

SIXTH ASSESSMENT REPORT

Working Group II – Impacts, Adaptation and Vulnerability



Climate change 2022: Impacts, adaptation and vulnerability

Towards Climate Resilient Development

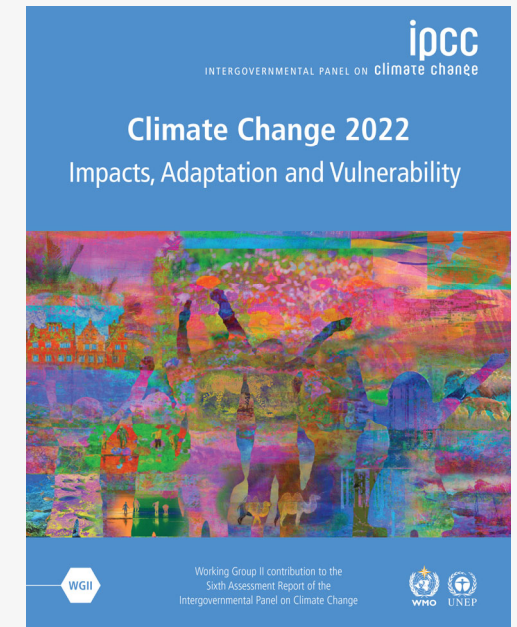
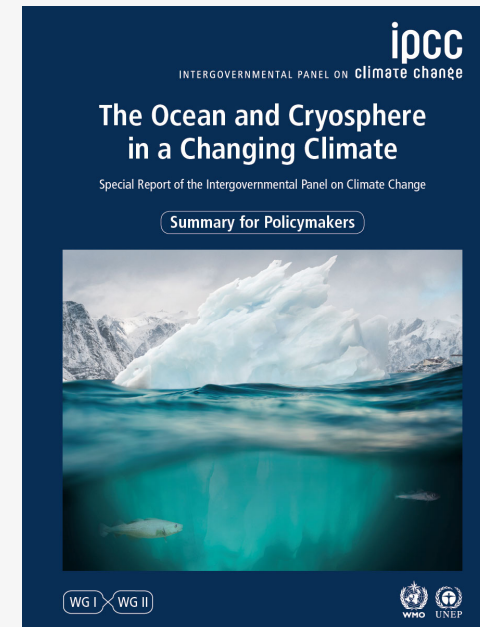
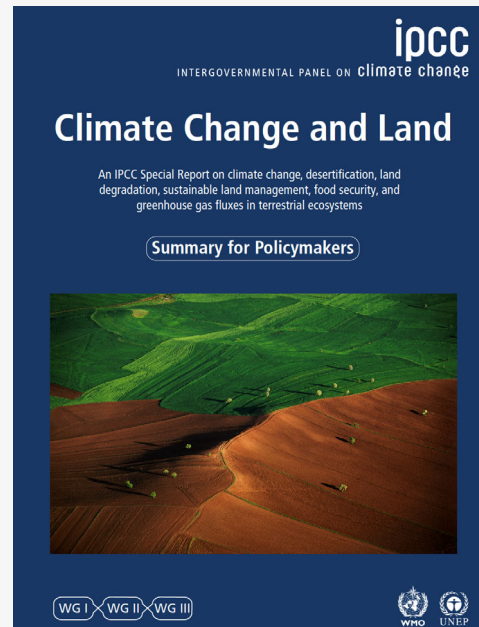
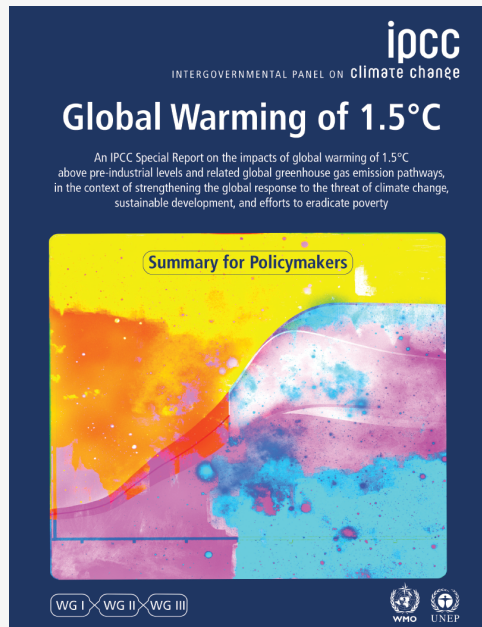
H.O. Pörtner, Co-Chair IPCC WGII, and WGII Author Team,
(Co-Chair of IPCC-IPBES workshop report on Climate and Biodiversity)



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WGII: Guiding AMBITION in Mitigation and Adaptation, setting LONG TERM GLOBAL GOALS ... for protecting biodiversity and human society

IPCC 6th Assessment Cycle: 3 Special Reports, WGI + II + III AR6 released between October 2018 and March 2022

What is already happening ...

Human pressure on biodiversity is increasing constantly. At the same time conservation efforts have not been sufficient to stem the loss of biodiversity on a global scale.

Human caused climate change is increasingly threatening nature and its contributions to people, causing:





Climate change is affecting the lives of billions of people, despite efforts to adapt

