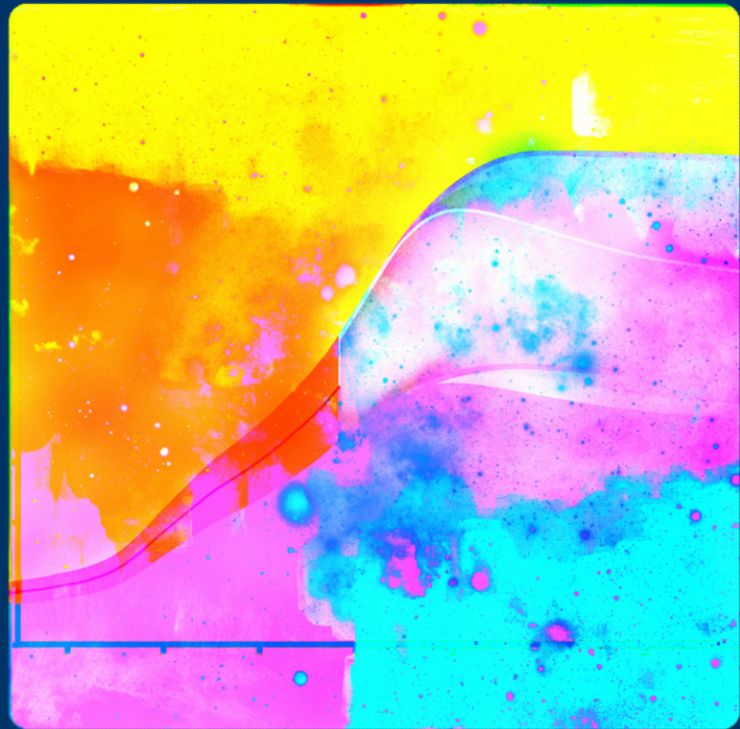


Jim Skea
Co-chair IPCC WG III



IPCC Special Report
on
Global Warming of 1.5°C

18 October 2018



Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

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The report in numbers

91 Authors from **40** Countries

133 Contributing authors

6000 Studies

1 113 Reviewers

42 001 Comments



Ashley Cooper / Aurora Photos

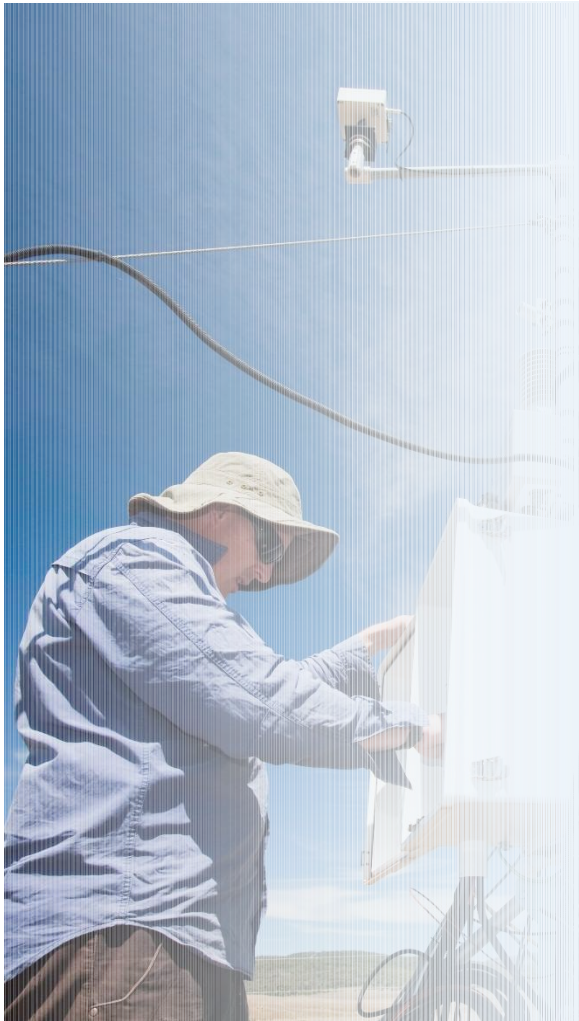
Key messages

- Climate change is already affecting people, ecosystems and livelihoods all around the world
- Limiting warming to 1.5°C is not impossible but would require rapid, far-reaching and unprecedented transitions in all aspects of society
- There are clear benefits to keeping global warming to 1.5°C compared to 2°C or higher; every bit of warming matters
- Limiting warming to 1.5°C can go hand in hand with achieving other world goals



