Session D: A Situationer

# Climate Change Adaptation & Mitigation & Disaster Risk Reduction & Management

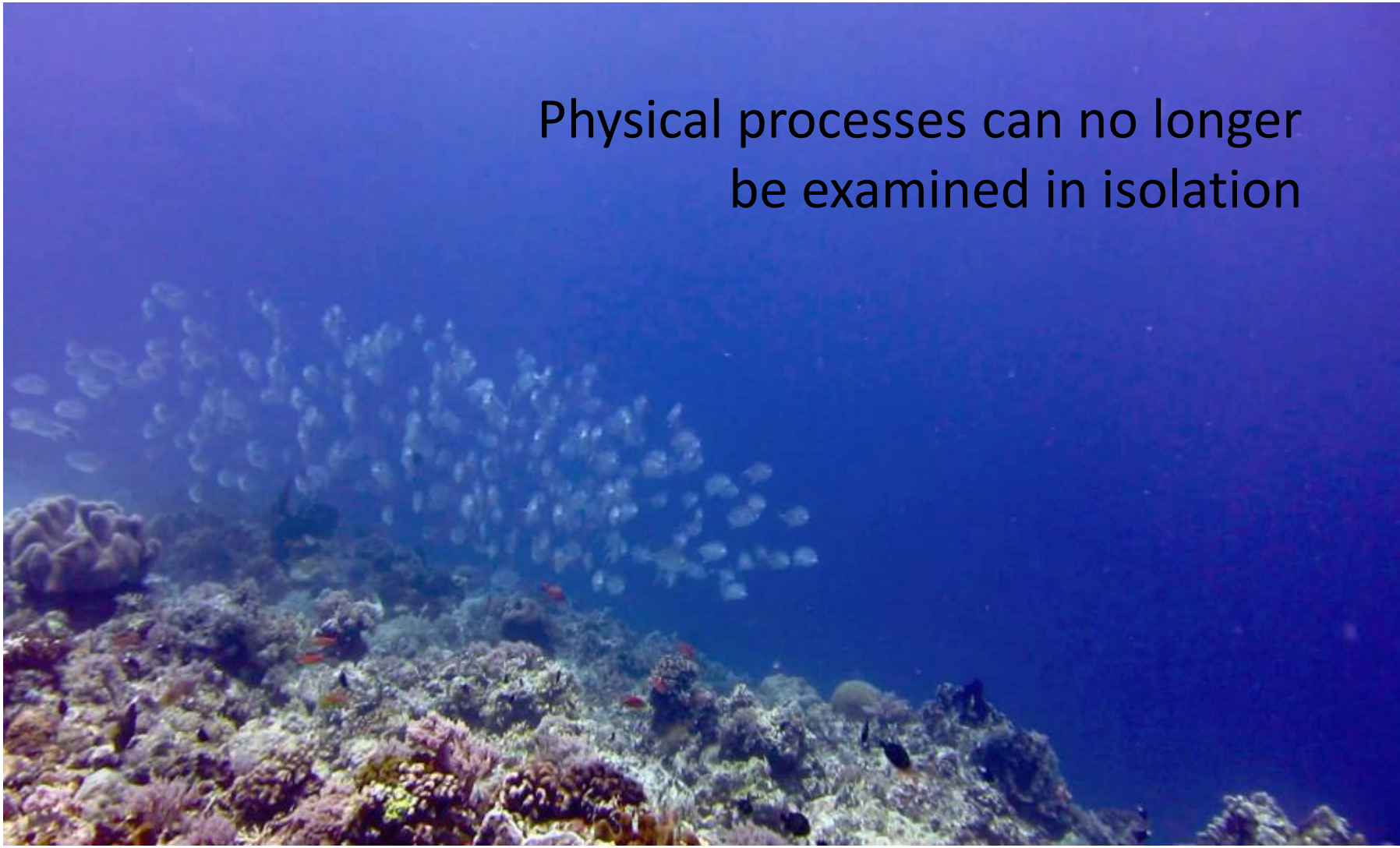
1st Philippines Environment Summit

10 February 2016


We live in the
…ANTHROPOCENE.

a period in which human actions play a major role


in shaping the biosphere and its processes.


Physical processes can no longer
be examined in isolation


Human processes
have become the dominant driver.

Article Will Steffen, Paul J. Crutzen and John R. McNeill

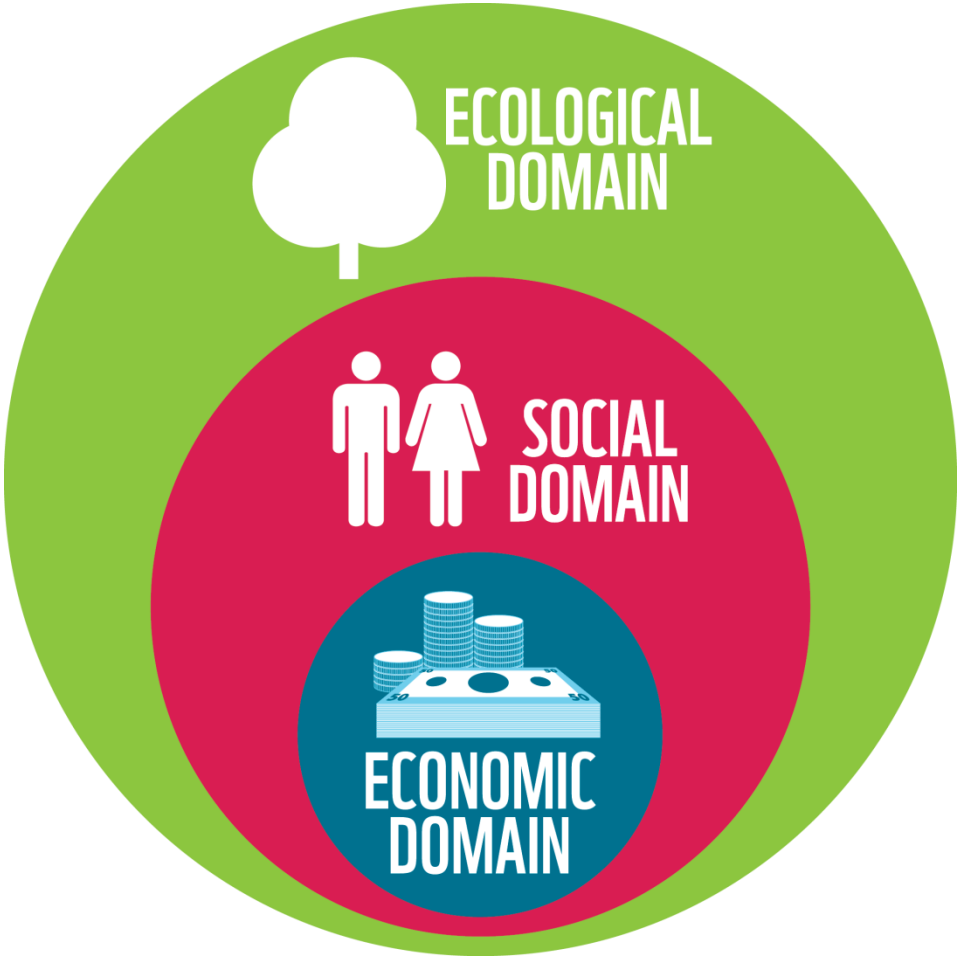
# The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?


Source: J. Rockstrom, Stockholm Resilience Center


- Living Planet Index (LPI) – **52% decline since 1970**
- Ecological Footprint (EF) – **alarming 50% overshoot**
- Poorest countries bearing the brunt
- Better choices – "**Business as usual" will not stop the decline**.

# Everything is connected.

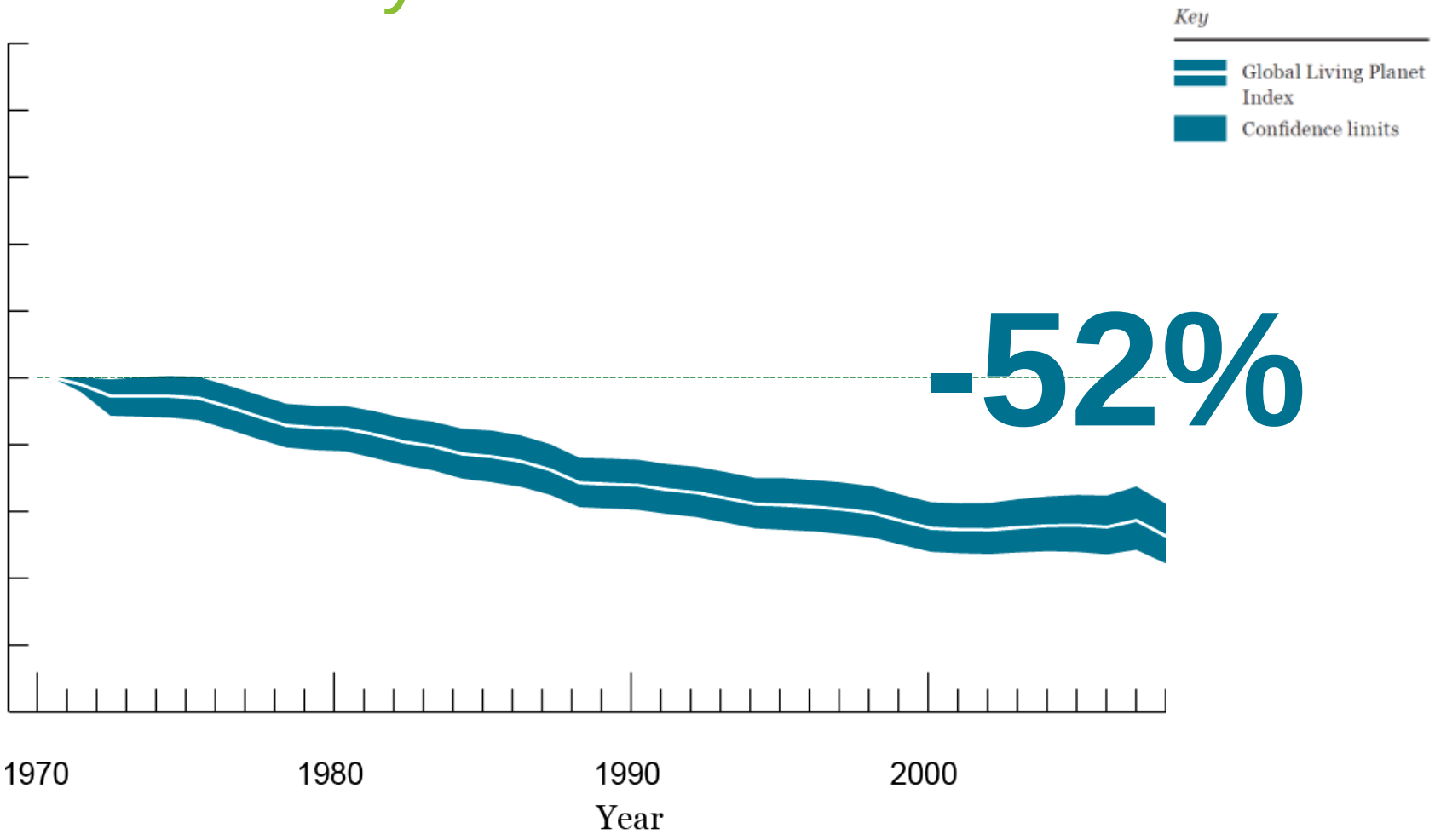
**Ecosystems sustain societies that create economies**