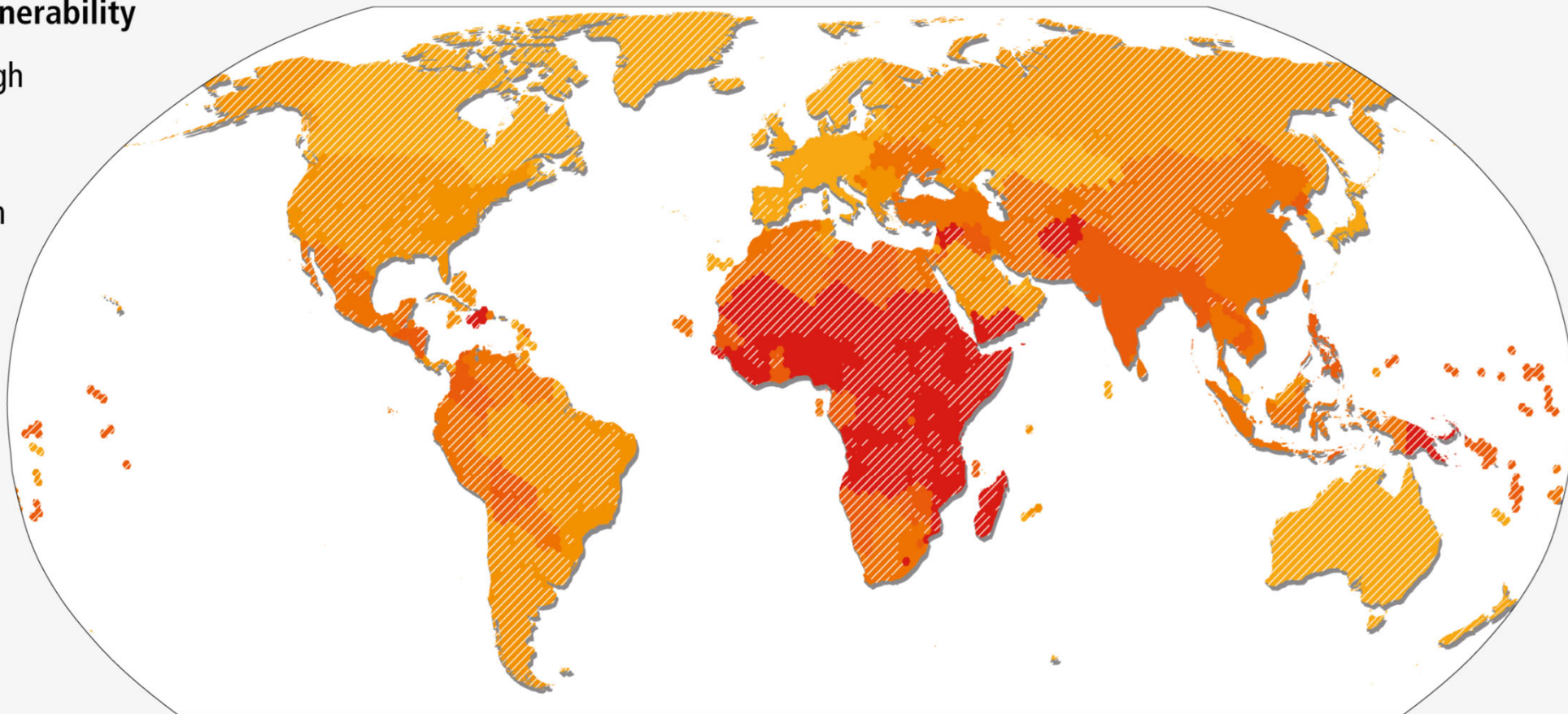
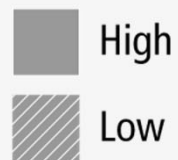
... for example, through high intensity cyclones, sea level rise, heavy rainfall, drought, causing losses and damages

3.3 – 3.6 billion people live in hotspots of high vulnerability to climate change impacts

