CAMBIAMO AGRICOLTURA!

Fondazione CARIPLO
TUTE SERVARE MUNIFICE DONARE · 1816

UNIVERSITÀ DEGLI STUDI DI MILANO

FORUM COOPERAZIONE E TECNOLOGIA

rete semi rurali

osservatorio per l'agroecologia

Confederazione italiana agricoltori

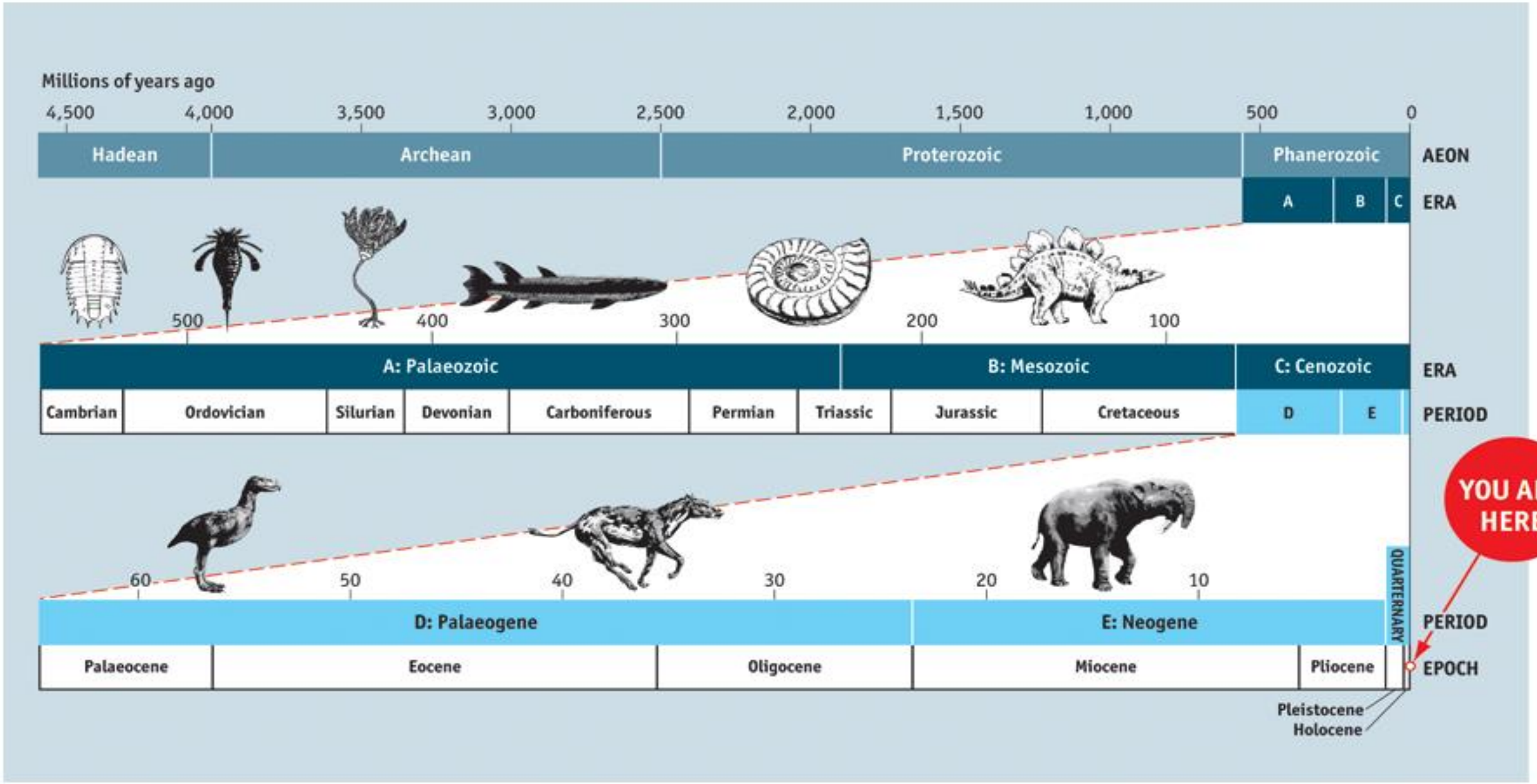
METROPOLI AGRICOLE

#2030. Sistemi agroalimentari per la sostenibilità: un dialogo tra locale e globale

Un sistema agricolo sostenibile nell'Antropocene

Gianfranco Bologna

ASviS, Club di Roma, WWF Italia


Millions of years ago
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Hadean
Archean
Proterozoic
Phanerozoic
AEON
A
B
C
ERA
500
400
300
200
100
A: Palaeozoic
B: Mesozoic
C: Cenozoic
ERA
Cambrian
Ordovician
Silurian
Devonian
Carboniferous
Permian
Triassic
Jurassic
Cretaceous
D
E
PERIOD
60
50
40
30
20
10
QUARTERNARY
YOU ARE HERE
D: Palaeogene
E: Neogene
PERIOD
Palaeocene
Eocene
Oligocene
Miocene
Pliocene
EPOCH
Pleistocene
Holocene

