Ministry for the Environment
Manatū Mō Te Taiao

Aide memoire: Summary of Key Policy-Relevant Findings of the Latest Global Evidence on Climate Change

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Actions sought from ministers	
Name and position	***Action sought***
To Hon Simon WATTS **Minister of Climate Change**	For noting only

Appendices and attachments
Nil

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Summary of Key Policy-Relevant Findings of the Latest Global Evidence on Climate Change

Purpose

1. This aide memoire gives you detail on the key policy-relevant aspects of the Intergovernmental Panel on Climate Change (IPCC) most recent Sixth Assessment Cycle (AR6) and the United Nations Environment Programme (UNEP) 2024 Emissions Gap Report.

Background

2. The IPCC is the internationally accepted platform for bringing together existing climate related research in a policy-relevant way. Reports are produced periodically, in cycles of 5-7 years. IPCC reports form the foundation of global and domestic policy development, including the Paris Agreement, providing a trusted and defendable evidence base.

3. The IPCC is currently in its Seventh Assessment Cycle (AR7), which formally began in July 2023. The AR7 is expected to reach conclusion in 2029.

4. The Global Stocktake (GST) is the mechanism in the Paris Agreement to take stock of collective progress, based on the best available science, and influence action by parties. It is important sufficient information from the IPCC is provided in time for the second GST, this has been a contentious issue, and it is likely further negotiation on timing will occur at the next IPCC Session.

5. As a requirement under the Paris Agreement, the next round of Nationally Determined Contributions (NDCs) will contain targets and measures for 2035 and are to be communicated by February 2025. Under the Paris Agreement, these should reflect the latest science, demonstrate progression from previous NDCs, and reflect each Party's highest possible ambition.

6. If global warming is to be constrained to 1.5˚C, then NDC targets and measures will need to be ambitious, and action taken.

IPCC Working Group I: The Physical Science Basis

7. The key policy-relevant findings of the Working Group I contribution to the AR6 of the IPCC, which was released in August 2021, include:

- Human influence on the climate system is unequivocal. This is a stronger statement compared to the IPCC Fifth Assessment Cycle (AR5) and reflects strengthened evidence of the impact of human activities on many different aspects of climate.

- The attribution of human-induced climate change on extreme weather events all around the world has strengthened since the AR5. Many of these events, including heatwaves, intense rainfall and droughts, have become more frequent and intense as a result of climate change.

- Even if emissions were to stop now, some of the changes to the climate system, including sea level rise and loss of glaciers, is irreversible over centuries to millennia. However, the rate and magnitude of these committed changes still depends on future greenhouse gas emissions.

- The report states that the likelihood of high-end emissions scenarios, such as Shared Socio-economic Pathway (SSP) 5-8.5, is *'considered low'* because of recent developments in the energy sector but acknowledges uncertainty in carbon-cycle feedback could push carbon dioxide (CO_2) concentrations towards the levels in SSP5-8.5 under nominally lower emission trajectories.

- A key advance in this cycle is the explicit recognition that sea level rise could fall outside the projected *'likely'* range. A number of the processes driving sea level change, including drivers of rapid ice loss in Greenland and Antarctica, are highly uncertain. As a result, it concludes that sea level rise approaching 2 m by 2100, 5 m by 2150 and 15 m by 2300 under SSP5-8.5 cannot be ruled out.

- Even though the IPCC has revised its estimate upwards of how much warming has occurred already, scenarios show that we can still limit warming to 1.5˚C. It requires net zero CO_2 emissions around 2050 along with substantial reductions in other greenhouse gases in the near-term, such as methane. If global methane emissions are not reduced rapidly, the remaining global carbon budget would shrink considerably.

IPCC Working Group II: Impacts, Adaptation and Vulnerability

8. The key policy-relevant findings of the Working Group II contribution to the AR6 of the IPCC, which was released in February 2022, include:

- We are already experiencing the impacts of climate change in New Zealand and the associated costs, with impacts projected to increase over the coming century.

- Evidence from around the world indicates that delaying action may result in higher future costs when adaptation becomes more urgent and impacts more extreme. While it is difficult to calculate cost implications, the IPCC has given an example that for 1 m of sea level rise the value of exposed assets in New Zealand would be NZD $25.5 billion.

