

# ipbes ipcc

IPBES-IPCC CO-SPONSORED WORKSHOP

## BIODIVERSITY AND CLIMATE CHANGE

WORKSHOP REPORT



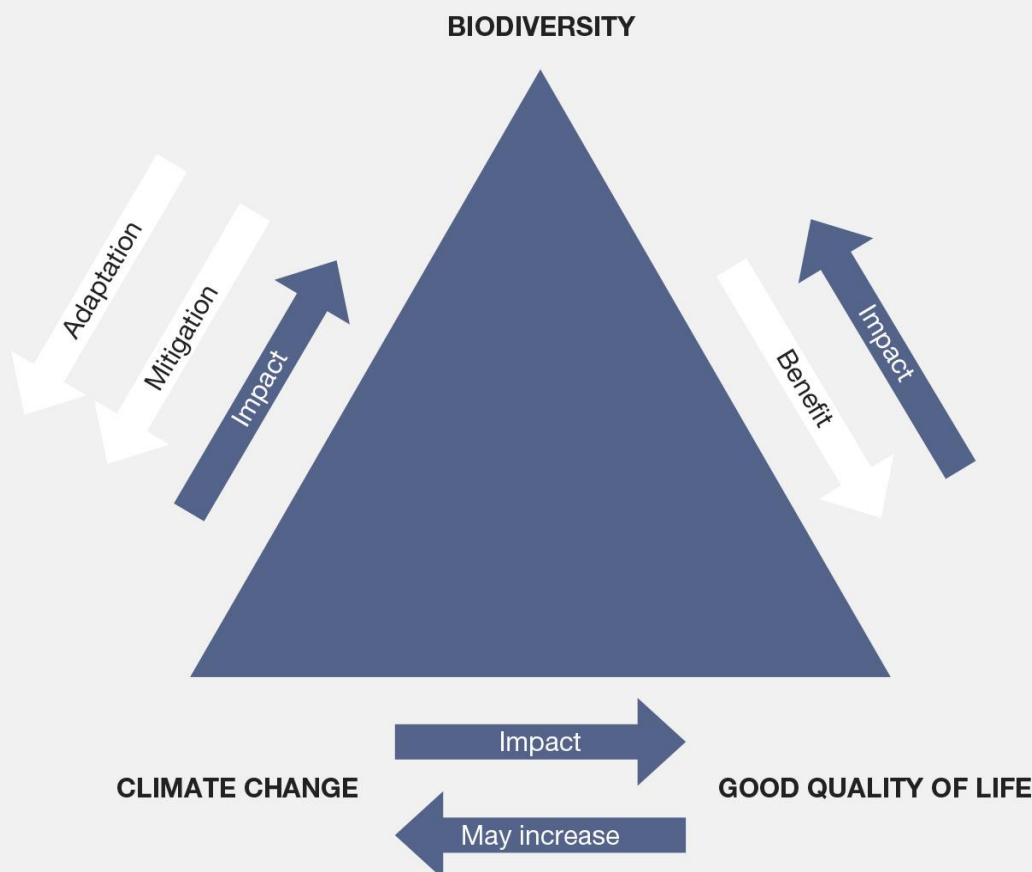
Presented by David Obura, Hans-O. Pörtner  
Lead Author, Co-Chair of workshop and report

**ipcc**  
INTERGOVERNMENTAL PANEL ON  
climate change



## What we need to know and consider ...

1. **The Earth's climate and biodiversity are inextricably connected with each other, and with human futures.** They reinforce each other and therefore cannot be managed in isolation from one another.



**Three Intertwined Systems:**  
**The changing Climate**  
**The changing Biosphere**  
**Human society / Quality of life**

Climate change exacerbates risks to biodiversity and natural and managed habitats; at the same time, natural and managed ecosystems and their biodiversity play a key role in the fluxes of greenhouse gases, as well as in supporting climate change adaptation.

