

# *Climate justice and the international regime: before, during and after Paris*

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# Climate Justice and the International Regime: Before, During and After Paris

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## **Abstract**

With a focus on key themes and debates, this article aims to illustrate and assess how the interaction between justice and politics has shaped the international regime and defined the nature of the international agreement that was signed in COP21 Paris. The work demonstrates that despite the rise of neo-conservatism and self-interested power politics, questions of global distributive justice remain a central aspect of the international politics of climate change. However, while it is relatively easy to demonstrate that international climate politics is not beyond the reach of moral contestations, the assessment of exactly how much impact justice has on climate policies and the broader normative structures of the climate governance regime remains a very difficult task. As the world digests the Paris Agreement, it is vital that the current state of justice issues within the international climate change regime is comprehensively understood by scholars of climate justice and by academics and practitioners, not least because how these intractable issues of justice are dealt with (or not) will be a crucial factor in determining the effectiveness of the emerging climate regime.

# Climate Justice and the International Regime: Before, During and After Paris

## 1. Introduction

Contentions over justice have played a significant role in shaping the UN Framework Convention on Climate Change (UNFCCC), its Kyoto Protocol, and the global treaty signed in Paris in December 2015. The UNFCCC has provided a forum for key justice issues to be discussed alongside international climate policy.<sup>1</sup> However, justice once again proved to be a controversial issue in the climate change regime at the recent Paris Conference of the Parties to the UNFCCC (COP). Perspectives and arguments about justice are well-established within the UNFCCC and long-standing divisions remain, most prominently between developed and developing countries. There are other dimensions to justice within the realm of climate change governance and policy, such as gender, indigenous communities, and land use rights, but in general these debates play out within the frame of current and historical North-South relationships.<sup>2</sup>

As climate politics has developed over the last 20 years, the contours of these divisions and the language of the debate have regularly shifted. Many reasons and dynamics account for these shifts. First, governments and other norm entrepreneurs have gained experience in negotiating with each other (or not) on the subject. Second, emission profiles and wealth levels of countries are constantly changing, with implications for responsibility and contribution. Third, scientific understanding of climate impact forecasts is getting more accurate, and the landscape of the global economy and public opinion has evolved in various ways across different parts of the world. Moreover, within the international climate change regime new issues have emerged, such as loss and damage compensation, and new policy ideas have been developed, such as intended nationally determined contributions (INDCs). These have brought their debates and disagreements, with justice again forming an essential component and source of both momentum and controversy.

With a focus on key contentions, this article aims to illustrate and assess how the interaction between justice and politics is shaping the international regime and in particular how this influenced the Paris Agreement. We focus on the UNFCCC regime deliberately because at present this is the main forum for global justice concerns to interact with climate policy. However, we recognise increasing momentum in transnational, sub-state and private climate governance, which open up new and important dimensions of climate justice across multiple scales.<sup>3,4</sup>

Our work here demonstrates that despite the rise of neo-conservatism and self-interested power politics, questions of global distributive justice remain a central aspect of the international politics of climate change. However, while it is relatively easy to demonstrate that international climate politics is not beyond the reach of moral contestations, the assessment of exactly how much impact justice has on climate policies and the broader normative structures of the climate governance regime remains a very difficult task. In fact, with developed countries appearing to be ducking their commitments while co-opting developing countries into binding emissions reduction and reporting commitments, there are grounds to argue that the equity principle of common but differentiated responsibility on which the regime has long been anchored is now being replaced with a perverse moral concept that the Lead Author has described as “common but shifted responsibility.”<sup>5</sup> As the world digests the Paris Agreement, it is vital that the current state of justice issues within the international climate change regime is comprehensively understood by scholars of climate justice and by academics and practitioners, not the least because how these intractable issues of justice are dealt with (or not) will be a crucial factor in determining the effectiveness of the emerging climate regime.

The article is organised into the following three sections. We begin, unlike the few existing post-Paris analyses, by explaining how justice issues shaped the international regime, in terms of its institutional beginnings and the earliest political struggles. We will then discuss how the regime responded to and handled questions of justice in the two decades after its creation. In the third and largest section, we examine each of the main policy areas within the international regime to highlight ongoing controversies relevant to the development of a new regime and indicate

implications of the outcome of the Paris Agreement. We conclude with some reflection on the state of justice in the international climate regime.

## **2. How has justice shaped the pre-existing regime?**

Justice has been a consistent theme of debate and advocacy throughout the development of the international climate change regime from its origin in the early 1990s.<sup>6,7,8</sup> Without a doubt, the influence of justice and equity are critical when seeking to understand how the international climate regime has developed, its functions and its key policy outputs. However, the theme of justice encompasses a kaleidoscope of perspectives and interpretations, making its impact fluid and complex. As observed, both justice concerns and impact are entangled with other factors shaping the climate regime, such as science, power and economic interests.<sup>9,10</sup>

A scientific theory about climate change had existed since the late 19<sup>th</sup> Century, but scientific consensus about the significance of the issue did not permeate the political realm until the 1980s. As more data became available and computing power allowed more accurate modelling of the implications of climate change, the message from the scientific community became clearer and stronger. More greenhouse gases were identified, and the extent of the problem and the role of anthropogenic emissions could not be ignored.<sup>11</sup>

As soon as climate change became a political issue, national positions demonstrated a notable distinction between rich, industrialised countries and poor, developing countries, reflecting a principle of differentiation that had been evolving since the 1970s in successive international environmental treaties. For example, calls for international climate justice, North-South equity, and exemplary leadership from developed countries are replete in the statements released after the first set of international conferences on climate change such as Villach Conference in 1985, and the Noordwijk Climate Declaration in 1989.<sup>12</sup>

In 1988 the Intergovernmental Panel on Climate Change (IPCC) was set up by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), creating a global focus for climate change science and formally

linking science with intergovernmental politics.<sup>13</sup> Reflecting the widespread sentiment on the need for North-South equity. The IPCC's first report in 1990 identified the 'specific responsibilities' of industrialised countries, noting that domestic measures were required because 'a major part of emissions affecting the atmosphere at present originates in industrialised countries where the scope for change is greatest'.<sup>14</sup> The report further stressed that industrialised countries should 'cooperate with developing countries in international action, without standing in the way of the latter's development', including the provision of finance and technology.<sup>15</sup>

The case for different accountability and obligations set out in the IPCC's first report was crucial in setting the stage for justice to remain central to the international regime because it provided the basis and legitimacy for expressing justice arguments in the language and data of science. This was particularly significant because the IPCC had been viewed, at least in some quarters, as a contrivance by some Western governments to depoliticise climate change by presenting it as a purely scientific matter.<sup>16</sup> In also pointing out that 'emissions from developing countries are growing and may need to grow in order to meet their development requirements', the IPCC drew attention to the considerable challenge of reducing overall emissions while allowing developing countries to industrialise. This dilemma has, to this date, defined the core of international climate negotiations.

