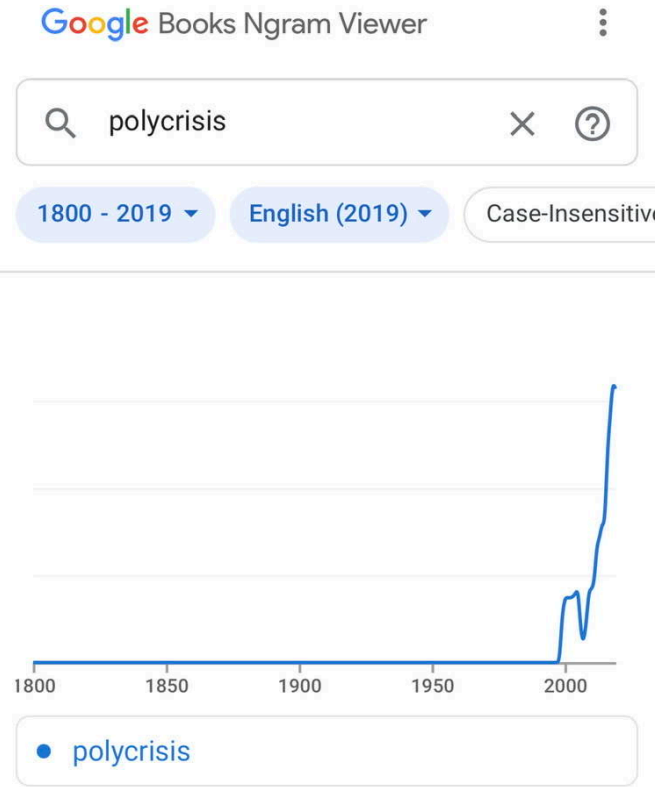




Pathways for Systems Transformation in Response to Global Polycrisis

Zack Walsh, Institute for Ecological Civilization Korea at Hanshin
University, 5-6:30 pm PST, September 13, 2022

Increasing use of the term “polycrisis”



Zack Walsh
July 29 · 🌐

WTO chief warns that we are in a global #polycrisis.

COUNTERCURRENTS.ORG

World Is Facing Unprecedented Polycrisis, Warns WTO | Countercurrents
The world, now more complex, is facing unprecedented polycrisis, the World Trade Organizatio...



What is a global polycrisis?

“Any combination of three or more interacting systemic risks with the potential to cause a cascading, runaway failure of Earth’s natural and social systems that irreversibly and catastrophically degrades humanity’s prospects” (Janzwood and Homer-Dixon, 2022).”

Table 1 summarizes the distinctions between systemic risk, GCR, polycrisis, and global polycrisis.

Table 1: Distinctions between systemic risk, global catastrophic risk, polycrisis, and global polycrisis

Type of risk	Number of “systems of origin”	Scale of outcomes	Magnitude and reversibility of outcomes
Systemic risk	One	Possibly regional, continental, or global	Typically sub-catastrophic, probably reversible
Global catastrophic risk	One	Global	Irreversible and catastrophic degradation of humanity’s prospects
Polycrisis	Three or more	Possibly regional, continental, or global	Sub-catastrophic, possibly reversible
Global polycrisis	Three or more	Global	Irreversible and catastrophic degradation of humanity’s prospects



Presentation Structure

The definition of global polycrisis highlights the relationship between three phenomena:

PART I: Interacting systemic risks

PART II: Social and environmental collapse

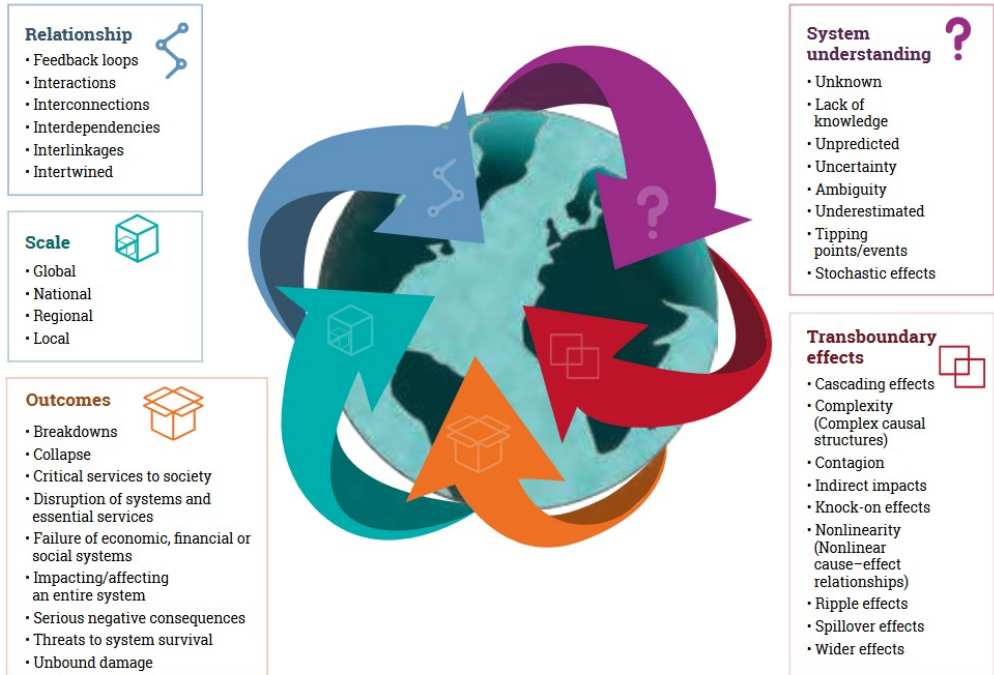
PART III: Existential risk and recovery



PART I:
Interacting
Systemic Risks

Properties of Systemic Risk

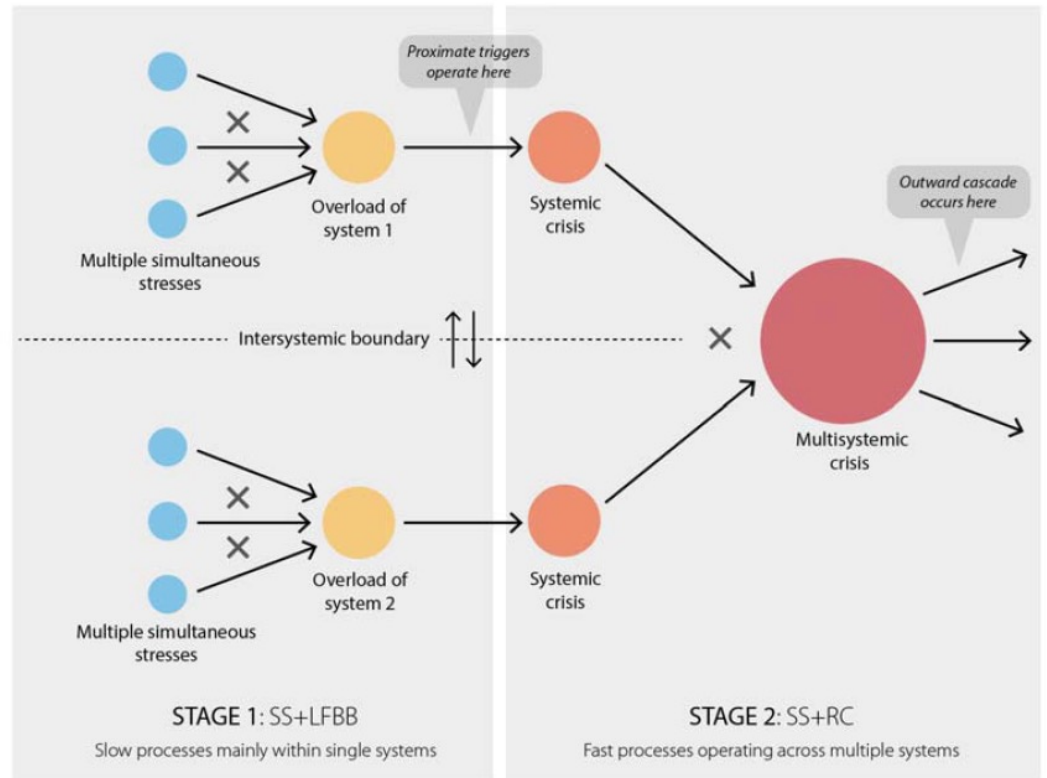
Figure 1.2. Terminology for key attributes of systemic risk



Source: Based on Sillmann et al. (2022)

Global Crisis Model

Fig. 1. Synchronous failure: a conceptual framework showing the emerging causal architecture of global crisis. SS = simultaneous stresses; LFBB = long fuse big bang; RC = ramifying cascade.

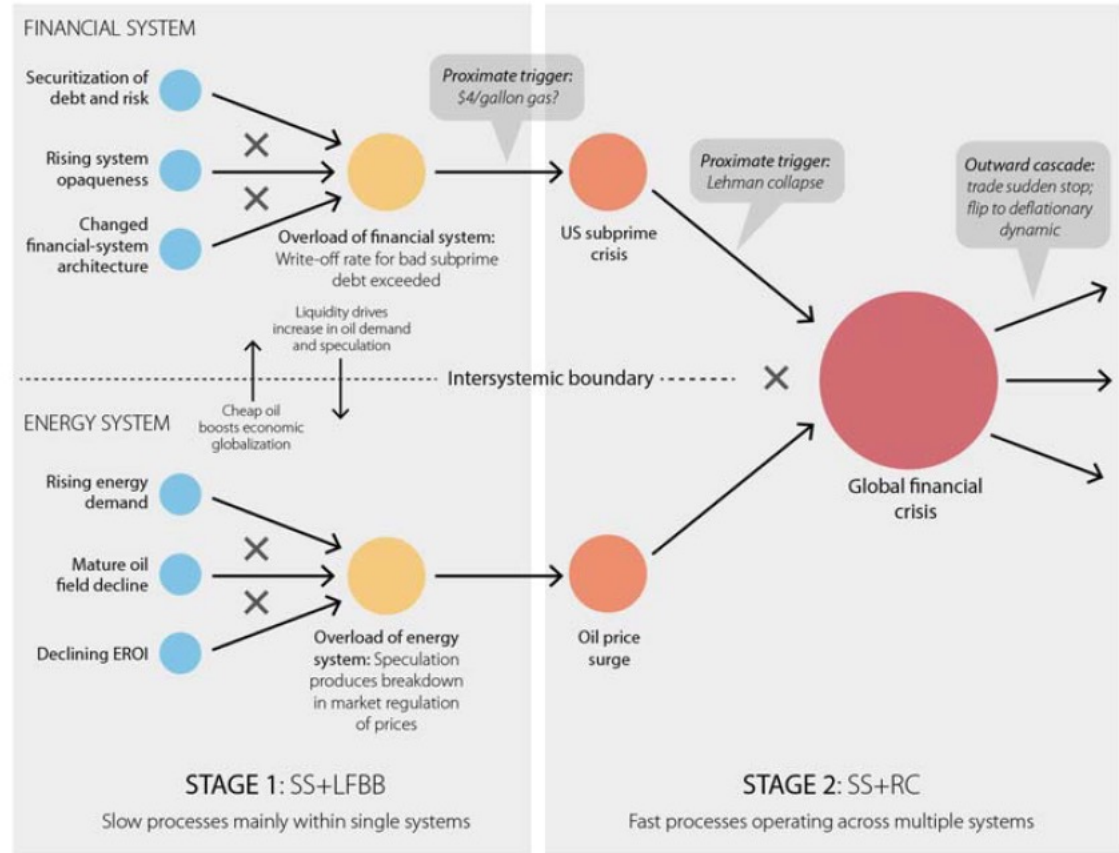


Pressures: Structural conditions that build up slowly (amenable to prediction)

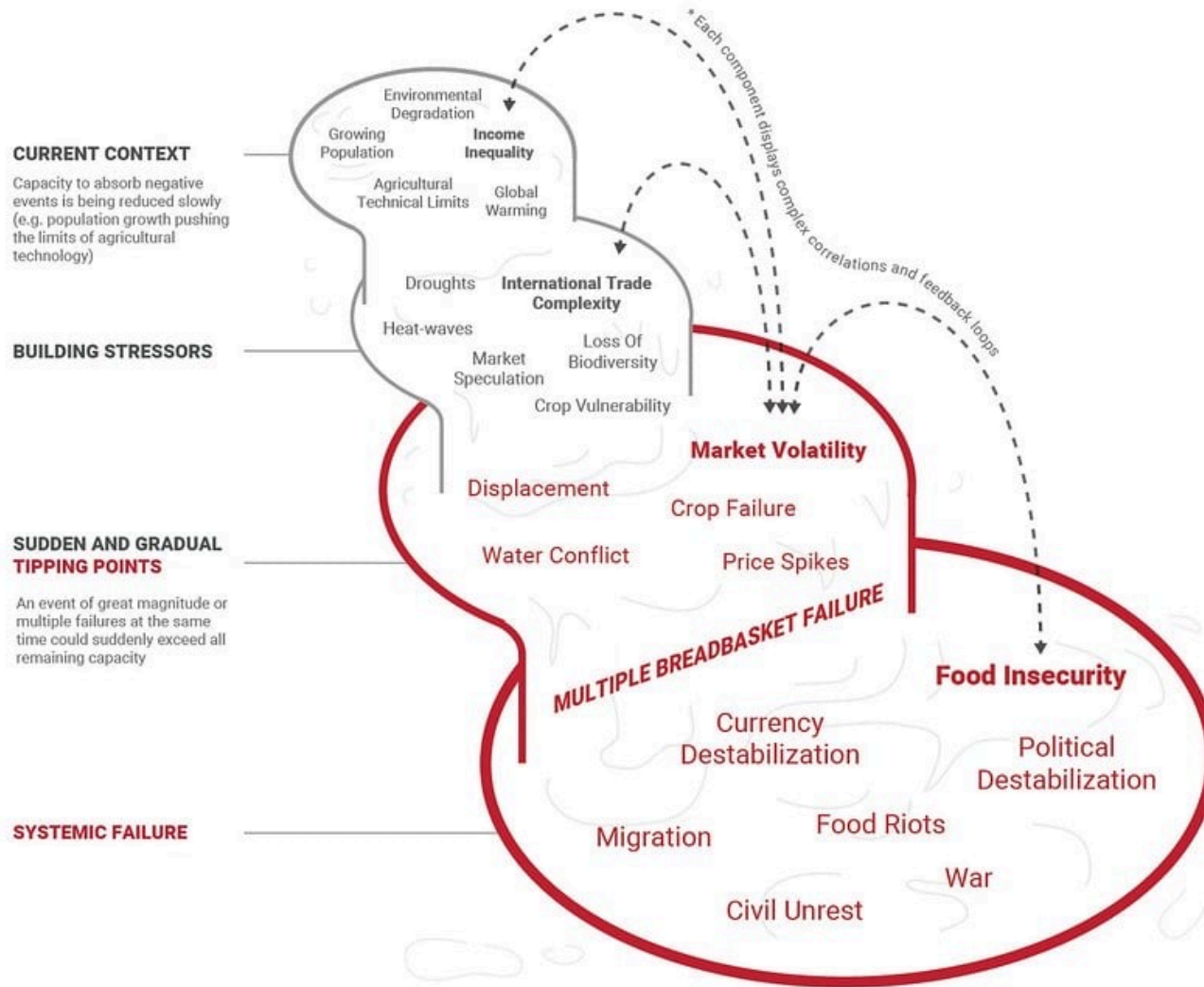
Triggers: Sudden releasing events which precede social or geological eruption (hard to predict, but often caused by pressures)

Example of Global Crisis Model

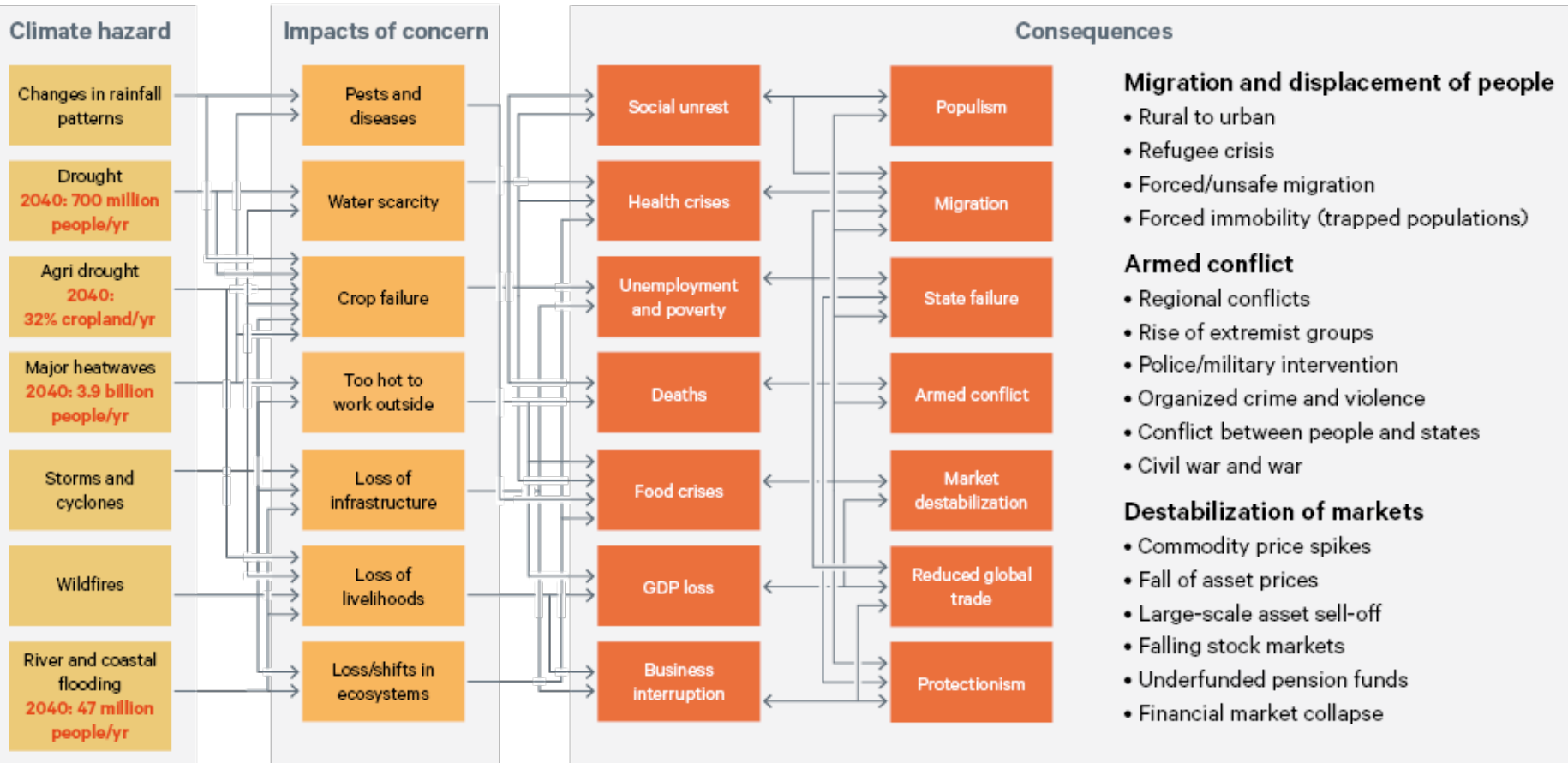
Fig. 2. The 2008 financial-energy crisis. SS = simultaneous stresses; LFBB = long fuse big bang; RC = ramifying cascade; EROI = energy return on investment.



