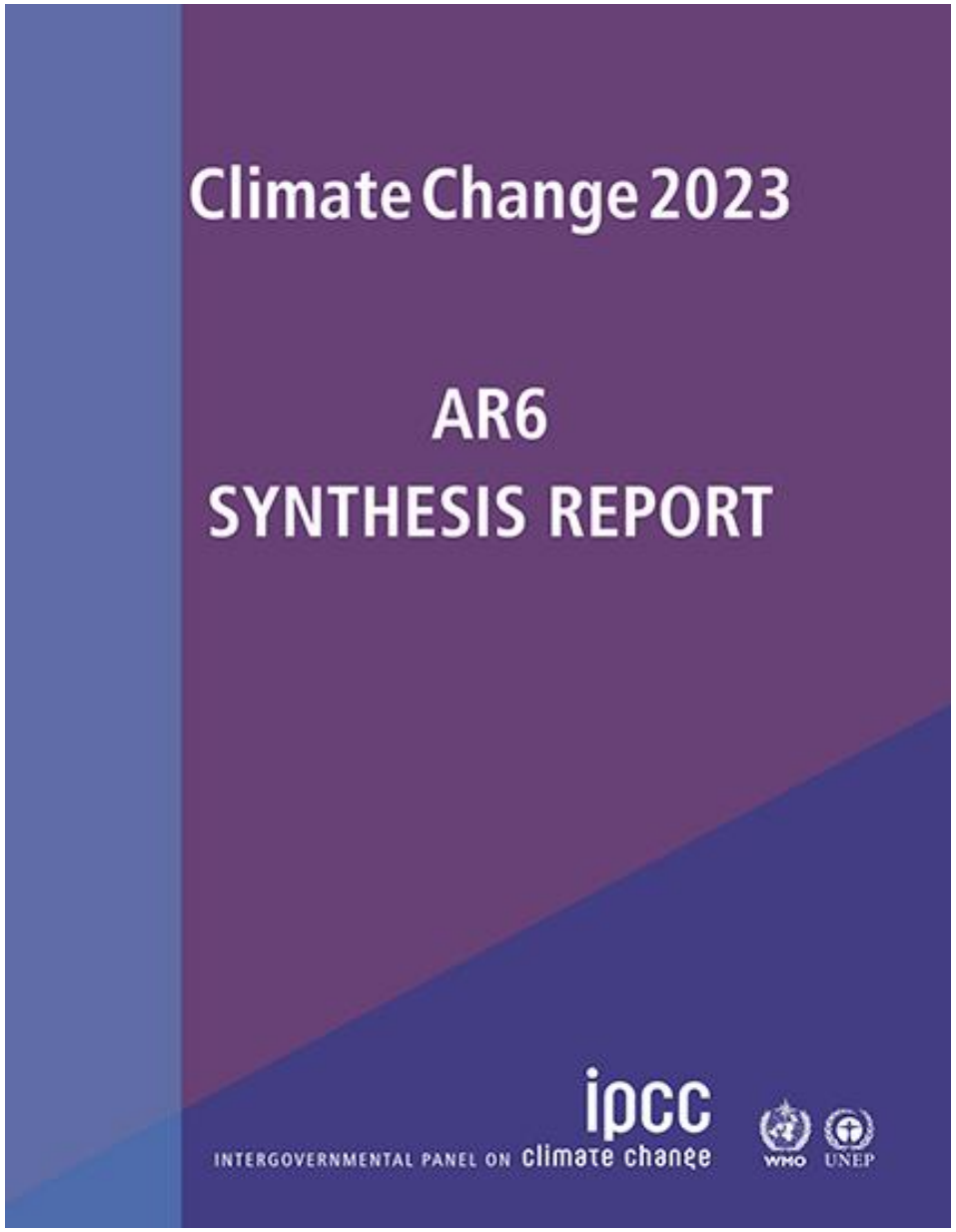

The IPCC's 6th Assessment Report

from a Climate Justice perspective

31st March 2023

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What is this report?

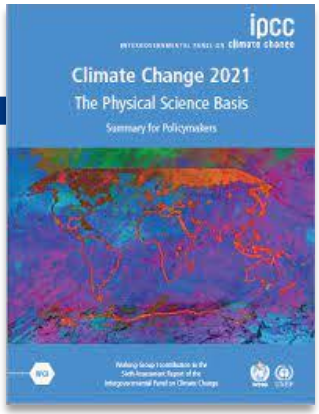
- Intergovernmental Panel on Climate Change is UN body formed 1988
- Does no research, only synthesises
- Produces Assessment Reports in 6-8 year cycles

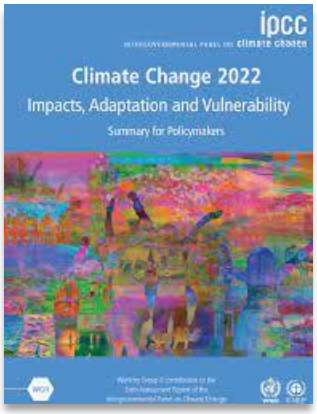
- Assessment Report 6 Synthesis of 3 working groups (+ 3 ‘Special Reports’)

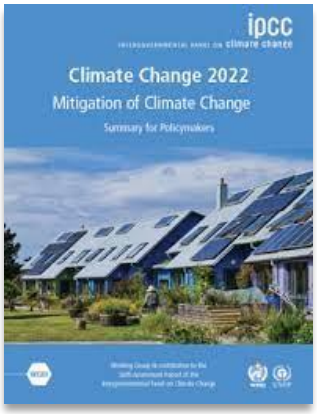
- Last one before 2028/2030 – by which time it will be too late!

