Keynote address and updates

Jim Skea

Chair
Intergovernmental Panel on Climate Change

Research Dialogue
SBSTA 62
Bonn

17 June 2025

IPCC Seventh Assessment Cycle

SEVENTH ASSESSMENT CYCLE

ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UN environment programme

★ Seventh assessment cycle products

Scoped
Authors working

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2023 · **2024** · **2027 onwards** · **2029**

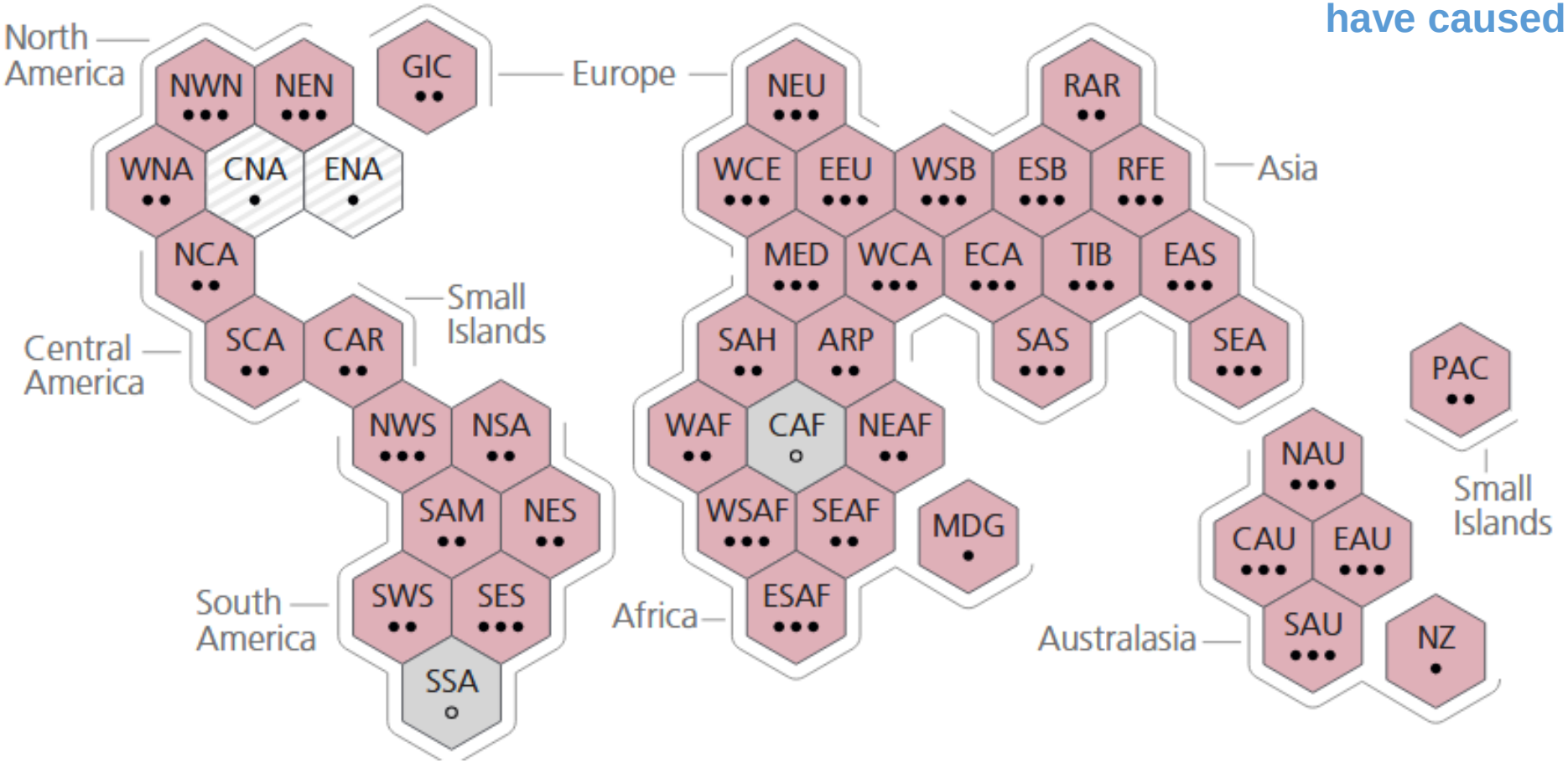
Attribution

"Human activities,
principally through emissions of greenhouse gases,
have unequivocally caused global warming"

First sentence, Summary for Policymakers, AR6 Synthesis Report.

