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The Legal Power of Highest Possible Ambition: Setting Legal and Scientific Indicators to Assess Highest Possible Ambition under Article 4(3) of the Paris Agreement

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Abstract

The Paris Agreement requires each state party to submit a nationally determined contribution (NDC) every five years. Current NDCs fall short of limiting global warming to 1.5°C, making the 2025 submissions crucial. Against commonly held belief, the level of climate change mitigation ambition in NDCs does not entirely lie within the discretion of Parties. Article 4(3) of the Paris Agreement requires that each party's successive NDC will reflect its 'highest possible ambition' (HPA); an important normative requirement crucial for raising mitigation ambition. This article examines HPA and provides legal and scientific indicators for assessing whether parties' 2025 NDCs and subsequent submissions align with the HPA requirement in Article 4(3). In doing so, a comprehensive framework essential for ensuring that NDCs are ambitious, credible, and effective in reducing emissions and mitigating climate impacts is offered. The success of the global effort against climate change depends on parties reflecting their HPA in NDCs and implementing effective mitigation measures, highlighting the urgency of HPA in each party's climate efforts.

Keywords

Paris Agreement – highest possible ambition – law and science – climate change – mitigation – due diligence

1 Introduction[1]

State parties to the Paris Agreement (PA)[2] were required to submit new nationally determined contributions (NDCs) by 10 February 2025, and to do

1 This paper is the results of a collaborative effort of bringing together climate scientists and climate lawyers under the SciLex Forum and its three workshops held in Amsterdam in June 2023, in Copenhagen in May 2024 and in London in June 2025.

2 Paris Agreement (Paris, 12 December 2015, in force 4 November 2016) 3156 UNTS 79 (hereinafter PA).

so every five years.[3] NDCs are a key feature of the Paris Agreement: states' individual commitments for the reduction of greenhouse gas emissions (GHG) are not negotiated internationally, but are left for each state to set at the national level.[4] Simultaneously, the Paris Agreement established the temperature target to '[hold] the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.'[5]

In preparing their NDCs, states determine how they will contribute to the targets of the Paris Agreement, including what action they will undertake to reduce their GHG emissions, enhance sinks, and increase adaptability to the effects of climate change. Subsequently, they should communicate this to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) and pursue domestic mitigation measures that are suitable to achieving the national targets adopted. Every five years, the Conference of Parties serving as the Meeting of the Parties to the Paris Agreement (CMA) will take stock of the collective progress of the parties in the implementation of the Agreement and towards achieving its long-term goals in a Global Stocktake (GST).[6] The conclusions of this GST shall inform state parties in updating their NDCs at the end of each five-year ambition cycle. The outcome of the First Global Stocktake,[7] concluded in 2023, as well as the 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)[8] and the annual emissions gap reports by the United Nations Environment Programme,[9] all highlighted that the ambition expressed in current NDCs is insufficient for limiting increases in global mean temperature to 1.5°C.[10] For this reason,

3 Ibid., Article 4(9); UNFCCC, Decision 1/CP.21, *Adoption of the Paris Agreement*, FCCC/CP/2015/10/Add.1 (29 January 2016), para. 25; UNFCC, Decision 17/CP.28, *Dates and Venues of Future Sessions*, FCCC/CP/2023/11/Add.2 (15 March 2024), para. 4.

4 PA, supra note 2, Article 4(2).

5 Ibid., Article 2(1)(a).

6 Ibid., Article 14.

7 UNFCCC, Decision 1/CMA.5, *Outcome of the First Global Stocktake*, FCCC/PA/CMA/2023/16/Add.1 (13 December 2023).

8 IPCC, *Climate Change 2023: Synthesis Report Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)] (IPCC, 2023).

9 United Nations Environment Programme (UNEP), *Emissions Gap Report 2024: No More Hot Air … Please! With a Massive Gap between Rhetoric and Reality, Countries Draft New Climate Commitments* (Nairobi: UNEP, 2024).

10 UNFCCC Decision 1/CMA.5, supra note 7, para. 18; Franck Lecocq et al., 'Mitigation and Development Pathways in the Near to Mid-term', in *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Priyadarshi R.

the 2025 NDCs are decisive to determine if the global community can hold warming from permanently set to crossing this threshold.[11]

While each state party had to communicate its first NDC when it joined the Paris Agreement, the legal requirement of preparing and communicating successive NDCs applies for the first time to all parties in the 2025 submission, and every five years thereafter (Articles 4(2) and 4(9) of the PA). The UNFCCC Executive Secretary, Simon Stiell, stated in this context that '[t]his next round of NDCs may be the most important documents to be produced in a multilateral context so far in this century.'[12] By the deadline of 10 February 2025, only 24 of the 195 parties to the Paris Agreement had communicated their NDCs.[13] Several NDCs continued to be received by the UNFCCC Secretariat after this date but, at the time of writing, the majority of states had yet to communicate their new NDCs.

While state parties enjoy a margin of autonomy in preparing their NDCs, this is not unrestrained. In particular, Article 4(3) of the PA assumes central importance when states communicate new NDCs, as it determines that each party's successive NDC

> will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

Shukla et al. (Cambridge: Cambridge University Press, 2022), at 424–5, https://doi.org/10.1017/9781009157926.006; United Nations Environment Programme, *Emissions Gap Report 2023: Broken Record—Temperatures Hit New Highs, Yet World Fails to Cut Emissions (Again)* (Nairobi: UNEP, 2023); Joeri Rogelj et al. 'The Emissions Gap in 2030 and 2035', in *UNEP Emissions Gap Report 2024*, supra note 9, 26–34, at 33–4.

11 Stiell continued, stating '[t]hey will determine which direction the world will take over the coming decades. It can be a direction where economic growth is gradually cancelled out by the cost of disaster management, rebuilding, and loss and damage. Or it can be one where we manage to set our economies and our societies on a sustainable, long-term pathway over the coming 5–10 years.' United Nations Framework Convention on Climate Change (UNFCCC) Secretariat, 'Building Support for More Ambitious National Climate Action Plans' (14 March 2024) available at https://unfccc.int/news/building-support-for-more-ambitious-national-climate-action-plans; all URLs in this article were accessed on 24 June 2025.

12 UNFCCC Secretariat, supra note 11.

13 The deadline was missed by 171 parties. See UNFCCC Secretariat, Report of the 13th Meeting of the Paris Agreement Implementation and Compliance Committee, Doc PAICC/2025/M13/3 (April 2025) available at https://unfccc.int/sites/default/files/resource/Report_on_the_13th_meeting_of_the_PAICC.pdf.

