

# Interpreting States' general obligations on climate change mitigation: A methodological review

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*EARLY DRAFT*

## Abstract

A variety of norms in international and domestic law imply that States have a general obligation to mitigate climate change (e.g. no-harm principle, obligation to protection human rights, public trust doctrine). Yet, a major methodological difficulty is faced when interpreting this general mitigation obligation: how to determine the requisite level of mitigation action? This article identifies and discusses various methods for the interpretation of States' general mitigation obligation in light of domestic cases. On the one hand, a top-down approach seeks to determine a State's requisite mitigation action in the light of a global objective on climate change mitigation and of effort-sharing criteria. On the other hand, bottom-up methods put emphasis on the demand for internal consistency, on the obligation for a State not to downplay its contribution to environmental impacts unfolding beyond its territory, and on various emerging transnational standards. The article argues that the top-down and bottom-up approaches enable a sound interpretation of States' general mitigation obligations especially when these approaches are used in combination.

## Keywords

Climate change mitigation, general obligation, no-harm principle, human rights, public trust, climate litigation

## I. Introduction

States, governments, corporations and possibly other legal persons or individuals have various obligations with regard to the mitigation of climate change. Some obligations are established by specific instruments, including treaties or unilateral declarations through which States endorse particular objectives and consent to particular commitments, as well as legislation and regulation through which national or subnational governments impose certain obligations on their subjects. Other obligations arise from general norms, such as the no-harm principle in international environmental law, positive obligations to protect the enjoyment of human rights, or (in some domestic legal regimes) the duty of the government to protect environmental resources under the public trust doctrine. These general mitigation obligations may require higher ambition than special obligations,<sup>2</sup> but the content of these general obligations remains largely ill-understood. For example, while the no-harm principle has been interpreted as implying an obligation to prevent activities causing 'excessive' greenhouse gas (GHG) emissions,<sup>3</sup> Zahar justly noted the risk that 'the undefined

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<sup>2</sup> States have widely recognized the 'ambition gap' between the aggregate impact of mitigation action pledged by individual States and their common objectives. See e.g. UNFCCC decisions 1/CP.17, 'Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention' (11 December 2011), in UN Doc FCCC/CP/2011/9/Add.1, recital 3; 1/CP.18, 'Agreed outcome pursuant to the Bali Action Plan' (8 December 2012) in UN Doc FCCC/CP/2012/8/Add.1, recital 2 above para 4; 1/CP.19, 'Further advancing the Durban Platform' (23 November 2013) in UN Doc FCCC/CP/2013/10/Add.1, recital 4; 1/CP.20, 'Lima Call for Climate Action' (14 December 2014) in FCCC/CP/2014/10/Add.1, recital 7; 1/CP.21, 'Adoption of the Paris Agreement' (12 December 2015) in FCCC/CP/2015/10/Add.1, recital 10.

<sup>3</sup> B Mayer, *The International Law on Climate Change* (Cambridge University Press 2018), chapter 5.

concept of “excessive” ... becomes the horse that does all the work.<sup>4</sup> A rigorous legal methodology needs to be developed to determine the requisite level of mitigation action under general mitigation obligations.

To date, remarkably little attention has been given to this methodological question in the literature on climate law. Yet, the question is assuming an increasing importance in a context where general mitigation obligations are being invoked before multiple courts in various countries. Most recently, in *Urgenda v. the Netherlands*, the Court of Appeal of the Hague held that the positive obligations of the government of the Netherlands to protect human rights implied a general mitigation obligation, which the Court interpreted as an obligation to reduce national GHG emissions by at least 25% by 2020 (1990 basis).<sup>5</sup> Yet, the analysis through which the Court arrived at this particular target is somewhat confused,<sup>6</sup> and will likely be challenged during the cassation proceedings that the Dutch Government will bring to the Supreme Court.<sup>7</sup> Beyond *Urgenda*, litigants around the world have been suggesting various methods to interpret a State’s general mitigation obligations, some of which are certainly more convincing than others.<sup>8</sup>

This article focuses on this unique methodological question: how can States’ general mitigation obligations be interpreted? It assumes that the obligation of a national government to mitigate climate change can be interpreted with the same methodology whether the obligation stems from general international law, human rights law or administrative law, among others. While the article focuses on States’ obligations, some of its analysis could be extended to an analysis of general mitigation obligations of non-State actors, for instance under tort law, if such obligations were to be identified.<sup>9</sup>

The analysis that follows distinguishes two methodological approaches. On the one hand, a top-down approach consists in defining a global, long-term objective on climate change mitigation, such as the ‘2°C target,’ to then break it down into a short-term obligation applicable to an individual State. On the other hand, a bottom-up approach builds on the demand for internal consistency in the determination and implementation of a State’s mitigation action, on the obligation for a State not to downplay its contribution to environmental impacts unfolding beyond its territory, and on the emergence of transnational standards

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<sup>4</sup> A Zahar, ‘The Contested Core of Climate Law’ (2018) 8 *Climate Law* 244, 254.

<sup>5</sup> See District Court of the Hague, *Urgenda Foundation v. The State of the Netherlands (Ministry of Infrastructure and the Environment)*, case No. C/09/456689 / HA ZA 13-1396 (24 June 2015) <<https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2015:7196>> (unofficial translation provided by the Court); Court of Appeal of the Hague (CA), *The State of the Netherlands (Ministry of Infrastructure and the Environment) v Urgenda Foundation*, C/09/456689, HA ZA 13-1396 (9 October 2018) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20181009\\_2015-HAZA-C0900456689\\_decision.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20181009_2015-HAZA-C0900456689_decision.pdf)> (unofficial translation provided by the Court). See also *Future Generations v. Ministry of the Environment*, STC4360-2018 (5 April 2018, Supreme Court, Colombia) <<http://climatecasechart.com/non-us-case/future-generation-v-ministry-environment-others/>>.

<sup>6</sup> See [placeholder for the reference to a case note on the judgment of the Court of Appeal in *Urgenda* currently under review]; A Zahar, ‘The Urgenda Appeal Decision and the Argument from Physical Necessity’ (3 December 2018) <<https://ssrn.com/abstract=3285076>>.

<sup>7</sup> See Dutch Government, ‘State to bring cassation proceedings in *Urgenda* case’ <<https://www.government.nl/latest/news/2018/11/16/state-to-bring-cassation-proceedings-in-urgenda-case>> (16 November 2018).

<sup>8</sup> Ongoing cases include *Juliana v. United States*; *Plan B Earth v. The Secretary of State for Business, Energy, and Industrial Strategy* (United Kingdom); *Carvalho v. Parliament and Council* (EU); *Environment JEUnesse v. Canada*; *Pandey v India*; *Klimaatzaak v. Belgium*; and *Ali v. Pakistan*, among others. Information on these case can be found on Climate Change Litigation Databases developed by the Sabin Center for Climate Change Law at Columbia Law School, available at <<http://climatecasechart.com/>>, and in the database of ‘Climate Change Law of the World’ developed by Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science, available at <<http://www.lse.ac.uk/GranthamInstitute/climate-change-laws-of-the-world/>>.

<sup>9</sup> See *infra* notes 19 and 20.

on climate change mitigation. Although there is no silver bullet, this article contends that a combination of top-down and bottom-up approaches may generally provide viable grounds for an objective assessment of a State's compliance with its general mitigation obligations.

The article is organized as follows. Section II sets the scene by presenting States' general mitigation obligations and the issue relating to their interpretation in greater details. Section III presents and discusses the top-down approach, whereas section IV turns to alternative methods using a bottom-up approach. Section V concludes.

## **II. Background: the interpretation of States' general mitigation obligations**

Climate change has far-reaching consequences on a broad range of physical, ecological, social, economic and cultural values which are protected by international and domestic legal systems. As a consequence, various obligations of States and national or local governments (as well as, arguably, non-State actors) require them to take action to mitigate climate change.

In international law, the overarching principle of sovereign equality implies the obligation for each State 'not to allow knowingly its territory to be used for acts contrary to the rights of other States.'<sup>10</sup> As a corollary, courts and tribunals have long recognized States' obligation to ensure that activities conducted within their territory do not result in transboundary environmental harm (no-harm principle).<sup>11</sup> Likewise, the principle of sovereign equality has been interpreted as implying a prohibition of harm to the global environment, hence an obligation to cease excessive emissions of GHGs.<sup>12</sup>

Some general treaty provisions are also relevant to climate change mitigation. For instance, as GHG emissions result in a warming and acidification of seawater, the obligation of States to protect and preserve the marine environment under the UN Convention on the Law of the Sea implies a general obligation to mitigate climate change.<sup>13</sup> Likewise, as the impacts of climate change affect the enjoyment of human rights, the positive obligation of States to take measures to protect the enjoyment of human rights implies a general obligation to mitigate climate change.<sup>14</sup> A similar obligation could be inferred from the duty of States to

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<sup>10</sup> *Corfu Channel case (United Kingdom of Great Britain and Northern Ireland v. Albania)* (judgment on merits) [1949] ICJ Rep 4 at 22.

<sup>11</sup> See e.g. *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (Judgment) [2014] ICJ Rep 14, para 101; *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)* (judgment on merits) [2015] ICJ Rep 665, para 104; Rio Declaration on Environment and Development' in 'Report of the United Nations Conference on Environment and Development' UN Doc A/CONF.151/26 (vol I) (12 August 1992) (Rio Declaration), principle 2.

<sup>12</sup> United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107 (UNFCCC), recital 10; *Urgenda* (District Court) (n 5) para 4.42; International Law Commission, Draft Guidelines on the protection of the atmosphere adopted by the Commission on first reading in 2018, in International Law Commission, Report on the work of the seventieth session (2018), UN Doc A/73/10, 157, guideline 3; B Mayer, 'The Relevance of the No-Harm Principle to Climate Change Law and Politics' (2016) 19 Asia Pacific Journal of Environmental Law 79.

<sup>13</sup> United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 397 (UNCLOS) art 192. See generally M Doelle, 'Climate change and the use of the dispute settlement regime of the Law of the Sea Convention' (2006) 37 Ocean Development & International Law 319.

<sup>14</sup> See e.g. M Bachelet, 'Open-Letter from the United Nations High Commission for Human Rights on integrating human rights in climate action' (21 November 2018) <<https://www.ohchr.org/Documents/Issues/ClimateChange/OpenLetterHC21Nov2018.pdf>>; 'Understanding Human Rights and Climate Change,' Submission of the Office of the High Commissioner for Human Rights to UNFCCC COP21 (2015) <<https://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf>>, 2; *Urgenda* (Court of Appeal) (n 5); *Future Generations* (n 5).

protect the world's cultural and natural heritage under the Convention Concerning the World Cultural and Natural Heritage.<sup>15</sup>

In domestic law, likewise, various norms and doctrines may be interpreted as implying a general obligation for national or local governments to mitigate climate change. Just like human rights treaties, constitutional or statutory rights could imply a general mitigation obligation.<sup>16</sup> Likewise, it has been argued that national or local governments, holding environmental resources in trust for the public, had the duty to protect these resources, including the atmosphere<sup>17</sup>—an argument that the District Court of Oregon appeared ready to consider.<sup>18</sup> General mitigation obligations could also extend to non-State actors. Thus, it was argued in some jurisdictions that large corporations had a general obligation to mitigate climate change under the common law of nuisance,<sup>19</sup> or even perhaps following a horizontal interpretation of certain human rights instruments.<sup>20</sup>

The adoption of special rules destined at addressing climate change does not necessarily exclude the application of general norms. General norms apply most obviously when and where special rules do not apply, for instance, on the international plane, in relation to a State not party to relevant treaties. But even within their scope of application, special rules do not automatically exclude the application of general norms. English courts apply the law of tort, for instance, even though legislation has been adopted, unless the Parliament says otherwise.<sup>21</sup> Likewise, in international law, special rules exclude the application of general norms only when there is some 'actual inconsistency' between the special rule and the general norm, or a 'discernible intention that one provision is to exclude the other.'<sup>22</sup> As neither condition is fulfilled, the

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<sup>15</sup> Convention Concerning the Protection of the World Cultural and Natural Heritage (adopted 23 November 1972, entered into force 15 December 1975) 1037 UNTS 151, art 4. The argument was made for instance in the memorandum for the applicants in *Carvalho v. Parliament and Council* (23 May 2018) <[http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/05/20180524\\_Case-no.-T-18\\_application-1.pdf](http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/05/20180524_Case-no.-T-18_application-1.pdf)> para 158.