As would be expected, developing countries seized on the points made by the IPCC to press their case for culpability and historical responsibility against the rich countries in the negotiations for the development of the international regime, which took place between 1990 and 1992 under the Intergovernmental Negotiating Committee (INC) established by the United General Assembly. However, beginning controversy that continues today, rich countries also appealed to justice but in a bid to counter perspectives that would obligate them to greater leadership and responsibility.<sup>17,18</sup>

Scholars<sup>19,20,21</sup> have catalogued the various ways in which contestations for justice shaped the design and evolution of the climate regime. First, it is noted that early agitations for procedural justice by developing countries resulted in the climate

regime being brought within the remit of the UN General Assembly. Developing countries felt that the one-country-one-vote system adopted in the UN would help mitigate their inability to participate on an equal footing with developed countries in the relatively narrow, technical realm of the IPCC. Meanwhile industrialised nations preferred the governance to remain within a more technical organisation such as the IPCC.<sup>22</sup>

Second, concern for justice was central in shaping the objective of the UNFCCC, with developing countries keen to highlight the close links between climate change, food security and sustainable economic development.<sup>23</sup> Okereke argues that developing countries, cognisant of the wide-ranging economic implications of climate change, saw governance negotiations as an opportunity to redress the injustices inherent in the prevailing global economic system.<sup>24</sup>

Third, concerns for justice resulted in several equity principles and provisions being included in the UNFCCC and its Kyoto Protocol. Key equity terms include the “common concern for mankind”, “common but differentiated responsibility”, “per capita emissions” and “historical responsibility” among others, while notable equity-based provisions include differentiation between countries with respect to emissions reduction obligations, commitment to North-South financial and technology transfers, and acknowledgment of the special need of vulnerable countries.

The foregoing is not of course to suggest homogeneity of views within developed and developing country groups. Even as the climate regime was being created, multiple perspectives were evident within and between developed and developing countries. For example, vulnerable small island states sought urgent action to curb emissions, stressing that climate change was a common concern of mankind, while oil-producing nations were wary of global emissions reduction targets and regularly highlighted that justice required a respect for sovereignty and allowing developing countries unfettered access to resources they desperately need to achieve national economic development. Furthermore, large developing countries such as China and India focused on their rights to develop (and increase emissions accordingly),<sup>25</sup> while climate-vulnerable countries emphasised their rights to survival and the need for sharp global emissions reduction this entailed.<sup>26</sup> Within developed countries there were also divisions, with some Nordic countries expressing support



for North-South financial transfer and poor countries' right to development, while others, such as the United States, were deeply sceptical of the notion of "development rights" and preferred to promote the market as the main source for any international resource distribution.

It is important to note that these arguments and divisions do not merely reflect individual countries' pragmatic assessments of their respective national circumstances, but also the multiplicity of philosophical perspectives on what global climate justice entails and how it can be achieved in practice. Perspectives have proliferated in wider academic and advocacy communities as scholars theorise how to apply these philosophical perspectives and achieve justice in the international climate regime.<sup>27,28</sup>

### **3. How the UNFCCC has responded to questions of justice**

Extant literature on the ethical dimensions of the global climate regime suggests that the UNFCCC and its Kyoto Protocol have struggled to address satisfactorily the multiple questions with which they are confronted.<sup>29,30,31</sup> While ambitious and lofty in its admission of global justice principles, the UNFCCC signed in 1992 did not actually contain specific policies or emission reduction targets and so offered no real test of the principles it contained.

Signed in 1997, the Kyoto Protocol was the first real major attempt to address climate change. It contained the first global emissions reduction obligations and was intended to be the first step in the process of curbing global emissions through multilateral governance.<sup>32</sup> The Protocol made a bold attempt to carry through the principle of differentiation established in the Convention by legally obligating only industrialised countries to quantified emission reduction targets. However, implementing the Protocol proved politically divisive and became a focal point for developed and developing countries alike to position their arguments about fairness and equity.<sup>33</sup> The United States was swift in its rejection of the Protocol, arguing that it was unfair to exempt rapidly developing countries like China and India from emission reduction obligations. The US argued that fairness required a focus more on current and future emissions rather than on historical pollution,

some of which took place before the full consequences of the problem were known. Moreover, on the grounds of pragmatism they argued it would be pointless for the West to reduce emissions while allowing untrammelled carbon pollution from some of the world's highest emitters located in the developing world. The US rejection of the Protocol contributed to the widespread perception that the climate change regime exists to allocate economic burdens and essentially penalise economically successful countries.

In 1992, Parties established equity as a cornerstone of the regime by embedding differentiation in the UNFCCC treaty in the form of the common but differentiated responsibility principle (CBDR).<sup>34</sup> However, the interpretation and implementation of CBDR have proven to be major sources of ongoing disagreements in the evolution of the climate change regime. In general, developing countries have tended to emphasise the “differentiated responsibility” part of the CBDR and in doing so demanded not only exemption from tough obligations, but also bold leadership by developed countries and substantial financial and technical assistance. Developed countries have tended to place more weight on the “common” aspect of CBDR, and consequently demanded that effective action on climate change requires concerted effort and sacrifice from all parties. Furthermore, developed countries often reject the charge of climate change culpability, preferring that calls for leadership and assisting developing countries should instead be justified on the grounds of their superior economic and technological capabilities. The result is that almost all references to CBDR in UNFCCC texts since the Copenhagen summit are now styled as common but differentiated responsibility *and respective capabilities* (CBDR+RC) (emphasis ours).

