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D2 perspective

The Economics of Ecosystems and Biodiversity

Haripriya Gundimeda
Associate Professor
Dept. Of Humanities and Social Sciences
Indian Institute of Technology Bombay
Joint Co-ordinator TEEB for local Policy Makers

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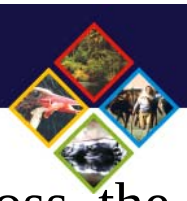
TEEB D2

How can an 'ecosystem services perspective' help improve biodiversity-related decisions at local/regional policy levels?

- A **source of inspiration** for conserving biodiversity by considering ecosystem services: telling examples from around the world.
- An **overview** of approaches and instruments for assessing and valuing ecosystem services, for various tasks and in different contexts.
- An **aid to orientation** on the potential, requirements and caveats, with regard to locally applying assessment and valuation instruments.

Coordinators – Haripriya Gundimeda (IIT Bombay) , Heidi Wittmer (UFZ)



Chapter 1 - The problem of biodiversity loss, the ecosystem services lens and the room-for-action at local level

- Concern for biodiversity is not a luxury – ESS are essential for well-being
- Many pressures on biodiversity are driven at levels beyond local policy levels
- Yet there are several things that can be done at local level to better include biodiversity in policy making and public management

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What are current approaches and instruments for explicitly considering ecosystem services?

Approaches

Ecological Approaches
Millennium ecosystem assessment
Total Economic Value

Instruments
Monetary and non-monetary valuation
Assessment instruments

Concept of Value

- Not a single, simple concept
- Environmental values depend on material, moral, spiritual, aesthetic interests
- Experts trained in different disciplines understand the concept of value differently
- Values – should reflect contributions to human well-being and values that affect social and civil norms and moral and spiritual beliefs
- Value = benefits (Millennium Ecosystem Assessment)

