Key Findings

SELECTION OF KEY GLOBAL FINDINGS RELEVANT TO AUSTRALIA
From the United Nations **Intergovernmental Panel on Climate Change's (IPCC's)** Synthesis Report. This is the final report in the IPCC's Sixth Assessment Cycle (AR6), integrating all IPCC reports from the past 7 years.

There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all. The choices and actions implemented in this decade will have impacts now and for thousands of years.

Climate change has rapidly altered the atmosphere, ocean, land and ice-covered areas

Prioritising risk reduction, equity and justice can support climate resilient development

Changes have caused more severe extreme events and widespread negative impacts on nature and humans

We collectively have sufficient knowledge, tools and global capital available to address the challenges of climate change

Climate change impacts are larger and more severe than reported in previous assessments

Human activities are responsible for global warming since 1850, reflecting more than a century of unsustainable:

- Energy use
- Land-use
- Lifestyles
- Patterns of consumption & production

The CO_2 emissions that will come from existing fossil fuel infrastructure alone will surpass the remaining carbon budget for 1.5°C

The net CO_2 emissions from 1850 to 2019 account for 80% of the total carbon budget for 1.5°C

We need deep, rapid and sustained GHG emissions reductions to limit warming to 1.5°C or 2°C across the century

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SELECTION OF KEY GLOBAL FINDINGS RELEVANT TO AUSTRALIA
From the United Nations **Intergovernmental Panel on Climate Change's (IPCC's)** Synthesis Report. This is the final report in the IPCC's Sixth Assessment Cycle (AR6), integrating all IPCC reports from the past 7 years.

The scientific evidence is clear: Climate change is a threat to human well-being and planetary health. There is a rapidly closing time window for actions to secure a liveable and sustainable future for all. We collectively have the knowledge, tools and global capital to address the challenges. The choices and actions we take now will have impacts for thousands of years.***[1]

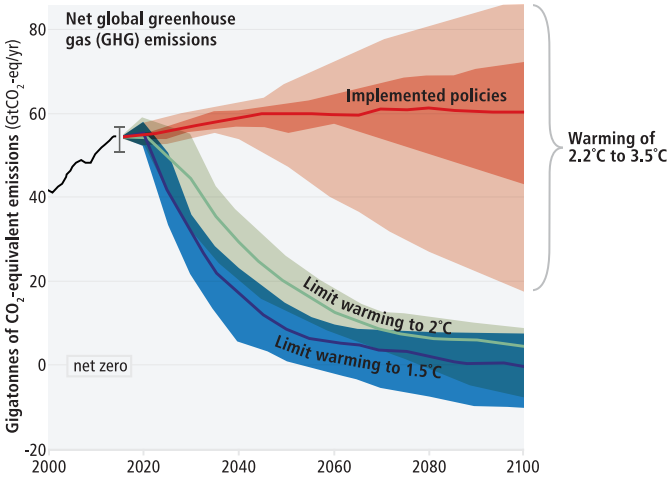
Human activities are responsible for global warming since 1850.[2] Warming is caused by greenhouse gas (GHG) emissions, primarily carbon dioxide (CO_2) and methane. Human-caused warming is partly masked by the effect of aerosols (tiny airborne particles such as air pollutants), which have a cooling effect.

It is unequivocal that human influence has warmed the climate (ocean, land and atmosphere) at an unprecedented rate. We experienced global surface temperature warming of 1.09°C in 2011–2020.[3] In Australia, temperature has increased by 1.4°C over the last 110 years.[4] Global surface temperature has increased faster since 1970 than in any other 50-year period over the last 2000 years.**[5]

Net emissions from all major sectors continued to rise since 2010 with energy, industry, transport and buildings together making up 79% of global greenhouse gas (GHG) emissions in 2019.**[6]

More than a century of unsustainable energy use, land use, lifestyle, and patterns of consumption and production have led to climate change.[7]

Projections based on the collective emission reduction targets laid out by countries in 2021 would likely result in warming exceeding 1.5°C during this century[8], reaching this level in 2030–2035 in nearly all scenarios and pathways[9]. Limiting warming to 1.5°C or 2°C, requires an unprecedented acceleration of mitigation efforts.[10]



Adapted from Figure SPM.5 — Projections of implemented policies vs. pathways that limit to 1.5°C and 2°C.

