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

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The average lifespan of a civilization is 336 years

THE Sun
NEWS WEBSITE OF THE YEAR
THE SUN, A NEWS UK COMPANY

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HU-MOAN-ITY Human civilisation 'will collapse by 2050' and intelligent life could be 'annihilated', shock paper warns

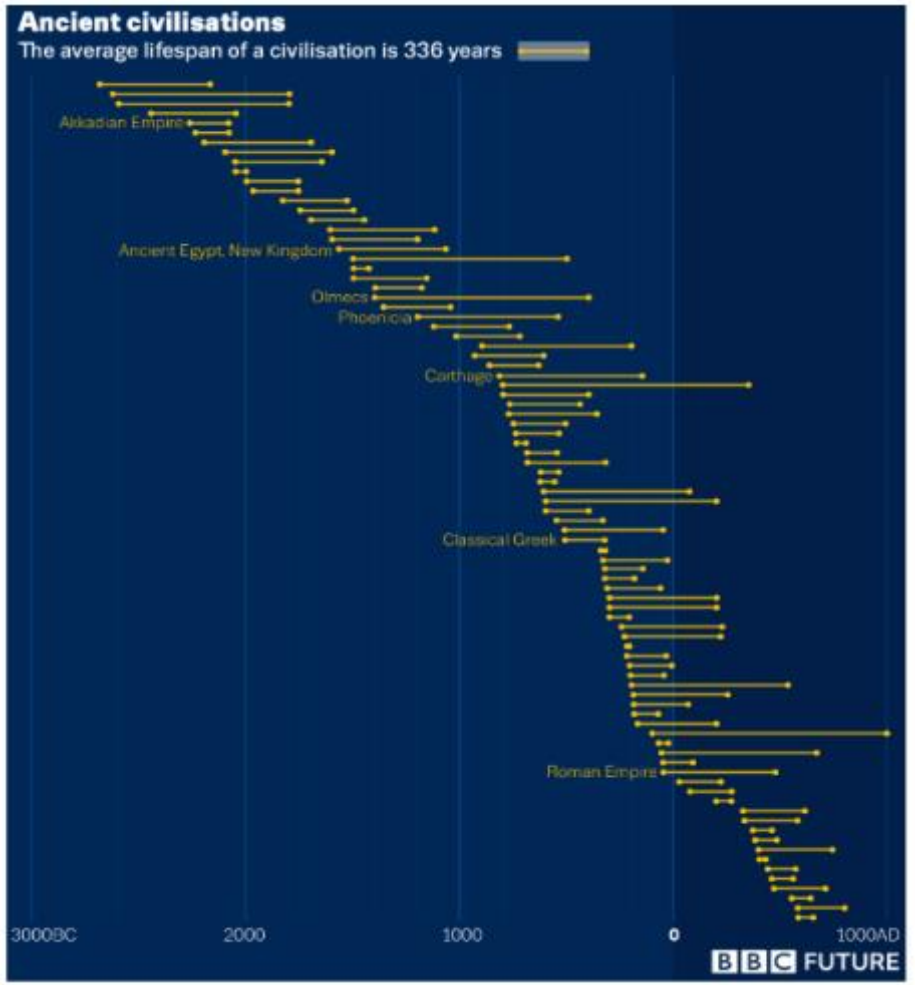
By Sean Keach, Digital Technology and Science Editor
4 Jun 2019, 11:56 | Updated: 4 Jun 2019, 13:18

13 COMMENTS

HUMAN civilisation could be well on its way to total collapse by 2050, according to a shocking new research paper.

Researchers have modelled the potential for climate disaster and warn that such a catastrophe risks "annihilating intelligent life" within our lifetimes.

Researchers warn that rising sea levels could devastate humanity Credit: Alamy



Luke Kemp, BBC, Feb 2019

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Societies collapse because:

- Climate changes
- Environment is degraded
- (Natural) resources are depleted
- Inequality increases
- Society becomes too complex
- Hit be external shocks
- Bad luck (“s…t happens”)

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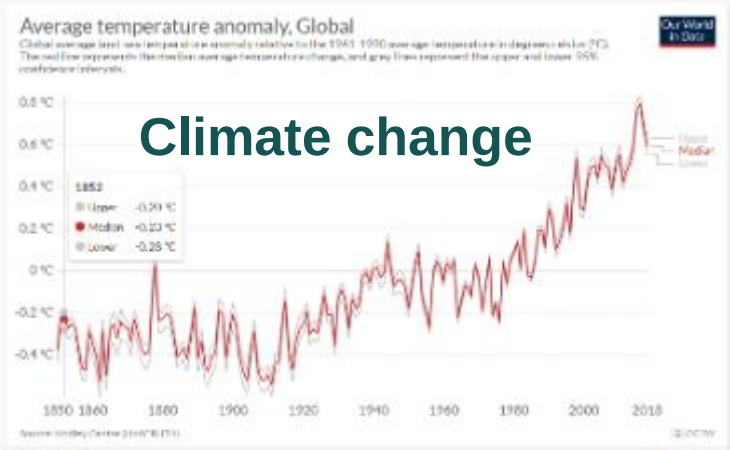
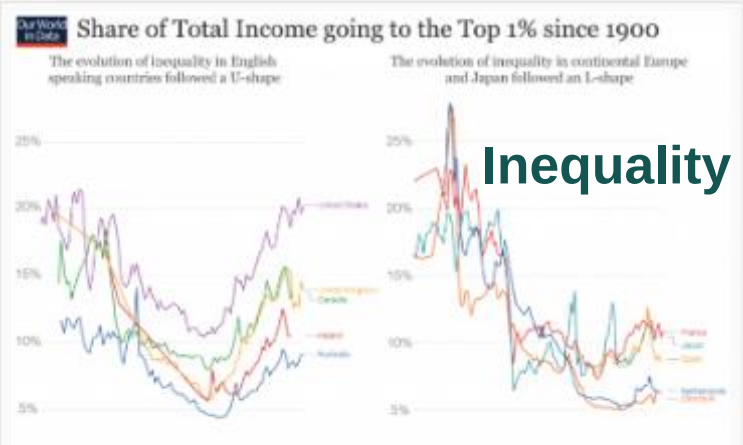
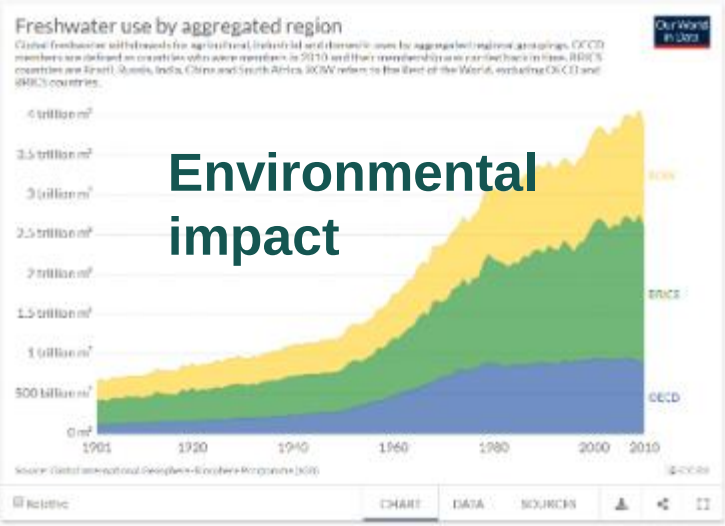
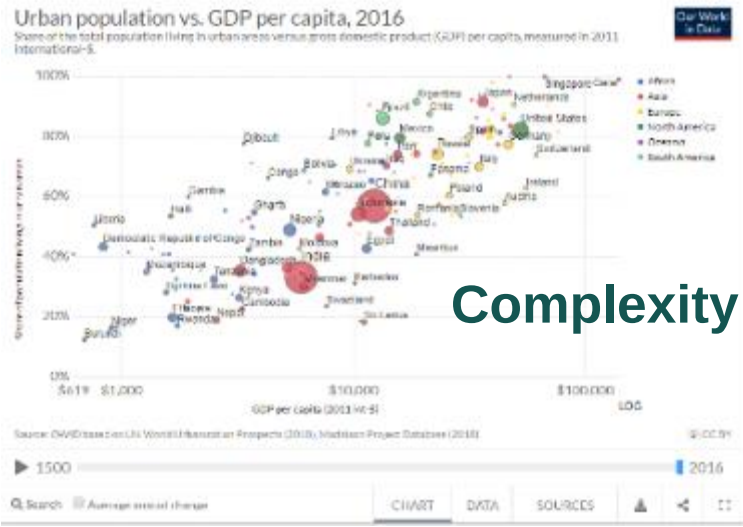




