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INEA editorial: Achieving 1.5 °C and climate justice

Kate Dooley[1] · Joyeeta Gupta[2] · Anand Patwardhan[3]

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1 Introduction

The Paris Agreement (PA) to the United Nations Framework Convention on Climate Change (UNFCCC) aims at 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. Further, it states that efforts to achieve the long-term temperature goal must be carried out "on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty" (UNFCCC 2015). In 2015, the Parties to the UNFCCC invited the Intergovernmental Panel on Climate Change (IPCC) to put together a Special Report on emission pathways to, and impacts of, achieving a 1.5 °C objective, to be published in October 2018. This special report will be a key input for the Facilitative Dialogue in 2018 that will look at enhancing the ambition of the nationally determined contributions (NDC's) of Parties before 2020. Research into such pathways and impacts often does not consider the equity aspects, and this is why this Special Issue engages with the topic of *Achieving 1.5 °C and Climate Justice*, as a means of strengthening the base of literature that could, inter alia, be drawn upon by the IPCC Special Report. We examine the equity, or climate justice, dimensions raised within

✉ Kate Dooley
kate.dooley@climate-energy-college.org

Joyeeta Gupta
J.Gupta@uva.nl

Anand Patwardhan
apat@umd.edu

[1] Australian-German Climate and Energy College, University of Melbourne, Parkville, Australia

[2] Amsterdam Institute for Social Science Research, University of Amsterdam, Amsterdam, The Netherlands

[3] School of Public Policy, University of Maryland, College Park, MD, USA

different debates related to the 1.5 °C target. This is especially important as some scholars are skeptical about integrating equity issues in environmental debates: Robert Keohane has reportedly stated that discussions of justice are "either irrelevant or dangerous in a post-Paris world" (Robert Keohane, quoted in Klinsky et al. 2016). This view led to a response by international scholars (including one of the editors of this Special Issue) that "analyses of equity and justice are essential for our ability to understand climate politics and contribute to concrete efforts to achieve adequate, fair and enduring climate action" (Klinsky et al. 2016). Further, issues of equity and justice continue to figure centrally in the multilateral process and are likely to influence and shape implementation of the Paris Agreement.

While a 1.5 °C target in preference to a 2 °C target may be considered to be a more just outcome—in that it can possibly minimize the more severe irreversible impacts of climate change, the question this Special Issue seeks to answer is how can the responsibilities with respect to this target be shared equitably between nation states? This is not a trivial question due to the much greater stringency of mitigation effort required to achieve 1.5 °C relative to 2 °C, requiring, for example, global peaking of emissions by 2020 and with estimates that the remaining carbon budget will be depleted well before 2030 for a 1.5 °C target (UNEP 2017).

The papers in this Special Issue grapple with the issue of how equity should be defined, elaborated and implemented not just with respect to the design and implementation of climate policy, but regarding what kind of science is promoted and how, and how country commitments can be viewed in terms of equity. Joyeeta Gupta and Karin Arts link the Right to Development with the Right to Promote Sustainable Development and analyze what the application of these rights implies for prospective oil and gas producers in the South. Bård Lahn argues that equity issues need to be debated actively (heating up), rather than being presented as resolved (cooling down). Jane Flegal and Aarti Gupta examine the trend toward using equity to justify solar geoengineering, while Turaj Faran and Lennart Olsson look at whether a simple cost-benefit analysis to justify carbon capture and storage adequately deals with the risks society takes with respect to such technologies. Kate Dooley and Sivan Kartha argue that the expectations from negative emission technologies in terms of using land to absorb greenhouse gas emissions ignore the risks of such approaches failing—potentially "locking in" higher global temperatures. Harald Winkler, Niklas Höhne, Guy Cunliffe, Takeshi Kuramochi, Amanda April and Maria Jose de Villafranca Casas examine the equity justification used by countries when they submitted their Intended Nationally Determined Contributions prior to Paris. Christian Holz, Sivan Kartha and Tom Athanasiou examine how efforts to meet the 1.5 °C target can be fairly shared. Sander Chan, Paula Ellinger and Oscar Widerberg look at how regional and national forms of orchestration can better catalyze local responses to climate change. These papers are briefly discussed below.