From a small world on a large planet…

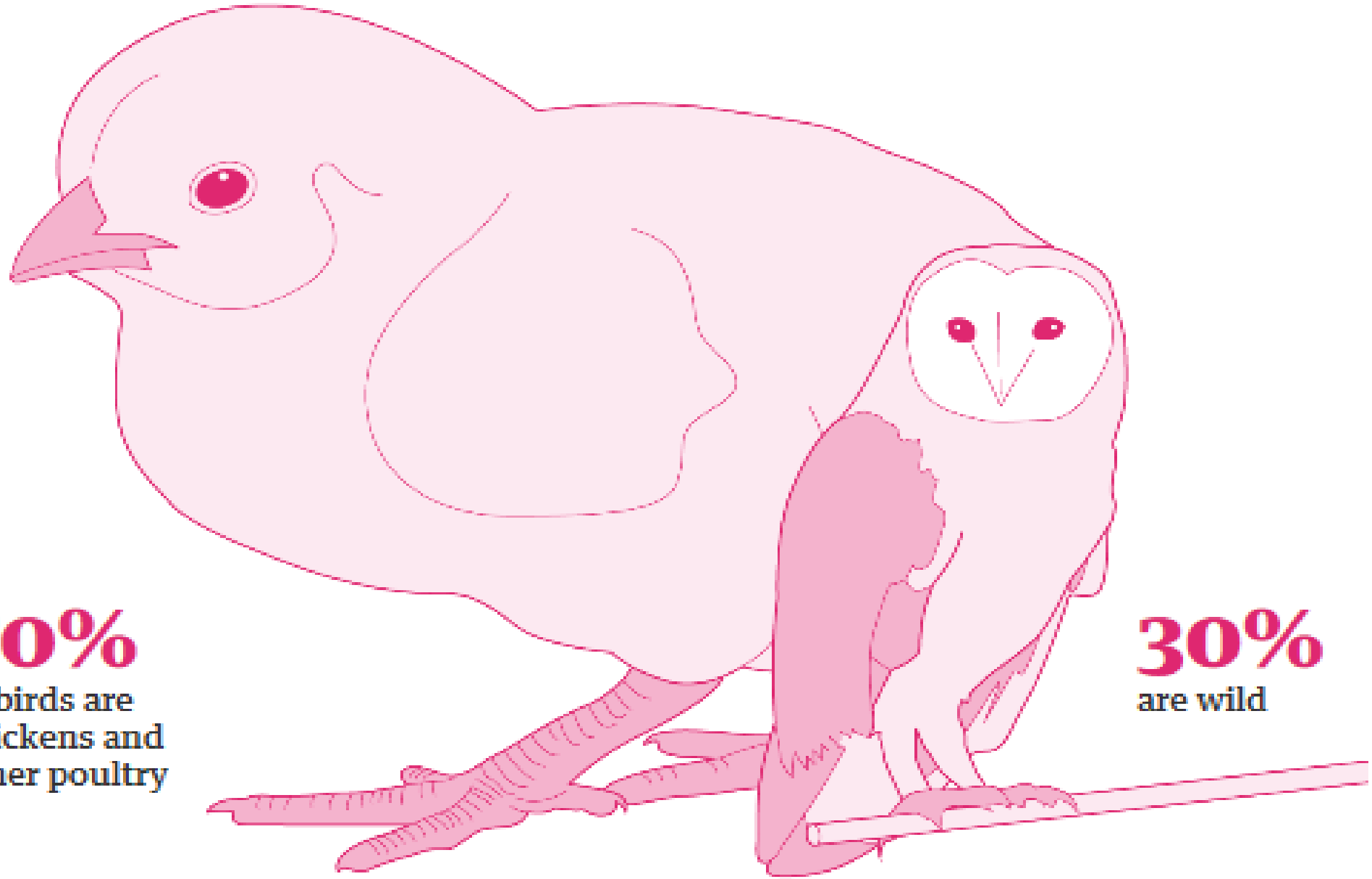
To a large world on a small planet…

ROYAL SOCIETY OPEN SCIENCE

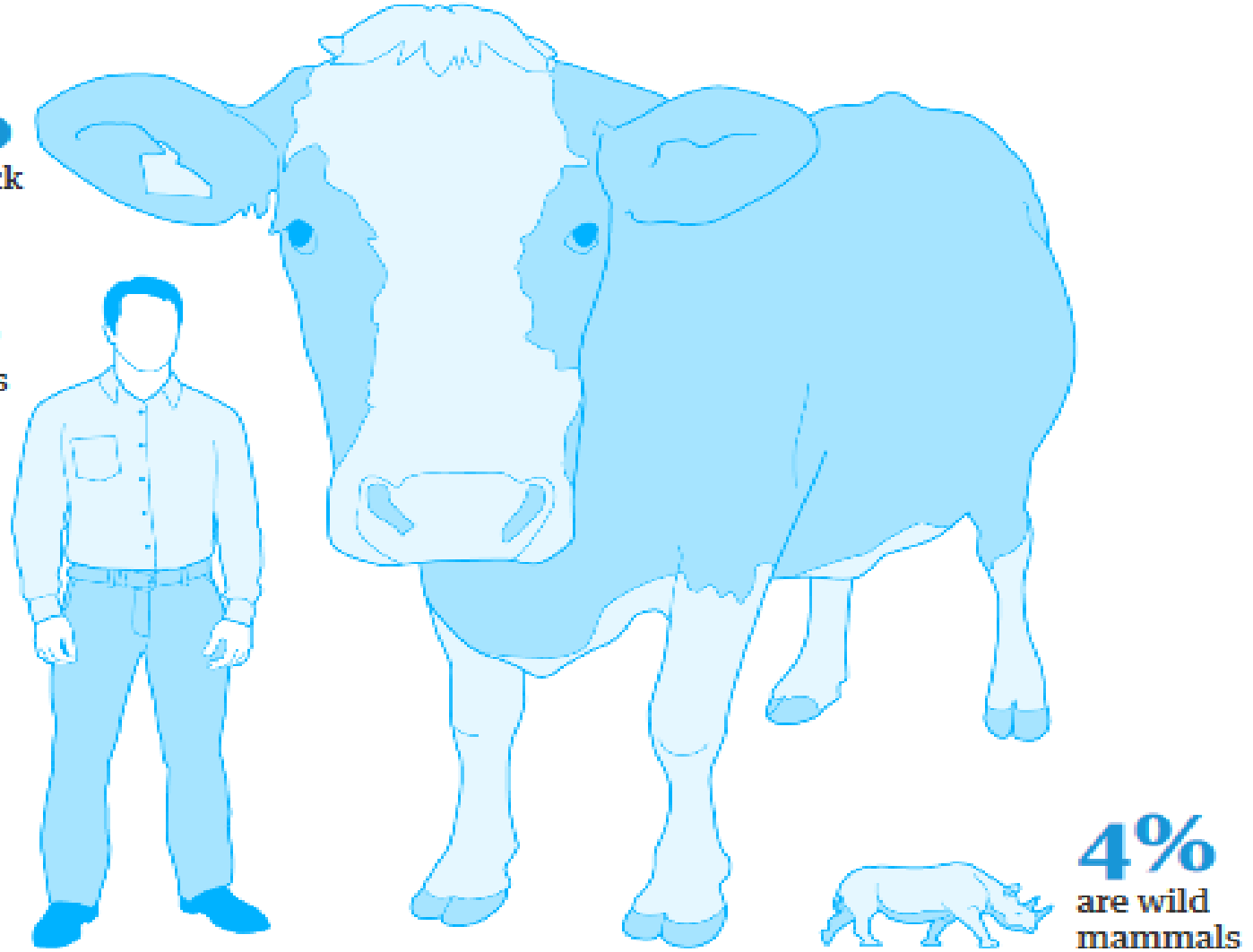
rsos.royalsocietypublishing.org

The broiler chicken as a signal of a human reconfigured biosphere

- ***Over 65.8 billion meat chicken carcasses were consumed globally in 2016***
- ***Standing population 22.7 billion and lifespan of five to seven weeks***
- ***The standing biomass of domesticated poultry, mostly chickens, has been calculated about three times higher the total biomass of all wild bird species combined***
- ***This monospecific vast bird biomass is unprecedent in Earth's recent history and perhaps also in Earth's geological history***
- ***It is thought that the most common wild bird in human history, the passenger pigeon, had a population of 3-5 billion in 1800s***


70%
of birds are chickens and other poultry
30%
are wild

Of all the mammals on Earth, 96% are livestock and humans, only 4% are wild mammals