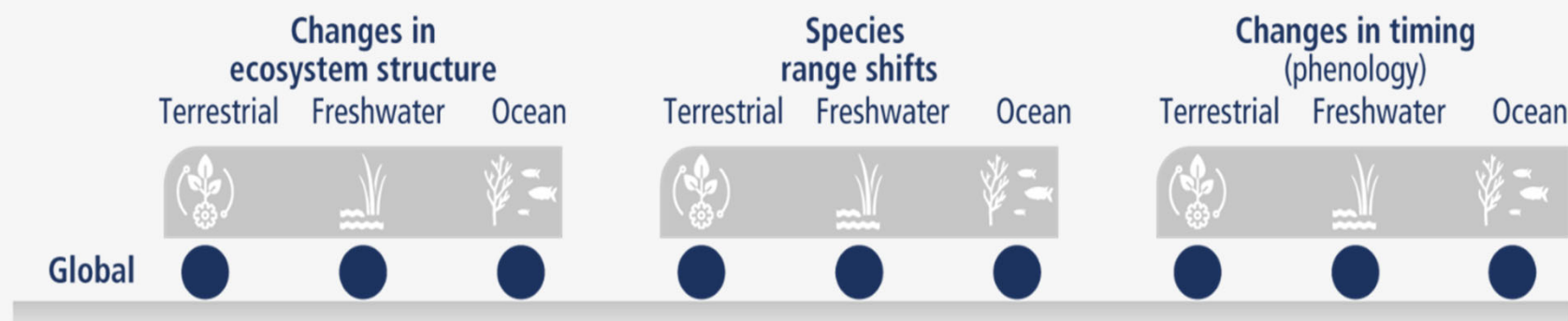
Relative vulnerability



Population density

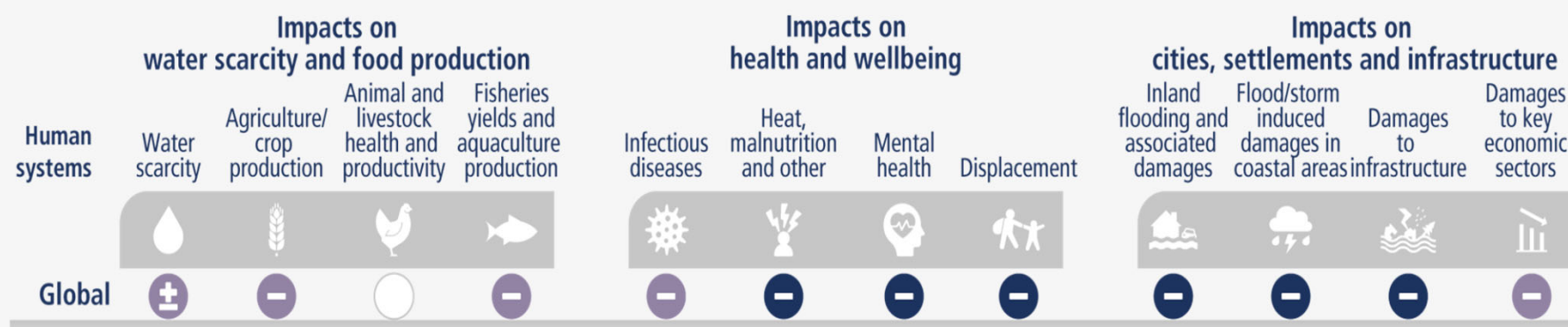


Observed impacts of climate change on ecosystems



↑ e.g. Temperature and Water changes ↓

Observed impacts on human systems



⊕ Increasing adverse and positive impacts

— Increasing adverse impacts

Confidence in attribution to climate change

● High or very high

● Medium

● Low

○ Evidence limited, insufficient

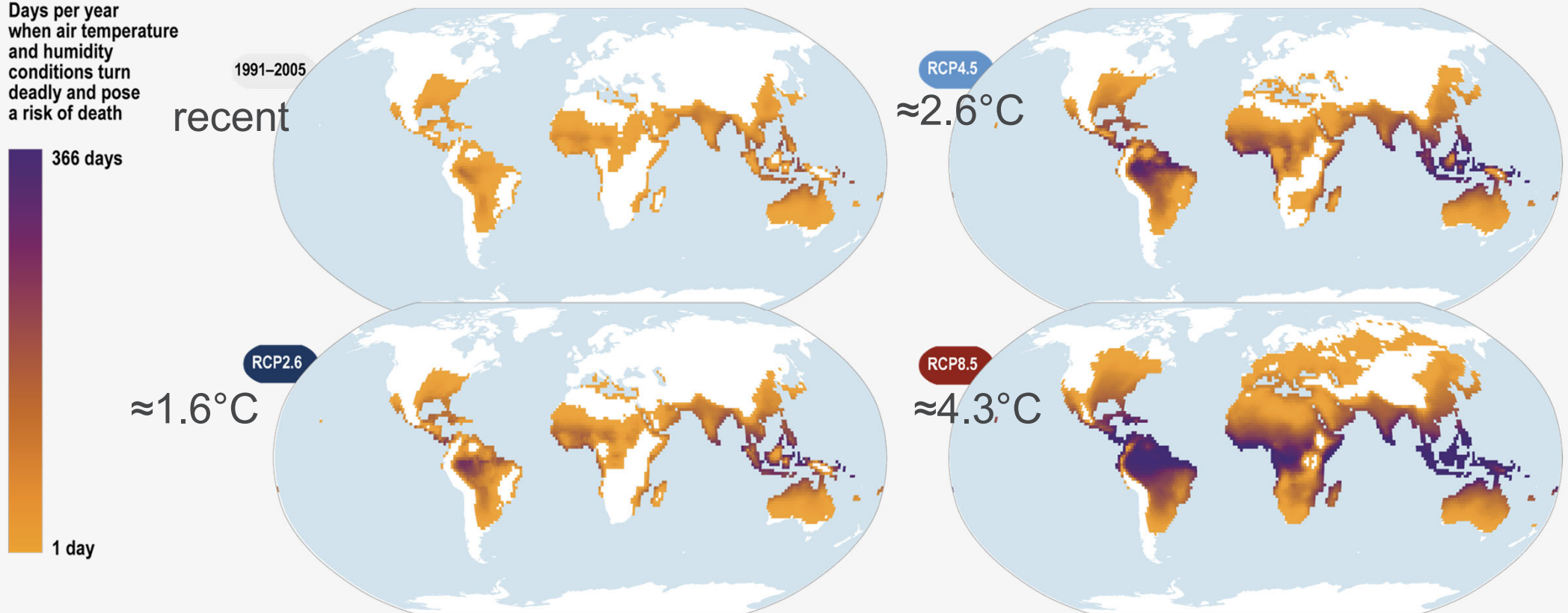
na Not applicable

Source:
IPCC WGII AR6
SPM Figure 2

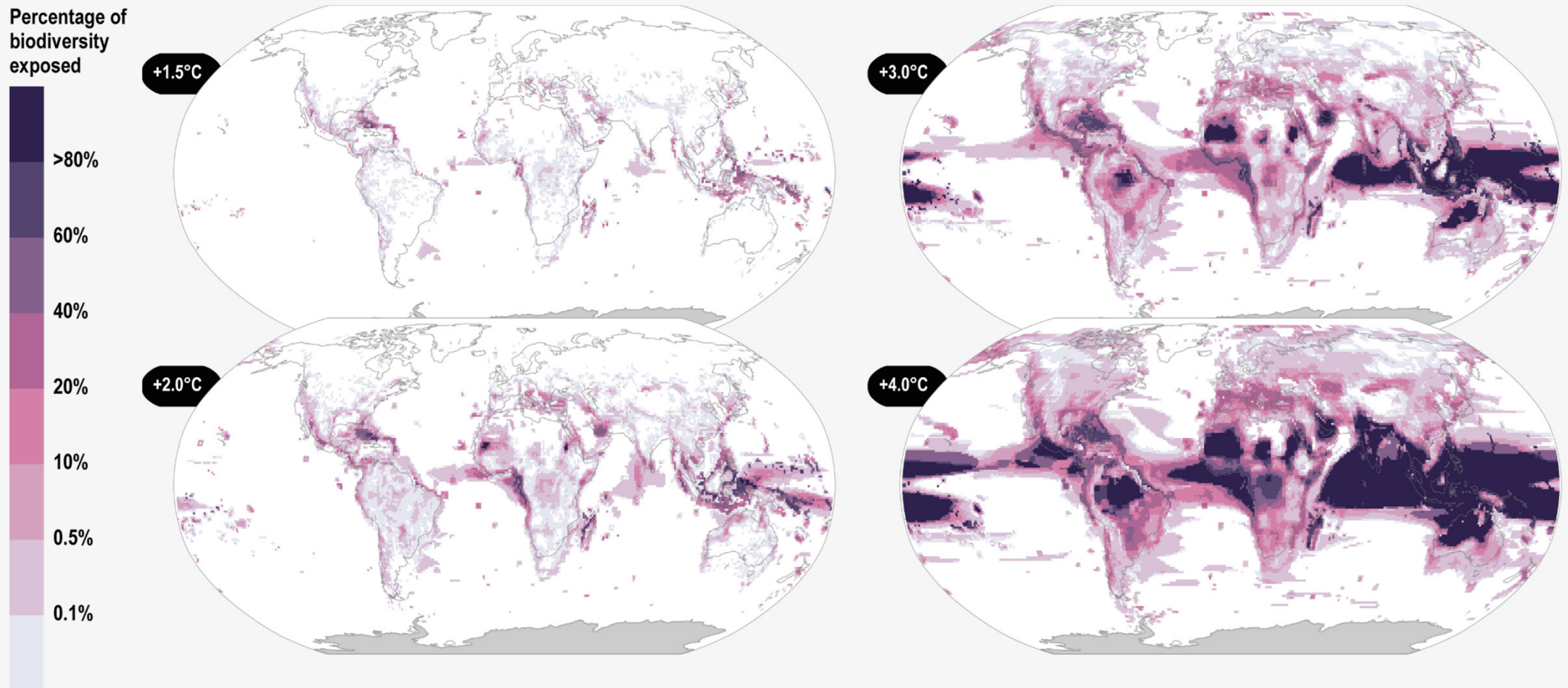
The Future: e.g., Loss of Human (and Livestock) Habitat

Global distribution of population exposed to hyperthermia from extreme heat and humidity (concerning half to three-quarters of the population periodically by 2100).