2 The right to development and the right to promote sustainable development

Climate justice can be defined in a number of ways. An approach to justice based on distributive justice theories is most common in questions of environmental justice, with several papers in this special issue noting that in the multilateral climate change negotiations, justice has primarily been approached as a distributional question concerning how

to equitably share the effort required to avoid dangerous climate change. Achieving the more ambitious 1.5 °C objective of the Paris Agreement will in particular require sharing equitably the responsibilities and rights that relate to this objective in a just manner. While the literature has extensively focused on the Principle of Common but Differentiated Responsibilities and Respective Capabilities as a way to address the division of responsibilities and risks between countries, there has been very little examination of the role of the Right to Development (RtD) and the Right to Promote Sustainable Development (RtPSD), a topic tackled here by Joyeeta Gupta and Karin Arts (this issue).

In 1986, the United Nations General Assembly recognized that developing countries have a Right to Development, but less than 6 years later this right was being questioned in the United Nations Framework Convention on Climate Change (UNFCCC 1992). Given that "equity is codified in the right to development,"[1] the Parties to the Framework Convention bypassed this right by stating instead that Parties have a "right to, and should, promote sustainable development" which basically converted the RtD into a RtPSD. Gupta and Arts examine the two rights and conclude that the Paris Agreement and the Sustainable Development Goals (SDGs) call for a radical reinterpretation of development and explore how both the RtD and the RtPSD can contribute to this reinterpretation. The Paris Agreement and the SDGs require that development is both socially and ecologically inclusive and this may mean moving away from defining economic development in terms of growth to human well-being. It argues that both rights need to merge in their inclusion of the ecological dimension and decarbonization in particular and that both rights are complementary in that while the RtD has domestic and international dimensions, the RtPSD—which has clearly a domestic dimension—when read in light of the remaining principles also has an international dimension. In other words, while both rights call for a progressive achievement of their contents, there is an international responsibility of the richer states to help in different ways the achievement of sustainable development in the developing world. The paper also applies this to the challenge for prospective oil producers in the developing world and concludes that even though a fairness case could be made for allowing prospective producers the right to produce, given the eventual phaseout of oil and gas for decarbonization, it may make more sense for the South to develop sustainably while demanding compensation for the continued use of fossil fuels in the North and support for sustainable development pathways.

3 Science, technology and equity

Even though a 1.5 °C target may be desirable in terms of avoiding potentially severe and irreversible impacts, achieving it might require (or be used to justify) the use of approaches such as geoengineering or negative emission technologies—which are themselves associated with large uncertainties, risks and distributional effects. In this context, it is important that research explicitly addresses equity issues as part of the analysis and assessment process. The following four papers tackle these questions in terms of the role of science in defining and achieving equity in climate mitigation.

[1] OHCHR "Introduction Statement by the High Commissioner: Development is a Human Right for all." Available: http://www.ohchr.org/EN/Issues/Development/Pages/IntroductionStatement.aspx [Accessed 22 November 2015].

3.1 Politicization or depoliticization?

Bård Lahn (this issue) explores the role of scientific expertise in dealing with the tension in the Paris Agreement between the *common* temperature goal, and the *differentiated* goal of equity in climate mitigation. He does so by examining two cases—the Bali Box case and the Civil Society Equity Review to examine whether issues should be politicized ("heated up") or depoliticized ("cooled down") in the use of science in policy-making.

The cooled down case of the "Bali Box" case refers to Box 13.7 in the IPCC's Fourth Assessment Report (Gupta et al. 2007: 776), in which scientific experts translated the long-term global emission reductions required for reaching the 2 °C target, into targets of 25–40% emissions reductions from 1990 levels for the North, and a "substantial deviation from baseline" in emissions by the South. This conclusion was drawn based on compiling the average range of emission reductions from different burden-sharing proposals in the existing literature, in line with IPCC's approach of reflecting what the scholarly literature states. This Box was used by developing countries to demand more action from the developed world, until the authors of the Box published a paper in which they made explicit what a "substantial deviation" would imply for the South!

The second case study examined the heated up case of a Civil Society Equity Review, which assessed countries as either "leaders" or "laggards" depending on whether their Intended Nationally Determined Contributions (INDCs) fell within the band of what the report defined as each country's "fair share" of the mitigation effort. Fair shares were determined by parameters based on the broadly accepted equity principles of responsibility and capability, which were agreed to by the civil society coalition (see Holz et al. this issue). This process resulted in a participatory science report presented in the lead up to the 15th Conference of the Parties (Action Aid et al. 2015) that advocated for increased ambition by the countries singled out as "laggards", by highlighting their (un)fairness in relation to a given set of justice principles, thereby bringing voices of dissent and criticism to the fore.

