Should we sacrifice nature to save climate?

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A luxury we can no longer afford?

Should we sacrifice nature, biodiversity, to save the climate?

No.

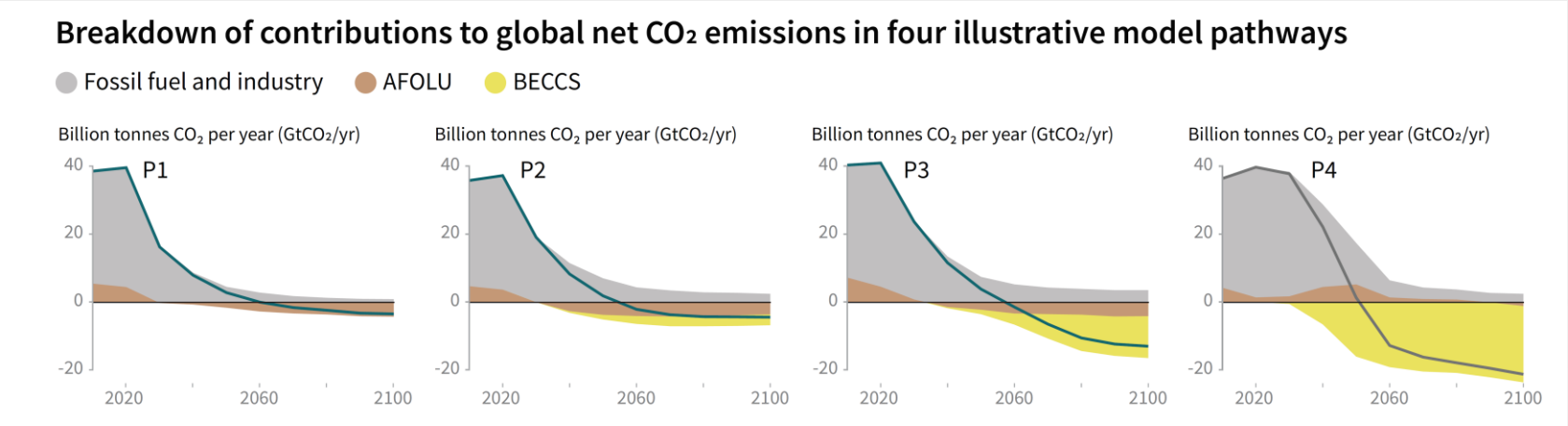
It will not work.

Also, it will kill us.


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

Simple answer: We can't!

**All* of the 1.5°C report scenarios involve nature..*

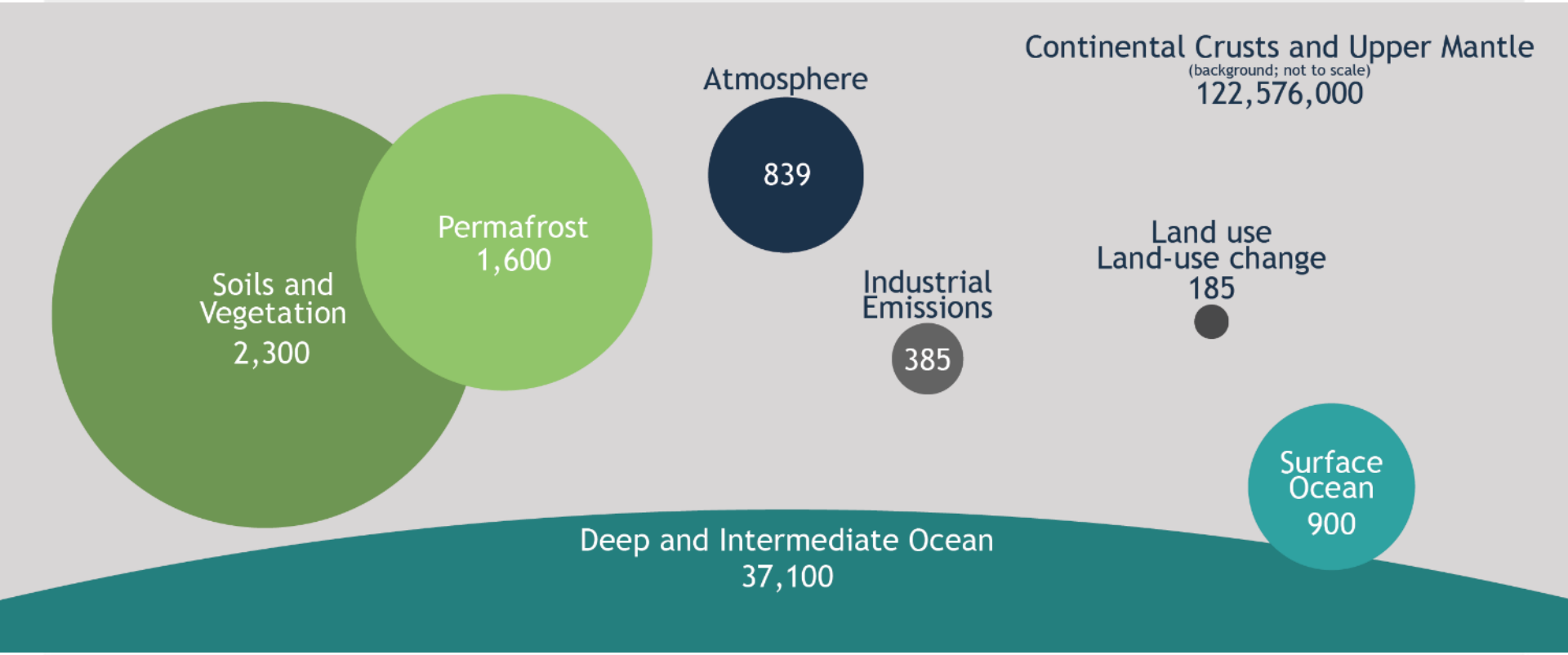


- 4 million km^2 *reduction* to a 2.5 million km^2 *increase* of agricultural land for food and feed crops
- 0.5–11 million km^2 *reduction* of pasture land
- 0–6 million km^2 *increase* of agricultural land for energy crops
- 2 million km^2 *reduction* to 9.5 million km^2 *increase* in forests

