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Final considerations

Considérations finales

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Cayenne
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General considerations

- Conference objectives
  - Discussion of major issues relative to tropical rainforests
  - Presentation of an overview
    - For operational applications
    - For scientific strategies
- The geographical scope of presentations was
  - global (35%)
  - Amazonia
    - French Guiana (18%)
    - Latin America, mainly Amazonia(25%)
  - Africa and Rest of the world (22%)

Contents

- Issues:
  - Management of natural forest resources
  - Climate change
  - Biodiversity
  - Land use change
  - Plantation forestry
  - Local development
  - Cross-cutting issues

Contents

- Main focuses for each issue:
  - Description of the theme
  - Which orientations for stake holders?
  - Which recommendations for research?

Management of forest natural resources

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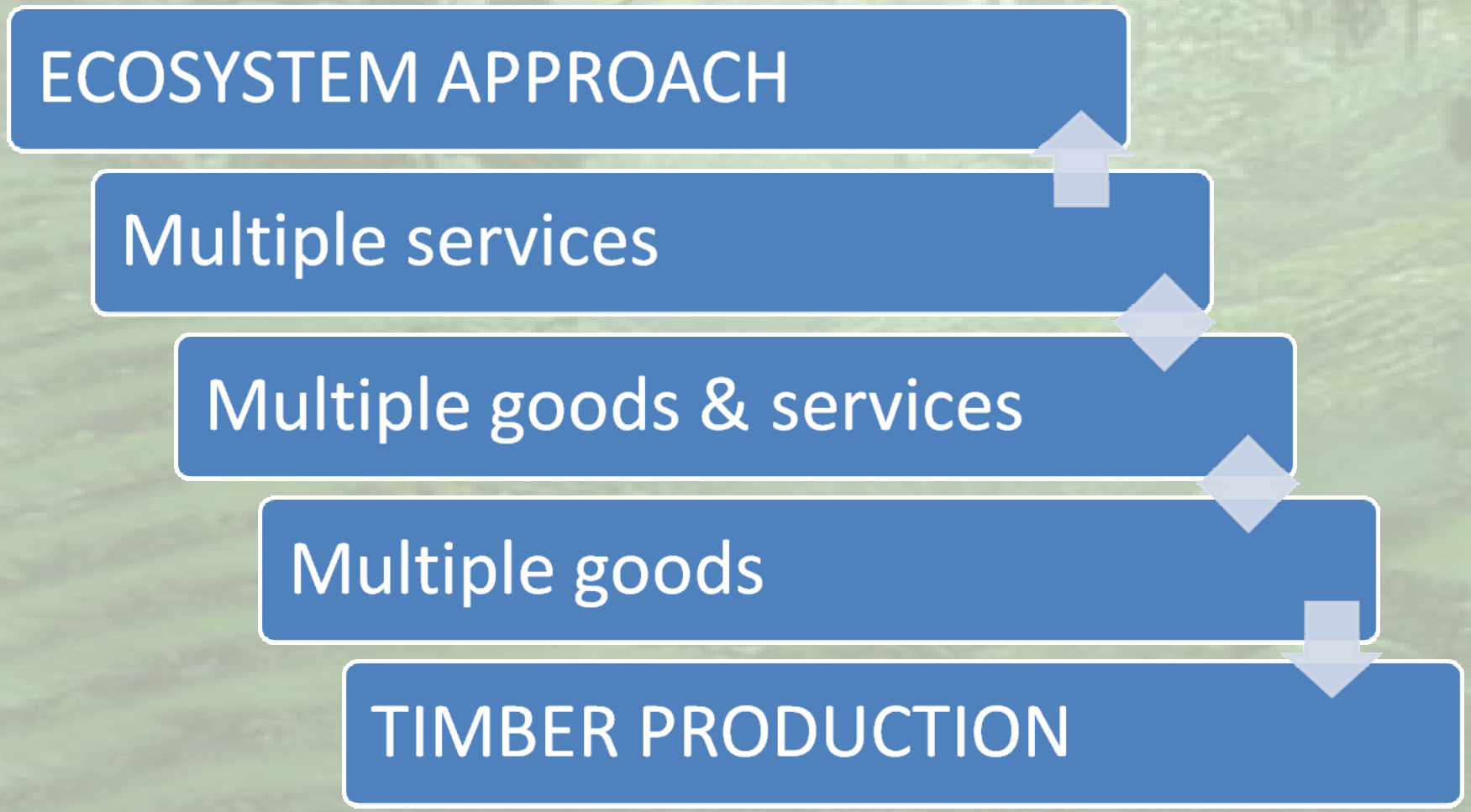
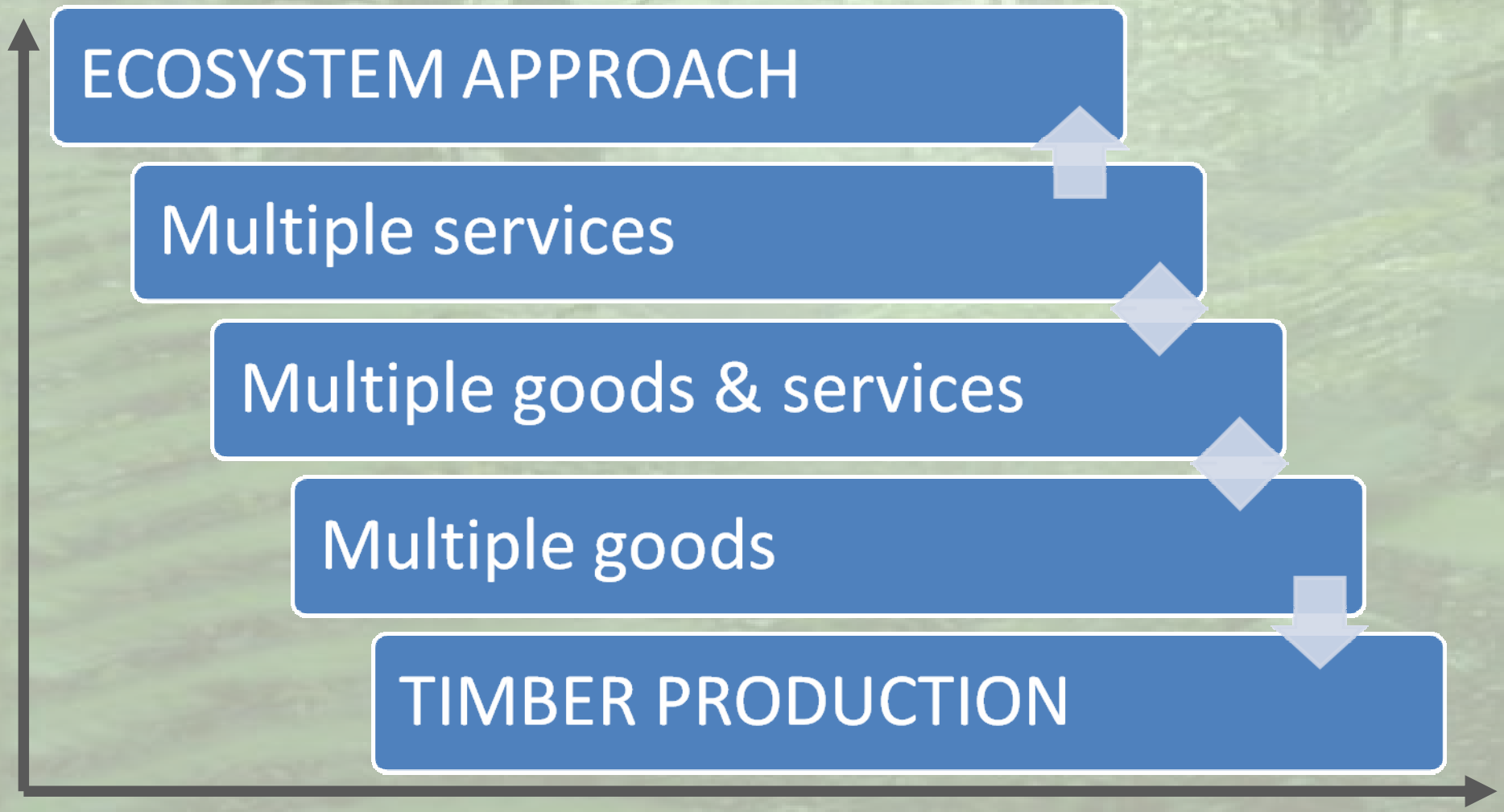
Multiple goods and services