Understanding Global Warming of 1.5°C





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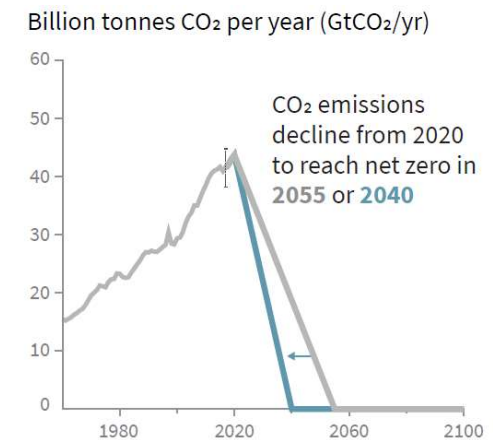
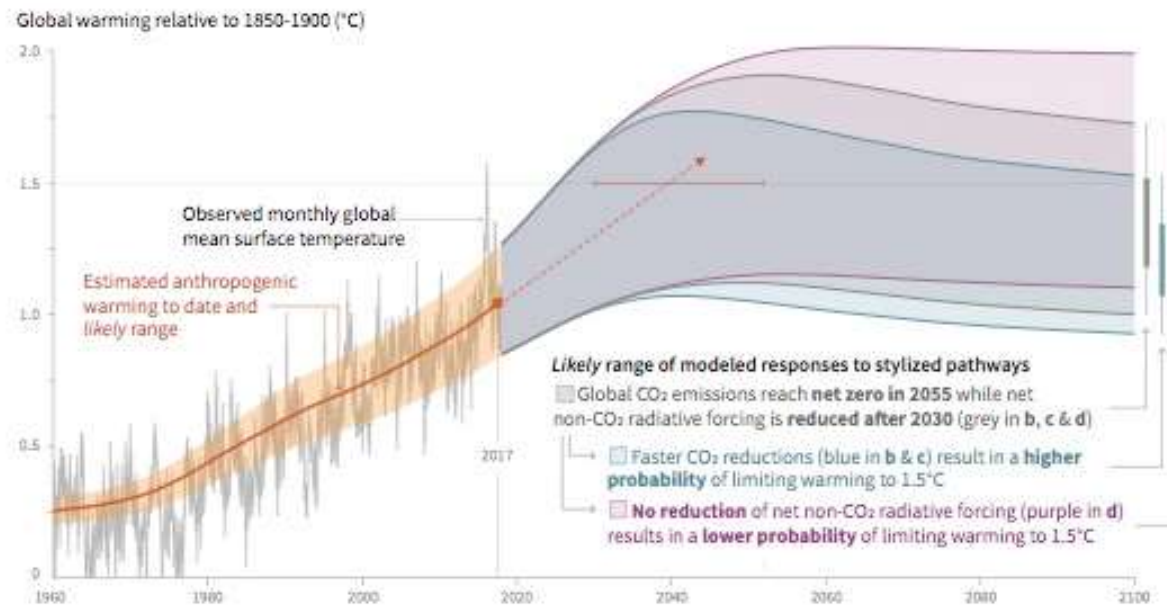
Where are we now?

Since pre-industrial times, human activities have caused approximately 1°C of global warming.

- Already seeing consequences for people, nature and livelihoods
- At current rate, would reach 1.5°C between 2030 and 2052
- Past emissions alone do not commit the world to 1.5°C

SPM1

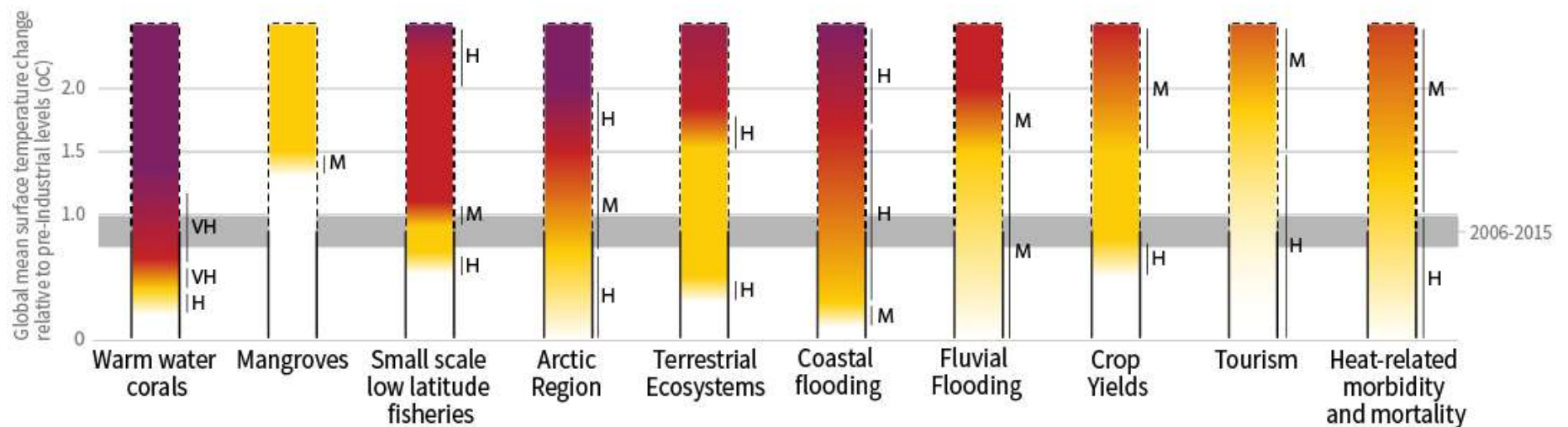
Cumulative emissions of CO₂ and future non-CO₂ radiative forcing determine the probability of limiting warming to 1.5°C



