REGIONAL OVERVIEW

Ecosystem Conservation and Restoration

Identifying drivers of land use change in Southeast Asia

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OUTLINE

1. Definitions of land-use change, deforestation and degradation
2. Status and trends in forests
3. Analysis of drivers of deforestation and degradation in SE Asia
4. Future scenarios and implications for conservation and restoration

DEFINITIONS

- **Land use change:** Change in the use of management of land by humans, which may lead to changes in land cover (IPCC)
- **Deforestation:** The conversion of forest to other land use or the long-term reduction of tree canopy cover below the minimum 10 percent (FAO)
  - Excludes areas where trees have been removed as a result of harvesting or logging and where the forest is expected to regenerate naturally or with the aid of silvicultural systems

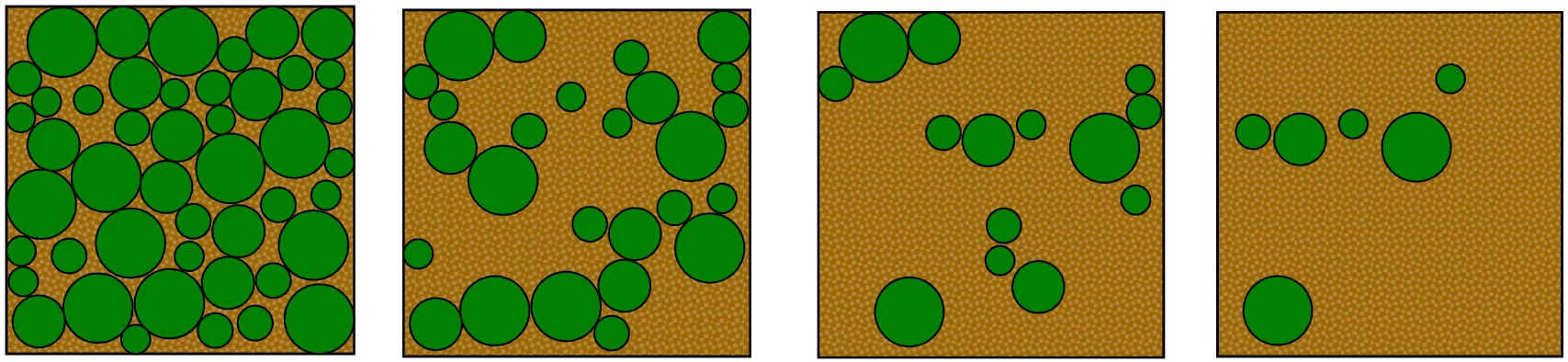
DEFINITIONS

- **Degradation**: Any combination of loss of soil fertility, absence of forest cover, lack of natural function, soil compaction, and salinization that either impedes or retards unassisted forest recovery through secondary succession (UNEP/CBD/SBSTTA/11/INF/2)
- **Forest degradation**: The reduction of the capacity of a forest to provide goods and services (FRA 2013)