Thus, in preparing their NDCs, parties must take into account the need to reflect their highest possible ambition (HPA). This legal requirement, which had only been scarcely explored in literature, despite the fact that it constitutes a central element in the Paris Agreement to raise the ambition of parties' individual commitments, has now been confirmed by the International Court of Justice (ICJ).[14]

This article aims to provide legal indicators against which the ambition levels of parties, as reflected in their 2025 (and subsequent) NDCs, could be measured and which could inform discussions on whether individual parties have exercised the necessary care required under HPA in Article 4(3) of the PA. It discusses how these indicators must incorporate scientific considerations and how recent scientific findings and technological developments can influence the assessment of ambition levels pursued by states in their NDCs—an element that previous accounts of HPA have not considered extensively.

Accordingly, the notion of HPA as a normative concept is examined, which determines the standard of care that parties need to exercise when preparing and communicating their quinquennial, successive NDCs.

The obligation of each party to prepare, communicate and maintain NDCs and to pursue domestic mitigation measures, with the aim of achieving the objectives of the NDC, is central to climate mitigation. The content of NDCs is not left to the discretion of parties. Rather, each party has a due diligence obligation to do its utmost to ensure that its NDC represent its highest possible ambition in order to realize the objectives of the Agreement.[15] This legal obligation of conduct is complemented by the requirement that each NDC is informed by the outcome of the Global Stocktake, and progresses in ambition

14 ICJ, Obligations of States in Respect of Climate Change, Advisory Opinion, 23 July 2025, available at: https://www.icj-cij.org/case/187 (hereinafter *ICJ Climate Change Advisory Opinion*). See also Benoit Mayer, 'The "Highest Possible Ambition" on Climate Change Mitigation as a Legal Standard', 73(2) *International & Comparative Law Quarterly* 285 (2024); Christina Voigt, 'The Power of the Paris Agreement in International Climate Litigation' 32(2) *Review of European, Comparative & International Environmental Law* 237 (2023); Christina Voigt and Felipe Ferreira, '"Dynamic Differentiation": The Principles of CBDR-RC, Progression and Highest Possible Ambition in the Paris Agreement', 5(2) *Transnational Environmental Law* 285 (2016); Christina Voigt, 'The Paris Agreement: What is the Standard of Conduct for Parties?' 26 *Questions of International Law* 17 (2016) available at http://www.qil-qdi.org/paris-agreement-standard-conduct-parties/.

15 *ICJ Climate Change Advisory Opinion*, supra note 14, paras. 234–254 and 268–270. ICJ, Obligations of States in Respect of Climate Change (Request for Advisory Opinion), Written Statement of the International Union for Conservation of Nature (IUCN), 19 March 2024, para. 37(c) available at: https://www.icj-cij.org/sites/default/files/case-related/187/187-20240319-wri-02-00-en.pdf.

every five years in relation to the previous NDC.[16] HPA, alongside progression, implies that the increase in ambition should match the best efforts a party can feasibly undertake, in light of its evolving responsibilities, capabilities, and informed by the best available science.[17] The two concepts together set a clear, substantive expectation that each party should raise ambition as much as possible when preparing its successive NDC. It is the combination of both factors, together with the overall aim reflected in the 1.5°C temperature goal, that delineates the standard of due diligence when formulating NDC mitigation objectives.[18]

However, besides its legal content, the concept of HPA also carries non-legal connotations. HPA is informed by the urgency of the matter, the risk at stake, best available science, and is open to scientific interpretation. In this sense it is epistemically very similar to other science-based notions that abound in international environmental law, such as 'necessary and appropriate measures,' or 'dangerous anthropogenic interference with the climate system,' or 'adverse effects of climate change,' where scientific input may be essential in 'distilling the essence of [the] legal concept.'[19] The double-faceted epistemic nature of HPA creates opportunities, while also holding some challenges. The legal interpretation of such science-intensive concepts should duly respect the scientific meaning of the notion's technical dimensions for reasons of epistemic legitimacy.[20] Scientific indicators add content to the term 'HPA,' which are then relevant for its normative interpretation. In this way, by bringing out the scientifically measurable aspects of the term, it becomes possible to operationalize the concept, which can, in turn, provide a common ground for discussions around this key notion and for domestic decision-making in the preparation of successive NDCs. It may also inform stakeholders in their work to push governments to higher levels of climate ambition.

These ideas are developed further below and the scope and significance of HPA is analysed in the context of the Paris Agreement by combining legal and scientific parameters and indicators. First, the scope of HPA within the Paris Agreement and its relation to other normative elements of the Agreement

16 *ICJ Climate Change Advisory Opinion*, supra note 14, paras. 240–243.

17 *ICJ Climate Change Advisory Opinion*, supra note 14, paras. 246 and 270. See also Voigt, 'The Power of the Paris Agreement in International Climate Litigation', supra note 14.

18 *ICJ Climate Change Advisory Opinion*, supra note 14, paras. 240–243, 270.

19 *Pulp Mills on the River Uruguay* (*Argentina v. Uruguay*), Judgment, *ICJ Reports* 2010, Joint dissenting opinion of Judges Al-Khasawneh and Simma, para. 17.

20 Katalin Sulyok, 'Science, Epistemology and Legitimacy in Environmental Disputes: The Epistemically Legitimate Judicial Argumentative Space', 37 *Leiden Journal of International Law* 139 (2024).

are explored. It finds that HPA is a due diligence standard and provides legal benchmarks on how to assess whether NDCs are reflecting HPA and are aligned with Article 4(3) of the PA.

2 The Legal Scope of Highest Possible Ambition in the Paris Agreement

The Paris Agreement does not prescribe specific, quantified emission reduction targets or the exact level of ambition to be taken by a given state party individually. Instead, one of its central features is the system of NDCs, according to which state parties need to put forward successive climate change mitigation[21] plans (Articles 4(2) and 4(9)). However, while parties enjoy a certain measure of autonomy in setting their emission targets, they are not unrestrained in preparing their NDCs. A number of legal obligations and parameters circumscribe the conduct expected of parties when preparing and communicating their respective NDCs. For instance, parties have to communicate NDCs every five years (Article 4(9)), provide the information necessary for clarity, transparency, and understanding (Article 4(8)), and new NDCs will have to represent a progression (Article 4(3)). One important parameter in this context is that each party's NDC will reflect its HPA (Article 4(3)).

The concept of HPA is not expressly defined in the Paris Agreement, requiring an exercise of treaty interpretation to give it concrete meaning. The general rules of treaty interpretation codified in the Vienna Convention on the Law of Treaties (VCLT) offer some guidance in this respect.[22] The VCLT requires that a treaty be interpreted 'in good faith in accordance with the ordinary meaning to be given to the terms of the treaty' (Article 31(1)). The ordinary meaning of a term is to be obtained through a combination of elements: the literal reading of a text should be taken into account, but also the context in which the term appears (which includes other provisions in the treaty and its preamble) and the object and purpose of the treaty. Other relevant elements for interpretation include any subsequent agreements and subsequent practice between the parties and other rules of international law applicable between the parties (Article 31(3)).