Source: WWF, ZSL, 2014

# The state of the planet - Biodiversity

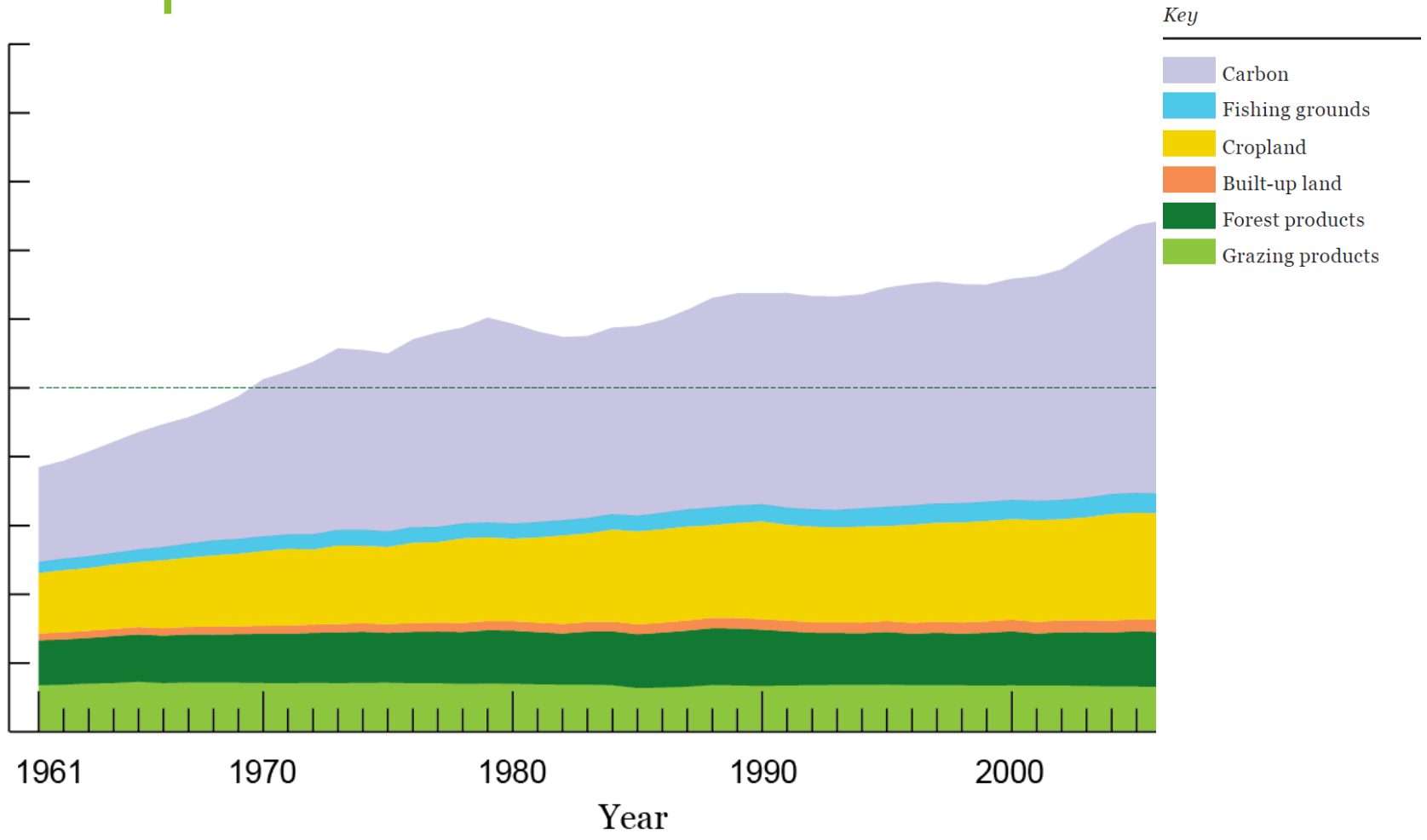
**Global Living Planet Index**




Source: WWF, ZSL, 2014

# The state of the planet – Ecological Footprint

**Global Ecological Footprint by component (1961-2010)**




Source: Global Footprint Network, 2014

# The Fifth Assessment Report

## Probabilities

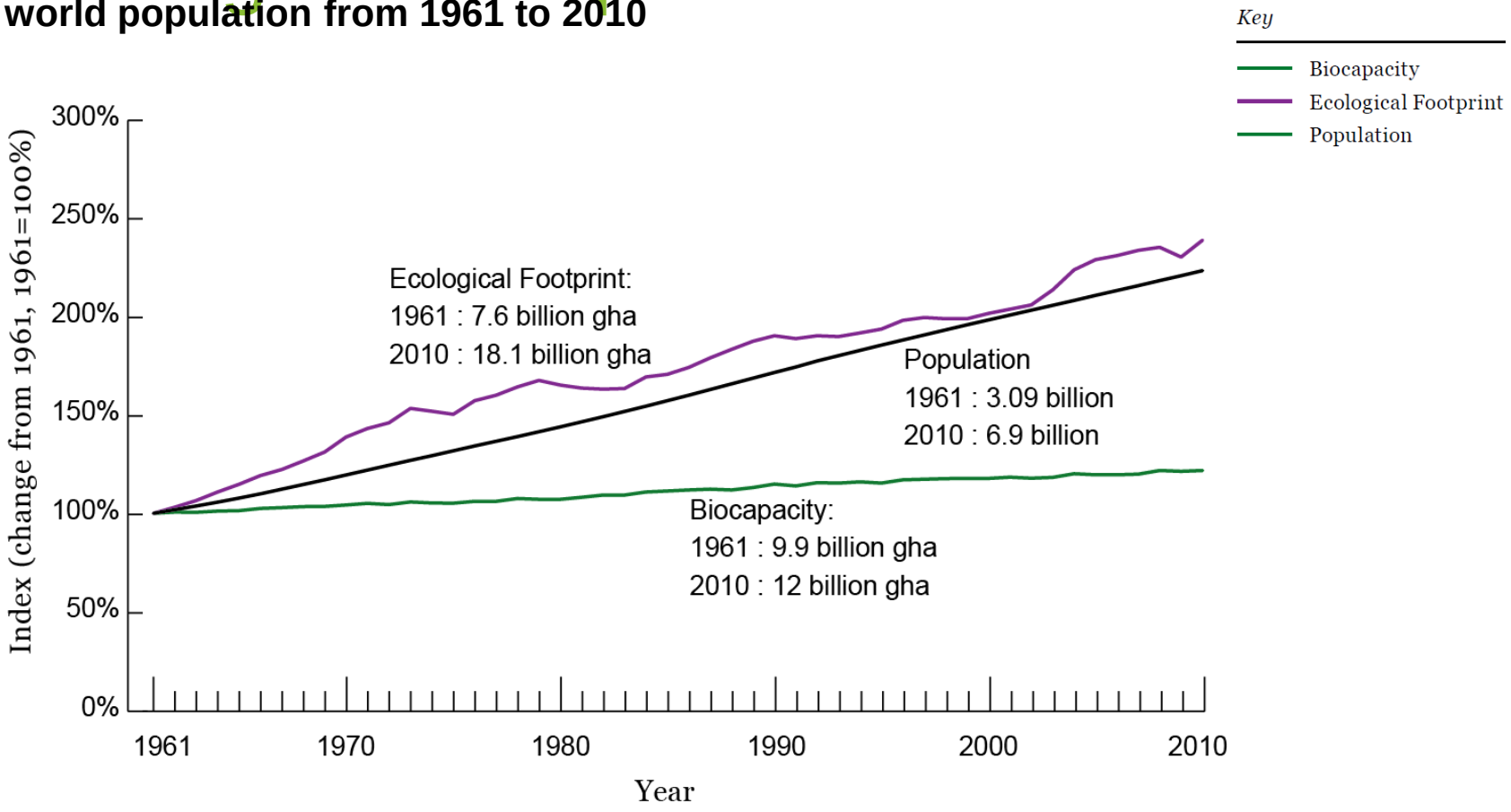
Note that in the IPCC the following terms mean:

| Term | Likelihood,of, the,Outcome |
|---|---|
| *Virtually)Certain* | 99"100% |
| *Extremely)Likely* | 95"100% |
| *Very)Likely* | 90"100% |
| *Likely* | 66"100% |
| *About)as)likely) as)not* | 33"66% |
| *Unlikely* | 0"33% |
| *Very)unlikely* | 0"10% |


GHG emissions growth has accelerated
despite reduction efforts.

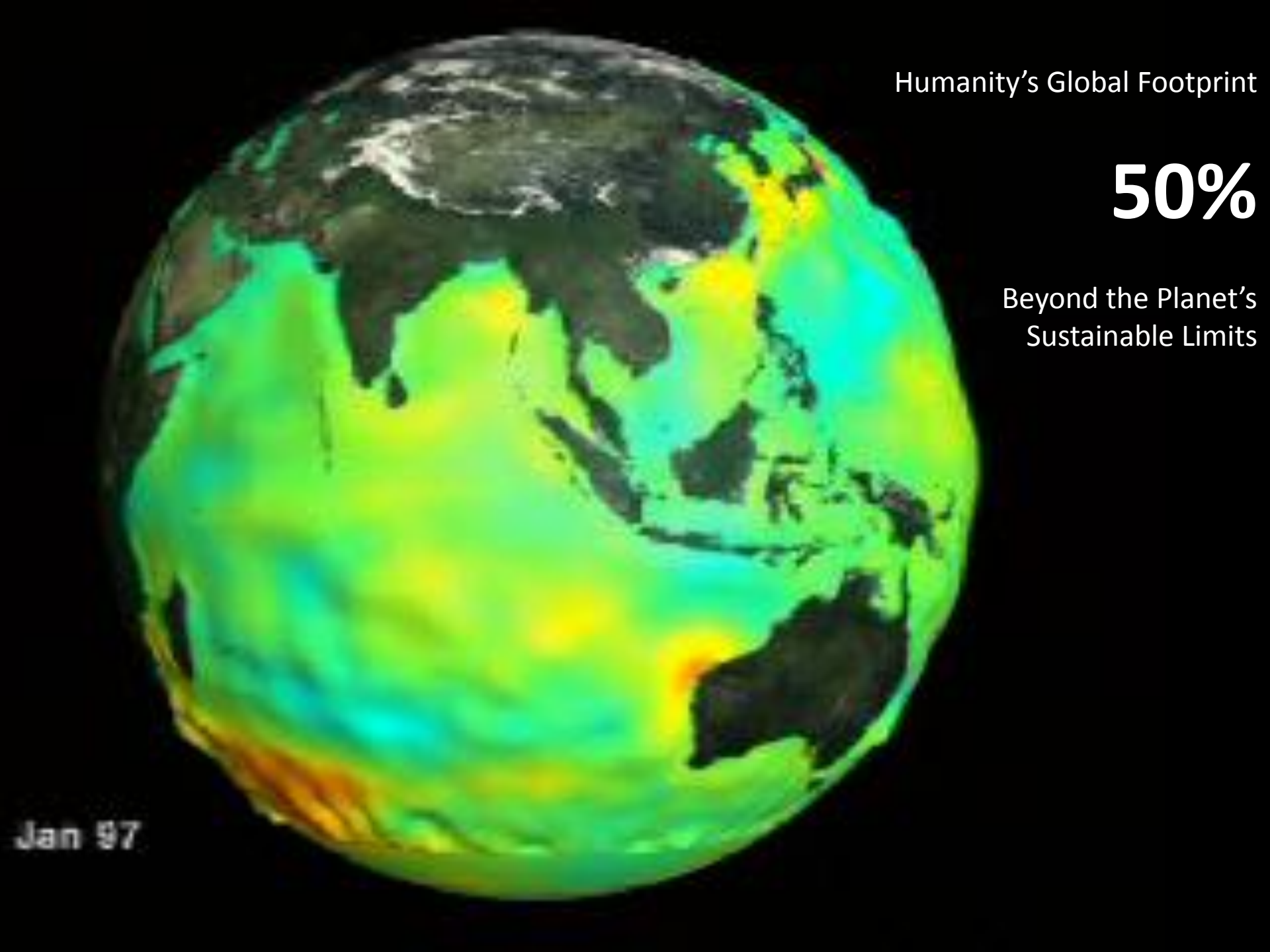
# The state of the planet – Ecological Footprint

