



GLOBAL
TIPPING
POINTS



FROM PERIL TO PROSPERITY

TIPPING POINTS AND THE FUTURE WE CHOOSE

A POLICY BRIEF FOR LEADERS AT COP30

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AT THE EDGE — EARTH SYSTEM TIPPING POINTS

Ten years after the adoption of the Paris Agreement, world leaders are gathering for COP30 — the first COP to take place inside a climate tipping element: the Amazon Rainforest. The world has entered a new reality. Global warming will soon exceed 1.5°C, entering a danger zone where multiple Earth system tipping points pose catastrophic risks to billions.

An Earth system tipping point is when gradual pressure like increasing warming pushes a system — like an ice sheet, a rainforest, or an ocean current — past a critical threshold, beyond which self-perpetuating dynamics create a rapid, unstoppable shift to a fundamentally different condition. Such tipping points have happened in the past, for example, a collapse of the Atlantic overturning circulation (AMOC) contributed to the conditions of the Little Ice Age. These shifts can be irreversible for centuries or longer, with potentially catastrophic impacts that cascade across borders, sectors and generations. Humanity is now climbing a steep mountain path where some steps lead to solid ground and others to sudden drops. The danger is real: one misstep could send us tumbling into irreversible cascades.

Already at 1.3°C of warming, tropical coral reefs are crossing their tipping point with dieback impairing the livelihoods of hundreds of millions. Polar ice sheets are nearing — and may already have passed — points of no return, threatening several meters of long-term sea-level rise that will displace entire coastal societies. The Amazon rainforest is approaching a threshold towards large-scale dieback, which would release vast amounts of carbon, changing regional climate patterns, threatening biodiversity, cultural loss and economic destabilization.

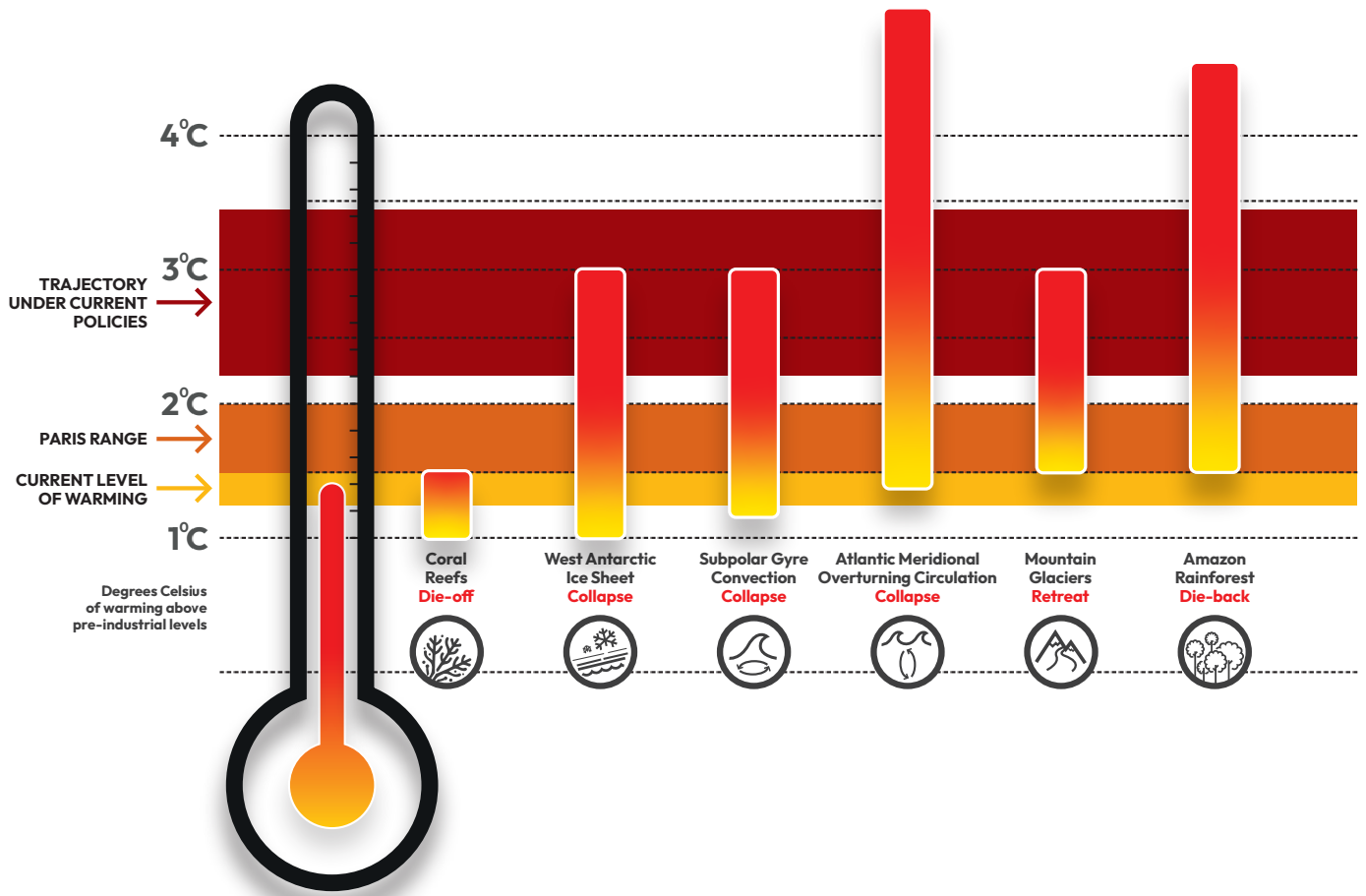
Every tipping point crossed erodes Earth's capacity to absorb shocks, magnifying climate extremes, deepening economic instability, and reversing decades of human development progress. This is no longer a distant environmental challenge — it is a present-day challenge to economic stability, (inter)national security, and human rights. Every fraction of additional warming makes these precipices closer, sharper, and harder to avoid.

