



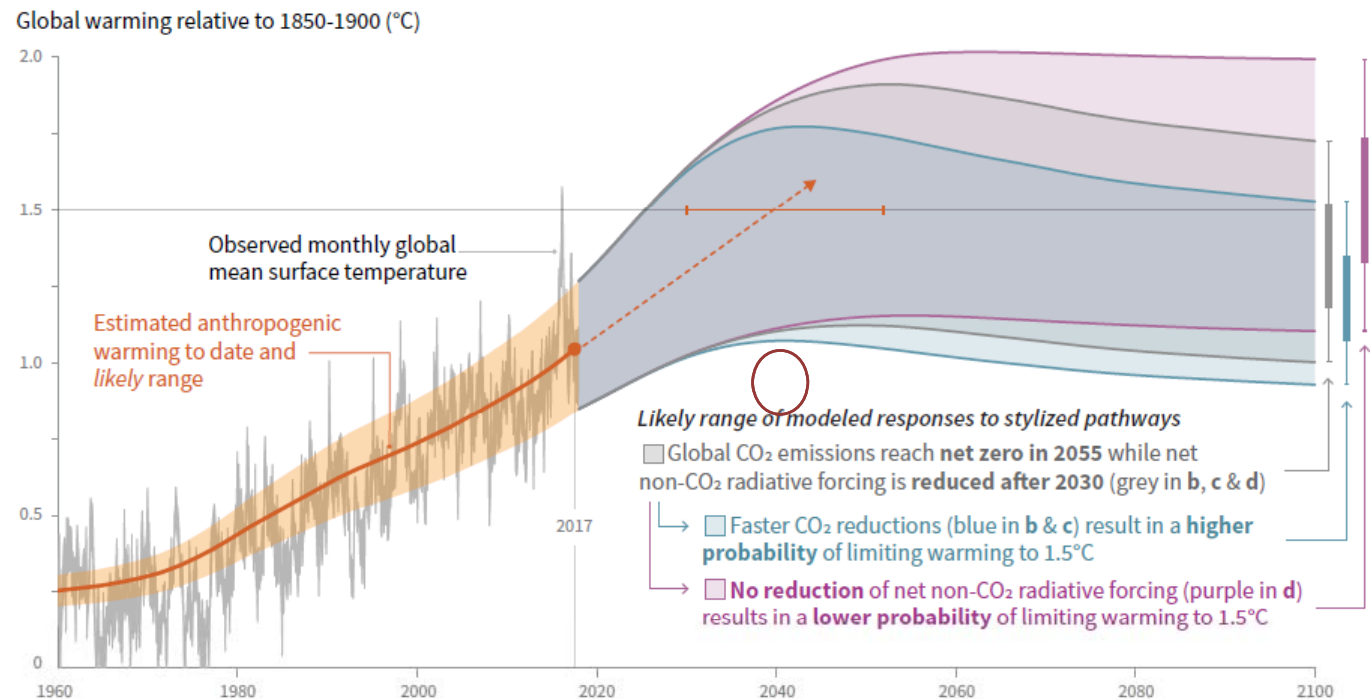
IPCC 1.5°C Report

Chandra Bhushan
Deputy Director General
Centre for Science and Environment



The IPCC 1.5°C Report

a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways



At current rate, we are set to cross 1.5°C between 2030-2052.





IPCC 1.5°C Report – Key Takeaways

- **The impacts at 1.5°C of warming on economy and ecosystems is much higher than anticipated in the previous scientific reports.**
- **The impacts at 2°C will be far higher than 1.5°C and will be catastrophic for the poor and the vulnerable communities.**
- **Staying on the right side of 1.5°C will require unprecedented transformation in every sector**
- **Demands drastically scaled-up action starting now. Next 10-15 years critical.**



1.5°C vs. 2°C

Indicator	Impact increase (1.5 vs. 2°C)
Water scarcity – Increase in % of global population exposed and vulnerable	2x
Food scarcity – population exposed to lower crop yields	10x
Agricultural productivity – reduction in maize yield in the tropics	2.3x



Source: SR15 Chapters 3 and 5; Tables 3.4, 3.5 and 5.1

1.5°C vs. 2°C

Indicator	Impact increase (1.5 vs. 2°C)
Flooding – Increase in % of global population affected by fluvial flooding	1.7x
Sea level rise – population at risk/year	2x - 6x
Heatwaves – Population exposed and vulnerable	1.5x

1.5°C vs. 2°C

Indicator	Impact increase (1.5 vs. 2°C)
Arctic sea-ice – sea-ice-free summers	10x One per century vs. once per decade
Coral reefs – population decline	0.3x 70-90% vs. near complete extinction
Permafrost – Area loss	0.4x 4.8 million sq. km vs. 6.6 million sq. km.
Species loss – Percentage of species which lose at least half of range	
Vertebrates	2x (4% vs. 8%)
Plants	2x (8% vs. 16%)
Insects	3x (6% vs. 18%)