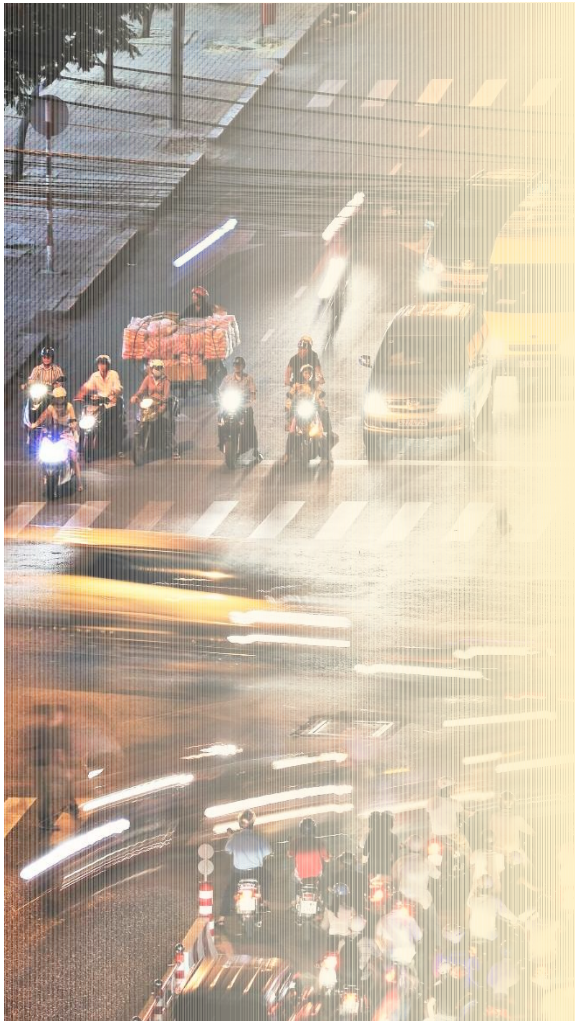
SPM2

How the level of global warming affects impacts and/or risks associated with the Reasons for Concern (RFCs) and selected natural, managed and human systems