- Full report (6000 pages) not yet published, only Summary for Policymakers (SPM, 36 pages)

- SPM signed off line-by-line by authors *and government delegates*







Examples of political influence

- Full report is scientific document, but SPM is *politically agreed*
- Scientist Rebellion leak of WG3 SPM provides insight into language changes

<u>On fossil fuels:</u>

- "focus of decarbonisation efforts in the energy systems sector needs to be on rapidly shifting to zero-carbon sources and actively *phasing out all fossil fuels*."

  → Pressure from Saudi Arabia →

- "transitioning from fossil fuels without carbon capture and storage (CCS) to very low- or zero-carbon energy sources, such as renewables or *fossil fuels with CCS*."

<u>On dietary change:</u>

- "A shift to diets with a higher share of plant-based protein in regions with excess consumption of calories and animal-source food can lead to substantial reductions in GHG emissions."

  → Pressure from Brazil and Argentina →

- Reference to "sustainable healthy diets"


What does the report say about…
Climate change so far?

A.1 Observed warming and its causes

- Warming greater on land (1.59°C) than oceans (0.88°C)
- But the Paris Agreement goal is 1.5°C!

- Despite all the warnings, emissions are still rising!
- Knowledge is not enough

A.1 Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020. Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions arising from unsustainable energy use, land use and land-use change, lifestyles and patterns of consumption and production across regions, between and within countries, and among individuals (*high confidence*). {2.1, Figure 2.1, Figure 2.2}

- Least developed countries (1.7 tonnes/person) have lower emissions than global average (6.9 tonnes/person)
- Top 10% of households emit 34-45% of emissions; bottom 50% emit 13-15%
- Emissions are driven by wealth, not 'people'

A.2 Observed changes and impacts

- Huge changes already, in every part of the planet, even at 1.1°C

- CC is impacting nature (forests, coral reefs, wetlands etc) as well as people, but "human and ecosystem vulnerability are interdependent"

A.2 Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people (*high confidence*). Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected (*high confidence*). {2.1, Table 2.1, Figure 2.2 and 2.3} (Figure SPM.1)

- 3.3-3.6 billion people "highly vulnerable", esp. Indigenous Peoples, small-scale food producers and low-income households in Global South


What does the report say about…
What will happen in the future?

B.1 Future climate change

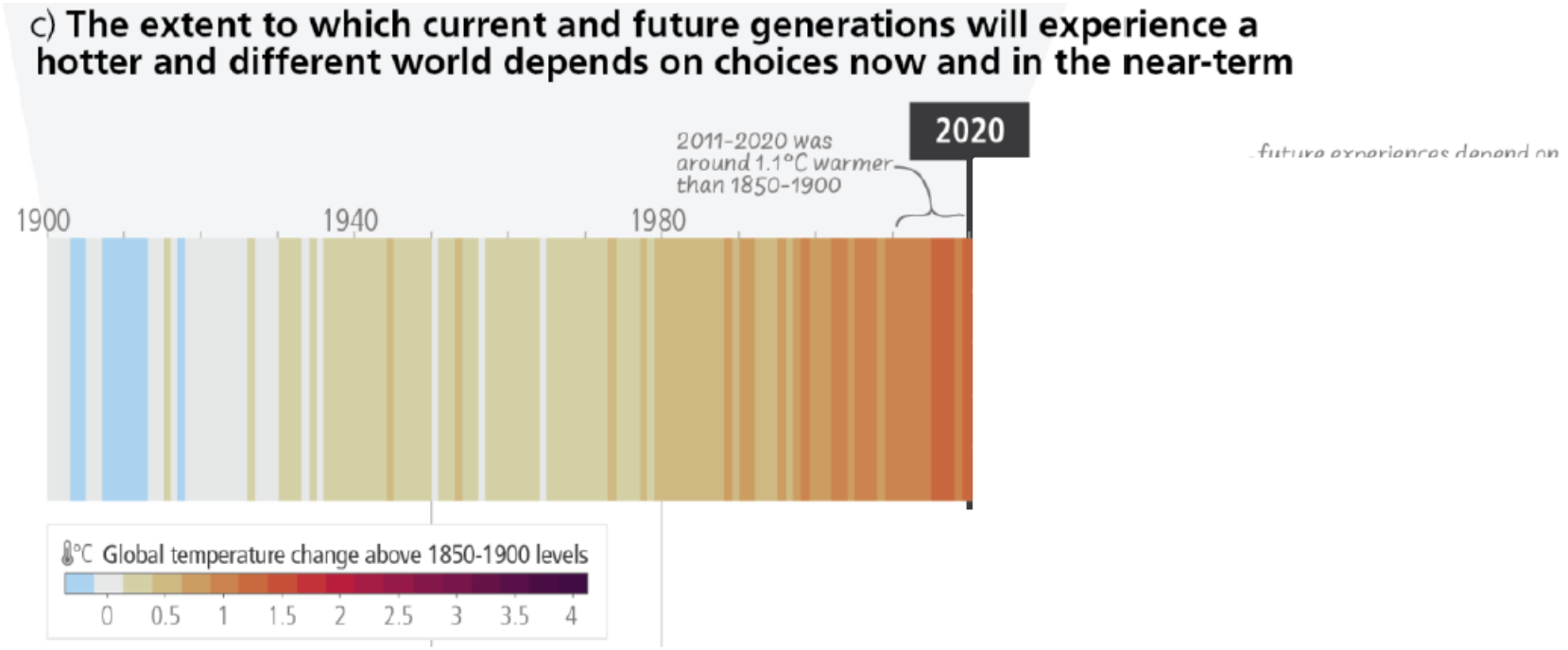
- Projections based on 5 scenarios ('shared socioeconomic pathways)
- Very low emissions = 1.4C by 2100… following 'temporary overshoot' of 'no more than 0.1C'
- Intermediate = 2.7C, Very high = 4.4C