Lahn concludes in favor of "heating up" discussions which begin from an understanding of the different positions and allows for substantive debate, rather than "cooled down" discussions which can obscure the underlying assumptions in scientific methodologies and their political implications. This raises the question of whether reporting on the existing literature on burden sharing is, as IPCC scientists may argue, merely a scientific act. The paper brings to the fore the discussion of scientific involvement in international climate governance, suggesting that scientists "should not shy away from highlighting conflicts in values and interests, rather than seeking to contribute to an illusory consensus" (Lahn, this issue).

3.2 Can research on geoengineering through solar radiation management be justified by equity reasons?

The failure so far to rapidly phase out greenhouse gases has raised the question of whether geoengineering will be required in order to meet temperature targets. The two main geoengineering approaches include solar radiation management (SRM or just solar geoengineering) and Carbon Dioxide Removal (CDR). Jane Flegal and Aarti Gupta argue, in their paper in this Special Issue, that proponents of SRM are using equity as a central justification for their research. Even in the absence of a clear political, legal or policy go-ahead for SRM, the authors find that the 1.5 °C temperature aim of the Paris Agreement is

now being used to justify research on solar geoengineering on the basis of a concern for the global poor. The authors characterize experts advocating for a shared vision of the role of solar geoengineering in climate policies as "sociotechnical vanguards"—evoking notions of equity to justify imagined technological pathways of the future that exclude the perspectives of those most vulnerable to climate change in the production of this knowledge. They outline three specific expert evocations of equity used as a way to justify near-term research demands: calls for more research in order to shed light on the distributional outcomes of envisioned futures with and without solar geoengineering, including a call to reduce uncertainties inherent in scientific models; a framing of "climate risk management" for evaluating the pros and cons of solar geoengineering; and using the 1.5 °C objective of the Paris Agreement to justify research on solar geoengineering out of concern for the global poor.

In a similar vein to Lahn (this issue), the authors argue that narrowly framing solar geoengineering and any attendant equity concerns as an empirical question, answerable by (more) scientific analysis, may (re)produce a dichotomy between the production of scientific knowledge, on the one hand, and the resolution of broader political and normative debates, on the other. The authors conclude that the overarching question in the context of an equity discussion becomes: Who will bear the burden of striving for 1.5 °C, what means of doing so become tenable, and on what grounds?

3.3 Does cost–benefit analysis ignore key equity dimensions in Carbon Dioxide Removal?

Turaj Faran and Lennart Olsson examine how in addition to equity arguments, scholars are (mis)using the cost–benefit approach to justify Carbon Dioxide Removal (via the use of bioenergy with carbon capture and storage), as one way to meet the 1.5 °C objective. For example, the Royal Society's report on the topic argues that the costs of investing in this form of geoengineering are much smaller than the benefits. However, the question is whether cost–benefit analysis (CBA) is an appropriate analytical approach given the huge risks involved to society—such risks cannot be easily calculated or apportioned within the cost–benefit analysis method. They argue that climate engineering is a classic case of Schumpeterian innovation, not because the technology involved is necessarily radical, but because of the sheer size and scale of the technical operation, because of the hidden linkages that it may in time show to have with other sectors of the economy, and equally because of the unknown impacts it may prove to have on the environment and subsequently on the whole economy. In such cases, one cannot speak of "economic viability" in the conventional sense that applying the method of CBA may reveal.

The authors argue that the risks of such technologies are borne by society as a whole and not just by those investing in the technology and thus it is unfair that the risks to society are excluded and the rewards are attributed to those who invest in the technology. The paper uses a risks-rewards nexus framework to conclude that cost calculations on carbon capture and storage externalize the risks in order to come to an estimation of the costs and benefits. In doing so, CBA ignores the real risk-takers and thus misuses a standard measure to promote investment in the field of carbon capture and storage, when a more just approach would be to focus on reducing emissions.

3.4 Do negative emission technologies exacerbate or mitigate climate risks?

In line with the previous two papers which focus on geoengineering (solar, carbon capture and storage), the paper by Kate Dooley and Sivan Kartha examines carbon removal by large scale utilization of terrestrial sinks. The paper uses a risk framework to argue that negative emission technologies (NETs) raise different kinds of risks than conventional mitigation options (reducing emissions) because if the former fails, the impacts of global warming may be irreversible as accepting these risks may lock us into much higher levels of warming than intended. The existing research tends to see these land-based NETs (bioenergy combined with carbon capture and storage, and afforestation) as cost-effective, but scarcely takes the risks into account, or who bears the risks (as also highlighted in the previous paper by Faran and Olsson).

