



Part 1: The Whole Earth System and the Human Impact

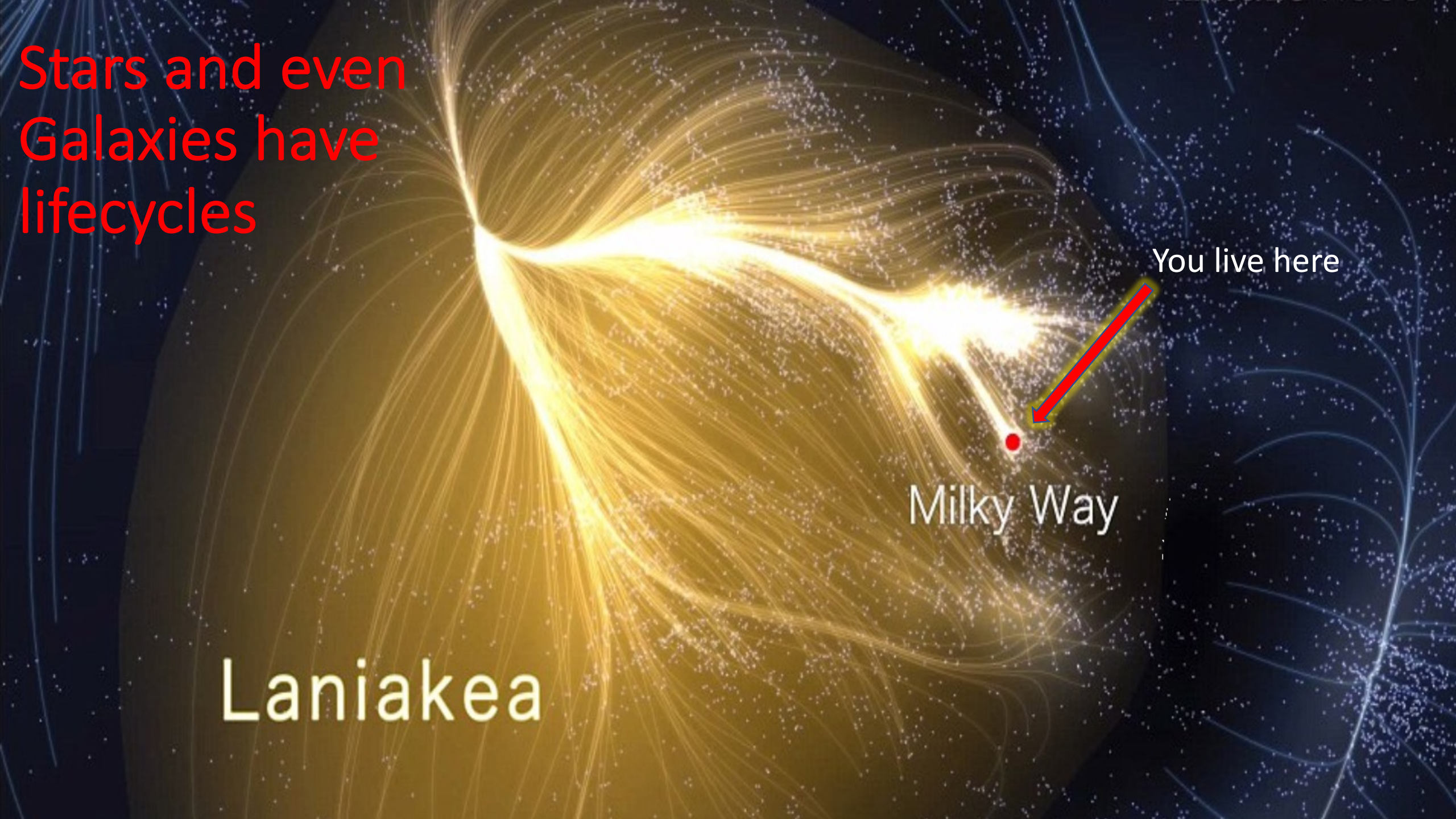
Biosphere Restoration Plan

Stars and even
Galaxies have
lifecycles

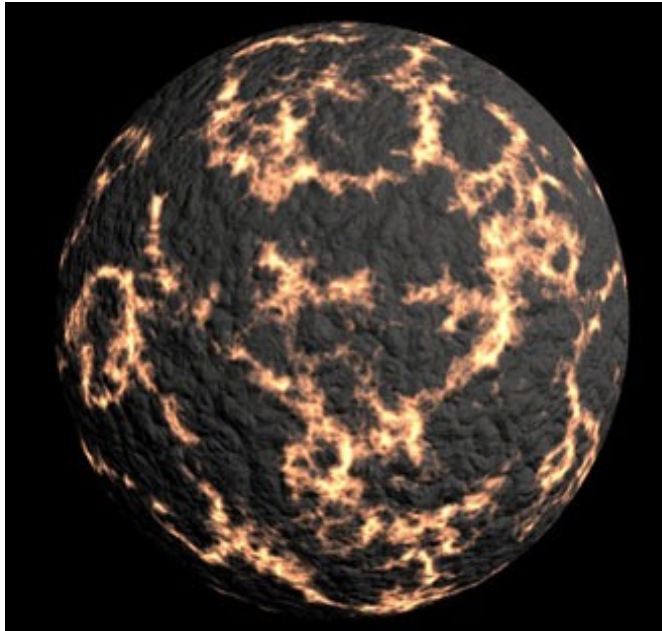
You live here

Milky Way

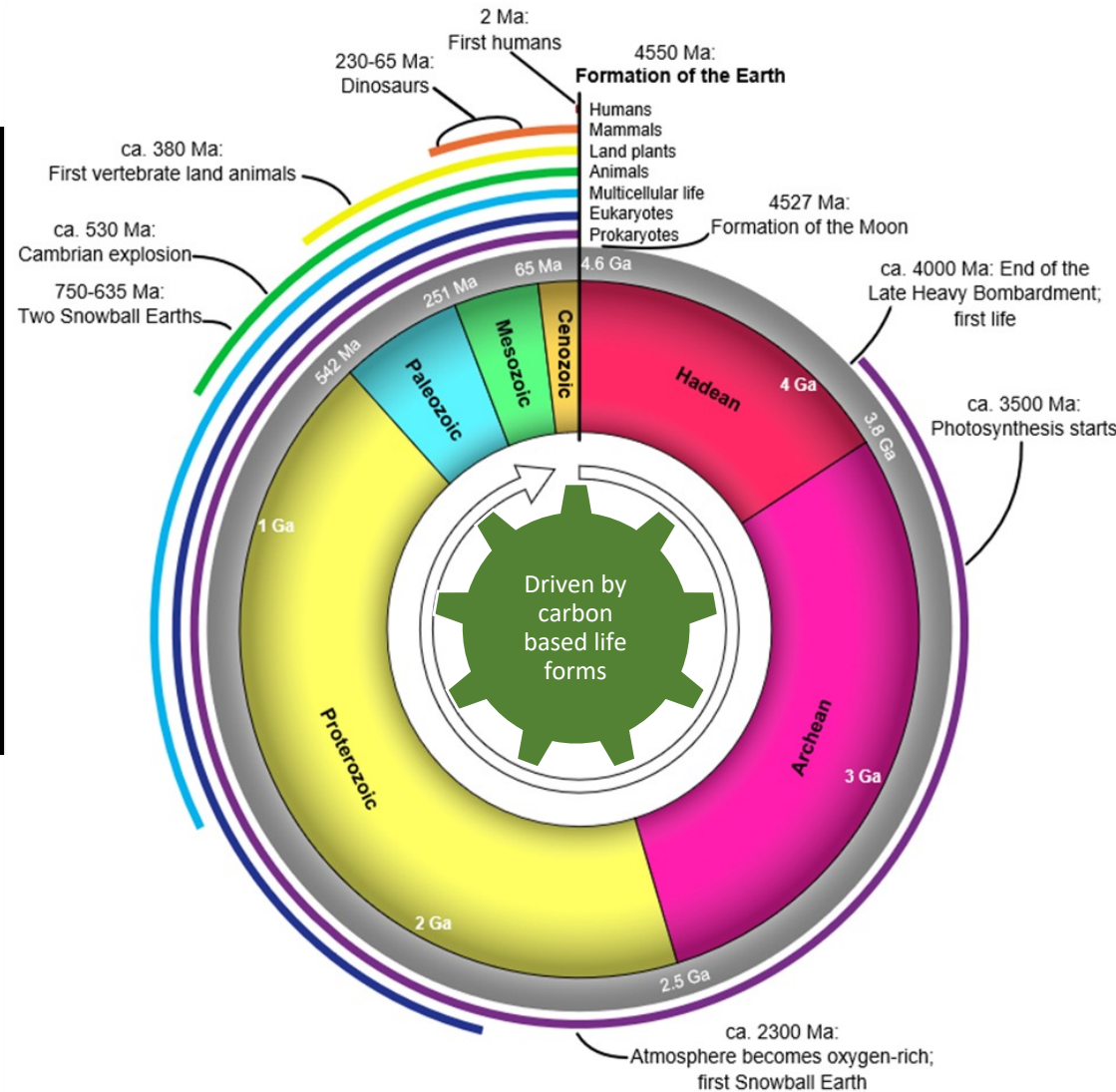
Laniakea



Life has spent 4 billion years cycling nutrients leftover from exploded stars to terraforming Earth

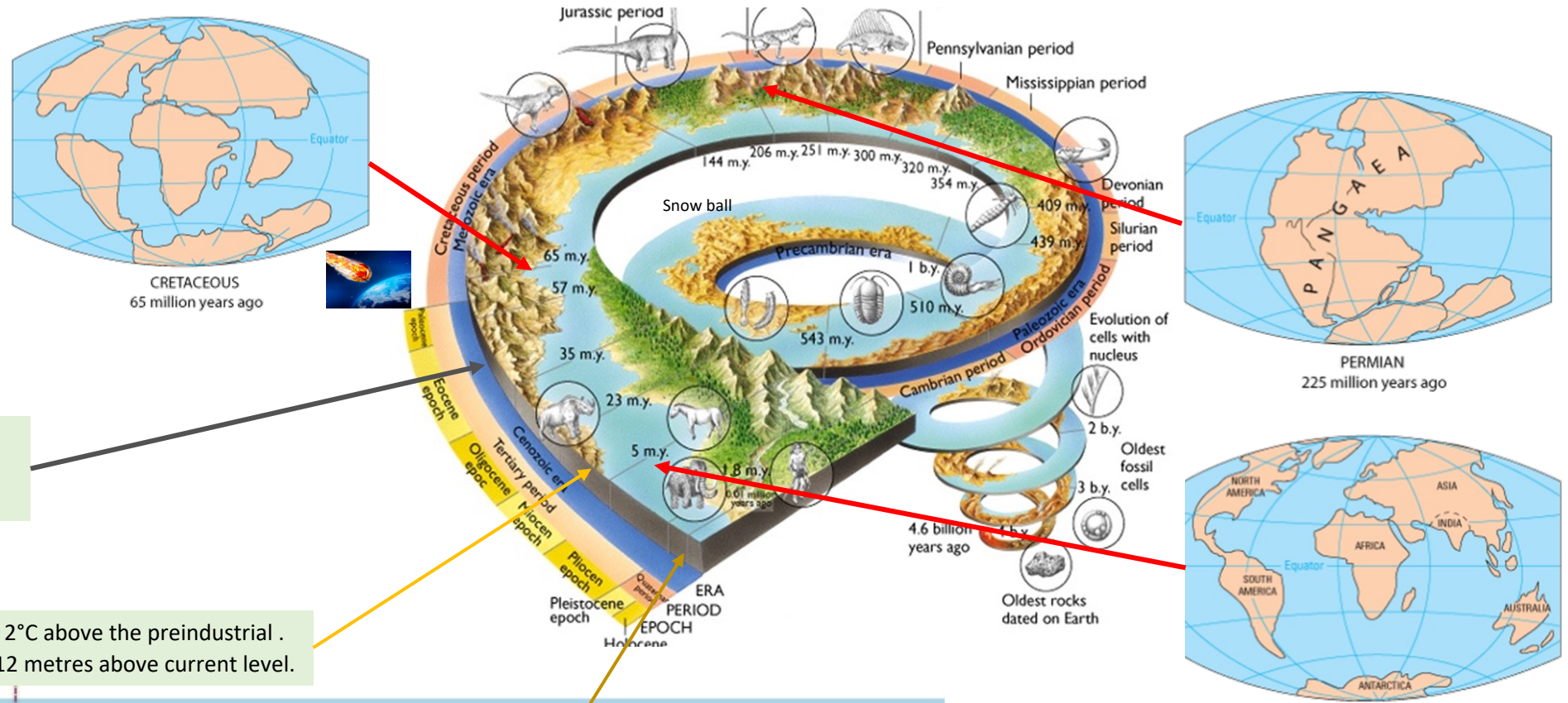


Coagulated space junk left over from exploding stars



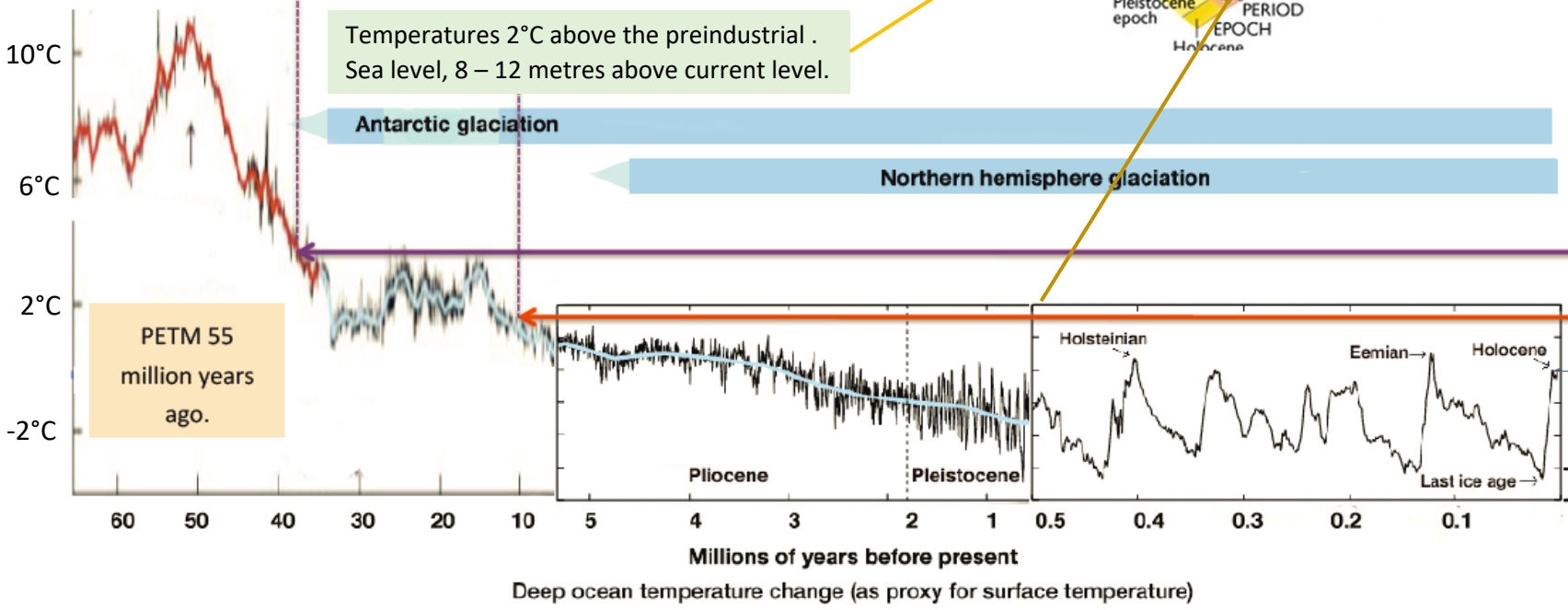
Perfectly stabilised environment

Evolutionary history and huge changes over time



Temperatures 4°C above the preindustrial. Sea level, 70 metres above the current level.