Expectedly, redistributive funding has been a key focus of justice controversies within the regime, with disagreements spanning aspects such as how much funding is appropriate or necessary, which specific goals to prioritise, the criteria for disbursement, and how the overall targets should be divided between different countries. Here again, the regime has proven very dynamic in rhetoric but far less successful in implementation. On the one hand, developing countries have regularly lamented the lack of adequate, predictable and long-term climate finance. They also accuse developed countries of renegeing on their promises and justice

responsibilities. Developed countries, on the other hand, insist they are doing their best in very tough economic conditions and express concern that some developing countries are attempting to use climate change as an excuse to get developed countries to fund their national economic development.

Available figures<sup>35</sup> reveal a wide disparity between pledges of almost \$14bn and the less than \$4bn actually transferred into the Global Environmental Facility (GEF) and Green Climate Fund (GCF), the two primary climate funds. Planned approvals are lower still at just over \$2bn, and money spent is a fraction of the money received, let alone the pledges. While the process of planning and executing projects can be admittedly complex, these figures reveal a huge gap between rhetoric, pledges and action with regard to climate equity in the UNFCCC, and help explain why many feel that global justice obligations have regularly been trounced by hard economic and power politics rooted in the anarchic nature of the international system.

Another battleground for justice disputes in the regime has concerned what should be the primary policy tool for stimulating climate change action at national and international levels. Despite agitations from several quarters, especially developing countries, the UNFCCC has at the behest of capitalist countries, especially the United States, more or less enthroned market-based mechanisms such as the Clean Development Mechanism (CDM) and other tools like payments for ecosystem services and carbon trading schemes as the main vehicle for climate action and North-South financial redistribution.

A key argument from proponents is that the market mechanism offers a flexible and efficient means to reduce emissions within countries and across the world.<sup>36, 37</sup> However, policy areas such as REDD+ that engage with market mechanisms involve numerous complex issues of local participation, human rights and indigenous groups, although the conversation about design and implementation remains state-centric. Critics argue that communities are often displaced or excluded from the payments as a result of implementation,<sup>38</sup> and schemes can reinforce existing social inequalities and power imbalances, thereby having a detrimental impact on local justice issues even if local communities do receive some compensation.<sup>39, 40, 41</sup> Phelps, Friess and Webb,<sup>42</sup> for example, suggest that by

changing the value of forest land, the CDM mechanism has exposed divisions between forest communities and national governments that has extended into the UNFCCC forum. Schroeder<sup>43</sup> argues that national governments are liable to favour the rights of elites over marginalised communities, a significant hurdle for achieving climate justice in the international regime.

It is widely recognised that for developing countries, increased capacity and access to clean technology are key to designing and implementing low-carbon development paths. However, despite repeated emphasis in different parts of the agreement, capacity building and technology transfer remain underdeveloped aspects of the international climate change regime, overshadowed by mitigation and without a strong institutional base within the regime's structure.

Lastly, although the instrumental value of procedural justice is clear, in addition to its moral significance,<sup>44</sup> the regime has also struggled to cope with the demand for greater procedural justice and participation from developing countries and non-nation-state actors.<sup>45,46</sup> While the one-country-one-vote structure remains intact, the fact that decisions within the UNFCCC continue to require consensus has afforded more powerful countries the leeway to impose their will through a combination of high-handed and tactful diplomacy.<sup>47,48</sup> At the same time, the angst that followed the lack of or perceived lack of procedural justice in the Copenhagen COP resulted in a renewed attention to the need for inclusiveness in the search for a more comprehensive regime that will replace the Kyoto Protocol from 2020, when the second commitment period comes to an end. However, the emerging regime that saw a new global agreement reached in Paris in 2015 remains dogged by a widely acknowledged lack of fair and effective participation by developing countries and non-nation-state actors.

#### **4. Justice in the Emerging Regime**

The road to a new comprehensive climate change treaty was formalised at the Durban COP in 2011 when all parties agreed to work towards signing a treaty in 2015, by means of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP). Previous attempts to agree a global framework, in Copenhagen in 2009, failed woefully primarily because of clashes between developed and

developing countries about how to handle difficult questions of justice in the post-Kyoto agreement. The US had categorically rejected any agreement that did not place comparable obligations on China.<sup>49</sup> This position was consistent with their longstanding view that global climate equity required symmetrical action from a wider group of countries but was hardened by the rapidly changing geopolitical and emissions landscapes. The EU determined they could not take on the burden of climate change action without the involvement of the US, as doing so would damage their global economic competitiveness. Moreover, China, with the backing of many developing countries, was insistent that the fundamental principle of equity and differentiation enshrined in Kyoto needed to be carried forward to any new agreement.

Equity and CBDR are not mentioned explicitly in the text of the Durban agreement because developed countries insisted that CBDR must be qualified in light of “contemporary economic realities”. In fact Todd Stern, the lead United States negotiator in Durban, was reported to have said: ‘If equity’s in, we’re out.’<sup>50</sup> Rajamani<sup>51</sup> has argued that this suggests differentiation between countries, which, she says, reached a ‘high-water mark’ in 1997 with the Kyoto Protocol, is now ‘on the wane’. As it turns out, how to address differentiation was arguably one of the most contentious issues during Paris COP in 2015 as parties struggled to balance between creating an ambitious regime while recognising historical and current responsibilities for climate change. This is hardly surprising because as many scholars noted, although equity is not mentioned explicitly in the text of the Durban Agreement, the treaty’s commitment to the principles of the UNFCCC implies an affirmation of the centrality of the principle of equity (in the form of CBDR+RC) as the cornerstone of the international climate regime.<sup>52</sup> The Lima Call for Climate Action (agreed at COP20) reaffirmed that a 2015 treaty must be based on principles of equity and CBDR+RC, but all options for implementing differentiation remained on the table at UN meetings leading up to the Paris COP.<sup>53</sup>

Following the signing of the Durban Agreement, which committed both developed and developing country Parties to ambitious action, nearly all the key policy discussions leading up to the Paris COP21 focused on how to design a comprehensive international regime that is based on voluntary, nationally

determined emissions reduction commitments. More or less explicit in these discussions were the justice implications of national pledges, policies and bilateral funding arrangements. These INDCs, of which 161 were declared by 188 countries before Paris, now represent the foundational thrust of the new climate regime and a feature that mostly clearly sets it apart from the more “top-down” Kyoto Protocol, where countries were assigned obligations based on a globally agreed emissions reduction target. Analysis of climate justice within the regime must therefore engage with the equity implications of this new voluntarist climate governance framework and how the contributions deliver ambitious and fair climate action in the context of global sustainable development.

