# IPCC report on impact of 1.5C temperature rise

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

In a nutshell what did it say?

Report to the Climate and Environment Advisory Committee, South Cambridge District Council

Anne Miller 18 October 2018

# Background

At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal.

Governments agreed

- a long-term goal of keeping the increase in global average temperature to **well below 2°C** above pre-industrial levels;
- to aim to limit the increase to **1.5°C**, since this would significantly reduce risks and the impacts of climate change;

This is the report they commissioned on the impacts and how to achieve it.

https://ec.europa.eu/clima/policies/international/negotiations/paris_en

# In summary:

Limiting global warming to 1.5ºC requires

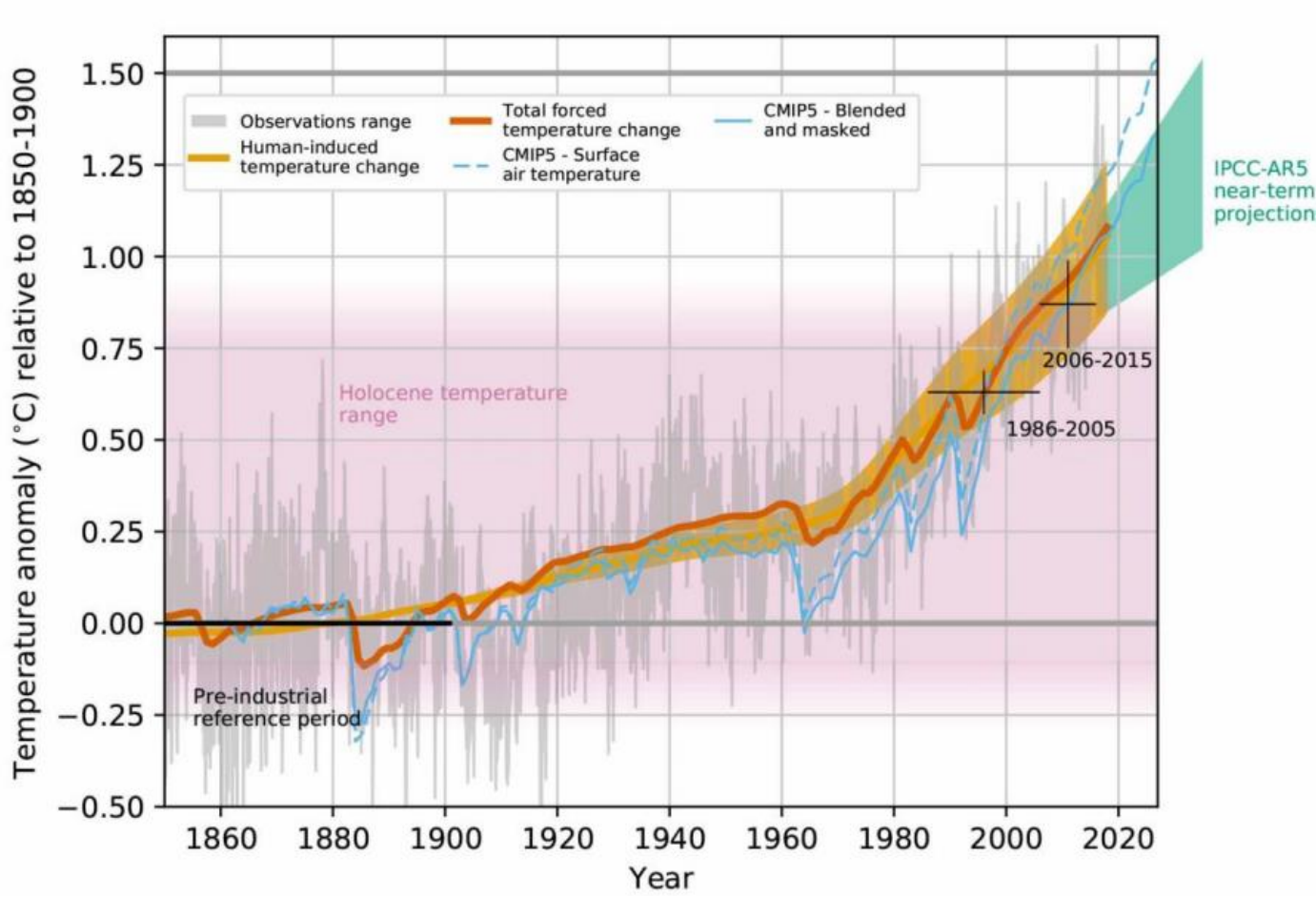
"*rapid, far-reaching and unprecedented changes in all aspects of society"*

with

"*clear benefits to people and natural ecosystems*"