DEFINITIONS

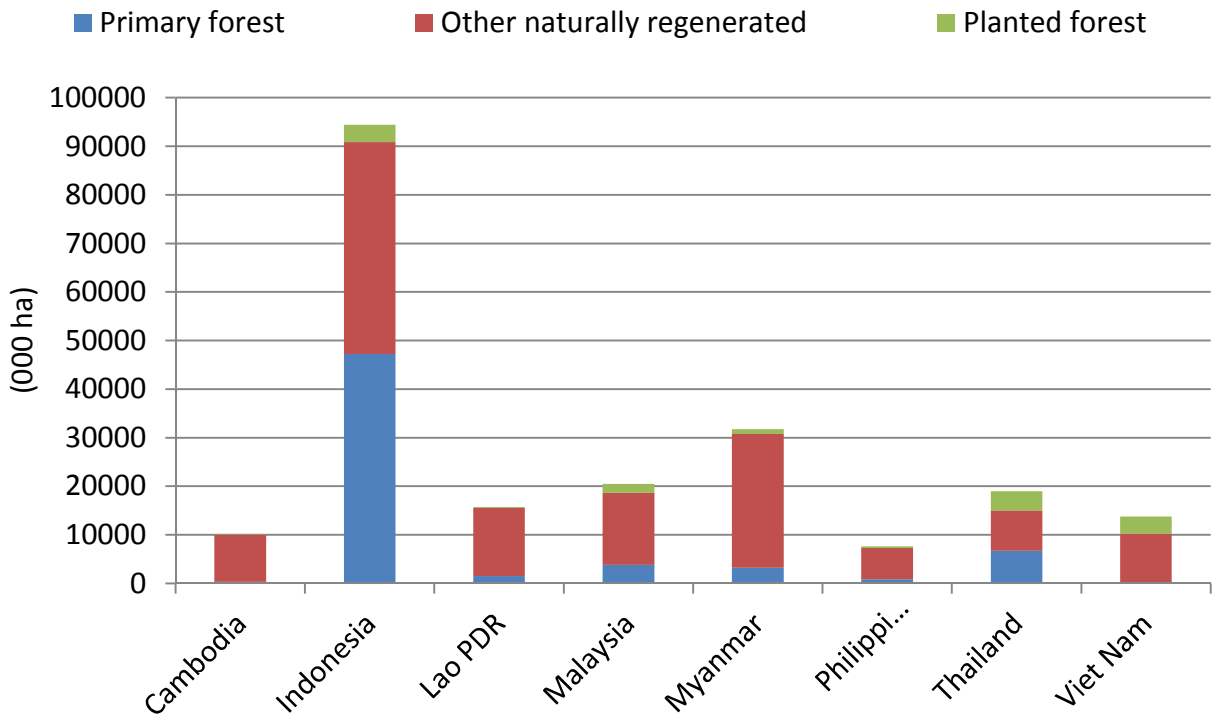
- **Forest:** Land spanning more than 0.5 ha with trees higher than 5 m and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. (FRA 2015)
  - Fails to capture qualitative forest values
  - Forest degradation is difficult to identify

Representations of 70, 40, 20 and 10% canopy cover – all of which constitute "forest"



STATUS AND TRENDS IN FORESTS

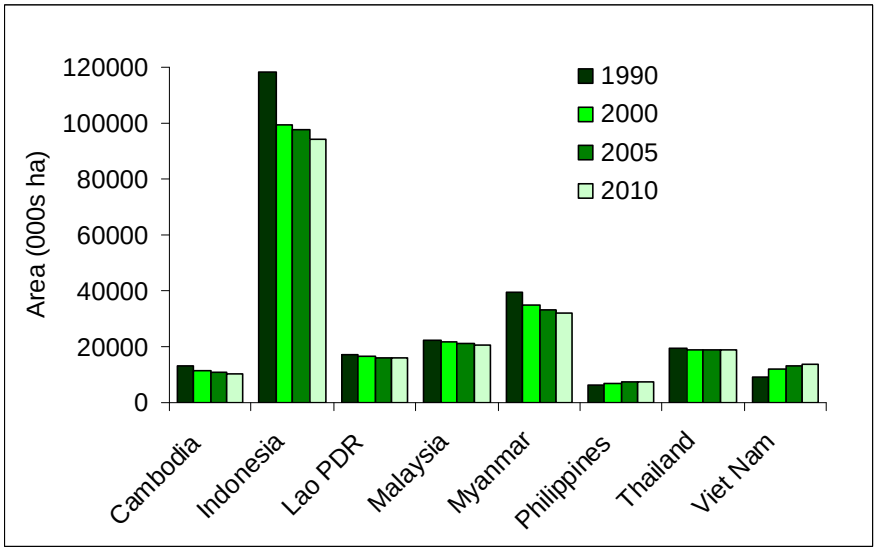
- 214 million ha, 49% of land area in SE Asia, 5.1% of global forest area
- Primary forest make up 30%, planted forest 6.8%
- Some of the most species rich in the world
- SE Asia accounts for 9.2% of world's forest plantations, 4.7% of roundwood production



