

Definition

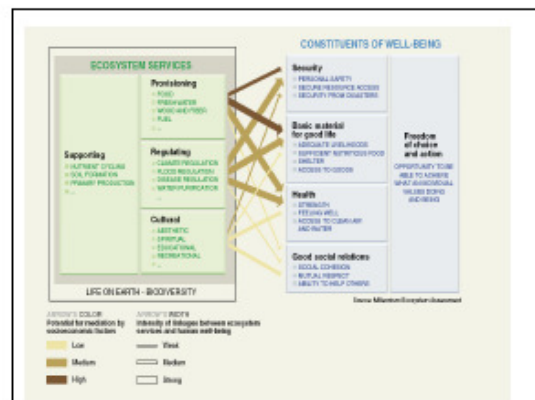
- **Reduction of the capacity of a forest to provide goods and service**
- Agreed that the definition was sufficient and no need to refine

Key issues / conclusions

- Degradation is location-specific
- Degradation is scale dependent (spatial and temporal)
- Degradation is both a state and a process (thresholds)
- Obvious need for flexibility but also need for some indicators that permit cross site comparability

Categories of ecosystem function

- **Carbon (biomass)**
- **Biodiversity**
- **Food**
- **Water**
- **Soil**
- Aligns broadly with MA

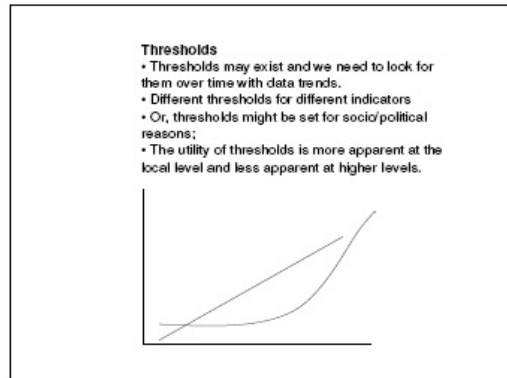
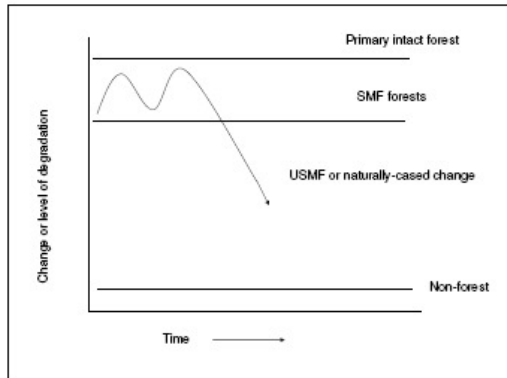


Possible indicators (from cards)

- Soil / water quality
- Watershed quality
- **Species composition**
- **Species richness**
- **Species presence / absence**
- **Stand density**
- **Canopy cover / structure**
- **Deadwood structure**
- **Comparison to «natural» reference**
- **Biomass**

Questions for WG 2

- What is the appropriate scale(s) to consider degradation: Does the current definition sufficiently address the issue of scale?
- What are the best indicators?
- Which indicators are best for national-level reporting?
- Which might also be proxy indicators for several different aspects of degradation?
- Which already have adequate definitions and assessment methods?
- What further actions are needed to facilitate regular monitoring of the indicators?



Levels are:

- Global
- Regional
- National
- Sub-national by forest type
- Local by landscape
- Stand

- Landscapes can be defined biophysically, functionally, social construct
- Or landscape can be a local level construct.
- Some level of sub-national forest typing
- Appropriate scale is relative to the goods and services being determined.
- Time scale of reporting, depends on what you are measuring.
- Time scale is relative to the indicator or process which you are measuring.

