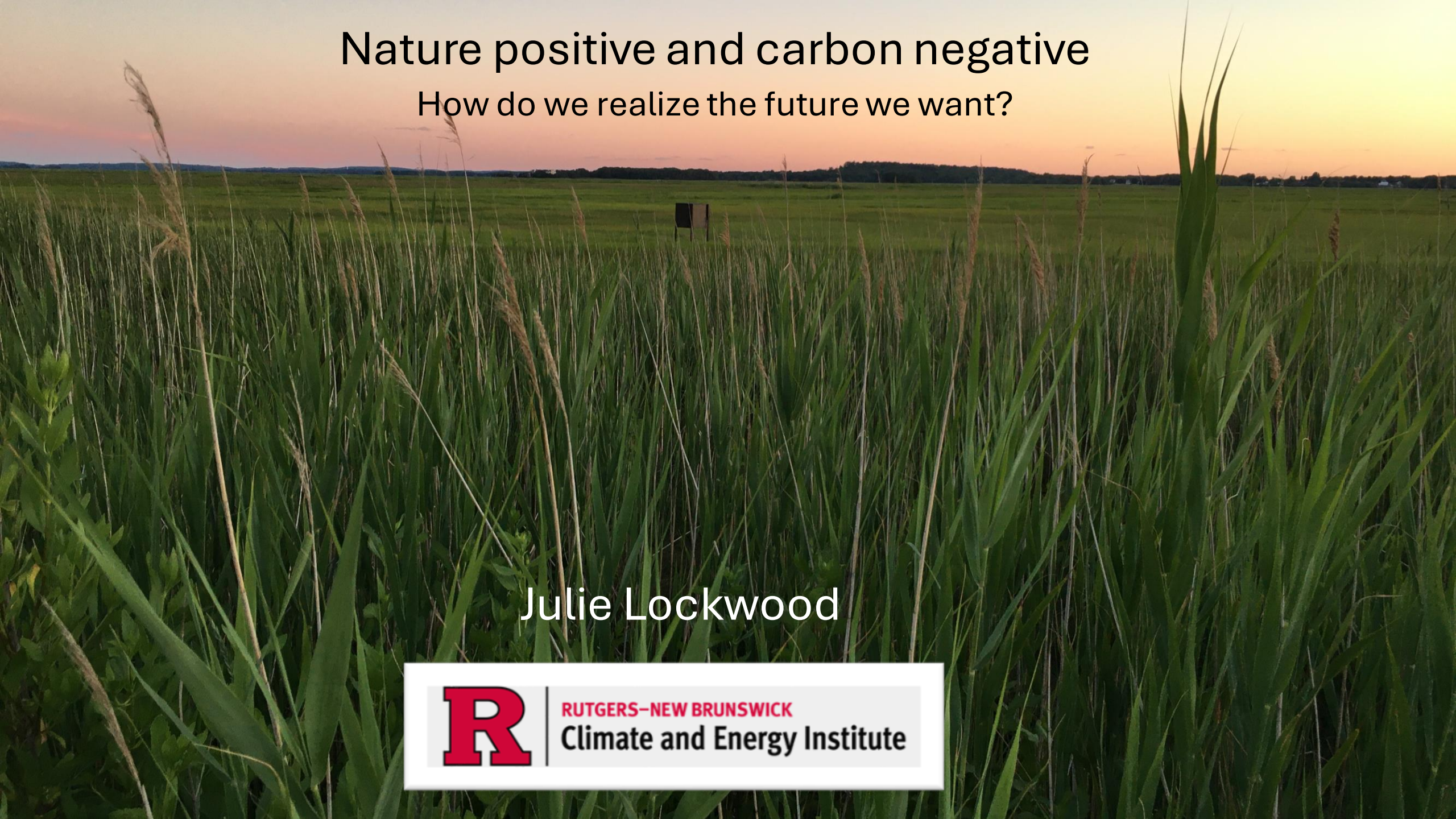


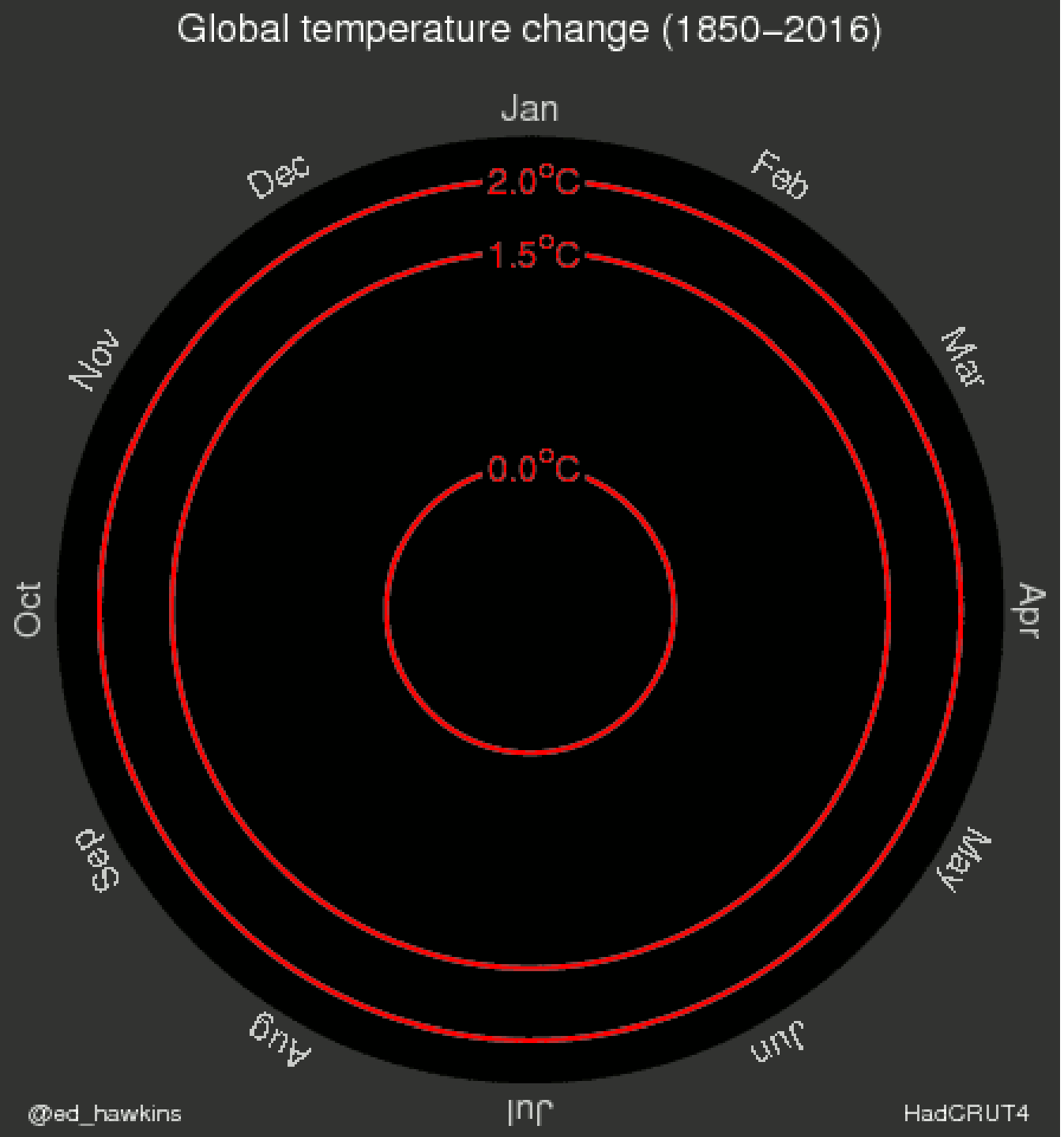
Nature positive and carbon negative

How do we realize the future we want?

