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Experiences of host communities with carbon market projects: towards multi-level climate justice

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The literature on equity and justice in climate change mitigation has largely focused on North–South relations and equity between states. However, some initiatives (e.g. the Clean Development Mechanism (CDM), the Reducing Emissions from Deforestation and Forest Degradation programme (REDD), and voluntary carbon markets (VCMs)) are already establishing multi-level governance structures that involve communities from developing countries in global mitigation efforts. This poses new equity and justice dilemmas: how the burdens and benefits of mitigation are shared across various levels and how host communities are positioned in multi-level governance structures. A review of the existing literature is used to distill a framework for distinguishing between four axes of climate justice from the perspective of communities. Empirical evidence from African and Asian carbon market projects is used to assess the distributive and procedural justice implications for host communities. The evidence suggests that host communities often benefit little from carbon market projects and find it difficult to protect their interests. Capacity building, attention to local power relations, supervision of business practices, promotion of projects with primarily development aims and an active involvement of non-state actors as bridges between local communities and the national/international levels could potentially contribute towards addressing some of the key justice concerns.

Policy relevance

International negotiations on the institutional frameworks that are envisaged to govern carbon markets are proceeding at a rather slow pace. As a consequence, host countries and private-sector actors are making their own arrangements to safeguard the interests of local communities. While several standards have emerged to guide carbon market activity on the ground, distributive as well as procedural justice concerns nevertheless remain salient. Four empirical case studies across Asia and Africa show that within the multi-scale and multi-actor carbon market governance, local-level actors often lack sufficient agency to advance their claims and protect their interests. This evidence suggests that ameliorating policy reforms are needed to enhance the positioning of local communities. Doing so is important to ensure future acceptability of carbon market activity in potential host communities as well as for ensuring their broader legitimacy.

Keywords: carbon markets; Clean Development Mechanism (CDM); host communities; justice; REDD; voluntary carbon markets

1. Introduction

Equity and justice issues have been of paramount significance in international negotiations on climate change ever since the adoption of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) (Athanasίου & Baer, 2002). Competing visions among Parties over who should participate in global mitigation efforts have stood in the way of establishing an effective climate change regime for nearly two decades (Dimitrov, 2010; Heyward, 2007). While developing countries are

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reluctant to be bound to formal mitigation commitments, they are nevertheless willing to act at the domestic level (Bailey & Compston, 2012). The Clean Development Mechanism (CDM), the UN Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) programme, and voluntary carbon markets (VCMs) are examples of vehicles for participation of developing countries in mitigation efforts.

A key characteristic of the aforementioned initiatives is the involvement of an increasing number of stakeholders, ranging from industrialized and developing countries to businesses and NGOs at the international, national, and local levels. The increasing involvement of non-state actors that is reflected in the success of carbon markets in terms of investment volumes and growth has mainly been due to the formation of a political coalition between financiers and environmentalists, together with the arising economic opportunity (Paterson, 2012). Such multi-level governance arrangements have emerged because even though climate change is a global problem, its causes and impacts, as well as the efforts needed to address them, span from local to global levels (Adger, 2001). Decisions about the scales at which climate change policy is to be made are as important as the decisions on mitigation efforts themselves, because interventions at different scales have different advantages and limitations (Sovacool & Brown, 2009). For instance, relying solely on an effective and fair international solution for climate change could delay action, and might, in any case, not work well alone without adequate efforts at lower geographical scales (Ostrom, 2009; Paavola, 2011). Moreover, policies that are agreed at a global scale might not generate sufficient trust among citizens and organizations, therefore compromising their effectiveness (Ostrom, 2009; Paavola, 2008).

Problematically, multi-level governance structures (such as those for carbon markets) emerged before international negotiations could advance the overall institutional framework within which they would operate. For example, only after the UNFCCC Conference of the Parties in Cancun in 2010 did parties engage in lengthy deliberations on the optimal design of a safeguard information system (SIS) to track how REDD+ safeguards are being addressed and complied with (Visseren-Hamakers, McDermott, Vijge, & Cashore, 2012). In the meantime, diverse initiatives such as the Gold Standard, the Climate, Community and Biodiversity Alliance (CCBA), and the Plan Vivo Standard are already being used to ensure that carbon projects draw on principles of community-based natural resource management and focus on the delivery of socio-economic benefits alongside carbon sequestration.

This uncoordinated expansion of carbon markets has generated new justice dilemmas regarding the sharing of burdens and benefits of mitigation across scales, and the positioning of host communities and countries in multi-level governance structures. It is therefore vital to study justice issues across scales, as it has been acknowledged that different scales of analysis may lead to different interpretations of injustice; indeed, the choice of scale is inevitably political (Kurtz, 2003; Williams, 1999). The choice of scale is not only important for the analysis of injustice – it is also invoked by different actors to strategically construct injustice (Towers, 2000). Hence, the prevalent framing of climate justice at the international scale hinders alternative claims of justice rooted in the varied experiences of the diverse actors across multiple scales (Fisher, 2012). A climate justice analysis that seeks therefore to bring forth claims of diverse actors across multiple scales has the potential to contribute to a pluralistic understanding of climate justice (Fisher, 2012; Marion Suisseya & Caplow, 2013).