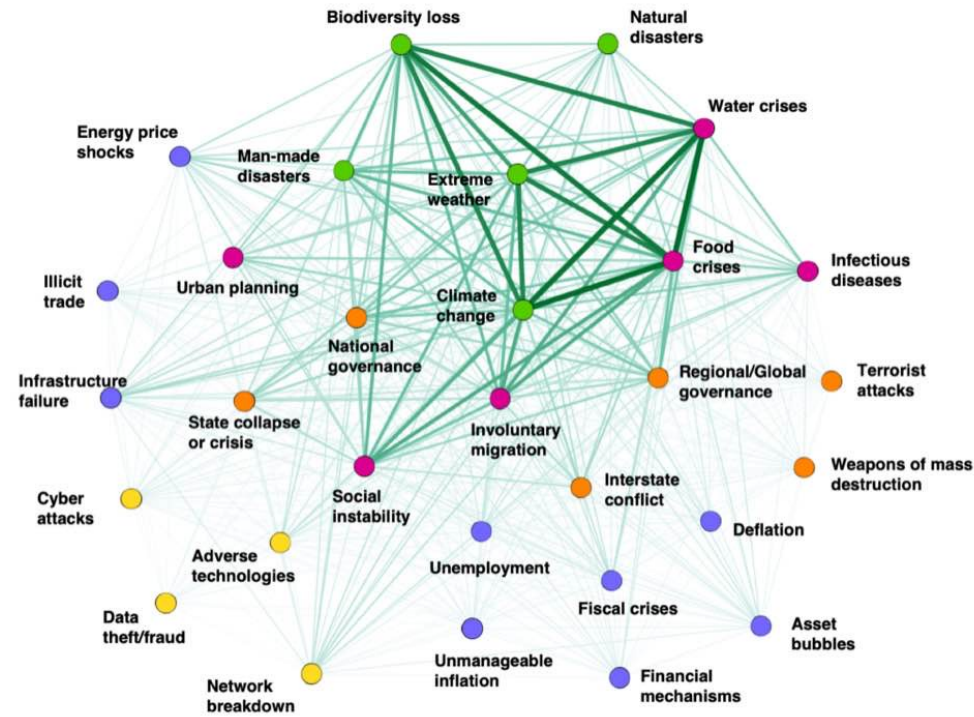
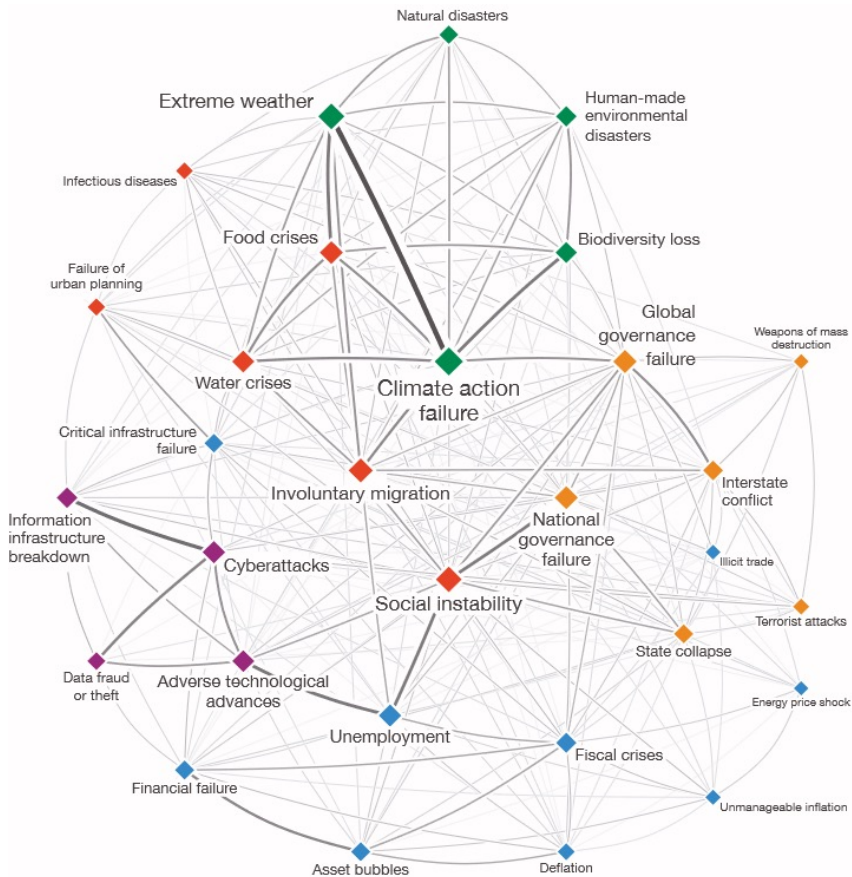
United Nations Disaster Risk Reduction



Climate change risk assessment



Surveys on risk perception

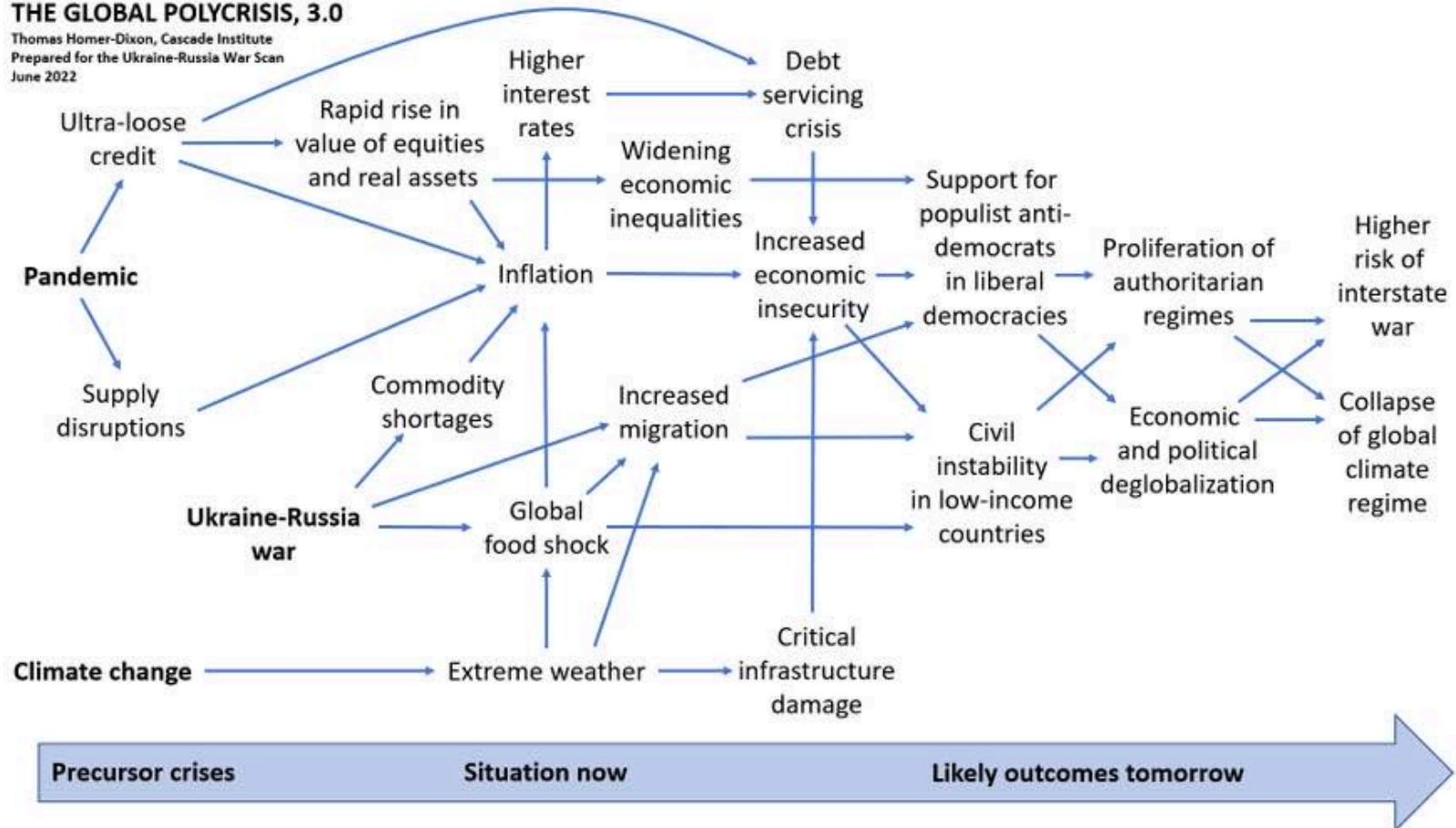


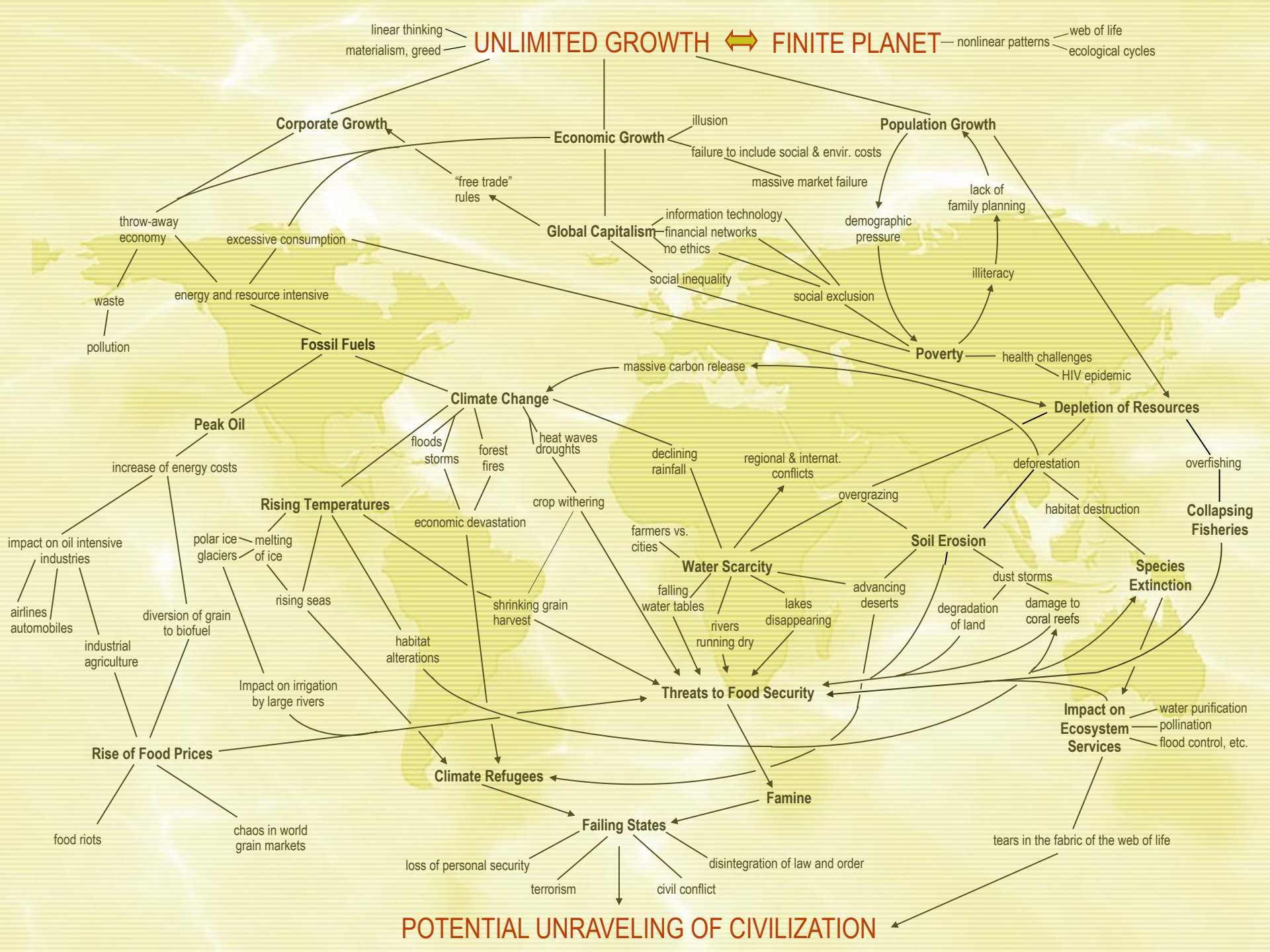
The network of potentially synergistic risks with the potential to lead to a global systemic crisis. The colour of the node indicates the category of risk (*green*=environmental; *pink*=societal; *orange*=geopolitical; *yellow*=technological; *blue*=economic). The thickness of the lines connecting two risks represents the frequency of responses identifying a synergistic interconnection between them.