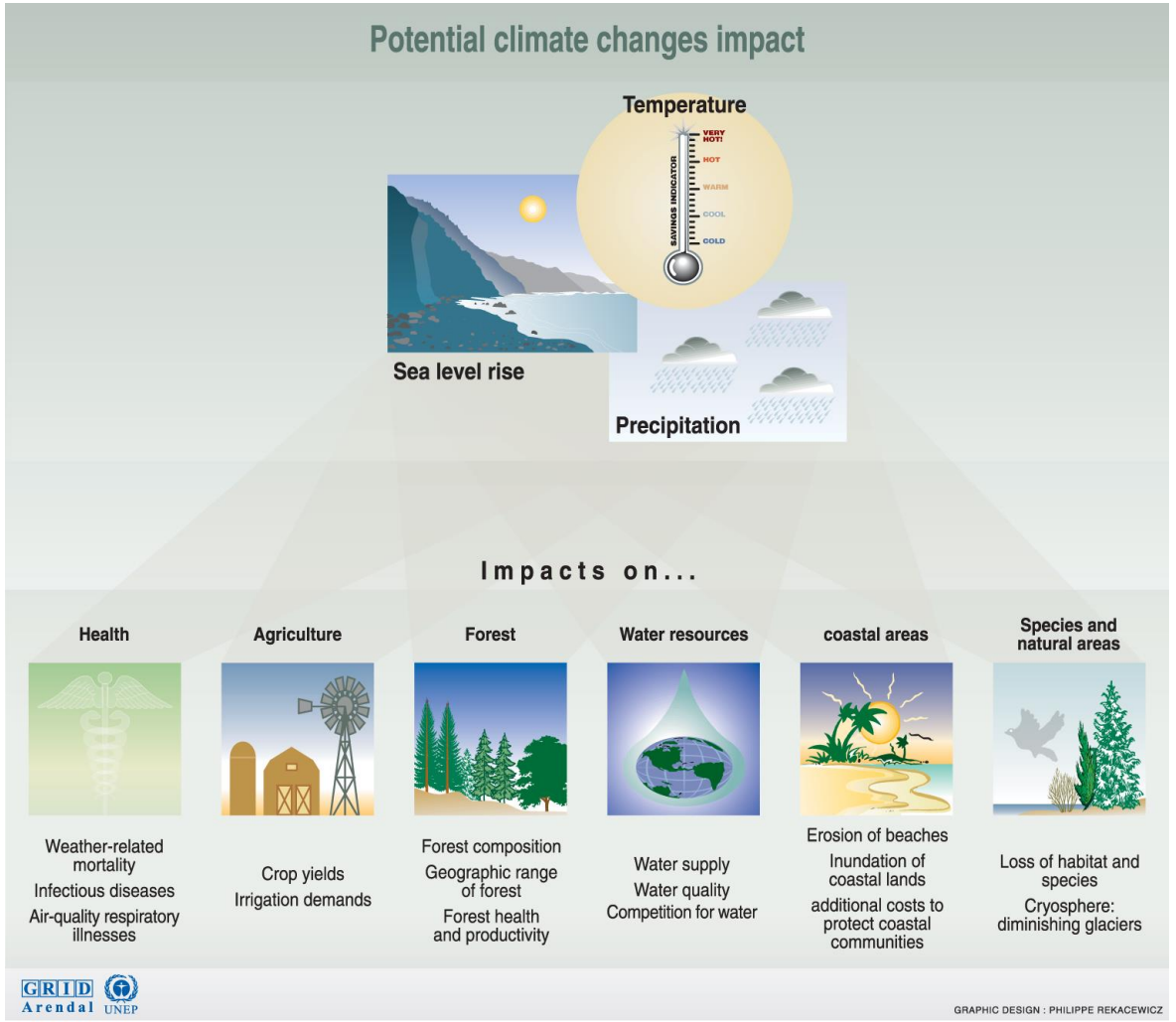
Julie Lockwood

RUTGERS–NEW BRUNSWICK
Climate and Energy Institute

The Greenhouse Effect



Each point on the spiral shows how a given month's average temperature deviates from the long-term average between 1850 and 1900 (the period before industrial activity really took off in the 20th century).