Just as the discussion develops about how to effectively address equity in the next phase of the climate change regime, there are increasing calls to overhaul the frame through which climate change action should be viewed. Traditionally seen as a distribution of unwanted economic burdens, a view reinforced by the actions of developed states such as the USA, numerous voices are now calling for a language and attitude of opportunity for green economy transition to prevail.<sup>54</sup> Also prevalent in discourse is the capabilities approach, which encapsulates the economic, social and personal capabilities necessary to pursue a decent livelihood and realise human rights. It is argued that this approach can help policymakers understand the implications of climate change and the potential impacts, both positive and negative, of policies they create.<sup>55</sup> There is also a growing agitation to link climate change governance more firmly and meaningfully with wider objectives of sustainable development, poverty reduction and tackling global inequality.

### **3.1 Mitigation**

Mitigating the effects of climate change by reducing greenhouse gas emissions is one of the core pillars of the climate change regime, but a just global climate change mitigation target and how to share it equitably remain controversial. A maximum 2°C global mean temperature rise by 2100 was adopted as a target at the Cancun COP in 2010, but vulnerable groups continued to highlight the potential injustice of selecting a target that still involves severe harm on particularly vulnerable communities. Island states and Least Developed Countries (LDCs) have drawn

attention to this potential injustice with their slogan “1.5 to Stay Alive”, and their representatives are vocal within the climate change regime, often referring to the devastating human impact on their populations should temperature rise exceed the 1.5°C threshold.<sup>56</sup>

The Paris Agreement includes an aim 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.’<sup>57</sup> Some have considered the inclusion of this target as a triumph of justice. However, a closer look reveals that the moral implications of a 1.5°C target are complex. First, it is more or less clear that the probability of meeting this target limit is extremely low. It has been widely reported that the aggregated INDC mitigation commitments, if fully implemented, still commit the planet to warming of between 2.7 and 3.7°C.<sup>58</sup> It is therefore arguable that the 1.5°C target is deceptive, inspires a sense of false hope and runs the risk of robbing the Paris Agreement of scientific (and ultimately public and political) credibility. A counter argument might be that the 1.5°C target can serve a useful moral purpose of motivating and inspiring the most ambitious action possible, even if it is evident from the outset that the target might not be attained.

Second, a 1.5°C target entails a significantly reduced global carbon space, which could in turn jeopardise the development aspirations of some developing countries. This sentiment was evident in the opposition by the Arab Group and to a lesser extent India to the inclusion of the 1.5°C target in draft texts during the Paris negotiations.<sup>59</sup> Third, the “just transition” scholarship has catalogued a range of local and national social justice and human rights implications that might be associated with aggressive decarbonisation in the pursuit of limiting warming to 1.5°C. However, the literature by no means suggests that injustice and human rights abuses are inevitable under these scenarios.<sup>60,61,62</sup> In fact, many scholars have argued that the lack of ambitious action portends far greater injustice and human rights abuse for vulnerable countries and communities than aggressive greenhouse gas reduction measures.<sup>63,64</sup> The Paris Agreement contains reference that Parties should respect their obligations to human rights when taking action to address climate change, suggesting a recognition of this range of views. One distinct possibility is that the reference to human rights in the Agreement could provide useful ammunition to

forest-dependent and oil bearing communities that might wish to challenge climate policies and block oil exploration, respectively.

Realistically, however, the immediate climate justice problem with the Paris Agreement is not about the moral implications of pursuing 1.5°C but the huge ambition gap that remains. Texts in earlier drafts, which talk about a peaking of global greenhouse gas emissions in 2030 and achieving zero emissions by 2060 to 2080, were all deleted in the final Agreement, with Parties merely agreeing to reach a global peaking ‘as soon as possible’.<sup>65</sup> In the end, the Paris Agreement sets no long-term global mitigation timeline, leaving important questions unanswered about the way mitigation will proceed over the coming decades and whether mitigation will be sufficient, let alone equitable. Relatedly, the Paris Agreement offers precious little about the means of actually keeping emissions below relevant atmospheric concentrations. Only once is the phrase “renewable energy” used, in connection with Africa, and virtually no mention is made of coal, oil, fossil fuel subsidies, carbon tax or the need to reign in vested corporate interests. The Agreement, however, recognises the important role of sustainable lifestyles and sustainable patterns of consumption and production in addressing climate change, ‘with developed countries taking the lead’.<sup>66</sup> In June 2015, the G7 countries made a public commitment to decarbonising their economies by 2100 and acknowledged that much of the effort will need to be undertaken by 2050.<sup>67</sup> However, their statement did not contain any concrete plans or schedules, and the Paris COP did not attempt to make any link with this historic commitment.

Before and during Paris, the overwhelming focus of Parties, especially developed countries with regards to mitigation, was on the need for ‘widest possible participation by all countries,’ or put differently, how to nuance the more or less binary division between developed and developing countries in the pre-existing regime. Accordingly, there was plenty of debate about exactly what “participation” means in this context. A cursory examination reveals multiple and often conflicting interpretations linked to differing economic positions and philosophical perspectives. Developed countries have tended to interpret widest possible participation as meaning that as many countries as possible, including those in the developing world, should take on quantified emission reduction obligations



comparable in both form and substance.<sup>68</sup> Developing countries, meanwhile, tend to interpret participation in a more relaxed way, suggesting that it includes all efforts to respond to climate change including adaptation and sustainable development. Furthermore, invoking relevant provisions in the original UNFCCC convention (e.g. Article 4.1), developing countries stress that adequate support from industrialised countries in the form of finance, technology, and capacity building remain essential preconditions for their action on climate change.

The Paris Agreement provides that all parties will undertake and communicate ambitious efforts to achieve a long-term temperature goal including the global peaking of greenhouse gas emissions. This and several other requirements for emissions measurement, national planning, reporting and transparency place a huge burden on many developing countries, especially in the context of vague wordings on the support that will be provided to help developing countries undertake action. However, the Agreement does grant that peaking will take longer for developing countries and the special situation of the LDCs should be recognised. Moreover, the Agreement stresses in many places that the global response to climate change needs to happen in the context of sustainable development and efforts to eradicate poverty.<sup>69</sup>

These provisions are in line with a key part of the practical aspect of climate justice, which is ensuring the ability of developing countries to develop and industrialise is not compromised by restrictions placed on them by climate policy. A notion of equitable access to sustainable development (EASD) had gained some traction within the international regime as a framework in which to address the moral dimensions of climate change and encourage collaboration,<sup>70</sup> but this was not picked up with any real force in the Paris Agreement. The treaty, however, does invoke the Sustainable Development Goals (SDGs), which replaced the Millennium Development Goals in 2015, and the Addis Ababa Action Agenda of the third International Conference on Financing for Development. Fighting climate change and using natural resources sustainably are core to the SDGs and sit alongside other aims such as ending poverty, securing education and health services, and reducing inequality.<sup>71</sup> However, other than these references the Agreement makes very limited, if any, attempt to link the climate regime to the wider global effort to tackle

poverty, address global inequality, and engender sustainable development.