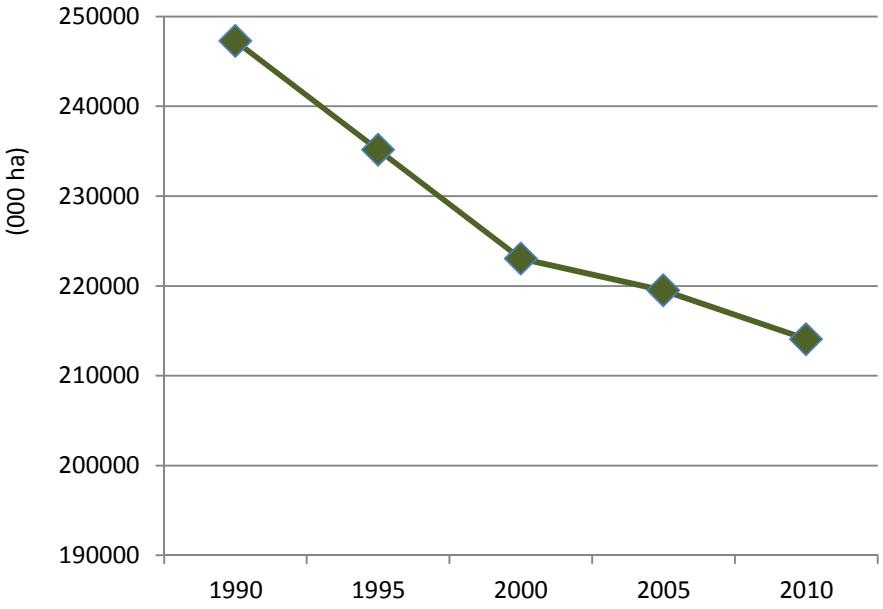
STATUS AND TRENDS IN FORESTS

- Net forest cover loss has slowed due to reforestation in some countries
- Deforestation and forest degradation continue (double those in Africa or Latin America)

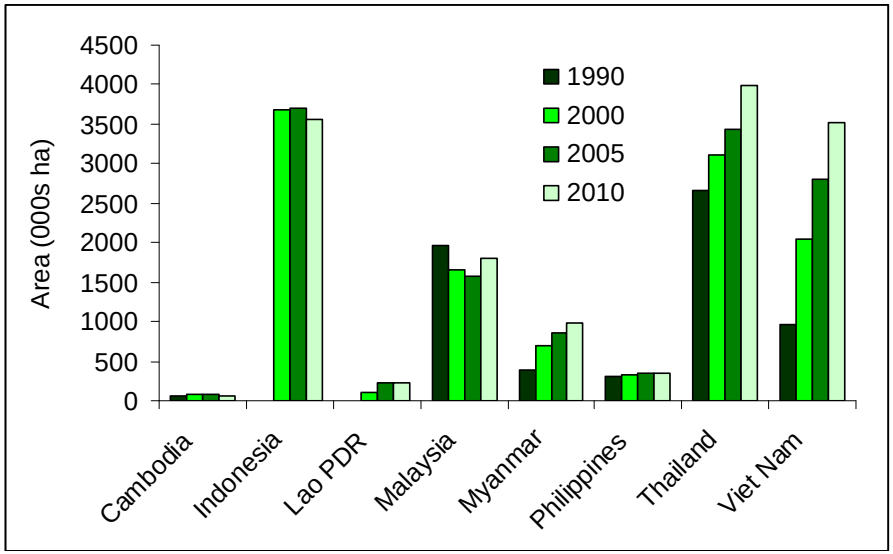
Forest areas in SE countries 1990-2010



Forest cover change in SE Asia 1990-2010



Extent of planted forests in SE 1990-2010



DRIVERS OF DEFORESTATION / DEGRADATION

Driver: Any natural or human-induced factor that directly or indirectly causes a change in an ecosystem (Millennium Ecosystem Assessment)