- Climate risks are projected to increase for a wide range of natural and human systems, exacerbated by underlying vulnerabilities and exposure. Indigenous people, small food producers and low-income households will be worst hit by many climate impacts.

- Successful adaptation requires the involvement and partnership of parties at many scales and many sectors, including individuals and households, communities, governments, the private sector, non-governmental organisations, and Māori.

- Embedding effective and equitable adaptation and mitigation in development planning can reduce vulnerability, conserve and restore ecosystems, and enable climate resilient development. Integrated adaptation and mitigation measures are needed to prevent more severe climate change impacts for human and ecosystem health and ensure climate resilient development.

IPCC Working Group III: Mitigation of Climate Change

9. The key policy-relevant findings of the Working Group III contribution to the AR6 of the IPCC, which was released in April 2022, include:

- Net anthropogenic greenhouse gas emissions have increased since 2010 across all major sectors globally, with increasing emissions attributed to urban areas.

- The report contains information that is relevant to the second Emissions Reduction Plan, emission budgets and New Zealand's second NDC. It identifies and assesses many mitigation options that are available now in all sectors including but not limited to, utilising carbon capture and storage technologies, moving toward use of sustainable fuels, and increasing afforestation to act as carbon sinks, offering substantial potential to reduce emissions.

- Greenhouse gas emissions are aggregated on a CO_2 equivalent basis using the Global Warming Potential (GWP) with a time horizon of 100 years (GWP100) with values based on the contribution of Working Group I to the AR6. The GWPs that New Zealand uses for reporting are based on earlier IPCC reports and are fully in line with internationally agreed guidelines under the Paris Agreement.

- A full assessment of various greenhouse gas metrics is provided, and the IPCC notes that the choice of metric depends on the purpose of the analysis and all greenhouse gas emission metrics have limitations and uncertainties, given that they simplify the complexity of the physical climate system and its response to past and future greenhouse gas emissions.

- The split gas targets in the Climate Change Response Amendment Act 2020 reflect New Zealand's recognition of the different warming effects and lifetimes of long-lived versus short-lived gases.

- The report acknowledges that *'high-end scenarios* [such as SSP5-8.5] *have become considerably less likely since AR5 but cannot be ruled out'*, and while no longer considered business as usual projections, they *'can be very useful to explore high-end risks of climate change'*.

UNEP Emissions Gap Report 2024: No more hot air… please!

10. The key policy-relevant findings of the UNEP Emissions Gap Report, which was released in October 2024, include:

- To be on the pathway for 1.5˚C global warming, emissions must fall by 42 per cent and 57 per cent by 2030 and 2035 respectively, compared with 2019 levels. To be on a pathway for 2˚C global warming, emissions must fall by 28 per cent and 37 per cent by 2030 and 2035 respectively, compared with 2019 levels.

- Based on current global conditional NDC commitments and policies, global failure to start delivering immediately and increase ambition in the next NDCs will put the world on course for temperature increases of 2.6-3.1˚C over this century.

- It is still technically possible to meet the 1.5˚C goal, but only if global mobilisation to start cutting emissions begins immediately. If action were to start in 2024, global emissions will need to reduce by an average of 7.5 per cent every year until 2035. It is important to

note that New Zealand has a unique emissions profile that is different to that of the global aggregate used to derive this percentage reduction which can be considered when setting second NDC.

- If global emissions in 2030 are not brought below levels implied from current policies and full implementation of current NDCs, it will become impossible to reach a pathway which limits global warming to 1.5˚C with no or limited overshoot, and increase the challenge of limiting warming to 2˚C.

Next steps

11. The Sixty-Second Session of the IPCC will take place in Hangzhou, China from 24-28 February 2025. At this Session the Panel will likely agree to the Assessment Report draft outline and timeline, including which reports will be available in time for the second GST. As well as this, the draft outline for the Methodology Report on Carbon Dioxide Removal Technologies and Carbon Capture Utilisation and Storage will be agreed upon and budgets will be discussed. A briefing will be sent to you after the Session.

Signature

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