The Essentials of the Oct 2018 IPCC 1.5°C Special Report

Edited for length and simplicity by Peter Carter, expert IPCC 1.5C Report reviewer and director Climate Emergency Institute. All text is as published (i.e quotes) except for additions in blue. Emphases are author's

https://report.ipcc.ch/sr15/pdf/sr15_headline_statements.pdf

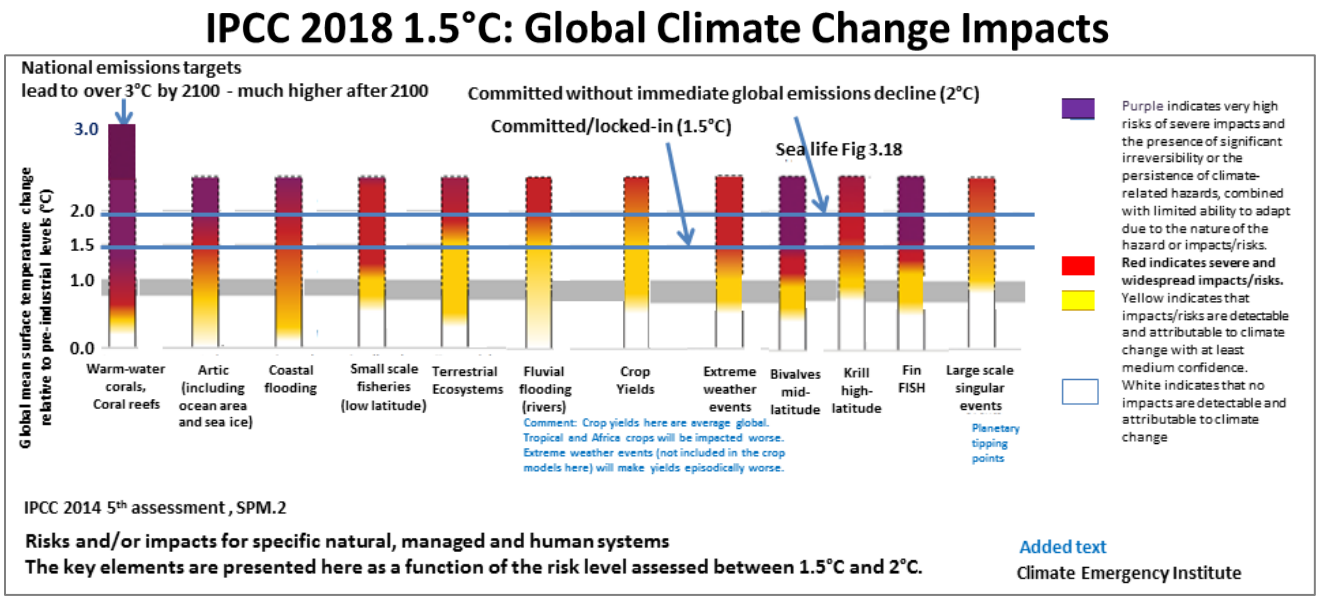
Full title: *Global Warming of 1.5 °C an IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts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

Key Headline Statement: ***The 0.5°C rise in global temperatures that we have experienced in the past years has contributed to shifts in the distribution of plant and animal species, decreases in crop yields and more frequent wildfires. Similar changes can be expected with further rises in global temperature.***

Key mitigation statements: ***Fossil fuel subsidies. Estimated at 650 billion USD in 2015 (Coady et al., 2017), these subsidies represent 25–30% of government expenditures in forty (mostly developing) countries. Reducing these subsidies would contribute to reaching 1.5°C-consistent pathways*** **(Ch. 4)**

Explicit carbon prices remain a necessary condition of ambitious climate policies **(Ch. 4)**

