

Pathways to integrate Ecosystem services into development sector: Tools and Methodologies

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Ecosystem Services

- Provisioning Services

- Productive power of the nature – used to produce goods and services for human needs

- livelihood supports
- food production
- medicinal herbs
- cash crops
- Livestock
- Fisheries
- crop , spices, fruits, nuts, etc.



Ecosystem Services

- Regulating services of the nature
 - flood control
 - Erosion
 - sand/silt deposit
 - disease regulation using ecosystem
 - Etc.

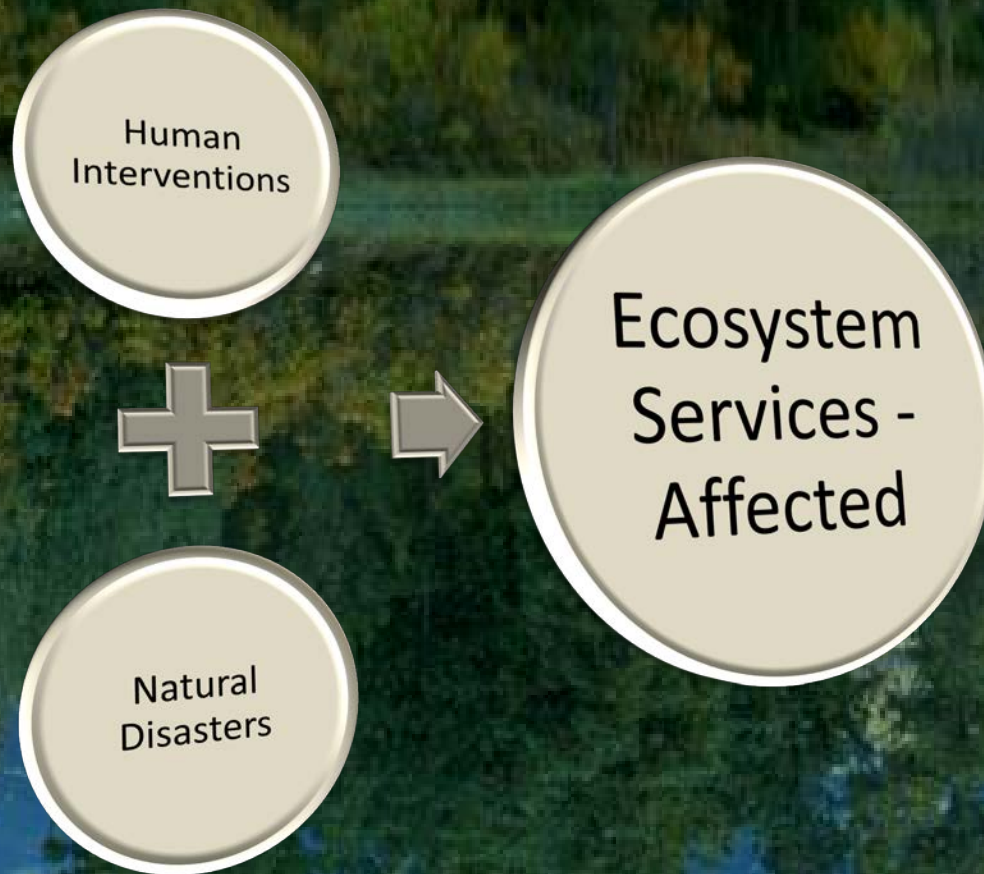


Ecosystem Services

- Cultural services
 - tourism / aesthetic
 - educational values
 - Spiritual
- Supporting services
 - nutrient cycle - type of silt (sand vs soil)
 - Pollination
 - Biodiversity
 - how water is supporting the community
 - flood protection
 - water availability

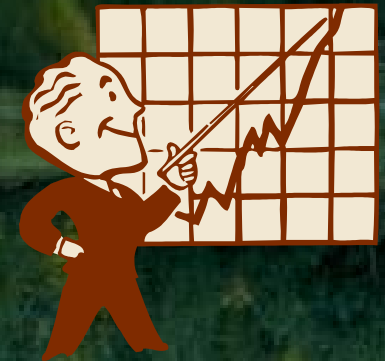


Effect on Ecosystem Services



Framework for Analysis

- Understanding of the pressure on the ecosystem due to development activities
 - Urbanization
 - Infrastructure development
 - Changes in land use
 - Changes in property rights
 - Changes in institutions governing the resources
 - Changes in the governance structure and policy
 - Changes in the market structure
 - Etc.