## 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:**



Losses in ...Overfished Stocks



...Excessive Drought



...Heatwaves



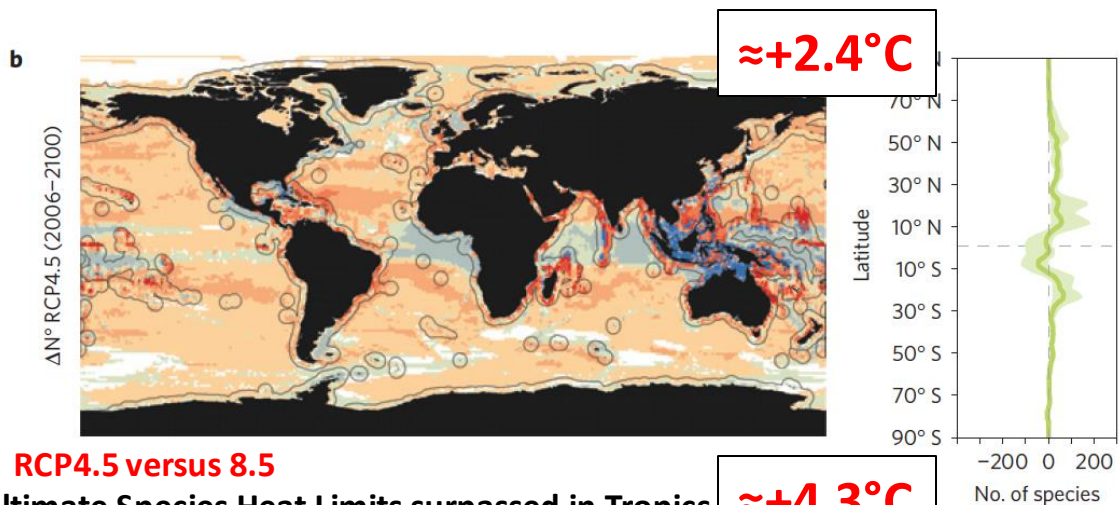
...Excessive Wildfires



Photos:  
 Unsplash.com,  
 Facebook/  
 Help Save the  
 Wildlife and Bushlands  
 in Campbelltown,  
 Madeleine Nicolas /  
 imaggeo.egu.eu

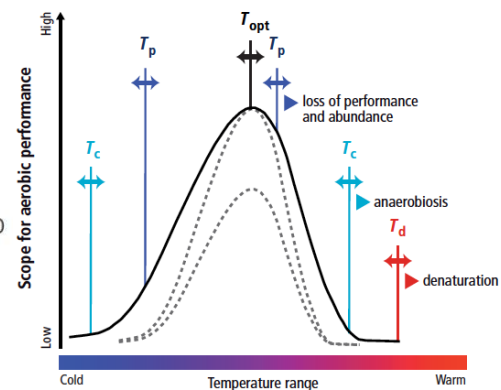
## Where we are headed ...

3. Climate change impacts and biodiversity loss are at the core of current challenges and risks for ecosystems and human societies .... species on the move, e.g. marine biodiversity