**Trends in total biocapacity, Ecological Footprint and world population from 1961 to 2010**




Source: Global Footprint Network, 2014

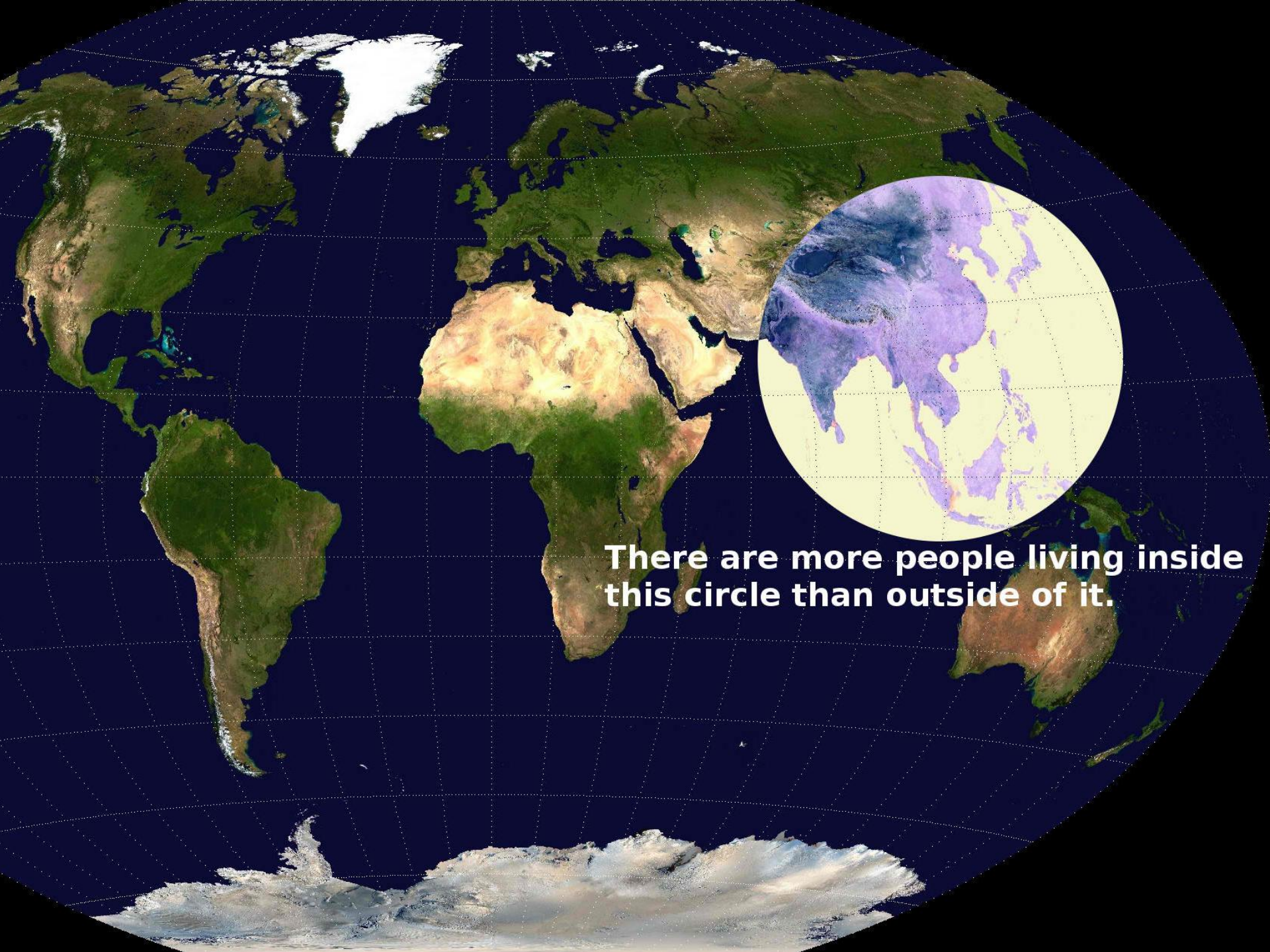
# The Human Footprint

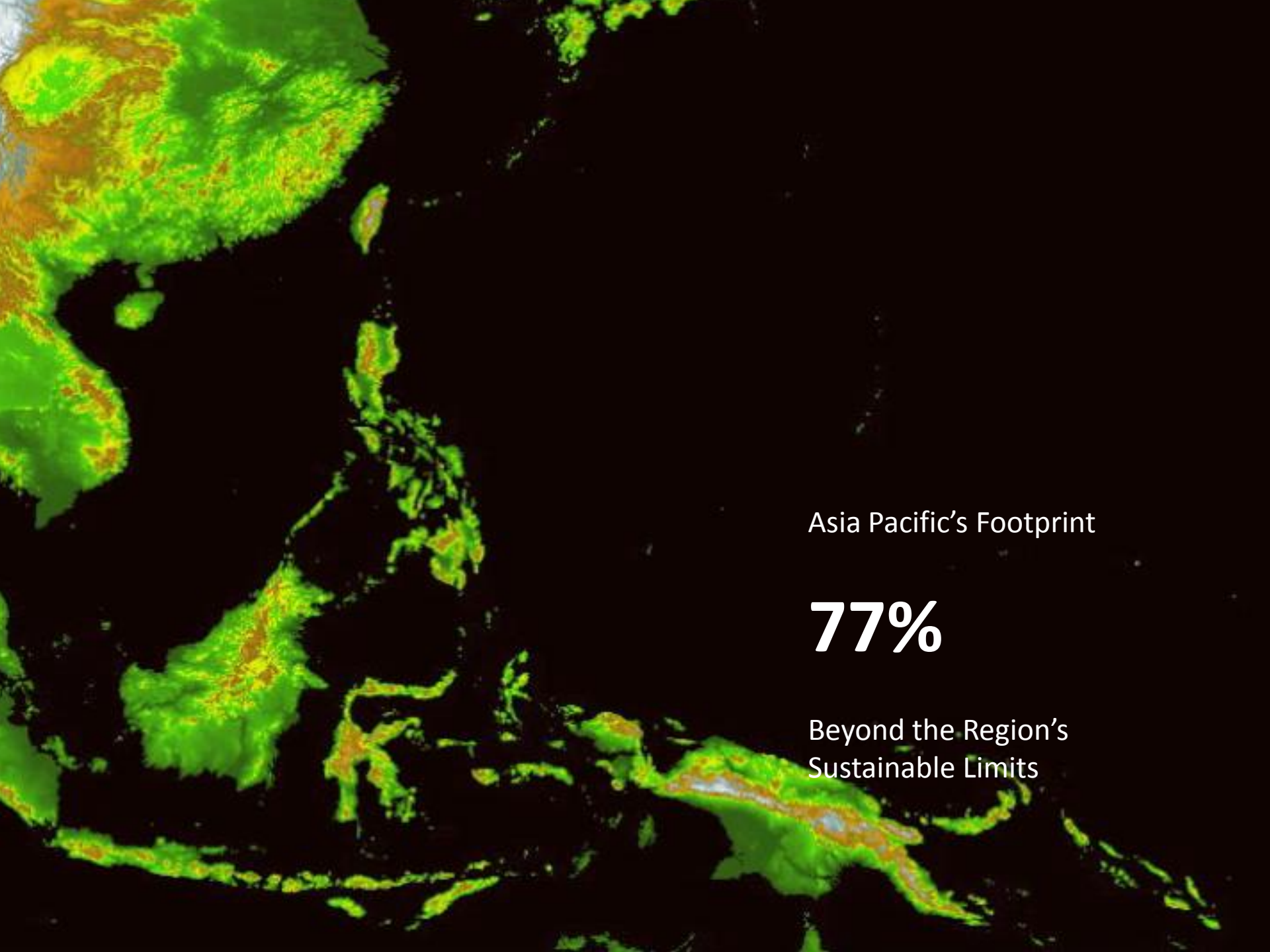



Humanity's Global Footprint

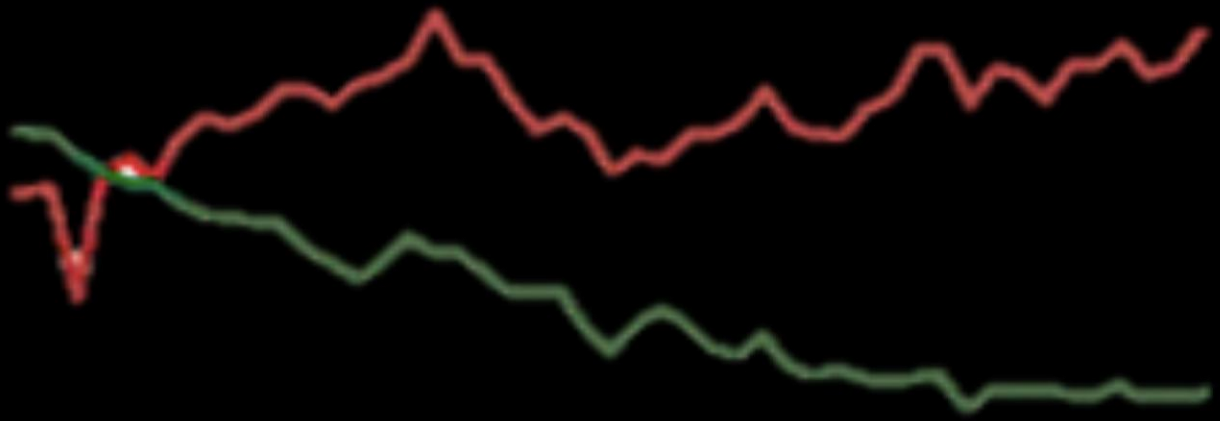
# 50%

Beyond the Planet's Sustainable Limits


There are more people living inside
this circle than outside of it.