Protect the last of the wild

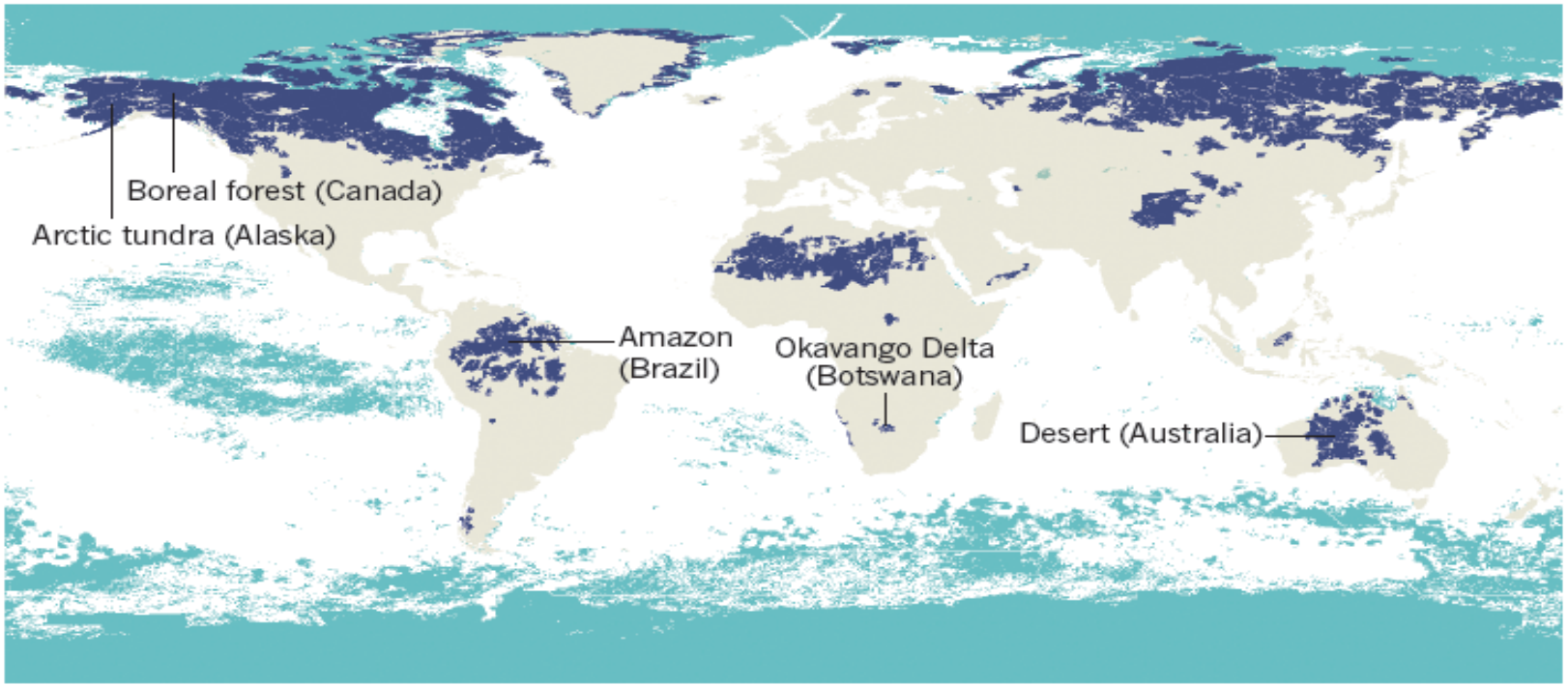
WHAT'S LEFT?

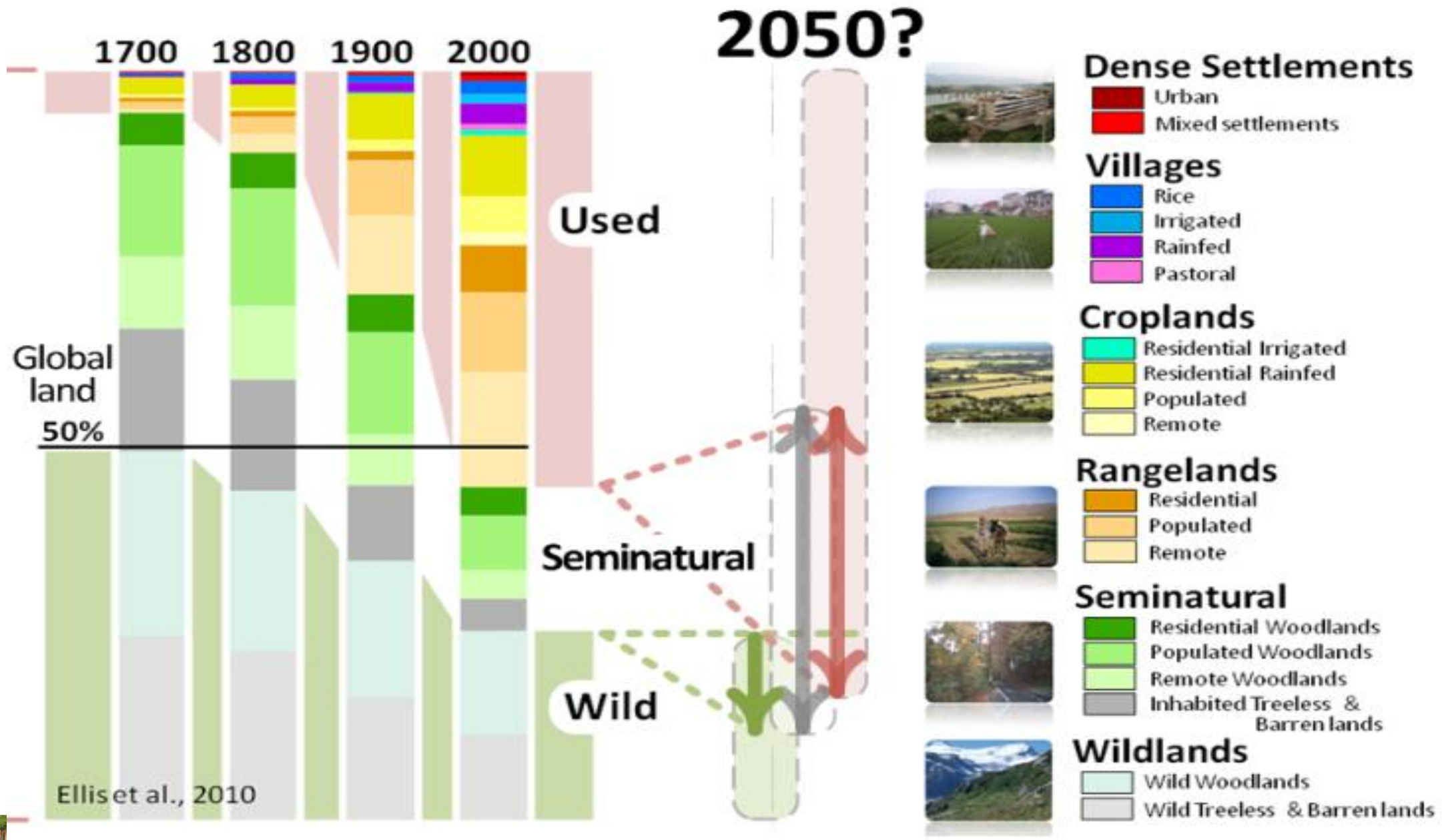
Earth's remaining wilderness areas are becoming increasingly important buffers against changing conditions in the Anthropocene. Yet they aren't an explicit target in international policy frameworks.