Multiple goods and services



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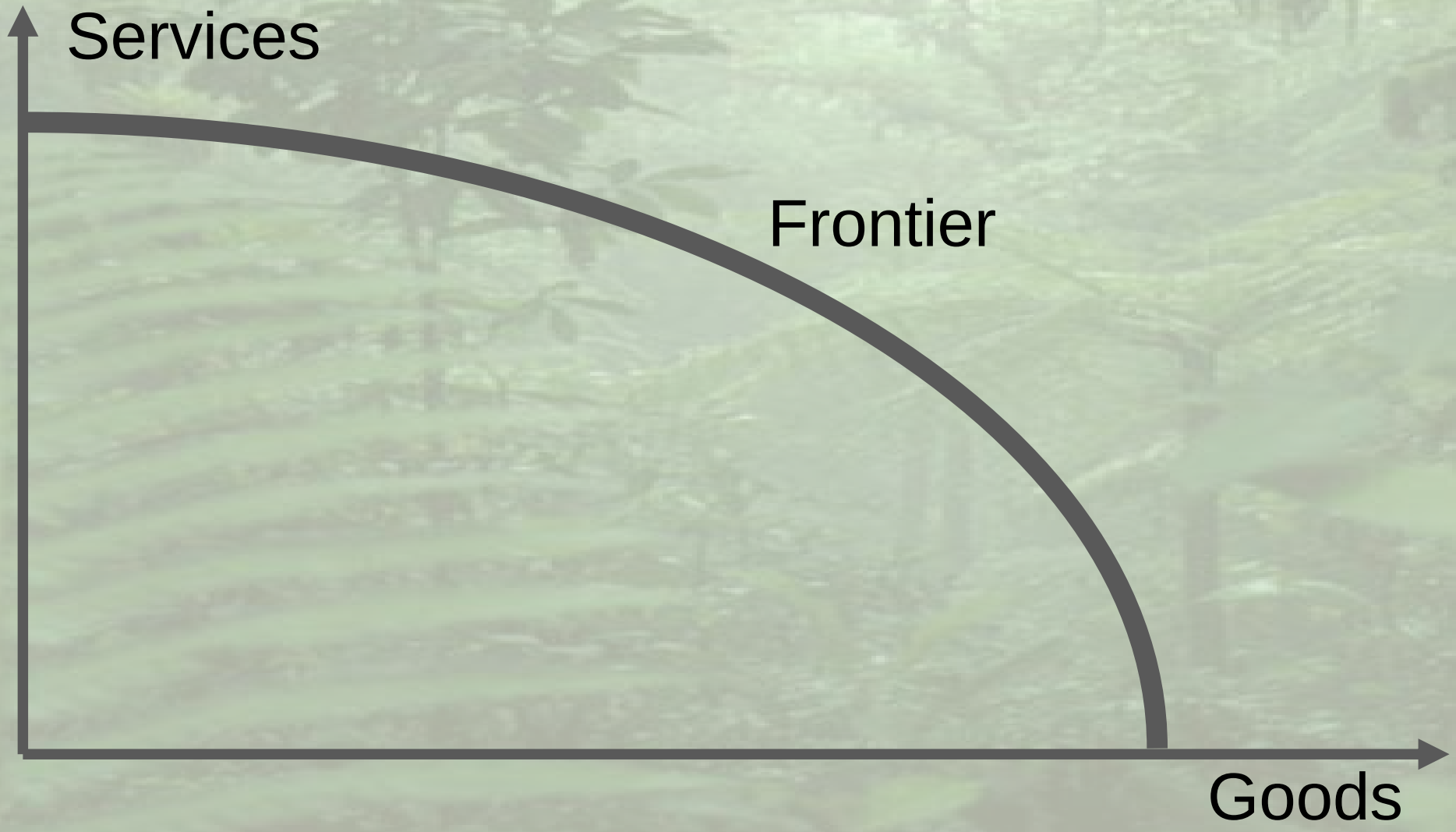

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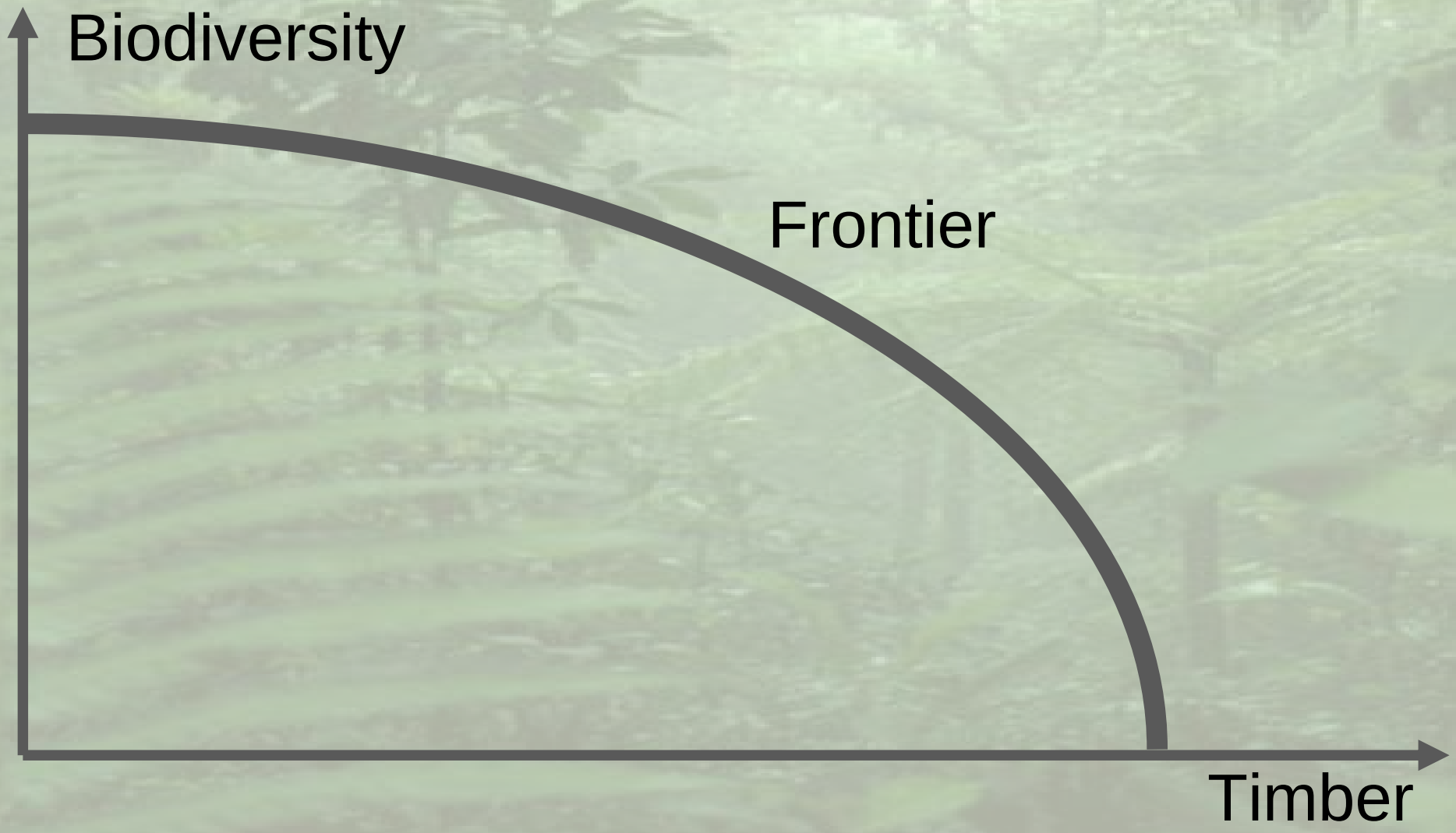