Temperatures 2°C above the preindustrial. Sea level, 8 – 12 metres above current level.



4°C By 2080 - the last time temperature was this high was 12 million years ago.

2°C By 2035 - last time temperature was this high was 10 million years ago.

0°C 2022 We are already 1.3°C above the pre industrial average.

Our Living Biosphere



The Human Impact

Almost everything we do is hostile to other life, as our actions disrupt the natural nutrient cycles

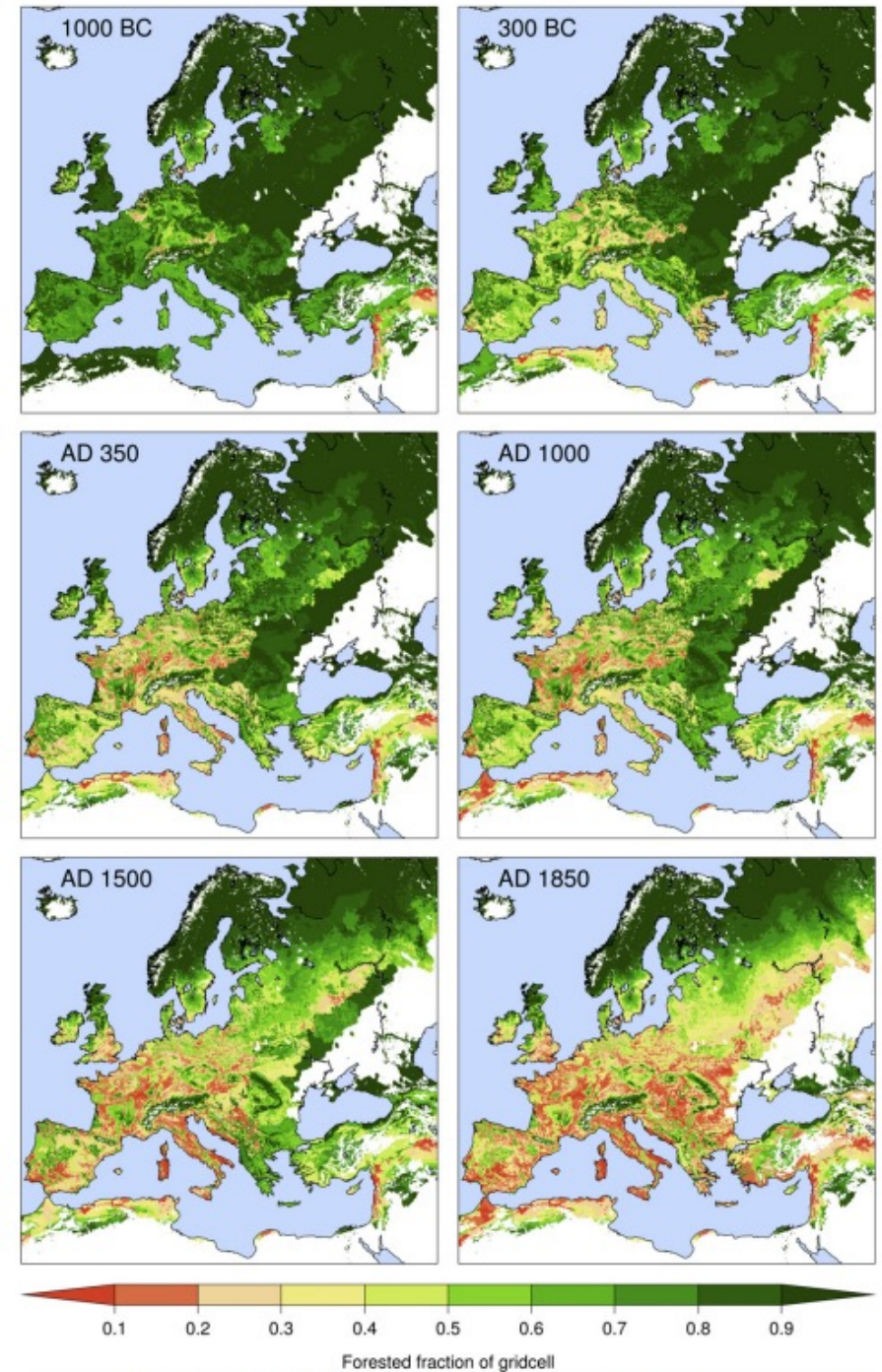
So much so, that over the past 12,000 years, we have reduced the overall amount of living things on Earth, to less than half of what had existed, for at least the preceding 2 million years!

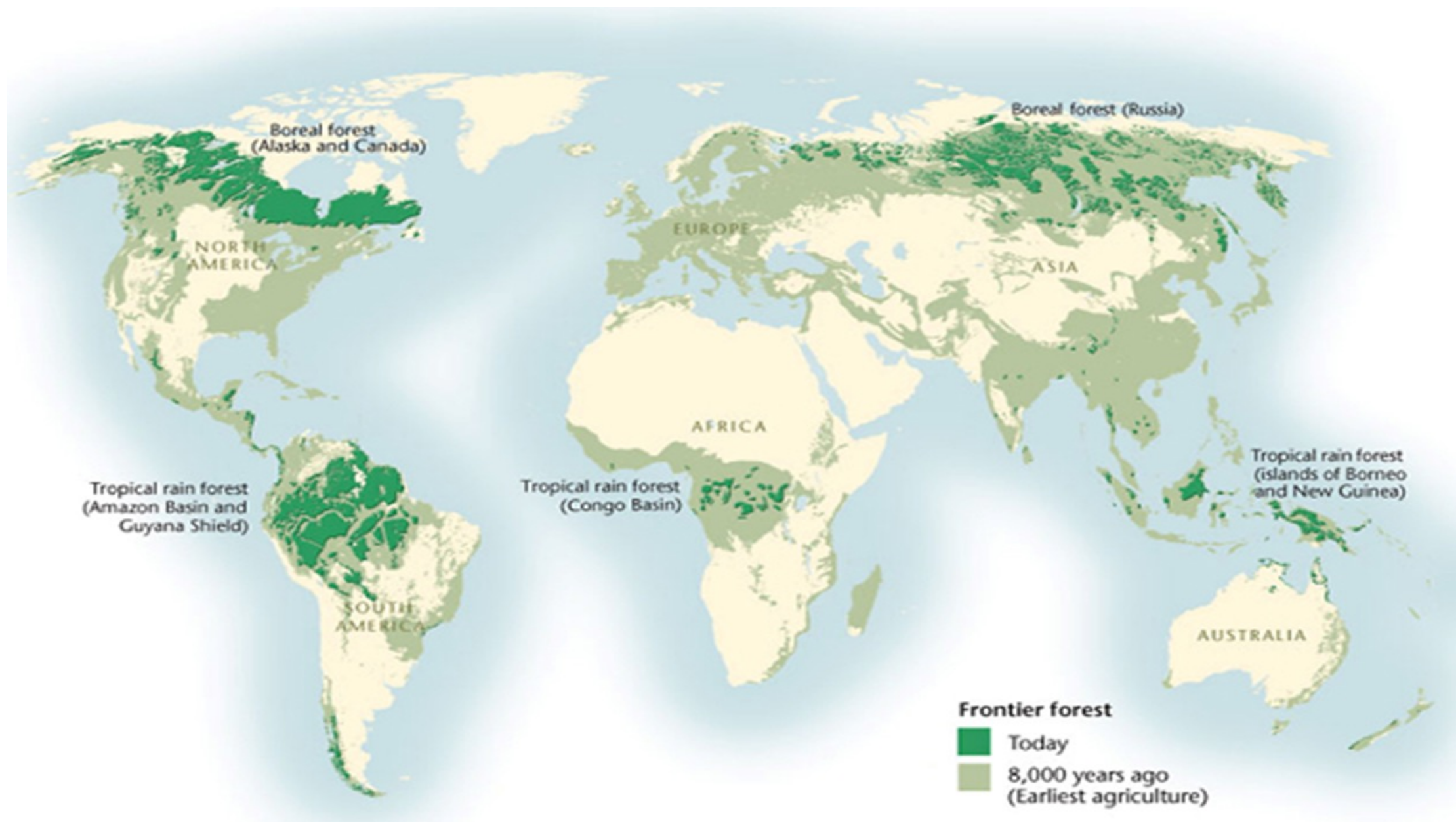
We have reduced the planet's climate management engine to half of its original size!



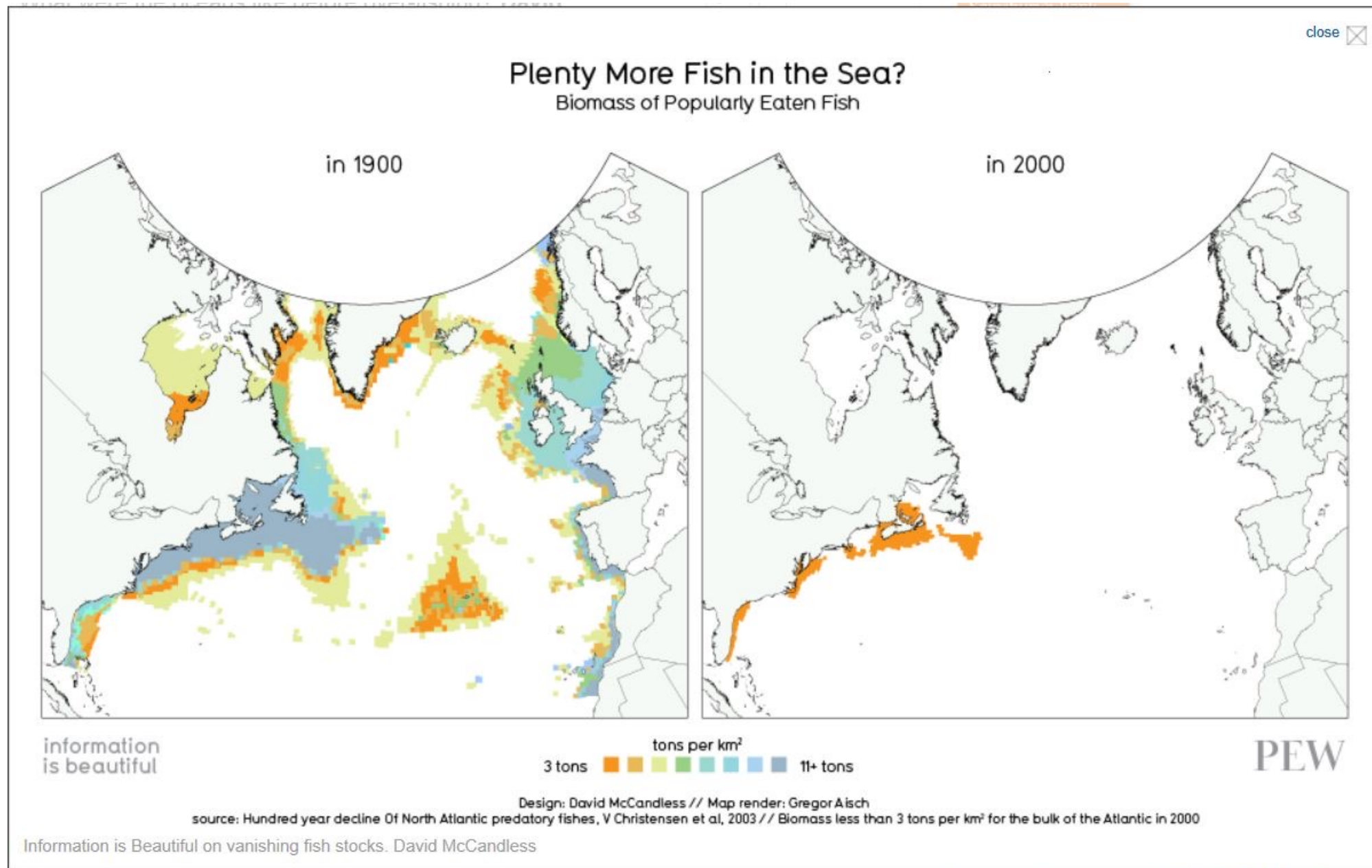
Historical forest clearance: 1000 BC to 1850 AD