<sup>16</sup> See for instance *Greenpeace Nordic Association v. Ministry of Petroleum and Energy* (Norway), judgment of the District Court of Oslo pronounced on 4 January 2018, case 16-166674TVI-OTIR/06 <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20180104\\_16-166674TVI-OTIR06\\_judgment-2.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20180104_16-166674TVI-OTIR06_judgment-2.pdf)> (unofficial English translation), where the constitution of Norway is interpreted as the basis of a general mitigation obligation of the government. See also the memorandum of the applicants in *Carvalho v. Parliament and Council* (n 15), paras 215-216. See also the Statement of Claim by Mataatua District Māori Council in *Mataatua District Māori Council v. New Zealand*, <[https://forms.justice.govt.nz/search/Documents/WT/wt\\_DOC\\_106784185/Wai%202607%2C%201.1.001.pdf](https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_106784185/Wai%202607%2C%201.1.001.pdf)> (30 May 2016), where the applicants argued that the Treaty of Waitangi between the Crown and the Maori people is the source of a general mitigation obligation for New Zealand; and the memorandum of *Klimaatzaak v. Belgium* (1 June 2015) <[https://affaire-climat.be/documents/affaire\\_climat\\_Citation\\_fr.pdf](https://affaire-climat.be/documents/affaire_climat_Citation_fr.pdf)> (in French), invoking constitutional rights, the European Convention on Human Rights, and tort law provisions of the civil code; petition of Ali in *Ali v. Pakistan* (April 2016) <<https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Resources/Non-US-Climate-Change-Litigation-Chart/pakistanyouthclimatepetition.pdf>>.

<sup>17</sup> See petition of Ali (n 16); and generally B Preston, 'The Evolving Role of Environmental Rights in Climate Change Litigation' (2018) 2 Chinese Journal of Environmental Law 131, 136-144.

<sup>18</sup> See *Juliana v. USA* 217 F.Supp.3d 1224 (D. Or, 2016).

<sup>19</sup> See *American Electric Power v. Connecticut* (2011) 564 U.S. 410 (but dismissing the case on the ground that the application of the federal law of nuisance had been displaced by statutory law).

<sup>20</sup> See generally A Savaresi, J Hartmann and I Cismas, 'The impact of climate change and human rights: some early reflections on the carbon majors inquiry' (28 november 2018) <<https://ssrn.com/abstract=3277568>> .

<sup>21</sup> See e.g. *Barr v Biffa Waste Services* [2012] EWCA Civ 312, para 146.

<sup>22</sup> International Law Commission, Draft Articles on the Responsibility of States for Internationally Wrongful Acts, in Yearbook of the International Law Commission, 2001, vol. II, Part Two, 31, commentary under article 55, para 55. See also, generally, International Law Commission, 'Conclusions of the work of the Study Group on the Fragmentation of International Law: Difficulties arising from the Diversification and Expansion of International Law' in Yearbook of the International Law Commission, 2006, vol. II, Part Two, 177.

special rules contained in climate treaties do not exclude the application of general mitigation obligations.<sup>23</sup> Consistently, some Courts have thus applied general mitigation obligations despite the existence of more specific rules.<sup>24</sup> In doing so, courts take into consideration the special rules (whether treaties or statutes) as part of the context in which general mitigation obligations are to be interpreted,<sup>25</sup> but courts are not bound to conclude that a State's requisite action under its general mitigation obligation is limited to the implementation of the international commitment to which it has consented. Courts could conclude that a State's general mitigation obligations require more than what the State has committed to do.

Yet, difficult questions arise as soon as one tries to interpret general mitigation obligations. Climate change cannot be attributed to the conduct of any particular State taken in isolation: a State's GHG emissions are 'a drop in the ocean'<sup>26</sup>—a tiny contribution to global GHG emissions. Rather, it is the accumulation of such individually harmless levels of emissions, throughout the world and over long periods of time, which is causing a dangerous increase in atmospheric concentrations in GHGs. This certainly does not exempt any individual actor from its obligations: each individual actor must act based on the assumption that others will generally comply with their own obligation, and addressing cumulative environmental damages calls necessarily for all actors to cooperate at their own scale.<sup>27</sup> But this scattering of responsibilities makes it particularly challenging to determine the requisite level of mitigation action for any individual State. Each State must act to reduce its GHG emissions, but a problematic work of interpretation is necessary to determine how much and how fast.

The following two sections identify two broad approaches to address this question: the top-down approach and the bottom-up approach.

### III. The top-down approach

One way to determine a State's general mitigation obligations is to identify a global mitigation objective and to determine the contribution that the State should make to the realization of this objective. Yet, difficulties are faced at both steps. Despite significant progress in international negotiations, there is yet no clear consensus on what precisely is to be achieved through global cooperation on climate change mitigation. Furthermore, there is even less consensus on how this elusive global objective is to be broken down into individual, time-bound targets. In practice, attempts to overcome these difficulties are often fraught with two pitfalls: an excessive reliance on climate science as a ground for value-based decisions, and an elusive analysis of various plausible equity theories. A top-down approach may play a role in determining the requisite level of mitigation action in some cases, but it should be used with great caution. The top-down approach is best used in combination with the bottom-up approach.

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<sup>23</sup> See B Mayer, 'The Applicability of the Principle of Prevention to Climate Change: A Response to Zahar' (2015) 5 *Climate Law* 1, 15-20; and B Mayer, 'Construing International Climate Change Law as a Compliance Regime' (2018) 7 *Transnational Environmental Law* 115, suggesting that climate treaties are best understood as a collective endeavour to promoting compliance with general obligations on climate change mitigation.

<sup>24</sup> See for instance, regarding the positive obligation of States to protect human rights, *Urgenda* (District Court) (n 5) and *Urgenda* (Court of Appeal) (n 5); *Greenpeace Nordic Association* (n 16) para 5.2.2. On cases pending before various courts, see note 8.

<sup>25</sup> See for instance *Tatar v. Romania*, App No 67021/21 (ECtHR, 27 January 2009), where the Court interpreted the positive obligations of a State party to the European Convention on Human Rights in the light of general principles of international environmental law, including the Rio Declaration on Environment and Development; and, in the English law of torts, *Allen v Gulf Oil Refining Ltd* [1981] AC 1001 (HL).

<sup>26</sup> See e.g. J Peel, 'Issues in Climate Change Litigation' (2011) 5 *Carbon and Climate Law Review* 15, at 16-18, describing the "'Drop in the Ocean' Problem" and the "'Death by a Thousand Cuts' Problem.'

<sup>27</sup> See 'Rio Declaration' (n 11) principle 7; *Center for Biological Diversity v National Highway Traffic Safety Administration*, 538 F.3d 1172 (9<sup>th</sup> Cir. 2008) at 1217.

## A. Definition of a global, long-term objective

The UN Framework Convention on Climate Change (UNFCCC) was adopted in 1992 with the ‘ultimate objective’ to achieve ‘stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.’<sup>28</sup> No consensus could be reached at the time on what would constitute a ‘dangerous’ climate change.<sup>29</sup> From the late 1990s onward, the European Union promoted the objective of holding the increase in global average temperature below 2°C.<sup>30</sup> The ‘2°C target’ was endorsed by Copenhagen Accord<sup>31</sup> and then the Conference of the Parties to the UNFCCC.<sup>32</sup> The Paris Agreement adopted a slightly more stringent objective of ‘holding 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 level.*’<sup>33</sup> In order to achieve this objective, the Paris Agreement suggested the need to ‘reach a global peaking of greenhouse gas emissions as soon as possible’ and to ‘achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century.’<sup>34</sup>

The Paris Agreement provides at present the most specific authoritative statement of a global mitigation objective. In principle, climate science can interpret a temperature target in terms of atmospheric concentrations in the atmosphere and, in turn, in terms of mitigation scenarios.<sup>35</sup> Yet, what the Paris Agreement’s temperature targets really mean is all but clear. Rather confusingly, they are two temperature targets (1.5 and 2°C). As global average temperature has already increased by around 1°C,<sup>36</sup> the two targets seem to suggest rather different global mitigation action. The global mitigation objective is phrased as if it was to distinguish between an obligation of conduct (*pursuing efforts* towards the 1.5°C target) and a strict obligation of result (*holding* warming well below 2°C). But applied to an objective rather than an obligation,<sup>37</sup> the distinction between means and result is of no obvious consequence. It is unclear how these

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<sup>28</sup> UNFCCC (n 12) art 2.

<sup>29</sup> As a first step, developed States agreed that their GHG emissions had to revert by the end of the 1990s to pre-1990 levels. See UNFCCC (n 12) art 4.2(a) and (b). See also ‘Kyoto Protocol to the United Nations Framework Convention on Climate Change’ (adopted 11 December 1997, entered into force 16 February 2005) 2303 UNTS 162, art 3.1; ‘Doha Amendment to the Kyoto Protocol’ (adopted 8 December 2012, not yet entered into force), art 1(C) (art 3.1bis of the consolidated version of the Kyoto Protocol).

<sup>30</sup> See generally S Randalls, ‘History of the 2°C climate target’ (2010) 1 WIREs Climate Change 598.

<sup>31</sup> ‘Copenhagen Accord,’ in annex of UNFCCC decision 2/CP.15, ‘Copenhagen Accord’ (18-19 December 2009) UN Doc FCCC/CP/2009/11/Add.1, paras 1 and 2.

<sup>32</sup> UNFCCC Decision 1/CP.16, ‘The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention’ (10-11 December 2010) UN Doc FCCC/CP/2010/7/Add.1, para 4.

<sup>33</sup> Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) 55 ILM 740, art 2.1(a) (emphasis added).

<sup>34</sup> *Ibid* art 4.1.

<sup>35</sup> Memorandum for the applicants in *Carvalho* (n 15) para 238(b): ‘Scientific analysis can estimate the maximum quantity of emissions that can be released globally in the atmosphere.’

<sup>36</sup> See M Allen et al, ‘Summary for Policymakers’ in V Masson-Delmotte et al (eds), *Global warming of 1.5°C: An IPCC Special Report* (WMO and UNEP 2018) 6, para A.1 (Special Report on 1.5°C), indicating a ‘likely range’ of 0.8-1.2°C. A ‘likely range’ indicates an estimate associated with 66% chance.