B.1 Continued greenhouse gas emissions will lead to increasing global warming, with the best estimate of reaching 1.5°C in the near term in considered scenarios and modelled pathways. Every increment of global warming will intensify multiple and concurrent hazards (*high confidence*). Deep, rapid, and sustained reductions in greenhouse gas emissions would lead to a discernible slowdown in global warming within around two decades, and also to discernible changes in atmospheric composition within a few years (*high confidence*). {Cross-Section Boxes 1 and 2, 3.1, 3.3, Table 3.1, Figure 3.1, 4.3} (Figure SPM.2, Box SPM.1)

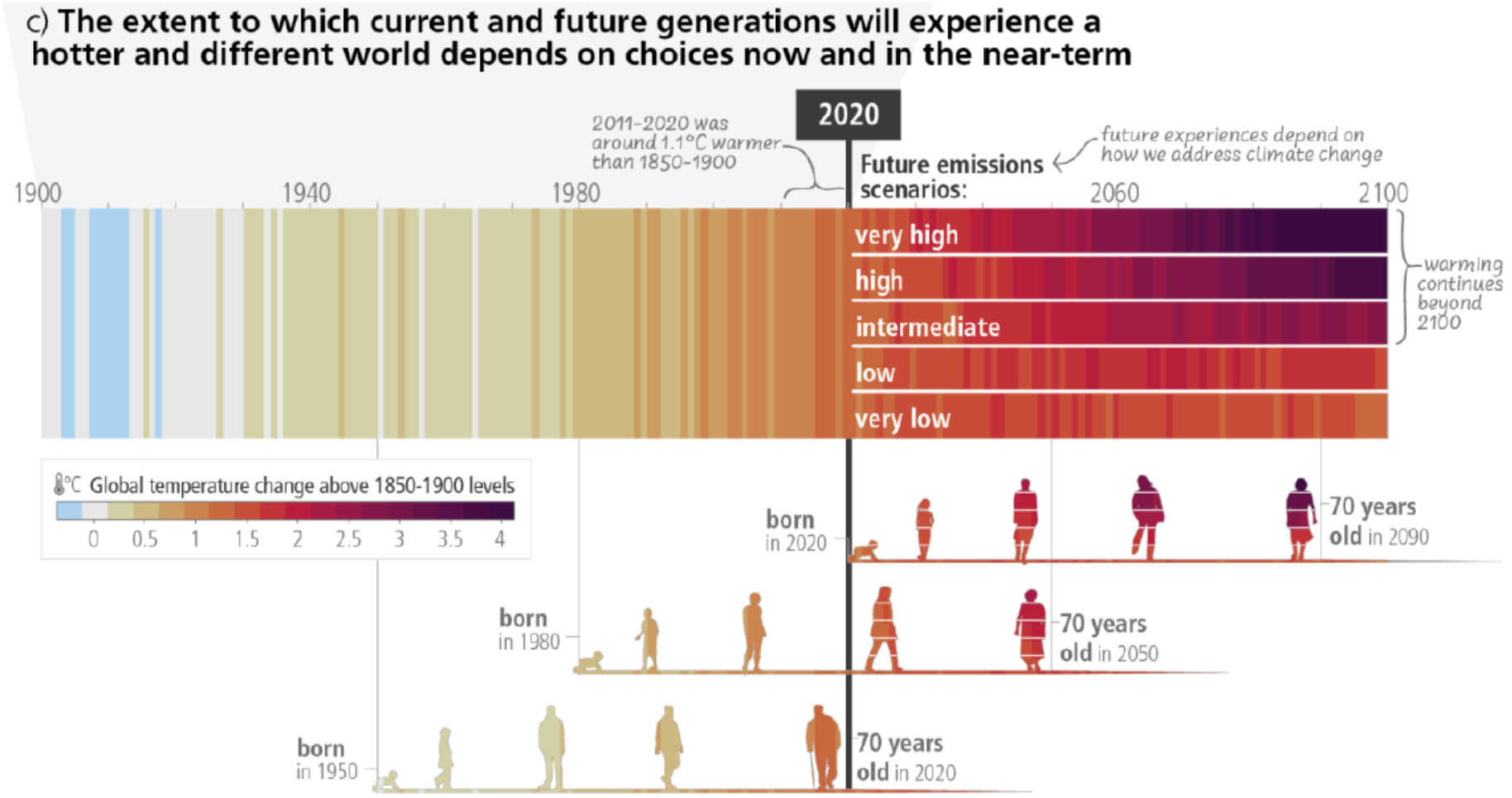
- >4C scenarios now unlikely, would require reversal of technology and policy*

