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UNEP Warns Global Warming Will Overshoot 1.5°C, Requiring a New Overshoot, Peak and Decline Climate Strategy

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Recent Developments:

- The **United Nations Environment Programme (UNEP)** released its *Limiting Overshoot: Navigating exceedance of 1.5°C and pathways towards return* report on **2 September 2026**, warning that crossing the **1.5°C warming threshold** is now widely assessed as unavoidable under current and near-term trajectories.
- The report proposes an **“overshoot, peak and decline” pathway**, under which global temperatures temporarily exceed 1.5°C, peak at the lowest possible level and subsequently decline towards the Paris Agreement goal.
- Even if countries fully implement their existing climate commitments and **net-zero targets**, UNEP projects peak warming of around **1.8°C**, while current policies point towards approximately **2.6°C warming by 2100**.
- UNEP therefore argues that climate policy must simultaneously pursue **rapid emission reductions, adaptation and carbon removal**, rather than treating the possibility of exceeding 1.5°C as a reason for policy resignation.

Background of the 1.5°C Goal:

Paris Agreement and Temperature Target:

- The **Paris Agreement, adopted at COP21 in 2015**, seeks to hold the increase in global average temperature to **well below 2°C** above pre-industrial levels while pursuing efforts to limit warming to **1.5°C**.
- The 1.5°C threshold is important because climate risks generally increase with every additional fraction of warming, particularly for **extreme heat, sea-level rise, ecosystems, food security and vulnerable communities**.
- The threshold should not be interpreted as a single physical “tipping point” at which climate change suddenly becomes catastrophic; rather, it represents a **risk-management benchmark** within international climate policy.
- The **IPCC** has established that overshooting a warming level produces greater and potentially irreversible impacts compared with pathways that remain below that level.

Why the Overshoot Concept Matters:

- **Overshoot** refers to a temporary period during which global warming exceeds a specified temperature level before subsequently declining through sustained **net-negative CO₂ emissions**.
- The larger and longer the overshoot, the greater the associated risks and the larger the quantity of **carbon dioxide removal (CDR)** required to reverse warming.
- The new UNEP approach therefore shifts the policy question from simply **“Can 1.5°C be avoided?”** towards **“How low can peak warming be kept, and how quickly can temperatures return below 1.5°C?”**

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UNEP's Overshoot, Peak and Decline Pathway:

Three-Stage Climate Strategy:

- **Overshoot:** Global temperatures temporarily rise above 1.5°C because cumulative greenhouse-gas emissions have already consumed much of the remaining carbon budget.
- **Peak:** Governments seek to minimise the maximum temperature reached through accelerated reductions in **CO₂ and short-lived climate pollutants**, particularly methane.
- **Decline:** Temperatures are gradually reduced through sustained **net-negative CO₂ emissions**, requiring atmospheric carbon removal to exceed remaining emissions.

Projected Warming Scenarios:

- UNEP estimates that full implementation of existing climate commitments could still result in approximately **1.8°C peak warming**, demonstrating the gap between present commitments and the 1.5°C objective.
- Under **current policies**, warming could reach approximately **2.6°C by 2100**, highlighting the continuing implementation and ambition gap in global climate action.
- The IPCC similarly finds that pathways returning to 1.5°C after an overshoot require substantially greater **net-negative CO₂ emissions** than pathways that avoid or minimise overshoot.

Compounding Costs of Overshoot:

Environmental and Socioeconomic Risks:

- Higher peak warming increases the likelihood of **extreme heat, heavy precipitation, wildfires, glacier loss, sea-level rise and ecosystem degradation**.
- **Coral reefs, glaciers, polar ecosystems and coastal systems** are particularly vulnerable because some impacts become irreversible or continue for very long periods even after temperatures decline.
- Overshoot can increase the risk of crossing **climate tipping points**, including instability of the **Greenland and West Antarctic ice sheets, Atlantic Meridional Overturning Circulation and Amazon ecosystems**.
- Temperature reversal does not automatically reverse every climate impact; for example, **sea-level rise can continue for decades to millennia** even after global warming begins to decline.
- The resulting burden is likely to fall disproportionately on **developing countries and vulnerable populations**, raising issues of climate justice, adaptation finance and loss and damage.

