Forest degradation and proposed indicators

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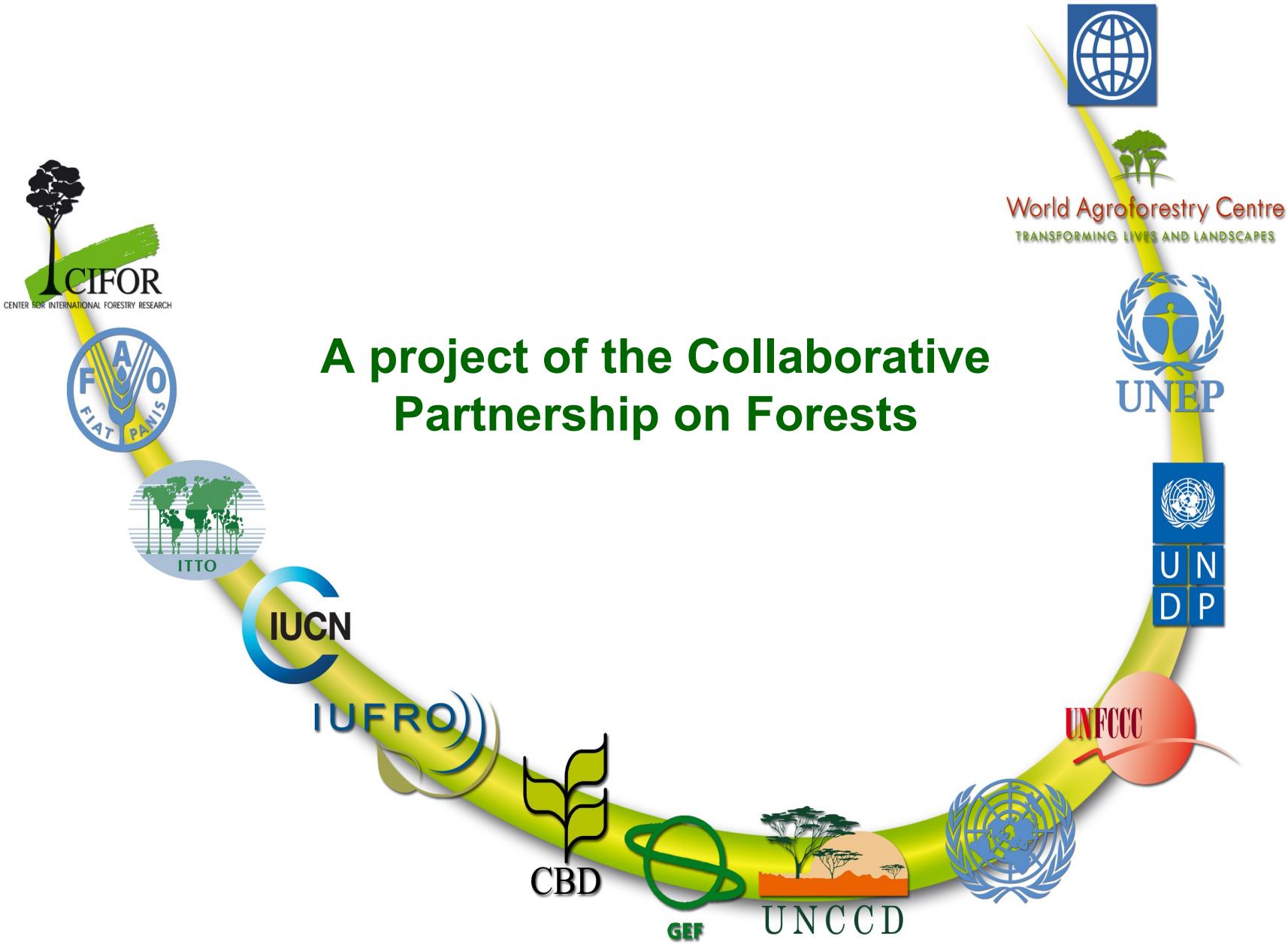
Collaborative Partnership on Forests

Tokyo, Japan, March 2011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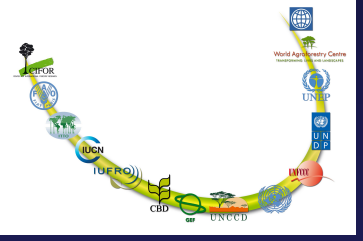


Why do we need to define and measure forest degradation?