Today's global polycrisis

THE GLOBAL POLYCRISIS, 3.0

Thomas Homer-Dixon, Cascade Institute
Prepared for the Ukraine-Russia War Scan
June 2022





PART II:
Social and Environmental Collapse
(the other side of growth)

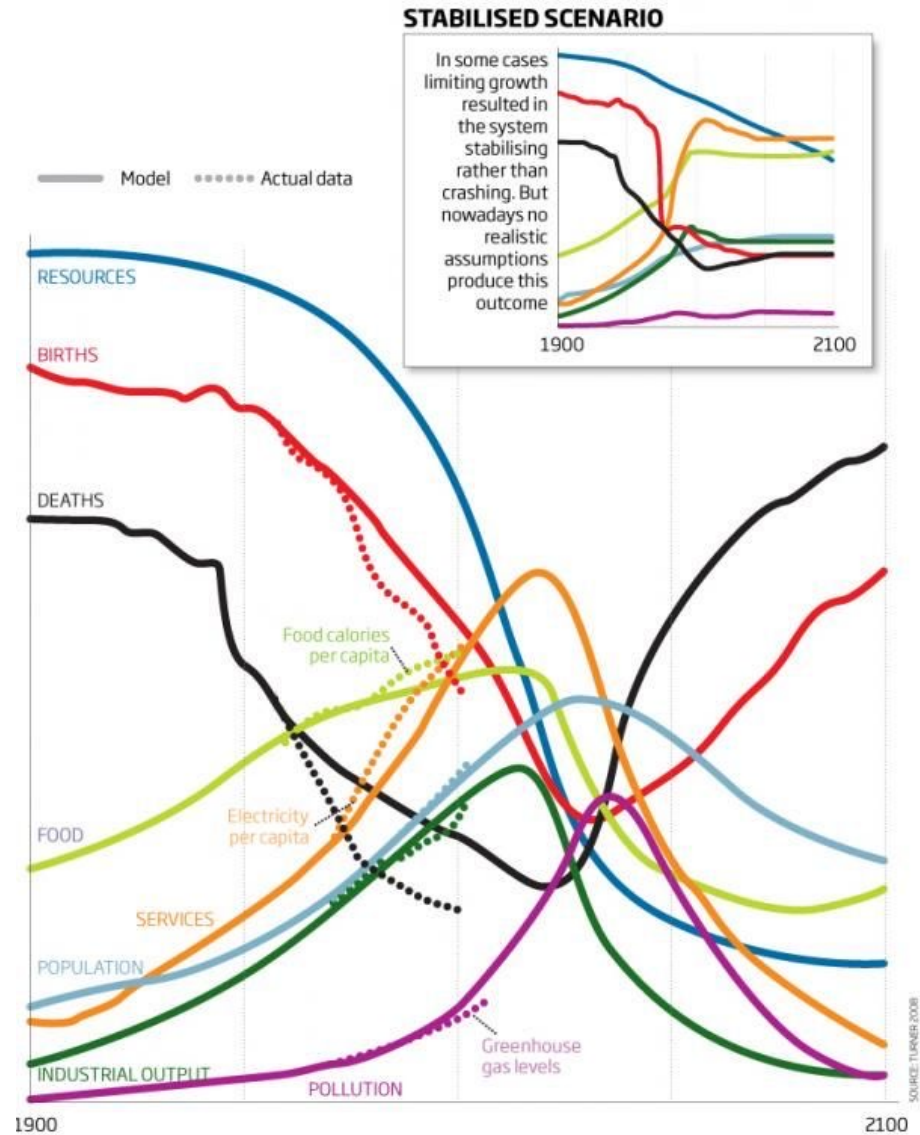


The end of exponential growth, the beginning of protracted breakdown and collapse

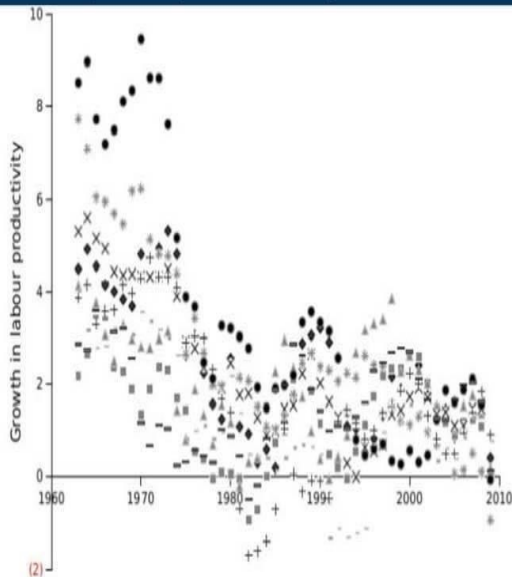
Boom and bust

©NewScientist

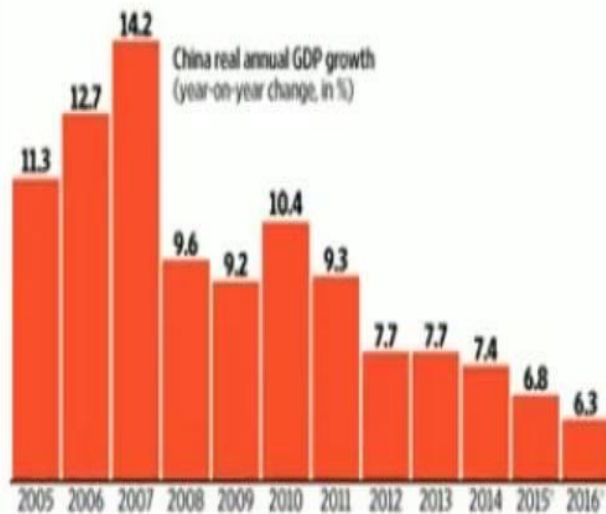
In most runs of the World3 computer model, rapid growth is followed by sharp decline. So far the standard run (main graphic) corresponds well with measurements of real-world equivalents (dotted lines)



THE DRAGON SLOWS



◆ Belgium
■ Canada
▲ Denmark
X France
* Italy
● Japan
+ Netherlands
- Switzerland
- United States



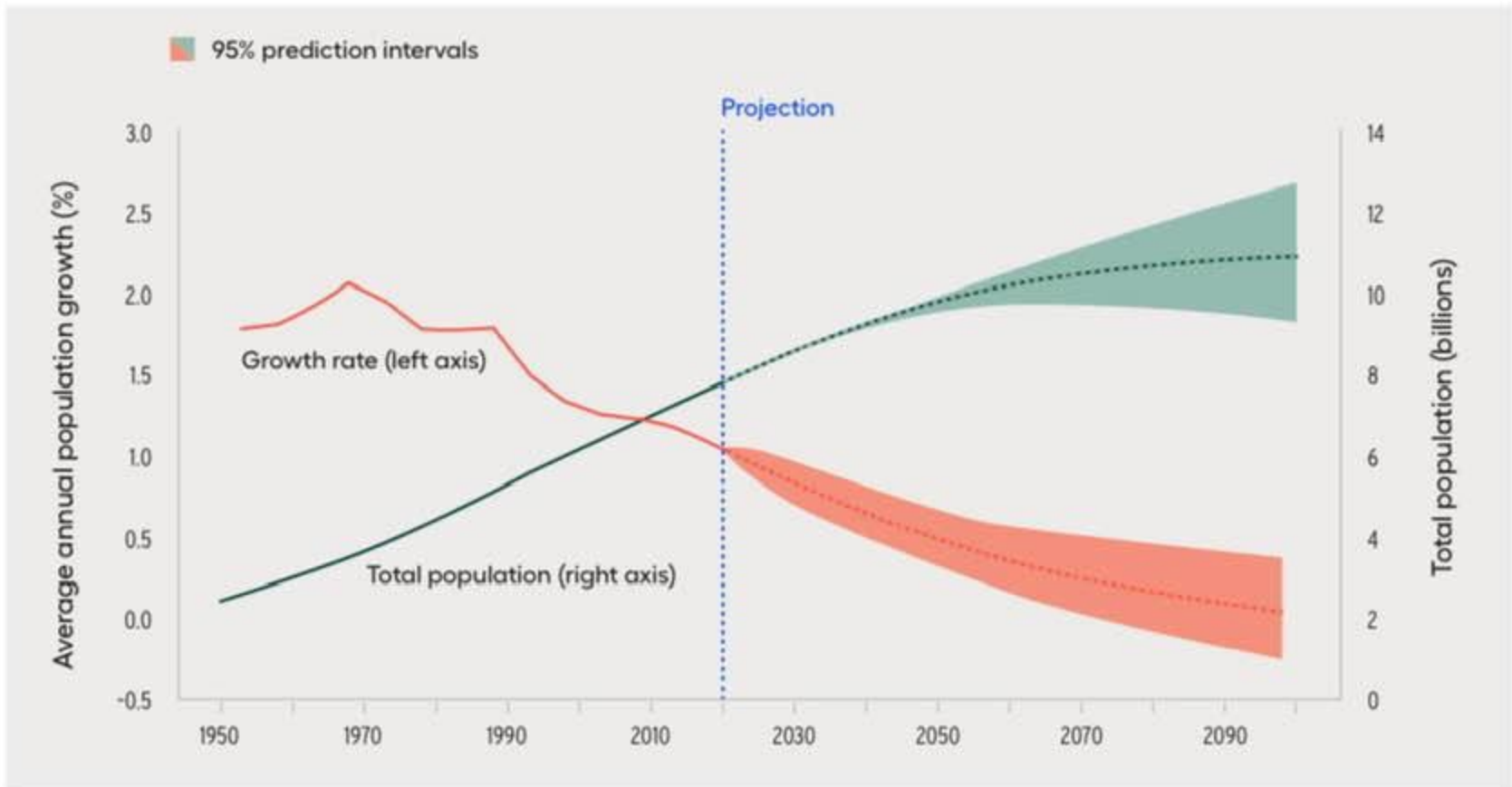
*Projected % change by International Monetary Fund

Source: Bloomberg

The global economy is in a phase of secular stagnation

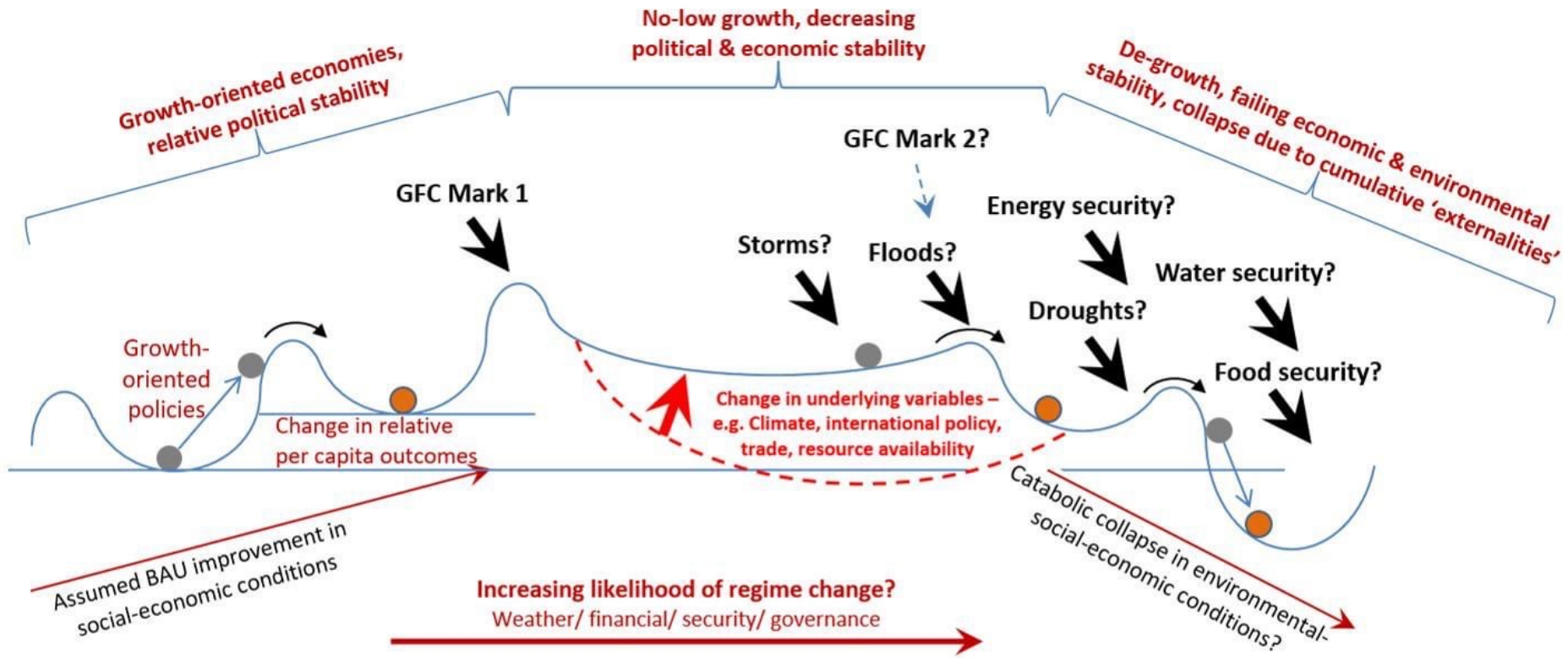
- Has any growth in the past 20 years been financially sustainable?
 - The stock market bubble of the 1990s
 - The housing bubble of the 2000s
 - The bubble in Europe's periphery in the 2000s
 - Japan's stagnation in the 1990s and 2000s
 - Quantitative easing in the 2010s
- Answer seems to be no
 - This points to a long-term problem: 'secular stagnation'

Figure 1.8 Global population is growing, but growth rates are falling



Source: UNDESA 2019b.

Ball & cup resilience for different system states/ regimes -- Global



Regime – shape indicates the persistence/ degree of resistance to shock/ change of the attraction domain



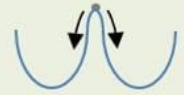
Current system state - individual, organisation, institution, community, ecosystem, economy



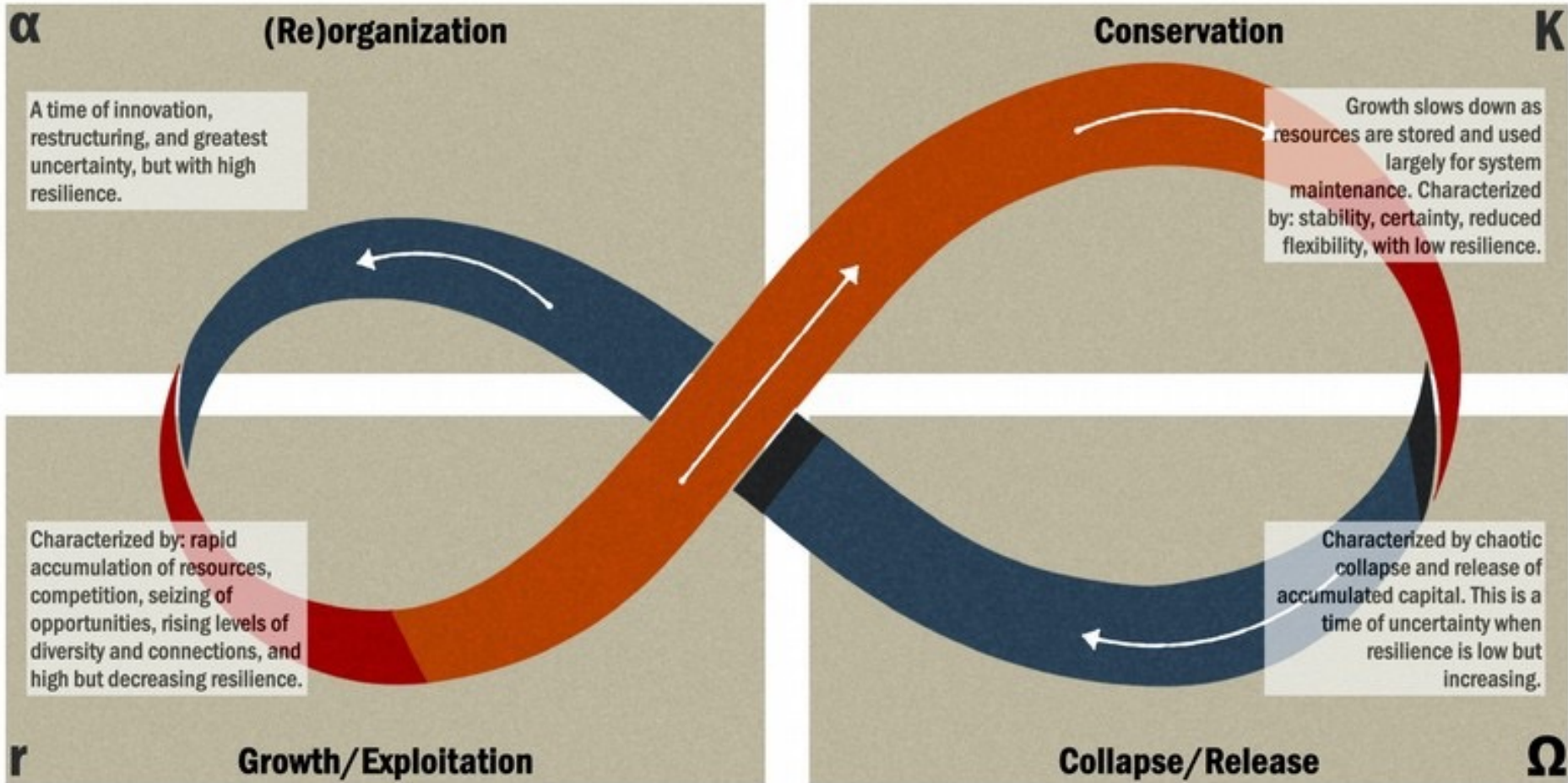
Shock – hurricane flood, fire, pollution event, currency collapse, commodity price collapse, resource depletion



Tipping point – point where system state could change rapidly by falling into either of two regimes