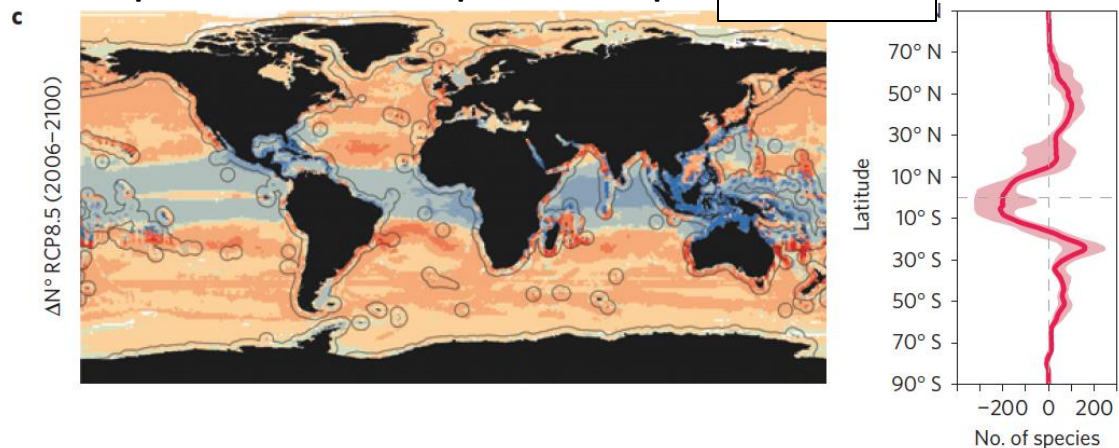
RCP 4.5 by 2100

**Thermal windows: limits and acclimatization**



**RCP4.5 versus 8.5**

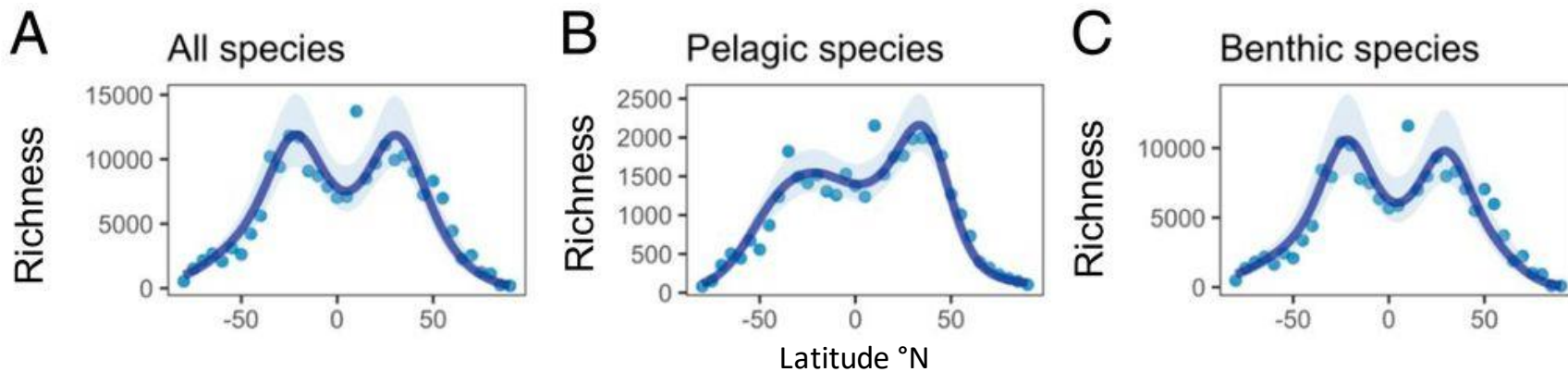
Ultimate Species Heat Limits surpassed in Tropics



RCP 8.5 by 2100

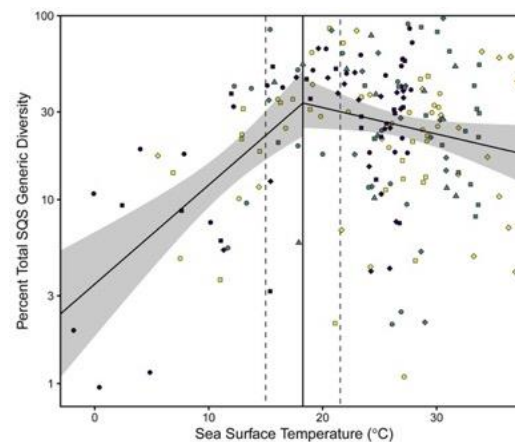
**Drivers of change:**  
**Warming and velocity...**  
 Large changes in community composition expected

# Modern marine findings resembling palaeo patterns



The latitudinal distribution of species richness in marine taxa at the scale of 5° latitudinal bands (the effect of latitude adjusting for shelf area)