Asia Pacific’s Footprint
77%
Beyond the Region’s
Sustainable Limits

Ecological Footprint / capita



117% beyond
sustainable limits

Biocapacity / capita

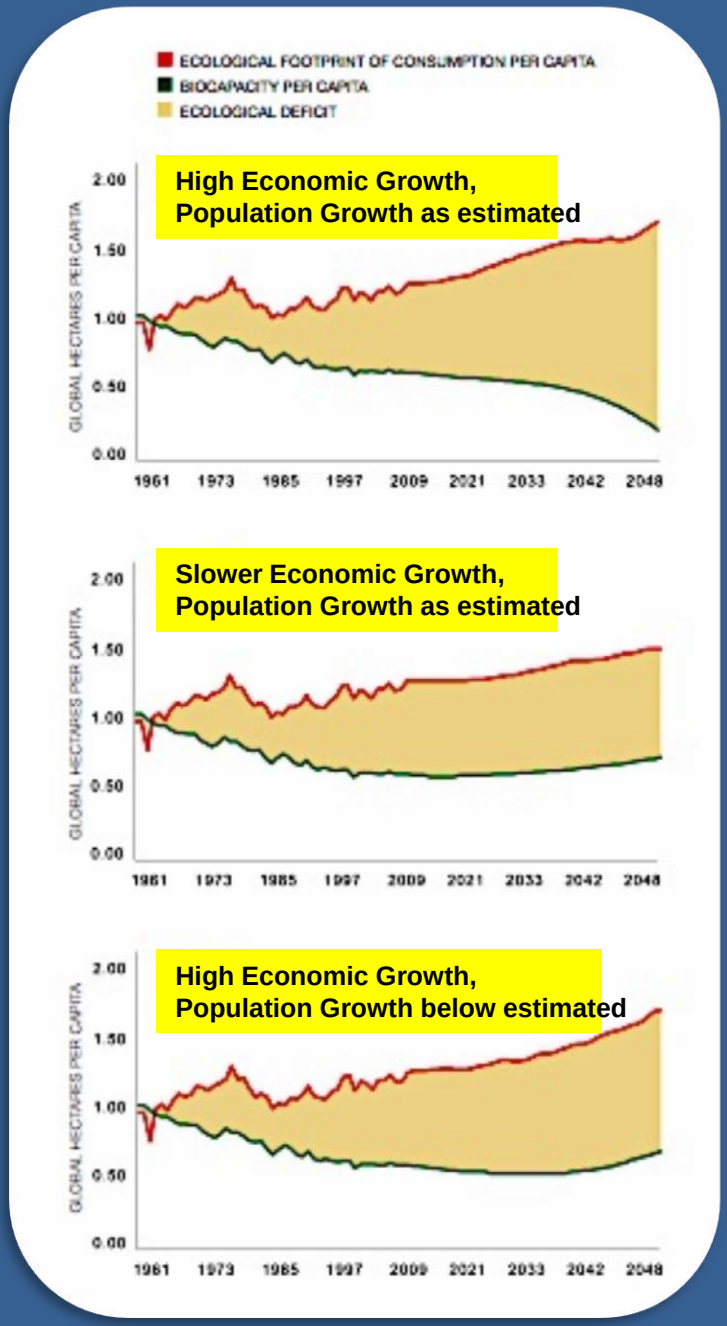

The Philippines

ECOLOGICAL OVERSHOOT
Depletion of Natural Capital


Ecological Footprint / capita – 1.7 GHA
Bio-capacity / capita - 0.05 GHA

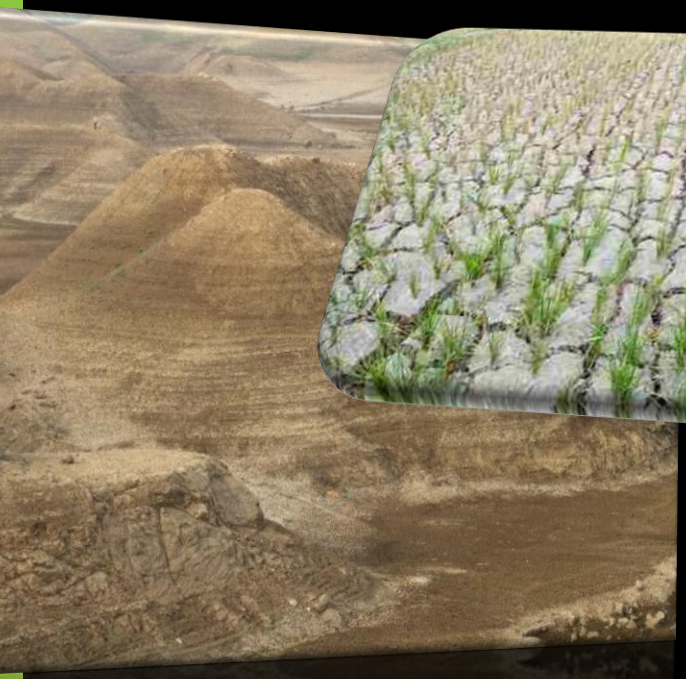
KRA

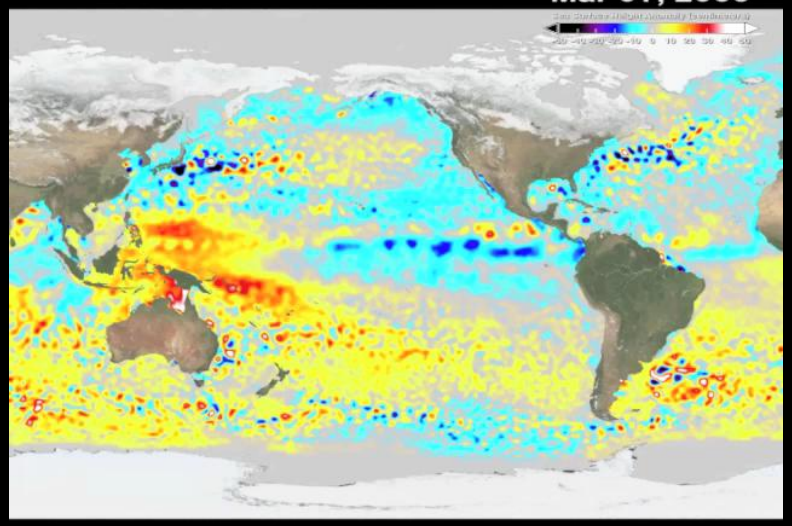
WE HAVE TO MAKE A DECISION.




**MAY 2009**

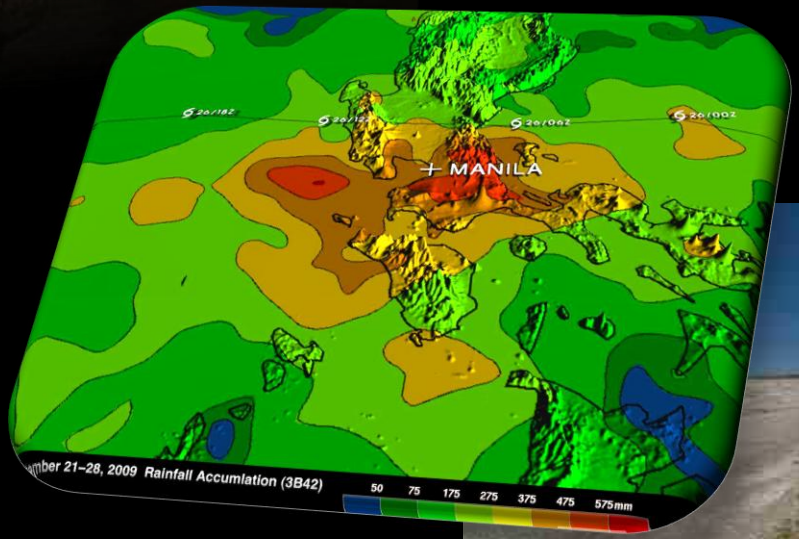
A comprehensive study involving **over 20 experts** and based on over **300 peer reviewed scientific articles**.





# EL NINO / LA NINA

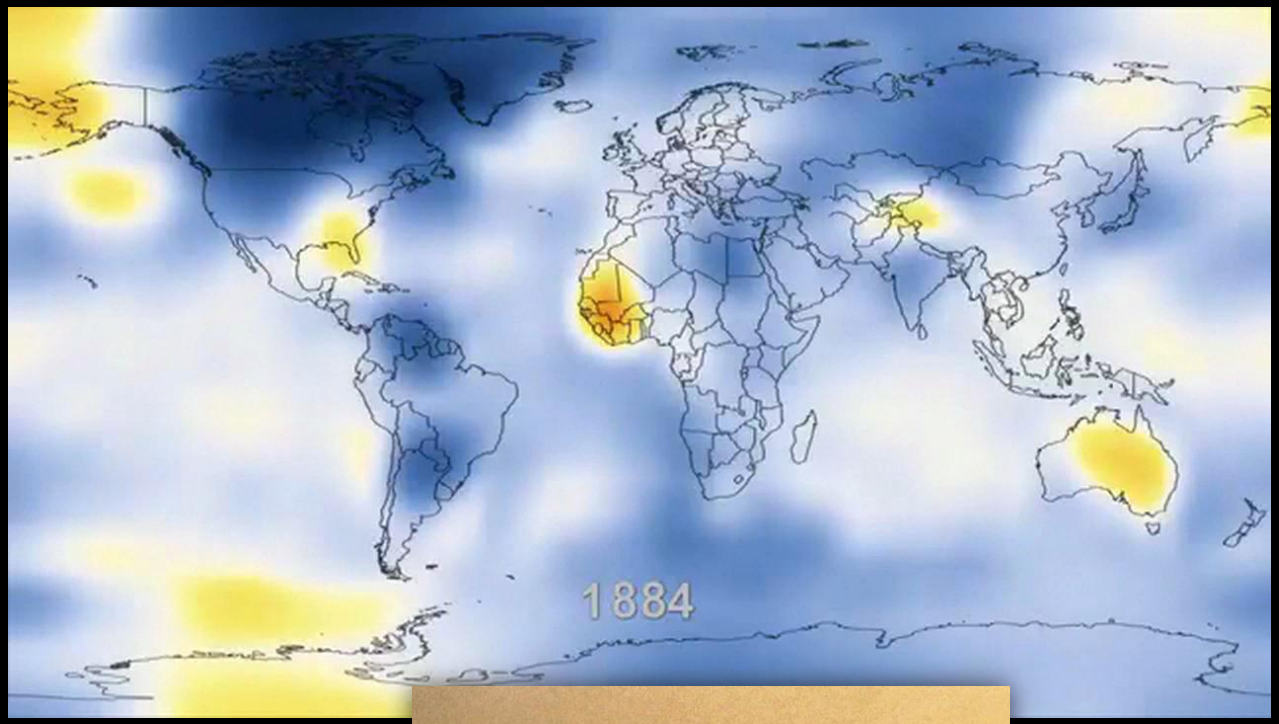
**El Niño Southern Oscillation Events**
**are likely to continue** as a significant source of inter-annual climate variability in the Coral Triangle region.