<sup>37</sup> It has been suggested that Article 2.1(a) of the Paris Agreement creates a ‘collective obligation.’ See e.g. L Rajamani, ‘The 2015 Paris Agreement: Interplay between Hard, Soft and Non-Obligations’ (2016) 28 *Journal of Environmental Law* 337, 343; A Huggins, ‘The Evolution of Differential Treatment in International Climate Law: Innovation, Experimentation, and “Hot” Law’ (2018) 8 *Climate Law* 195, 204; C Voigt and F Ferreira, ‘Differentiation in the Paris Agreement’ (2016) 6 *Climate Law* 58, 69-70; and, in relation to the Kyoto Protocol, J Peel, ‘Climate Change’, in A Nollkaemper and I Plakokefalos (eds), *The Practice of Shared Responsibility in International Law* (Cambridge University Press 2017), 1026. If ‘collective obligation’ is understood as a legal obligation belonging to a group of legal persons which does not itself has a legal personality, this concept is at odds with the premise that only a legal

two targets are to be treated when determining how much mitigation action is to be pursued, as neither can simply be disregarded without betraying the terms of the treaty.<sup>38</sup>

Although the ‘2°C target’ and sometimes the ‘1.5°C target’ became a rallying cry in climate change litigation, few courts or litigants appear to have carried out extensive efforts to interpret the mitigation objective of the Paris Agreement. Oddly enough, these targets were often attributed to climate science, for instance to the IPCC<sup>39</sup> or to a ‘scientific consensus,’<sup>40</sup> rather than to political agreement.<sup>41</sup> Scientific authority is thus used to cut short potential debates about what the signatories of the Paris Agreement precisely agreed upon while giving a semblance of determinacy and objectivity to a ‘science-based’ objective.<sup>42</sup> While climate science can help to determine the impacts of climate change and the consequences of mitigation action, it is not equipped to make normative judgments about what constitutes a ‘dangerous’ anthropogenic interference with the climate system—a judgment which requires balancing the costs of climate change mitigation with the impacts and risks associated with particular climate change scenarios. The IPCC is bound by its mandate to being ‘neutral with respect to policy,’<sup>43</sup> which excludes any participation in the normative debate on balancing the costs and benefits of climate change mitigation. Consistently, while the IPCC has noted that the impacts of climate change increase with higher temperatures, it has never supported any particular global objective on climate change mitigation (even though it has obviously helped to inform decisions).<sup>44</sup>

In reality, the two temperature targets endorsed by the Paris Agreement make little concrete difference as neither temperature target is particularly helpful in determining the requisite level of mitigation action. For one, there remains uncertainty of  $\pm 0.2^\circ\text{C}$  (66% likelihood) regarding the current level of warming,<sup>45</sup> and, consequently, about the additional warming consistent with either target. Overall, neither the Paris Agreement, nor COP decisions even attempt to provide the sort of technical specifications which would be necessary for a rigorous determination of what level of mitigation action is to be achieved.<sup>46</sup> Thus,

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person can hold a legal obligation. See *Reparation for Injuries suffered in the service of the United Nations* (Advisory Opinion) [1949] ICJ Rep 174, 179. If climate treaties create ‘collective obligations,’ this can only be in the sense of obligations held individually by any State part of the collective (i.e. the Parties). See generally A Zahar, ‘Collective Obligation in the Paris Agreement’ (paper presented at ‘Climate Change and Paris Agreement Workshop’ held in Sun Yat-sen University in Guangzhou on 15-16 September 2018, in file with author).

<sup>38</sup> The question was raised in at least two cases. See *Plan B Earth v. The Secretary of State for Business, Energy and Industrial Strategy* [2018] EWHC 1892 (Admin). Plan B Earth appealed; Plan B Earth, ‘Grounds of Appeal’ (July 2018) <<https://planb.earth/wp-content/uploads/2018/07/Plan-B-v-BEIS-Grounds-Appeal-Permission-SEALED.pdf>>; *Thomson v. Minister for Climate Change Issues*, Civ 2015-485-919 [2017] NZHC 733 (Mallon J) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20171102\\_2017-NZHC-733\\_decision-1.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20171102_2017-NZHC-733_decision-1.pdf)> para 162(a).

<sup>39</sup> *Thomson* (n 38) para 11(a).

<sup>40</sup> ‘Memorandum for the applicant in support of urgency application’ in *Mataatua District Māori Council v. New Zealand* before the Waitangi tribunal, WAI 2607 (4 July 2017) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20170704\\_WAI-2607\\_application-1.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20170704_WAI-2607_application-1.pdf)> para 12 (about the 1.5°C target).

<sup>41</sup> Strikingly, the Copenhagen Accord (n 31) para 1 and (although more ambiguously) the Cancún Agreements (n 31) para 4 also attribute the 2°C target to science.

<sup>42</sup> See Andy Stirling, ‘Keep it complex’ (2010) 468 *Nature* 1030.

<sup>43</sup> IPCC, *Principles Governing IPCC Work* (approved 1-3 October 1998, last updated 14-18 October 2013) <<http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles.pdf>> para 2.

<sup>44</sup> See generally R Knutti, J Rogelj, J Sedláček and EM Fischer, ‘A scientific critique of the two-degree climate change target’ (2016) 9 *Nature Geoscience* 13, 16; Y Gao, X Gao and X Zhang, ‘The 2 °C Global Temperature Target and the Evolution of the Long-Term Goal of Addressing Climate Change: From the United Nations Framework Convention on Climate Change to the Paris Agreement’ (2017) 3 *Engineering* 272.

<sup>45</sup> See above note 36.

<sup>46</sup> See M Allen et al, ‘Framing and Context’ in Special Report on 1.5°C (n 36) 56-67.

negotiations did not define the time horizon in which global average temperature must be held within 1.5°C or well below 2°C,<sup>47</sup> nor does it specify whether a temporary overshoot is permitted. Nor was an agreement adopted on a definition of ‘pre-industrial levels’ of global average temperature, which can be measured on various periods and through different methodologies (e.g. land and sea surface temperature, or air temperature near surface).<sup>48</sup> Negotiations did not determine whether the targets relate to anthropogenic warming or total warming (including the incidental effect of natural variations). And most importantly, given the high degree of uncertainty about the reaction of the climate system to additional GHG emissions, negotiations did not determine the likelihood that mitigation action must have to achieve the 1.5°C or 2°C targets—should mitigation action be ‘as likely as not’ to achieve the target (50% likelihood) as assumed by the Court of Appeal of the Hague in *Urgenda*,<sup>49</sup> should it be ‘likely’ (66% likelihood) as argued by applicants in various other cases,<sup>50</sup> or should the likelihood of success be even higher?<sup>51</sup>

Beside these unanswered questions, interpreting a temperature target as a global mitigation objective raises practical challenges that courts and litigants are ill-equipped to address, being often little acquainted with an analysis of complex scientific reports. In *Urgenda*, the Court of Appeal of the Hague discarded all mitigation scenarios developed in the IPCC’s Fifth Assessment Report (AR5) on the sole ground that these scenarios did not categorically exclude the possibility of negative emissions technologies<sup>52</sup>—thus brushing away, in just a few lines, a careful decision of the most authoritative scientific body based on years of debates in the scientific community.<sup>53</sup> Instead, the Court relied on mitigation scenarios developed seven years earlier in the IPCC’s Fourth Assessment Report (AR4).<sup>54</sup> This led the Court to conclude that atmospheric concentrations in GHGs had to be limited to 450 ppm CO<sub>2</sub>eq by 2100 (‘450 ppm scenario’), in accordance with the AR4’s estimate for a 50% chance of holding temperature within 2°C,<sup>55</sup> even though the AR5 had suggested that a 500 ppm scenario would be consistent with the same likelihood of holding global warming below 2°C.<sup>56</sup>

Pending applications in other cases evidence similar difficulties. The applicants in *Environment JEUnesse v. Canada* picked the 450 ppm scenario as the scenario that AR5 associated with a 66% likelihood of keeping global warming below 2°C (thus suggesting the same conclusion as in *Urgenda*, but based on a

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<sup>47</sup> Scientific analyses have generally focused on the 21<sup>st</sup> Century, in part due to limited confidence in longer-term projections. See generally M Collins et al, ‘Long-term Climate Change: Projections, Commitments and Irreversibility’ in TF Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2013) 1029 (WG1’s Contribution to AR5).

<sup>48</sup> See Allen, ‘Framing’ (n 46) 57-59.

<sup>49</sup> See *Urgenda* (Court of Appeal) (n 5) para 12, and generally [[placeholder for the reference to a case note on the judgment of the Court of Appeal in Urgenda currently under review](#)].

<sup>50</sup> See e.g. memorandum for the applicants in *Carvalho* (n 15) para 218; and memorandum for the applicants in *Environment JEUnesse v. Canada* (26 November 2018) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20181126\\_500-06\\_application-2.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20181126_500-06_application-2.pdf)> (unofficial English translation) para 2.38.

<sup>51</sup> See J Lambrecht and C Ituarte-Lima, ‘Legal innovation in national courts for planetary challenges: *Urgenda v State of the Netherlands*’ (2016) 18 *Environmental Law Review* 57, 62, suggesting that even a 66% chance of achieving the 2°C target may not be sufficient.

<sup>52</sup> *Urgenda* (Court of Appeal) (n 5) para 49

<sup>53</sup> See e.g. O Edenhofer et al, ‘Technical Summary’ in O Edenhofer et al (eds), *Climate Change 2014; Mitigation of Climate Change. Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2014) 70-72 (WG3’s Contribution to AR5).

<sup>54</sup> *Urgenda* (Court of Appeal) (n 5) paras 12 and 49.

<sup>55</sup> B Fisher et al, ‘Issues related to mitigation in the long-term context’ in B Metz et al, *Climate Change 2007: Mitigation of Climate Change. Working Group III Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2007) 227 (WG3’s Contribution to AR4).