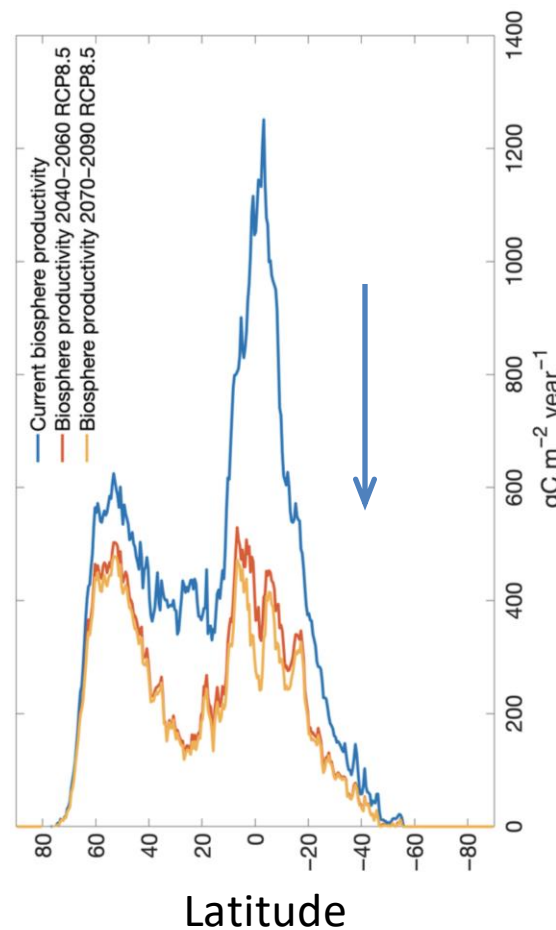
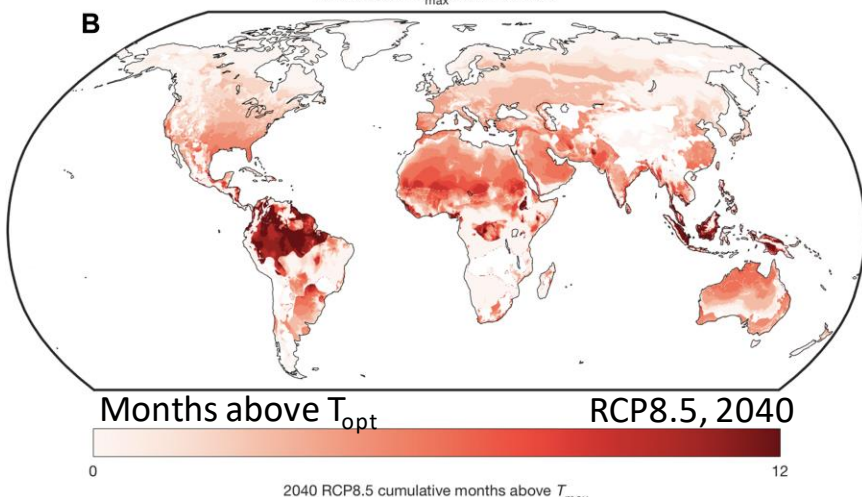
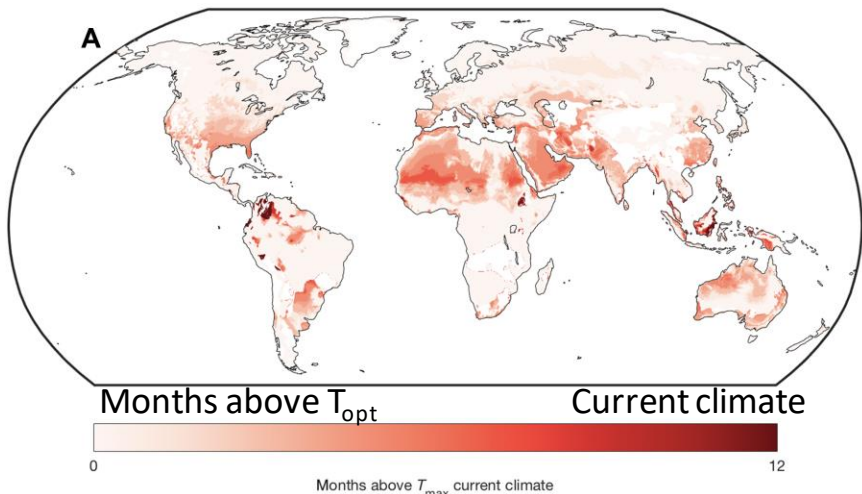
Present and palaeo  
 $T_{opt} \approx \leq 20^{\circ}C$



