

The possibility of climate restoration law

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The climate must not only be protected in its status-quo-it must be restored.

The dominant discourse in climate change law and policy centres on climate legislation that enshrines, at its best, sector-specific quantified greenhouse gas (GHG) emissions reduction targets for mitigation. In some instances, climate legislation combines rules on mitigation with provisions that address country-specific needs for adaptation which, in general, receive much less attention and, crucially, funding. Climate legislation primarily focuses, explicitly or impliedly, on the distribution of a rapidly shrinking global carbon budget within sectors, between generations and among nations. National legislatures, often jointly with scientific advisory boards, are tasked with the endeavour of translating global carbon budgets into national quota and quantifiable climate targets.

At the international level, we are entering the era of second-generation nationally determined contributions (NDCs) under the 2015 Paris Agreement, due in 2025 and expected with a new time horizon up to 2035 (so-called NDCs 3.0). These NDCs represent important touchpoints between the international climate change regime and its policy- and law making processes, and relevant national climate laws and policies. New NDCs must be informed by the outcome of the first global stocktake that concluded at the 5th Conference of Parties serving as the Meeting of Parties under the Paris Agreement (CMA5) in Dubai, 2023. At this critical juncture, it is necessary to evaluate existing legal techniques and to develop and advance new instruments, principles and approaches that transpose science into measurable standards. This special issue endeavours to reflect on this architecture of climate law.

A few points are worth mentioning at the outset.

Previous research and the results of climate lawsuits have shown that the legal processes that translate

science into carbon budgets is susceptible to errors and misconceptions about both, the role of science in climate legislation and the measurable effects of climate targets. Three main challenges can be summarised.

First, the legislative operation that intersects carbon budgets with GHG emissions quantities and temperature scenarios presumes a mathematical precision that does not exist. A carbon budget is of course needed, yet the accuracy of emissions quantities and the comparability of country-specific metrics are limited, and the various levels of confidence and probability are often lost when science is moulded into legal provisions. Carbon budget calculations can only indicate a likelihood with which a certain temperature threshold will not be exceeded, provided the carbon budget is well managed and maintained. Correspondingly, sector specific accounting can only be folded into a baseline that, for example, indicates how achieving the target supports the overarching probability of net zero. This includes assumptions about the achievability of targets across jurisdictions and beyond national control. It also depends on net zero definitions. These scientific realities must be considered to ensure that targets are set to remain ambitious.

Second, achieving 1.5°C is not a goal in itself, it is an agreed threshold of an indicator that is aimed to avoid the worst impacts of climate change but that nevertheless amplifies and accelerates the extreme weather events and slow onset events we are already witnessing today, at 1.3°C. Achieving 1.5°C is already a compromise, one that puts fragile icesheets into jeopardy and triggers significant sea level rise over decades and centuries. Legislatures must carefully consider risks arising from overestimating the effect of mitigation actions and the feasibility of reductions, elsewhere or later on, while underestimating the long-term effects of long-living GHG emissions.

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Third, the perspective of current climate laws is largely on avoiding worst-case scenarios that will arise above the 1.5°C threshold. While a clear focus on a numerical target is of course necessary and streamlines action, a too close focus on a specific temperature threshold that will not halt climate change, comes at the cost of losing the ability to imagine the prospect of—let alone planning and law making for—achieving climate positive outcomes. In particular, it obscures the necessity of adequately considering justice, human rights, and equity implications of climate change in domestic legal frameworks.

Overall, the objective of current climate laws is primarily to manage an increasingly more dangerous situation, not to restore a status *ex ante* with significantly less severe human-induced climate change impacts. This limited objective implies a future that will be inevitably defined by climate change and consequently growing inequalities; significantly more so than already present.

Scientific evidence could enable better law making across many jurisdictions. The aspiration of climate legislation should be achieving positive outcomes, a betterment of the climate conditions for currently disadvantaged and marginalised individuals and communities and for future generations. The prospect of a nature and climate positive future must inform scientific research and it must direct our legal imagination.

Conversely, climate laws that continue to inadequately capture scientific knowledge will create promises and securities, nurtured by the comforting existence of legislative measures that remain illusory and cannot be achieved. Failing to meet targets will then not only be caused by absent or insufficient implementation, but by factual impossibilities to fulfil climate promises. The legal certainty that climate targets could imply can only materialise if the probability of reaching a threshold is set at a much higher value than, for example, a 67% likelihood of remaining within a specific carbon budget (as was the case for the German Climate Protection Act 2019).