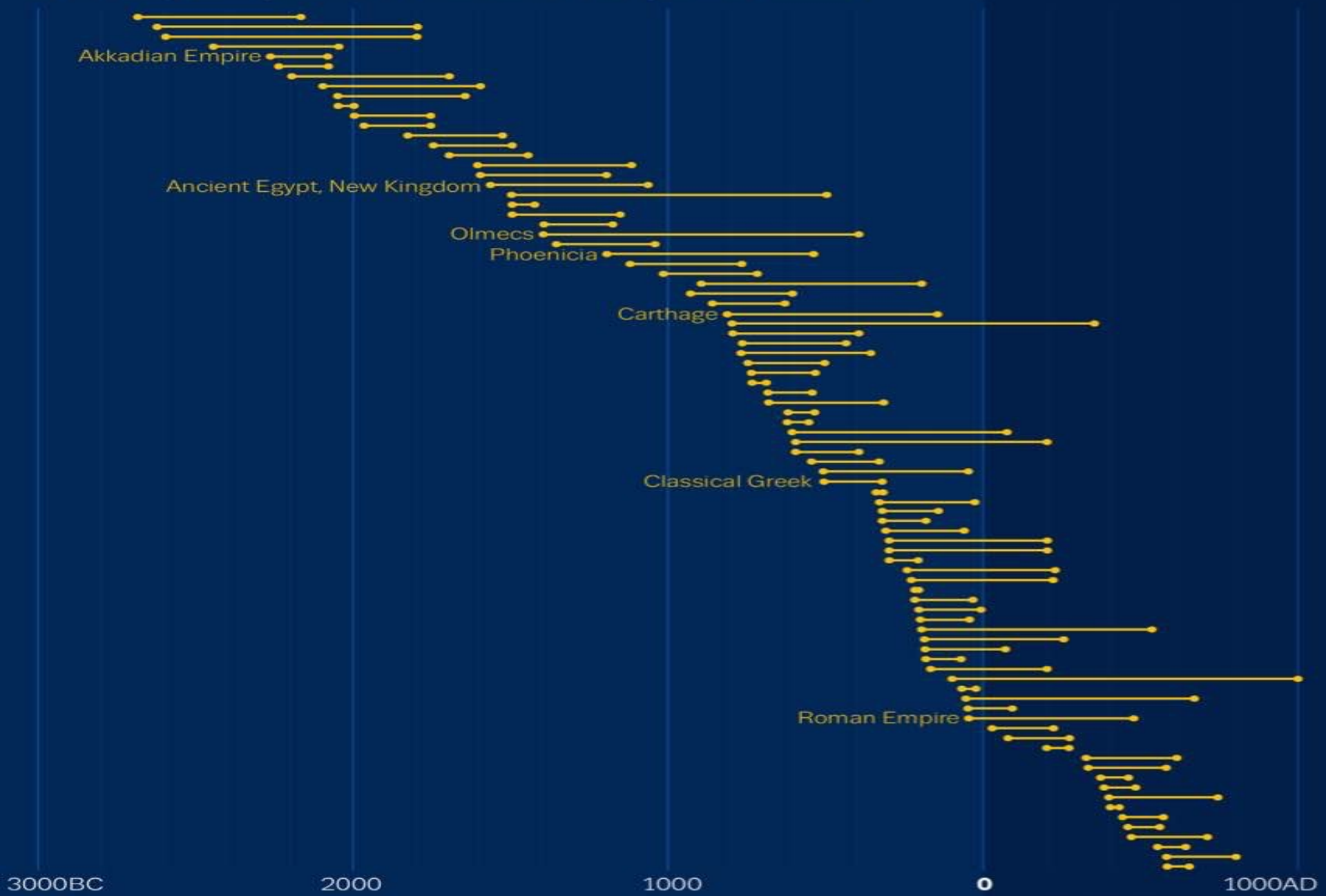
The Adaptive Cycle



source: Holling, Gunderson and Ludwig, In Quest of a Theory of Adaptive Change, 2002

Ancient civilisations

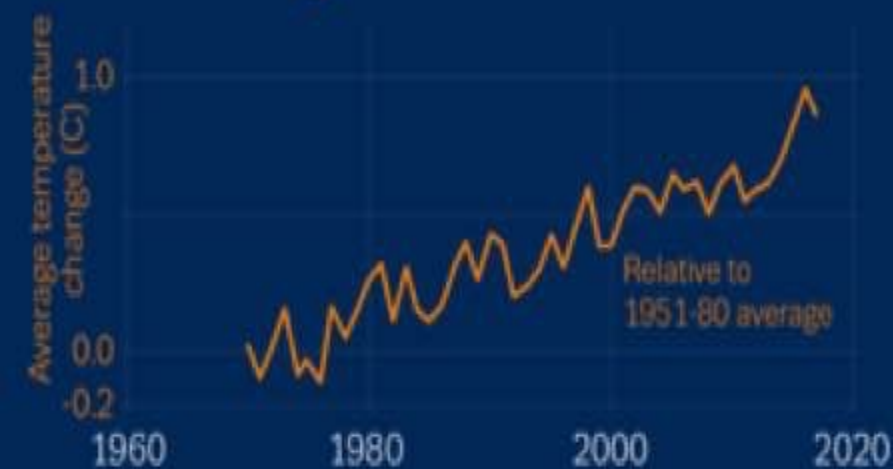
The average lifespan of a civilisation is 336 years



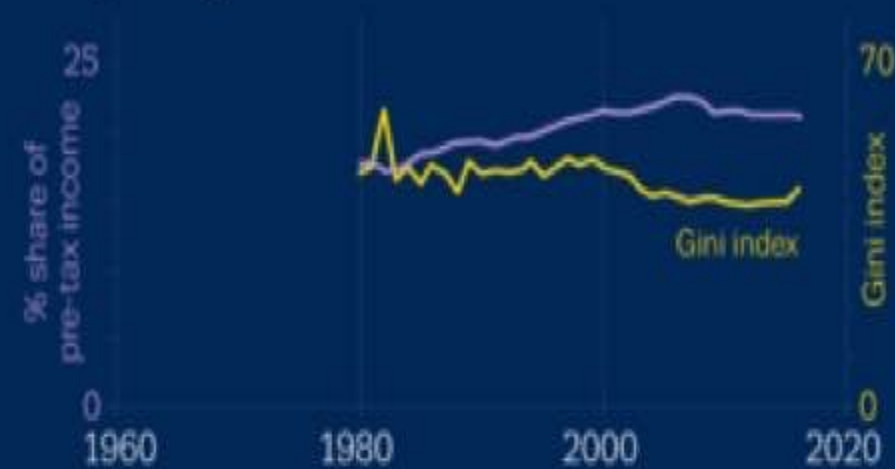
Danger signs

History suggests that when these indicators rise, the likelihood of collapse is greater.

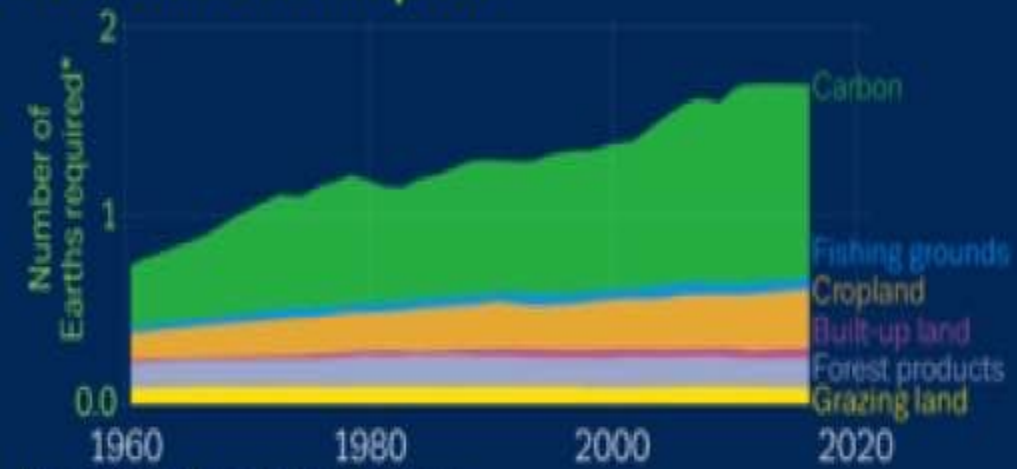
Climate change



Inequality



Environmental impact



Complexity



*a measure of ecological footprint, describing Earth's capacity to support our demands

© Nigel Hawtin

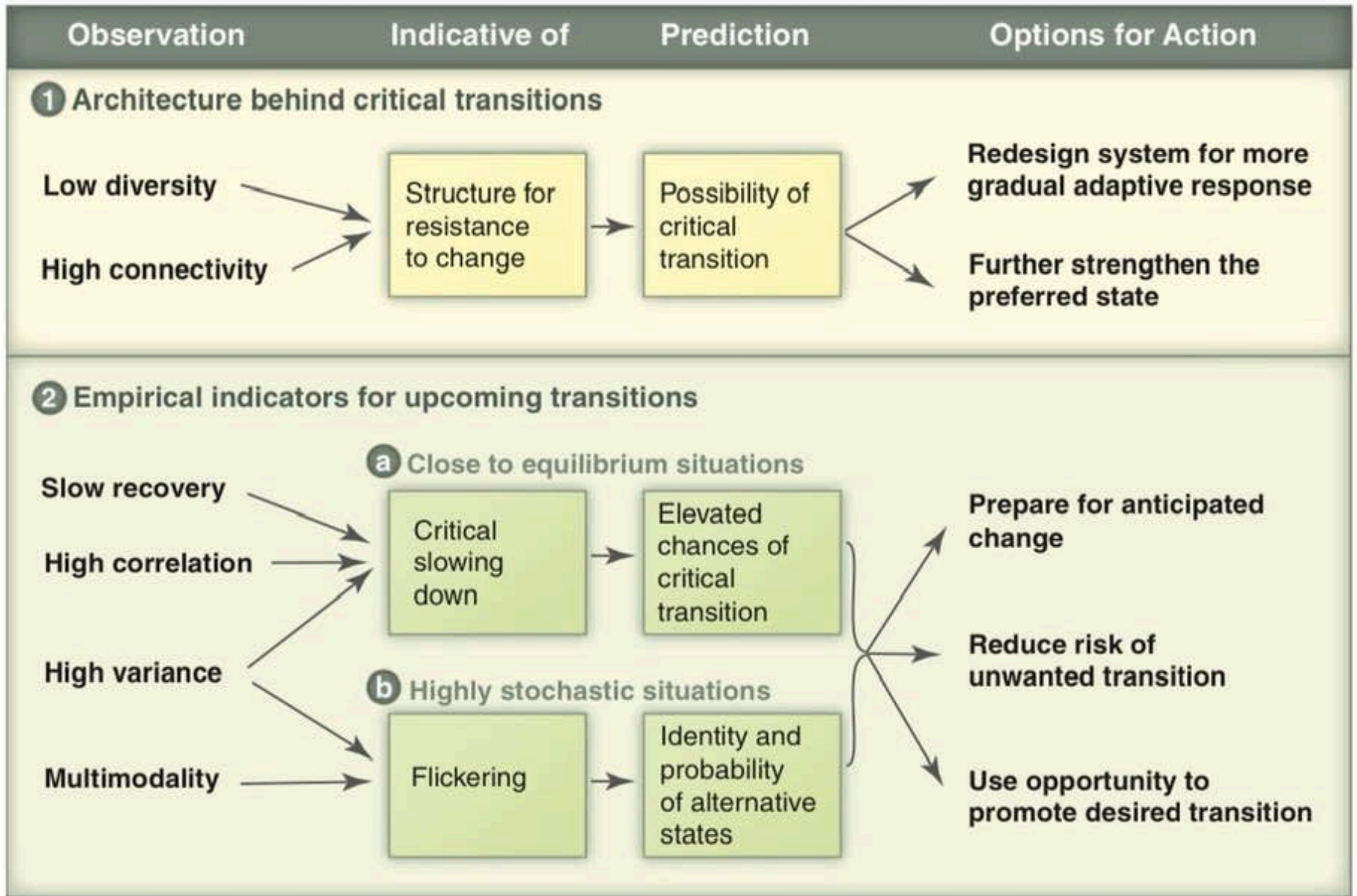


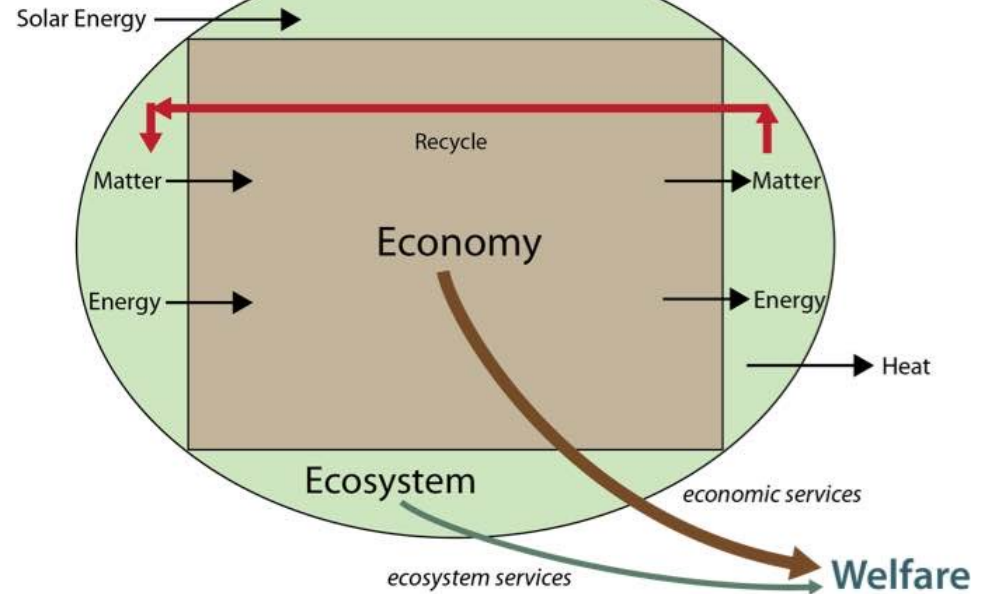
Fig. 4. Different classes of generic observations that can be used to indicate the potential for critical transitions in a complex system.

Table 2. Summary of 14 Mechanisms, or Hypotheses, That May Lead to Collapse in Social–Ecological Systems. Examples of cases for which researchers have invoked many of these mechanisms are presented in Table 1

Family of mechanism	Specific mechanism	Summary of mechanism
Top-heavy mechanisms	Overshoot	Ecological degradation and excessive resource consumption; collapse caused by climate change or other impact on productivity [4,34,94].
	Complexity threshold	Complexity creates problems that only more complexity can solve; diminishing marginal returns mean burden becomes too great for society to support, and collapse occurs [22,43].
	Elite capture	Wealthy become parasitic on the poor. Resentment, revolution, or technological change can cause collapse [87].
	Overspecialization and inability to adapt	Specialization on a particular resource, sunk cost effects [20], and/or a lack of diversity create other vulnerabilities that lead to collapse [8,95].
Mismatch mechanisms	Scale mismatch	Scales of environmental variation and governance, or production and regulation, become misaligned. This can cause system dysfunction and collapse [22,90,96].
	Upscaling	Getting resources remotely can detach people from environmental degradation, creating an overconsumption feedback and potential for collapse [80].
	Speculation	Success leads to a decreasing investment in regulation; returns to speculation exceed those on investments in productive capacity. If expectations about future growth are threatened, abrupt collapse of speculation and general economic activity due to borrowing can occur [93].
Lateral flow mechanisms	Collapse by contagion	Perturbation or negative impact is transmitted through lateral connections [75].
	Collapse by fragmentation	Loss of modularity and reliance on connections result in collapse if connections are broken [22].
Obliteration	External disruption	A force from outside the system destroys or undermines it [86].
	Grinding down	Gradual depletion of key resources, such as biodiversity or soil fertility, eventually leads to collapse [91].
Transition and boundary mechanisms	Vulnerability threshold	Systems (or individual components) grow from less vulnerable sizes through more vulnerable sizes and may collapse during a vulnerable stage [97].
	Leakage	Semipermeable boundaries that are important for sustainability become permeable, leading to loss of key resources and/or influx of problem-causing agents [69].