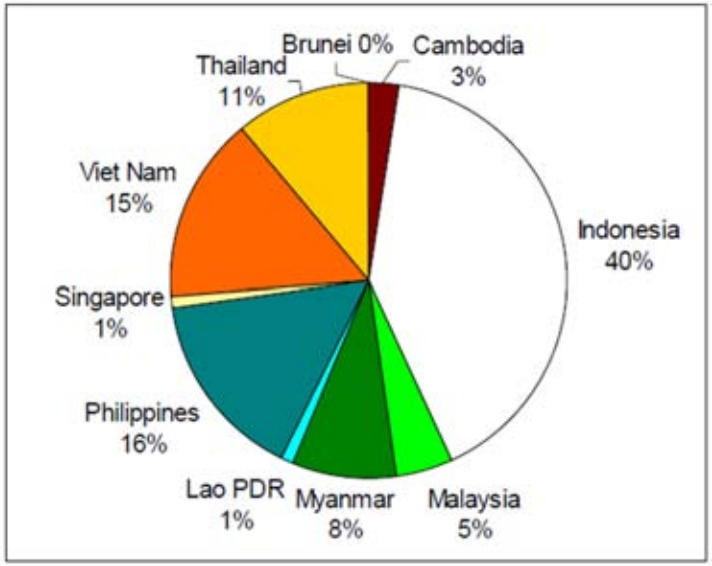
Direct drivers	Indirect drivers
Physical and biological drivers: → Climate variability and change → Plant nutrient use *(nutrient application to agricultural systems)* → **Land conversion** → Biological invasions and diseases **Drivers interact** across spatial, temporal, and organizational scales In many cases, **multiple direct drivers work in combination**.	→ Demographic drivers *Population dynamics and primary determinants of population change: fertility, mortality, and migration* → Economic drivers *Consumption, production and globalization* → Sociopolitical drivers *Policies, regulations, governance, people's attitudes and demands* → Cultural and religious drivers → Scientific and technological drivers

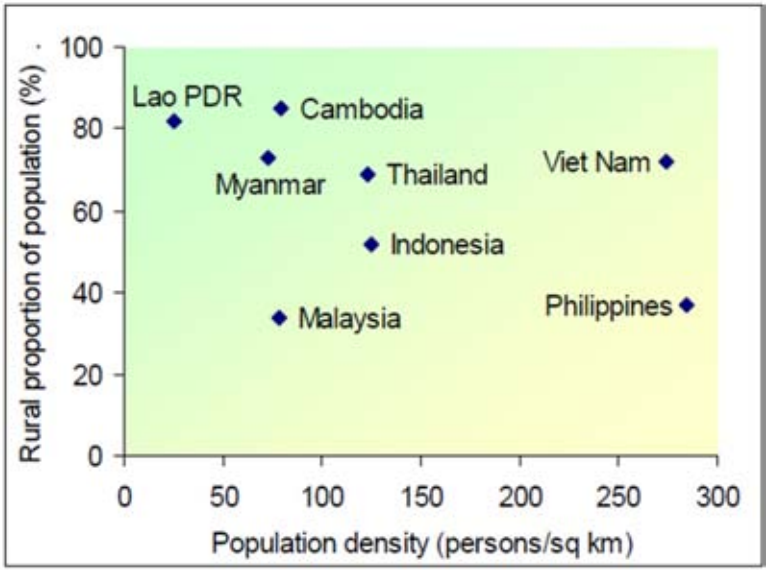
KEY TRENDS

- Larger and wealthier populations, increased demand for land and resources
- China as the global engine of economic growth and key export destination for SE Asia
- Trade-offs between economic development and environmental protection acutely experienced
- Role of forest in responses to climate change
- ‘Peak timber’ has passed and cultivation of other crops has proved more profitable than natural forest management
- Slow progress towards SFM due to lack of financial and institutional support jeopardizing natural forests and biodiversity