21 While parties may include information on adaptation action, finance, and other points in their NDCs, this article focuses on the mitigation aspect as this at the heart of Article 4.

22 Vienna Convention on the Law of Treaties (Vienna, 23 May 1969, in force 27 January 1980) 1155 UNTS 331.

Within this framework, this section analyses, first, the different elements to be taken into account in developing the concept of HPA and clarifying its role in the PA. All these elements combined provide what has been referred to as the 'normative environment' within which provisions of the PA must be interpreted.[23] The normative context of HPA includes its situation within the PA and its relation with other key provisions on mitigation, in particular its object and purpose and other rules and principles that qualify the obligation of states to prepare and communicate NDCS, and to strengthen the global response to the threat of climate change, including the long-term temperature goal. Second, the nature of HPA as a due diligence standard is analysed. Underlying both the context within the PA and the standard of due diligence obligations is a close relation to best available science, which must inform decision-making and implementation. The relevance of taking into account scientific indicators (and which ones) in measuring states' mitigation ambition is discussed further in section 3.

2.1 *HPA Within the Context of the PA*

The Paris Agreement sets several 'normative parameters' for raising states' ambition levels in devising their newest NDCS. These parameters 'pull up' mitigation action and consist of the temperature goal, progression, and outcome of the Global Stocktake, next to HPA. HPA is further framed within the concept of common but differentiated responsibilities and respective capabilities (CBDR-RC), in the light of different national circumstances.

2.1.1 HPA and the Long-term Temperature Goal

As evidenced by Article 4(1) of the PA, NDCS are the core instrument under the Paris Agreement. They are the main 'tool' put in place by parties 'in order to achieve the long-term temperature goal set out' in Article 2(1)(a). The temperature goal is further specified by a corresponding timeline and global pathway set out in Article 4(1). NDCS thus need to be devised with the aim to provide each state's response to achieving this collective goal. It is in this context that HPA assumes critical relevance. While each party's individual response cannot be quantified, HPA creates the expectation that each party will do as well as it can in the preparation and subsequent communication of its NDC with the aim of holding warming to the critical threshold set out in Article 2(1)a.

23 Lavanya Rajamani, 'Interpreting the Paris Agreement in Its Normative Environment', 77 *Current Legal Problems* 167 (2024).

The PA sets a two-headed temperature goal: holding the increase of global average temperatures to well below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5°C.[24] Recent CMA decisions provide further specification that parties ought to focus on limiting warming to 1.5°C, which would significantly reduce the risks and impacts of climate change.[25]

The temperature goal is one of the central objectives of the Paris Agreement and provides a 'direction of travel for collective and individual action.'[26] Together with the objective of stabilizing GHG concentrations in the atmosphere, it is part of the object and purpose of the treaty and, therefore, it must guide implementation by state parties and informs the obligation of parties with respect to mitigating climate change (Article 31(1) of the VCLT). Namely, parties' NDCs must contribute to achieving the long-term temperature goal and they must provide information clarifying how they do that.[27] In addition, the temperature goal provides a benchmark against which parties' collective efforts are assessed during the Global Stocktake.[28]

Accordingly, in determining the HPA for their NDCs, parties must necessarily take into account the extent to which their current contributions reflect an alignment with the 1.5°C temperature goal and whether more ambitious action can be taken to stay within the boundaries provided by that goal. In order for NDCs to be aligned with the temperature goal in Article 2(1)(a) of the PA, the timelines and emission pathways set out in Article 4(1) are relevant. Article 4(1) sets out the aim of global peaking of GHG emissions as soon as possible and rapidly reducing them thereafter so as to achieve net-zero greenhouse gas emissions in the second half of the century. Notably, Article 4(1) refers to actions in accordance with the best available science, which is generally

24 The fact that this constitutes a single goal is clear from the text of Article 4(1) of the PA which refers to 'the long-term temperature goal set out in Article 2.'

25 *ICJ Climate Change Advisory Opinion*, supra note 14, para. 224. E.g., UNFCCC, Decision 1/CMA.3, *Glasgow Climate Pact 2021*, FCCC/PA/CMA/2021/10/Add.1 (8 March 2022), para. 21; Decision 1/CMA.5, supra note 7, para. 4. See also Carl-Friedrich Schleussner et al., 'Differential Climate Impacts for Policy-Relevant Limits to Global Warming: The Case of 1.5°C and 2°C', 7 *Earth System Dynamics* 327 (2016).

26 M. J. Mace, 'Mitigation Commitments under the Paris Agreement and the Way Forward Special Issue on Paris Agreement', 6 *Climate Law* 21 (2016), at 24; see also Lavanya Rajamani and Jacob Werksman, 'The Legal Character and Operational Relevance of the Paris Agreement's Temperature Goal', 376 *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 20160458 (2018), at 6.

27 PA, supra note 2, Article 3; UNFCCC, Decision 4/CMA.1, *Further Guidance in Relation to the Mitigation Section of Decision 1/CP.21 Annex I*, FCCC/PA/CMA/2018/3/Add.1 (15 December 2018), para. 7(b). *ICJ Climate Change Advisory Opinion*, supra note 14, paras. 242 and 270.

28 PA, supra note 2, Article 14(1); Decision 1/CMA.5, supra note 7, paras 18–25.

understood as a reference to the science assessed by the IPCC.[29] IPCC reports have identified that 'in model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO_2 emissions decline by about 45% from 2010 levels by 2030, reaching net zero around 2050.'[30]

Accordingly, state parties recognize in the outcome of the first Global Stocktake that limiting global warming to 1.5°C with no or limited overshoot requires deep, rapid and sustained reductions in global greenhouse gas emissions of 43 per cent by 2030 and 60 per cent by 2035 relative to the 2019 level and reaching net-zero carbon dioxide emissions by 2050.[31] After 2050, at the latest, 1.5°C alignment requires global net-negative CO_2 emissions,[32] depending on the amount of cumulative CO_2 emissions emitted prior to reaching net-zero emissions and the level of residual non-CO_2 greenhouse gas emissions.[33] This is even more urgent in case of exceeding the 1.5°C threshold, which seems to become more and more likely.[34] In this case, significant global net-negative emissions are required to minimize the duration and magnitude of the overshoot and to reverse it. The reference to 'balance' in Article 4(1) also includes the need sustain net-negative emissions to reverse the temperature excess and to return to 1.5°C (the so-called 'overshoot scenario'). These timelines and pathways for emission reductions and removals need to inform the level

29 This was confirmed by the International Tribunal for the Law of the Sea (ITLOS), when stating that '[w]ith regard to climate change and ocean acidification, the best available science is found in the works of the IPCC which reflect the scientific consensus.' *Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law*, Advisory Opinion, 31 May 2024, *ITLOS Reports* (2024), para. 208 (hereinafter *ITLOS Climate Change Advisory Opinion*).