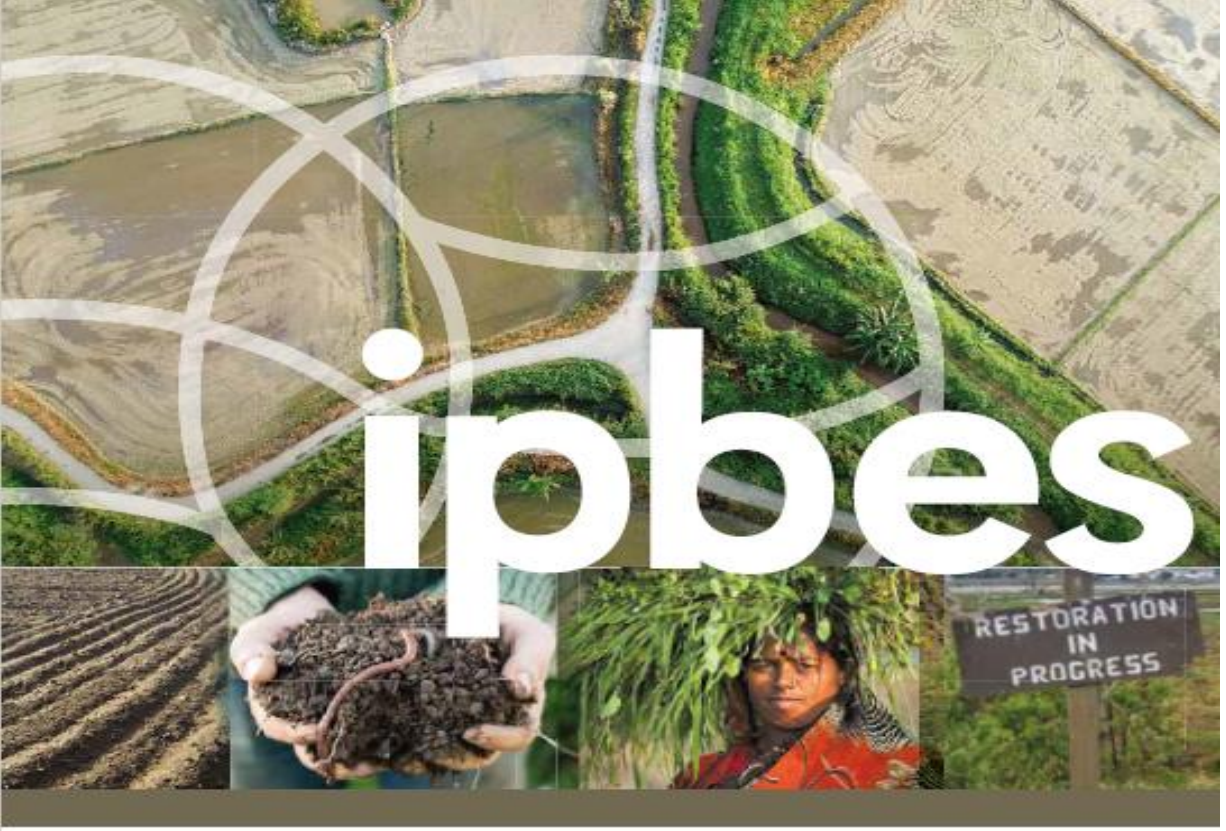
THE HUMAN FOOTPRINT

77% of land (excluding Antarctica) and 87% of the ocean has been modified by the direct effects of human activities.

REMAINING WILDERNESS: Terrestrial Marine




1700
1800
1900
2000
2050?
Used
Seminatural
Wild
Global land
50%
Ellis et al., 2010
Dense Settlements
Urban
Mixed settlements
Villages
Rice
Irrigated
Rainfed
Pastoral
Croplands
Residential Irrigated
Residential Rainfed
Populated
Remote
Rangelands
Residential
Populated
Remote
Seminatural
Residential Woodlands
Populated Woodlands
Remote Woodlands
Inhabited Treeless & Barren lands
Wildlands
Wild Woodlands
Wild Treeless & Barren lands

