

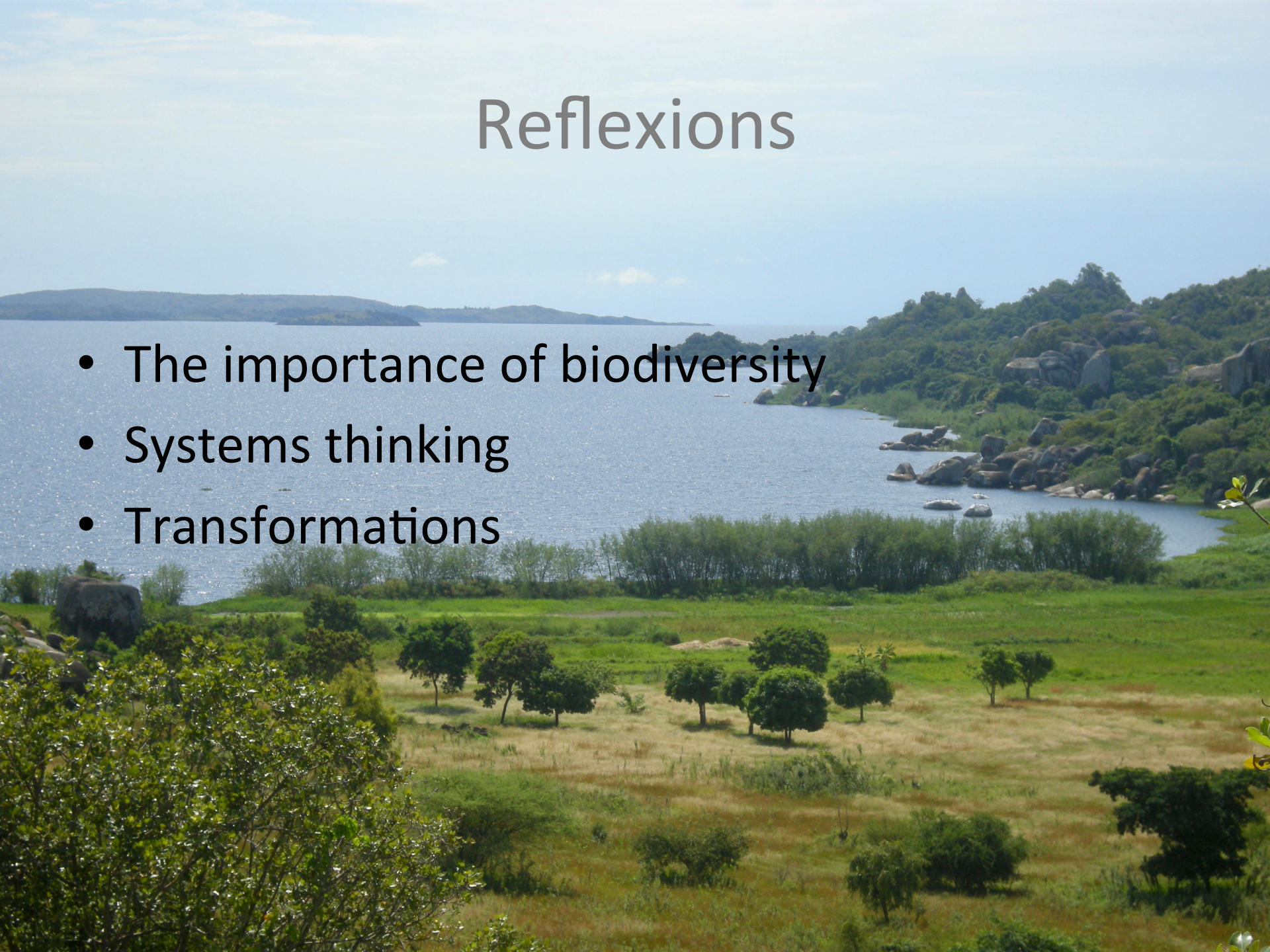
# Advancing the biodiversity agenda through systems thinking