30 IPCC, 'Summary for Policymakers', in *Climate Change 2023: Synthesis Report*, supra note 8, p. 21.

31 Decision 1/CMA.5, supra note 7, para. 27.

32 IPCC, *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Priyadarshi R. Shukla et al. (eds.)] (Cambridge: Cambridge University Press, 2023), at 20.

33 Joeri Rogelj et al., 'Net-Zero Emissions Targets Are Vague: Three Ways to Fix', 519 *Nature* 365 (2021); Joeri Rogelj et al., 'A New Scenario Logic for the Paris Agreement Long-term Temperature Goal', 573 *Nature* 357 (2019); Carl-Friedrich Schleussner et al., 'An Emission Pathway Classification Reflecting the Paris Agreement Climate Objectives', 3(135) *Communications Earth & Environment* (2022).

34 Joeri Rogelj, Michel Den Elzen and Joana Portugal Pereira, 'Chapter 4: The Emissions Gap in 2030 and 2035', in *The UNEP Emissions Gap Report 2024: No More Hot Air … Please! With a Massive Gap between Rhetoric and Reality, Countries Draft New Climate Commitments* (Nairobi: UNEP, 2024), 26–34; Future Earth, The Earth League, World Climate Research Programme (WCRP), *10 New Insights in Climate Science 2023/2024* (Stockholm: Future Earth, 2023), at 13.

of HPA in the preparation of the NDC. In fact, exceeding 1.5°C strengthens rather than weakens states' obligations to develop and communicate NDCs that reflect their HPA.[35]

2.1.2 HPA and Progression

Article 4(3) of the PA determines that each new NDC will represent a 'progression' beyond previous commitments and reflect each party's HPA, making it clear that the two concepts must be interpreted together and that they set a combined requirement that defines the care to be taken by each party when preparing and communicating its NDCs.

Progression means that each successive NDC needs to contain a more demanding mitigation goal compared to the previous NDC. Progression must not be confused with simply meaning non-regression. Non-regression only prevents backsliding and could allow for ambition to stay at the same level over time (i.e., stagnation). Progression, on the other hand, requires the continuous increase and improvement of ambition over time. At a minimum, however, it serves as a back-stop against regression from previous commitments and prevents backsliding in a state's ambition towards achieving the long-term objectives of the PA.[36] Most importantly, progression compels states to commit to more enhanced mitigation measures over time.

However, often there is a range of different mitigation targets available to a state, all of which could represent an increase in the level of their emission reductions, or the anticipation of the date upon which emissions will peak. In principle, all of these commitments could comply with the requirement of progression—to the extent that they represent an increase of efforts by the state to pursue the objectives of the PA.[37] If different possibilities are available to a state, it is clear that HPA requires it to commit to the most ambitious or the best efforts scenario which are still attainable.[38] Accordingly, states cannot increase their GHG emission reduction target by 10 per cent if 20 per cent is within reach; they cannot aim to achieve net-zero by 2050 if a 2040 target is accessible; nor can they postpone peaking emissions if it is possible to achieve it within the next ambition cycle. Moreover, progression in terms of effort can also take other forms. For example, developing countries may

35 Joeri Rogelj and Lavanja Rajamani, 'The Pursuit of 1.5°C Endures as a Legal and Ethical Imperative in a Changing World', *Science* 10.1126/science.ady1186 (2025).

36 Voigt, 'The Power of the Paris Agreement in International Climate Litigation', supra note 14, at 241.

37 Voigt and Ferreira, supra note 14, at 296.

38 Voigt, 'The Power of the Paris Agreement in International Climate Litigation', supra note 14.

add more sectors and gases to their NDCs, as well as move towards economy-wide absolute targets. In general, however, progression is to be understood as a trajectory that is increasingly aligned with the timelines and pathways laid out in Article 4(1) and the temperature goal contained in Article 2(1)(a). In other words, 'progression' means that the ambition and effort level in each successive NDC needs to increase, and HPA informs *how much* increase can be expected of each Party.[39]

2.1.3 HPA and the Global Stocktake

In 2023, the CMA took stock, for the first time, of the collective progress of parties in the implementation of the Paris Agreement and towards achieving its long-term goals (Article 14). The GST will always take place two years before the next successive NDC is due. This is to allow parties time to properly take into account the outcome of the GST in the preparation of their next NDC. Importantly, as a matter of legal obligation, each party's NDC shall be informed by the outcomes of the GST (Article 4(9)). The outcome of the GST 'shall inform' state parties in updating their NDCs and enhancing their national action and international cooperation.[40] While this formulation does not render the GST outcome binding for states, it also does not permit them to disregard it. Rather, it establishes a further due diligence element which parties need to take duly into account in the exercise of their obligation to prepare and communicate a successive NDC. In this sense, the GST outcome informs HPA.

In fact, according to decision 4/CMA.1, parties have to provide information when communicating their NDCs on how their preparation was informed by the outcomes of the GST.[41] The requirement that state parties take the outcomes of the GST into account when preparing each successive NDC is underlined by two factors. The first is the nature of the GST process, which is constructed as an inclusive and discursive process, where a wide range of actors (including states, international organizations, experts, non-governmental organizations, and civil society) can provide inputs and contribute to the final outcome[42] that is consensual in nature and adopted as a decision or declaration by the CMA.[43] As a result of its consensual nature, the GST outcome generates a shared understanding by parties to the PA, as well as other actors, as to the gap in

39 Voigt and Ferreira, supra note 14.

40 PA, supra note 2, Articles 4(9), 14(3).

41 Decision 4/CMA.1, Annex I, supra note 27, para. 4(c).

42 UNFCCC, Decision 19/CMA.1, *Matters Relating to Article 14 of the Paris Agreement and Paragraphs 99–101 of Decision 1/CP.21* (15 December 2018), paras 6, 37(f).