In this article, the focus is on examining the experiences of local communities with carbon market projects and their interactions with other scales of carbon market governance in order to understand

their positioning within these structures from a justice perspective. This is a contribution to the emerging body of literature that examines the experiences of communities' participation in carbon governance either through desk-based studies (e.g. Marion Suissey & Caplow, 2013; Olsen, 2007; Subbarao & Lloyd, 2011; Visseren-Hamakers et al., 2012) or via case study evidence (e.g. Böhm & Dabhi, 2009; Boyd et al., 2007; Brown & Corbera, 2003; Gross-Camp, Martin, McGuire, Kebede, & Munyarukaza, 2012; Schroeder, 2010). A framework is proposed comprising the key axes and dimensions of climate justice in relation to the positioning of local communities in the multi-level governance context. The framework is then applied to case studies of CDM projects from India, a REDD project from Tanzania, and VCM projects from Mozambique and the Democratic Republic of Congo to further substantiate social justice issues. The case studies draw on empirical data collected *inter alia* through qualitative in-depth interviews with multiple stakeholders, analysis of project documents, and a review of existing studies. Finally, the findings are discussed and key justice implications are drawn for carbon markets governance across multiple scales.

2. Justice and local communities' positioning in carbon governance

A number of commentators have questioned the possibility of reconciling the pursuit of justice with neoliberal environmental governance (Lohmann, 2008; Okereke, 2008). The intention of this article is not to engage with this question at the theoretical level, yet it is considered sufficiently important from an empirical point of view to critically examine injustices experienced by communities in existing carbon projects and to consider whether and how some of them could be overcome.

Ensuring justice for communities hosting CDM, VCM, and REDD+ projects is important for at least three reasons. First, all these initiatives have dual objectives of generating low-cost emission reductions and contributing towards sustainable development in the host communities (Forest Trends, 2011; Stringer et al., 2012; UNFCCC, 1997). Second, host communities will have to live with the projects, thus being vulnerable to their impacts. Third, growing evidence suggests that affected communities can find themselves marginalized due to technical complexity, limited capacity, and a relative lack of power to influence important decisions (Böhm & Dabhi, 2009; Corbera, Brown, & Adger, 2007; Schroeder, 2010).

Theories of justice fall into several distinct types – utilitarianism (maximum benefit overall), contractarianism (greatest benefit for the poorest), egalitarianism (reducing inequality), and libertarianism (fair share of benefits and burdens with an emphasis on individual freedom) (see Liu, 2000). It is not possible to objectively or impartially decide between competing claims of justice that are based on different principles (Sen, 2009). Hence, pursuit of justice requires an accommodation of a plurality of reasons (Sen, 2009). Moreover, although there is no single definition of justice, the core idea of justice is that 'no one should be preferred if others are thereby put at a disadvantage, and that no one should be harmed for someone else's advantage' (Sachs & Santarius, 2007, p. 125). Applying this central idea of justice, which focuses on the relative positions of different social actors, four key axes are proposed for examining justice from the perspective of host communities in multi-level carbon market governance:

- Global priorities vs. local concerns
- National/regional objectives vs. local aspirations

- Business vs. community interests
- Within host communities

Distributive and procedural justice concerns are pertinent in each of the above four axes. Distributive justice has received more attention in the literature so far, but there is increasing recognition of the importance of the procedural dimension of climate justice (e.g. Paavola & Adger, 2006). The claims of injustice arise not just from an inequitable distribution of burdens and benefits, but also from lack of recognition, representation, and opportunities for participation (Fraser, 2009; Paavola, 2005; Schlosberg, 2004). Pre-existing power relations and inequalities between actors do shape access to distribution and participation (McDermott, Mahanty, & Schreckenber, 2013). They may be seen as distinct from procedural justice (McDermott et al., 2013; Schlosberg, 2004) or be considered aspects of procedural justice (Paavola, 2005). This article follows the latter approach in which recognition, participation, and pre-existing power relations together form the core concerns of procedural justice (Paavola, 2005). The following four subsections outline our analytical multi-level justice framework, which focuses on the four axes, each of which is defined by potential justice tensions between particular levels. Each axis includes both distributive and procedural justice elements.