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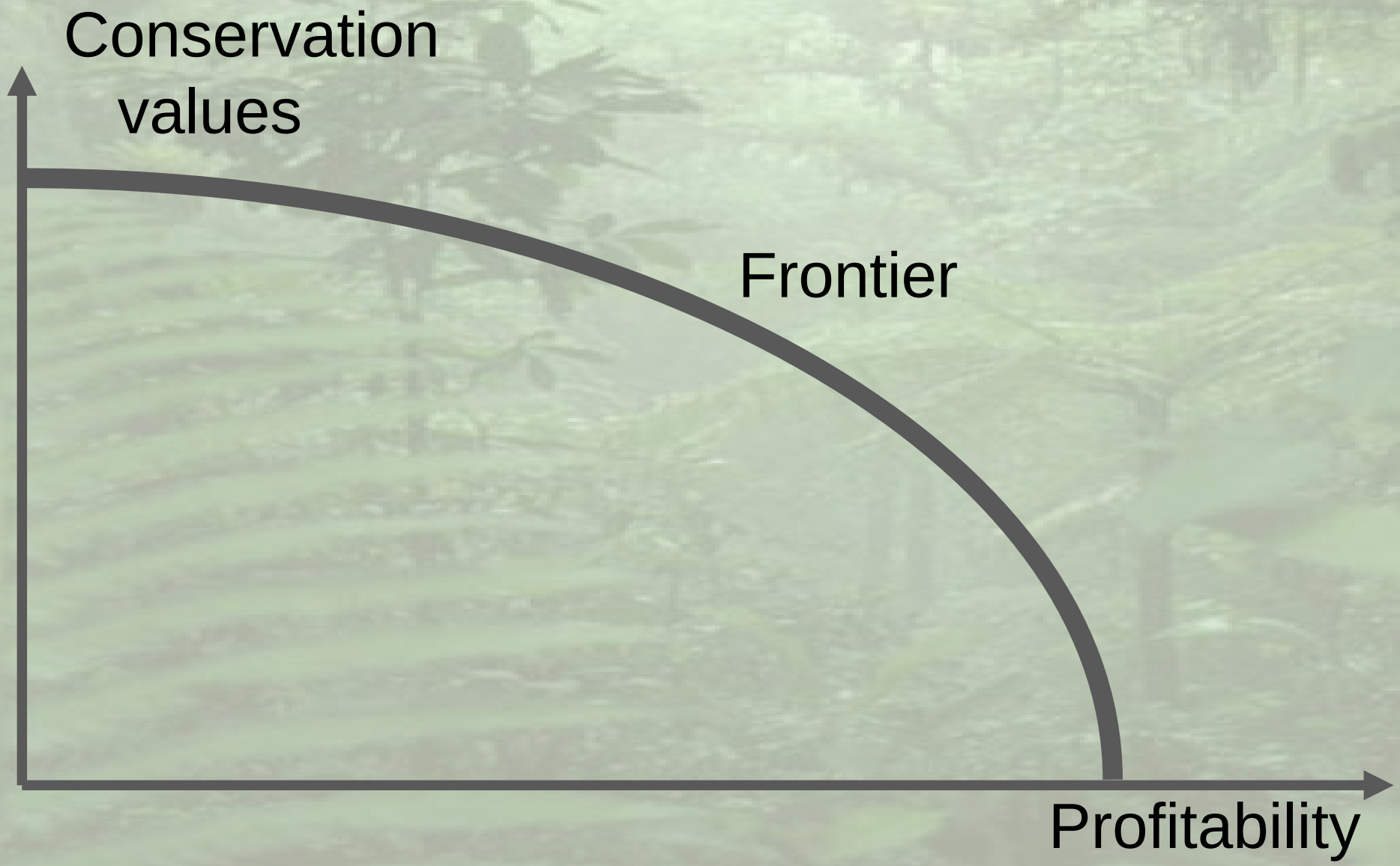
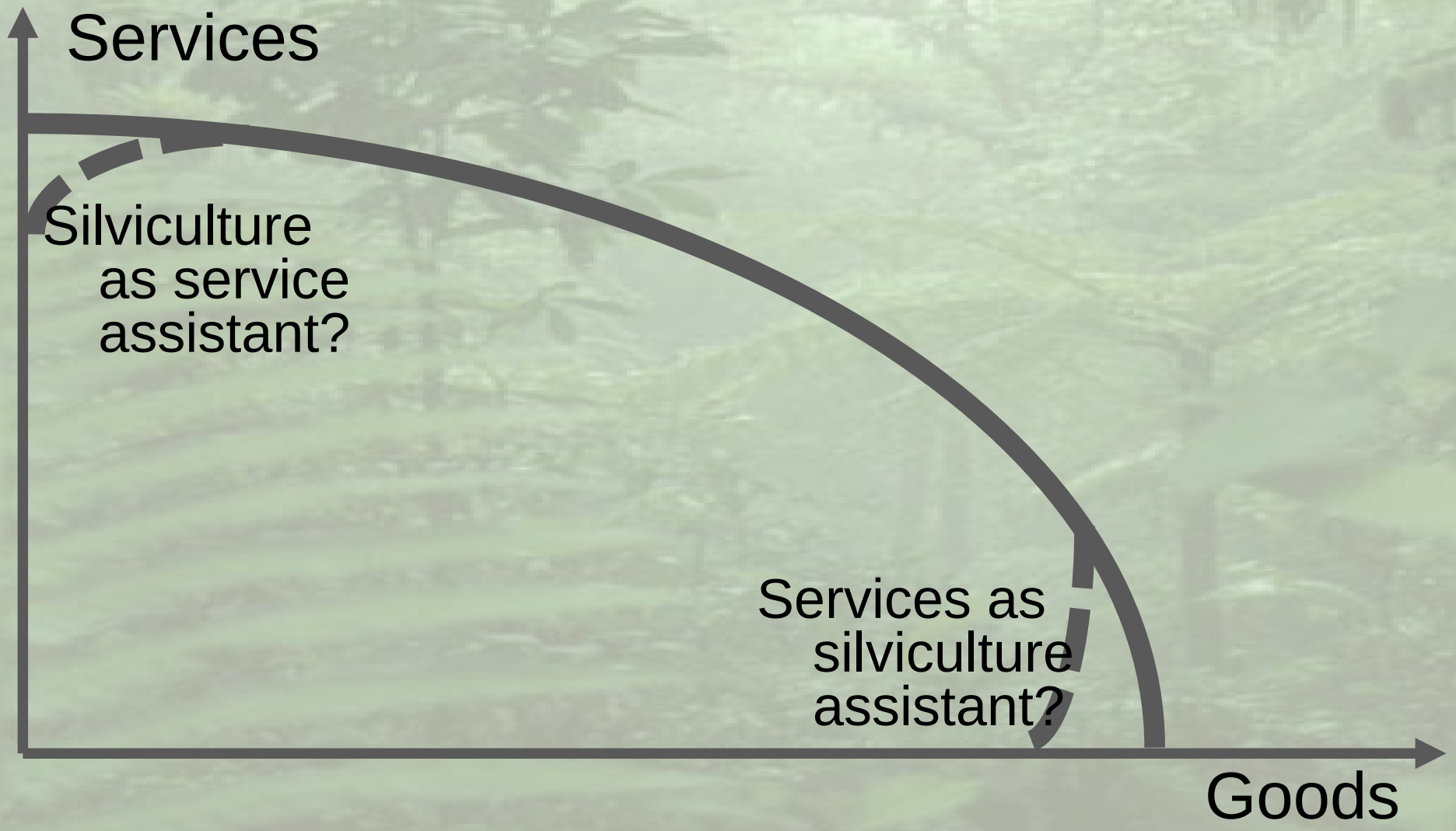


Which forest management?