The evidence is all around us



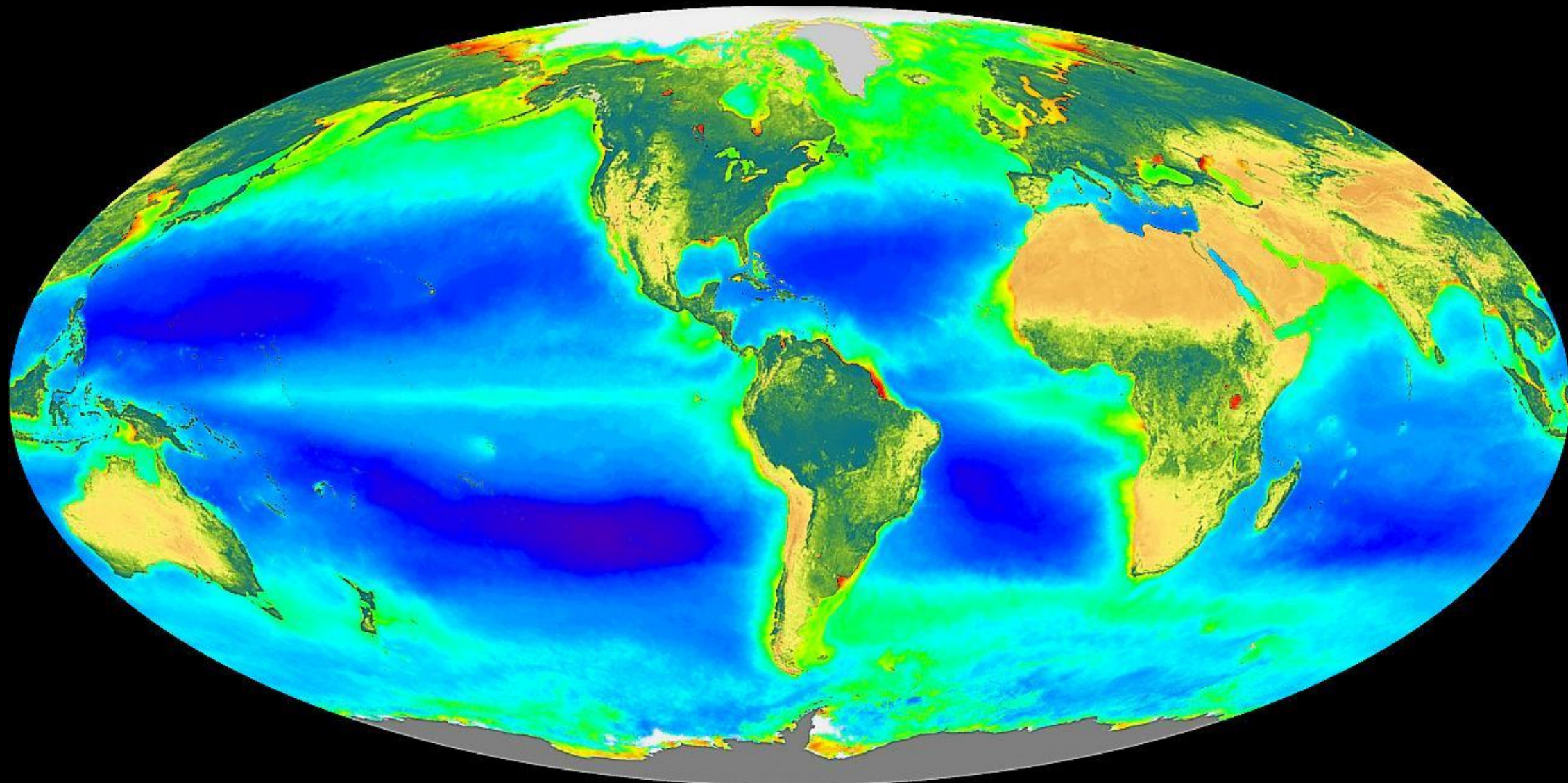


It's the same in the seas.

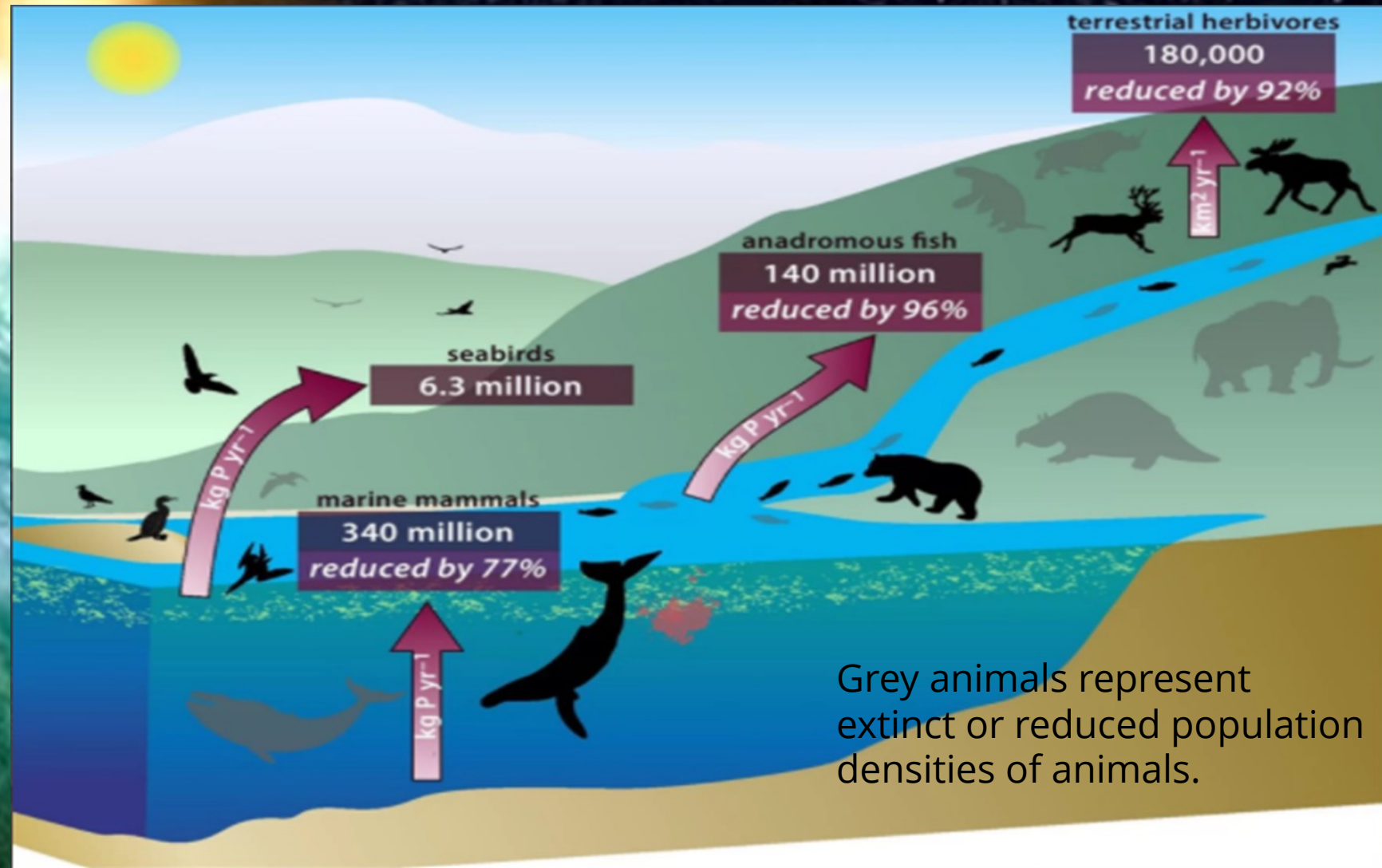








The interconnected web of life, colonises and stabilises, the process continually circulates nutrients. Human impacts may have reduced the overall size of these cycles by as much as 90%











Part 2: The Impact on the Climate of Human Actions

Biosphere Restoration Plan

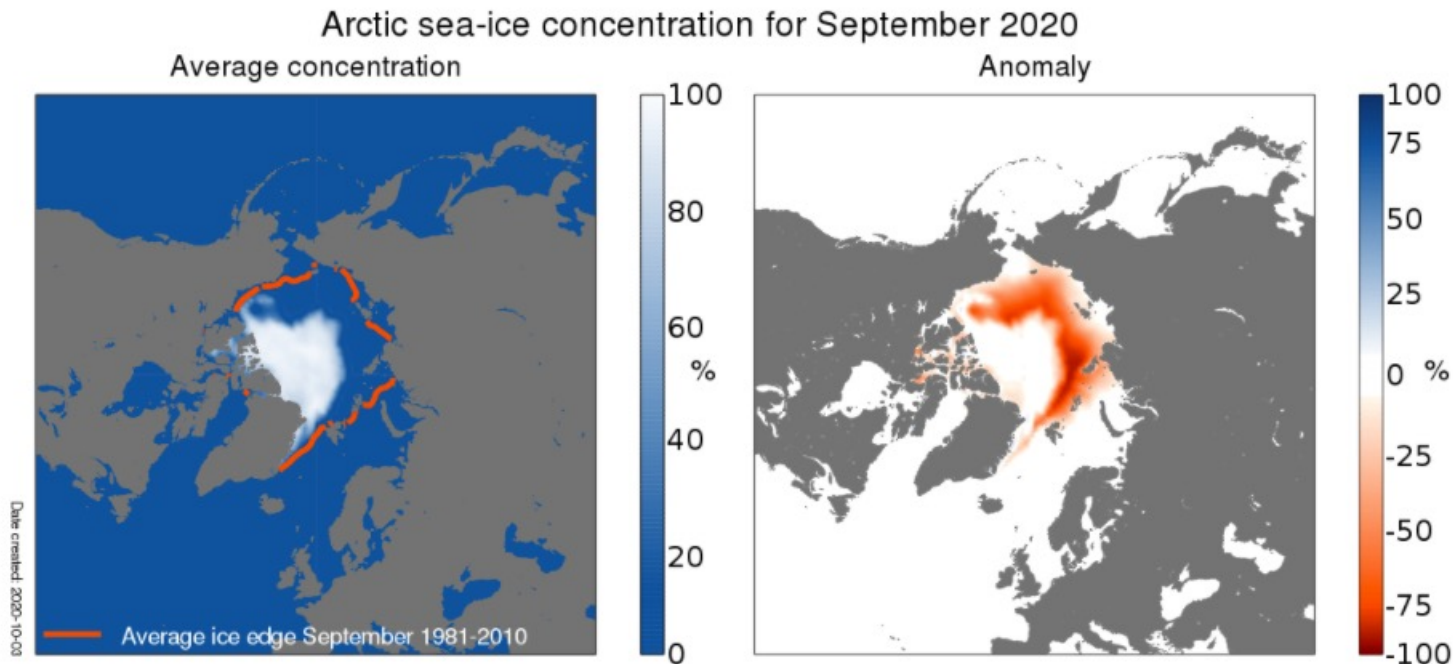
Human activity has and is, causing major environmental degradation



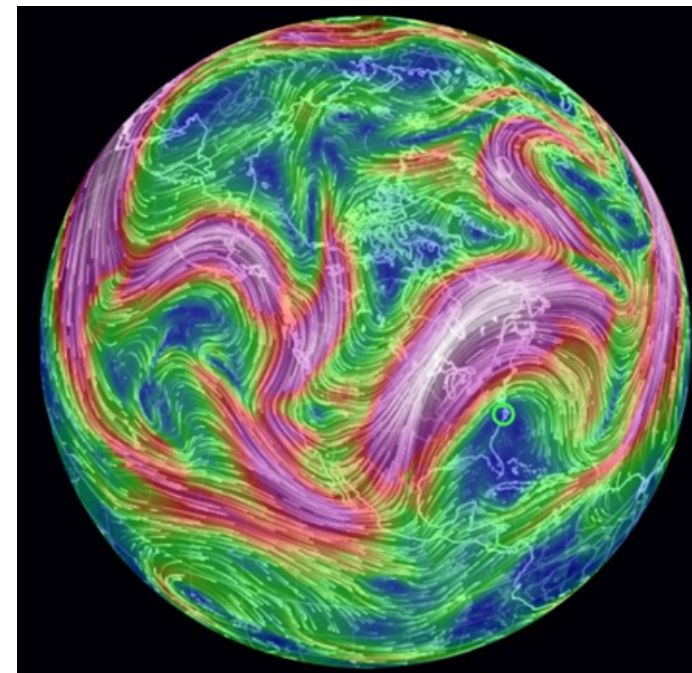
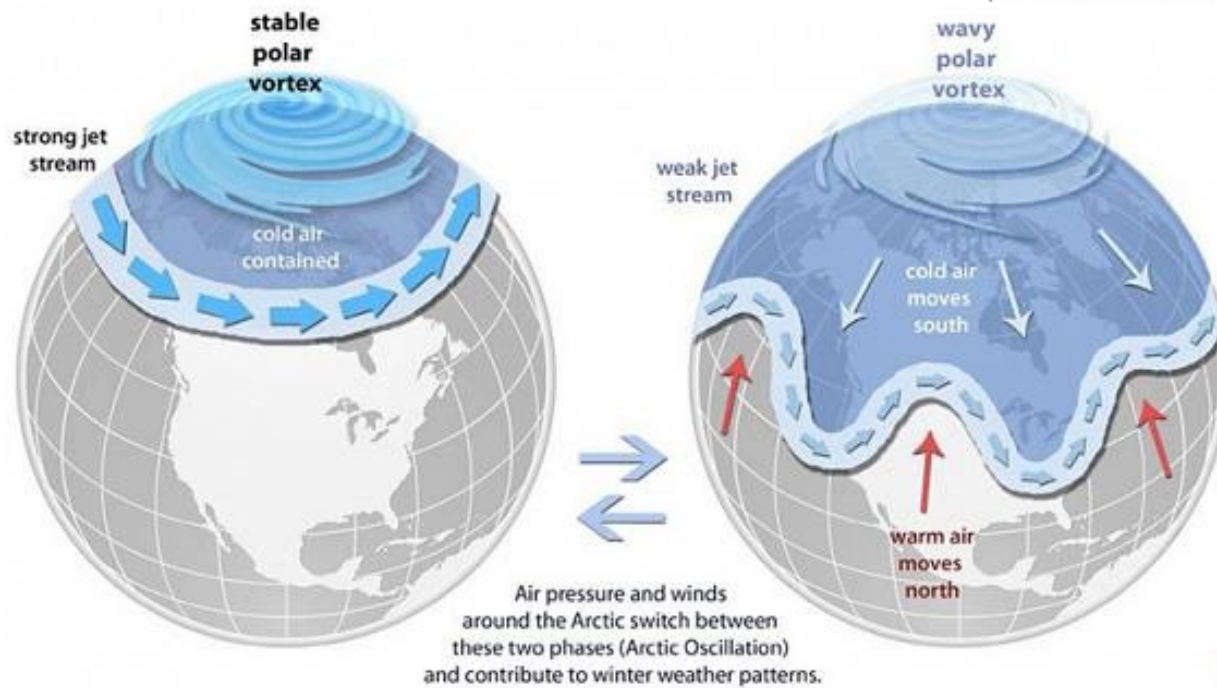
But how bad is the situation and how concerned should we be?