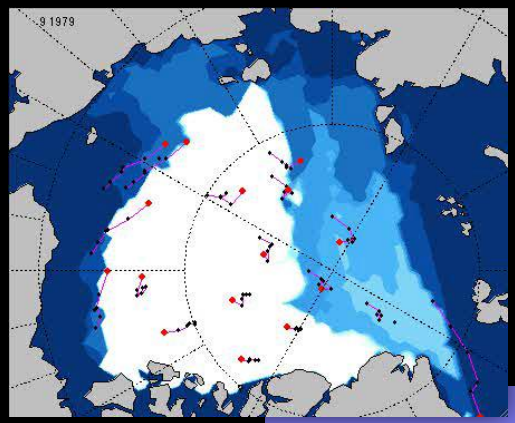


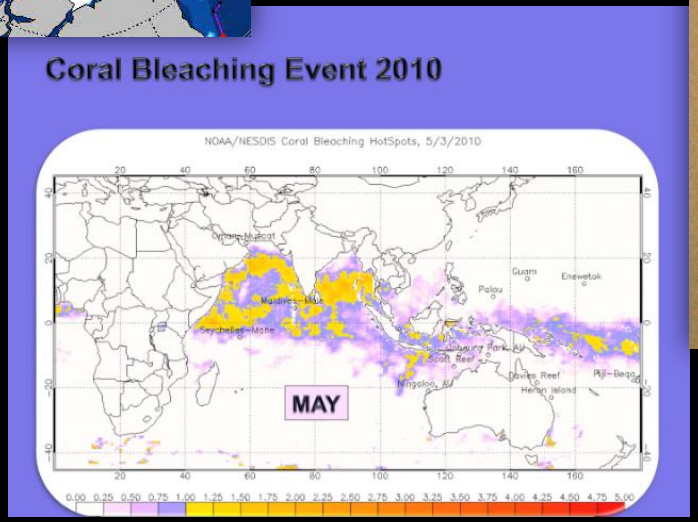

META-SCALE

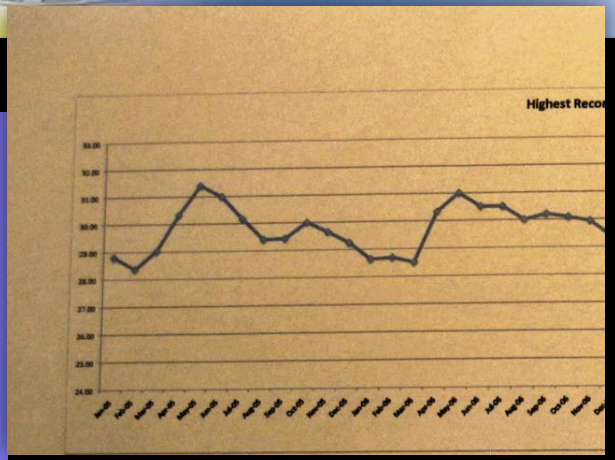
WWF

**Sea Surface Temperatures are likely to be between 1 to 4oC warmer** by the end of this century.



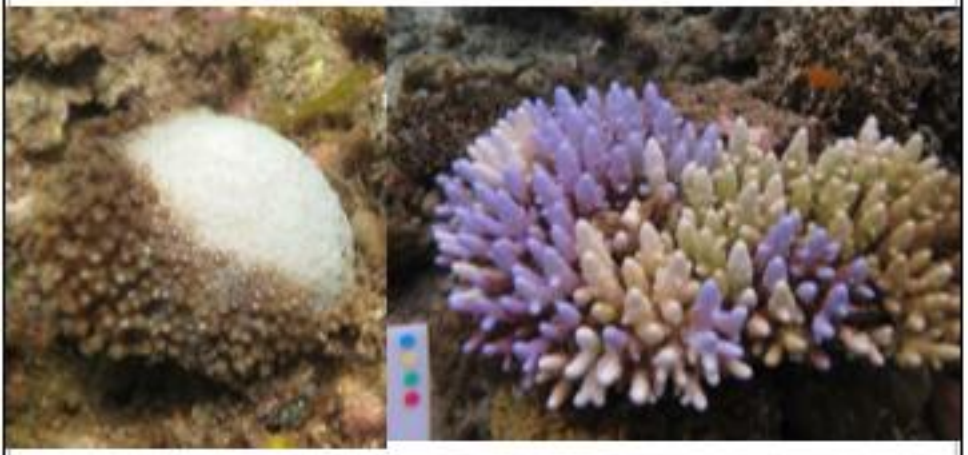



# SEA SURFACE TEMPERATURES

## What coral bleaching is



Loss of pigments for photosynthesis, or loss of the algae (=zooxanthellae)

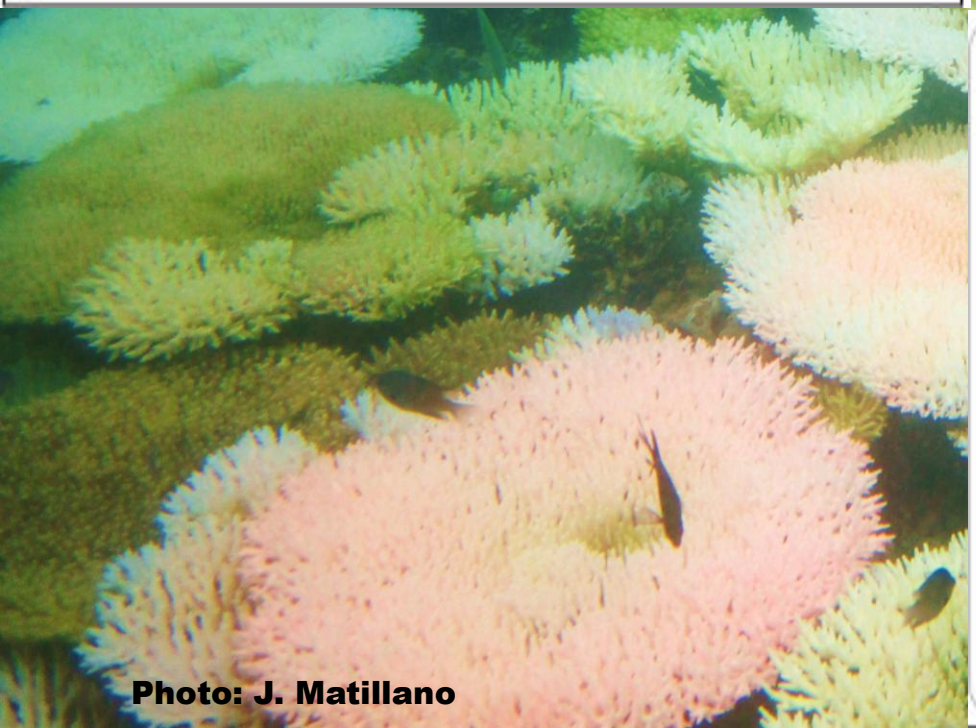
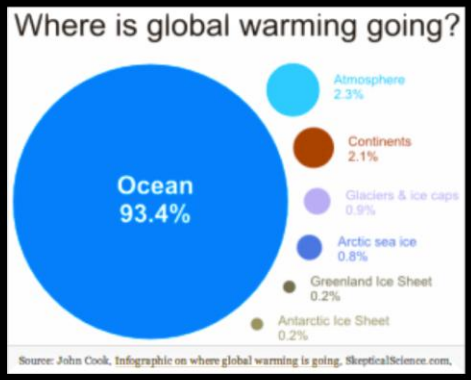
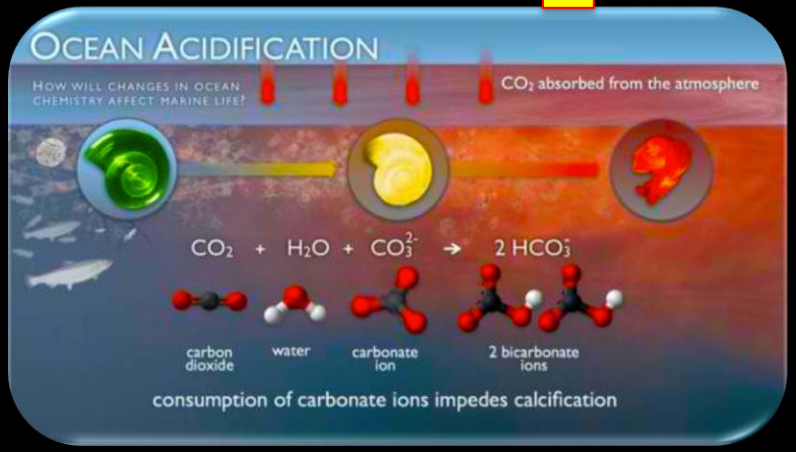


Photo: J. Matillano

## Bleached corals still have polyps



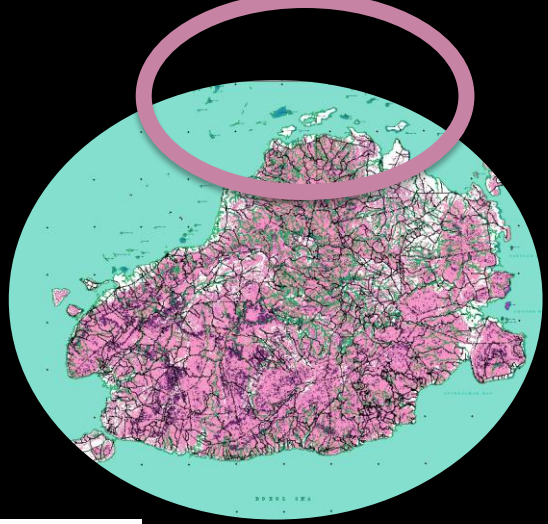


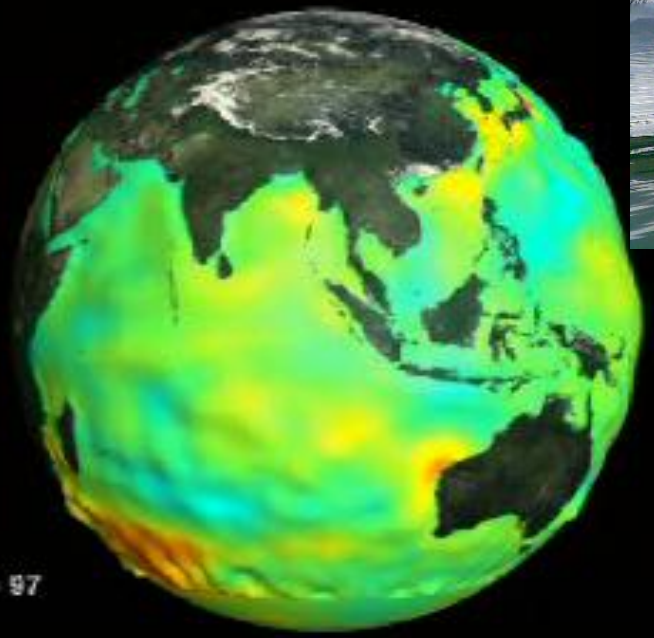

# Ocean Acidification

**will likely make the aragonite saturation state "marginal"** for coral reefs and marine life that require calcium carbonate within the period 2020-2050.

# SEA LEVEL RISE

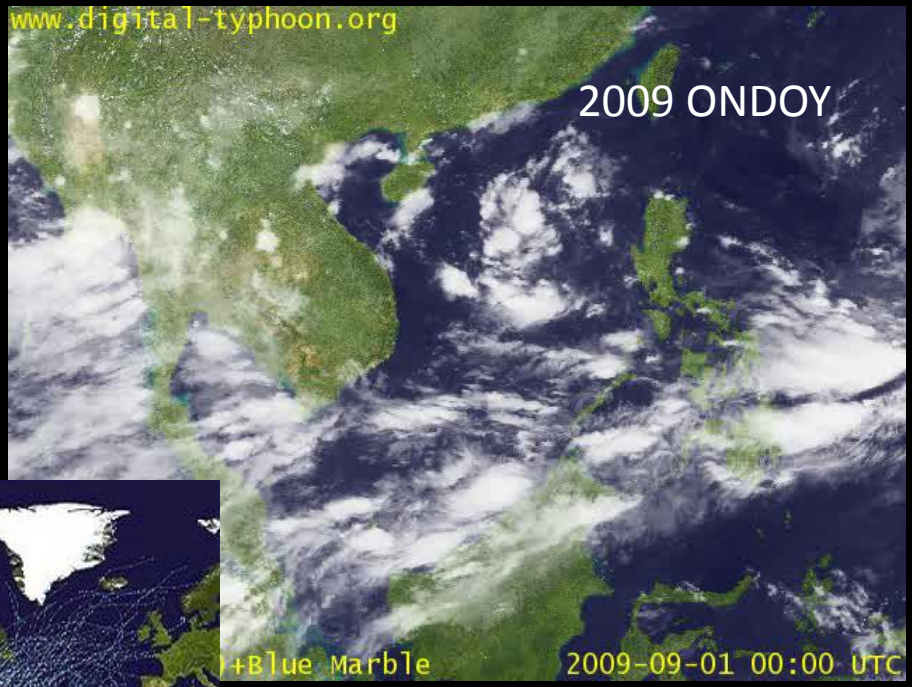


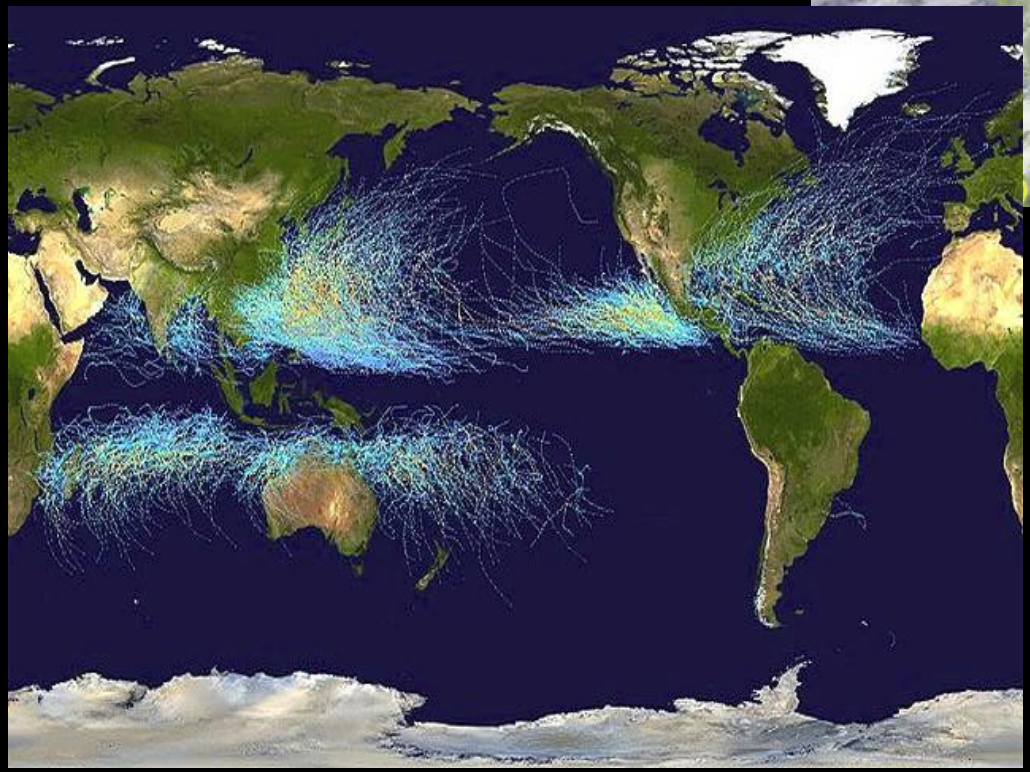
**Sea Levels are likely to rise from +4 to +6 meters** due to the possibility of the melting of the large land-based ice sheets in Antarctica and Greenland. The possible timing remains uncertain.