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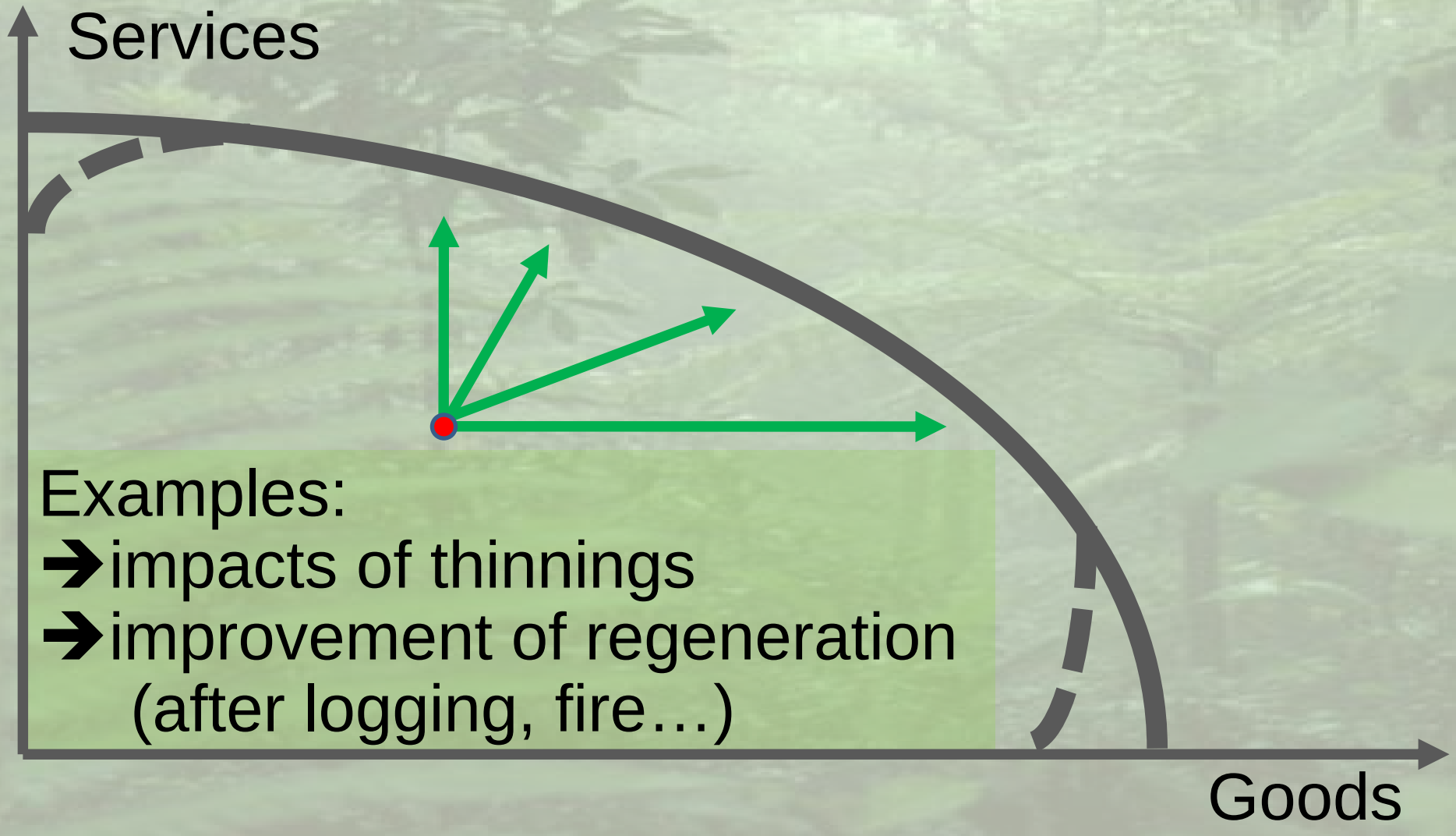
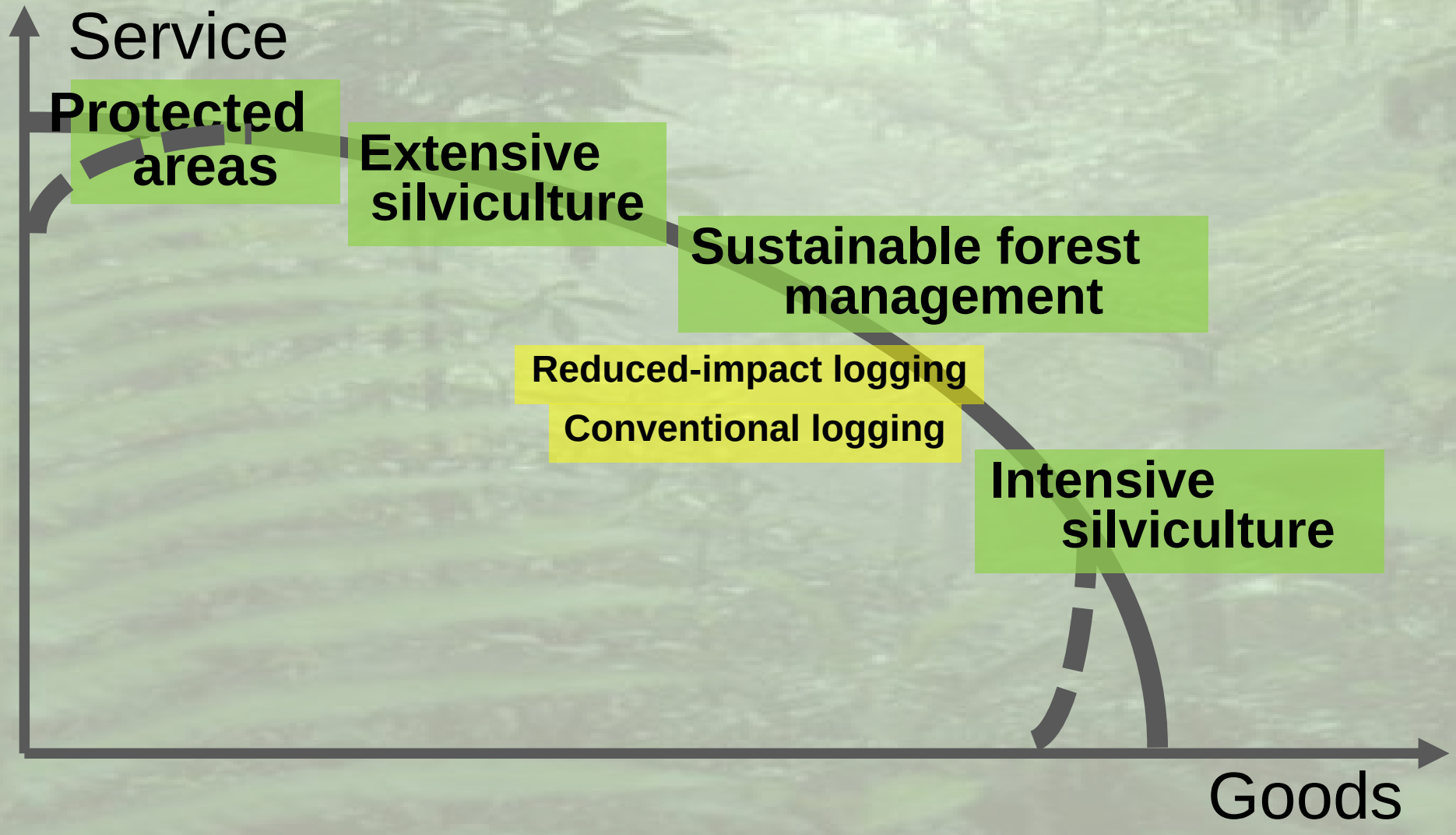


Examples:

