



Sustainability in an Ageing Society
Climate Change, Health Risks, and the Strategic Role
of Insurance

July 9, 2026
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FALIA

Today's Agenda

- 1. What is Sustainability?**
- 2. Why Sustainability Matters for the Insurance Sector?**
- 3. Key environmental issues**
- 4. Sustainability in Ageing Society**
- 5. Insurance sector's sustainability actions**

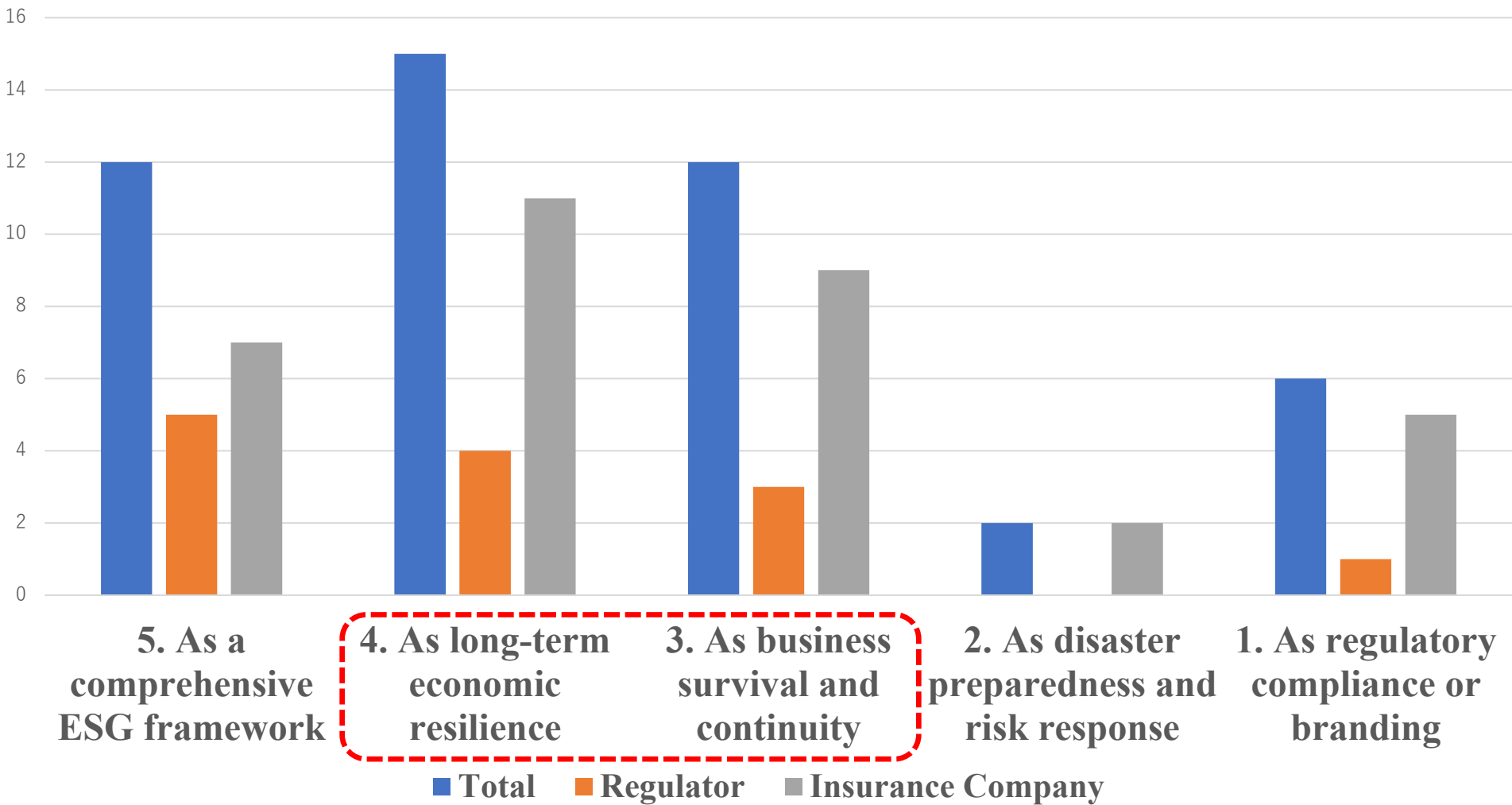
1. What is Sustainability?

Question

In your country or region, which interpretation of “sustainability” tends to be most emphasized or understood?

- 5 – **As a comprehensive ESG framework**: Sustainability is widely understood as the integration of environmental, social, and governance (ESG) factors into business strategy, operations, and stakeholder engagement.
- 4 – **As long-term economic resilience**: It is commonly associated with strengthening financial stability, climate risk mitigation, and intergenerational value creation.
- 3 – **As business survival and continuity**: The term is often interpreted as ensuring the company’s survival amid external shocks such as pandemics, economic crises, or demographic shifts.
- 2 – **As disaster preparedness and risk response**: Sustainability is mainly linked to catastrophe risk management, underwriting for natural disasters, and emergency response planning.
- 1 – **As regulatory compliance or branding**: It is generally seen as a requirement for reporting or a tool for corporate image, with limited integration into core business practices.

What is "Sustainability"?



What is Sustainability?

1. Foundational Definition (Brundtland Commission, 1987)

“Development that meets the needs of the present **without compromising the ability of future generations** to meet their own needs.”

2. **ESG** as the Operational Framework

Environmental: climate risk, resource use, biodiversity, emissions

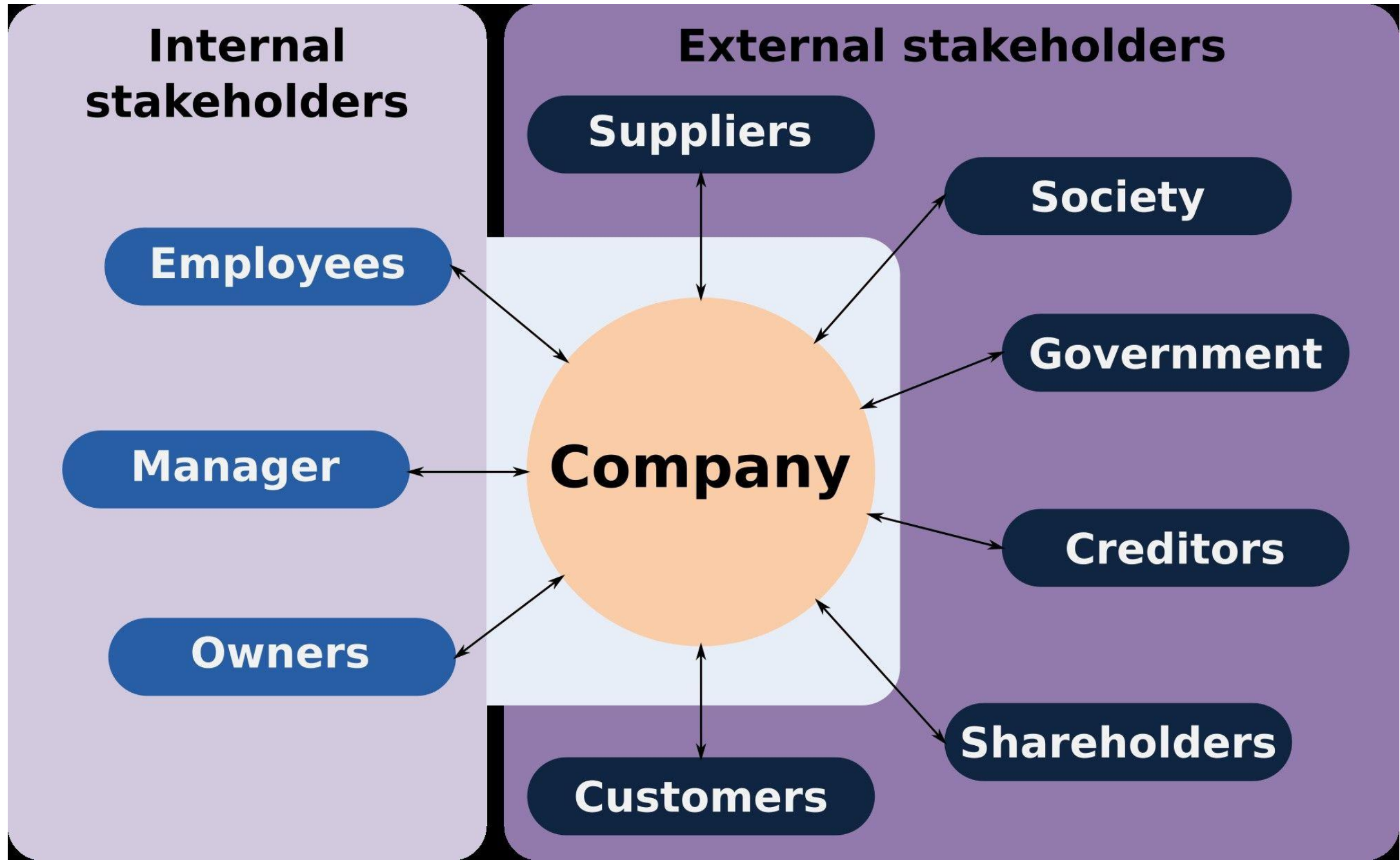
Social: labour practices, community impact, human rights, customer wellbeing

Governance: transparency, accountability, ethical conduct, board oversight.

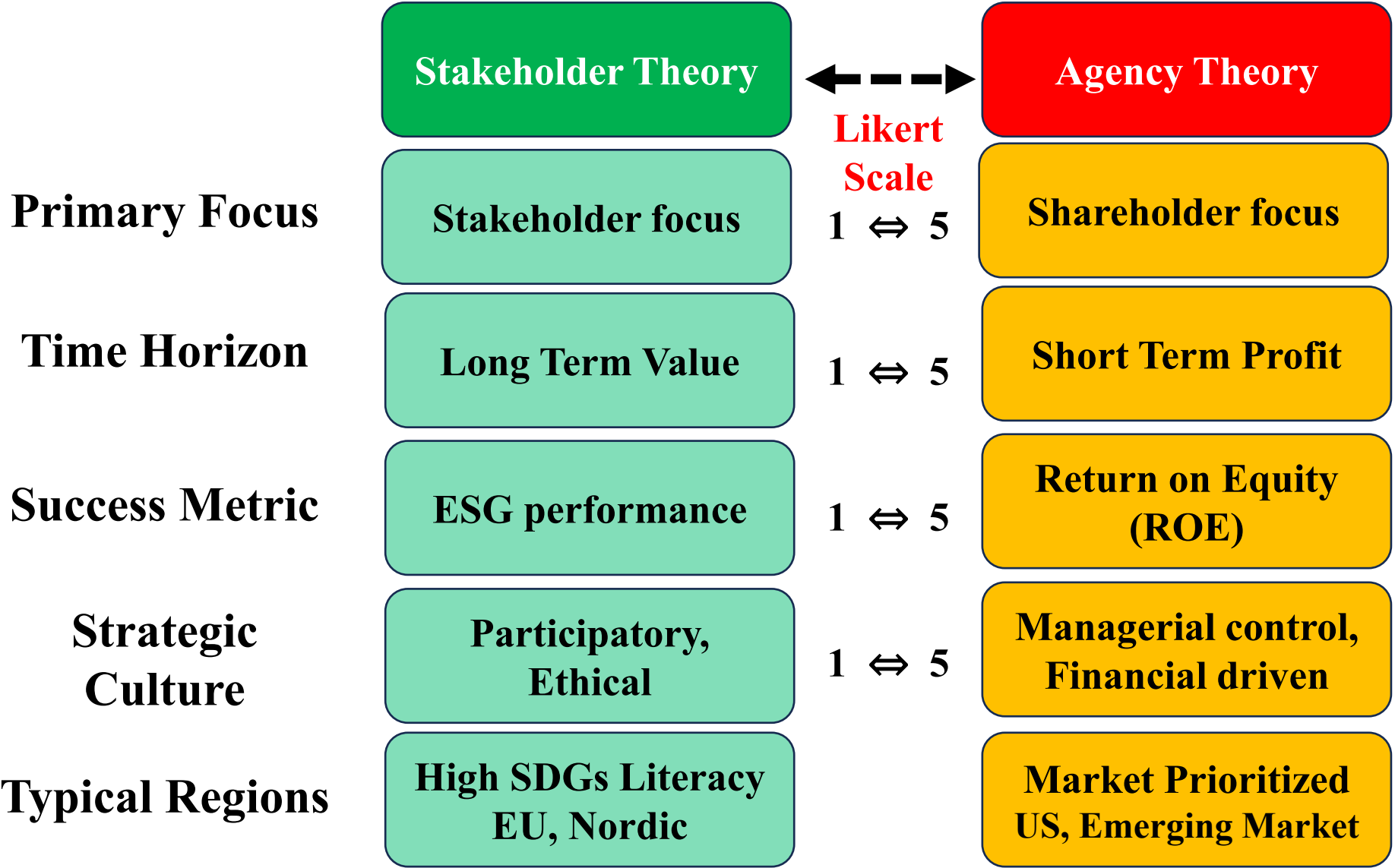
3. Sustainability Management (ESG Integration)

Process of guiding an organization's ESG activities to create long-term value while considering and balancing the needs of all **stakeholders**.

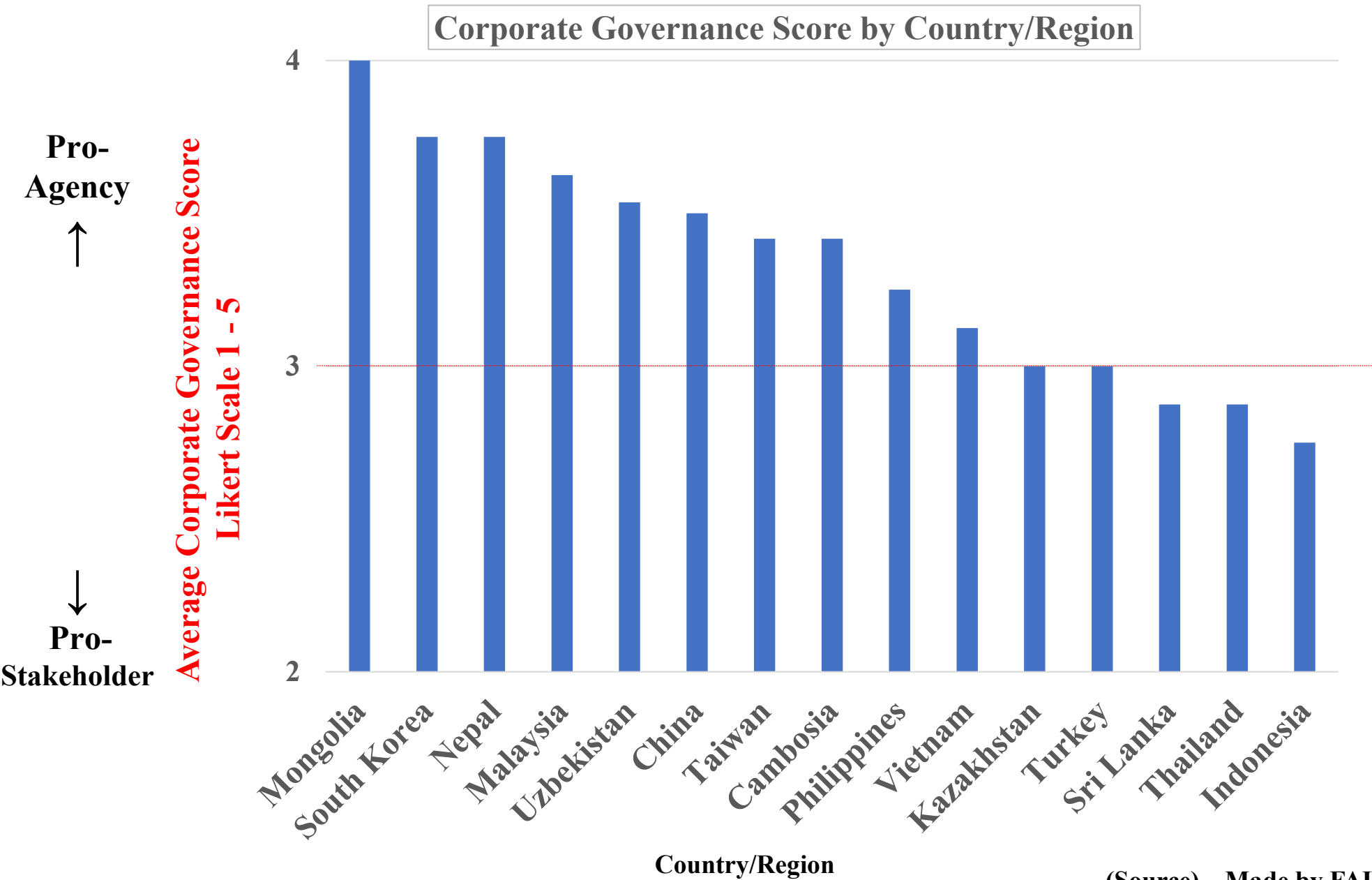
What is Stakeholder?



Corporate Governance Culture: Stakeholder vs Agency-oriented



Corporate Governance Perception: Agency or Stakeholder-oriented?