History suggests when these indicators rise, the risk of collapse is increasing





All graphs from “Our World in Data, accessed 9/06/2019

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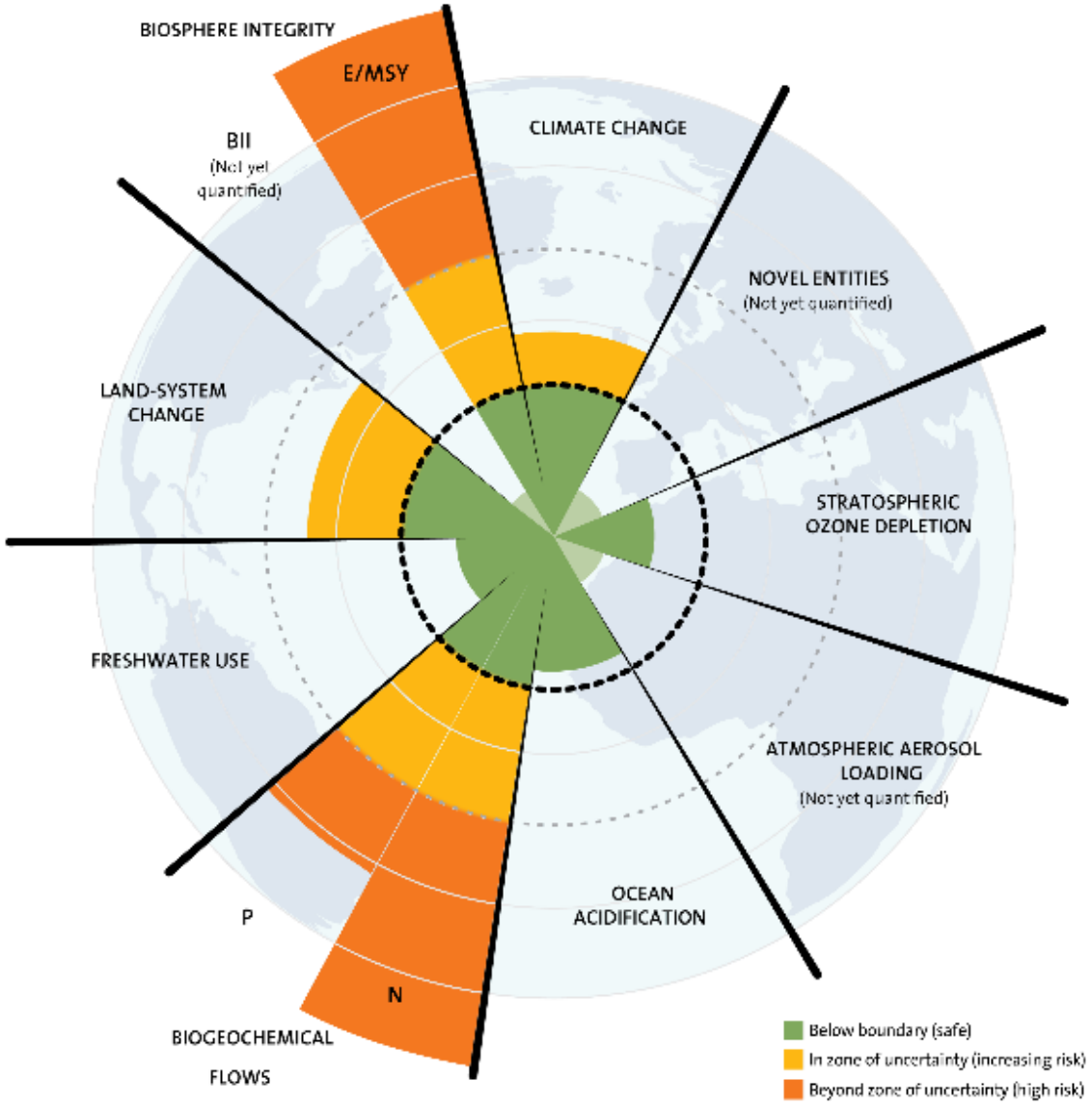

Four of nine planetary boundaries have now been crossed as a result of human activity

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

Steffen et al. 2015. Planetary Boundaries: Guiding human development on a changing planet. Science Vol. 347 no. 6223

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

Why forests matter?

https://medforest.net/2018/10/24/european-commission-promotes-new-bioeconomy-action-plan/