…"profound challenges for sustainable management of the various demands on land for human settlements, food, livestock feed, fibre, bioenergy, carbon storage, biodiversity and other ES"…

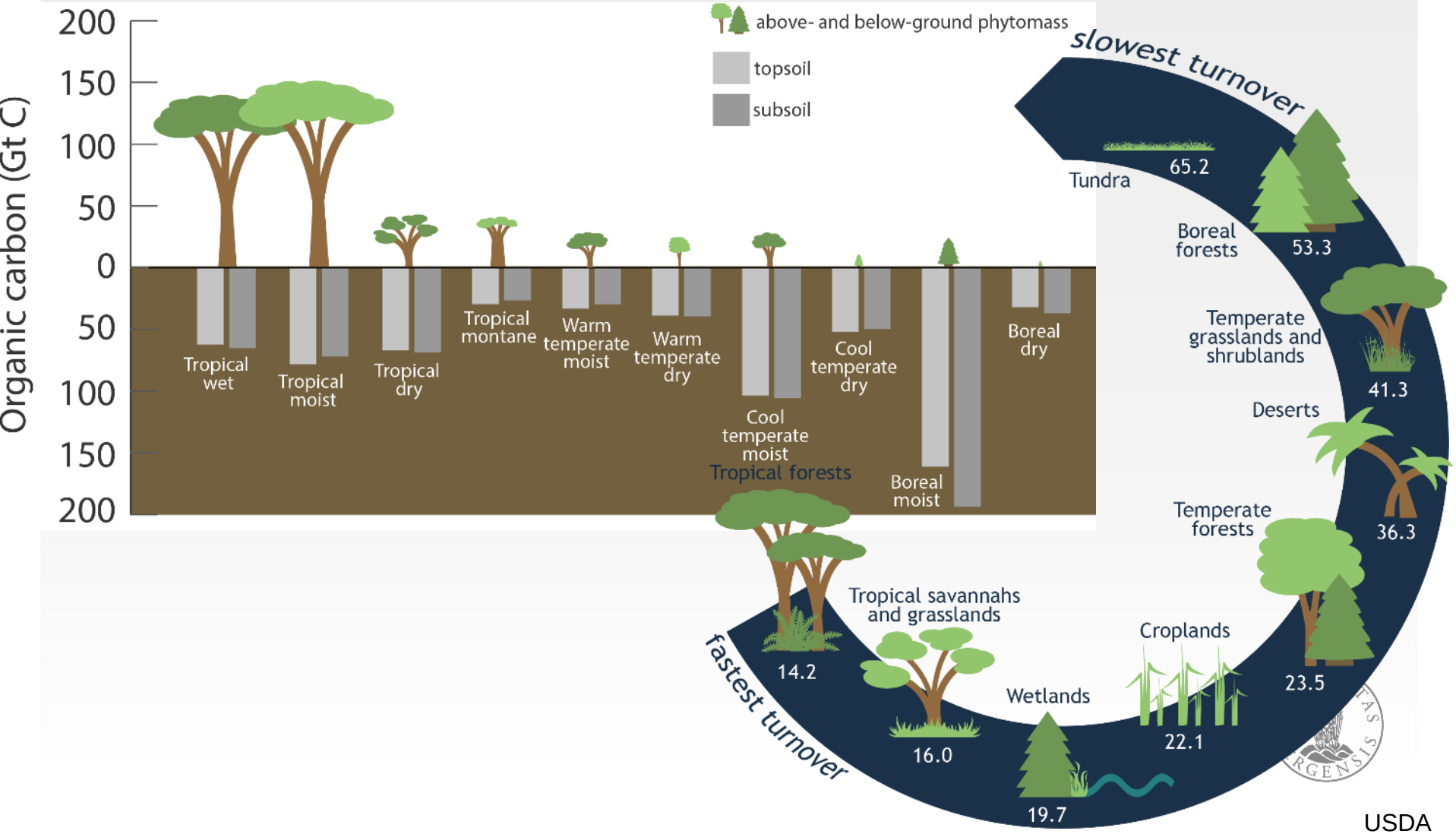
IPCC

Let's talk about Carbon….