Days per year
when air temperature
and humidity
conditions turn
deadly and pose
a risk of death



The Future: e.g., Loss of Species Habitat and Biodiversity



Nature's crucial services at risk in a warming world



Pollination



Coastal protection



Tourism / recreation



Food source



Health



Water filtration

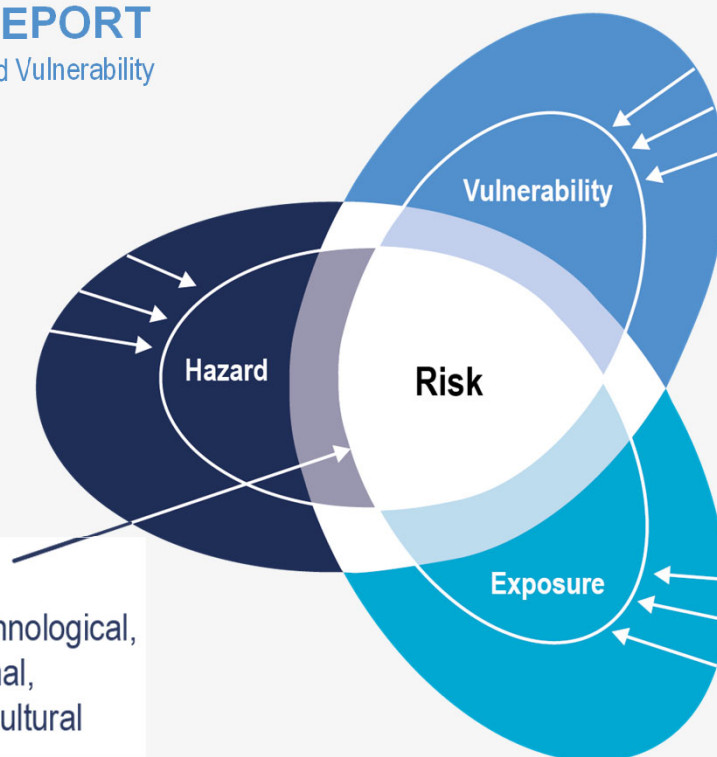


Clean air / water



Climate regulation

Evaluating risks



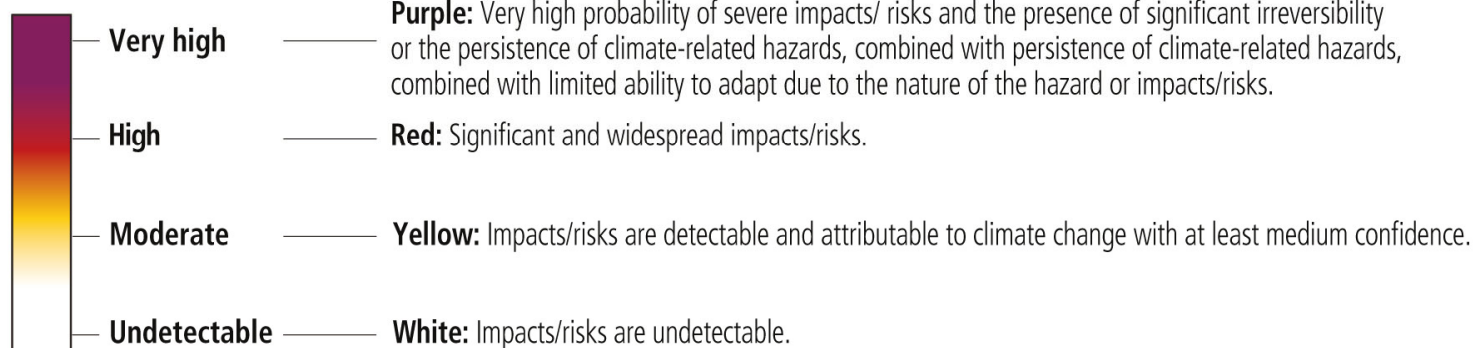
The IPCC concept of risk

Climate action entails risk reduction by adaptation and mitigation considering limits to adaptation

Limits to Adaptation

- E.g. physical, ecological, technological, economic, political, institutional, psychological, and/or socio-cultural