The path humanity takes now matters enormously. Some trajectories lead to safer places — where risks are minimized, overshoot is brief, and recovery is possible. Others descend towards escalating harm. COP30 convenes at a moment when the conditions for global cooperation are weakening, yet the need for it has never been greater. Leaders face a stark choice: guide humanity carefully along the narrow ridge that avoids the cliff or risk a fall that future generations cannot climb back from.



Risks of Earth system tipping points increase with global warming

Sources: Global Tipping Points Report 2025 and Armstrong McKay et al., 2022



THE NARROW PATH – CHOOSING THE SAFEST WAY FORWARD

Global warming is projected to **overshoot 1.5°C within a few years**. Every fraction of a degree — and every year spent above 1.5°C — takes us further along a treacherous ridge where sudden drops become more likely. That’s because several critical Earth system tipping points lurk in the danger zone of 1.5–2°C global warming.

We don’t know precisely where these tipping points are hiding. But we know that the further and longer we stray into the danger zone — the hotter it gets and the longer that lasts -- the bigger the risk of triggering them. Once triggered, tipping points have their own accelerating momentum — propelling us like a boulder down a slope.

To stay on safe ground, leaders must act now to limit how hot it gets and for how long.

To **limit the magnitude and duration of temperature overshoot above 1.5°C** demands frontloading mitigation action in this decade, accelerating reductions of short-lived climate pollutants, and investing today in the development of sustainable carbon removal at scale.

The safest pathway is clear:

- Halve global greenhouse gas emissions by 2030 (compared to 2010)
- Reach net zero by 2050 and net negative soon thereafter
- Rapidly cut methane and other short-lived climate pollutants
- Scale sustainable, equitable carbon removal to return temperatures below 1.5°C

If we wait to act until after tipping points are crossed, it will be too late. The only credible risk management strategy is to **act in advance** — but the window for doing so is rapidly closing. Current Nationally Determined Contributions and long-term targets are not enough; they still commit the world to warming that will likely exceed 2°C before 2100. This demands immediate, unprecedented action from leaders at COP30 and policymakers worldwide.

