

# The value of forest ecosystem services

1. Range and categorization of ecosystem services
2. Methodologies for valuation of ecosystem services
3. Global trend of valuation of ecosystem services and in particular forest and forestry sector statistics
4. Scope of valuation and its reference level
5. Diversity and/or differences of services prioritized
6. Analyzing hierarchic structure of relevant ecosystem services
7. Range and scope of data and relevant data quality
8. Public dissemination

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## Montreal Process C&I:

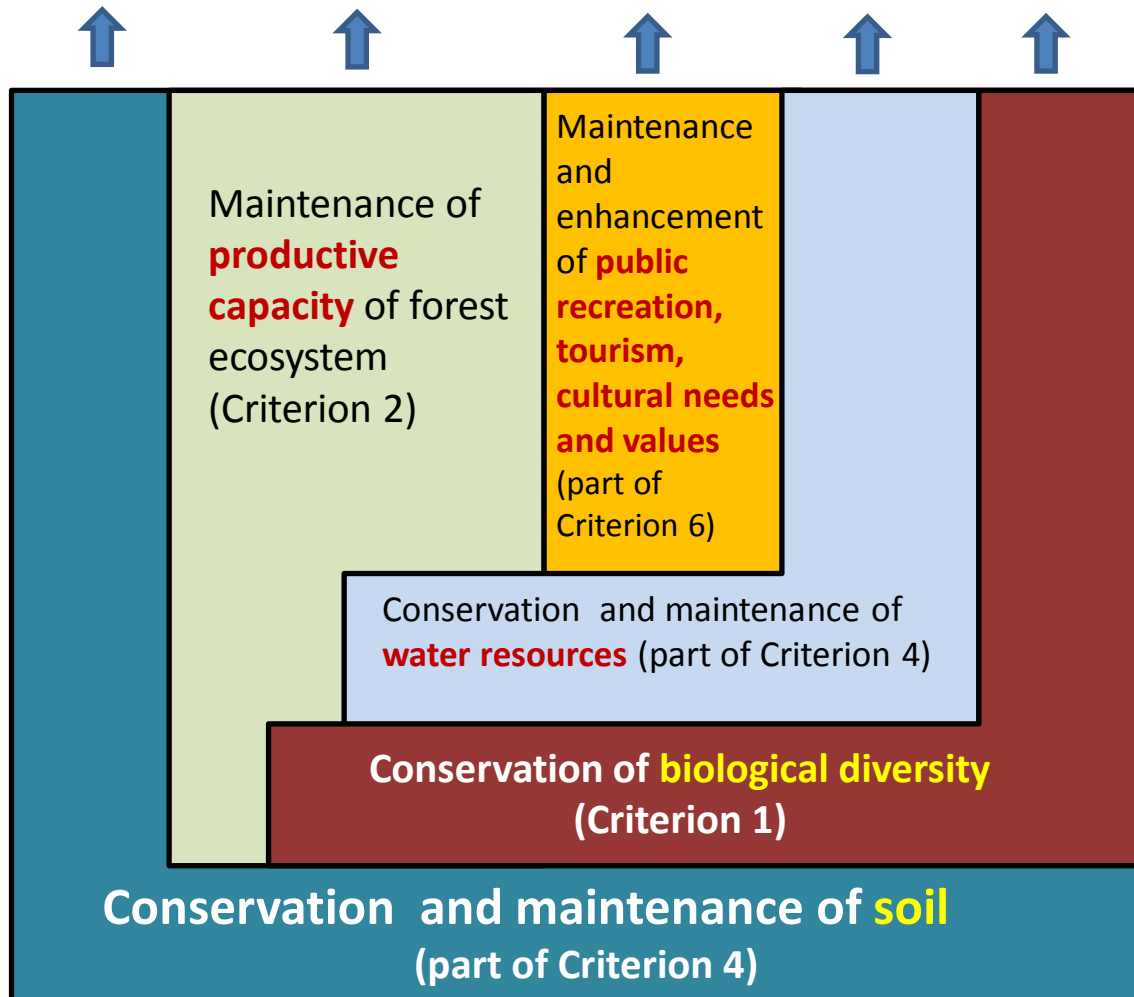
- **Criterion 1: Conservation of biological diversity**
  - Ecosystem diversity
  - Species diversity
  - Genetic diversity
- **Criterion 2: Maintenance of productive capacity of forest ecosystems**
- **Criterion 3: Maintenance of ecosystem health and vitality**
- **Criterion 4: Conservation and maintenance of soil and water resources**
  - Protective function
  - Soil
  - Water
- **Criterion 5: Maintenance of forest contribution to global carbon cycles**
- **Criterion 6: Maintenance and enhancement of long term multiple socioeconomic benefits to meet the needs of societies**
  - Production and consumption
  - Investment in the forest sector
  - Employment and community needs
  - Recreation and tourism
  - Cultural, social and spiritual needs and values
- **Criterion 7: Legal, institutional, and economic framework for forest conservation and sustainable management**

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- Characteristics of forest ecosystem services in the report of Science Council of Japan in 2001:
  - Each service is not powerful by itself, but many services are expressed in a overlapped manner. As a consequence, overlapped multiple services are powerful comprehensively.
  - “Hierarchy” among multiple services is clearly observed.  
Biological diversity conservation service, soil conservation service and biomass production service are the fundamental services.  
On the basis of such fundamental ones, fostering water resources service, formulation of comfortable living environment service and wood production service are expressed. Other services such as culture service and global environmental conservation service are finally expressed based upon the above stated services as well as the existence of wide area of forests.
- Masakazu Suzuki (2007) stated further in hierarchic structure of forest ecosystem services as follows:

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## Fulfilling functions of services



- Soil conservation service is located at the basement of this diagram, since no vegetation exists in the area where soil erosion prevails.
- Under this condition, biological diversity service is ensured. Then with these two pre-conditions, water resources service is functioned under a hierarchic structure.
- If forest is managed primary for productive capacity service, water resources service and biological diversity service may not be fully functioned. This trade-off relation is found in step-wise structure between productive capacity service and , biological diversity and water resources services. Even under such case, soil conservation service should not be damaged.

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## Wrapping-up message by facilitator (part 1)

1. Process towards valuation of forest ecosystem services based upon the comparative and reliable data set such as FRA2015 will request us to work on additional improvement in data quality with analysis of interactive functions or hierarchic structure on relevant services represented by such data
2. We cannot find an absolute evaluation method at this stage, but current trend in environmental economy indicates that the contingent valuation method, in which “willingness to pay” of the stakeholders are evaluated, would be a good option for justification of PES and/or environmental tax introduction in a particular watershed/landscape level.
3. In this context, the report of Science Council of Japan in 2001, which demonstrated a calculation of the total value of some services by the replacement cost method as well as indicated a hierarchic structure among various services, has been recorded as a milestone analysis related to forest ecosystem services.

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## Wrapping-up message by facilitator (part 2)

4. However, for providing a practical message to judge “willingness to pay” of the stakeholders of the specific services, the reference level should be “forest as business as usual” and the marginal value based upon the cost and benefit analysis should be also considered with total value approach. B/C analysis of the specific forest management scheme for particular services will be a first step for consideration of PES and/or taxation system in this context. I do hope today’s seminar will be the first case to provide proper information to the general public.
5. Parallel to such information dissemination activities, it is our urgent mandate to enhance the research related to analysis of interactive functions or hierarchic structure among the services and impact analysis of various silvicultural options. Under the global collaborative partnership generated through FRA2015 process, Japan should provide its additional contribution including dissemination of soil condition analysis tool through FAO project in the developing countries.