Methodology for Assessing The Economic Impact of Desertification, Land Degradation and Drought in India

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Impact of Desertification and Land Degradation

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The impact of desertification is intensifying due to climate change, which is reducing the availability of freshwater, fertile soil, and forest and vegetation. As the degraded land loses value, investments in agriculture and rural Development decline even more Combating desertification yields multiple local and global benefits and helps mitigate biodiversity loss and human induced global climate change

Ban Ki-moon

Objectives

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- Assess scale of land degradation in the country with the economic impacts.
- Assess the quantum, along with the sources, of investment required for undertaking preventive and restorative measures which can help achieve the aspirational goal of land degradation neutral India by 2030

TORs

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1. Examine economic valuation studies and data available from secondary literature and published sources.
2. Review Government's programmes and schemes relating to DLDD issues, targets, financial allocations and achievements.
3. Select 6 case study sites for micro-economic assessment in arid, semi-arid and dry sub-humid regions of the country, identify the data requirements and sources of information.
4. A macro-economic assessment for the entire country and scenario development (till 2030).
5. A micro-economic assessment for 6 case study sites for full economic assessment and scenario development (till 2030).

Broad contours of methodology

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1. Secondary literature survey
2. Identification of 6 study sites (Primary Research) Assessment of Indirect Economic Impact
3. Development of restorative/preventative plans
4. Economic assessment of degradation and cost of restoration/prevention
5. Application of Indirect Economic Impact using Benefit transfer Method

Literature Survey

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1. Review of studies assessing economic impacts of degradation and methodology (global and India-specific) and main findings-both reports and published papers
2. Assessment of existing macroeconomic studies of desertification

   One study for India estimated the direct costs of land degradation as 2% of the GDP for India-4% of the Agricultural GDP (Reddy, 2003) based on estimates for 442 districts in 14 regions (NRSA data of 1988-89)
3. Review of government interventions for prevention of LD and desertification
   - **Review of causes of desertification and approaches to their prevention/amelioration**
   - **Review of policy, regulatory and institutional framework for combating desertification**
   - **Review of existing schemes, financial allocations, technical interventions and impacts**
   - **Review of possible secondary data sources for this study (e.g. information published by NRSA, Central Soil and Water Conservation Research & Training Institute,**

Micro-Economic Assessment

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- Identification of six Pilot sites in Six States
- Assessment of Direct and Indirect Economic Impact due to Desertification, Land Degradation and Drought through Primary Research
- Application of outcome of primary research for Macro-Economic Assessment

Tentative List of States

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- Rajasthan 67% (primarily wind erosion) (arid region)-1-site
- Gujarat- 68.43% (salinisation) (arid and semi-arid region)-1 site
- Uttar Pradesh (water erosion & sodic sites)-1 site
- Uttarakhand-56% (vegetal degradation-38.7%) (dry sub-humid region)-1 site
- Tamil Nadu or Andhra Pradesh:1 site
- Chhatisgarh or Maharashtra: 1 site

Various Economic Impacts

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- **Direct Economic Impact**
  - ✓Agriculture Loss
  - ✓Soil Nutrients Loss
  - ✓Animal Husbandry Loss
  - ✓Cost due to siltation

Various Economic Impact

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- **Indirect Economic Impact**
  - ✓Loss due to Regulating Ecosystem services
  - ✓Loss due to provisioning Ecosystem services
  - ✓Loss of Aesthetic Services