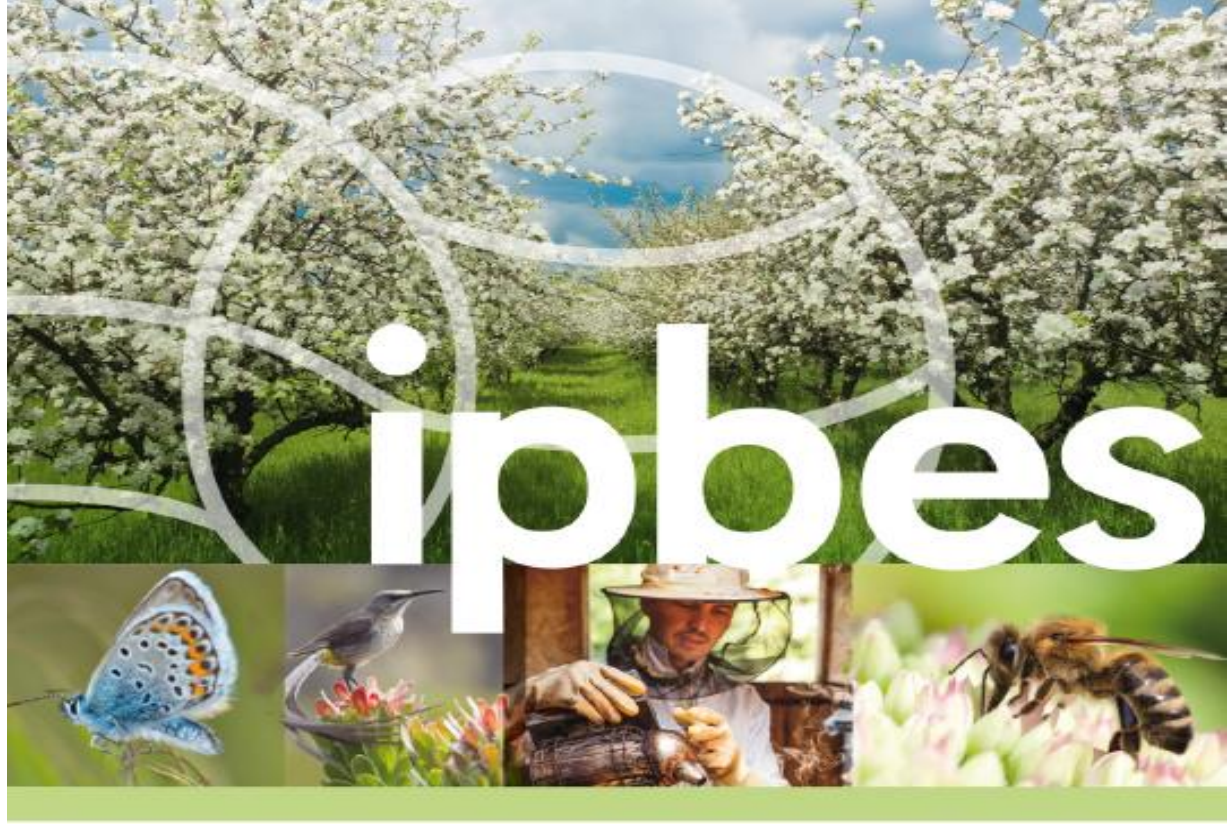


The assessment report on

LAND DEGRADATION AND RESTORATION

SUMMARY FOR POLICYMAKERS

ipbes



The assessment report on

POLLINATORS, POLLINATION AND FOOD PRODUCTION

SUMMARY FOR POLICYMAKERS

ipbes

Contents lists available at ScienceDirect

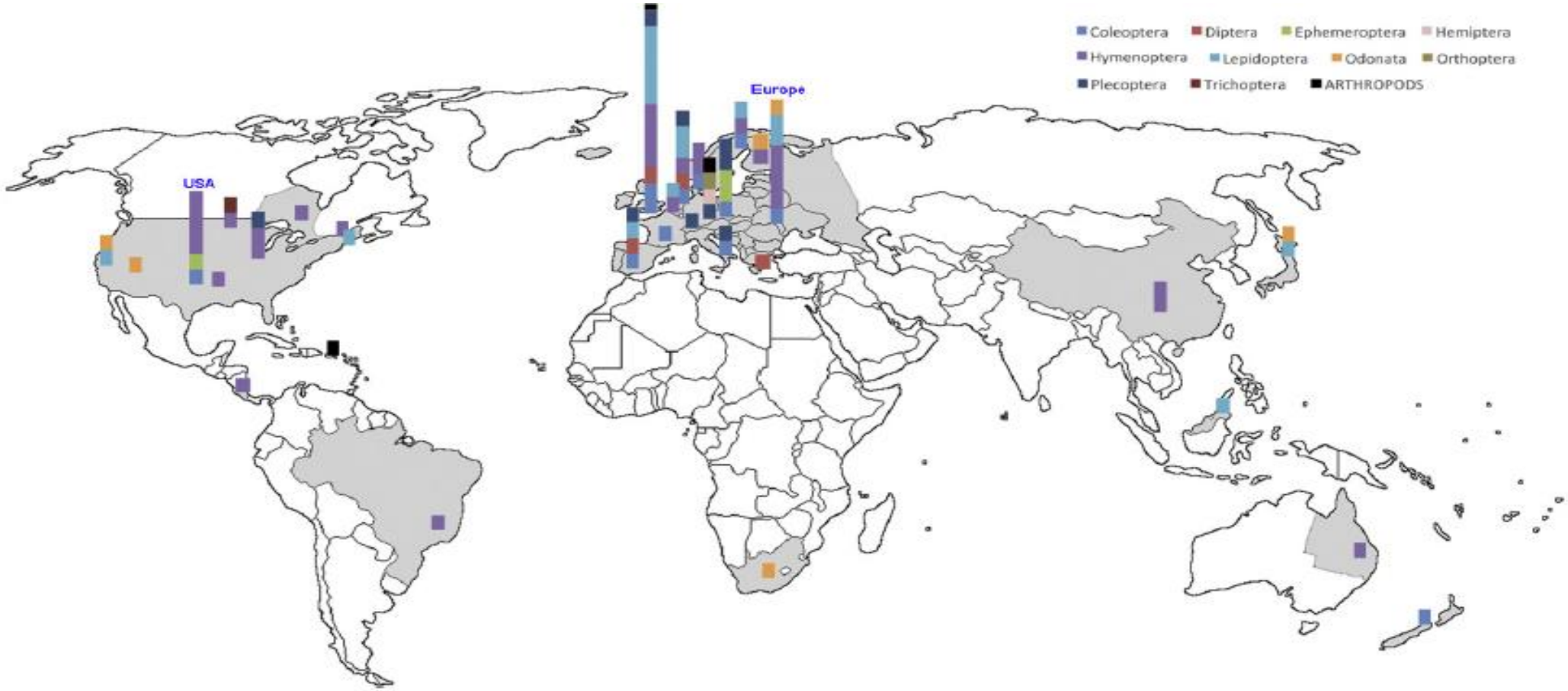
Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Review

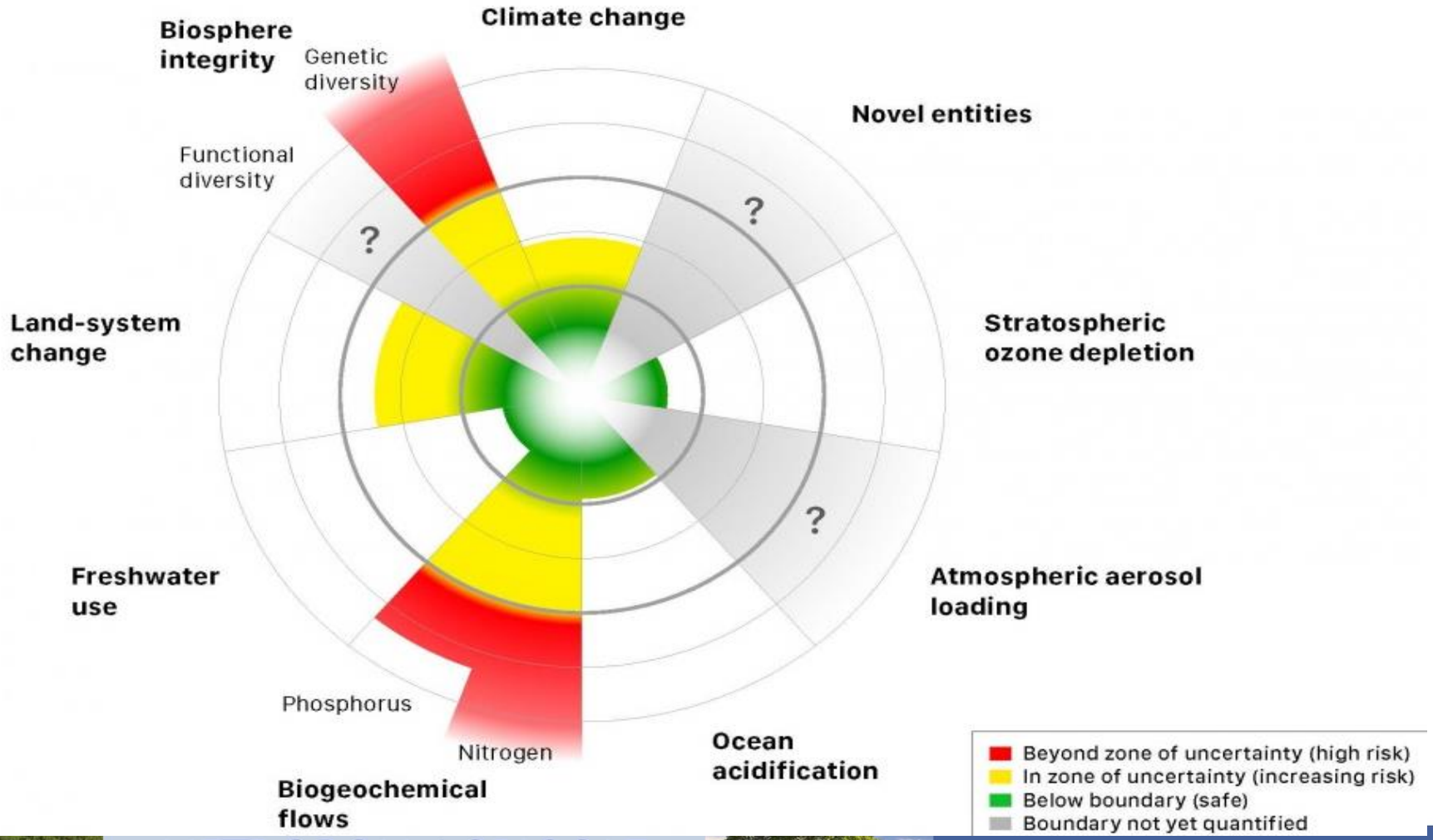
Worldwide decline of the entomofauna: A review of its drivers