Andrea S. Downing  
Stockholm Resilience Centre

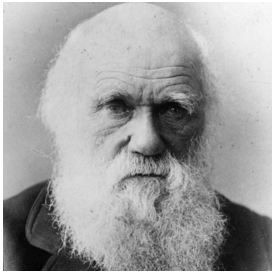
# Reflexions

- The importance of biodiversity
- Systems thinking
- Transformations

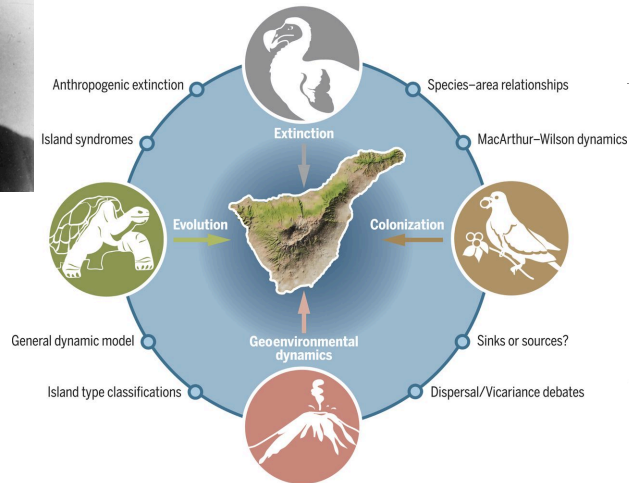


# Biodiversity evolving

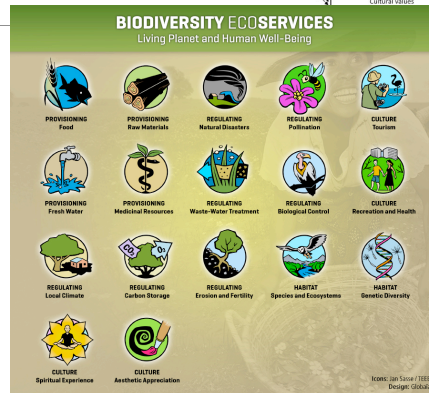
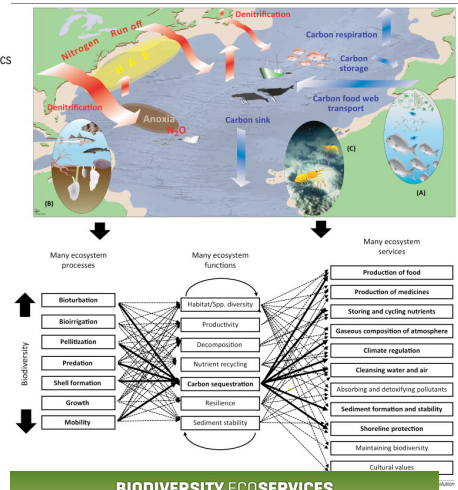
1859



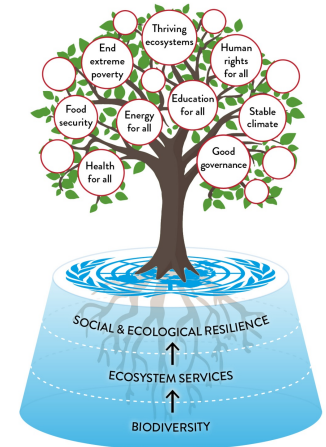
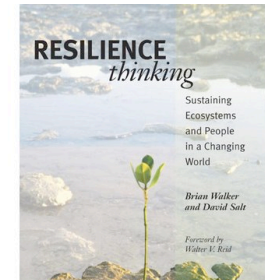
1967