Impacts and risks for selected natural, managed and human systems



Confidence level for transition: L=Low, M=Medium, H=High and VH=Very high



Gerhard Zwirger-Schoner / Aurora Photos

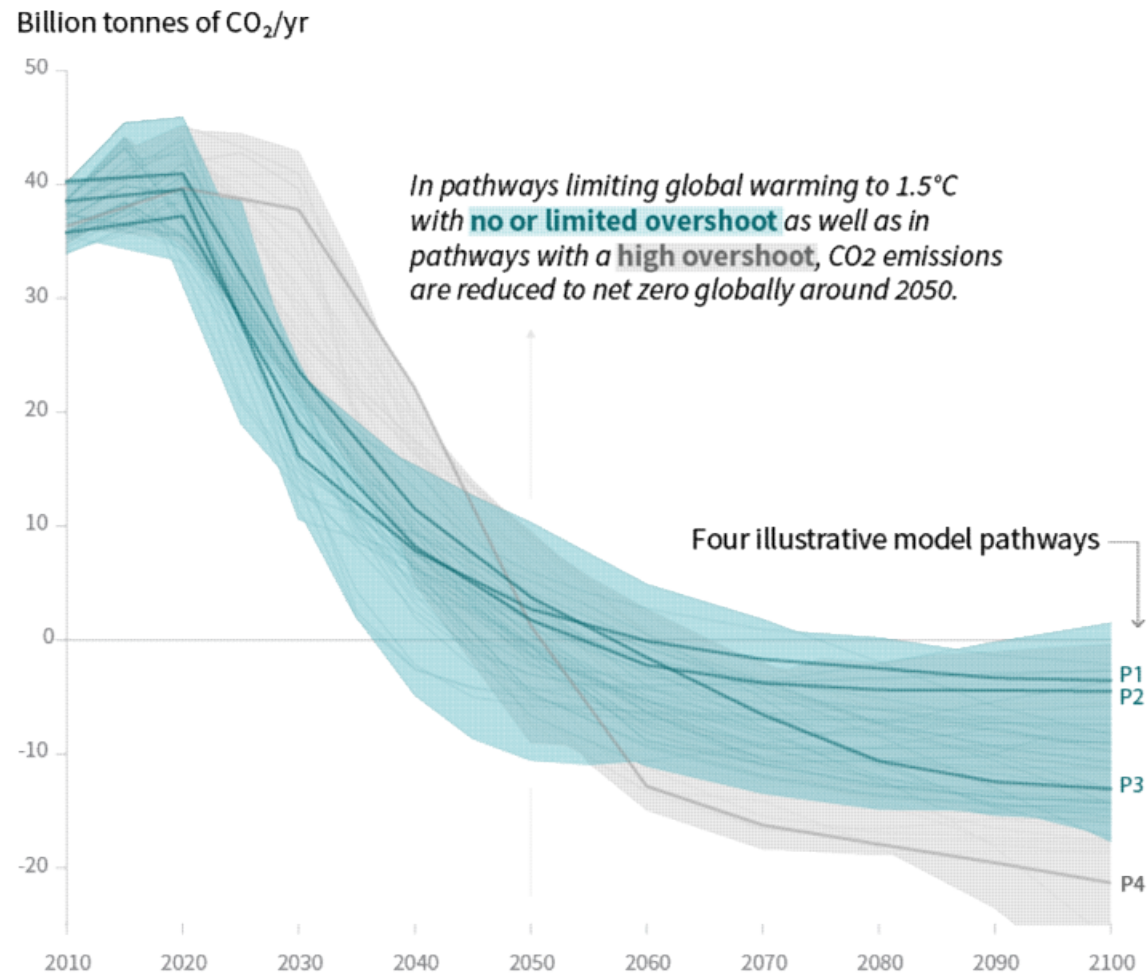
What are the implications?

- National ambitions expressed in the last three years will not be enough on their own to limit global warming to 1.5°C
- Currently tracking towards 3°C by 2100, with warming continuing afterwards
- In all pathways that limit global warming to 1.5°C with no or limited overshoot, CO₂ emissions fall substantially by 2030



Emission Pathways and System
Transitions Consistent with
1.5°C Global Warming

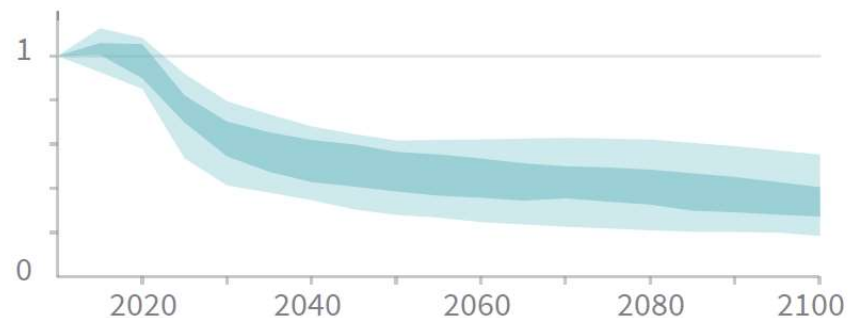
Global emission pathway characteristics: carbon dioxide



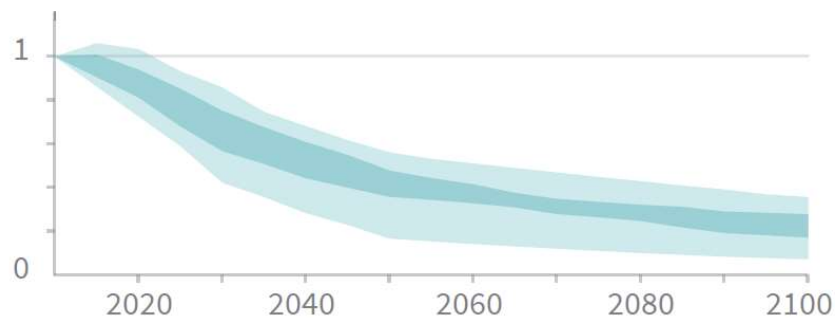
Global emission pathway characteristics: non-CO₂ emissions

Emissions of non-CO₂ forcers are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

