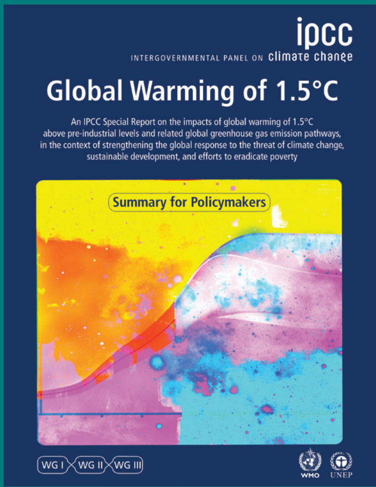
Summary of SR15



IN PLAIN LANGUAGE

Where we are now;

why every half a degree of global warming matters;

why every year matters; and

why every choice matters.

Where are we now?

Since the end of the 19th century, human activities have caused around 1.0°C of global warming.

Climate change is already affecting people, ecosystems and livelihoods all around the world through warmer conditions over land and in oceans, increases in the intensity and frequency of extreme events such as heat waves or heavy rainfall events, the loss of Arctic sea ice and glaciers, and rising sea levels, among other changes.

At the current rate of increase, global warming will reach 1.5°C between around 2030 and 2050.

Although past emissions of greenhouse gases will continue to cause long lasting changes in the climate system, including sea level rise, they are unlikely to cause global warming to reach 1.5°C.

Reaching and sustaining net zero global emissions of carbon dioxide would halt global warming on a timescale of several decades.

The faster net zero emissions happen, the lower will be future cumulative carbon dioxide emissions, and thus peak warming. Halting global warming also requires that we reduce the net effect of other climate drivers.

We still have a window for action to limit warming to 1.5°C.

Why does every half a degree of global warming matter?

Projected changes in climate

Climate projections show clear differences between today, a 1.5°C and a 2°C warmer world.

Each half a degree of global warming leads to further warming over land and in oceans, increased average precipitation in cold regions, and reduced precipitation in regions of Mediterranean climate.

Differences are even stronger for extreme events, especially increases in the number of hot days and intensification of hot extremes, increased risks of heavy rainfall in many regions, and risks of drought in some regions.

Even if global warming is stabilised at 1.5°C, global sea level will continue to rise during this century by several tens of centimetres and continue beyond 2100.

By 2100, the rise would be around 10 cm lower for global warming of 1.5°C compared to 2°C. This would mean 10 million fewer people exposed, and more time for adaptation in deltas and low-lying islands and coasts.

Impacts and risks for natural, managed and human systems

Limiting global warming to 1.5°C compared to 2°C is projected to reduce increases in ocean warming, in ocean acidity and decreases in ocean oxygen levels and thus to reduce risks to marine ecosystems and biodiversity.

The likelihood of a sea ice free Arctic summer is around once per century for global warming of 1.5°C, increasing to at least once per decade for 2°C.

The risk of irreversible loss of marine and coastal ecosystems increases with global warming. Even at 1.5°C, 70 to 90% of warm water coral reefs are projected to be severely degraded, with larger losses at 2°C.

The proportion of land insects, plants and vertebrates projected to lose over half of their climatic range doubles between 1.5°C and 2°C of global warming.

Limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater and coastal ecosystems and their services to humans.

It is also projected to prevent the thawing of around 2 milllion km^2 of permafrost.

These impacts and risks will affect people's lives and livelihoods around the world.

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.

Risks from heat-related morbidity and mortality and from vector-borne diseases such as malaria and dengue fever are projected to increase with warming from 1.5°C to 2°C.

The impacts of climate change in the ocean are increasing risks to aquaculture and fisheries, especially in low latitudes, and livelihoods that depend on them.

Limiting warming to 1.5°C compared with 2°C would mean smaller reductions in yields of maize, rice, wheat and other cereal crops, particularly in sub Saharan Africa, Southeast Asia, and Central and South America. Livestock is also projected to be adversely affected.

The proportion of the world population exposed to climate-change induced water stress would be up to 50% less with global warming of 1.5°C compared to 2°C.

At 1.5°C compared to 2°C

Populations at disproportionately higher risk include disadvantaged and vulnerable populations, some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods.

