

Submission to the Belém Mission to 1.5°C Call for Inputs

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To: COP 29 Presidency (Republic of Azerbaijan), COP 30 Presidency (Federative Republic of Brazil), COP 31 Presidency (Republic of Türkiye), and COP 31 Presidency of Negotiations (Australia)

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The Oxford Sustainable Law Programme welcomes the opportunity to respond to the Belém Mission to 1.5°C Call for Inputs. The Call poses two guiding questions: first, what action areas and solutions have the highest impact potential to support the submission, ambition, and implementation of NDCs and NAPs; and second, what is required to further strengthen international cooperation to enhance ambition and enable effective implementation. This submission addresses both questions by drawing on recent and forthcoming peer-reviewed research. It advances a central proposition: that minimising overshoot is both a legal imperative and a practical necessity, achievable through prioritising deep emissions reductions, particularly of methane, alongside transparent, feasible, and coherent CO₂ removal strategies and sectoral approaches.

Current Situation & Inevitability of Overshoot

Understanding why overshoot has become inevitable is essential to identifying the high-impact solutions the Call seeks. The decade since the adoption of the Paris Agreement has seen global temperatures reach 1.37°C above pre-industrial levels,¹ rising at accelerating rates.² At the current level of global emissions, the remaining 1.5°C carbon budget will be expended before 2030.³ The lack of emission reductions over the past decade has seen the Paris Agreement goal of limiting warming to 1.5°C change from ambitious but feasible to a goal that will soon be transgressed, and most states are still on track to exceed their share of an equitably distributed remaining carbon budget.⁴

Overshoot of 1.5°C has become inevitable, but what its consequences will be depends on several factors. If emissions are reduced as quickly as possible to limit the peak warming level, achieving the long-term temperature goal is still feasible following a *temporary* overshoot. Reversing an overshoot depends on reducing global emissions to net-negative by first reducing greenhouse gas emissions as deeply as possible and removing and then permanently sequestering an amount of carbon that is substantially more than the size of any residual emissions. At present, the best possible outcome if all states' greenhouse gas emissions reduction targets were implemented would limit peak warming to 1.7°C.⁵ If achieved, it would still be possible to return temperatures to 1.5°C in the longer-term, following a period of temperature overshoot.⁶

As overshoot becomes a dominant paradigm for climate action, this does not permit countries to justify inaction by reference to temperature target relaxation:⁷ the long-term temperature goal of the Paris Agreement retains its integrity under overshoot conditions. Understanding the legal basis for this continued relevance is essential to framing states' mitigation obligations.

Minimisation of Overshoot as a Legal Necessity

The inevitability of exceeding 1.5°C does not undermine the significance of the Paris Agreement's temperature goal.⁸ Temporary exceedance of 1.5°C leaves open the possibility of subsequently returning below this level through strengthened mitigation efforts. The temperature goal continues to inform parties' mitigation obligations under the climate change treaties and the standard of due diligence required of them under international law.⁹ In particular, the International Court of Justice (ICJ) interpreted Article 4 of the Paris Agreement as entailing that parties' NDCs 'must, when taken together, be capable of achieving the temperature goal...'.¹⁰

There are strong legal arguments that parties' NDCs must collectively be capable not only of *eventually* returning below 1.5°C, but also of minimising the magnitude and duration of overshoot. The Paris Agreement's temperature goal does not exist in isolation. It is a concretisation of the ultimate objective set out in Article 2 of the UNFCCC: 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.' Article 2.1 of the Paris Agreement clarifies that the temperature goal is aimed at 'enhancing the implementation of the Convention, including its objective...'. Accordingly, the ICJ understood the temperature goal as 'providing a means for achieving' the objective of the UNFCCC.¹¹

The best available science is unequivocal that each incremental increase in the magnitude and duration of overshoot increases the extent of dangerous anthropogenic interference in the climate system, as it will cause a long-term legacy of climate change impacts. Every increment in temperatures increases the impacts of climate change on health, economies, agriculture, and water resources,¹² as well as increasing the likelihood that climate tipping points will be crossed.¹³ Some changes, such as in regional temperatures, may be reversible if temperatures are returned to 1.5°C; others will persist long after overshoot as thresholds in physical or socioeconomic systems are crossed, or impacts are locked in long-term.¹⁴ Critically, though, the duration of overshoot and the level of peak warming will determine the magnitude of overshoot risks. As stated in the Summary for Policymakers of the IPCC's Sixth Assessment Report: '[o]vershoot entails adverse impacts, some irreversible, and additional risks for human and natural systems, all growing with the magnitude and duration of overshoot'.¹⁵ As such, the consequences of overshoot will be substantially reduced if overshoot is limited and reversed as quickly as possible.