Research Results on Regulatory Coding

Document-based Sustainability Regulation Status for each country/region

Country /Region	Aggregated Scores	Regulation Status
China, Indonesia, Malaysia, the Philippines, Sri Lanka, Taiwan, and Turkey	4.0-5.0	Mandatory
Cambodia, Mongolia, South Korea, Thailand, and Vietnam	1.5-3.5	Partial / Developing
Kazakhstan, Nepal, and Uzbekistan	0-1.0	Minimum

**Aggregate Score (0-5) = ESG mandates (0-1)+ Disclosure (0-1)+ Reporting (0-1)
+Alignment with ISSB/TCFD/GRI (0-1) + Insurance-specific applicability (0-1)**

2. Why Sustainability Matters for the Insurance Sector?

Why Sustainability Matters for the Insurance Sector?

The insurance sector occupies a unique position in society, combining a public-interest mandate with long-term financial responsibilities. As global risks intensify, insurers are increasingly expected to contribute to sustainable development.

- **Insurance functions as a cornerstone of social stability and economic continuity.**
- **Societal expectations are rising as climate, demographic, and economic risks escalate.**
- **Sustainability is no longer peripheral; it is integral to insurers' strategic relevance.**

The Social Role of Insurance

Insurance operates as a quasi-public institution, complementing social security systems and supporting societal resilience.

- **Acts as a risk redistributor, protecting households, businesses, and governments.**
- **Often functions as an extension of public social protection, especially in health, pensions, and disaster recovery.**
- **Enhances societal resilience by enabling recovery and reducing long-term vulnerability.**
- **High public trust and social expectations create a responsibility to act sustainably.**

The Widening Protection Gap

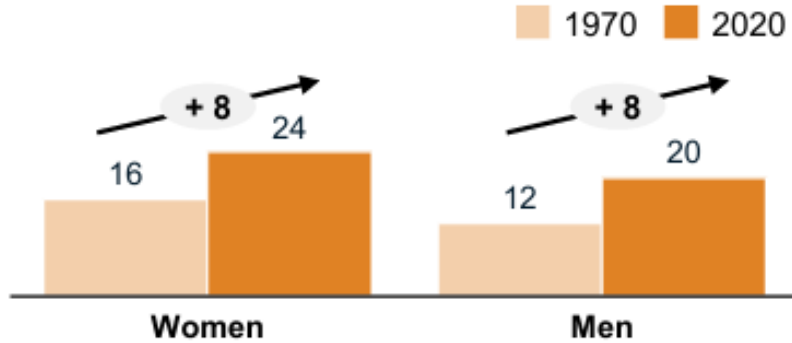
The gap between economic losses and insured losses is expanding, particularly for climate-related and disaster risks.

- **Natural catastrophes are increasing in frequency and severity, yet insurance penetration remains low in many regions.**
- **The protection gap represents a systemic risk for households, governments, and financial markets.**
- **Insurers are expected to innovate products, pricing, and partnerships to narrow this gap.**
- **Closing the gap is both a social responsibility and a strategic opportunity for the sector.**

Four major protection gaps

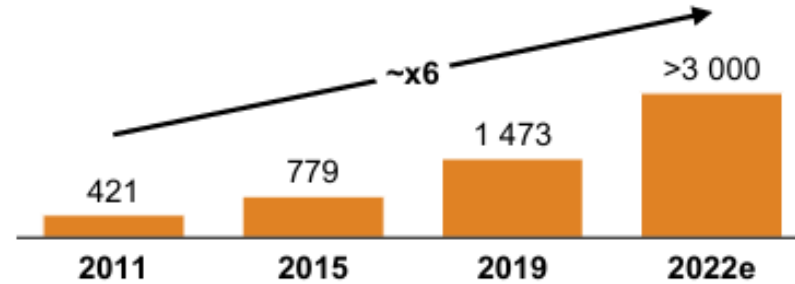
Pension

Expected life years after labour market exit (OECD countries)



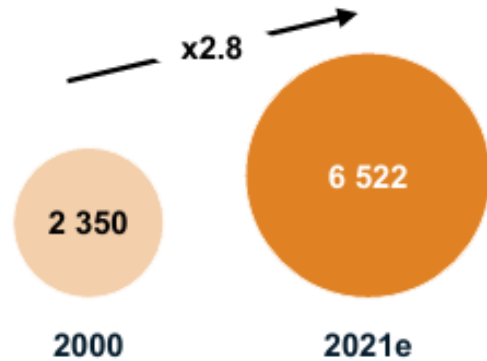
Cyber

Number of breaches with >50 000 files lost



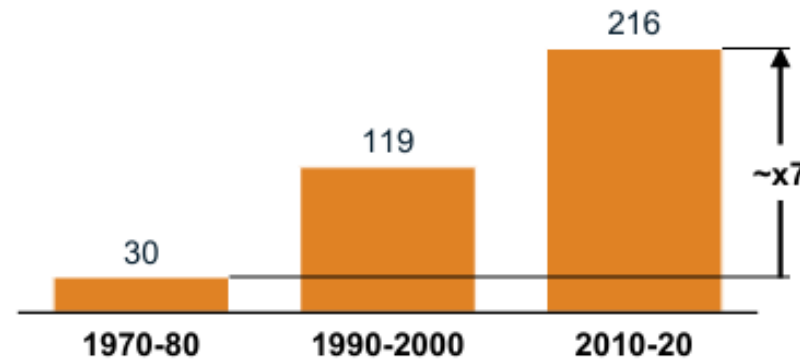
Health

Health spending¹ in OECD countries (US\$ per capita)



Natcat

Average annual natcat losses per decade² (US\$bn)



Insurers as Long-Term Institutional Investors

With long-duration liabilities and large investment portfolios, insurers are pivotal actors in sustainable finance.

- **Premiums accumulated over decades position insurers as major institutional investors.**
- **Integration of Environmental, Social, and Governance (ESG) factors strengthens long-term asset performance and risk management.**
- **Insurers are expected to channel capital into sustainable infrastructure, climate-resilient assets, and impact investments.**
- **ESG-aligned investment contributes to reducing environmental harm and enhancing societal resilience.**

Long-Term Engagement with Policyholders

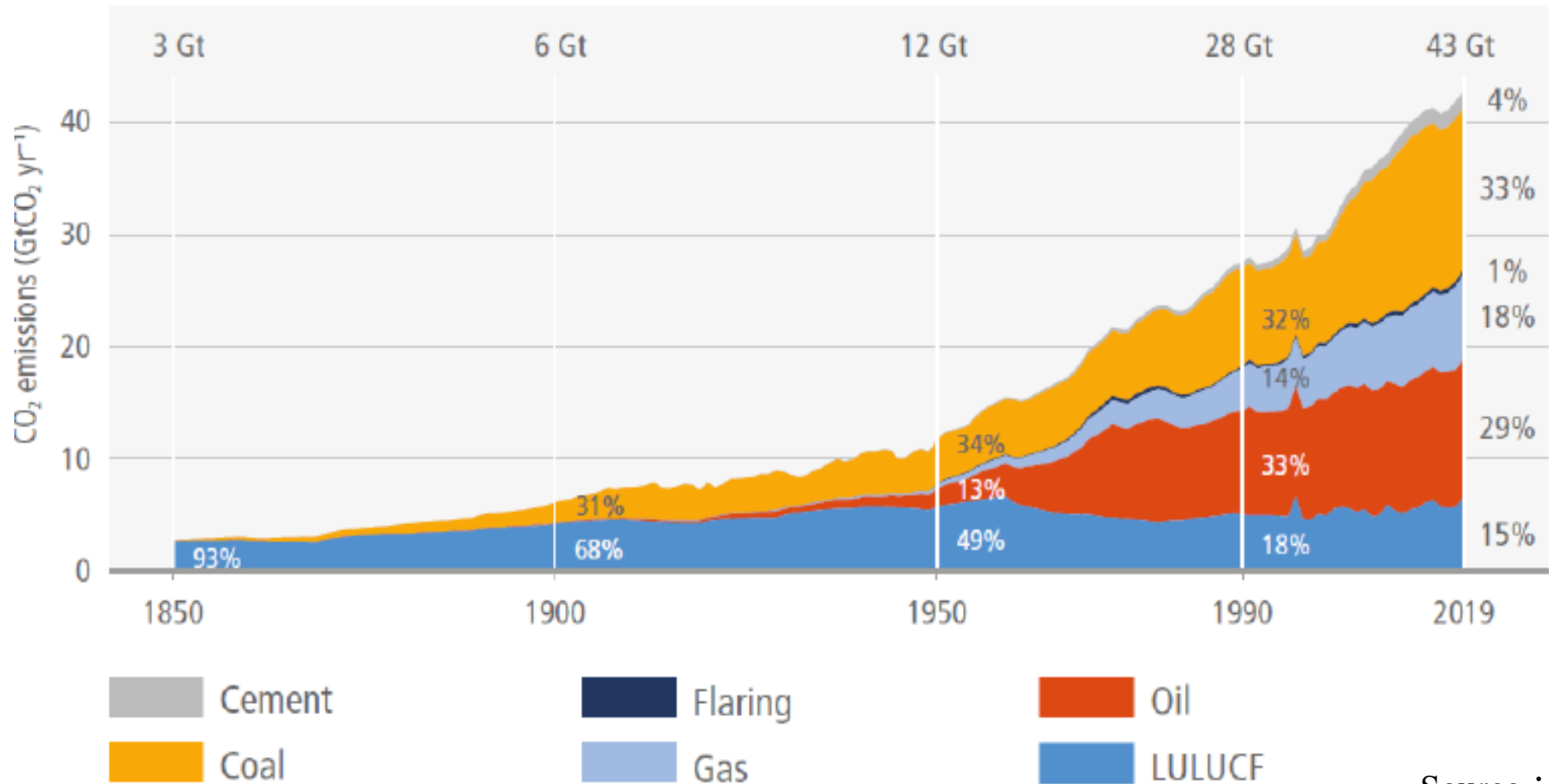
Insurance products create long-term relationships that shape people's lives, health, and financial security.

- Life and health insurance involve multi-decade commitments, influencing wellbeing across the life course.**
- Insurers interact with customers at critical moments—illness, accidents, ageing—giving them a unique social presence.**
- Sustainable practices strengthen trust, fairness, and long-term value creation.**
- Embedding sustainability enhances both customer outcomes and organisational legitimacy.**

3. Key environmental issues

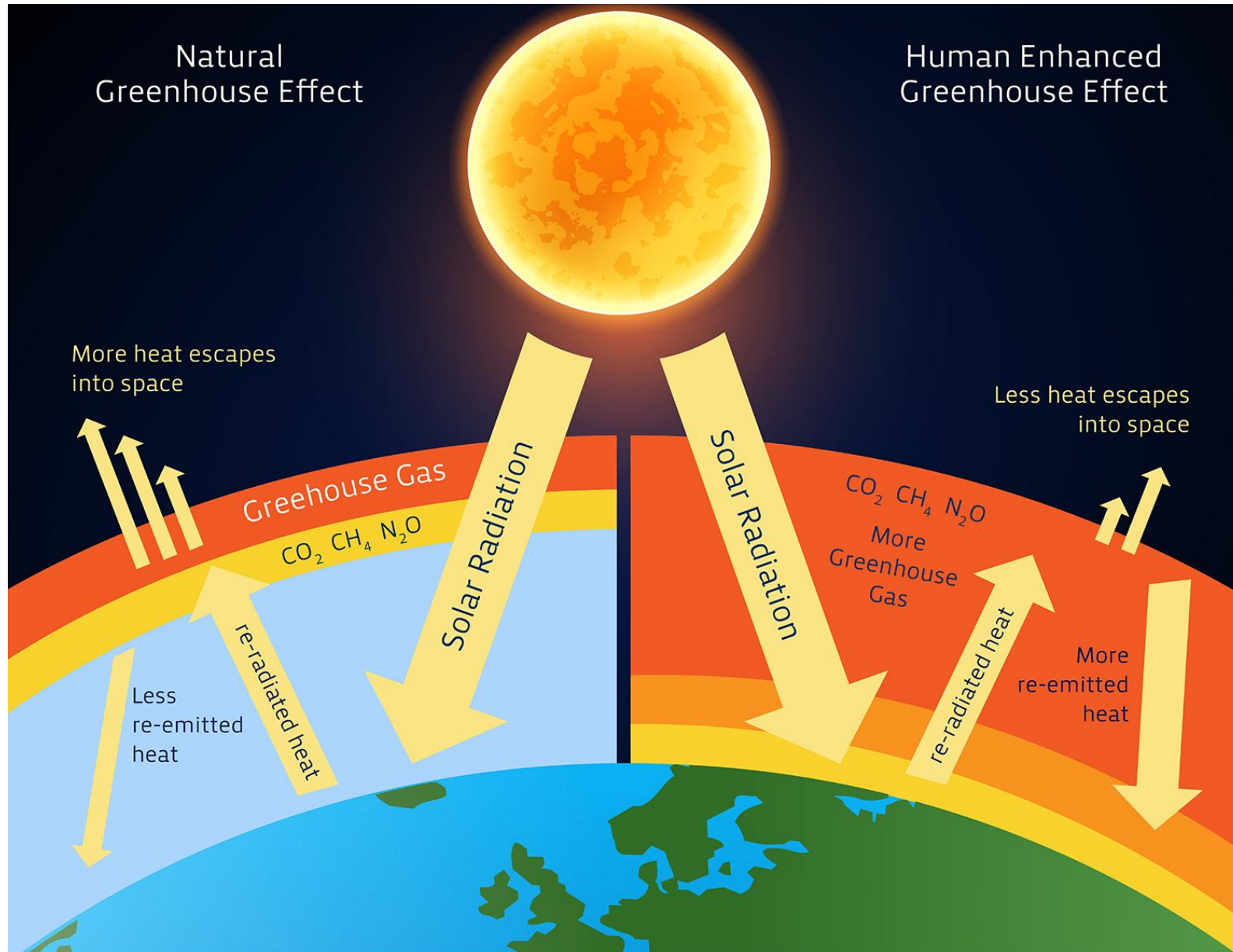
Cumulative CO₂ emissions

(a) Long term trend of anthropogenic CO₂ emissions sources



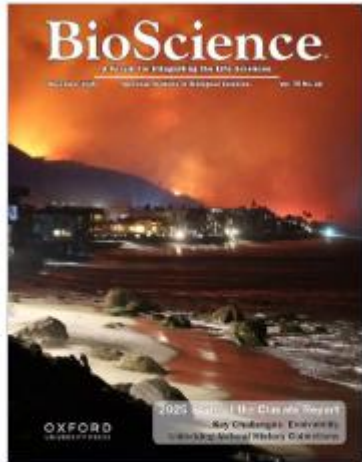
Source : AR6/WG3
chapter 2, Figure 2.7

Why Does CO₂ Warm the Earth?

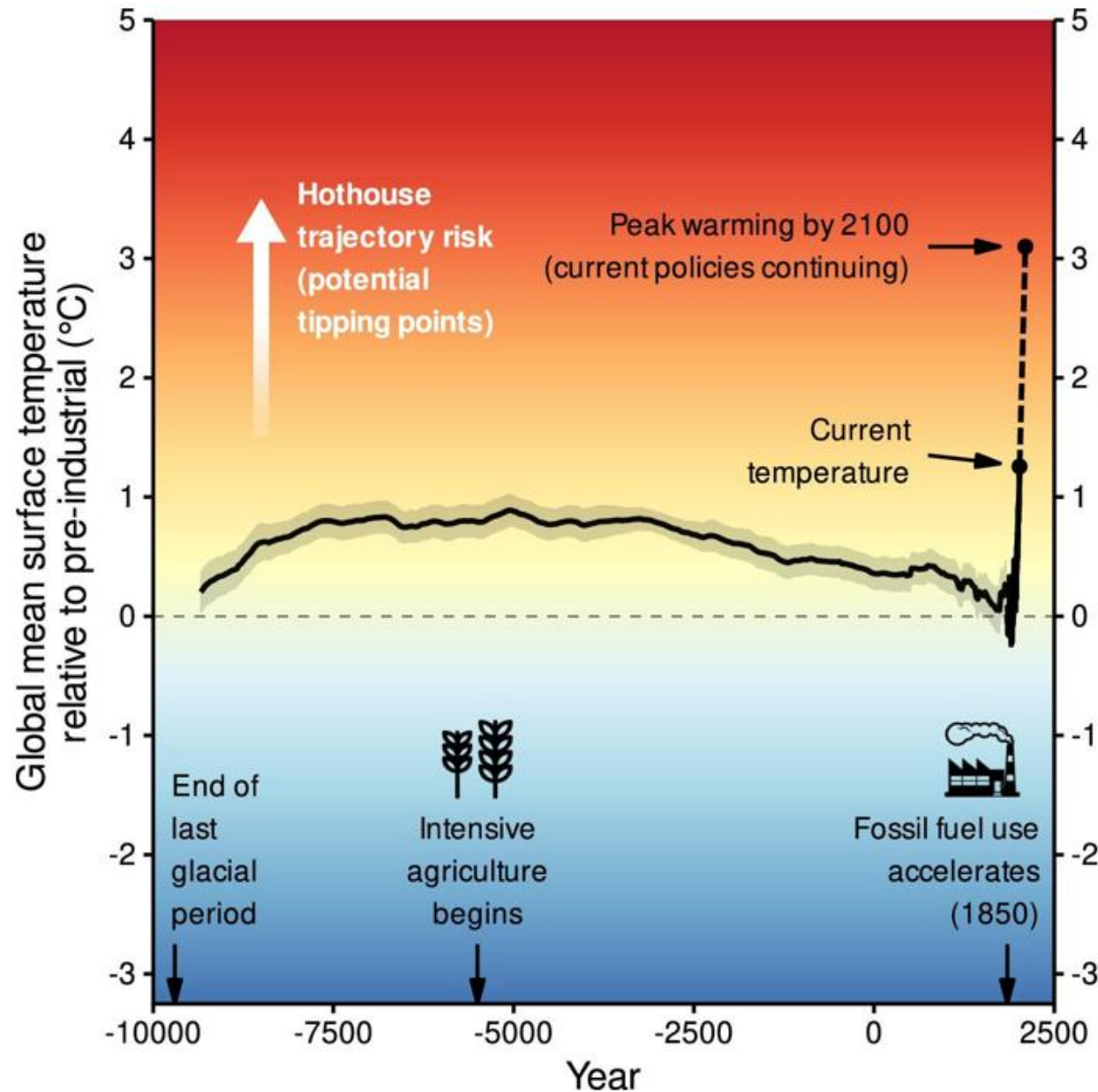


- 1 Sunlight warms the Earth**
- 2 Earth emits infrared radiation**
- 3 CO₂ and other greenhouse gases absorb and re-radiate heat**
- 4 Heat gets trapped, temperature rises**