Francisco Sánchez-Bayo[a,*], Kris A.G. Wyckhuys[b,c,d]

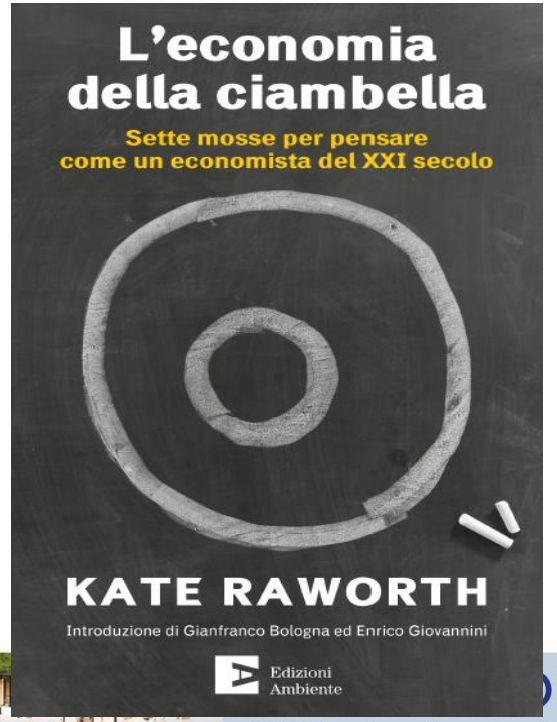


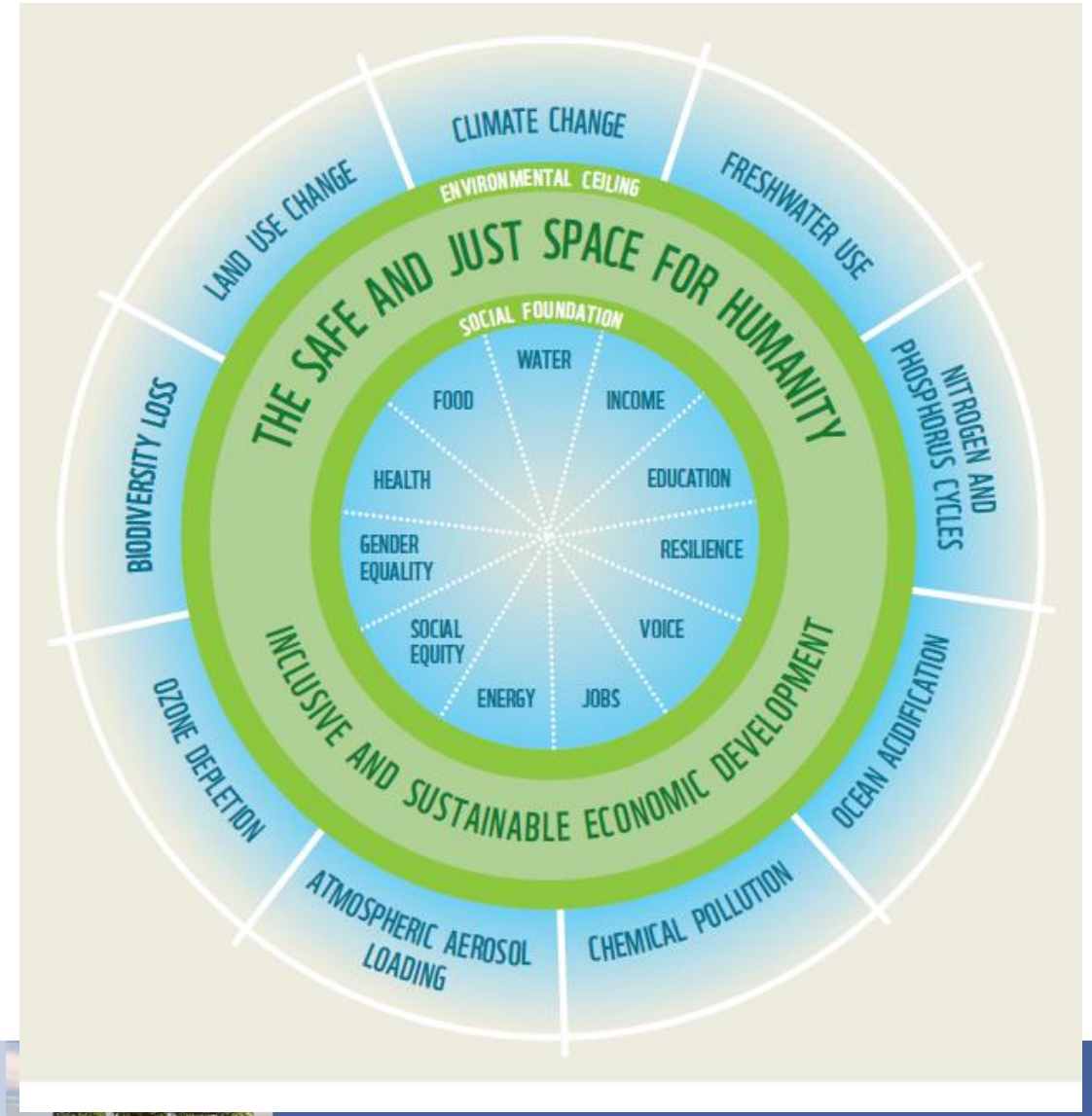
THE SDGS WILL OPERATE DURING 2016-2030

Planetary Boundaries



Doughnut Economics





Summary Report of the EAT-Lancet Commission

Healthy Diets From
Sustainable Food Systems

Food Planet Health

Earth system process	Control variable	Boundary (Uncertainty range)
Climate change	GHG emissions	5 Gt CO_2-eq yr^{-1} (4.7 – 5.4 Gt CO2-eq yr^{-1})
Land-system change	Cropland use	13 M km^2 (11–15 M km^2)
Freshwater use	Water use	2,500 km^3 yr^{-1} (1000–4000 km^3 yr^{-1})
Nitrogen cycling	N application	90 Tg N yr^{-1} (65–90 Tg N yr^{-1}) * (90–130 Tg N yr^{-1})**
Phosphorus cycling	P application	8 Tg P yr^{-1} (6–12 Tg P yr^{-1}) * (8–16 Tg P yr^{-1})**
Biodiversity loss	Extinction rate	10 E/MSY (1–80 E/MSY)

*Lower boundary range if improved production practices and redistribution are not adopted.
**Upper boundary range if improved production practices and redistribution are adopted and 50% of applied phosphorus is recycled.