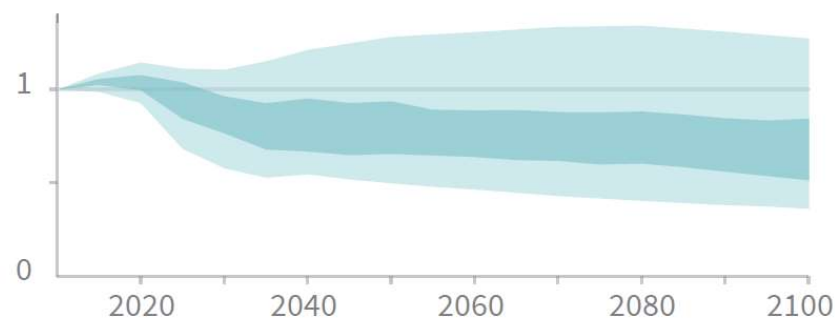
Methane emissions



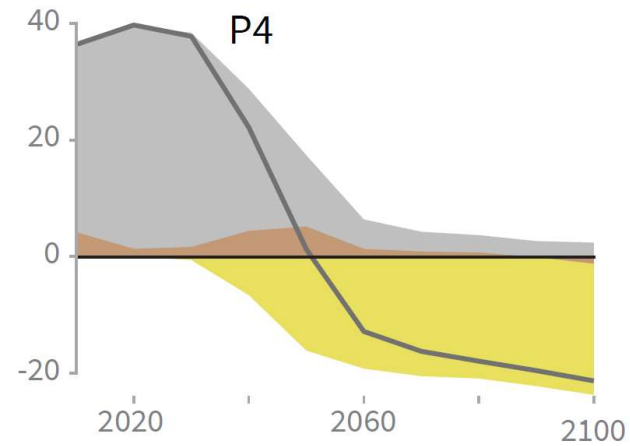
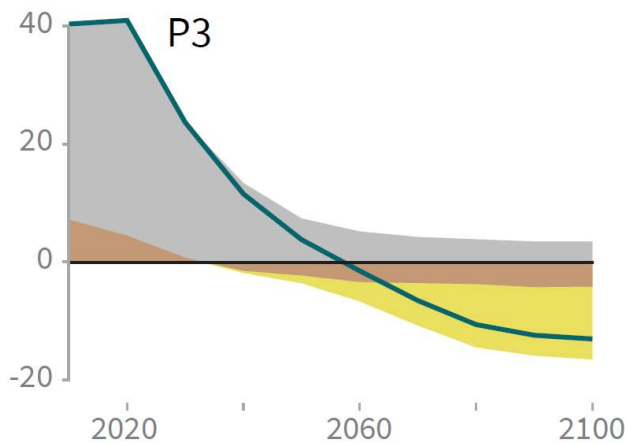
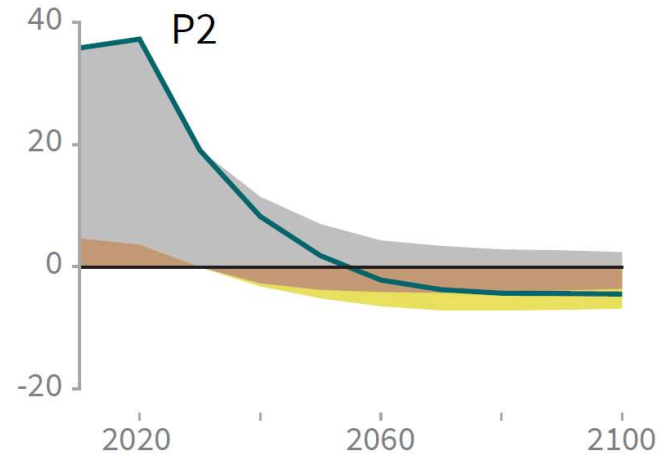
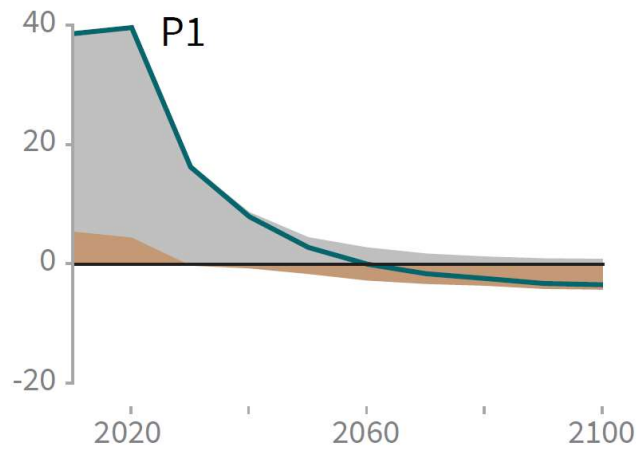
Black carbon emissions