Source: United States environmental protection agency (EPA).

1960s

GLOBAL CARBON BUDGET

CLIMATE CENTRAL

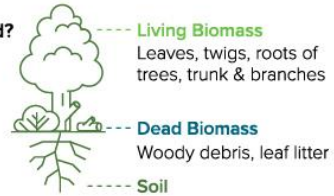
Carbon Storage in Earth's Ecosystems

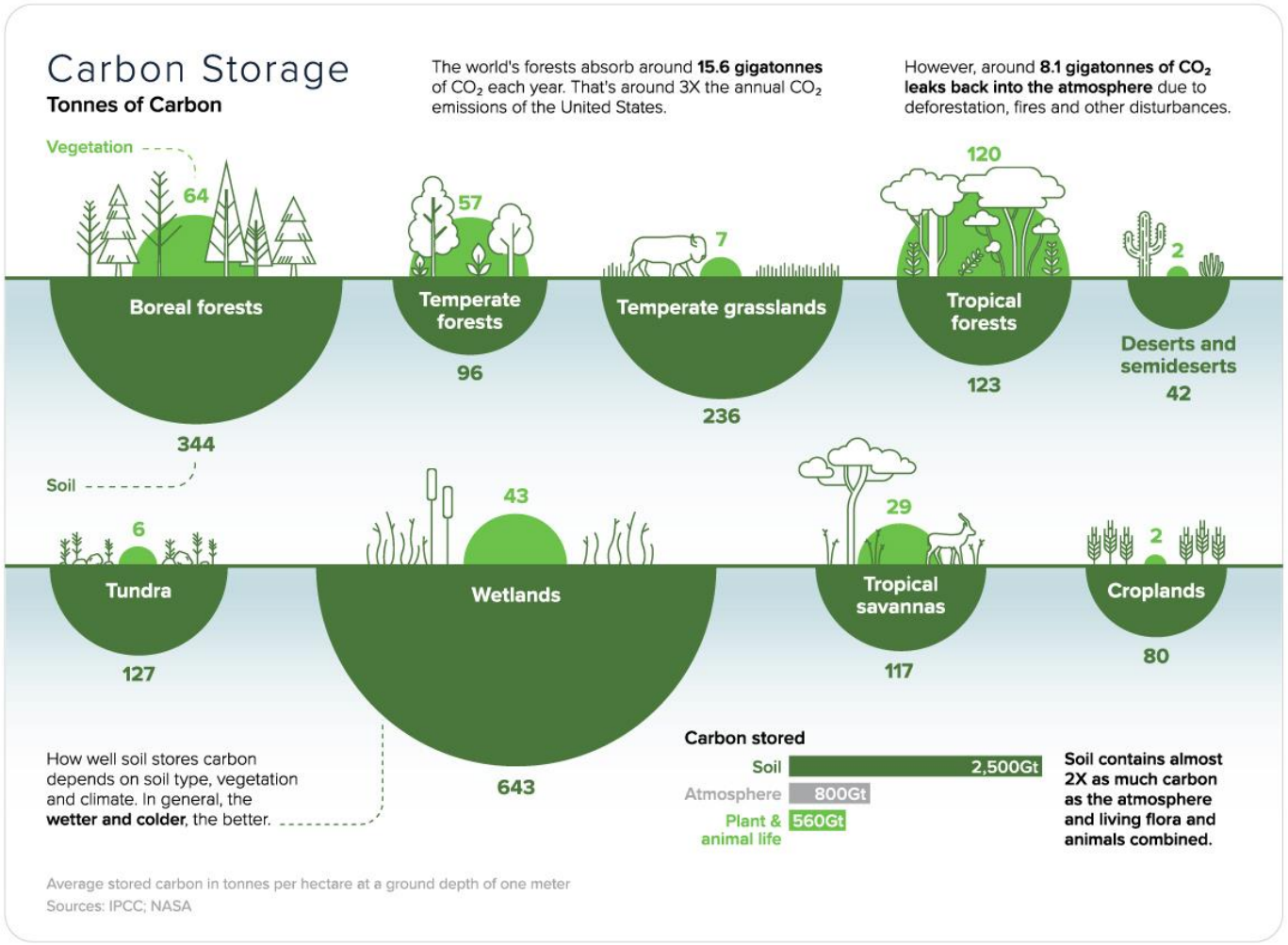
Achieving net-zero by 2050 depends on the Earth's natural carbon sinks.