Global problem:

- no good estimates of amount of degraded forest
- no accepted global definition of degraded forest
- provision of ecosystem goods and services
- link to global climate efforts - REDD

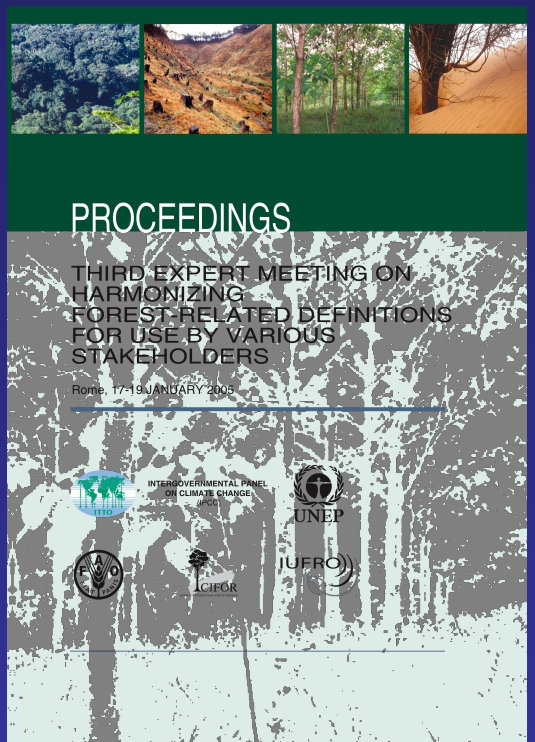
Countries….

- monitor changes
- identify causes of forest degradation
- prioritize resources
- restoration and rehabilitation
- report to international processes (improve FRA)

What is forest degradation?

"***The reduction in the capacity of a forest to provide goods and services***"

- Broad definition, not operational
- Many perceptions depending on concept of the forest



Current work towards operational indicators

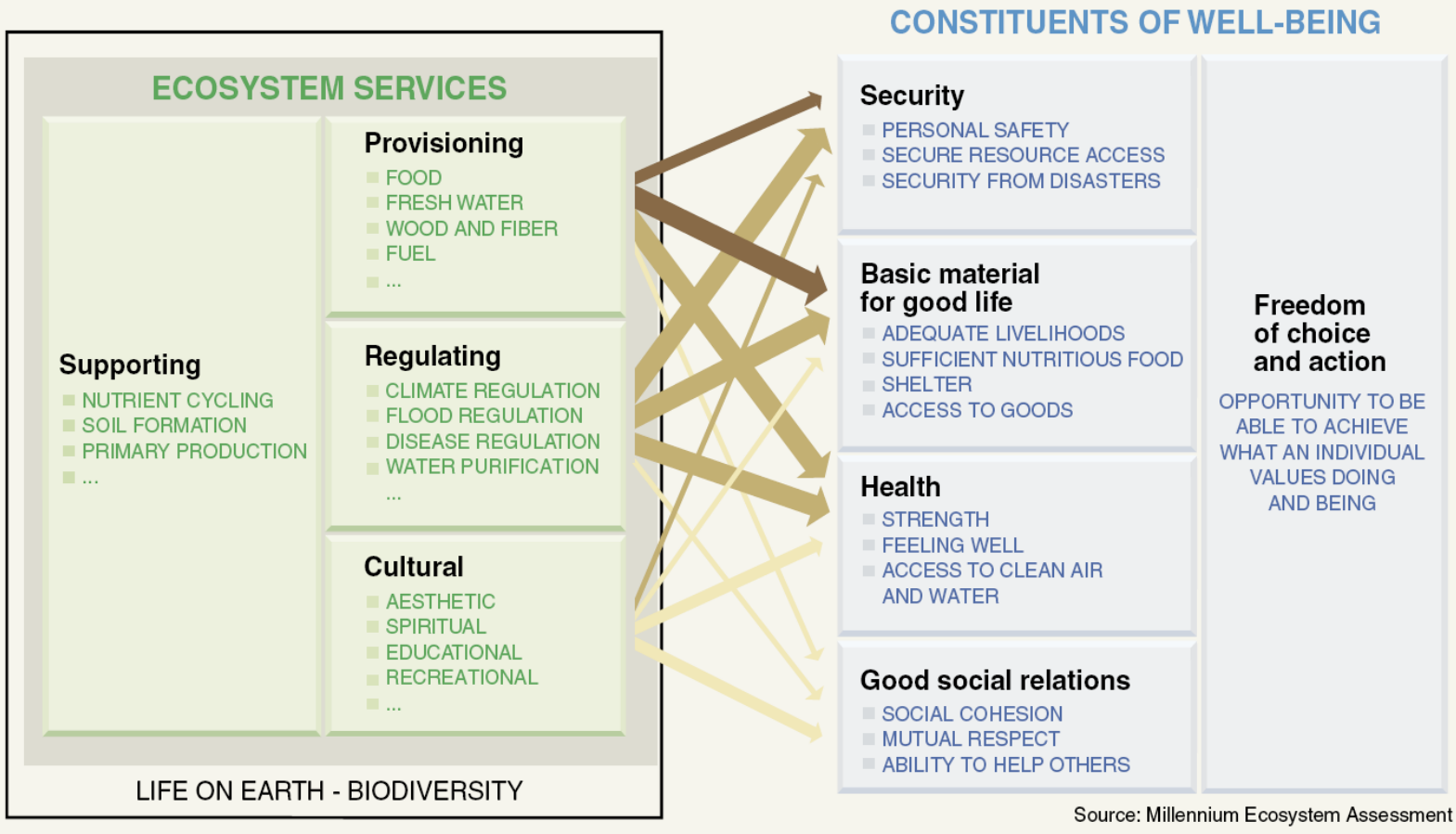
Criteria:

