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Key Findings from the Newest Global Assessment Report on Climate Change Briefing Series: What Congress Needs to Know About COP27

Wednesday, October 12, 2022

About EESI

Non-partisan Educational Resources for Policymakers

A bipartisan Congressional caucus founded EESI in 1984 to provide non-partisan information on environmental, energy, and climate policies

Direct Assistance for Equitable and Inclusive Financing Program

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs

Commitment to Diversity, Equity, Inclusion, and Justice

We recognize that systemic barriers impede fair environmental, energy, and climate policies and limit the full participation of Black, Indigenous, people of color, and legacy and frontline communities in decision-making

Sustainable Solutions

Our mission is to advance science-based solutions for climate change, energy, and environmental challenges in order to achieve ***our vision of a sustainable, resilient, and equitable world***.

Policymaker Education

Briefings and Webcasts

Live, in-person and online public briefings, archived webcasts, and written summaries

Climate Change Solutions

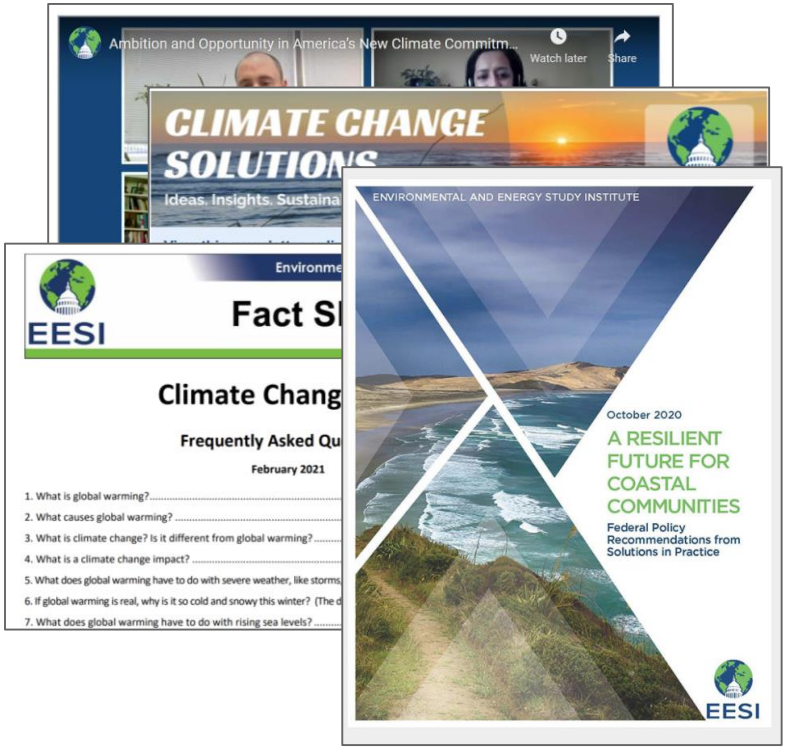
Bi-weekly newsletter with everything policymakers and concerned citizens need to know, including a legislation and hearings tracker

Fact Sheets and Issue Briefs

Timely, objective coverage of environmental, clean energy, and climate change topics

Social Media (@EESIOnline)

Active engagement on Twitter, Facebook, LinkedIn, and YouTube



What Congress Needs to Know About COP27

Climate Change Loss and Damage	**Oct 20 @ 11:00 AM EDT**
Natural Climate Solutions	**Oct 28 @ 1:00 PM EDT**
What's on the Table for the Negotiations?	**Nov 02 @ 11:00 AM EDT**

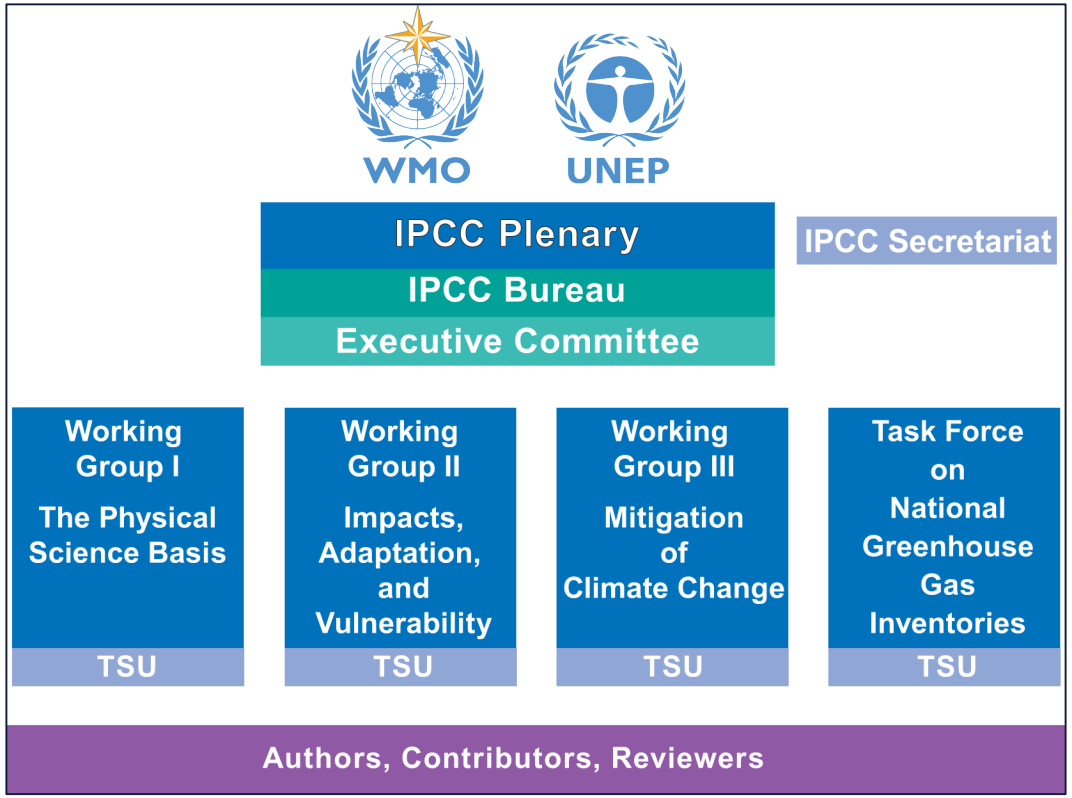
Climate Summit Recap: Key Outcomes and What Comes Next
During the week of November 28, 2022

Intergovernmental Panel on Climate Change Sixth Assessment Report Working Group I [2021]

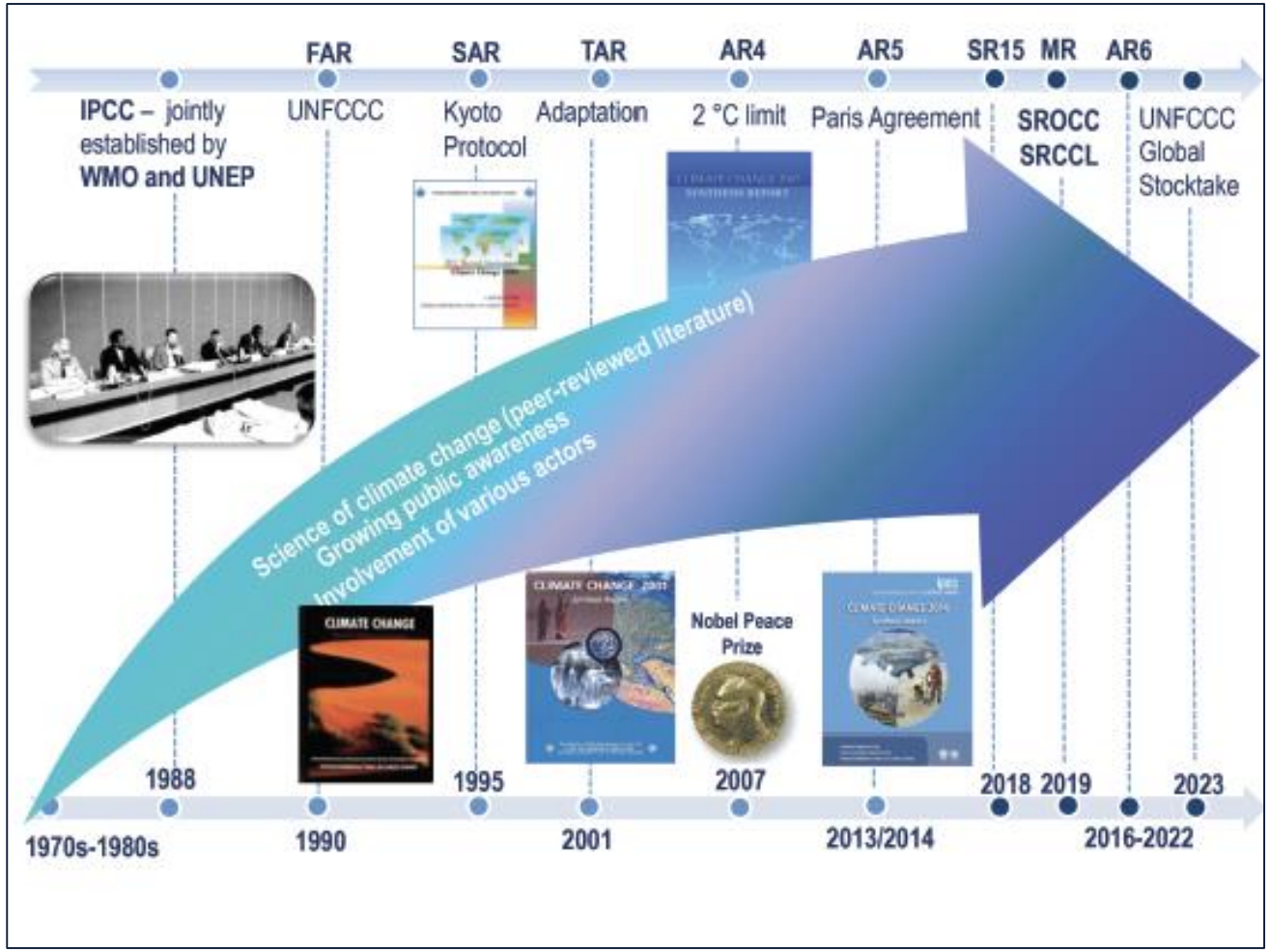
The Physical Science Basis

Ram Ramaswamy [NOAA/ GFDL, Princeton]
Review Editor [Chapter 7]

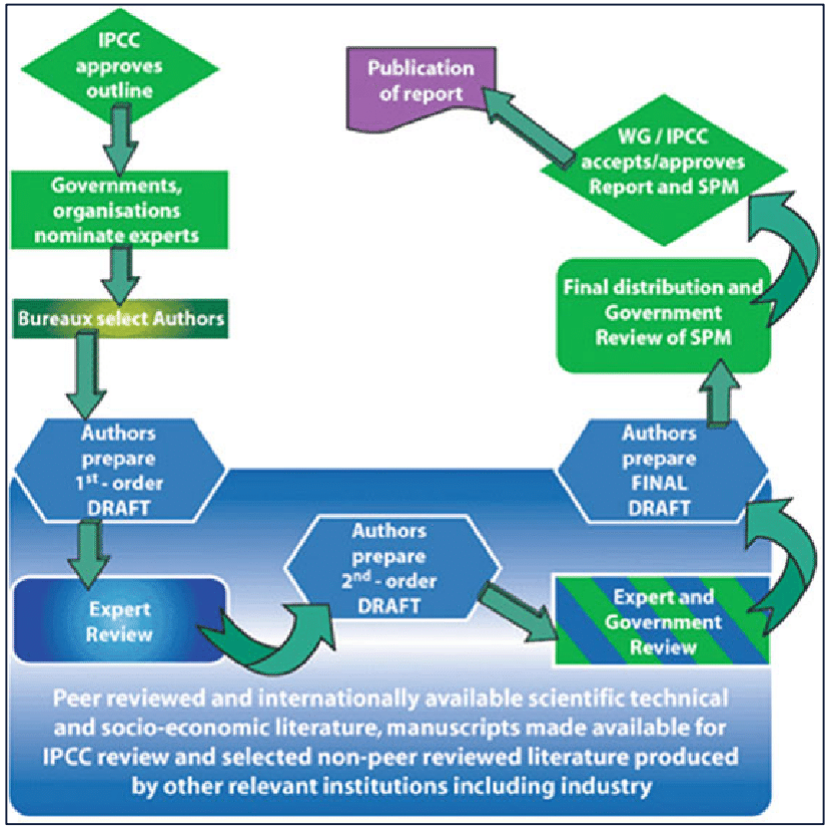
Organization of the IPCC



Evolution of the IPCC Assessment Reports

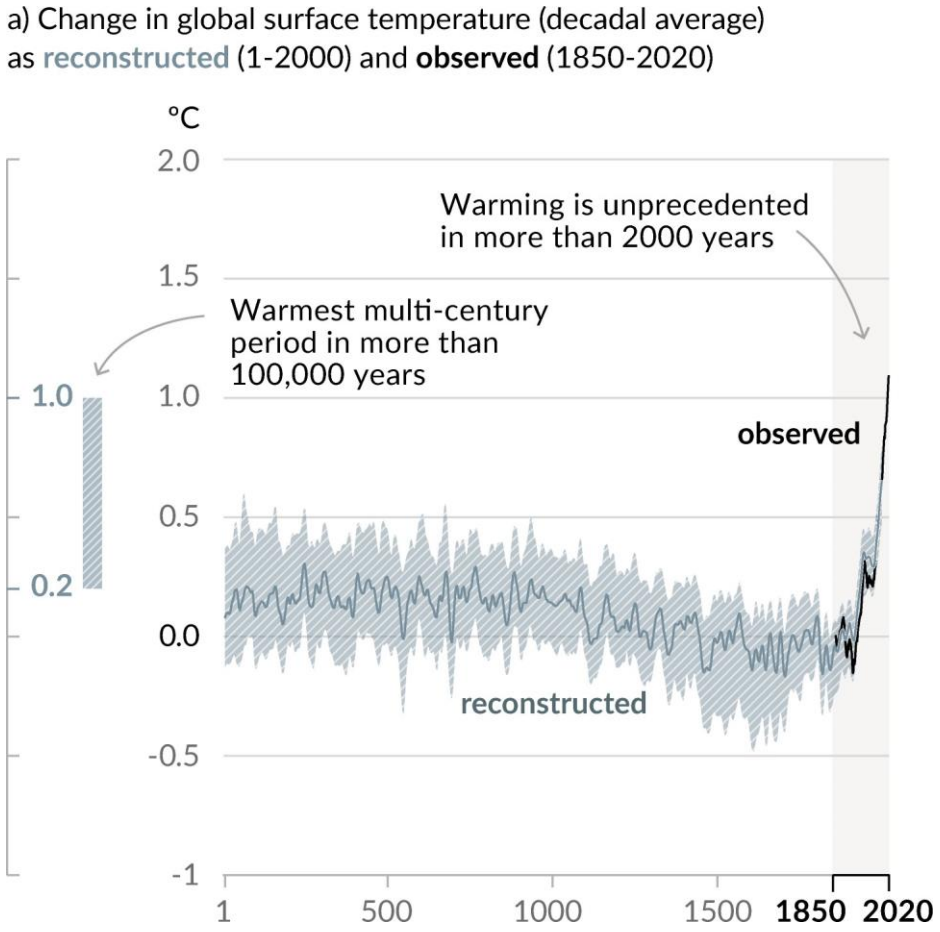


Generation of the Report



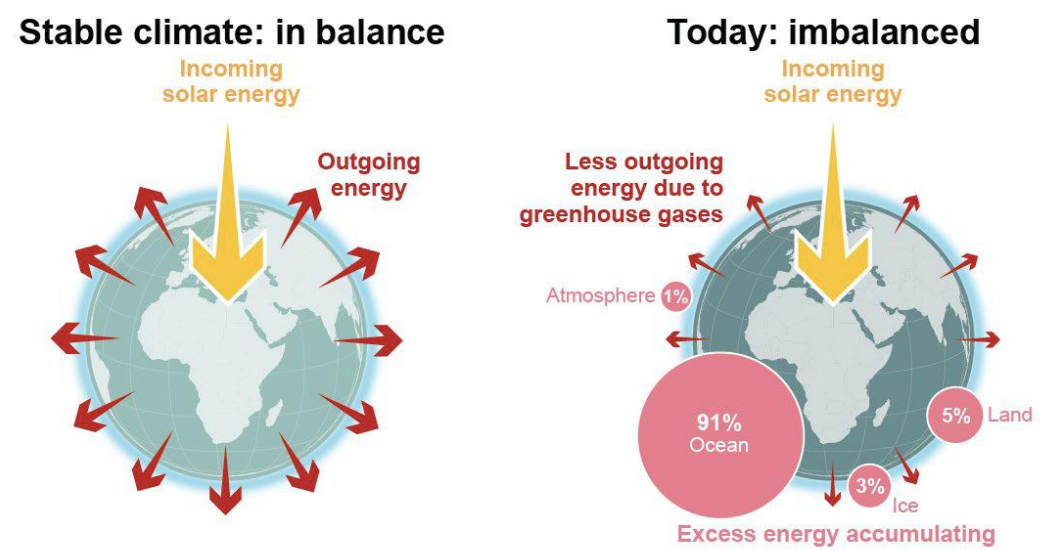
Observed Change in Global Surface Temperature