Read in light of the objective of the UNFCCC and the best available science, alignment with the Paris Agreement's temperature goal therefore requires minimisation of the magnitude and duration of overshoot.¹⁶ The COP has repeatedly recognised the need to minimise overshoot. The Outcome of the First Global Stocktake (2023) echoed the findings of the IPCC by recognising 'that limiting global warming to 1.5°C with no or limited overshoot requires deep, rapid and sustained reductions in global greenhouse gas emissions...'.¹⁷ The COP went further in paragraph 7 of the Global Mutirão Decision (2025), which reads in full:

'Underscores that the risks and impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C and *reiterates* its resolve to pursue efforts to limit the temperature increase to 1.5°C, to limit both the magnitude and the duration of any temperature overshoot, and to close adaptation gaps...'.¹⁸

Having established the legal framework requiring minimisation of the magnitude and duration of overshoot, the next section responds directly to the Call's first guiding question by highlighting action areas and solutions capable of turning this resolve into a reality.

Legal Avenues for Reducing Overshoot: High-Impact Action Areas

The severely limited remaining carbon budget, amounting to just over three years of emissions at current levels, from early 2026, has two key implications: rapid, sustained CO₂ reductions are needed to slow and halt warming, and measures to expand the budget are necessary to keep relatively low-overshoot pathways viable. Concretely, there is a need to reduce methane emissions by more than 45% by 2050, CO₂ emissions by 80% by 2050, achieve net zero by 2060, and deliver cumulative net-negative emissions of at least 60 GtCO₂ in the second half of the century. Achieving these outcomes requires prioritising emissions reductions. CO₂ removal and net-negative emissions cannot effectively substitute for mitigation.

Consequently, there is an urgent need to double down on CO₂ emission-reduction measures. In addition, the other principal lever that can achieve the legal mandate to minimise the magnitude and duration of overshoot, as established in the preceding section, is accelerated reductions of global methane emissions. These two levers are addressed in turn.

- **Substantial reliance on CO₂ removal is already embedded in existing 1.5°C pathways, and greater reliance on CO₂ removal to reduce the magnitude and duration of overshoot is unlikely to be either feasible or desirable.** Existing needs for CO₂ removal already face challenges, given (1) land-use constraints for land-based CO₂ removal (and the time taken to deliver land-based removals), and (2) technological limitations and the relatively early stage of development of novel CO₂ removal options like DACCS.¹⁹ Notably, empirical research raises substantial doubts about the pace of technological advancement and cost reductions for these CO₂ removal technologies, weakening their feasibility and desirability.²⁰ Substantial CO₂ removal is already assumed in existing mitigation pathways, although high reliance could exceed sustainable deployment limits and planetary boundaries, worsen biodiversity loss, and cause irreversible harms to human and natural systems.²¹ These constraints represent significant barriers to the implementation of NDCs that substantially rely on CO₂ removal, a concern the Call specifically invites submissions to address. Accordingly, states must pursue deep emissions reductions alongside transparent, feasible, and coherent CO₂ removal strategies.²²
- **Rapid methane cuts are the principal feasible means of limiting warming to 1.5°C with low overshoot, and this should be reflected in the next round of NDCs.** Reducing methane emissions will reduce methane-induced warming within two decades and make more ambitious temperature pathways feasible. In the IPCC Sixth Assessment Report, substantial methane reductions are required in all pathways that limit warming to 2°C by 2100 with >67% probability, and in all 1.5°C pathways, with or without overshoot. Pathways limiting warming to 2°C require methane emissions to fall by at least 40% by 2050, rising to 45% for pathways limiting warming to 1.5°C. In light of this, the climate change treaties indicate that, collectively, states must substantially reduce methane emissions to meet even the Paris Agreement's 'well below 2°C' goal. Individually, developed states with high historic methane emissions face a demanding legal burden to justify weaker methane targets. In line with international legal obligations, they should reduce methane emissions by at least the global average of 40% by 2050.²³ Embedding these targets in the next round of NDCs would directly advance the ambition and implementation objectives at the heart of the Belém Mission.

