



EMBARGOED UNTIL 03 DECEMBER 2023 16.00 - 17.00 GST / 12.00 - 13.00 GMT

Top 10 Climate Science Insights Unveiled: Rapid Fossil Fuels Phase-out Crucial for Minimising 1.5°C Overshoot

Dubai, United Arab Emirates – Today, global experts in social and natural sciences have unveiled the annual 10 New Insights in Climate Science report, alongside UNFCCC Executive Secretary, Mr. Simon Stiell. The report equips policymakers with the latest and most pivotal climate science research from the previous 18 months, synthesised to help inform negotiations at COP28 and policy implementation through 2024 and beyond.

Mr. Simon Stiell, UNFCCC Executive Secretary said: *“The 10 New Insights in Climate Science report provides an essential tool for decision makers at a critical time in the climate calendar each year. Scientific findings from reports like these should inform the ambitious and evidence-based action plans needed in this critical decade of accelerated climate action.”*

The scientific insights of the report function as indispensable evidence for decision makers in business and policy, equipping them with the latest climate science to facilitate informed, effective decision-making on holistic climate and nature solutions, especially against the backdrop of the inaugural Global Stocktake at COP28, which underscores the pressing need for transformative actions to fulfil the Paris Agreement's ambitions.

The report findings underscore the looming inevitability of overshooting the Paris Agreement’s 1.5°C global warming target, emphasising the urgency of a rapid and managed fossil fuel phase-out.

Prof. Johan Rockström, Director, Potsdam Institute of Climate Impact Research commented: *“Science is clear. COP28 must be the global meeting when the world gets serious about phasing out fossil-fuels. Dubai is the grand mitigation moment for coal, oil and gas, which need to shift from increasing 1%/yr to decreasing globally by at least 5 %/yr, and for nature by protecting remaining carbon sinks and stocks in ecosystems, plus building resilience and new carbon sinks in agriculture. So far, we have failed on both nature and energy, taking us on a dangerous path towards losing sight of the Paris Agreement target - the 1.5°C biophysical limit.”*

The report also highlights the need for robust policies to attain the scale needed for effective complementary technology solutions, such as carbon dioxide removal (CDR), especially amidst emerging concerns over the future of land and ocean carbon sinks.

Dr. Oliver Geden, Senior Fellow, German Institute for International and Security Affairs and IPCC WG III Vice-Chair said: *“While not a replacement for rapid and deep emissions reductions, Carbon Dioxide Removal (CDR) will be necessary to deal with hard-to-eliminate emissions and eventually to reduce the global temperature. Current CDR is predominantly forest-based, but rapid acceleration and deployment at scale of other CDR methods with permanent CO₂ removal is required, supported by stronger governance and better monitoring.”*

The report spotlights the urgent need for enhanced just climate adaptation strategies that proactively address simultaneous interconnected extreme events and ensure resilience for the most vulnerable.

The report also accentuates the critical role of food systems in climate action, which are currently responsible for approximately one third of global greenhouse gas emissions. It advocates for the rectification of existing inequalities and emphasises that policies must be adapted to regional and sociocultural contexts, to enable the establishment of just, low-carbon food systems.

As Dr. Aditi Mukherji, Director, Climate Change Adaptation and Mitigation Impact Area Platform CGIAR, explains: *“The intimate links between climate change mitigation and adaptation, biodiversity conservation, and broader societal needs, including food security, requires transformative change in how we jointly govern socio-ecological systems at all scales. Most importantly, due to the growing risks of food insecurity, policies and solutions must be designed and implemented with those who suffer the most.”*

The 10 New Insights in Climate Science series, launched with the UNFCCC at the COPs since 2017, is a collaborative initiative of Future Earth, the Earth League and the World Climate Research Programme, synthesising the latest developments in climate change research. This year’s report represents the collective efforts of 67 leading researchers from 24 countries.

Dr. Wendy Broadgate, Global Hub Director, Future Earth, concludes: *“Science shows that we are heading for overshooting 1.5°C degrees. Minimising this overshoot is critical if we want to reduce risks to societies all over the world. COP28 must be the inflection point where collective action to phase out fossil fuels gathers pace.”*

Full list of insights:

1. Overshooting 1.5°C is fast becoming inevitable. Minimising the magnitude and duration of overshoot is essential.
2. A rapid and managed fossil fuel phase-out is required to stay within the Paris Agreement target range.
3. Robust policies are critical to attain the scale needed for effective carbon dioxide removal (CDR).

4. Over-reliance on natural carbon sinks is a risky strategy; their future contribution is uncertain.
5. Joint governance is necessary to address the interlinked climate and biodiversity emergencies.
6. Compound events amplify climate risks and increase their uncertainty.
7. Mountain glacier loss is accelerating.
8. Human immobility in areas with climate risks is increasing.
9. New tools to operationalise justice enable more effective climate adaptation.
10. Reforming food systems can contribute to just climate action.

- ENDS -

Additional quotes

- Dr. Ploy Achakulwisut, Research Fellow, Stockholm Environment Institute, and UN Secretary-General's Climate Action Team said: *“The fast-shrinking carbon budget means that governments and the private sector must stop enabling new fossil fuel projects, accelerate the early retirement of existing infrastructure, and plan for a well-managed phase-out of fossil fuel production and consumption alongside rapidly increasing the pace of renewable energy deployment. High-income countries must lead this transition and provide support for countries with lower capacities, with all countries striving for an equitable and just transition away from fossil fuels.”*
- Dr Lisa Thalheimer-Prezyna, United Nations University – Institute for Environmental and Human Security (UNU-EHS) said: *“As interconnected extreme climate events intensify, the need for timely identification of and preparation for climate hazards also grows. Using climate adaptation planning centred on justice is essential to build resilience amongst the most vulnerable communities and decrease the risk of maladaptation; this must be advanced at COP28.”*
- Dr. David Obura, IPBES Chair and Director, CORDIO East Africa, said: *“The climate and biodiversity emergencies need to be addressed jointly. The multilateral conventions on climate change and biodiversity, and their respective science-policy platforms, would be much more impactful with closer alignment. Ensuring that the allocation of climate finance has nature-positive safeguards, and strengthening concrete cross-convention collaboration, are examples of key actions that would lead to more effective outcomes.”*

NOTES TO EDITOR:

Dedication: The 10 New Insights in Climate Science 2023/24 report is dedicated to Professor Saleemul Huq, co-author and member of the Editorial Board, who sadly passed away on 28 October 2023. As a

climate science visionary and champion of the Global South, the 10 New Insights in Climate Science community is indebted to his legacy.