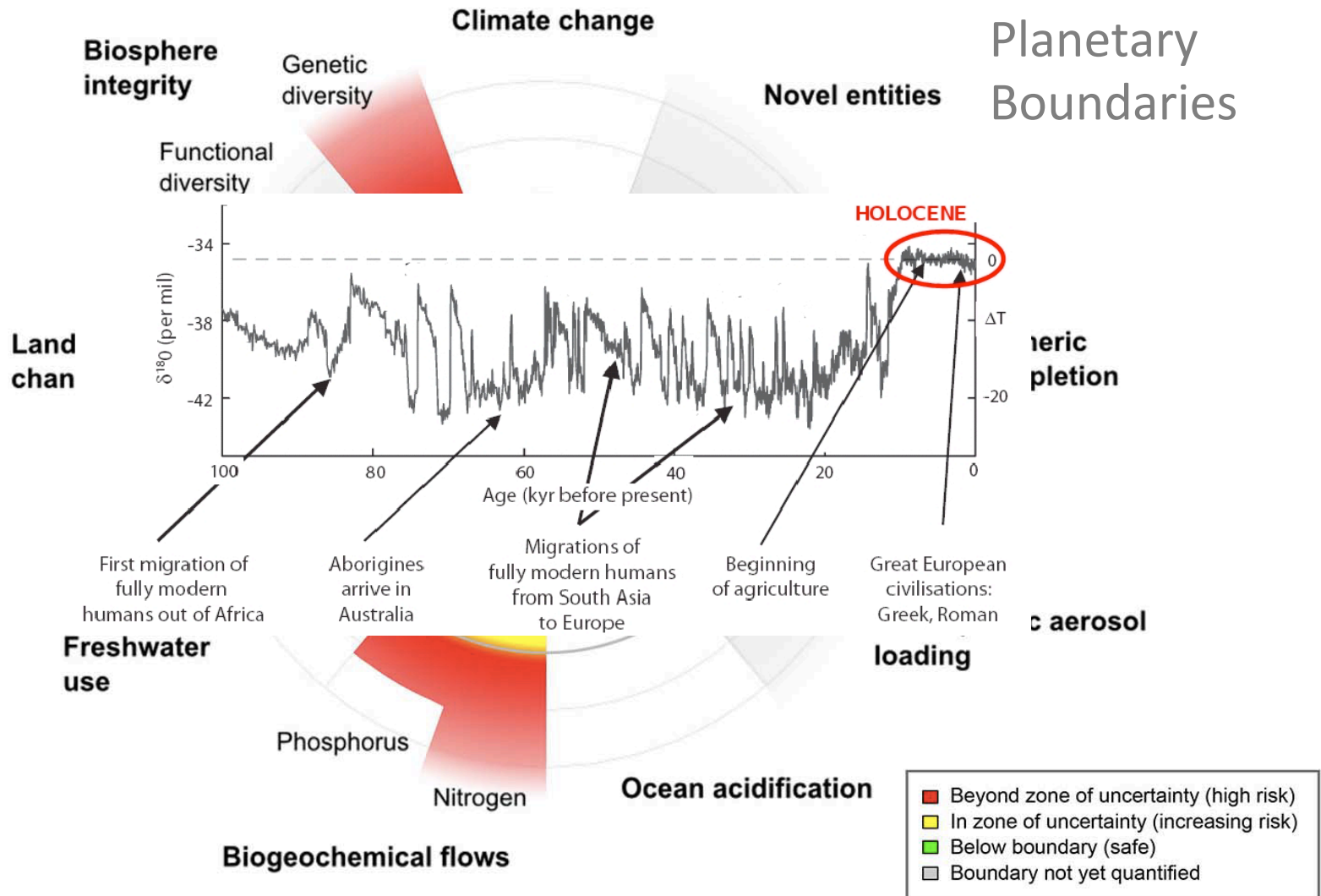
1990s