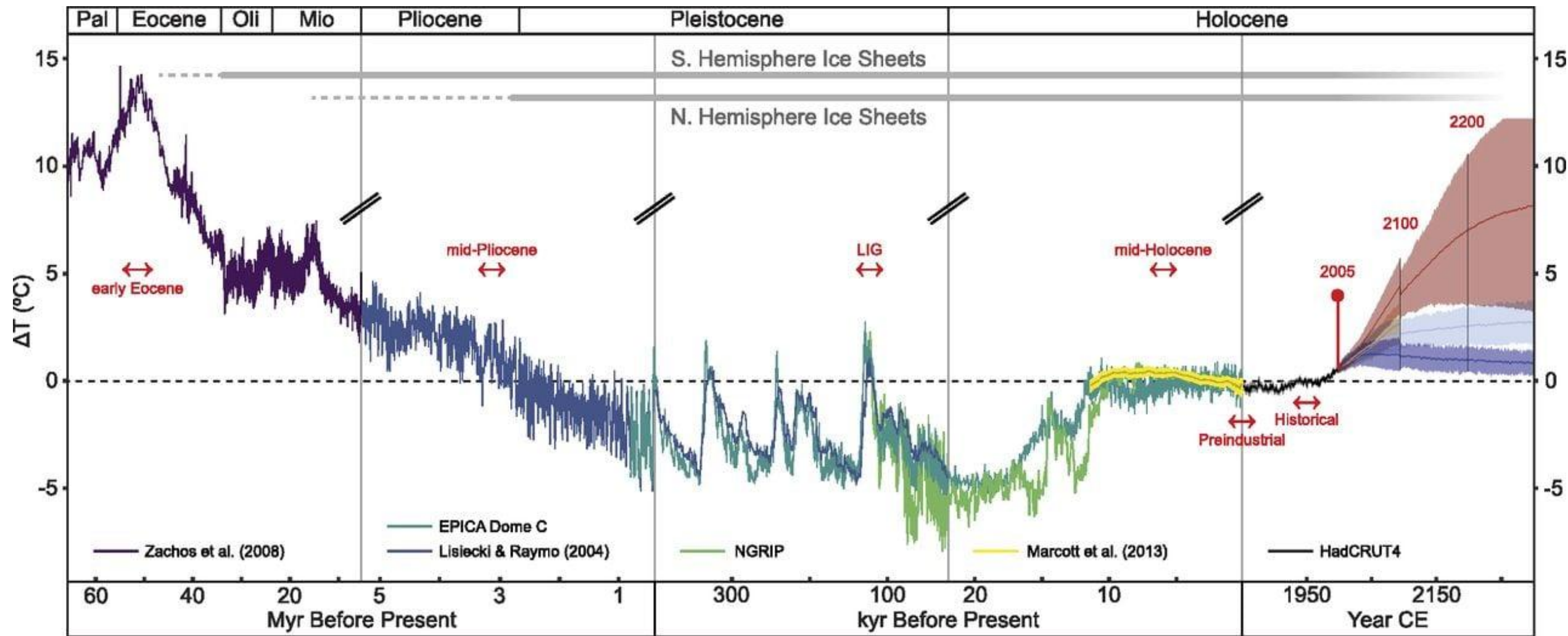
Approximate global average temperature from –9340 BCE to 2020 CE.



Volume 75, Issue 12
December 2025



Global land temperature



Crocodiles of the Ancient Arctic Wetlands

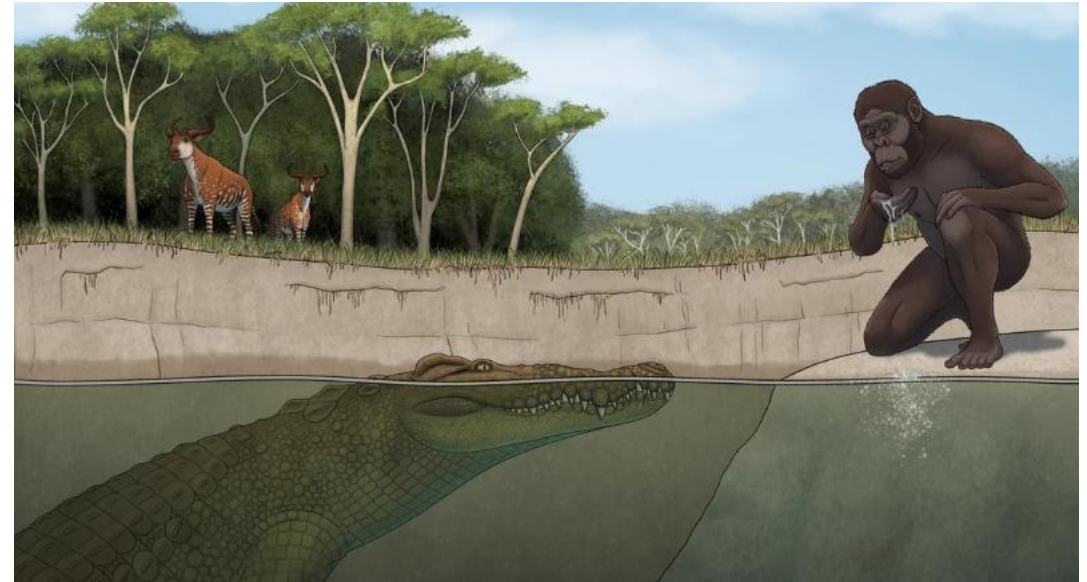
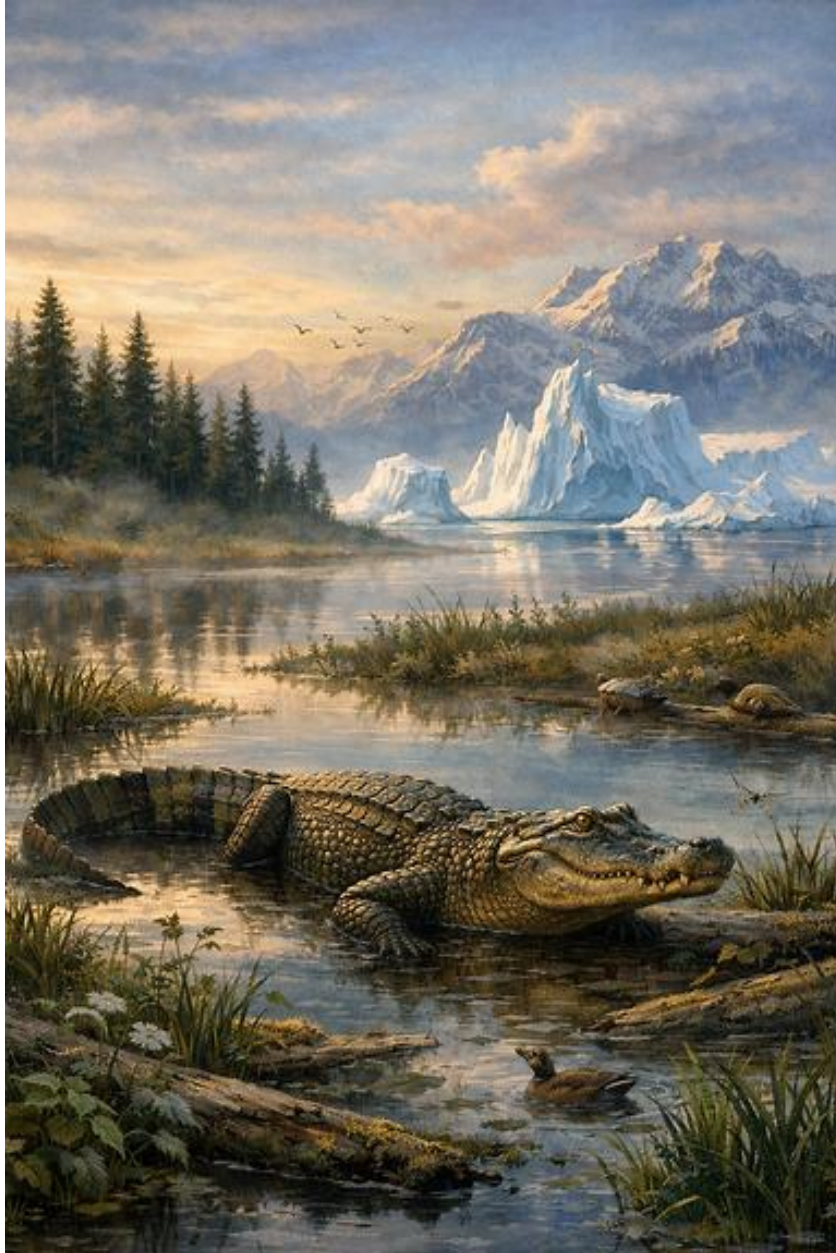
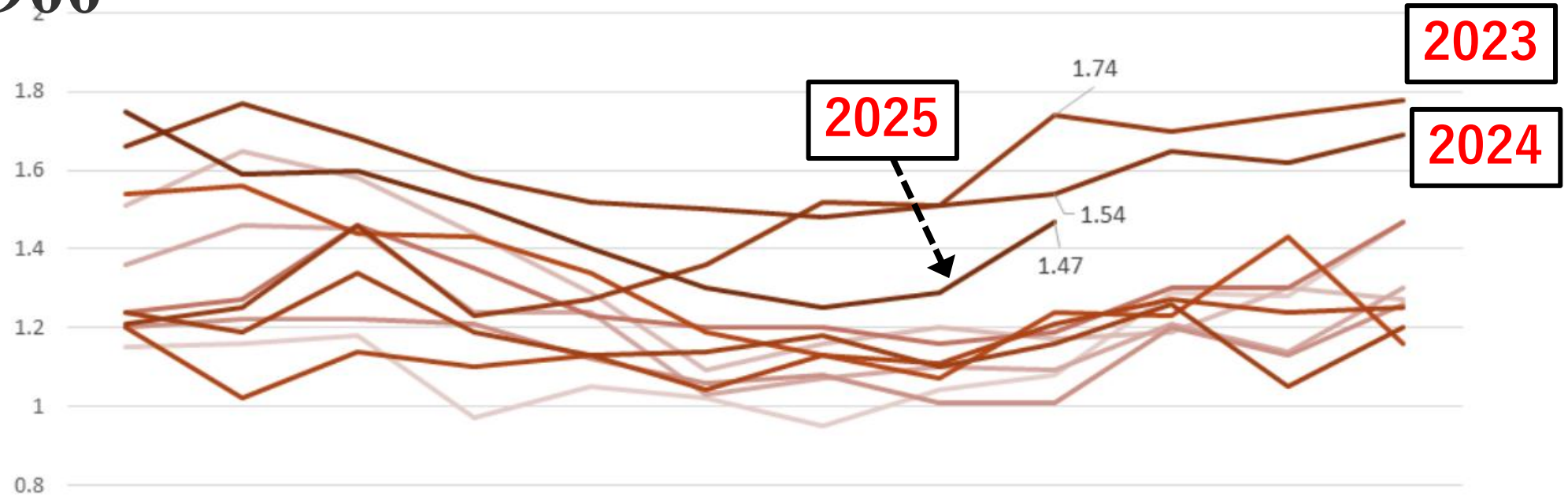


Illustration generated by Microsoft Copilot, an AI-based visual synthesis tool, for academic explanatory purposes.

Global Sea Surface temperature- Monthly anomaly relative to 1850-1900



September 2025 was the third warmest September on record globally, with an average surface air temperature of 16.11°C : 1.47°C above the estimated pre-industrial baseline (1850–1900)



What is IPCC?

[REPORTS](#)[SYNTHESIS REPORT](#)[WORKING GROUPS](#)[ACTIVITIES](#)[NEWS](#)[CALENDAR](#)[FOLLOW](#)[SHARE](#)

About the IPCC

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

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GROUPS](#)[FUTURE WORK](#)[SCHOLARSHIP](#)[ENGAGE](#)[CONTACT](#)

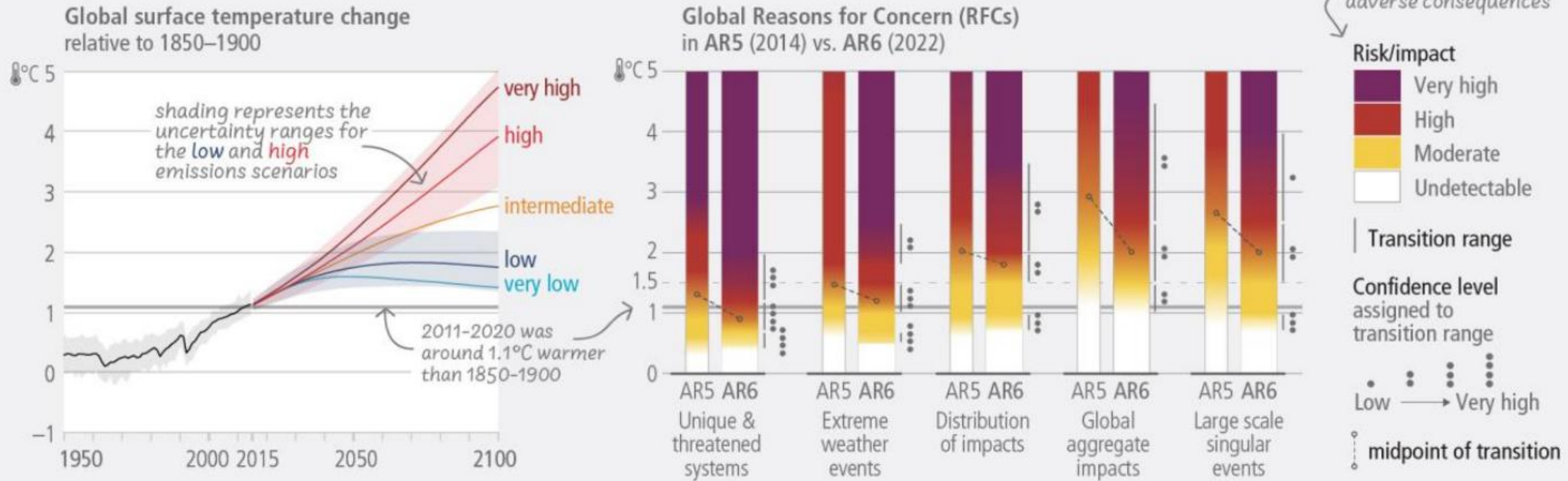
“It is **unequivocal** that human influence has warmed the atmosphere, ocean and land” (AR6)