Many authors, notably Simon Caney, have challenged the institutional isolation of climate change policy within the international regime, instead advocating an “integrationist” approach that considers climate change ‘in light of a general account of global justice’.<sup>72</sup> By advocating a focus on meeting the basic needs of all persons, Caney suggests a basis for designing climate policy and determining a fair distribution of emissions, and provides a theoretical perspective that echoes calls from developing countries that climate change is inherently tied to other challenges such as poverty and health. Since development is a key issue for nations within the climate regime, as well as outside it, a more co-ordinated approach may prove essential if the more voluntary nature of the regime and the Paris Agreement is not to lead to continued failure, or indeed greater burden on developing countries who have been more or less co-opted into ambitious emissions reduction commitments.

### **3.2 Intended Nationally Determined Contributions (INDCs)**

A more voluntary approach to national commitments has emerged as the key approach for future global action on climate change, reflecting determined opposition by powerful countries to an extension of a Kyoto Protocol-type agreement with its emphasis on top-down mandatory obligations. The pledge-and-review formula is based on INDCs, where each country makes a statement detailing what climate action it intends to implement over a given period of time horizon. It started to become evident that a pledge and review approach would replace the Kyoto Protocol-style obligations when the Copenhagen COP failed to produce a global deal but proceeded to “take note” of the patchwork of national commitments and contributions that were announced during and in the run up to the summit. Subsequently, COP 19 in Warsaw in 2013 included a decision inviting parties ‘to initiate or intensify domestic preparations for their intended nationally determined contributions, without prejudice to the legal nature of the contributions, in the context of adopting a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties’.<sup>73</sup>

This indistinct beginning highlights a key problem with a voluntary

approach to climate change action: if each Party can determine what goes into their contribution, there is no guarantee that any or all will contain commitments that are equitable, ambitious and legally binding.<sup>74</sup> Despite consuming large amounts of negotiating time, no greater clarity on design, methodology or baselines was achieved in subsequent UN meetings (e.g. the 2014 COP in Lima, SBSTA 42 in Bonn in June 2015) and eventually in the Paris Agreement itself. Parties are encouraged to explain the equitability of their contributions but this is not mandatory, and including an explanation will do nothing to ensure all the various INDCs tie together into a cohesive whole and create a fair and equitable basis for the emerging regime.<sup>75</sup>

Proponents of the pledge and review system are usually quick to criticise the Kyoto Protocol for being complex and ineffective.<sup>76</sup> However, it is not exactly clear how the patchwork of intended contributions represents a simplification of the climate regime and it is even less clear how to monitor progress on ambition and fairness in the context of such a bewildering cacophony of pledges. Differing approaches to distributing emissions reduction targets amongst developed and developing countries have been noted in contributions from the USA and China<sup>77</sup> and under-reporting of coal consumption – up to 17% in the case of China – was revealed just before COP21.<sup>78</sup>

The lack of a framework through which to assess INDCs, both in terms of their ambition and their equity credentials, means there is nothing to prevent these differences becoming the source of intense disagreement during discussions by the Ad Hoc Working Group on the Paris Agreement, which has been tasked with developing further guidance on features of the INDCs. Similarly, fractious debates about fairness can be expected in planned discussions to elaborate the scope and modalities for the global “stocktake”, which should assess the collective progress towards achieving the ultimate objective of the Agreement, including the overall effect of the INDCs, consideration of long term strategies, the state of adaptation efforts, and support for developing countries.

Scholarly attention must turn to the justice implications of the institutionalisation of a culture of voluntary contributions. While the role of multilateral arrangements may be enhanced because a central body is required to

monitor INDCs and ensuring they meet relevant criteria, it appears unlikely the UNFCCC can perform this function in the absence of an agreed basis for judging whether contributions are fair and equitable in design, or indeed sufficient to meet agreed warming limits. At the same time, it may be that voluntary contributions allow developing countries to resist pressure to lower their expectations of differentiation, and articulate more strongly and clearly what climate justice entails within the heart of the governance regime. It could be argued that the INDCs have the virtue of allowing developing countries to determine their contributions without having a target imposed on them by the more powerful countries, as might have been the case under a target-based agreement. However, such an argument would be difficult to sustain given that developing countries are not formulating their contributions in isolation. The process remains part of the wider negotiation sphere and has consequently involved the bargaining and pressure from developed countries that one would expect in this level of international relations. As a result, agreeing the new voluntary regime has involved some developing countries signing up to undertake ambitious climate action without firm promises of adequate support. The full extent and implications of such pressure and the implications of “ambition” rhetoric should be seen as an important aspect of analysing the voluntary regime.

Lessons from other international governance regimes indicate that incorporating equity in a concrete and multidimensional manner is an essential component of political and policy success.<sup>79</sup> However, an Equity Reference Framework (ERF)<sup>80</sup> to guide the development of the 2015 regime, which uses factors such as historical responsibility, current capabilities and an assessment of development needs to gauge what a fair contribution entails, did not gain traction in the negotiations preceding Paris. Klinsky *et al.*<sup>81</sup> have argued that a capabilities approach with reference to securing human rights can facilitate the realisation of the “respective capabilities” element of the CBDR+RC principle, by providing a means to judge what expectations are appropriate for different countries, and what kinds and levels of support they should receive. Support is necessary from a practical perspective since many countries are limited in the technical and financial resources they can apply to INDC preparation. Developing countries continue to call for more

support, but this is but one aspect of the broader support and redistribution measures within the international regime, all of which remain contested. Research for UNFCCC and UNDP earlier in 2015 showed that more than a quarter of countries were still awaiting international support with their INDCs.<sup>82</sup>

The challenges of support and consistency are encapsulated in the debate about including adaptation in INDCs. In advance of Paris, some developing countries were increasingly in favour of doing so,<sup>83</sup> and adaptation has been an important part of a wider debate about the scope of INDCs. NGOs have argued developed countries should include adaptation support beyond their borders when producing their INDCs,<sup>84</sup> but developed countries including Canada and the United States have clearly stated they consider adaptation outside the remit of INDCs.<sup>85</sup> At the same time, including adaptation potentially requires greater time and resources, which are in short supply for the most vulnerable countries. At Lima in 2014, parties were simply invited to 'consider including an adaptation component in their intended nationally determined contributions',<sup>86</sup> but in Paris adaptation was acknowledged as a legitimate component of INDCs.

