The Economics of Ecosystems & Biodiversity

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The Economics of Ecosystems & Biodiversity

Pavan Sukhdev
Study Leader – TEEB, &
Special Adviser & Head - Green Economy Initiative
UNEP
The Economics of Ecosystems & Biodiversity

TEEB’s genesis …

“Potsdam Initiative – Biological Diversity 2010”

……the economic significance of the global loss of biological diversity….

G8 2007 Environment Ministers Meeting
Potsdam, 15-17 March 2007

TEEB Interim Report
CBD COP-9, Bonn, May 2008

TEEB Climate Issues Update
Strömstad September 2009.

TEEB for Policy Makers
Brussels 13 Nov. 2009
What is TEEB?

TEEB's mission is to make Nature economically visible
The Economics of Ecosystems & Biodiversity

TEEB Advisory Board

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“Private Profits, Public Losses”

If public wealth is included, the “trade-off” choice changes completely....

Source: Barbier 2007
Why is it TEEB important?

- Ecosystem Services form 45%-90% of the “GDP of the Poor” in rural and forested lands,
- But we are losing land ecosystem services valued at $2tr-$4.5tr in terms of human welfare benefits
- Phase 1 sized the Problem, Phase 2 describes Solutions
- Effective, Equitable and Economically justifiable solutions EXIST - we describe 120 examples!
Valuations, Operating Spaces, Responses...
Opportunities for mainstreaming

- Cancun UNFCCC COP
  - Climate change mitigation policy needs to reflect wider costs and benefits for biodiversity (Coral reef emergency / REDD).
  - Climate change adaptation finance needs to consider the compelling economics of using ecosystem restoration.
- Rio+20
  - Formally recognise the links between biodiversity, climate change, development, water and food security
**Recommendation: Invest in ecological infrastructure**

- Tropical forests store a fourth of all terrestrial carbon
  - 547 gigatonnes (Gt) out 2,052 Gt (Trumper et al. 2009)

- Tropical forest capture
  - up to 4.8 Gt CO$_2$ annually (Lewis & White 2009) (total emissions p.a. ~32Gt)

- Stopping deforestation holds an excellent cost-benefit ratio
  - Halving deforestation generates net benefits of about $3.7 trillion (NPV) including only the avoided damage costs of climate change (Eliasch Review 2008)
Recomm : Recognise the value of protected areas

- Global spending on PAs p.a.: ~ $6.5-10 billion
- Need for PAs (15% land, 30% sea) p.a.: ~ $45 billion
- Need for Natura2000 p.a.: ~ $6.5 billion
- Benefits from effective PAs p.a.: ~ $4-5 trillion
- International NGO funding: ~ >$1 billion p.a.
- International gov funding (30-50% to PAs): ~ $4-5 billion p.a.
- Market-based income to PAs ~ $1-2 billion p.a.
- Percentage of total ODA: ~ 2.8%

(TEEB D1 ch8)
Investment in ecological infrastructure

Ecological infrastructure key for adaptation to climate change

- Afforestation: carbon store+ reduced risk of soil erosion & landslides
- Wetlands and forests and reduced risk of flooding impacts
- Mangroves and coastal erosion and natural hazards
- Restore Forests, lakes and wetlands to address water scarcity
- Coral reefs as fish nurseries for fisheries productivity / food security
- PAs & connectivity to facilitate resilience of ecosystems and species

From local to national to EU efforts

Global responsibility / contribution
Investments in Ecological Infrastructure for Climate adaptation

- restoration can be cost effective way of providing a service:

  planting mangroves along coastline in Vietnam cost $1.1 million but saved $7.3 million annually in dyke maintenance (GRID-Arendal 2002; Reid and Huq 2005)
Example: Nature-based climate change mitigation, Germany

- drainage of 930,000 ha peatlands in Germany for agriculture cause emissions of 20 Mio. t of CO₂-eq. per year
- total damage of these emissions amounts to 1.4 billion €
- peatland restoration: low cost and biodiversity friendly mitigation option

Mecklenburg-Vorpommern:
- pilot project between 2000-2008
- restoration of 30,000 ha (10%)
- emission savings of up to 300,000 t CO2-eq.
- avoidance cost of 8 to 12 € / t CO₂
- if alternative land use options are realized (extensive grazing, reed production or alder forest) costs decrease to 0 to 4 € / t CO₂
- where Maize can be grown restoration can not compete

Source: Federal Environmental Agency 2007; MLUV MV 2009; Schäfer 2009
Natural resource management & spatial planning

- Flooding of River Elbe, Germany (2002), Damage over EUR 2 billion
- Assessment that flood damage (+ cost of dams) by far exceed costs of upstream flooding arrangements with land holders

