Editorial

Special Issue: Legal Aspects of the 1.5°C Target

All countries recognise the existence of climate change, its anthropogenic nature and the need for international action on climate change mitigation.¹ Nevertheless, the level of global ambition on climate change mitigation has been the object of a protracted debate. Science, here, is of little help: there is no consensus among scientists about a 'safe' level of anthropogenic interference with the climate system.² The Copenhagen Accord was the first time many States agreed on a specific long-term objective on climate change mitigation, namely: 'to hold the increase in global temperature below 2 degrees Celsius.'³ This was understood to refer to an increase in global average surface temperature by the end of the 21st Century, as compared to pre-industrial (ie 19th Century) levels.

This '2°C target' was formally endorsed the following year with the adoption of the Cancún Agreements.⁴ Yet, the Cancún Agreements suggested that the adequacy of this objective should be reviewed periodically, starting in 2013-2015, in particular with a view to strengthening it in relation to a '1.5°C target.'⁵ Through this review process and largely as the result of a diplomatic campaign led by small island developing States and the European Union, the 21st Conference of the Parties to the United Nations Framework on Climate Change (COP21) in Paris ultimately agreed to include a mention a 1.5°C target, along with a 2°C target, in a rather circumvoluted definition of the collective objective of the Paris Agreement on climate change mitigation:

'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 levels, recognizing that this would significantly reduce the risks and impacts of climate change'⁶

From a scientific perspective, there are surely 'better ways to measure the stress that humans are placing on the climate system than the growth of average global surface temperature.'⁷ Although human activities are the leading factor influencing changes in global average temperature at a decennial scale, some variations are concomitantly caused by various natural factors. Thus, the ability of humankind to achieve a determined temperature target at a particular time depends in part on factors not within the control of humankind. Nor is there any scientific certainty as to the specific patterns of greenhouse gas emissions

DOI: 10.21552/cclr/2018/1/3

1 United Nations Framework Convention on Climate Change, art 2.

2 See generally Andreas Fischlin, 'Background and Role of Science' in Daniel Klein et al, *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford University Press, 2017) 3, 9.

3 See Copenhagen Accord, in annex of decision 2/CP.15 (18-19 December 2009), para 2. For the prior origins of the 2°C target, see Samuel Randalls, 'History of the 2°C climate target' (2020) 1:4 WIREs Climate Change 598.

4 Decision 1/CP.16, para 4.

5 Decision 1/CP.16, paras 4 and 138-139.

6 Paris Agreement (12 December 2015), art 2.1(a).

7 David G Victor and Charles F Kennel, 'Climate policy: Ditch the 2 °C warming goal' (2014) 514 Nature 30. See also Reto Knutti et al, 'A scientific critique of the two-degree climate change target' (2016) 9 Nature Geoscience 13.

which would be compatible with a 1.5°C target or a 2°C target. Climate change projections are probabilistic in nature, and not everything is known about complex, non-linear feedback mechanisms. Neither the Copenhagen Accord nor the Paris Agreement specifies the level of certainty that States should have, collectively, that they are heading towards a particular warming by the end of the century. A collective objective on climate change mitigation would have been clearer and more specific if it had been expressed in terms of atmospheric concentrations in greenhouse gases rather than in terms of increase in global average temperature.

Despite these uncertainties regarding the responses of the climate system to anthropogenic stresses, it is, at present, almost certain that current greenhouse gas emissions are inconsistent with the least-cost scenario for holding the warming of global average temperature below 2°C by the end of the century – let alone 1.5°C. The Intended Nationally Determined Contributions (INDCs) communicated by States and the European Union prior to or shortly after COP21 are estimated to divert the emissions pathway only marginally from business as usual.⁸ Few States have increased their ambition since then; but the United States, the second-largest greenhouse gas emitter, has indicated under the Trump administration that it would cease any effort towards the implementation of its INDC. Temperature would likely increase by around 3.2°C by the end of the Century if all countries were to fully implement their INDCs,⁹ instead of around 4.0°C in a business-as-usual scenario.¹⁰ The best scientific estimate as of early 2018 is that global surface temperature has already increased by about 1.1°C above pre-industrial levels.¹¹ In other words, three-fourths of the 1.5°C target has already been reached, and 55% of the 2°C target – and greenhouse gases are being emitted in larger quantities globally than ever before.