### **3.3 Adaptation**

Despite officially being given the same priority within the UNFCCC process,<sup>87</sup> adaptation has received significantly less attention than mitigation, which has taken most of the focus in global discussions about climate change justice. This is particularly problematic for many low income countries that contribute little to climate change, because adaptation is the highest priority when considering duties to their citizens.<sup>88</sup> In contrast with the global level, at the national and regional level in the Global South, adaptation has received the majority of lobbying and investment attention. This is principally because, in terms of responding to climate change, adaptation has been viewed as the key link between climate change, risk, poverty, and development.<sup>89</sup> However, it is arguable that this view was also shaped by the perspective that positioning mitigation as the responsibility of developed nations would reinforce appropriate liability for climate change. More recently, however, scholars have stressed that an integrative approach that combines adaptation and mitigation is a key requirement for an optimum climate solution.<sup>90</sup>

Moellendorf<sup>91</sup> has reinforced the moral basis for an integrative approach, by arguing that when considering the realisation of climate justice it is prudent to remember that mitigation and adaptation are both moral obligations within a response to climate change. Mitigation involves directly targeting the ultimate cause of climate change, which is necessary because climate change has the potential to bring about effects that cannot be alleviated through adaptation. Adaptation is also a moral necessity because the impacts of climate change are already apparent and will continue to worsen as current and future emissions affect the climate further.<sup>92</sup> Furthermore, adaptation is important for intergenerational justice, since the less mitigation that is done now, the greater the effects of climate change will be and the more adaptation will be required.<sup>93</sup>

In Paris, adaptation received mixed attention. On the one hand, developing countries were successful in ensuring that adaptation planning and indications of funding needs can be legitimately included in their INDCs, despite initial resistance from developed countries who wanted the INDCs to be focused on mitigation. In addition, a specific goal for adaptation was included in the Paris Agreement, and linked to the mitigation target.<sup>94</sup> Vulnerable groups like the LDCs, AOSIS and African countries had demanded such a goal, with a key aim of ensuring adaptation is considered as a global responsibility within the international regime. This is in line with the Bali Action Plan, adopted within the UNFCCC in 2007, which gave mitigation and adaptation equal status within the evolving climate regime.<sup>95</sup> On the other hand, no measurement mechanism was included in the Paris Agreement and texts explicitly linking aggregate mitigation levels and support from developed countries for adaptation were deleted in the final Agreement. Instead, however, “cycles of action” are intended to increase ambition and effort on adaptation as the regime moves forwards. Moreover, while allowing flexibility for the different circumstances and resources of different countries, the Paris Agreement does little to ensure funding requirements will be met or that vulnerable countries will actually be able to design and implement measures to meet their adaptation needs.

Within the international regime, National Adaptation Plans (NAPs) are the means by which countries will articulate their adaptation needs and planning over the medium- and long-term. So far this process has been focused on LDCs, but there

has been no firm decision about whether this should be extended to other countries. Funding for creating NAPs is also a key outstanding issue, and ties in with similar uncertainty about INDCs. In advance of the Paris COP21, the African Group criticised the ‘inadequate funds and lack of clear guidance on how developing countries can access direct financial support for formulating and implementing NAPs’.<sup>96</sup> This criticism contrasted with official confirmation that funding is available from the GCF to assist with NAPs, suggesting a misalignment of the governance regime and the nations subject to it. If the regime does not successfully meet the needs of the most vulnerable countries, these failures will contribute to the ongoing marginalisation of the poorest developing countries within the regime and restrict their empowerment to participate fully.

Moellendorf<sup>97</sup> has recently restated the strong moral basis to the claim developing nations have to be relieved of the burden of adapting to climate change, rooted in their relative poverty and relatively small contribution to the problem. Since development is a critical means of reducing vulnerability, this claim can take the form of development resources and is consequently linked directly to equitable access to sustainable development and the concept of “carbon space”. NAPs are also linked strongly to national development strategies. Tracking vulnerability can also be a practical means to target spending on adaptation while at the same time providing a conceptual basis for the obligations developed states have towards developing states. Climate justice cannot be achieved simply by raising sufficient financial commitments, however, and the NGO community has pointed out the need to strive for community-specific adaptation measures that place human rights and indigenous knowledge at their centre.<sup>98</sup> A key challenge is ensuring the post-2015 international regime adequately recognises the importance of adaptation and can ensure adaptation plans are implemented in a way that promotes justice at the local level as well as the global level.

### **3.4 Finance**

While headline figures and financial pledges are not sufficient to address climate change without considering what happens with the money, securing the commitments and organising the proportions involved in provision and distribution

of finance are vital to addressing climate change and realising climate justice. Flows of finance are also a public indicator necessary to increase confidence that developed countries will meet their emissions commitments.<sup>99</sup> Redistributive flows provide a visible and practical response to the justice claims of vulnerable developing countries that they should not bear an unfair burden of climate change action. In practice, however, developing countries are diverting more and more of their already-limited spending to adaptation and risk reduction because financial flows are not sufficient to meet their needs. The burdens are not being lifted from them and as a result other government spending on health, education and infrastructure is vulnerable in the face of the overwhelming urgency and severity of climate change.<sup>100</sup>

The Copenhagen COP in 2009 generated important political momentum in climate finance, with developed countries pledging a “fast-start” of \$30bn in 2010-2012 and reaching \$100bn a year by 2020.<sup>101</sup> However, the pledges have not led to a sufficient shift towards increasing and reliable flows of finance,<sup>102</sup> so funding is lagging behind the commitments and the needs of developing countries.<sup>103</sup> In Paris no new figure for finance was agreed upon, with commentators criticising the continued lack of clarity on how financing will actually be measured and therefore monitored to ensure developed countries are meeting the headline commitments they made in Copenhagen and reiterated in Paris.<sup>104</sup>

