Mainstreaming Ecosystem Services into Development: Policy Issues, Options and Responses: With Special Reference to Mountain Ecosystems

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Outline

1. Mountain Ecosystems & their Role in Economy, Environment & Human Well-being
2. Issues & Challenges in Mainstreaming Ecosystem Services
3. Valuation as a Tool in Improving Policy Response
4. Examples of Policy Innovations/ Responses
5. Lessons & Way forward

Mountain Ecosystems & their Role in Economy & Environment

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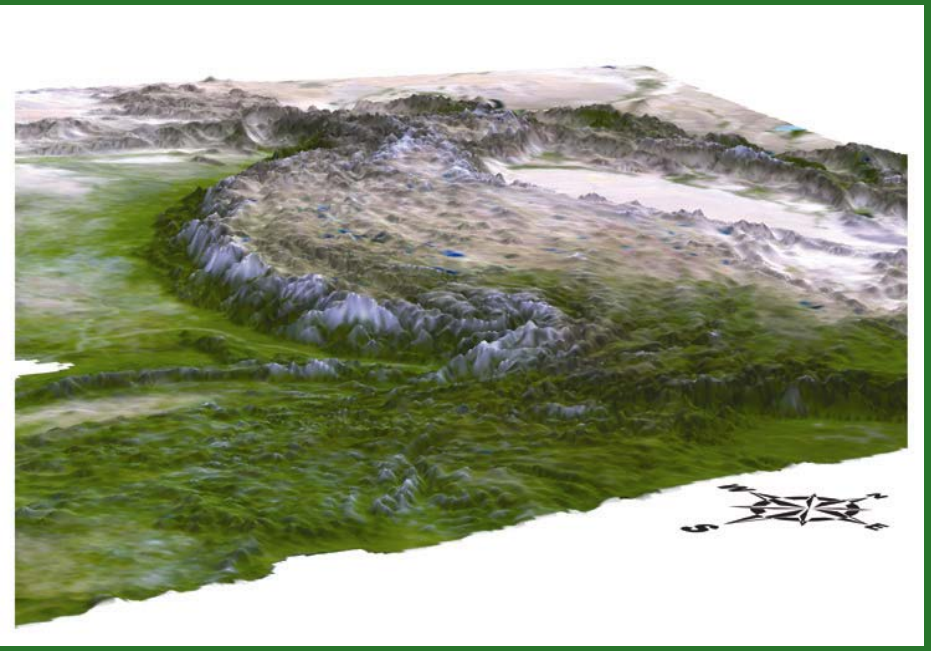
Mountains are the **water towers of the world**

Almost all of the world's major rivers, and many smaller ones, originate in mountains

Himalayas – the Third Pole



Permanent snow & ice in the Himalayan region

Sub-region	Volume (km^2)	Surface area (km^2)
Hindu Kush	930	6,200
Karakorum	2,180	15,670
Himalayas	5,000	43,000
Tibet	4,820	32,150
Total	**12,930**	**97,020**

Mountain Ecosystems & their Role in Economy & Environment

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- Mountains are important sources of hydropower & clean energy – provides more than 15% of the world's hydropower & other forms of clean energy

- **Mountains are sources of water storage, ground water discharge, …**

Mountain Ecosystems & their Role in Economy & Environment

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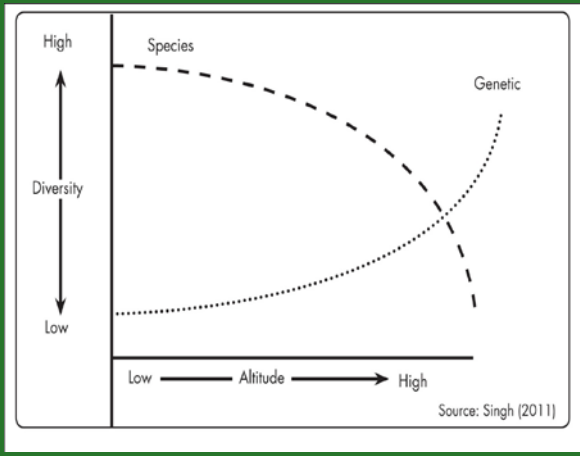
- Biodiversity
  - Mountains support 25% of the planet's biodiversity, have 50% of the world's biodiversity hotspots
  - 32% of global PAs are in mountains
  - Himalayan has 488 PAs covering 39% of the region's terrestrial area
- Mountain communities are custodians of agrobiodiversity
  - **Six of 20 plant crop species** that supply 80% of the world's food originated in the mountains
- Mountains: a source of cultural, spiritual & recreational resources