43 PA, supra note 2, Article 14.

collective action towards achieving the objectives of the Paris Agreement.[44] Thus, parties who disregard the main conclusions of the GST process in their new round of NDCs would breach the expected standard of conduct and might lead to the perception of those parties as 'unreliable cooperators.'[45]

The second factor is the circumstance that the outcome of the GST can assist in the determination of the content of other obligations under the PA, and the actions that are required of state parties to comply with them. As noted above, the decision on the outcome of the first Global Stocktake clarifies that, in line with IPCC findings, limiting global warming to 1.5 °C with no or limited overshoot, requires deep reductions in GHG emissions in the next decades and reaching net-zero carbon dioxide emissions by 2050.[46] Further, it calls on parties to contribute to global efforts with a detailed a list of actions, including, among other things, the need to transition away from fossil fuels in the energy sector, taking into account their different national circumstances.[47] As indicated by Article 14(3), parties have a legal obligation to be informed by these requirements in preparing their next NDCs as the GST sets a baseline on what ambition has to be possible. In this context, the GST outcome, broken down in the context of national circumstances, serves as an indicator for HPA.

2.1.4 HPA and CBDR-RC

Article 4(3) frames the concept of HPA in the context of CBDR-RC, in the light of different national circumstances. This includes the fact that higher ambitions are expected from states with higher responsibilities and capabilities. HPA, thus, is not an abstract level to be expected from each state but is relative to the individual circumstances of each party.[48] This does not mean, however, a categorical exemption for any group of parties. Each party is required to do the most possible in its respective capacity, or 'do the best it can.' 'In light of different national circumstances' refers to the consideration of responsibilities and capabilities at the individual party level, as opposed to broad categories (i.e., not the annexes to the Convention) and adds nuance and dynamism. HPA as a due diligence standard may vary according to the responsibilities,

44 Decision 19/CMA.1, supra note 42, paras 6, 10.

45 Thomas Gehring, 'Treaty-Making and Treaty Evolution', in *The Oxford Handbook of International Environmental Law*, edited by Daniel Bodansky, Jutta Brunnée and Ellen Hey (Oxford: Oxford University Press, 2008), 467–97, at 93.

46 Decision 1/CMA.5, supra note 7, para. 27. See section 2.1.1. above.

47 Decision 1/CMA.5, supra note 7, para. 29.

48 *ICJ Climate Change Advisory Opinion,* supra note 14, paras. 226, and 247, 248. Mayer, supra note 14, uses the expression 'refinement of differentiation' while Voigt and Ferreira, supra note 14, use `nuanced and dynamic differentiation´.

capabilities, and available resources of each state. This requires a state with greater responsibilities and/or capabilities and sufficient resources to do more than a state not so well placed. In this context, the International Tribunal on the Law of the Sea (ITLOS) noted that even a state not so well placed is required 'to do *whatever it can* in accordance with its capabilities and available resources to prevent, reduce and control marine pollution from anthropogenic GHG emissions, while the ICJ clarified that ′even the latter State [is required] to take all the means at its disposal to protect the climate system in accordance with its capabilities and available resources.'[49]

In this context, the practice of including conditionality requirements regarding the level of ambition or achievement of some parts of the NDCs requires particular attention. The vast majority of developing country parties' NDCs so far have included elements that are conditional to some kind of support, that is, capacity-building, technology transfer or provision of financial resources. For example, Zambia's NDC includes a pledge to reduce GHG emissions by 25 per cent by 2030 compared to 2010 (unconditional element) *or* 47 per cent in case of substantial international support (conditional element).[50] However, Article 4(3) speaks to each party's individual HPA ('its'), considering its own capabilities and responsibilities. It implies that HPA still needs to be demonstrated on the part of the NDC, which is not conditioned upon international finance support. At the same time, it is possible to increase the level of ambition above what is 'unconditionally possible' by including the conditional elements in an NDC.[51] This might require states to show how the provision of adequate support, financially, technologically, or otherwise, can help to overcome capability constraints and shift the possibility frontier. As such, it can inform deliberations on the needs and effectiveness of support.

In conclusion, each party needs to have an NDC at the level of its HPA. Above and beyond that, it can include conditional levels, pushing up its ambition even further.

2.2 *The Legal Nature of HPA: A Due Diligence Standard*

Although the operative verb 'will' means that HPA is not a legal obligation of result, it implies a due diligence standard—an obligation of conduct—in

49 *ITLOS Climate Change Advisory Opinion*, supra note 29, para. 241. Emphasis added. *ICJ Climate Change Advisory Opinion*, supra note 14, para. 291; see also paras. 150 and 292..

50 Republic of Zambia, Provisional NDC 3.0 (2025) available at: https://unfccc.int/sites/default/files/2025-03/Provisional%20NDC%20Submission_Zambia_Revised%20and%20Updated_NDC_100325.pdf.

51 W. Pieter Pauw et al., 'Conditional Nationally Determined Contributions in the Paris Agreement: Foothold for Equity or Achilles Heel?', 20(4) *Climate Policy* 468 (2019).

relation to the main obligation of preparing and communicating an NDC.[52] Or, phrasing it slightly differently, HPA is 'a regime-specific marker of due diligence.'[53] The IPCC 6th Assessment Report Working Group III chapter on international cooperation has also recognized the due diligence nature of the norm in Article 4(3) of the PA, observing that '[w]hile what represents a Party's highest possible ambition and progression is not prescribed by the Agreement or elaborated in the Paris Rulebook …, these obligations could be read to imply a due diligence standard.'[54]

First, reflecting a party's HPA in its successive NDC is a legal standard of due diligence. The choice of wording of Article 4(3) places it somewhat in between the usual indicators of obligations (such as 'shall') and wording indicating soft law (such as 'should'). Instead, this provision determined that each party's successive NDC 'will' reflect its HPA. An interpretation that takes into account the context of this paragraph in the normative environment of the Paris Agreement (Article 31(1) of the VCLT) and subsequent agreements and practice

52 See Voigt and Ferreira, supra note 14. *ICJ Climate Change Advisory Opinion,* supra note 14, paras. 246 and 270. The ICJ confirmed that the term "will" is used "in a prescriptive sense", ibid, para. 240.

53 Lavanya Rajamani, 'Due Diligence in International Climate Law', in *Due Diligence in the International Legal Order*, edited by Heike Krieger, Anne Peters and Leonhard Kreuzer (Oxford: Oxford University Press, 2020), 163–80, at 69. See, slightly differently, Mayer, building on Voigt, supra note 14, arguing that HPA is in itself 'a standard likely to inform the application of obligations of due diligence on climate change mitigation.'