Overshoot

Full World



Supply: $G(S)$

G Rate at which the biosphere regenerates

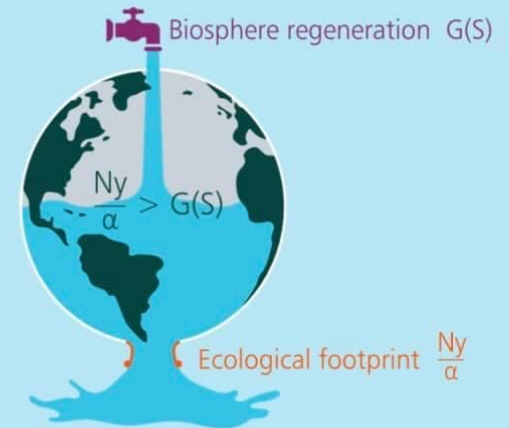
S Stock of the biosphere

Demand: $\frac{Ny}{\alpha}$

N Human population

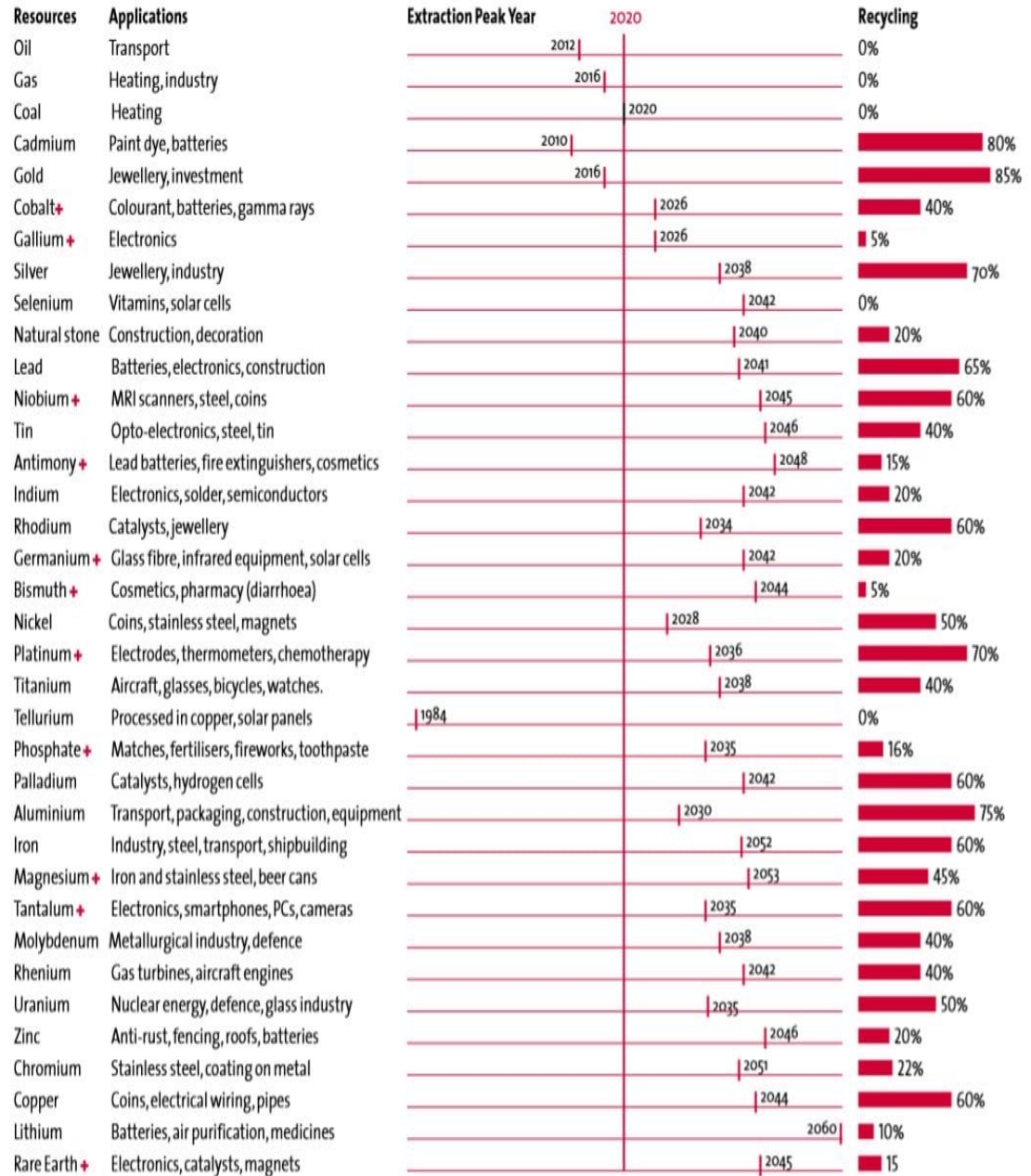
y Human economic activity per capita

α Efficiency with which the biosphere's goods and services are converted into GDP and the extent to which the biosphere is transformed by our waste products



Peak resources

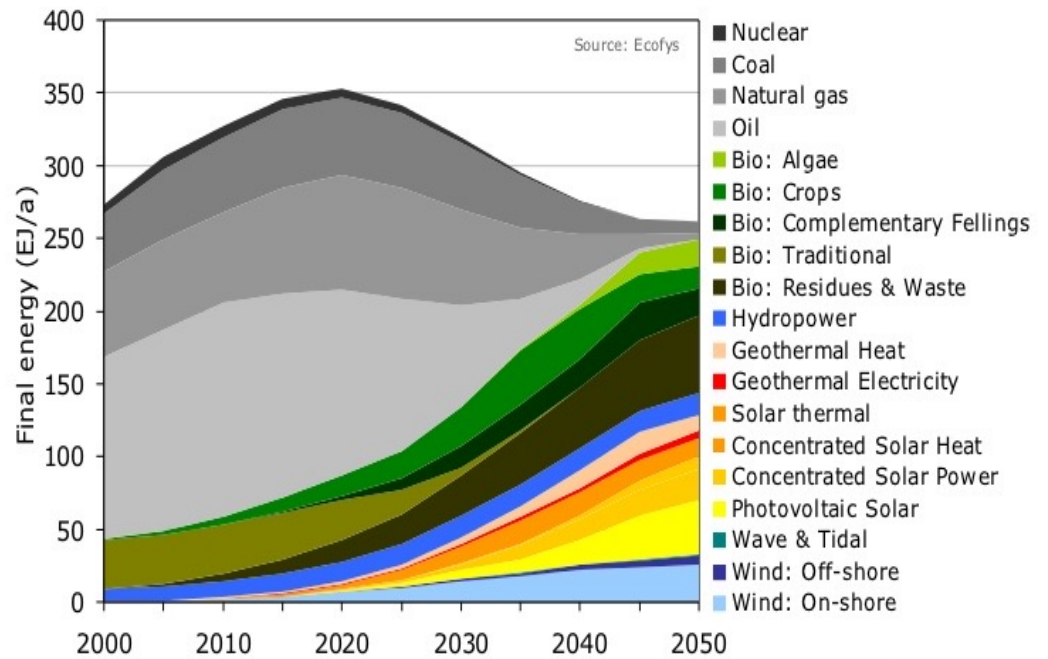
WHEN DO WORLD STOCKS OF RESOURCES END?



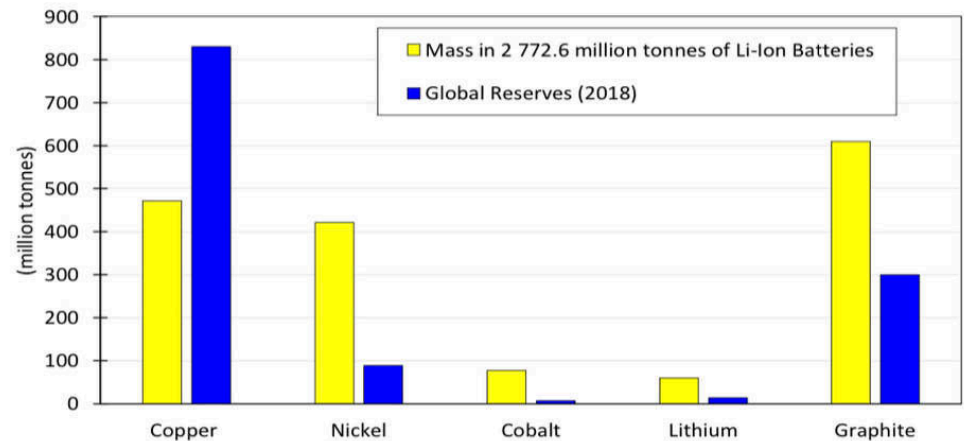
+ Are also on the list of "Critical Raw Materials" EU

Source: Harald Sverdrup and Anna Olafsdottir

Energy descent



Battery Metals Needed to Phase Out Fossil Fuels
(Scenario F vehicles and power storage stations)





PART III: Existential Risk and Recovery

Civilizational Trajectories

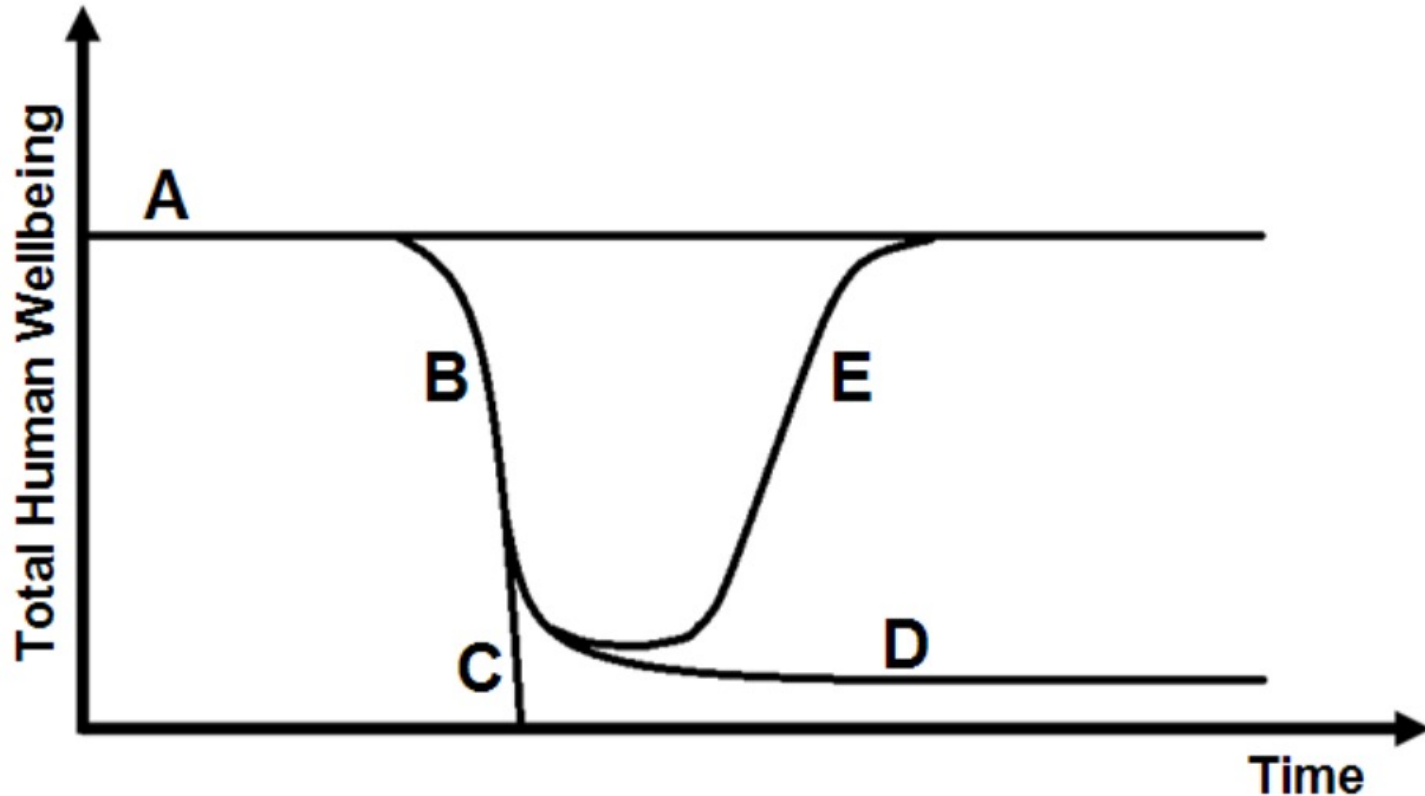
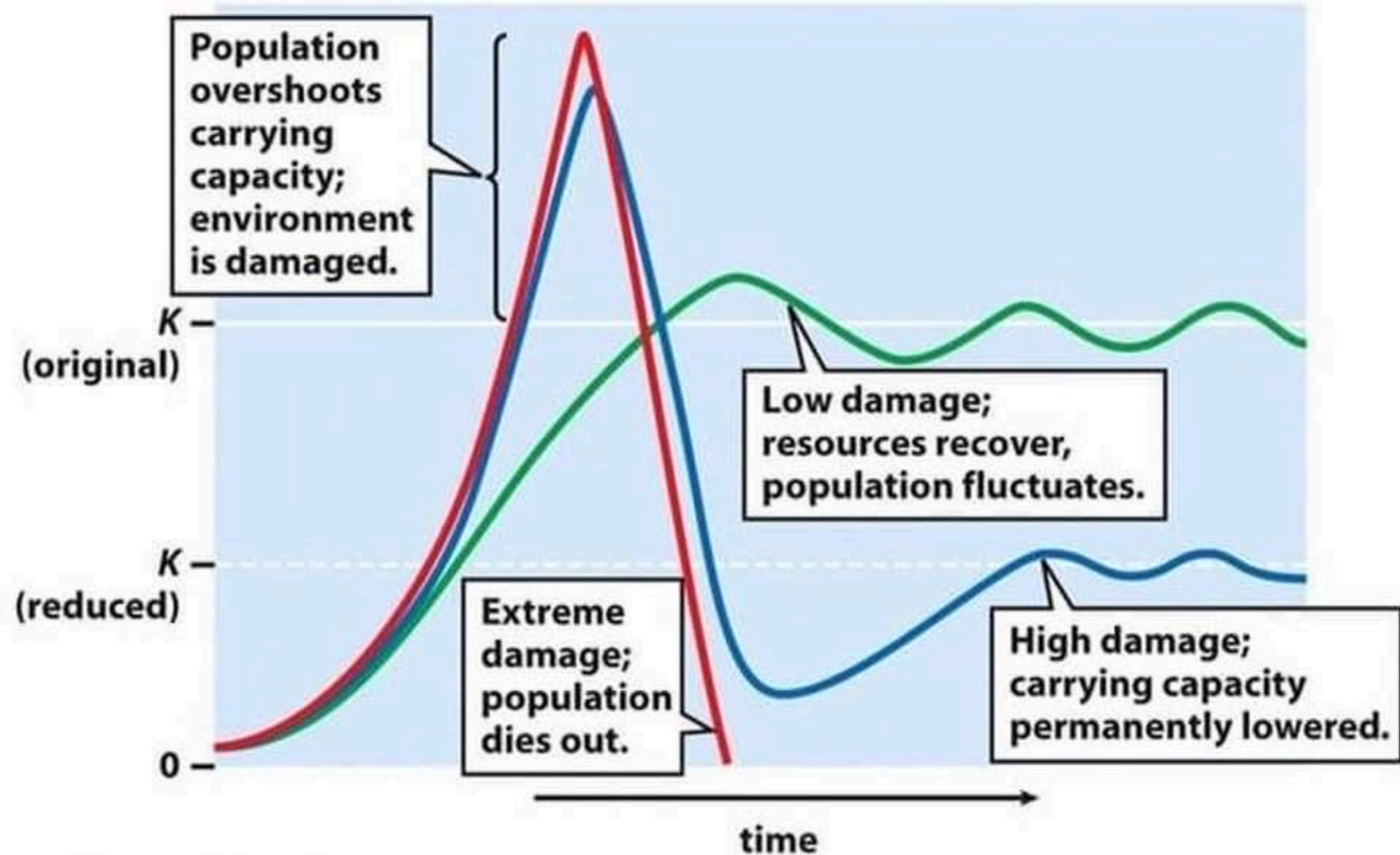
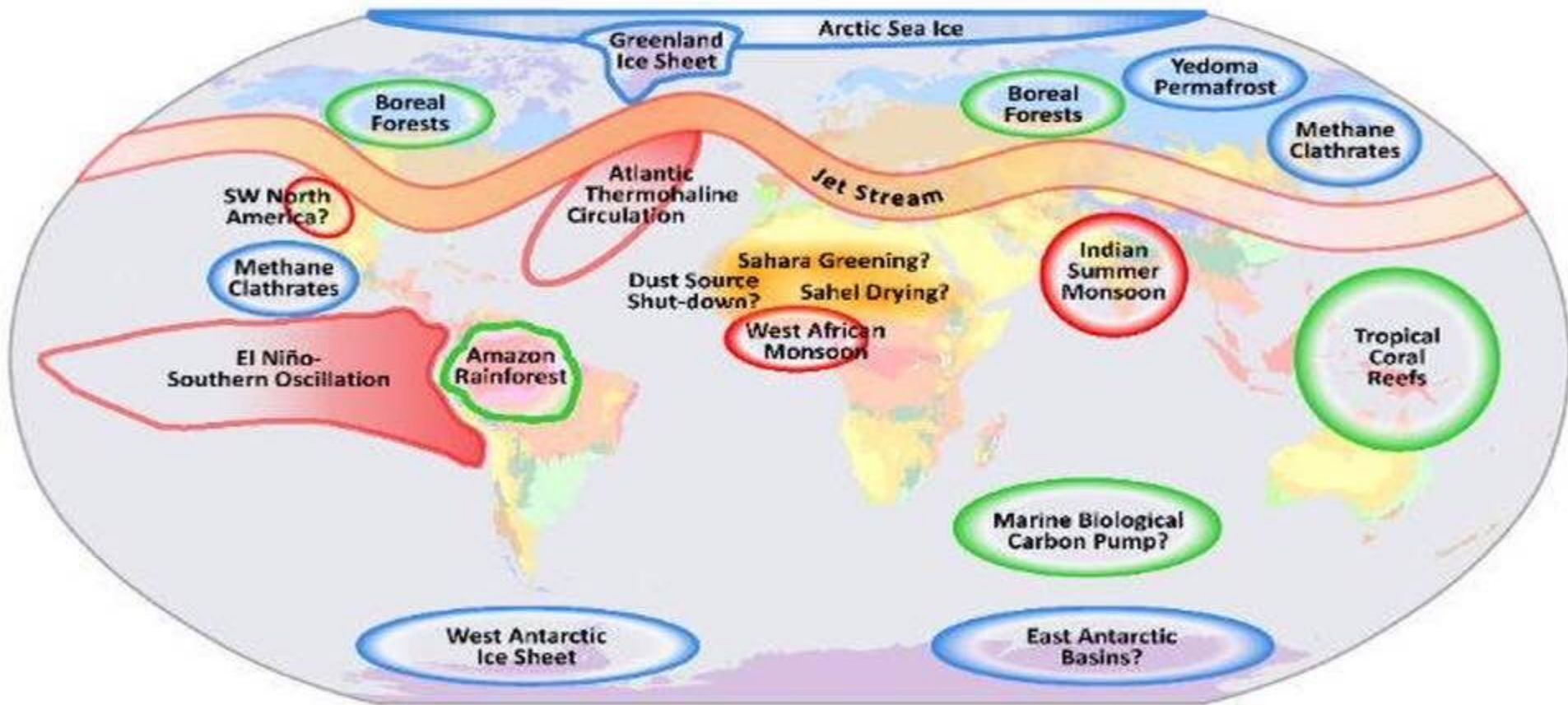


Figure 3. Rough sketches of human civilization trajectories measured in terms of total human wellbeing, including humanity at baseline wellbeing (A), global catastrophe (B), human extinction (C), adaptation (D), and recovery (E). Based on Maher and Baum (2013).