In 2014, David G. Victor and Charles F. Kennel expressed the view that a 2°C target was ‘effectively unachievable,’ unless one was to accept ‘heroic assumptions ... such as almost immediate global cooperation and widespread availability of technologies such as bioenergy carbon capture and storage methods that do not exist even in scale demonstration.’¹² Their view is largely shared, if not necessarily with regard to the 2°C target, at least as to a 1.5°C target. Current levels of emissions are not only *inconsistent*, but also nearly *incompatible* with the objective of avoiding an additional 0.4°C increase in global average temperature. Compatible scenarios are characterised by a peak in greenhouse gas emissions before 2030, followed by a rapid decline over the following two to three decades.¹³ Some of these scenarios imply a higher ‘peak warming’ during the 21st Century, generally between 1.5 and 1.8°C, before the increase in global average temperature reverts to 1.5°C in 2100.¹⁴ If there is still a narrow window of opportunity for practicable pathways towards

8 UNFCCC Secretariat, ‘Aggregate effect of the intended nationally determined contributions: an update,’ doc FCCC/CP/2016/2 (2 May 2016).

9 UN Environment, ‘The Emissions Gap Report 2017’ (November 2017) xvii.

10 IPCC, Climate Change 2014: Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge University Press, 2014) 11.

11 World Meteorological Organization, *Statement on the State of the Global Climate in 2016* (WMO, 2017) 2. See also LV Alexander et al, ‘Summary for Policymakers’ in TF Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013) 3, 5, estimating that, by then, temperature had increased by 0.85°C.

12 Victor and Kennel, *supra* note Error: Reference source not found, 30-31.

13 Joeri Rogelj et al, ‘Scenarios towards limiting global mean temperature increase below 1.5 °C’ (2018) *Nature Climate Change* (forthcoming).

14 *ibid.*

limiting the increase in global temperature to 1.5°C, this window of opportunity is rapidly shrinking at present, as the sense of urgency conveyed at the international level is not yet fully reflected in the domestic action of all countries through immediate application of stringent mitigation laws and policies.

While noting that the 1.5°C target is extraordinarily ambitious, one should not fail to mention that it is also far from a panacea. It is the first time that humankind comes to terms with its massive impact on the global environment in such a way. Never before have States agreed that global environmental harm of this scale – the addition of at least 1.5°C on Earth's surface and its far-reaching consequences – is virtually unavoidable.¹⁵ A world with 1.5°C of warming will be very different for many stakeholders, whom are already being affected by the early-onset consequences of 1.1°C warming. More low-lying islands and coastal areas will become uninhabitable as the sea-level rises, while other regions will struggle to retain access to sufficient quantities of freshwater. Extreme weather events will continue to become more extreme and more frequent in diverse regions of the world. Food production and human health will be affected in various ways. Biological diversity will no doubt be further reduced.

Likewise, efforts to limit the increase in global average temperature to 1.5°C will also have wide-ranging consequences. Massive cuts in greenhouse gas emissions will transform modern economies and re-orient development processes in lower-income countries. A rapid, large-scale deployment of bioenergy with carbon capture and storage (BECCS) is almost certain to be part of any successful set of efforts to limit warming to 1.5°C.¹⁶ Beyond that, a quick and radical transformation will be needed not only in power generation and industrial production, but also in transportation, agriculture and buildings, among others. If they are to be successful, measures pursuing a 1.5°C target – or even a 2°C target – will change our way of life in many fundamental ways in the decades and even the years to come. This will be the first time that a global concerted effort is made to generate an economic, social and cultural revolution, although this revolution could take very different forms in different countries and regions. Like any revolution, there will be winners and losers. The distribution of the unintended consequences of stringent mitigation measures will challenge the capacity of nations to cooperate in the decades to come.

This special issue has gathered contributions from scholars and practitioners from around the world exploring various legal aspects of the 1.5°C target.