54 Anthony Pratt et al., 'Chapter 14: International Cooperation', in *Climate Change 2022: Mitigation of Climate Change*, supra note 32, 1451–545, at 1466. See also Written Statement of the European Union, supra note 18, para. 147: 'While the term "highest possible ambition" is not defined within the Paris Agreement, the European Union considers that Article 4(3) implies a substantive expectation for each Party to exert its 'best efforts' or strive for optimal performance when crafting successive NDCs. The use of the term "will" in Article 4(3) carries more weight than a term such as 'should' but does not elevate the obligation to one of result—for instance by using the term 'shall'. Given the terminology used, this provision signifies a behavioural standard, consistent with its status as an obligation of conduct requiring an exercise of due diligence, whereby each Party is expected to take all appropriate measures at its disposal.' Similarly, see Written Statement by Colombia: 'One of the main principles of the Paris Agreement is that each Party should reflect its "highest possible ambition" in its NDC to achieve the Agreement's long-term temperature goal. Articles 3 and 4(3) establish a requirement that the efforts of all Parties will represent a progression over time, meaning that every new effort will go beyond previous ones. This, in turn, is based on the principle of due diligence, which requires taking due regard to different national circumstances, reflecting CBDR–RC.' ICJ, Obligations of States in Respect of Climate Change (Request for Advisory Opinion), Written Statement of Republic of Colombia, para. 3.37, available at https://www.icj-cij.org/sites/default/files/case-related/187/187-20240311-wri-01-00-en.pdf.

of the parties (Article 31(3) of the VCLT) makes it clear that reflecting its HPA is a legal standard that applies to each party when preparing and communicating its NDC—not as an obligation of result, but as an *obligation of conduct*. On the one hand, Article 4(3) of the PA further specifies the procedure and content of the successive NDC mandated by Article 4(2), which parties have an obligation to prepare ('*shall* prepare'). On the other hand, decision 4/CMA.1 established an obligation for parties to provide information, when communicating their NDCs, on how they consider their NDC to be fair and ambitious in light of their national circumstances and how they addressed Article 4(3).[55] Almost all parties (98 per cent) included some form of qualitative and/or quantitative information with their current NDC in relation to progression and ambition.[56] Yet, in doing so parties chose a range of different metrics that limit the objective assessment of whether or not HPA is indeed met in their NDC.

Second, an obligation of conduct to is not an obligation to achieve a specific result. Rather, in international law, it is recognized as being based on a due diligence standard to deploy adequate means, to exercise best possible efforts, to do the utmost, in order to obtain the envisaged result.[57] Importantly, obligations of conduct are no less onerous as obligations of result, as they should not conceived as 'requir[ing] a lesser degree of effort to achieve the intended result' as due diligence obligations 'can be highly demanding.'[58]

The stringency of due diligence within climate obligations has recently been underlined by the ICJ and ITLOS in their Advisory Opinion on Climate Change. While ITLOS interpreted the United Nations Convention on the Law of the Sea (UNCLOS), it did so by taking into account the Paris Agreement.[59] ITLOS emphasized that what amounts to a state's best effort is not simply a subjective exercise, but must be 'determined objectively'[60] on the basis of several factors, including scientific and technological information, the urgency involved in addressing climate change, relevant international rules and standards (i.e., the 1.5°C temperature goal and the corresponding GHG emission pathways

55 Decision 4/CMA.1, Annex I, supra note 27, para. 28.

56 UNFCCC, *Nationally Determined Contributions under the Paris Agreement. Synthesis Report by the Secretariat*, FCCC/PA/CMA/2024/10 (2024), paras 123–9, available at https://unfccc.int/documents/641792.

57 So *ICJ Climate Change Advisory Opinion,* supra note 14, paras .246 and 270. ITLOS Seabed Disputes Chamber, *Responsibilities and Obligations of States with Respect to Activities in the Area*, Advisory Opinion, 1 February 2011, *ITLOS Reports 2011*, p. 10, para. 1109; *Pulp Mills*, supra note 19, para. 197.

58 *ITLOS Climate Change Advisory Opinion*, supra note 29, para. 257.

59 Ibid., para 222 ff. *ICJ Climate Change Advisory Opinion,* supra note 14, paras. 246, 254. 343 and 347.

60 *ITLOS Climate Change Advisory Opinion*, supra note 29, para. 257.

and timeline of reaching global net-zero CO_2 emissions by 2050),[61] and the risk of harm, including the probability or foreseeability of the harm, and its severity or magnitude.[62] With respect to the severe consequences for the marine environment that would ensue if global temperature increases exceed 1.5°C, the Tribunal considered that the standard of due diligence states must exercise in relation to marine pollution from anthropogenic GHG emissions needs to be stringent. In similar terms, the ICJ recognized that the standard of due diligence for preventing significant harm to the climate system is also stringent.[63]

The ITLOS advisory opinion also emphasized that where states' conduct subject to the due diligence obligation may have transboundary impacts on other states, the expected level of care is even higher, rendering the due diligence obligation *even more* stringent.[64] As the mitigation actions of states have clear transboundary implications, such stringency should also apply to the due diligence to be exercised by each party when preparing and communicating its successive NDCs.

3 Indicators to Assess Alignment with HPA

HPA as a standard of due diligence obligation is not subjective. As supported by the ITLOS and ICJ advisory opinions, a due diligence obligation must be based on objective indicators that permit assessing a state's conduct. Scientific and technological information forms a key factor in assessing due diligence obligations,[65] and parties to the PA recognized that effective responses to the threat of climate change can only be developed on the basis of best available science.[66] This section develops legal indicators to assess alignment with HPA that are directly informed by scientific and technological information.

3.1 *The Magnitude, Foreseeability and Urgency of the Risks Involved*

The degree of care required of states in complying with their obligations must be proportional to the magnitude and foreseeability of the harm involved.[67]

61 Ibid., para. 250.

62 Ibid., para. 239. See also *ICJ Climate Change Advisory Opinion,* supra note 14, para. 134.

63 *ITLOS Climate Change Advisory Opinion*, supra note 29, para. 241; *ICJ Climate Change Advisory Opinion,* supra note 14, para. 138.

64 Ibid., para. 258.

65 Ibid., para. 159 ff.

66 PA, supra note 2, Preamble.

67 International Law Commission (ILC), *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with Commentaries* (2001), at 155, para. 18.

This principle is well established in the context of transboundary harm. As the ICJ has determined in both the *Pulp Mills* case[68] and the *Certain Activities* case,[69] states must take into account the risks that activities in their territory pose to the territory of other states, namely, the risks of causing environmental harm, and employ all the appropriate means at their disposal to avoid that harm.[70] The same considerations must apply in relation to protection of the atmosphere. The emissions one state releases into the atmosphere in its own territory have transboundary effects on all countries that share that very same atmosphere, that is, every single country on Earth, as well as on areas beyond national jurisdiction. The impacts of climate change are far reaching and are fundamentally affecting both human systems and ecosystems.[71]

The existence of severe, probable, and foreseeable risks resulting from climate change underlines the urgency of acting and entails heightened obligations for states in setting their climate mitigation goals. This reasoning was confirmed by ITLOS and ICJ Advisory Opinions on Climate Change where the courts found that the standard of due diligence states must exercise in relation to climate harm from anthropogenic GHG emissions needs to be stringent in light of the foreseeability and severity of harm to the environment posed by GHG emissions.[72] The courts repeatedly relied on best available science—as found in IPCC reports—to determine the magnitude of the risk at stake.