Forests play a critical role in regulating the global climate. They absorb carbon from the atmosphere and then store it, acting as natural carbon sinks.

Where is Carbon Stored?

There are various carbon pools in a forest ecosystem.





How do we keep these ecosystems 'on the map'?

How do we ensure that these ecosystems are storing as much carbon as possible and for as long as possible?

Can we restore degraded ecosystems so that they store more carbon?

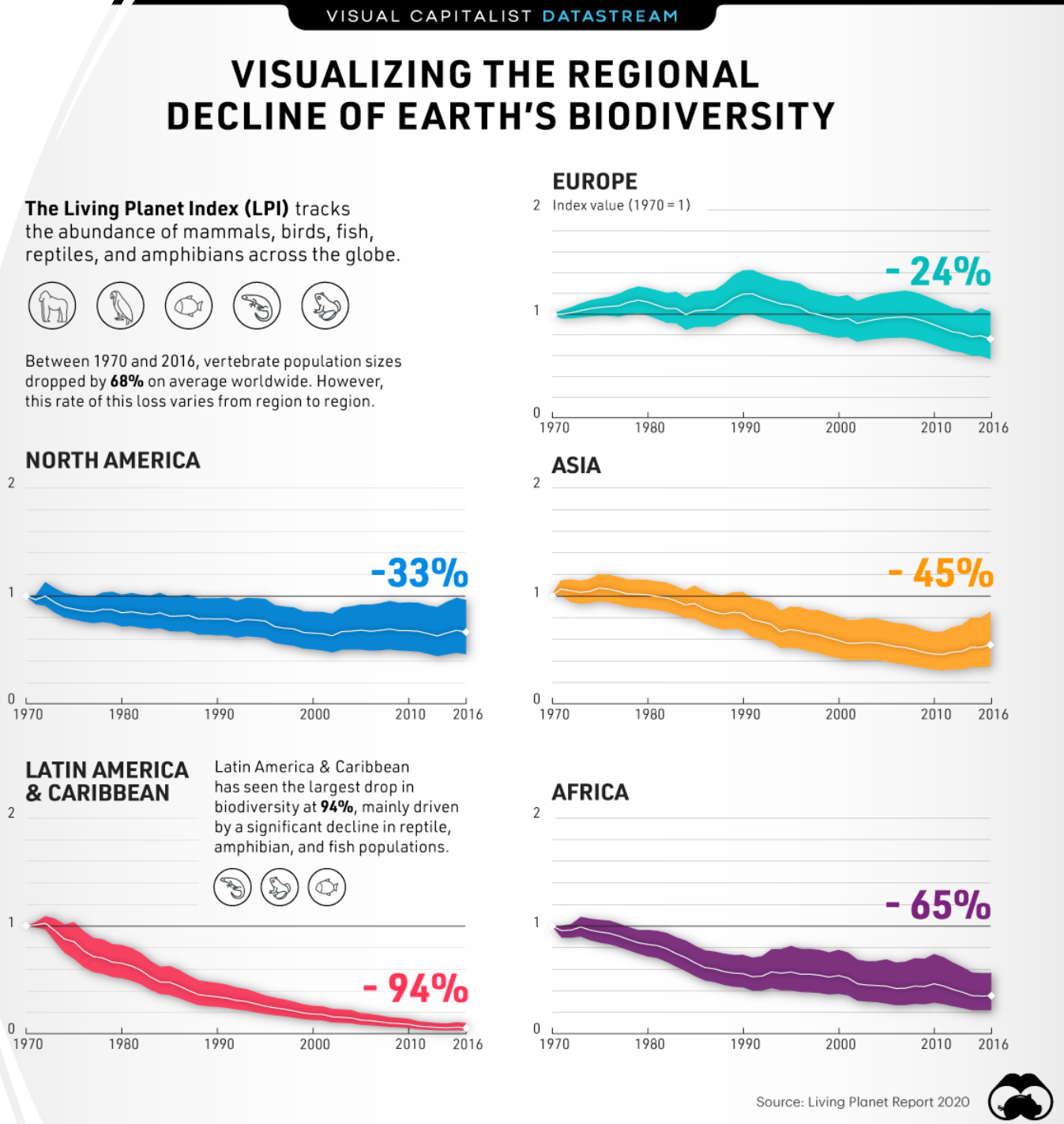
Are we missing anything here?