Given that land is a limited resource, land-based CDR needs also to be in line with the SDGs especially those in relation to food security, climate change and ecological integrity. The paper argues that the upper end of the stated range of negative emissions from published 1.5 °C scenarios (between 450 and 1000 Gt CO_2) is improbably high to be achieved through land-based mitigation, given biophysical limits and the risks of social and economic impacts. The paper instead presents a set of options for achieving a lower threshold of negative emissions (370–480 Gt CO_2) that does not exceed biophysical constraints and could conceivably be implemented without jeopardizing other critical land uses and sustainable development objectives. The analysis shows that measures such as ecosystem restoration and reforestation could achieve the carbon removal required for 1.5 °C, if the role of forests, particularly carbon-dense and biologically rich intact forest landscapes, was prioritised as a critical mitigation strategy.

In addition to contributing to substantial climate change mitigation, such options contribute to a multitude of sustainable development objectives, including preserving ecosystem services such as biodiversity and watershed protection, and protecting food security, human rights, and local livelihoods. Achieving the dual outcomes of climate and development goals will require approaches that promote localized decision-making over natural resources, and recognize and strengthen customary rights to land, as key elements of enhancing and maintaining biospheric carbon stocks.

4 Equitable burden sharing

The following papers focus on equitable burden sharing, and on different scales of action in the context of countries' commitments to combating climate change. The first two papers look at how equity can be assessed, and to what extent countries' existing commitments can be considered equitable. The final paper examines national and sub-national scales of action to determine the benefits of orchestrating—using networks to increase engagement of—non-state actors into climate responses.

4.1 Are existing INDCs fair?

The paper by Harald Winkler et al. examines the Intended Nationally Determined Contributions (INDCs) submitted by countries prior to the Paris Agreement. In these INDCs, countries were invited to explain how and why their bottom-up contributions could be considered fair. This paper analyzes the arguments of 163 countries with regard to why

they think their contribution is fair. The striking finding is that most countries argue that their contribution is so marginal that they do not have to take much action, even though these are some of the countries with the highest per capita emissions. The low per capita argument is used by many others. Many countries argue that their vulnerability to climate change is justification for focusing on adaptation. However, the paper concludes that the equity claims made by countries are superficial and largely unsubstantiated. The authors argue that states must be pushed to use more robust methods to assess why their approach is fair and that these should be assessed in the global stocktaking process of the UNFCCC.

4.2 How can national fair shares for INDCs be determined?

The following paper by Christian Holz, Sivan Kartha and Tom Athanasiou addresses the question of sharing the global mitigation effort fairly. The paper examines existing commitments and effort-sharing parameters agreed in a deliberative civil society process. It then compares the extent to which national mitigation pledges are compliant with, or fall short of, what is required. They present a framework that includes responsibility, capacity or ability to pay and the right to development (see Gupta and Arts, above).

The authors argue that rich countries need to reduce their own emissions and contribute toward global emission reductions, while poor countries need to do their own share as well as be helped, via international cooperation, to transform their societies. In relation to key countries, the paper concludes that China does more than its fair share and India meets its obligations, while the EU, USA, Japan and Brazil need to do significantly more. The paper concludes that countries need to not only take unilateral emission reduction measures at home, they also need to engage in deep cooperation with each other—if a 1.5 °C world is to become a reality. Such deep cooperation implies that the potential for traditional offsetting should be reduced and instead a real focus on collaboration for phasing out fossil fuels is needed (as also argued by Gupta and Arts, this issue).

4.3 Focus on sustainable development through regional and national orchestration of non-state action

The final paper, from Sander Chan, Oscar Widerberg and Paula Ellinger, focuses on the importance of non-state actors to meet an ambitious 1.5 °C climate target. The paper looks at orchestration between international organizations or governments, and "intermediaries" (i.e., city networks and partnerships) and analyzes whether and to what extent orchestration helps to realize a 1.5 °C world.

The paper takes as a central orchestrator the Global Climate Action Agenda (GCAA), part of the UNFCCC agenda to enhance action before 2020, and presents a comparative case study. The case studies examines how national and regional orchestration efforts can bolster the impact of the GCAA through "catalytic linkages" that can engage new and underrepresented actors, emphasizing equity and ambition in implementation of the NDCs, and providing support to intermediaries to increase action. Based on five national and regional case studies, the authors find that the GCAA has facilitated direct catalytic linkages by entering into collaborations with city and business networks and mobilizing new initiatives, but has had indirect catalytic effects on the emergence and development of national and regional orchestration initiatives.