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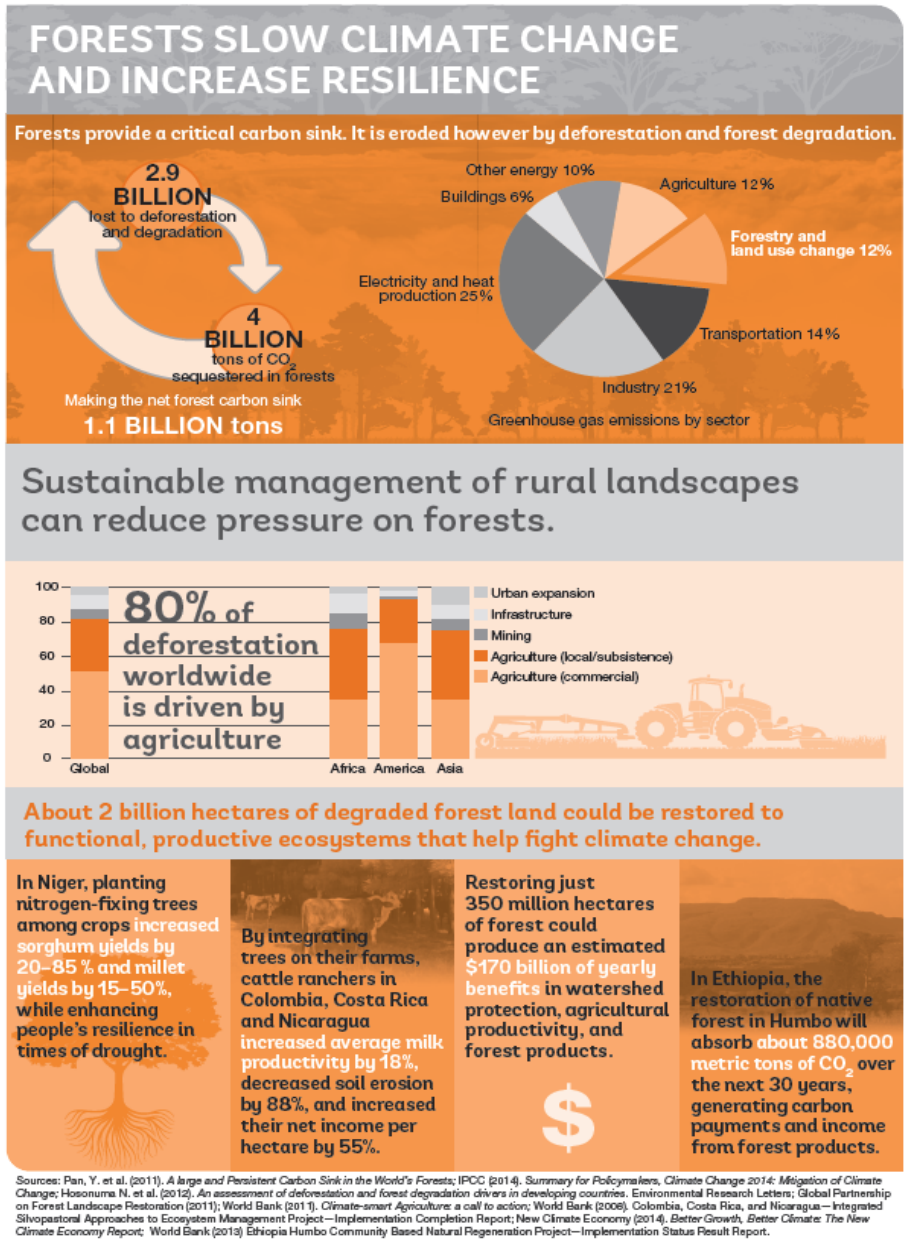
Forests, Trees and Agroforestry systems: why they matter?



Sources: Pan, Y. et al. (2011). *A large and Persistent Carbon Sink in the World's Forests*; IPCC (2014). *Summary for Policymakers, Climate Change 2014: Mitigation of Climate Change*; Hosonuma N. et al. (2012). *An assessment of deforestation and forest degradation drivers in developing countries*. Environmental Research Letters; Global Partnership on Forest Landscape Restoration (2011); World Bank (2011). *Climate-smart Agriculture: a call to action*; World Bank (2006). Colombia, Costa Rica, and Nicaragua—Integrated Silvopastoral Approaches to Ecosystem Management Project—Implementation Completion Report; New Climate Economy (2014). *Better Growth, Better Climate: The New Climate Economy Report*; World Bank (2013) Ethiopia Humbo Community Based Natural Regeneration Project—Implementation Status Result Report.

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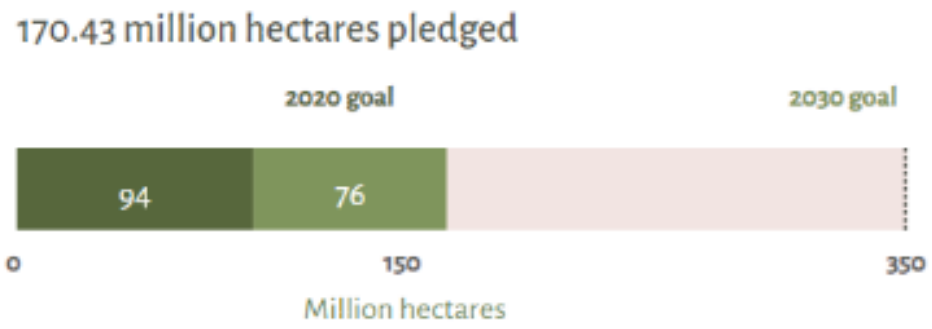
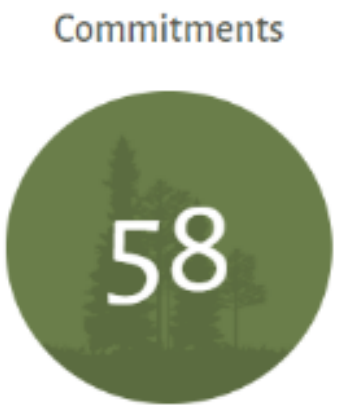
Forest Landscape Restoration