VISUAL CAPITALIST

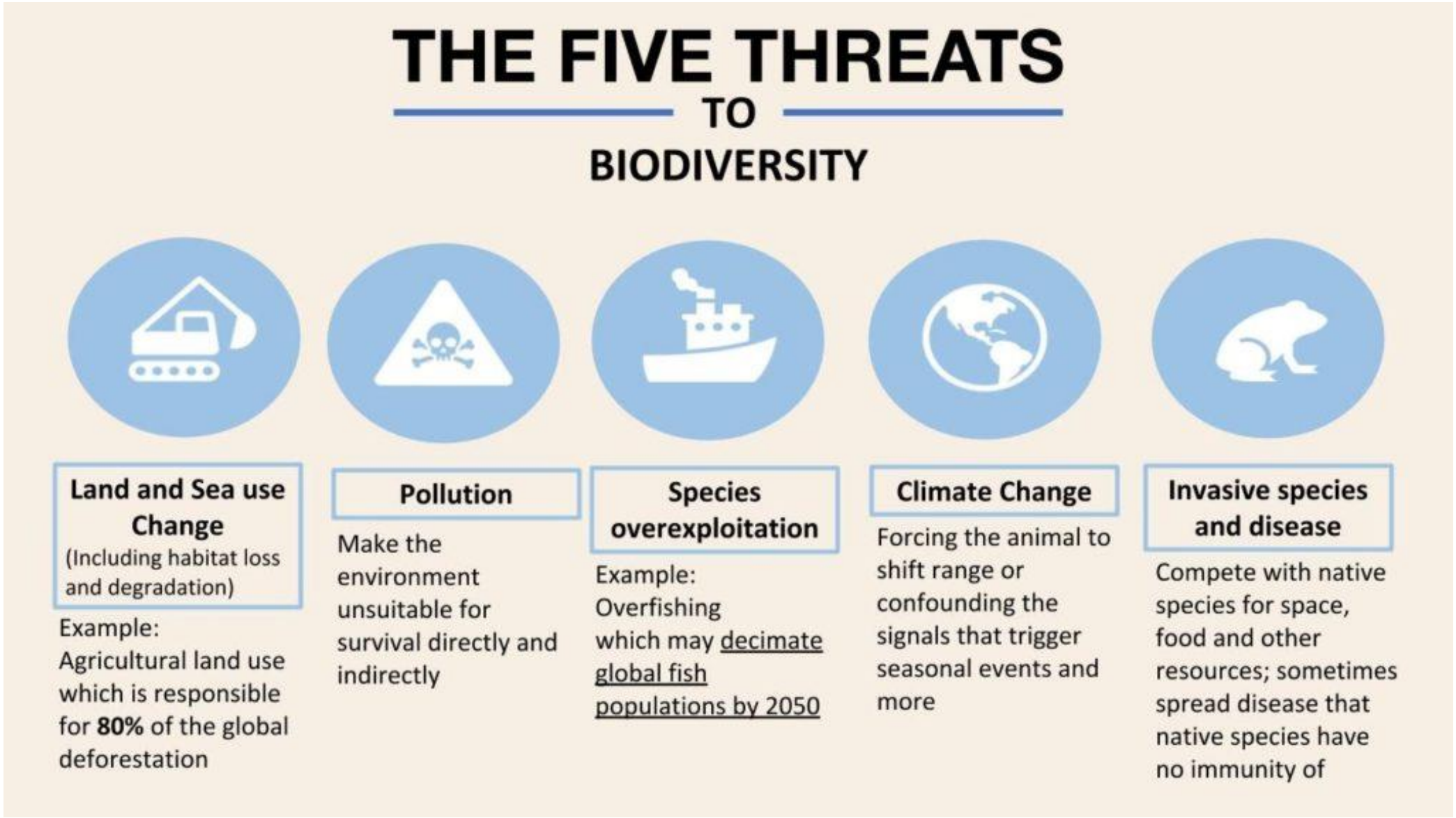
Living up to the **Nature Positive** part

The Biodiversity Crises is not a ‘blip on the screen’ of life on Earth.....

- One million of the world’s estimated 8 million species of plants and animals are threatened with extinction. (IPBES)
- 75 percent of the Earth’s land surface has been significantly altered by human actions, including 85 percent of wetland areas. (IPBES)
- 66 percent of ocean area is impacted by human activities, including from fisheries and pollution. (IPBES)
- Close to 90% of the world’s marine fish stocks are fully exploited, overexploited or depleted. (UNCTAD)



The climate and biodiversity crises must be addressed together




Now what?