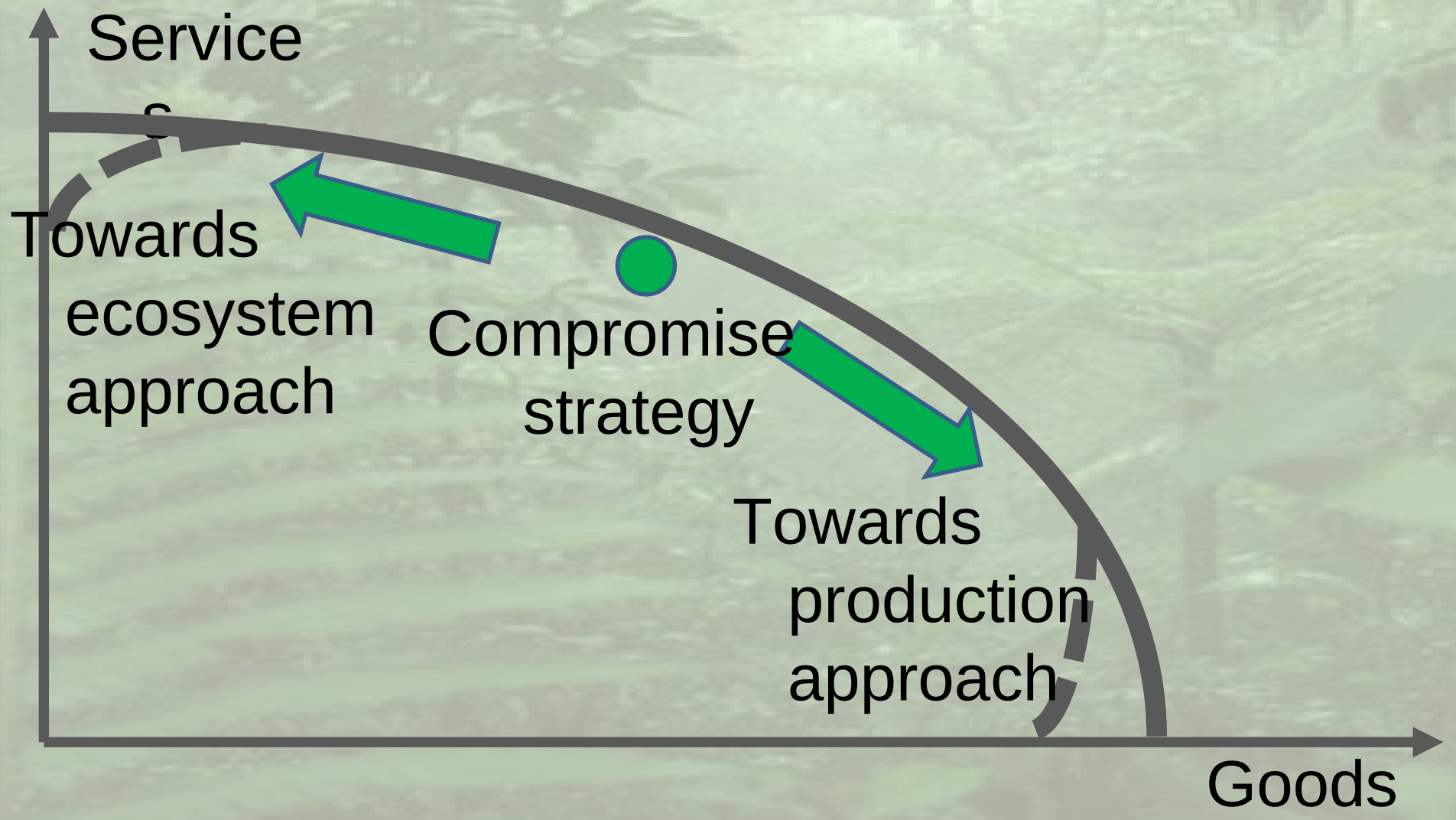
➔impacts of thinnings

➔improvement of regeneration (after logging, fire…)

Which forest management?



Which forest planning?



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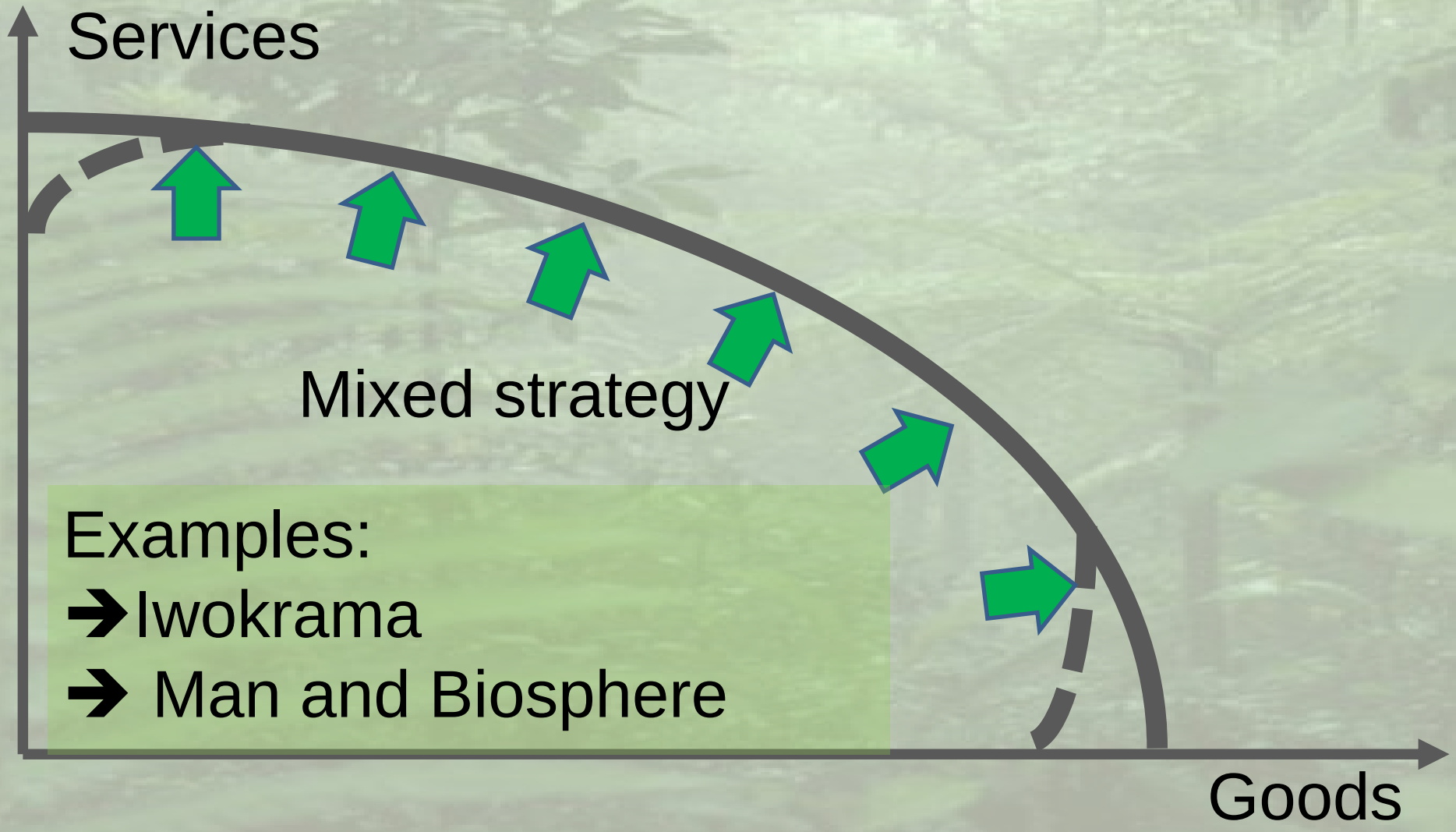
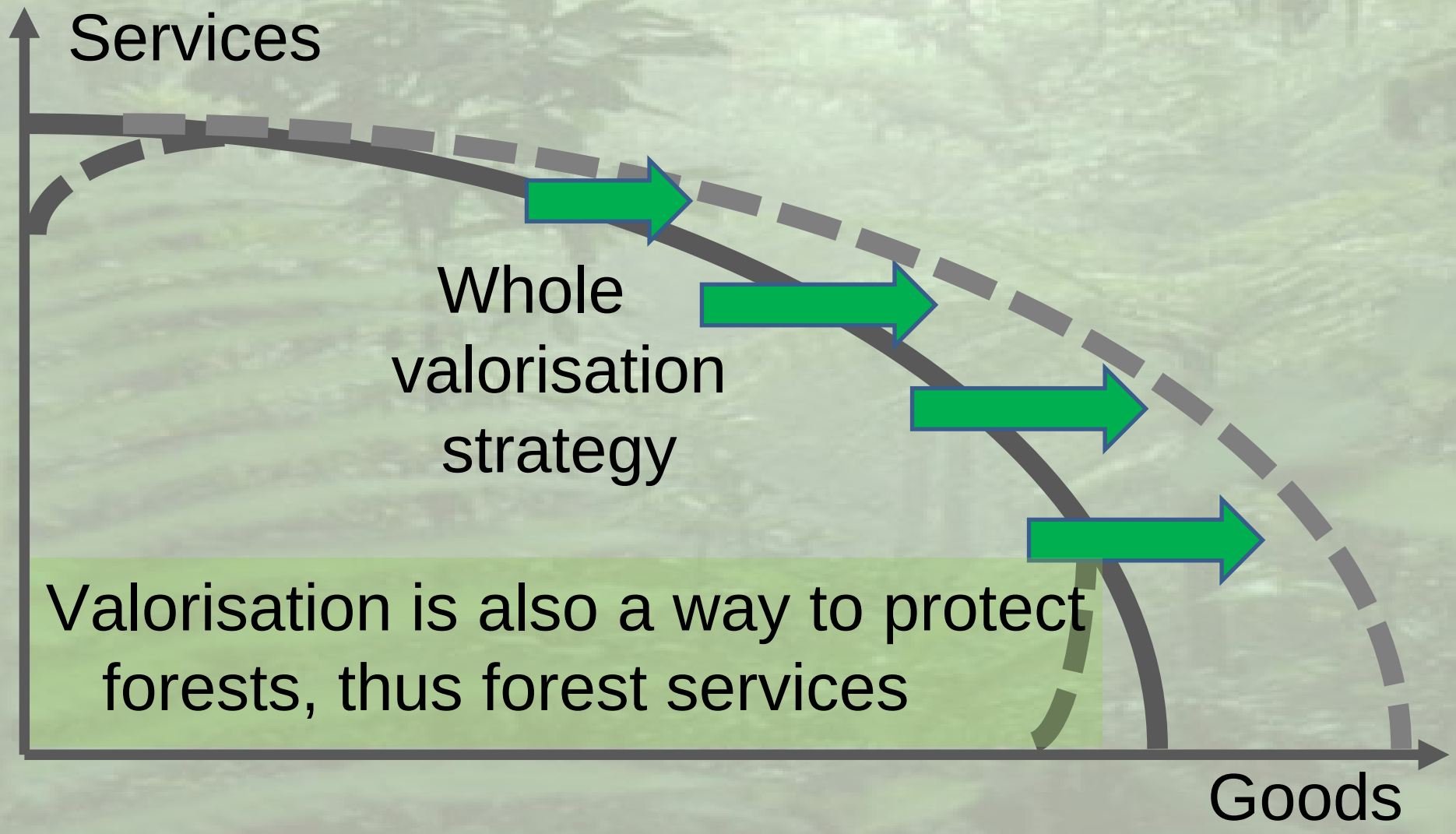