- Modern
- Late Miocene (13.82 – 5.333 Ma)
- Middle Eocene (47.8 – 37.8 Ma)
- ▲ Late Paleocene (59.2 – 56 Ma)
- ◊ Campanian (83.6 – 72.1 Ma)
- Late Pliocene (3.333 – 2.58 Ma)
- Early Oligocene (33.9 – 27.82 Ma)
- Early Eocene (56 – 47.8 Ma)
- ◊ Maastrichtian (72.1 – 66 Ma)
- ◊ Berriasian-Barremian (145 – 125 Ma)

# Ambitious emissions reductions protect biodiversity and its contributions to climate mitigation

## 4. Climate change and biodiversity loss are at the core of current challenges and risks: Carbon storage by forests across latitudes constrained by warming, drought and degradation



Progressive productivity Loss due to warming = loss of carbon binding and storage

.... combined with Increased release of greenhouse gases from permafrost in polar areas

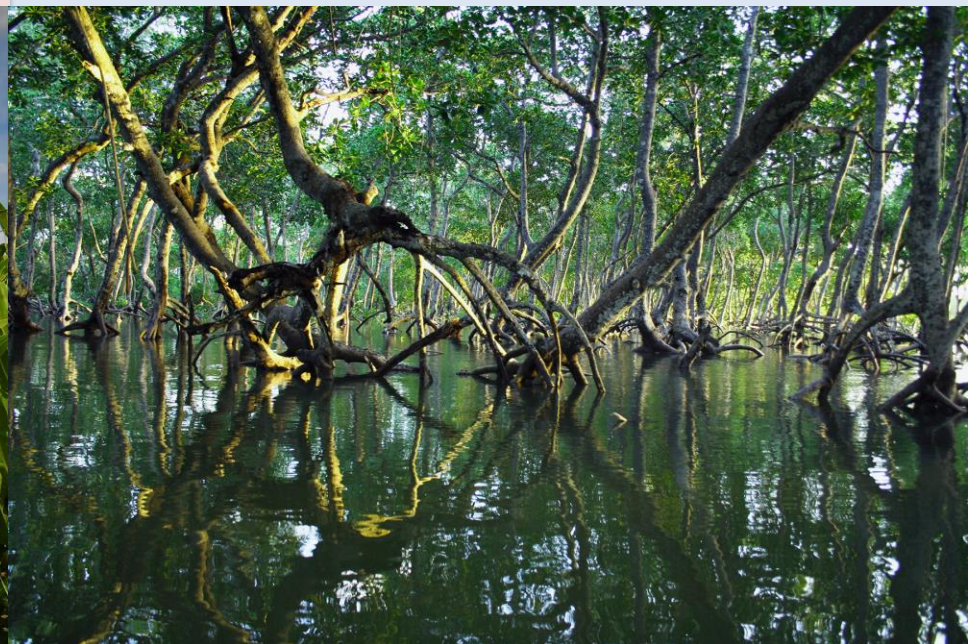
## Making choices

5. Actions taken to mitigate climate change can have either beneficial or harmful effects on biodiversity depending on policy. Ignoring the inseparable nature of climate, biodiversity, and human quality of life will result in non-optimal solutions.



Corn field (Waldemar Brandt / Unsplash.com)

Bioenergy crops covering large shares of land are threatening biodiversity and food security for people.



Mangroves (Timothy K./Unsplash.com)

Restoring natural ecosystems enhances carbon storage and benefits biodiversity and people.

## Conserving biodiversity supports adaptation to climate change

6. Biodiversity assists people and ecosystems to adapt to climate change. Actions that halt, slow or reverse biodiversity loss can also help mitigate climate change. To support intact and fully functional habitats under climate change and halt biodiversity loss, around 30 to 50 percent of the world's ocean and land would be effectively conserved.