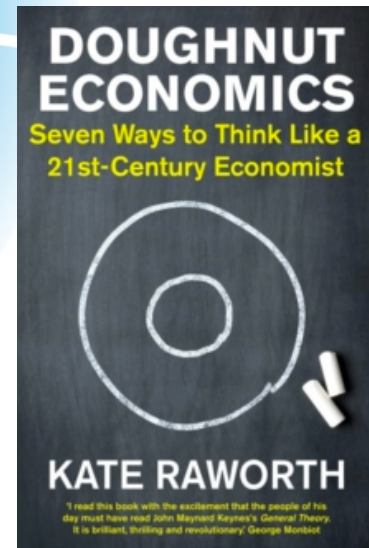
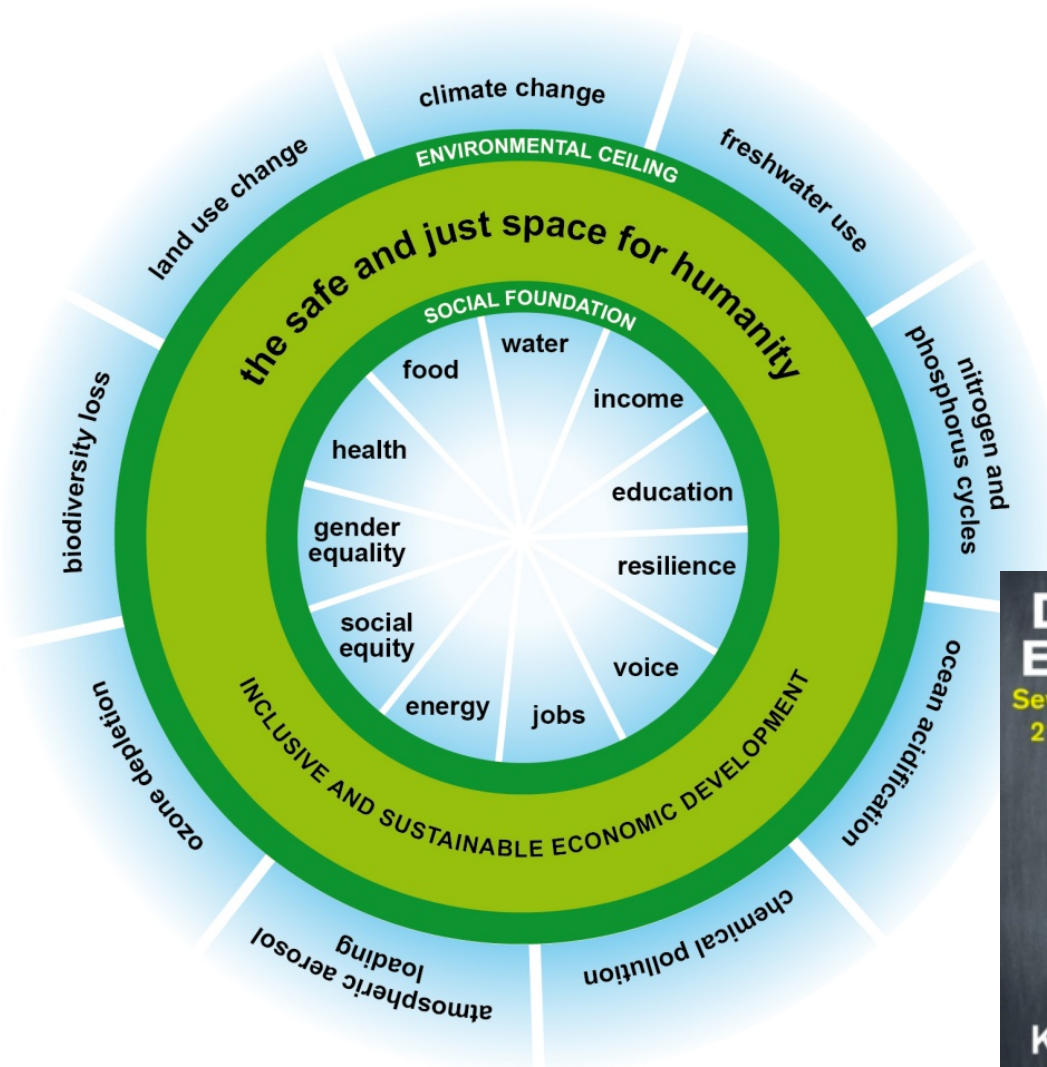
2006