<sup>56</sup> O Edenhofer et al, ‘Summary for Policymakers’ in WG3’s Contribution to AR5 (n 53) 10.



different justification).<sup>57</sup> Yet, the applicants interpreted the 450 ppm scenario as a scenario where atmospheric concentrations in GHGs would never exceed 450 ppm,<sup>58</sup> thus misrepresenting the IPCC AR5's mitigation scenarios, which admits the possibility of a temporary overshoot.<sup>59</sup> Much less subtly, the claimants in *Mataatua District Māori Council v. New Zealand* simply stated that, to keep warming within 2°C, 'it is scientifically considered that greenhouse gas concentrations need to stay below the level of 450 ppm.'<sup>60</sup> By contrast, according to the applicants in *Ali v. Pakistan*, 'the best available scientific knowledge ... dictates that to restore a stable climate system, the dangerous levels of CO<sub>2</sub> currently in our atmosphere must be reduced to below ... 350 ppm atmospheric CO<sub>2</sub> by the year 2100.'<sup>61</sup>

Even the most rigorous interpretation of global mitigation objectives based on climate science provide very limited indications of the quantity of GHG emissions consistent with the global mitigation objective of the Paris Agreement. These variations appear most clearly with regard to estimates of the remaining 'budget' of GHG emissions consistent with particular temperature targets.<sup>62</sup> The IPCC's latest report estimates the carbon budget (starting 1 January 21018) at 420 GtCCO<sub>2</sub> for a 66% likelihood of holding warming below 1.5°C and at 1,500 GtCCO<sub>2</sub> for a 50% chance of holding warming below 2°C.<sup>63</sup> These estimates were associated with uncertainties which were 'increasingly relevant as a specific temperature limit is approach'<sup>64</sup>—up to about 50% variation for 1.5°C-consistent budgets.<sup>65</sup> Overall, these estimates varied significantly from those published by the IPCC just a few years earlier in AR5.<sup>66</sup>

No precise individual obligations could be defined based on such a broad, ill-defined global objective. The drafters of the Paris Agreement would have been particularly ill-advised to adopt such a vague objective if they had in sight that it could be interpreted by national courts in an effort to determine precisely the requisite level of mitigation action at the global level, let alone at the national level. Rather, the temperature target contained in the Paris Agreement should be understood as a vague indication of what the Agreement means by 'strengthen[ing] the global response to the threat of climate change.'<sup>67</sup> These temperature targets are a clear indication of the 'direction of travel,'<sup>68</sup> and help to communicate the urgency of climate action to a broad public,<sup>69</sup> even though they do not give a clear indication of the specific end-point. They provide a strong signal for higher ambition, however, as long as the aggregate anticipated effects of domestic mitigation action remains so far from these targets.<sup>70</sup>

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<sup>57</sup> Memorandum for the applicants in *Environment JEUnesse* (n 50) para 2.38.

<sup>58</sup> *Ibid* paras 2.39, 2.46.

<sup>59</sup> See Edenhofer, 'Technical Summary' in WG3's Contribution to AR5 (n 53) 52: 'The vast majority of scenarios reaching about 450 ppm CO<sub>2</sub>eq in 2100 involve concentration overshoot.'

<sup>60</sup> 'Memorandum for the applicant in support of urgency application' in *Mataatua District Māori Council* (n 40) para 13.

<sup>61</sup> Petition of Ali (n 16) 29.

<sup>62</sup> See Memorandum for the applicants in *Carvalho* (n 15) para 260.

<sup>63</sup> J Rogelj et al, 'Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development' in Special Report on 1.5°C (n 36) 108.

<sup>64</sup> *Ibid* 96.

<sup>65</sup> *Ibid* 107.

<sup>66</sup> See *ibid* 107.

<sup>67</sup> Paris Agreement (n 33) art 2.1 (chapeau).

<sup>68</sup> Comp with L Rajamani and J Brunnée, 'The Legality of Downgrading Nationally Determined Contributions under the Paris Agreement: Lessons from the US Disengagement' (2017) 29 *Journal of Environmental Law* 537, using the expression in a more specific context, in relation to the revision of NDCs.

<sup>69</sup> D Bodansky, 'The Paris Climate Change Agreement: A New Hope?' (2016) 110 *American Journal of International Law* 288, 303.

<sup>70</sup> See UN Environment, Emissions Gap Report 2018 (November 2018) <[http://wedocs.unep.org/bitstream/handle/20.500.11822/26895/EGR2018\\_FullReport\\_EN.pdf?isAllowed=y&sequence=1](http://wedocs.unep.org/bitstream/handle/20.500.11822/26895/EGR2018_FullReport_EN.pdf?isAllowed=y&sequence=1)>.

## B. Breaking-down a global, long-term objective into time-bound, individual obligations

The second step of the top-down approach to interpret a State's general mitigation obligations consists in breaking down the global, long-term mitigation objective in the time-bound, individual obligation of a given State. The task of lawyers would be easier if the global mitigation objective was an immediate and absolute cessation of all GHG emissions, as the implication of this objective would be clear: each State would be bound to stop GHG emissions. The difficulty, however, relates to the fact that States recognize some level of GHG emissions as unavoidable for some time, framing cooperation as a matter of 'mitigation' rather than 'cessation,' and adopting global mitigation objectives which leave some room for States, both individually and collectively, to decide where and when GHG emissions have to stop.<sup>71</sup> Thus, a problematic process of interpretation is necessary to determine what a global, long-term objective implies for a State's mitigation action on the short- to medium-term.

Two distinct questions arise at this second step of the top-down approach. One question regards the contribution that a given State should make to the achievement of the global mitigation objective. The other question relates to the timing of mitigation efforts towards a long-term mitigation objective in order to determine what a State must do on the medium-term.<sup>72</sup> In turn, there are two methods to address these questions, starting either with the question of a State's contribution, or with the question of the timing of mitigation action. Thus, the *national budget method* consists in inferring a State's contribution to global climate change mitigation on the long-term, in terms of a national 'budget' of GHG emissions, before determining, if needed, the mitigation action that the State must take on the medium-term in order to respect with this budget. By contrast, the *global pathway method* seeks first to trace a global mitigation pathway consistent with the long-term mitigation objective, including medium-term milestones, before determining the implications for a State's requisite action on the medium-term. In principle, both methods should demonstrate the same conclusions through different means.

The *national budget method* may appear as the most instinctive, as it leaves it to each State to determine how best to use 'its' budget of GHG emissions.<sup>73</sup> A global budget compatible with any particular mitigation objective can be estimated (though with a wide margin of uncertainty),<sup>74</sup> and then broken down among States. Yet, the difficulty is that there is no objective basis to break down a global budget of GHG emissions into national budgets. Through thirty years of intense negotiations, States could only agree that their participation in global efforts on climate change mitigation would be decided 'on the basis of equity and in accordance with their common but differentiated respective capabilities,'<sup>75</sup> and with a view to their 'different national circumstances'<sup>76</sup>—and that, 'accordingly, developed country Parties [to the UNFCCC] should take the lead in combating climate change.'<sup>77</sup> There is no general agreement on any specific interpretation of these principles, in particular not on the weighing of different criteria, such as equality, responsibility and capability, in determining each State's requisite contribution. In practice, each State tends to adhere to a conception of equity which is broadly in line with its interests.<sup>78</sup>

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<sup>71</sup> This problem is more acute in relation to relatively loose objectives, which leave more room for manoeuvre to States. Yet, even the 1.5°C target leaves some room for manoeuvre, as it does not command the immediate cessation of all sources of GHG emissions.

<sup>72</sup> I use 'medium-term' to refer to the timeline in which mitigation action can be formulated, adopted and implemented, typically several years.

<sup>73</sup> This, arguably, is more in line with the 'principle of sovereignty of States in international cooperation to address climate change,' reaffirmed in UNFCCC (n 12) recital 10.

<sup>74</sup> See L Clarke et al, 'Assessing Transformation Pathways' in WG3's Contribution to AR5 (n 53) 432.

<sup>75</sup> UNFCCC (n 12) art 3.1.

<sup>76</sup> Paris Agreement (n 33) art 2.2.

<sup>77</sup> UNFCCC (n 12) art 3.1.

<sup>78</sup> See Y Robiou du Pont and M Meinshausen, 'Warming assessment of the bottom-up Paris Agreement emissions pledges' (2018) 9 Nature Communications 4810.

For lack of such a general agreement on the distribution of the carbon budget among States, arguments relying on the national budget method must rely on unsubstantiated normative assumptions. For example, the applicants in *Carvalho v. Parliament and Council* contend that an equal individual right to cumulative GHG emissions should be the principle guiding the distribution of a global carbon budget among States: in their view, ‘the EU can use no more than its share of emissions, in accordance with its proportionate share of the world’s population.’<sup>79</sup> The applicants’ argument that the EU must implement more stringent mitigation action depends entirely on this assumption.<sup>80</sup> Yet, while the principle of an equal individual right to cumulative GHG emissions clearly has some moral traction, so do a number of other equity criteria relating for instance to responsibility, capacity or to the right to development.<sup>81</sup> An obvious objection to grounding international cooperation on climate change mitigation entirely on equality is that this approach would fail to exploit opportunities for more effective mitigation action where they lie, such as the ability of developing countries to ‘leap-frog’ a high-emission development stage directly into an advanced low-emission economy: by delaying mitigation action in the name of equality, this theory would further harm those already affected by the impacts of climate change.

After establishing a national budget, the next step would be to determine what this budget implies for the State in the medium-term. The applicants in *Carvalho v Parliament and Council* argued that the EU must not postpone mitigation efforts and, accordingly, that it must at least impose emission reductions on a linear basis (i.e. by achieving a fixed amount of emission reduction year after year).<sup>82</sup> This is, at best, a wise political argument,<sup>83</sup> but not obviously a legal one. In contrast, the High Court of New Zealand held that the government had no obligation to take the most cost-effective pathway towards the achievement of its 2050 target.<sup>84</sup> The circumstances in which a court should grant judicial review because a government appears to postpone mitigation efforts should be limited to circumstances where such decision appears as clearly unreasonable, in view for instance of the disproportionate costs of delayed mitigation action and of the additional impacts associated with the faster pace of warming that this may involve.<sup>85</sup>

Alternatively, the *global pathway method* focuses first on the timing of global mitigation efforts before drawing implications for any individual State’s requisite mitigation action. Climate treaties and COP decisions provide clarification on the medium-term implications of long-term mitigation objectives,<sup>86</sup> but these provisions are vague, either with regard to the time horizon, or to the mitigation target. Thus, the Paris Agreement provides a specific target—a global peaking and the cessation of net GHG emissions—but no specific time horizon—‘as soon as possible’ and ‘in the second half of this century.’<sup>87</sup> On the other hand, some COP decisions relate specifically to the 2020 horizon, but call, in vague terms, for ‘a deviation in emissions relative to “business as usual” emissions,’<sup>88</sup> or for ‘aggregate emission pathways consistent with

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<sup>79</sup> Memorandum for the applicants in *Carvalho* (n 15) para 266.

<sup>80</sup> *Ibid* para 284.

<sup>81</sup> See generally M Fleurbaey et al, ‘Sustainable Development and Equity’ in WG3’s Contribution to AR5 (n 53) 317-321. See also P Baer, T Athanasiou, S Kartha and E Kemp-Benedict, ‘Greenhouse Development Rights: A Framework for Climate Protection that is “More Fair” than Equal per Capita Emissions Rights’ in SM Gardiner, S Caney, D Jamieson and H Shue (eds), *Climate Ethics: Essential Readings* (Oxford University Press 2010) 215.

<sup>82</sup> See Memorandum for the applicants in *Carvalho* (n 15) paras 275-276.

<sup>83</sup> At best because some assumptions on the development and deployment of technology could suggest otherwise. See e.g. below note 93.

<sup>84</sup> *Thomson* (n 38) para 176.

<sup>85</sup> Besides the overall level of warming, scientists have highlighted that the pace of warming may also be of great importance, as ecosystems, in particular, are less able to adapt to a more rapid warming. See A Abdulla et al, ‘Technical Summary’ in Special Report on 1.5°C (n 36) 35-36.

<sup>86</sup> See note 29 for provisions of mostly a historical relevance.

<sup>87</sup> Paris Agreement (n 33) art 4(1).

