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COP31

Climate Overshoot, Carbon Budget and Climate Justice

Climate Overshoot – Latest News

COP31 in Antalya, Turkey, has renewed debate over the concept of 1.5°C climate overshoot and the need for developed countries to fulfil their emissions-reduction and climate-finance commitments.

Understanding the 1.5°C Climate Overshoot

The 2015 Paris Agreement aims to limit global warming to well below 2°C above pre-industrial levels while pursuing efforts to restrict it to 1.5°C.

Climate overshoot refers to a situation in which global temperatures temporarily exceed the 1.5°C threshold before potentially returning to that level by the end of the century through large-scale carbon dioxide removal.

The concept has gained prominence in climate negotiations. However, it raises concerns about whether future carbon-removal technologies and mitigation measures can realistically reverse the effects of excessive emissions.

The central argument is that the possibility of returning to 1.5°C should not become an excuse for delaying immediate emissions reductions.

Developed Countries and Unfulfilled Climate Obligations

Developed countries have historically contributed disproportionately to global greenhouse gas emissions. However, their domestic climate actions and financial commitments remain inadequate. Major concerns include the following:

- *Continued fossil-fuel dependence: Fossil fuels accounted for approximately 83% of primary energy consumption in the United States and 73% in the European Union in 2025.*
- *Expansion of fossil-fuel projects: Countries including the US, Norway, the UK, Germany, the Netherlands and Australia have continued approving oil and gas exploration or extraction projects.*
- *Inadequate climate finance: Although developed countries reported mobilising approximately $137 billion in climate finance in 2024, its estimated actual value was only $33–45 billion. Around 65% of public finance was provided as loans.*
- *Declining adaptation finance: Adaptation finance fell to $26 billion in 2023, against an estimated annual requirement of $310–365 billion by 2035.*

These developments highlight the gap between international climate commitments and their actual implementation.

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Scientific and Economic Challenges of Climate Overshoot

The United Nations Environment Programme (UNEP), in its report Limiting Overshoot: Navigating Exceedance of 1.5 Degrees Celsius and Pathways towards Return, examined the scale of carbon removal required to reverse temperature increases.

The report highlighted that reversing just 0.1°C of warming would require permanently removing approximately 220 billion tonnes of CO_2 from the atmosphere.

Current carbon-removal capacity remains inadequate:

- *Natural systems, particularly forests and soils, remove approximately 2.2 billion tonnes of CO_2 annually.*
- *Direct air capture removes barely 2 million tonnes annually.*
- *Scaling up direct air capture could cost approximately $600 per tonne of CO_2 removed.*

Moreover, removing carbon dioxide from the atmosphere does not necessarily reverse all the climatic consequences caused by its original emission.

This makes reliance on future carbon-removal technologies scientifically uncertain and economically challenging.

Climate Inequity and the Global South

A major concern surrounding climate overshoot is the unequal distribution of its costs and responsibilities.

Large-scale carbon removal requires land, forests and other natural resources. However, much of the land identified for carbon-removal projects is located in developing countries.

Experts highlight that national climate pledges already rely on nearly 1.2 billion hectares of land for CO_2 removal, much of it in the Global South.

This creates several concerns:

- *Land-use conflicts: Land required for carbon-removal projects may compete with agriculture, food production and local livelihoods.*
- *Unequal responsibilities: Developed countries may outsource their emissions-reduction obligations through carbon credits and projects in developing countries.*
- *Development constraints: Carbon-removal projects may restrict the availability of land and natural resources needed for industrialisation.*
- *Biodiversity and indigenous rights: Large-scale land-use changes can affect ecosystems and communities dependent on forests and natural resources.*

The European Union's Carbon Border Adjustment Mechanism (CBAM), covering sectors such as iron, steel, cement and aluminium, also raises concerns about the impact of unilateral climate-related trade measures on industrial development in the Global South.

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Way Forward: Returning to the Basics of Climate Action

Experts argue that COP31 must prioritise measurable climate commitments rather than relying on emerging narratives and future technological possibilities.

Key priorities include:

- *Immediate emissions reduction: Developed countries should undertake deep and sustained domestic emissions reductions and achieve net-zero well before 2050.*
- *Net-negative emissions: Countries with historically high emissions should pursue net-negative emissions within their own borders rather than relying excessively on developing countries' forests and land.*
- *Predictable climate finance: Developing countries require grant-based public finance rather than loans or uncertain private investment commitments.*
- *Technology transfer: International negotiations must address intellectual property barriers that make clean technologies expensive for developing countries.*
- *Carbon-budget accountability: Countries should discuss the remaining global carbon budget and their respective historical contributions to emissions.*
- *Safeguards for overshoot pathways: Any proposed carbon-removal strategy must account for scientific uncertainty, technical feasibility, food security, biodiversity and indigenous communities.*

Article 9.1 of the Paris Agreement is particularly relevant, as it recognises the obligation of developed countries to provide financial resources to developing countries for mitigation and adaptation.