Hot extremes

Hot extremes *Including heatwaves*



Highly confident that human activities have caused observable increases in hot extremes

Key

Type of observed change since the 1950s

- Increase
- Decrease
- Limited data and/or literature
- Low agreement in the type of change

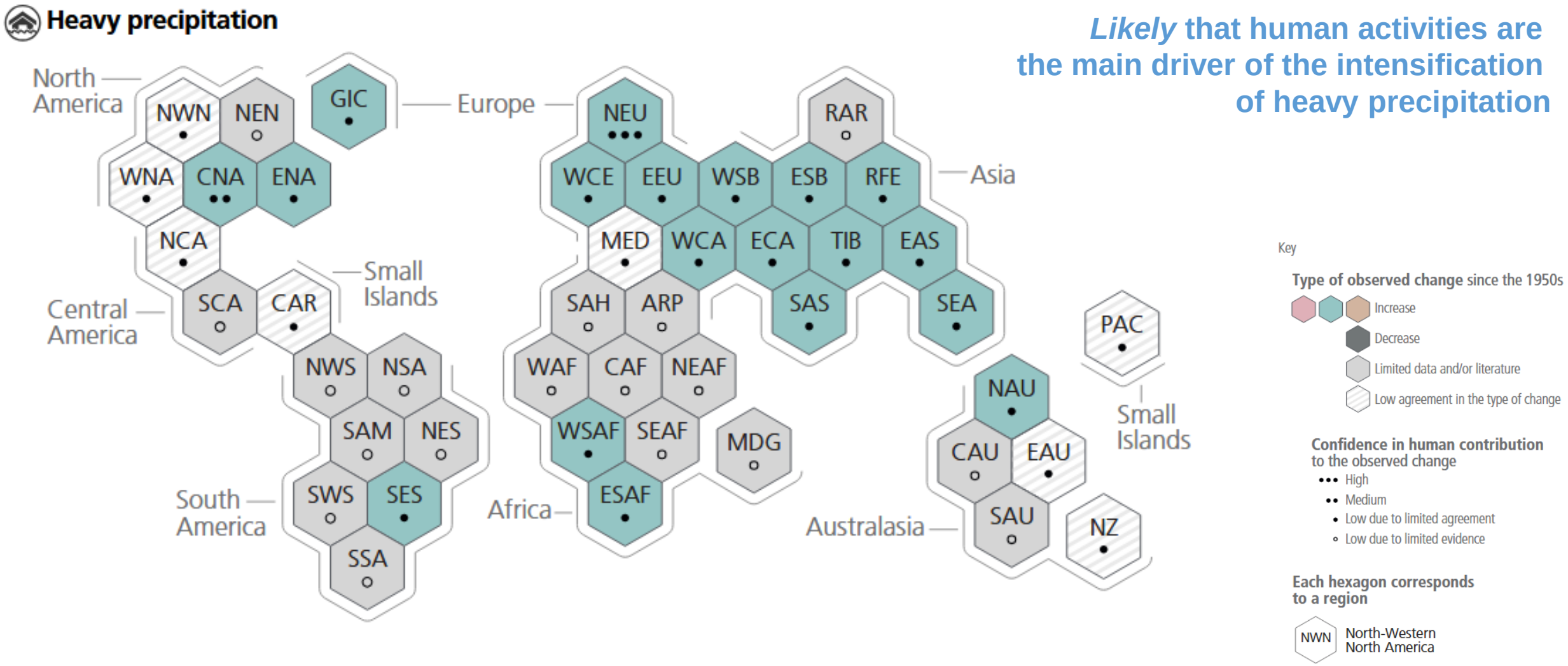
Confidence in human contribution to the observed change

- ••• High
- •• Medium
- • Low due to limited agreement
- o Low due to limited evidence