WWF

# INTENSIFIED TYPHOONS



**Tropical Cyclones are likely to become more intense.**There is no clear consensus, however, whether the location or frequency of tropical cyclones will change in a warming world.

Regional hard-coral bleaching

Sea level rise and coastal erosion

Recurring infrastructure damage

Decrease in agricultural productivity

# The "New Normal"

Extreme Storms

El Nino / La Nina

Sea Surface Temperatures

Acidification

Intensifying Rainfall / Drought

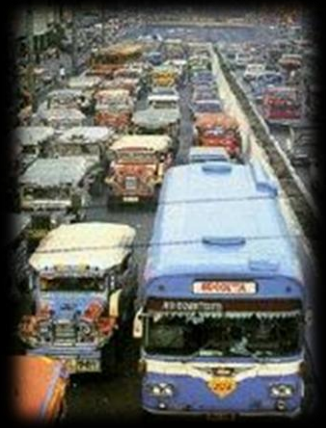
Non-linear

High Variability

Localized Impacts

Sea Level Rise

# Climate Change Mitigation

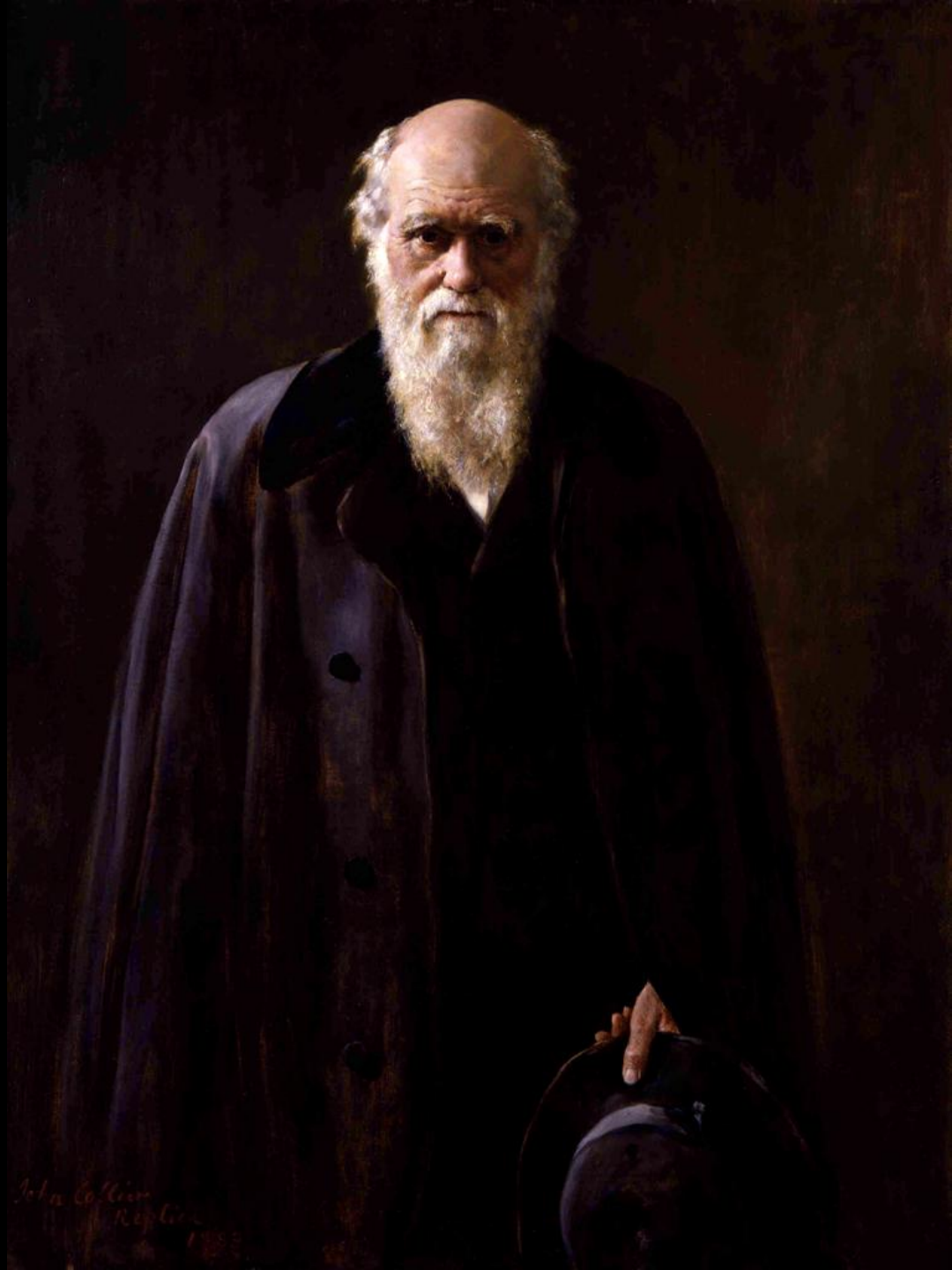
Controlling and reducing our individual impacts – our *carbon footprint.*

# Climate Change Adaptation

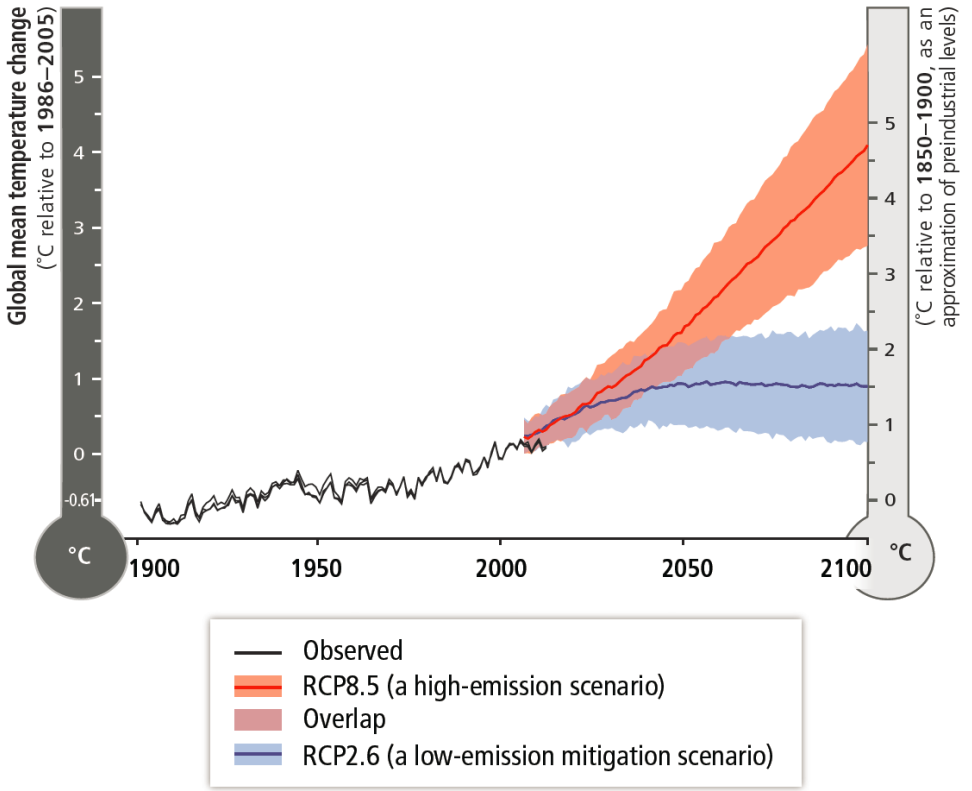
Building resilience within communities, croplands, coral reefs and forests. Capitalizing on opportunities to address economic and environmental gaps. Retrofitting communities for climate impacts. Even preparing to relocate.

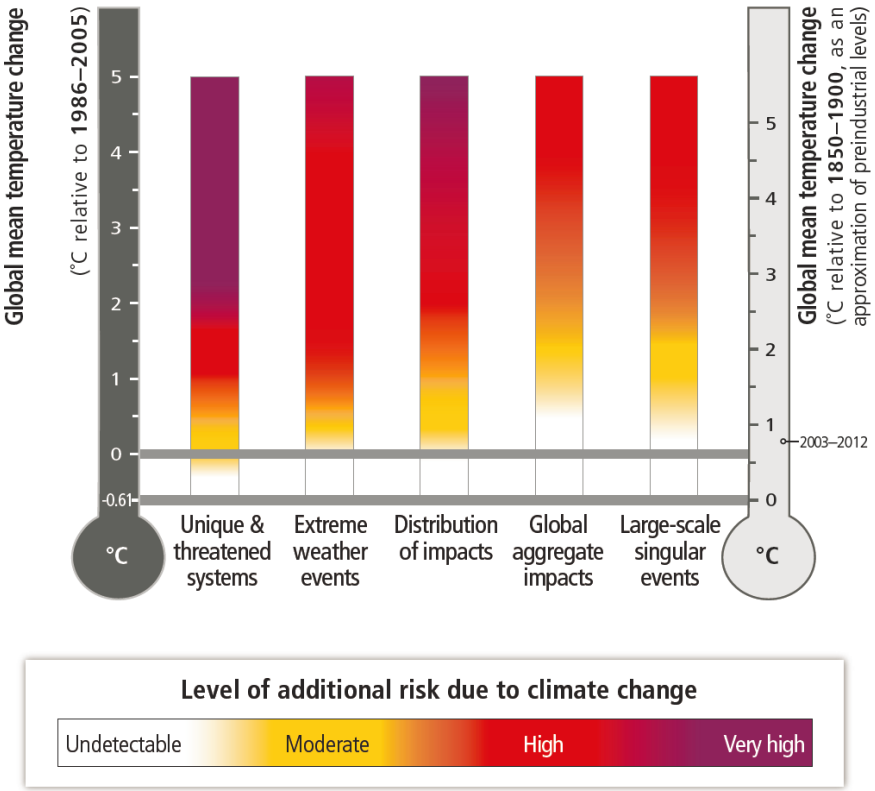
“It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change.”

