CONCEPT

Science update in a rapidly changing world: avoiding tipping points and managing overshoot

Event & Timing:	COP31 Science, Industry and Technology Day — High-Level Segment, 16th of November 2026
Format & Venue:	High-Level Science–Policy Dialogue (Plenary Hall 2 (Akdeniz))
Duration & Slot:	75 Minutes
Session Anchor:	Prof. Dr. Johan Rockström (Director, Potsdam Institute for Climate Impact Research)
Target Audience:	Ministers (Environment/Climate, Industry, Technology, Finance, Economy, Foreign Affairs) & Heads of Delegation

1. Context

The climate is shifting in pace with an increased rate of global warming, higher frequency and magnitude of climate impacts, rising adaptation challenges, and higher costs of inaction, coupled with evidence of multiple and rising co-benefits from climate action, in particular the rapid pace of electrification of the global economy. This moving evidence base must influence climate policy and decision-making. In this session, a scientific update across risks, impacts, resilience, and pathways provides the most recent support for science-aligned climate policy.

A starting point is the evidence of rapidly rising global risks. Progress remains insufficient and accelerated action is needed. At COP31, climate policy must face evidence of breaching, within 3–5 years, the 1.5°C limit. Even an optimistic scenario puts expected peak temperature rise at 1.8°C. However, science tells us that it is possible to get to an overshoot peak and decline pathway, that holds temperature rise to the lowest levels possible and then brings it down by the end of the century. 1.5°C remains the goal, even after excedance.

Extreme events are hitting harder and creating more human suffering; a dwindling global carbon budget requires a rapid transition away from fossil fuels in energy systems, in a just, orderly, and equitable manner; and major efforts to adapt to committed climate change.

The science on risk is amply connected with evidence of opportunity. Research on innovations, economics, policy, governance, and justice provides evidence of a changing global landscape toward more efficient, low-carbon, circular, and secure development trajectories.

The latest *UNEP Emissions Gap Report*, the UNEP *Overshoot Report*, *Planetary Health Check* data, the *State of the Climate Report*, the *2026/2027* and *10 New Insights in Climate Science (10NICS)* demonstrate that the Earth system is rapidly approaching critical planetary thresholds and potential tipping points. Crossing these biophysical limits poses severe systemic risks, including severe heat-related mortality and morbidity, severe disruptions to agricultural yields and global supply chains, irreversible loss of critical biodiversity and ecosystem services, and compounding macroeconomic instability. Maintaining global economic stability, fiscal resilience, and human well-being requires

urgent, science-aligned policy intervention to limit overshoot, accelerate decarbonization, and build adaptive capacity across all regions.

2. Session Objectives

Rising climate risks: brief delegates on rising climate risks, and the loss of resilience, highlighting the impacts on people and economies.

Attribution science: present advances in climate attribution science and their direct implications for loss and damage funding and policy.

Overshoot management: share updates from overshoot pathways and the necessary steps to pivot from emissions growth to reductions.

Economics and equity: share why carbon emissions cost society more than previously estimated, and what this means for mitigation ambition and climate finance. Focus will be as well on global climate governance and the implementation of just transitions.

3. Outcomes

Briefing note for ministers: a concise, policy-ready synthesis detailing the current state of the Earth system, critical planetary tipping point risks, macroeconomic exposure, and science-aligned pathways for managing temperature overshoot.

Co-chairs' summary: a non-negotiated summary of key ministerial insights and recommendations to inform ongoing NDC updating processes and COP31 high-level deliberations.

4. Run of Show

Moderator: Hindou Ibrahim (**confirmed**)

Time	Topic	Speaker
13:00 – 13:03 (3m)	Opening & Protocol	Session Chair / Host Presidency Representative Mehmet Fatih KACIR (Minister of Industry and Technology, Turkey)
13:03 – 13:11 (8m)	Scientific Keynote: Climate Risks, Tipping Points and Earth losing Resilience	Prof. Dr. Johan Rockström, Director, PIK
13:11 – 13:17 (6m)	Scientific Input: Climate Impacts & Health	Prof. Marina Romanello, Executive Director of the Lancet Countdown

13:17 – 13:23 (6m)	Scientific Input: Social Costs of Carbon and climate impacts on economic growth	Prof. Şiir KILKIŞ, Middle East Technical University Ankara
13:23 – 13:29 (6m)	Scientific Input: Advances in Attribution Science	Prof. Dr. Sonia I. Seneviratne, ETH Zürich
13:29 – 13:35 (6m)	Scientific Input: Overshoot Pathways	Dr. Ryna Cui, Center for Global Sustainability (CGS), University of Maryland
13:35 – 13:41 (6m)	Scientific Input: Climate Governance, Just Transition and International Cooperation	Prof. Chukwumerije Okereke, Professor in Global Governance & Public Policy, School for Policy Studies, University of Bristol
13:41 – 14:11 (30m)	Inter-Ministerial Panel	Nepal Minister Env. (confirmed), Germany Minister Env. (invited) , The President of the Turkish Academy of Sciences Prof. Dr. Muzaffer Şeker (confirmed) , Stientje van Veldhoven / NL (invited), Ethiopia/Kenya (not invited yet), Chris Bowen / Australia (not invited yet).
14:11 – 14:13 (2m)	Closing Remarks & Call to Action	Prof. Laurence Tubiana (invited)
14:13 – 14:15 (2m)	Buffer / Handoffs	—