Each hexagon corresponds to a region

NWN North-Western North America

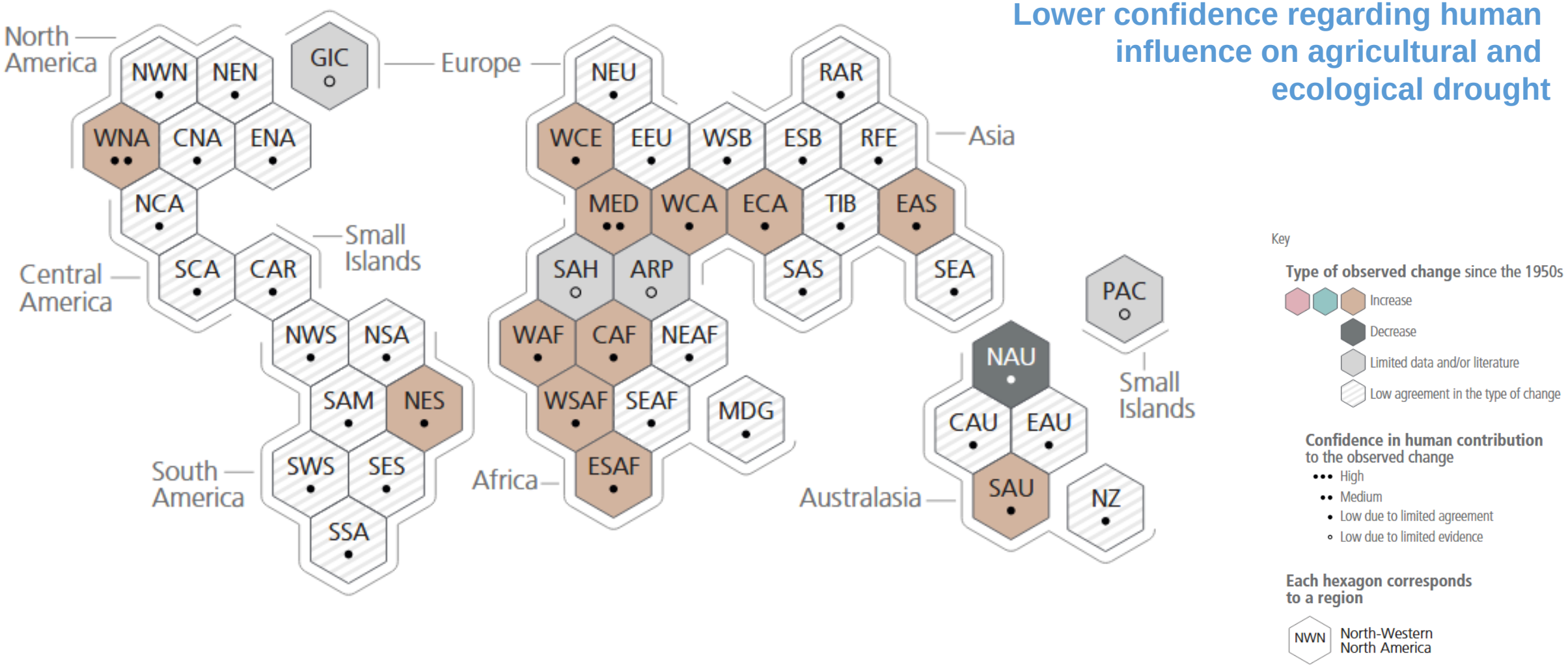
Heavy precipitation



Likely **that human activities are the main driver of the intensification of heavy precipitation**