Examples:

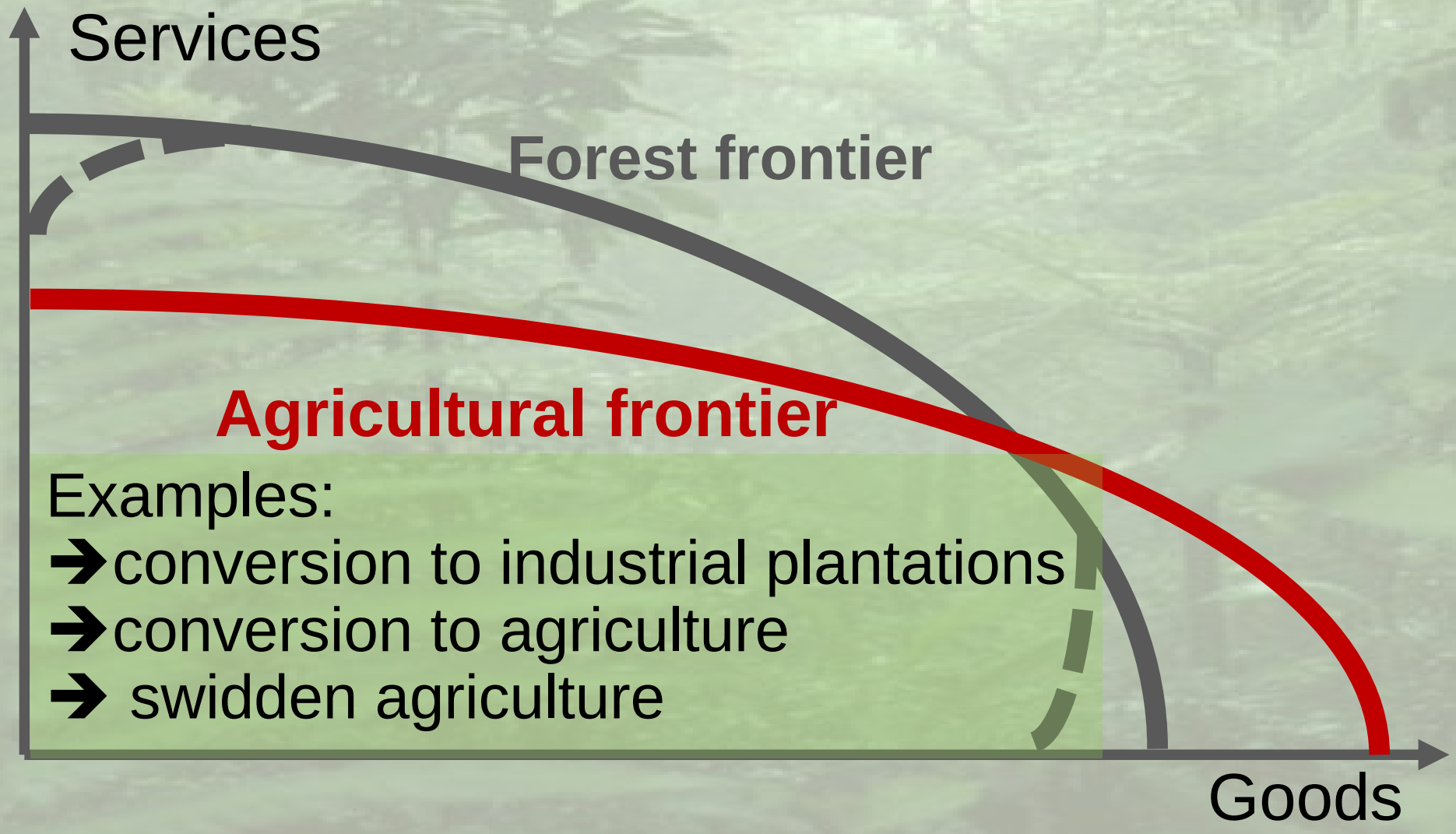
➔Iwokrama

➔ Man and Biosphere

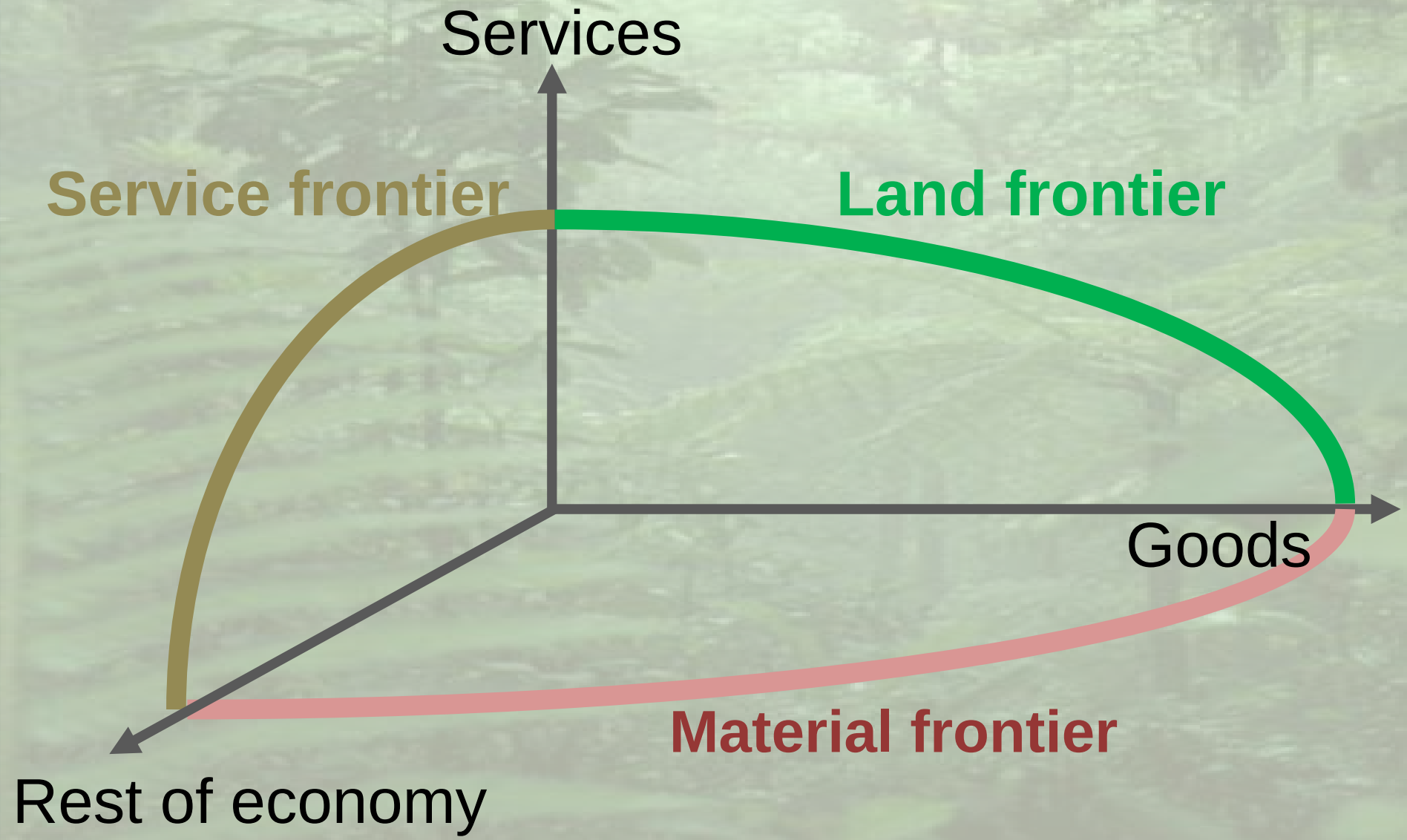
Which forest planning?



