

Climate crisis

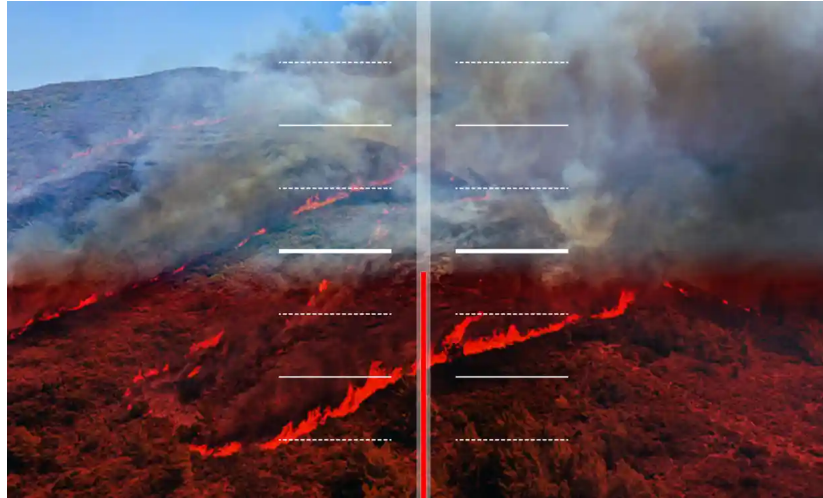
World's top climate scientists expect global heating to blast past 1.5C target

Exclusive: Planet is headed for at least 2.5C of heating with disastrous results for humanity, poll of hundreds of scientists finds

'Hopeless and broken': why the world's top climate scientists are in despair

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Environment editor

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The climate crisis is already causing profound damage to lives and livelihoods across the world. Illustration: Guardian Design/Halil Kahraman

Hundreds of the world's leading climate scientists expect global temperatures to rise to at least 2.5C (4.5F) above preindustrial levels this century, blasting past internationally agreed targets and causing catastrophic consequences for humanity and the planet, an exclusive Guardian survey has revealed.

Almost 80% of the respondents, all from the authoritative Intergovernmental Panel on Climate Change (IPCC), foresee at least 2.5C of global heating, while almost half anticipate at least 3C (5.4F). Only 6% thought the internationally agreed 1.5C (2.7F) limit would be met.

Many of the scientists envisage a "semi-dystopian" future, with famines, conflicts and mass migration, driven by heatwaves, wildfires, floods and storms of an intensity and frequency far beyond those that have already struck.

Numerous experts **said they had been left feeling hopeless, infuriated and scared by the failure of governments to act** despite the clear scientific evidence provided.

"I think we are headed for major societal disruption within the next five years," said Gretta Pecl, at the University of Tasmania. "[Authorities] will be overwhelmed by extreme event after extreme event, food production will be disrupted. I could not feel greater despair over the future."

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How high will global heating go?

How high above pre-industrial levels do you think average global temperature will rise between now and 2100?

Count of answers given by IPCC climate experts

77% of climate scientists expect a rise of at least 2.5C

Each square is 1 answer

Below 1.5C 1.5C 2.0C 2.5C 3.0C 3.5C 4.0C 4.5C 5.0C or above

Guardian graphic. Source: Guardian survey of climate experts. 380 responses

But many said the climate fight must continue, however high global temperature rose, because every fraction of a degree avoided would reduce human suffering.

Peter Cox, at the University of Exeter, UK, said: “Climate change will not suddenly become dangerous at 1.5C - it already is. And it will not be ‘game over’ if we pass 2C, which we might well do.”

The Guardian approached every contactable lead author or review editor of IPCC reports since 2018. Almost half replied, 380 of 843. The IPCC’s reports are the gold standard assessments of climate change, approved by all governments and produced by experts in physical and social sciences. The results show that many of the most knowledgeable people on the planet expect climate havoc to unfold in the coming decades.

The climate crisis is already causing [profound damage to lives and livelihoods](#) across the world, with only 1.2C (2.16F) of global heating on average over the past four years. Jesse Keenan, at Tulane University in the US, said: “This is just the beginning: buckle up.”

Nathalie Hilmi, at the Monaco Scientific Centre, who expects a rise of 3C, agreed: “We cannot stay below 1.5C.”

The experts said massive preparations to protect people from the worst of the coming climate disasters were now critical. Leticia Cotrim da Cunha, at the State University of Rio de Janeiro, said: “I am extremely worried about the costs in human lives.”

The 1.5C target was chosen to prevent the worst of the climate crisis and has been seen as an [important guiding star](#) for international negotiations. Current climate policies mean the world is [on track for about 2.7C](#), and the Guardian survey shows few IPCC experts expect the world to deliver the huge action required to reduce that.

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Younger scientists were more pessimistic, with 52% of respondents under 50 expecting a rise of at least 3C, compared with 38% of those over 50. Female scientists were also more downbeat than male scientists, with 49% thinking

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global temperature would rise at least 3C, compared with 38%. There was little difference between scientists from different continents.

Dipak Dasgupta, at the Energy and Resources Institute in New Delhi, said: "If the world, unbelievably wealthy as it is, stands by and does little to address the plight of the poor, we will all lose eventually."

The experts were clear on why the world is failing to tackle the climate crisis. A lack of political will was cited by almost three-quarters of the respondents, while 60% also blamed vested corporate interests, such as the fossil fuel industry.

Many also mentioned inequality and a failure of the rich world to help the poor, who suffer most from climate impacts. "I expect a semi-dystopian future with substantial pain and suffering for the people of the global south," said a South African scientist, who chose not to be named. "The world's response to date is reprehensible - we live in an age of fools."

About a quarter of the IPCC experts who responded thought global temperature rise would be kept to 2C or below but even they tempered their hopes.

"I am convinced that we have all the solutions needed for a 1.5C path and that we will implement them in the coming 20 years," said Henry Neufeldt, at the UN's Copenhagen Climate Centre. "But I fear that our actions might come too late and we cross one or [several tipping points](#)."

Lisa Schipper, at University of Bonn in Germany, said: "My only source of hope is the fact that, as an educator, I can see the next generation being so smart and understanding the politics."

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