IPCC press release

- Human induced temperature change is already ~1C and having attributable impacts



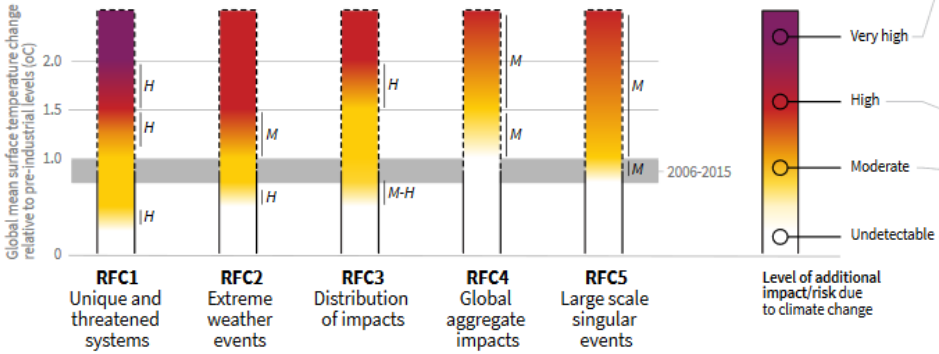

Chapter 1, p13


Human induced climate change is
already having attributable impacts

- 1.5C is safer than 2C.
- Even 1.5C risks “severe and widespread impacts”.
- Above 1.5C there’s a disproportionate increase in the risk of passing critical tipping points.

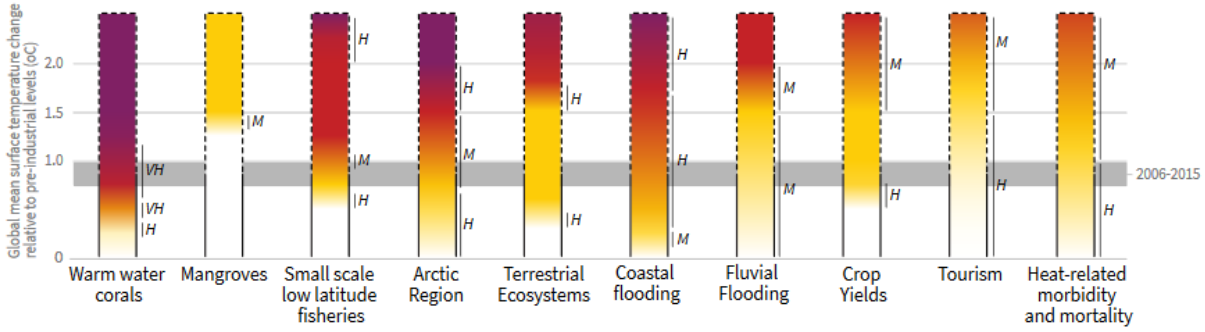
Five Reasons For Concern (RFCs) illustrate the impacts and risks of different levels of global warming for people, economies and ecosystems across sectors and regions.