The answer requires a detailed understanding of the functionality of the Whole Earth System

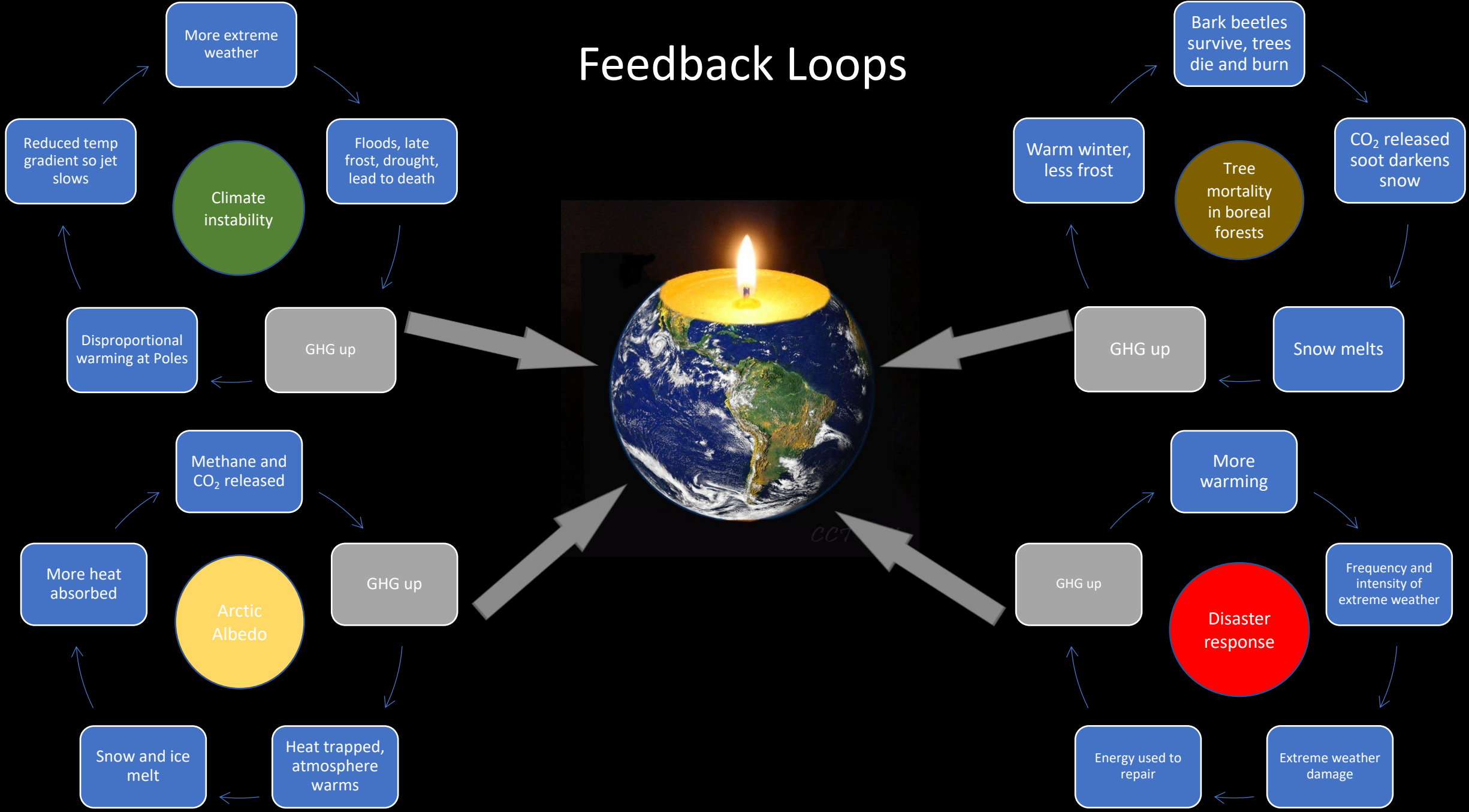
Only then can we determine the full extent of the damage and devise effective solutions for a viable future



(Data: ERA5. Reference period: 1981-2010. Credit: C3S/ECMWF)

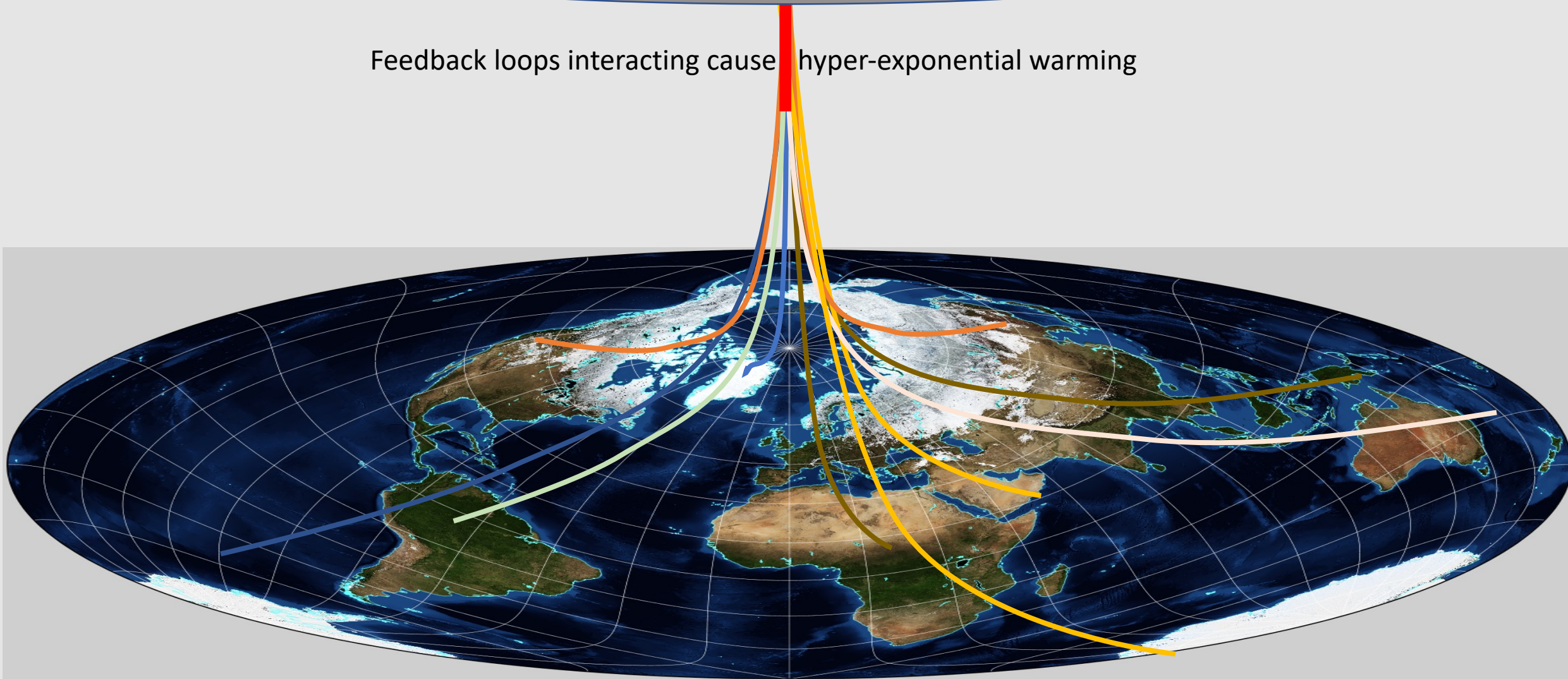


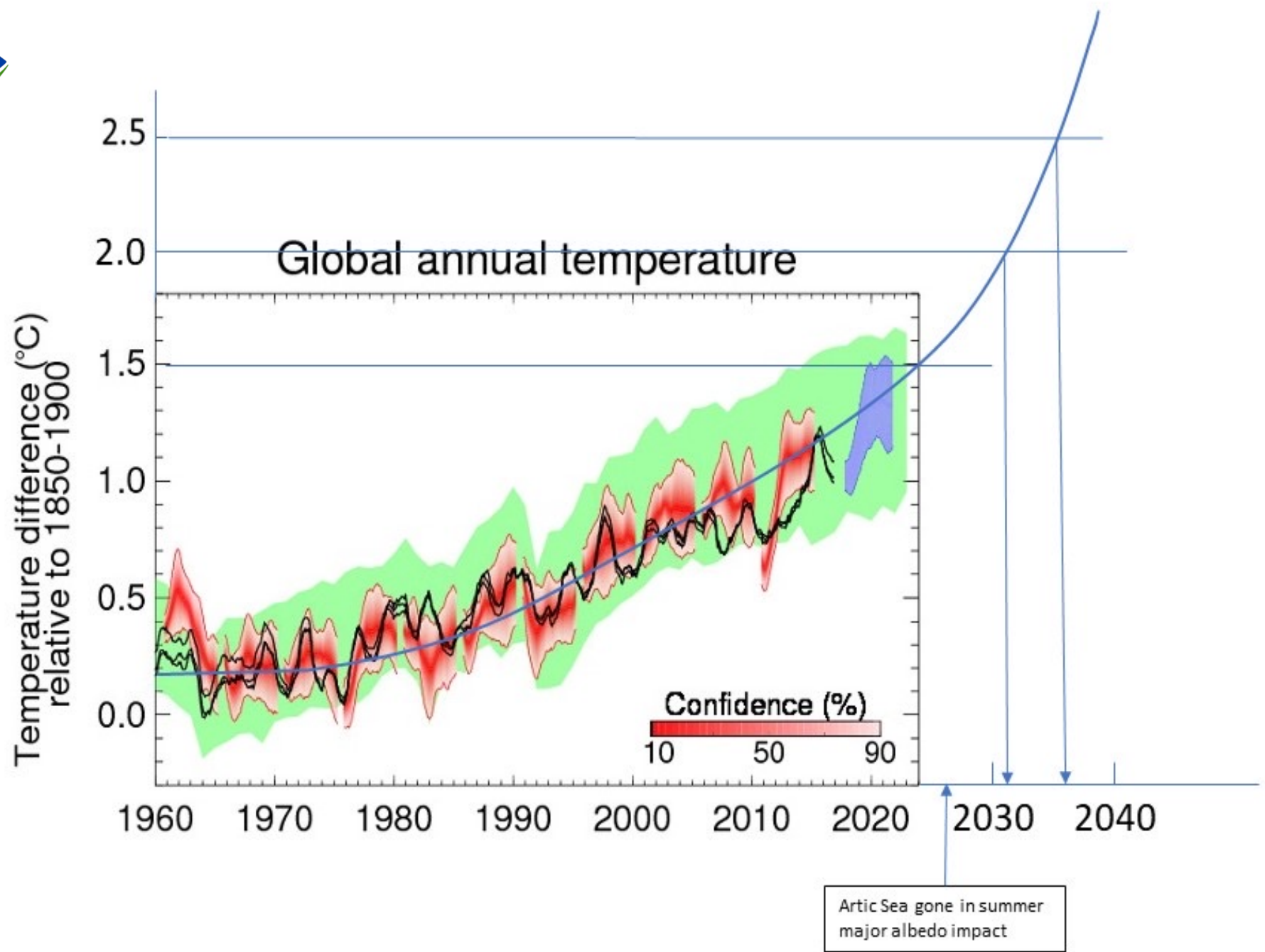
Feedback Loops



Greenhouse gases accumulate, trapping more and more of the sun's heat

Feedback loops interacting cause hyper-exponential warming





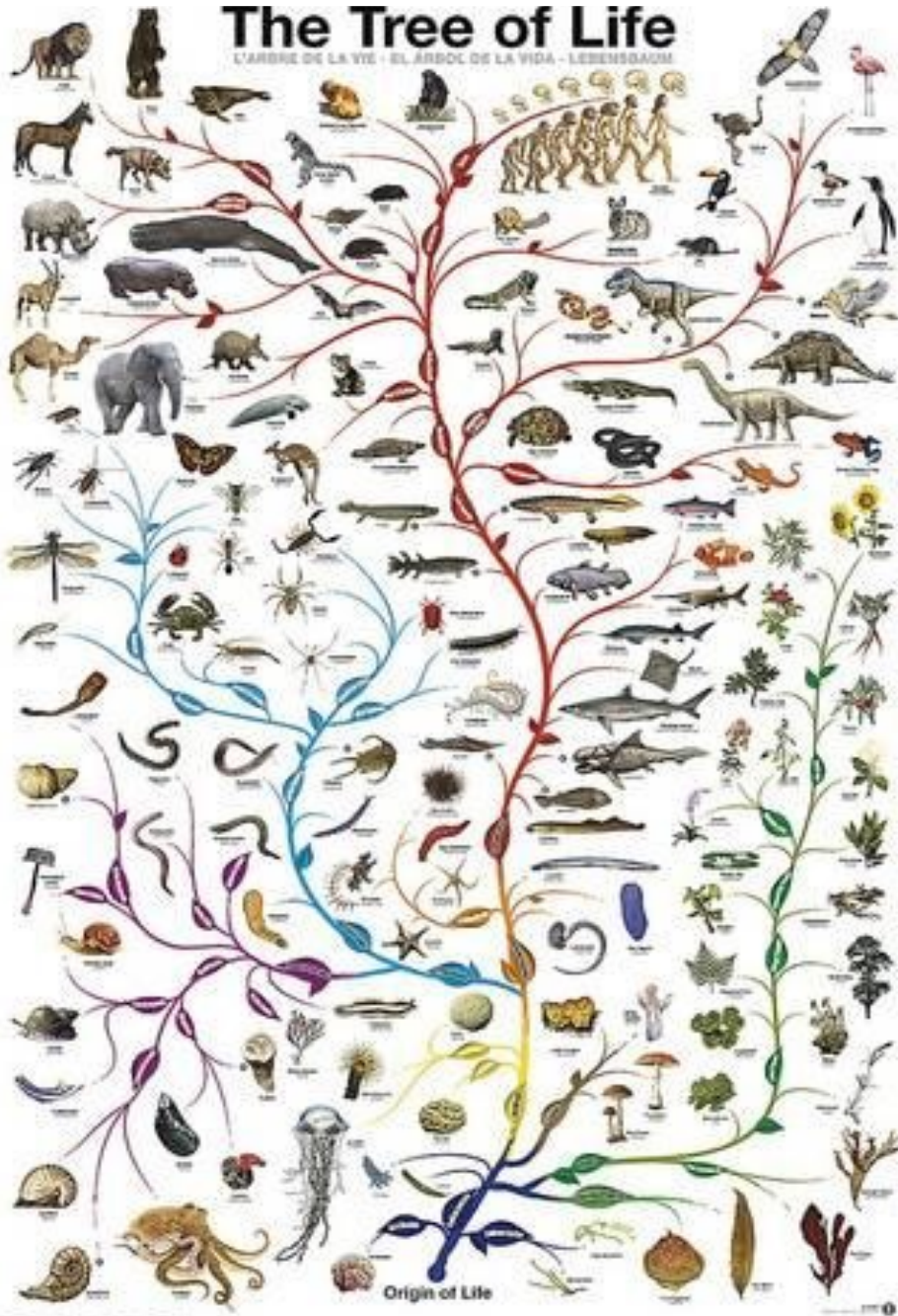


Part 3: Our place in nature. Have we gone wrong?

Biosphere Restoration Plan

The Tree of Life

L'ARBRE DE LA VIE - EL ARBOL DE LA VIDA - LEBENSBAUM



Humanity what are we and where do we fit in?