DRIVERS OF CHANGE – DEMOGRAPHY

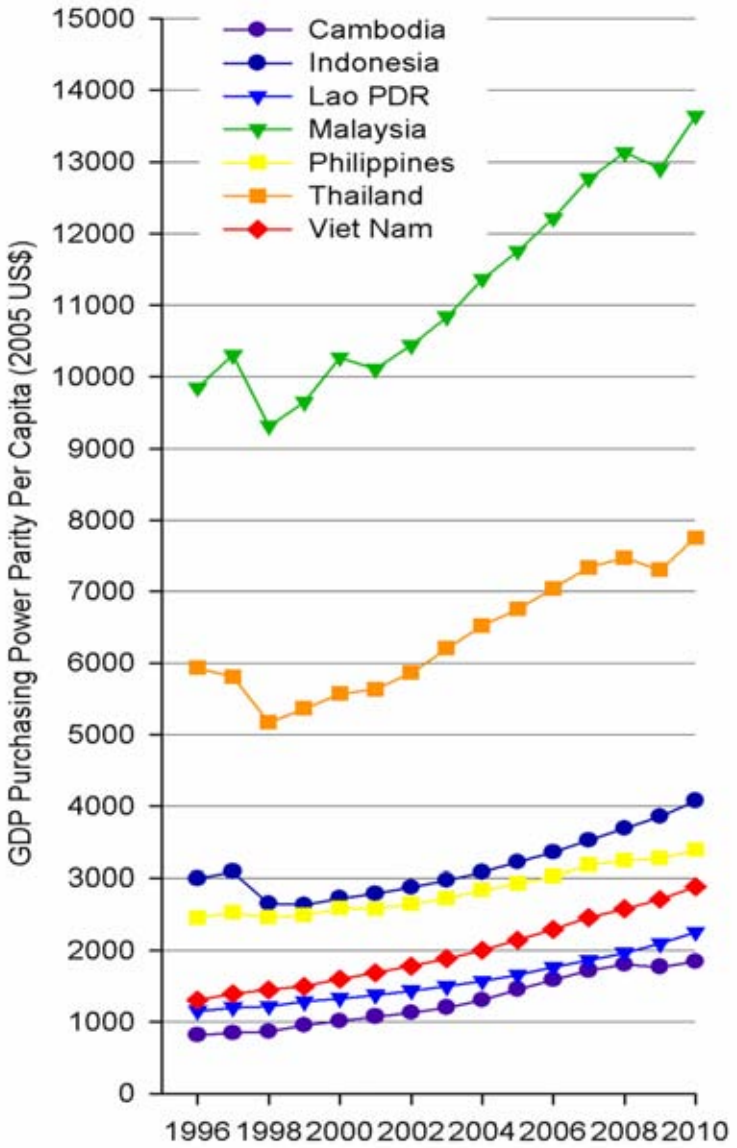
- Increasing population: 593 million in 2010, 657 million in 2020
- Most increases in densely populated countries
- Age structures changing
- Rapid urbanization: 47% of population urban by 2020
- Outmigration and overseas remittances
  - Reduce pressure on land and capacity to extract forest resources
  - Intensity agriculture and educate children





DRIVERS OF CHANGE – ECONOMY

- High growth rates increasing the demand for food, fibre and fuel
- Poverty rates will likely decline but the number of poor will remain high
- Recent reductions hit export orientated countries hardest (Cambodia, Malaysia, Thailand)
- Shift away from agriculture to industry and services
- Rate of deforestation linked to global commodity prices
- Investment in forestry focusing on pulpwood production



DRIVERS OF CHANGE – TRADE

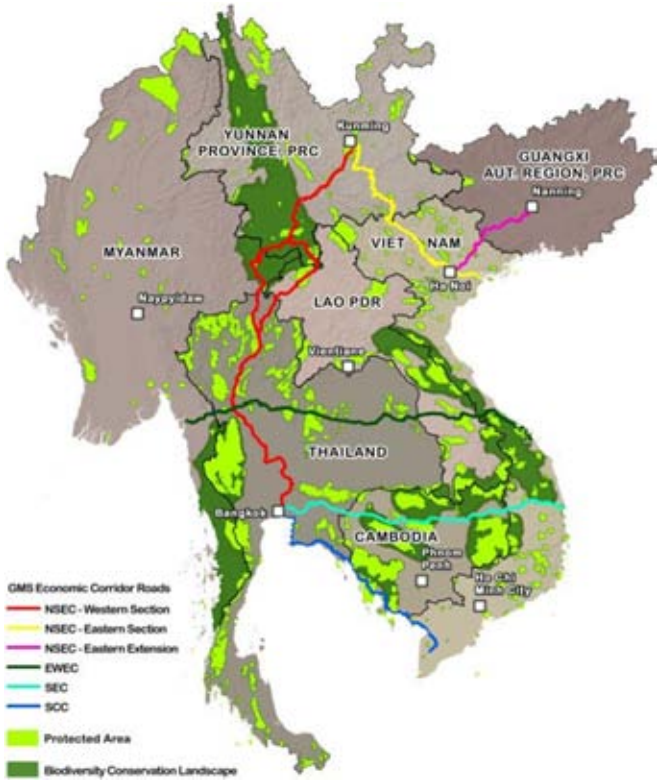
- Trade play a critical role in economies of SE countries
- Falling barriers and expanding trade routes
- Perception of tropical wood as linked to illegal logging and environmental degradation
- Import restrictions to ensure timber legality
  - Possibly expanded trade with less discerning partners