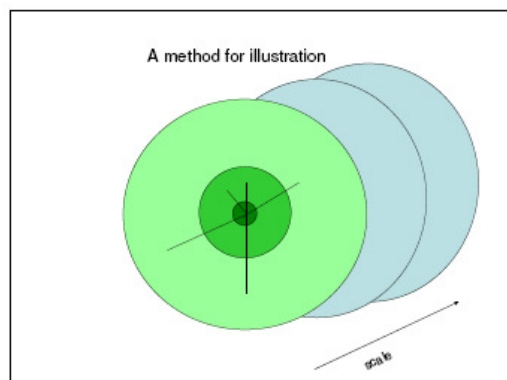
Indicators	Scales				
	Global	Regional	National	Forest type	Local
Soil quality				X	X
Erosion rate				X	X
H ₂ O quantity		X	X	X	X
H ₂ O quality		X	X	X	X
Species comp.	X	X	X	X	X
Forest stand					
Variables (canopy, stocking etc.)				X	X
Landscape variables					
(land cover, fragmentation, etc.)	X	X	X	X	X
Carbon pools (S)	X	X	X	X	X

For these indicators, which ones already have adequate definitions and assessment methodologies?

Agreed that methods are available for all.
Lund's proposed common ground indicators:
Soil
Biodiversity
Biomass (carbon)

- As a minimum to define degradation we need to measure species composition, landscape pattern, and carbon pools in some way


Further actions needed to facilitate regular monitoring of these indicators (e.g. harmonization of definitions, capacity building, R&D).
e.g., NFIs not in all countries and not standardized
By whom?





Complex issues with many confounding factors and drivers

- Globalization
 - Pension fund in Europe funding US bank funding industrial company funding local investor logging in Sarawak...)
- Policy environment and legal framework
- Societal choices
 - Use of natural capital to build physical capital
- Institutional settings
 - Lack of capacity to manage / control





A wicked problem

Problem Attributes	Complexity Spectrum	
	Simple Problems	Wicked Problems
Definition	Clear, all agree	Fuzzy, much disagreement
Objectives	Single	Multiple
Stakeholders	Aligned	Fragmented
Factors influencing objectives	Few, controllable	Many, beyond control
Uncertainty	Low	High
Relative risks	Low variability	High variability
Role for science	Leads to clear choice	Informs choices
Coping strategies	Not contentious	Contentious
Decision analysis	Less valuable	More valuable



Forest products (goods)

- Goods differ (wood and wood-based, NTFP...)
- Indicators can be developed at the forest management unit level
- FMU level indicators can be scaled up to national or international levels



GOODS: • Timber • Fuelwood • Medicines • Mushrooms/berries • Meat • Honey Etc...	STOCKS • Standing timber • Deadwood • Etc...	SUSTAINABLE PRODUCTION LEVELS (SPLs) ACTUAL PRODUCTION LEVELS including for local consumption (APLs)
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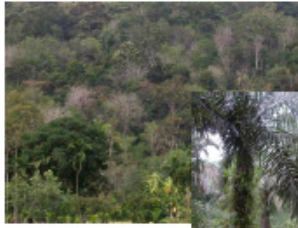
Indicator: set of ratios SPL/AP



Socio-economic services

- Linked to the "goods" but in a non-linear, monotonic way (→ secondary indic.)
- Indicators can be developed at the forest management unit level
- FMU level indicators cannot be scaled up to national or international levels

Agroforests vs. clonal plantations

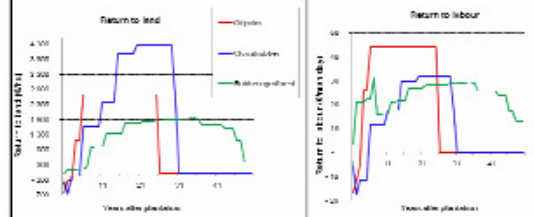


Biodiversity,
Ecosystem services
Income



No biodiversity
Some ecosystem services
Much bigger income

Comparison of different smallholders' plantations



	Oil palm	Clonal rubber	Rubber agroforest
Return to land (€/ha)/year	2 154	2 717	1 172
Return to labour (€/man.day)	36	18	22

Possible socio-economic indicators

- Local demographic trends
- National population trends
- Employment (forest and extra-sectoral)
- % Household income from forest goods



Recommendations

- Develop meaningful macro-economic indicators for national scale socio-economic services
- Provide training and capacity building to assess indicators at local level
- Use a common conceptual framework to analyze indicators



What sort of forest degradation can we really address with the instruments at our disposal?

Where is REDD likely to fail or to succeed?