Nitrous oxide emissions



Different pathways and mitigation strategies could limit global warming to 1.5°C



● Fossil fuel and industry ● AFOLU ● BECCS

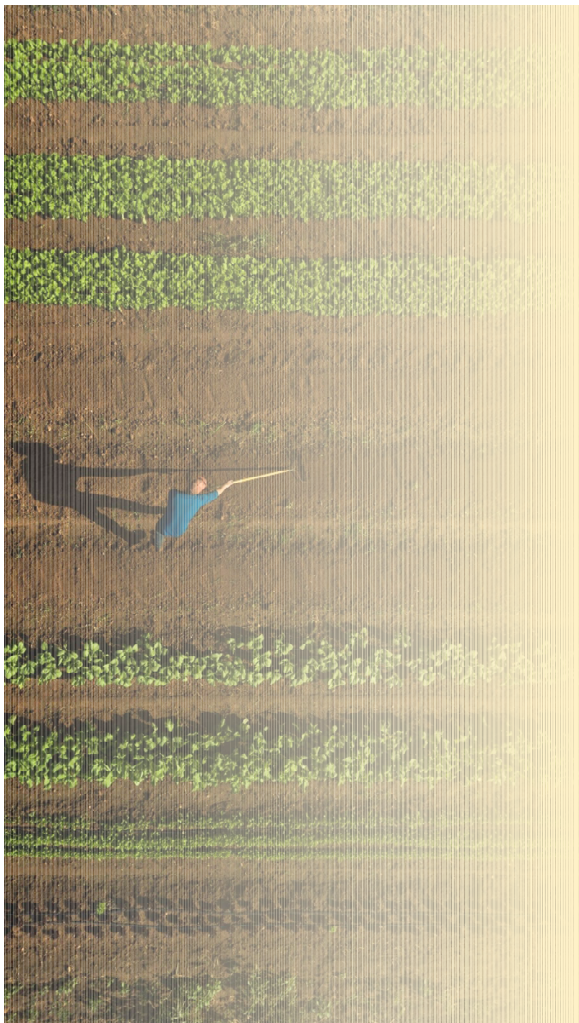


Strengthening the Global Response in the
Context of Sustainable Development and
Efforts to Eradicate Poverty

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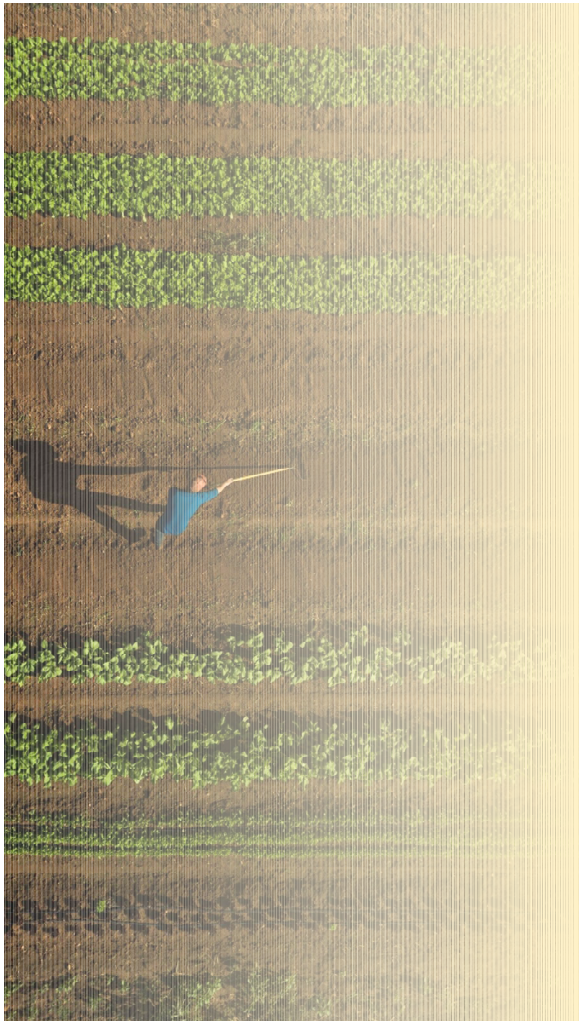