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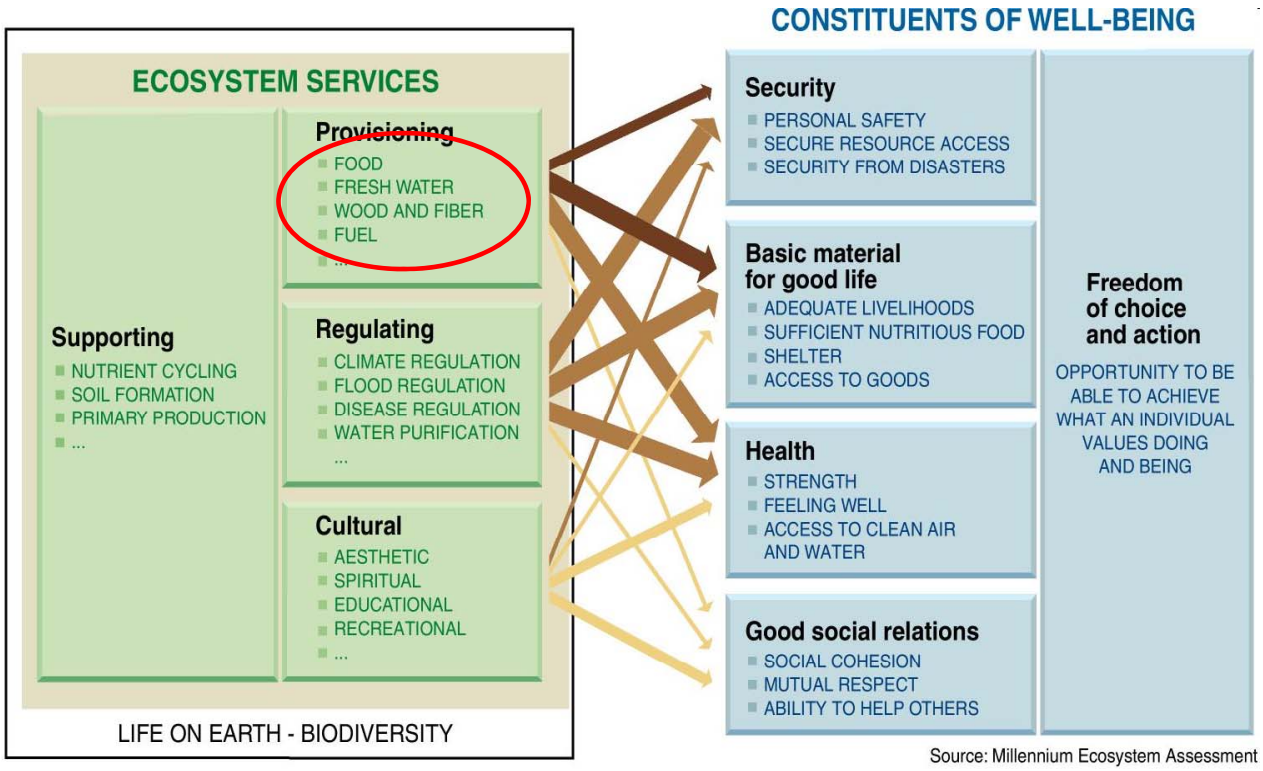
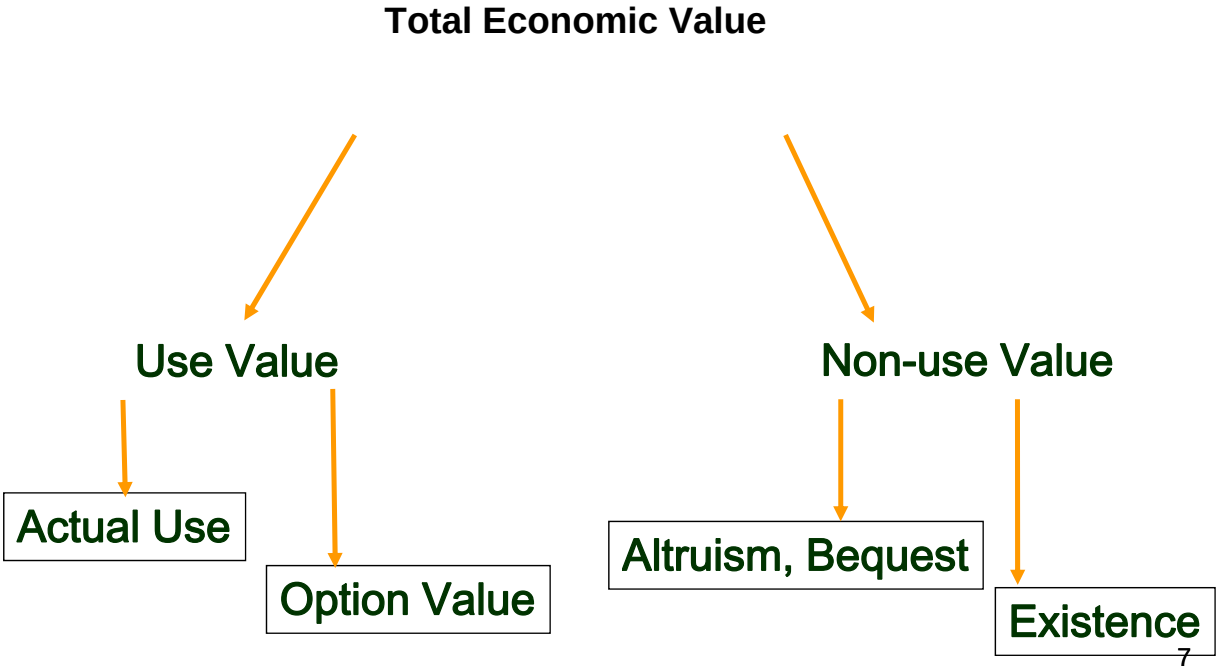


Source: Millennium Ecosystem Assessment

TOTAL ECONOMIC VALUE:

all goods and services; on-site and off-site impacts



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Some key messages of TEEB D2

1) Key to appropriate natural resource management is the consideration of the entire range of ecosystem services and their multiple benefits to the local community and to the world.

2) This helps to avoid the bias in decision-making towards exploitative economic development.

3) Valuation instruments imply several discrete decisions e.g. on the time horizon or on the selection of transfer values, which affect the result.