Consequences of exceeding K .



Tipping Points and Critical Transitions



- Cryosphere Entities
- Circulation Patterns
- Biosphere Components

Köppen Climate Classification



PARIS EMISSIONS PATH & CLIMATE RISKS

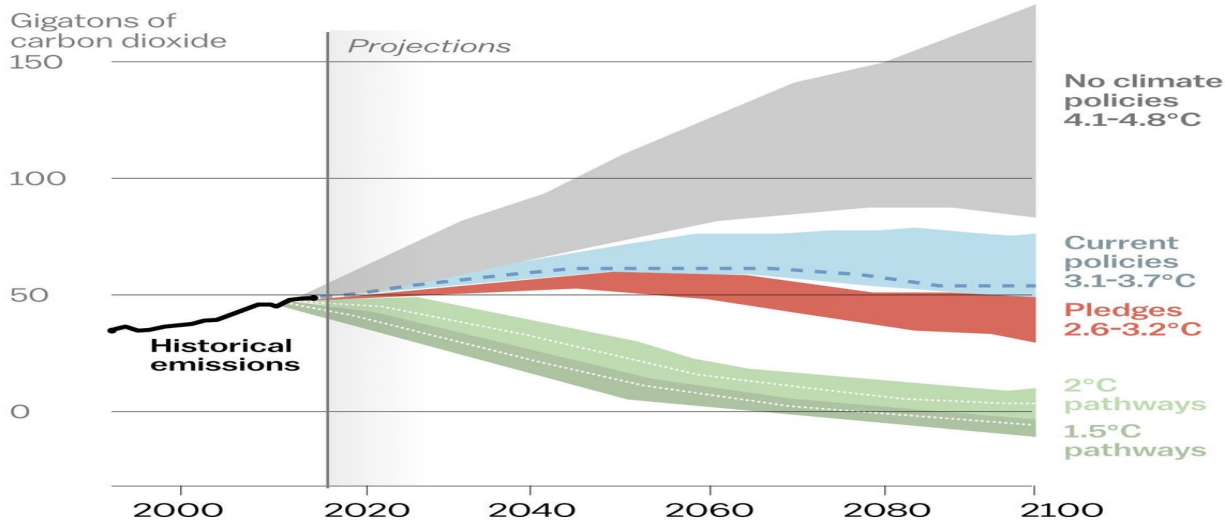


“Hot House Earth Scenario” kicks in between 1.5-2°C

THE PARIS AGREEMENT EMISSIONS PATH HAS A **50% CHANCE OF EXCEEDING 3°C**

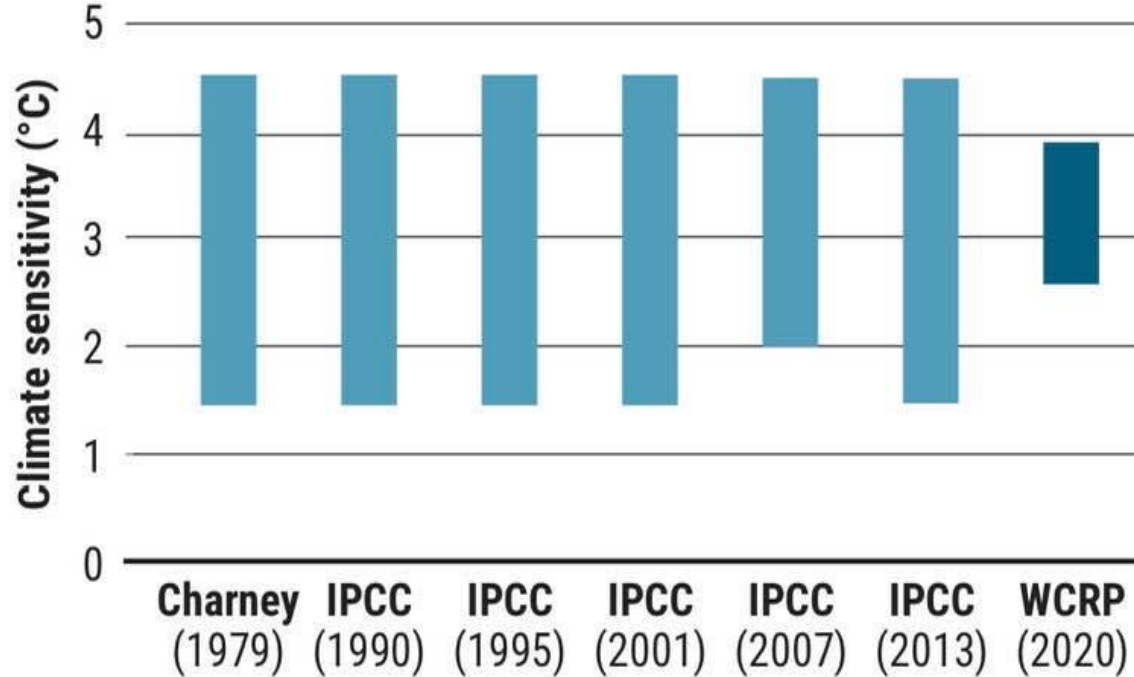
Effect of current pledges and policies

Global greenhouse gas emissions



Source: Climate Action Tracker

Vox



**Global Warming
by 2100**

**Very likely [5-95%]:
2.3 - 4.7°C**

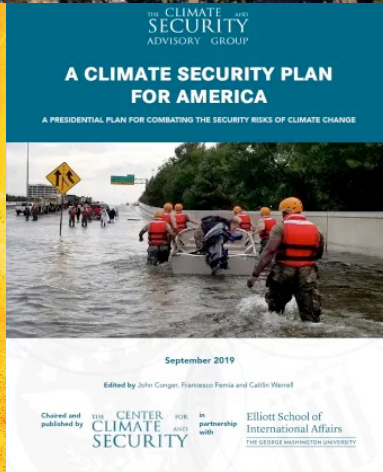
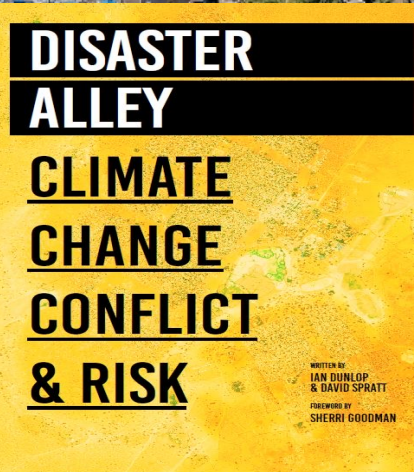
**Likely [17-83%]:
2.6 - 3.9°C,
3.1°C median (1)**



Understanding ecofascism, white nationalists' extreme reaction to the coming environmental apocalypse



Governments, Defense Departments, insurance agencies, and private investors are already developing adaptation, investment, and security plans for a 3°C world.



RAND EUROPE UNIVERSITY OF EXETER

A Changing Climate

Exploring the Implications of Climate Change for UK Defence and Security

Kate Cox, Anna Knack, Martin Robson, Neil Adger, Pauline Paillik, Jon Freeman, James Black and Ruth Harris

DISASTER ALLEY

CLIMATE CHANGE CONFLICT & RISK

WRITTEN BY IAN DUNLOP & DAVID SPRATT

FOREWORD BY SHERRI GOODMAN

THE CLIMATE SECURITY ADVISORY GROUP

A CLIMATE SECURITY PLAN FOR AMERICA

A PRESIDENTIAL PLAN FOR COMBATING THE SECURITY RISKS OF CLIMATE CHANGE

September 2019

Edited by John Conger, Francisco Ferris and Caitlin Wessell

Chaired and published by THE CENTER FOR CLIMATE SECURITY IN partnership with the Elliott School of International Affairs THE GEORGE WASHINGTON UNIVERSITY

The Center for Climate and Security | 1000 Connecticut Ave., 7th Floor, NW | Washington, DC 20037 | www.climateandsecurity.org

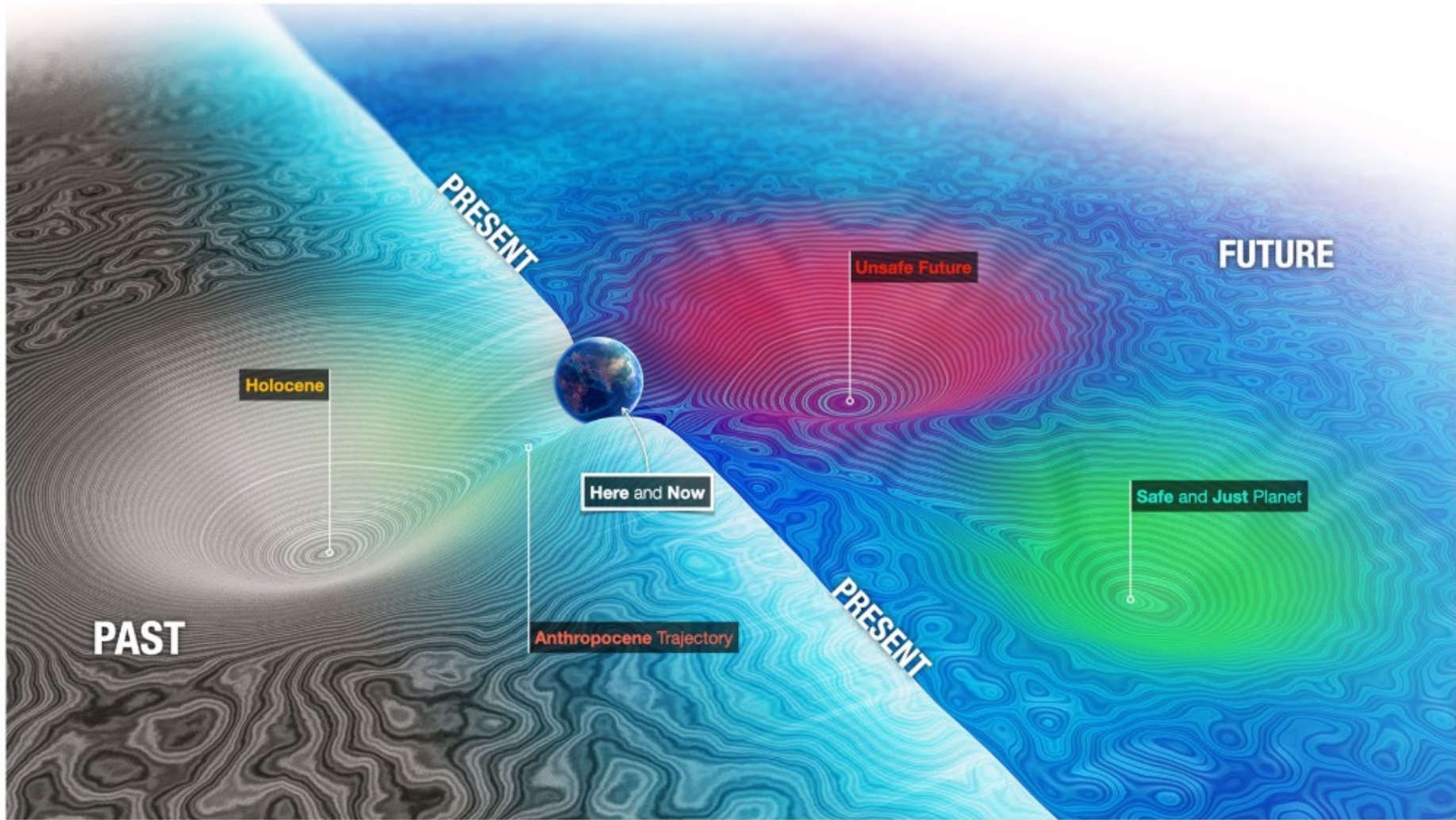
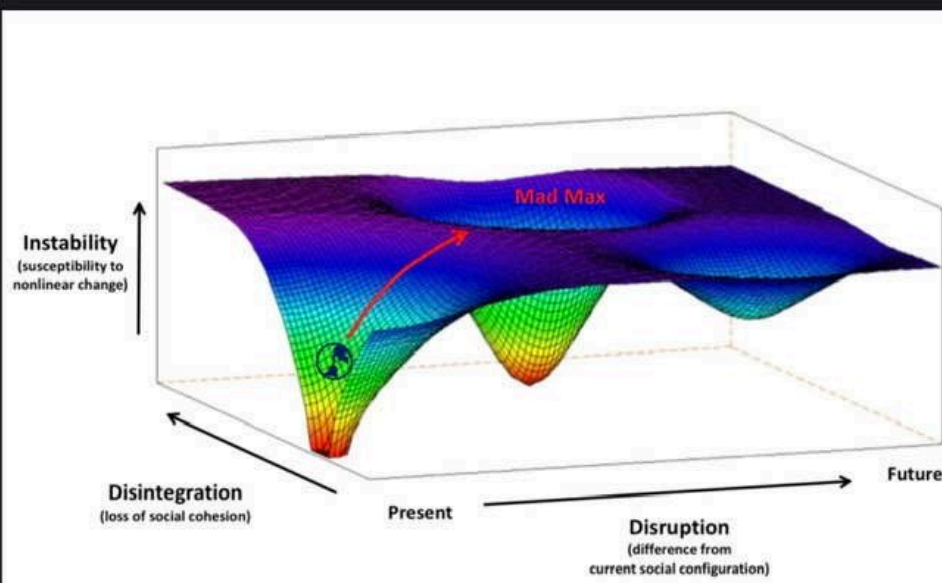


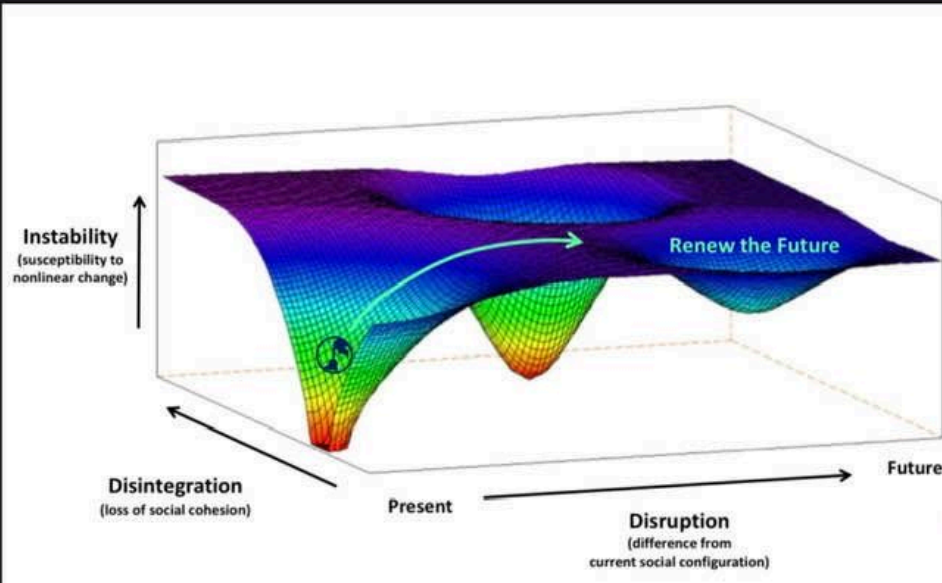
Figure 1. The challenge: To define, and navigate toward, a safe and just future for people and the planet.



Mad Max represents a future of wholesale loss of institutional stability and social cohesion. Think of the mess in Haiti today writ globally.

This basin is broad and deep. It represents stable disintegration. If humanity falls into Mad Max, that's likely where we're going to stay.