<https://www.ipcc.ch/>

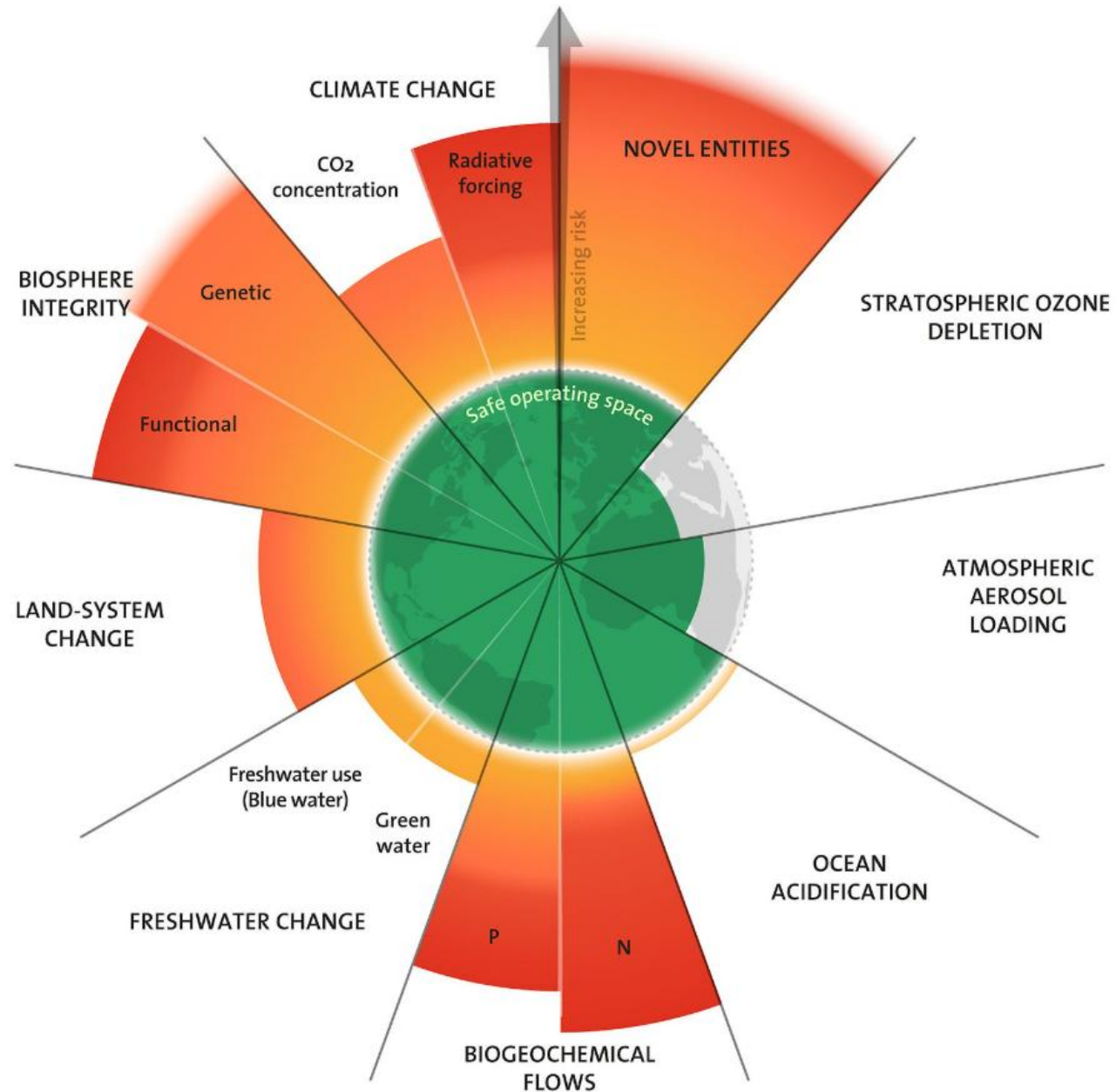
IPCC 6th Assessment Report (AR6)

Risks are increasing with every increment of warming

a) High risks are now assessed to occur at lower global warming levels

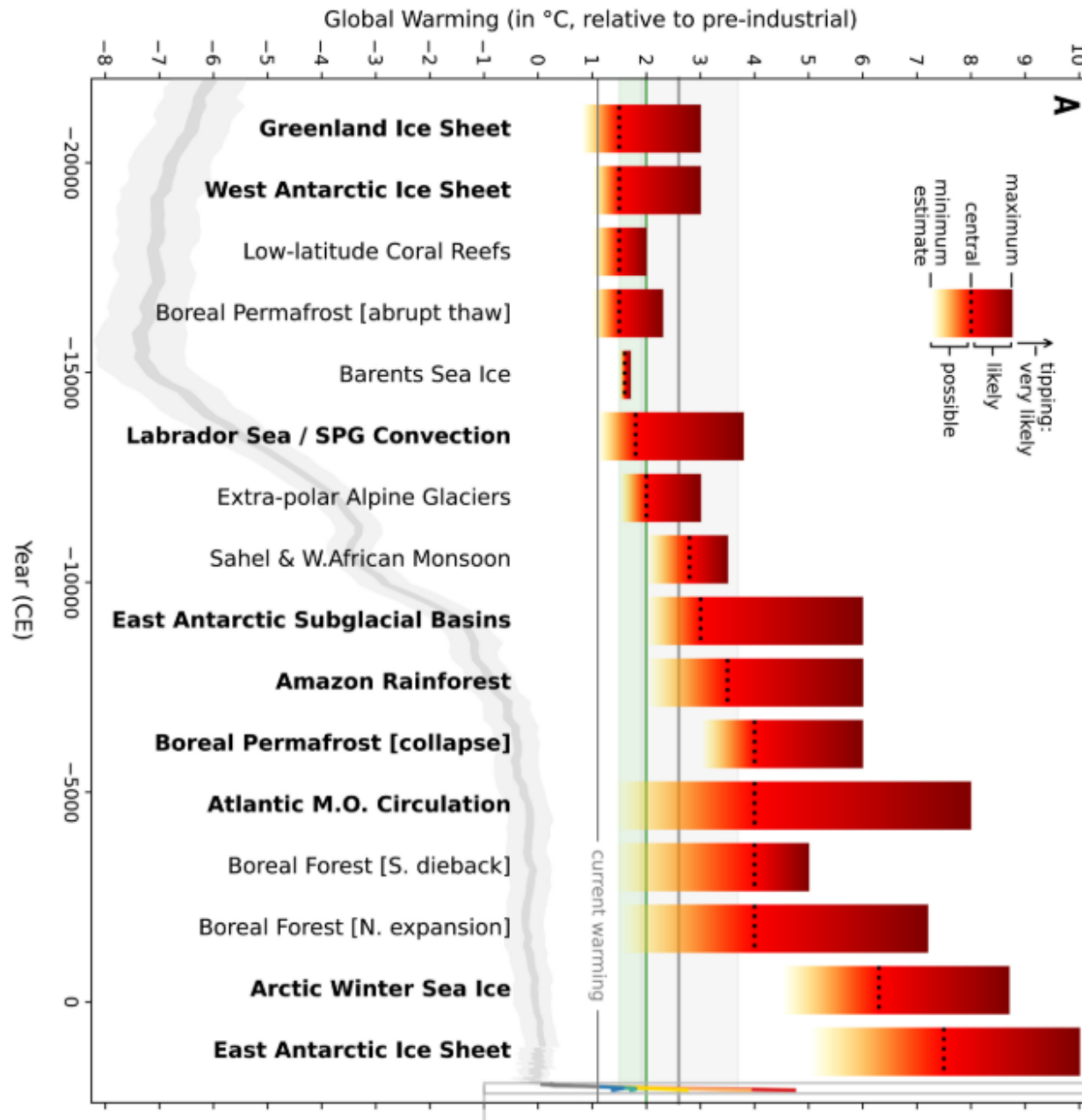


Planetary Boundaries



Johan Rockström

Tipping Point



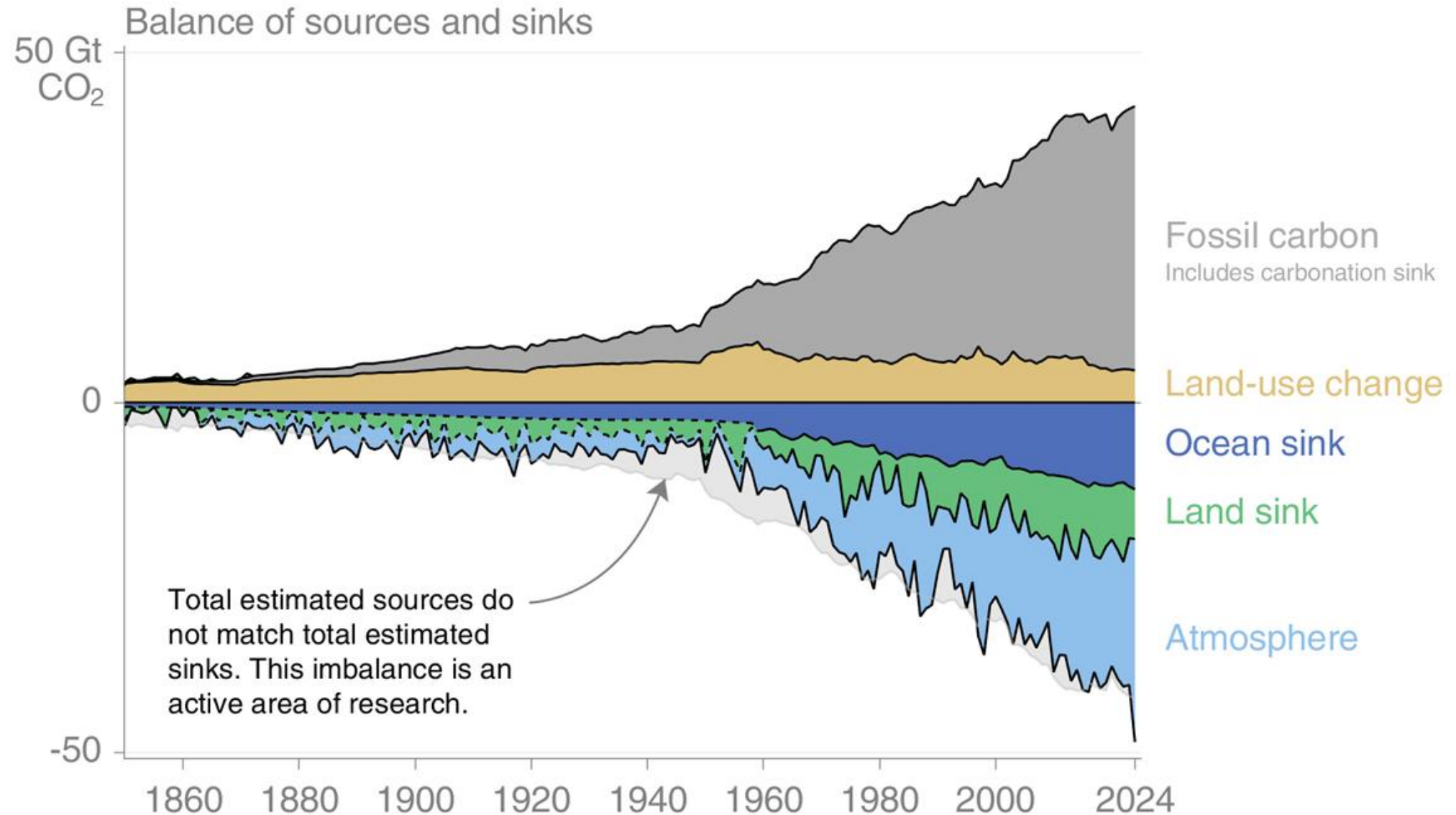
<https://svs.gsfc.nasa.gov/31156/>
https://svs.gsfc.nasa.gov/31158?utm_source=copilot.com

(Reference) NSIDC (National Snow and Ice Data Center) website

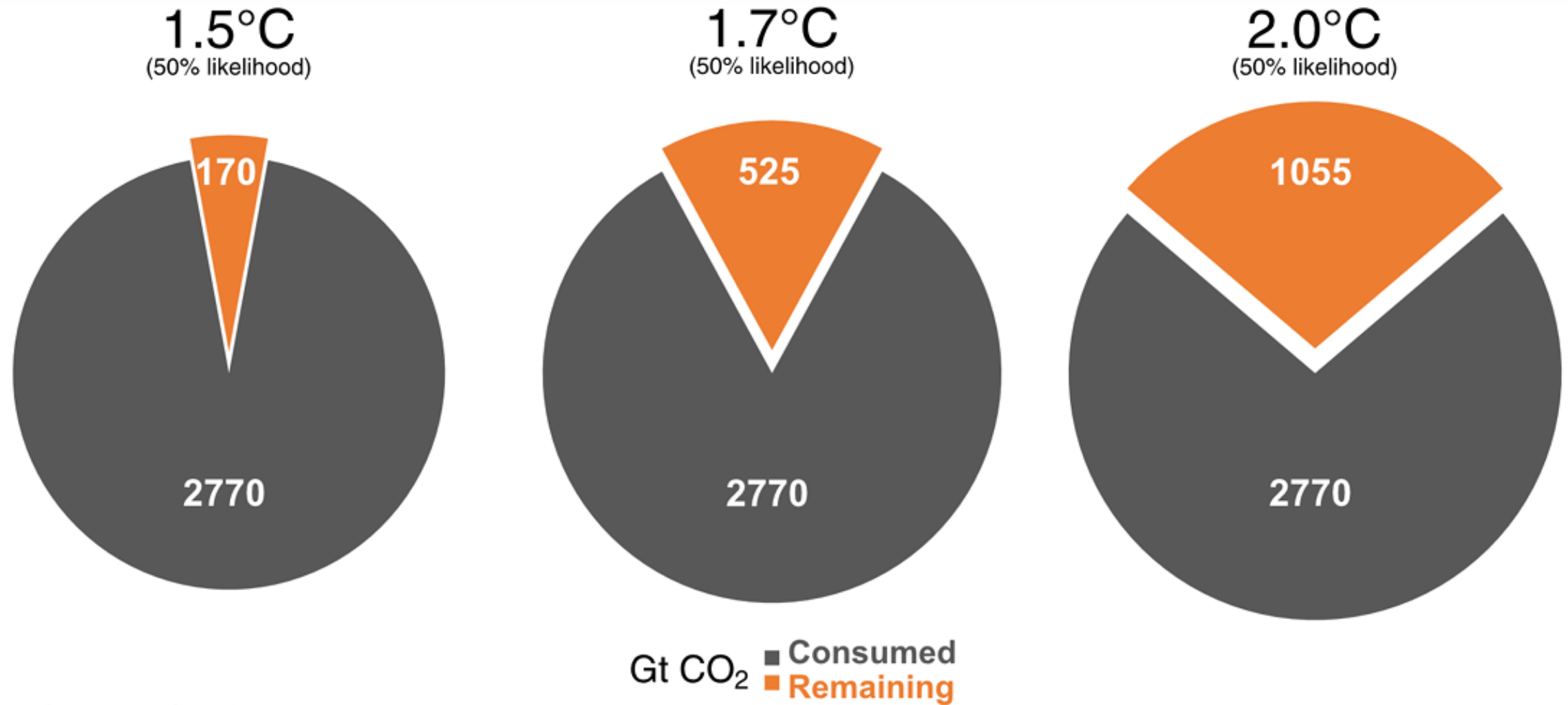
<https://science.nasa.gov/earth/explore/earth-indicators/arctic-sea-ice-minimum-extent/>

(Reference) Exceeding 1.5° global warming could trigger multiple climate tipping points (2022) David I. Armstrong McKay

Global Carbon Sink

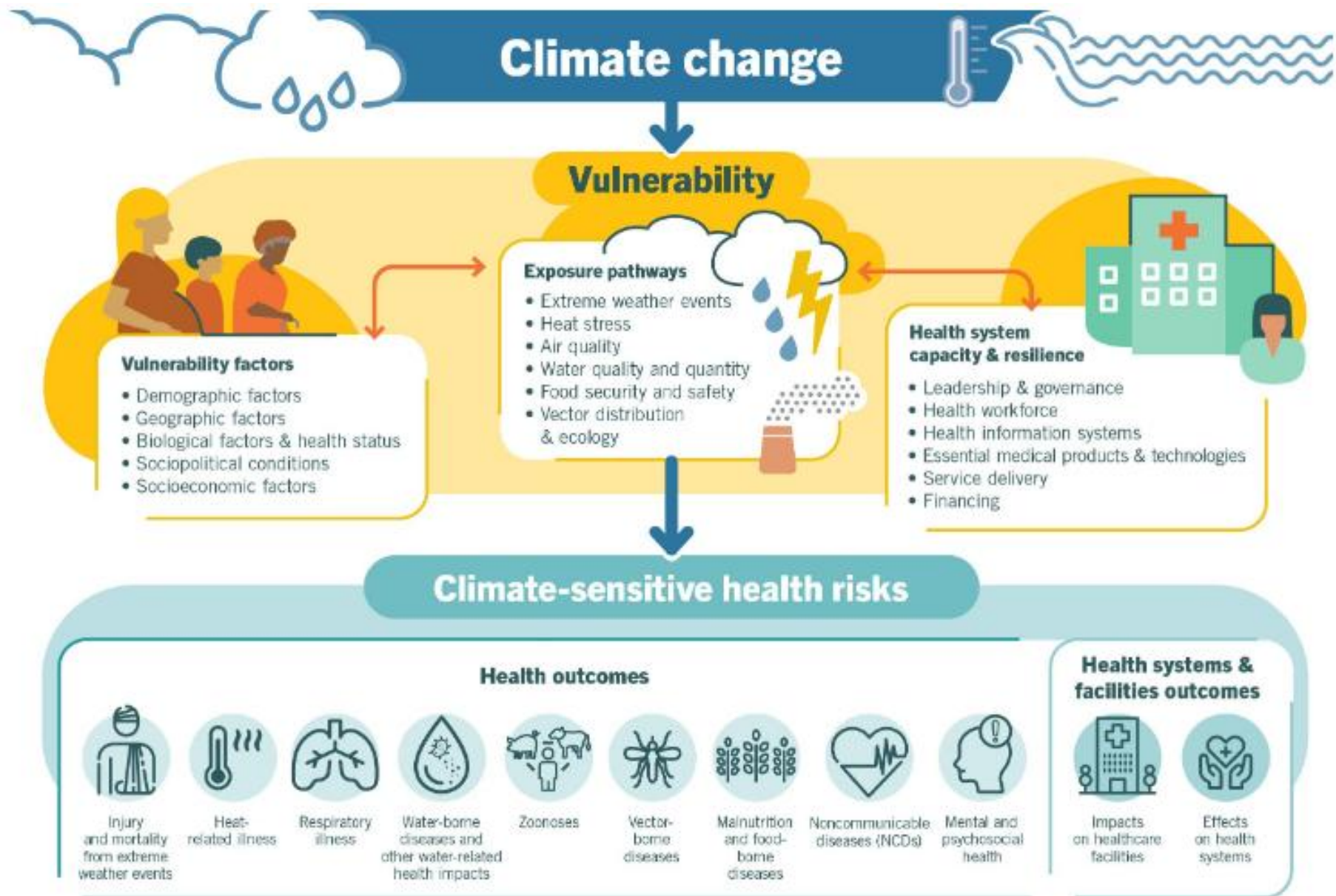


Remaining Carbon Budget



4. Sustainability in Ageing Society

Climate Change as a Health Risk



Why Older People Are Most Vulnerable

Ageing and Climate Vulnerability

- Reduced heat regulation capacity
- Higher prevalence of chronic diseases
- Limited mobility and access to care
- Greater risk of social isolation

Major Health Risks for the Elderly

- Heatstroke and excess mortality
- Cardiovascular and respiratory deterioration
- Water-borne diseases after floods
- Vector-borne diseases (e.g. dengue — potentially fatal)
- Malnutrition from food disruption
- Mental health decline
- Heat-related mortality among those aged 65+ has increased significantly in recent decades

Key Insight

Ageing amplifies climate risk into life threatening systemic risk

Findings from the PSI publications

Publication	Vulnerability of Older Persons	Expected Response of Insurers
Closing the protection gap in Canada	Climate change disproportionately affects low-income households, seniors, and Indigenous peoples due to greater vulnerability and lower adaptive capacity.	Insurers should make insurance more accessible and affordable for vulnerable populations and work with communities on adaptation measures.
Guiding Principles on Business and Human Rights	The Guiding Principles require special attention to vulnerable or marginalized groups.	Insurance companies should identify, prevent, and address adverse impacts on vulnerable groups.
Just Transition Finance: Case Studies from Banking and Insurance	Older people should be included in a just transition and not left behind.	Financial institutions and insurers should provide inclusive solutions that benefit vulnerable groups, including older people .