Agricultural and ecological drought

Agricultural and ecological drought



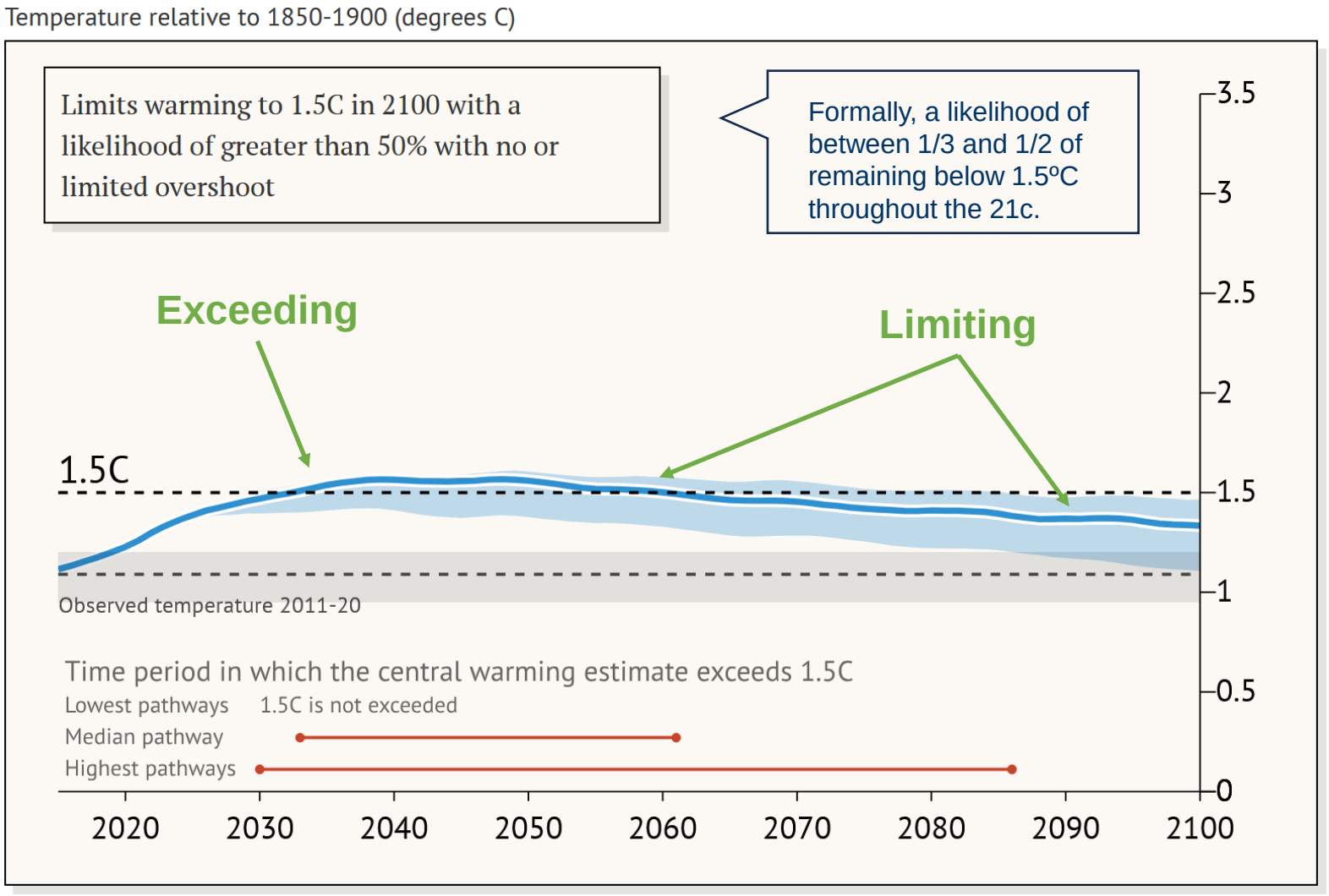
Lower confidence regarding human influence on agricultural and ecological drought

Seventh assessment coverage

- Attribution of large-scale changes in the climate system and their causes (WG I Chapter 2)
- Attribution of regional and local changes (WG I Chapter 3)
- Attribution of extreme events, including tropical cyclones, and compound events (WG I Chapter 3)
- Observed and projected impacts, including economic and non-economic losses and damages, building on both slow onset and extreme Climatic-Impact Drivers (WG II, common across regional and thematic chapters)