Overwhelming evidence for the global climate emergency



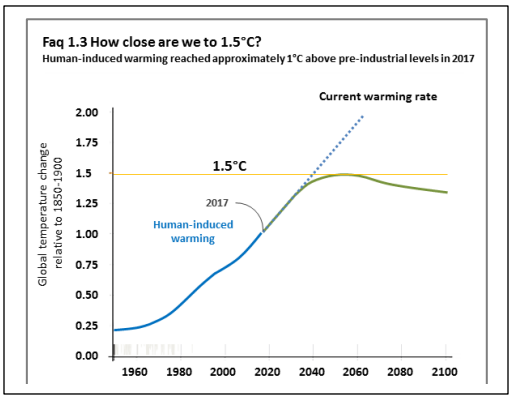
Excerpts from FAQs

FAQ 1.1: Why Are We Talking about 1.5°C

Summary: Climate change represents an **urgent and potentially irreversible threat to** human societies and the planet. In recognition of this, countries adopted the Paris Agreement in December 2015, the central aim of which includes pursuing temperature rise to 1.5°C.

Over a fifth of the global population live in regions that have already experienced warming in at least one season that is greater than 1.5°C above pre-industrial levels.

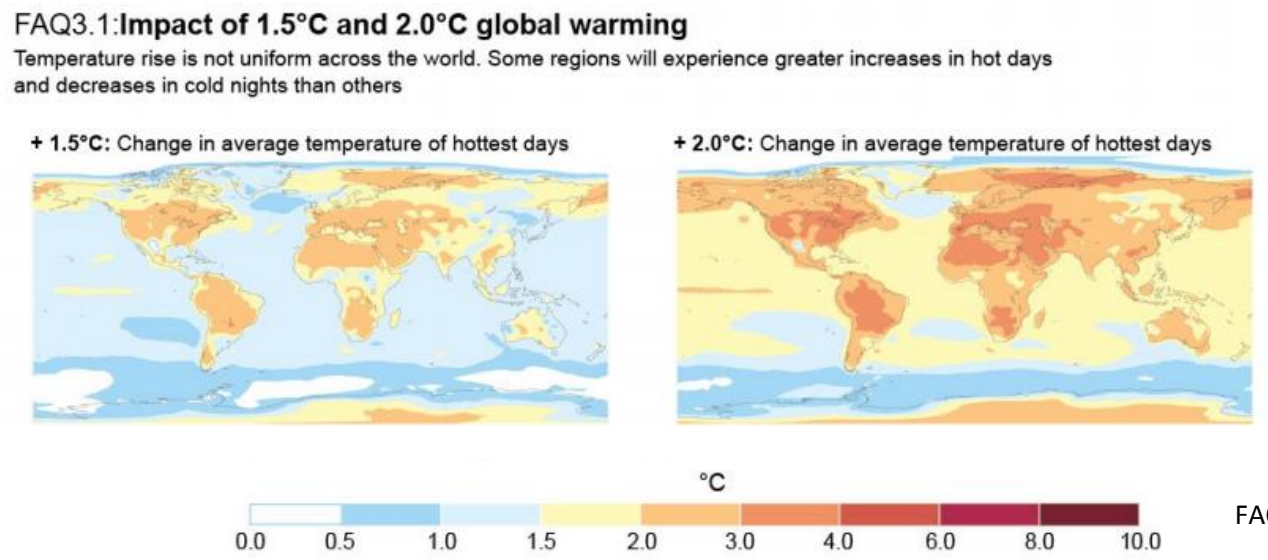
Human-induced warming reached approximately 1°C above pre-industrial levels in 2017. At the present rate, global temperatures would reach 1.5°C around 2040.



Above graphic: Stylized 1.5°C pathway shown here involves emission reductions beginning **immediately**, and CO2 emissions reaching zero by 2055

A world that is consistent with holding warming to 1.5°C would see greenhouse gas emissions rapidly decline in the coming decade, with strong international cooperation and a scaling up of countries' combined ambition beyond current national emissions targets.

FAQ 3.1: What are the Impacts of 1.5°C and 2°C of Warming?