Figure SPM.1



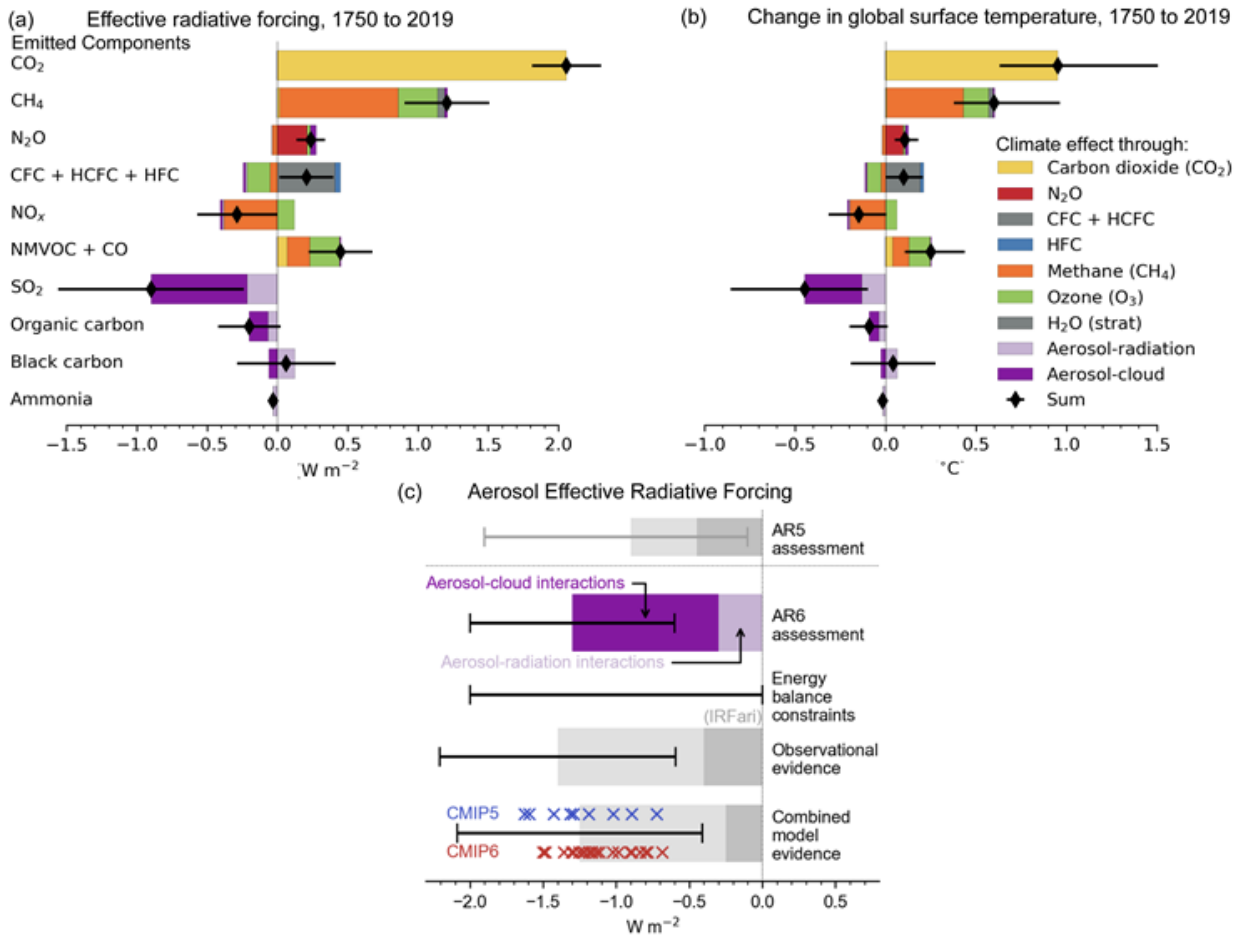
The climate system is now out of energy balance

Figure FAQ7.1



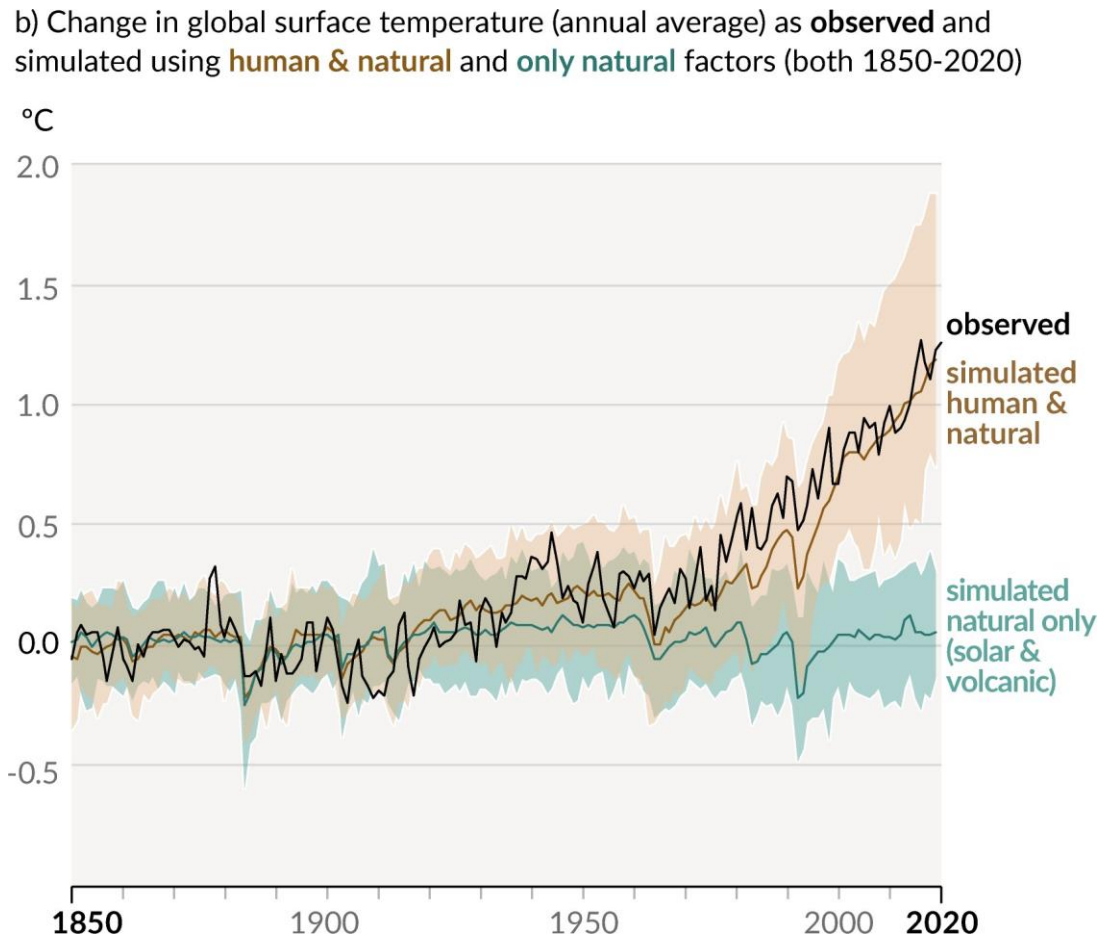
Human-induced perturbations to Earth's Radiation Budget

Figure TS.15



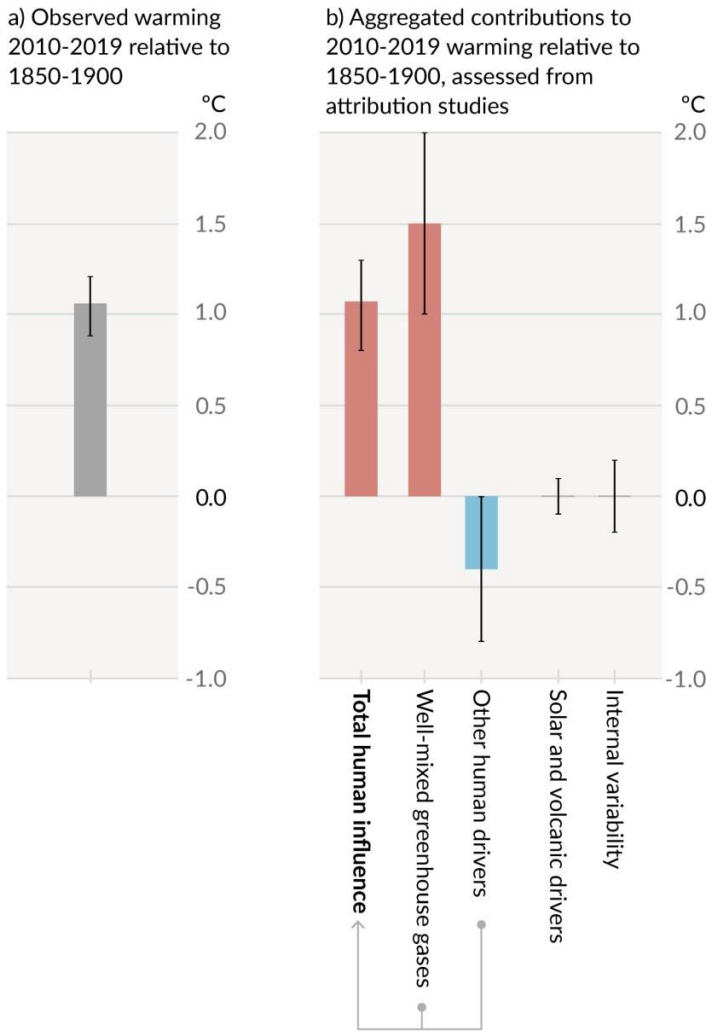
Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years

Figure SPM.1



Observed warming is driven by emissions from human activities, with greenhouse gas warming partly masked by aerosol cooling

Figure SPM.2



Climate change is already affecting every inhabited region across the globe, with human influence contributing to many observed changes in weather and climate extremes

Figure SPM.3

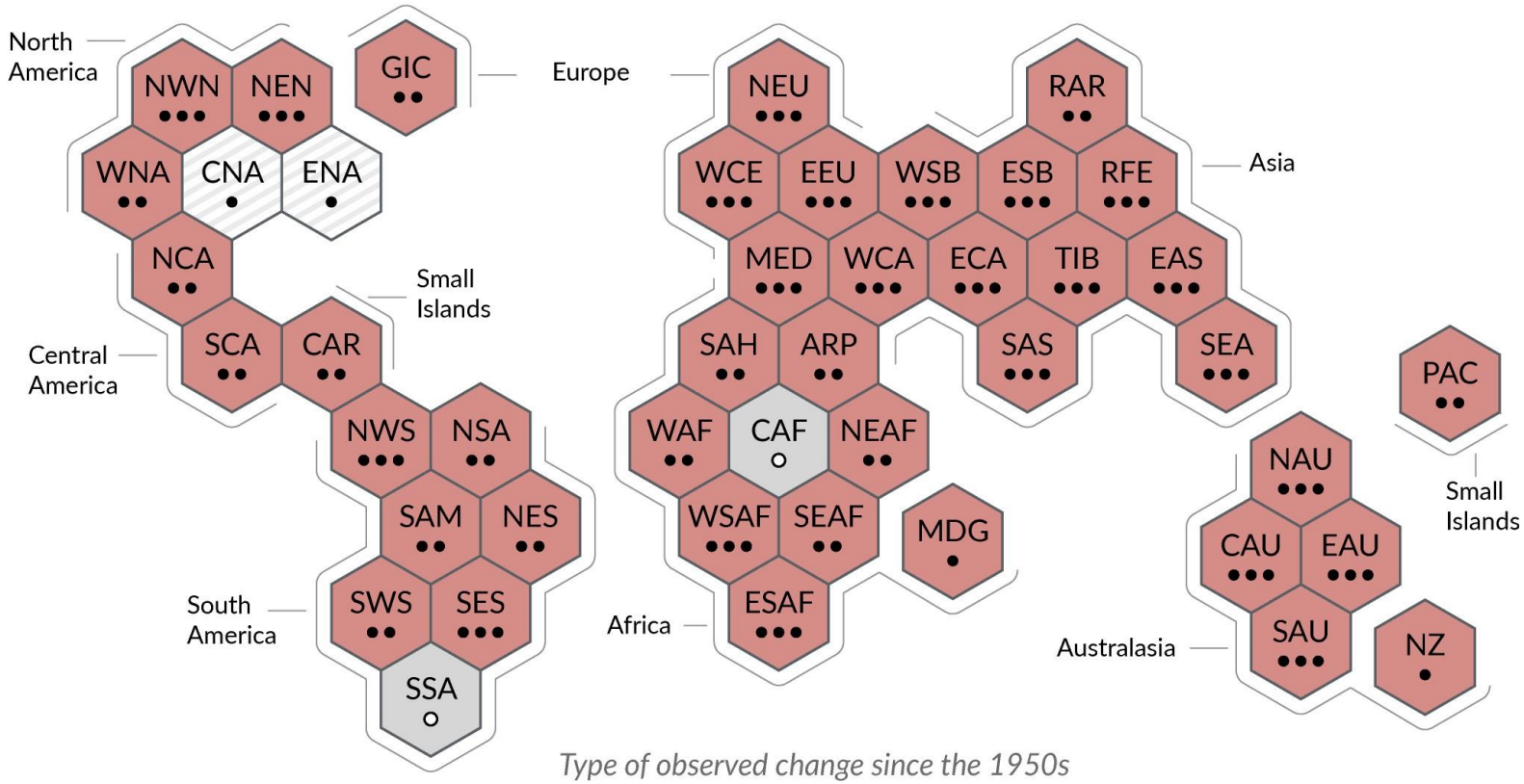
a) Synthesis of assessment of observed change in **hot extremes** and confidence in human contribution to the observed changes in the world's regions

Type of observed change
in hot extremes

- Increase (41)
- Decrease (0)
- Low agreement in the type of change (2)
- Limited data and/or literature (2)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

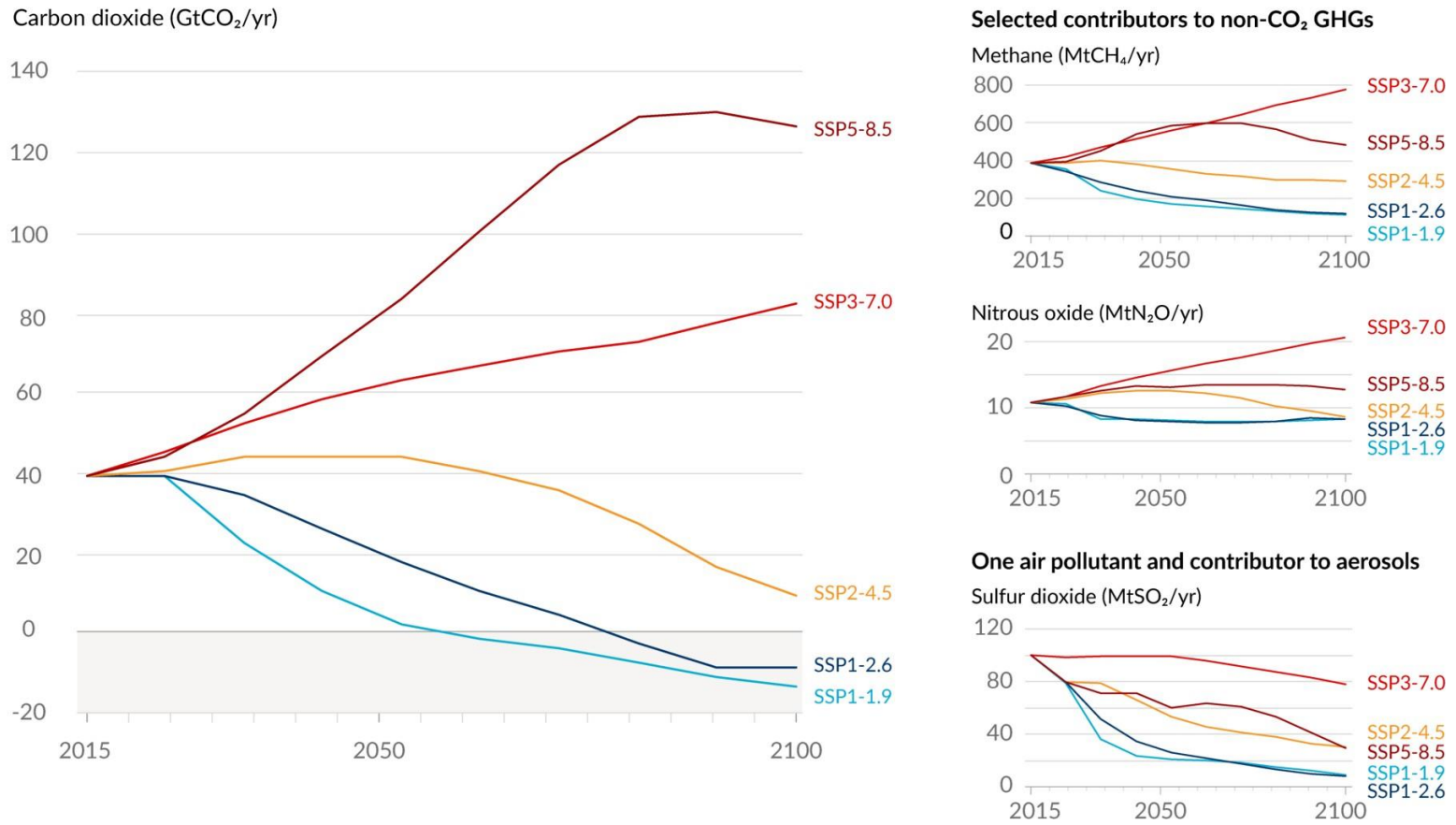


Type of observed change since the 1950s

Future emissions cause future additional warming, with total warming dominated by past and future CO_2 emissions