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- Prof. Johan Rockström, Director, Potsdam Institute of Climate Impact Research
- Dr. Oliver Geden, Senior Fellow, German Institute for International and Security Affairs and IPCC WG III Vice-Chair
- Dr. David Obura, IPBES Chair and Executive director, CORDIO East Africa (virtual)
- Dr. Aditi Mukherji, Director, Climate Change Adaptation and Mitigation Impact Area Platform CGIAR
- Dr. Ploy Achakulwisut, Research Fellow, Stockholm Environment Institute and UN Secretary-General's Climate Action Team
- Dr. Wendy Broadgate, Global Hub Director, Sweden, Future Earth

Press conference info (for those with accreditation)

Global Launch (English)

- Date: 3 December
- Time: 16.00 - 17.00 GST (Local time) / 12.00 - 13.00 GMT
- Location: UNFCCC Press conference Room 1, Zone B8, Blue Zone, COP28/Dubai
- The Global Press Conference will be livestreamed from Dubai.

About Future Earth: Future Earth is a global network of scientists, researchers, and innovators working to provide the knowledge needed to support transformations towards sustainability. With a strong focus on systems-based approaches, Future Earth seeks to deepen our understanding of complex Earth systems and human dynamics across different disciplines and leverage this understanding to underpin evidence-based policies and strategies for sustainable development. Learn more at futureearth.org.

About the Earth League: The Earth League is an international alliance of institutional and individual members, who work together to respond to some of the most pressing issues faced by humankind including climate change, depletion of natural resources, land degradation, water scarcity, and food security. While addressing existing and emerging problems created by resource use beyond our planet's capacity, the Earth League explores how problems can be anticipated and avoided through strategic action and innovation. The Earth League aims at providing stakeholders and actors with robust

information for decision-making concerning a wide range of issues that need immediate and long-term action. Learn more at the-earth-league.org.

About the World Climate Research Programme (WCRP): WCRP coordinates and guides international climate research to develop, share, and apply climate knowledge that contributes to societal well-being. WCRP addresses aspects of climate science that are too large and too complex to be tackled by a single nation, agency, or scientific discipline. Through international science coordination and successful partnerships, WCRP helps lead the way in understanding the fundamentals of the climate system and in determining its interactions with human activities. Learn more at wcrp-climate.org

PRESS RESOURCES:

[Find downloadable assets here](#)

LAUNCH EVENTS OF THE 10 NEW INSIGHTS IN CLIMATE SCIENCE

Global Launch (English)

Date: 03 December

Time: 16.00 - 17.00 GST (UAE local time) / 12.00 - 13.00 GMT

Location: UNFCCC Press conference Room 1, Zone B8, Blue Zone, COP28

The Global Press Conference will be livestreamed from Dubai via this link:

<https://unfccc.int/event/future-earth-wcrp-earth-league-with-unfccc-executive-secretary-mr-simon-stiell-10-new-insights-in>

COP28 events (English)

10 New Insights in Climate Science 2023/2024 Panel Discussion

Date: 04 December

Time: 14:30 - 15:30 GST (UAE local time)

Location: COP28/Dubai, Arizona State University Julie Ann Wrigley Global Futures Laboratory Pavilion, in-person/live-streamed

Speakers: Sandrine Dixson-Declève (The Club of Rome), Carlos Nobre (Institute for Advanced Studies at University of São Paulo), Laura Pereira (University of the Witwatersrand; Stockholm University), Johan Rockström (Director, PIK), Peter Schlosser (Global Futures Laboratory, Arizona State University)

10 Insights in Climate Science - A Deep Dive

Date: 08 December

Time: 12.00-13:00 GST (UAE local time)

Location: Resilience Pavilion, Blue Zone

Speakers: Johan Rockström, Director PIK, Oliver Geden, IPCC WG III Vice-Chair, German Institute for International and Security Affairs, Berlin, Germany, Aditi Mukherji, Principal Researcher, IMWI and CGIAR, Kolkata, India, [Minister Zakia Khattabi](#), Minister of Climate, the Environment, Sustainable Development and Green Deal, EU parliament, Moderator Sophie Hebden, Future Earth

Japan Launch (Japanese)

Date: 13 December

Time: 14:00 - 15:30 JST

Location: Online via Zoom Webinar

https://nagasaki-u-ac-jp.zoom.us/webinar/register/WN_Dx-e5BiYRe6kYnQtME2AkQ#/registration

Please contact Future Earth Japan for more information: sunhee.suk@futureearth.org

Canada Launch (French)

Date: 14 December

Time: 9:00 - 10:45 EST

Location: Online via Zoom Webinar (live-streamed from Montréal):

<https://sustainabilitydigitalage.org/en-vedette/lancement-des-10-nouvelles-perspectives-en-sciences-du-climat-2023/>

Please contact Future Earth Canada for more information or if you are Montreal media and would like to cover the event in person: rachelle.fox@futureearth.org