Regions at disproportionately higher risk include Arctic ecosystems, dryland regions, small island developing states, and Least Developed Countries.

Limiting global warming to 1.5°C, compared with 2°C, could reduce the number of people both exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050.

Adaptation needs will increase for global warming of 1.5°C, and further for 2°C. There are limits to adaptation and adaptive capacity for some human and natural systems even at 1.5°C, with associated losses.

Considering climate change, preservation of biodiversity and fighting inequalities, there are clear benefits to keeping warming to 1.5°C compared to 2°C, or higher.

Why does every year matter?

Limiting global warming to 1.5°C implies reducing emissions of carbon dioxide by about 45% by 2030, compared to 2010 levels. They would need to reach net zero around 2050. This means any remaining emissions would need to be balanced by removing carbon dioxide from the air.

For comparison, in most pathways that limit global warming to below 2°C, carbon dioxide emissions decline by about 25% by 2030 and reach net zero around 2070.

As part of limiting warming to 1.5°C, reducing emissions of other climate drivers would improve air quality and have direct and immediate health benefits.

Limiting warming to 1.5°C

Limiting warming to 1.5°C implies unprecedented, rapid and far reaching transitions in energy, industry, land, urban and infrastructure systems.

It means deep emission reductions in all sectors, the use of a wide range of technologies, behavioural changes, and a significant increase of investment in low carbon options.

Rapid progress is already being made in some areas, notably renewable energy and energy efficiency. This progress would need to be picked up in other sectors such as transport, building, and land management.

In pathways compatible with 1.5°C global warming, transitions include decarbonizing the electricity supply, through greater use of renewables and a reduction in coal and other fossil fuels. This in turn reduces emissions of other sectors by electrifying other energy end uses in transport, industry and building, combined with increased energy efficiency. The development of circular economy reduces greenhouse gas emissions and wasteful use of materials.

With over half of the world's population now living in urban areas and huge investments in future urban areas planned, cities offer enormous potential to reduce greenhouse gas emissions, including urban planning that supports low carbon and public transport, as well as low or zero carbon buildings.

Changes to agricultural practices and land management and nature-based solutions can reduce greenhouse gas emissions, increase the land carbon sink, and provide adaptation benefits, with synergies for biodiversity preservation.

To be effective, these transitions need system and cross-system thinking to combine adaptation and mitigation, integrate and coordinate across all systems.

To limit warming to 1.5°C, we would need to remove carbon dioxide out of the atmosphere during the 21st century to compensate for residual emissions and achieve net negative emissions to return to 1.5°C following an overshoot.

Methods for doing this include options such as the restoration of degraded land, soil carbon sequestration, reforestation or afforestation, and bioenergy combined with carbon dioxide capture and storage.

Carbon dioxide removal on a large scale by afforestation and bioenergy would compete with other land uses and have negative implications for food security, ecosystems and biodiversity preservation.

Why does every choice matter?

Current nationally determined contributions from governments imply an increase in greenhouse gas emissions until 2030 and these pathways would result in a global warming of about 3°C by 2100.

Climate change and sustainability

Individual adaptation or mitigation measures and different 1.5°C pathways to address climate change could lead to co-benefits or trade-offs with the other dimensions of sustainable development goals.

When carefully chosen and implemented, a mix of adaptation and mitigation measures can support the sustainable development agenda, promoting social well-being, economic prosperity and environmental and biodiversity protection.

Pathways with low energy demand, low material consumption and healthy, low carbon diets have the highest co-benefits with sustainable development and would reduce dependence on carbon dioxide removal.

Key enabling conditions include strengthening institutional capacities, cooperation, multi-level governance, the acceleration of technological and social innovation and changes in behaviour, and investments.

I would like to stress the importance of education to accelerate these changes by empowering youth. What about an international benchmarking of school and university programmes on biodiversity and climate change?

When designed and implemented with specific attention to those must vulnerable to climate change and to the consequences of climate policies, these transitions can be ethical, fair and just, leading to low-carbon, climate-resilient development pathways.

Conclusion

Limiting warming to 1.5°C is not impossible, but political and societal will is critical. Rapid action is needed, with multiple synergies with the preservation of biodiversity and fighting inequalities.

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