- Biological diversity
- Productive functions
- Carbon sequestration and storage
- Forest health
- Protective functions

Basis for indicators of degradation

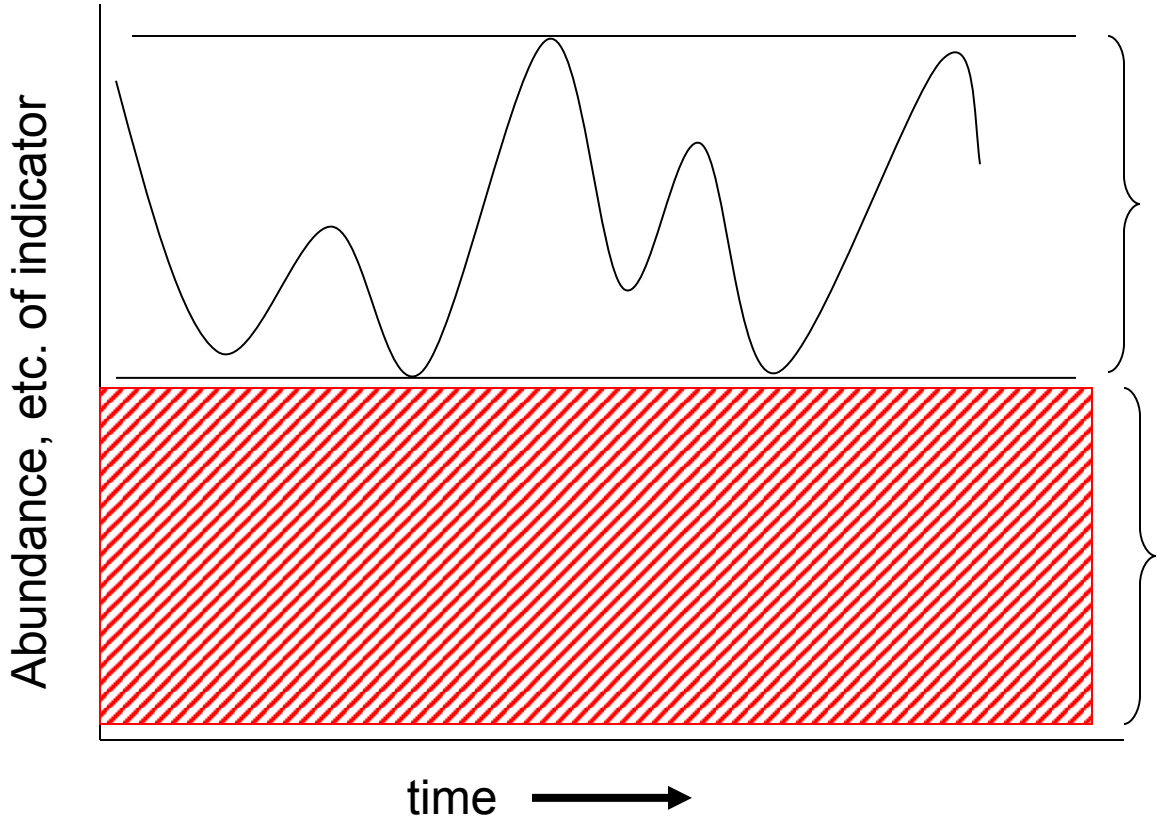
- degradation = loss of expected goods and services from the forest
- good and services are forest products, including non-valued services and products (e.g., clean water)
- biodiversity underpins and supplies most ecosystem goods and services
- possible to degrade forests with minimal effect on forest appearance, e.g., “empty forests syndrome”
- need indicators to suggest degradation either as an indicator of state or process