- A logical extension to the natural pattern of dispersion
- Taking over from the biological autopilot
- We are a great, but high-risk accelerator of the natural systems



Can we lift our game and step up to the challenge?

- We are already reaching out into the rest of the solar system and making it part of our environment
- Ultimately, we provide the capacity to allow our collective DNA to disperse beyond this solar system

Bezos, Branson, and Musk. It's programmed into our DNA!

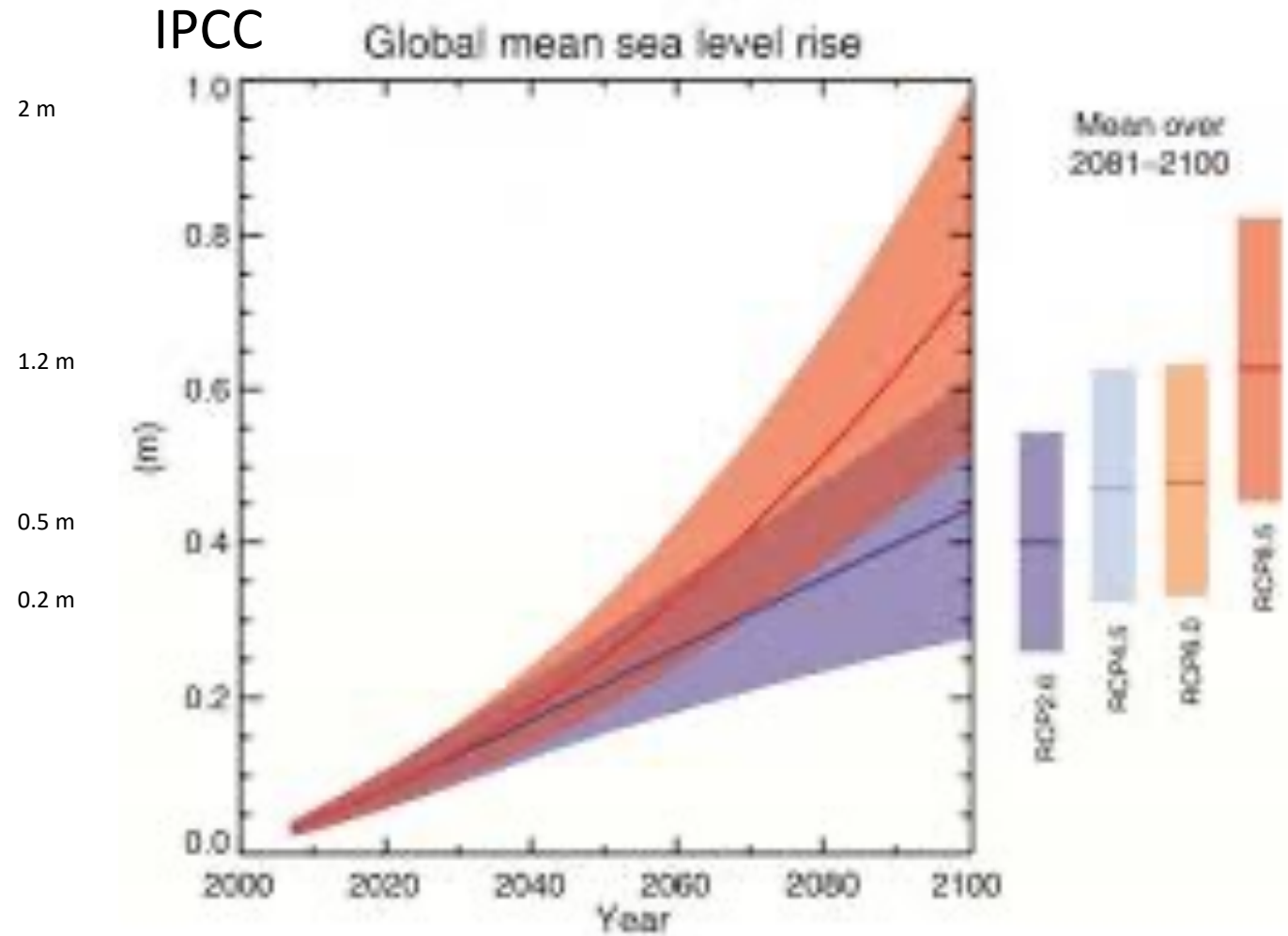
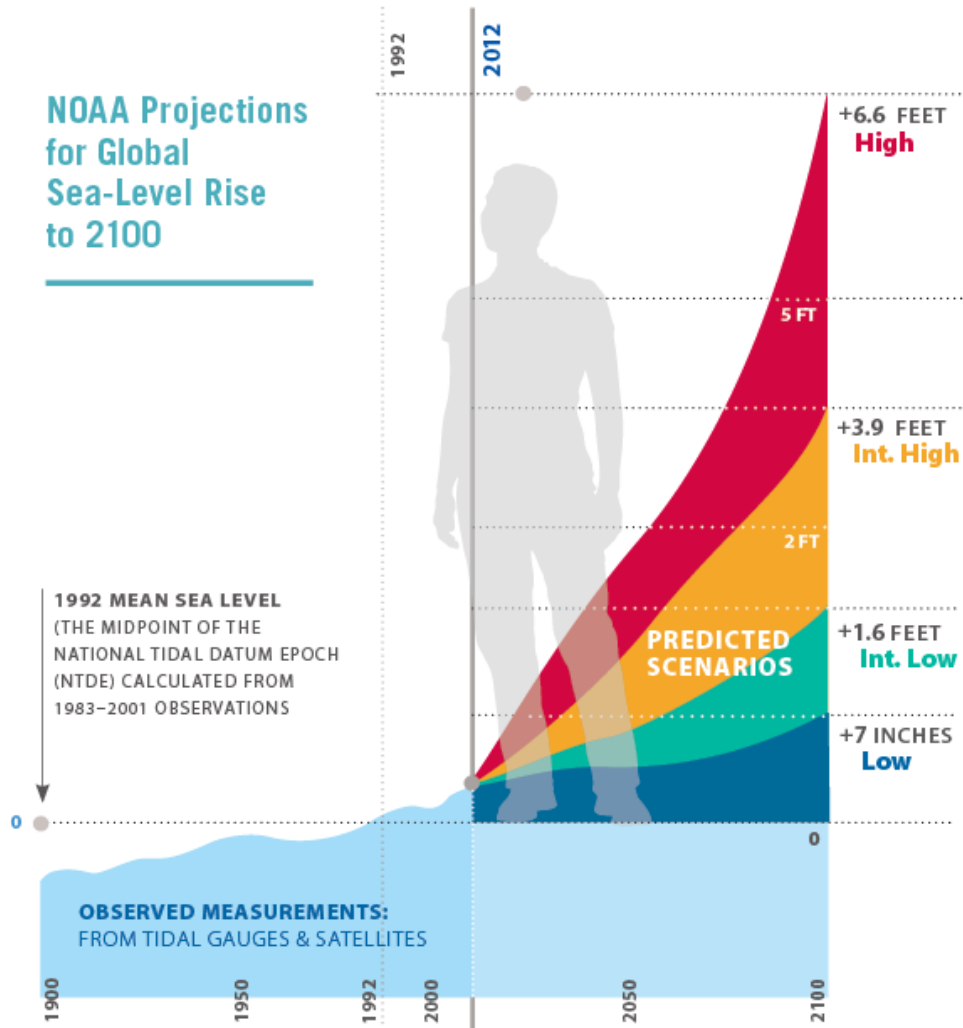


Jeff Bezos, Sir Richard Branson, and Elon Musk are racing to the stars

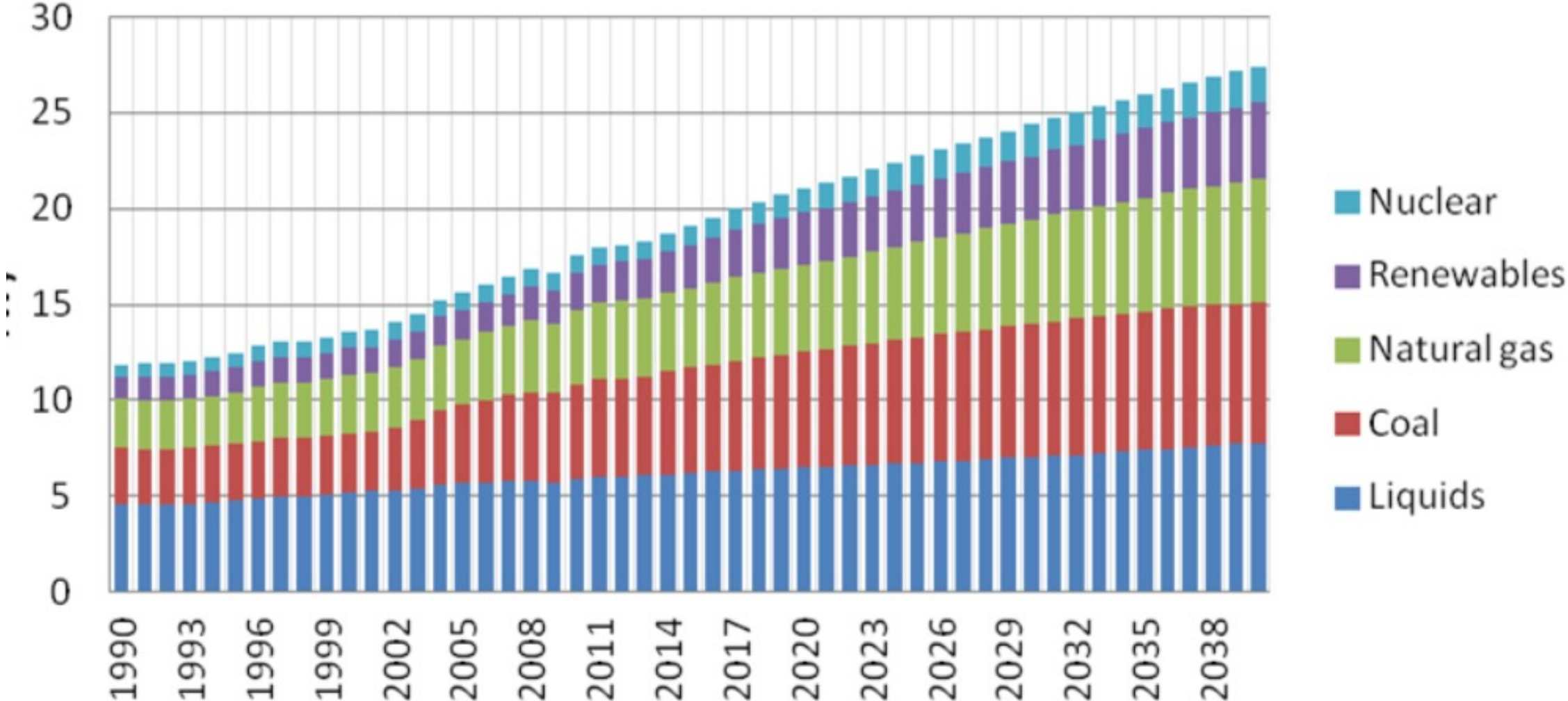
How have we
got things so
wrong and why
are we risking
everything?



Consensus based predictions

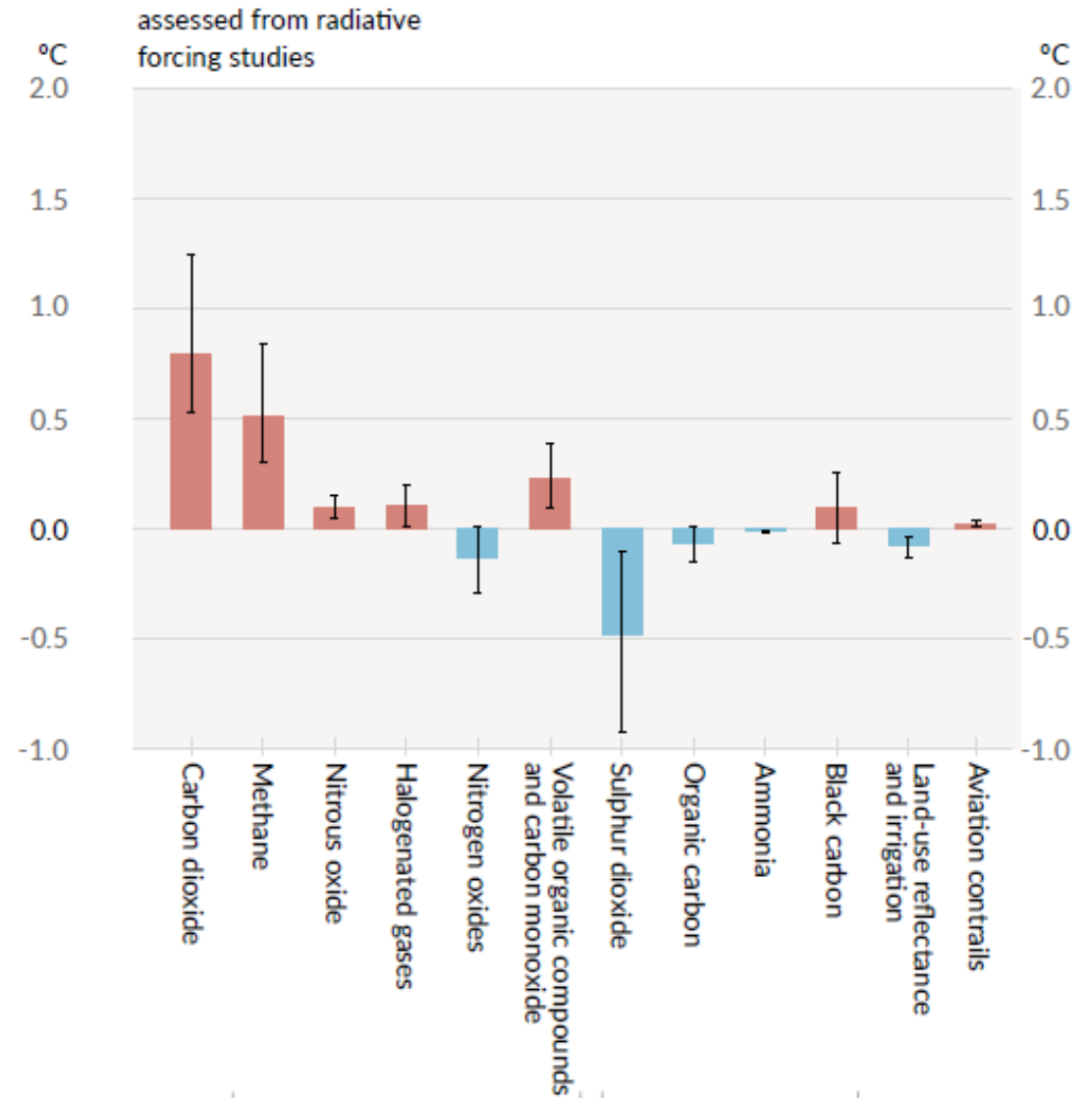


EIA World energy consumption by fuel type



From IPCC Advice to Policymakers (2021)

Its complicated, some of the emissions from burning coal and oil actually have a cooling impact. See the blue columns in the chart, if we stopped all hydrocarbon emissions tomorrow, the carbon dioxide will stay in the atmosphere but the sulphur dioxide would quickly clear away and the earth would experience a very fast further 0.5°C of warming





Part 4: Goals and Capability

Biosphere Restoration Plan

Weathering the storm requires a plan

1) What are our goals?