4) These decisions should be clear between scientists conducting the study and policy makers who want to draw on its results.

How can valuation aid in conservation? Example: Human-Elephant-Conflict Sri Lanka

- elephants consume 150kg of food every day: crop raiding is a serious problem in densely inhabited areas – defences cause injuries, etc..
- a survey of impacts on 480 local households and of their willingness to accept compensation.
- a second survey among Colombo city residents: their willingness to pay for the conservation of elephants exceeds the funding needed for compensating rural elephant damage.
- in 2007, Ceylinco Insurance presented a new scheme, partly CSR and partly profit driven: Ceylinco charges a small addition to the premium payments of life/vehicle policy holders. This feeds a trust for compensations payments.

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Important: How to apply them in Policy areas or public management tasks?

4. Environmental Management Systems: EMAS, ISO, Ecobudget
5. NRM: forestry, fisheries, agriculture, water management, disaster mitigation, tourism
6. Spatial planning instruments and EIA
7. Protected Area Management
8. Marked-based instruments for conservation
9. Competitions, certification and labelling

Public Management systems and urban management

- Different (standardized and non-standardized) environmental management systems (EMS) available for Local Governments to implement, such as:
  - ISO 14000 series
  - ecoBUDGET
  - EMAS.
- Local Governments can also use different environmental tools that can support the management of natural resources, such as:
  - Indicators
  - Green public procurement
  - Local Biodiversity Strategy and Action Plans
  - Planning
  - Strategic environmental assessments and
  - Environmental impact assessments and so on.
- These tools have specific purposes and can be coordinated through an environmental management system.

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Role of environmental management systems in conservation of ecosystems
Example: EcoBUDGET in Tubigon - Philippines

- **The problem**: (i) increasing threats to the municipality's fish and water resources, (ii) little knowledge about impact of existing environmental initiatives.
- **The instrument**: ecoBUDGET, an environmental mgmt system:
- common budgeting & accounting system is used as a frame for setting up an environmental budget, in which key natural resources are selected, targets set and measured on a recurrent basis, instead of money.
- **The required input:** broad consultations; 9 municipal staff from different departments work on annual Master Budget; ratified by the city council.
- **The impact**: Subsequently, environmental efforts were coordinated and geared to meet targets of the Master Budget, with stronger cross sector involvement. Annual budget cycle ensures continuous follow-up. Strong public awareness.

Singapore City Biodiversity Index

- A grading system to measure how cities worldwide are conserving their plant and animal species.
- The Singapore Index on Cities' Biodiversity would measure performance and assign scores based on three categories:
- Biodiversity - the number of plant, animal and other species that exist in a city;
- The services that these plants and animals provide, such as pollination and as carbon sinks; and
- How well a city manages its biodiversity - for instance, by setting up a conservation agency or a museum to document species and habitats.
- help cities benchmark the success of their efforts to reduce biodiversity loss and hopefully enhance urban biodiversity in the longer term.

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Natural resource use, management and extension

(a) Agriculture (incl irrigation), pastures
(b) Forestry (including peat-lands)
(c) Fisheries
(d) Watershed management
(e) Tourism management

- **Key to appropriate natural resource management is the consideration of the entire range of ecosystem services and their multiple benefits to the local community and to the world.**
- **Local communities and sub-national decision makers have a key role in enhancing natural resource management through appropriate planning and valuation methods.**

Ecosystem Services Valuation of Open Spaces in eThekwini Municipality (Durban)

- The natural ecosystems of the eThekwini Municipal Area (Durban) are of immense contribution to human well-being and are threatened by human activities
- EThekwini Municipality is one of the first cities in the world to recognise the economic contribution of open spaces and ecosystems services.
- With an estimated replacement value of US$ 400 million per year in 2003, excluding the contribution to annual tourism-related turn-over, eThekwini Municipality has made a strong economic argument for conserving its biodiversity.
- The results of the project have been useful in lobbying for more money to undertake management work especially for areas which fall outside of the municipal nature reserves.

