# Valuation of Ecosystem Services: Methodological Framework for BCI Pilot Sites

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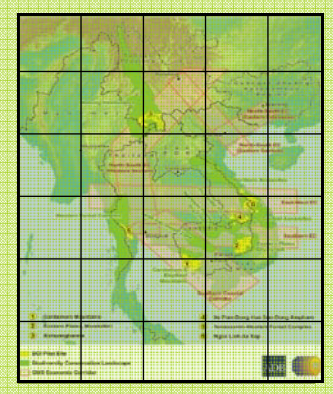
## OUTLINE

- Ecosystem Services
- Importance of Valuation
- Methodology of VES
- Case Study
- VES in BCI
- Proposed VES Study

GMS BCI Pilot Sites and Landscape



Valuation of Ecosystem Services

## What are Ecosystem Services (ES)?

- **Ecosystem:** a natural unit of living things (animals, plants and micro-organisms) and their physical environment.

- **Ecosystem services:** goods and services provided by the ecosystem that benefit people.

- Five **categories of ecosystem services:**
  - ***Provisioning services*** (i.e. foods, spices, precursors, energy)
  - **Regulating service** (carbon sequestration, nutrient dispersal)
  - **Supporting services** (pollination, pest and disease control)
  - **Cultural services** (spiritual inspiration, recreation, scientific)
  - **Preserving services** (genetic and species diversity for future)

## Why is Valuation of ES Important?

- **Valuation of Ecosystem Services (VES) is essential for the correction of market failure**

- **Market Failure of ecosystem services:**

  - **Public good:** Ecosystem services are often public goods, which means that they may be enjoyed by any number of people without affecting other peoples' enjoyment.

  - **Externality:** Ecosystem services may be affected by externalities, or uncompensated side effects of human actions.

  - **Property Rights:** If property rights for natural resources are not clearly defined, they may be overused, because there is no incentive to conserve them.

## Methodology of VES

- **History of VES**
  - ***Proposed Practices for Economic Analysis of River Basin Projects* by the Committee on Water Resources in 1958**
  - ***The value of the world's ecosystem services and natural capital (Costanza 1995)***
  - **Nature's Services: Societal Dependence on Natural Ecosystems (Gretchen Daily 1997)**
- **VES methodologies**
  - **Contingent valuation method**
  - **Travel cost method**
  - **Game theory method**
  - **Hedonic prices**
  - **Direct estimation of opportunity costs**
  - **Replacement Costs**
  - **Cost savings**
  - **Threshold values**

## Case study: VES of Forests in Mexico

- **Policy background:** reform of he constitution and changes in the law relating to forestry
- **Objectives**: estimates the total economic value (TEV) of forests in Mexico mainly focus on non-timber value
- **Methodology:**
- **Data collection and analysis:**
  - Data source: empirical research and existing studies
  - Meta-analysis approach
- **Results:** annual lower bound value of the services of Mexico's forests worth US$4 billion

## Case study: VES of Forests in Mexico

•**Policy background:** reform of he constitution and changes in the law relating to forestry

•**Objectives**: estimates the total economic value (TEV) of forests in Mexico mainly focus on non-timber value

•**Methodology:**

| Type of value | Type of ecosystem services | Valuation Method |
|---|---|---|
| Direct use value | •NTFP<br>•Recreation | •Direct market<br>•Travel Cost |
| Indirect use value | •Carbon storage<br>•Watershed protection | •Modeling+cost saving<br>•Cost saving |
| Option value | •Genetic resources<br>•Existence (conservation) | •Opportunity cost<br>•Contingent valuation |

## VES in BCI Services

**Objectives:**

- **Economic and empirical information base for policy formulation and decision making for BCI Site**
- **Basis for establishing Sustainable Financing Mechanism for BCI Sites – Potential Payment for Ecosystem Services (PES) Programmes**

**Process:**

- **Collecting data on land use and land cover (LULC) and market linkages in BCI sites**
- **Identifying potential ecosystem services to be valued for each BCI site**
- **Developing valuation method and conduct valuation of the selected ecosystem services**
- **Analyzing the results and providing policy recommendations for the regulation of the BCI site**
- **Identifying and developing potential markets and PES for selected ecosystem services**

## Proposed VES Study in BCI Site

- A pilot VES study in Xishuangbanna BCI Sites
- Work plan
  - Literature review (July – Aug 2008)
  - Valuation method/model selection and development (Sep – Oct 2008)
  - Prepare for field study (Nov 2008)
  - Conduct field studies and input primary data into data formats/tables (Dec 2008-Jan 2009)
  - Analyze data and feed into economic valuation model (Jan-Feb 2009)
  - Write up report on valuation of ecosystem services in Xishuangbanna BCI site (March-April 2009)