Limiting warming to 1.5°C

Would require rapid, far-reaching and unprecedented changes in all systems

- A range of technologies and behavioural changes
- Scale up in annual investment in low carbon energy and energy efficiency by factor of five by 2050
- Renewables supply 70-85% of electricity in 2050
- Coal declines steeply, ~zero in electricity by 2050
- Oil and especially gas persist longer – gas use rises by 2050 in some pathways
- Deep emissions cuts in transport and buildings
- Changes in land use and urban planning

Peter Essick / Aurora Photos



Peter Essick / Aurora Photos

Carbon Dioxide Removal (CDR)

- All pathways that limit global warming to 1.5 °C with limited or no overshoot use CDR
- Used to compensate for residual emissions and in most cases achieve 'net negative' emissions
- The larger and longer the overshoot, the greater the reliance on CDR later in the century
- BECCS (bioenergy with carbon capture and storage) features in most scenarios but is avoided in a few
- Implications for land, food and water security, ecosystems and biodiversity



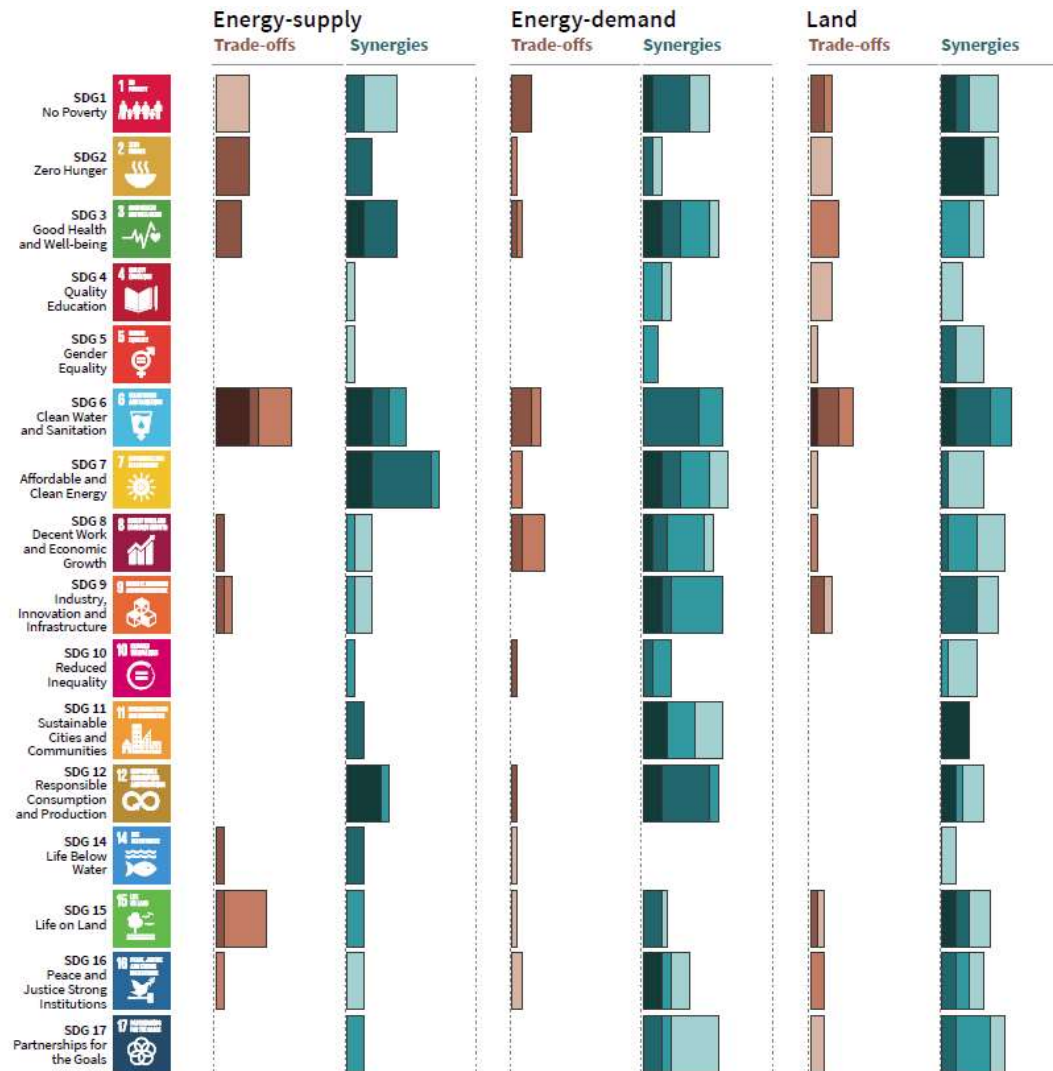
Strengthening the Global Response *in the
Context of Sustainable Development and
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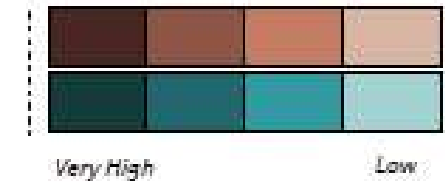
Synergies and trade-offs with the UN Sustainable Development Goals

