FORESTS IN A CHANGING WORLD: GLOBAL TRENDS AND KEY CHALLENGES

LUKE Natural Resources Institute Finland and Finnish Environment Institute (SYKE) report to Ministry of Agriculture and Forestry

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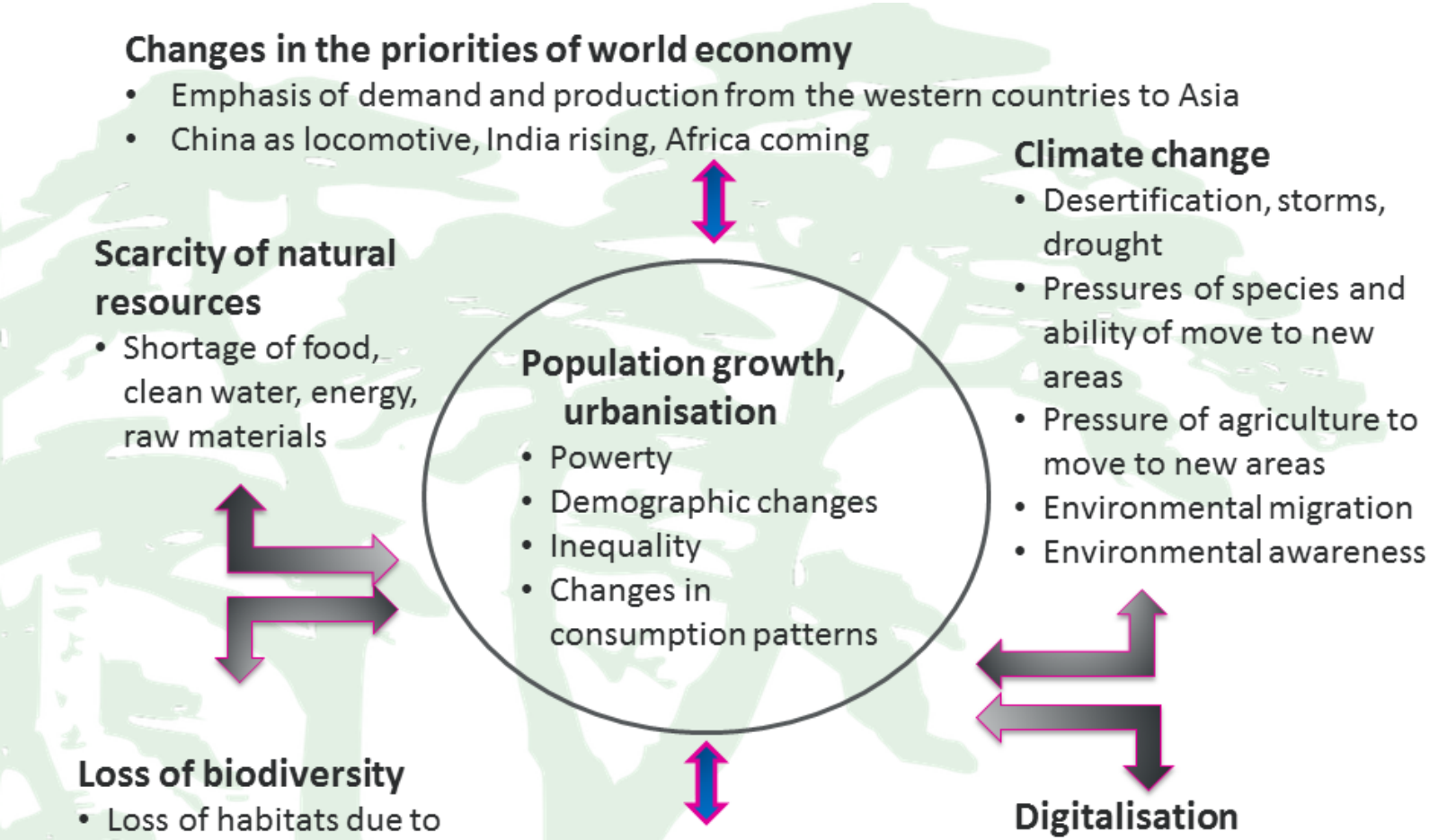
Global megatrends affect forests



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1. Forests, economic development and trade

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Emerging and critical global issues:

- Impacts of bioeconomy and circular economy on forests
- Impacts of international trade agreements and policies, customs policy, eco-labels and other similar instruments on forest-based material flows and world trade
- Business opportunities based on forest ecosystem services
- Accountability and distribution of investments

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Challenges related to the global megatrends can be addressed through sustainable development and green economy

- Resource efficiency and replacement of fossil energy and materials with renewable ones - use of forest biomass increases.
- Use of forest biomass as raw material and energy is affected by the global climate agreement commitments and the sustainability criteria – in the worst case, the interpretation can lead to carbon leakage.
- Forest resources are insufficient especially in countries with high populations
- Planted forest area is expected to grow – the share of industry's raw wood originating in planted forests increases.
- Agroforestry can promote sustainable agriculture
- Fuelwood is an important wood product in low income countries.

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Forestry and forest ecosystem services as a basis for sustainable business

- Identification and utilization of ecosystem services can bring competitive advantages, for example, by creating sustainable innovations from natural resources, and by increasing economic growth and productivity.
- In the future, ecosystem services can be a tool to define the targets of international forest policy and forest-related business, and to assess the achievement of those targets.
- The economic instruments with extremely harmful effects to critical ecosystem services and biodiversity must be identified, and removed or redirected to ensure genuinely sustainable solutions.

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Accountability and distribution of investments

- Growth of investments in recent years has been more significant in developing countries than in developed countries
  - Fragile countries with abundant natural resources have attracted the most direct foreign investments
- Investors need information on corporate responsibility and on how companies promote change towards sustainability
- Responsible investors avoid investments associated with sustainability problems

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2. Forests, climate change and energy

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- Critical and emerging questions
  - Increasing impact of climate policy on the entire forest sector
  - Role of forests as carbon storage and sink
  - Halting of deforestation and degradation of forests
  - Role of forest biomass as a source of renewable energy
  - Balancing of climate change mitigation and adaptation
  - Implementation of mitigation actions in practice

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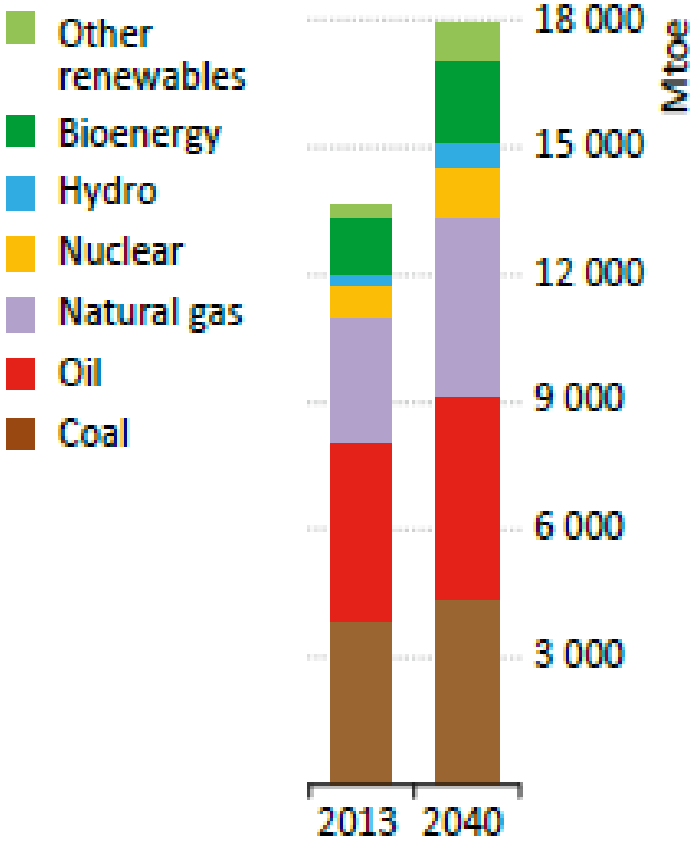
Production of bioenergy grows slower than solar and wind energy

- 10% of global primary energy is bioenergy
- Half of global wood harvest goes directly to energy generation
- Investments both in solar and wind power are 10-20 times bigger than in bioenergy
- Competitiveness of bioenergy in electricity generation is weakened; liquid transport biofuels challenged



Source of the graph: IEA Energy Outlook
12.1.2018

Climate policy impacts the entire forest sector through carbon sinks

- Sink policy, originally designed for energy sector, will have great impacts on the entire forest sector
  - Harvesting of wood is an emission in LULUCF accounting regardless of the end use of wood
  - Interaction of carbon sink and wood harvesting and substitution effects of wood-based products will be subject to fierce debate
  - Forest-related mitigation actions for short and long term impacts may be contradictory
  - Mitigation of and adaptation to climate change can be difficult to match in forest management

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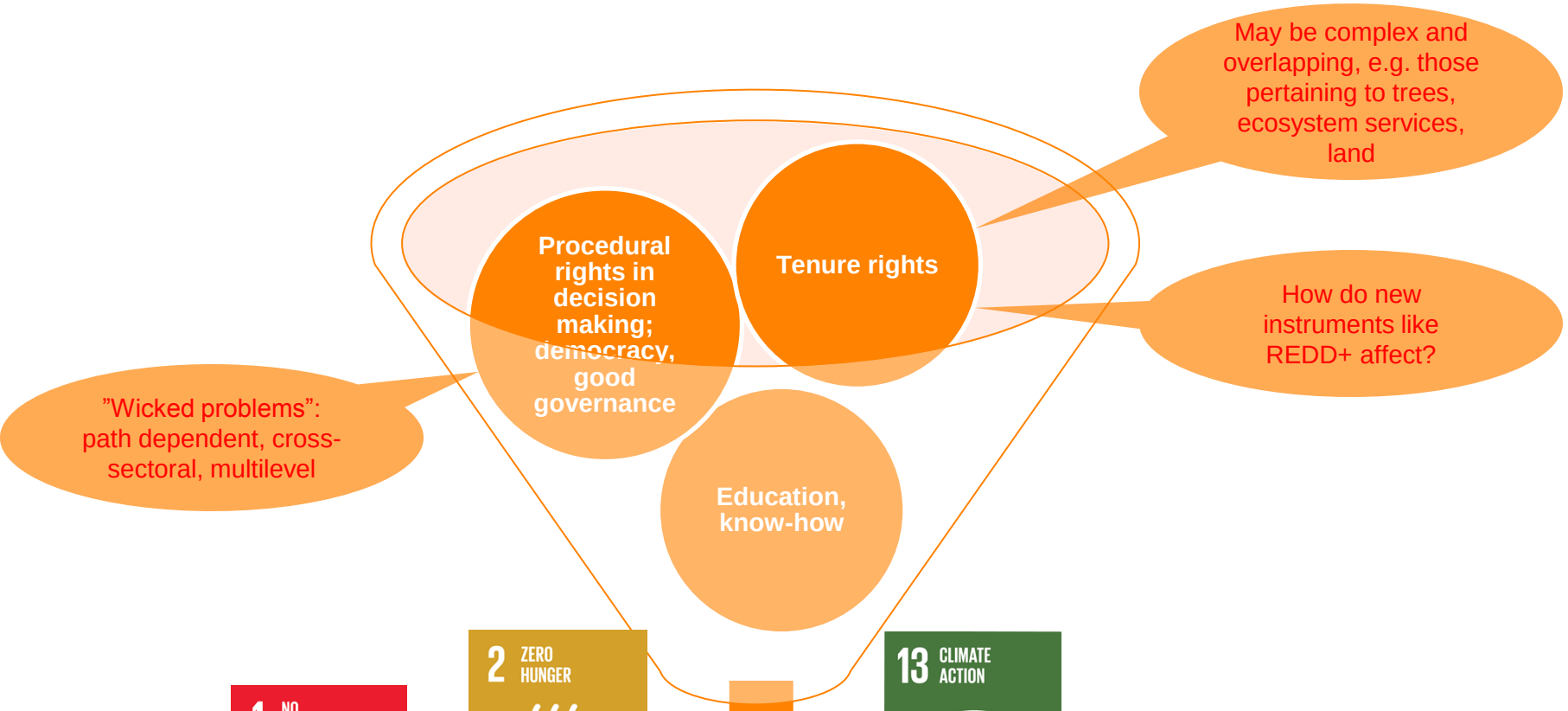
3. Forests as the foundation for just and equitable well-being