Due diligence obligations have an inherent epistemic precondition, namely, that the state must know or should have known that its conduct carries a risk of significant harm.[73] To discharge this duty, states are expected to take measures against such risks that are seen as 'necessary,' 'effective,' and 'reasonable' means to the stated end.[74]

68 *Pulp Mills*, supra note 19, para. 205.

69 *Certain Activities Carried Out by Nicaragua in the Border Area* (*Costa Rica v. Nicaragua*), Judgment, 16 December 2015, *ICJ Reports 2015*, p. 665, at para. 104.

70 *Pulp Mills*, supra note 19, at para. 101.

71 IPCC, 'Summary for Policymakers', in *Climate Change 2023: Synthesis Report*, supra note 8, at 23.

72 *ITLOS Climate Change Advisory Opinion*, supra note 29, paras 239–41. *ICJ Climate Change Advisory Opinion,* supra note 14, paras. 135–138

73 ILC, supra note 67, at 155, para. 18.

74 Christina Voigt, 'The Paris Agreement: What is the Standard of Conduct for Parties?' 18(21) *Questions of International Law* 17 (2016); Benoit Mayer, 'Article 4 on Mitigation', in *The Paris Agreement on Climate Change: A Commentary*, edited by Geert Van Calster and Leonie Reins (Cheltenham: Edward Elgar, 2021), 109–32, at 26–7.

The risks associated with climate change have been well known for decades. Since the Brundtland Report in 1987,[75] and further detailed by the First IPCC Assessment Report[76] (and since then by another five IPCC Assessment Reports), the existence and substantive nature of climate risks are well established and unequivocally known by states. Indeed, as aptly expressed by the European Court of Human Rights, it can now be established 'as a matter of fact that … States are aware of' anthropogenic climate change.'[77] In an effort to synthesize the widespread and diverse nature of climate risks, the IPCC has integrated the diverse set of climate risks into five iconic 'reasons for concern', including risks for unique and threatened systems, extreme weather events, distribution and globally aggregated impacts, as well as irreversible changes in the Earth System.[78]

Moreover, in the Sixth Assessment Report, the IPCC found that climate risks materialize at lower levels of warming than previously determined in the Fifth Assessment Report (AR5), and that exceeding global warming of 1.5°C would come with increasingly high or even very high risks across all domains considered.[79] It is worth noting that the science on climate impact and risks as reflected in the reports of the IPCC has informed the assessment of the adequacy of the long-term global goal under the periodic review process of the UNFCCC,[80] and that the 2013–2015 Periodic Review, which informed the adoption of the temperature goal set in Paris in 2015,[81] was based on the science in AR5. Therefore, these novel scientific determinations pointing to severe levels of risk at lower levels of warming emphasize the growing urgency of action and makes the requirements of HPA ever more stringent.

75 World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987).

76 IPCC, *Climate Change: The 1990 and 1992 Assessments* (IPCC, 1992).

77 ECtHR, *Verein KlimaSeniorinnen Schweiz and others v. Switzerland*, 9 April 2024, appl. no. 53600/20, para. 436.

78 Brian O'Neill et al., 'Chapter 16: Key Risks Across Sectors and Regions', in *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Hans-O. Pörtner et al. (Cambridge: Cambridge University Press, 2022), 2411–538.

79 IPCC, 'Summary for Policymakers' in ibid., 1–34, at B.3.3.

80 UNFCCC, *Report on the Structured Expert Dialogue on the 2013–2015 Review*, FCCC/SB/2015/INF.1. (2015).

81 Carl-Friedrich Schleussner et al., 'Science and Policy Characteristics of the Paris Agreement Temperature Goal' 6 *Nature Climate Change* 827 (2016).

Finally, uncertainty of science is no excuse for reducing the level of HPA. Article 3(3) of the UNFCCC, which also guides the parties to the PA,[82] makes it clear that parties need to take precautionary measures and that scientific uncertainty is not an excuse for postponing action. In contrast, uncertainty should lead to an increased level of HPA. As ITLOS in its 2024 climate change advisory opinion also stressed in an analogous situation while determining the content of a due diligence obligation to prevent and control marine pollution from anthropogenic GHG emissions, scientific certainty is not required for determining what measures must be taken to fulfil this obligation.[83]

3.2 *Comprehensive Assessment of All Mitigation Options*

Emissions of GHGs come from many different sectors and sources.In order to reflect its HPA in its NDC and to act with necessary stringent due diligence, each party needs to comprehensively assess all the mitigation options available to it and the mitigation potential associated with them, taking into account all relevant mitigation information and dimensions.

First, all greenhouse gases from all sectors and sources have to be assessed. Initially, Article 4(4) of the PA established the expectation towards developed country parties to undertake, economy-wide absolute emission reduction targets from the outset, while developing countries are encouraged to move towards this target over time. This was further reinforced in the Outcome of the First Global Stocktake and now applied to all state parties, not only developed countries. Paragraph 39 of the outcome of the First GST reads:

> [*E*]*ncourages* Parties to come forward in their next nationally determined contributions with ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors and categories and aligned with limiting global warming to 1.5 °C, as informed by the latest science, in the light of different national circumstances.[84]

It is important to note that the GST also found that mitigation and low-emission technologies have become increasingly available during the last decade and at continuously lower costs.[85] This can be taken to indicate that deployment of these technologies requires a smaller effort from states than previously, and

82 PA, supra note 2, Preamble; United Nations Framework Convention on Climate Change (New York, 9 May 1992, in force 21 March 1994) 1771 UNTS 107. *ICJ Climate Change Advisory Opinion,* supra note 14, para. 293.

83 *ITLOS Climate Change Advisory Opinion*, supra note 29, para. 213.