Global Insurance Framework: PSI



Ban Ki-moon

Secretary-General of the United Nations



Principles for Sustainable Insurance (PSI)

Environment

Society

Governance

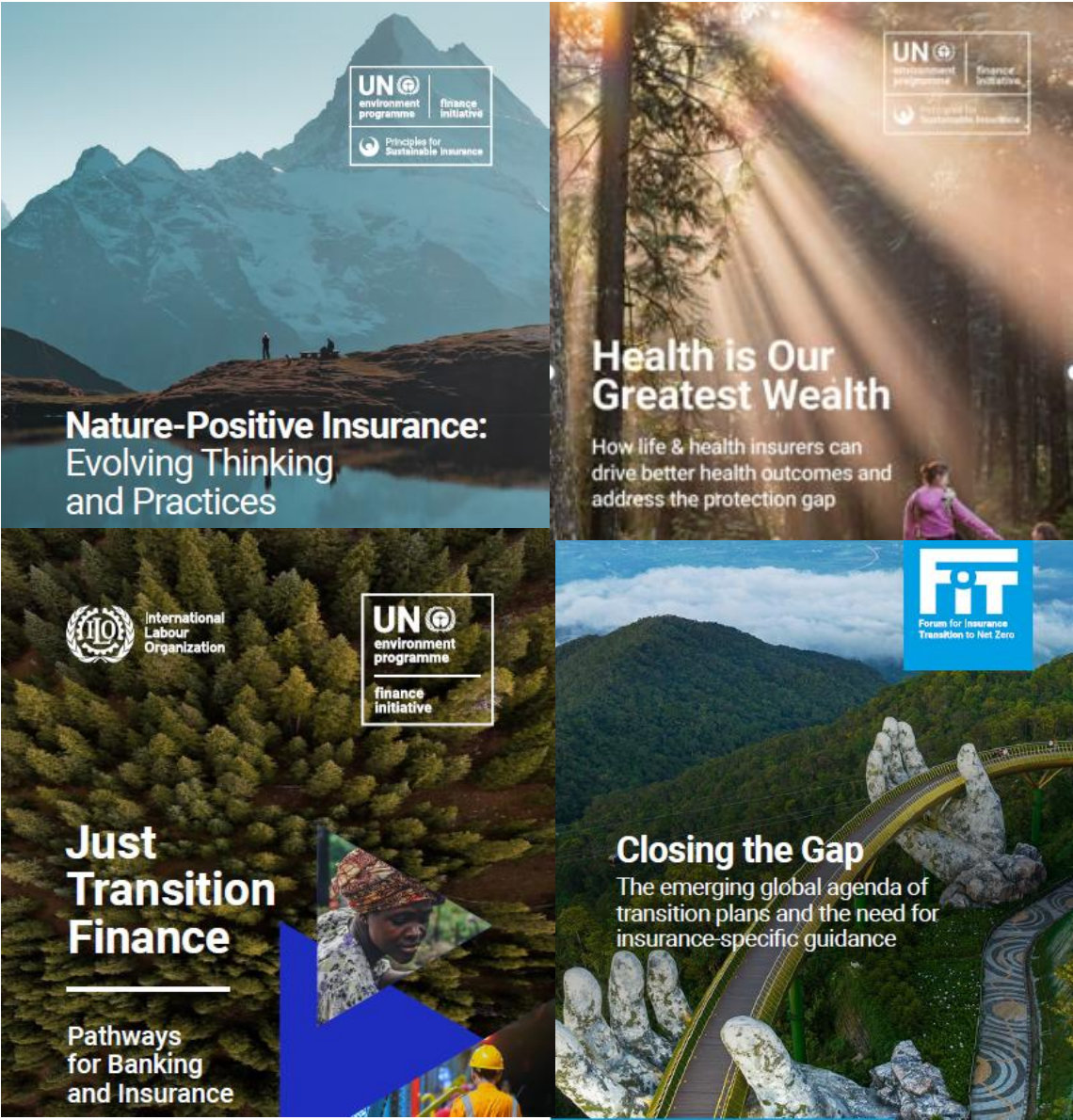
Principle 1 ESG based decision making

Principle 2 Raise awareness of ESG

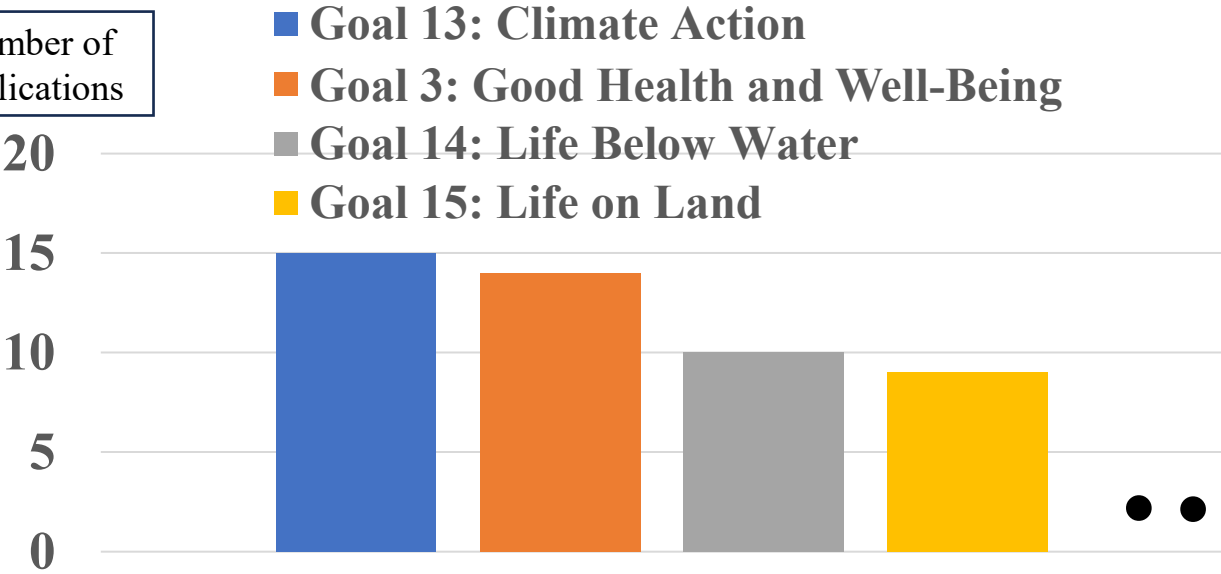
Principle 3 Work together with Stakeholders

Principle 4 Accountability and Transparency

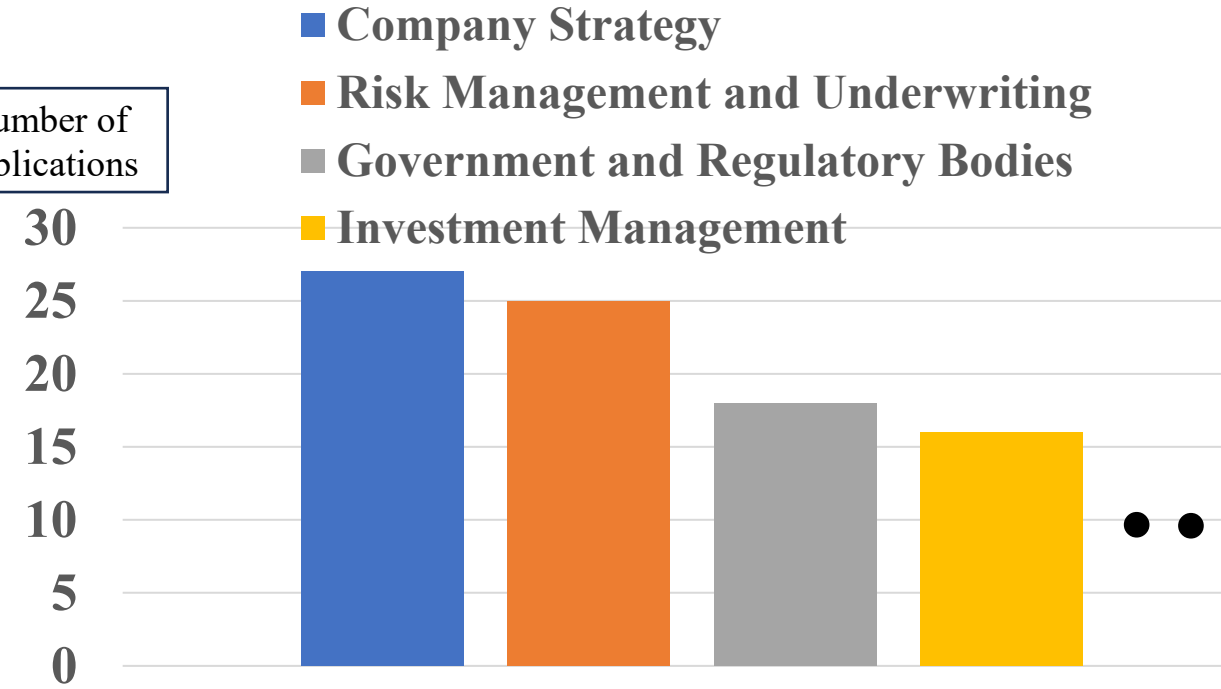
28 PSI publications



Number of publications



Number of publications



(Source) <https://www.unepfi.org/category/publications/>

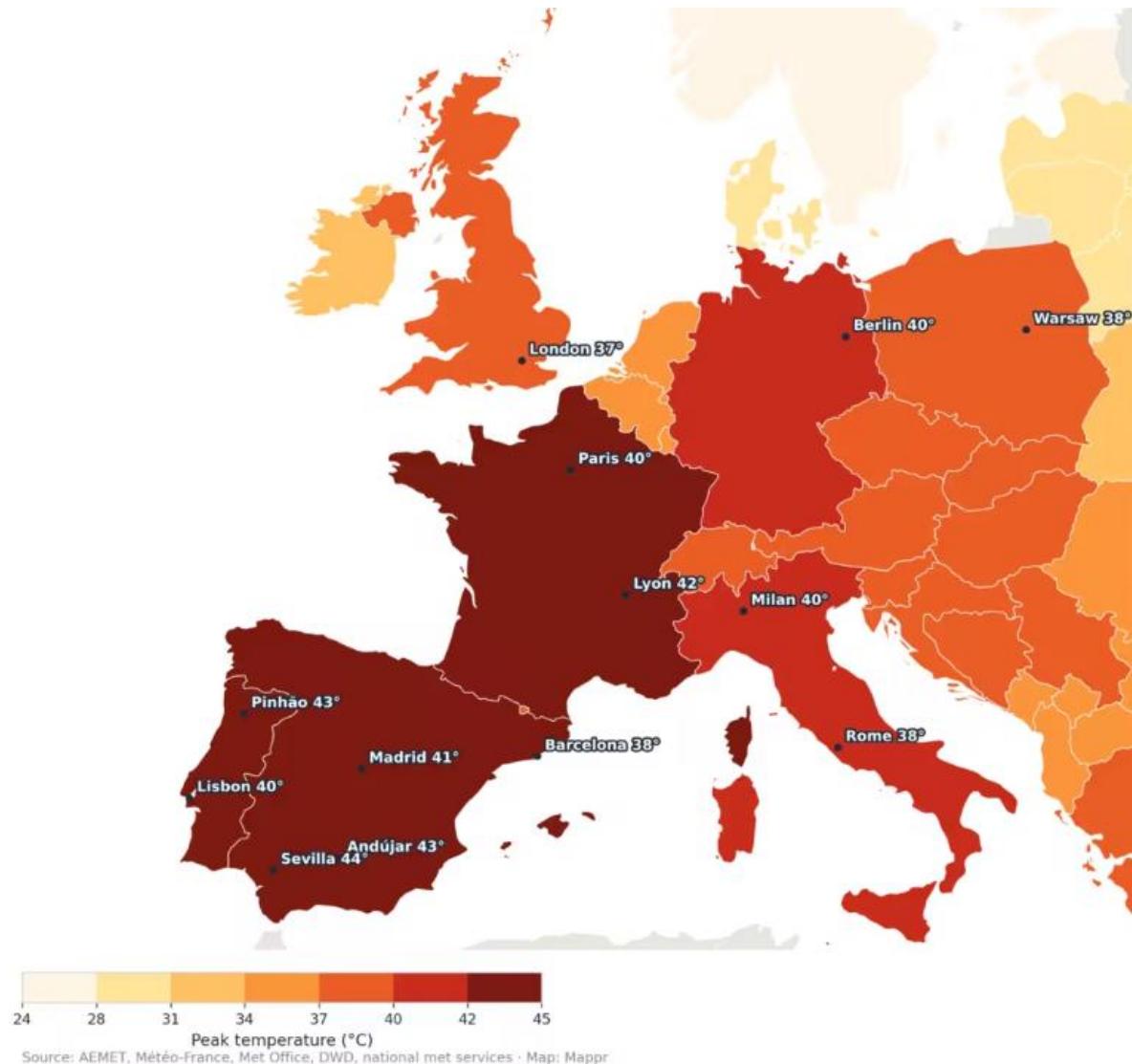
Climate Change Impacts on Older Adults — Key Indicators from the Lancet Countdown

Indicator	Title	Impact on Older Adults
1.1.2	Heatwave Exposure: Older Adults	Rapidly increasing exposure of people aged 65+ to extreme heat events. Demonstrates that older adults are the most affected group during heatwaves.
1.1.3	Heat-Related Mortality	Mortality rises sharply among older adults during heatwaves due to reduced thermoregulation and interactions with chronic diseases.
1.1.4	Wildfire Exposure	Smoke exposure worsens respiratory diseases (COPD, asthma), which are more common among older adults.
1.1.5	Vulnerability to Extreme Heat	Country-level vulnerability index showing older adults as the most heat-sensitive population due to physiological and health-related factors.
1.3.x	Climate-Sensitive Infectious Diseases	Older adults face higher severity and mortality during outbreaks (e.g., COVID-19), reinforcing their classification as a highly vulnerable group.

(1.1.2) Heatwave Exposure and Mortality Risk in Older Adults

Topic	Population / Scope	Key Finding
Heat-related mortality in older adults	Global heat-related mortality and heatwave impacts	Heat-related mortality among people aged over 65 increased by approximately 85% between 2000–2004 and 2017–2021 .
Global burden of heat-related deaths	Global estimates, 2000–2019	Studies show approximately 489,000 heat-related deaths occur each year , with 45% in Asia and 36% in Europe .
Recent European heatwave mortality	Europe, summer 2022	An estimated 61,672 heat-related excess deaths occurred in Europe in summer 2022.

(1.1.2) Heatwave Exposure in Europe (since 21st until the end of June, 2026)



WHO Director-General Tedros Adhanom Ghebreyesus has now put the toll at **more than 1,300 excess deaths** across Europe since 21st until the end of June, 2026. **Germany hit 41.7°C** at Coschen on 28 June, its hottest day on record for a third day running, while **Poland** reached an all-time high of **40.5°C** at Słubice and the **Czech Republic** logged **41.1°C** at Doksany.

