

Concepts and Challenges of Sustainability Assessment

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Personal Progression

- Sustained Yield Forestry (pre 1990)
- Post 1960 for the National Forests (multiple use approach)
- Pre 1990 National Forests largely for ecosystems services (little timber management)
- Renewable Resources (1990)
- Auditing and Certification (1994)
- Criteria and Indicators (1998)
- National Report on Sustainable Forests (2003, 2008)
- Sustainable Resources (2008)



Some Casual Concepts of Sustainability

(applied largely to forestry)

- “The forest has been there of many thousands of years, therefore it must be sustainable” French forester (1996).
- “Sustainability is more a philosophy of how forest should be cared for than a definable condition of the forests or a set of definable management practices” International Forest Forum presentation (1997)
- Certified forestry: applies a set of management practices. But these groups have moved away from declaring their forestry “sustainable” and more that management “adheres to a set of acceptable or best practices.”



Some Concepts

- Sustained yield forestry
- Criteria and Indicators
- Certified Sustainable Forestry with Third Party Certification
- Brundtland Commission (1987)
 - Economic, ecological and social
- Resource Sufficiency Paradigm
- Functional Integrity Paradigm



Brundtland Commission

- Our Common Future (1987)
- Sustainable Development: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”
- Save all the pieces.
- Calls for a balancing of ecological, social, and economic objectives over time. The three pillars of sustainability.



Sustained Yield

- Forests are harvested at a rate that, in principle, can be maintained indefinitely.
- The Regulated forest (European origins).
- In the US the problem was the optimal drawdown of the huge stock of natural old growth forest and their transition to a regulated forest.
- With the old-growth now protected so US forestry resembles that of the European regulated forest.



Criteria and Indicators

- Europe Helsinki Process: six criteria for characterizing sustainable forests
- Santiago Declaration: Seven criteria said to characterize forest management
 - Biodiversity conservation
 - Ecosystem productivity
 - Ecosystem health
 - Soil and water conservation
 - Global carbon cycles
 - Multiple socioeconomic benefits
 - Legal policy institutional frameworks
- Used to evaluate a countries progress towards sustainability at the national level



Forest Certification

- Concept: Forest Auditing for Sustainability Certification
- Third Party Certification
- Certifiers: FSC, PEFC, SFI, AmTFSyst, others
- Certified as meeting some standard like best practices or Sustainability.



Resource Sufficiency Paradigm

- Concerned with future resource availability so concerned about the rate of depletion.
- Maintain the resource stock (natural capital) over time.
- Maintain the productive of the system, i.e., natural plus human created capital over time.



Functional integrity paradigm

- Ability of system to reproduce its self, in all facets, over time.
- A host of Ecosystem services, including biodiversity, should be maintained.
 - Speed at which the system can return to equilibrium after disturbance
 - Ability of system to resistance being dislodged from and equilibrium.
- System have resiliency and robustness
- But, there may be more than one stable state.



Where are we today? Some preliminary conclusions.

- Stressing sustainable ecosystem functions on most forests.
- Have designated some forests to timber production (plantations).
- Trapped between recognition that specialization generates benefits, but also need to maintain natural systems.
- Fortunate that wood demands are modest and can be rather easily meet.
- However, this may not be true for a world where renewable energy replaces much of our traditional fossil fuels.