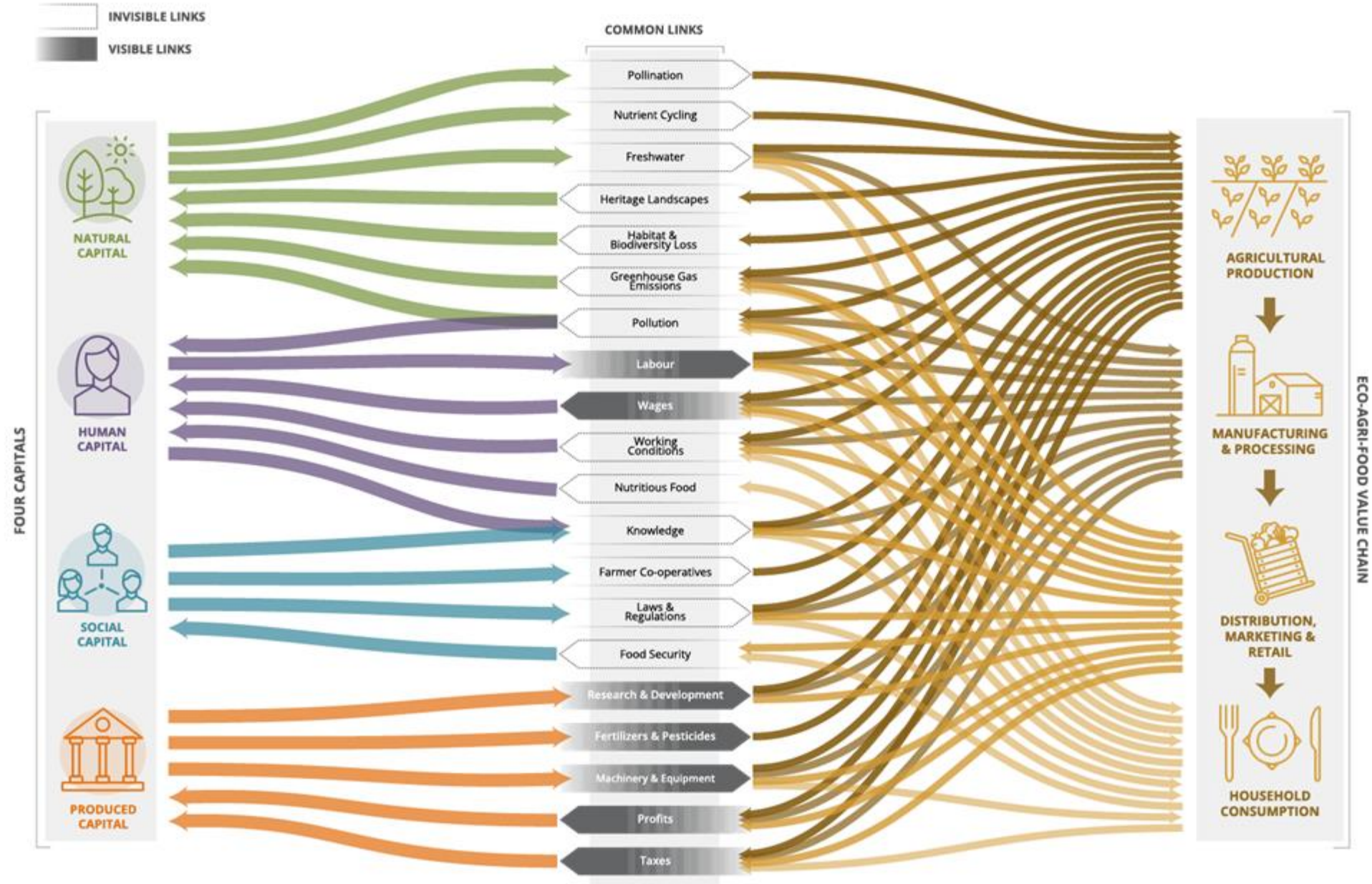
ECONOMY
SOCIETY
BIOSPHERE

MEASURING WHAT MATTERS IN AGRICULTURE AND FOOD SYSTEMS

A synthesis of the results and recommendations of TEEB for Agriculture and Food's Scientific and Economic Foundations Report