Which land management?



Which economy?



Other important factors

- Temporal scale
- Spatial scale
- Local conditions

Orientations for Stakeholders

- Importance of local factors for decision
- Solutions are not always very simple
- Valorisation of more forest resources than now
- Continuous improvement process

Recommandations for Research

- Huge lack of knowledge as regards
  - biodiversity
  - products (properties, origins, …)
  - practices
- Combination of traditional and academic knowledge
- Adaptation of research to the different scales
- Interdisciplinarity

Climate change

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Evolution along time

- Analyses on past and recent changes allow us to prepare the future but there are…
- many differences between past and future evolutions (causes, speed,…)
- different analytical methods
  - paleoecology, paleoclimatology, palynology, genetics,…
  - modelisation

Past evolutions

- Historic analyses show
  - Important past changes
  - Variations of forests/savannah ratio
  - Non obvious phenomena
    - Structural changes (atmosphere, climat,…)
    - Different ways for different species (population genetics)

Past evolutions

- Recent analyses show
  - a tropical carbon sink
    - in aerial forest biomass
    - with less mortality
    - due perhaps mainly to CO_2 fertilisation
  - but a carbon source in some locations
  - but many ecosystems are probably not at equilibrium
  - consequences of extreme events
    - higher reduction of respiration than photosynthesis during recent droughts
    - but only some extreme events are taken into account

Future expectations

- The results are very different from one socio-economic scenario to another
- They also differ for the tropics, sometimes in opposite directions
  - according to climate models
  - depending on the continent
  - regarding the type of ecosystem
- Models take appropriate phenomena only partly into account
- Some phenomena that are favourably considered today could be negative tomorrow

Orientations for Stakeholders

- Uncertainty on future expectations must be taken into account
  - there is no possible forecast
  - several scenarios should always be compared
- Growing gap between scientists and policy makers as regards climate?
  - REDD process : a geopolitical tool
  - Sustainable forest management is not degradation!
  - Local adaptation as important as global mitigation
- More research is still needed

Recommandations for Research

- Many needs depend on climate models (global, regional,…)
- The link between vegetation models and climate models should be reinforce
- Extreme events need more attention in comparison with trends and as regards their frequencies and intensities
- Economic, social and human sciences are very important in relation to nature sciences (see climate convention and its applications).

Biodiversity

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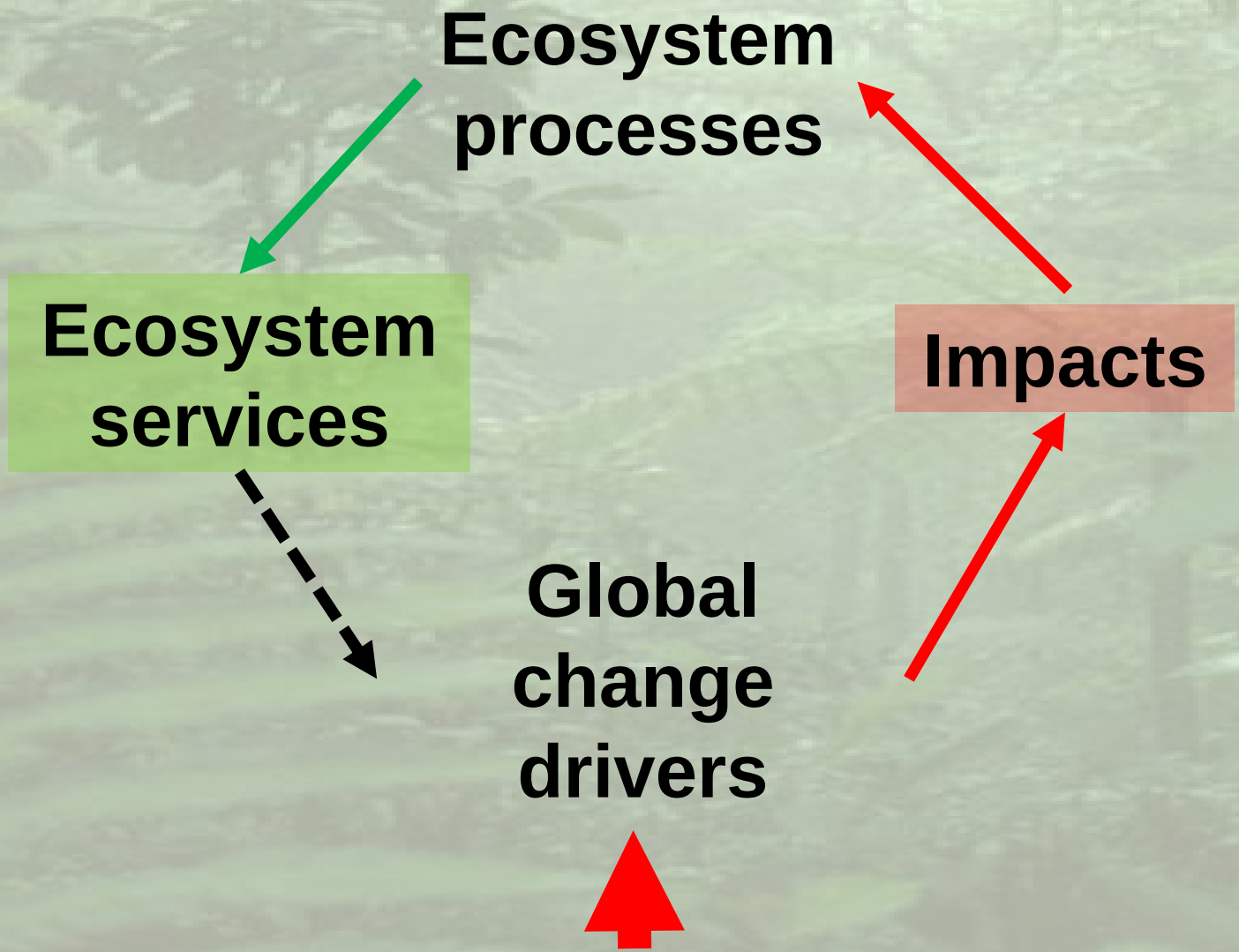
Services and impacts



A huge need of knowledge

- Biodiversity structure
- Functional biodiversity
- Ecosystem services
- Global change drivers
  - Global drivers (climate change)
  - Local drivers (land use changes)
  - Forest practices
- Impacts
- Mitigation and adaptation measures

Methods and tools

- Observation (and experimentation)
  - inventories (abundance, spatialisation)
  - faster methods with more techonology and less human resources: camera trapping, DNA markers
- Understanding and modelisation
  - plasticity, functioning economy,…
  - dynamics (regeneration, phenology, genetics…)
  - much should still be done!
- Reviews and metaanalyses
  - traditional knowledge
  - taxa (palms,…)

Orientations for Stakeholders

- Could ecosystem services be at the root of a Green New Deal?
- Now, there are gaps between science and policy
- Impacts on biodiversity vary much with conditions, taxa and practices; however:
  - management and biodiversity can be compatible
  - secondary forests (and plantations) play a major role
  - the landscape scale is crucial.