Ecosystem goods and services from the MEA

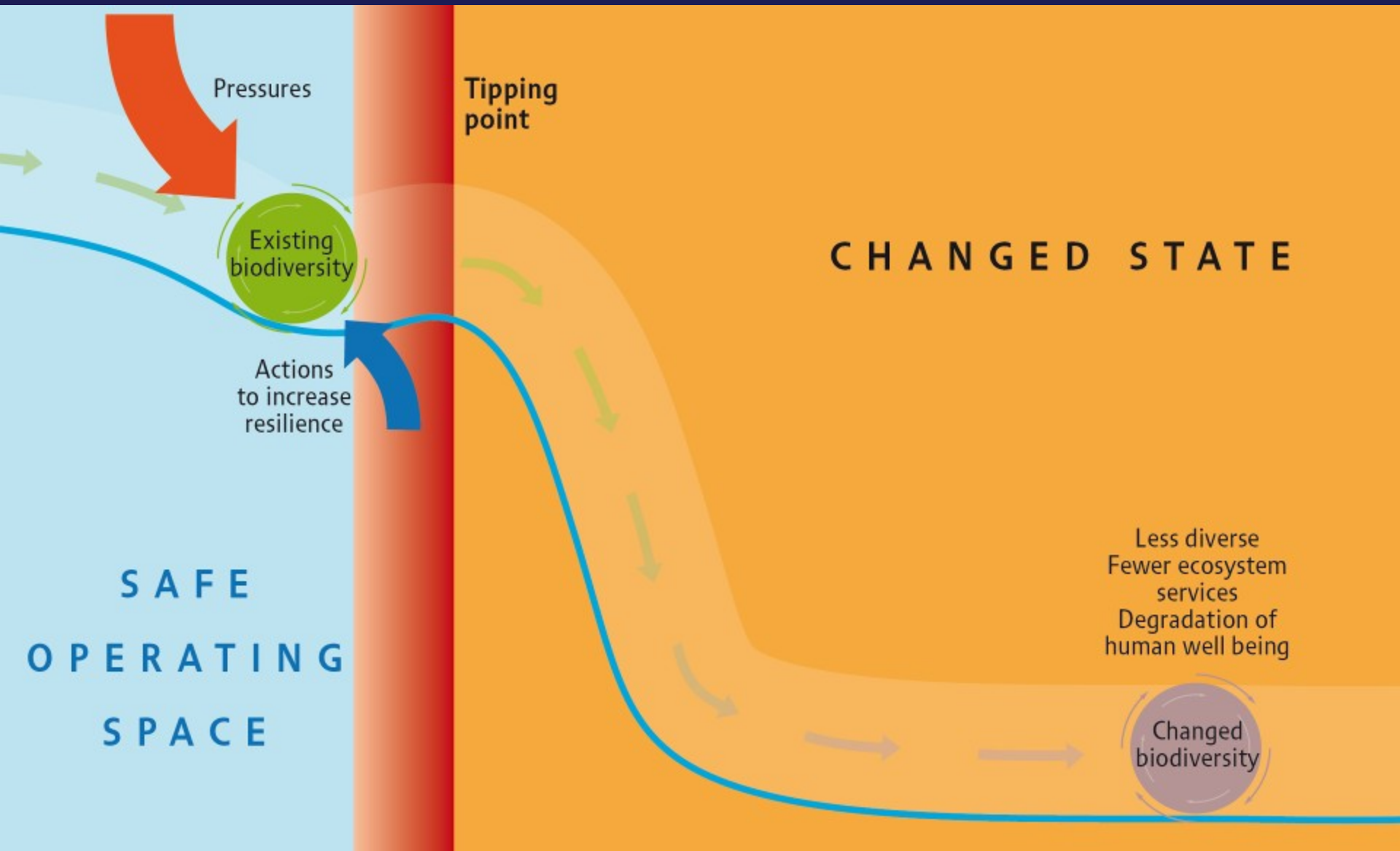


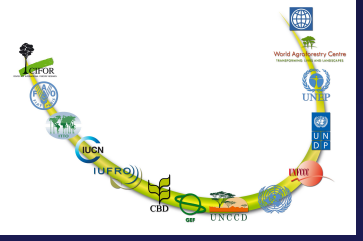
Source: Millennium Ecosystem Assessment

Range of natural variation



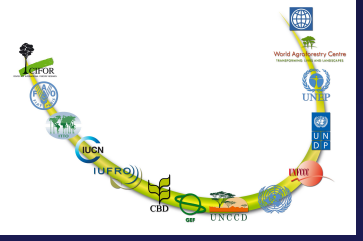
Forest resilience and tipping points (thresholds)





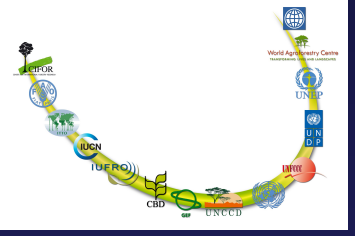
Indicators of degradation of productive functions

- amount of timber products produced
- amount of growing stock (selected species)
- amount of non-wood forest products
- amount of fuel wood
- water quality and quantity



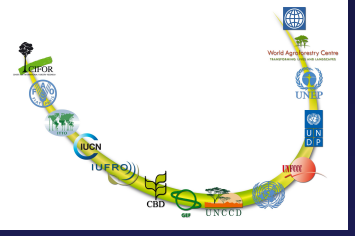
Biodiversity indicators of forest degradation

- change in ecosystem diversity
- change in ecosystem state (resilience)
- amounts of fragmentation, intactness, and road density
- certain species abundance: functional; invasive; managed; listed; flagship (or focal)



Carbon indicators of degradation

- amount of total biomass
- amount of total growing stock
- amount of carbon stored in each of 5 pools

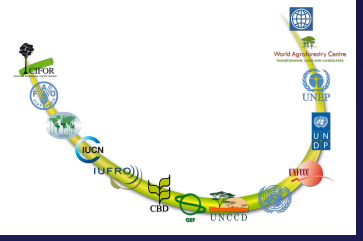


Protective function indicator of degradation

- rate of soil erosion (or area affected)

Forest health indicators of degradation

- Area of forest affected by biotic agents (e.g. insects, fungi etc.)
- Area of forest affected by abiotic agents (e.g. storms, excessive snow etc.)
- Area of forest affected by invasive species (e.g. plants, insects etc.)