2) Assess the extent of the problems

3) Review capability and resources

4) Plan and organise for success

5) Finance and implement the plan



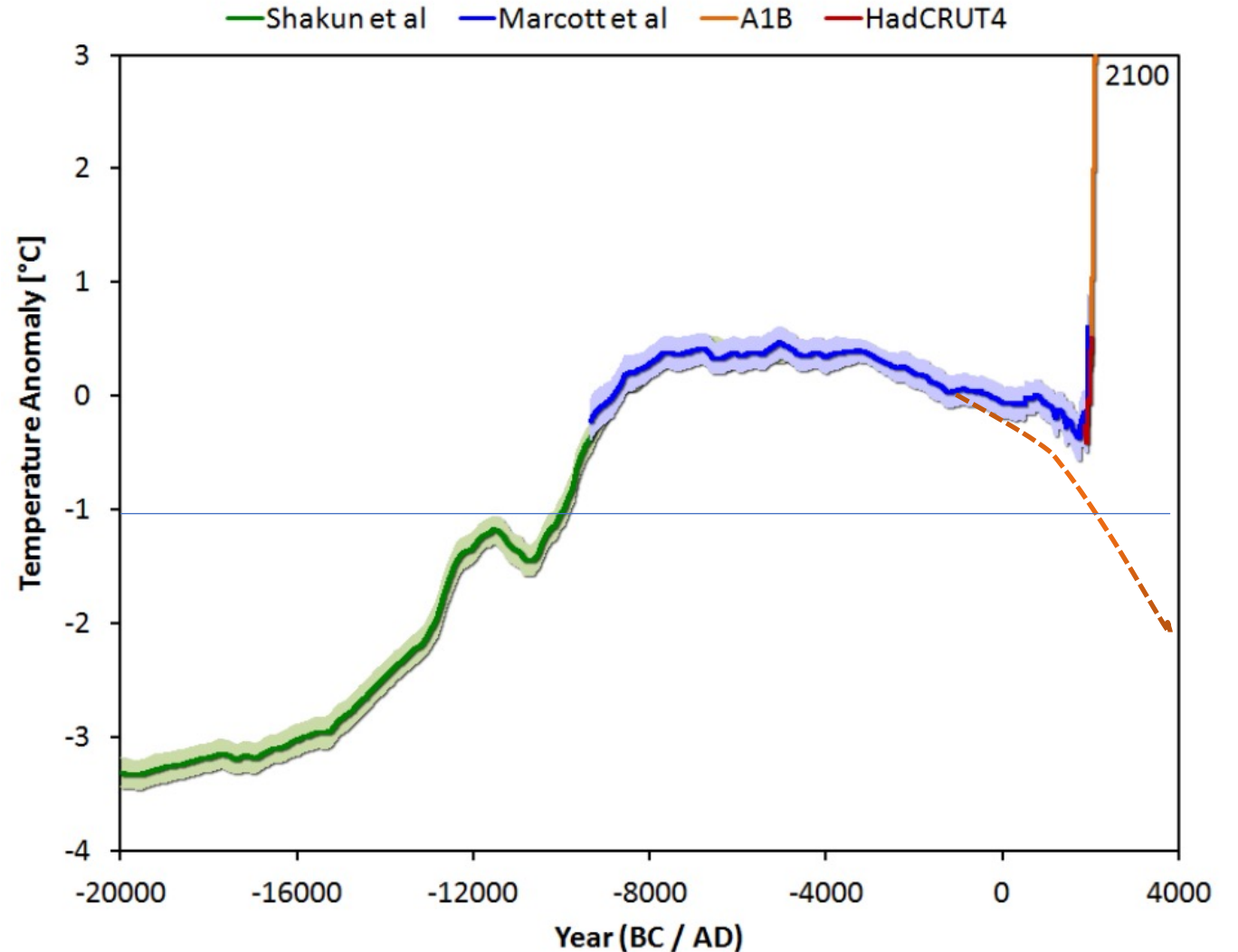
1) What are our goals



2) Assess the extent of the problems

- We have stopped the natural decline into the next ice age
- It's a big overcorrection
- But it proves our capability

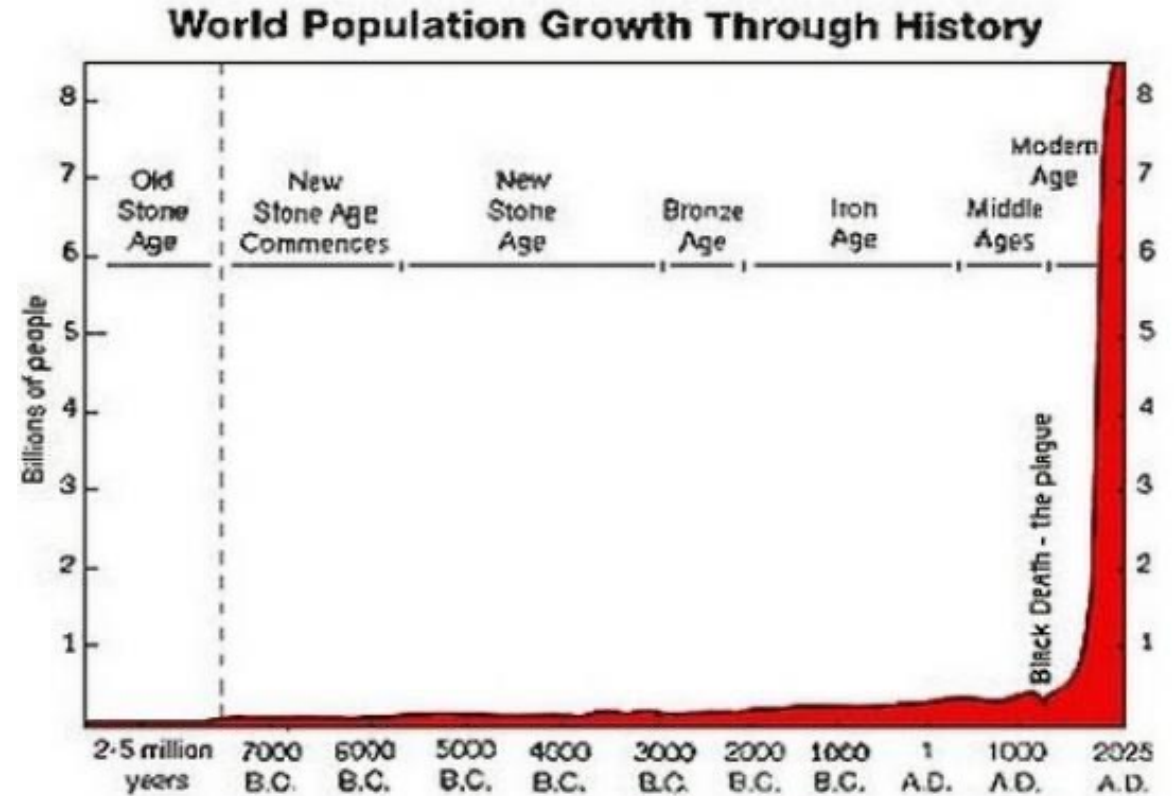
Quite an achievement!



Population

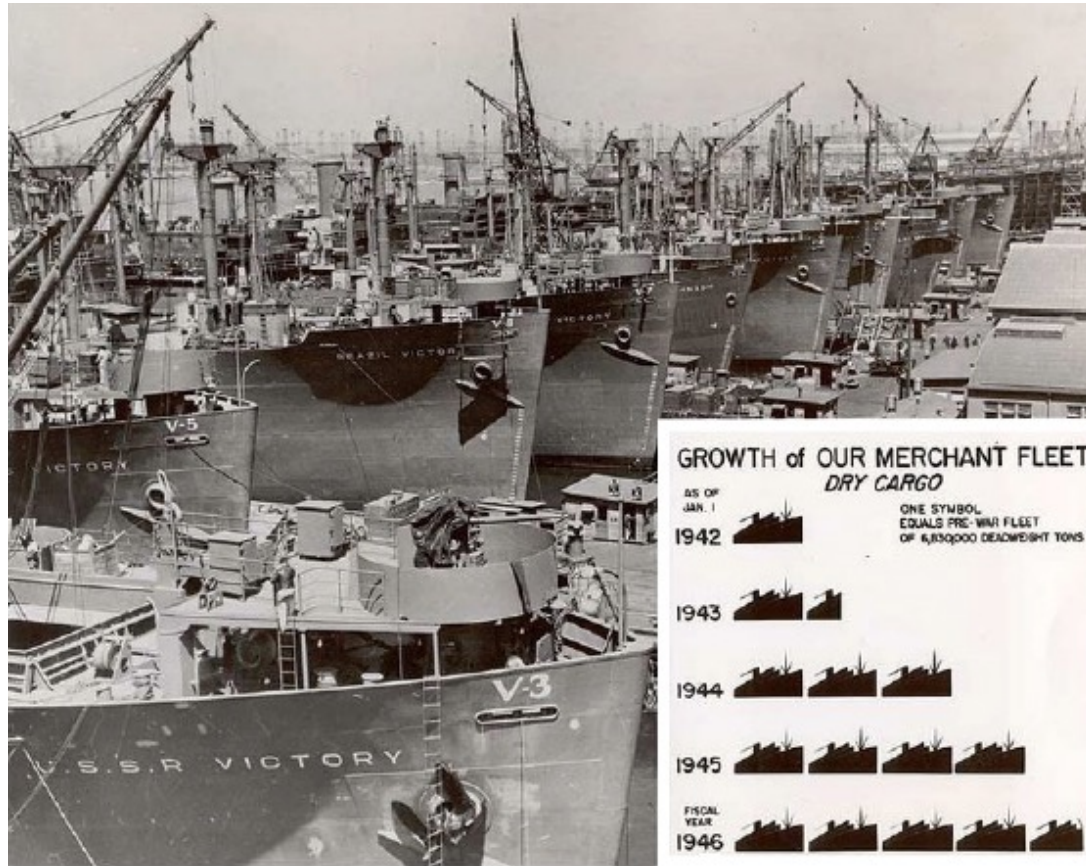
- **A massive resource.**
- Billions of people ready to be employed in restoring the environment.

3) Review our capability & resources



3) Review our capability & resources

Mobilising for war and rebuilding, prove our extraordinary capability



Liberty ships

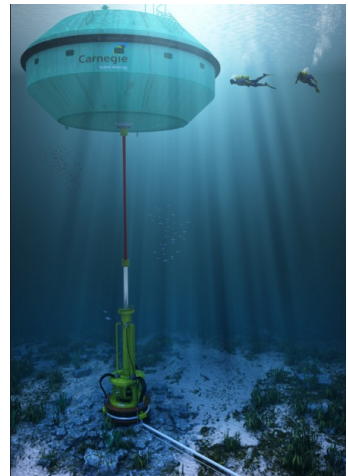
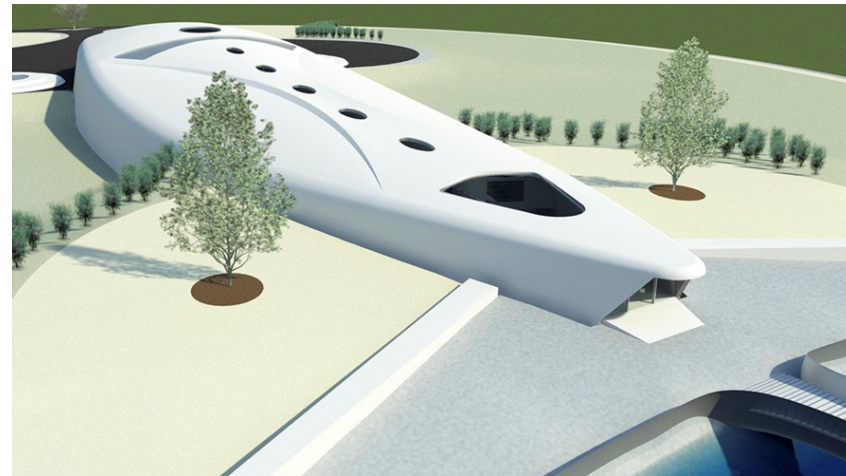


Hiroshima

3) Review our capability & resources

Global Resources

- Clean energy – practically unlimited resource for solar, wind, geothermal and nuclear
- Fresh water – effectively unlimited with sufficient available energy
- There is no shortage of wealth. 0.4% of the global bond market alone leveraged at 10 to 1 delivers \$90 trillion