Crossing the Valley of Death in Climate and Biodiversity Solutions

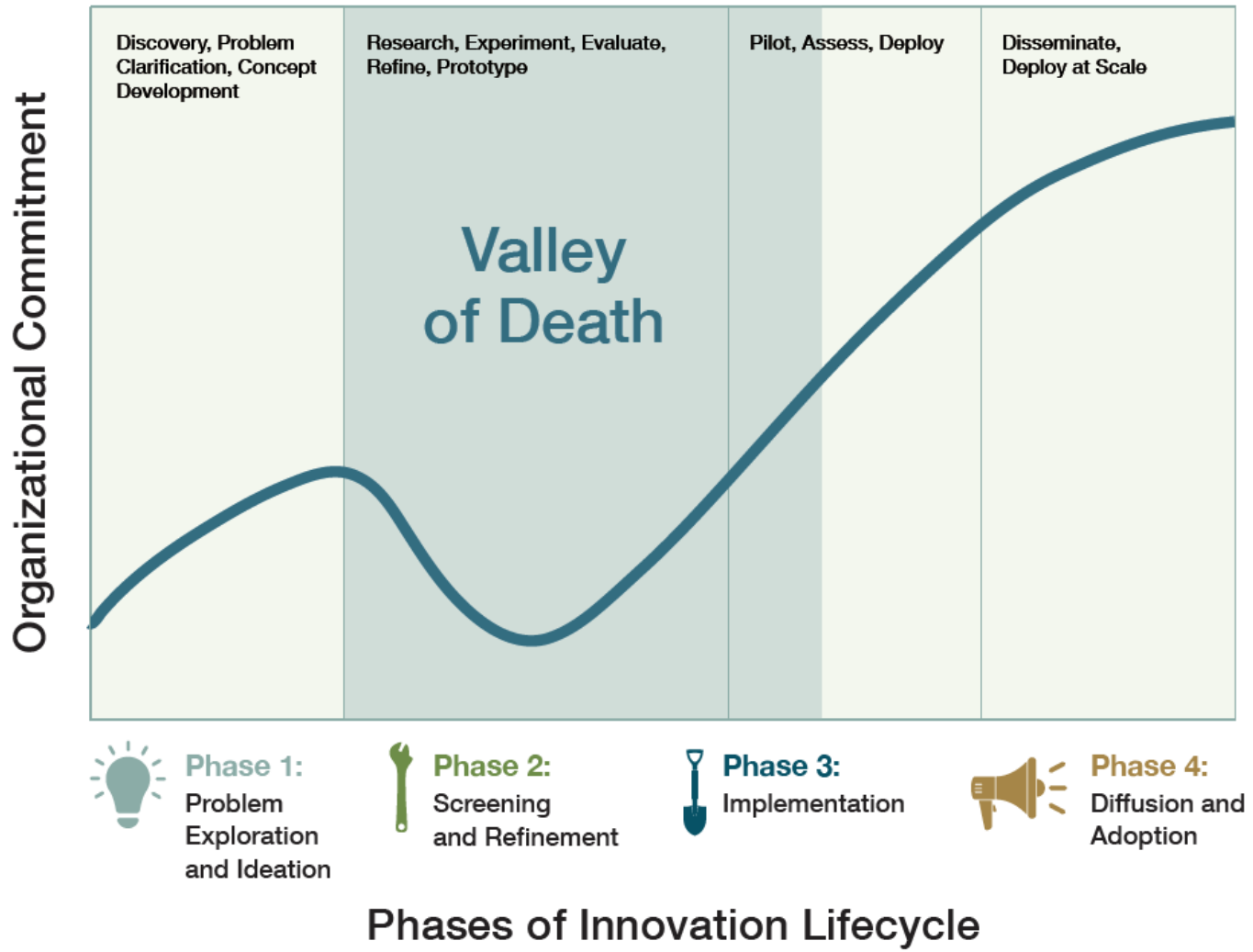


Figure 1.1. The innovation lifecycle, illustrating the four phases in the overall innovation process. The "valley of death" refers to where a gap in organizational commitment and investments can impede transition from concept development to deployment (adapted from NASEM 2016).

Some solutions are in the widespread implementation stage.

Most solutions are at Phase 2….the Valley of Death.

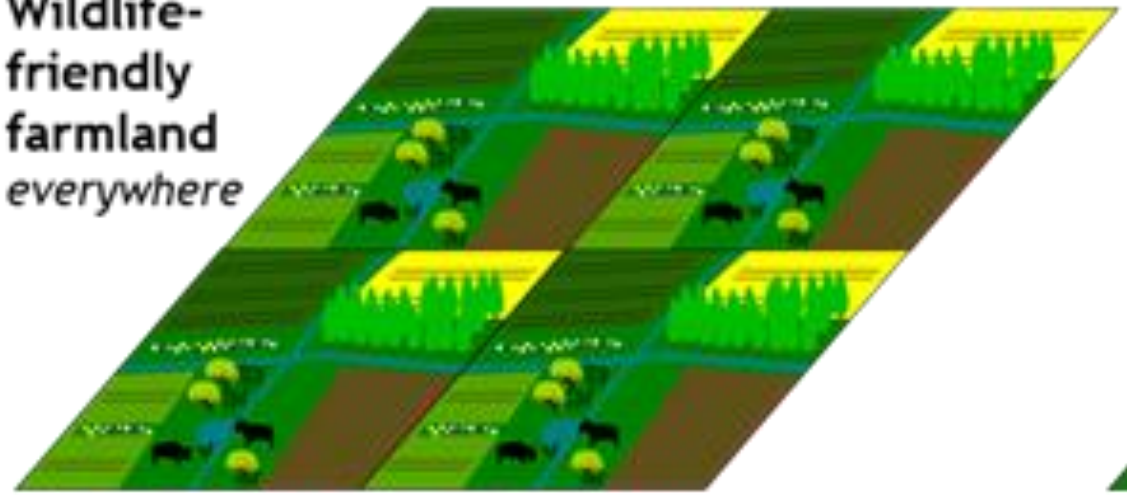
How do we screen and refine in the most cost and time effective way possible?

How do we sort through those solutions that seemed promising but did not work?

How do we 'name and shame' the solutions that are simply greenwashing?