In this special issue, we aim to shift the focus to the potential of climate law structures that acknowledge scientific evidence more fully and that take the research that underpins the limitations of States' realistic capacities to meet their self-imposed targets as a given. In light of the latter, climate legislation must necessarily account for the well-documented tendency of States to overestimate own efforts and to underestimate the effects of estimates on GHG emissions concentrations in the atmosphere. As we learn more about the extreme weather impacts of climate change, our attitude towards law making must change, including the realisation that IPCC reports are only ever able to provide the latest science at the point of their publication. But as long as we continue to burn fossil fuels the climate keeps warming fast. A new updated study in 2024 assessed the 2014–2023 decade-average human-induced warming at 1.19 [1.0 to 1.4]°C, which is 0.12°C above the AR6 assessment for 2010–2019. Equally, the single-year-average

human-induced warming is assessed to be 1.31 [1.1–1.7]°C in 2023 relative to 1850–1900.

Conceptually, the law remains deeply challenged by climate change, but research and judicial pronouncements globally demonstrate that the law can incorporate scientific evidence on impacts of climate change, vulnerabilities and exposure, as the recent decision of the European Court of Human Rights in the case *KlimaSeniorinnen v Switzerland* effectively illustrates. Equally, the Advisory Opinion of the International Tribunal for the Law of the Sea shows the important role of science and of international rules and standards in determining the concrete measures that States must adopt to prevent, reduce, and control marine pollution from anthropogenic GHG emissions.

These developments provide welcome clarification for the required standards of domestic climate legislation. Thus, legal yardsticks *are* emerging, through international diplomacy and international law as well as national legislation and litigation. Yet the political consensus of the international community on climate change remains fragile. Amidst persisting challenges, the following contributions offer critical analyses and conceptual reflections on how the architecture of climate law could develop and change to restore the climate. It reflects on the legal options to shift the focus away from avoiding ill-defined worst-case scenarios towards enabling a positive future.

In this special issue, Brian Preston describes how climate litigation can be a way to facilitate better climate legislation. He identifies three levels, niche (individual actors), landscapes (international and domestic courts) and overarching regimes, through which actors entertain and intersect a process that allows novel arguments to emerge and eventually create change through law.

One such novel argument that could help the acceptance of legitimate but so far neglected claims by individual actors and communities on past, present and future losses, particularly on the non-economic level, is provided by Petra Minnerop, ushering in an increased focus on the inevitability of climate change in the concept of intergenerational preparedness. It draws on the legal concept of community interest obligations to argue that the environmental rule of law demands an explicit recognition of both, States' obligations to prevent the deterioration of the climate *and* to prepare communities for the foreseeable detrimental changes.

Colin Reid proposes to reverse legal trends to find collective and long-term solutions that value the natural world in itself but crucially as a necessity for human striving. To that end, he suggests that the past evolution of the law has had a detrimental effect for sustainability because it obstructs, or fails to enable and incentivise, legal structures that can support a way of living based on collective and long-term approaches in partnership with nature.

Volker Roeben introduces a novel regulatory principle of synergy to foster holistic and integrated decision-making processes on climate change. He lays the

theoretical foundations for a principle of synergy based on reinforcing, functional and dormant synergies and argues that it could achieve better legislative outcomes than a default position of trade-off and collision.

The last two contributions turn their attention to the scientific underpinning as it exists today. It is not only from a legal perspective that the ultimate reasons of why climate change is such an urgent and important issue are often obscured. As Fredi Otto and Frederick Fabian demonstrate, there is also a crucial imbalance relating to metrics for the measurement of emissions and the lack of criteria, agreement or guidelines for delineating the impacts of climate change from other drivers of losses and damages. This is a key consideration, given that without the potential to identify adaptation needs and to measure progress, conditions for vulnerable populations will worsen and any focus on adaptation will lack necessary contours. They find, as do Robin Fears et al. in the last contribution, that measures for climate positive laws exists, and that these will have health benefits. However, these measurable, positive outcomes of science informed climate laws need to be more clearly articulated across sectors and in legal frameworks. Benefits for human health through climate protection illuminate that climate restoration law could be attainable. Turning science informed legal imagination into better living conditions for present and future generations is the goal of reflecting on the architecture of climate law.

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CONFLICT OF INTEREST STATEMENT

There are no known conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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