Mountain Ecosystems & their Role in Economy & Environment

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Regional & global climate regulation

- Mountain ecosystems contribute in regulating global climate by mediating carbon, energy, and water balance at the land surface
- The Himalayas, for example, influence the monsoon & rainfall patterns of the Indian subcontinent

Economic Contribution of Mountain Ecosystem Services

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- Mountain ecosystem services provide both **direct & indirect contributions** in the mountains & downstream
- Mountains provide a large share of the world's resources for forestry, mining, water for drinking, irrigation, hydropower & wind power
- Total value of forest ecosystem services in Uttarakhand, India estimated to be **US$ 2.4 billion per year**

Economic Contribution of Forest Ecosystem Services

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Intangible benefits of forest ecosystem services is larger than tangible benefits

Ecosystem service	US$/ha/yr
Climatic regulation	167.6
Disturbance regulation	2.3
Water regulation and water supply	5.2
Erosion control	114.6
Soil formation	11.6
Nutrient cycling	429.6
Waste treatment	102.7
Biological control	2.3
Food production	50.7
Raw material	164
Genetic resource	18.5
Recreation	78.6
Cultural	2.3
Total	**1,150**

Source: Singh, 2007

Issues and Challenges

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- **Lack of recognition of ESs in economic decision-making**, development planning & resource allocation-v*alue of ESs is either ignored or poorly understood.* **Policy failure-**
- Value of ESs is not captured in GDP , their contribution to national economies & people's livelihoods is invisible.
- Inadequate or missing market for many ES- Market Failure
- Insufficient compensation for ESs- Institutional Failures

Issues and Challenges

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- **Knowledge gaps-** challenges to provide economic value of ESs, regulating, supporting services. ecosystems are dynamic, multifunctional, their components interact in complex ways. services are largely intangible, and no defined market
- Unclear property rights- free rider
- Nascent market for ESs. Complicated procedures in global market-based instruments such as CDM, REDD(+), **High Transation costs**

Valuation to Improve Policy Response

- **Raising awareness**: Valuation of ESs can raise awareness about the importance of the ecosystem services-by putting price tag.
- Valuation provide basis for action, Decision Making, Science, Evidence
- *Demonstrating the value of ESs in economic terms - informed decision-making.*
- **Improving management mechanisms- by** evaluating different policy options, market & non-market instruments

Examples of Policy Responses

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- Policy innovations in government for conservation & development of ecosystems
- Government of India has established **Fiscal Transfer from the central government to the states for forest ecosystem services**
- **Green India Mission** to enrich forest cover
- National Rural Employment Guarantee Act 2005- green infrastructure
- **Economics of Ecosystems & Biodiversity (TEEB) India initiative** to value & compensate ecosystem services.

Examples of Policy Responses

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- *Grain for Green Program in China -transforming sloping farmlands into vegetation rehabilitation*

- *Different Ecological Compensation Programs for different Ecosystems: forests, grasslands, wetlands, oceans & farmlands*
- ***Monetary & Fiscal Innovations** : Green Finance, Green Credit, Green Insurance, Green Procurement*

Link between Valuation & Policy Response

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- *Policy making is a process- involves multiple actors, policy makers, researchers, Civil Society, NGOs*
- *Valuation & impact studies contributes directly/indirectly in the process of policy development/responses*
- *Process of influence*
- *India- valuation studies, civil society,*
- *China- Impact studies, cost of Inaction, sustainability concern*

Lessons

- *Valuation of ESs contributes to informed decision-making Demonstrating > Recognizing > Capturing*
- *Needs to involve key stakeholders- government, private sector, NGOs, Civil Societies and Engage them strengthen Science-Policy interaction.*
- *Disconnect between valuation studies & policy. Need to demonstrate **economic, social, environmental values & cost of non-action**,… impact studies, Scenarios,…*
- *Identify win-win situation -investment in Ecosystem can contribute poverty reduction, long-term economic growth*

Way Forward

- Growing realization & recognition of the value of ESs
- *Need to improve* ***communication*** to decision makers
- Engage diverse stakeholders, policy makers, Business, NGOs, Civil society
- Need to demonstrate the link between ESs business, economy- Corporate Social Responsibility
- Strengthen capacities of policy makers to deal environmental issues including market instruments , e.g., PES, REDD, REDD+
- Integrating valuation into project & program design including EIA
- Develop, test & disseminate best practices for business investment in ecosystem management

Thank you

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