Level of added impacts/risks



Confidence level for transition

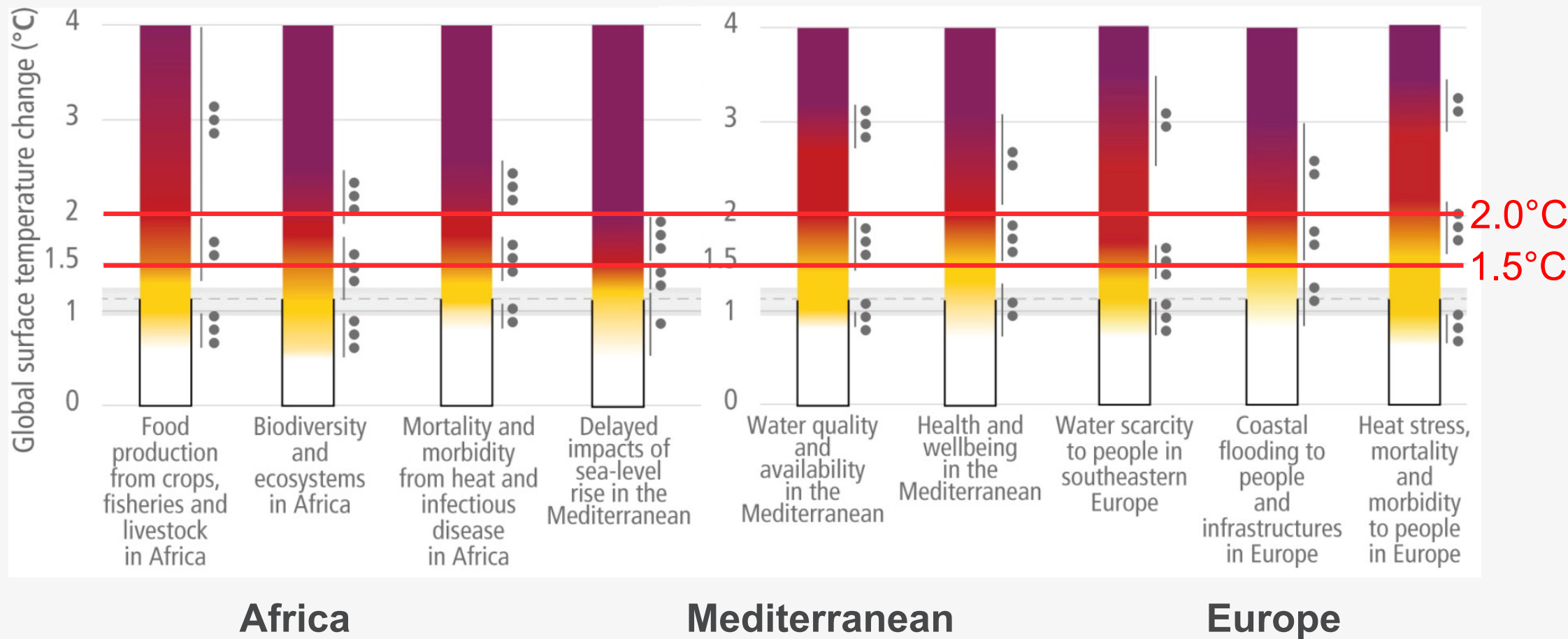
- = Very high
- = High
- = Medium
- = Low
- | = Transition range

**see figure caption for definition

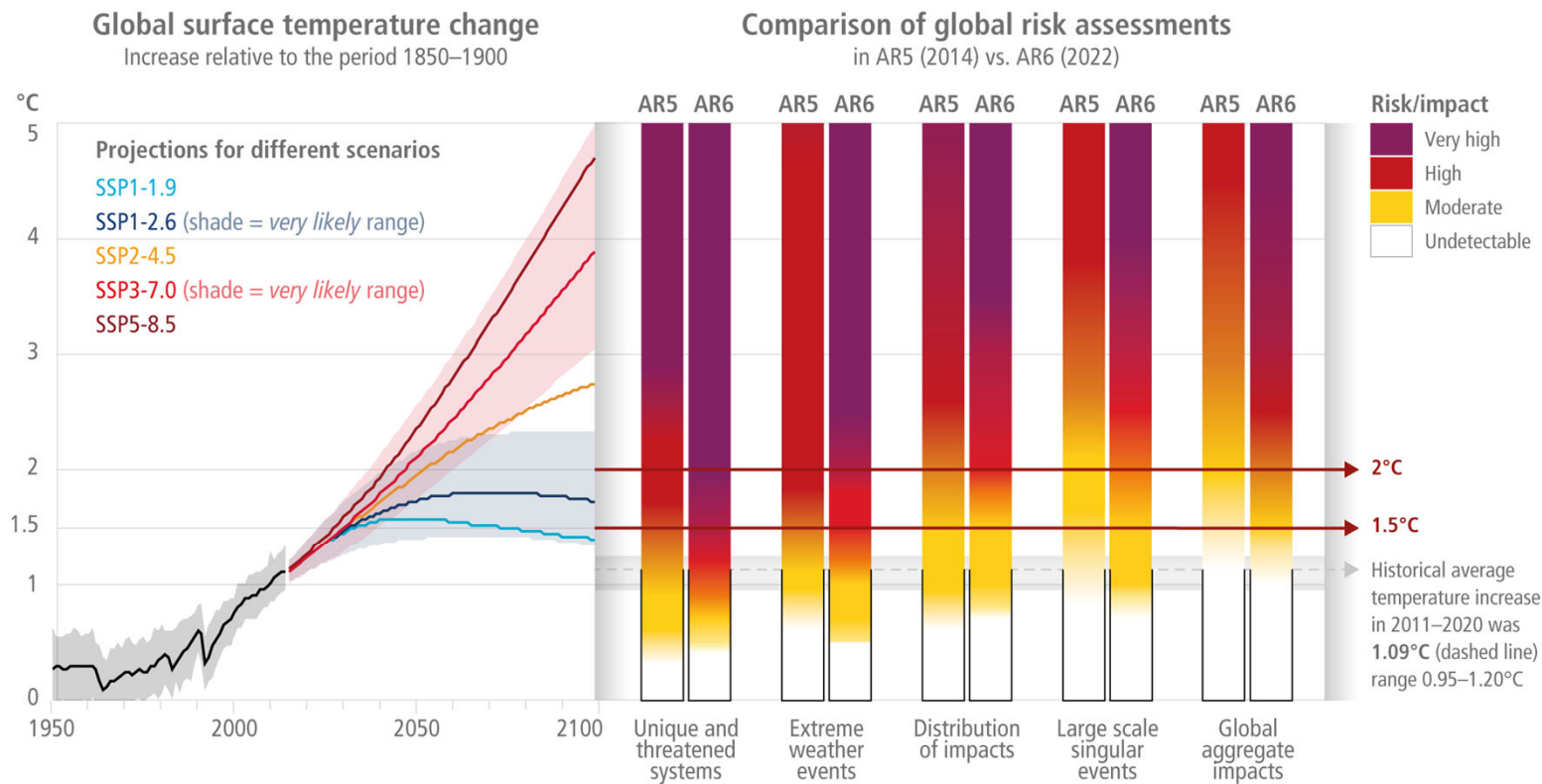
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Global and regional risk provide orientation for action (adaptation and mitigation) ... minimizing risk by keeping global warming below 1.5°C