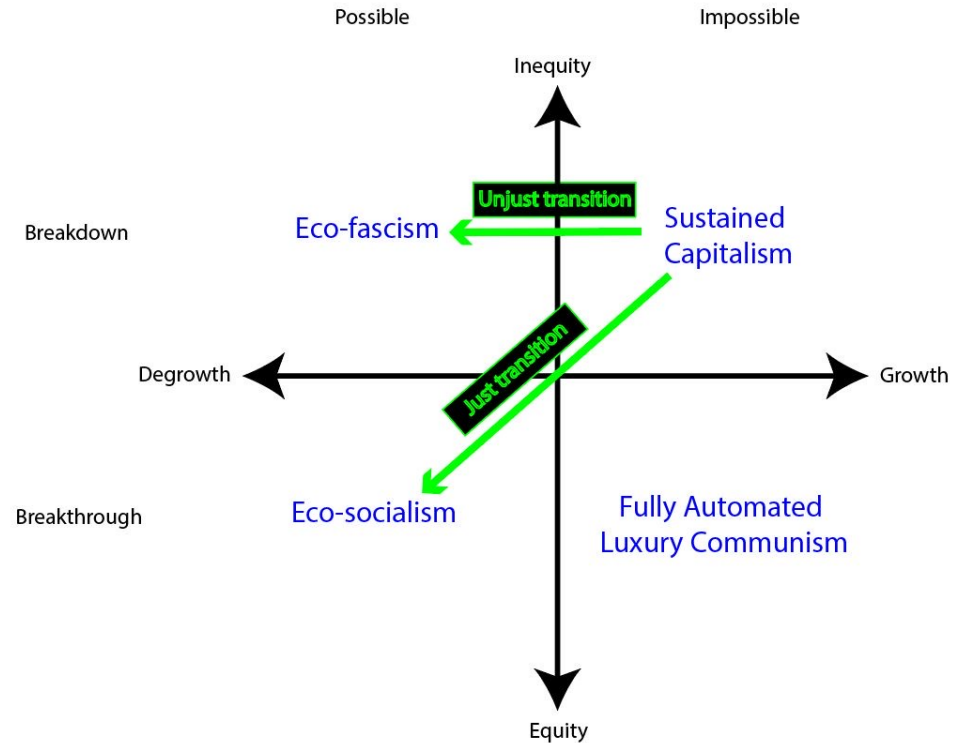
It's also relatively close; a moderate amount of social disruption, exploited by opportunistic actors, could propel us there.



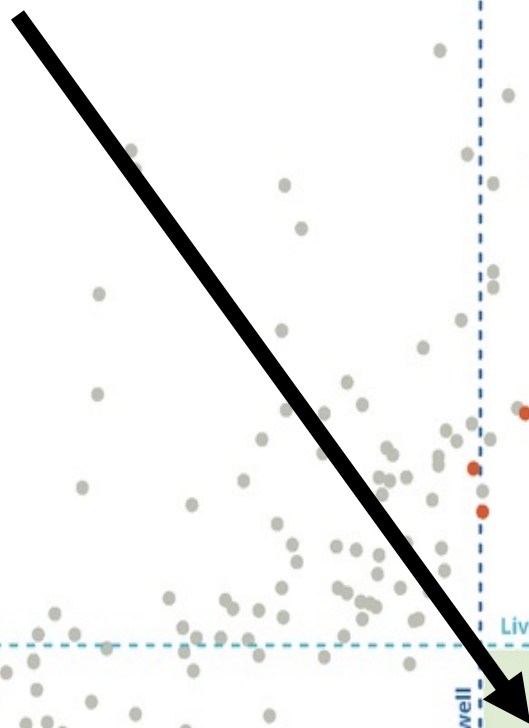
The Renew the Future basin offers a possible socially cohesive alternative, but the basin is shallower and its watershed smaller. It's harder to reach, because getting there entails a more profound reconfiguration of our worldviews, institutions, and technologies (i.e., a greater level of disruption). Because it is less stable, it is more demanding. We'll have to work hard to stay there.

We need a systemic transformation on a democratic basis, otherwise the transition will be unjust.

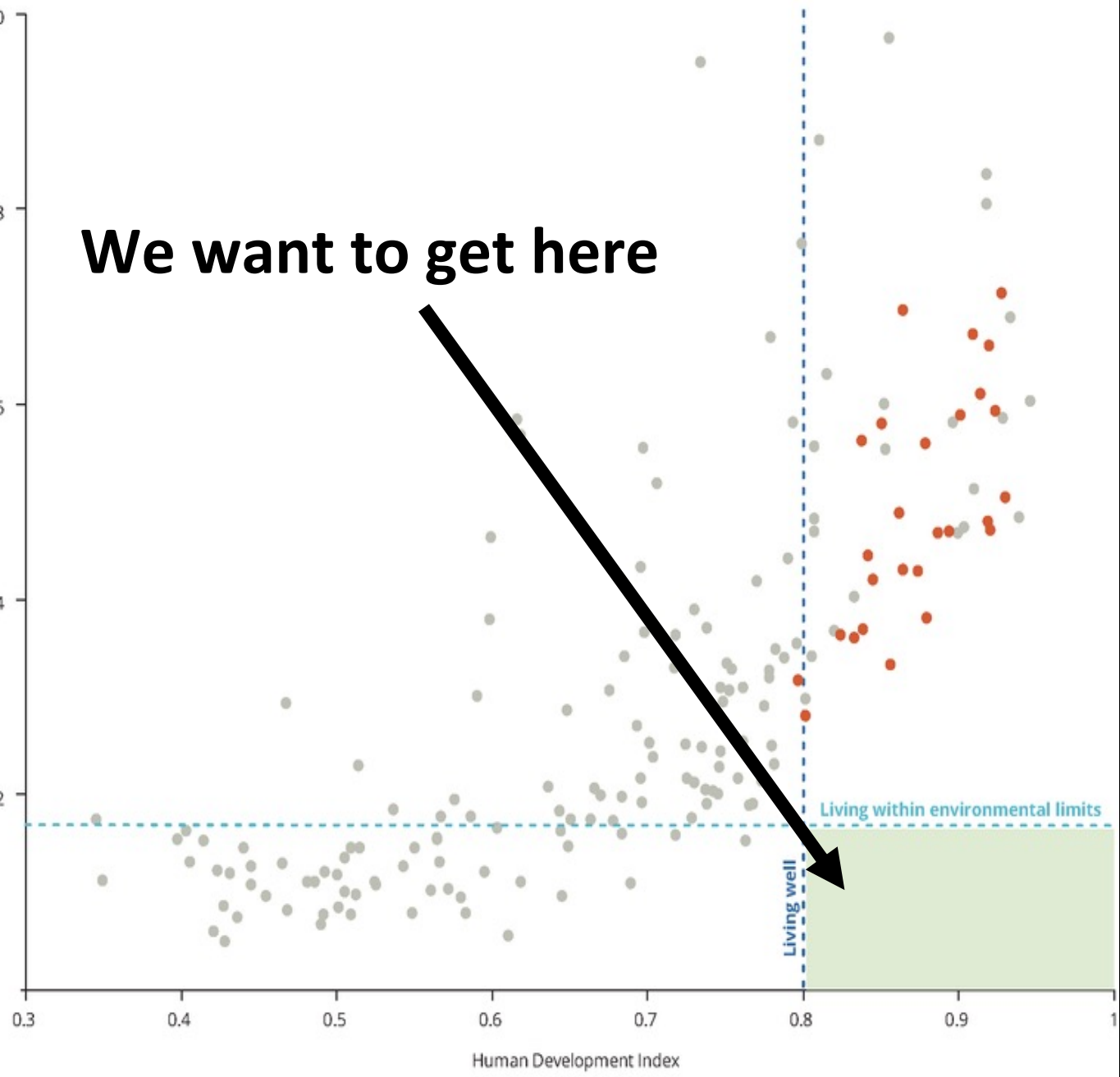
Four Futures Matrix

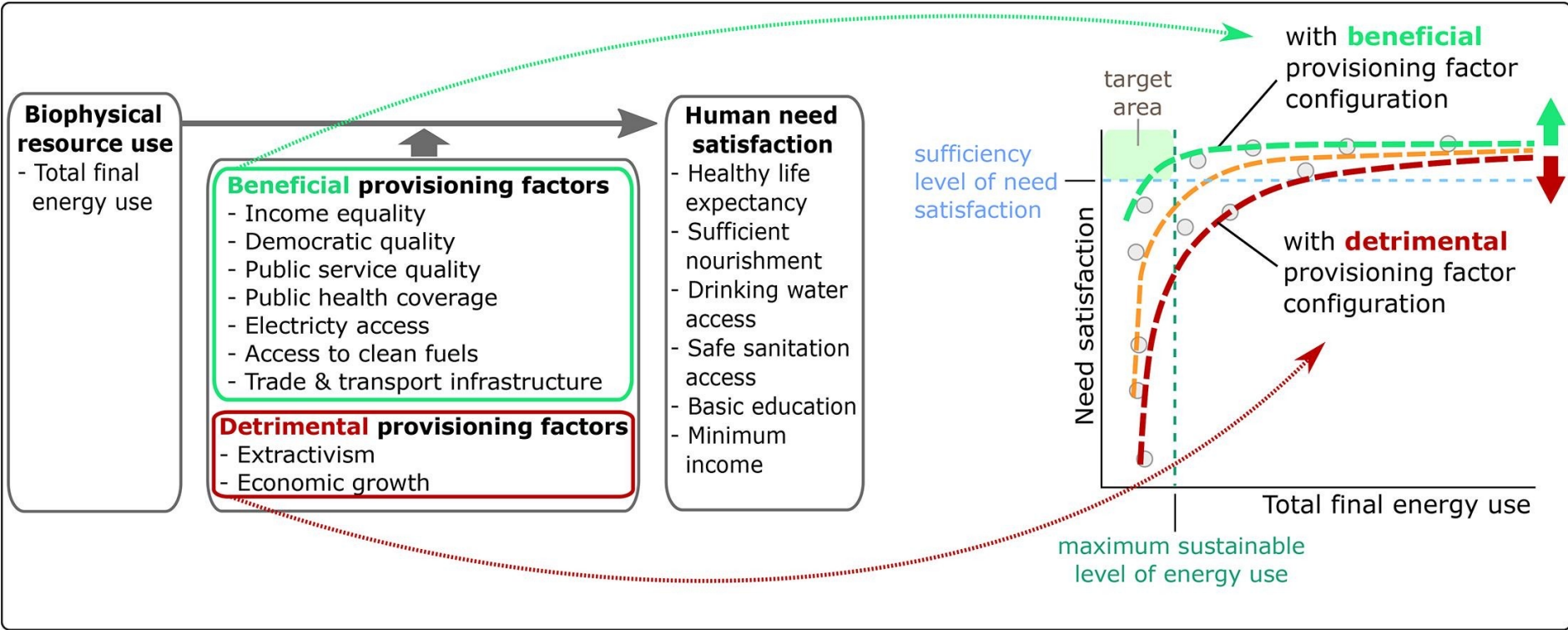


We want to get here

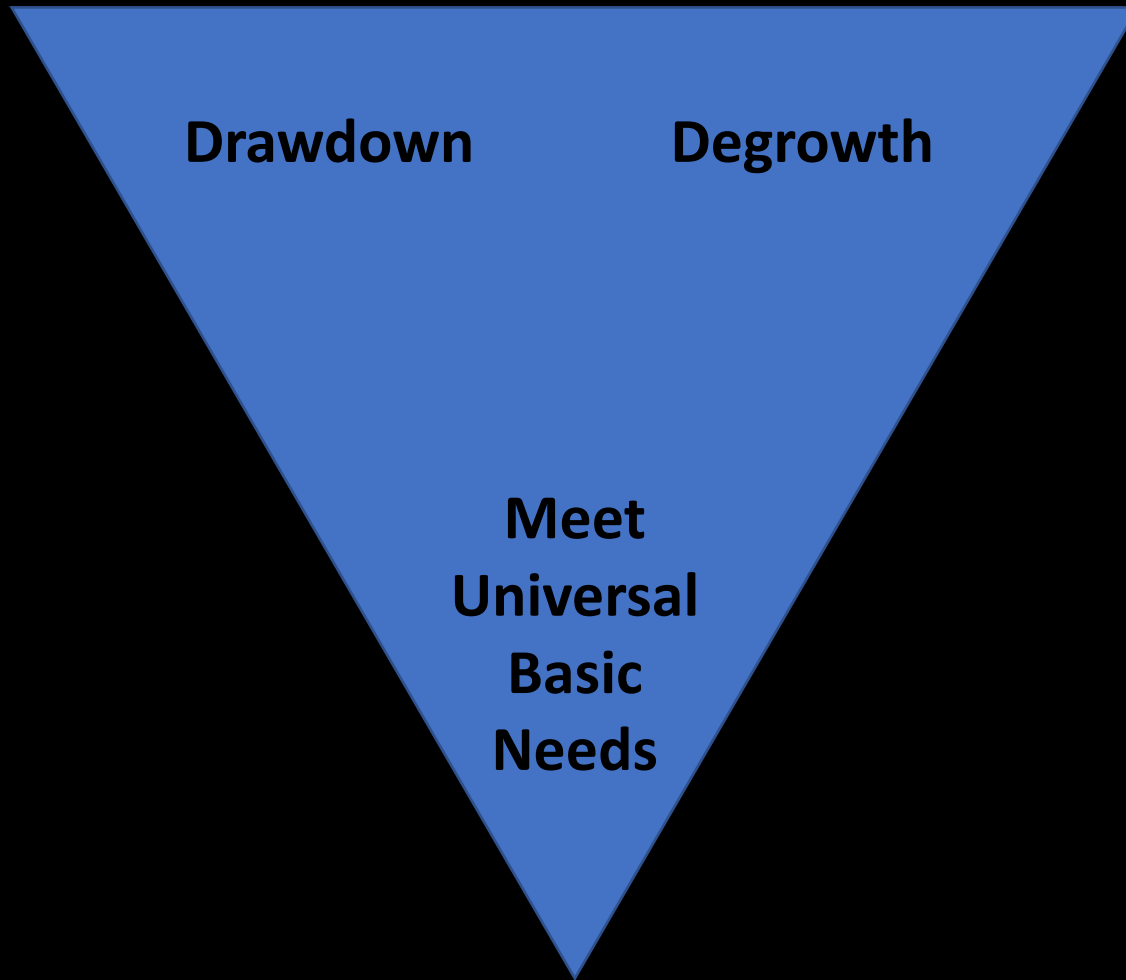


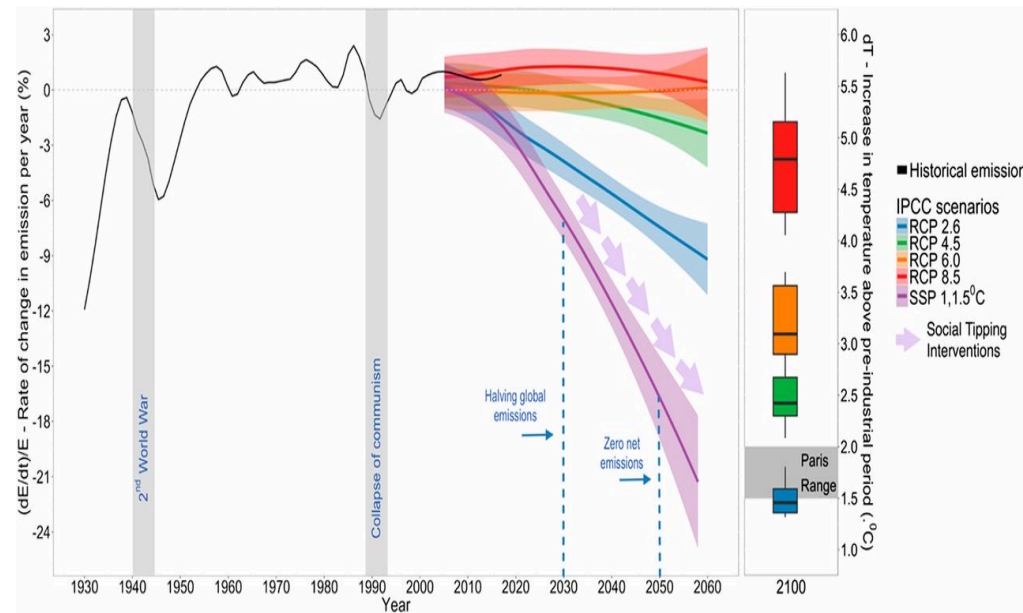
Everyone's universal basic needs are met within sustainable environmental limits