**Impacts and risks associated with the Reasons for Concern (RFCs)**

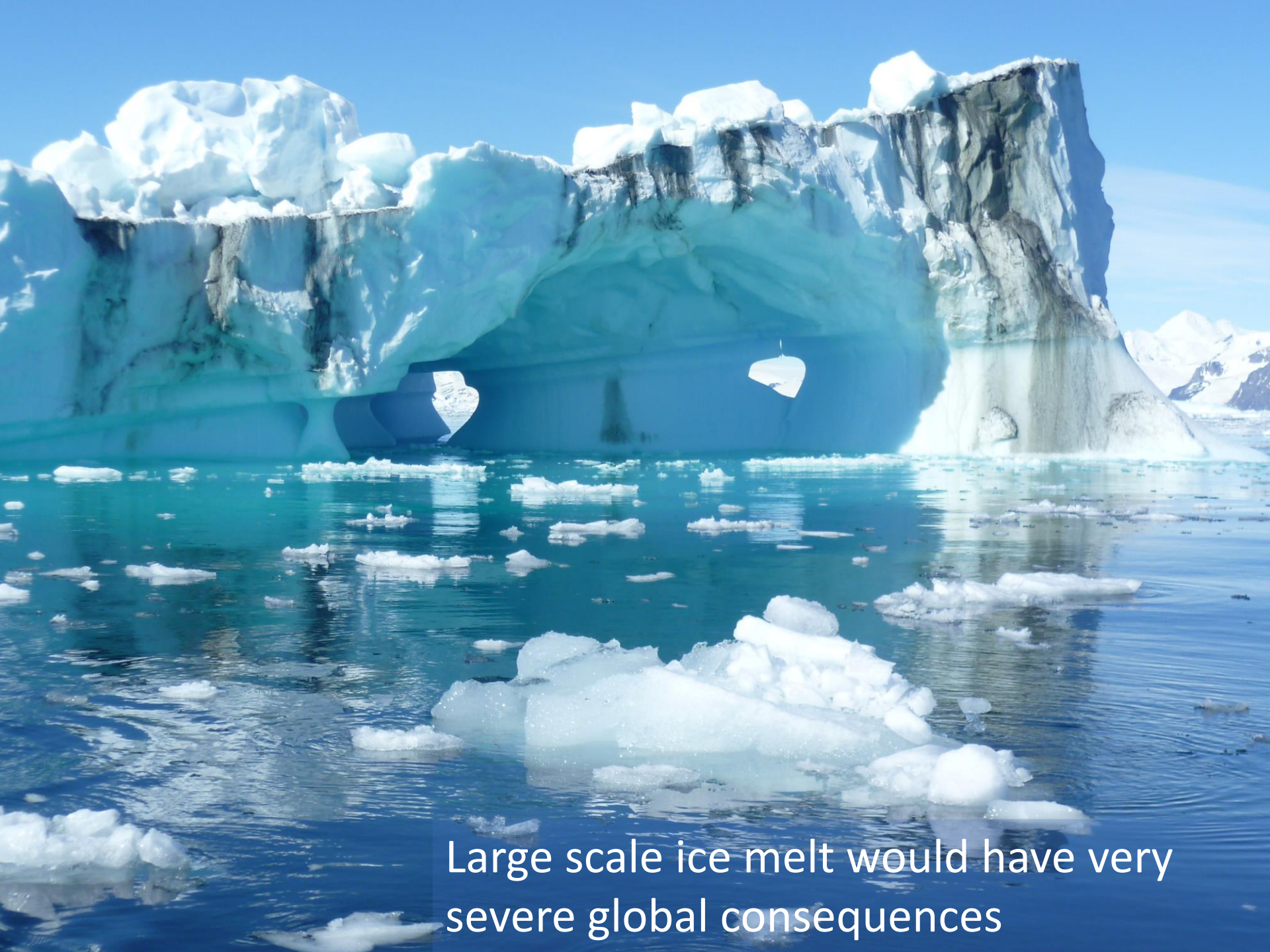



**Purple** indicates very high risks of severe impacts/risks and the presence of significant irreversibility or the persistence of climate-related hazards, combined with limited ability to adapt due to the nature of the hazard or impacts/risks.
**Red** indicates severe and widespread impacts/risks.
**Yellow** indicates that impacts/risks are detectable and attributable to climate change with at least medium confidence.
**White** indicates that no impacts are detectable and attributable to climate change.