- Time lag between decarbonisation and slowdown
- 1.5C expected by 2040

Future scenarios



Future scenarios



B.2 Climate change impacts and climate related risks

- Things going to be worse than we thought they would be
- And much worse than they are now

- The hotter we let it get, the worse things will be
- … but every fraction of a degree counts!

B.2 For any given future warming level, many climate-related risks are higher than assessed in AR5, and projected long-term impacts are up to multiple times higher than currently observed (*high confidence*). Risks and projected adverse impacts and related losses and damages from climate change escalate with every increment of global warming (*very high confidence*). Climatic and non-climatic risks will increasingly interact, creating compound and cascading risks that are more complex and difficult to manage (*high confidence*). {Cross-Section Box.2, 3.1, 4.3, Figure 3.3, Figure 4.3} (Figure SPM.3, Figure SPM.4)

- CC impacts will compound societal issues (e.g. food and water scarcity, conflict, land & resource competition) and be much harder to manage at hotter levels

B.7 Overshoot: exceeding a warming level and returning

- Suggests 'overshoot' of 1.5C can be reversed using CDR

- But technology doesn't exist ('feasibility concerns')

B.7 If warming exceeds a specified level such as 1.5°C, it could gradually be reduced again by achieving and sustaining net negative global CO_2 emissions. This would require additional deployment of carbon dioxide removal, compared to pathways without overshoot, leading to greater feasibility and sustainability concerns. Overshoot entails adverse impacts, some irreversible, and additional risks for human and natural systems, all growing with the magnitude and duration of overshoot. (*high confidence*) {3.1, 3.3, 3.4, Table 3.1, Figure 3.6}

- "Adverse impacts that occur during this period of overshoot and cause additional warming via feedback mechanisms, such as increased wildfires, mass mortality of trees, drying of peatlands, and permafrost thawing, weakening natural land carbon sinks and increasing releases of GHGs would make the return more challenging"

- Extremely worrying to normalise and legitimise this idea!


What does the report say about…
Risks of the worst outcomes?

B.3 Likelihood and risks of unavoidable, irreversible or abrupt changes

- Increased risk of species extinctions and irreversible biodiversity loss (incl. forests, coral reefs, polar regions)

"The likelihood and impacts of abrupt and/or irreversible changes in the climate system, including changes triggered when tipping points are reached, increase with further global warming"

B.3 Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse gas emissions reduction. The likelihood of abrupt and/or irreversible changes increases with higher global warming levels. Similarly, the probability of low-likelihood outcomes associated with potentially very large adverse impacts increases with higher global warming levels. (*high confidence*) {3.1}

Footnote (!) states "Warming levels >4°C may result from very high emissions scenarios, but can also occur from lower emission scenarios if climate sensitivity or carbon cycle feedbacks are higher than the best estimate."


What does the report say about…
Mitigation efforts so far?

A.4 Current mitigation progress, gaps and challenges

- There has been progress, e.g. participation in Paris Agreement, energy efficiency, deforestation, technology deployment
- 18 countries have sustained emissions reduction