FAQ 3.1 Figure 1

Summary: The impacts of climate change are being felt in every inhabited continent and in the oceans. However, they are not spread uniformly across the globe, and different parts of the world experience impacts differently. Limiting warming to 1.5°C rather than 2°C can reduce these risks, but the impacts the world experiences will depend on the specific greenhouse gas emissions 'pathways'

>Reaching 2°C instead of 1.5°C of global warming would lead to **substantial warming of extreme hot days in all land regions**. It would also lead to an increase in heavy rainfall events in some regions, particularly in the high latitudes of the Northern Hemisphere, potentially raising the risk of flooding.
>In addition, some regions, such as the Mediterranean, are projected to become drier at 2°C versus 1.5°C of global warming.
>The impacts of any additional warming would also include stronger melting of ice sheets and glaciers, as well as increased sea level rise, which would continue long after the stabilization of atmospheric CO2 concentrations.
>Change in climate means and extremes have knock-on effects for the societies and ecosystems living on the planet.
>Climate change is projected to be a poverty multiplier, which means that its impacts are expected to make the poor poorer and the total number of people living in poverty greater.
>The 0.5°C rise in global temperatures experienced in the past years has contributed to shifts in the distribution of plant and animal species, decreases in crop yields and more frequent wildfires. Similar changes with further rises in global temperature.

Pathways that overshoot 1.5°C run a greater risk of passing through '**tipping points',** thresholds beyond which certain impacts can no longer be avoided even if temperatures are brought back down later on. The collapse of the Greenland and Antarctic ice sheets on the timescale of centuries and millennia is one example of a tipping point.

FAQ 4.1: What Transitions Could Enable Limiting Global Warming to 1.5°C?

There are actions across all sectors that can substantially reduce greenhouse gas emissions. Examples of actions include shifting to low- or zero-emission power generation, such as renewables; changing food systems, such as diet changes away from land-intensive animal products; electrifying transport and developing 'green infrastructure', such as building green roofs, or improving energy efficiency by smart urban planning, which will change the layout of many cities.

Transitional changes are already underway in many systems, but limiting warming to 1.5°C would require a rapid escalation in the scale and pace of transition, **particularly in the next 10–20 years.**

Afforestation (planting new trees) and reforestation (replanting trees where they previously existed) enhance natural CO2 'sinks'. Converting waste plant material into a charcoal-like substance called biochar and burying it in soil can also be used to store carbon away from the atmosphere for decades to centuries.

Excerpts from Head-line Statements

Understanding Global Warming of 1.5°

Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

Warming from anthropogenic (human source) emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, with associated impacts…

Climate-related risks for natural and human systems are higher for global warming of 1.5°C than at present, but lower than at 2°C. These risks depend on the magnitude and rate of warming…

Projected Climate Change,
Potential Impacts and Associated Risks

Climate models project differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions, hot extremes in most inhabited regions, heavy precipitation in several regions and probability of drought and precipitation deficits in some regions.

Sea level will continue to rise well beyond 2100.

On land, impacts on biodiversity and ecosystems, including species loss and extinction, are projected to be lower at 1.5°C of global warming compared to 2°C. Limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater, and coastal ecosystems and to retain more of their services to humans.

Limiting global warming to 1.5°C compared to 2ºC is projected to reduce increases in ocean temperature as well as associated increases in ocean acidity and decreases in ocean oxygen levels.

Consequently, limiting global warming to 1.5°C is projected to reduce risks to marine biodiversity, fisheries, and ecosystems, and their functions and services to humans, as illustrated by recent changes to Arctic sea ice and warm water coral reef ecosystems.

Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C.

Estimates of the global emissions outcome of current nationally stated mitigation

Ambitions as submitted under the Paris Agreement would lead to increased global greenhouse gas emissions in 2030. These would not limit global warming to 1.5°C.

Mitigation

In model pathways with no or limited overshoot of 1.5°C, global net CO2 emissions decline by about 45% from 2010 levels by 2030 reaching net zero around 2050. Non-CO2 emissions in pathways that limit global warming to 1.5°C show deep reductions.

Pathways limiting global warming to 1.5°C would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems . These systems transitions are unprecedented in terms of scale, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options.

Fossil fuel subsidies. Estimated at 650 billion USD in 2015), these subsidies represent 25–30% of government expenditures in forty (mostly developing) countries. Reducing (preferably eliminating) these subsidies would contribute to reaching 1.5°C-consistent pathways (Ch. 4)

Explicit carbon prices remain a necessary condition of ambitious climate policies (Ch. 4)