USDA

The distribution and dynamics of C stocks vary in space and time

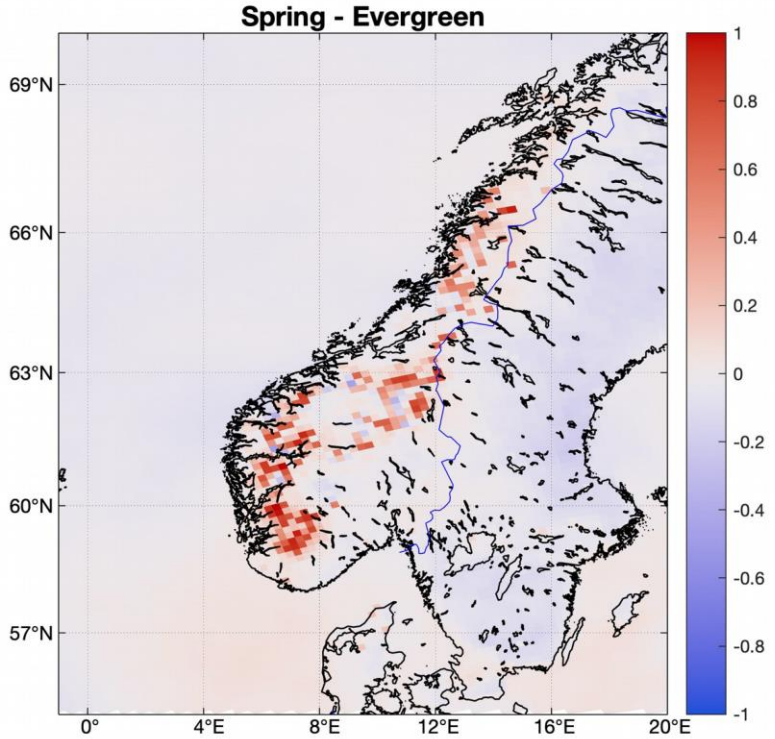


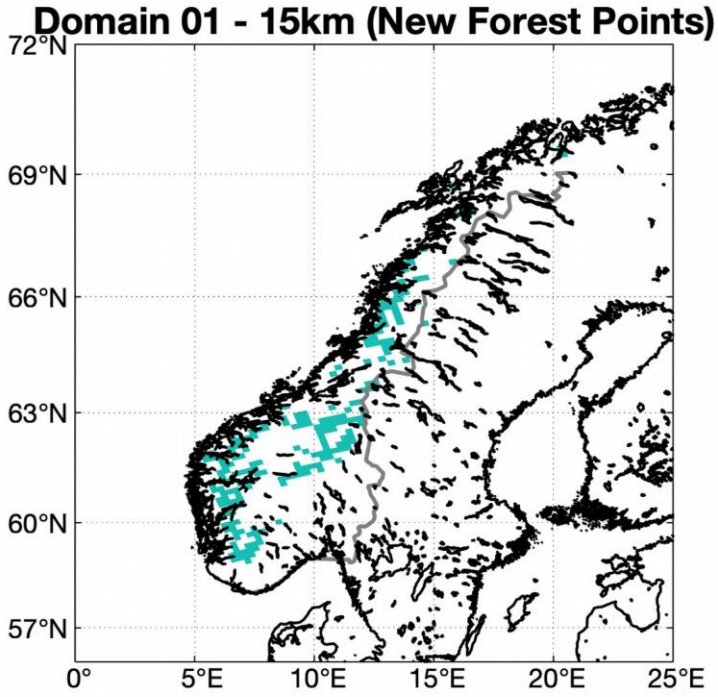
USDA

In a variable, world, mitigation measures must also vary…

Regional Climate Modelling

Model simulations of afforestation scenario: spring air T increase





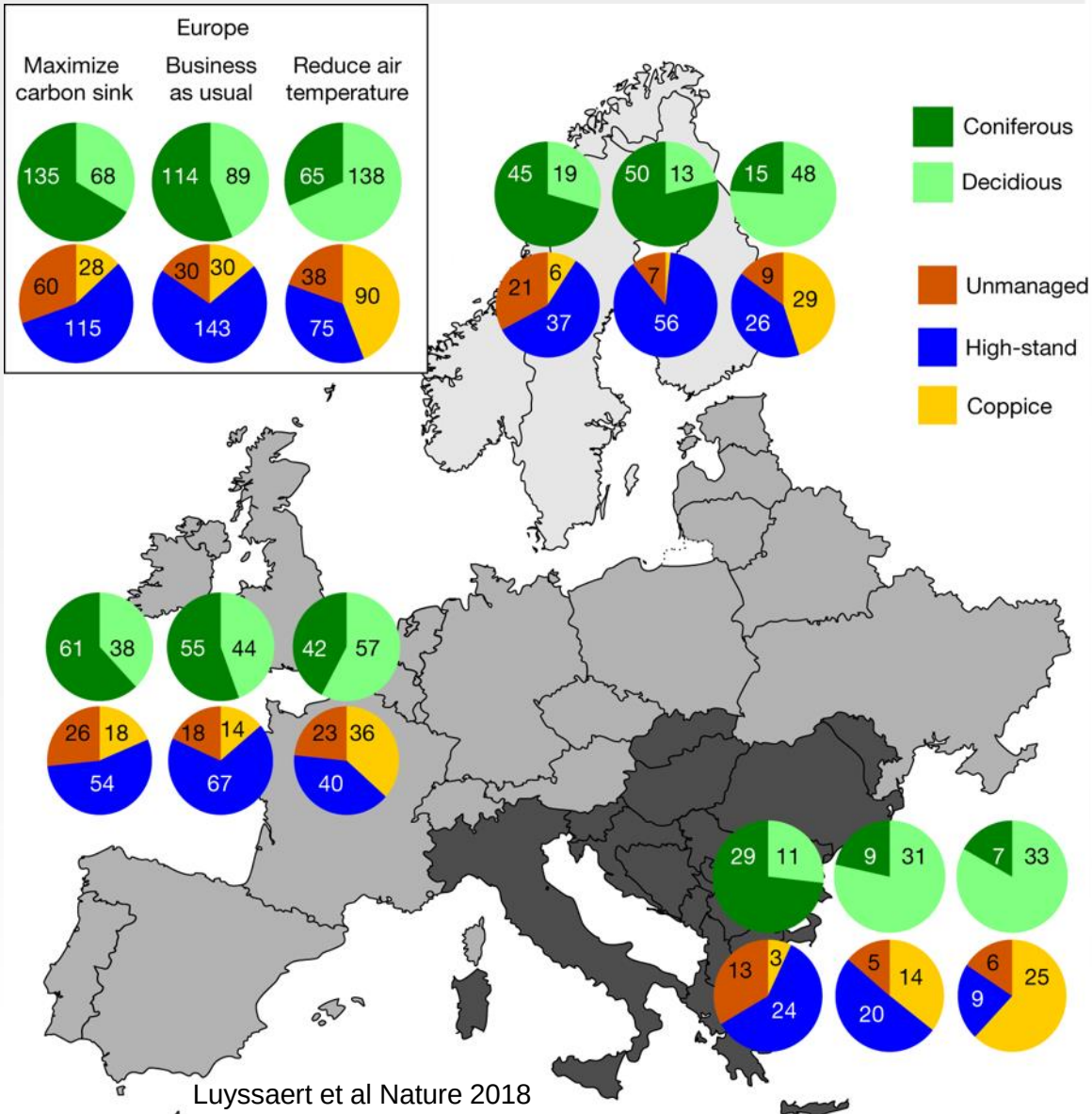
Blue areas indicate evergreen forest plantation