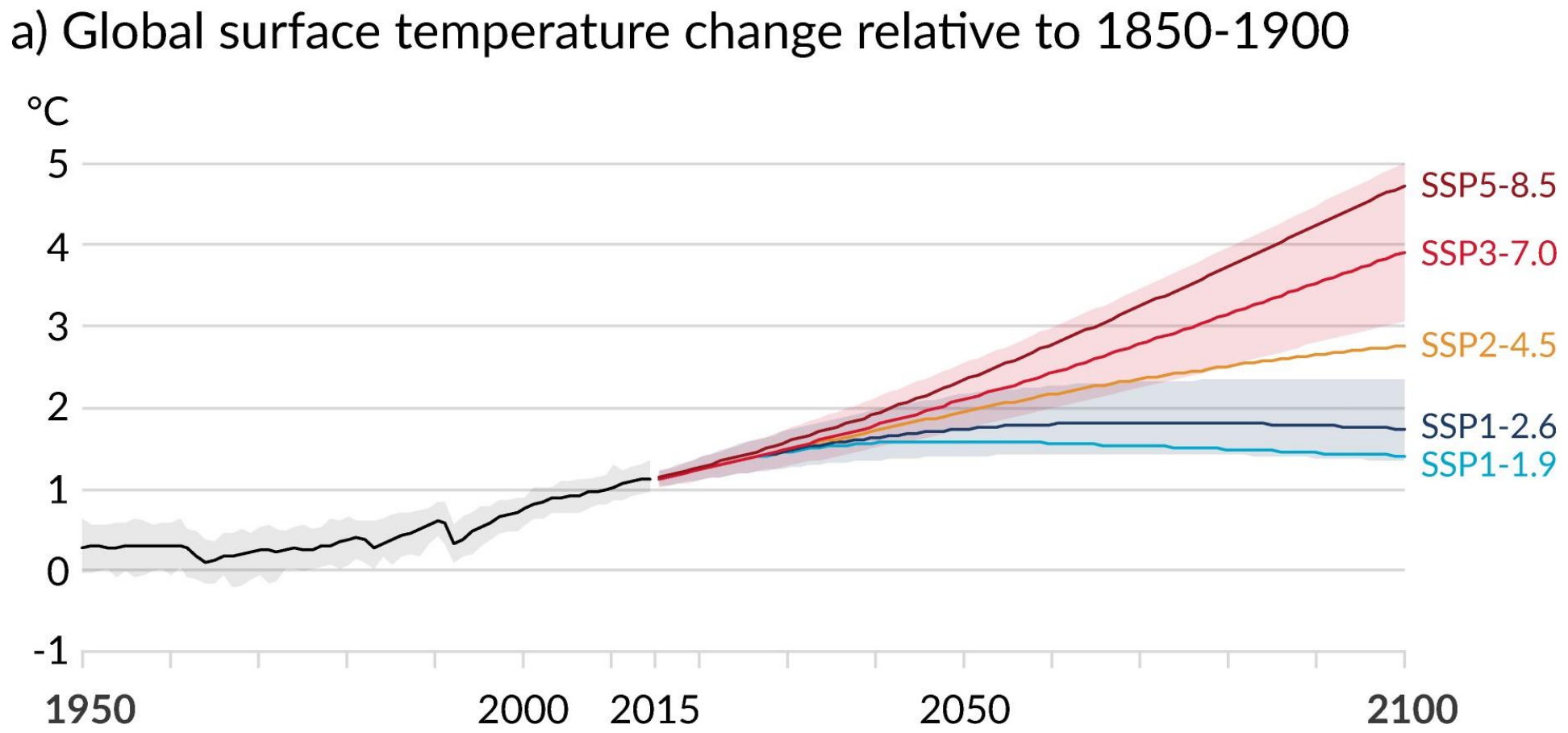
Figure SPM.4

a) Future annual emissions of CO_2 (left) and of a subset of key non-CO_2 drivers (right), across five illustrative scenarios



Human activities affect all the major climate system components, with some responding over decades and others over centuries

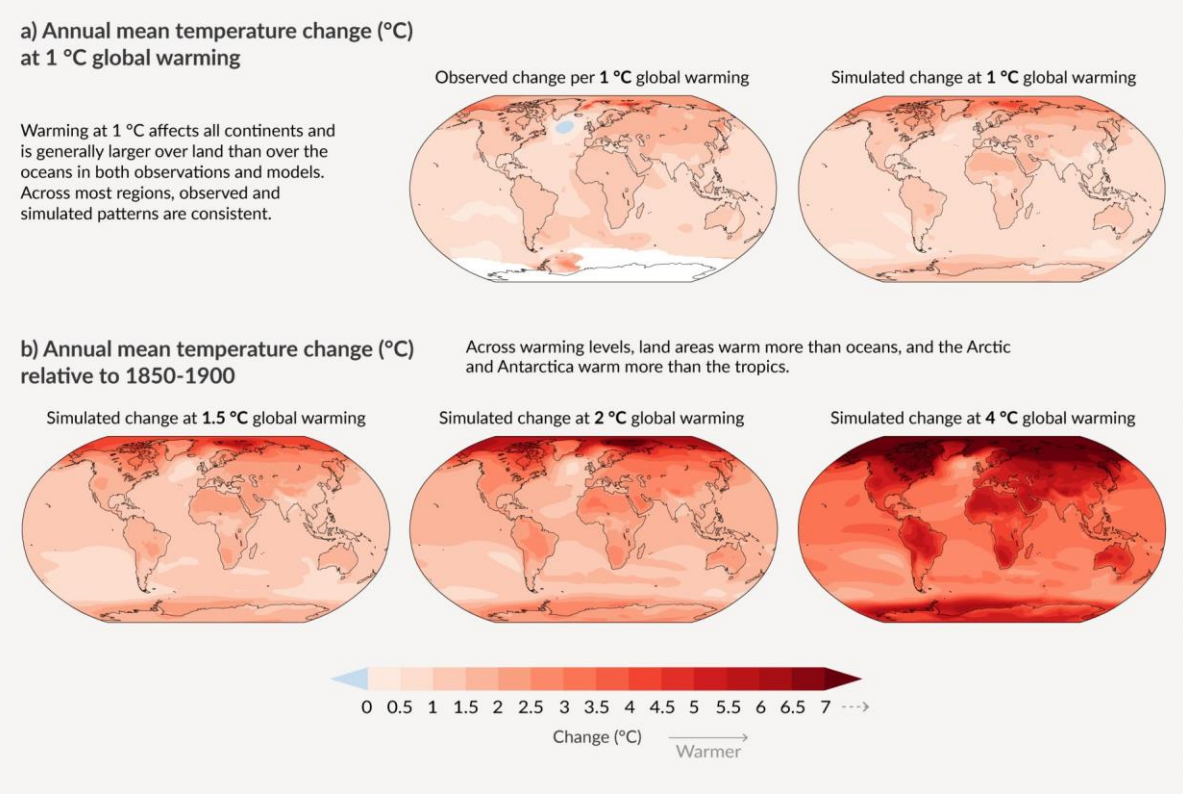
Figure SPM.8



IPCC AR6 WG1

Figure SPM.5

With every increment of global warming, changes get larger in regional mean temperature, precipitation and soil moisture



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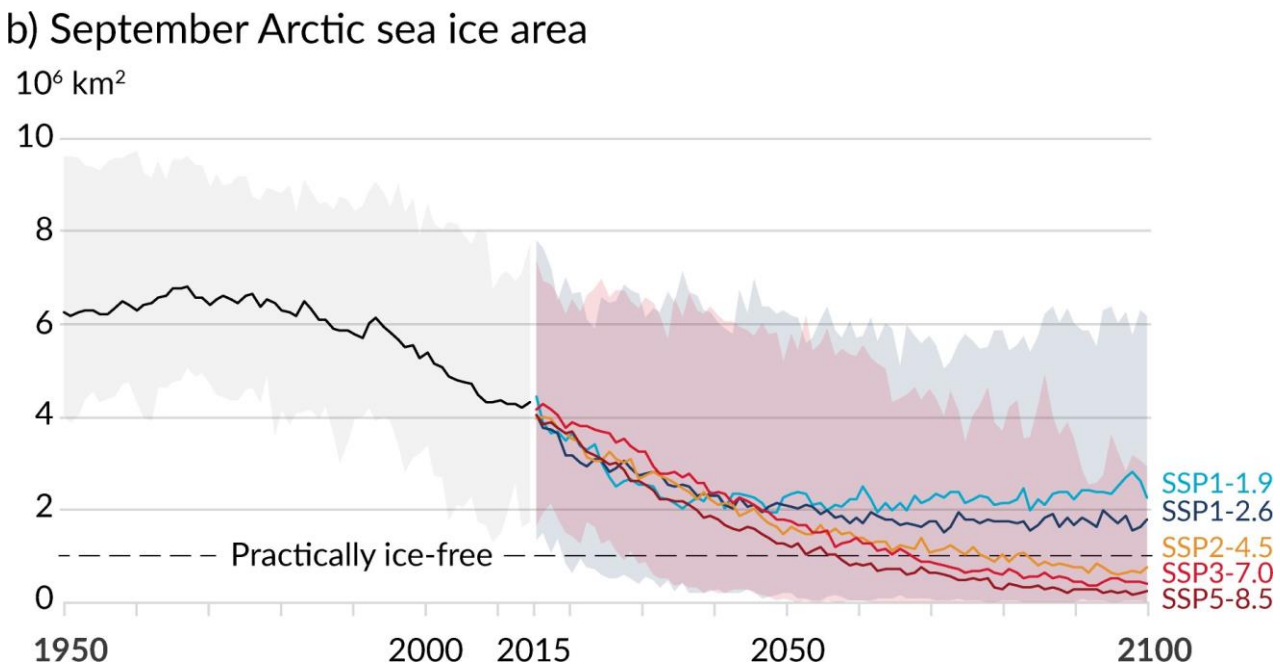

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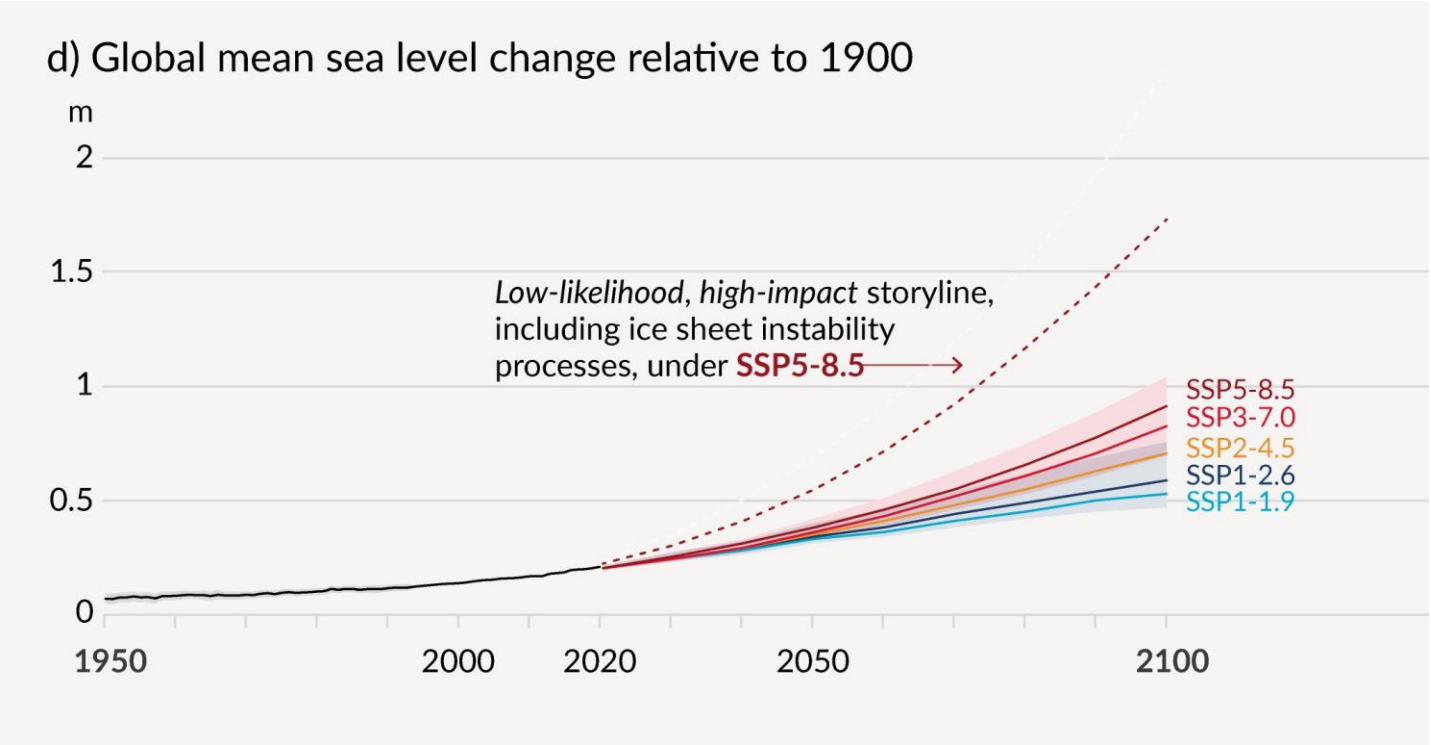
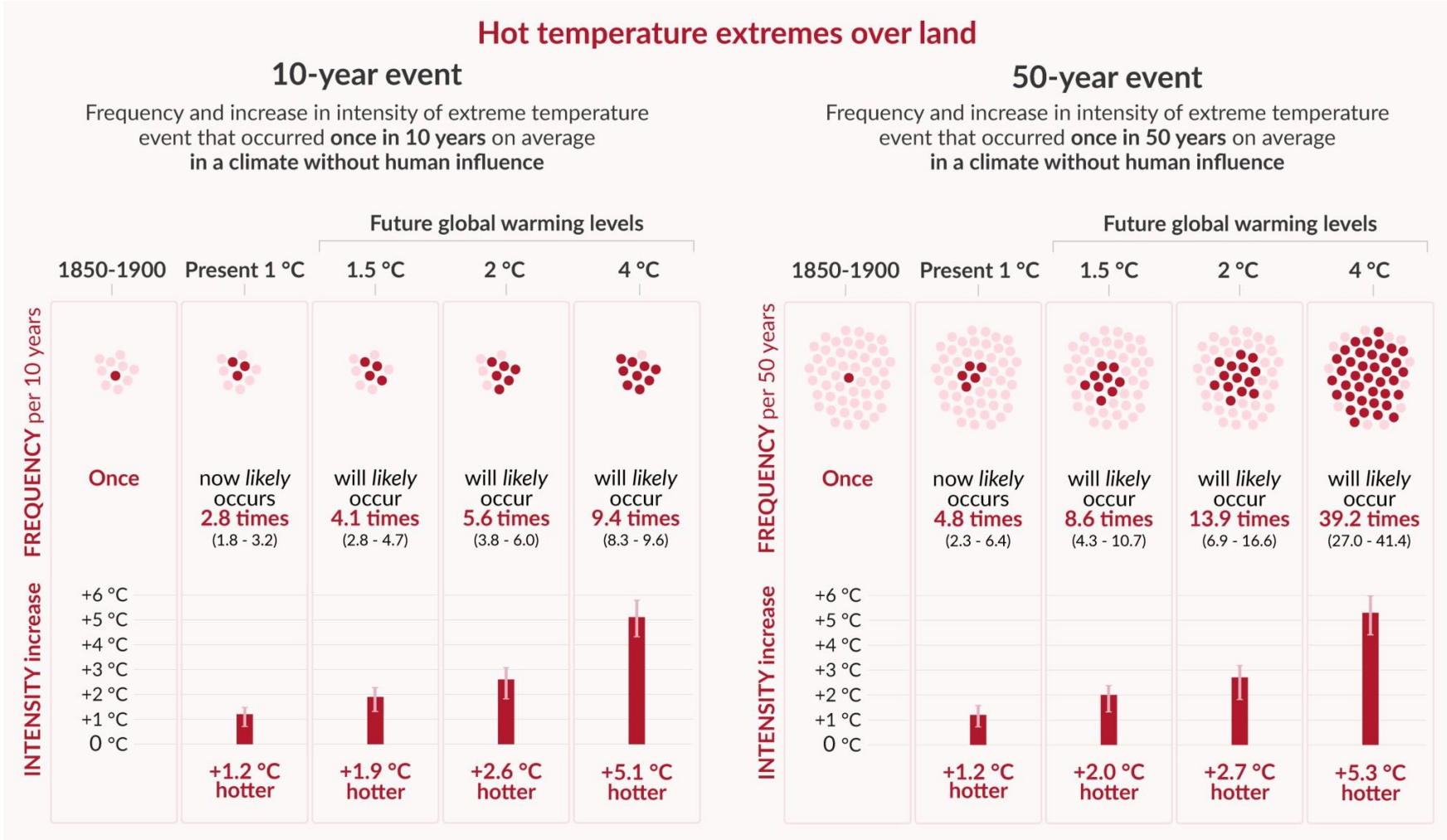


Projected changes in extremes are larger in frequency and intensity with every additional increment of global warming

Figure SPM.6



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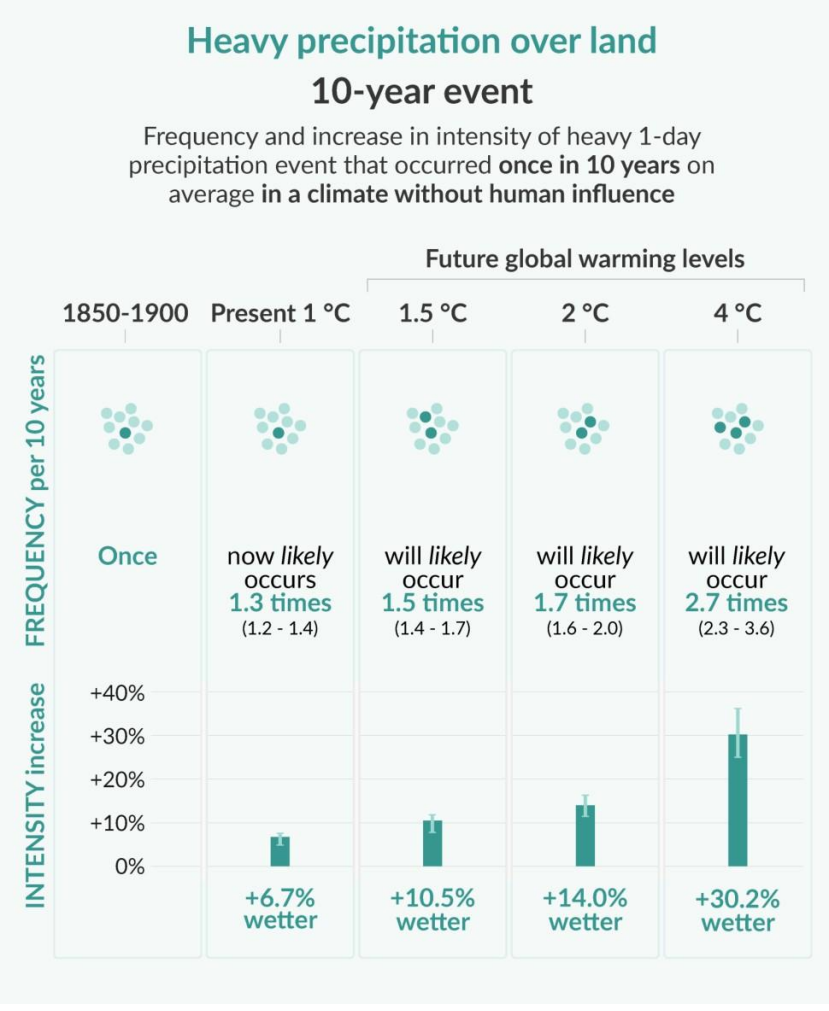

[Credit: NASA]

> Recent changes in the climate are widespread, rapid, and intensifying, and unprecedented in thousands of years.

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INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

[Credit: Yoda Adaman | Unsplash]

> It is indisputable that human activities are causing climate change, making extreme climate events, including heat waves, heavy rainfall, and droughts, more frequent and severe.

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INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

[Credit: Hong Nguyen | Unsplash]

“Climate change is already

affecting every region on Earth, in multiple ways.

The changes we experience will increase with further warming.