<sup>88</sup> UNFCCC Decision 1/CP.16 (n 32) para 48.,

having a likely chance of holding the increase in global average temperature below 2°C or 1.5°C above pre-industrial levels.<sup>89</sup>

More specific milestones can be inferred from climate science, but only with a relatively high degree of uncertainty. Thus, the IPCC's medium-confidence estimate in 2018 was that, in order to have an even chance of limiting warming to 1.5°C, cumulative carbon emissions from 2018 onwards should not exceed 580 GtCO<sub>2</sub>.<sup>90</sup> While developing a range of 'least-cost mitigation pathways' compatible with this objective, the IPCC also recognized that what such constraints mean for mitigation pathways depends about 'a range of assumptions about economic growth, technology development and lifestyles.'<sup>91</sup> For instance, such scenarios vary significantly depending in whether they assume the possibility of deploying technologies to remove atmospheric carbon dioxide (such as bioenergy with carbon capture and storage)<sup>92</sup> at a sufficient time and pace to remove substantial quantities of carbon dioxide.<sup>93</sup> The IPCC's analysis suggests that the 1.5°C target is more likely to be achieved if global GHG emissions peak before 2030, are in a range of 25-30 GtCO<sub>2</sub>eq in 2030, and cease around 2050.<sup>94</sup>

In turn, medium-term milestones—e.g. the limitation of global emissions to 25-30 GtCO<sub>2</sub>eq in 2030—need to be broken down into national targets, which raises the same issues as described above in relation to the national budget method. As an intermediary step, the global milestone can be broken down into a milestone applicable only to a group of countries, for instance Annex I Parties, based on the notion that they 'should take the lead in combating climate change.'<sup>95</sup> In *Urgenda v. the Netherlands*, the District Court and the Court of Appeal of the Hague both considered that a 450 ppm scenario requires 25 to 40% emission reduction in Annex I countries by 2020 (1990 basis),<sup>96</sup> based on AR4's estimate of the most likely mitigation pathways.<sup>97</sup> This seemingly inspired the applicants in *ENvironment JEUnesse v. Canada*, who relied on the AR5 to suggest that Annex I Parties as a whole would need to half their GHG emissions by 2030 (2010 basis) in a least-cost pathway consistent with the same concentration scenario.<sup>98</sup> Yet, these milestones tend to be extremely approximate,<sup>99</sup> hence of limited help, as more specific milestones would need to rely on questionable normative assumptions regarding particular equity theories.

The determination of milestones for Annex I Parties is only a small step closer from determining the requisite mitigation action of an individual State. In what follows, courts typically make fleeting references to some equity criteria—including both responsibility-based criteria (e.g. historical and current

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<sup>89</sup> UNFCCC Decision 1/CP.17 (n 2) third recital.

<sup>90</sup> Abdulla (n 85) 33.

<sup>91</sup> Ibid 32.

<sup>92</sup> Rogelj (n 63) 115.

<sup>93</sup> Abdulla (n 85) 42.

<sup>94</sup> Ibid 33. The range of emissions for 2030 corresponds to an interquartile range (i.e. consistency with half of the emission pathways), thus implying limited confidence.

<sup>95</sup> UNFCCC (n 12) art 3.1. See also Paris Agreement (n 33) art 4.4.

<sup>96</sup> *Urgenda* (District Court) (n 5) para 4.20; *Urgenda* (Court of Appeal) (n 5) para 48. A similar argument was made by the applicants in 'Memorandum for the applicant in support of urgency application' in *Mataatua District Māori Council* (n 40) para 43 (presenting IPCC milestones as 'targets set by the United Nations for developed countries').

<sup>97</sup> S Gupta, 'Policies, Instruments and Co-operative Arrangements' in WG3's Contribution to AR4 (n 55) 776, table 13.7. The courts wrongly attributes this Annex I target to COP decisions. See *Urgenda* (District Court) (n 5) para. 4.31, 4.84 et passim; *Urgenda* (Court of Appeal) (n 5) paras. 11, 15, 51. The 25-40% emission reduction range was only 'recognized' in the preamble of a CMP decision: see Kyoto Protocol decision 1/CMP.6, "The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its fifteenth session" (10-11 December 2010) UN Doc. FCCC/KP/CMP/2010/12/Add.1, recital 6.

<sup>98</sup> Memorandum for the applicants in *Environment JEUnesse* (n 50) para 2.66. See generally Clarke (n 74) 459.

<sup>99</sup> See Clarke (n 74) 459, which recognizes 'a large range' of possible variations in relation to the 50% emission reduction in developed countries by 2030 (2010 basis) mentioned by the applicants in *ENvironnement JEUnesse*.

emissions,<sup>100</sup> population,<sup>101</sup> profits drawn from the GHG-emitting industries<sup>102</sup>) and capacity-based criteria (e.g. ‘technical and economic capacity,’<sup>103</sup> emissions profile<sup>104</sup>)—but do not go at any length in explaining how these various criteria ought to be weighed. The Court of Appeal in *Urgenda*, for instance, simply noted that the Netherlands had to ‘assume its responsibility’<sup>105</sup> given its higher-than-average per capita GDP<sup>106</sup> and per capita GHG emissions<sup>107</sup>—all the more so because it had ‘profited from fossil fuels for a long time.’<sup>108</sup> On this basis, the Court summarily concluded that the Netherlands had to achieve at least as much as the average Annex I State, namely at least 25% emission reduction by 2020 (1990 basis).<sup>109</sup> It does not seem that either party to the dispute produced any detailed analysis of the responsibility of the Netherlands for climate change or of its capability to achieve this emission target.<sup>110</sup>

Compared with the national budget method, the global pathway method relies on scientific report to situate a State’s medium-term target in the context of a group of States’ most likely medium-term milestone. Yet, both methods face the same difficulties, in particular the difficulty of determining what contribution a single State should make to collective efforts, in the absence of generally agreed theory of equity. If States agreed on one thing throughout 30 years of negotiations, it is that—contrary to the approach of the applicants in *Carvalho v. Parliament and Council*<sup>111</sup>—no single equity criterion can guide differentiation in isolation.<sup>112</sup> Yet, litigants and courts may not have the time, resources or expertise to assess what would constitute a State’s fair share based on multiple complementary criteria, and they lack the legitimacy to draw conclusions when multiple criteria point in different directions.

As a whole, the top-down approach to the definition of a State’s general mitigation obligation is fraught with difficulties. It requires the interpretation of an elusive global mitigation objective and questionable assumptions about the principles that ought to guide effort-sharing. Arguments using a top-down approach may be persuasive, and they may succeed in courts,<sup>113</sup> but this is likely to be limited to cases where a State patently fails to take mitigation action at the requisite scale (and *a fortiori* when the State takes virtually no mitigation action at all). In many more subtle cases, States will likely be within a very broad ‘grey zone’ where the top-down method alone will not be able to determine whether a State complies with its general mitigation obligation.

#### **IV. The bottom-up approach**

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<sup>100</sup> Memorandum for the applicants in *Environment JEUnesse* (n 50) para 2.48-2.49.

<sup>101</sup> *Ibid* para 2.50.

<sup>102</sup> *Urgenda* (Court of Appeal) (n 5) para 66.

<sup>103</sup> Memorandum for the applicants in *Carvalho* (n 15) para 154(a).

<sup>104</sup> *Thomson* (n 38) paras 59, 160.

<sup>105</sup> *Urgenda* (Court of Appeal) (n 5) para 66.

<sup>106</sup> *Ibid* para 60.

<sup>107</sup> *Ibid* paras 26, 44, 60 and 66.

<sup>108</sup> *Ibid* para 66. See also *Urgenda* (District Court) (n 5) para 4.57.

<sup>109</sup> *Urgenda* (Court of Appeal) (n 5) para 73.

<sup>110</sup> The judgment of the District Court was adopted late 2015, giving only five years for the government to adopt and implement additional mitigation action. It was not clear whether the government could rely on international carbon markets for compliance.

<sup>111</sup> See *supra* note 79.

<sup>112</sup> See e.g. Paris Agreement (n 33) art 2.2, enumerating ‘equity,’ ‘common but differentiated responsibilities and respective capabilities,’ and ‘national circumstances,’ as three complementary principles which should guide effort-sharing.

<sup>113</sup> *Urgenda* could be viewed as a case where the District Court and the Court of Appeal agreed on a top-down analysis, although considerations highlighted by both courts suggest that a bottom-up argument might have been persuasive. See below, note 131.

By contrast to the top-down approach, various bottom-up methods make it possible to interpret a State's general mitigation obligation without developing a complete theory of global cooperation on climate change mitigation.

Bottom-up methods typically differ from the top-down approach in two ways. First, they tend to put emphasis on the efforts made by States, rather than on their quantified outcomes. This reflects the true nature of general mitigation obligations as obligations of means—the obligation for States to strive towards a particular outcome—whether the obligation arises under general international law and international environmental law,<sup>114</sup> or as part of States' positive obligations in human rights law.<sup>115</sup> A State must, in particular, formulate, adopt and implement measures on climate change mitigation.<sup>116</sup> As such, the failure of a State to formulate any measure, adopt the measures it has formulated, or implement the measures it has adopted, could denote a breach of the State's general mitigation obligations, unless it could be justified (e.g. adoption of alternative measures). In particular, the growing recognition of the principles of non-regression and progression provides a useful benchmark to assess the evolution of a State's mitigation action.<sup>117</sup>

Second, bottom-up methods tend to provide more deference to the political processes through which a State's mitigation action is determined. The focus is on the internal consistency between the statements and the conduct of a State or between its efforts to address local and global environmental concerns, although considerations can be extended to compliance with transnational benchmarks for mitigation action (e.g. the prohibition of flaring in oil production).<sup>118</sup> While the top-down approach starts with the need for global cooperation on climate change mitigation, the bottom-up approach begins with an assessment of the capability of a State to take measures towards the prohibition of excessive GHG emissions.

Three important methods to interpret States' general mitigation obligations from a bottom-up approach are identified and discussed in the following. The first method is a test of the internal consistency of a State's policy and action on climate change mitigation. The second method relies on a comparison between the State's efforts to address local environmental concerns and its efforts to mitigate climate change to determine whether the State is implementing mitigation action commensurate with its capability. The third method relates to the implementation of emerging transnational good practices with regard to climate change mitigation.

#### A. Demand for internal consistency

A first method to test a State's compliance with its general mitigation obligations from a bottom-up approach is to rely on the State's own interpretation of these obligations. This method may rely alternatively, before various courts, on the concept of estoppel (common law) or the maxim '*Venire contra factum proprium non valet*' (civil law), both of which prevent a party to a dispute from arguing against what it has already admitted—or it could rely more generally on the general principle of good faith in international

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<sup>114</sup> See e.g. *Pulp Mills* (n 11) para 101, and generally B Mayer, 'Obligations of conduct in the international law on climate change: A defence' (2018) 27 *Review of European, Comparative and International Environmental Law* 130, 132-134.

<sup>115</sup> See e.g. International Covenant on Civil and Political Rights (adopted 16 December 1966, entered into force 23 March 1976) 999 UNTS 171, art 2.1; Human Rights Committee, General Comment No 31, 'The Nature of the Legal Obligation Imposed on States Parties to the Covenant' (29 March 2004) UN Doc CCPR/C/21/Rev.1/Add. 13, para 8.

<sup>116</sup> See e.g. UNFCCC (n 12) art 4.1(b) (all Parties) and 4.2(a) (Annex I Parties); Paris Agreement (n 33) art 4(2).

<sup>117</sup> See infra note 133 and 134.