Current and projected levels of warming

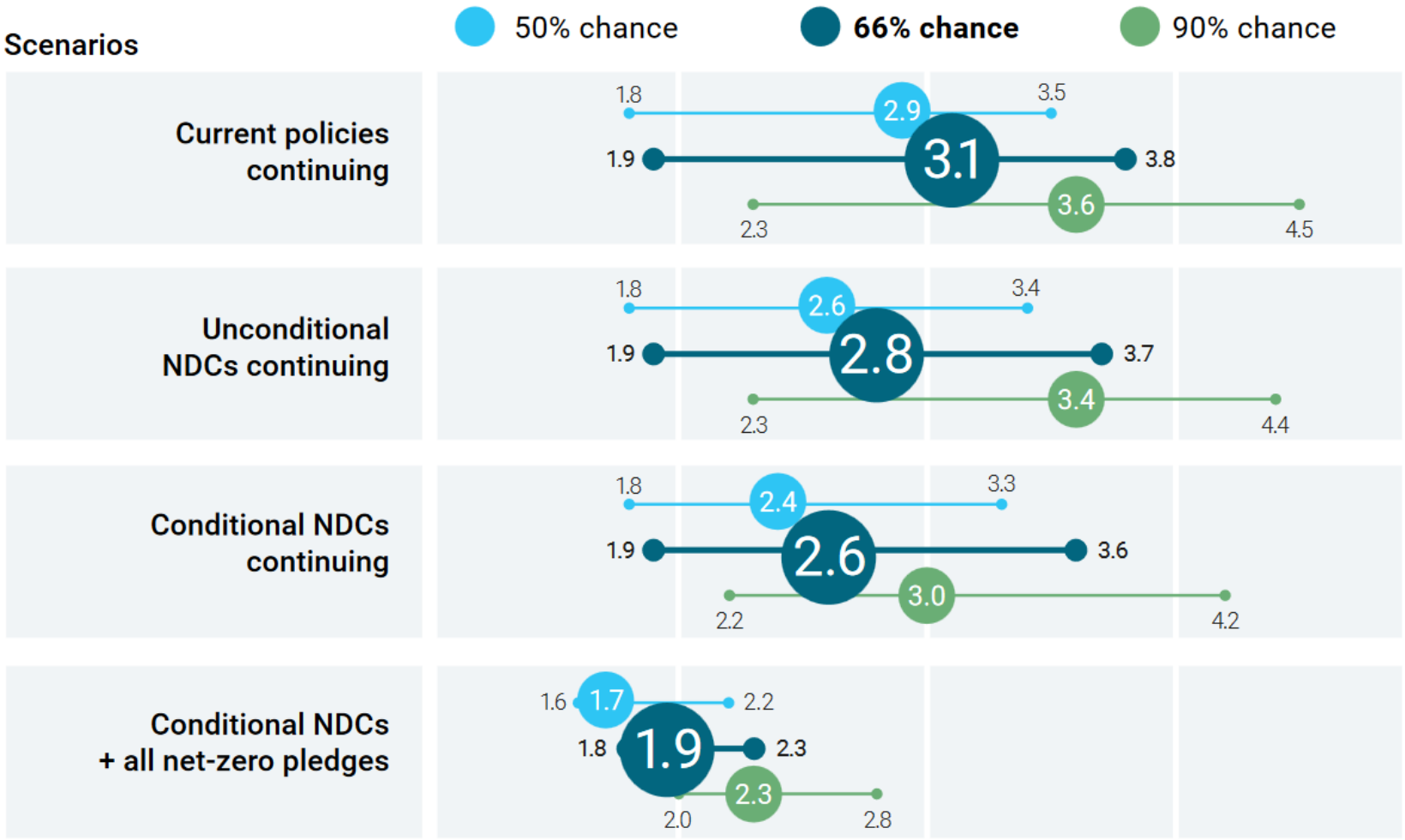
A pathway can both limit warming to 1.5°C and exceed 1.5°C warming…