Recommandations for Research

- Develop knowledge on badly known compartments (inventories,…)
- Gather and manage knowledge
- Develop modelling
- Pay attention to evolutionary processes
- Use social and nature sciences, combine them if necessary
- Adapt means to what is at stake.

Land use change

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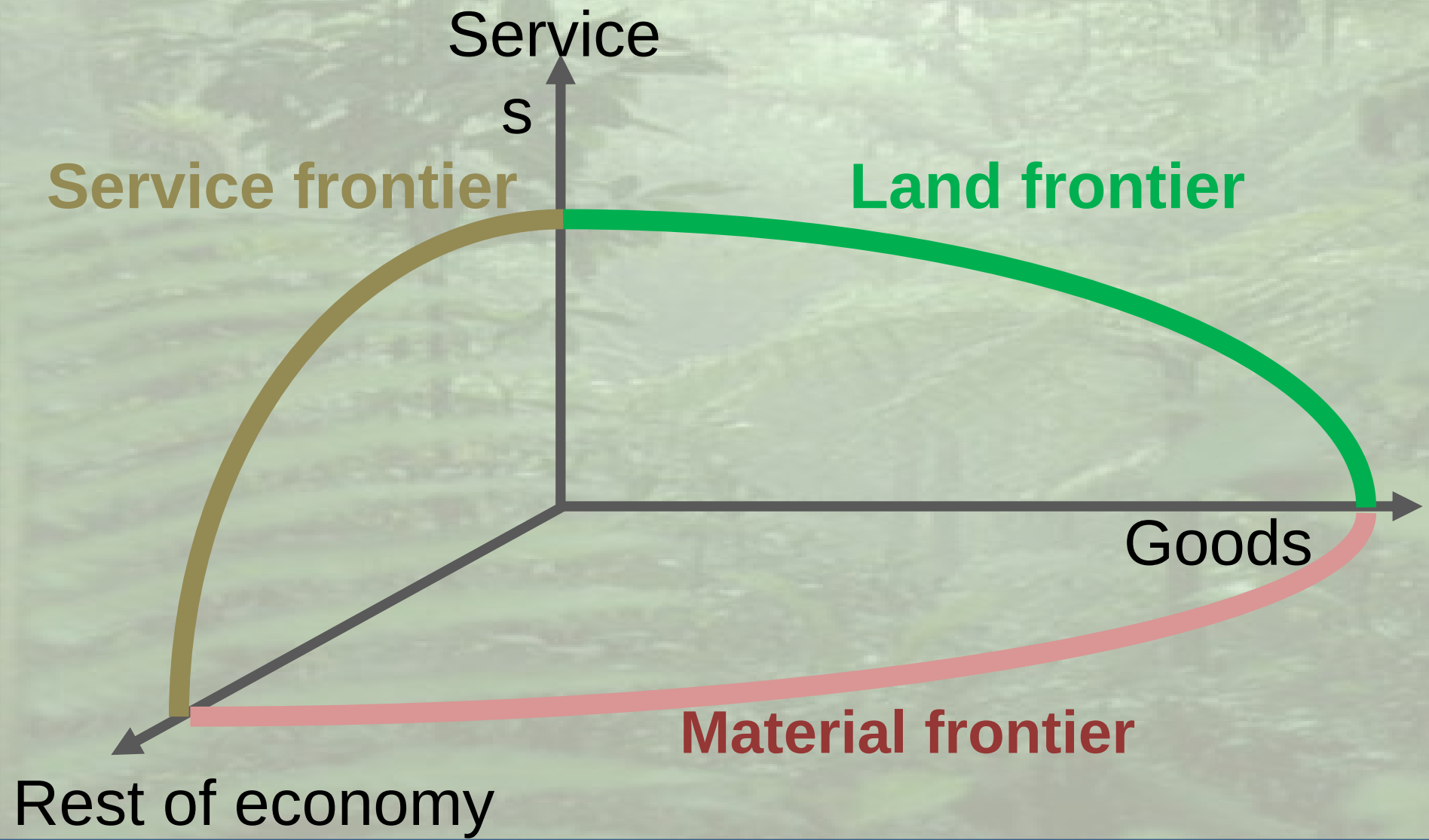
From pioneer frontiers to efficiency frontiers



Reasons for land use changes

- Cases of Amazonia, Indonesia and Congo basin:
  - Much deforestation, few restauration
  - Not many forest reasons, much land conversion
  - Industrial agriculture
  - Industrial plantations (energy, rubber…)
  - Infrastructures (for timber, agriculture, mining, development)
  - Alternative uses are more profitable
- French Guiana could be considered as an exception (lower rate of deforestation)

Are there any brakes?

- Population growth is diminishing
- Urban population is growing and less adapted to rural activities
- Pioneer boundaries are farther and farther
- Agriculture productivity is increasing and reduces land demand
- Local needs will become more important in comparison with abroad needs
- Transportation will become more expensive
- An ecological consciousness is developing with development

Orientations for Stakeholders

- Landscape and even a higher level is necessary
- Different phenomena should be clearly distinguished
  - swidden agriculture is not industrial agriculture
- Traditional practices should be supported
- It can be dangerous to use carbon to promote sustainable forest management

Recommandations for Research

- Monitoring is a major task
- Progresses in other activities are welcome!

Plantation forestry

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Interests of plantation forestry

- Satisfaction of social needs
- Reduction of the pressure on natural forests
- Restauration of degraded forests
- Plantations are particular ecosystems but ecosystems anyway with
  - biodiversity conservation
  - water, soils and carbon management
  - risk management
  - social concerns

Orientations for Stakeholders

- Ecosystem functioning is not only useful for biodiversity and environmental considerations but also as an assistant for silviculture
- A landscape approach is useful; a short distance to natural forests has a value added
- Payments for ecosystem services can be a solution

Recommandations for Research

- Plantations are suitable for experimentation
- Many similarities with temperate forestry
- Pay more attention to the soil and its sustainability (low resilience, dependance on organic matter)

Local development

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From integrated management to systemic approach

- Multiple-use management: timber/non timber
- Certification
- Ecotourism
- Payment for ecosystem services (PES)
- Failure of exogenous development
- Endogenous development
  - autonomous/assisted development
  - traditional/modernised practices
  - Adapt existing systems if necessary
  - Provides subsistence, environmental services (and income)
  - Is based on low input, low risk strategies

Orientations for Stakeholders

- Capacity building is necessary (ex: ERAIFT, UNESCO/FUST)
- Land rights should be clear
- Incentives are necessary (ex: PES)
- Local governance
- Market organisation
- Pay more attention to non timber forest products
- Preserve informal knowledge
- Existing systems should be preserved and adapted if necessary.

Recommandations for Research

- Impact analyses of the harvest of timber and non timber forest products
- Knowledge improvement of product properties
- Identification of adapted integrated management practices

Cross-cutting issues

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Orientations for Stakeholders

- All these themes are interrelated
- Multicriteria evaluation of management options is useful; certification is an help;
- It is useful to take into account the landscape scale before decision making
- A patchwork of forest types and practices, and other land uses will be the more frequent situation
- Partnerships at large scale are necessary to be efficient because of the importance of the task
  - Examples of Brazil-France, Guyana shield, Congo basin….

Recommandations for Research

- Interdisciplinarity should develop
  - new sciences (landscape ecology, environmental / ecological economics, political ecology, …)
  - new scientists (double training?)
- To work at different scales is necessary
  - The landscape scale should be more considered

Science and decision

- There is a gap between science and decision (application of the two conventions on climate and biodiversity)
- Decision is usually much more than scientific results
- The mix between scientists and policy makers is non stable (Christiane Taubira)
- But scientific implication is useful and sometimes requested
  - a good scientific communication is important and today better than in the past (Chantal Berthelot)
  - see Regional Council of French Guiana (José Gaillou)
  - see also political partnerships based on scientific cooperation.

Thank you for your attention and your active participation!

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