- Charles Darwin



# RCP, Temperature increase & level of risk

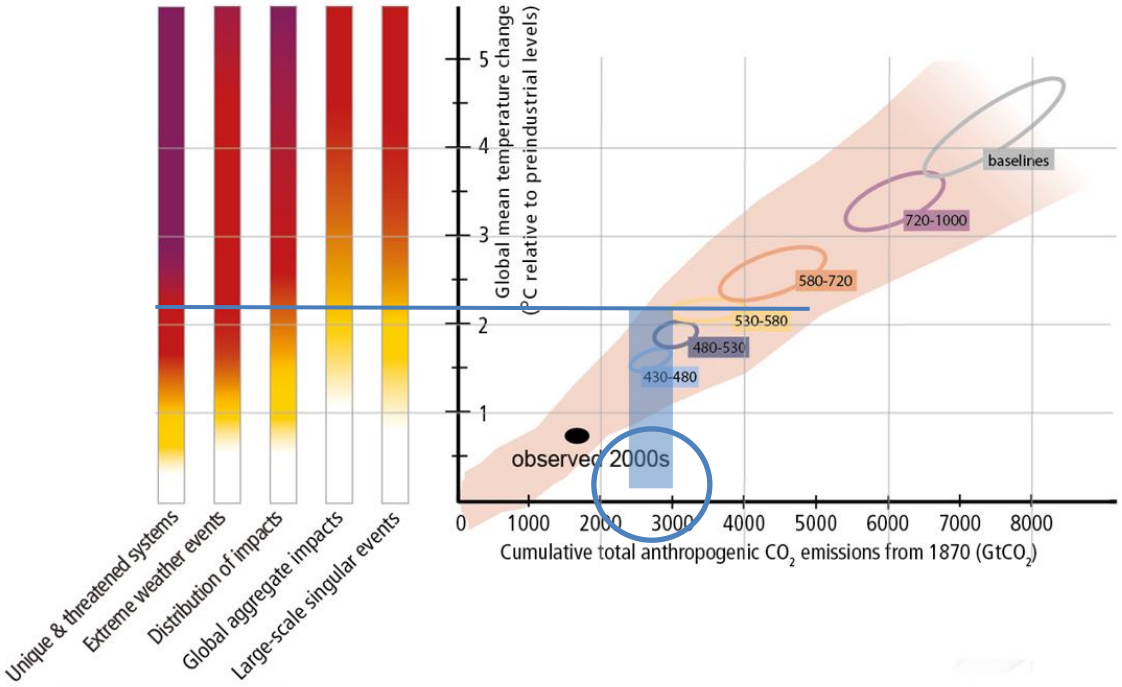



*Source: IPCC AR 5 WG II (http://www.ipcc-wg2.gov )*

# The Synthesis of IPCC

Risks from climate change depend on cumulative $CO_2$ emissions...

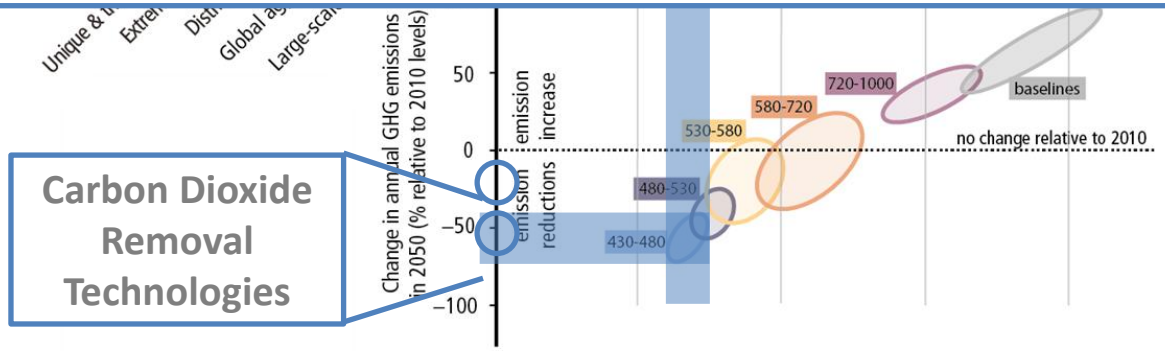



Based on SYR Figure SPM.10

# The Synthesis of IPCC

... which in turn depend on annual GHG emissions over the next decades.

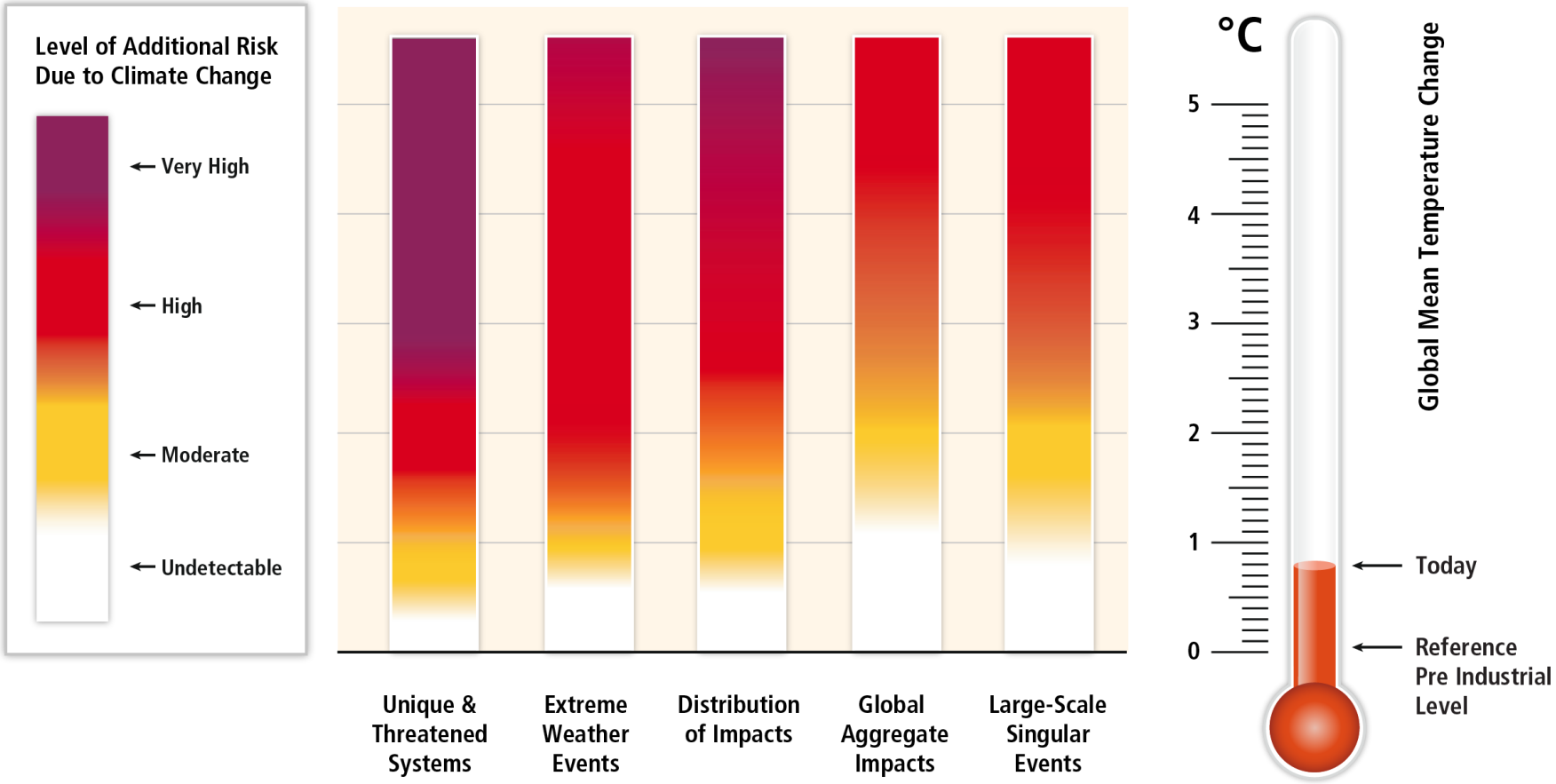

**Mitigation involves some level of co-benefits and of risks due to adverse side-effects, but these risks do not involve the same possibility of severe, widespread and irreversible impacts as risks from climate change.**




Based on SYR Figure SPM.10


Limiting warming to 2°C involves substantial technological, economic and institutional challenges.

# Without additional mitigation, global mean surface temperature is projected to increase by 3.7 to 4.8°C over the 21st century.




Based on WGII AR5 Figure 19.4

# Historic Event

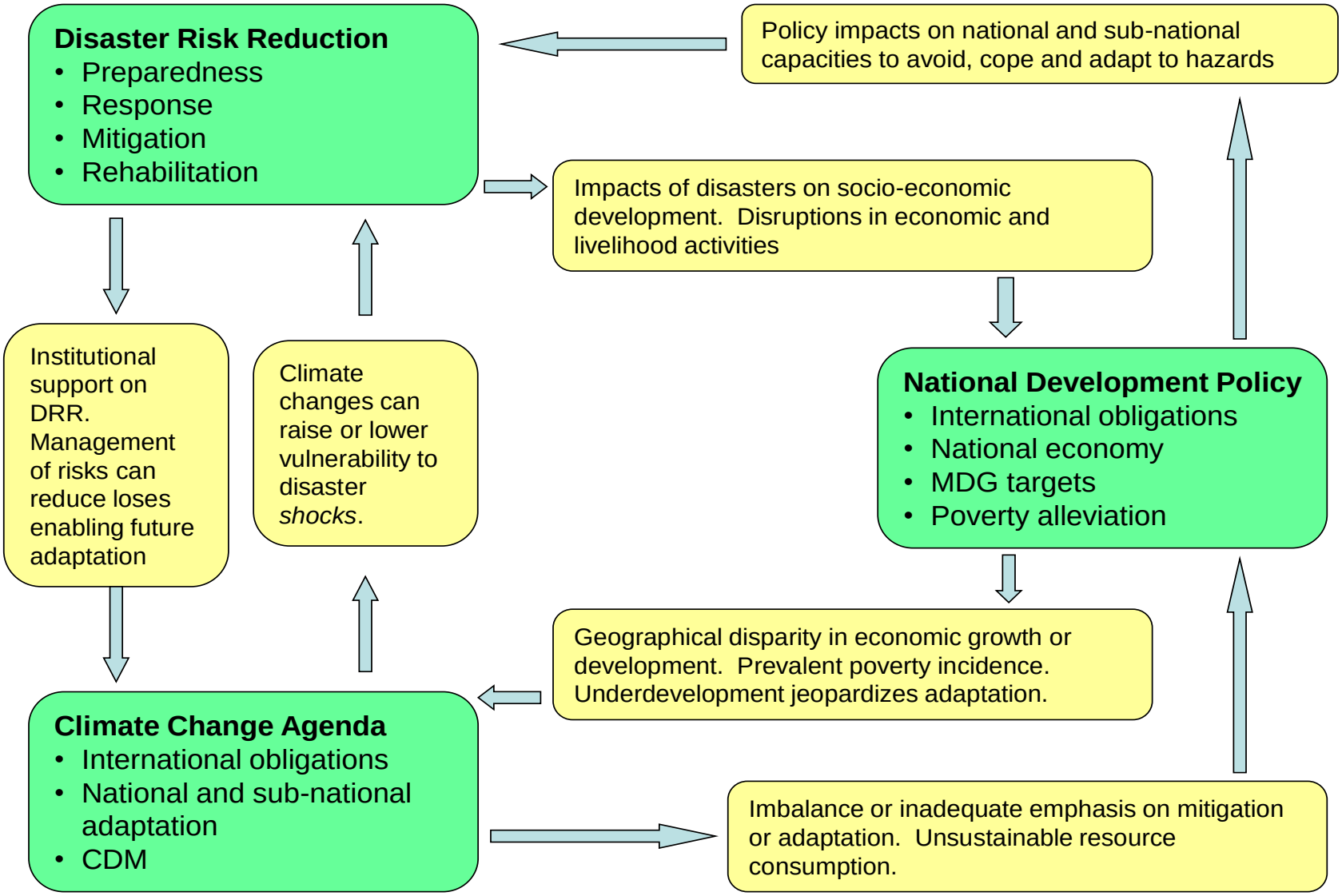

# New SDGs


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
THE GLOBAL GOALS
For Sustainable Development
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