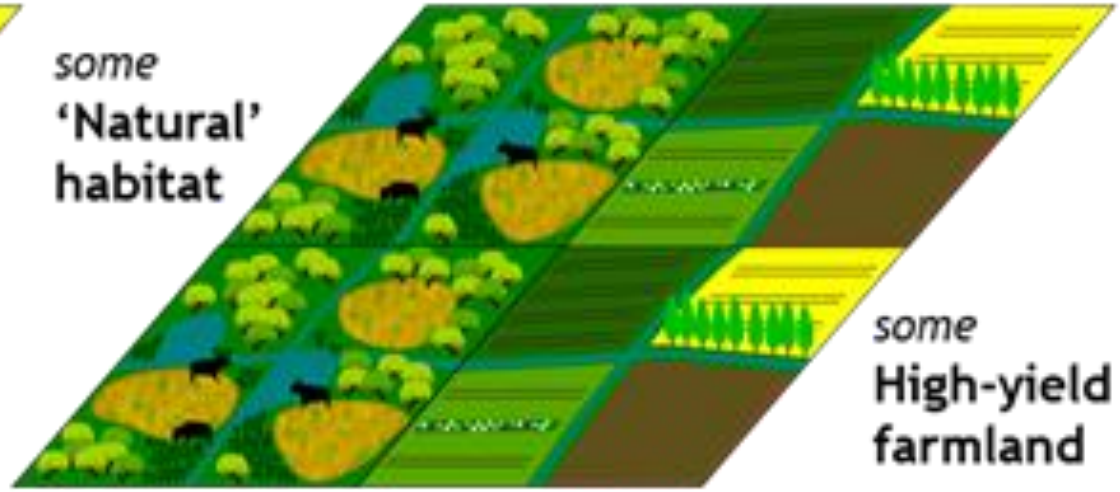
Land sharing

Wildlife-friendly farmland *everywhere*



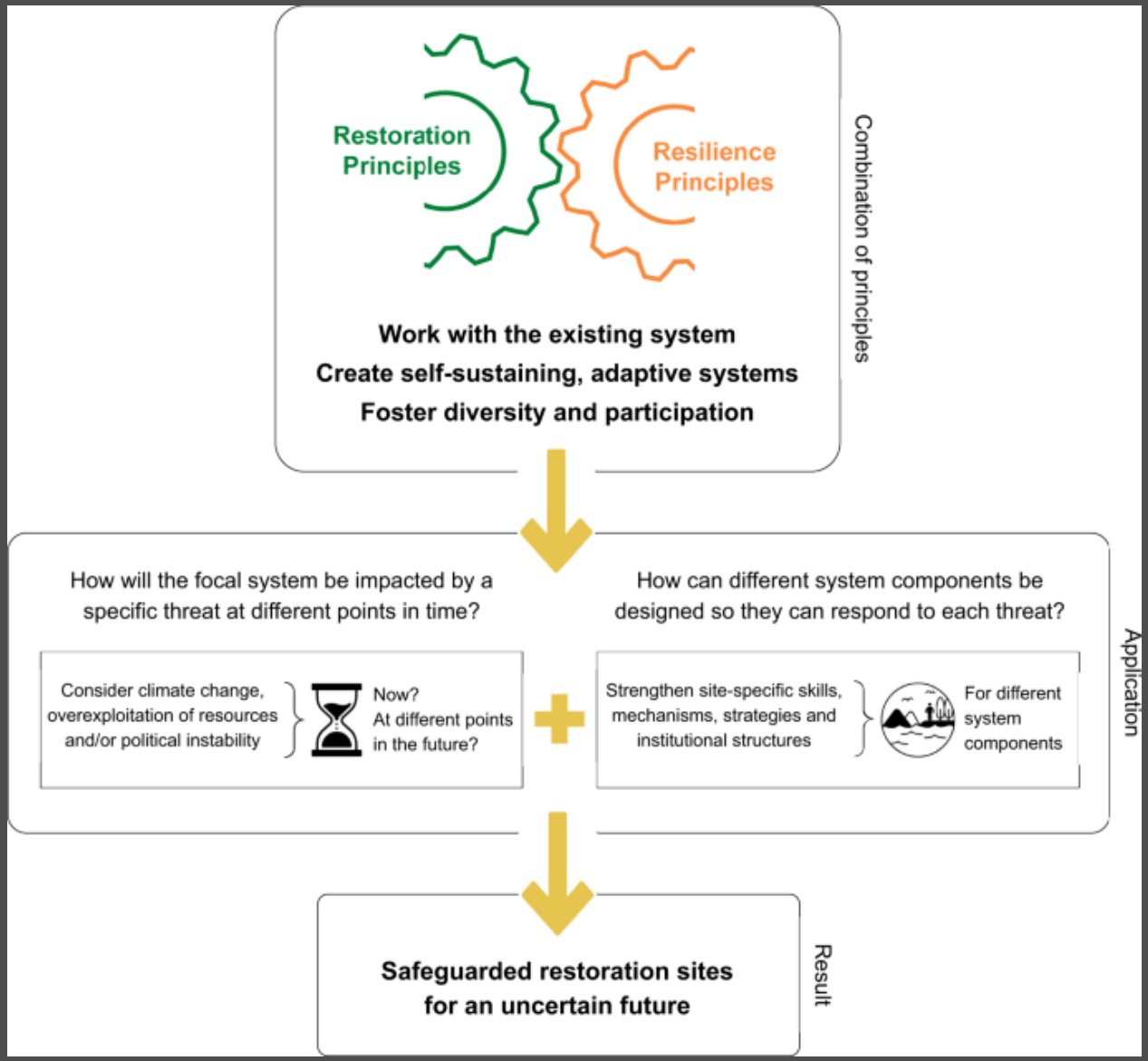
Land sparing

some ‘Natural’ habitat



some High-yield farmland

What effect does each option have on biodiversity and carbon sequestration?
How do we get the ‘right mix’ on the landscape?



