

Forest Degradation:
*Annotated Bibliography &
Analysis of Material*

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Case Studies on Forest Degradation

- The main goals:
 - Develop annotated bibliography containing (world wide) publications and case studies on forest degradation
 - List the studies on forest degradation under SFM thematic elements/ FRA Variables/ Degradation variable
 - Determine which variables under SFM thematic elements are poorly covered
 - Identify definitions used in assessing forest degradation and main causes of degradation
 - Indicate forest degradation assessment methodologies and indicators used in each study
 - Choose and suggest the most promising studies for future work
 - Identify problem areas and give evaluation and suggestions

Table format with SFM elements & variables

SFM thematic element	FRA Variables	Degradation element/ variable	Suggested additional indicators	Assessment methodology	Potential case studies	Potential author(s)
Extent of Forest Resources						
	Area of forest	Forest cover and stocking				
	Area of other wooded lands	Includes function of forest and trees outside forests				
	Forest Characteristics	Extent of forest types				
		Degradation				
		Fragmentation				
		Naturalness				
		Structure				
		Crown cover %				
		Encroachment				

Studies identified and listed

- Total of 146 studies received due July 31st
- Total of 120 studies listed in bibliography
- 16 studies identified as the most appropriate and applicable and 30 studies as useful, depending on purpose
- SFM elements covered:
 - Extent of Forest resources (17)
 - Forests and climate change (28)
 - Forest health and vitality (12)
 - Biological diversity (9)
 - Productive functions of forests (9)
 - Protective functions of forests (2)
 - Socio-economic functions of forests (23)
 - Policy and Legal (20)

The most covered variables under each SFM element

- **Extent of forest resources**
 - Degradation (12); Forest cover and stocking (6);
Extent of forest types (4); Structure (4)
- **Contribution to carbon cycle**
 - Carbon stock (22)
- **Biodiversity:**
 - Forest area designated for conservation of biodiversity (4)
- **Socioeconomic functions:**
 - Socioeconomic factors (market, population growth, poverty) (16)
- **Policy and legal:**
 - Policy aggravating or preventing forest degradation (10)
 - Measures to restore, rehabilitate, regenerate degraded forest/
number of projects (7)
 - Policies for adaptation of forests changing environment (5)

Some of the main causes of forest degradation

- Unsustainable management practices:
 - **deforestation** (logging & burning)
 - land use change, forest conversion, shifting cultivations, agriculture expansion
 - excessive timber extraction
 - inappropriate harvesting techniques
 - overgrazing
- Natural occurrences:
 - Forest fires
 - Massive die-offs (insects, diseases)
 - Biodiversity loss
 - Damage by animals
 - Slow natural regeneration
 - Climate change – rise of the temperature
- Social aspects:
 - Population growth, economic growth, poverty, development projects promoting monoculture production, conflicts
- Economic aspects:
 - Market forces e.g. demand for wood and non wood (medicinal plants) forest products
 - Industrial development & urbanization
- Policy incentives:
 - Changes in land use policy promoting unsustainable forest management practices

Definitions on forest degradation

- Various, mostly FAO (2002):
“Forest degradation is the reduction of the capacity of a forest to provide goods and services”
- Forest degradation is usually understood as deforestation or loss in forest cover and not as degradation (as a whole or in some parts) of a complex eco-system
- Only few studies suggests new definitions and has more advanced perception on forest degradation

Forest degradation assessment methodologies

Several studies suggests that:

Remote-sensing imagery supported by ground observations is the most reliable way to estimate locations and rates of deforestation and forest degradation

■ Methods & tools:

- GIS/ Remote sensing/ satellite data/ spatial analysis/ aerial photography/ radar data/ maps etc. (deforestation)
 - Few advanced remote sensing methods for degradation (mostly selective logging)
- Field inventory
- Historic data; literature reviews; surveys; interviews
- Monetary accounting & economic analysis
- Modeling

Forest degradation assessment indicators

- Remote sensing:

- Biomass (above & below ground & deadwood)
 - Forest canopy cover & density, vegetation cover etc.

- Field surveys:

contains various indicators depending on study purpose:

- *species composition, tree height, volume, quality of timber (e.g. level of rottenness etc.)*
- *chemical data – forest soil quality, nutrients etc.*

- Socio-economic surveys:

Market prices; population density; migration, income, consumption rates etc.

Suggested types of case studies

- Studies which:
 - looks at the forests as a complex (eco)system, offering more comprehensive and sophisticated approach to evaluate and monitor changes in forest ecosystem.
 - use advanced tools and assessment methods for a certain degradation variable
 - offers approach (methodologies and indicators) to do global forest degradation assessments
- The list of chosen studies should represent assessment for all SFM elements and degradation indicators

Identified problems and suggestions

- Most part of the case studies are found in so called “*grey literature*”
- Forest as a complex ecosystem
 - *Ecosystem services*
- Degradation – suggested approach
“*forest degradation should be understood as the reduction in the capacity of forests to produce ecosystem services*” (K.P. Acharya)

Thank you!!