- 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





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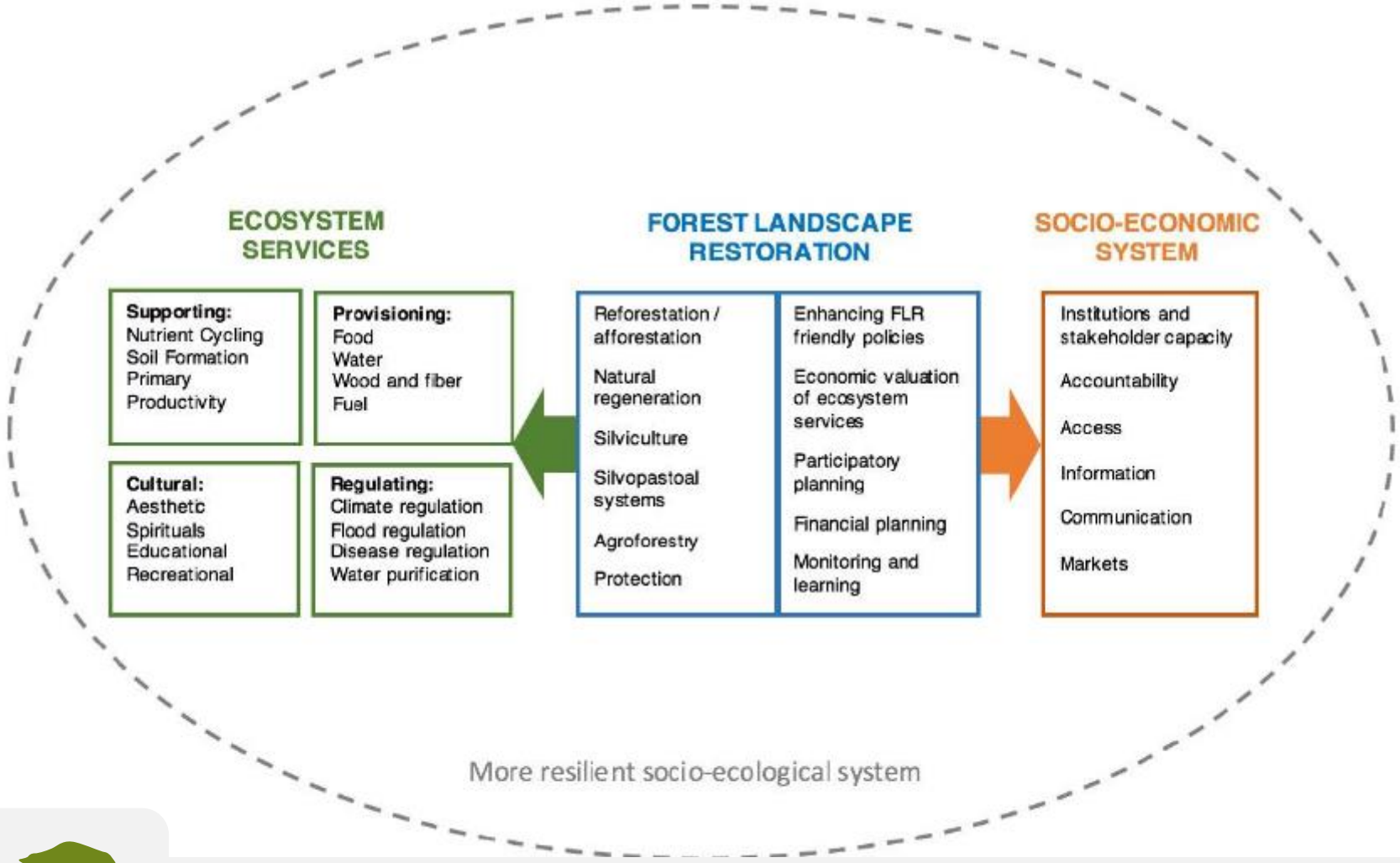
Forest Landscape Restoration enhance resilience of socio-ecological systems



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Bio-economy

Wood in construction…

- **2.2 t of CO_2 are avoided by using 1 t of wood** instead of Portland cement
- Better **thermal efficiency**
- **Material use** is reduced by 50% compared to concrete

Product categories	Average substitution effect kg C / kg C wood product	Average substitution effect kg CO2 eq. / kg wood product
Structural construction	1.3	2.4
Non-structural construction	1.6	2.9
Textiles	2.8	5.1
Other product categories	1 – 1.5	1.8 – 2.7
Average across all product categories	1.2	**2.2***

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**

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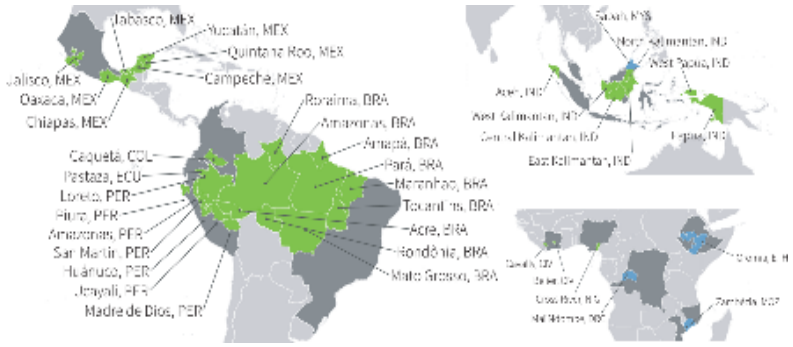
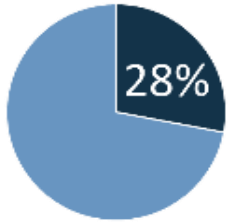
Jurisdictional Approaches to Low Emissions Development