AR6 insight: Risks are developing sooner than assessed in AR5 ... emphasizing the ambitious side of the Paris Agreement (GWL $\leq 1.5^{\circ}\text{C}$)





A. Erlangga/CIFOR-ICRAF CC BY-NC-ND 2.0

**Vulnerable
population groups
have the most urgent
need for adaptation
... but:**

**There are increasing
gaps between
adaptation action
taken and what's
needed ... how do we
accelerate and
sustain adaptation?**

Towards Transformative Adaptation: Five System Transitions



**Land, ocean,
coastal and
freshwater
ecosystems**



**Urban, rural
and
infrastructure**



Energy



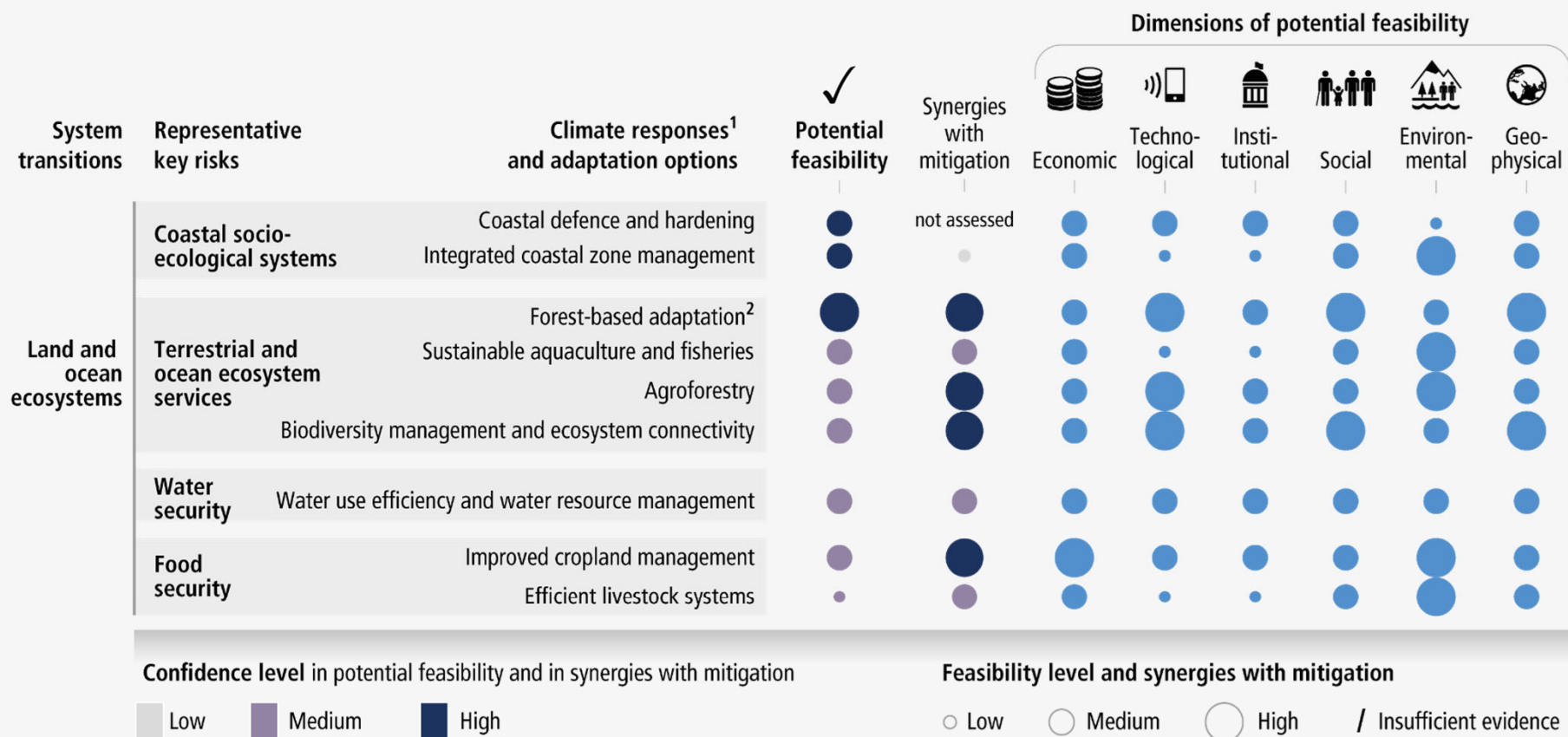
Industry



Society

- Have co-benefits with mitigation and are important for achieving the low global warming levels that would avoid many limits to adaptation.
- Make possible the adaptation required for human health and well being; economic and social resilience; ecosystem health and planetary health.

The Feasibility of Adaptation measures: e.g. Land and ocean ecosystems



Footnotes:

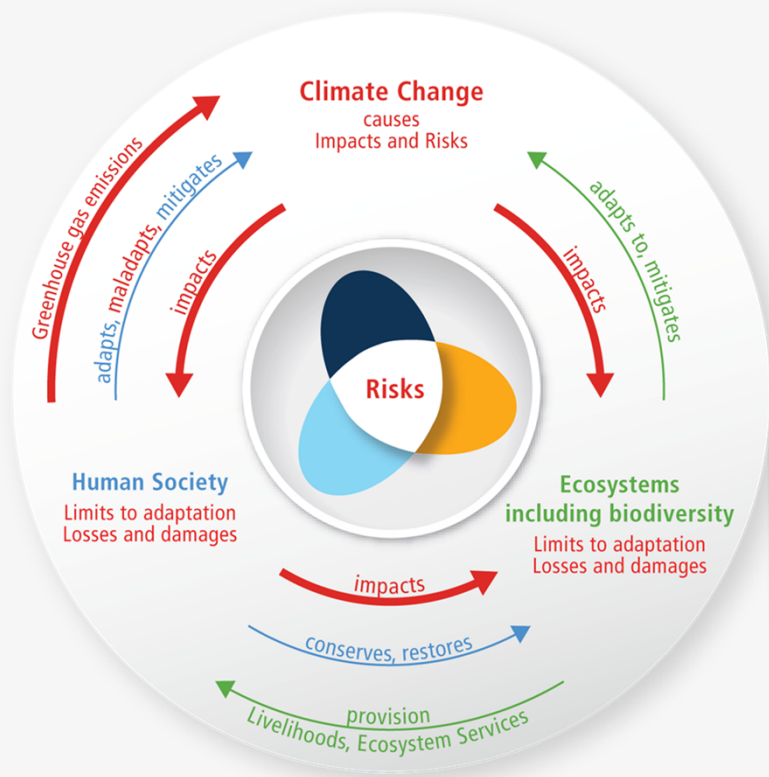
¹ The term response is used here instead of adaptation because some responses, such as retreat, may or may not be considered to be adaptation.