Even amid geopolitical fragmentation, **existing institutions can be leveraged to accelerate policy responses to non-linear climate risk**. The Paris Agreement's ambition cycle can be sharpened for prevention efforts and to embed tipping risk in global adaptation and loss and damage mechanisms. The G20, IMF, World Bank, WTO, and regional blocs can integrate tipping point risk into finance, trade, and development frameworks. National governments can integrate tipping points into risk assessments, preparedness frameworks, and security policies. Cities, businesses, indigenous leaders, and civil society must also be empowered to act.

Governance Action Checklist for Leaders at COP30

- 1 Embed tipping point risk in all national and regional strategies.
- 2 Establish early warning and rapid response mechanisms.
- 3 Frontload emissions cuts and phase out fossil fuels.
- 4 Address non-climate drivers of ecosystem collapse.
- 5 Scale sustainable carbon dioxide removal.
- 6 Ensure justice and solidarity, supporting the most vulnerable nations and communities.

THE SAFER TRAIL – POSITIVE TIPPING POINTS

The same dynamics that make Earth system tipping points dangerous can also open new safer paths and be used to our advantage. Positive tipping points — moments when small actions trigger rapid, self-sustaining change towards zero emissions — are already reshaping economies. Pursuing this trail, leaders can accelerate the turn onto safer ground for people, economies, and ecosystems.

Clean Energy: Solar power and electric vehicles are scaling faster than predicted. Policy mandates to phase in clean technologies — and phase out fossil-fuelled ones — can make clean energy cheaper and better for all.

Food Systems: Sustainable production and consumption, and sustainable trade rules, can prevent damaging ecosystem tipping points — including for the Amazon rainforest — and free up land for nature regeneration.

Nature Regeneration: Indigenous-led conservation, marine protected areas, and rights of nature laws are spreading. Scaling these can rapidly restore ecosystems, remove CO₂, and secure biodiversity goals.

Governments can foster positive tipping points by consistently supporting select technologies with high potential for rapid cost declines and non-linear adoption, tailoring policies to each stage of development—from research funding to strategic investments, stable demand creation, removing infrastructure barriers, and removing subsidies that lock in high-emissions systems. Mandates and bans have proven effective tools in fostering tipping points towards decarbonization. Long-term reliability and policy consistency are crucial, as uncertainty and shifting regulations undermine trust and slow down transformative change.

If governments coordinate internationally, positive tipping can be brought forward for everyone. For example, policies in China and Europe are already making electric vehicles cheaper for everyone, including emerging markets.

Positive tipping points can **reinforce one another** and cascade between sectors. Batteries from electric vehicles are helping balance renewable power grids, while evercheaper renewable energy accelerates the electrification of transport. This in turn improves air quality, saving millions of lives annually. Leaders can target these “superleverage points” — like EV mandates that speed up battery innovation — to spark systemwide transformations, such as bringing electric trucks to market faster.

When coordinated with business, finance and civil society, positive tipping can happen sooner. Civil society is already pioneering local positive tipping points in areas from ecosystem restoration to community energy systems. Governments can amplify these successes by removing legal and financial barriers, opening up data, and creating networks and digital public infrastructure for knowledge exchange and learning. Supporting initiatives such as the *Global Mutirão* can help local breakthroughs spread across regions, turning isolated sparks into a global wave of regeneration and resilience.

Positive tipping points can be powerful drivers of **climate and social justice**, reducing inequalities by making clean technologies, healthy environments, and new economic opportunities accessible to all. But they need to be designed with fairness in mind to avoid concentrating benefits among the wealthy while leaving others behind. Ethical governance, inclusive participation, and equitable distribution of costs and benefits are essential to ensure that the acceleration towards sustainability also accelerates **justice**. “