Key Global Findings

Earth Innovation Institute · CIFOR · GCF task force

39 Jurisdictions



Tropical forest

19 of 39 Reduction relative to FREL

38 of 39 Formal commitments & concrete actions

6.8 $GtCO_2e$ Avoided emissions

69.2 GtC Total carbon stock

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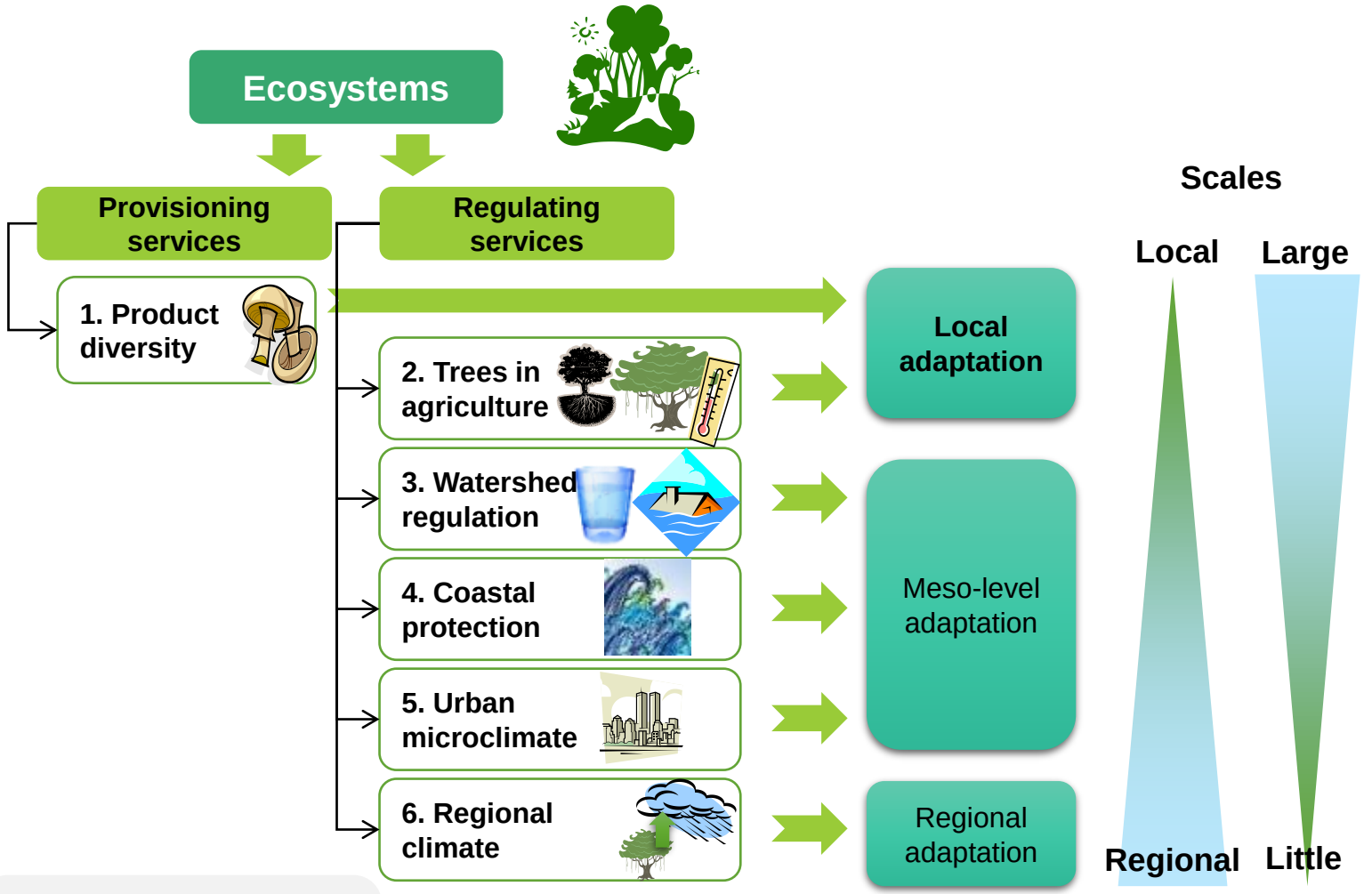
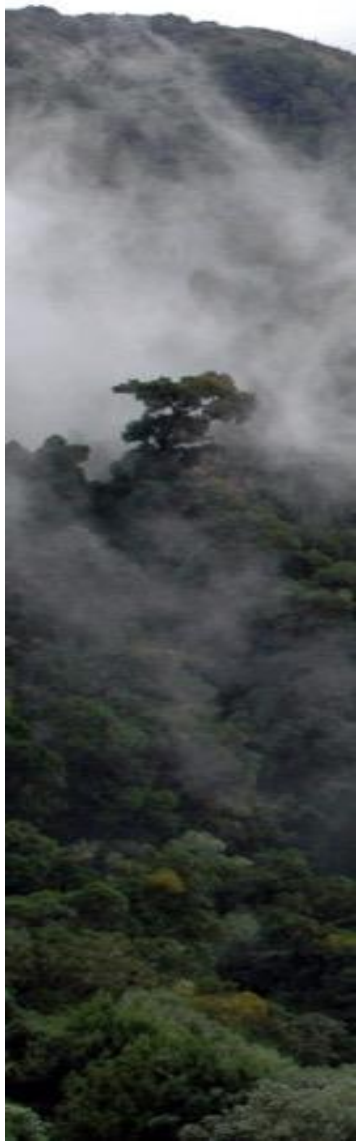
Ecosystem Based Adaptation





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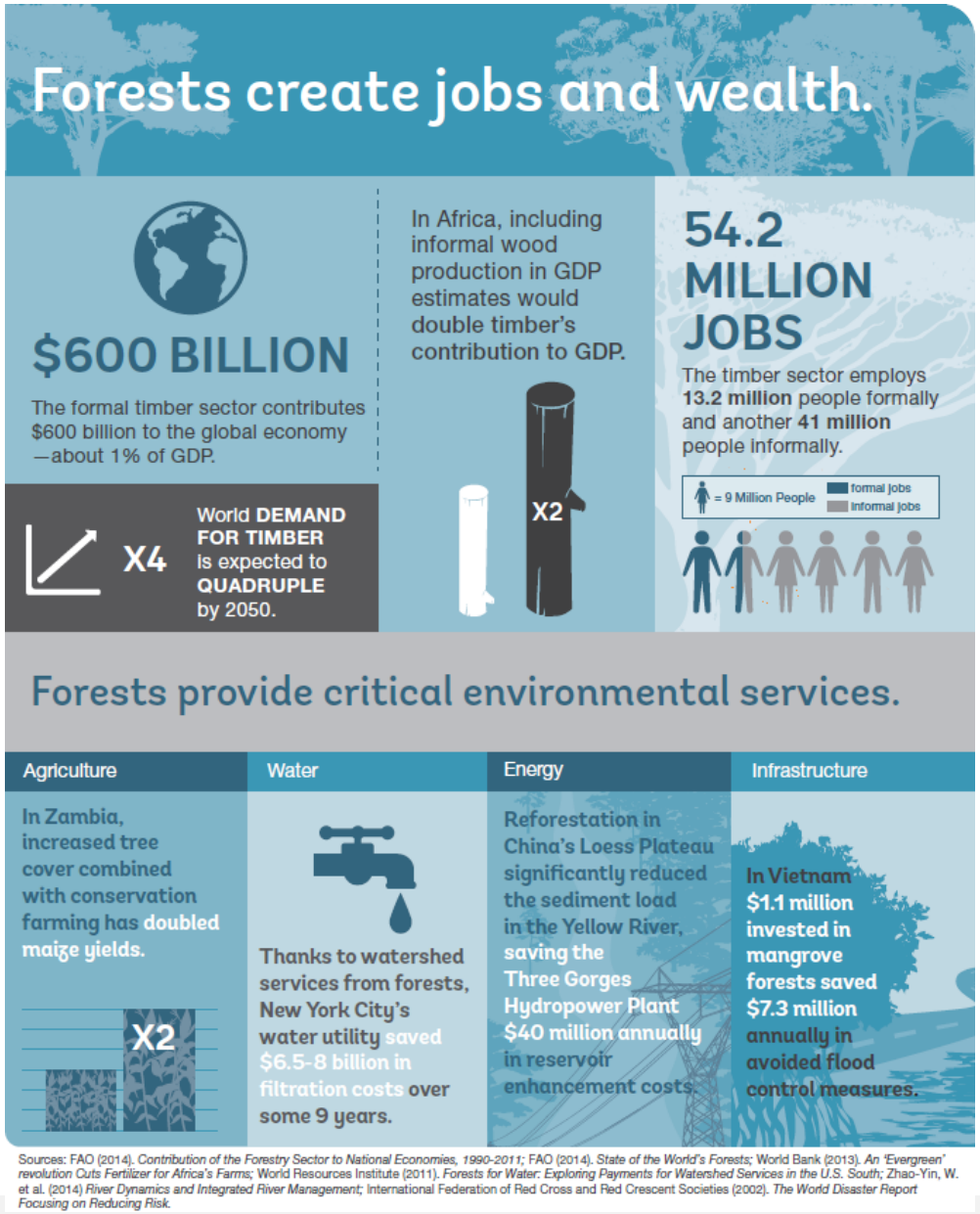