Why Delay Becomes More Costly:

Carbon Budget and Negative Emissions:

- The remaining **carbon budget** represents the cumulative amount of CO₂ that can still be emitted while retaining a specified probability of limiting warming to a particular temperature level.
- Continued high emissions reduce this budget and increase the probability of overshoot, thereby transferring a larger mitigation burden to future generations.
- The IPCC estimates that reducing global temperature by **0.1°C** through atmospheric carbon removal requires roughly **220 GtCO₂ of net-negative emissions**, with a likely range of 160–370 GtCO₂.
- Consequently, delayed emission reductions create a double burden because they increase both **peak warming** and the subsequent requirement for **carbon removal**.

Methane as a Near-Term Priority:

Short-Lived Climate Pollutant:

- **Methane (CH₄)** is a potent greenhouse gas with a much shorter atmospheric lifetime than CO₂, making methane mitigation particularly important for reducing **near-term warming**.

- The IPCC finds that rapid reductions in methane and other non-CO₂ emissions can lower peak warming and reduce dependence on later **net-negative CO₂ emissions and CDR**.
- Key methane-reduction opportunities exist in **oil and gas operations, coal mining, livestock, rice cultivation, landfills and wastewater management**.
- For an overshoot strategy, methane reduction has strategic importance because it can deliver relatively rapid climate benefits while CO₂ reduction remains essential for **long-term temperature stabilisation**.

Role of Carbon Dioxide Removal:

Need and Limitations:

- Returning global warming below 1.5°C after an overshoot requires **carbon dioxide removal**, because atmospheric CO₂ concentrations must decline sufficiently to produce net-negative emissions.
- CDR options include **afforestation, reforestation, ecosystem restoration, soil-carbon sequestration, bioenergy with carbon capture and storage and direct air capture**.
- Large-scale CDR can create trade-offs involving **land, water, food security, biodiversity, energy and local livelihoods**, particularly when land-intensive methods are expanded rapidly.
- CDR should therefore **complement rather than substitute deep emission reductions**, because excessive dependence on future removals could increase technological, ecological and governance risks.

Implications for India:

Climate Policy and Development:

- India faces a dual challenge of pursuing **rapid economic development and poverty reduction** while limiting growth in greenhouse-gas emissions.
- Greater emphasis on **renewable energy, energy efficiency, electric mobility, green hydrogen, public transport and resilient infrastructure** can reduce emissions while supporting long-term development.
- India also requires stronger **heat-action plans, climate-resilient agriculture, water management, urban cooling, disaster preparedness and early-warning systems** because adaptation needs will rise even under successful mitigation.
- Methane reduction can provide opportunities through improved **waste management, livestock practices, landfill-gas capture and agricultural interventions**.
- India can also contribute to nature-based carbon removal through **ecosystem restoration, afforestation and improved land management**, while ensuring that carbon projects do not undermine food security or community rights.

Challenges in Global Climate Governance:

Equity and Climate Justice:

- A major challenge is determining who should bear the costs of **emission reductions, adaptation and carbon removal**.
- Developing countries argue that historical emissions and differences in financial and technological capacity must remain central to climate negotiations.
- Large-scale CDR may generate new disputes over **land acquisition, carbon accounting, permanence, monitoring and benefit sharing**.
- Climate finance therefore remains essential for enabling developing countries to pursue both **mitigation and adaptation** without compromising developmental priorities.

Need for Integrated Action:

- The Paris Agreement also seeks to strengthen countries' ability to **adapt to climate impacts and build resilience**, making mitigation and adaptation complementary rather than competing priorities.
- The first **Global Stocktake**, concluded at COP28 in 2023, established an important mechanism for assessing collective progress and informing stronger national climate action.
- The central policy objective should therefore remain **deep and immediate emission reductions**, while preparing for unavoidable impacts and developing responsible carbon-removal capacity.

Value Addition for UPSC:

Keywords and Answer Enrichment:

- **Overshoot:** Temporary exceedance of a specified warming level followed by a decline in global temperature.
- **Peak Warming:** The maximum level of warming reached before temperatures begin to decline.
- **Net-Negative Emissions:** A situation in which global removal of greenhouse gases exceeds global emissions.
- **Carbon Dioxide Removal:** Human activities that remove CO₂ from the atmosphere and store it durably.
- **Tipping Points:** Critical thresholds beyond which changes in climate systems can become self-reinforcing and difficult or impossible to reverse.
- **Climate Justice:** The principle that climate responsibilities and burdens should reflect historical emissions, capabilities and differing vulnerabilities.
- **UPSC-ready conclusion:** The prospect of 1.5°C overshoot should not become a justification for climate inaction; it strengthens the case for **faster mitigation, aggressive methane reduction, climate-resilient development, equitable finance and carefully governed carbon removal**.