(1.1.4) Wildfire Exposure

1. American Journal of Respiratory and Critical Care Medicine (2025)

“Impact of Wildfire Smoke on COPD and Asthma Exacerbation Prevalence and Lung Function” (COPD=Chronic Obstructive Pulmonary Disease)

2. Environment International (2025, Elsevier)

“Long-term exposure to smoke PM_{2.5} and COPD-caused mortality for elderly people”

3. Respiratory Care (SAGE, 2026)

“Effects of Wildfire Smoke Inhalation on Respiratory Health”

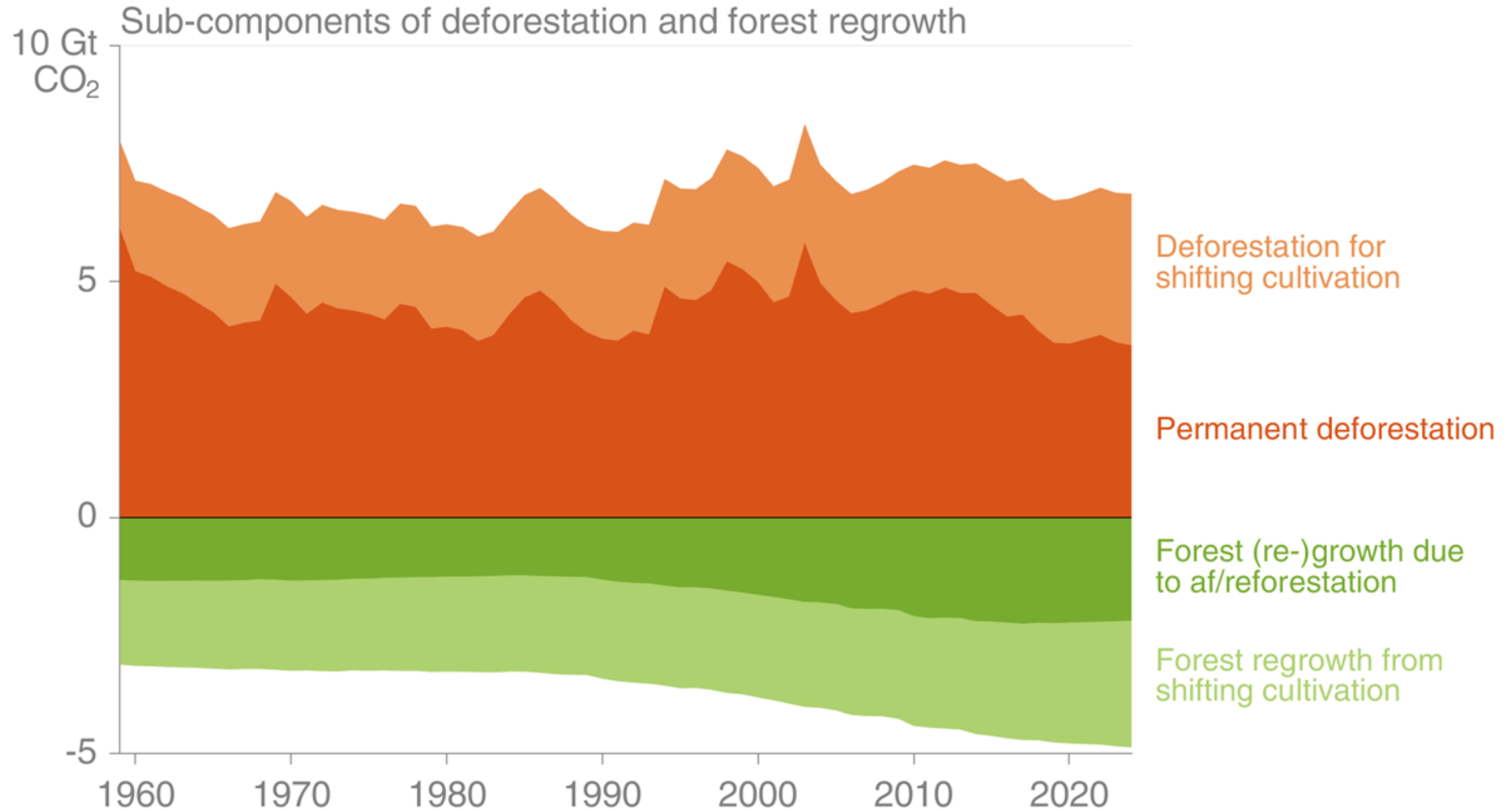
(1.1.4) Wildfire Exposure

Top 3 Largest Wildfires in 2026 as of 6th July 2026

Rank	Location / Country	Burned Area (Estimated)	Fatalities (Estimated)	Key Characteristics
1	British Columbia, Canada	≈ 480,000 ha burned	≈ 19 deaths	One of the largest fire seasons in Canadian history; massive smoke plumes affecting US cities; multiple communities evacuated.
2	Attica & Evia, Greece	≈ 52,000 ha burned	≈ 7 deaths	Extreme heatwave + strong winds; destruction of homes and forests; major EU civil protection deployment.
3	Catalonia, Spain	≈ 31,000 ha burned	≈ 3 deaths	Rapid spread due to 45° C heatwave; extensive agricultural and forest loss; thousands evacuated.

(Source) Copernicus EMS, NASA FIRMS, and national wildfire agencies (BC Wildfire Service, Greek Fire Service, Bombers de Catalunya)

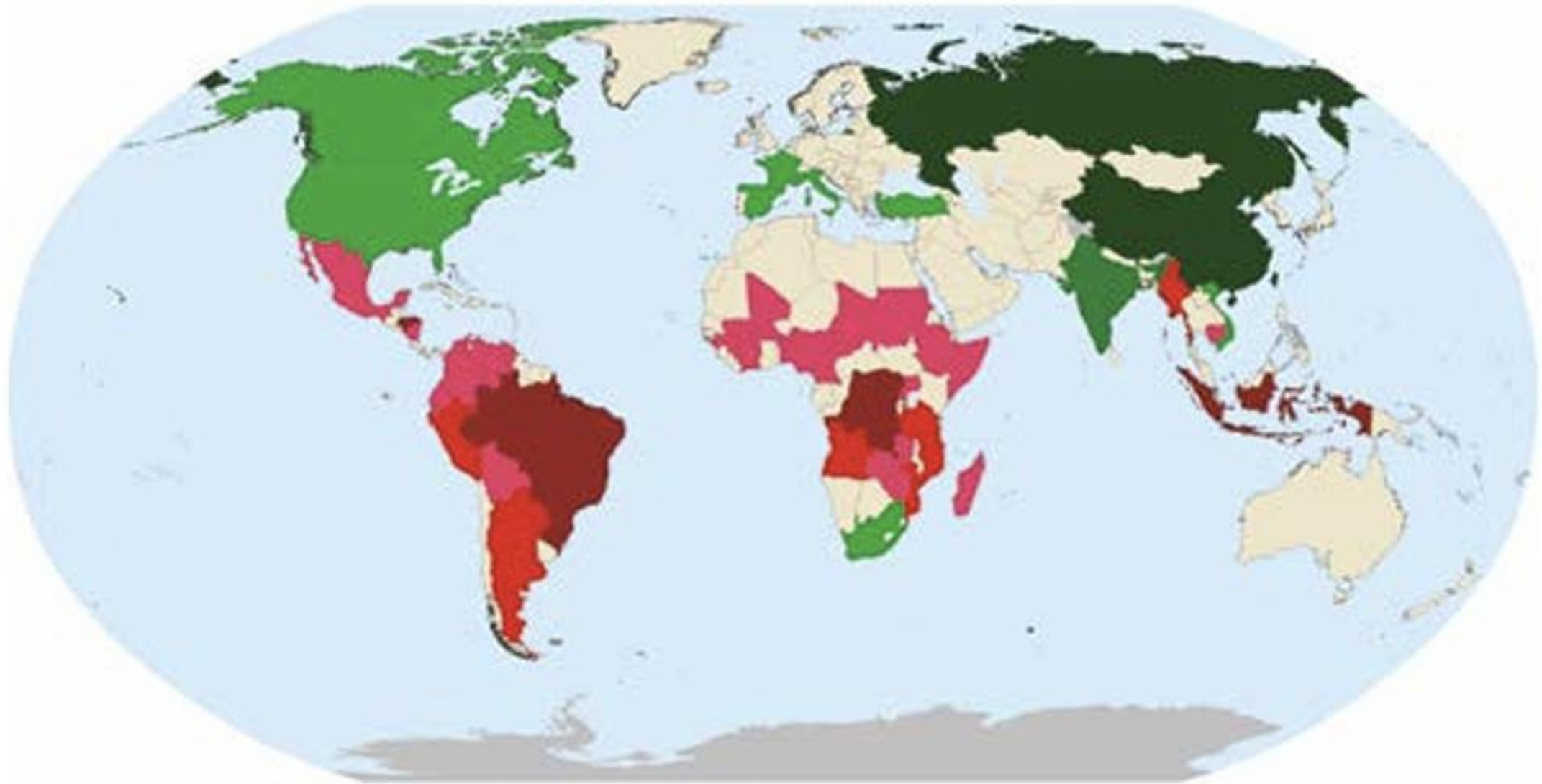
Forest expansion and deforestation



© Global Carbon Project

(Source) <https://globalcarbonbudget.org/gcb-2025/>

Annual forest area net change, by country, 1990–2025

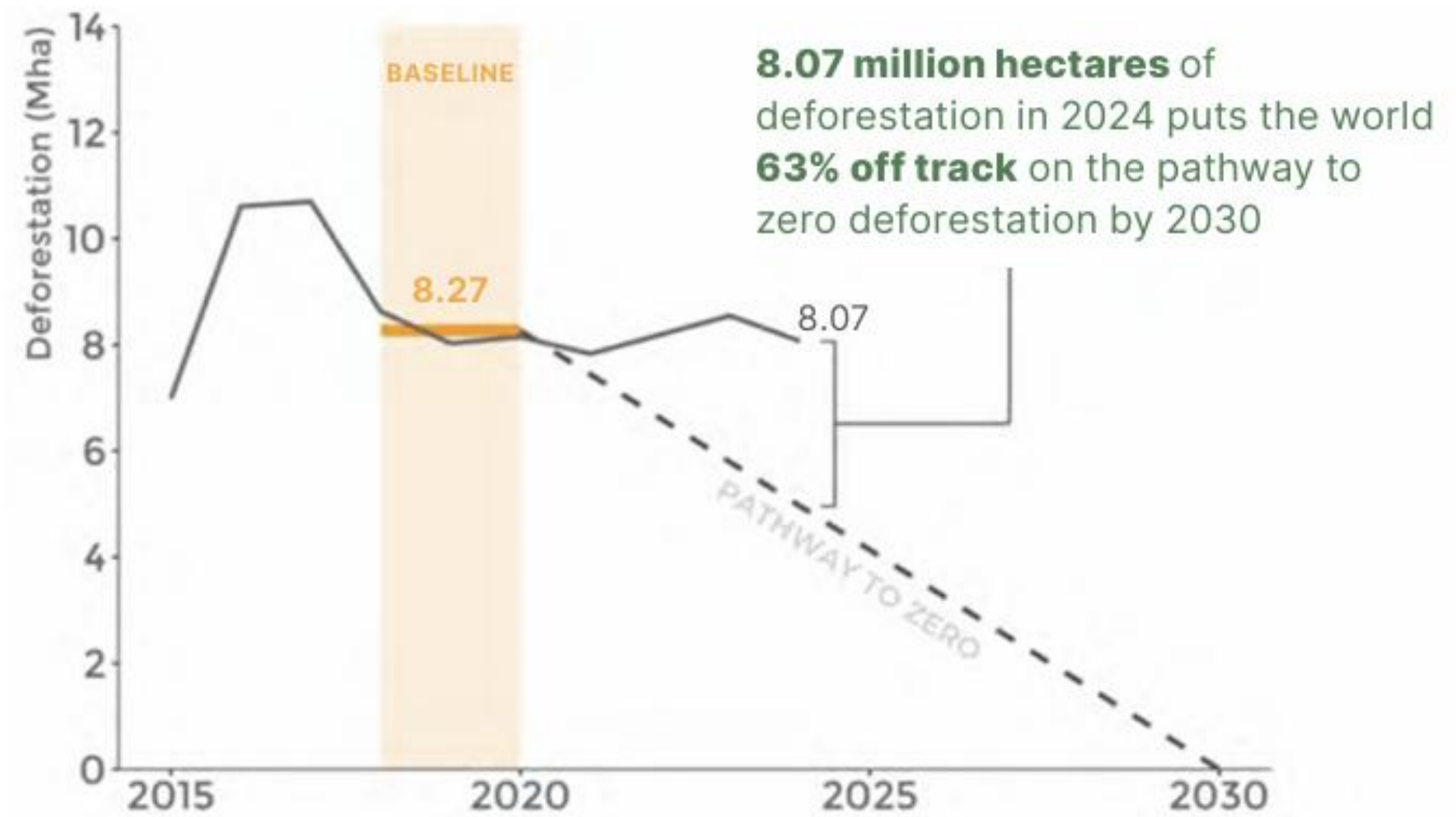


1 000 ha/year

Net gain: >501 251–500 51–250 Small changes: >±50 Net loss: >–501 251–500 51–250 No data

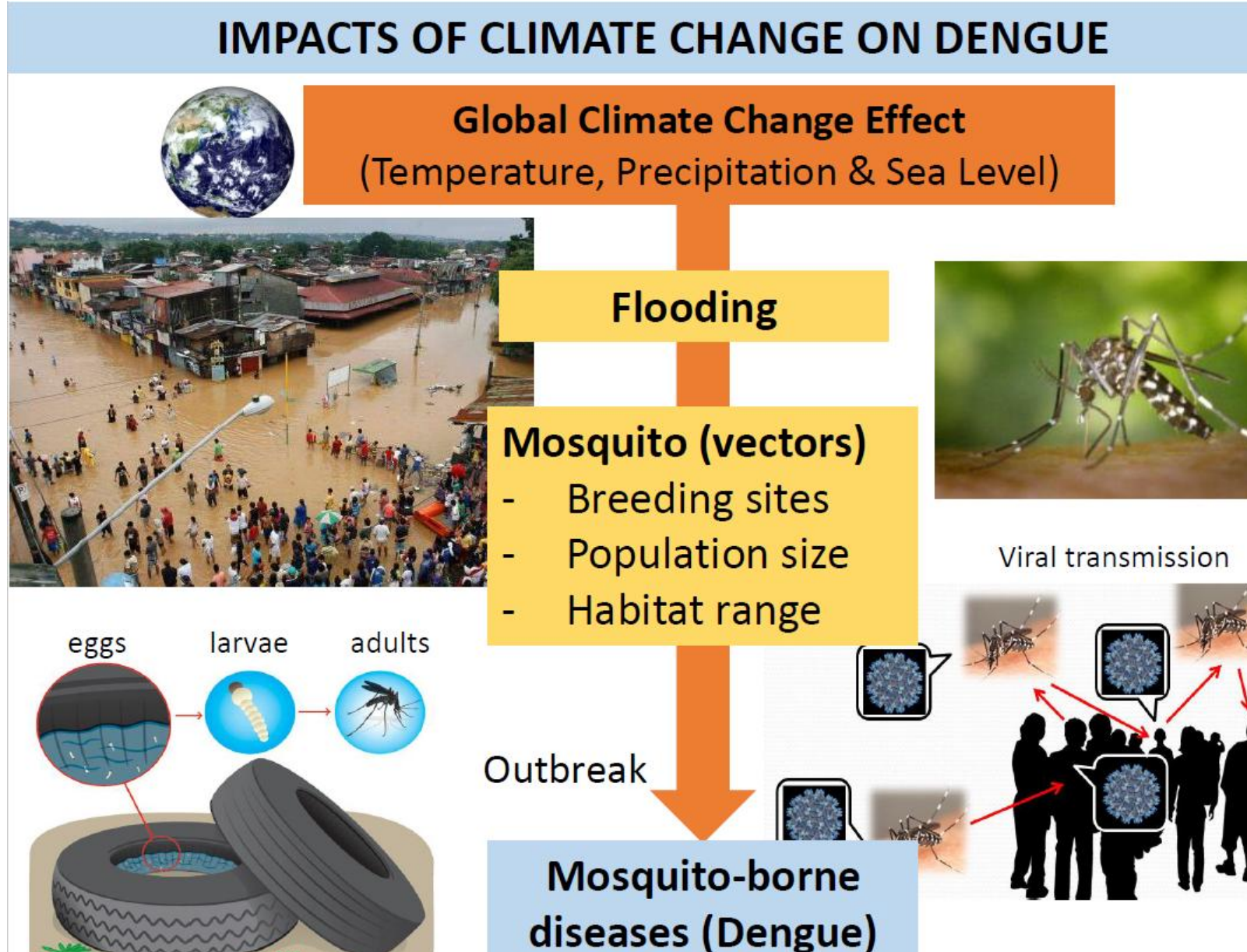
(Source) Food and Agriculture Organization of the United Nations, Global Forest Resources Assessment 2025

Global deforestation from 2015-24, in million hectares (Mha)



(Source) THE FOREST DECLARATION ASSESSMENT 2025, Own analysis using tree cover loss data (Hansen et al. 2013, updated through 2024) and drivers of tree cover loss (Sims et al. 2025, updated through 2024)

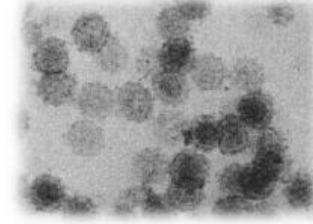
(1.3.x) Infectious Disease Climate Change impact on Dengue



Dengue fever at a glance

WHAT IS DENGUE?