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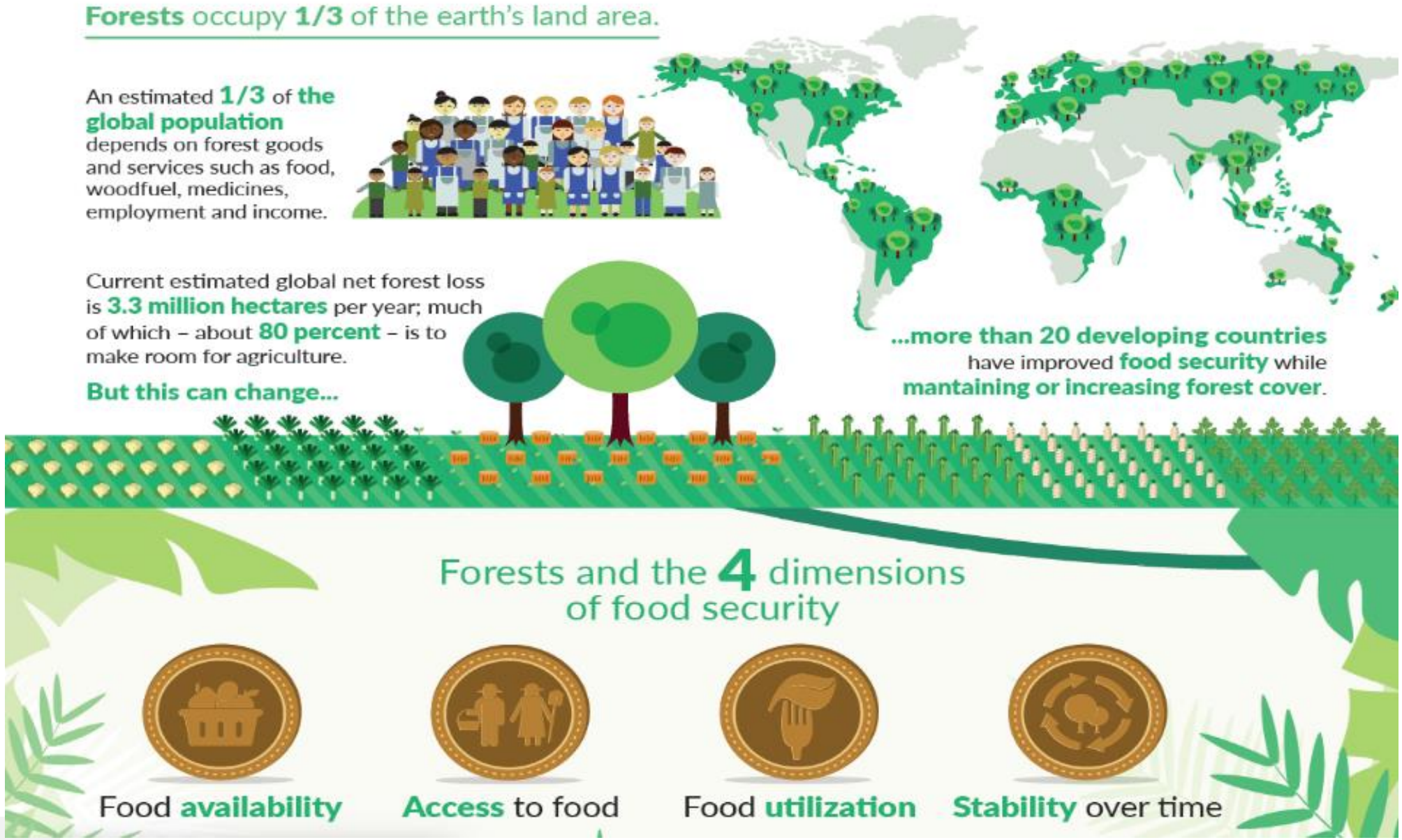
Food security



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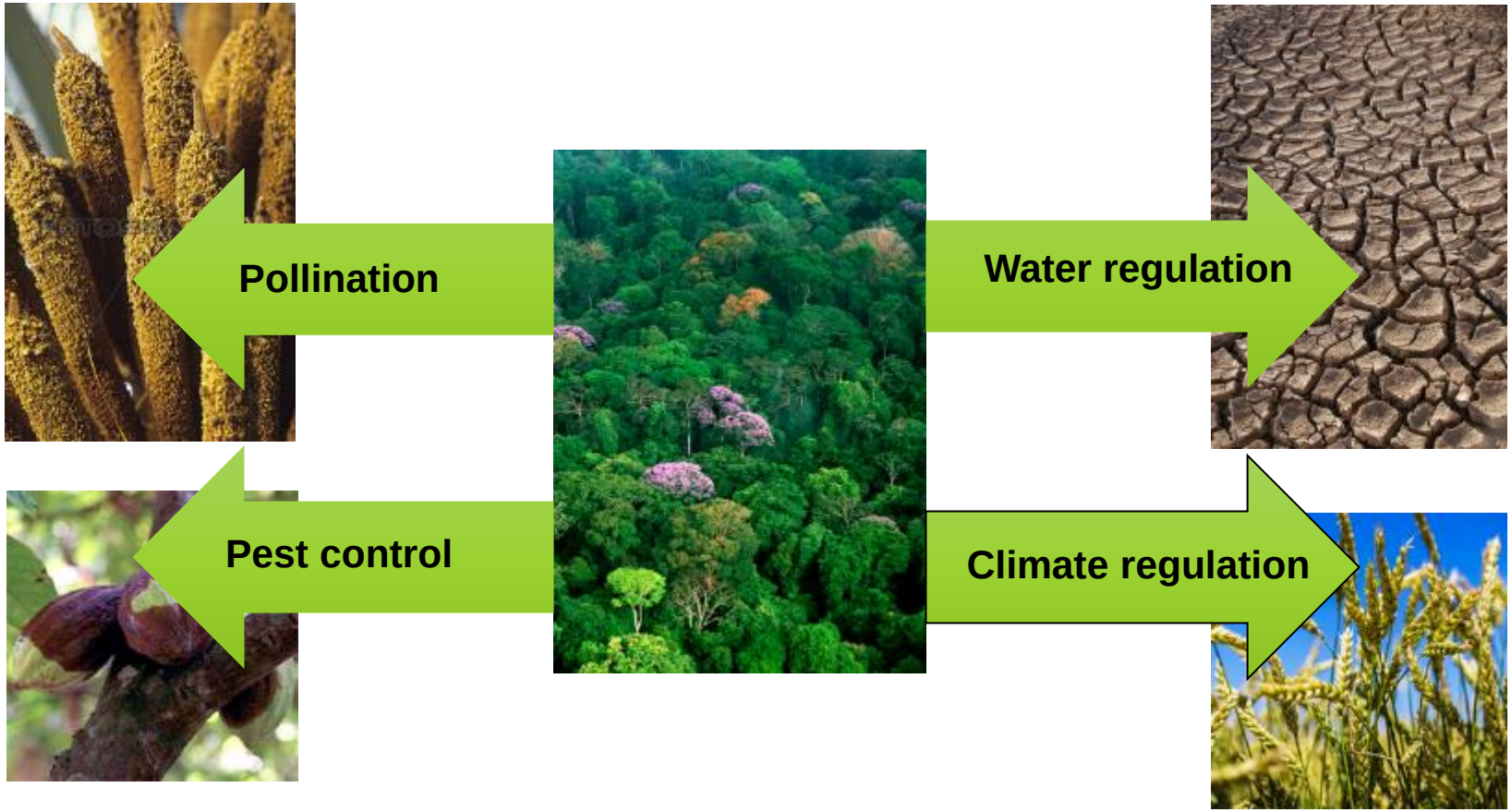
Forests and trees sustain agriculture



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

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Food Sec. (2015) 7:535–554
DOI 10.1007/s12571-015-0466-5

ORIGINAL PAPER

Improving diets with wild and cultivated biodiversity from across the landscape

Bronwen Powell[1] · Shakuntala Haraksingh Thilsted[2] · Amy Ickowitz[1] · Celine Termote[3] · Terry Sunderland[1] · Anna Herforth[4]

"*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

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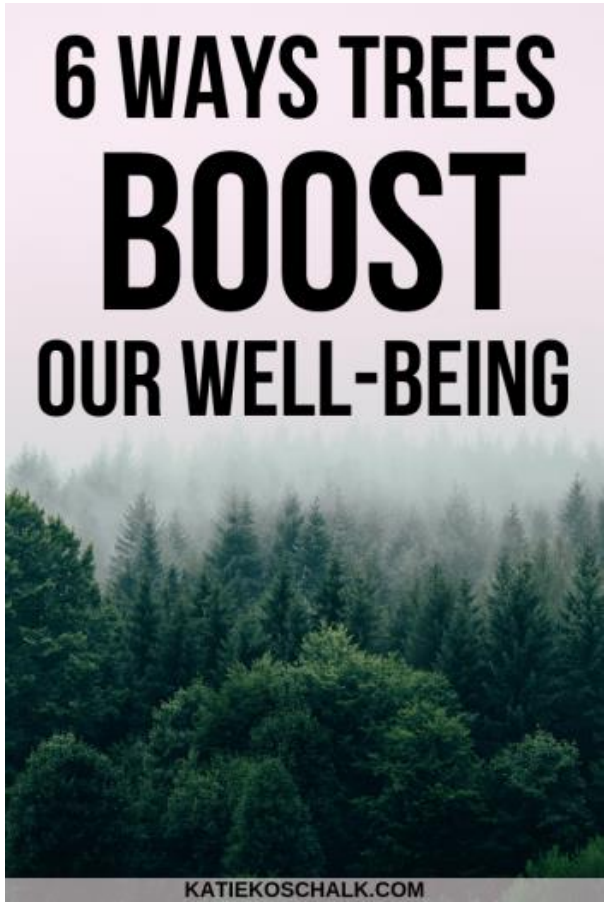
Well-being


6 WAYS TREES
BOOST
OUR WELL-BEING
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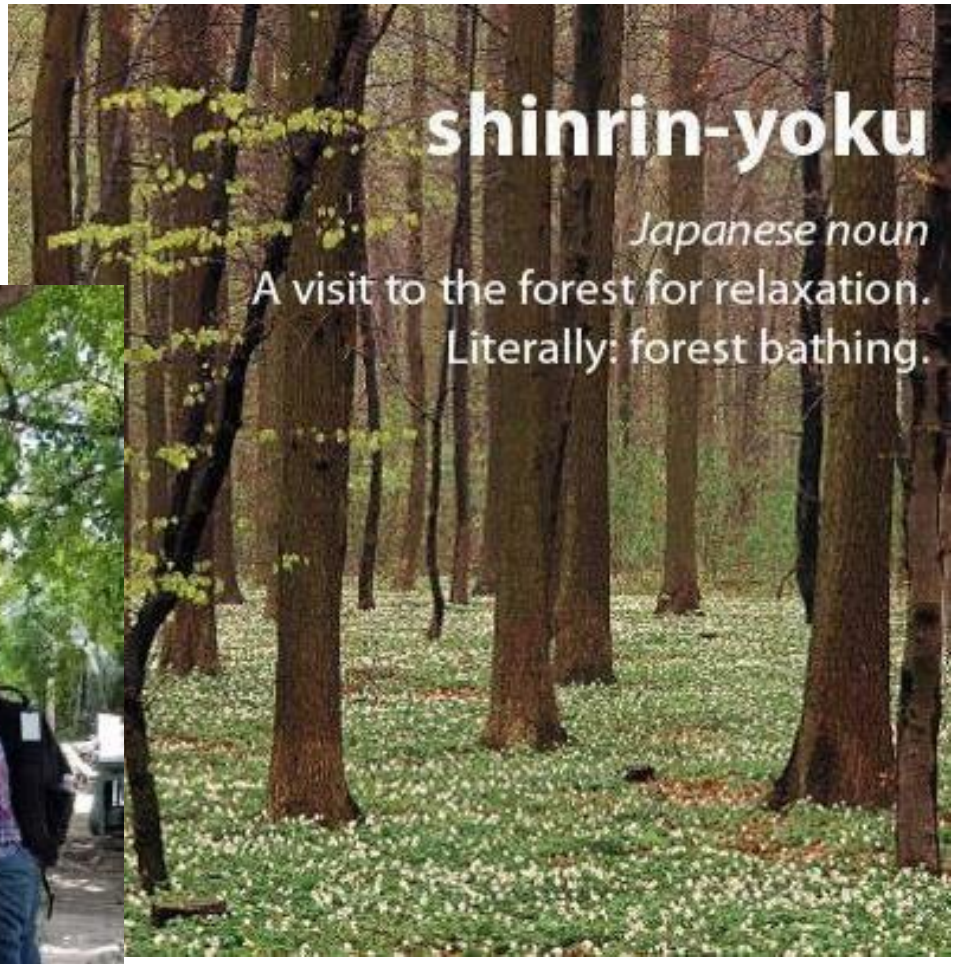
shinrin-yoku
Japanese noun
A visit to the forest for relaxation.
Literally: forest bathing.

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?

https://medforest.net/2018/10/24/european-commission-promotes-new-bioeconomy-action-plan/

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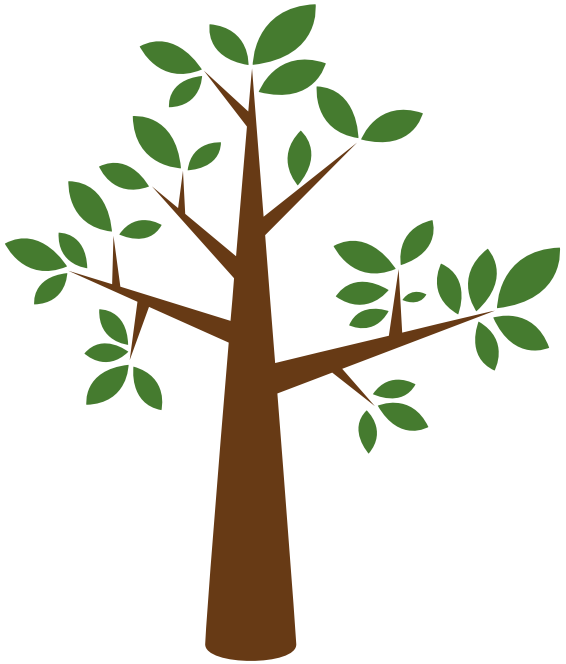
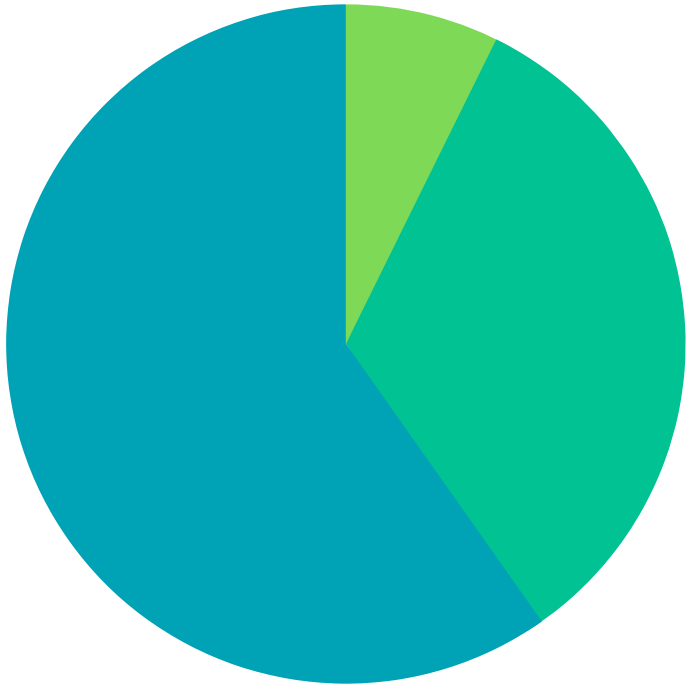
Bio-economy to replace fossil economy

Forested land

215 figures in millliones of hectare



Natural regenerated forests
59.8%



Plantations
7.3%

Primary forests
32.9%

Total: **3,999**

FAO 2015, http://www.fao.org/forest-resources-assessment/past-assessments/fra-2015/en/

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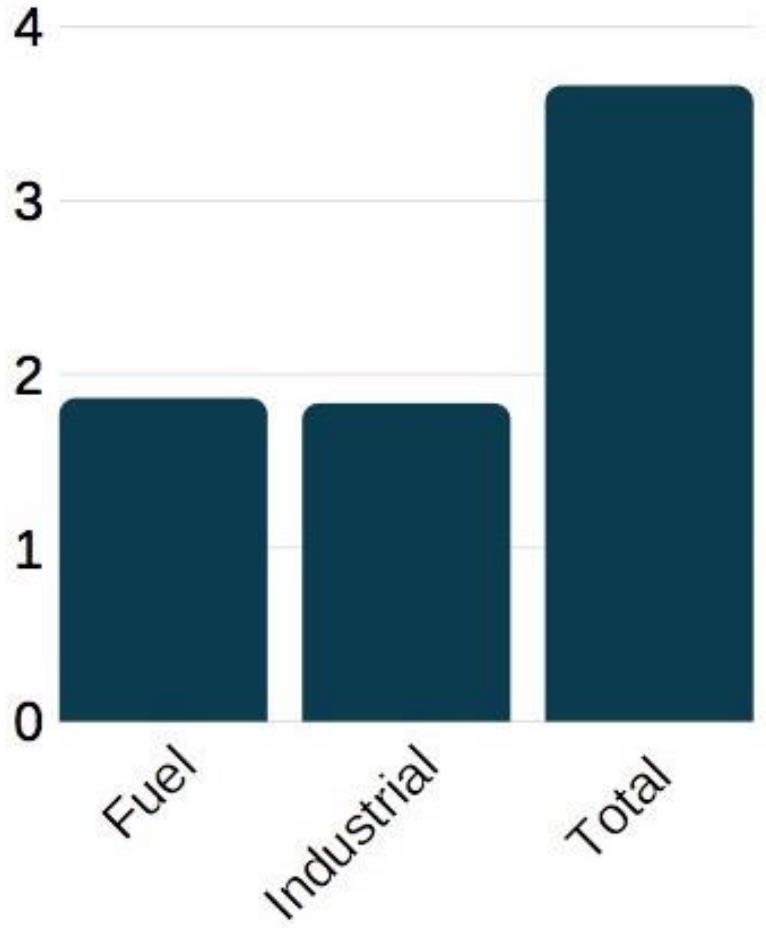
Wood production

2016 figures (in billion cubic meters)



FAO 2015, http://www.fao.org/forest-resources-assessment/past-assessments/fra-2015/en/

+ 950

million people

2018 **2030**

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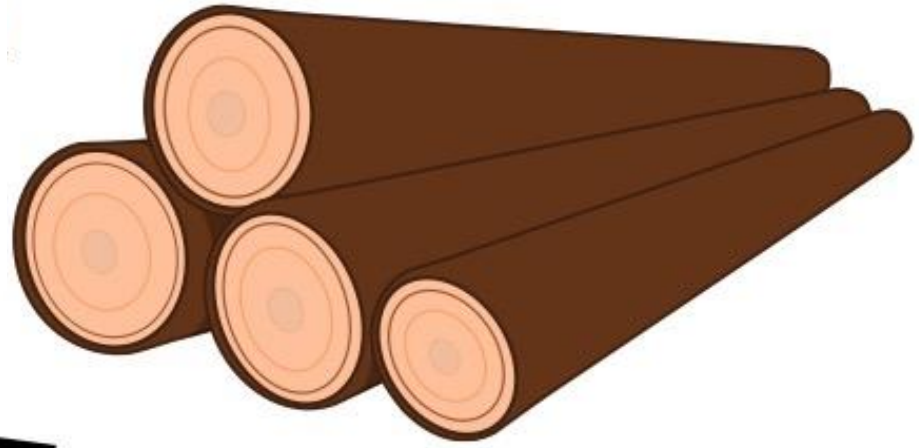
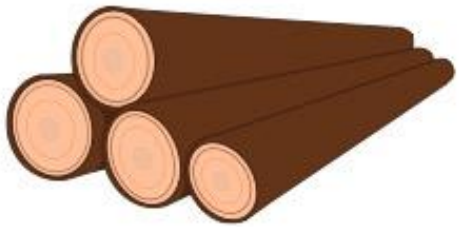
Wood demand to rise by

450 million

cubic meter by 2030





Where will it come from?

FAO 2015, http://www.fao.org/forest-resources-assessment/past-assessments/fra-2015/en/

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

THANK YOU

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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.

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