→ The value of upstream ecosystems in regulating floods was re-discovered

→ Local authorities start changing spatial planning & seeking arrangements upstream (but still have a lot to do)
Step 1: Specify and agree on the problem
• August 2002 heavy floods of the river Elbe, direct economic damage of over 9 billion €
• occasion to revise system of flood protection towards integrated flood risk management

Step 2: Which ecosystem service are relevant
• flood protection
• habitat for a multitude of species
• nutrient retention

Step 3: Define information needs and select methods
• CBA of different alternatives (relocate dykes, establish polder)
• replacement costs for assessment of the nutrient and pollutant filters
• contingent valuation for the willingness to pay for flood control
Step 4: Conduct the assessment
- relocation of the dykes creates a new flood retention area of just 35,000 ha of land
- establish polder includes the creation of a surface of 3,248 ha
- combination of both measures with dike relocations (3402 ha) and steered polders (4143 ha)

Step 5: Identify and appraise policy options
- all options have a positive benefit-cost-ratio if environmental benefits are included:
  - BCR:  
    - relocation of the dykes = 3.1
    - establish polders = 9.9
    - combination = 4.6

Step 6: Assess the distributional impacts of policy response
- Maps are being made that indicate economic losses and social impacts

Opportunity ahead: Research needs for Germany (and Europe)

- Give yourself an overview: What is the natural capital in Germany?

>> A TEEB for Germany and a national ecosystem assessment will help to show the way

- More than 1000 studies on valuation of ecosystem services across the world – but only few from central Europe

>> More studies and better methods needed

- Major instruments have been developed (e.g., habitat banking, ecological fiscal transfer)

>> develop them further and implement them
TEEB and economic development

• From Interim Report (2008), & Report for local and regional policy makers (2010): biodiversity is acutely important for the worst off in society

  – Ecosystems contribution to the “GDP” of the poor - subsistence farmers, pastoralists, forest-dwellers...

  – Links to the MDGs: 1, 3, 4, 5 and 7.
“GDP of the Poor” is most seriously impacted by ecosystem losses.

Source: Gundimeda and Sukhdev, D1 TEEB
Opportunity ahead:
The need for a more ambitious CBD strategy and implementation

- foster mainstreaming in all policy areas
- address indirect drivers
- Develop and use innovative financial mechanisms
- ABS regime with fair rules
TEEB in CBD COP-10...

☑ CBD Strategic Plan : 14 (e) and (f)

(UnEP/CBD/WG-RI/3/L.9)

☑ SBSTTA 14 - XIV/4.. (... protected areas...) (c) 8.

☑ SBSTTA 14 - XIV/6... (.. Article 10 ... (sustainable use of biodiversity...) 1. )

☑ SBSTTA 14 - XIV/15 (.... Incentive measures ...)

(Article 11...(# 2, 4, 8 and 11) )
TEEB After Nagoya?
Four Assets Maintain & Develop....

- **TEEB Reports**
  - need updating every 2-3 yrs

- **TEEB Approach**
  - needs stewardship

- **TEEB Community**
  - needs to stay alive

- **TEEB Brand**
  - needs to be maintained
Post TEEB reports, Post Nagoya: Stakeholder demands....

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<td>Collaboration &amp; TEEB Reps for National/ Regional TEEB studies</td>
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<td>WB, ADB, UNEP, OECD, others …</td>
<td>SEEA “first-mover nations” (5-6 each developed and developing) for Ecosystem Accounting</td>
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<td>ICAEW, IASB, GRI, WBCSD, Corporations…</td>
<td>Sector Impact Estimates (over 500 calculations TEEB D3 “China/Cons/Forest” model… ) &amp; Sector TEEB (eg: Agriculture; Finance; etc)</td>
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<td>Citizens, NGOs…</td>
<td>TEEB Outreach, esp. through social media, traditional media, advertising sector, cppartners, CSR, NGOs …</td>
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- Shift from demand for *research* to demand for *advice* on implementation of ‘TEEB’ approach
“Demand for isolated theory is getting weaker, for applied economics is getting stronger…”

(John Gowdy, President, ISEE - at Bremen)

- Capacity Building for Developing Countries
- “Country” and “Regional” TEEB - for Policy-makers
- Green Accounting Project – WB and Others
- Estimating Business Sector Externalities
- Stewardship & Quality Assurance - TEEB Approach
- Prioritizing Ecology & Valuation Knowledge Gaps
- Communicating the Issue to Society at Large
Challenge: ECUADOR’S Conservation Proposal (Yasuni Preserved, ITT Oil stays in ground)?
Thank You!

www.teebweb.org

www.teeb4me.com