Mooney et al. In prep

Mitigate or adapt?

«Europe should not rely on forest management to mitigate climate change.

The modest climate effects from changes in forest management imply, however, that [] the forests could be adapted to climate change with neither positive nor negative climate effects.”



Luyssaert et al Nature 2018

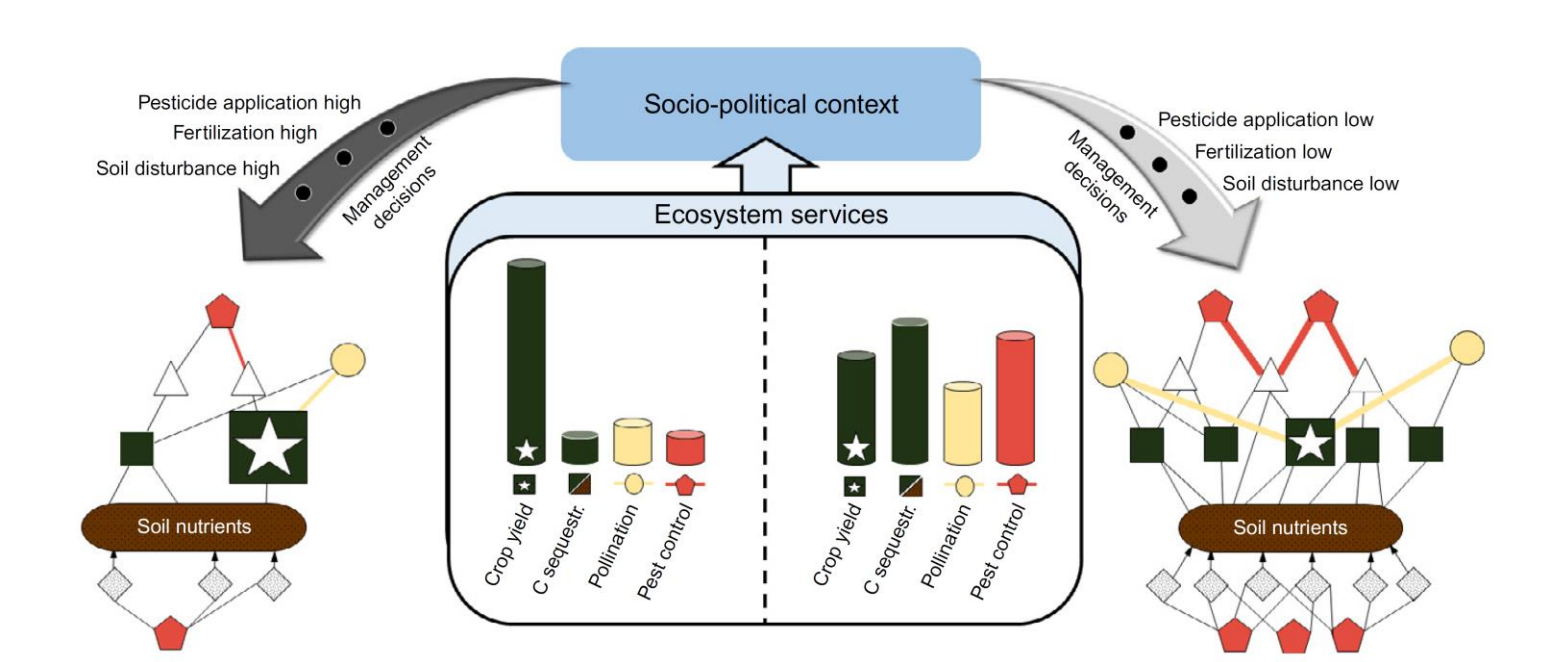
And there is more: emerging risks

2018 – a busy year for *voluntary* firefighters

- 93 721 hours; 6 841 persons
- Total costs of 2.67 mill Euro
- Fought wildfires *every day* in July

(Data from the Civil Defense)