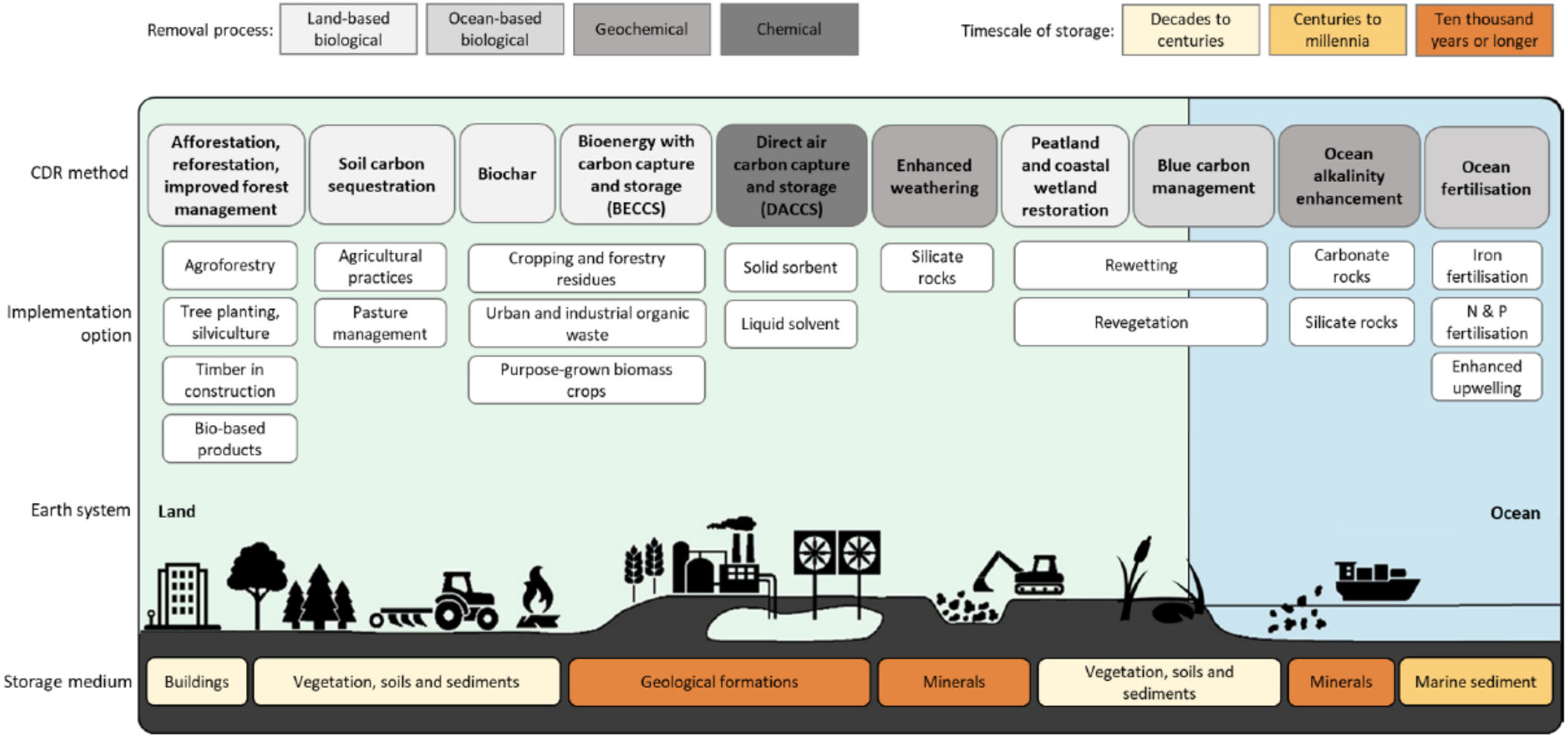
Source: based on Carbon Brief

Projections of global warming under the pledge-based scenarios assessed

Peak warming (°C) over the 21st century relative to pre-industrial levels



Source: UNEP Emissions Gap Report 2024



Carbon Dioxide Removal (CDR) can counterbalance residual emissions from hard-to-transition sectors, and achieve and sustain net-negative CO_2 or GHG emissions in the long term

AR7 WG I Chapter 9

Earth system responses under pathways towards temperature stabilization, including overshoot pathways

- **Global and regional Earth system responses** to pathways towards temperature stabilization, including to **global net-zero, negative and net-negative emissions**, and long-term implications
- **Pathway dependency** of responses including in the context of **overshoot and irreversible aspects**
- **Bio-geophysical capacity** and limits of carbon dioxide removal (CDR) methods
- Global and regional Earth system **responses to removals of carbon dioxide, methane or nitrous oxide**
- Global and regional Earth system **responses to** different global and regional **solar radiation modification (SRM)** methods, including **consequences and uncertainties**

AR7 WG III Chapter 15

Potentials, limits, and risks of Carbon Dioxide Removal (CDR)

- **Effectiveness** of CDR approaches at different warming levels and time scales
- The role of CDR strategies in **net-zero and net-negative emissions futures**, including levels of residual emissions achievable
- **Technical and economic potential, sustainability aspects, scalability, equity** implications and costs of different approaches, including storage potential, CDR approaches in other chapters and marine carbon dioxide removal
- **Co-benefits, opportunities, synergies, trade-offs and adverse** effects of different CDR approaches on land, biodiversity and ecosystems, energy, materials, food, and waterbodies
- **Feasibility** assessment of CDR approaches (including geophysical, environmental-ecological, technological, economic, institutional and sociocultural) reflecting different regional and sub-regional contexts and scales
- **Permanence, durability and reversibility** of CDR approaches at different scales
- Assessment of current status and limits of **MRV approaches**
- **Policies and governance**, market, non-market and financing for research and development and implementation of CDR approaches
- **Interactions** with sustainable development, adaptation, and other mitigation options
- **Technology transfer and capacity building** for CDR approaches

