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Five Things You Should Know About the Latest Climate Scenarios

Climate scenarios are essential scientific tools that help governments, businesses and society understand how today's policy choices may shape the future climate. By combining observations, emissions data and socio-economic projections, scientists can estimate how global temperatures and climate impacts may evolve under different development pathways.

Recent updates to these scenarios indicate that the previously considered "worst-case" emissions pathway is no longer regarded as plausible. While this reflects the positive impact of global climate action, scientists stress that the remaining scenarios still point to substantial warming and significant climate risks if emissions are not reduced more rapidly.

Climate scenarios have been updated

Climate scientists have recently revised the range of scenarios used to assess future climate change.

The updated framework, presented in a peer-reviewed 2025 study, now focuses on **seven plausible future scenarios**, excluding both the highest and the lowest emissions pathways previously considered.

These updated scenarios will serve as the scientific basis for the **Seventh Assessment Report (AR7)** of the **Intergovernmental Panel on Climate Change (IPCC)**, which provides the internationally recognised scientific foundation for climate policymaking.

The revised scenarios reflect developments in emissions trends, technological progress and climate policies observed since earlier assessments.

The previous worst-case scenario is no longer considered likely

One of the most notable changes is the removal of the **RCP8.5 (SSP5-8.5)** scenario from the range of plausible futures.

This scenario had projected a global temperature increase of approximately **3.5°C to 5.5°C by 2100**, assuming continued rapid growth in fossil fuel use.

According to scientists, this pathway is now considered unlikely because global climate policies, technological advances and the deployment of low-carbon energy have slowed the growth of greenhouse gas emissions.

The report emphasises that this does **not** indicate previous climate science was incorrect. Rather, it demonstrates that scientific scenarios evolve as real-world policies and economic developments change.

Nevertheless, the highest remaining emissions pathway could still result in around **3.5°C of global warming by the end of the century**, with temperatures continuing to rise beyond 2100 if further action is not taken.

Limiting warming to 1.5°C is becoming increasingly challenging

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While the most extreme scenario has become less likely, the updated projections also show that achieving the ambitions of the **Paris Agreement** has become more difficult.

Even the most optimistic current scenario projects a temporary rise in global temperatures to approximately **1.7°C**, exceeding the Paris Agreement's 1.5°C threshold before temperatures could gradually decline.

Scientists stress that this temporary overshoot does not necessarily mean the long-term objective has been lost. However, every additional fraction of a degree increases risks to:

- Human health
- Food security
- Water resources
- Biodiversity
- Economic stability

The report therefore highlights the need to accelerate emissions reductions in order to minimise both the magnitude and duration of any temperature overshoot.

Climate models continue to provide reliable projections

The updated scenarios do not call into question the reliability of previous climate modelling.

On the contrary, observations show that actual global temperatures continue to fall within the range projected by climate models over recent decades.

At the same time, recent research indicates that warming has accelerated, while assessments of climate risks have become more severe.

The latest **IPCC Assessment Report** concludes that many high-risk climate impacts may occur at lower levels of global warming than previously estimated.

This reinforces the need to strengthen both:

- Climate mitigation efforts to reduce greenhouse gas emissions
- Climate adaptation measures that improve resilience to unavoidable impacts

The economic cost of inaction continues to grow

The report highlights the increasingly significant economic consequences of climate change.

According to data from the **European Environment Agency**, climate-related losses within the European Union reached:

- **€58 billion** in 2022
- **€45 billion** in 2023
- **€40 billion** in 2024

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Looking ahead, the European Commission estimates that under a high-emissions pathway, **EU GDP could be around 7% lower by the end of the century** compared with a scenario that limits warming to 1.5°C.

Climate-related risks expected to intensify include:

- Coastal flooding
- Wildfires
- Droughts
- Water scarcity
- Sea level rise
- Heatwaves
- Damage to transport and energy infrastructure
- Reduced labour productivity
- Public health impacts

The **European Climate Risk Assessment (EUCRA)** concludes that strengthening both emissions reductions and climate resilience will be essential to limit these long-term economic and societal costs.

Continued climate action remains essential

The updated climate scenarios provide encouraging evidence that international climate policies are influencing future emissions pathways.

However, they also demonstrate that the remaining plausible futures still involve substantial warming and increasing climate risks.

According to the Commission, continued investment in decarbonisation offers multiple benefits beyond reducing greenhouse gas emissions. These include greater energy independence, stronger competitiveness in clean technologies, improved public health through better air quality and reduced economic losses from extreme weather events.

Background

Climate scenarios are developed by the international scientific community to explore how different emissions pathways may influence future climate conditions. They underpin assessments by the **Intergovernmental Panel on Climate Change (IPCC)** and provide the evidence base for international climate negotiations under the **Paris Agreement**.

The latest update, published in 2025, reflects changes in global emissions trends and policy developments since previous assessments. While the most extreme emissions pathway is no longer considered plausible, the remaining scenarios indicate that limiting global warming remains a major challenge. The findings reinforce the need for sustained efforts to reduce

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greenhouse gas emissions while strengthening adaptation to the climate impacts that are already unavoidable.

More information: https://climate.ec.europa.eu/news-other-reads/news/five-things-you-should-know-about-climate-scenarios-2026-06-05_en

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