Increasing pressures, needs, risks; we need *multifunctional* landscapes

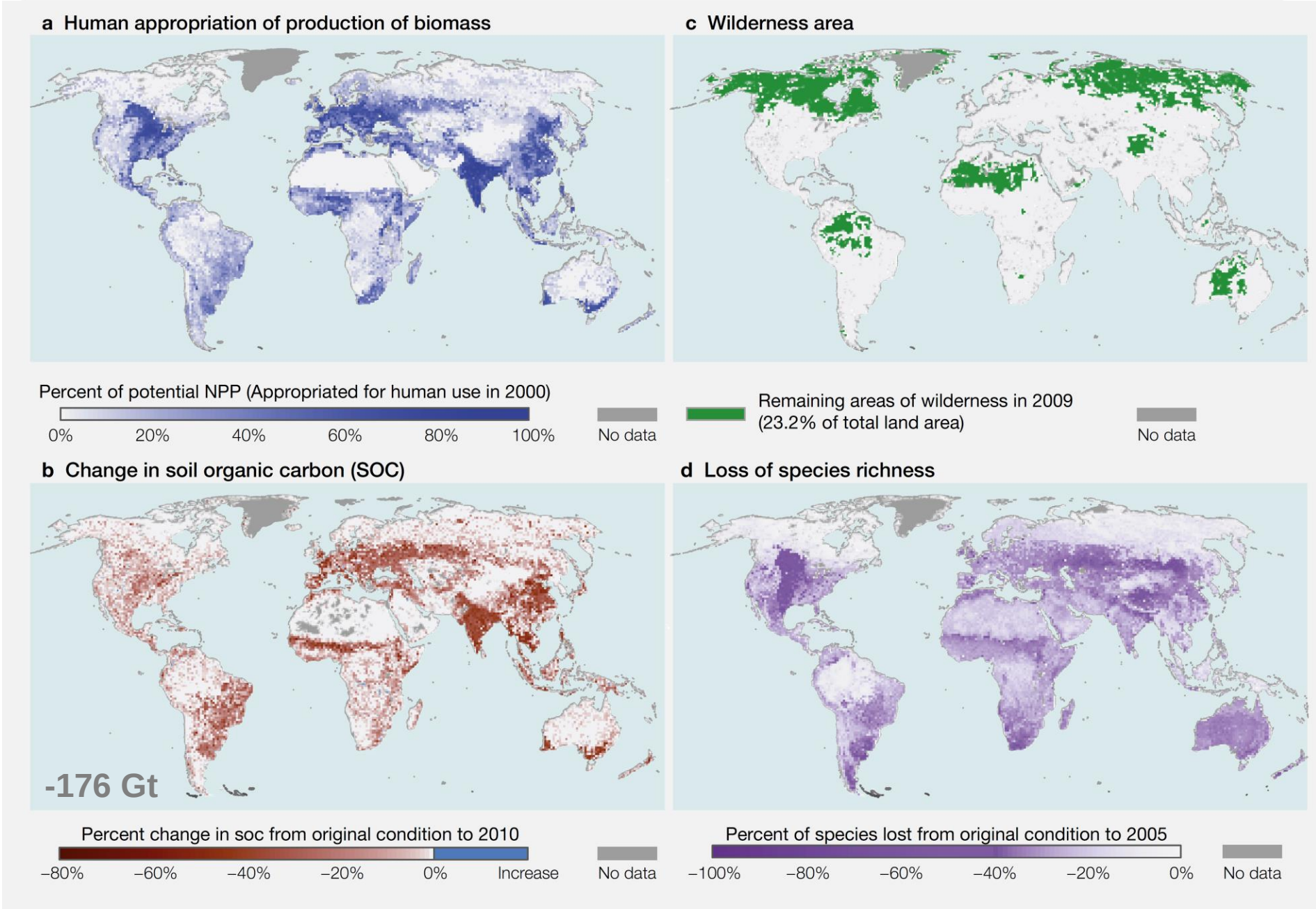


https://doi.org/10.1016/bs.aecr.2015.09.001


NutNet

Nature is rather good at what it's doing…

….unfortunately, it isn't doing so great these days

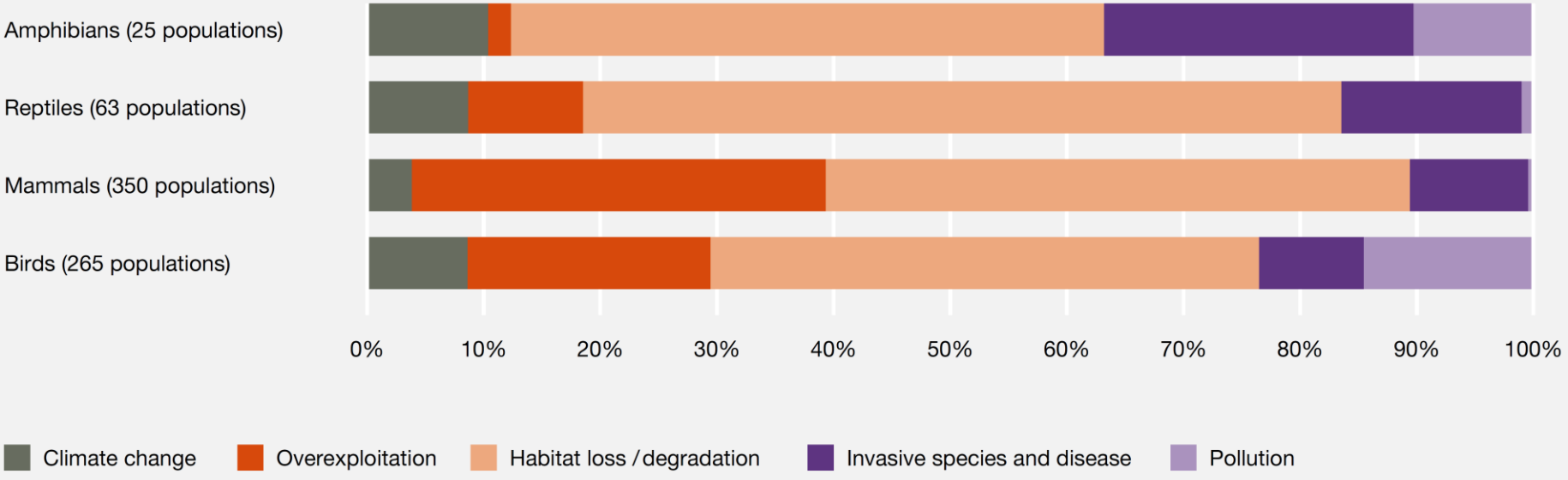


IPBES Land Degradation report 2018

Climate is not to blame, *yet*…

Figure SPM 13 **The most common drivers of biodiversity loss among some animal taxa.**