**Impacts and risks for selected natural, managed and human systems**




p14 summary for policy makers

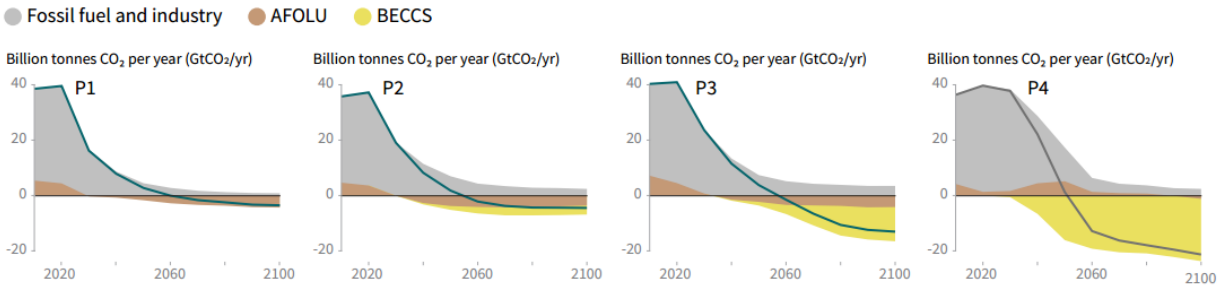

Large scale ice melt would have very severe global consequences

- We have choices in how to limit the rise to 1.5C, but all involve rapid decarbonisation and the mopping up of excess emissions

## Characteristics of four illustrative model pathways

Different mitigation strategies can achieve the net emissions reductions that would be required to follow a pathway that limit global warming to 1.5°C with no or limited overshoot. All pathways use Carbon Dioxide Removal (CDR), but the amount varies across pathways, as do the relative contributions of Bioenergy with Carbon Capture and Storage (BECCS) and removals in the Agriculture, Forestry and Other Land Use (AFOLU) sector. This has implications for the emissions and several other pathway characteristics.

### Breakdown of contributions to global net $CO_2$ emissions in four illustrative model pathways




**P1:** A scenario in which social, business, and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the global South. A down-sized energy system enables rapid decarbonisation of energy supply. Afforestation is the only CDR option considered; neither fossil fuels with CCS nor BECCS are used.

**P2:** A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.

**P3:** A middle-of-the-road scenario in which societal as well as technological development follows historical patterns. Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.

**P4:** A resource and energy-intensive scenario in which economic growth and globalization lead to widespread adoption of greenhouse-gas intensive lifestyles, including high demand for transportation fuels and livestock products. Emissions reductions are mainly achieved through technological means, making strong use of CDR through the deployment of BECCS.

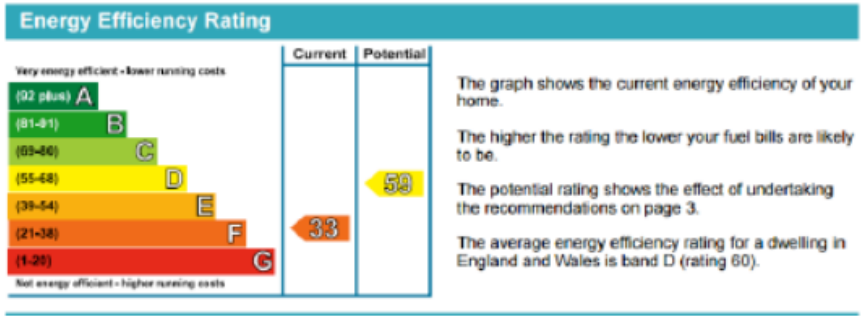
**Option 1**
Incredibly rapid adoption of renewables and demand reduction, with excess emissions mopped up by afforestation.

**Option 3**
Normal historical rates of social and technological change to reduce emissions. Surplus emissions balanced out by massive new industry to grow bioenergy crops then capture and bury the carbon emissions

Chart on p19 of summary for policy makers


Trees are good

- Achieving 1.5C involves reducing emissions by 45%* by 2030, and then achieving net zero by 2050
- Many of the ways of doing this will bring other benefits




## Estimated costs of running your home

Your EPC will give an indication of how much it will cost to heat and power your home. Details are also listed on potential savings that could be made should you improve the energy efficiency of your household running costs.

**Estimated energy costs of this home**

| | Current costs | Potential costs | Potential future savings |
|---|---|---|---|
| Lighting | £375 over 3 years | £207 over 3 years | You could save £2,865 over 3 years |
| Heating | £4,443 over 3 years | £2,073 over 3 years | |
| Hot water | £549 over 3 years | £222 over 3 years | |
| Totals: | £5,367 | £2,502 | |

These figures show how much the average household would spend in this property for heating, lighting and hot water. This excludes energy use for running appliances like TVs, computers and cookers, and any electricity generated by microgeneration.

https://www.moneysupermarket.com/gas-and-electricity/energy-performance-certificate/

* Reduction from 2010