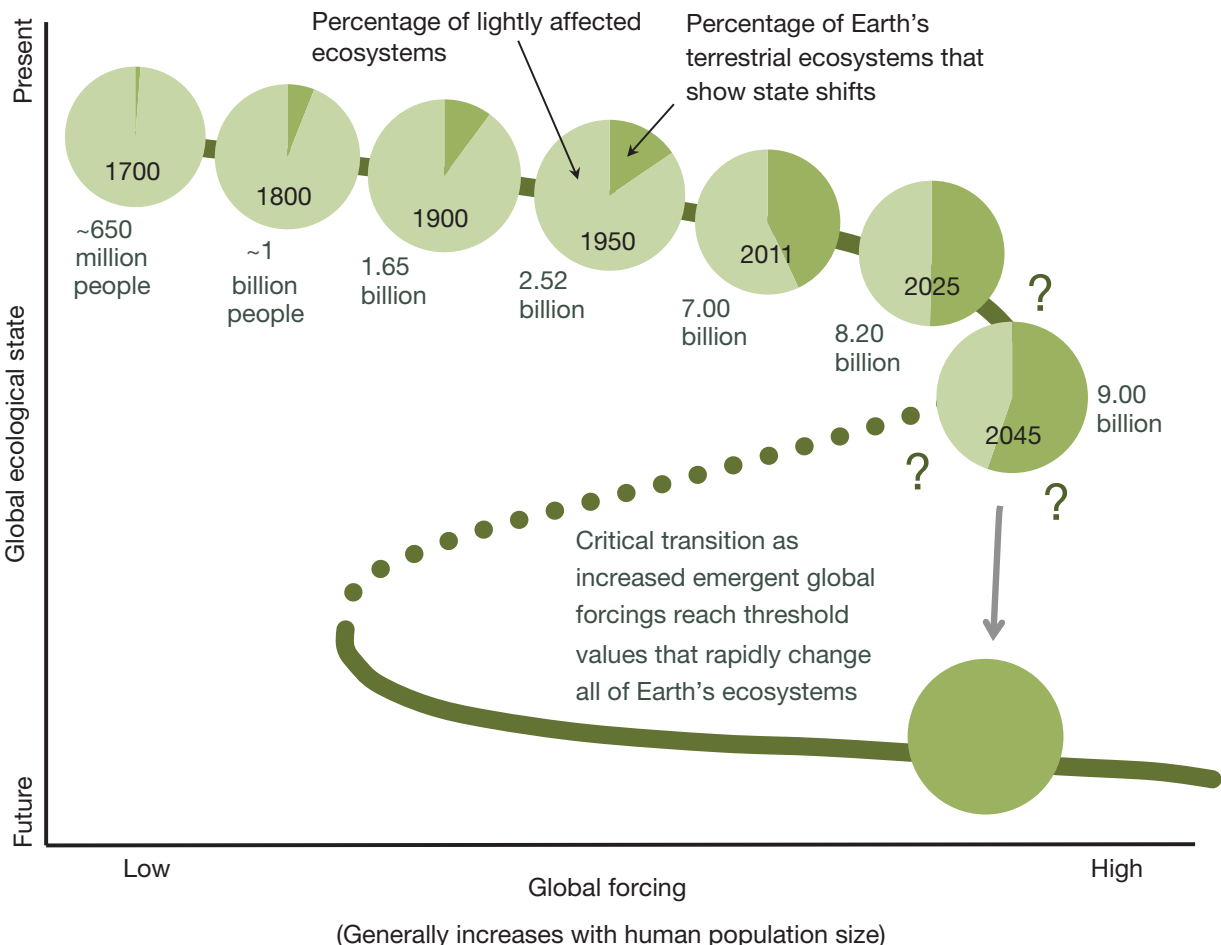
# Biodiversity in sustainability



# Biodiversity in sustainability



# Where are we going?



# The global context



## 2020: THE NECESSARY, DESIRABLE, & ACHIEVABLE TURNING POINT TO SAFEGUARD OUR CLIMATE

TUESDAY, NOVEMBER 14, 2017, 11:30AM - 1:00PM  
MEDIA EVENTS ZONE, BONN ZONE & LIVE STREAM VIA UNFCCC



**Expect to be challenged to act. Expect to be inspired.  
Expect to leave on a mission.**

**Christiana Figueres** (@CFigueres), Former Executive-Secretary of the UNFCCC and Convener of Mission 2020

**Johan Rockström** (@JRockstrom), Director of the Stockholm Resilience Centre

**Kevin Anderson** (@KevinClimate) Zennström Professor, CEMUS, Uppsala University; Chair of Energy and Climate Change, Tyndall Centre, University of Manchester

Moderated by **Mary Robinson** (@MRFCJ), President of the Mary Robinson Foundation for Climate Justice, Former President of Ireland, Former UN High Commissioner for Human Rights

**#2020DONTBELATE // #COP23**

This event is made possible by Mission 2020, the Stockholm Resilience Centre, CEMUS (Uppsala University), and the Leonardo DiCaprio Foundation. **RSVP to Monique Nardi, MNardi@Mission2020.Global**