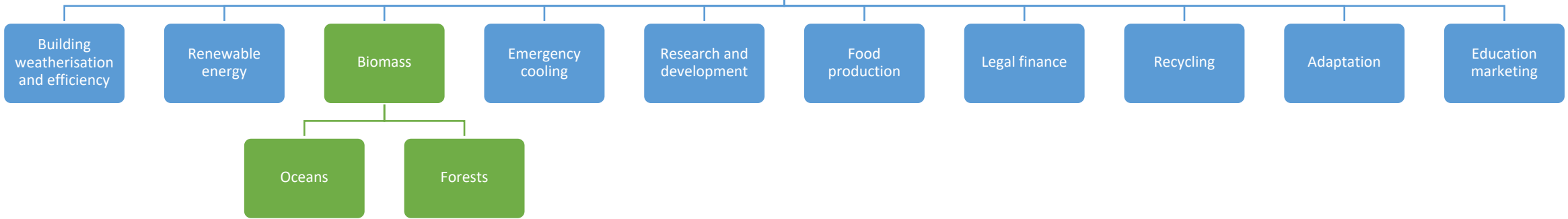
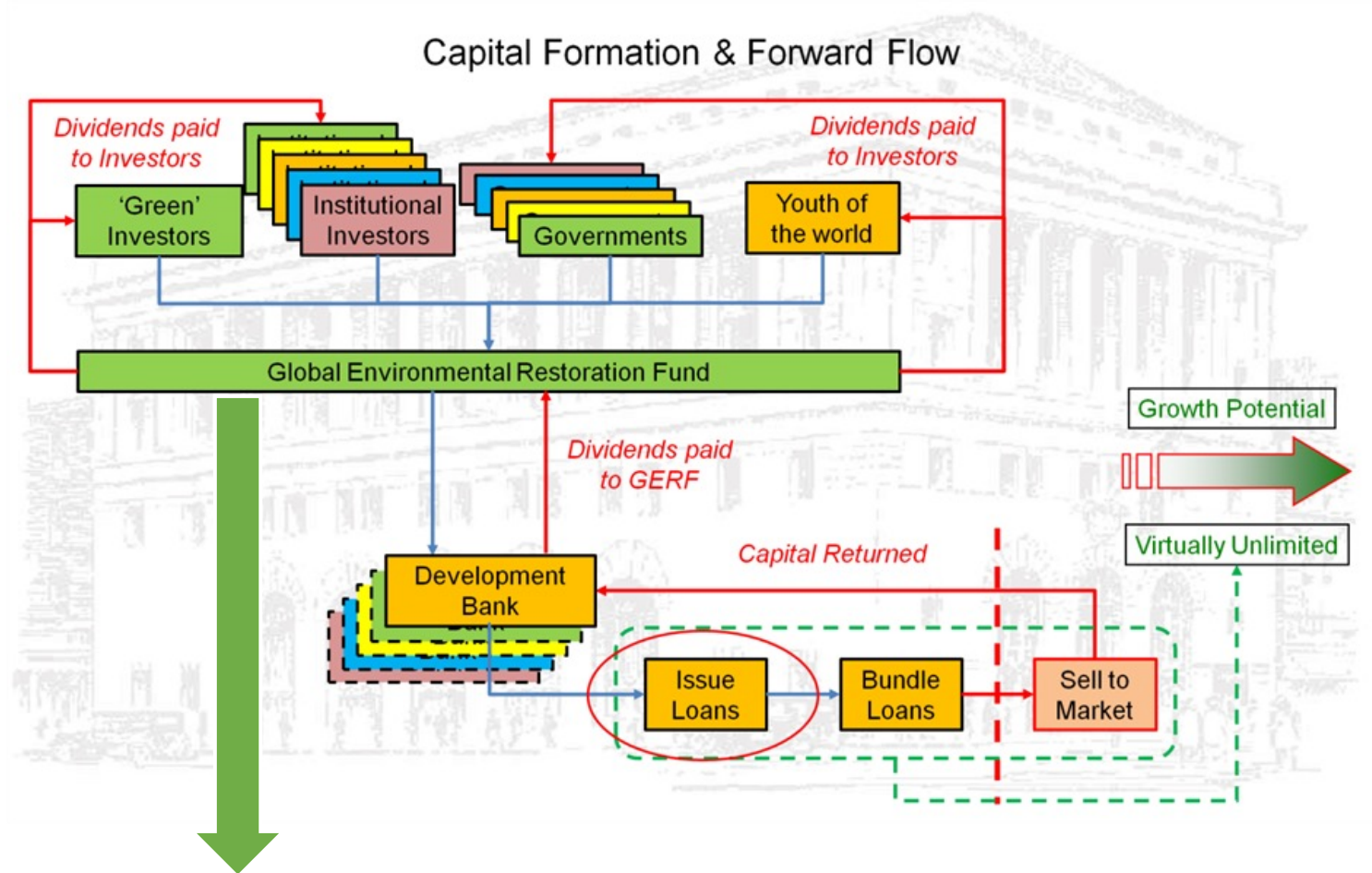
4) Plan and organise for success

The power of the human mind is a limitless resource

- We have analysed the problems
- Identified what needs to be done
- Agreed upon our direction
- Marshalled our resources
- Now we must organise to succeed

5) Finance & implement the plan

Financing biosphere restoration is a massive business opportunity

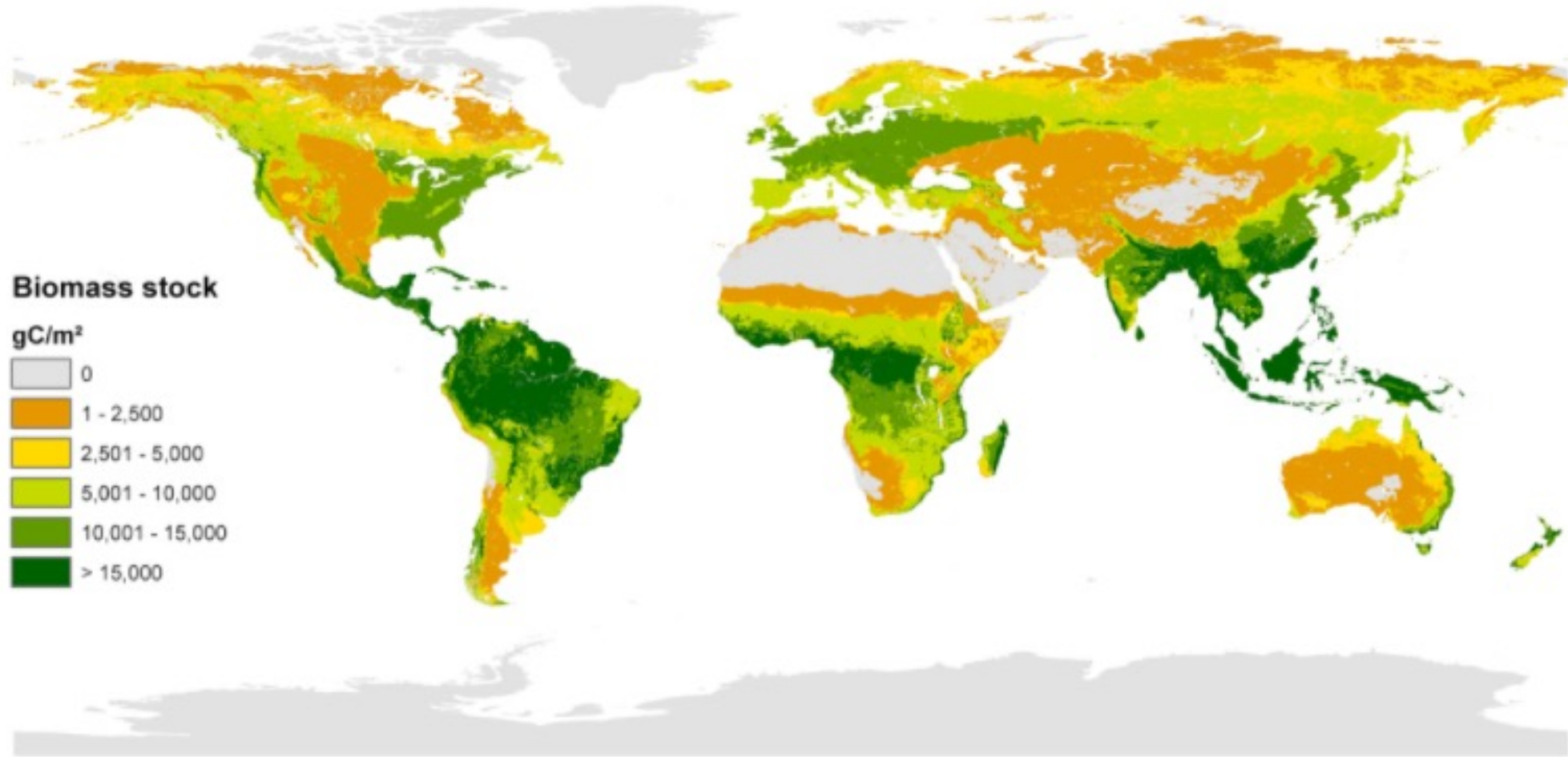




Part 5: Restoring the Biosphere

Biosphere Restoration Plan

Biomass density 7000 years ago and before



7000 years of human impact

**Carbon in living things
7000 years ago:**

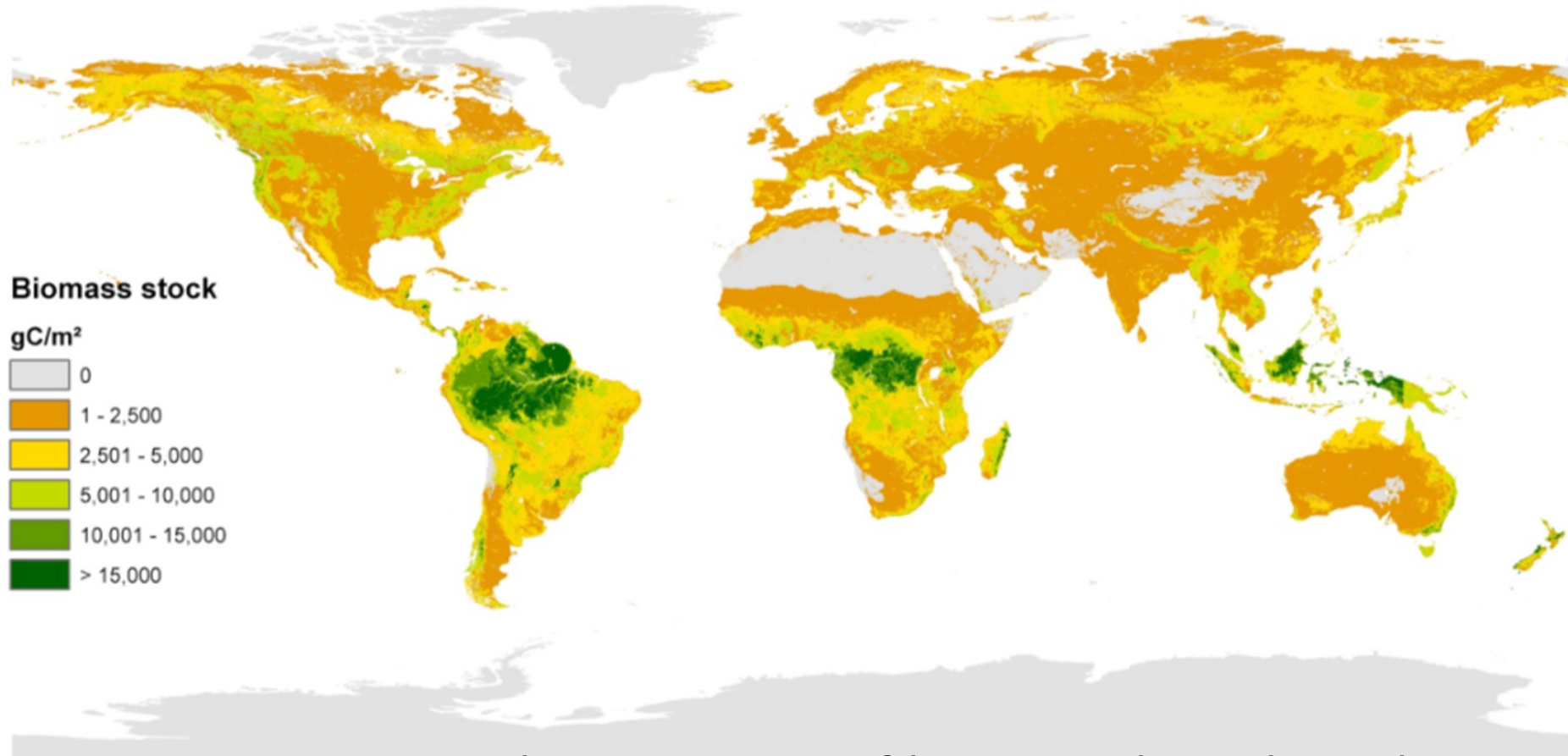
More than 1,100 Gt



Now reduced to 550 Gt



This map shows the remaining biomass density on earth



It represents about 550 Gt of living carbon, less than half the amount that existed 7000 years ago.



Loess Plateau Restoration before and after, an area the size of Belgium.

Image from Gaia University Webinar with John D. Liu

Great Green Wall

A pan-African
tree planting
project fights
desertification



SOURCE: Green Wall Initiative

AP



Freeing up space for the additional biomass and feeding the world at the same time?



Global Vertical Farming Market, 2020-2027

\$16.77

Billion by 2027

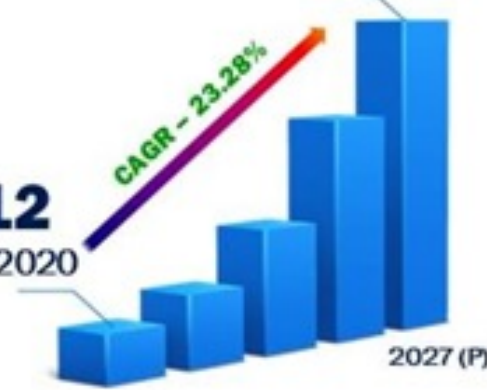
\$3.12

Billion in 2020

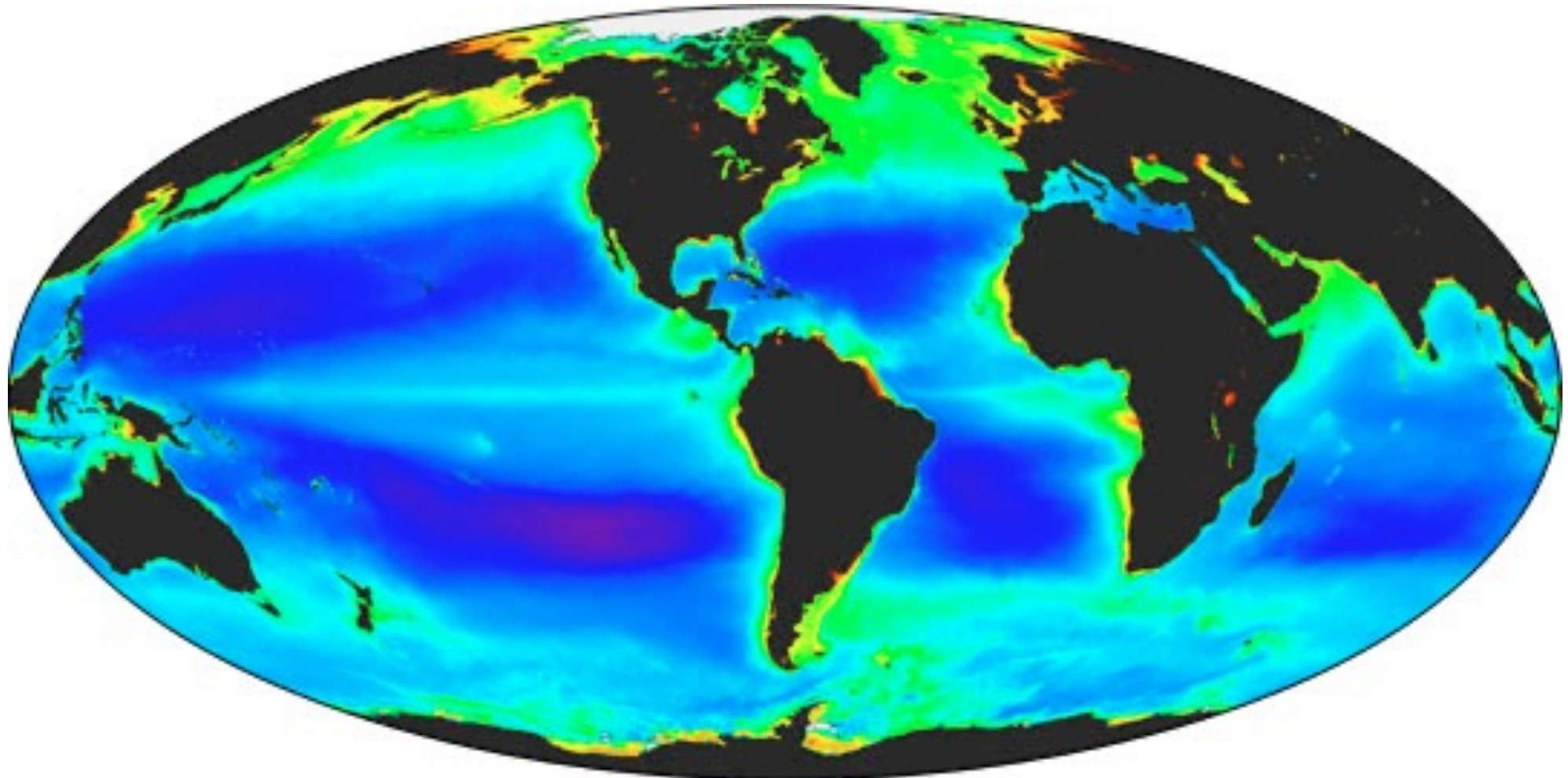
CAGR - 23.28%

2020 (E)