84 Decision 1/CMA.5, supra note 7, para. 39.

85 Ibid., para. 30.

it is now more likely to fall within the scope of their HPA. This is particularly relevant for the near-term ambition covered by the first round of NDCs, and overlapping with the second round of NDCs with an end date up to 2035. All other things being equal, rapidly falling costs should enable more stringent emission reductions pre-2030 and thereby an update of the 2030 target. For example, the price for solar panels has (adjusted for inflation) fallen by more than 95 per cent since 1990 and halfed since 2015.[86]

Second, the IPCC pathways and timelines for emission reductions have to be considered.[87] These pathways include the reductions in global greenhouse gas emissions of 43 per cent by 2030 and 60 per cent by 2035 relative to the 2019 level, reaching net-zero carbon dioxide emissions by 2050, and varying levels of net-negative CO2 emissions thereafter.[88] While the report does consider the feasibility of these pathways, including technological, economic, and institutional aspects, its primary emphasis is on delineating the actions required to meet the temperature goals. This includes analysing the scale and pace of emissions reductions, the deployment of low-carbon technologies, and changes in energy systems. They serve as a strong indicator of what ambition is possible according to the best available science.

To show that its NDCs meet HPA, a state needs to prove that it has assessed all mitigation options reasonably available to it and to give reasons why the concrete target and measures reflect the highest (and not a higher) possible ambition following such a comprehensive assessment.

Moreover, as a corollary to the nationally determined character of each state's contribution to the common temperature goal of Article 2(1)(a) of the PA and the shift of responsibility to the national level, states' NDCs need to be embedded into national regulatory measures, and national compliance and enforcement must be ensured.[89] While new NDCs need to reflect progressively higher mitigation ambition, these ambitions must be credible. Only national regulation and/or legislation, compliance, and enforcement lead to credibility that a state commits to the highest ambition possible. These mechanisms may include administrative oversight by an independent national authority or

86 Our World in Data, 'Solar (Photovoltaic) Panel Prices' (2024) available at https://ourworldindata.org/grapher/solar-pv-prices; accessed 5 June 2025.

87 Keywan Riahi et al., 'Chapter 3: Mitigation Pathways Compatible with Long-term Goals,' in *Climate Change 2022: Mitigation of Climate Change*, supra note 32, 295–408.

88 *Climate Change 2022: Mitigation of Climate Change*, supra note 32, at 20.

89 Enforcement mechanisms as part of due diligence obligations in the context of environmental law has been recognized by the ICJ. See *Pulp Mills*, supra note 19, paras 185–96; *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, Advisory Opinion, 1 February 2011, *ITLOS Reports 2011*, p. 10, at para 235 ff. *ICJ Climate Change Advisory Opinion,* supra note 14, paras 138 and 253.

the possibility of judicial review.[90] It must be noted that this depends on the national situation and has to be carried out in accordance with competences and procedures prescribed in national constitutions.

3.3 *Temporal Indicator*

There is a temporal dimension which is relevant to assessing HPA.

First, the more the ambition is shifted towards the future, the less likely it is that action actually follows. As a consequence, HPA requires states to set out clear pathways with short-, medium-, and long-term GHG reduction measures to show how they intend to turn targets into action. In addition, targets have to be aligned with the long-term temperature goal and take into account the outcomes of the Global Stocktake. As a result, states should aim for immediate emissions cuts as later GHG reduction measures result in higher levels of warming due to the accumulation of GHGs in the atmosphere, thereby undermining the long-term temperature goal. The more ambition is shifted to the future, the more a state needs to show why these steps cannot be taken earlier and how its NDC is consistent with the long-term temperature goal. The need for considering the long-term implications of present decisions affecting future generations also flows from the principle of inter-generational equity, which is recognized under both the UNFCCC and the Paris Agreement.

As mentioned above, parties to the Paris Agreement are expected to align their level of ambition with their respective responsibilities and capabilities, in the light of national circumstances. Thus, countries with higher responsibility and/or more capacity must go further and faster in their NDC objectives, consistent with the emission pathways necessary to stay within the threshold of 1.5°C. Countries with less capacity may need more time and technical assistance in order to implement policies, plans and laws that reduce GHG emissions to these levels.[91]

Furthermore, parties must have a broad idea on how successive NDCs fall into place. This does not mean that the extent of each of the following NDCs must be clear today, but rather that parties must have a broad understanding of the trajectory and contribution of its successive NDCs to a party's long-term ambition.

Second, parties should also communicate mid-century, long-term low greenhouse gas emissions development strategies.[92] Accordingly, the outcome

90 See, for example, Bundesverfassungsgericht (BVerfG), 1 BvR 2656/18, 24 March 2021 (*Neubauer Case*), para. 218.

91 IPCC, *Climate Change 2022: Mitigation of Climate Change*, supra note 32, at 43 and 94.

92 PA, supra note 2, Article 4(19); Decision 1/CP.21, supra note 3, para. 35.

of the first Global Stocktake notes the importance of aligning NDCs with long-term low greenhouse gas emission development strategies and encourages parties to align their NDCs with such long-term strategies.[93]

Third, parties must revisit their assessment of what they deemed possible when submitting the NDC at the end of the NDC period. For example, as seen by recent reports of the International Energy Agency, the development of renewable energies has significantly outgrown even the most optimistic predictions.[94] When a party drafts new NDCs, it has to reassess the actual development of the predictions it has based its previous NDC on. Such a reassessment informs the party on how ambitious its predictions may be. Combined with the principle of progression, this guarantees that new NDCs reflect actual technological developments based on experience.

4 Conclusion

The concept of HPA under Article 4(3) of the PA is a critical component of the global effort to address climate change. As a due diligence standard, HPA requires parties to exercise their best efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change every time they prepare and communicate an NDC. HPA is not a subjective standard, but rather an objective benchmark that can be assessed through a range of legal and scientifically-informed indicators, including the magnitude and foreseeability of climate risks, and the comprehensive assessment of mitigation options, including credibility and vigilance of national compliance and enforcement mechanisms.

As the 195 parties to the Paris Agreement are obliged to submit new NDCs in 2025—and every five years thereafter—it is essential that they take into account the latest scientific information and technological advancements to reflect their respective HPA.

The indicators developed here provide a framework for assessing whether a NDC reflects a party's HPA and is aligned with Article 4(3) of the PA. By using these indicators, parties can ensure that their NDCs are ambitious, credible, and effective in reducing greenhouse gas emissions and mitigating the impacts of climate change.

93 Decision 1/CMA.5, supra note 7, para. 40.

94 International Energy Agency (IEA), *Renewables 2024: Analysis and Forecasts to 2030* (Paris: IEA, 2024).

Ultimately, the success of global climate action depends on the ability of parties to the Paris Agreement to adopt and implement effective mitigation measures at their level of highest possible ambition. As NDCs are the central tool of mitigation under the Paris Agreement, HPA in a party's NDC is of utmost importance. As demonstrated here, HPA is a critical component of the Paris Agreement's architecture, and its implementation is essential for achieving the Agreement's long-term temperature goal.