# Transformations



**“What if we don’t change at all ...  
and something magical just happens.”**

#80913688



# Transformations



Agency

Goals

Leverage points

# Earth biomes that regulate planetary resilience



The polar regions regulate global temperature, regional climate systems and ocean circulation. **Melting faster than anticipated.**



The World's rainforests act as carbon sinks, provide moisture feedback, are banks for genetic diversity and generate oxygen. **In rapid decline but the rate has slowed somewhat.**



The ocean's marine systems act as a heat conveyer, carbon sink, a bank for genetic diversity and generates oxygen. **In rapid decline**



The world's temperate organic systems (such as permafrost) act as carbon & methane sinks and generate oxygen. **Faster than anticipated thawing of permafrost & methane release**



Temperate forests act as carbon sinks, regulate rainfall patterns & generate oxygen. **Relatively stable but concern over rate of deforestation in Russia and severe warming impacts on disease.**

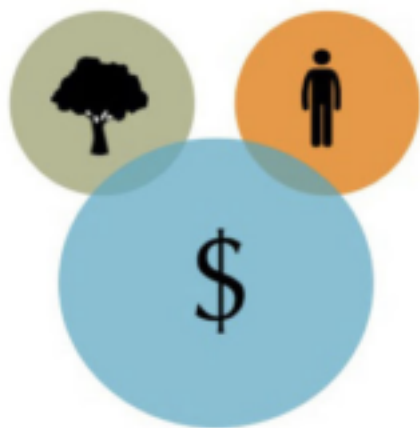


Tropical savannah systems play a role in moisture feedback, regional rainfall patterns and act as carbon sinks. **They remain relatively stable.**