² Including sustainable forest management, forest conservation and restoration, reforestation and afforestation.

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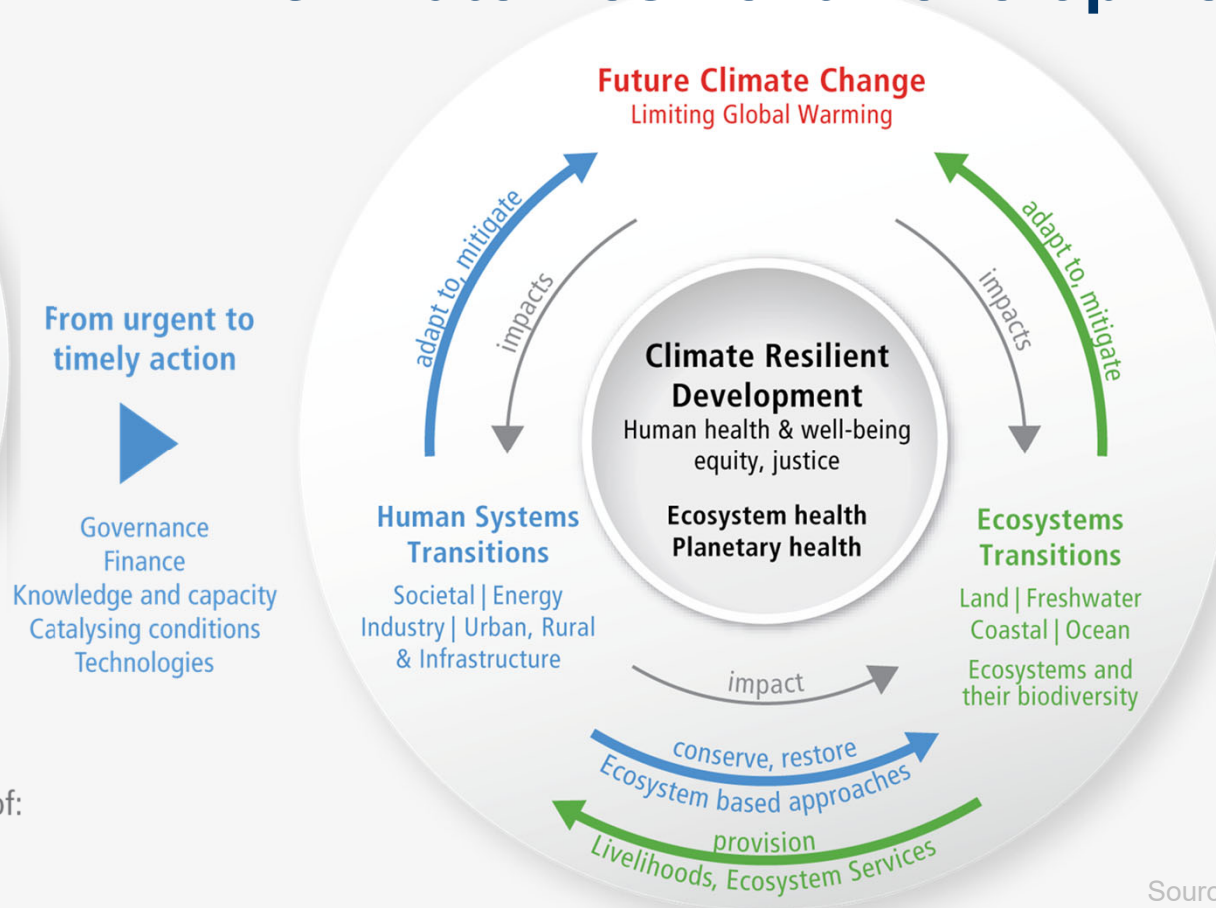
Current imbalance ...



The risk propeller shows that risk emerges from the overlap of:



towards a sustainable future = Climate Resilient Development...