<sup>118</sup> See infra note 177.

law.<sup>119</sup> Through these various grounds, a court is able to give weight to a State's own admission of what its general mitigation obligations imply.<sup>120</sup>

From the Cancún Pledges<sup>121</sup> to the Nationally Determined Contributions,<sup>122</sup> States have been called to communicate specific time-bound commitments on climate change mitigation through formal avenues. Other commitments have also been made through various regional forums or bilateral declarations.<sup>123</sup> International law obligations may arise from such commitments, either under the Paris Agreement,<sup>124</sup> or under the declarations themselves when they constitute a public expression of the intention of the State to be bound.<sup>125</sup> But even when these commitments create no legal obligation, they are statements of a State's own interpretation of its general mitigation obligations and ought to be given some weight when a court is called upon to assess whether the State has complied with these general mitigation obligations.

Thus, courts can frequently rely on a State's international commitments to interpret its general mitigation obligations. In *Demanda Generaciones Futuras v. Minambiente*, the Supreme Court of Colombia was to decide of an alleged breach of the obligation of the national government and other public authorities to protect human rights on the ground of a lack of action on climate change mitigation, in particular in relation to a creeping rate of deforestation. Relying on Colombia's 2011 Cancún Pledge<sup>126</sup> and on a joint statement of 2013<sup>127</sup> in which Colombia had pledged to stop all deforestation in its portion of the Amazonian forest by 2020, the Supreme Court construed Colombia's human rights obligations as implying an obligation to take measures to stop deforestation.<sup>128</sup> This method appears to have inspired other applicants, in particular in a case pending before the National Green Tribunal of India, where applicants seek an injunction of the government to take steps towards honouring its international commitments on climate change mitigation on the basis of the doctrine of public trust as well as constitutional provisions.<sup>129</sup>

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<sup>119</sup> See e.g. AX Fellmeth and M Horwitz, *Guide to Latin in International Law* (Oxford University Press 2009) 290; M Kotzur, 'Good Faith (Bona fide)' in *Max Planck Encyclopedia of Public International Law* (Oxford University Press, 2009); T Cottier and JP Müller, 'Estoppel' in *Max Planck Encyclopedia of Public International Law* (Oxford University Press 2007).

<sup>120</sup> The same analysis could apply *mutatis mutandis* to the obligation of non-State actors (e.g. local governments, corporations) in relation to their own statements about their obligation, if one assumes that such actors have a general obligation to mitigate climate change.

<sup>121</sup> See UNFCCC decision 1/CP.16 (n 32) paras 36 and 49. Cancún Pledges were compiled in 'Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention' UN Doc FCCC/SBSTA/2014/INF.6 (9 May 2014); and 'Compilation of information on nationally appropriate mitigation actions to be implemented by developing country Parties' UN Doc FCCC/SBI/2013/INF.12/Rev.3 (19 January 2015).

<sup>122</sup> See UNFCCC decisions 1/CP.19 (n 2) para 2(b); 1/CP.20 (n 2) para 8; 1/CP.21 (n 2) para 13; Paris Agreement (n 33) art 4.2.

<sup>123</sup> See for instance 'U.S.-China Joint Announcement on Climate Change' (Beijing, 12 November 2014) <<https://obamawhitehouse.archives.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>> para 3.

<sup>124</sup> See Paris Agreement (n 33) art 4.2.

<sup>125</sup> See B Mayer, 'International law obligations arising in relation to Nationally Determined Contributions' (2018) 7 *Transnational Environmental Law* 251, 262-270.

<sup>126</sup> See 'Compilation of information on nationally appropriate mitigation actions' (n 121) para 46(b)(i).

<sup>127</sup> 'Joint statement of Colombia, Germany, Norway and the United Kingdom on reducing emissions from deforestation in the Colombian Amazon' (19 November 2013) <[http://www.minambiente.gov.co/images/sala-de-prensa/Documentos/2013/noviembre/131119\\_joint\\_statement\\_colombia\\_germany\\_norway\\_uk.pdf](http://www.minambiente.gov.co/images/sala-de-prensa/Documentos/2013/noviembre/131119_joint_statement_colombia_germany_norway_uk.pdf)>.

<sup>128</sup> *Future Generations* (n 5).

<sup>129</sup> Memorandum for the applicants in *Pandey v. India* (25 March 2017) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20170325\\_Original-Application-No.-of-2017\\_petition-1.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20170325_Original-Application-No.-of-2017_petition-1.pdf)> para 12. Two cases have also been brought against the German Government for its alleged failure to comply with its regional and international commitments. See *Family Farmers v. German Government* and *Friends of the Earth Germany v. Germany*. Information on these cases is available on the Climate

Beside the implementation of international commitments, internal consistency may also be tested in the process through which decisions are made on mitigation action. Thus, in *Indigenous Environmental Network v. Department of State*, the District Court of Montana quashed the decision of the Department of State under the Trump Administration to authorize the construction of the Keystone XL Pipeline, which the same department had prevented in 2015 under the Obama Administration, on the ground that the agency had failed to provide ‘a reasoned explanation’ for disregarding prior factual findings relating to the impact of the project on climate change.<sup>130</sup> A similar reasoning can be applied in relation to a national target. In *Urgenda v. The Netherlands*, the District Court as well as the Court of Appeal of the Hague put some emphasis on prior statements whereby the Dutch government had recognized the need and the feasibility of a national target of 30% emission reduction by 2020 (1990 basis), highlighting in particular that the State had provided no scientific or economic justification for its change of mind.<sup>131</sup> This lack of consistency reinforced the conclusions drawn by the Courts in *Urgenda* based on a top-down approach.<sup>132</sup> These arguments relate closely to the emerging principle of non-regression, according to which States should ‘refrain from allowing activities or adopting norms that have the effect of reducing the global level of environmental protection guaranteed by current law,’<sup>133</sup> or even a more demanding principle of progression, as suggested in the Paris Agreement.<sup>134</sup>

Furthermore, States have arguably an obligation to review their mitigation action as needed on a regular basis and following relevant developments. Thus, in *Thomson v. Minister for Climate Change Issues*, the High Court of New Zealand held that the government had the obligation to ‘update [its] individual measures in light of’ new scientific information.<sup>135</sup> Nevertheless, the court concluded that no update was necessary in the case as issue as the applicants had not provided evidence of ‘any material change from the AR4 to the AR5 which affects the 2050 target.’<sup>136</sup> A similar line of argument was submitted by the appellants in *Plan B v. The Secretary of State for Business*, who contend that the British Government had the obligation to revise its 2050 target following recent developments, in particular the adoption of a more stringent objective in the Paris Agreement than in previous COP decisions.<sup>137</sup> Following the same line of reasoning,

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Change Litigation Databases developed by the Sabin Center for Climate Change Law (n 8). See also the amended complaint of Mbabazi in *Mbabazi v Attorney General* (Uganda) (2 August 2015) <<https://static1.squarespace.com/static/571d109b04426270152febe0/t/58dedb883e00be3d0a71899e/1491000234231/UgandaAmendedPlaint.pdf>>, seeking compliance with treaties, in particular the obligation to conduct GHG emission inventories and to take measures for climate change mitigation and adaptation.

<sup>130</sup> *Indigenous Environmental Network v. US Department of State* (2018) --- F.Supp.3d ----, 2018 WL 5840768 (DC Mont).

<sup>131</sup> See e.g. *Urgenda* (District Court) (n 5) paras 4.29, 4.70; *Urgenda* (Court of Appeal) (n 5) para 52.

<sup>132</sup> A similar argument is now presented by the applicants in *Klimaatzaak*, which rely on objectives that Belgium promoted in climate negotiations for all Annex I Parties and, in their proceedings against the regional Government of Wallonia, on a regulation containing a long-term mitigation target. See memorandum of *Klimaatzaak* (n 16) paras 37, 84 and 88.

<sup>133</sup> See e.g. Preliminary Draft of a Global Pact for the Environment (24 June 2018) <<http://pactenvironment.emediaweb.fr/wp-content/uploads/2018/11/EN.pdf>> art 17.

<sup>134</sup> See Paris Agreement (n 33) art 4.3; see also ‘Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement’ in annex of decision -/CMA.1 (14 December 2018), para 121(s).

<sup>135</sup> *Ibid* para 91.

<sup>136</sup> *Ibid* para 96.

<sup>137</sup> See Plan B Earth, ‘Statement of facts and grounds’ (8 December 2017) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20171207\\_Claim-No.-CO162018\\_points-of-claim-1.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2017/20171207_Claim-No.-CO162018_points-of-claim-1.pdf)> para 191(a); and Plan B Earth and others, ‘Appellants’ Skeleton Argument in Support of an Application for Permission to Appeal against the Refusal of Permission to Apply for Judicial Review’ (26 July 2018) <[http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20180726\\_Claim-No.-CO162018\\_appeal.pdf](http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/non-us-case-documents/2018/20180726_Claim-No.-CO162018_appeal.pdf)> para 7(b). On the case, see above note 38.



UN High Commissioner for Human Rights Michelle Bachelet argued in the run-up to COP24 that, in the context of an ambition gap, States ‘have an obligation to strengthen their mitigation commitments in order to prevent the worst impacts of climate change.’<sup>138</sup>

Last but not least, States’ general mitigation obligations can be interpreted as implying that States must act consistently with the long-term objective of a cessation of their interference with the climate system.<sup>139</sup> Thus, the UNFCCC recognizes ‘*stabilization* of greenhouse gas concentrations in the atmosphere’<sup>140</sup> as a collective objective, while the Paris Agreement calls its Parties to ‘formulate and communicate long-term low greenhouse gas emission development strategies.’<sup>141</sup> In this context, States should be able to justify how current action is consistent with such a long-term strategy. While this method does not seem to have been decided by any court yet, it has already been invoked by the applicants in *Juliana v. US*, who submitted that the US has ‘to prepare and implement an enforceable national remedial plan to phase out fossil fuel emissions and draw down excess atmospheric CO<sub>2</sub> so as to stabilize the climate system.’<sup>142</sup> In turn, once such a long-term strategy has been adopted, courts ought to have a hard look at any alleged failure of the government to achieve intermediary steps, for instance by ensuring that the State has a strategy to limit total cumulative national emissions within a certain ‘budget.’<sup>143</sup> As discussed above, even though a State probably does not have an obligation to adopt the least-cost mitigation pathway,<sup>144</sup> it must not postpone mitigation action if this results in disproportionate costs or additional impacts.<sup>145</sup> This method may lead to outcomes very similar to those of a top-down approach, but without requiring a court to determine a global mitigation objective and a State’s requisite contribution to its achievement.

Thus, this method allows to interpret general mitigation obligations as a patchwork of specific steps that States must take—and that courts can test—, in particular the formulation a long-term objective to cease any substantial net GHG emissions and the adoption, reviews and effective implementation of measures of an increasing ambition consistent with this long-term strategy. Various institutional developments fostered by climate treaties such as the Paris Agreement enhance the relevance of this method. For instance, the review of national mitigation action under the transparency framework<sup>146</sup> and under the compliance mechanism<sup>147</sup> of the Paris Agreement will help prospective applicants to identify and document situations where a State fails to act on its promises, and courts to assess such shortcomings. Domestic litigation could help to ensure that national authorities give strong consideration to the possibility of review their mitigation action every five years following the outcomes of global stocktaking exercises.<sup>148</sup> The demand for internal consistency can thus go a significant way in ensuring that national governments do not evade their responsibilities.