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INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

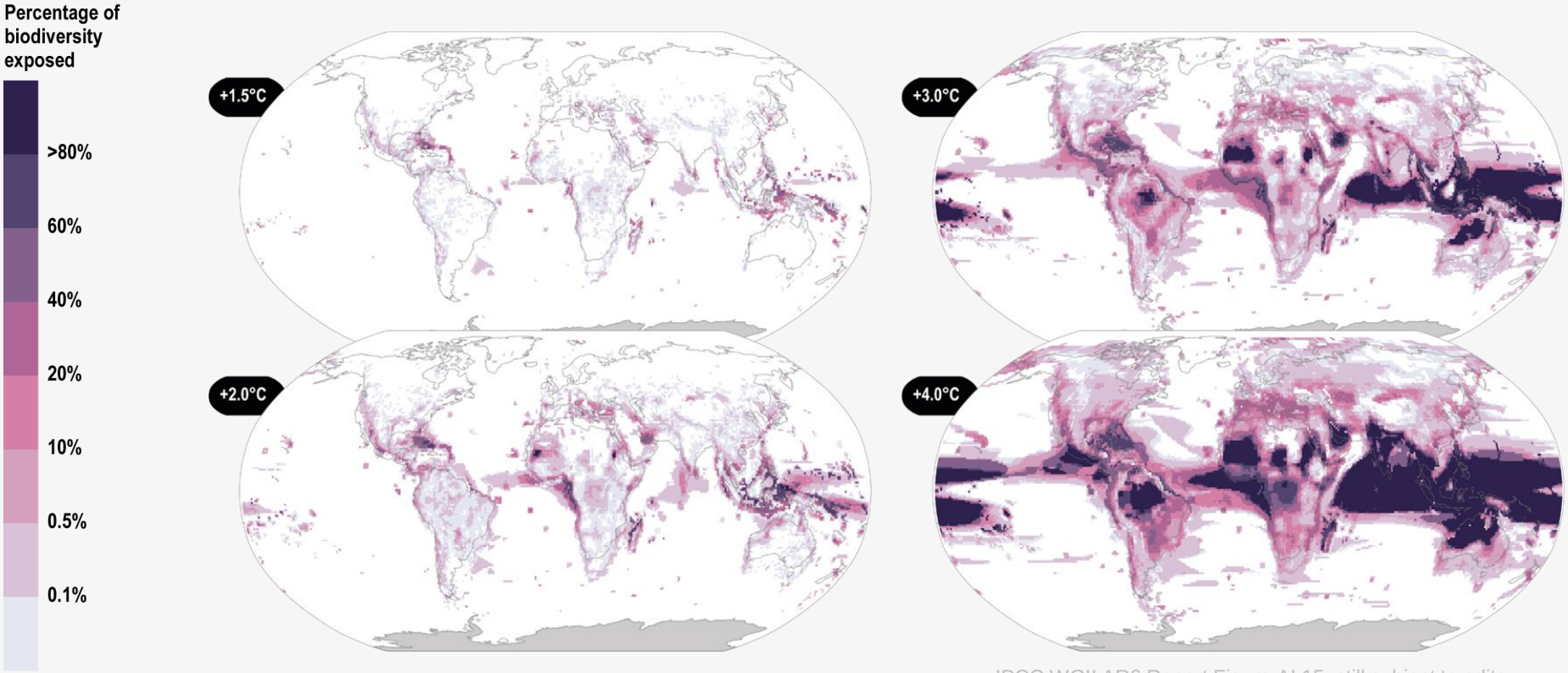
SIXTH ASSESSMENT REPORT
Working Group II – Impacts, Adaptation and Vulnerability

Environmental and Energy Study Institute
Briefing Series: What Congress Needs to Know About COP27

Climate Change 2022: Impacts, Adaptation and Vulnerability

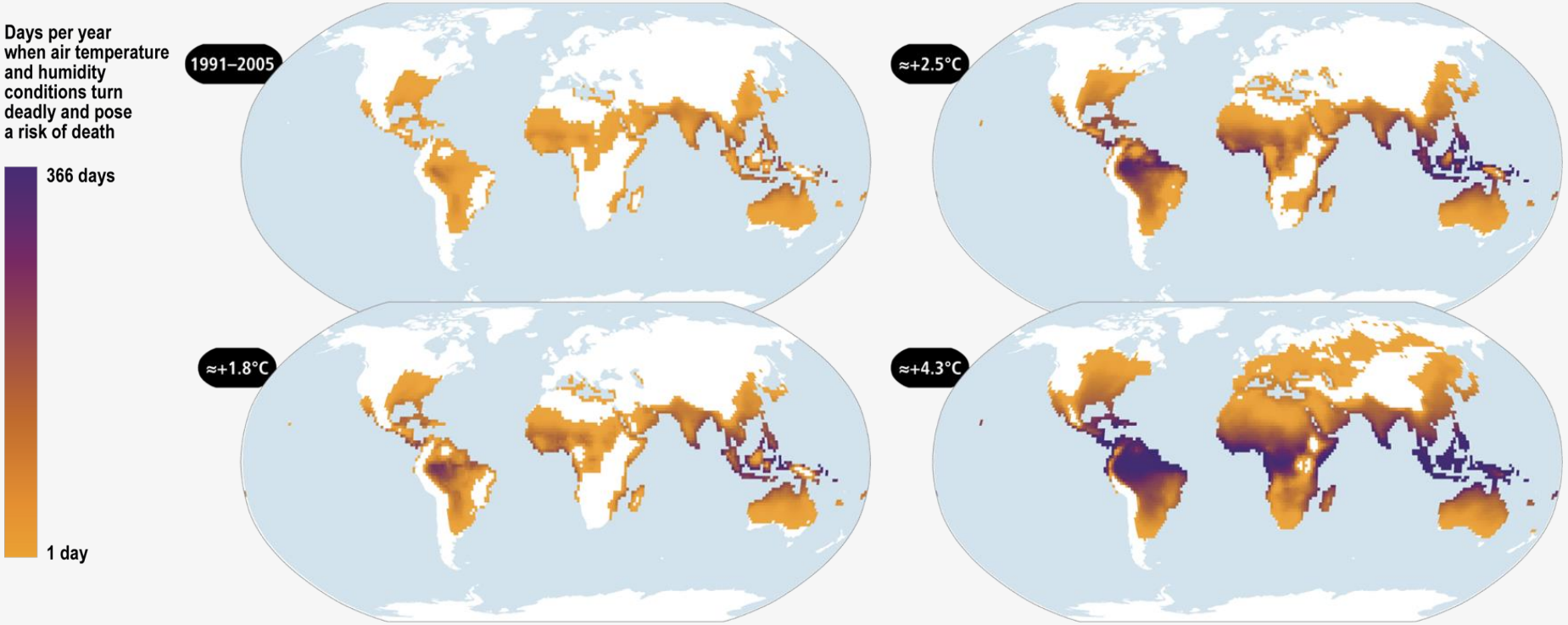
Dr. Debora Ley
October 12th, 2022

Species exposed to potentially dangerous climate conditions



IPCC WGII AR6 Report Figure AI.15, still subject to edits

Global distribution of population exposed to hyperthermia from extreme heat and humidity - Projections for year 2100



IPCC WGII AR6 Report Figure AI.29, still subject to edits

Future global climate risks

Heat stress

Exposure to heat waves will continue to increase with additional warming.

Water scarcity

At 2°C, regions relying on snowmelt could experience 20% decline in water availability for agriculture after 2050.

Food security

Climate change will increasingly undermine food security.

Flood risk

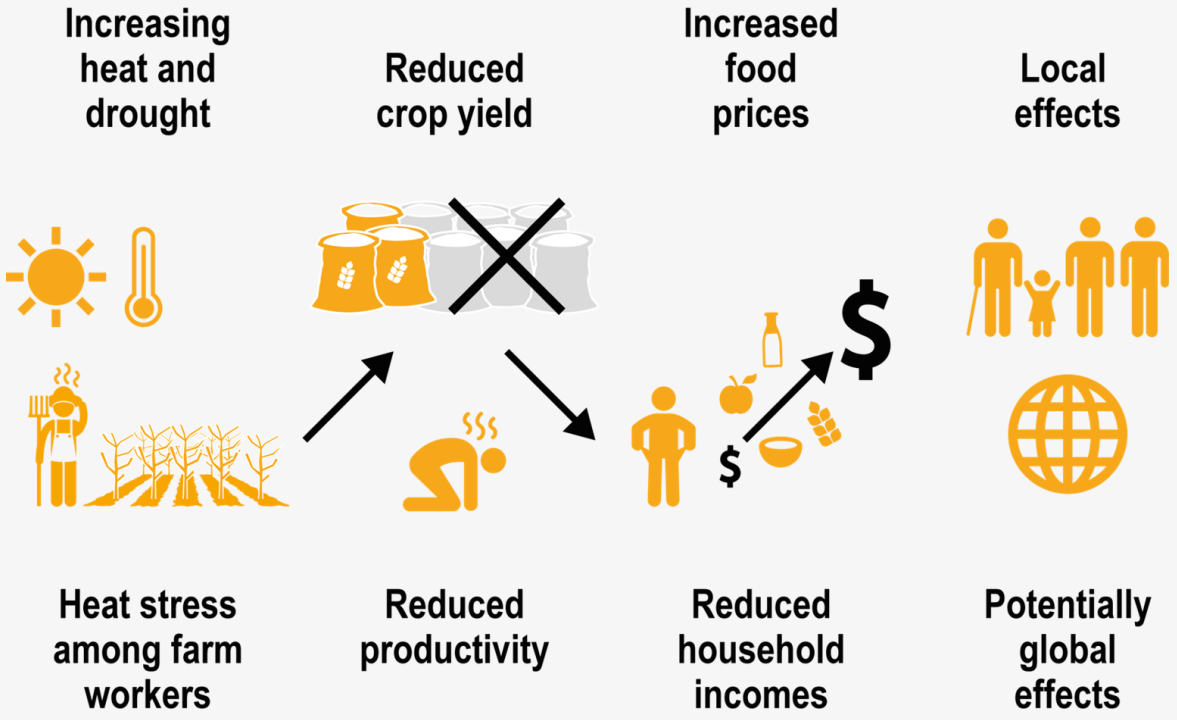
About a billion people in low-lying cities by the sea and on Small Islands at risk from sea level rise by mid-century.

Simultaneous extreme events compound risks

Multiple extreme events that compound the risks are more difficult to manage

… e.g. reductions in crop yields, made worse by heat stress among farm workers

…



Between 3.3 y 3.6 billion people live in places that are highly vulnerable to climate change

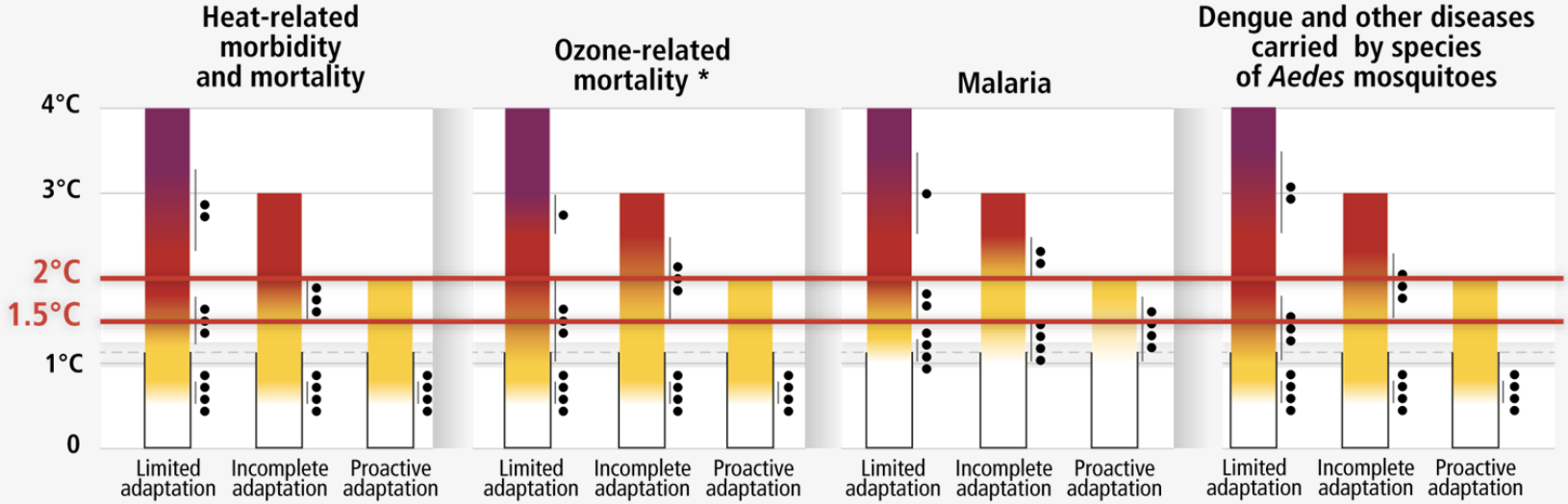
[Denis Onyodi / KRCS CC BY-NC 2.0]

These places fase simultaneous challenges

- Limited access to basic services and infrastructure
- Climate sensitive income sources
- High levels of poverty and unequal income distribution
- Problems with governance
- Lack of financing sources
- Low levels of trust

[Denis Onyodi / KRCS CC BY-NC 2.0; Marco Dormino UN Photo CC BY-NC-ND 2.0; Markus Krisetya / Unsplash]

Risk development and reduction under 3 adaptation scenarios: human health



Scenario narratives

Limited adaptation: Failure to proactively adapt; low investment in health systems
Incomplete adaptation: Incomplete adaptation planning; moderate investment in health systems
Proactive adaptation: Proactive adaptive management; higher investment in health systems

* Mortality projections include demographic trends but do not include future efforts to improve air quality that reduce ozone concentrations.

Adaptation saves lives, reduces risks and has multiple benefits.

Boskalis / Rijkswaterstaat

There are limits to adaptation

- Even effective adaptation cannot prevent all losses and damages
- Above 1.5°C some natural solutions may no longer work.
- Above 1.5°C, lack of fresh water could mean that people living on small islands and those dependent on glaciers and snowmelt can no longer adapt.
- By 2°C it will be challenging to farm multiple staple crops in many current growing areas.

Maladaptation

- Adaptation that has unintended consequences and exacerbates vulnerability, including shifting risk burdens now and over time, due to short-term actions, lack of attention to the most vulnerable, and lack of planning, amongst others.

The most disadvantaged groups are most affected by maladaptation.

Five System Transitions in Adaptation

Land, ocean, coastal and freshwater ecosystems

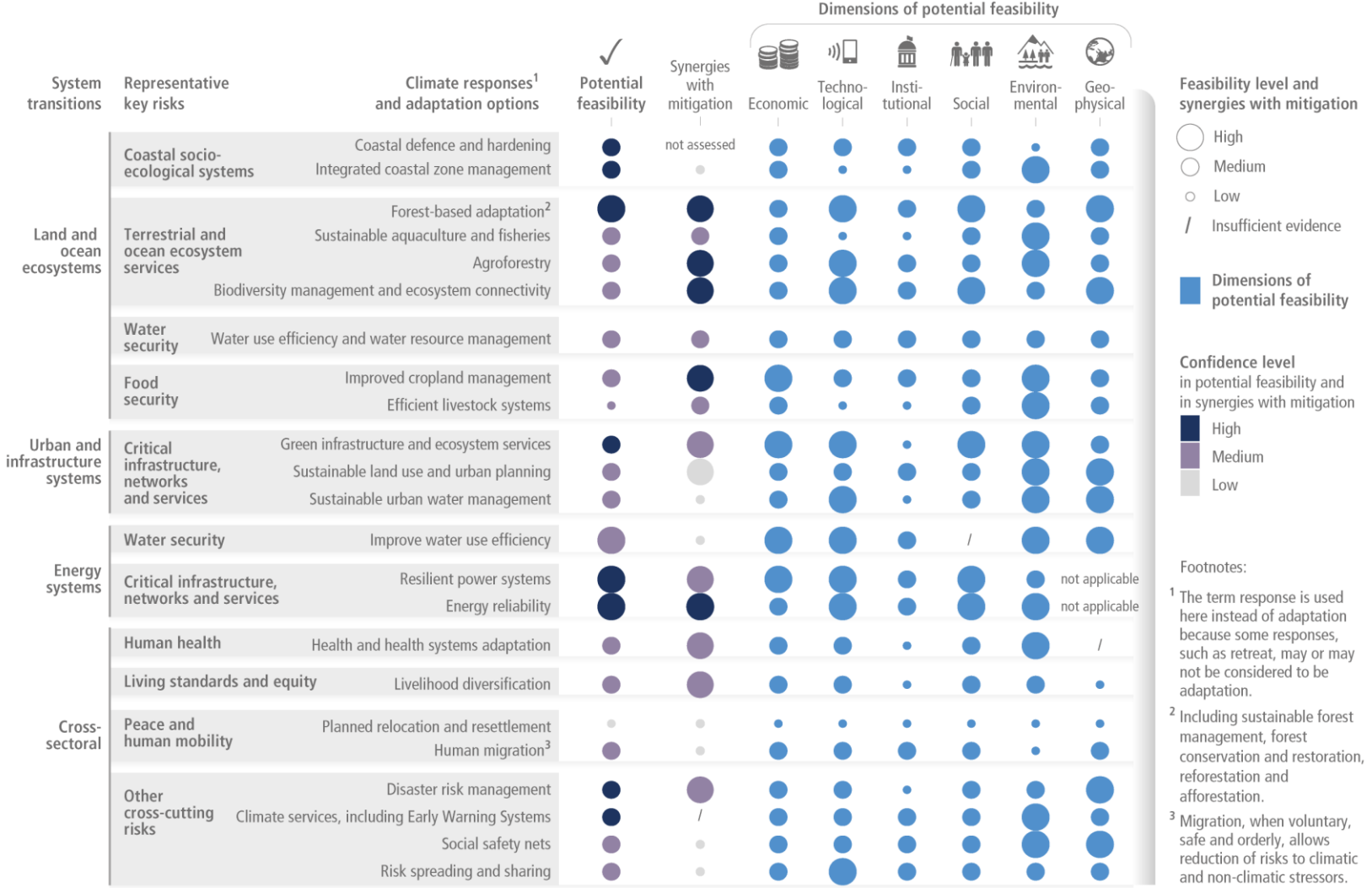
Urban, rural and infrastructure

Energy

Industry

Society

- Make possible the adaption required for human health and well being; economic and social resilience; ecosystem health and planetary health
- Are important for achieving the low global warming levels that would avoid many limits to adaptation



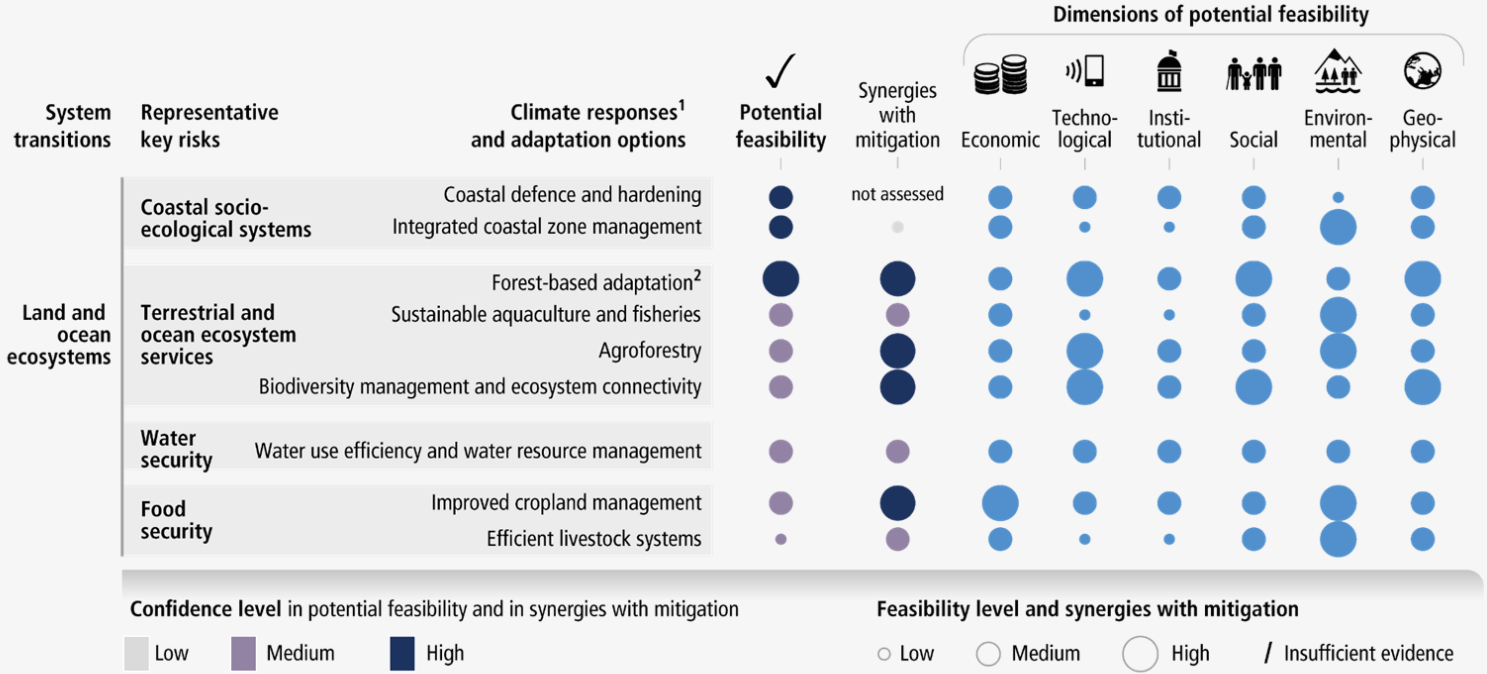
IPCC

IPCC AR6 SPM Figure 4a

Indicators for adaptation

Dimensions	Adaptation indicators
Economic	Micro-economic viability Macro-economic viability Socio-economic vulnerability reduction potential Employment & productivity enhancement potential
Technological	Technical resource availability Risks mitigation potential
Institutional	Political acceptability Legal & regulatory feasibility Institutional capacity & administrative feasibility Transparency & accountability potential
Socio-cultural	Social co-benefits (health, education) Socio-cultural acceptability Social & regional inclusiveness Intergenerational equity Gender equity
Environmental/ ecological	Ecological capacity Adaptive capacity/ resilience building potential
Geophysical	Physical feasibility Land use change enhancement potential Hazard risk reduction potential

The Feasibility of Adaptation measures



Footnotes:

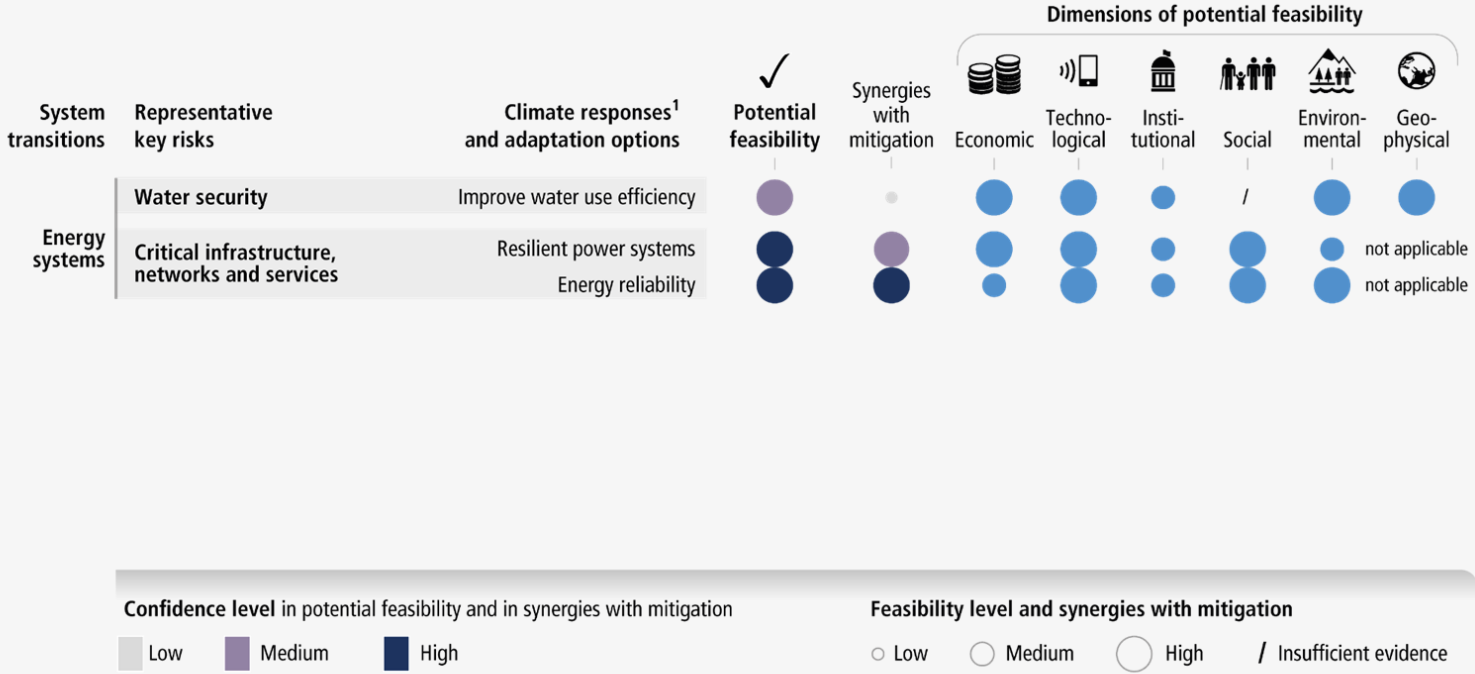
[1] The term response is used here instead of adaptation because some responses, such as retreat, may or may not be considered to be adaptation.

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

[3] Migration, when voluntary, safe and orderly, allows reduction of risks to climatic and non-climatic stressors.

IPCC WGII AR6 SPM Figure 4a

The Feasibility of Adaptation measures



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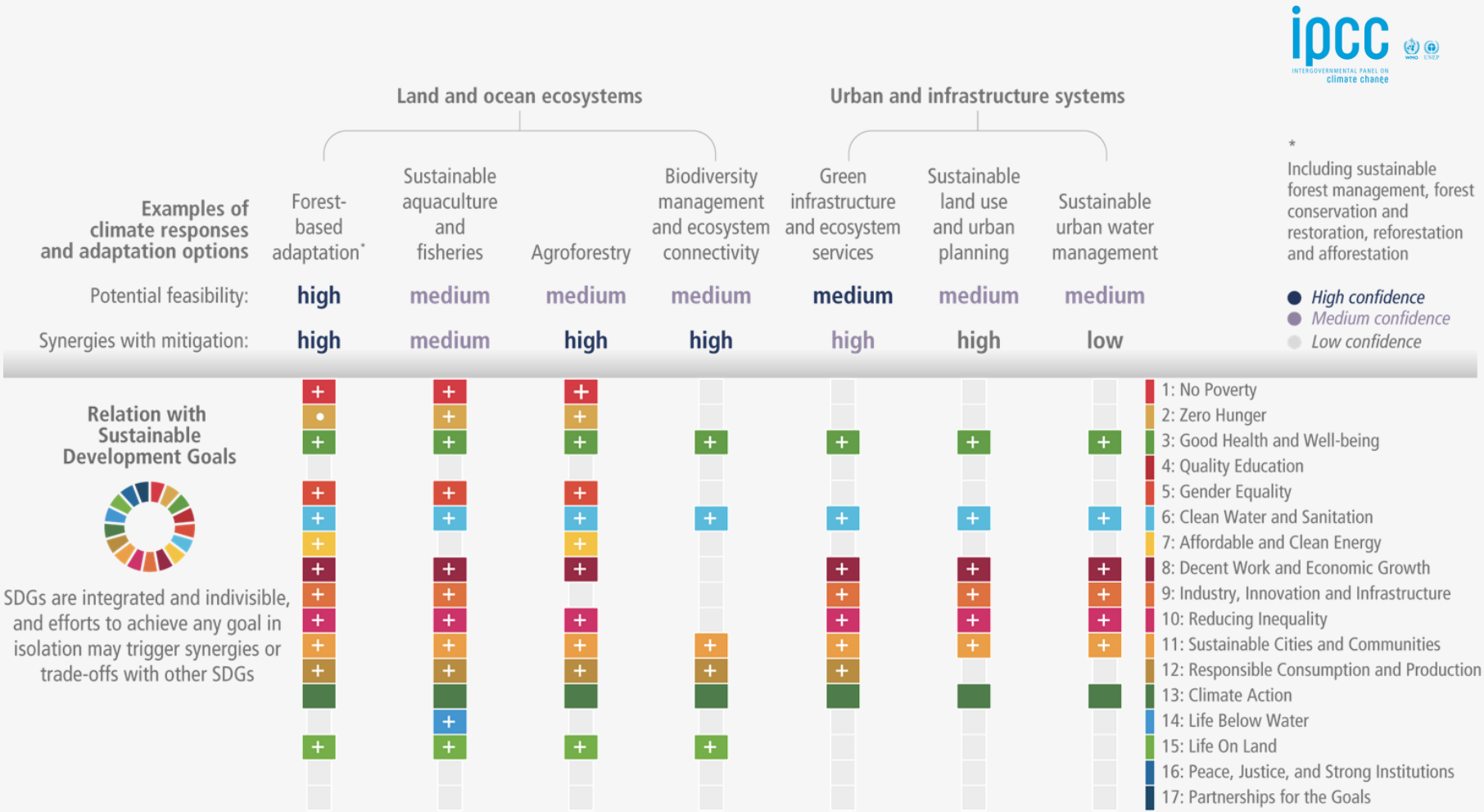
IPCC WGII AR6 SPM Figure 4a



IPCC WGII AR6 SPM Figure 4b

[Axel Fassio/CIFOR CC BY-NC-ND 2.0]

Accelerating adaptation

- Political commitment and follow-through across all levels of government
- Institutional framework: clear goals, priorities that define responsibilities
- Enhancing knowledge of impacts and risks improves responses
- Monitoring and evaluation of adaptation measures are essential to track progress
- Inclusive governance that prioritises equity and justice – direct participation

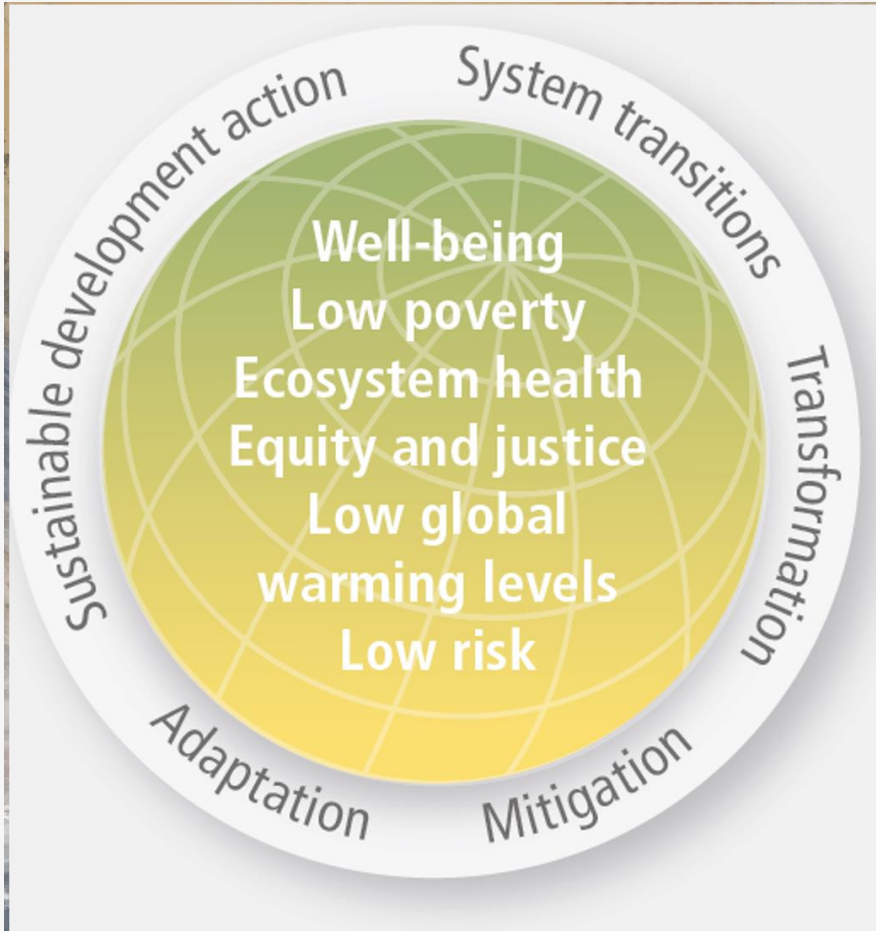
Climate resilient development

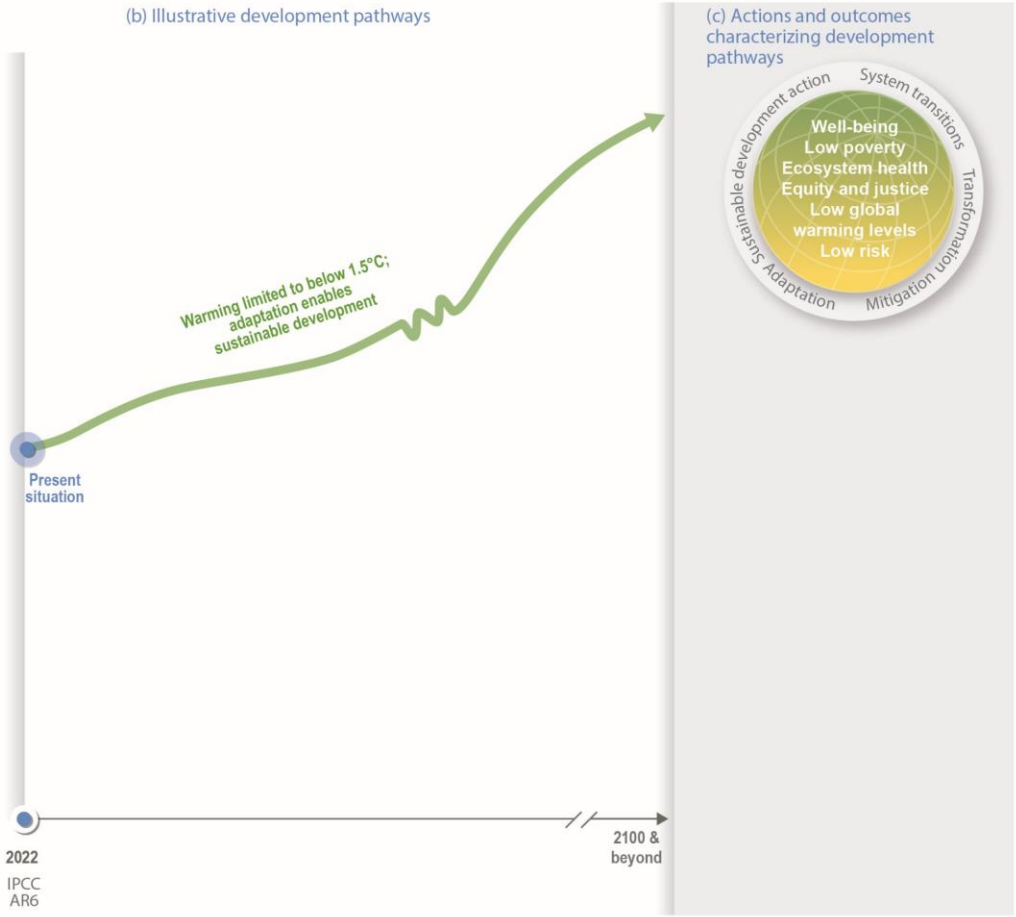
Adaptation: Reduced climate risks

Mitigation: Reduced greenhouse gas emissions

Interdependence with ecosystems: Enhanced biodiversity and Sustainable Development Goals

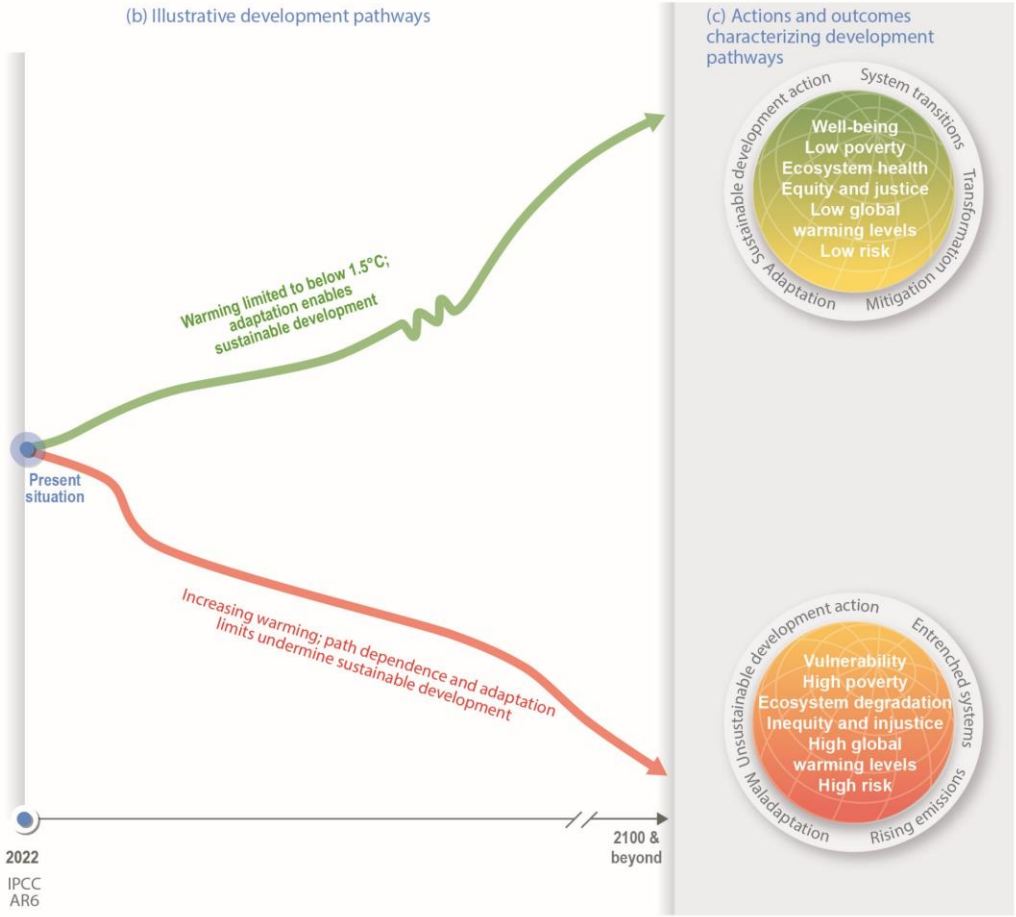
Shifting to a societal development that limits global warming and climate risk, and that advances sustainable development, is urgent





Climate resilient development:

- Adaptation supporting sustainable development
- Increasingly irreversible changes as we approach and exceed 1.5 degrees warming
- Limits to adaptation increase with warming



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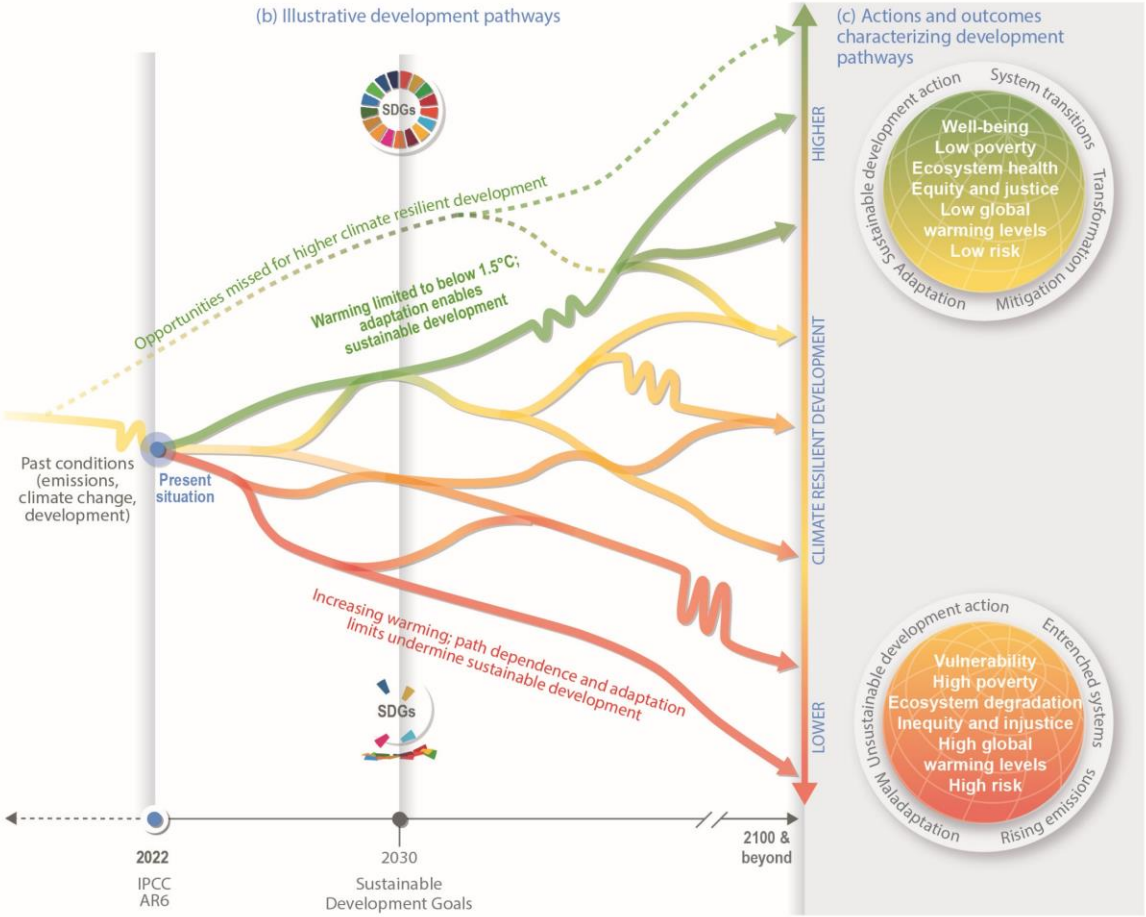
Current development trajectories

- Adaptation gaps are increasing
- Inequities exacerbate vulnerability
- We are on course to 3.2 degrees warming by 2100
- Path dependence



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The prospects to shift to pathways towards sustainable futures depend on action this decade

Development pathways result from continuous societal choices

Societal choices are the result of multiple decisions made by multiple actors in diverse arenas of engagement

- Multiple government, private sector and civil society actors interact in different arenas of engagement, including **economic + financial**

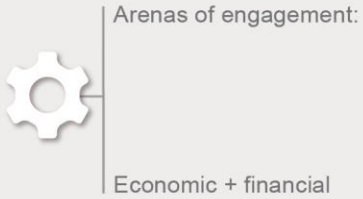

Photo: shutterstock.com

Photo: Alex Fassio/CC BY-NC-ND 2.0/flickr

Societal choices are the result of multiple decisions made by multiple actors in diverse arenas of engagement

- Multiple government, private sector and civil society actors interact in different arenas of engagement, including economic + financial, **knowledge + technology**

Photos: shutterstock.com

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Photo: Bruce Glavovic

Photo: shutterstock.com

Societal choices are the result of multiple decisions made by multiple actors in diverse arenas of engagement

- Multiple government, private sector and civil society actors interact in different arenas of engagement, including economic + financial, knowledge + technology, ecological, **political**

Arenas of engagement:

Political
Ecological
Knowledge + technology
Economic + financial

Photo. Marco Oriolesi/unsplash.com

Photo: shutterstock.com

Societal choices are the result of multiple decisions made by multiple actors in diverse arenas of engagement

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Photo: Marianne Mosberg

Photo: shutterstock.com

Societal choices are the result of multiple decisions made by multiple actors in diverse arenas of engagement

- Multiple government, private sector and civil society actors interact in different arenas of engagement, including economic + financial, knowledge + technology, ecological, political, socio-cultural and **community** arenas.

Arenas of engagement:
Community
Socio-cultural
Political
Ecological
Knowledge + technology
Economic + financial

Photo: wonderlate/unsplash.com

Photo: Joris Visser/unsplash.com

Photo. Asia Culturecenter/unsplash.com

Dimensions that enable actions towards higher climate resilient development

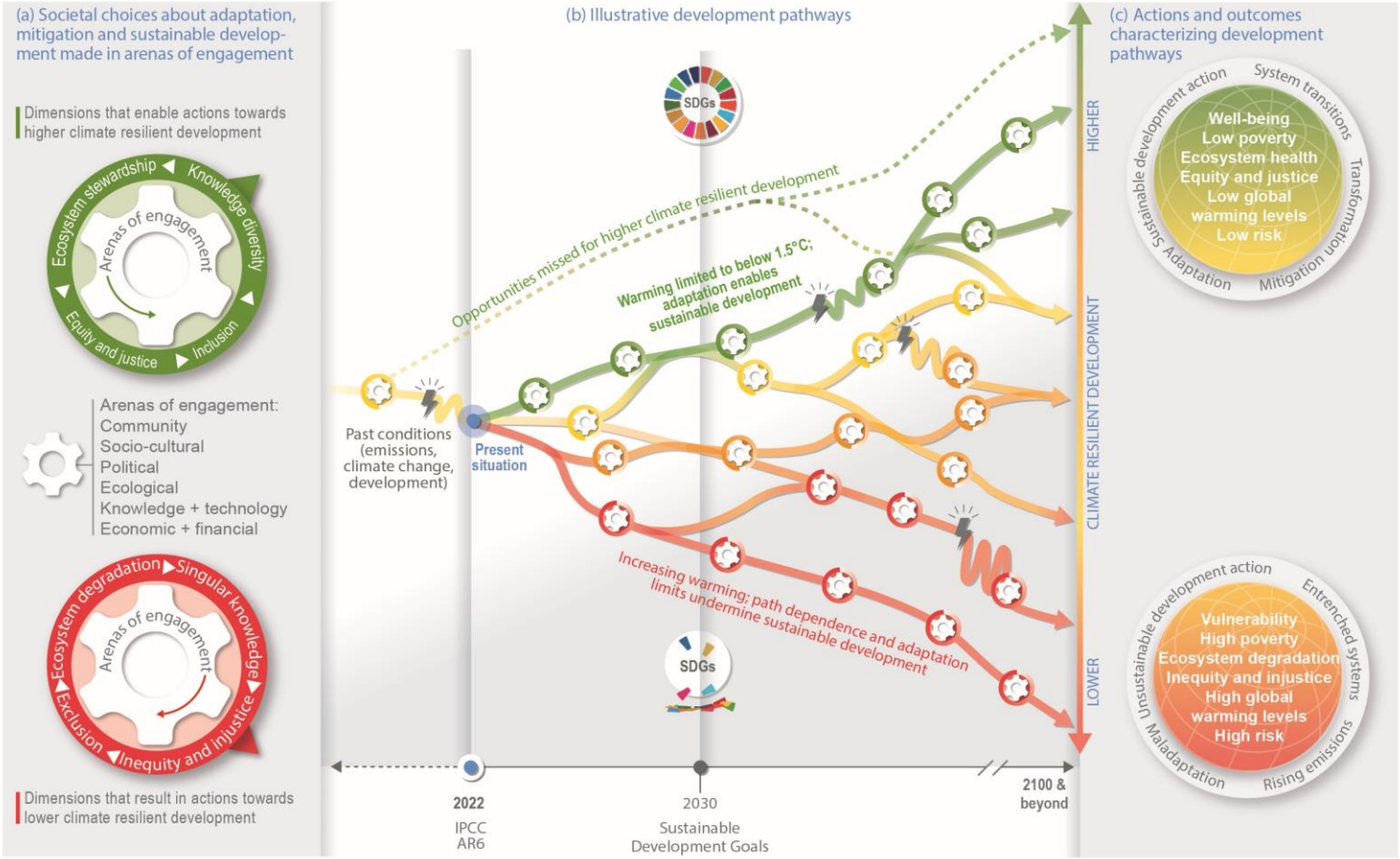
Arenas of engagement:
Community
Socio-cultural
Political
Ecological
Knowledge + technology
Economic + financial

Dimensions that result in actions towards lower climate resilient development

Key dimensions enable climate resilient development

- Dimensions that enable societal choices towards *higher* climate resilient development include knowledge diversity, ecosystem stewardship, equity and justice and inclusion.

- Dimensions that result in societal choices towards *lower* climate resilient development have been identified as **singular knowledge, ecosystem degradation, exclusion, and inequity and injustice**


(a) Societal choices about adaptation, mitigation and sustainable development made in arenas of engagement
Dimensions that enable actions towards higher climate resilient development
Ecosystem stewardship
Knowledge diversity
Arenas of engagement
Equity and justice
Inclusion
Arenas of engagement:
Community
Socio-cultural
Political
Ecological
Knowledge + technology
Economic + financial
Ecosystem degradation
Singular knowledge
Arenas of engagement
Exclusion
Inequity and injustice
Dimensions that result in actions towards lower climate resilient development
(b) Illustrative development pathways
SDGs
Opportunities missed for higher climate resilient development
Warming limited to below 1.5°C; adaptation enables sustainable development
Past conditions (emissions, climate change, development)
Present situation
Increasing warming; path dependence and adaptation limits undermine sustainable development
SDGs
HIGHER
CLIMATE RESILIENT DEVELOPMENT
LOWER
2022
IPCC AR6
2030
Sustainable Development Goals
2100 & beyond
(c) Actions and outcomes characterizing development pathways
System transitions
Transformation
Mitigation
Adaptation
Sustainable development action
Well-being
Low poverty
Ecosystem health
Equity and justice
Low global warming levels
Low risk
Entrenched systems
Rising emissions
Maladaptation
Unsustainable development action
Vulnerability
High poverty
Ecosystem degradation
Inequity and injustice
High global warming levels
High risk
Illustrative climatic or non-climatic shock, e.g. COVID-19, drought or floods, that disrupts the development pathway
Narrowing window of opportunity for higher CRD

Key message I

- Since AR5, climate risks are appearing faster and will get more severe sooner.
- Impacts cascade through natural and human systems, often compounding with the impacts from other human activities.

Key message II

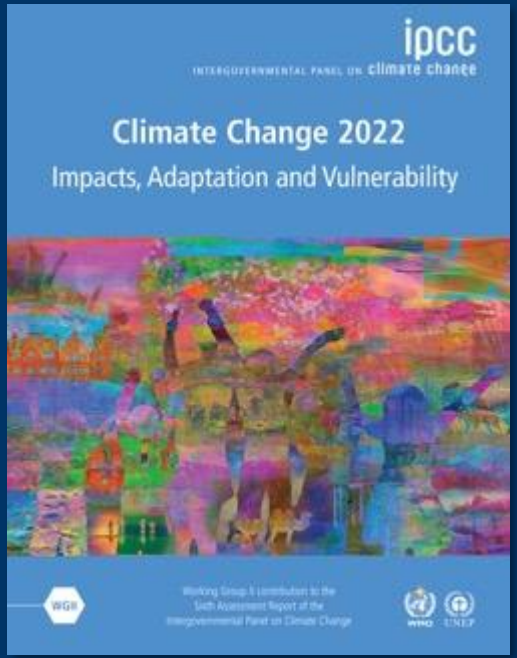
- For many locations on Earth, the capacity for adaptation is already significantly limited.
- The maintenance and recovery of natural and human systems will depend on the achievement of mitigation targets.





Key message III

- The magnitude of observed impacts and projected climate risks indicate the scale of decision-making, funding and investment needed over the next decade if climate resilient development is to be achieved.
- Available evidence on projected climate risks indicates that opportunities for adaptation to many climate risks will likely become constrained and have reduced effectiveness should 1.5°C global warming be exceeded…



“The scientific evidence is unequivocal: climate change is a threat to human well-being and the health of the planet.

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

This report offers solutions to the world.

ipcc
INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

THANK YOU FOR YOUR ATTENTION!

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Sixth Assessment Report
WORKING GROUP III – MITIGATION OF CLIMATE CHANGE

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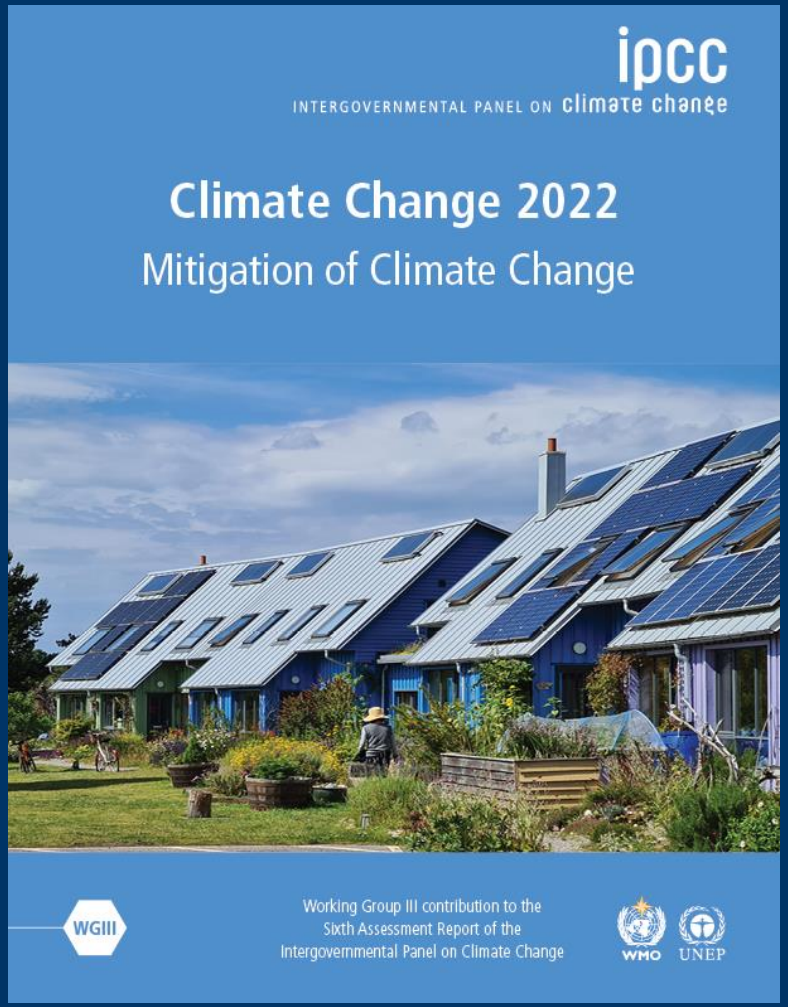
Climate Change 2022

Mitigation of Climate Change

Nan Zhou
Senior Scientist
Lawrence Berkeley National Laboratory

[photo: Matt Bridgestock, Director and Architect at John Gilbert Architects]



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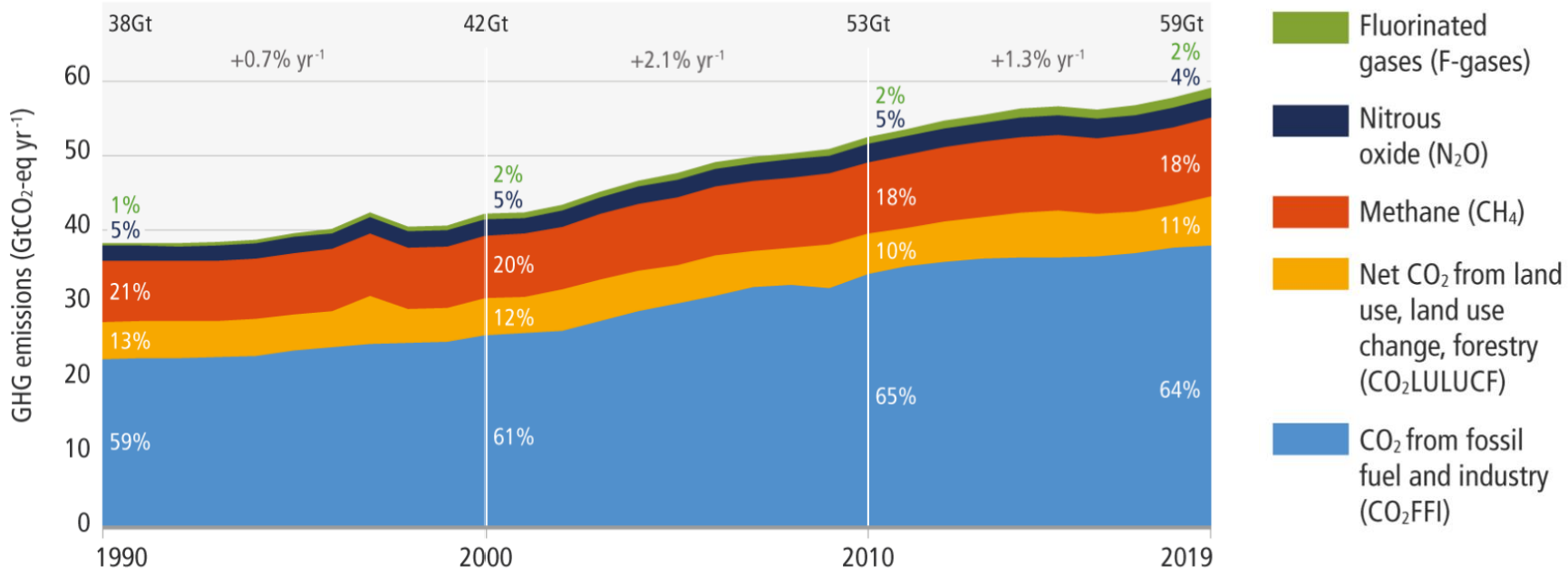
2010-2019: Average annual greenhouse gas emissions at highest levels in human history

We are not on track to limit warming to 1.5 °C.



…but there is increased evidence of climate action

[Charlie Chesvick/IStock.com]

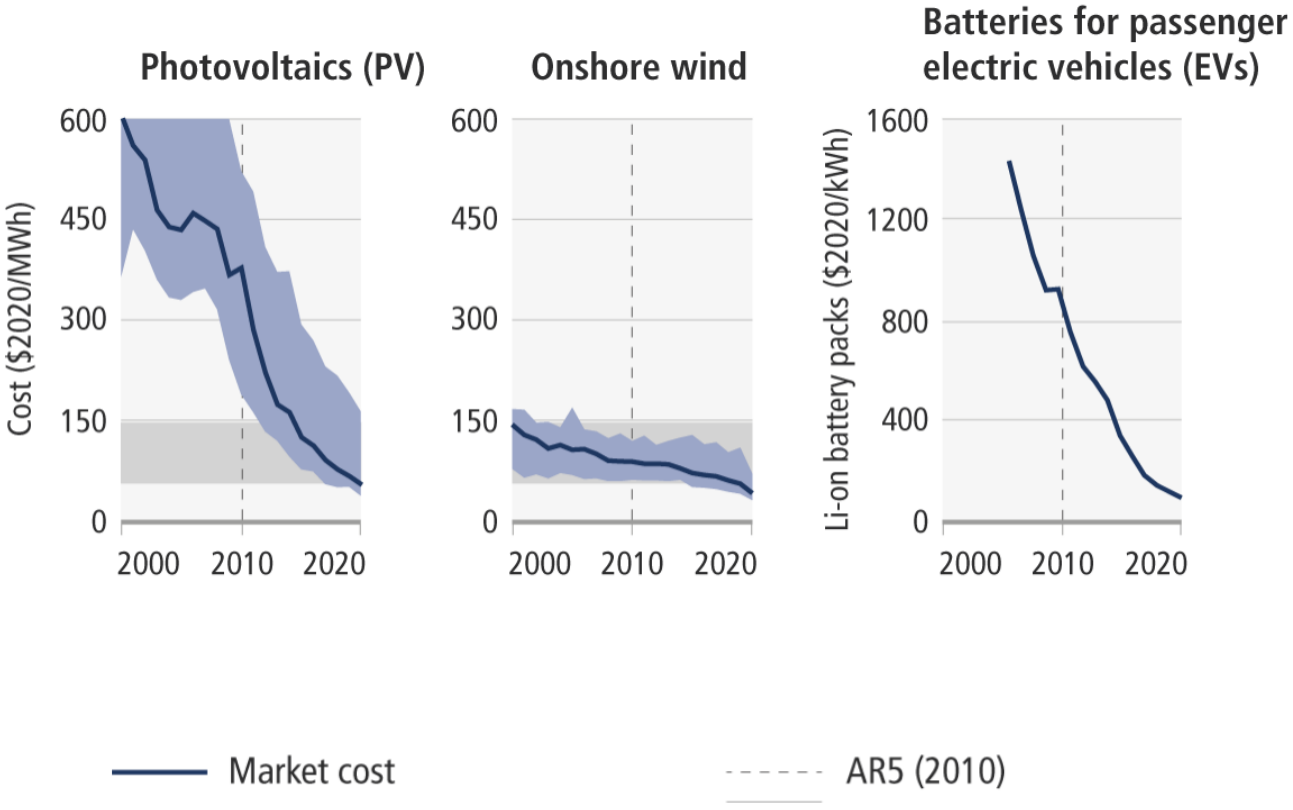
ipcc

> **Unless there are immediate and deep emissions reductions across all sectors, 1.5°C is beyond reach.**

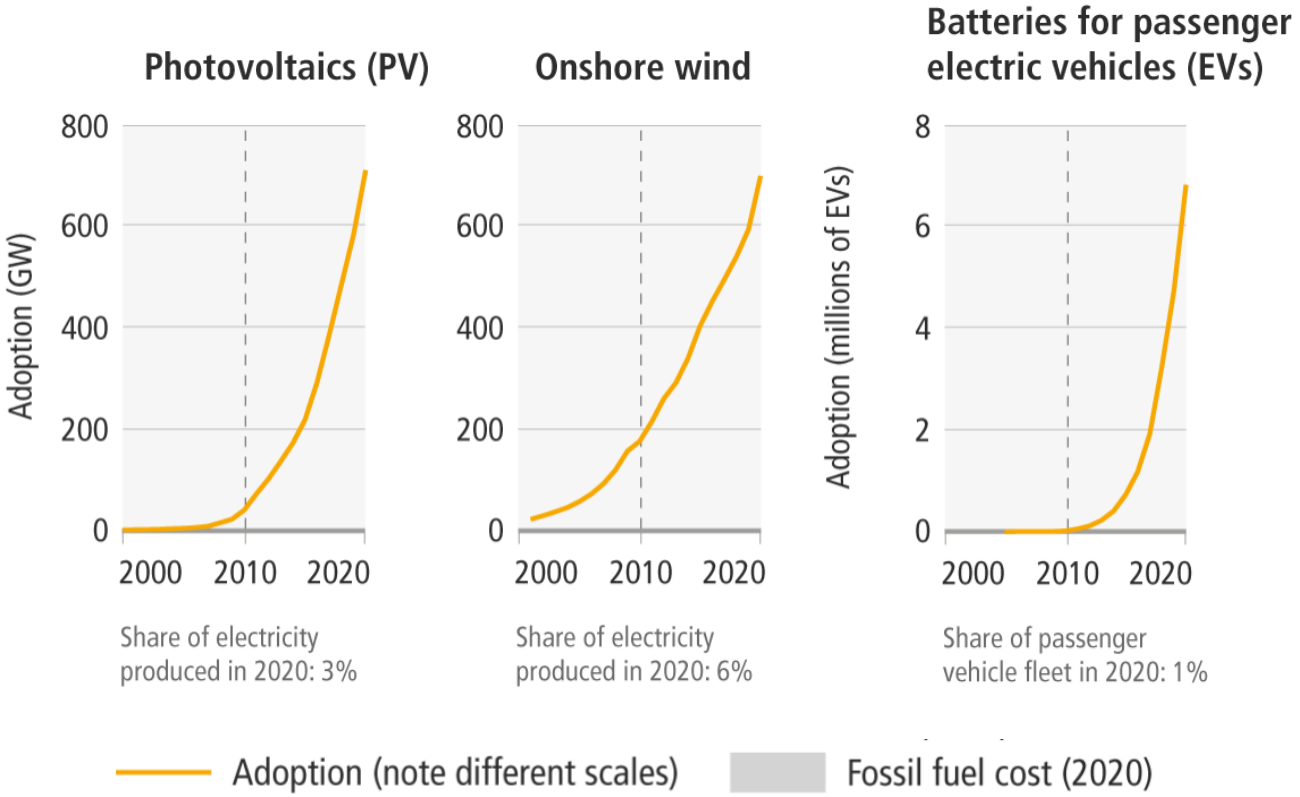
Increased evidence of climate action

Some countries have achieved a **steady decrease** in emissions **consistent** with limiting warming to **2°C.**

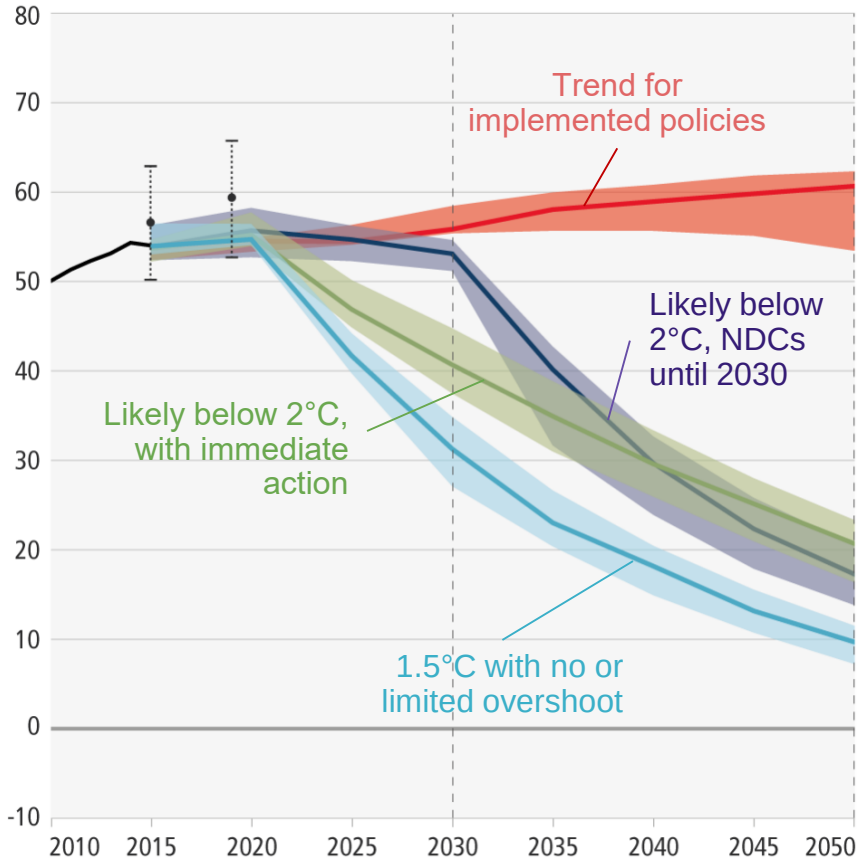
Zero emissions targets have been adopted by at least **826 cities and 103 regions**



In some cases, costs for renewables have fallen below those of fossil fuels.



Electricity systems in some countries and regions are already predominantly powered by renewables.



Limiting warming to 1.5 °C

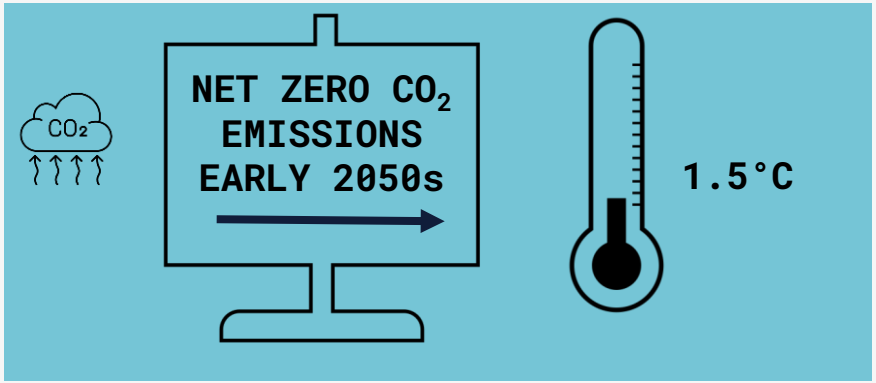
- Global GHG emissions peak before 2025, reduced by 43% by 2030.
- Methane reduced by 34% by 2030

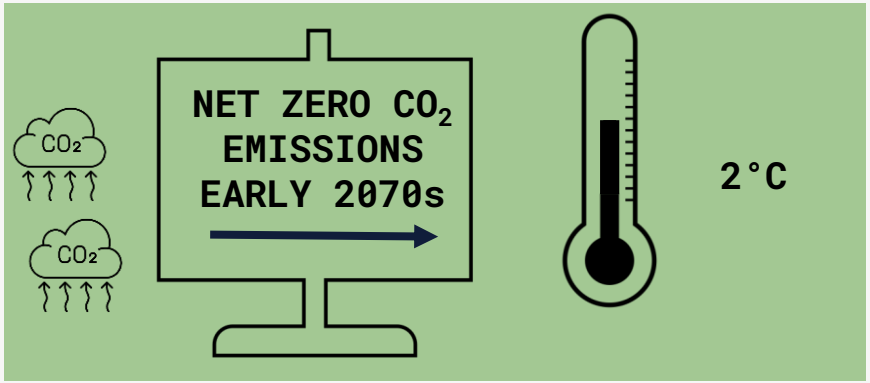
Limiting warming to around 2°C

- Global GHG emissions peak before 2025, reduced by 27% by 2030.

(based on IPCC-assessed scenarios)

The temperature will stabilise when we reach net zero carbon dioxide emissions





(based on IPCC-assessed scenarios)

There are options available **now** in every sector that can at least **halve** emissions by 2030

Demand and services

Energy

Land use

Industry

Urban

Buildings

Transport

C.4 **Reducing GHG emissions across the full energy sector requires major transitions, including a substantial reduction in overall fossil fuel use, the deployment of low-emission energy sources, switching to alternative energy carriers, and energy efficiency and conservation.** The contin
emissi

C.5 **Net-zero CO_2 emissions from the industrial sector are challenging but possible. Reducing industry emissions will entail coordinated action throughout value chains to promote all mitigation options, including demand management, energy and materials efficiency, circular**

C.6 **Urban areas can create opportunities to increase resource efficiency and significantly reduce GHG emissions through the systemic transition of infrastructure and urban form through low-emission development pathways towards net-zero emissions. Ambitious mitigation efforts for established, rapidly growing and emerging cities will encompass 1) reducing or changing energy and material consumption, 2) electrification, and 3) enhancing carbon uptake and storage in the urban environment. Cities can achieve net-zero emissions, but only if emissions are reduced**

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regions. There are many sustainable options for demand management, materials efficiency, and circular material flows that can contribute to reduced emissions, but how these can be applied will vary across regions a
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technolog
scenarios

C.7. **In modelled global scenarios, existing buildings, if retrofitted, and buildings yet to be built, are projected to approach net zero GHG emissions in 2050 if policy packages, which combine ambitious sufficiency, efficiency, and renewable energy measures, are effectively implemented and barriers to decarbonisation are removed. Low ambitious policies increase the**

underestimated compared to bottom-up industry-specific models. (*high confidence*) {3.4, 5.3, Figure

Energy

- **major transitions** are required to limit global warming
- reduction in fossil fuel use and use of carbon capture and storage
- low- or **no-carbon** energy systems
- widespread **electrification** and improved energy **efficiency**
- **alternative fuels**: e.g. hydrogen and sustainable biofuels

Demand and services

- potential to **bring down** global **emissions** by **40-70%** by 2050
- walking and cycling, electrified transport, reducing air travel, and adapting houses make large contributions
- **lifestyle changes** require **systemic changes** across all of society
- **some** people require additional **housing**, **energy** and **resources** for human wellbeing

[Bosch, Unsplash/Yoav Aziz, Adam Bartoszewicz, Victor Hernandez]

Transport

- **reducing demand** and **low-carbon** technologies are key to reducing emissions
- **electric vehicles**: greatest potential
- **battery technology**: advances could assist electric rail, trucks
- **aviation** and **shipping**: alternative fuels (low-emission **hydrogen** and **biofuels**) needed
- Overall, substantial potential but depends on **decarbonising the power sector**.

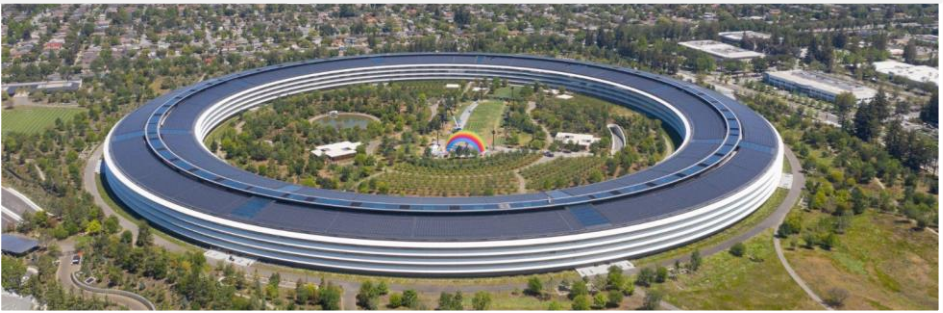
[United Airlines, Jeremy Segrott CC BY 2.0, Andreas160578/Pixabay]

Cities and urban areas

- better urban planning, as well as:
- sustainable production and consumption of goods and services,
- **electrification** (low-emission energy),
- enhancing **carbon uptake and storage** (e.g. green spaces, ponds, trees)

There are options for existing, rapidly growing *and* new cities.