- Existing pledges are not strong enough (will lead to 2.8C)…

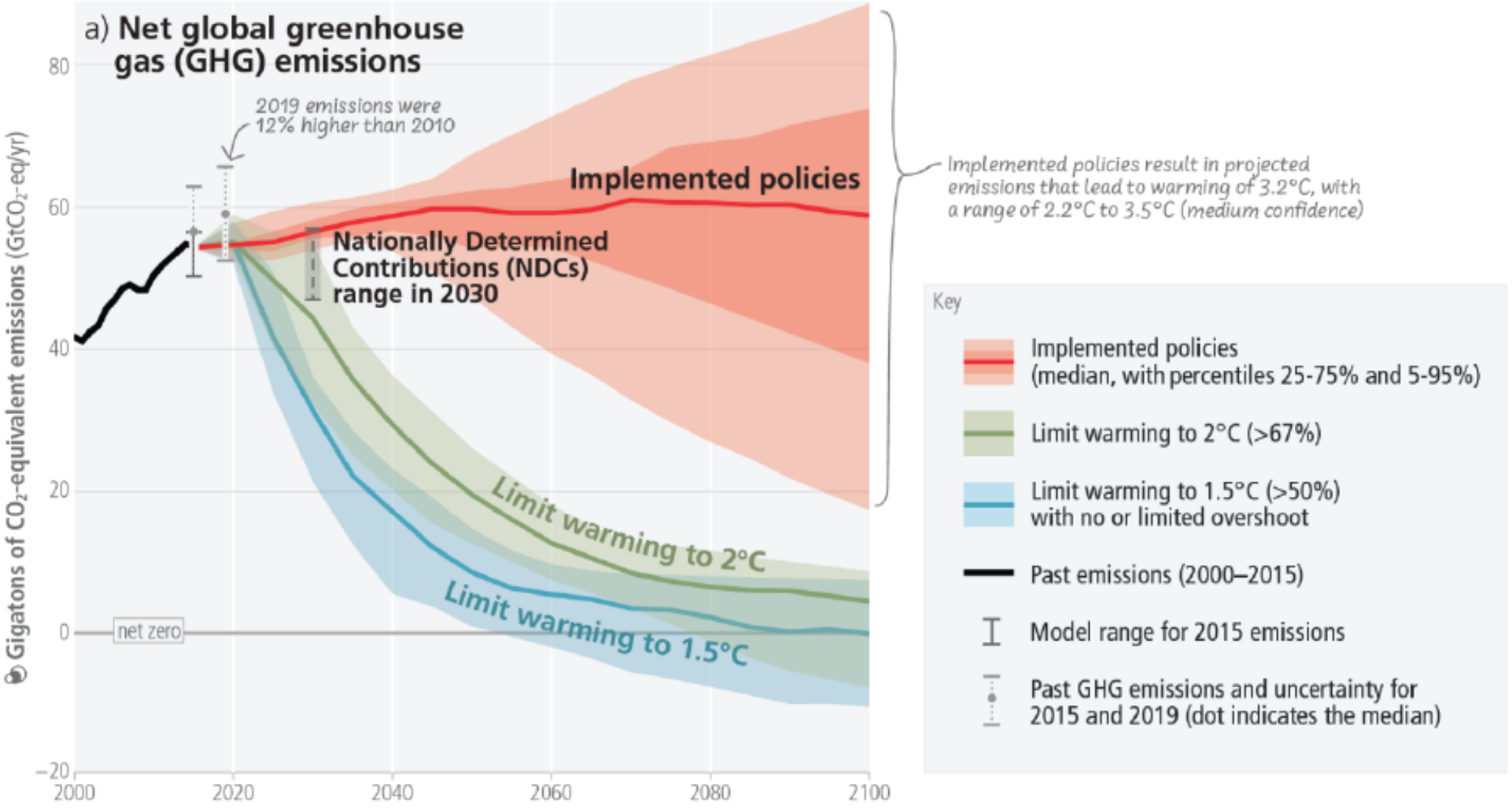
A.4 Policies and laws addressing mitigation have consistently expanded since AR5. Global GHG emissions in 2030 implied by nationally determined contributions (NDCs) announced by October 2021 make it *likely* that warming will exceed 1.5°C during the 21st century and make it harder to limit warming below 2°C. There are gaps between projected emissions from implemented policies and those from NDCs and finance flows fall short of the levels needed to meet climate goals across all sectors and regions. (*high confidence*) {2.2, 2.3, Figure 2.5, Table 2.2}

- … and governments are not putting in place policies that will allow them to meet those pledges
- "Without a strengthening of policies, global warming of 3.2 [2.2–3.5]°C is projected by 2100"

- "Public and private finance flows for fossil fuels are still greater than those for climate adaptation and mitigation"

Limiting warming to 1.5°C and 2°C involves rapid, deep and in most cases immediate greenhouse gas emission reductions

Net zero CO_2 and net zero GHG emissions can be achieved through strong reductions across all sectors



What does the report say about…

The need for rapid action?

C.1 Urgency of near-term integrated climate action

- It's not too late but we need to act fast!

- This requires international cooperation, financial support for the vulnerable, and inclusive governance

C.1 Climate change is a threat to human well-being and planetary health (*very high confidence*). There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all (*very high confidence*). Climate resilient development integrates adaptation and mitigation to advance sustainable development for all, and is enabled by increased international cooperation including improved access to adequate financial resources, particularly for vulnerable regions, sectors and groups, and inclusive governance and coordinated policies (*high confidence*). The choices and actions implemented in this decade will have impacts now and for thousands of years (*high confidence*). {3.1, 3.3, 4.1, 4.2, 4.3, 4.4, 4.7, 4.8, 4.9, Figure 3.1, Figure 3.3, Figure 4.2} (Figure SPM.1; Figure SPM.6)

- The next few years are the most important there have ever been or ever will be!