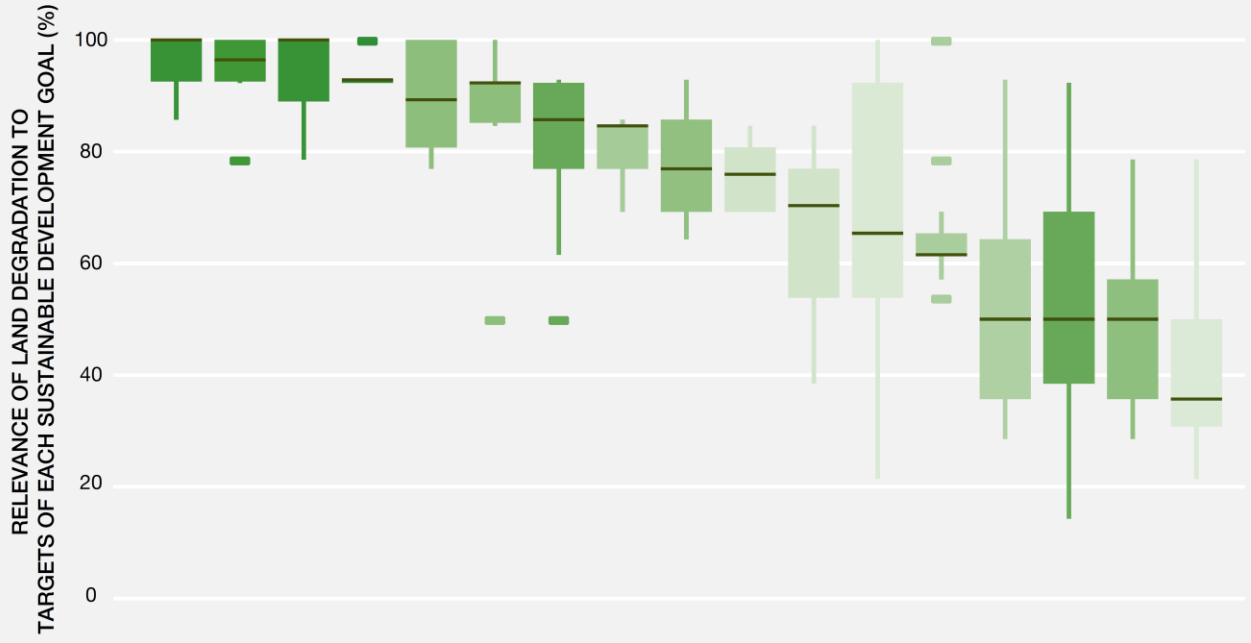
Data includes 703 populations from the Living Planet Report (WWF, 2016).[25]



IPBES

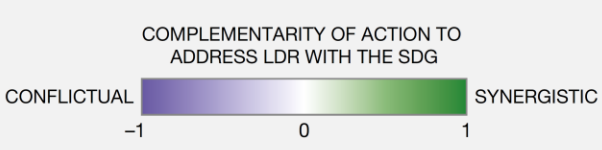
The assessment report on
LAND DEGRADATION AND RESTORATION

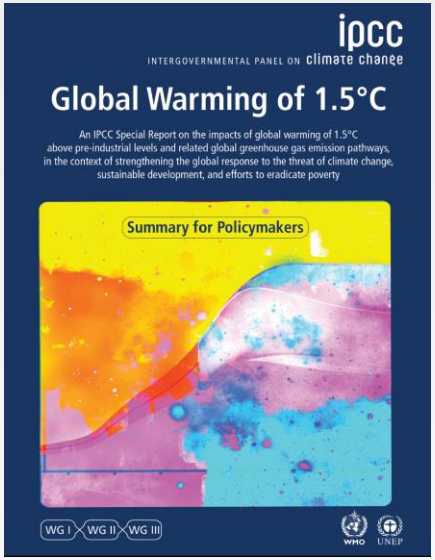
ipbes



SUSTAINABLE DEVELOPMENT GOALS

- Life on land
- Clean water and sanitation
- Responsible consumption and production
- Climate action
- Zero hunger
- No poverty
- Sustainable cities and communities
- Affordable and clean energy
- Partnerships to achieve the goal
- Industry, innovation and infrastructure
- Reduced inequality
- Decent work and economic growth
- Life below water
- Quality education
- Peace, justice and strong institutions
- Gender equality
- Good health and well-being





Length shows strength of connection

The overall **size of the coloured bars** depict **the relative potential** for synergies and trade-offs between the sectoral mitigation options and the SDGs.

Shades show level of confidence

The shades depict **the level of confidence** of the assessed potential for **Trade-offs**/**Synergies**.