[Pelargoniums for Europe/Unsplash, City of St Pete CC BY-ND 2.0, Victor/Unsplash, EThekwini Municipality, Arne Müseler/arne-mueseler.com, CC BY-SA 3.0 de]



Buildings

- buildings: possible to reach net zero emissions in 2050
- action in this decade is critical to fully capture this potential
- involves retrofitting existing buildings and effective mitigation techniques in new buildings
- requires ambitious policy packages
- zero energy and **zero-carbon** buildings exist in new builds **and retrofits**

[Pelargoniums for Europe/Unsplash, City of St Pete CC BY-ND 2.0, Victor/Unsplash, EThekwini Municipality, Arne Müseler/arne-mueseler.com, CC BY-SA 3.0 de]

Industry

- using materials more **efficiently**, **reusing**, **recycling**, **minimising waste**; currently **under-used** in policies and practice
- **basic materials**: low- to zero-greenhouse gas production processes at **pilot** to **near-commercial** stage
- achieving **net zero** is challenging





[Ahsanization/Unsplash, IMF Focus | Industry and Manufacturing CC BY-NC-ND 2.0, Rwanda Green Fund CC BY-ND 2.0, ILO/M. Fossat CC BY-NC-ND 2.0, Stephen Cornwell Pxhere.com]

Carbon Dioxide Removal

- required to **counterbalance hard-to-eliminate** emissions
- through **biological** methods: reforestation, and soil carbon sequestration
- **new technologies** require more **research**, up-front **investment**, and proof of concept at **larger scales**
- **essential** to **achieve net zero**
- **agreed methods** for measuring, reporting and verification required

[Forest Service Northern Region CC BY 2.0, Fiston Wasanga/CIFOR CC BY-NC-ND 2.0, Climeworks]



Land use

- can provide large-scale emissions reductions **and** remove and store CO_2 at scale
- protecting and restoring **natural ecosystems** to remove carbon: forests, peatlands, coastal wetlands, savannas and grasslands
- competing demands have to be **carefully managed**
- **cannot compensate** for **delayed** emission **reductions** in other sectors

Closing investment gaps

- financial flows: **3-6x lower** than levels needed **by 2030** to limit warming to below 1.5°C or 2°C
- there is **sufficient global capital** and liquidity to close investment gaps
- challenge of closing gaps is widest for developing countries

[Tobias/Unsplash, Rwanda Green Fund /CC BY-SA 2.0]

Policies, regulatory and economic instruments

- regulatory and economic instruments have **already proven effective** in reducing emissions
- **policy packages** and **economy-wide packages** are able to achieve **systemic change**
- ambitious and effective mitigation requires **coordination across government** and society

Technology and Innovation

- investment and policies **push forward low emissions** technological **innovation**
- **effective decision making** requires assessing potential benefits, barriers and risks
- **some options** are technically **viable**, rapidly becoming **cost-effective**, and have relatively **high public support**. Other options face barriers

Adoption of low-emission technologies is slower in most developing countries, particularly the least developed ones.

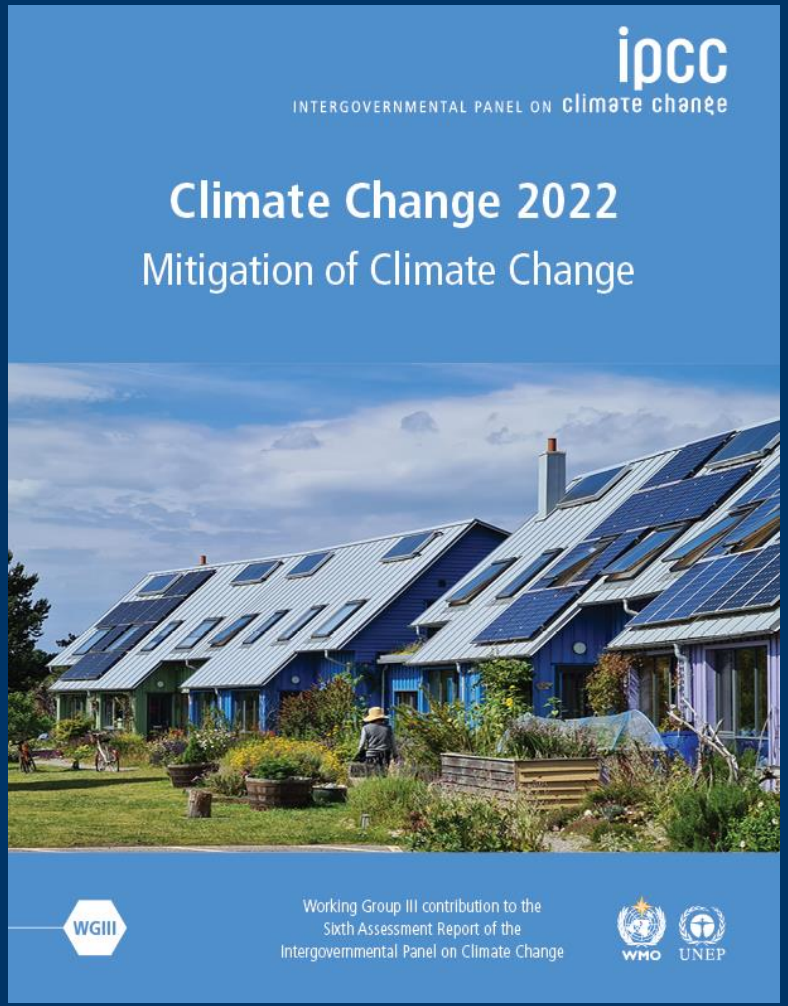
Accelerated climate action is critical to sustainable development

[Duy Pham/Unsplash]

Sixth Assessment Report
WORKING GROUP III – MITIGATION OF CLIMATE CHANGE

“ **The evidence is clear:**

The time for action is now

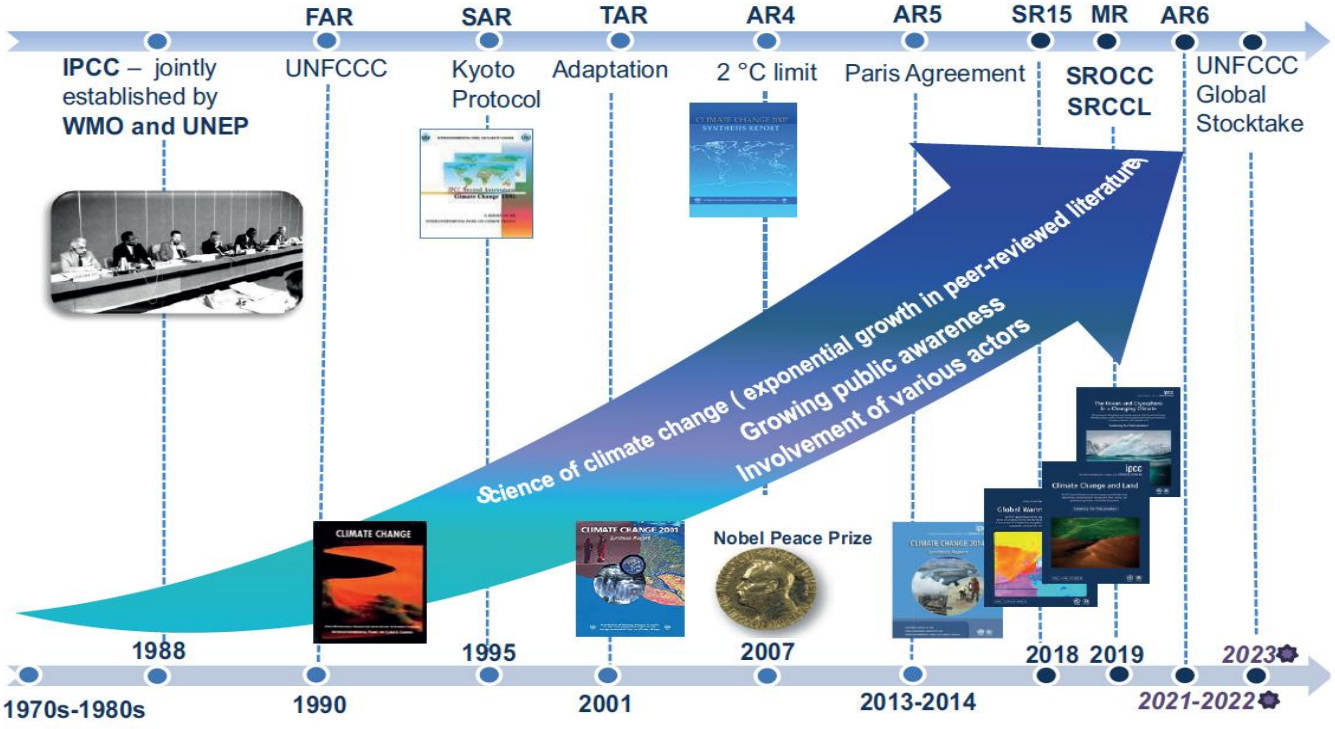


IPCC: Looking Back and Looking Forward

Lynn Price
Affiliate (retired Senior Scientist)
Lawrence Berkeley National Laboratory

[photo: Daniel Bernard]

IPCC contribution to climate science and policymaking



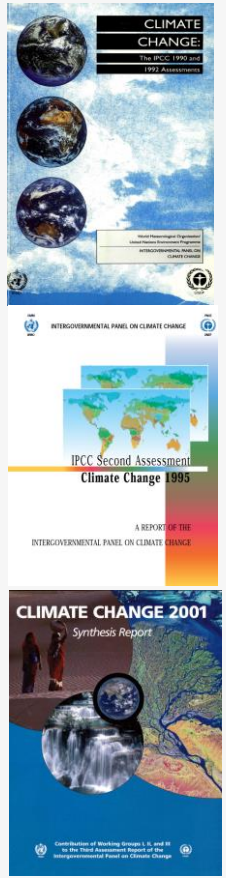
These dates are subject to change.

IPCC Assessment Reports – Influence of Human Activities

- FAR (1990): We are certain of the following: …emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases: CO_2, methane, CFCs and nitrous oxide. These increases will enhance the greenhouse effect, resulting on average in an additional warming of the Earth's surface.

- SAR (1995): …the observed trend in global mean temperature over the past 100 years is unlikely to be entirely natural in origin. More importantly, there is evidence of an emerging pattern of climate response to forcings by greenhouse gases and sulphate aerosols in the observed climate record. Taken together, these results point towards a human influence on global climate.

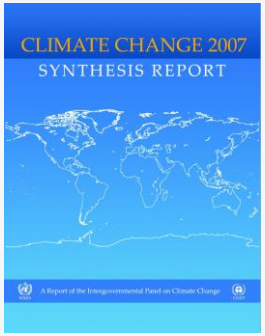
- TAR (2001): An increasing body of observations gives a collective picture of a warming world and other changes in the climate system…There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.

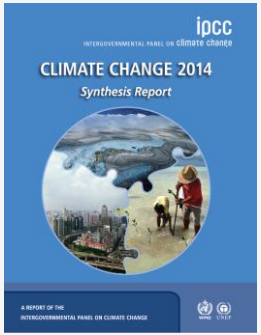


IPCC Assessment Reports – Influence of Human Activities

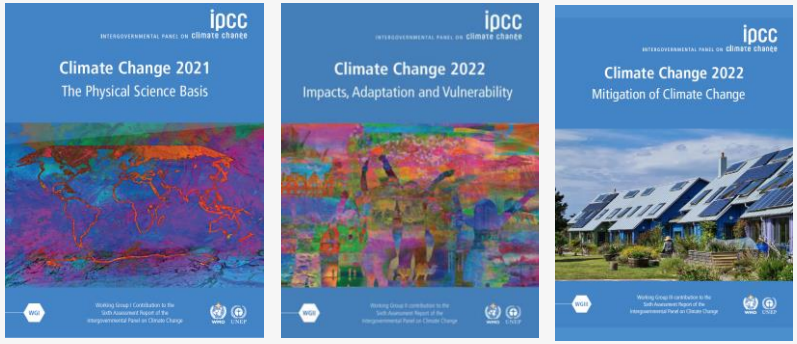
- AR4 (2007): Warming of the climate system is unequivocal. Most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic GHG concentrations.

- AR5 (2013/2014): Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. This evidence for human influence has grown since AR4. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.





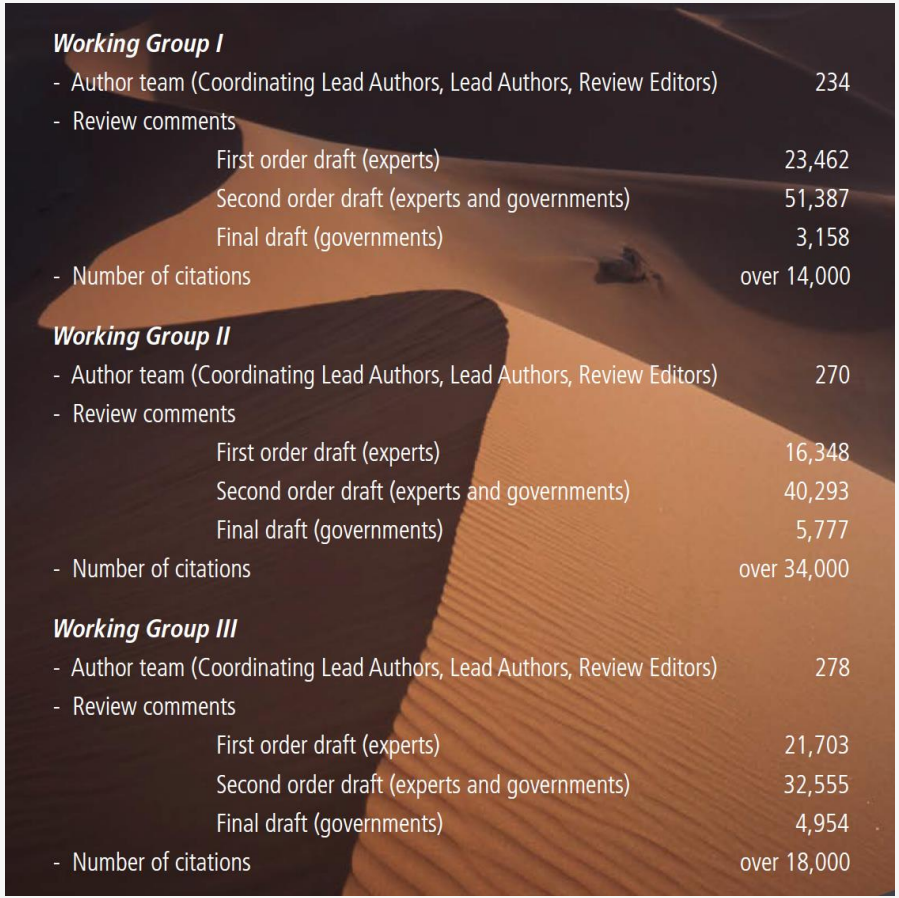
IPCC Assessment Reports – Influence of Human Activities



AR6 (2021/2022)

- The evidence for human influence on recent climate change strengthened from the IPCC First Assessment Report in 1990 to the IPCC Fifth Assessment Report in 2013/14, and is now even stronger in this assessment.
- In addition to global surface temperature, a wide range of indicators across all components of the climate system are changing rapidly, with many at levels unseen in millennia. The observed changes provide a coherent picture of a warming world, many aspects of which have now been formally attributed to human influence, and human influence on the atmosphere, ocean, and land components of the climate system, taken together, is assessed as unequivocal for the first time in an IPCC assessment report.

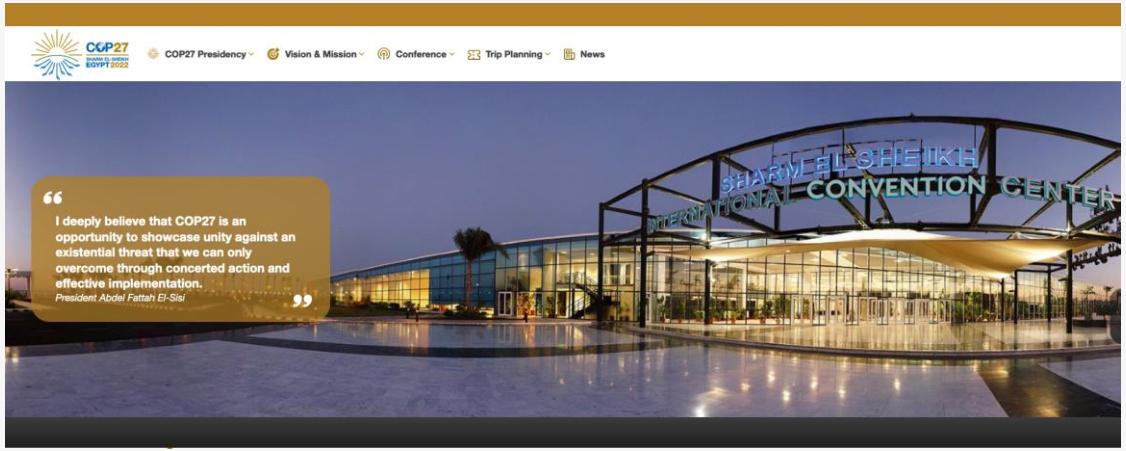
IPCC Sixth Assessment Report – By the Numbers



Sixth Assessment Report

- Authors: 782
- Review comments: 199,637
- Citations: over 66,000

Upcoming Events



- November 6-18, 2022: IPCC outreach at COP-27 in Sharm El Sheikh, Egypt
- March 20, 2023: Sixth Assessment Report (AR6) Synthesis Report released

Nobel Peace Prize - 2007

The Intergovernmental Panel on Climate Change and Albert Arnold (Al) Gore Jr. were awarded the Nobel Peace Prize ”for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change".

EESI
Environmental and Energy Study Institute

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www.eesi.org/101222cop

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Wednesday, October 12, 2022