Implemented policies result in projected emissions that lead to warming of 2.2°C to 3.5°C. Only deep, rapid and sustained GHG emissions reductions would limit the warming to 1.5°C or below 2°C across the century.**

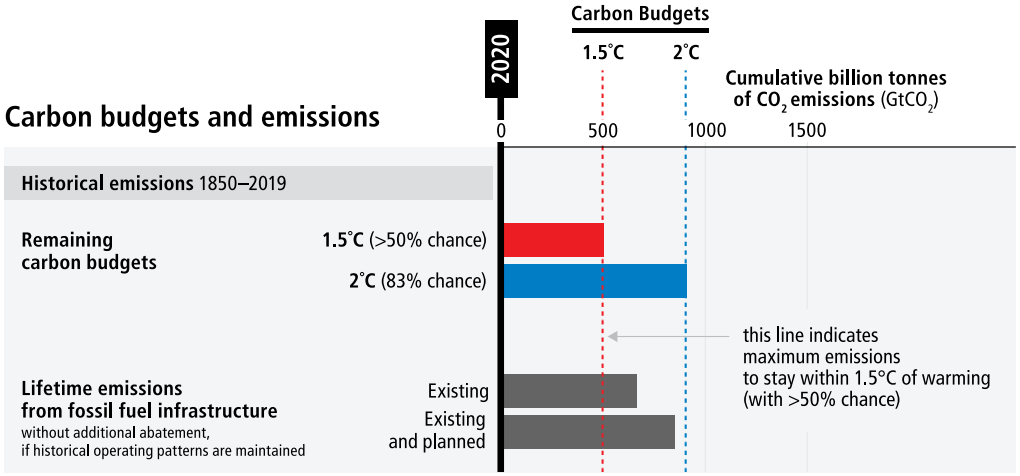
Adapted from Figure SPM.5.

Climate change impacts are larger and more severe than reported in previous assessments**[11]. Human-caused climate change has led to widespread and rapid changes in the atmosphere, ocean, frozen areas and land, including more frequent and intense extreme events. These changes have caused widespread negative impacts and losses and damages to nature and people.[12]

1 Summary for Policymakers (SPM) C.1
2 SPM A.1.2
3 SPM A.1; Warming is in comparison to baseline 1850–1900 temperature levels.
4 Working Group II (WGII) Chapter 11, FAQ 11.1
5 SPM A.1.1
6 SPM A.1.4
7 SPM A.1
8 SPM A.4; 1.5°C with no or limited overshoot
9 SPM B.1
10 SPM C.3.1
11 SPM B.2; Figure SPM.4(a)
12 SPM A.2

* = medium confidence
** = high confidence
*** = very high confidence

Remaining carbon budgets to limit warming to 1.5°C could soon be exhausted.



Adapted from Figure 3.5(a) (Longer Report, Section 3) — Remaining carbon budgets to limit warming to 1.5°C could soon be exhausted.

If we keep within a carbon budget of 500 $GtCO_2$ from 2020, we have a greater than 50% chance of remaining within 1.5°C. If we keep within a carbon budget of 900 $GtCO_2$ from 2020, we have an 83% chance of remaining within 2°C.

Note that these IPCC projections don't include emissions since 2020. Globally we have emitted another 80.7Gt of CO_2.

CARBON BUDGETS

Keeping global temperatures to a specific level of warming requires keeping CO_2 emissions within a finite carbon budget, plus strong reductions in other GHG emissions[13]. The accumulated net CO_2 emissions from 1850 to 2019 equal about 80% of the total carbon budget for 1.5°C.[14]

CO_2 emissions generated from existing fossil fuel infrastructure will alone exceed the remaining carbon budget for 1.5°C.***[15]

Only rapid, deep and immediate GHG emissions reductions would limit warming to 1.5°C or 2°C across the century.**[16]

In pathways that limit warming to 1.5°C with no or limited overshoot, by 2035, global GHG emissions reduce by 60% below 2019 levels, and global carbon dioxide emissions reduce by 65% below 2019 levels.[17]

Immediate emissions reductions are even more important in pathways that limit overshoot.[18] Overshoot is when a temperature limit is exceeded temporarily and then is brought back down to the chosen level of warming. Emissions would have to peak and then be removed through Carbon Dioxide Removal (CDR) methods, such as reforestation. In scenarios with increasing CO_2 emissions, natural land and ocean carbon sinks are projected to take up a decreasing proportion of these emissions.**[19]

ADAPTATION AND RESPONSE MEASURES

The assessed **long-term risks escalate with projected levels of global warming, but they will also strongly depend on socio-economic development pathways and adaptation actions** to reduce vulnerability and exposure.[20]

There is a **gap between current levels of adaptation and levels needed** to respond to impacts and reduce climate risks.**[21]

Strengthening climate change **mitigation action now would bring benefits from avoiding damages and reduced adaptation costs** despite requiring up-front investment.**[22]

Finance provided for both mitigation and adaptation remained insufficient in 2018. Finance has been mostly directed towards mitigation.**[23] Sufficient global capital exists, but there are barriers to redirect it to climate action.[24]

13 SPM B.5.1.

14 SPM B.5.3; This refers to keeping to 1.5°C with more than 50% likelihood. 'Carbon budget' refers to the maximum amount of cumulative net global anthropogenic CO2 emissions that would result in limiting global warming to a given level with a given probability.