Very High *Low*

Energy Supply

Trade-offs | Synergies

Energy Demand

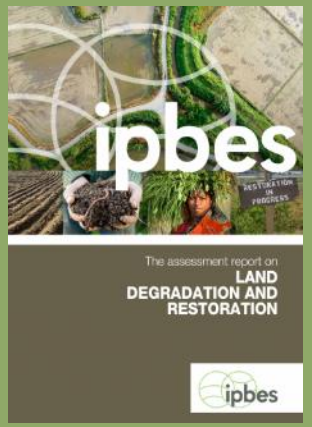
Trade-offs | Synergies

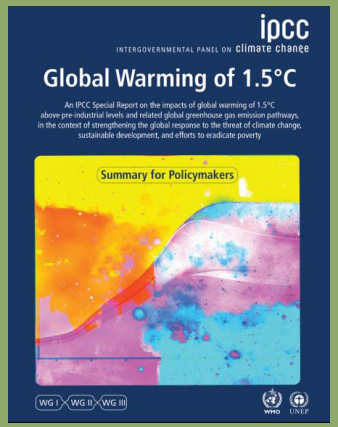
Land

Trade-offs | Synergies

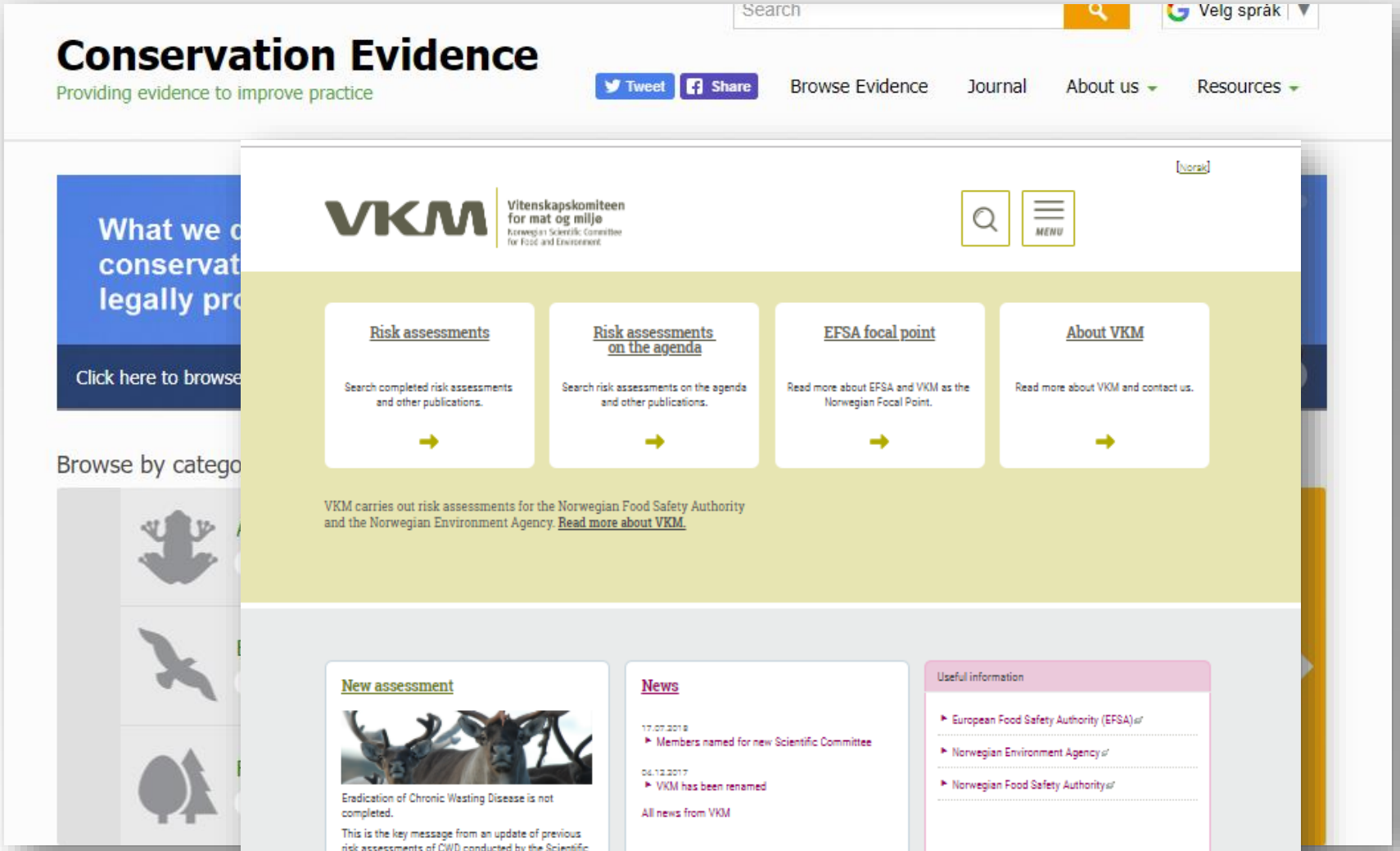
- **SDG1** No Poverty
- **SDG2** Zero Hunger
- **SDG 3** Good Health and Well-being
- **SDG 4** Quality Education
- **SDG 5** Gender Equality
- **SDG 6** Clean Water and Sanitation
- **SDG 7** Affordable and Clean Energy
- **SDG 8** Decent Work and Economic Growth
- **SDG 9** Industry, Innovation and Infrastructure
- **SDG 10** Reduced Inequalities
- **SDG 11** Sustainable Cities and Communities
- **SDG 12** Responsible Consumption and Production
- **SDG 14** Life Below Water
- **SDG 15** Life on Land
- **SDG 16** Peace, Justice and Strong Institutions
- **SDG 17** Partnerships for the Goals

So, we need evidence-based management of a complex, multi-functional nature…?