Forests as the foundation for just and equitable well-being: the basic elements



Sustainable use and management of forests

Global Forest Goal 2
Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people.

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Women and forests

- SDG 5: Gender equality; SDG 10: Reduced inequalities
- Women play an important part in the management and use of forests globally – may become even more pronounced in the future due to human mobility and migration
- However, women are often in a weaker position as regards forest tenure rights, procedural rights to forest decision making and related practices, as well as forest-based businesses
- Improving women's position vis-à-vis forests may positively contribute to various Sustainable Development Goals: eradication of poverty (SDG 1), food security and nutrition (SDG 2), energy (SDG 7) and water (SDG 6) availability, protection of terrestrial ecosystems (SDG 15), climate action (SDG 13) etc.


Photo: © Salla Rantala

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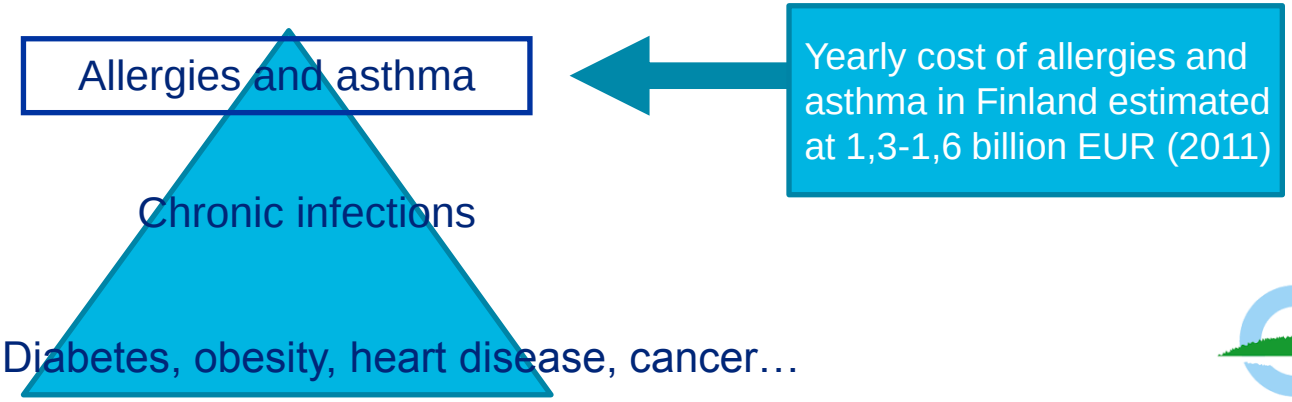
Forests, health and well-being

- Multiple connections: forests provide medicines, food and nutrition, clean air and water, physical and mental well-being, etc.
- Emerging issues:

1. Direct and indirect contributions of forests to food and nutrition
2. Role of forests in preventive health care

   * Biodiversity hypothesis: reduced contact of people with diverse natural environments, such as forests, may adversely affect the human immunomodulatory capacity



- **Critical issue: forest accessibility vs. land use competition, urbanization**

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4. Forests as safeguards for biodiversity and ecosystem services