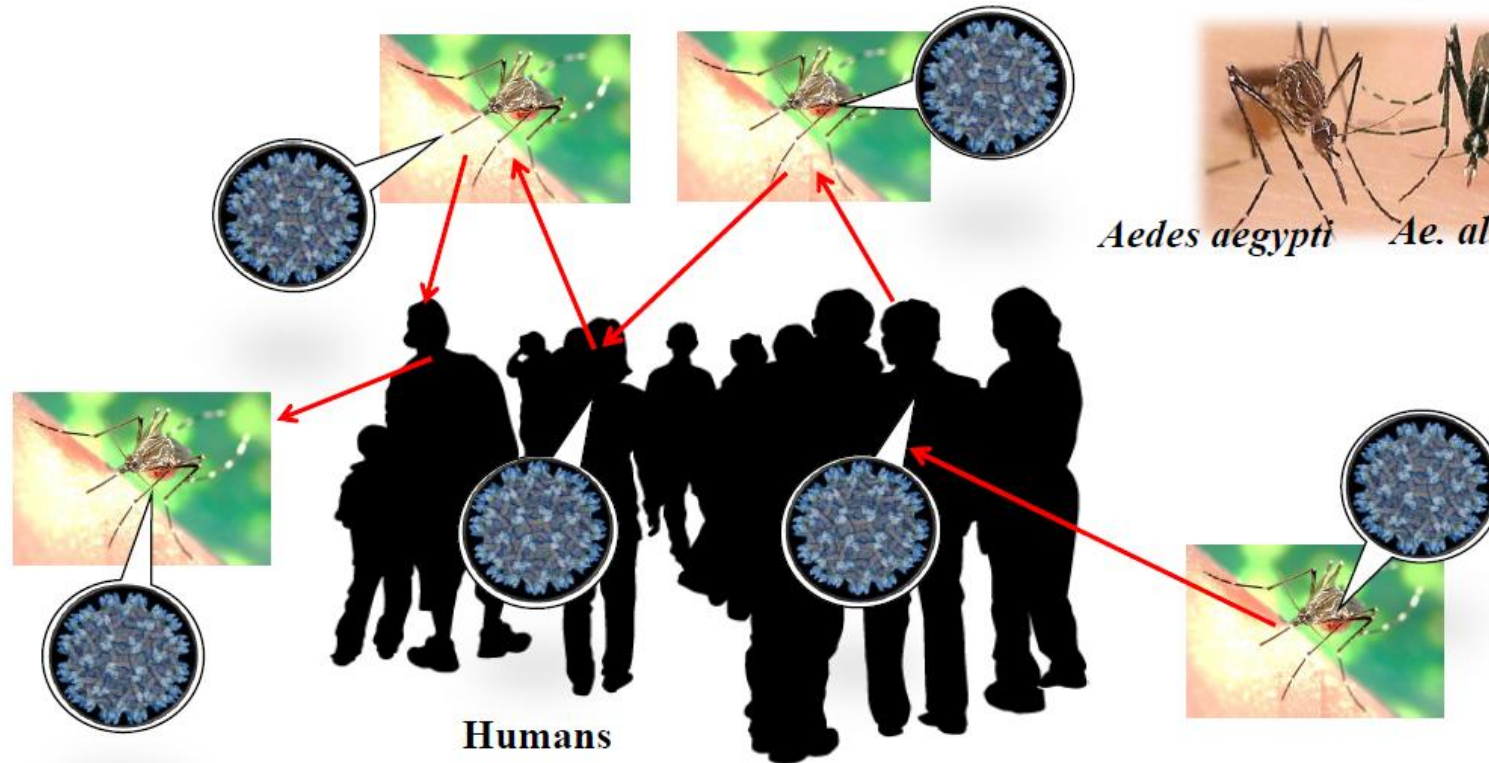
It is a viral infection transmitted by the bite of an infected female *Aedes* mosquito (WHO, 2012)



Dengue Virus (DENV)
Has 4 serotypes



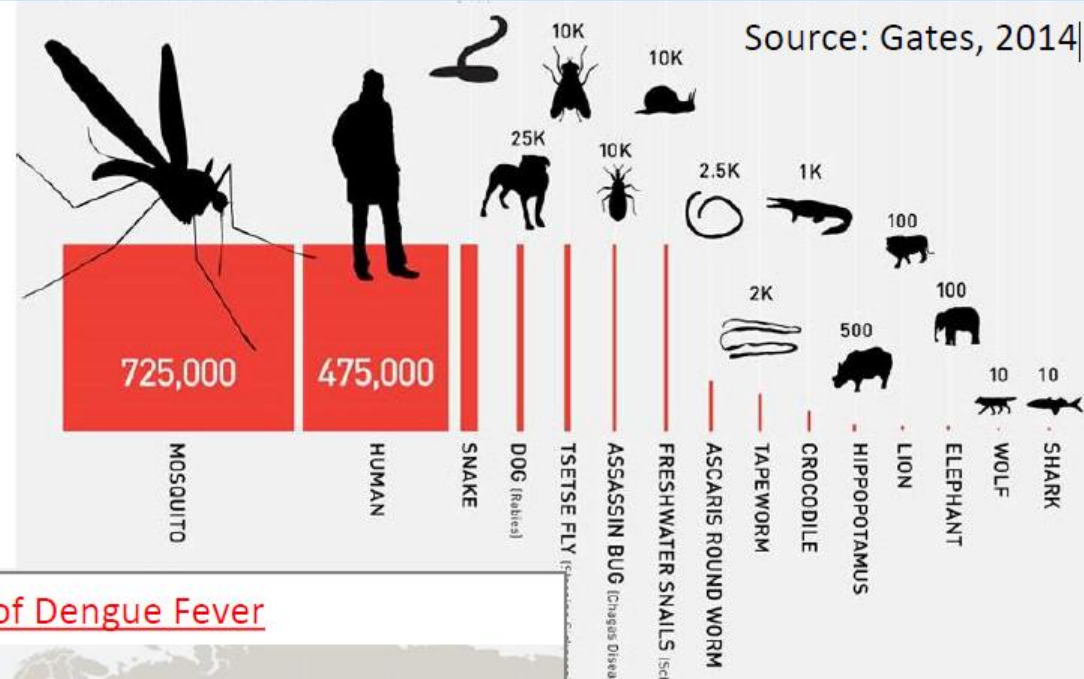
Aedes aegypti *Ae. albopictus*



Dengue fever at a glance

MOSQUITOES: THE WORLD'S SMALLEST BIGGEST KILLER

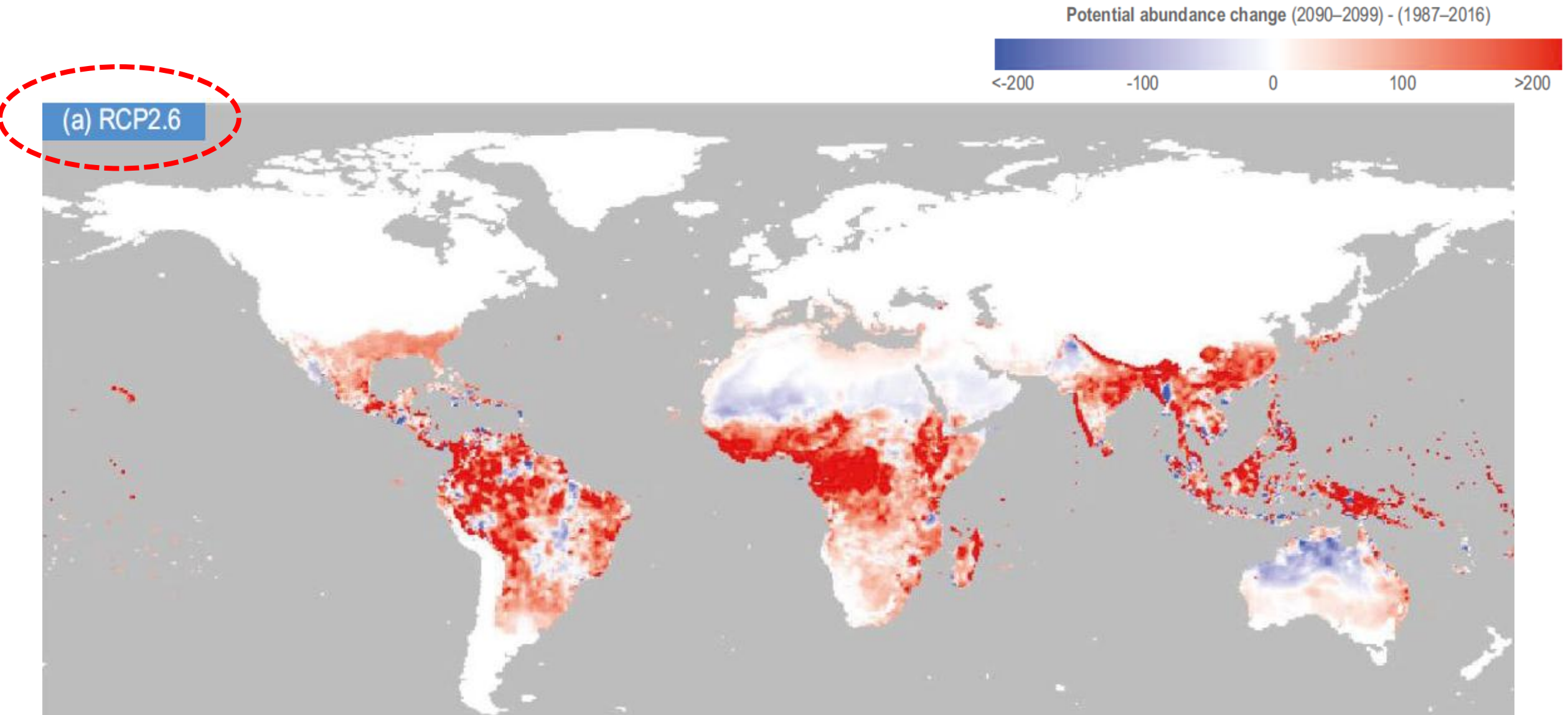
5



Distribution of Dengue Fever



Projected change in the abundance of *Aedes aegypti*



What is RCP (Representative Concentration Pathway)?

RCP2.6: In this scenario, radiative forcing peaks in the mid-21st century and then declines to **2.6 Watt/m²** (Radiant flux leaving (emitted, reflected and transmitted by) a surface per unit area) by the end of the 21st century. This means that **greenhouse gas emissions will decline rapidly** and atmospheric carbon dioxide concentrations will stabilize. In this scenario, the impacts of climate change can be minimized, but this requires strong mitigation measures and negative emissions technologies.

RCP4.5: In this scenario, radiative forcing stabilizes at 4.5 W/m² by the end of the 21st century. This means that greenhouse gas emissions will peak in the mid-21st century and then gradually decline. In this scenario, the effects of climate change can be limited to some extent, but this requires moderate emissions reduction measures and improvements in energy efficiency.

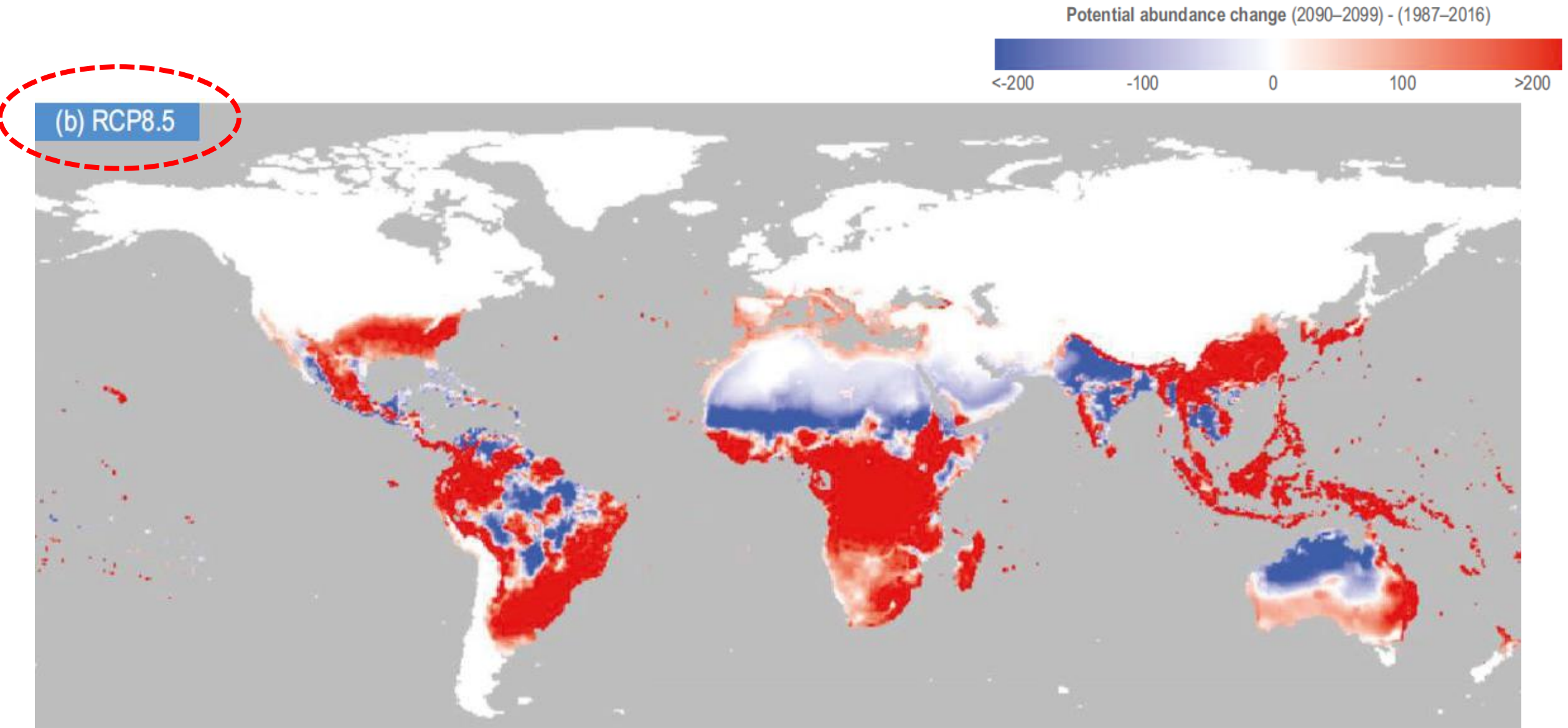
RCP (Radiation Concentration Pathway)

RCP6.0: In this scenario, radiative forcing stabilizes at 6.0 W/m² by the end of the 21st century.

This means that greenhouse gas emissions will peak in the second half of the 21st century and then decline slightly. In this scenario, the impacts of climate change would be significant, but they would require lower-level emissions mitigation and energy transitions.

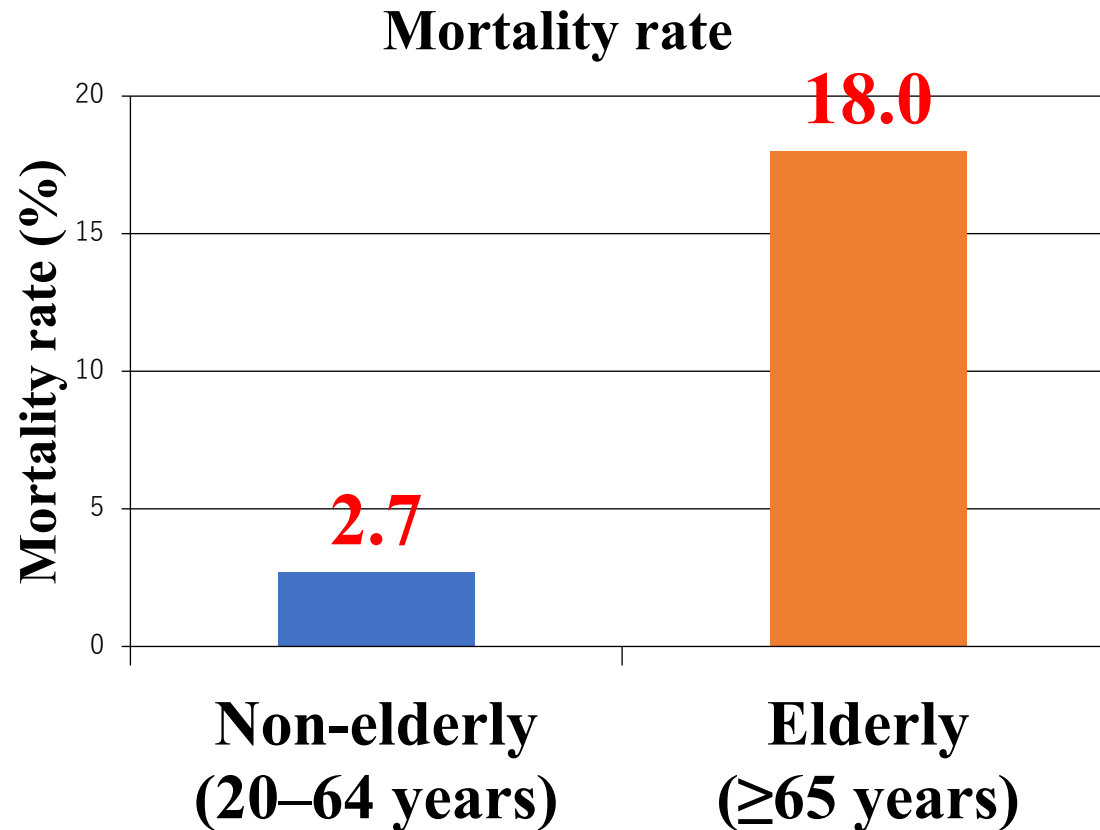
RCP8.5: In this scenario, radiative forcing will reach **8.5 W/m²** by the end of the 21st century. This means that greenhouse gas emissions will continue to increase throughout the 21st century. In this scenario, the impacts of climate change will be very severe, but it assumes that few mitigation or adaptation measures will be taken.