To recall

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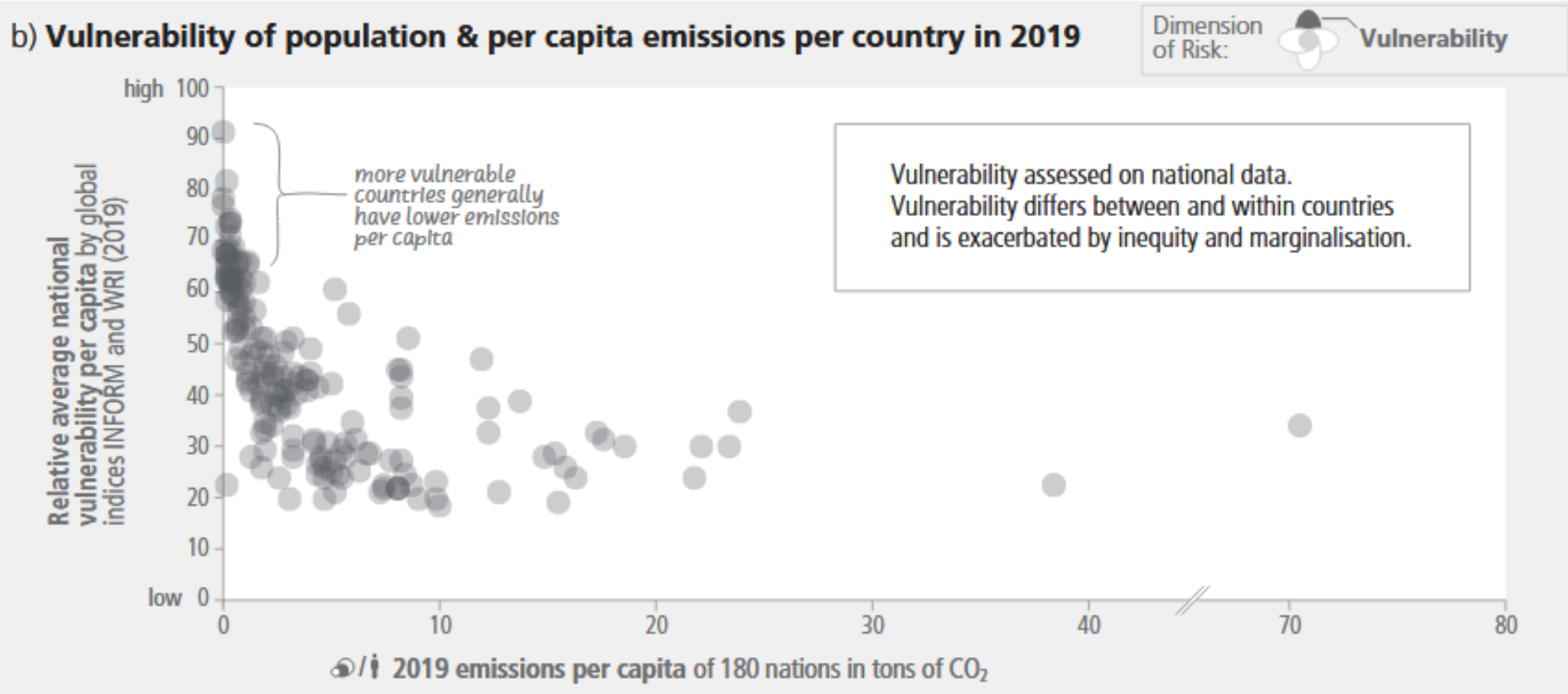
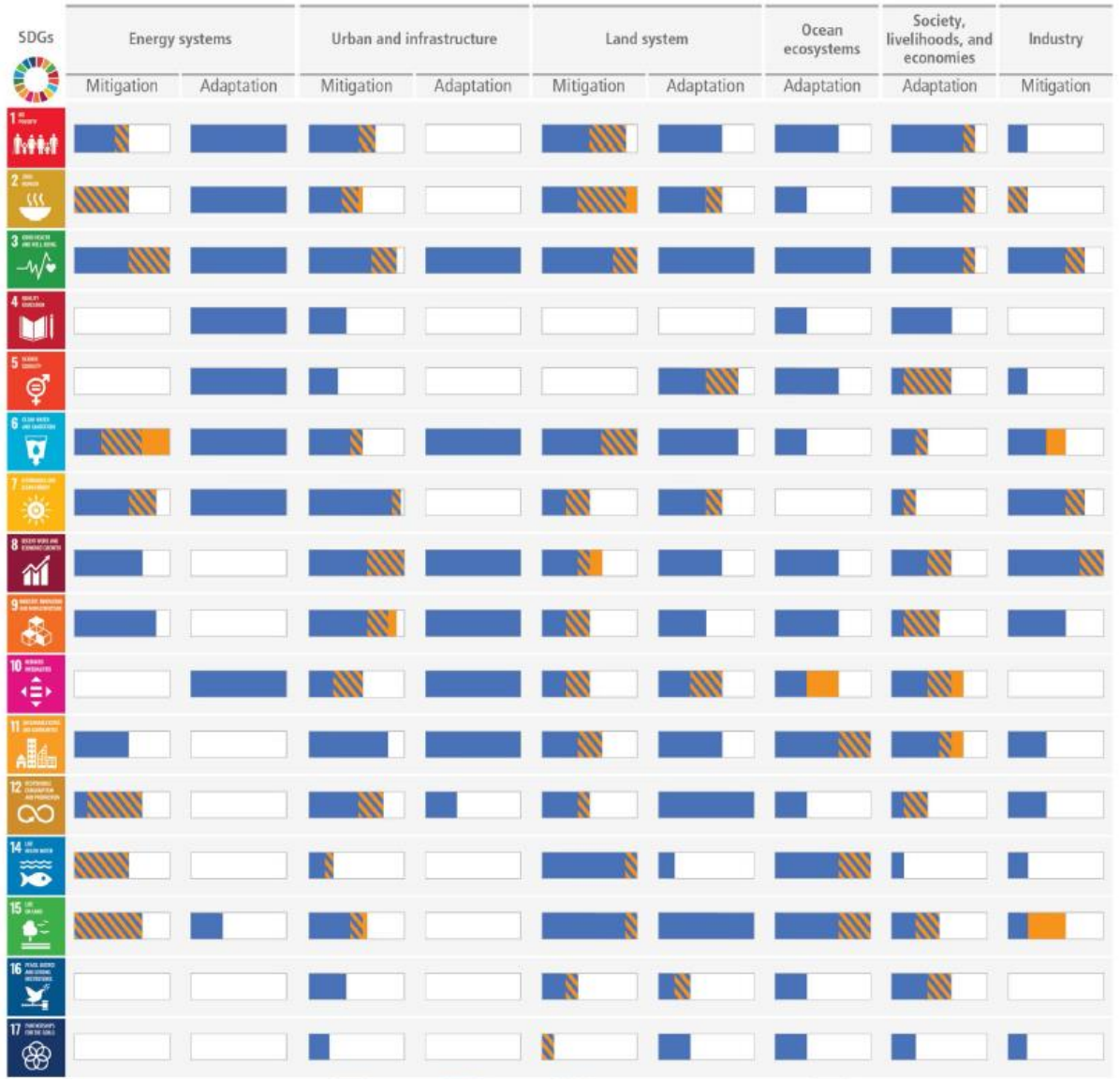


Those who have generally least contributed to climate change are most vulnerable

Near-term adaptation and mitigation options have more synergies than trade-offs with the Sustainable Development Goals

Energy systems
Urban and infrastructure
Land systems
Ocean ecosystems
Society, livelihoods and economies
Industry



Key Synergies Trade-offs Both synergies and trade-offs/mixed Limited evidence/no evidence/no assessment

AR7 WG III

Chapter 3: Projected futures in the context of sustainable development and climate change

Chapter 4: Sustainable development and mitigation (excerpts)

- Sustainable development **including and beyond SDGs** as an integrative perspective for climate change responses (synergies and trade-offs)
- **Distributional consequences**, within and across groups and countries
- Climate change mitigation response **capacities and enabling conditions**, including technology, finance, and cooperation for sustainable development
- **Equity and justice**
- **Mitigation-adaptation interlinkages** and other sustainable development objectives, including potential synergies and trade-offs
- **Implications** of climate change mitigation responses on biodiversity and ecosystems, conservation, and restoration
- **Pathways** in the context of sustainable development and the remaining carbon budgets, considering different stages of development, and circumstances

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