The GCF was set up in 2010 as the key means of administering redistributive financial flows, but while this mechanism brings to life the principle of redistributive justice it also captures the disagreement surrounding how to implement CBDR in climate policy. Based on mobilising voluntary public and private contributions, with a lack of enforcement capabilities and COP-level oversight, the GCF has been criticised as moving away from UNFCCC principles, including CBDR.<sup>105</sup> Vanderheiden includes the GCF’s loose recommendation to operate along Kyoto Protocol categorisation of developed and developing countries in the failure of the GCF to further CBDR. However, as the regime develops and constructive participants look for ways to create more dynamic differentiation between Parties, this vague framework could prove to allow advantageous flexibility in shaping climate finance. Referring back to the evolving circumstances of differentiation, it is notable that



countries such as South Korea and Mexico, which are in the developing country category in the Kyoto Protocol regime, have pledged contributions to the GCF.<sup>106</sup>

Agreements to redistribute money or secure particular amounts will not be sufficient to support developing countries and achieve recognisable climate justice. The way finance is provided is important, too, since there are already well-established aid flows from the developed to developing world. Assurance is necessary that aid will not be diverted away from existing commitments towards climate-related funding, thereby reducing the additional burden taken on by developed countries and limiting the benefits for justice. Preventing the diversion of existing funds is important for enhancing confidence that the financial mechanisms within the international climate regime are not geared towards the interests of donor nations.<sup>107</sup>

### **3.5 Loss and Damage**

Loss and damage refers to the effects of climate change that countries are not adapted or cannot adapt to; principles of justice are invoked to claim a right to compensation when countries experience such effects but did little to cause climate change. The IPCC has confirmed that climate change is likely to breach the limits of adaptation, and many countries have been vocal about the need for a mechanism within the international regime to administer compensation. From a justice perspective, the claims for compensation will be narrower than for adaptation, since it is much more difficult to prove a direct link between climate change and specific extreme weather events, as opposed to longer-term trends in weather and sea-level.<sup>108</sup> Discussions in annual COP meetings from 2010 led to the formulation of a mechanism at the Warsaw COP19 in 2013, designed to foster knowledge sharing on risk management, strengthen co-operation on tools and approaches to addressing loss and damage, and enhancing financial and technical support.<sup>109</sup> Reaching agreement was not straightforward, though, and only achieved after a move by Australia to postpone discussions on loss and damage until after the 2015 Paris COP prompted a mass walkout from frustrated developing countries.<sup>110</sup> The Paris Agreement preserves the Warsaw Mechanism, which had been due to expire in 2016.

Until the Paris COP21, loss and damage had been kept within the adaptation pillar of the UNFCCC. More than any other area, loss and damage requires a move away from the spirit of aid and compassion that has characterised the existing climate change regime.<sup>111</sup> In Paris, loss and damage was recognised as a distinct component within the regime for the first time, adding legitimacy to the claims of developing countries. However, this was only achieved alongside specific acknowledgement in the treaty that it ‘does not involve or provide a basis for any liability or compensation.’<sup>112</sup> This was seen as essential to ensure the US Congress did not reject the entire Paris Agreement,<sup>113</sup> and follows the track record of developed nations, who throughout the history of the climate change regime have sought vigorously to deflect issues of blame and liability raised by the pursuit of compensatory justice. For example, at Warsaw COP19, the EU’s climate commissioner said: ‘We cannot have a system where we have automatic compensation when severe events happen around the world. That is not feasible’.<sup>114</sup>

The Paris outcome on loss and damage reveals important boundaries and power-dynamics of the international regime, and highlights the way domestic political circumstances in developed countries can influence the way justice is realised or avoided in the international regime. Neither developed nor developing countries have prevailed in loss and damage discussions, and the issue remains at the forefront of justice concerns within the international regime.

### **3.6 Capacity Building**

Capacity building refers to increasing nations’ ability to respond to the challenges they face from climate change, through both mitigation and adaptation. Capacity building goes beyond technological and financial resources. It encompasses knowledge, infrastructure, human resources and other elements, all of which affect the way a nation is able to use technology and funding in its local responses to climate change. NGOs and vulnerable countries alike are vocal about the importance of capacity building within the overall relationship between developed and developing countries in responding to climate change.<sup>115,116</sup> CDM projects and payments for ecosystem services models provide numerous examples of local or community equity being overlooked or given a low priority by investors, and

payments bypassing the poorest and most vulnerable.<sup>117</sup> No matter how much financial and technological support is made available, climate justice cannot be achieved if developing countries are unable to make use of these resources because their capacity to build and implement systems, infrastructure and processes is limited and powerful local actors can capture the benefits.

Like other aspects of the global response to climate change, capacity building has been overshadowed within the international regime by mitigation and has often been treated as an afterthought. In practice, capacity building has suffered from a lack of sustained, long-term investment as donors lose interest, developing country governments are unable to maintain project momentum, and cohesive enabling institutions do not exist. Some scholars have suggested that a separate, defined institution is necessary to ensure capacity building receives appropriate attention and funding, and can maximise the effectiveness of relevant funding.<sup>118</sup> Others have described capacity building as a “cross-cutting” component of the international regime, which can be effectively addressed by using existing institutions and processes.<sup>119</sup>

There remain no formal targets within the international regime to stimulate capacity building, despite calls by developing countries.<sup>120</sup> At COP21 in 2015, the Paris Committee on Capacity-building was created, aiming to ‘address gaps and needs, both current and emerging, in implementing capacity-building in developing country Parties and further enhancing capacity-building efforts’.<sup>121</sup> While a positive step, the text is lacking in specific detail about mechanisms that will deliver practical change to capacity building efforts. This reinforces how capacity building illustrates the complex multiscalar nature of both governance and justice within the global response to climate change. It is increasingly understood within the international regime that a global response to climate change must enable developing countries to participate fully, both in terms of achieving justice and ensuring the commitments and mechanisms agreed and funded at the highest level of governance can actually be implemented.