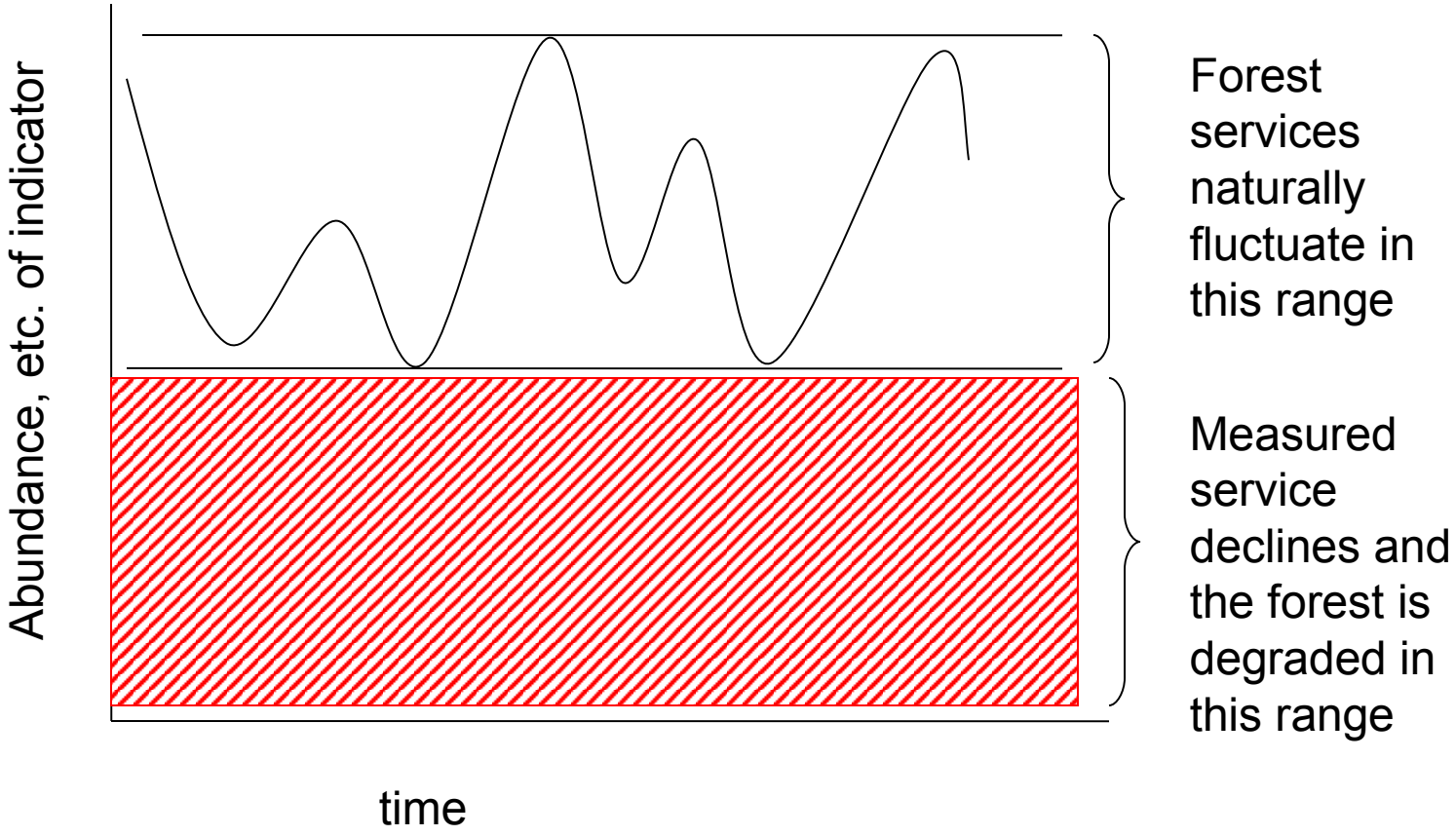


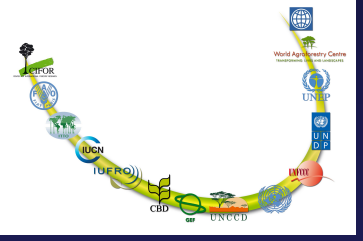
Data and baselines

- indicators show a trend and so at least 2 points in time are required
- measure against expected values for managed forests
- measure against expected values for a forest type under certain conditions (e.g., vs. a control forest)
- possible data sources: previous photography and satellite imagery, previous surveys
- require standards against which a level of degradation is measured

How will degradation be determined?

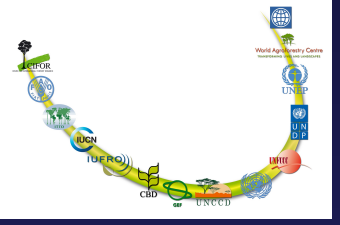
- some indicators are clear
- others require interpretation





How will the indicators be used?

- as verifiers for condition
- as correction factors for remotely sensed data
- stand level indicators used to provide a sample to extrapolate across forest types
- to propose a level of degradation



Outcomes

- Guidelines and tools
- Capacity building
- Support countries to meet current and future reporting requirements
- Improved FRA

Conclusions and recommendations

- degradation is a state and a process
- common criteria set
- indicators must be selected for local forest types
- data must be reported as an area degraded
- need a baseline for the '*range of natural variation*'
- multiple perspectives on forest degradation
- all relate to reduced ecosystem goods and services

Additional Information

www.fao.org/forestry/cpf/forestdegradation/en/

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