Rainforest



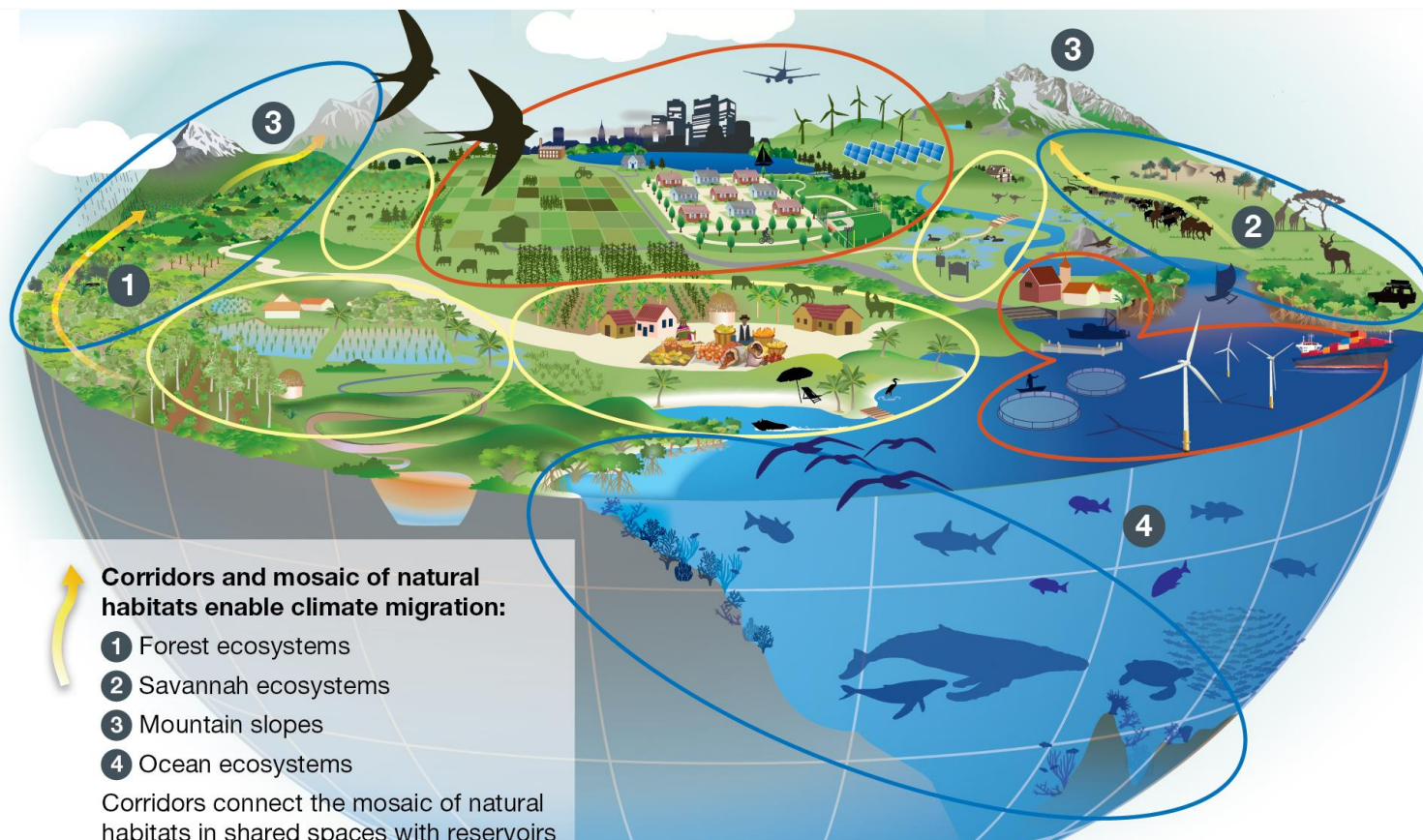
Coral reef



## Integrating conservation, climate and societal actions

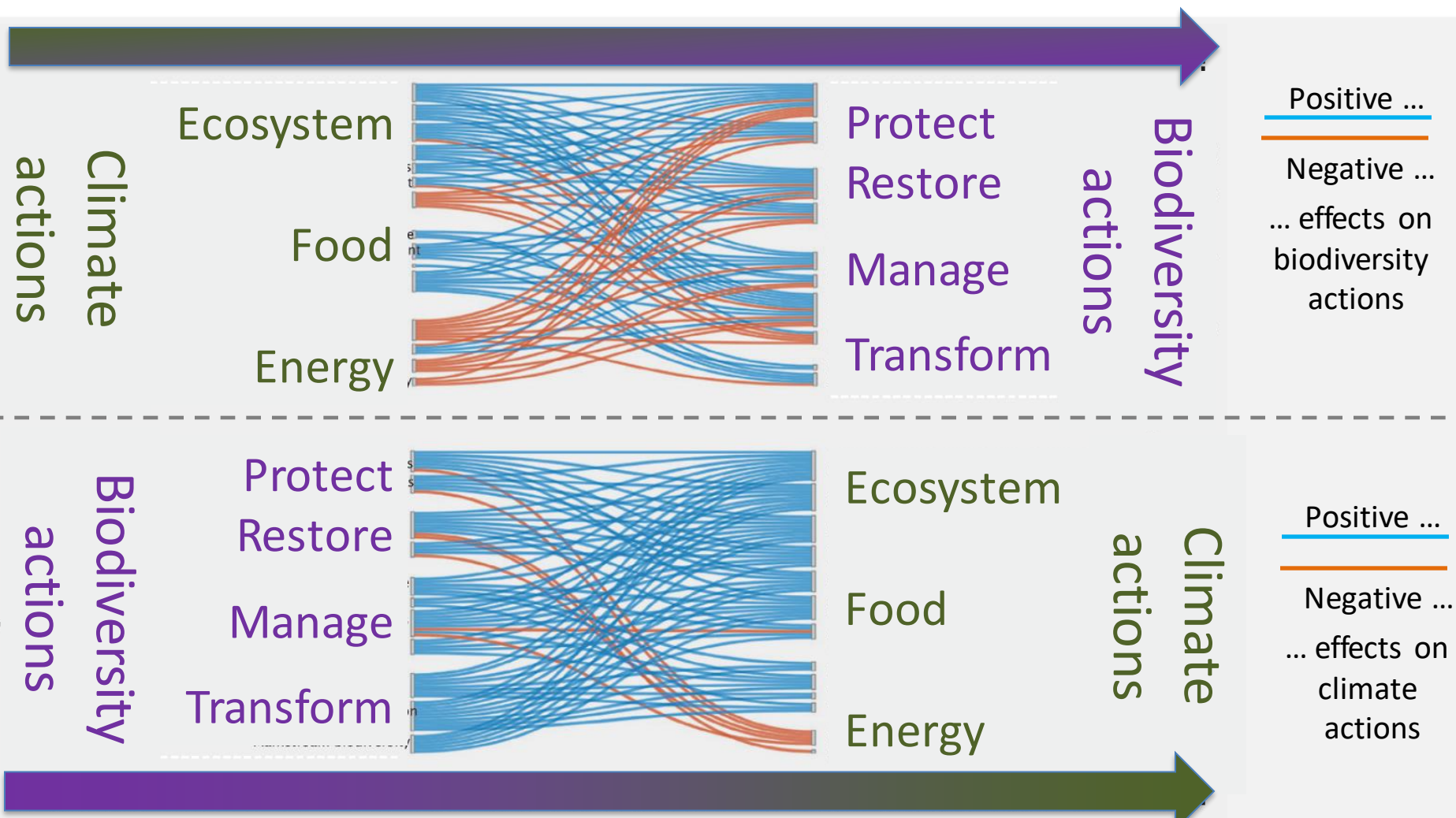
7. **Treating climate, biodiversity, and human society as coupled systems is key to successful outcomes. To be successful, conservation and climate actions would go hand in hand across landscapes, in cities as well as in rural areas.**

When climate and conservation actions also take people's needs into consideration, benefits and outcomes for climate and biodiversity protections as well as humans can be maximized.