The first article discusses ways to address the gap between the global objective formulated by the Paris Agreement and the national commitments communicated as nationally determined contributions (NDCs). In particular, Feja Lesniewska and Linda Siegele offer a prime analysis of the so-called 'Talanoa Dialogue,' a process established by the Fiji presidency of COP23 in order to carry on the long-awaited 2018 facilitative dialogue and to pave the road to the global stocktake (GST) under the Paris Agreement. Characterized by its cooperative spirit, the Talanoa Dialogue is to bring a community-style discussion within the UNFCCC negotiations. While recognizing the challenges that the Talanoa Dialogue will face, Lesniewska and Siegele describe this mechanism as an important opportunity to

15 That 1.5°C of warming is unavoidable is implied when art 2 of the Paris Agreement only refers to efforts to 'limit' warming to 1.5°C.

16 See Kevin Anderson and Glen Peters, 'The trouble with negative emissions' (2016) 354:6309 *Science* 182.

enhance nationally-determined ambition under the Paris Agreement.

In the next article, Reuben Makomere and Kennedy Liti Mbeva remind us that many of the mitigation commitments expressed in the nationally determined contributions of developing countries are conditional to the provision of international support by better-off countries. Conditionality of mitigation efforts in developing countries is in line with the principle of common but differentiated responsibilities and respective capabilities, and with the concept of equity in climate action. However, this also means that the effective delivery of commensurate support by high income countries will be instrumental to the success of the Paris Agreement. As the authors note, there is currently great uncertainty as to the capacity and willingness of high-income countries to provide commensurate financial, technical and capacity-building support to developing States. The 2018 facilitative dialogue and the subsequent global stocktake exercises may be opportunities to build trust and enhance support to enable effective climate action in developing countries.

Then, Maria Socorro Manguiat and Andy Raine look at the national legal frameworks which seek to turn NDCs into reality, making use of a new, extensive database on 'Law and Climate Change Toolkit' developed by UN Environment in close collaboration with the UNFCCC Secretariat and the Commonwealth Secretariat. Manguiat and Raine show that many new laws are being adopted throughout the world at a pace never seen before. These laws often have common or, at least, comparable features, and national governments could learn a lot from comparing their respective experiences. More than the number of laws, Manguiat and Raine highlight the importance for States to adopt 'good' climate laws. They suggest that 'good' climate laws do not only address climate change effectively, but are also consistent with broader considerations such as the respect for human rights and the rule of law.

Building upon the conditionality of NDCs and the need to develop national legal frameworks, Takako Morita and Christina Pak discuss how domestic laws and institutions may facilitate or hinder access to climate finance. As they note, 'if the legal and regulatory systems of a country are unclear, overlapping, contradictory, show gaps or create unintended barriers, and/or provide limited enforcement ability or remedial actions, such country is less likely to attract the necessary climate finance to implement NDCs.' The authors explore the efforts of developing countries in Asia and the Pacific to develop legal frameworks able to attract climate finance, with more extensive discussions of reforms undergone in Laos and in Fiji.

Natalie Jones' article notes that higher ambition on climate change mitigation inevitably implies greater risks of unintended consequences, in particular for the world's most vulnerable. She highlights that the adverse impacts of negative emissions technologies are yet largely unknown. This leads Jones to consider several options for safeguarding against unintended consequences under a framework for higher ambition, for instance by enhancing linkages between the Paris Agreement and the Sustainable Development Goals, by mainstreaming human rights considerations in the climate regime, and by promoting participatory approaches and informed decision-making.

Finally, Endre Tvinnereim and Michael Mehling offer a critical assessment of carbon pricing and its potential as an instrument of deep decarbonisation in line with the 1.5°C target. After dissecting its conceptual premises as a policy instrument and as an epistemic

proxy in climate modelling, they draw on empirical case studies to illustrate that mainstream understandings of carbon pricing are both theoretically misaligned with politically agreed objectives such as the 1.5°C target, and that political economy constraints preclude instituting the price levels required for deep decarbonisation in the near term. Instead, they argue for the importance of an instrument mix, in which carbon pricing operates alongside other instruments including regulation and legal mandates.

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