Collapse or resilience of civilization: A role for forests and trees?

Forests, trees and agroforestry for diverse sustainable landscapes

22-24 June 2021

Robert Nasi, CIFOR
The average lifespan of a civilization is 336 years

Luke Kemp, BBC, Feb 2019
Societies collapse because:

- Climate changes
- Environment is degraded
- (Natural) resources are depleted
- Inequality increases
- Society becomes too complex
- Hit by external shocks
- Bad luck ("s...t happens")
Climate change

Inequality

History suggests when these indicators rise, the risk of collapse is increasing

Environmental impact

Complexity

All graphs from “Our World in Data, accessed 9/06/2019
Four of nine planetary boundaries have now been crossed as a result of human activity

The four are: climate change, loss of biosphere integrity, land-system change, altered biogeochemical cycles (phosphorus and nitrogen).

Is collapse in the near to medium term certain or is there a brighter future?

Why forests matter?

Forests, Trees and Agroforestry systems: why they matter?
Forest Landscape Restoration

- Around 12 million hectares of land are lost each year to degradation.
- Harming the wellbeing of at least 3.2 billion people,
- Costs more than 10% of annual global GDP in lost ecosystem services
- $6.3 trillion lost per year to land degradation

- Net benefit $0.7 - $9 trillion by achieving Bonn Challenge
- $7–30 in economic benefits for every dollar invested
Forest Landscape Restoration enhance resilience of socio-ecological systems.
Bio-economy

Wood in construction…
• 2.2 t of CO₂ are avoided by using 1 t of wood instead of Portland cement
• Better **thermal efficiency**
• **Material use** is reduced by 50% compared to concrete

Wood-based textiles…
- Global production of textile fibres:
  - 93 Mt (2016)
  - 250Mt (2050)
- Carbon footprint from “new” wood-based textile fibres can be up to 9 times lower than synthetic ones
Jurisdictional Approaches to Low Emissions Development

Key Global Findings

39 Jurisdictions

19 of 39 Reduction relative to FREL

6.8 GtCO$_2$e Avoided emissions

38 of 39 Formal commitments & concrete actions

69.2 GtC Total carbon stock
Ecosystem Based Adaptation

Ecosystems

Provisioning services

1. Product diversity

Regulating services

2. Trees in agriculture
3. Watershed regulation
4. Coastal protection
5. Urban microclimate
6. Regional climate

Local adaptation

Meso-level adaptation

Regional adaptation

Scales

Local
Large
Regional
Little

CIFOR
World Agroforestry
Resilient Landscapes
Forests, Trees and Agroforestry systems: Why they matter?
Food security

Forests occupy 1/3 of the earth’s land area.

An estimated 1/3 of the global population depends on forest goods and services such as food, woodfuel, medicines, employment and income.

Current estimated global net forest loss is 3.3 million hectares per year; much of which – about 80 percent – is to make room for agriculture.

But this can change...

Forests and the 4 dimensions of food security

Food availability  Access to food  Food utilization  Stability over time

...more than 20 developing countries have improved food security while maintaining or increasing forest cover.
Forests and trees sustain agriculture

- Pollination
- Water regulation
- Pest control
- Climate regulation
Relationship between agriculture and forests must change:

• Preserve permanent forest land and develop appropriate forest management plans.

• Promote an integrated landscape approach moving beyond the debate on land sparing vs. land sharing.

• Ensure full and effective participation of relevant stakeholders in forest policies and forest management.

• Adopt a rights-based approach and favour community vs agribusiness approaches
The relationship between biodiversity and nutrition, suggests that we need to pay close attention to the potential of integrated approaches. We must also seek to understand what the implications are for policy and what the messages to policy makers should be.

Primarily, it suggests there is a need for more systems and multi-sectorial approaches to address the contemporary concurrent challenges of sustainable food systems that include forestry, conservation, agriculture, food security and nutrition”. Powell et al., 2015
Well-being

6 WAYS TREES BOOST OUR WELL-BEING

shinrin-yoku
Japanese noun
A visit to the forest for relaxation.
Literally: forest bathing.
Socio-environmental resilience requires a shift from fossil-based to a bio-based resource economy

We need more forests and trees and greater use of forest and tree resources!

Under which conditions?

Following which actions?

The next challenge?

Bio-economy to replace fossil economy
Forested land

215 figures in millions of hectare

Natural regenerated forests 59.8%

Primary forests 32.9%

Plantations 7.3%

Total: 3,999

Wood production

2016 figures (in billion cubic meters)

+ 950 million people
Wood demand to rise by 450 million cubic meter by 2030

Where will it come from?

We have a moral obligation to remain optimistic and not resign to fate and Judgement Day.

THANK YOU.

The Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF) envision a more equitable world where forestry and landscapes enhance the environment and well-being for all. CIFOR–ICRAF are CGIAR Research Centers.