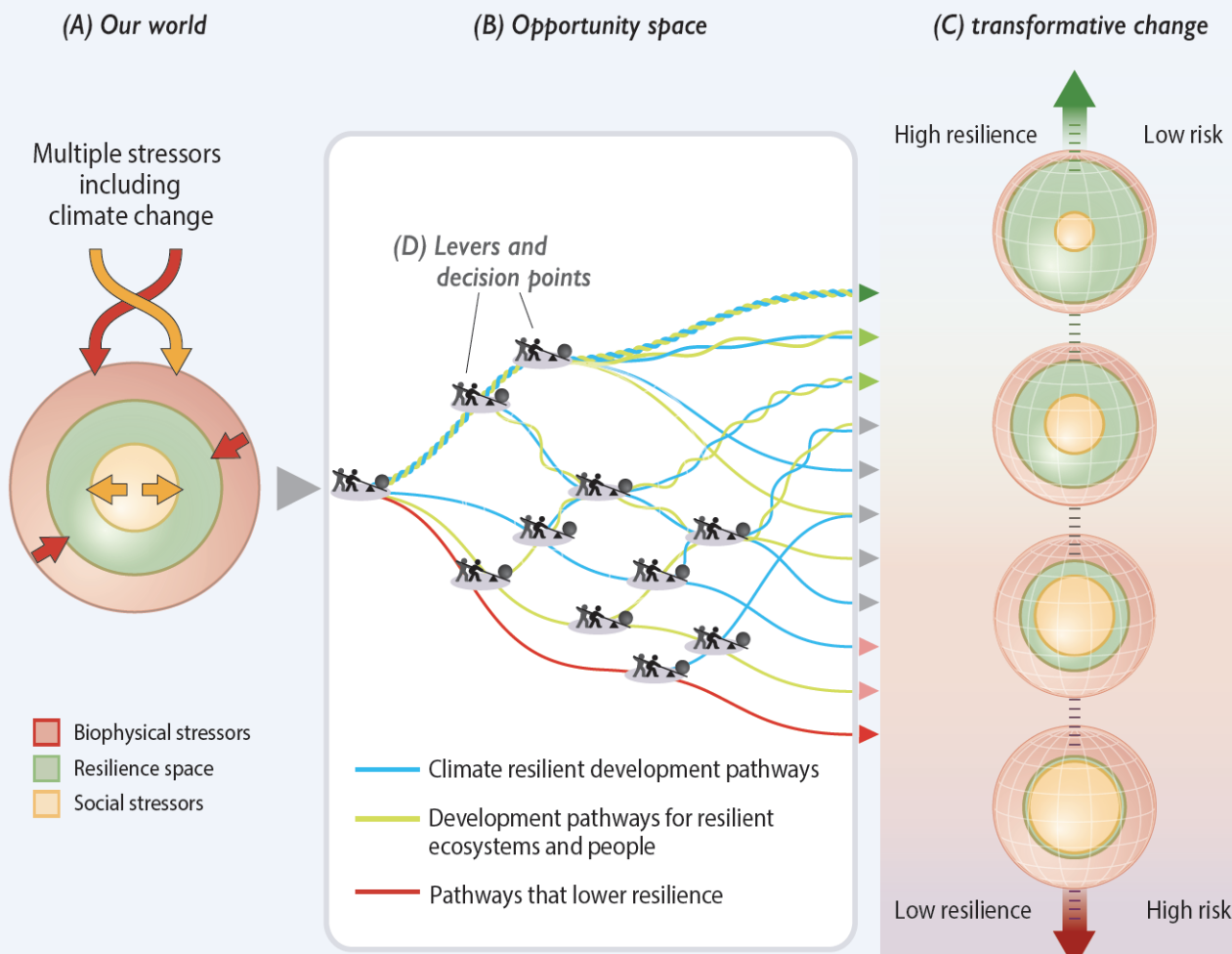
## Integrating conservation, climate and societal actions.

8. Nature is offering solutions which can be effective if paralleled by strong emission reductions in all sectors. Effective conservation, climate and societal actions would go hand in hand.



# Pathways of sustainable development, for ecosystems and people

9. Nature can do a lot, but it cannot do everything. There are pathways of development that can successfully navigate through the multiple crises we face. The transformative change needed relies on rapid and far-reaching actions of a type never before attempted.



## TRANSFORMATIVE GOVERNANCE

- Effective incentives and capacity building
- Cooperation across sectors and jurisdictions
- Pre-emptive actions
- Adaptive and inclusive decision-making
- Strong environmental law and policy

## Learning from this and earlier reports

### **SUCCESSFUL IMPLEMENTATION DEPENDS ON RAPID ENTRY INTO ACTION:**

- ... ambitious emissions reductions from fossil fuels**
- ... restoring a resilient biosphere and biodiversity**
- ... addressing justice and equality, eradicating poverty**

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### **Overall...**

- ... every bit of warming matters**
- ... every lost species and degraded ecosystem matters**

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Thank you!