C.2 The benefits of near-term action

- Acting now would prevent huge damage & have co-benefits
- E.g. “The economic benefits for human health from air quality improvement arising from mitigation action can be of the same order of magnitude as mitigation costs”

C.2 Deep, rapid and sustained mitigation and accelerated implementation of adaptation actions in this decade would reduce projected losses and damages for humans and ecosystems (*very high confidence*), and deliver many co-benefits, especially for air quality and health (*high confidence*). Delayed mitigation and adaptation action would lock-in high-emissions infrastructure, raise risks of stranded assets and cost-escalation, reduce feasibility, and increase losses and damages (*high confidence*). Near-term actions involve high up-front investments and potentially disruptive changes that can be lessened by a range of enabling policies (*high confidence*). {2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8}

- Continuing to invest in FFs risks stranded assets, will means more loss and damage, and reduced options for adaptation

- Rapid decarbonisation will be expensive and disruptive…
- … but there is a lot that governments can do to enable it

C.4 Synergies and trade-offs with sustainable development

- Climate action is compatible with – and supports – sustainable development

C.4 Accelerated and equitable action in mitigating and adapting to climate change impacts is critical to sustainable development. Mitigation and adaptation actions have more synergies than trade-offs with Sustainable Development Goals. Synergies and trade-offs depend on context and scale of implementation. (*high confidence*) {3.4, 4.2, 4.4, 4.5, 4.6, 4.9, Figure 4.5}

"Eradicating extreme poverty, energy poverty, and providing decent living standards in low-emitting countries/regions in the context of achieving sustainable development objectives, in the near term, *can be achieved without significant global emissions growth*"

"In regions with high dependency on fossil fuels for, among other things, revenue and employment generation, mitigating risk for sustainable development requires policies that promote economic and energy sector diversification and considerations of *just transitions principles, processes and practices*"


What does the report say about…
What needs to be done?

B.5 Carbon budgets and net zero emissions

- Need to reach Net Zero emissions as soon as possible
- (But shouldn't it focus on the causes of emissions, i.e. fossil fuels and land use change?)

B.5 Limiting human-caused global warming requires net zero CO_2 emissions. Cumulative carbon emissions until the time of reaching net-zero CO_2 emissions and the level of greenhouse gas emission reductions this decade largely determine whether warming can be limited to 1.5°C or 2°C (*high confidence*). Projected CO_2 emissions from existing fossil fuel infrastructure without additional abatement would exceed the remaining carbon budget for 1.5°C (50%) (*high confidence*). {2.3, 3.1, 3.3, Table 3.1}

- It's not when we reach Net Zero that counts, but how much we emit before then
- 2050 targets are dangerous, need interim targets

- We already have enough FF infrastructure to exceed 1.5C, we must stop looking for more

B.6 Mitigation pathways

- Staying at 1.5C requires 'rapid, deep and immediate emissions reductions in all sectors this decade'…
- Emissions must peak 'at the latest by 2025'

- And reach Net Zero by early 2050s (but this is a global average)

B.6 All global modelled pathways that limit warming to 1.5°C (>50%) with no or limited overshoot, and those that limit warming to 2°C (>67%), involve rapid and deep and, in most cases, immediate greenhouse gas emissions reductions in all sectors this decade. Global net zero CO_2 emissions are reached for these pathway categories, in the early 2050s and around the early 2070s, respectively. (*high confidence*) {3.3, 3.4, 4.1, 4.5, Table 3.1} (Figure SPM.5, Box SPM.1)

"**B.6.3** Global modelled mitigation pathways reaching net zero CO2 and GHG emissions include transitioning from *fossil fuels without carbon capture and storage* (CCS) to very low- or zero-carbon energy sources, such as renewables or *fossil fuels with CCS*, demand-side measures and improving efficiency, reducing non-CO2 GHG emissions, and *CDR*."