THE LEGACY MOMENT - RETURNING TO SAFER GROUND

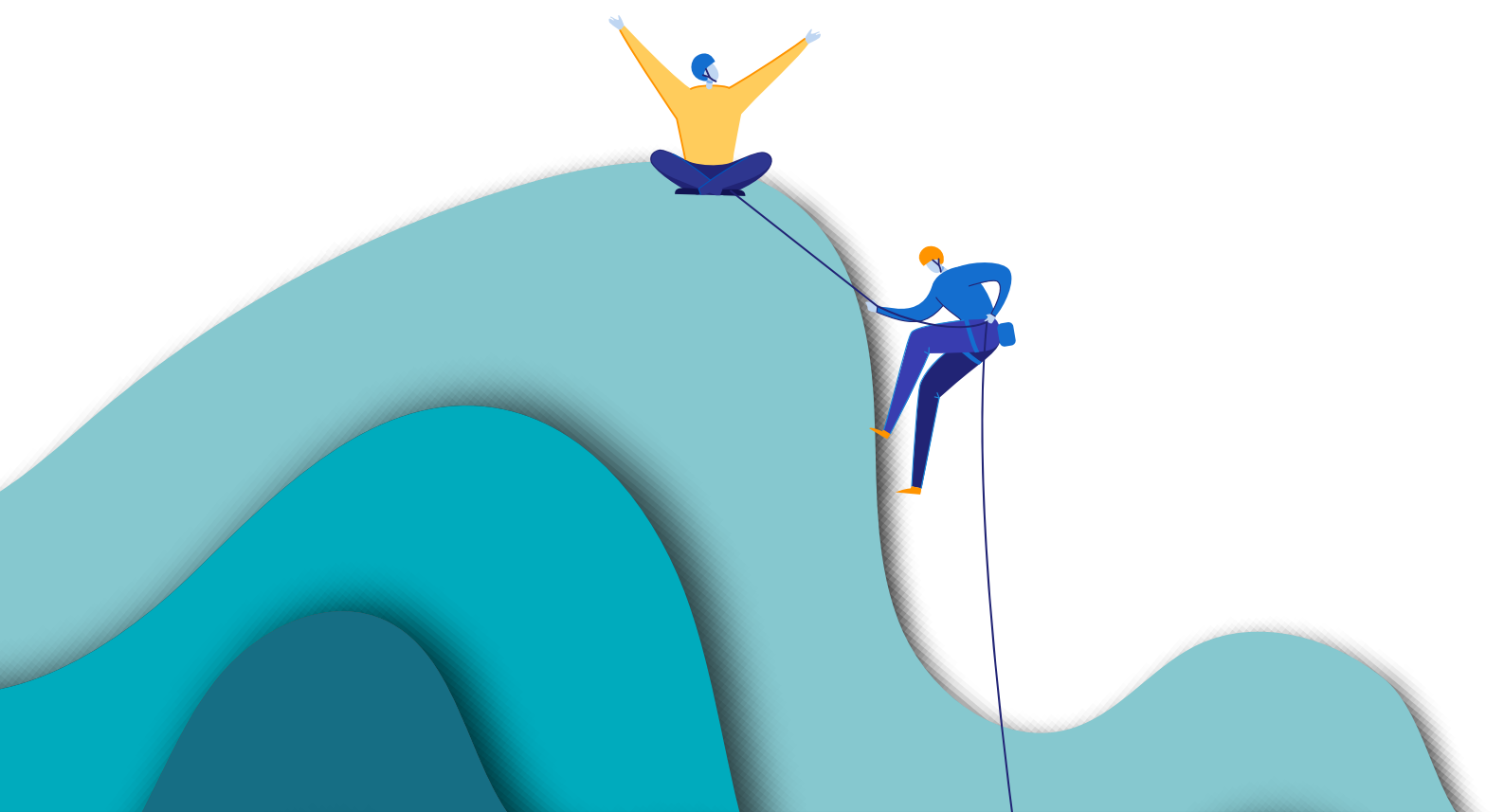
Preventing Earth system tipping points is about protecting lives, economies, and stability now — not just about safeguarding future generations. At COP30, leaders can choose to prevent irreversible damage by committing to a safe 1.5°C-return pathway, rebuild trust by embedding tipping point risk into governance at every level, and trigger a cascade of solutions that secure prosperity while restoring Earth’s resilience.