Projected change in the abundance of *Aedes aegypti*



Dengue Mortality: Elderly vs Non-Elderly Patients

Evidence for climate-sensitive infectious disease risk in ageing societies



Key interpretation

Age ≥ 65 was identified as an independent predictor of mortality.

Elderly dengue patients had higher severe dengue, longer hospital stays and more complications.

Mortality reported: 18.0% in elderly patients vs 2.7% in non-elderly patients.

Risk lens for insurers

The issue is not only infection incidence, but **severe outcomes, hospitalisation, disability and death** among older adults.

(Source) <https://colab.ws/articles/10.1016/j.tmaid.2025.102855>

Sources: Jeng et al., Travel Medicine and Infectious Disease, 2025; Huang et al., Emerging Infectious Diseases, 2023. Data shown: mortality rate in elderly vs non-elderly dengue patients.

Dengue Mortality: Elderly vs Non-Elderly Patients

(Major Findings)

Country /Region	Study	Elderly Mortality (%)	Non-Elderly Mortality (%)	Notes
Taiwan	Lee et al. (2017)	5–7%	0.5–1%	Elderly patients showed approximately tenfold higher mortality.
Malaysia	Mallhi et al. (2015)	~7%	~1%	Significant excess fatality among elderly dengue patients.
Singapore	Rowe et al. (2014)	~1%	~0.04%	Elderly mortality about 25 times higher than non-elderly.
Thailand	Suwannapong et al. (2014)	4–5%	0.3–0.5%	Clear age-related gradient in dengue fatality.
Cuba	Guzman et al. (2013)	~5%	~0.4%	Elderly patients exhibited markedly higher fatality rates.

(1.3.x) Infectious Disease

Mechanism: Flooding to Health Impact

**Flooding → Water contamination → Human exposure
→ Disease outbreak**

- **Drinking water contamination**
- **Sewer overflow and sanitation breakdown**
- **Reduced access to healthcare**



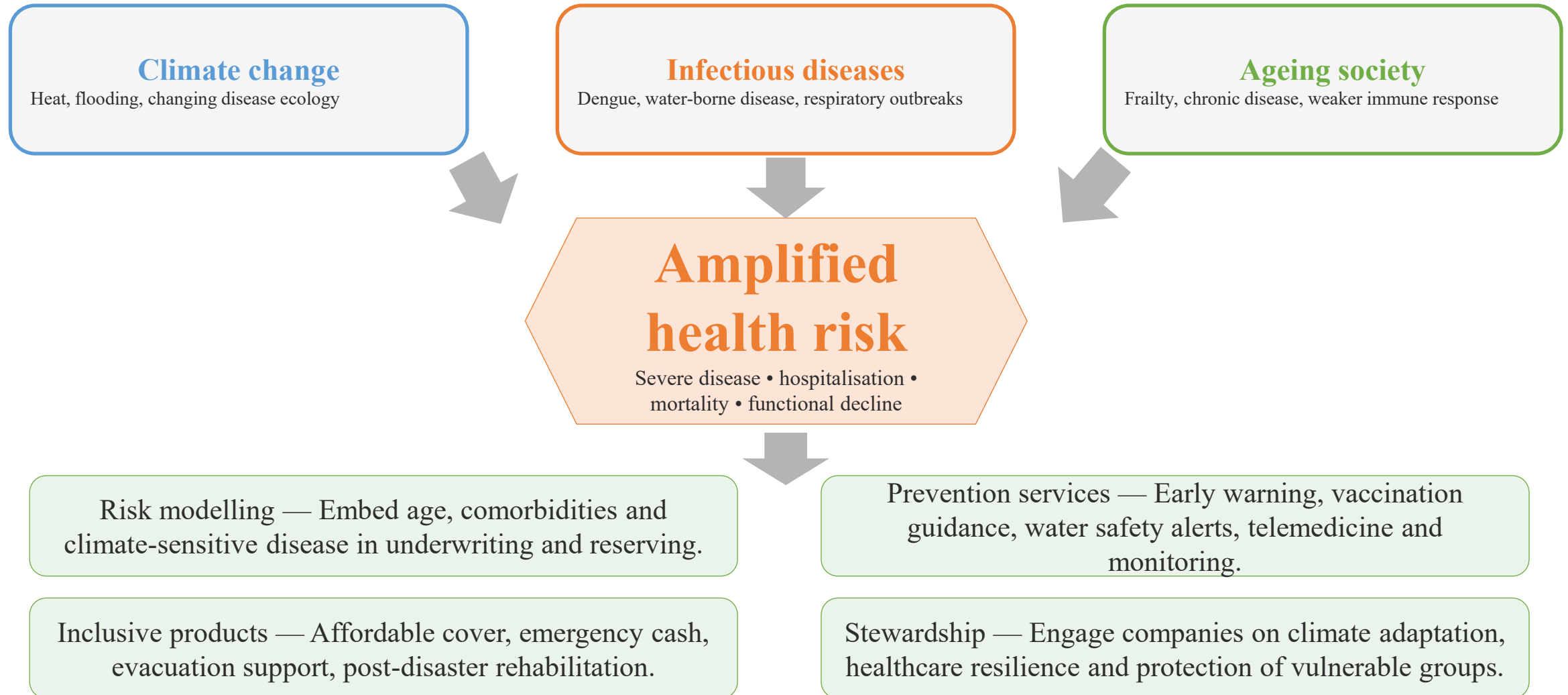
Typical Water-borne Diseases

- Cholera – severe diarrhoea, dehydration, fatal if untreated
- Typhoid & dysentery – intestinal infections
- Leptospirosis – infection via polluted water contact
- E. coli & parasites – gastrointestinal illness

[Source: WHO, UNDRR definitions of water-borne diseases]

Infectious Disease × Ageing × Insurance

An integrated framework for strategic sustainability management



Asian Case Examples

Bangladesh Floods:

- Large-scale flooding contaminates drinking water
- Recurrent cholera and diarrhoeal outbreaks

Philippines Typhoons:

- Storm surge and flooding damage sanitation systems
- Increased leptospirosis and diarrhoeal diseases
- High exposure in urban communities



Strategic Role of Insurers

From Risk Transfer to Risk Prevention

Insurance must evolve beyond claims payment:

1. Literacy & Awareness (PSI Principle 2)

- Educate policyholders on climate-health risks
- Target vulnerable groups, especially elderly

2. Prevention Services

- Heat alerts and health monitoring
- Smart home/environmental sensors
- Preventive healthcare and partnerships

3. Inferential Knowledge

- Integrate climate, health, demographic data
- Anticipate future mortality and morbidity trends
- The Principles for Sustainable Insurance (PSI) promote ESG integration and risk awareness across the value chain

Key Insight

Prevention is not optional — it is core to sustainable insurance.

Role of Supervisors & Investors

System-Level Sustainability Leadership As Institutional Investors

Engage companies on:

- Climate adaptation for elderly populations
- Resilient healthcare and infrastructure
- Food and water security

As Regulators / Supervisors

- Integrate climate-health risk into supervision
- Require scenario analysis (heat, disease, ageing)
- Encourage protection of vulnerable populations
- Supervisors are expected to integrate climate-related risks into governance, risk management, and disclosure frameworks

Key Message

**Sustainability in an ageing
society means:
Protecting human health under
climate change — especially for
the most vulnerable.**

5. Insurance sector's sustainability actions

Activities to improve Planetary Health

Mangrove Planting Activities



(Source) Tokio Marine Website

Blue Carbon Project



(Source) Samsung Fire & Marine insurance website

Forest Conservation



(Source) MS&AD Insurance Group Website

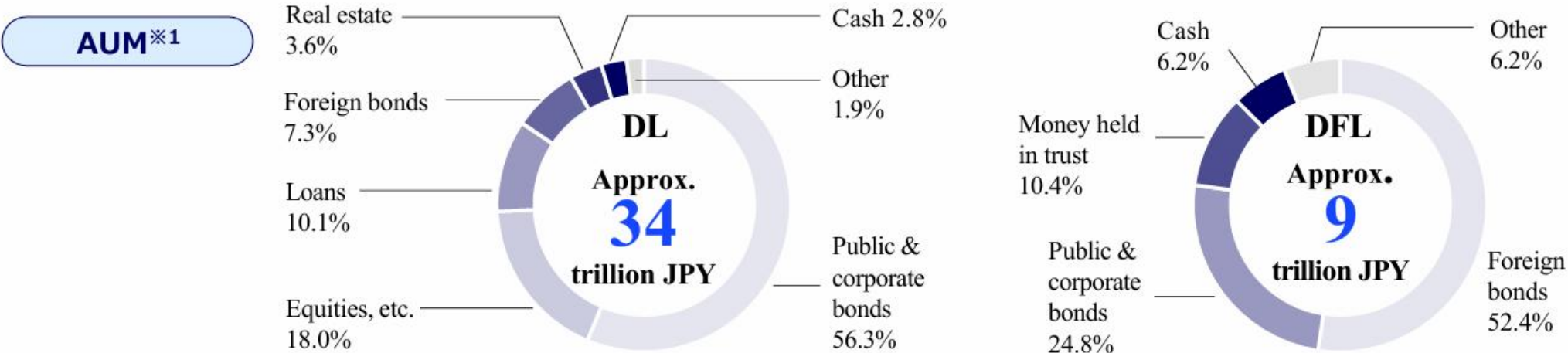
Promotion of greening of buildings



(Source) Dai-ichi Life Group Sustainability Report 2025

Responsible Investment Overview of Dai-ichi Life Group

Responsible Investment Overview



Sustainability thematic investments^{※1}

Investment amount

Appopx. **3.1** trillion JPY

Of which environment and climate change solution investments

Approx. **1.5** trillion JPY

SDGs bonds, etc.

Approx. **1.4** trillion JPY

SDGs projects

Approx. **800** million JPY

Impact investments

Approx. **190** billion JPY

Other

Approx. **700** million JPY

Engagement

Number of engagements^{※2}

207 companies

Of which executives interviewed^{※2}

Approx. **49.8**%

AUM coverage of engagement (within domestic listed equities) (Market value basis)

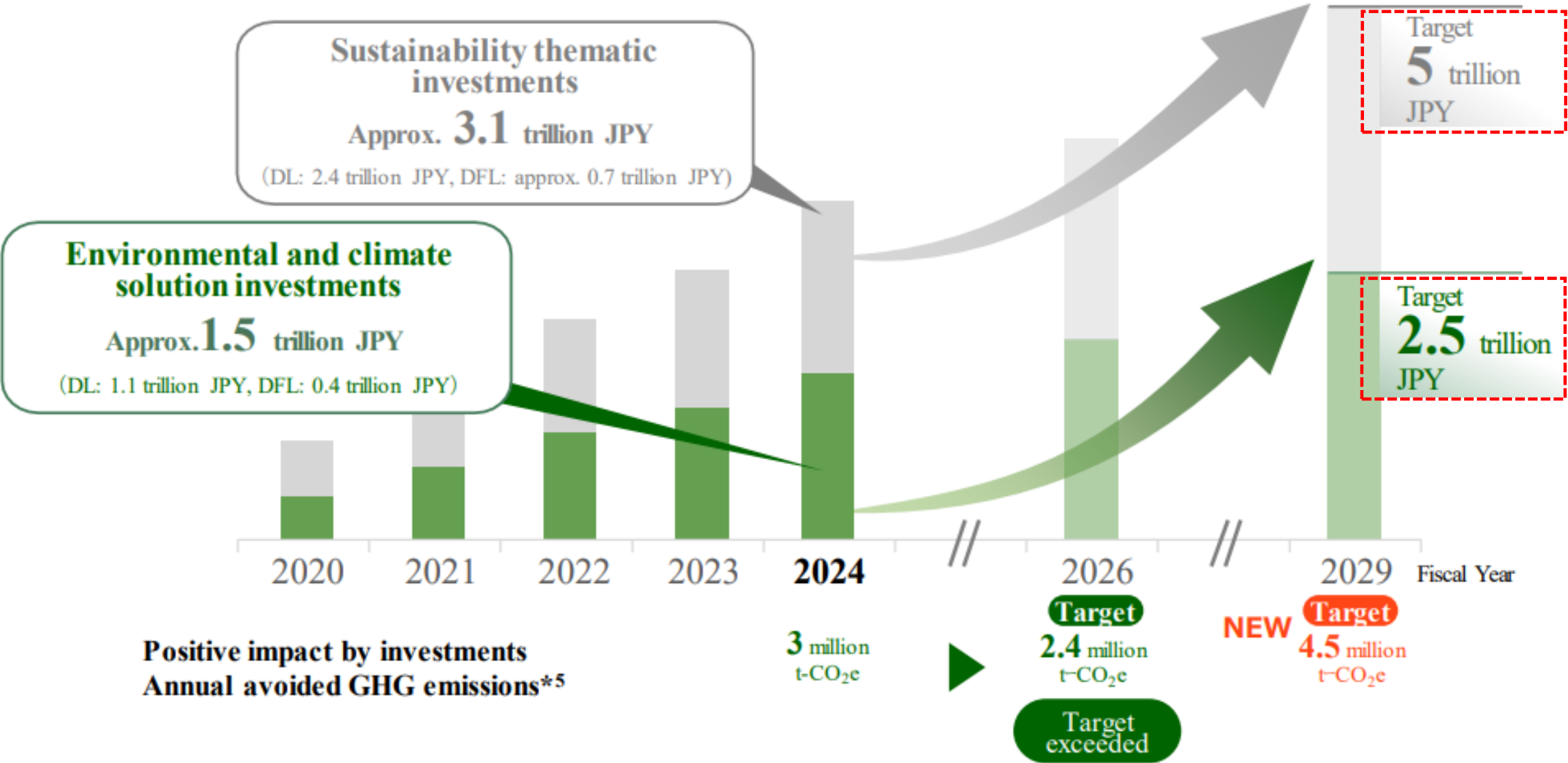
3-year cumulative total

Approx. **86.5**%

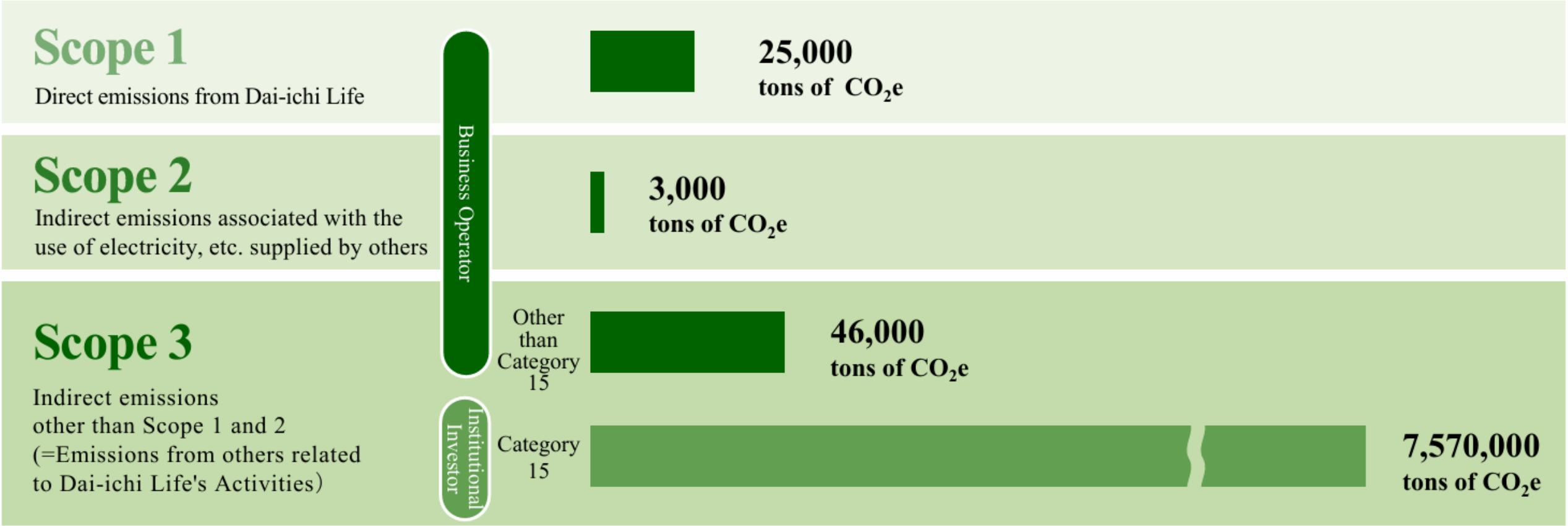
FY2024

Approx. **55.6**%

Impact Investment by Dai-ichi Life Group



GHG Emissions Composition of Dai-ichi Life Group



This is the end of the presentation.

Thank you for listening to my presentation.