Synthesis, assessment for specific needs and local context



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2018, VOL. 16, NO. 1, 1–28
https://doi.org/10.1080/14735903.2017.1402504

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System of crop intensification for more productive, resource-conserving, climate-resilient, and sustainable agriculture: experience with diverse crops in varying agroecologies

Prabhakar Adhikari[a], Hailu Araya[b], Gerald Aruna[c], Arun Bala
B. C. Barah[g], Debaraj Behera[h], Tareke Berhe[i], Parag Boruah[j], S

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DOI: 10.1038/s41467-018-05956-1 OPEN

A global meta-analysis of yield stability in organic and conservation agriculture

Samuel Knapp[1,2] & Marcel G.A. van der Heijden[1,3]

How much of the world's food do smallholders produce?

Vincent Ricciardi[a,b,*], Navin Ramankutty[a,b], Brenton Chookolingo[a,b]

Ecological Applications, 28(1), 2018, pp. 62–77

Cultivar mixtures: a meta-analysis of the effect of intraspecific diversity on crop yield

Emily

AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS
2018, VOL. 42, NO. 3, 264–273
https://doi.org/10.1080/21683565.2017.1359806

The "Biodiversity–Ecosystem function debate": An interdisciplinary dialogue between Ecology, Agricultural Science, and Agroecology

Dr. Valentin Daniel Picasso, PhD

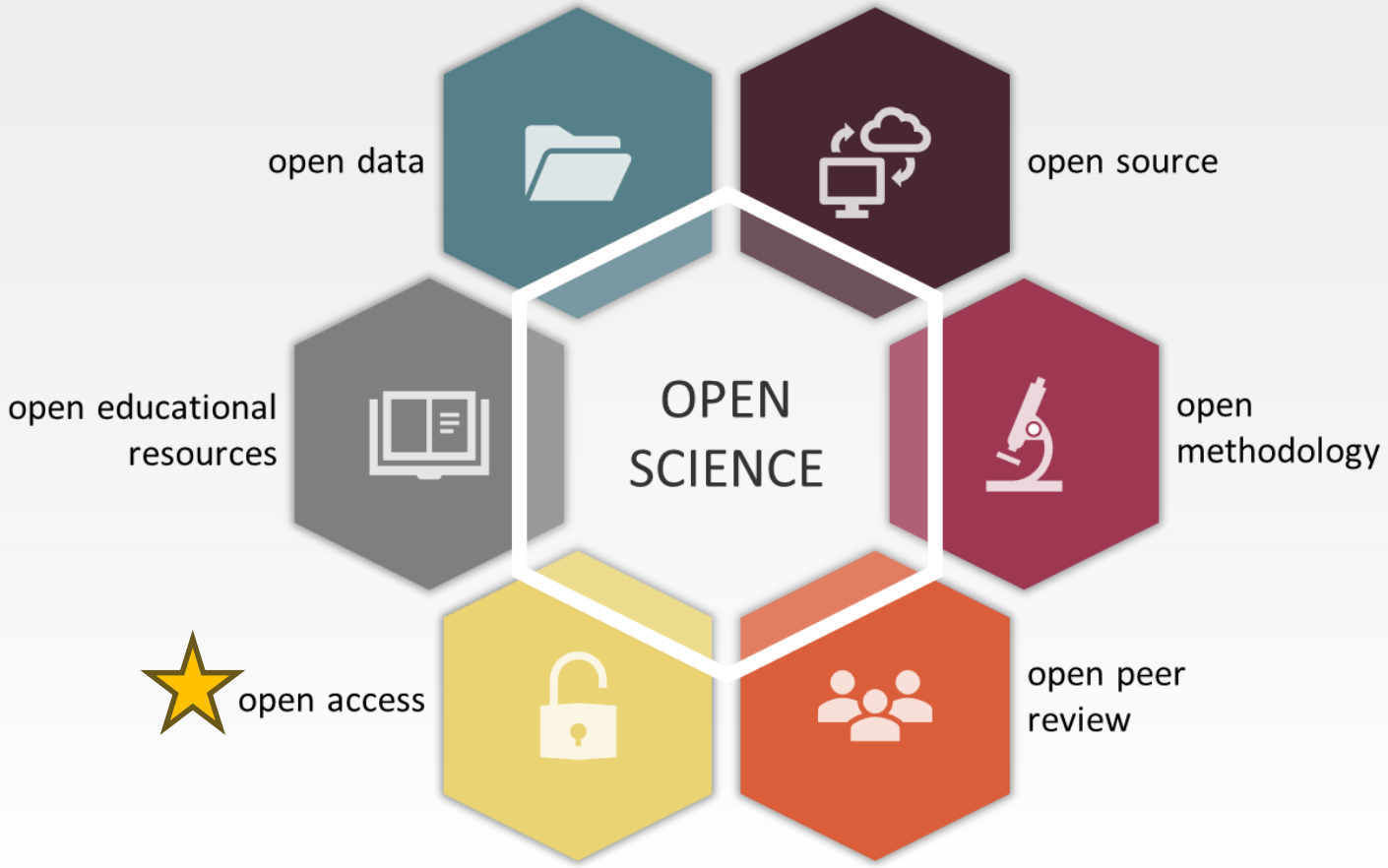
RESEARCH

FOREST ECOLOGY

Classifying drivers of global forest loss

Philip G. Curtis[1]*, Christy M. Slay[1], Nancy L. Harris[2], Alexandra Tyukavina[3], Matthew C. Hansen[3]

Evidence syntheses depend on FAIR data, open science



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