Beyond these two principal levers to reduce overshoot, one way to strengthen international cooperation and implementation is to complement the aggregate objectives of climate treaties with sectoral

approaches. This responds directly to the Call's second guiding question on enhancing international cooperation. These tailored mitigation strategies target specific sectors within the climate regime and can generate greater mitigation momentum by focusing attention on a particular sector and providing mechanisms to facilitate emissions reductions within it. This is important because the practical scope and pace of emissions reductions can vary significantly across sectors. The principal objective of sectoral approaches is to ensure that sectoral targets, policies, and measures are commensurate with global targets and objectives, thereby contributing to their achievement while ensuring that mitigation progresses across all sectors at an appropriate pace.

A sectoral approach already exists for forests (REDD+ and Article 5 Paris Agreement). Recent COP decisions reveal existing discussions on employing sectors to structure mitigation actions under the climate change treaties.²⁴ Most prominent are references to fossil fuel emissions in the energy sector.²⁵ The case for developing sectoral approaches, particularly for sectors with persistent mitigation gaps such as agriculture, alongside aggregate emissions reduction objectives is therefore rooted in the recent COP process. Support can also be found in the Paris Agreement's emphasis on economy-wide emissions reduction targets (Article 4(4) Paris Agreement). Given that economy-wide mitigation must occur across all sectors, sector-specific approaches can help implement the broader objectives of climate change treaties, especially in sectors that do not offer the 'low-hanging fruit' of mitigation. Integrating further sectoral approaches within mitigation actions under the climate change treaties may make future NDCs more ambitious and provide an avenue for implementing existing NDCs. This would directly serve the legal mandate to minimise the magnitude and duration of overshoot discussed above, whilst also addressing the Call's second guiding question on strengthening international cooperation.

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The views expressed in this submission are those of the authors alone and do not necessarily reflect the views of the Sustainable Law Programme, the Smith School of Enterprise and the Environment, or the University of Oxford.

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²² Lavanya Rajamani and others, 'Legal Guardrails on States' Dependence on Carbon Dioxide Removal to Meet Climate Targets' [2026] Climate Policy 1 <<https://doi.org/10.1080/14693062.2025.2599861>>.

²³ Katharina Neumann and Rupert Stuart-Smith, 'Keeping 1.5°C within Reach: Scientifically Informed Imperatives for State Obligations to Reduce Methane Emissions under International Environmental Law' (2026) (forthcoming).

²⁴ COP26 'welcomes the action taken to unlock the potential for sectoral action to contribute to fulfilling and implementing national targets, particularly in emission-intensive sectors', UNFCCC Decision 1/CP.26, *Glasgow Climate Pact*, FCCC/CP/2021/12/Add.1 (2022) [48]. At COP27, the parties emphasised that the mitigation ambition and implementation work program should include *all sectors* covered in the IPCC National Inventories Guidelines, UNFCCC Decision 4/CMA.4, *Sharm el-Sheikh mitigation ambition and implementation work programme*, FCCC/PA/CMA/2022/10/Add.1 (2022) [4]. At COP28, in the Global Stocktake Decision, parties reiterated encouragement to 'come forward in their next nationally determined contributions with ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors... and aligned with limiting global warming to 1.5°C, as informed by the latest science', UNFCCC Decision 1/CMA.5 [38].

²⁵ The Glasgow Climate Pact specifically calls upon parties to 'accelerate the adoption of policies to transition towards low-emission energy systems and to expedite the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies,' see UNFCCC Decision 1/CMA.3, *Glasgow Climate Pact*, FCCC/PA/CMA/2021/10/Add.1 (2021) [36]. The Sharm el-Sheikh Implementation Plan strengthens this by highlighting that rapid emission reduction must be achieved inter alia through 'the use of low-emission and renewable energy, just energy transition partnerships and other cooperative actions,' UNFCCC Decision 1/CMA.4, *Sharm el-Sheikh Implementation Plan*, FCCC/PA/CMA/2022/10/Add.1 (2022) [12]; UNFCCC Decision 1/CP.27, *Sharm el-Sheikh Implementation Plan*, FCCC/PA/CP/2022/10/Add.1 (2022) [11]. The Global Stocktake decision calls on parties to transition away from fossil fuels in energy systems, to 'accelerate' actions this decade, UNFCCC Decision 1/CMA.5 [28](d), (e). The ICJ advisory opinion specifically called for the reduction of fossil fuels in general, ICJ Advisory Opinion (2025) [427],[428]; Joint Declaration of Judges Bhandari and Cleveland [1], [10], [11], [15].