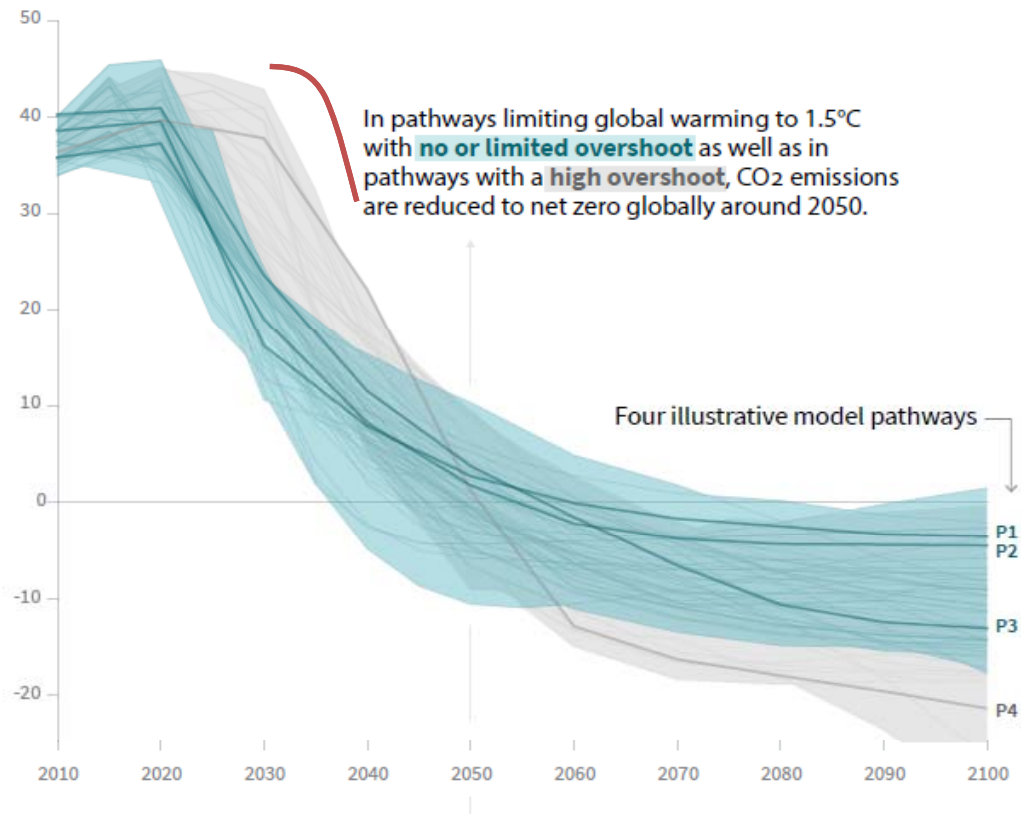
What will it take to remain within
1.5°C?



What does 1.5°C Require?

Global total net CO₂ emissions

Billion tonnes of CO₂/yr

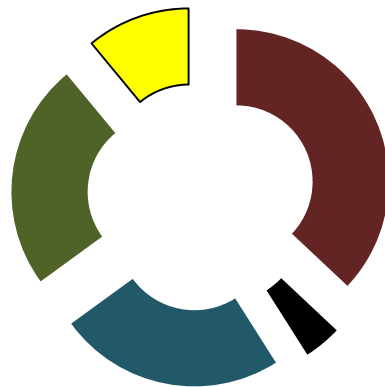


- Gray zone – overshoot 1.5°C, then aim to “return”.
Later peak, steeper cliff.
- Requires large scale deployment of “carbon dioxide removal” – natural (sinks) + expensive technology (BECCS)
- Capacity to “return” **deeply uncertain**



What does 1.5°C Require?

Present Breakup of Global Electricity Supply by Fuel Source



2050 Target






- Coal
- Oil
- Natural Gas
- Renewables
- Nuclear

Renewables – from 24% today to 47-65% in 2030, to 70-85% in 2050

Coal – from 37% today to 0% in 2050



What does 1.5°C Require?

	Indicator	Change (year)
	Energy demand for buildings (2010 baseline)	↓ 19-37% (by 2050)
	CO2 emissions from industry (2010 baseline)	↓ 75-90% (by 2050)
	Share of low carbon fuels - electricity, hydrogen and biofuel - in transport (2020 baseline)	↑ 30-60% (by 2050)



Issues

- Can we meet 1.5°C goal?
- How will the global politics on climate change unfold post Katowice conference?
- Understanding the impacts of climate change in India
- How are we preparing ourselves to adapt to climate impacts?