DRIVERS OF CHANGE – AGRICULTURE

- Cash crop plantations and agricultural expansion - primary reason for forest conversion
- A few agricultural crops account for a large proportion of deforestation, most importantly oil palm and rubber
- Rubber plantations are expanding greatly, important cause of deforestation in some countries
- Oil palm plantations set to spread significantly (particularly important to Indonesia and Malaysia)
- Oil palm is often established in logged-over forest

DRIVERS OF CHANGE – INFRASTRUCTURE

- Infrastructure development associated with economic expansion, spread of markets and extraction of natural resources
- Road densities highest in countries with higher population densities and lowest forest cover
- Significant impacts on forests by increasing access to and land value
- Dam development commonly associated with forest loss

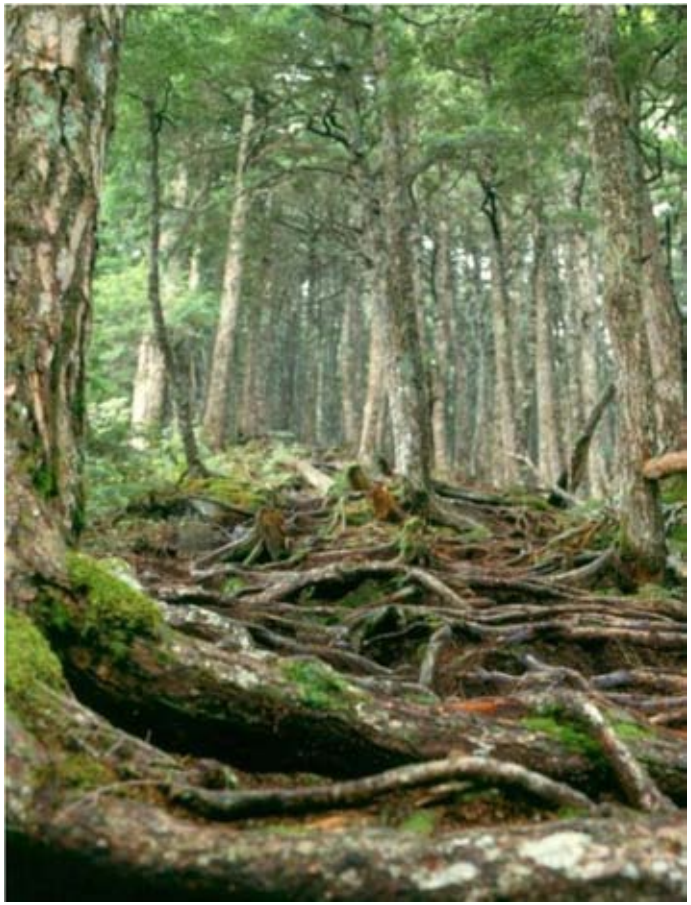


DRIVERS OF CHANGE – POLITICAL AND INSTITUTIONAL ENV'T

- Broad and diversified institutional arrangements
- Demands for participation in public policy and decision-making, accountability and transparency
- Decline in governance standards – low scores for corruption, accountability, and regulatory quality