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Kampala, Uganda

- Plans to drain the Nakivubo Swamp (>40sqkm) for improved agri production
- Waste water treatment capacity of the swamp was assessed (Emerton 2004)
- Maintaining the wetlands: ~235.000$ p.a.
- Running a sewage treatment facility with equivalent capacity: ~2.000.000$ p.a.
- Thus, draining plans were abandoned and Nakivubo Swamps gazetted as protected area

Spatial planning and tools

- **Spatial planning is a key to secure the needs of both existing and future generations.**
- Integrating an Ecosystem services approach into spatial planning allows balancing of multiple benefits
- EIA and SEA are key impact assessments not yet used to their full potential.
- Stakeholder participation a key building block in achieving sustainable development.

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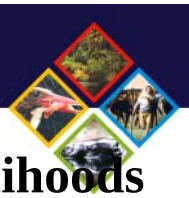
Strategic Catchment Planning at uMhlathuze municipality, South Africa

- uMhlathuze municipality a biodiversity hotspot.
- A classic case of “development” versus “conservation” dilemma
- In order to alleviate the conflict and time delays that arise during EIA, the uMhlathuze Municipality opted to undertake a Strategic Catchment Assessment.
- Instead of identifying and declaring “no-go” areas, the study highlights the ecosystem services that the environment provides free of charge to this Municipality.
- Nutrient cycling and waste management, water supply, water regulation, flood and drought management are some of the most highly valued services.
- The value of environmental services provided by all catchments was estimated at R1,7 billion (nearly US$ 200 million) per annum.
- Local administrators reacted positively once they realized that ecosystem services have an economic value.



Case where both biodiversity and local livelihoods have benefited

- Humla region in Northwest Nepal
- A complex ecosystem and a highly contested area of natural products.
- Land was awarded to the local community to produce high value essential oils and sales are negotiated by organisations in the partnership, thus disincentivising the use of low value raw produce such as fuel wood.
- The essential component of this is community members working together with the enterprise organizations to learn skills, help develop plans and take up formal tenure.

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Protected Areas

Protected Areas are part of the local landscape and an important asset to local governments!

They provide a range of ecosystem services, jobs and reputation.

Local governments can get involved in PA management, to secure local PA benefits.

Valuing ecosystem services help in various ways:

Advocacy

Fundraising

Decision support

Conflict resolution

Gauging Political Support through Valuation – case of Leuser national park in Aceh Province, Indonesia

- The province Aceh in Sumatra - one of the largest forest ecosystems remaining in SE Asia has rich biodiversity and high social values
- Leuser National Park seeks to protect this rich natural heritage.
- The National army, heavily present during conflict in Aceh during the 1990s, was itself involved in logging within Leuser partly in order to generate revenues for its operations.
- Appeals to respect the unique biodiversity were ineffective.
- In face of rapid degradation, the scientific director at the park commissioned a valuation study of the impact of biodiversity loss on the province's potential for economic development, with financial support from the EU (van Beukering et al. 2003):
- This suggested that over 30 years US$2 billion more value would come from the park if the forest were retained, which was a strong argument for the army officials to change their strategy.

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Valuation for Support in planning and management in Vietnam

- Communities on the coast of Vietnam are vulnerable to storm damage;
- More than 80 per cent of the population is believed to live at risk of flooding of some sort
- Evaluation studies suggest that restoration of natural mangrove forests is more cost effective than building artificial barriers.
- Since 1994 local communities planted and protected mangroves in northern coastal regions. Over 125,000 ha of mangroves have been planted, resulting in reduced coastal erosion.
- An investment of US$1.1 million saved an estimated US$7.3 million a year in sea dyke maintenance;
- During typhoon Wukong in 2000 the project areas remained relatively unharmed compared with neighbouring provinces
- Building on this initial analysis and success, mangroves have now also been restored in the southern part of the country around Mui Ca Mau National Park, at the end of the Mekong Delta.
- As a result of restoration overall forest cover increased from around 50 per cent in 2000 to 96 per cent in 2007

Payment for environmental services

- Market mechanisms for PES enhance the cost-efficient investment of conservation funds.
- But for local sellers to master the market conditions we need to invest long-term in local PES capacity and institutions.
- There are various design options for PES. Which one it the appropriate depends on the local and regional conditions.
- If PES is implemented under unsuitable circumstances there can be unexpected social impacts.
- Key factors include
- transparent and credible governance,
- an incentive structure that rewards appropriate conservation outcomes, and
- effective monitoring and enforcement of legal requirements.