# Sendai Framework for DRR

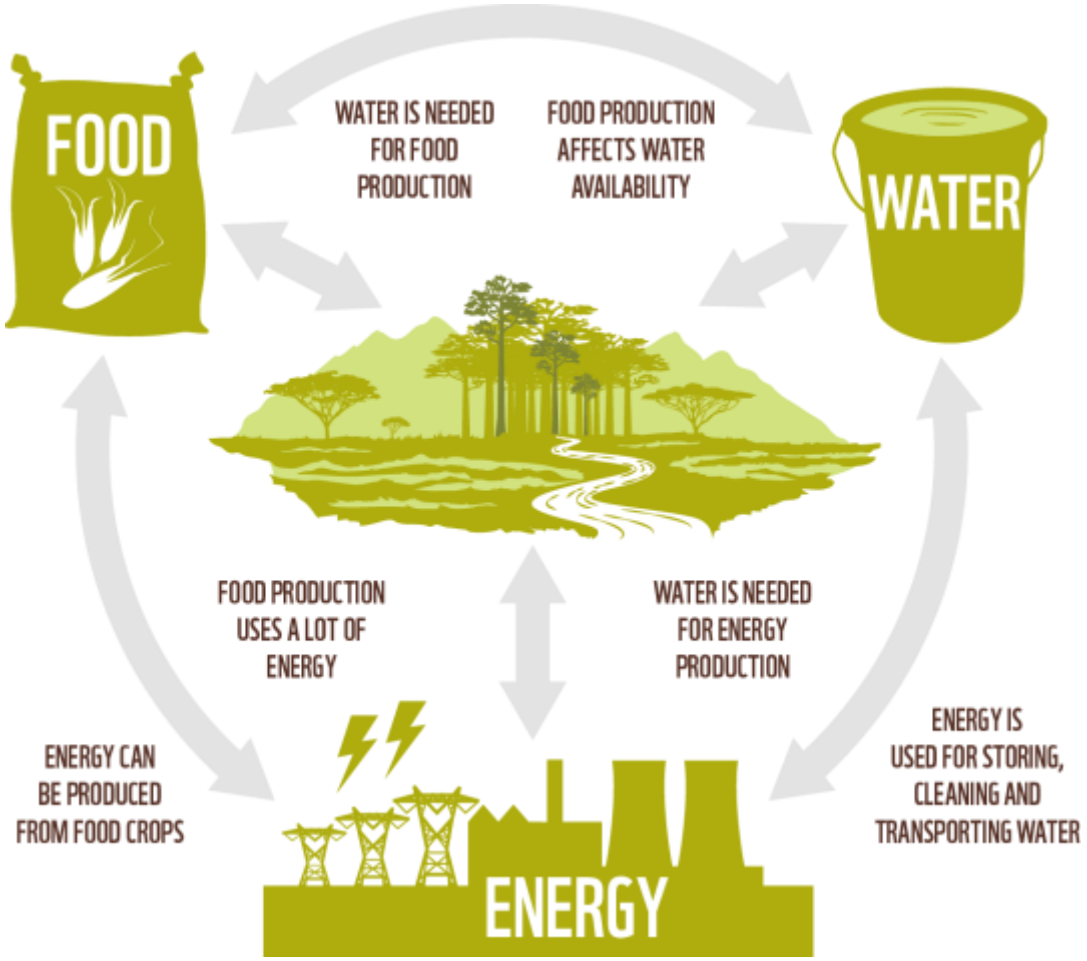
| Seven Global Targets in the Sendai Framework for Disaster Risk Reduction | |
|---|---|
| (a) | Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015; |
| (b) | Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020-2030 compared to the period 2005-2015; |
| (c) | Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030; |
| (d) | Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030; |
| (e) | Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020; |
| (f) | Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030; |
| (g) | Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030. |

# Disaster-CC-development linkages

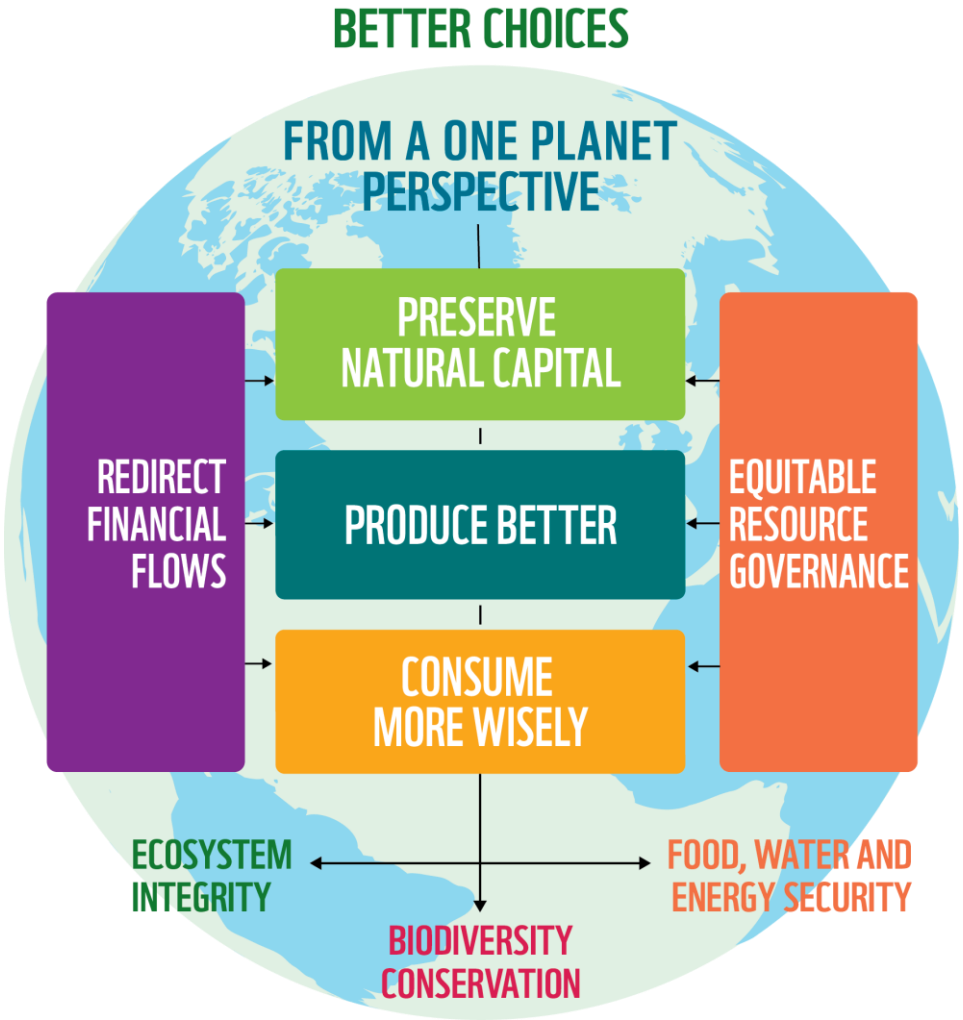


# Biosphere underpins food, water and energy

**The inter-relationships and interdependencies between the biosphere and food, water and energy security**



# WWF's One Planet Perspective

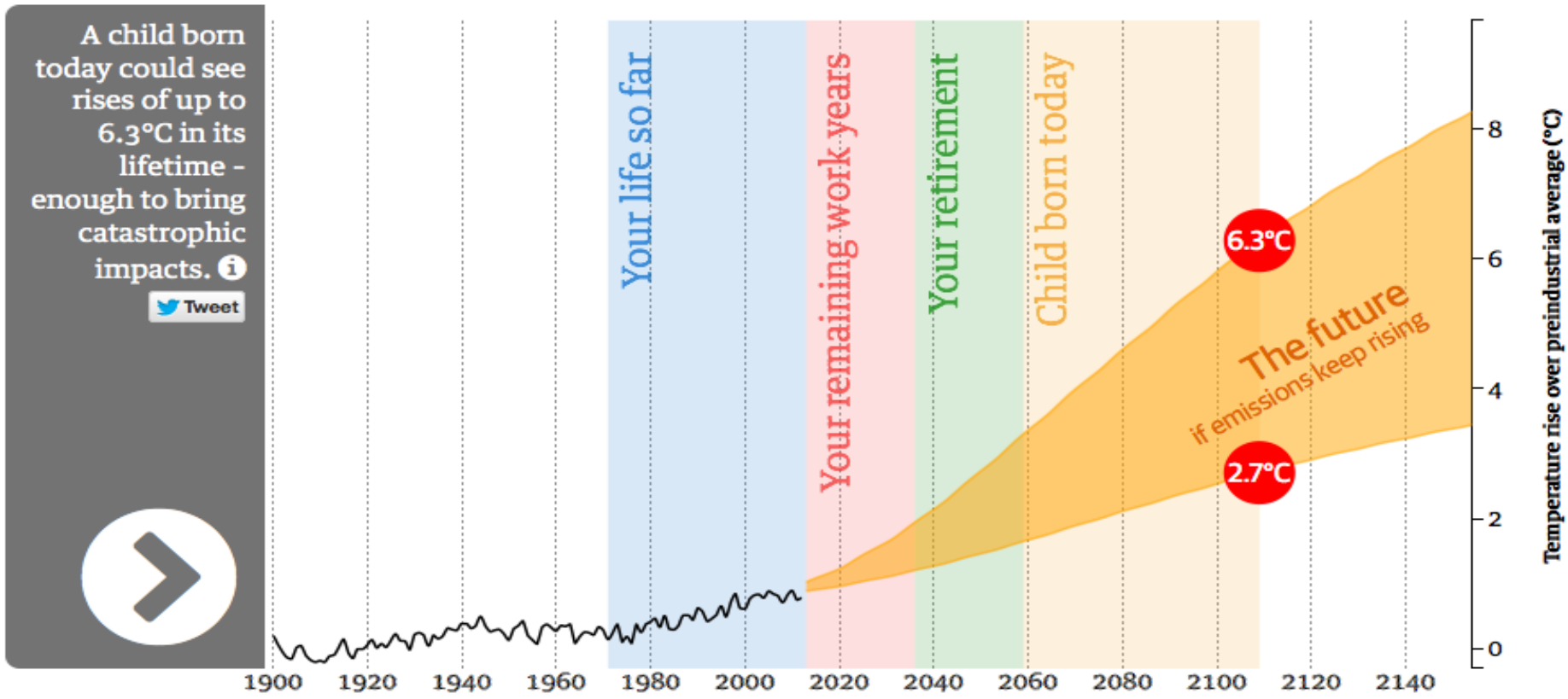



Source: WWF, 2012

# Addressing the Risks of Slow Onset Hazards

1. Research, monitoring, database generation, documentation, new equipment and technology
2. Deeper understanding of the CLUP and preparing effectively
3. Education / awareness raising
4. Intensified role of the LGUs
5. Enhancing coordination, true collaboration and harmonization between agencies
6. Investing in human capital and increasing capacity to cope
7. Values and Vision
8. Communication

Adapted from iCSC and Christian Aid, 2015 and Huq, 2012




Data provided by the Environmental Change Institute, School of Geography and the Environment, and Department of Physics, University of Oxford, with support from the Oxford Martin Programme on Resource Stewardship and the Union of Concerned Scientists. Modelling by Richard Millar. Interactive by Duncan Clark.

Temperature projections are based on the idealised climate model of Boucher and Reddy (2009), as used for calculation of warming potentials in IPCC (2013), driven by the IPCC "RCP8.5" high emissions scenario. They are consistent with, but not identical to, to the projections of the IPCC (2013).

# Thank you!

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