TEEB FOR AGRICULTURE & FOOD
SCIENTIFIC AND ECONOMIC FOUNDATIONS REPORT

LINKS BETWEEN FOUR CAPITALS AND THE ECO-AGRI-FOOD VALUE CHAIN



SDG'S THREE-TIERED STRUCTURE AND LINKS TO ECO-AGRI-FOOD SYSTEMS

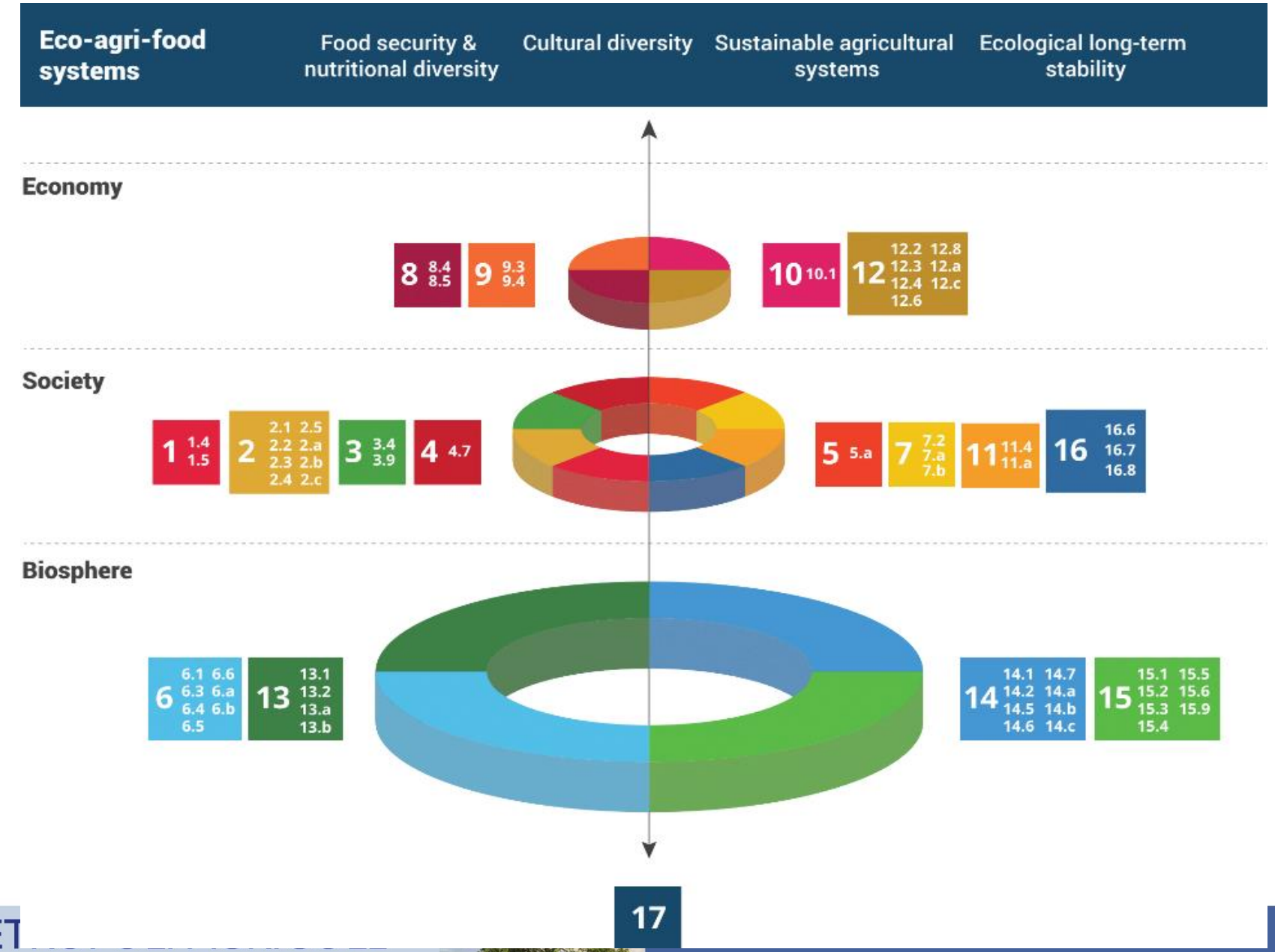
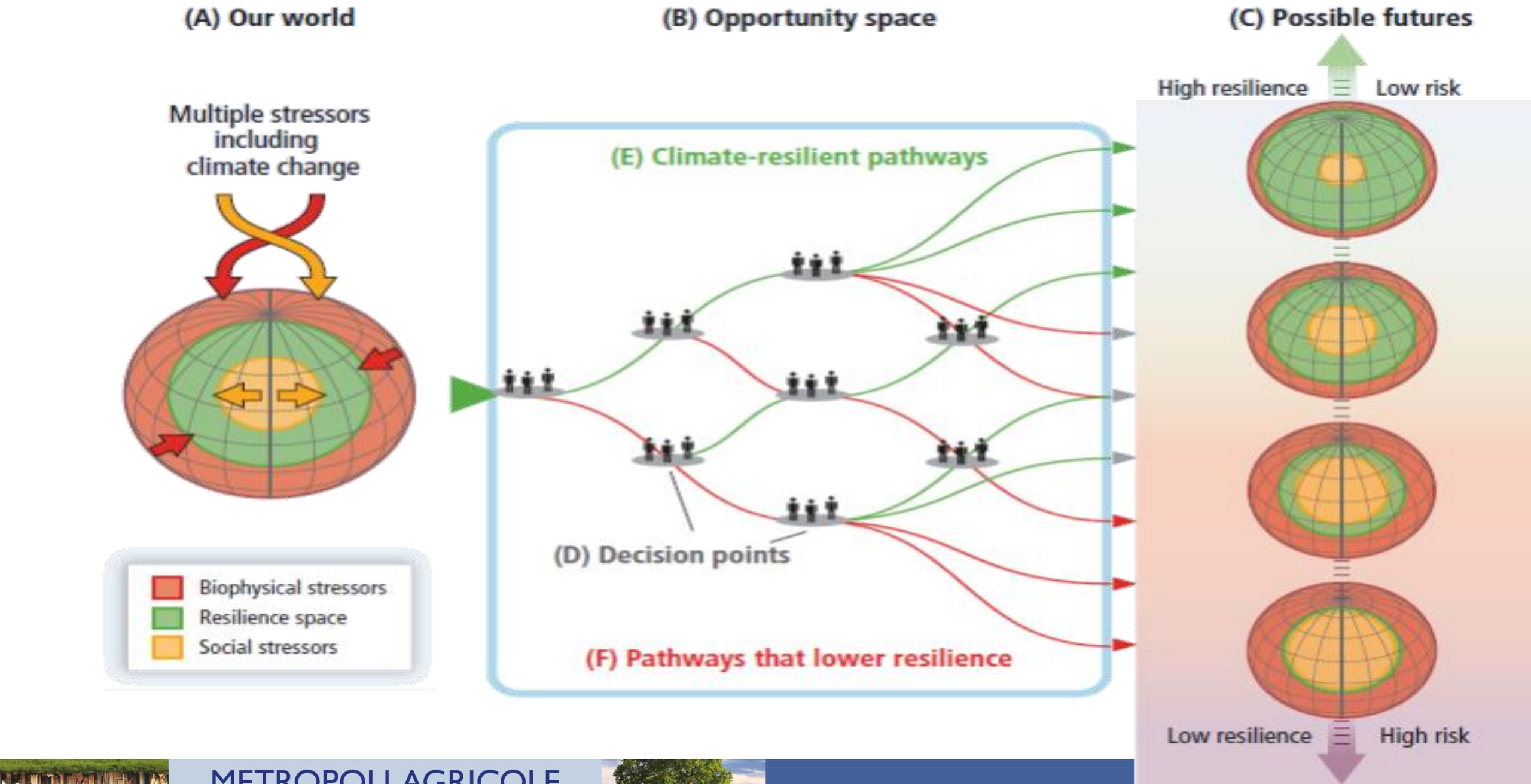


Figure 10.2 (modified)
Source: authors, adapted from EAT 2016

Sustainable Eco-Agri-Food Systems

- ***Sustainable Eco-Agri-Food Systems need to operate within the Safe Operating Space (S.O.S.)***
- ***Transformation to sustainable Eco-Agri-Food Systems for about 10 billion people by 2050 should use no additional land, safeguarding existing biodiversity, reduce consumptive water use and manage water responsibly, substantially reduce nitrogen and phosporus pollution, produce zero carbon dioxide emissions, and cause no further increase in methane and nitrous oxide emissions***
- ***Transformation to healthy diets by 2050 will require substantial dietary shifts, including a greater than 50% reduction in global consumption of unhealthy foods, such as red meat and sugar, and a greater than 100% increase in consumption ogìf Healthy foods, such as nuts, fruit, vegetables, and legumes (the changes needed differ greatly by region)***


(A) Our world
(B) Opportunity space
(C) Possible futures
Multiple stressors including climate change
Biophysical stressors
Resilience space
Social stressors
(E) Climate-resilient pathways
(D) Decision points
(F) Pathways that lower resilience
High resilience
Low risk
Low resilience
High risk

The Choice is Ours