

Managing Our Ecosystems

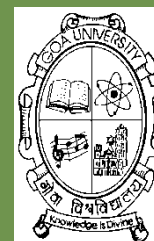


Managing Our Ecosystems

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**Session 12:
ECONOMIC
INSTRUMENTS
FOR GREENING
DEVELOPMENT**

**SANDEE-POVERTY
ENVIRONMENT
INITIATIVE (PEI)**

Paro, Bhutan

**SANDEE-UNDP-
UNEP
12 - 13th August
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Anthropogenic pressure: eg. water



- Global population tripled in the last 100 years
- Water use increased six times.
- Global population likely to will grow by 3 over the next 50 years
- Water demand will either double or triple over the next 50 years.

Definitions



- Ecosystem: *A dynamic complex of plant, animal and micro-organism communities* and the non-living environment interacting as a functional unit. People are integral parts of ecosystems
- Ecosystem services: Benefits people obtain from ecosystems

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**"The ecosystem can fend for itself,
but you're blocking the tv."**

<http://www.cartoonstock.com/directory/p/pipelines.asp>

Categories of Ecosystem services



Type of service	Description	Examples
Provisioning	Direct services and consumption goods	Production of food, timber and water
Regulating	Modulates environment	Control of climate, floods, waste, water quality and disease;
Supporting	Services that enable the maintenance and delivery of other services , Habitat provision	Soil formation, photo-synthesis, nutrient cycles and crop pollination
Cultural and Recreational	Recreational, aesthetic, and spiritual benefits	Religious or tourism services
Other services: “carrying” or “preserving” services, which includes insurance against uncertainty by maintenance of diversity		

Provisioning



http://smehorizon.sulekha.com/kerala-to-implement-projects-worth-rs-650-crore-for_fmcg-viewsitem_8470

Regulatory



Supporting

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<http://www.telegraph.co.uk/science/science-news/7980954/Bee-decline-already-having-dramatic-effect-on-pollination-of-plants.html>

Cultural and Recreational



<http://nickfleming.com/936/inspiring-altitude-the-journey-to-the-source-of-the-ganges>



<http://rolwim.wordpress.com/tag/mountain-climbing/>

<http://powersectorworld.blogspot.in/2012/04/nepals-whitewater-rapids-threatened-by.html>



Ecosystem Management involves

- Three related tasks
 - Quantification of services
 - Valuation
 - Policies and programmes for sustainable governance

Responses



Private

- Social Norms and Conventions
- Bargaining
- Market Creation

Public

- Regulation:
 - Command & Control
 - Taxes & fees



Social Norms & Convention

- Fishing ban in breeding season
- Rotational extraction quotas among traditional resource users – fishing, forestry, water users
- Sacred Groves in Forests, etc.



Bargaining- Assignment of property rights

- Climate Change negotiations
- Water Users Association – Upstream & Downstream users
- Trans-boundary Resources

Payment for Ecosystem Services



- Umbrella term which includes:
 - schemes that rely on one-off deals with rural landowners
 - and more complex ‘market’ mechanisms involving offset credits traded among many buyers and sellers

Types of ES buyers



- (1) philanthropic buyers, motivated by non-use values;
- (2) public sector agencies -- secure ecosystem services for public at large;
- (3) private agents (including communities) undertake private deals to secure ecosystem for use-values
- (4) consumers of eco-certified products, both use and non-use values

New York's Water supply



- 1.2 billion gallons of drinking water daily to 9 million New Yorkers
- Comes from the Catskill Mountain range
- Watershed spans
 - nearly 2000-square-miles,
 - 19 reservoirs and aqueducts
 - Cuts across nine counties
 - provides.

Two options



- Build a water filtration plant: (Cost \$6 billion + 250 million annual maintenance)
- Or Protect its watershed
- They bought 70,000 acres of land in the Catskill range (\$1.5 billion approx).
- Water quality in NY has improved.
- Upstream local economy has benefiitted

China - Grain for Green Programme



- Objective: Convert sloping farmlands back to forestland to control soil erosion
- Area: Yangtze and Yellow river basin
- Mechanism: Farmers engage in **rehabilitation** of degraded ecosystems through "ecological tree" planting; and **reforestation** for commercial plantation with "economic trees" (producing nuts or fruits and for timber)

Subsidies

- **Grain subsidies:**
2250kg/yr (Yangtze) and 1500kg/yr (Yellow river) for each hectare of converted land
- **Cash subsidies**
300 RMB/ha of converted land.
- **Planting and seeds:**
750 RMB/ha for planting trees on farmlands

The Rupa Lake -- Nepal



- 3rd largest lake in Nepal (1.35 km²)
- Watershed area is 30 km²
- Dense settlements in North and NW face of the catchment.
- Economic pressure led to deterioration of lake
- Rupa Lake Restoration and Fishery Cooperative was established in 2001.

Mechanism



- Co-operative members receive significant benefits which are shared with upstream communities.
- Conservation focused on biodiversity management, organic farming, agroforestry
- Effect: Reduced sedimentation and pollution flowing into the lake
- Improved lake quality

Payments



- NRs 4000 annually to 19 forest users groups upstream
- NRs 4000-5000 to 19 schools for environmental education students.
- Scholarships of NRs 400 given to 200 students annually, etc.

Valuing Water and its Ecological Services in Rural Landscapes: A Case Study from Nepal
Navraj Pradhan, Isabelle Providoli, Bimal Regmi, Gandhiv Kafle

Storm Water Management



Urban Growth → Blocks natural drainage over use of groundwater

Policy Solutions:

Waterloo, CA: Storm Water Runoff tax.

New York: Green streets program. Transforming paved areas into vegetative street spaces

Portland, Oregon: Green roofs program

Chicago: Green Alleys program

Jaipur enlarging urban green spaces to reduce run-off and replenishing ground water

Rainwater Harvesting in India



- Himachal Pradesh
- Ahmedabad
- Bengaluru
- Port Blair
- Tamil Nadu
- New Delhi
- Haryana, etc.



Urban Greens

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- Benefits:
- Reduction of solar heating,
- Removal of pollutants & production of oxygen
- Rain water absorption, and
- Traffic calming



International Efforts



- Canberra planted 400,000 trees to control micro-climate → reduce energy consumption + Air pollution. Would provide benefits of U.S.\$20–67 million for the period 2008–2012
- Coral Springs, USA: Tree subsidy program for house owners
http://www.coralsprings.org/environment/subsidy_species.cfm
- Toronto: Private Tree ownership incentive
http://www.toronto.ca/trees/tree_planting.htm

Thank you

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