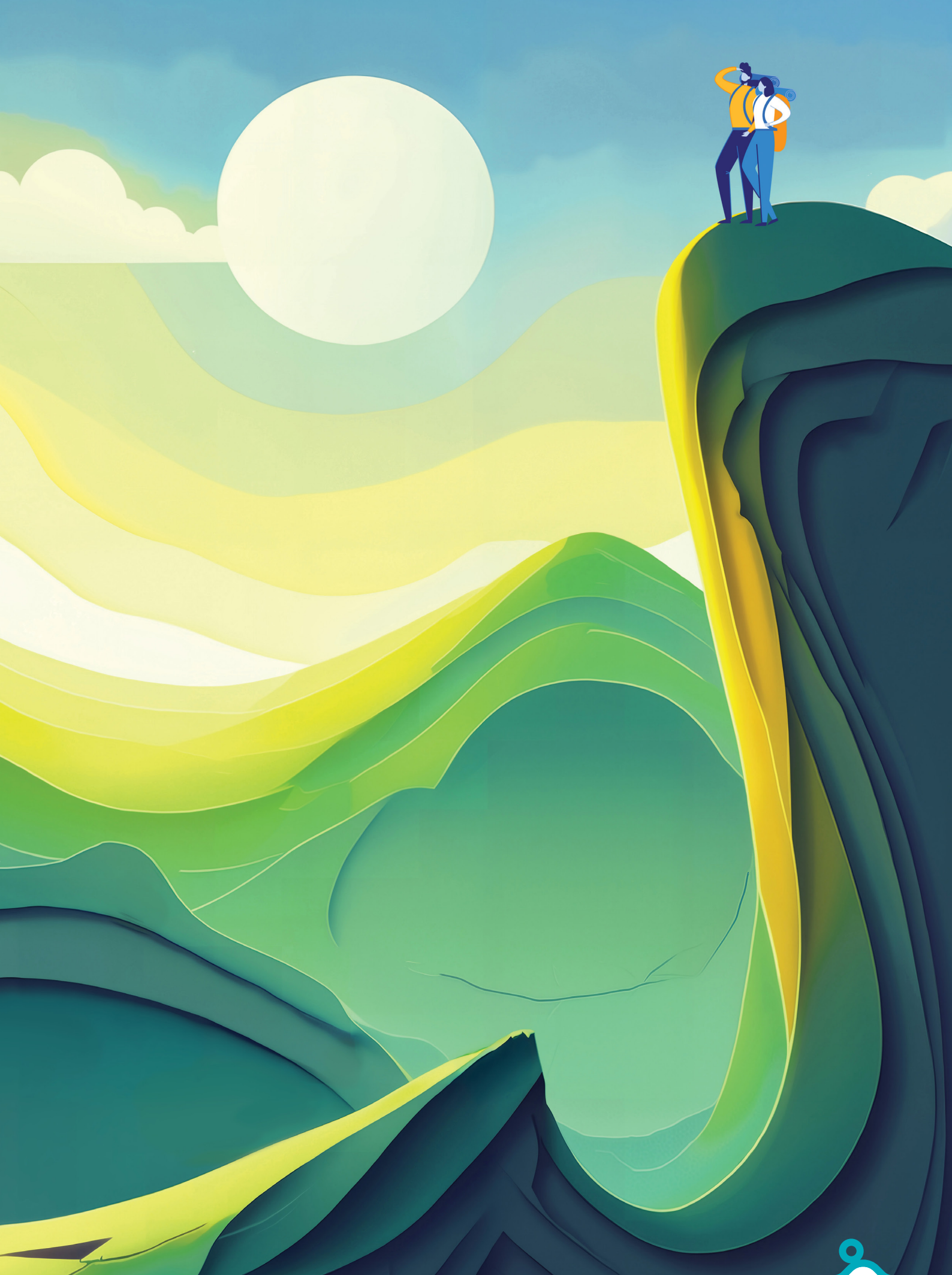
This is the decade to tip the balance — from instability to security, from breakdown to breakthrough. The decisions made now will be remembered not only for saving vital ecosystems, but for safeguarding the foundations of human civilization.

Three Challenges for COP30, Three Missions for 2030

- 1 Minimize overshoot of 1.5C through accelerated phase-out of fossil fuels.
- 2 Integrate tipping point risk into all governance, finance, and security frameworks.
- 3 Trigger three global positive tipping points by 2030 — in energy, food, and nature.

If leaders act now, **the story changes**. We are approaching a precipice, but public leadership can shift our collective path from peril to prosperity.





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