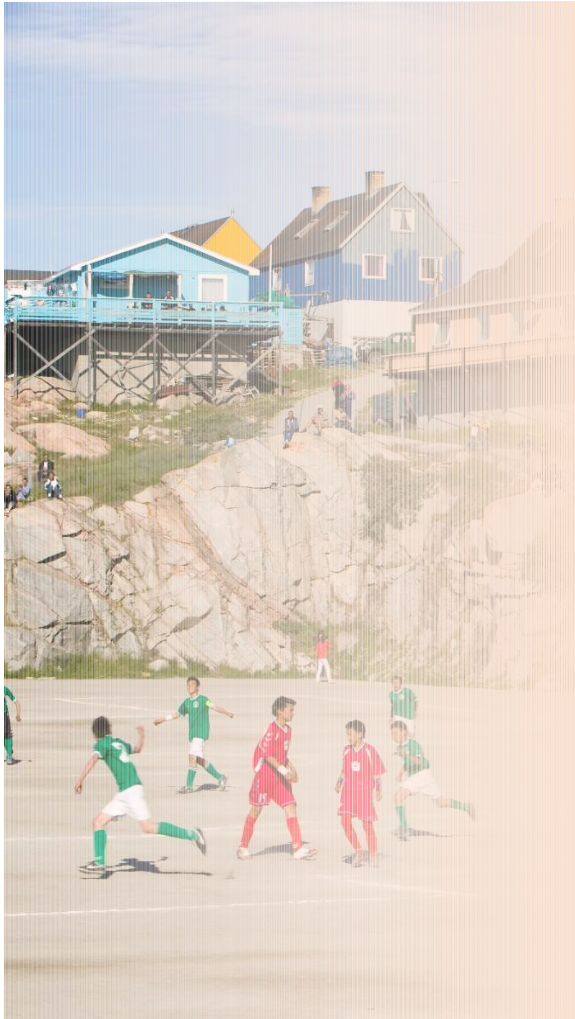


Length shows strength of connection



Shades show level of confidence

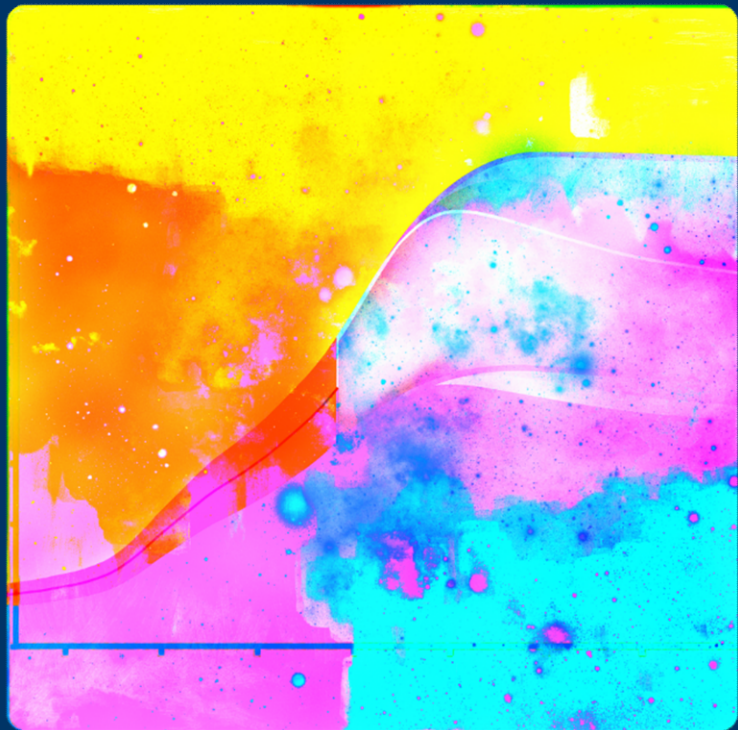




Ashley Cooper/ Aurora Photos

Climate change and people

- Different pathways have different benefits and trade-offs with UN Sustainable Development Goals (SDGs)
- Low energy demand, low material consumption and low carbon intensive food carry highest benefits
- Careful mix of measures to adapt to climate change and reduce emissions can help achieve SDGs
- Governance, policy, technological innovation and mobilisation of finance can enhance feasibility of option consistent with limiting warming to 1.5C



<http://www.ipcc.ch/report/sr15/>

#SR15