DRIVERS OF CHANGE – ENVIRONMENTAL CONCERNS

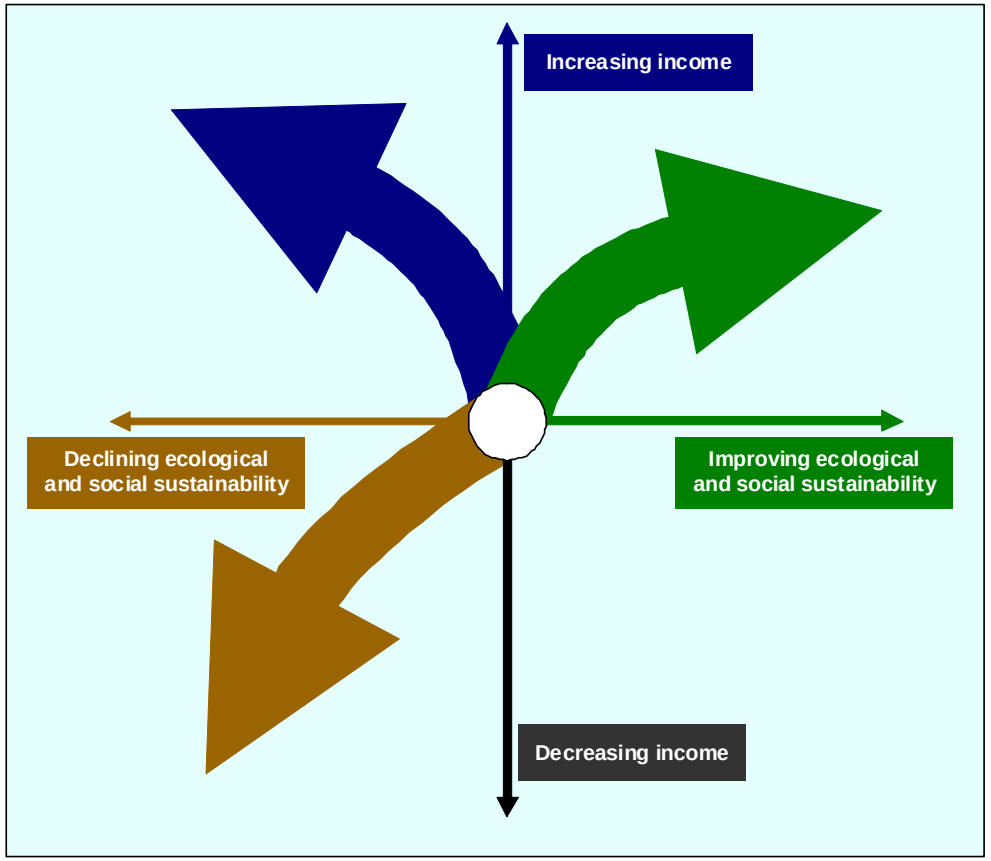
- Protection and conservation roles of forest increasingly recognized
  - Climate change
  - Biodiversity
  - Natural disasters
- Local and national issues and actions
- Global and regional environmental drivers:
  - International commitments and the outcomes of climate change negotiations
  - Pressure from stakeholders in the “global forest resource”



FUTURE SCENARIOS IN ASIA-PACIFIC

Three scenarios

- High economic growth and recovery: the “boom” scenario
- Low economic growth and stagnation: the “bust” scenario
- Social and ecological stability: the “Green economy” scenario



THE 'BOOM' SCENARIO

- Recovery from economic crisis within 2 to 3 years
- Middle class grows, increasing demand for goods and services
- Globalization accelerates foreign direct investments, trade, travel and access to technology

Implications for forests:

- Forest area increases in emerging economies, but declines in forest-rich developing countries
- Demands for wood and wood products increase significantly but no general shortages
- Greater funding availability for environmental protection

THE 'BUST' SCENARIO

- Prolonged sluggishness of national economies
- Protracted recession
- High dependence on land as a source of income persists
- Slow growth of manufacturing and services sectors

Implications for forests:

- Reduced capacity to invest in sustainable forest management
- Increased dependence on agriculture, with potentially more forest clearance
- ...but reduced demand for wood and wood products lessens pressure of industrial forestry

THE ‘GREEN ECONOMY’ SCENARIO

- Balanced growth encompassing social and ecological sustainability
- Improved efficiency in the use of energy and raw materials
- Improved land and water management, higher productivity and focus on conserving biological diversity

Implications for forests:

- Increasing areas and improved quality of forests
- Increased focus on recycling and reuse of wood products
- Focus on ecosystem services
- Certification and fair trade practices expand

2020 OUTLOOK

- Forest area will stabilize regionally, but losses in Southeast Asia will continue
- Mining, infrastructure and industrial crop expansion will be the major causes of deforestation
- Forest degradation will remain a major problem especially in densely populated, low-income countries
- Increasing threats from invasive species
- Sustainable management of natural forests will remain as elusive as now

Thank you for your kind attention