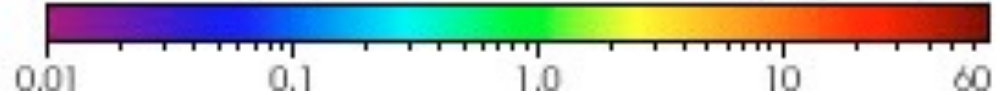
2027 (P)



Vast areas of the oceans are also available for biomass regrowth



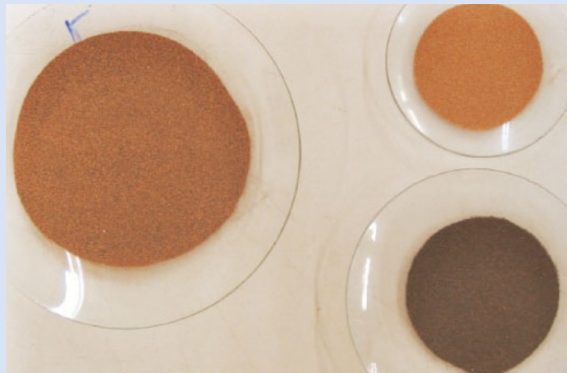
Chlorophyll a Concentration (mg/m³)



Ocean fertiliser with buoyant flakes



Rice husks include silica.



Mineral tailings, rich in iron, silica, phosphorus and trace elements.



Flakes approx. 0.3-0.5cm² in area at 10 to 100 per m² of ocean.

These float on the surface for 6 - 12 months, providing nutrients and a habitat for micro organisms.



Targeting equilibrium at no more than 0.5°C warmer than pre-industrial



Carbon dioxide in the atmosphere is now at:

416 ppm CO₂ = 886 Gt C

We can't stop year on year emissions increasing before 2033 and although we will be reducing emissions thereafter, we will still be adding CO₂ even as its drawn down until at the earliest 2050 (Net zero), so we are committed to at least:

470 ppm CO₂ = 1001 Gt C

However to that must be added:

emissions from thawing permafrost, a big unknown so add

30 ppm CO₂ = 64 Gt C

as partial pressure of CO₂ reduces in the atmosphere the

oceans, will release CO₂ back to the atmosphere so add up to 50%

100 ppm CO₂ = 213 Gt C

Subtract target for CO₂ in the atmosphere

-300 ppm CO₂ = 639 Gt C

Therefore the total carbon to be removed from atmosphere is:

300 ppm CO₂ = 639 Gt C

Returning to atmospheric CO₂ levels of 300 ppm by 2050 requires carbon drawdown



Re-growing Earth's biomass to 1100 Gt i.e. to pre significant human impacts 7000 years ago draws down:

258 ppm CO₂ = 550 Gt C

Direct air mechanical capture:

18 ppm CO₂ = 40 Gt C

Chemical systems such as accelerated rock weathering, and adding biochar and basalt to soils

24 ppm CO₂ = 50 Gt C

Total

300 ppm CO₂ = 640 Gt C



Part 6: Restructure, to deliver a sustainable future

Biosphere Restoration Plan

Good management is critical



- All life follows laws, this holds true for:
 - a nest of ants
 - shoals of fish
 - a troupe of chimpanzees
 - all human societies
- Without rules they perishes



Civilisation is driven by commerce. It is successful,
when the laws it operates within, are fit for purpose.

Clearly they are not!



ONE LAW TO PROTECT THE EARTH

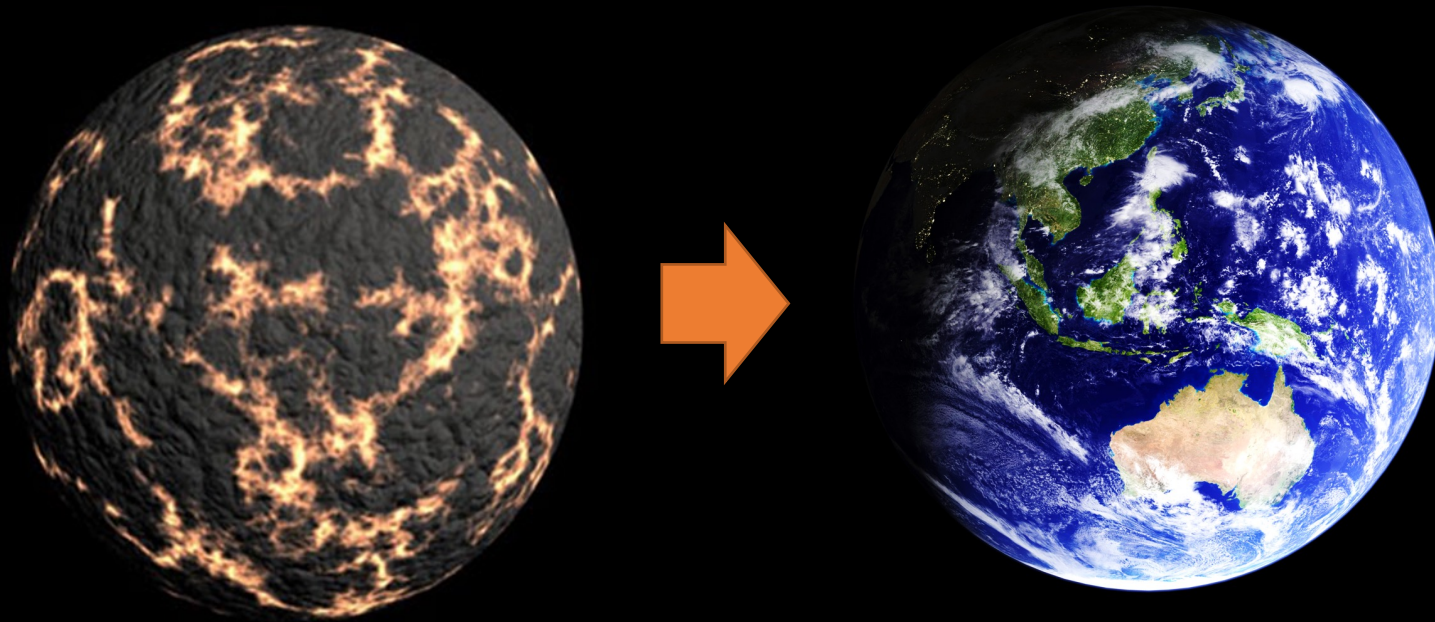
EUROPEAN PARLIAMENT REAFFIRMS SUPPORT FOR ECOCIDE LAW



RECOMMENDATION INCLUDED
IN HUMAN RIGHTS REPORT

#StopEcocide @EcocideLaw

Earth – 3.8 billion years of automated development of a dynamically stabilised biosphere, by the interconnected web of life



Deep storage of carbon in rocks, oil, gas and coal (savings account)

Carbon in living biomass (working capital)

Carbon in the atmosphere and oceans (the loan account)

The evolution of conscious intelligence in humans has overridden the automatic control system!



A primary failing of present societal structures
is fraudulent Earth system accounting

If it is not sustainable, it's not growth!
It's a contingent liability

At this stage of human societal development all wealth is dependent on the health of the biosphere

This can best be calculated by measuring the amount of active carbon in living things



A new financial paradigm is required



Where:

- the true value all living things is recognised, in a global account of living biomass
- the full cost of greenhouse gas emissions is calculated and not subsidised
- only sustainable growth that does not deplete biosphere resources, is recognised
- finite resources are fully recycled
- the value of people's work is fairly recognised, especially in respect of biosphere maintenance



Time to take full control of Spaceship Earth





Global Living Carbon Account

- A global living carbon account can underpin all human economic activity and, as such, will be a far more logical standard than gold or other precious metals
- This links back to the dashboard for planet Earth which displays the critical information brought together by the International Centre for Earth Simulation to provide a key indicator of planetary health
- It will provide a base standard for all other carbon accounting certification systems
- Land and ocean areas to grow biomass on, become assets to raise finance against
- The contracts between urban and rural areas become the biggest financial market place ever



The Empathy Coin
Linked to the living
carbon standard,
can engage the
entire market

- A crypto token, backed by the carbon in living biomass
- Because having empathy with the rest of life on Earth, is critical to our survival
- Investment in Empathy Coins allow everyone to become part of the process
- Coins act, as a receipt for investment in environmental restoration
- The value of the coins will increase, in direct proportion to biosphere health and stability
- A stabilised climate adds value to all other assets

Tackling the problem is the biggest commercial opportunity of all time

Capitalism
under a fit for
purpose legal
framework
will deliver



- Demand is obvious - we all want to live!
- Supplying solutions delivers the biggest business opportunity of all time!

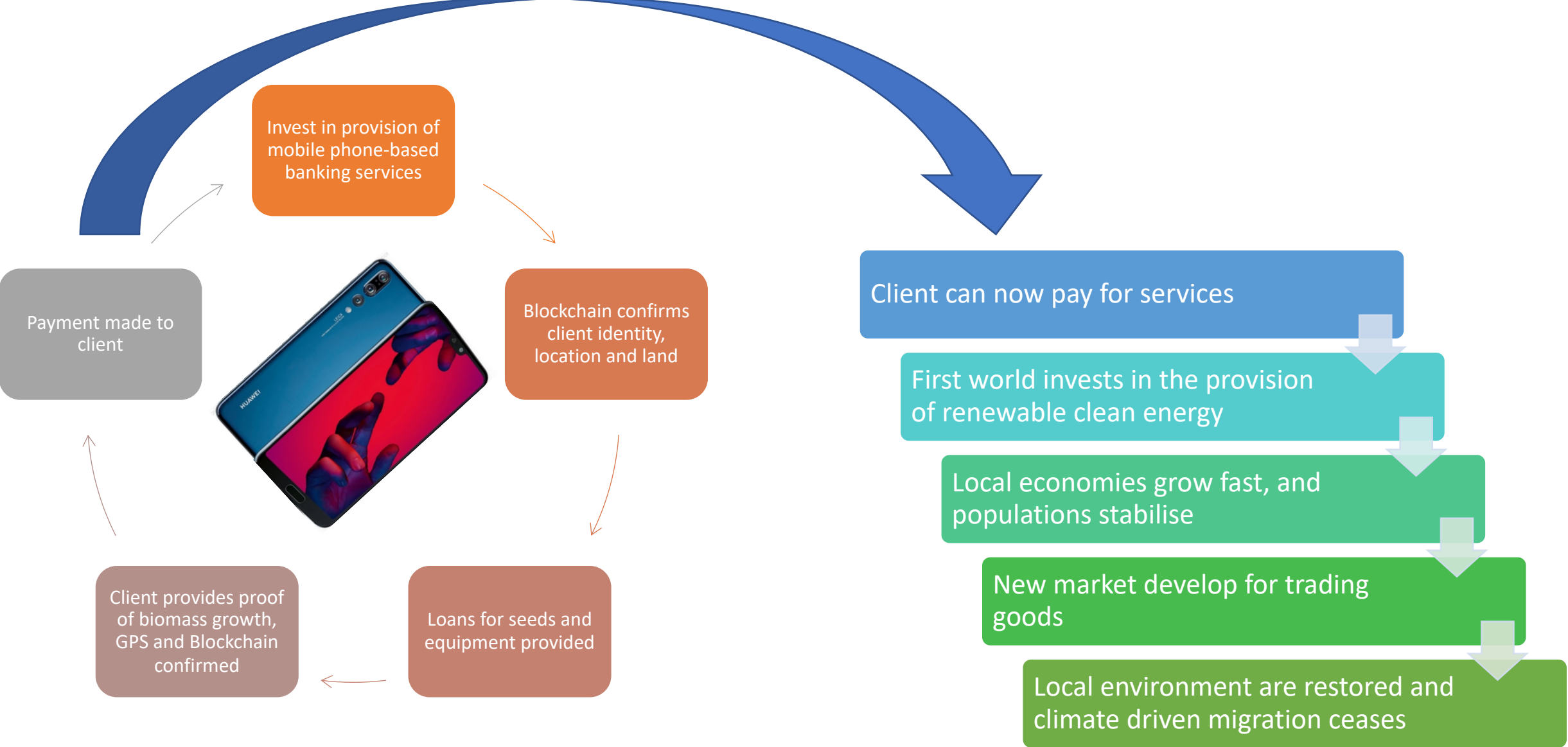


Contracts for biosphere services

- The world's urban areas are going to require contracts with the rural areas, for the provision of biosphere life support services
- Huge investment will be required, in less developed countries and rural areas
- The opportunity and payback comes through the creation of new markets



Enriching populations and expanding markets





Paris 2050 Smart City Project



2050 The future

- The climate is dynamically stabilised and fully chaperoned
- Vast areas of land and ocean are being restored
- 550 Gt of additional living carbon has been added to the carbon cycle
- UN Sustainable Development Goals are being achieved
- Mechanisation and artificial intelligence have taken over the mundane, and the resulting wealth is being shared
- Vastly more free time for arts, sciences, music, exploration, discovery and creativity has become available
- Humanity is positioned to disperse onto other planets of our Solar System



Acknowledgements

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