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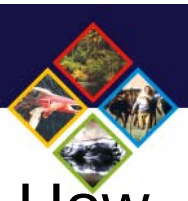
Payment for ecosystem services

- Pepsi Cola in Guatemala agreed to pay to maintain a natural forest in the watershed above its bottling factory, having located the latter because of the clean water available
- Water company supplying Quito in Ecuador pays residents in two national parks to maintain the forest cover this ensuring that its water is pure and reducing treatment costs
- In Bolivia, in La Aguda Community, there were significant negative local effects due to cattle ranching around water sources because of animal waste, soil compaction and vegetation loss.
- The Eastern Training Institues (ICO), initiated a scheme to protect water quality, by fencing off riverside areas and prohibiting cattle grazing.
- The ranchers were given **one-off cash payment for land purchase and in-kind compensation to the ranchers** in the form of a drinking pool outside of the enclosed area.
- The scheme has been mainly successful because it is a small group of environmental service providers and the payments and in-kind compensation to the land owners and the cattle ranchers were sufficient to cover the opportunity costs so no conflicts arose.



PES – one of the design issues - How to pay the participants?

- In Indonesia, under RUPES programme, to rehabilitate the slope surrounding Singkarak Lake in western Sumatra, it was proposed that participants in the program be given a **charity-loan system where communities receive financial support** for under taking economic activities like shade-grown coffee, planting fruit trees, replanting native trees in state-owned protection forests as loans.
- If they fail to fulfil their environmental improvement and protection commitments, these loans have to be repaid, otherwise they are given as a grant.
- In Mexico, the Coatepec Muncipality, Veracruz requested the users of water for a **small voluntary contribution of MEX $1** to be added to the water bill for conservation of cloud forests which the users (local domestic and commercial) were willing to pay

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Attracting the poor through microinsurance programs - Biorights project at East Kolkata Wetlands in India

- Biorights is an innovative concept launched to compensate the poor for conserving the Biodiversity and the environment by transforming nature services into alternative economic opportunities like micro-insurances and micro-financing schemes.
- **This bio-rights project advocates the right of commons for getting compensated for their endeavors to conserve the wetlands**.
- Eco-tourism has been used as a financial tool, to establish this compensation model through micro health insurance scheme and bank linkages for micro-financing
- This has been a successful case of public-private partnership towards environmental conservation and poverty alleviation

Certification and Labelling

- Certification and labelling are powerful tools to promote standards for sustainable production/service delivery and to effectively communicate them.
- Successful labelling schemes need to be credible and easy to understand for consumers.
- Local/regional governments can effectively promote certification/labelling schemes, e.g. by providing infrastructure, capacity building and incentives for local producers to take part in them.

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BR Walser Tal Label

- WAlsertal comprising six muncipalities (Austria)
- A living model of sustainable regional development with the participation of the local people
- Part of the UNESCO Biosphere Reserve – “using nature without harming it”
- Logo of biosphere reserves created through design competion in schools
- Some of the successful labelling initiatives in the valley
- **Der Walserstolz (The Walser Pride) for Cheese**
- **Nature as a resource – the e5 program** for renewable resources
- **“Genussspechte“ (Gourmets – people with a taste for fine things) – for food**
- **The “Bergholz“ label – for sustainable timber**
- Community involvement a key success factor

An economic perspective can help to recognize the value of ES:

- Makes a strong case for better integrating environmental concern into all public management
- Shows the urgency required for action
- Shows the social impacts of policies
- Orients among management options
- Overcomes the mental separation between development and conservation

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Your examples/stories are welcome:
Where did a focus on ES made a difference in public mgmt – and how?

Your experience and feedback is important:
Do the draft messages of the TEEB D2 report fit with your experience?

www.teebweb.org

Please contact
haripriya.gundimeda@iitb.ac.in
(or) teeb@ufz.de

Thank You!

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