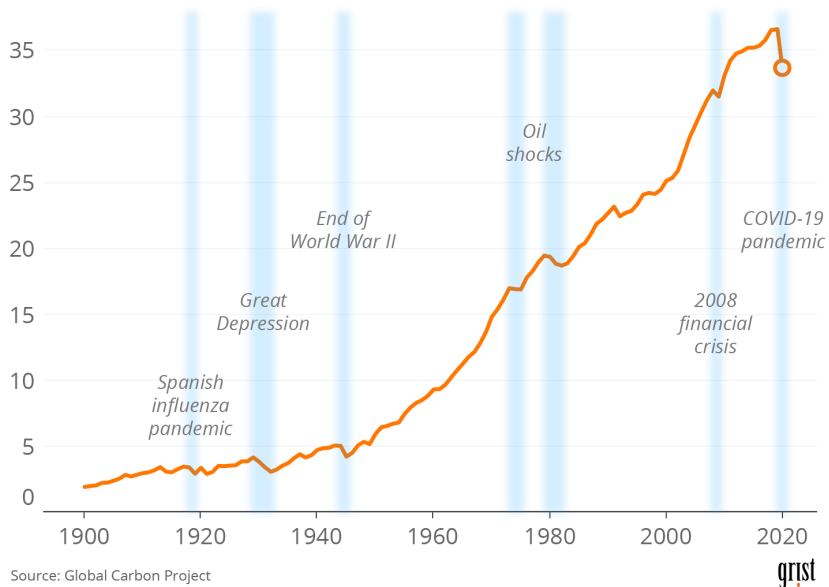
Essential Requirements





A familiar pattern

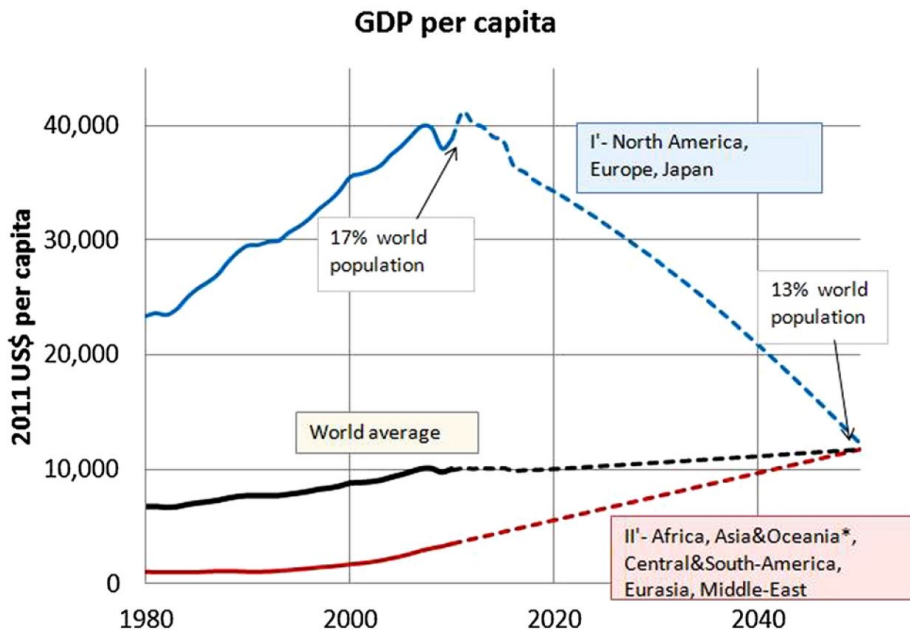
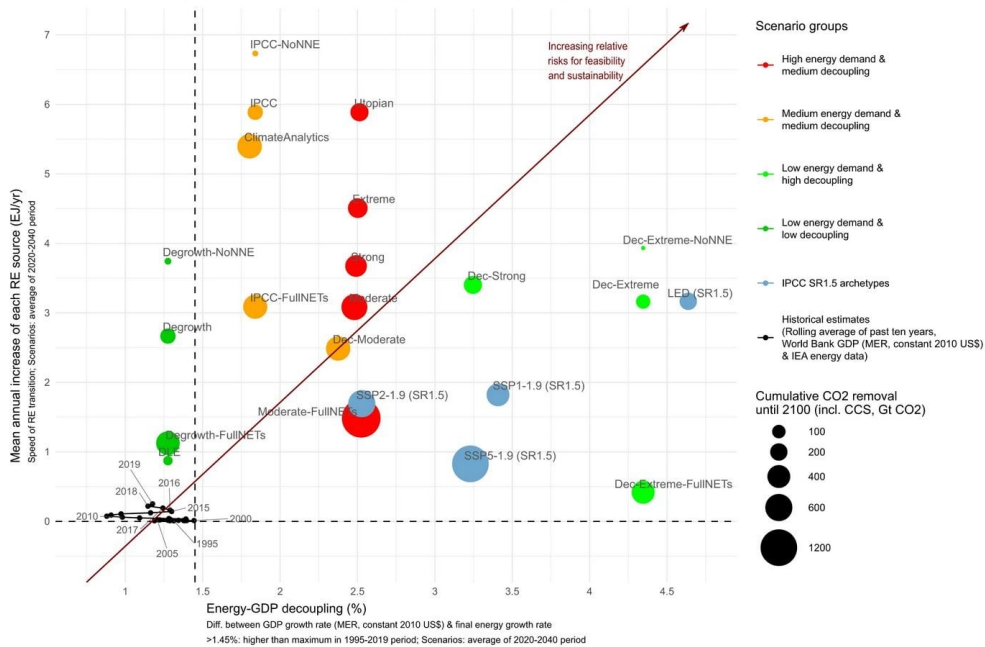
Annual global fossil emissions, billion metric tons of CO₂



Drawdown

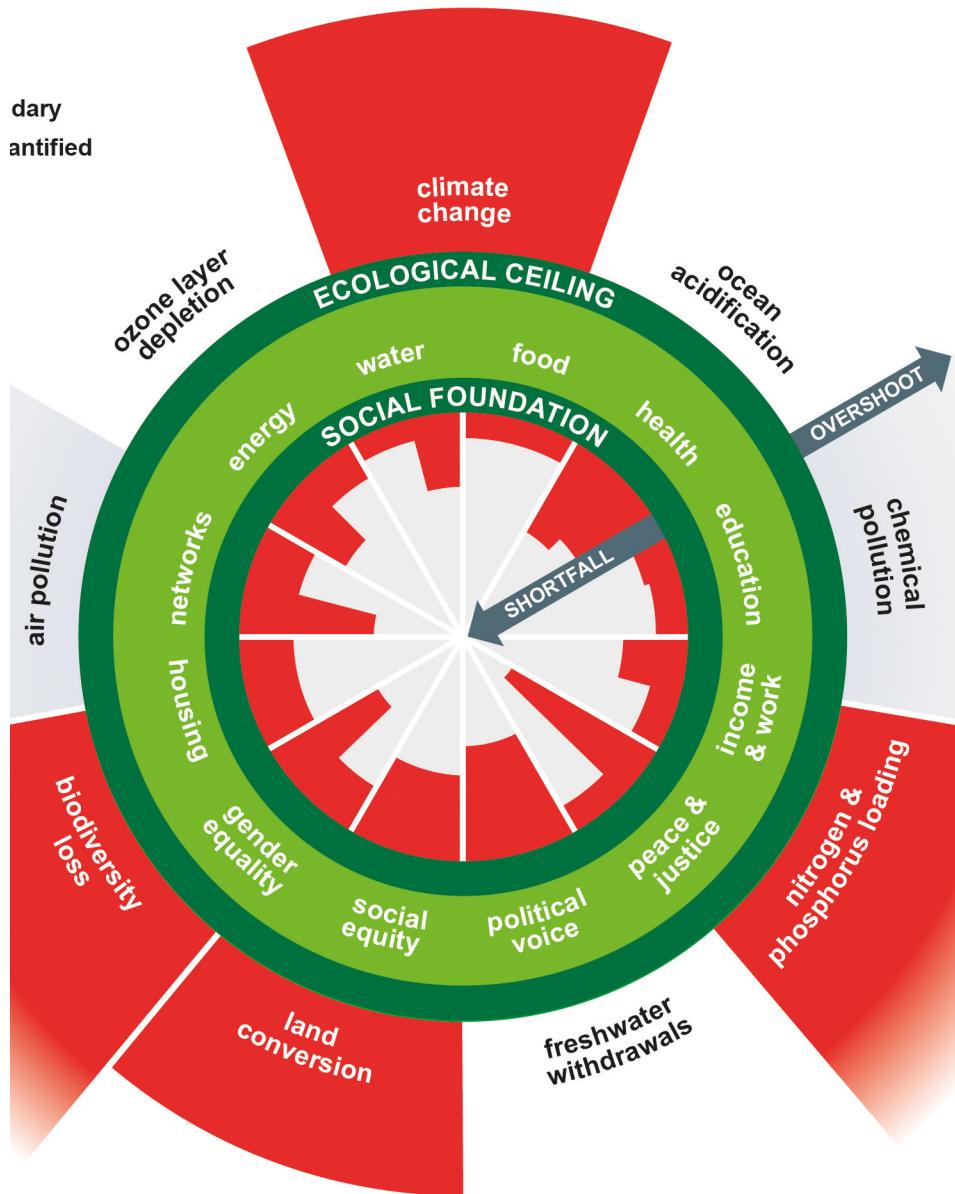
Carbon emissions must decline 7% per year for 30 years to stabilize the climate at 1.5 °C. Emissions declined by 6.4% in 2020 due to the pandemic.

1.5°C scenario map under different levels of energy-GDP decoupling, RE speed and NETs



Degrowth

High consuming countries need to reduce GDPpc 4x at a yearly pace of -3% until 2050, while the Global South increases GDPpc 3x. Some countries currently in the convergence range display levels close to the UN 'high development' threshold (greater or equal to .8 HDI).



Meet Universal Basic Needs

If we are successful at drawdown and degrowth, we can reduce global energy consumption in 2050 to the levels of the 1960s, and still provide decent material livings to the entire global population. We must lower the ceiling and raise the floor.



WHAT DOES THIS SOCIETY LOOK LIKE?

Cosmolocalism

Commons can decrease matter-energy throughput by up to 80%. By sharing IP, the marginal costs of production decreases and production re-localizes as supply and distribution chains shorten.

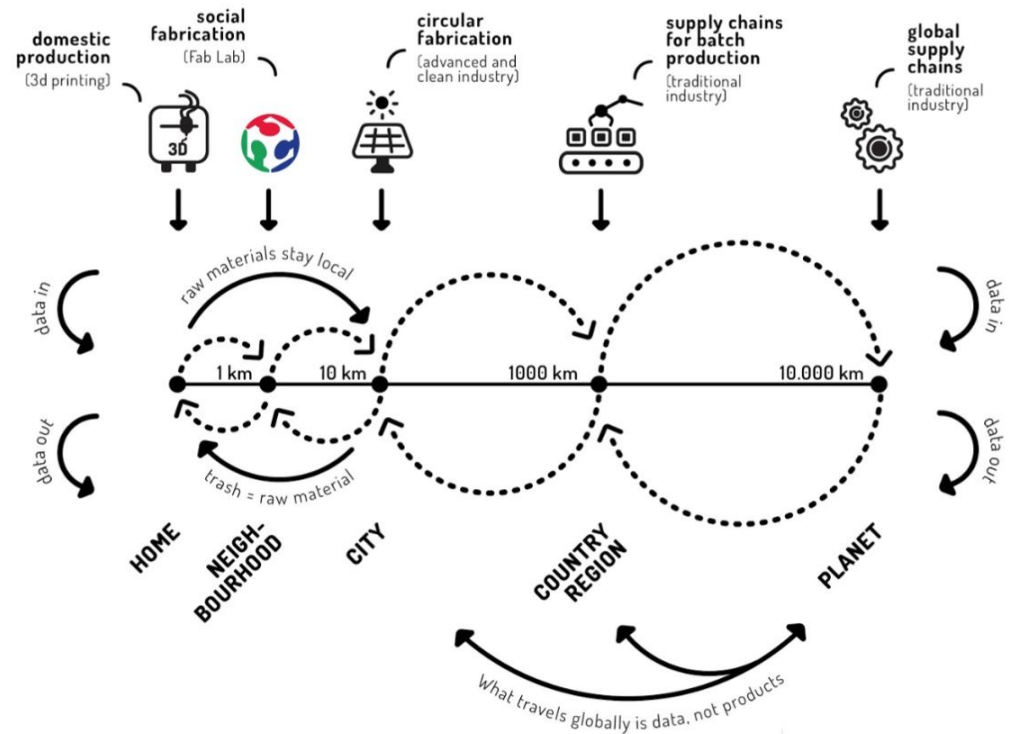


Figure 2: Examples of Solidarity Economy Practice

**SE exists in all sectors of the economy.
*Tremendous foundation to build on!***

Production/Reproduction

- Worker co-ops
- DIY
- Care work
- Community gardens
- Mutual aid
- Skill shares
- Community production

Distribution & Exchange

- Social currencies
- Time banks
- Fair trade
- Toy/tool shares
- Swap meets
- Gifting

Consumption

- Community land trusts
- Resident-owned communities
- Food co-ops
- Electric co-ops
- Housing co-ops

Finance

- Credit unions
- Peer lending
- Community loan funds
- Direct public offerings
- Public banking
- Family & friends

Governance

- Participatory budgeting
- Community governance
- Public sector, schools
- Policies
- Universal basic income
- Commons

THEMATIC STRATEGIES

HORIZON 1

HORIZON 2

HORIZON 3

BREAKDOWN



SHIFT CURRENT INSTITUTIONS



BUILD NEW INSTITUTIONS



BREAKTHROUGH



Ecological



GREEN CAPITALISM

Financializing Nature
Decoupling
Net Zero

JUST TRANSITION

Systems Finance
Rights of Nature
Post-growth & Degrowth
Drawdown

NATURAL COMMONS

Indigenous Land Stewardship
Land, Water, Food, Energy Commons
Transition Towns and Ecovillages
Global Thresholds and Allocations

ECOLOGICAL CIVILIZATION

Steady-state Economy
Solarpunk
Democratic Ecosocialism
Eco-anarchism

Equitable



WELFARE CAPITALISM

Wealth Redistribution
Social Entrepreneurship
Charity

ECONOMIC LIBERATION

Debt Forgiveness
Maximum Income
Reparations
Land Back

SOLIDARITY ECONOMY

Universal Basic Income, Assets & Services
Cooperativism
Community Wealth Building
Democratized Finance

ECONOMIC DEMOCRACY

Decolonization
Commons Federations
Social Anarchism
Libertarian Socialism

Effective



PLATFORM CAPITALISM

Big Tech
Algorithmic Governance
Digitalization

POLITICAL LIBERATION

Participatory Democracy
Digital Democracy
Wellbeing Economy

DIGITAL COMMONS

Cyber Commons
Alternative Currencies
Platform Cooperatives

DEEP DEMOCRACY

Libertarian Municipalism
Democratic Confederalism
Multispecies Democracy

Postcapitalist Landscape Map

Institutes and Networks for the New Economy



Social Justice, Labor, and Democracy Movements



Research and Print Media



Practical Community- and Company-based Experiments



Environmental Movements and Organizations



Online Media



Technologies for Distributed Data, Finance, and Governance



Indigenous and Land-based Movements



Television

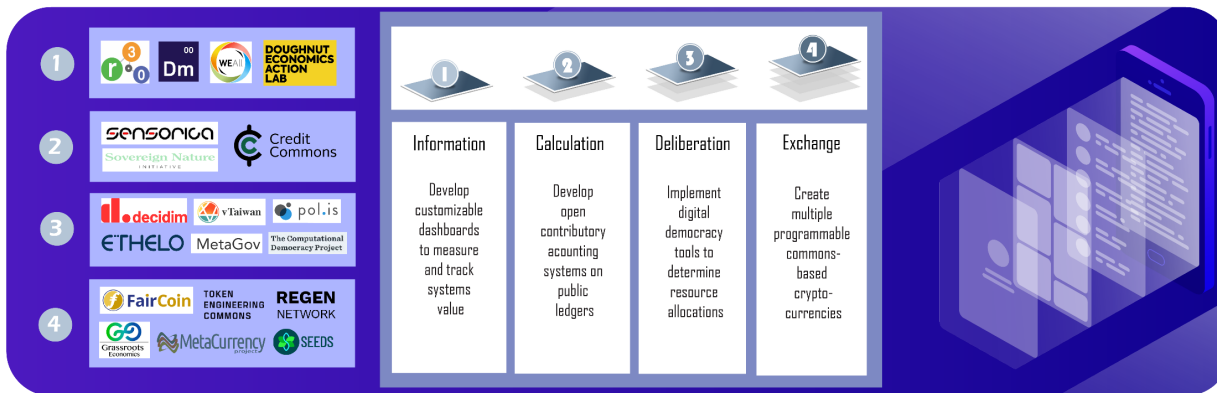


Radio



Open Digital Platform

Protopolis runs its economy on a full stack of interoperable programs (1-4) that provide the information, analytics, deliberation tools, and forms of exchange that organize the economy, effectively aligning individual's wants and needs with collective goals and biophysical limits.



Welcome to Protopolis!

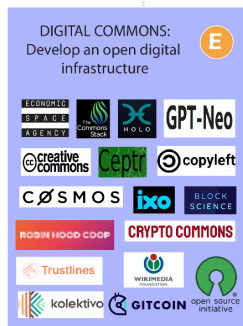
Protopolis is a city working to become a commons-based postcapitalist society. This infographic illustrates how to build Protopolis!

Radical Democracy



Commons Economy

Protopolis' economy is comprised of democratically owned and managed provisioning systems (A-D).



An open digital infrastructure (E) provides the interface between the software (1-4) running the economy and the economy's various provisioning systems (A-D).



Protopolis' government is run by civil society following principles of radical democracy.

Stay in touch!

Zack Walsh

President and Owner

Polycrisis Transition Consultancy

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