15 SPM B.5.3; This is based on unabated fossil fuel infrastructure (e.g. without Carbon Capture & Storage).

16 SPM B.6

17 SPM Table XX; Longer Report Table 3.1

18 SPM B.7

19 SPM B.1.3

20 Figure SPM.6

21 SPM C.2.1

22 Figure SPM C.2.4

23 Section 2.3

24 SPM C.7

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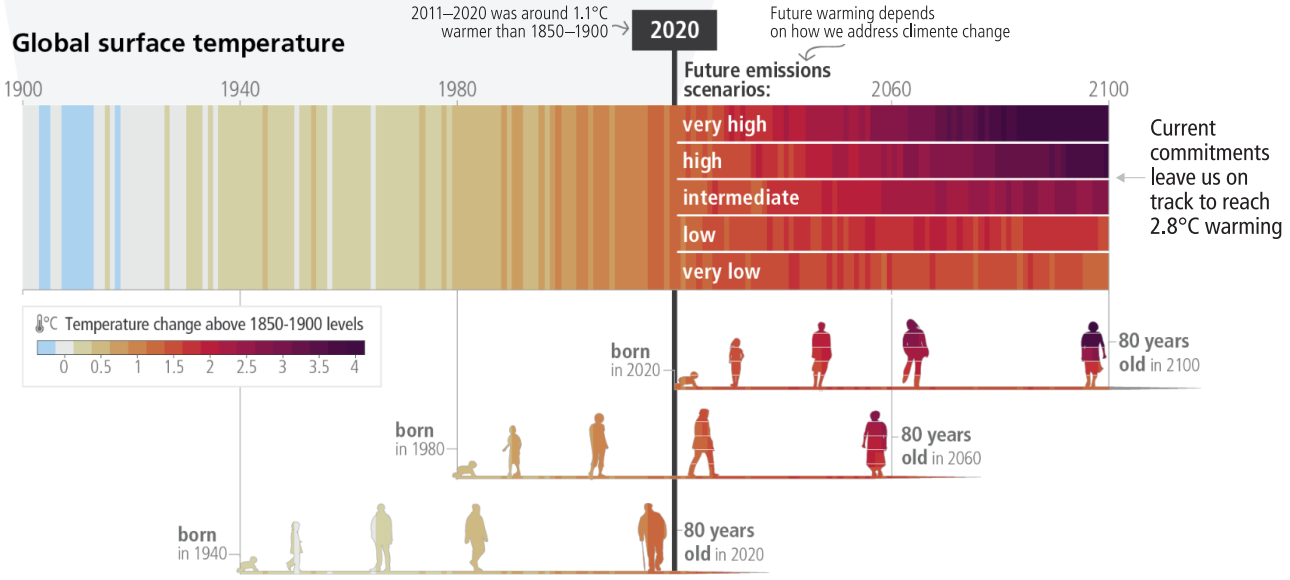
Our choices determine the extent to which today's children will live in a different, hotter world



Adapted from Figure SPM.1 — Our choices determine the extent to which today's children will live in a different, hotter world. The world is already around 1.1°C warmer than 1850–1900. The level of projected climate change experienced by individuals across the three illustrative generations representing the human population (being born in 1940, 1980 and 2020) will differ significantly based on the future emissions scenario (very low, low, intermediate, high, and very high).

Public and private finance flows for fossil fuels are still greater than those for climate adaptation and mitigation.**[25]

The greatest gains in well-being in urban areas can be achieved by prioritising finance to reduce climate risk for low-income and marginalised residents.[26]**

Individuals with high socio-economic status contribute disproportionately to emissions and have the highest potential for emissions reductions e.g., as citizens, investors, consumers, role models, and professionals.**[27]

Human health will benefit from integrated mitigation and adaptation options that mainstream health into food, infrastructure, social protection, and water policies.***[28]**
A key climate change adaptation pathway in the health sector is universal access to healthcare.**[29]

Urgent, rapid and far-reaching transitions across all sectors and systems are critical to achieve ambitious mitigation and adaptation outcomes. Many feasible, effective and low-cost options exist in the near term, some with immediate positive impacts.[30]

Shifting development pathways towards sustainability and climate resilient development is supported when governments, civil society and the private sector make choices that prioritise risk reduction, equity and justice.[31]
Meaningful participation and inclusive planning, informed by cultural values, Indigenous knowledge, local knowledge, and scientific knowledge can help address adaptation gaps, avoid maladaptation and also increase chances of sustainability.**[32]

25 SPM A.4.5
26 SPM C.5.3; Section 4.5.3
27 SPM C.5.4; Longer Report Section 4.4
28 SPM C.3.7
29 SPM 4 C.5.3; Section 4.5.5
30 SPM C.3
31 SPM C.1.2
32 SPM C.4.2; SPM C.5.2; SPM C.6.5

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Prepared by Australian National University Institute for Climate, Energy & Disaster Solutions with support from Australian Government Department of Climate Change, Energy, the Environment and Water