communications biology

PERSPECTIVE

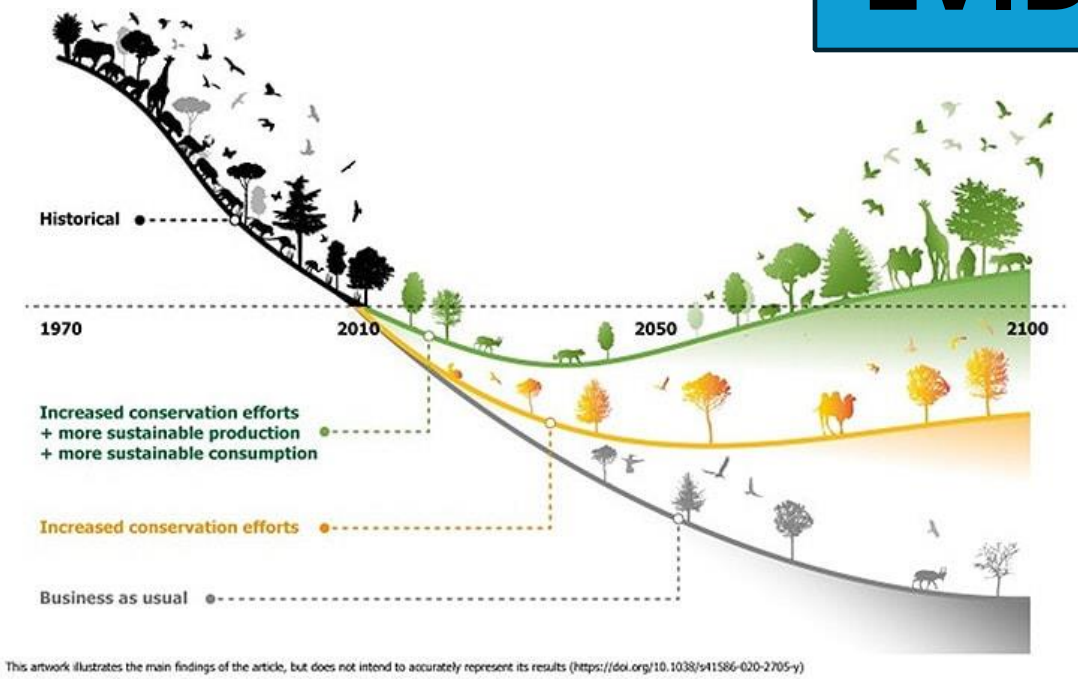
https://doi.org/10.1038/s42003-023-04736-y OPEN

Future-proofing ecosystem restoration through enhancing adaptive capacity

Marina Frietsch[1,2✉], Jacqueline Loos[1,3], Katharina Löhr[4,5], Stefan Sieber[4,6] & Joern Fischer[1]

How do we achieve the future we want, and how do we know we are getting there?

EVIDENCE



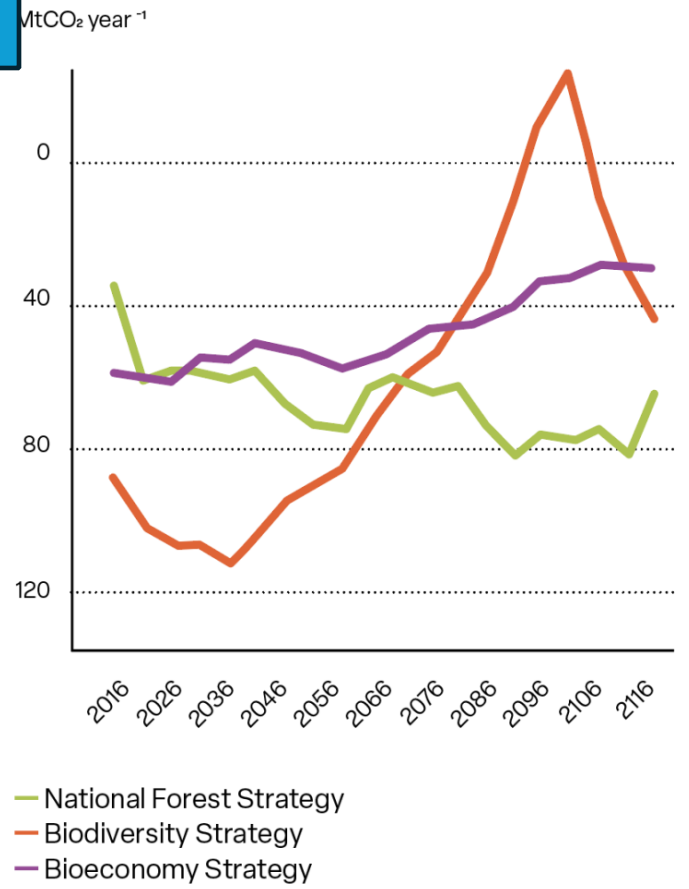
This artwork illustrates the main findings of the article, but does not intend to accurately represent its results (https://doi.org/10.1038/s41586-020-2705-y)

Article

Bending the curve of terrestrial biodiversity needs an integrated strategy

https://doi.org/10.1038/s41586-020-2705-y A list of authors and their affiliations appears at the end of the paper.

Modelling of the forest carbon sink under three different Finnish forest strategies




Thank you!