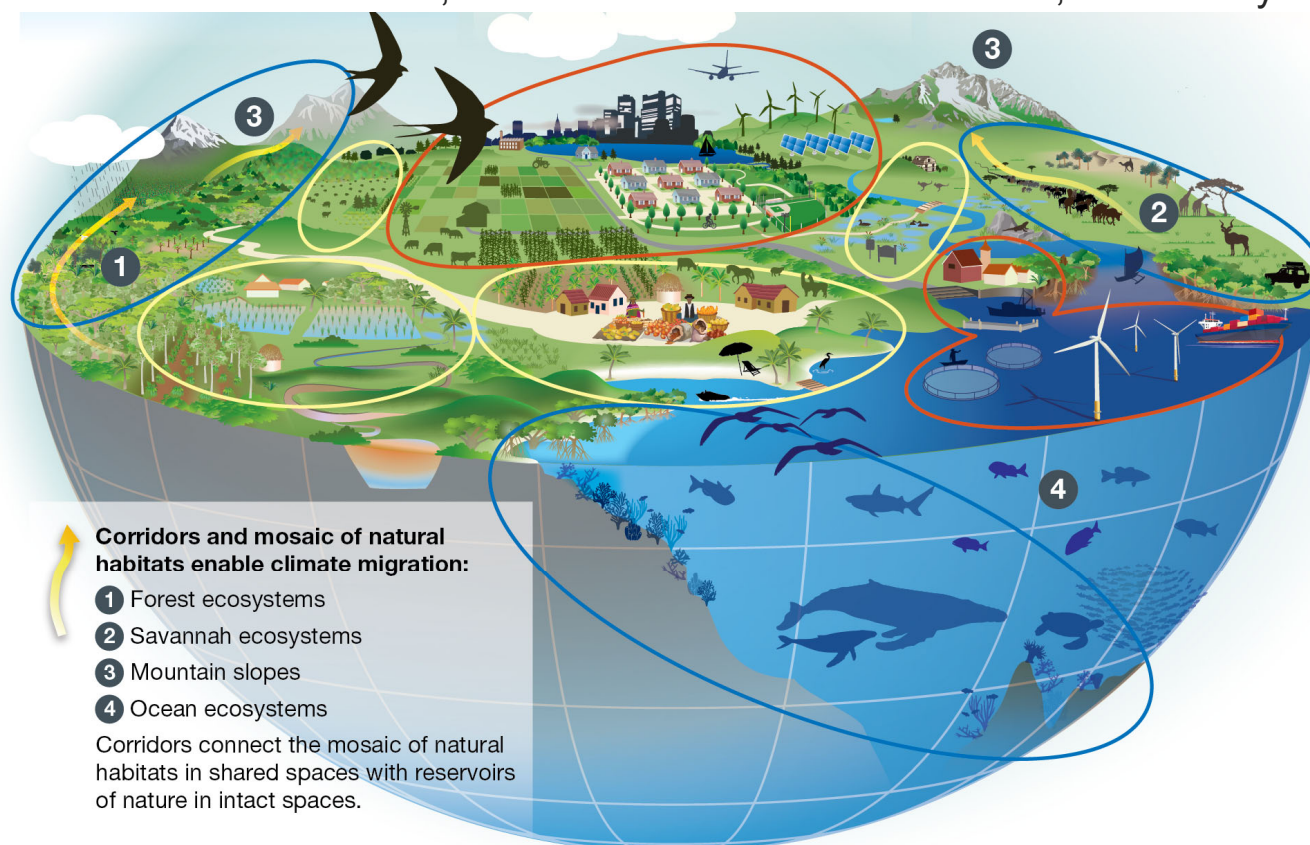


Source:
IPCC WGII AR6
SPM Figure 1

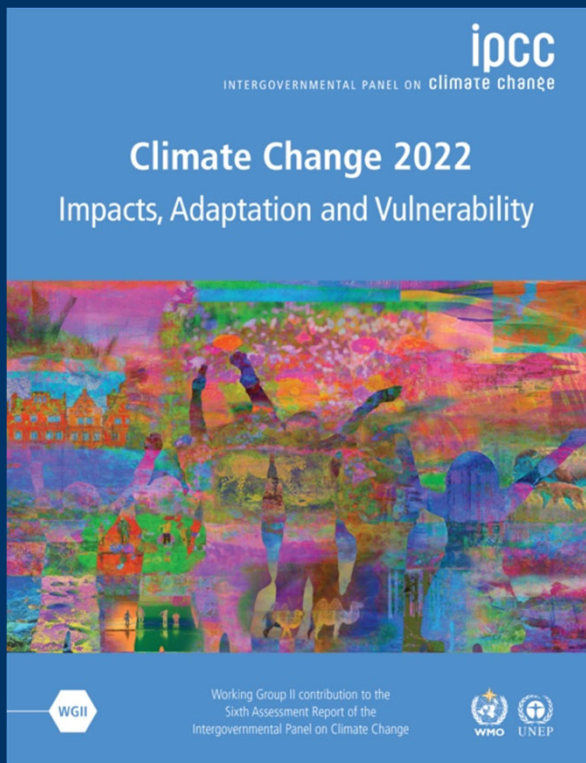
Integrating conservation, climate and societal actions: spatial planning

Treating climate, biodiversity, and human society as coupled systems is key to successful outcomes.

To be successful, conservation and climate actions would go hand in hand across landscapes, in cities and rural areas, taking people's needs into consideration, for maximized benefits for climate, biodiversity and humans.



...effectively
conserving
ecosystems on 30 to
50% of land and ocean



The science is clear.

Any further delay in concerted global action will miss a brief and rapidly closing window to secure a liveable future.

IPCC AR6 reports offer solutions to the world.

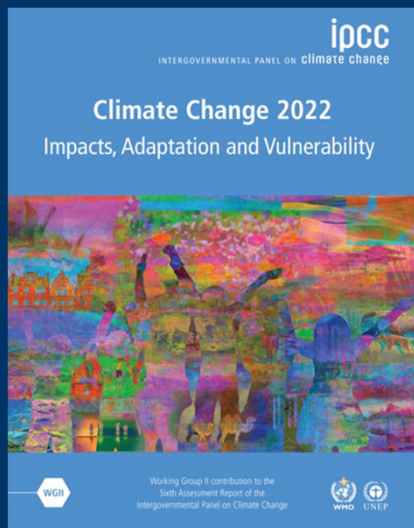
However, it is getting late!

Discussion points

Some high level conclusions from the WGII report(s):



- **Meeting the ambitious side of the Paris agreement has no acceptable alternative.**
- A holistic concept (CRD) integrates mitigation, adaptation, development, and also covers **loss and damage**.
- Justice and equity demand **shared responsibility** for the present and the future. (A dynamic basis for everybody's regular financial contributions would be the **cumulative emissions per country**, past and present.)

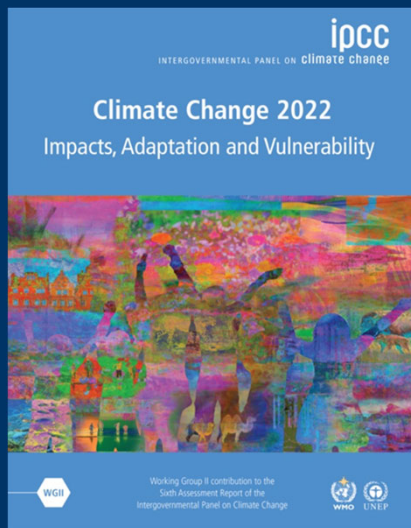


Discussion points



Some high level conclusions from the WGII report(s):

- Solutions of the **climate and the biodiversity** crises depend on each other.
- **Global Goals:** As much as limiting warming to 1.5° would be a **GG for Mitigation**, limiting risk to medium levels could be a **GG for Adaptation**. According to WGII both GGs would nicely match.
- CRD and the closing time window call for tying **development to using renewable energies only**.
- **Climate action** for mitigation and adaptation has no alternative and is an **existential necessity**.



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Thank you!

IPCC Working Group II Author Team



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