Identifying practical needs in developing countries remains an important challenge for operationalising capacity building, although efforts continue at the UNFCCC level to work with developing countries to identify needs<sup>122</sup> and implement

a framework.<sup>123</sup> Importantly, however, it is a key difficulty within the regime but also a key requirement of realising climate justice to link top-down policies to the local context by facilitating local ownership, engagement and understanding, thereby increasing the potential for successful implementation. Capacity building is necessary to achieve these objectives, and in turn achieve justice through adaptation, mitigation, and procedural design. At the same time, capacity building must operate in reverse, with the international regime and its institutions devoting greater attention to understanding local level conditions and capabilities when designing policy.<sup>124</sup>

### **3.7 Technology Transfer**

In a similar way to capacity building, technology transfer is a policy area often given a lower level of attention than mitigation within the international regime. However, technology transfer has been given a place at the centre of climate justice, since technology is seen as essential for low-carbon development. The logic follows that developing country governments with obligations towards their citizens will pursue development and increase their energy generation using the technology available to them and within their financial reach. Prominent advocates such as Mary Robinson assert that if the international regime is to foster justice rather than impede it, policies must not penalise developing countries by seeking to prevent fossil fuel-based development.<sup>125</sup> Instead, facilitating a low-carbon development path can achieve the twin aims of development and reducing greenhouse gas emissions. Such perspectives link climate change action with development, reflecting the similar prevalence of discussions on trade, capital flows and economic growth in the international regimes governing both climate change and development.<sup>126</sup>

Technology becomes an instrument of justice, but one inherently bound up with the existing capitalist hegemonic global structures. Technology transfer is important in revealing the international climate regime's place at the heart of these structures.<sup>127</sup> Suggestions that technology transfer could be facilitated by working with famously-neoliberal organisations such as the World Intellectual Property Organization (WIPO) and with the private sector<sup>128,129</sup> underline the confines in which those seeking to act in the interests of the world's poor and vulnerable are

operating. Developing countries remain frustrated that the Technology Mechanism created under the UNFCCC only provides consultancy and information services rather than an actual transfer of technology that can be used for climate action and low-carbon development.<sup>130</sup> The agreement in Paris COP21 did little to alter this, with a focus on innovation and enabling development of technology, and only passing reference to removing barriers that prevent the transfer of existing technology to nations where a need for it in facilitating climate action has been identified.<sup>131</sup> The reluctance of developed countries to encourage action that goes directly against the core principles of neoliberal capitalism is not surprising, and in this context we must ask whether meaningful North-South technology transfer can ever possibly be achieved without disrupting hegemonic global structures.

#### **4. Can the international regime accommodate changing national circumstances, increasing scientific urgency and multiple perspectives on justice?**

This paper has shown that justice remains crucial to a new multilateral climate treaty as the international climate change regime begins a new phase after the Paris COP21 in December 2015. There were some positive signs in advance of COP21, such as the US climate envoy acknowledging the necessity of addressing justice, which was a “U-turn” from their infamous threat in Durban to walk away from an agreement that incorporates equity. Other positive signs included BASIC nations such as China making gestures towards announcing ambitious targets.<sup>132</sup> However, at the climate talks leading up to Paris discussions remained intractable on transitioning out of fossil fuels, when large developing countries should reduce greenhouse gas emissions, and how much financial support should be provided by which countries.<sup>133</sup> These are familiar themes from the earliest days of climate change governance and proved to be central to the COP21 negotiations and outcome.

There are grounds to suggest that the trend towards voluntary commitments and “parallelism” (the same or similar commitments by both rich and poor countries) poses the greatest threat to successful realisation of justice in climate change policy. Despite proposals such as the Equity Reference Framework<sup>134</sup> and efforts by scholars and practitioners to explore various ways of interpreting and embedding widely

shared intuitions of fairness into the climate regime,<sup>135,136,137,138,139</sup> there is little prospect of a robust discussion within the regime about adopting a framework or an equity assessment mechanism to underpin creation and review of INDCs. While the Paris Agreement includes recognition that it will be implemented to reflect equity and the CBDR+RC principle, the only mention of “climate justice” in the text is a short statement in the preamble section, which notes ‘*the importance for some of the concept of “climate justice”, when taking action to address climate change*’<sup>140</sup> (our emphasis).

While general principles of differentiation have nominal weight, the complexity of realising justice means that with no framework there is little prospect that voluntary global climate action will be structured in a manner consistent with principles of fairness and justice. The inability of the international regime to impose or encourage the application of one or a limited set of justice principles remains a perennial constraint on the regime’s effectiveness and a challenge when translating justice concerns into practical action.<sup>141</sup> Meanwhile, in the midst of the cacophony of perspectives, emissions are increasing as are negative impacts on vulnerable communities around the world.

It is evident that the normative architecture of the global order remains hostile to solidarist conceptions of justice.<sup>142</sup> Positive sentiment was encapsulated in the “high ambition coalition” in Paris, and promises of co-operation outside the international regime have given many observers reason to think there is greater momentum for cooperation. However, the withdrawal of Canada from Kyoto, the debacle of Copenhagen and the stance of many Western countries in recent negotiations suggest a renewed attack against even the minimalist notions of climate justice that were embodied in the pre-existing agreement.

It was clear from statements at COP21 in Paris that powerful nations were shaping the idea of legitimate differentiation, and seeking to focus on parity in economic development and their perspective that justice entails developing countries contributing more to climate action.<sup>143</sup> In reality, this levelling of expectations has actually entailed reducing emissions reduction expectations on developed countries while more burdens are imposed on developing countries that are already bearing the greatest brunt of climate change. There is therefore a sense

that the moral tenor of global climate governance has moved away from the principle of common but differentiated responsibility towards a perverse moral concept that Okereke has described as “common but shifted responsibility”.<sup>144</sup>

An ethical analysis of the climate regime reveals an abiding strong interconnection between economic circumstances, geopolitical power and the justice claims that nations can assert in negotiations.<sup>145</sup> Events within the climate regime highlight the importance of questioning the extent to which claims of justice can ever be truly realised in the context of international regimes of environmental governance as well as how much concerns for justice are motivated by other concerns such as relative economic gains or geopolitical objectives.<sup>146</sup> It would appear that the progress made in entrenching justice at the heart of the climate agreement is now seriously threatened by the recent global financial crisis, which has served to awaken simmering egotistical impulses among state actors. Nevertheless, suggestions that the new pledge and review system has sidestepped the contentious justice debates that characterise the Kyoto Protocol cannot but be described as simply naïve and wishful thinking. Our work has demonstrated the depth and complexity of the present issues, and the magnitude of the challenge to overcome widespread disagreement.

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