Forests as safeguards for biodiversity and ecosystem services

- Critical and emerging issues:
  - Maintenance of continuous forest cover and avoidance of forest degradation and fragmentation
  - Cost-efficient protection and management of forests, sustainable management of use of industrial forests and restoration of forests and wetlands
  - Water as a critical ecosystem service in the future
- Sustainable Development Goals and Aichi biodiversity targets:
  - Protection: diverse ecosystems, species and genes
  - Sustainable use: natural resources, trees, food, other products

➢ **Forest quantity and quality**

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Deforestation impacts beyond the loss of hectares of forest

- Deforestation:
  - Land use change, e.g. for agricultural land
  - Conversion of natural forests for planted forests
  - Low-diversity forests
    - Increased susceptibility to extreme weather events and related damage
  - ➢ **Deforestation proceeds gradually, as a front, as fragmentation**
  - Along with the trees, ecosystem services are lost, e.g.
    - Carbon sequestration and recycling of nutrients
    - Culturally and economically valuable forest uses

Climate change

25% of greenhouse gas emissions

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Water as a forest ecosystem service

A functional forest ecosystem:

- Stores water
- Prevents floods
- Mitigates erosion
- Filters particles, minerals, nutrients

➢ **Regulates water quantity and quality**

➢ Forests as providers of water ecosystem services is one of the most critical global issues in the future

➢ Water provisioning is a classic example of Payments for Ecosystem Services

UN Photo/Martine Perret

Mechanisms to safeguard the ecological sustainability of forests

17% target

- Protected areas safeguard endangered species, habitats and ecosystem functioning
  - Require public funding; restrict economic uses. Participation has improved legitimacy

REDD+
METSO

- Voluntary instruments sustain ecosystem services cost-efficiently and create co-benefits
  - Often with public funding; planning is more limited, cost-efficient targeting remains a challenge

Carbon trade?

- Ecological compensation mitigates net loss of nature values by requiring restoration
  - “Polluter” pays; assessment of net loss of nature values difficult
- Choice between sustainable use, protection and restoration

➢ **Sustainable use more cost-efficient than restoration**

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Conclusions

Most critical issues and relevant Finnish solutions

Halting deforestation and increasing forest carbon sinks

- Significant cuts in greenhouse gas emissions and mitigation of climate change can be achieved through halting deforestation and degradation of forests
- The importance of carbon sinks of forests and soil will grow from the present state: The carbon sinks of forests and soil are a cost-effective and for the time-being, the only available method for generating carbon sinks implementable on a large scale
- Finland is a forerunner in research on green house gas inventories and carbon sinks of forests and forest products (forest inventory, GHG accounting, sustainable forestry) . Implementation of the Paris Agreement will increase the demand of this know-how.

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Most critical issues and relevant Finnish solutions 2

Tenure rights, the status and rights of women, indigenous peoples and local communities

- Clearly defined tenure rights are a prerequisite for sustainable use of forests
- Women have a significant role in the management and use of forests. Improving the status of women can be a significant factor contributing towards several Sustainable Development Goals
- 'Good governance' is essential for sustainable forest-based development, but has proved challenging to promote in international cooperation, requiring long-term commitment and action
- Finnish experience of equitable participation in forest policy making, organizing and influence by diverse actors could benefit supporting good governance, while adapting the collaboration goals and action to the local circumstances

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Most critical issues and relevant Finnish solutions 3

Availability of sufficient education and know-how

- Ensuring basic education for all and occupational competencies are prerequisites for forest-based sustainable development
- Rapid technological and regulatory development in forestry (e.g. related to climate policy) creates further pressure for the development of competencies
- Technical know-how related to e.g. agroforestry, forestry and protection of forests, harvesting wood and other forest products, monitoring of forests as well as new digital opportunities is required
- In addition to basic education, Finland has a lot to contribute to the availability of forest information, utilisation of technology, occupational education, as well as developing business competencies

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Kiitos!

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