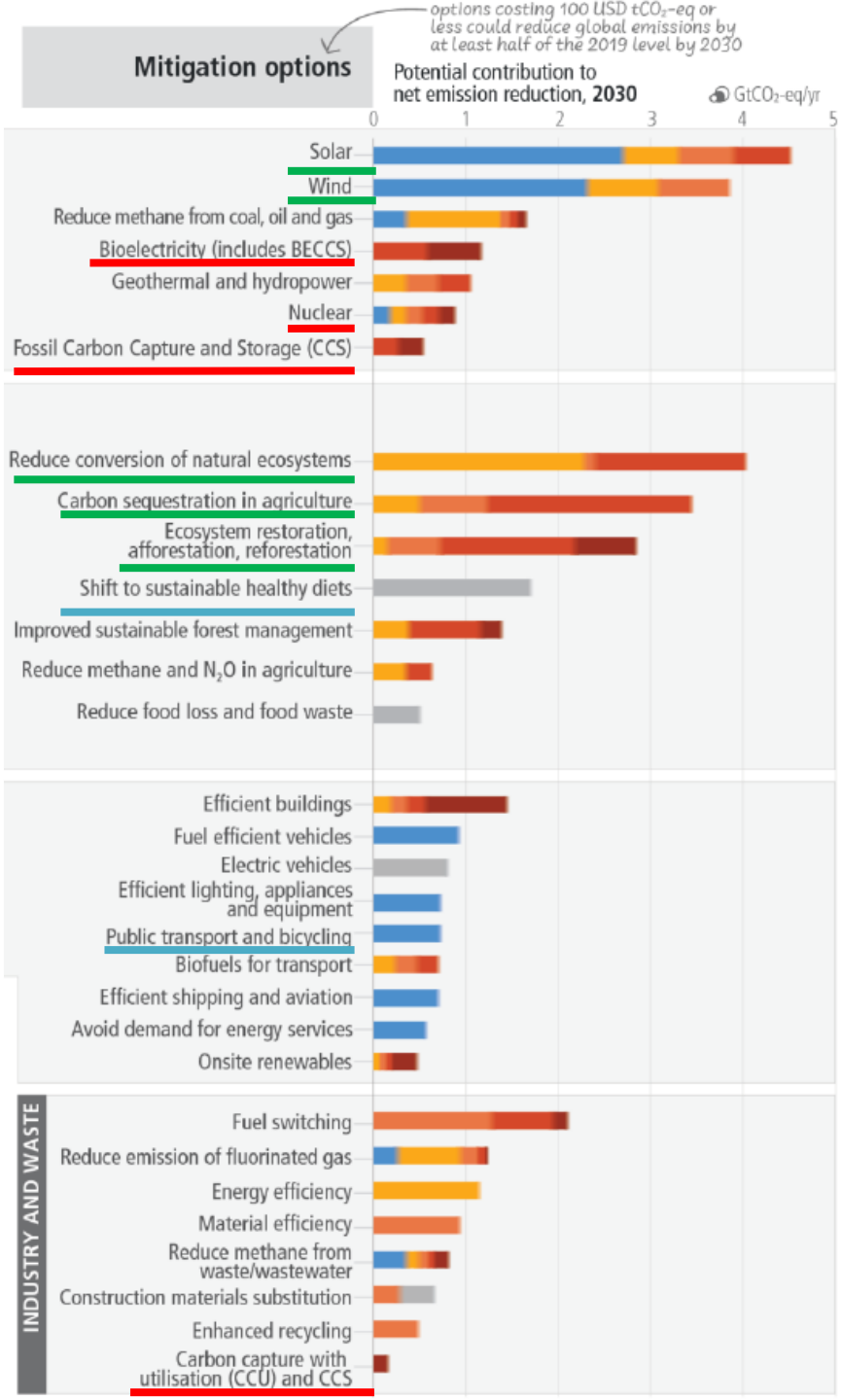
C.3 Mitigation and adaptation options across systems

- Every sector, every organisation has to do this

"The systemic change required to achieve rapid and deep emissions reductions and transformative adaptation to climate change is unprecedented in terms of scale, but not necessarily in terms of speed"

C.3 Rapid and far-reaching transitions across all sectors and systems are necessary to achieve deep and sustained emissions reductions and secure a liveable and sustainable future for all. These system transitions involve a significant upscaling of a wide portfolio of mitigation and adaptation options. Feasible, effective, and low-cost options for mitigation and adaptation are already available, with differences across systems and regions. (*high confidence*) {4.1, 4.5, 4.6} (Figure SPM.7)

- We largely have the solutions already…
- …but we are not replacing existing, destructive approaches with them
- The transition is not primarily a technical problem, but a social & political one



Mitigation options

- Highest potential in wind, solar, conserving and restoring ecosystems, agriculture
- ‘Natural climate solutions’ are as important as technology (but less effective with CC)
- Conserving forests better than planting trees

- Bioenergy/BECCS, nuclear, carbon capture have much lower potential

- Significant role for individual lifestyle changes, e.g. diets, transport choices

What does the report say about…

Adaptation?

A.3 Current progress in adaptation and gaps and challenges

- Some adaptation is happening, and it can be effective
- … but there's not nearly enough

- We cannot adapt to everything
- Some places already experiencing unadaptable changes

A.3 Adaptation planning and implementation has progressed across all sectors and regions, with documented benefits and varying effectiveness. Despite progress, adaptation gaps exist, and will continue to grow at current rates of implementation. Hard and soft limits to adaptation have been reached in some ecosystems and regions. Maladaptation is happening in some sectors and regions. Current global financial flows for adaptation are insufficient for, and constrain implementation of, adaptation options, especially in developing countries (*high confidence*). {2.2, 2.3}

- There is not enough investment in adaptation, especially in Global South which i) is most vulnerable and ii) contributed least
- Adaptation doesn't prevent loss & damage

B.4 Adaptation options and their limits in a warming world

- Adaptation that works now won't work at higher temperatures
- We need to limit warming to keep adaptation options open

- We won't be able to adapt to everything
- If natural systems (forests, oceans) reach adaptation limits, we lose our life support system AND carbon sinks

B.4 Adaptation options that are feasible and effective today will become constrained and less effective with increasing global warming. With increasing global warming, losses and damages will increase and additional human and natural systems will reach adaptation limits. Maladaptation can be avoided by flexible, multi-sectoral, inclusive, long-term planning and implementation of adaptation actions, with co-benefits to many sectors and systems. (*high confidence*) {3.2, 4.1, 4.2, 4.3}

- Adaptation must be thoughtfully and inclusively planned to avoid maladaptation

What does the report say about…

Loss and damage?