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<sup>138</sup> UN Office of the High Commissioner for Human Rights, ‘Open-Letter from the United Nations High Commissioner for Human Rights on integrating human rights in climate action’ (21 November 2018) <<https://www.ohchr.org/Documents/Issues/ClimateChange/OpenLetterHC21Nov2018.pdf>> 2.

<sup>139</sup> See B Mayer, ‘State Responsibility and Climate Change Governance: A Light through the Storm’ (2014) 13 Chinese Journal of International Law 539.

<sup>140</sup> UNFCCC (n 12) art 2.

<sup>141</sup> Paris Agreement (n 33) art 4(19).

<sup>142</sup> *Juliana et al*, ‘First Amended Complaints for Declaratory and Injunctive Relief’ (10 September 2015) Case No.: 6:15-cv-01517-TC

<<https://static1.squarespace.com/static/571d109b04426270152febe0/t/57a35ac5ebbd1ac03847eece/1470323398409/YouthAmendedComplaintAgainstUS.pdf>> seventh prayer for relief.

<sup>143</sup> See also Petition of Ali (n 16) 38 (prayers d-e).

<sup>144</sup> See *supra* note 84.

<sup>145</sup> See *supra* note 85.

<sup>146</sup> Paris Agreement (n 33) art 13.

<sup>147</sup> Paris Agreement (n 33) art 15.

<sup>148</sup> Paris Agreement (n 33) art 14.3, noting that the exercise ‘shall inform Parties in updating and enhancing, in a nationally determined manner, their action and support.’

## B. Obligation of non-discrimination

Beside internal consistency, an alternative way to assess a State's mitigation action from a bottom-up perspective uses the State's policies on the protection of the local environment as a benchmark. A State's general mitigation obligations implies an obligation to cooperate with other States 'in good faith and in a spirit of partnership'<sup>149</sup>—and hence, at the very least, no to seek to free-ride on the efforts of others.<sup>150</sup> To assess a State's fair share in global cooperation on climate change mitigation without the determination of a global mitigation objective and a theory of equity, it is possible to use the State's efforts to protect its local environment as an indication of its capacity and willingness to invest in environmental protection. For instance, a State which adopts measures to reduce air, water and land pollution within its territory, but systematically excludes climate change mitigation from the scope of these measures without particular justification, is probably not displaying its 'highest possible ambition'<sup>151</sup> on climate change mitigation. Likewise, a State which invests massive resources to address local environmental concerns, but comparatively very little to mitigate climate change, is also seemingly failing to cooperate in good faith to global efforts on climate change mitigation.

This method relates to the more general idea that States have an obligation not to discriminate in their environmental policies against environmental concerns of a transboundary or global nature. Thus, it has been suggested that States have the obligation to 'apply their own environmental laws without discriminating between internal environmental harm and environmental harm to areas external to the State.'<sup>152</sup> The principle of non-discrimination in environmental law has generally been invoked in cases where there were no precise international norms and no political support to far-reaching harmonization of national laws. It is of greater practical relevance in countries with demanding domestic standards, which, in environmental matters, tend to be developed countries.<sup>153</sup> From a procedural standpoint, this principle requires that the persons affected by transboundary environmental harm have equivalent recourses and remedies as the persons affected within the State's own territory.<sup>154</sup> From a more substantive standpoint,

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<sup>149</sup> 'Rio Declaration' (n 11) principle 27. See also UNFCCC (n 12) seventh recital.

<sup>150</sup> See for instance EA Posner and D Weisbach, *Climate Change Justice* (Princeton University Press 2010) 170, who, having rejected most other ethical grounds for international cooperation on climate change cooperation, admit nonetheless that free-riding a Pareto-optimal treaty would be 'unethical.'

<sup>151</sup> Paris Agreement (n 33) art 4(3)

<sup>152</sup> N Craik, *The International Law of EIA* (Cambridge University Press 2010) 55. See also A Boyle, 'Human Right and the Environment: Where Next?' (2012) 23 *European Journal of International Law* 613, 635, approaching this principle from a human rights angle; Draft Guidelines on the protection of the atmosphere (n 12) commentary under guideline 9, para 13.

<sup>153</sup> See H Smets, 'Le principe de non-discrimination en matière de protection de l'environnement' (2000) 4 :1 *Revue Européenne de Droit de l'Environnement* 3. See also J Ebbesson, 'Public participation' in D Bodansky, J Brunnée and E Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press 2007) 696-698.

<sup>154</sup> See Convention on the Protection of the Environment (adopted 19 February 1974, entered into force 5 October 1976) 1092 UNTS 279 (Nordic Environmental Protection Convention), art 3; Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (adopted 25 June 1998, entered into force 30 October 2001) 2161 UNTS 447 (Aarhus Convention) art 3.9; African Convention on the Conservation of Nature and Natural Resources (Revised) (adopted 11 July 2003, entered into force 23 July 2016) <[https://au.int/sites/default/files/treaties/7782-treaty-0029 -  
\\_revised\\_african\\_convention\\_on\\_the\\_conservation\\_of\\_nature\\_and\\_natural\\_resources\\_e.pdf](https://au.int/sites/default/files/treaties/7782-treaty-0029_-_revised_african_convention_on_the_conservation_of_nature_and_natural_resources_e.pdf)> art XVI.2; Convention on the Law of the Non-navigational Uses of International Watercourses (adopted 21 May 1997, entered into force 17 August 2014) 36 ILM 700 (International Watercourses Convention) art 32; OECD, 'Some principles concerning transfrontier pollution' in annex of Recommendation of the Council on Principles Concerning Transfrontier Pollution (14 November 1974) C(74)224, para 5; 'Draft articles on Prevention of Transboundary Harm from Hazardous Activities' in Yearbook of the International Law Commission, 2001, vol. II, Part Two, 148, art 15; 'Draft principles

this principle suggests that the transboundary impact of an activity be weighed as if they occurred within the State's own territory,<sup>155</sup> and the same standards should be applied.<sup>156</sup>

The principle of non-discrimination can be extended to global environmental concerns such as climate change to suggest that States must not exclude the application of their environmental laws to climate change mitigation without justification. This may apply in relation to both procedural and substantive standards. On the one hand, States must not arbitrarily exclude climate change mitigation from their general procedures on environmental protection. This notion has been reflected in debates on the scope of the environmental assessment (i.e. environmental impact assessment and strategic environmental assessment) of proposed activities likely to have a significant impact on the environment. In various countries, debates have taken place regarding the extension of such procedures to integrate an assessment of the impact of proposed activities on the climate system. Most courts decided that considerations for climate change mitigation had to be mainstreamed in such procedures,<sup>157</sup> and the courts which decided otherwise did so only because they considered that more appropriate measures offering equivalent constraints were applied to climate change mitigation.<sup>158</sup> Like any environmental assessment, a climate assessment ensures that a proposed activity is consistent with the national mitigation strategy, that alternatives have been considered, and that all costs and benefits have been weighed.<sup>159</sup>

On the other hand, the principle of non-discrimination may also apply with regard to substantive matters. In practice, it may be particularly difficult to conduct a meaningful comparison between the efforts of a State to address local environmental concerns and to mitigate climate change. Litigation could build on experience with diffuse and indirect discriminations in human rights and economic law.<sup>160</sup> Certain measures could be considered inherent discriminatory, for instance a hypothetical policy to invest heavily in 'clean coal' technologies, approached as technologies that reduce air pollution without addressing carbon dioxide emissions. Likewise, the failure of a State to take measures on climate change mitigation under a general instrument on environmental protection could appear discriminatory. Thus, in *Environmental Protection Agency v. Massachusetts*, the US Supreme Court held that an agency's refusal to regulate GHG emissions among other air pollutants from motor vehicles was 'arbitrary, capricious, or otherwise not in accordance with the law.'<sup>161</sup> The Court highlighted matters of internal consistency (i.e. the first bottom-up method described above), for instance by noting that the Environmental Protection Agency had provided 'ardent support for various voluntary emission-reduction programmes,'<sup>162</sup> thus recognizing the importance of any 'incremental step'<sup>163</sup> towards the mitigation of climate change. But this inconsistency with a statutory

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on the allocation of loss in the case of transboundary harm arising out of hazardous activities' in Yearbook of the International Law Commission, 2006, vol. II, Part Two, 59 principle 6, para 2.

<sup>155</sup> See Nordic Environmental Protection Convention (n 154) art 2; International Watercourses Convention (n 154) art 32.

<sup>156</sup> See 'Some principles concerning transfrontier pollution' (n 154) para 4.

<sup>157</sup> See e.g. *Center for Biological Diversity* (n 27); *Barbone and Ross (on behalf of Stop Stansted Expansion) v. Secretary of State for Transport* [2009] EWHC 463; *Greenpeace New Zealand v. Northland Regional Council* [2007] NZRMA 87; *Australia Conservation Foundation v. Latrobe City Council* (2004) 140 LGERA 100; *Gray v. Minister for Planning and Others* [2006] NSWLEC 70; *Earthlife Africa Johannesburg v. Minister of Environmental Affairs* (case 65662/2016) [2017] ZAGPPHC 58, [2017] 2 All SA 519 (GP) (8 March 2018); cases E 875/2017 and E 886/2017 (2 August 2017) (Constitutional Court, Austria). See also Memorandum for the applicants in *Pandey* (n 129), requesting the National Green Tribunal to order the Indian government to extend the procedure on environmental impact assessment to include consideration of the impacts of proposed activities on climate change.

<sup>158</sup> *Environmental Defence Society v. Auckland Regional Council* [2002] NZRMA 492 (EnvC) para 88.

<sup>159</sup> See generally B Mayer, 'Climate Impact Assessment as an Emerging Obligation Under Customary International Law' (4 October 2018) <<https://ssrn.com/abstract=3090793>>.

<sup>160</sup> See generally S Fredman, *Discrimination Law* (2<sup>nd</sup> ed, Clarendon 2011) chapter 4.

<sup>161</sup> *Environmental Protection Agency v Massachusetts* (2007) 549 U.S. 497, 501.

<sup>162</sup> *Ibid* 526.

<sup>163</sup> *Ibid* 524.

provision reflected the agency's reluctance to impose any mandatory standard for climate change mitigation, whose impacts mostly take place beyond the State's territory.