Ecosystem Services

The benefits people obtain from ecosystems

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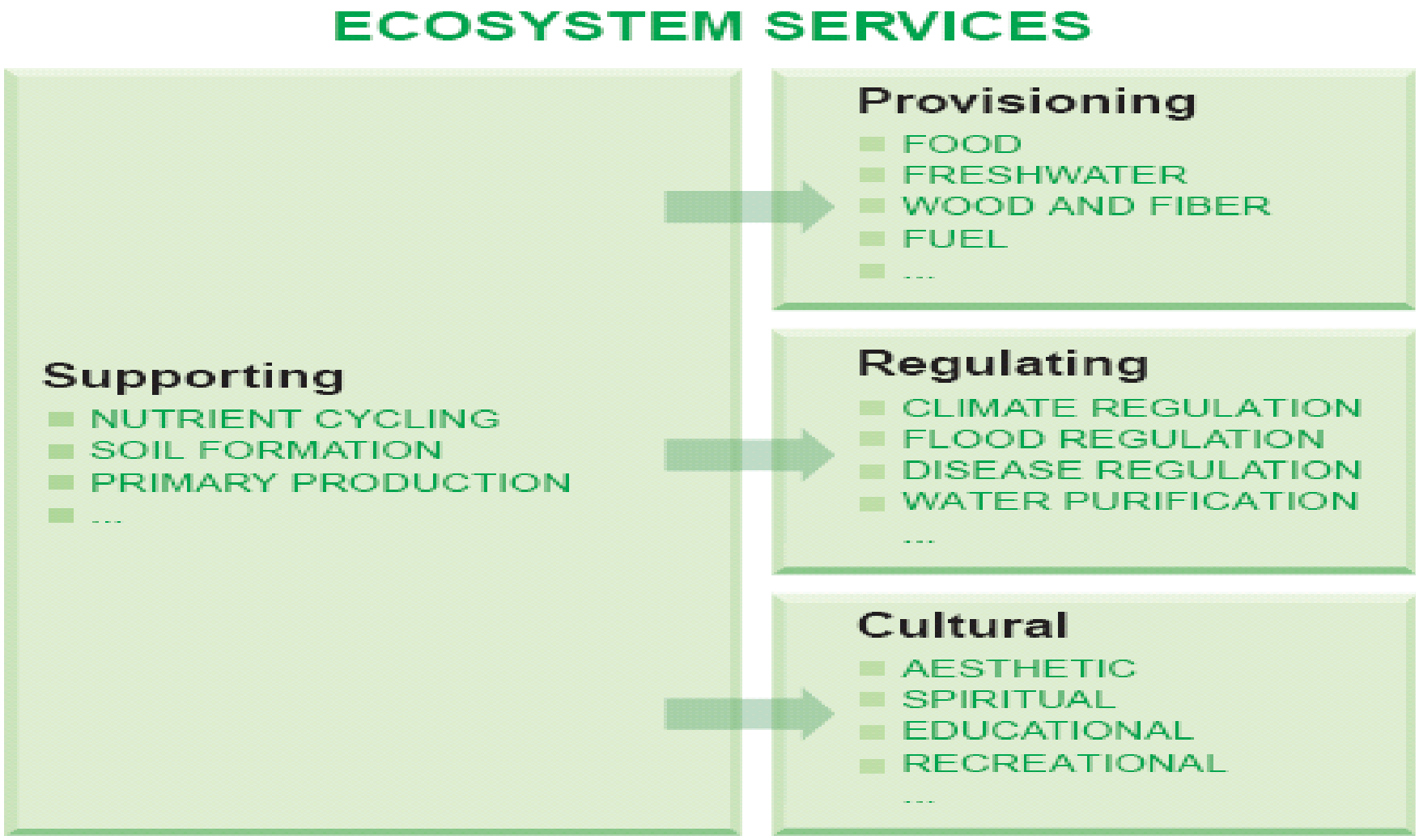

Methods for Assessing Direct Economic Impact

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- Dose – Response Approach(DRA)
- Change in the Productivity approach (CPA)
- Replacement Cost Approach (RCA)
- Illness Cost approach (ICA)

Methods for Assessing In-Direct Economic Impact

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- Damage Cost Avoided
- Replacement Cost
- Contingent valuation
- Travel cost Method
- Hedonic Price Method
- Benefit Transfer Method

Benefit Transfer Method

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- The benefit transfer method is used to estimate economic values for ecosystem services by transferring available information from studies already completed in another location and/or context.
- The basic goal of benefit transfer is to estimate benefits for one context by adapting an estimate of benefits from some other context.

Benefit Transfer Method

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- Benefit transfer is often used when it is too expensive and/or there is too little time available to conduct an original valuation study.
- It is important to note that benefit transfers can only be as accurate as the initial study.
- The TEV of any forest ecosystem may be applied on other forest ecosystem having same kind of flora, fauna and geography.

Advantages

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- Benefit transfer is typically less costly than conducting an original valuation study.
- Economic benefits can be estimated more quickly than when undertaking an original valuation study.
- The method can be used as a screening technique to determine if a more detailed, original valuation study should be conducted.

Limitations

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- Benefit transfer may not be accurate, except for making gross estimates unless the sites share all of the site, location, and user specific characteristics.
- It may be difficult to track down appropriate studies, since many are not published.
- Adequacy of existing studies may be difficult to assess.

Application of the Benefit Transfer Method

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Step-1: identify existing studies or values that can be used for the transfer. There are a number of valuation databases that can be useful

Step-2: evaluate the existing values to determine whether they are appropriately transferable. Consider whether:

- **The service being valued is comparable to the service valued in the existing studies.**
- **This includes determining whether the features and qualities of sites or ecosystems are similar the characteristics of the relevant population are comparable.**
- **This includes determining whether the demographics, and peoples' preferences, are similar between the area where the existing study was conducted and the area being valued.**

Application of the Benefit Transfer Method

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- Third, evaluate the quality of studies to be transferred. The better the quality of the initial study, the more accurate and useful the transferred value will be. This step requires professional judgment of the researcher.
- Fourth, adjust the existing values to better reflect the values for the site under consideration, using whatever information is available and relevant. The researcher may need to collect supplemental data in order to do this well.

Application of the Benefit Transfer Method

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- Finally, estimate the total value by multiplying the transferred values by the number of affected people.

Cost –Benefit Analysis

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- Estimating Macro-Economic impact by using outcome of primary research from 6 pilots in the country
- Estimating rehabilitation cost and prevention cost by using secondary data
- Assessing Macro-Economic Impact considering direct and indirect cost
- Analyze Cost Effectiveness of rehabilitation and economic impact(direct and indirect)
- Suggesting land use options

Thank you for your Attention