‘Losses and damages’

- ‘Loss and damage’ has explicit political meaning, but ‘losses and damages’ mentioned throughout

A.2.6 Climate change has caused widespread adverse impacts and related losses and damages[15] to nature and people that are unequally distributed across systems, regions and sectors. Economic damages from climate change have been detected in climate-exposed sectors, such as agriculture, forestry, fishery, energy, and tourism. Individual livelihoods have been affected through, for example, destruction of homes and infrastructure, and loss of property and income, human health and food security, with adverse effects on gender and social equity.

B.4.2 With additional global warming, limits to adaptation and losses and damages, strongly concentrated among vulnerable populations, will become increasingly difficult to avoid (*high confidence*). Above 1.5°C of

C.2.2 Delayed mitigation action will further increase global warming and losses and damages will rise and additional human and natural systems will reach adaptation limits (*high confidence*). Challenges from delayed adaptation and mitigation actions include the risk of cost escalation, lock-in of infrastructure, stranded assets, and reduced feasibility and effectiveness of adaptation and mitigation options (*high confidence*). Without rapid, deep and sustained mitigation and accelerated adaptation actions, losses and damages will continue to increase, including projected adverse impacts in Africa, LDCs, SIDS, Central and South America[49], Asia and the Arctic, and will disproportionately affect the most vulnerable populations (*high confidence*). {2.1.2; 3.1.2, 3.2, 3.3.1, 3.3.3; 4.1, 4.2, 4.3} (Figure SPM.3, Figure SPM.4)

What does the report say about…

Equity, finance and governance?

C.5 Equity and inclusion

- Recognition that mitigation and adaptation will be more effective if fair
- "Redistributive policies across sectors and regions that shield the poor and vulnerable, social safety nets, equity, inclusion and just transitions, at all scales can enable deeper societal ambitions and resolve trade-offs with sustainable development goals."
- "Climate resilient development is advanced when actors work in equitable, just and inclusive ways to reconcile divergent interests, values and worldviews, toward equitable and just outcomes."

C.5 Prioritising equity, climate justice, social justice, inclusion and just transition processes can enable adaptation and ambitious mitigation actions and climate resilient development. Adaptation outcomes are enhanced by increased support to regions and people with the highest vulnerability to climatic hazards. Integrating climate adaptation into social protection programs improves resilience. Many options are available for reducing emission-intensive consumption, including through behavioural and lifestyle changes, with co-benefits for societal well-being. (*high confidence*) {4.4, 4.5}

- "Individuals with high socio-economic status contribute disproportionately to emissions, and have the highest potential for emissions reductions."

C.7 Finance, technology, and international cooperation

- Mitigation and adaptation funding must be hugely increased, and made available to vulnerable countries/groups
- "Public and private finance flows for fossil fuels are still greater than those for climate adaptation and mitigation"

C.7 Finance, technology and international cooperation are critical enablers for accelerated climate action. If climate goals are to be achieved, both adaptation and mitigation financing would need to increase many-fold. There is sufficient global capital to close the global investment gaps but there are barriers to redirect capital to climate action. Enhancing technology innovation systems is key to accelerate the widespread adoption of technologies and practices. Enhancing international cooperation is possible through multiple channels. ***(high confidence)*** **{2.3, 4.8}**

- "There is sufficient global capital and liquidity to close global investment gaps… but there are barriers to redirect capital to climate action both within and outside the global financial sector and in the context of economic vulnerabilities and *indebtedness* facing developing countries."

- Warning that future loss and damage will limit available funding!

C.6 Governance and policies

- Governments must use their full array of powers to enable society to get on with transition

- Governance should be participatory and draw on diverse knowledge and perspectives

C.6 Effective climate action is enabled by political commitment, well-aligned multilevel governance, institutional frameworks, laws, policies and strategies and enhanced access to finance and technology. Clear goals, coordination across multiple policy domains, and inclusive governance processes facilitate effective climate action. Regulatory and economic instruments can support deep emissions reductions and climate resilience if scaled up and applied widely. Climate resilient development benefits from drawing on diverse knowledge. (*high confidence*) {2.2, 4.4, 4.5, 4.7}

- But what to do if governments have shown themselves unwilling to make the changes required?


What does the report say about…
What WE need to do?
REBEL FOR LIFE
NON VIOLENT
STOP
Climate
NATURE ISNT
CAPITAL
There is no
RISE UP
REBEL FOR LIFE
extinction rebellion

Nothing!

- C.6.2 states “Policy support is influenced by actors in civil society, including businesses, youth, women, labour, media, Indigenous Peoples, and local communities.”

- But no analysis of power, influence or barriers to transition
- No analysis of failures and inaction so far

- No analysis of how change happens (social tipping point theory, social movement theory)
- Why? Young, qualitative fields? Challenge to power?

- No guidance for individual action beyond lifestyle change

Key question:

If decades of IPCC reports have not stimulated governments into serious action, what can citizens of the world do to change that?