Framework of analysis

- Develop understanding on
 - The measure of changes in the state of pressure
 - The impact on ecosystem services
 - Provisioning services
 - Regulating services
 - Cultural services
 - Supporting services



Impact pathways

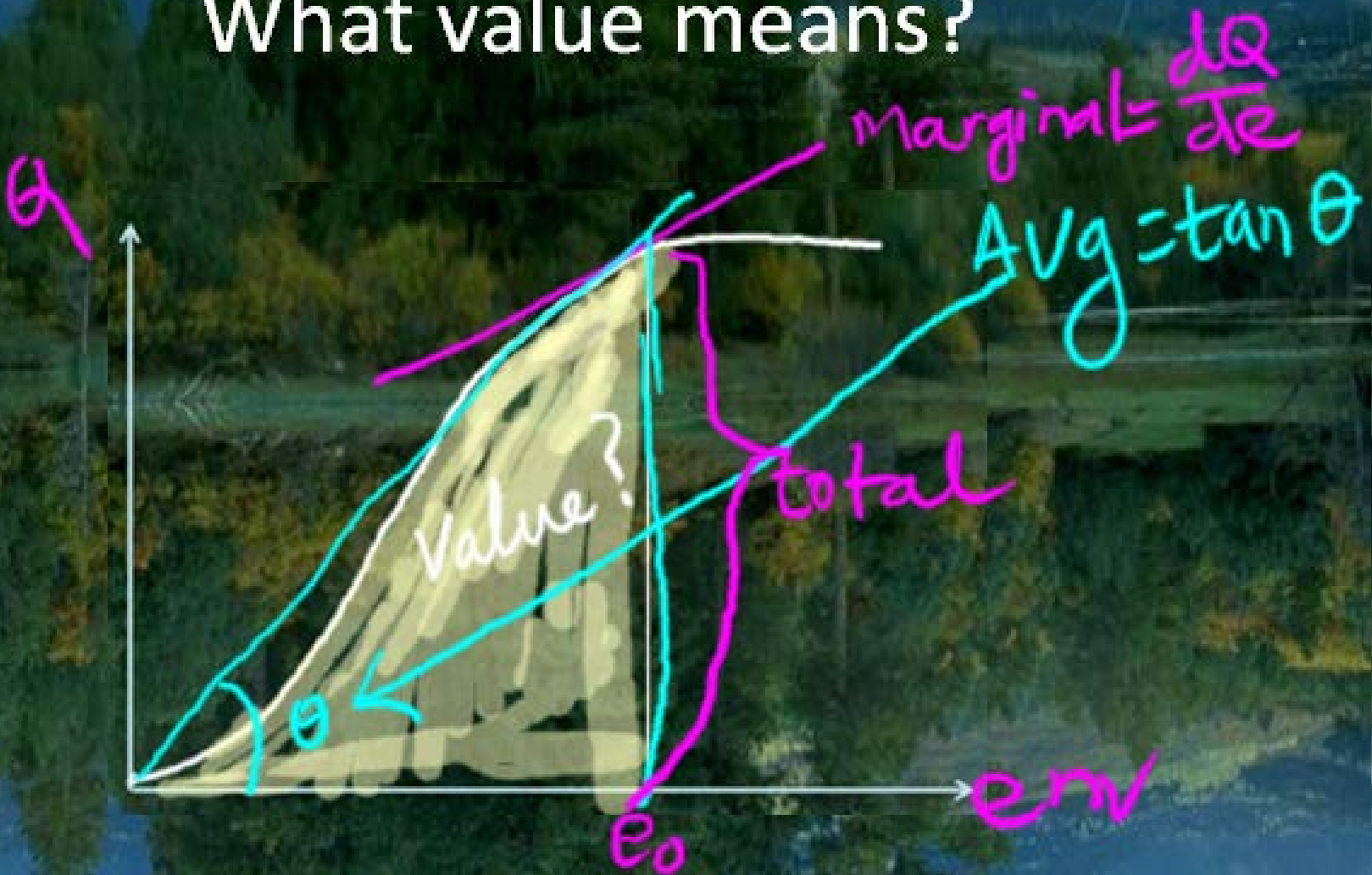


Method of valuation

Revealed preference method

Stated preference method

What value means?



Tools of assessment

- Cost Benefit Analysis
 - Costs of development interventions
 - Direct, indirect
 - Changes in the quality/quantity of ecosystem
 - Impact on productivity/benefits/costs
 - Find Marginal Impacts
 - Analyze distribution of effects
 - Analyze vulnerability of communities due to changes
 - Integrate assessment of ecosystem impacts with costs
 - Follow EIA – assess mitigation possibilities - adjust benefits
 - Find EIRR, EBCR, ENPV

Method of analysis

- Surplus method
 - Assess impacts of development activities on supply / demand for goods and services
 - Assess the changes in the ecosystems
 - Assess changes in the CS/PS due to ecosystem changes
 - Incorporate avertive and mitigating actions of the economic agents
 - Adjust CS/PS by incorporating avertive and mitigating actions

Method of analysis

- Optimization

- Assess ecosystem health
- Assess alternative options
- Maximize social benefits due to development intervention
- Keep in view
 - Changes in prices, if any
 - Ceteris paribus conditions
 - Market interactions when considering large development interventions
 - Distribution of benefits and costs between communities
 - Assess changes in the vulnerability of communities

Key considerations

- Analysis of changes in the state of ecosystem health
- Analysis of pathways of impacts – through ecosystem services
- Ensure the science is correct
- Analyze the mitigating and avertive actions of the economic agents
- Understand assumptions during analysis – market/institutions
- Analyze impact factors – partial equilibrium analysis vs general equilibrium analysis
- Use ‘appropriate’ valuation method to elicit values
- Identify marginal impacts of changes
- Find additional costs and benefits
- Integrate it with traditional decision tree