### C. Benchmarks

A third bottom-up method interprets a State's general mitigation obligation based on a comparison with the mitigation action carried out by its peers. Thus, the action of other States in broadly similar circumstances is used as evidence States' common interpretation of their general mitigation obligations.<sup>164</sup> The advantage of this method is that it is relatively straightforward (even though there could be some discussions about what precisely constitutes a relevant benchmark): compared with the top-down approach, this method does not require a comprehensive theory of global cooperation on climate change mitigation. Its downside, however, stems from its comparative basis: this method will lead to conservative interpretations of States' general mitigation obligations as long as the comparator—States' current mitigation action—is inconsistent with a global mitigation objective.<sup>165</sup>

In its most rudimentary form, this method consists in a comparison of a State's overall mitigation action with that of others. The High Court of New Zealand followed this method in *Thomson v. Minister for Climate Change*, holding that New Zealand's 2030 mitigation target (30% emission reduction, compared with 2005) was 'fair' when compared with those of Australia, Canada, Japan, the EU and the US (all falling between 25% and 36% emission reduction on the same basis).<sup>166</sup> A similar argument was made by the applicants in *Klimaatzaak v Belgium*, suggesting that Belgium's mitigation target should be compared with those of Germany, Denmark, the United Kingdom and Sweden.<sup>167</sup>

This method (like all others) must be used with restraint. Leaving aside the selection of comparators, this method also fails to take into account any national circumstances that may suggest, for instance, different capabilities among these developed countries. Besides the overall rate of emission reduction, comparisons could focus on the efforts carried out by States, with variables relating to the cost of mitigation measures (e.g. marginal abatement cost, overall proportion of GDP invested in climate change mitigation), the price charged on GHG emissions (e.g. level of carbon tax, price of emission allowance under a market mechanism), or the emissions themselves (e.g. GHG intensity in particular sectors, deviation from business as usual).<sup>168</sup> No single comparison based on a single variable could be conclusive, but a bundle of comparisons could provide a general idea of whether a State's mitigation action is on a par with others.

In a more elaborate form, this method seeks to identify more specific benchmarks from the emerging transnational recognition of good practices in climate change mitigation. These benchmarks may relate to procedures, actions or outcomes that States, or some groups of them, have largely recognized as at least an aspirational good practice. Such benchmarks may also have been promoted by international organizations or influential non-State actors, such as industry organizations capable of identifying realistic sectorial

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<sup>164</sup> From a customary international law perspective, State practice may provide evidence of acceptance as law (*opinio juris*) when the practice goes against the State's interests and thus cannot be explained without a sense of duty. See *Military and Paramilitary Activities in and Against Nicaragua (Nicaragua v. US)* (Judgment on Merits) [1986] ICJ Rep 14, paras 204-208.

<sup>165</sup> See above note 2.

<sup>166</sup> *Thomson* (n 38) para 166.

<sup>167</sup> Memorandum of *Klimaatzaak* (n 16) para 94.

<sup>168</sup> See JE Aldy and WA Pizer, 'Alternative Metrics for Comparing Domestic Climate Change Mitigation Efforts and the Emerging International Climate Policy Architecture' (2016) 10 *Review of Environmental Economics and Policy* 3. See also A Zahar, 'The Polluter-Pays Principle in International Climate Change Law: Are States Under an Obligation to Price Carbon Emissions?' (3 December 2018) <<https://ssrn.com/abstract=3281677>>, which essentially implies that States' general mitigation obligation under customary international law requires them to put a level of constraint, or 'price,' on GHG emissions.

opportunities for mitigation action in a credible way. Such benchmarks are not necessarily binding *per se*, but they are relevant in interpreting States' general mitigation obligations because they provide an objective point of comparison. The systematic failure of a State to take any measure towards compliance with such benchmarks may evidence a breach of general mitigation obligations.

Some of the clearest benchmarks at the moment are of a procedural nature. For instance, States have largely recognized *the adoption and publication of progressive mitigation targets on a regular basis* as part of any State's bona fide action on climate change mitigation. The process, created by the UNFCCC,<sup>169</sup> is now institutionalized through procedural obligations under the Paris Agreement.<sup>170</sup> Yet, as some States may never ratify the Paris Agreement or then withdraw from it, this procedural benchmark would remain relevant to the interpretation of their general mitigation obligations.

Likewise, States have largely recognized *the scientific assessment of, and public consultations on activities likely to result in significant amounts of GHG emissions* as a benchmark. As a corollary of the due diligence obligation of a State on its territory and of the no-harm principle, the International Court of Justice recognized 'the requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context.'<sup>171</sup> A number of treaties apply a similar obligation when the risk affects an area beyond national jurisdiction<sup>172</sup> or biological diversity.<sup>173</sup> Lawmakers, national agencies and courts in various countries extended existing EA processes to include a climate assessment,<sup>174</sup> and the Member States of the UN Economic Commission for Europe recognized the relevance of, in particular, strategic environmental assessments.<sup>175</sup> This suggests that climate assessment is becoming a procedural standard on its own—not just under the principle of non-discrimination, as described in the previous subsection, in States which already have a general environmental assessment procedure in place.

Benchmarks of a substantive nature are also progressively emerging from the practice of States. For instance, there has been a growing support to the idea that *economic incentives to GHG-intensive activities are to be reduced*. For instance, the members of the G20 have affirmed a commitment to phase out fossil fuel subsidies over the medium-term.<sup>176</sup> While these statements do not directly create a legal obligation, they should be taken into consideration when interpreting the general mitigation obligations of States.

Likewise, a growing number of interested States and other interested actors have given support to the idea of *a prohibition of routine 'flaring' (i.e. the burning of waste gas) during the production of oil*. In particular, twenty-seven national governments and one local government (California) have joined the World Bank's 'Zero Routine Flaring by 2030' initiative, along with various oil companies and international financial

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<sup>169</sup> UNFCCC (n 12) art 4.1(b).

<sup>170</sup> Paris Agreement (n 33) art 4.2-3.

<sup>171</sup> *Pulp Mills* (n 11) para 204. See also *Certain Activities* (n 11) para 101; Espoo Convention on Environmental Impact Assessment (adopted 25 February 1991, entered into force 10 September 1997) 1989 UNTS 309 (Espoo Convention).

<sup>172</sup> UNCLOS (n 13) art 206; Protocol on Environmental Protection to the Antarctic Treaty (adopted 4 October 1991, entered into force 14 January 1998) 30 ILM 1455. See also *Responsibilities and obligations of States with respect to activities in the Area*, Case No 17 (Advisory opinion) ITLOS Seabed Disputes Chamber (2011) 50 ILM 458, para 148; *South China Sea (Philippines v. China)* PCA case No 2013-19 (Award on the Merits) (2016) paras 987-993.

<sup>173</sup> Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79, art 14.1(a).

<sup>174</sup> See Mayer, 'Climate Impact Assessment' (n 159).

<sup>175</sup> See 'Minsk Declaration' (16 June 2017) reproduced in UN Doc ECE/MP.EIA/23/Add.1-ECE/MP.EIA/SEA/7/Add.1, para 9.

<sup>176</sup> See e.g. 'G20 Hamburg Climate and Energy Action Plan for Growth' (7-8 July 2017) para F2; 'G20 Leaders Statement: The Pittsburgh Summit' (24-25 September 2009) para 29.

institutions.<sup>177</sup> Even though the initiative does not appear to be formally binding, these governments have contributed to framing a benchmark which can help to interpret the general mitigation obligations of States. Thus, the Oslo District Court in *Greenpeace Norway v. Government of Norway* held that the approval of oil extraction projects was lawful, noting, among other things, that the government had banned routine flaring.<sup>178</sup>

Additional benchmarks will inevitably emerge as States continue to reduce their GHG emissions in the coming years and decades, forming a more advanced consensus on the need to prescribe, ban or regulate particular activities, processes, products, substances, or policy tools. Some governments have already taken steps towards preventing deforestation,<sup>179</sup> banning coal for power generation,<sup>180</sup> preventing the sale of petrol and diesel vehicles,<sup>181</sup> and restraining the production of fossil fuels,<sup>182</sup> among others, while a transnational campaign is calling for restrictions in investments in the fossil fuel sector.<sup>183</sup> Once a critical number of States participate to these initiatives, benchmarks will progressively be set, that courts could use as evidence to determine whether a State is acting in compliance with its general mitigation obligations.

## V. Conclusion: two complementary approaches

This article identified two distinct approaches to the interpretation of States' general mitigation obligations. The top-down approach seeks to define a global, long-term mitigation objective and to break it down in time and space to determine the requisite mitigation action for a given State at a given time. By contrast, bottom-up methods interpret a State's general mitigation obligations based on the demand for internal consistency, the obligation of non-discrimination against environmental concerns of a transboundary or global nature, and emerging or already well-established benchmarks for mitigation action.

Both approaches have their advantages and their limitations. The top-down approach provides a comprehensive interpretation of a State's obligation based on a theory of global cooperation on climate change mitigation as a whole, whereas the bottom-up approach can only identify some punctual elements of a State's general mitigation obligations. On the other hand, while the top-down approach relies on a number of adventurous assumptions and must therefore be approached with great caution, bottom up methods can be significantly more precise. It is for instance much easier for a Court to order a State to implement a target which it has previously recognized as necessary and feasible (bottom-up approach), than to determine what the State's 'highest possible ambition'<sup>184</sup> really is in a true construction of the State's general mitigation obligations (top-down approach)—even though the target once recognized by a State may fall short of the State's highest possible ambition. In sum, the bottom-up approach allows a clear determination of some particular implications of a State's general mitigation obligations, whereas the top-down approach provides a broader but more approximate interpretation.

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<sup>177</sup> World Bank, 'Zero Routine Flaring by 2030' (nd) <<http://www.worldbank.org/en/programs/zero-routine-flaring-by-2030>>. Instead of being burnt, the waste gas is to be collected and used or stored in deep geological formations.

<sup>178</sup> *Greenpeace Nordic Association* (n 16) 27.

<sup>179</sup> See for instance *Future Generations* (n 5).

<sup>180</sup> BH Meijer, 'Netherlands to ban coal-fired power plants in blow to RWE' (18 May 2018) Reuters <<https://www.reuters.com/article/us-netherlands-energy-coal/netherlands-to-ban-coal-fired-power-plants-in-blow-to-rwe-idUSKCN1IJ1PI>>.

<sup>181</sup> A Chrisafis and A Vaughan, 'France to ban sales of petrol and diesel cars by 2040' (The Guardian, 6 July 2017) <<https://www.theguardian.com/business/2017/jul/06/france-ban-petrol-diesel-cars-2040-emmanuel-macron-volvo>>.

<sup>182</sup> P Erickson, M Lazarus and G Piggot, 'Limiting fossil fuel production as the next big step in climate policy' (2018) 8 *Nature Climate Change* 1037.

<sup>183</sup> See e.g. C Kormann, 'The Divestment Movement to Combat Climate Change Is All Grown Up' (The New Yorker, 14 September 2018) <<https://www.newyorker.com/news/dispatch/the-divestment-movement-to-combat-climate-change-is-all-grown-up>>.

<sup>184</sup> Paris Agreement (n 33) art 3(4).

In practice, the top-down and bottom-up approaches are not necessarily exclusive; they often play a complementary role. In *Urgenda*, for instance, the District Court and the Appeal Court of the Hague both highlighted that the State's past statements on a appropriateness and feasibility of a 30% emission reduction target confirmed the conclusions of a top-down analysis according to which the Netherlands should aim at least at 25% emission reduction by 2020 (1990 basis).<sup>185</sup> In other cases, a top-down analysis may be used as evidence of circumstances requiring a revision of a national mitigation target (as suggested by the appellants in *Plan B*) rather than as evidence that a specific target should be adopted.<sup>186</sup> In such cases, given the complexity of determining the fair share of a given State to global cooperation on climate change mitigation, a procedural remedy such as the order to revise the national mitigation target may be more in line with the subsidiary role of judicial institutions.

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<sup>185</sup> See *Urgenda* (District Court) (n 5); *Urgenda* (Court of Appeal) (n 5).

<sup>186</sup> *Plan B Earth*, 'Statement of facts and grounds' (n 137) para 242.