# Goals

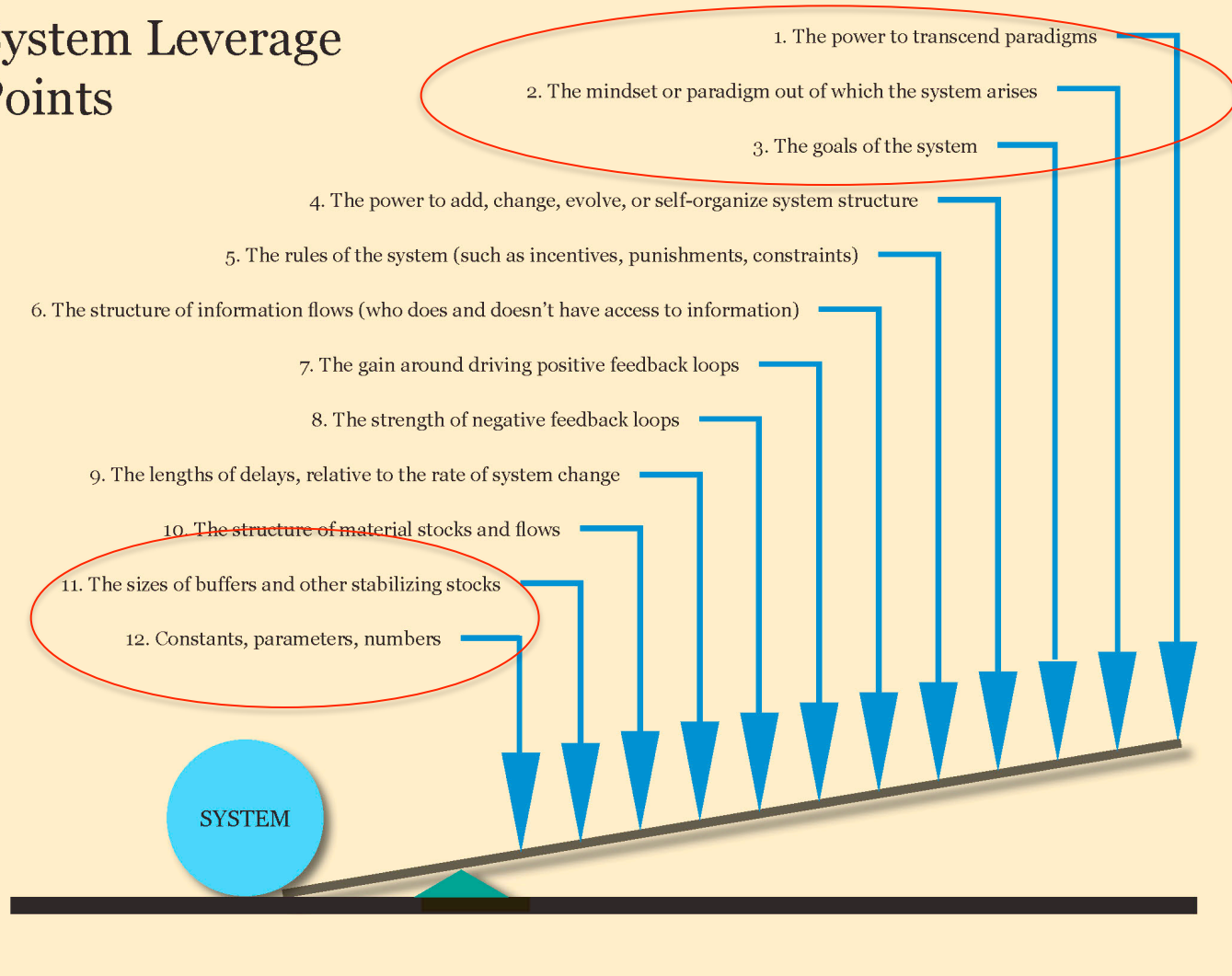


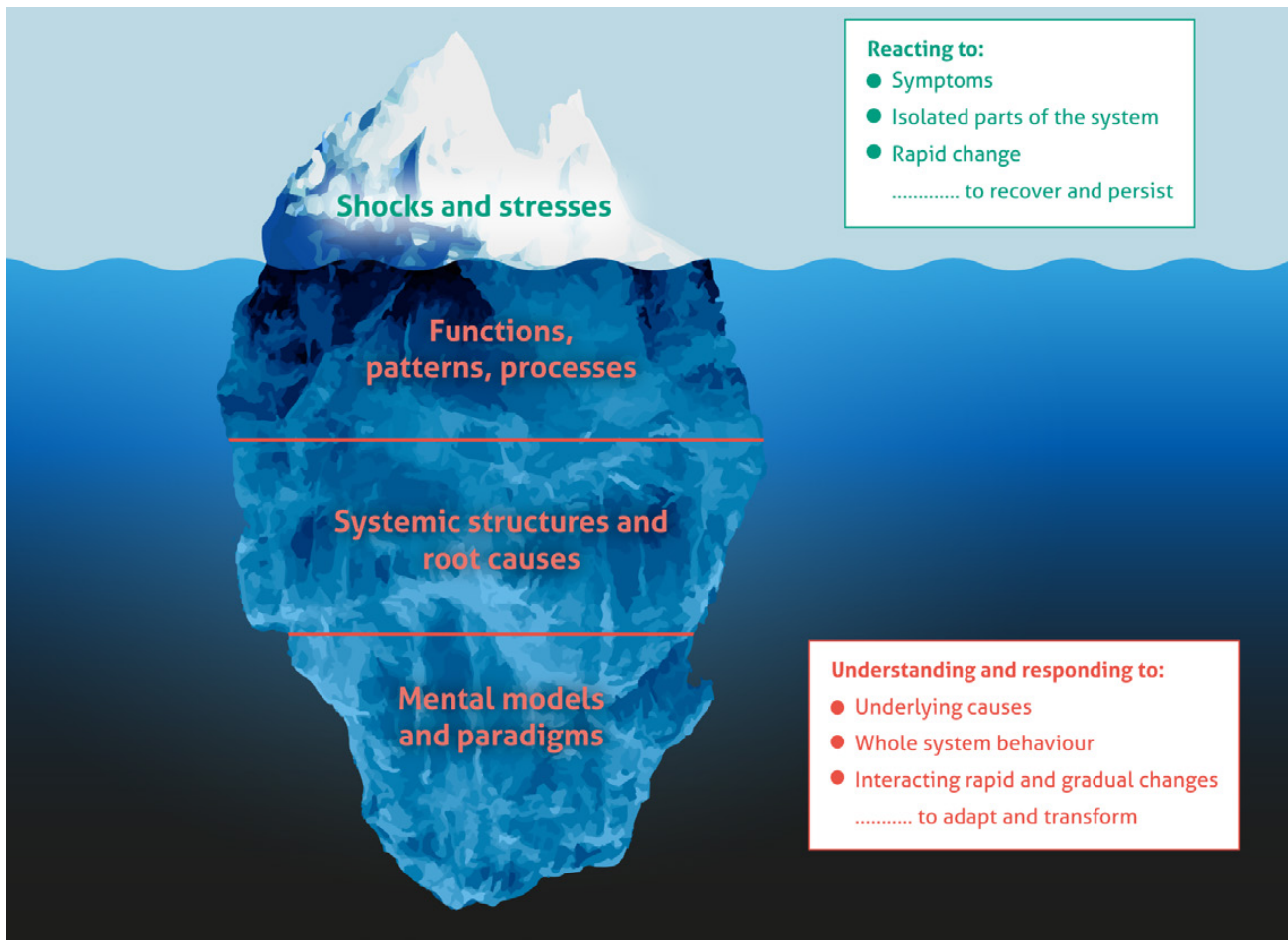
# Goals



# Leverage points

## System Leverage Points





The complexity iceberg. A complexity lens helps us to see below the surface and move beyond consideration and immediate reactions to surface level shocks and stresses to understand: 1) Functions, patterns, processes 2) Systemic structures and root causes 3) Mental models and paradigms.

# Reflexions

- The importance of biodiversity?
- Systems thinking?
  - Connections
  - Feedbacks
  - Emergent properties
  - Lags
- Transformations?
  - Goals
  - Agency
  - Leverage points

# Thank you!

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