The authors present examples of orchestration focusing on social or climate justice in the regional context, bringing onboard underrepresented stakeholders and redressing North/South imbalance in business engagement. The paper concludes that the GCAA could

increase national contributions by enabling and building the number of climate actions and efforts at the sub-national level, but "highlight four limitations: the focus on large scale and economically powerful actors; a lack of focus on implementation; weak linkages with the 1.5 °C target and social justice concerns; and limited provision of material and ideational support." Instead, the authors suggest that a greater focus on catalytic linkages with regional and national orchestrators could better achieve these objectives, given their greater capacity to "understand and address challenges and opportunities among regional and local actors" (Chan et al., this issue).

5 Conclusion

The last 27 years have seen the rhetoric of equity ebb and flow within the climate negotiations—not least affected by linguistic tricks intended to undermine the effect of the principles in general and that of the right to sustainable development and the precautionary principle in particular. These 27 years have witnessed only 5 years of legally binding quantitative commitments (2008–2012) for the industrialized countries minus the USA and Canada. There is hope that the bottom-up approach of the Paris Agreement might lead to greater implementation by all countries of their own nationally determined contributions.

Despite general acknowledgement of the importance of equity, operationalizing it has proven to be challenging. The Paris Agreement marks perhaps a decisive shift away from top-down targets that could have been based on carbon budgets and equity-based allocation. Further, the language of the Paris Agreement does not accept the universality of climate justice instead stating that "the importance *for some* of the concept of 'climate justice' when taking action to address climate change" (UNFCCC 2015, emphasis added) needs to be taken into account. Justice delayed is justice denied. Despite existing climate injustices, the urgency of the action needed to ensure that the risks of climate change are kept within manageable limits means that the multiple equity dimensions within the climate change problem need to be understood as a way to deepen action and to ensure a just world.

As Lahn points out, avoiding equity debates will not solve the distributive justice problem inherent within the UNFCCC, challenging the argument of Keohane that focusing on justice could undermine political will. Rather than being a distraction, a greater focus on equity can deliver greater ambition through deepened international cooperation (Holz et al.), enable more structured comparison of effort and therefore greater willingness to participate (Winkler et al.), and present economic analyses that takes account of societal risk, such as the risk-reward nexus (Faran and Olsson).

In terms of the dual objectives of the Paris Agreement to limit global warming to below 2 or 1.5 °C, on the basis of equity and in the context of sustainable development, Chan et al. show that greater participation of underrepresented stakeholders through catalyzing local action creates a dual focus on climate objectives and sustainable development objectives. In a similar vein, Kate Dooley and Sivan Kartha highlight the potential synergies between land-based carbon removals and sustainable development goals. Joyeeta Gupta and Karin Arts point out the need to integrate the Right to Development with the Right to Promote Sustainable Development, while Jane Flegal and Aarti Gupta warn against a shift away from the historical responsibility component of the CBDR principle in the UNFCCC to the capacity component that risks "equity debates to become less about ambitious mitigation by those with the greatest historical responsibilities, and more about

enhancing the capacities to take action of those with lower responsibilities." These papers contribute to a growing recognition that climate action and sustainable development must be tackled together, and that addressing the equity dimensions of the climate crisis can contribute to meeting these dual objectives.

References

Action Aid, et al. (2015). Equity and the ambition Ratchet: Towards a meaningful 2018 facilitative dialogue. Report, civil society equity review.

Gupta, S., Tirpak, D., Boncheva, A. I., Gupta, J., Hohne, N., Konoan, G. M., et al. (2007). *Policies, instruments and cooperative arrangements, IPCC-3 fourth assessment report* (pp. 747–807). Cambridge: Cambridge University Press.

Klinsky, S., Klinsky, S., Roberts, T., Huq, S., Okereke, C., Newell, P., et al. (2016). Why equity is fundamental in climate change policy research. *Global Environmental Change*. https://doi.org/10.1016/j.gloenvcha.2016.08.002.

UNEP. (2017). *The emissions gap report 2017*. United Nations Environment Programme (UNEP), Nairobi.

UNFCCC. (1992). United Nations Framework Convention on Climate Change.

UNFCCC. (2015). The Paris agreement. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf.