



# Causes of deforestation and policy incentives for mitigation

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# Overview

- Background
- Causes of deforestation
- Total Economic Value of forests
- Capturing the benefits

# Background

- Rate of deforestation: 13 million ha/yr (FAO)
- Top 10 countries with highest deforestation rates
  - Brazil, Indonesia, Sudan, Myanmar, DR Congo, Zambia, Tanzania, Nigeria, Zimbabwe, Venezuela
- Deforestation is major source of global GHG emissions and main source of emissions in many developing countries
- Tropical forests are home to 70% of world biodiversity

# Causes of deforestation

- Underlying and proximate causes
  - Complex, vary from country to country, over time, and in response to different social, cultural and economic conditions (Geist and Lambin, 2002)
- Market, government and institutional failures
  - Lack of markets for environmental goods and services
    - Public goods and free rider problem
  - Lack of clearly defined property rights
  - Illegal logging
  - Lack of capacity/resources to enforce laws
  - Extra-sectoral policies (agricultural subsidies)

# Ecosystems to Economics

- Forests provide valuable local, regional and global ecosystem services
  - Carbon sequestration benefits are global
  - Biological diversity benefits are local to global
- These translate directly to economic goods and services
- Total Economic Value (TEV) of forests
- Objective is to maximise the aggregate *social* value of forest land

# TEV of forests

- Direct use value
  - Timber, fuelwood, non-timber forests products, recreation and tourism
- Indirect use value
  - Carbon sequestration, ecosystem resilience, watershed services
- Option value: Reflects WTP to conserve the option of forest for future
- Non-use (existence) value: Reflects WTP that is unrelated to current or planned use of forests

# Measurement of Economic Values

- Valuation methods
  - Individual preferences and WTP
- Enable us to identify, or at least approximate, the optimum
  - i.e., marginal benefits = marginal costs

# Valuation studies

- Carbon sequestration benefit estimates tend to be highest (Pearce, 2001)
- NB: Lack of valuation studies in developing countries
  - Valuation studies are time and resource-intensive
  - Benefit transfer methods exist

# Capturing carbon sequestration benefits

- Kyoto Protocol
  - Afforestation/Reforestation in CDM
- Voluntary carbon markets
- Payments for environmental services
  - e.g. GEF in Costa Rica
- REDD?

# Capturing biodiversity benefits

- Tradable development rights
- Conservation easements
- Tree-planting subsidies or subsidized credit (Chile)
- Tax breaks for reforestation (Panama)
- Bioprospecting
- Biodiversity offsets (Brazil Forest Code)
- Payments for environmental services