2.1. Axis 1 – global priorities vs. local concerns

The key distributive issue with respect to carbon markets on this axis is the balance between global mitigation benefits and local sustainable development contribution. Desk-based analyses of CDM projects (Olsen, 2007; Sirohi, 2007; Subbarao & Lloyd, 2011; Sutter & Parreño, 2007), as well as case studies of CDM projects (Böhm & Dabhi, 2009; Boyd et al., 2009; da Cunha, Walter, & Rei, 2007), have concluded that they have often failed to contribute to local sustainable development. Studies of projects in the Gold Standard (GS) scheme, which was launched to reward projects that make a clear contribution to sustainable development, suggest that their contribution to sustainable development is not significantly bigger than that of ordinary projects (Drupp, 2011; Nussbaumer, 2009). VCMs have been expected to be better able to deliver higher sustainable development benefits than the CDM because of their ability to accommodate a wider range of project types. However, in reality, the experience with VCM projects has been comparable to that with the CDM (Estrada, Corbera, & Brown, 2008). A desk-based review of GS and Climate Community and Biodiversity (CCB) Standard projects has concluded that it still remains to be seen whether the adoption of these standards leads to additional sustainable development benefits, as most studies to date have relied on project documents (Wood, 2011). Emerging evidence suggests that the REDD+ mechanism faces similar challenges (Blom, Sunderland, & Murdiyaso, 2010; Mustalahti, Bolin, Boyd, & Paavola, 2012).

For procedural justice, it is critical that communities are recognized as key actors and have opportunities to shape the design of these mechanisms. Studies have highlighted how communities hosting CDM projects may have understandings and priorities other than the global emphasis on emission reductions (Bozmoski & Hultman, 2010; Parnphumeesup & Kerr, 2011). That is, global managerial priorities may marginalize local understandings and practices within climate change mitigation mechanisms such as the CDM (Boyd, 2009). Similarly, negotiations on REDD offer limited opportunities to challenge the prevailing neoliberal agenda, which emphasizes market-based solutions (Long, Roberts, & Dehm, 2010; Okereke & Dooley, 2010). This lack of openness in international negotiations

can be a barrier to procedural justice. For instance, indigenous or forest communities are highly vulnerable to the impacts of climate change, as well as the design of REDD+ , but despite indirect participation through trans-national advocacy coalitions, their ability to influence the design of REDD+ is weak (Schroeder, 2010). From a procedural justice perspective, it is crucial that these mechanisms of global carbon governance both respect and accommodate local differences (Jasanoff & Martello, 2004).

2.2. Axis 2 – national/regional objectives vs. local aspirations

As experience has shown, what counts as a sustainable development contribution at the national level is not necessarily in the interest of local communities. Hence, the distribution of benefits and burdens between these two levels raises important justice concerns. The CDM and REDD+ award a prominent role to national governments. In the CDM, host-country governments set up Designated National Authorities (DNAs), which define what counts as ‘local sustainable development’ and are responsible for host-country approval of projects (Lecocq & Ambrosi, 2007). Such institutional arrangements have strong implications for distributive justice. Rindeljäll, Lund, and Stripple (2011) highlight that Chile has used CDM projects mainly to attract foreign investment and has not made much effort to ensure sustainable development outcomes. The Indian government’s approach to CDM is similarly considered primarily as that of a ‘business-friendly market facilitator’ (Benecke, 2009, p. 362). Using case studies from India, Erlewein and Nüsser (2011) note that large hydropower CDM projects can contribute renewable energy to the electricity grid, but create environmental and social burdens at the local level. In the context of REDD+ , national governments are expected to benefit from increased investment, development of physical infrastructure, reduced spending in certain sectors, and promotion of national environmental objectives (Peskett, 2011). For their part, host communities are expected to benefit from increased employment and local incomes, as well as from improvements in the local environment (Peskett, 2011). However, experience with environmental instruments marketed as win–win solutions suggests that there are likely to be tensions and trade-offs between the different potential benefits (Muradian et al., 2013). It is then important from a justice perspective to examine how local impacts are balanced with national-level benefits.

There are also important procedural justice dimensions along this axis. In the CDM case, most countries assess the contribution to sustainable development without direct engagement of local stakeholders. An exception is the Peruvian DNA, which conducts site visits and interviews local stakeholders to assess the level of local consultation and participation in projects (Disch, 2010). This case apart, serious concerns remain regarding the opportunities available to local communities to participate and influence projects (Böhm & Dabhi, 2009; Parnphumeesup & Kerr, 2011). With regard to REDD+ , there is limited understanding on which actors are able to participate in shaping national strategies. Hence, it is important to investigate the extent to which local communities have agency in influencing governance at national levels (Corbera & Schroeder, 2011).

2.3. Axis 3 – business vs. community interests

The prominent role of the private sector in carbon markets raises important distributive justice concerns for the host communities. On the one hand, it has been claimed that the CDM ‘breaks new ground in international environmental law’ (Streck, 2004, p. 298) because of its emphasis on the involvement of the private sector. On the contrary, it has been argued that there is a need for a supervisory

body as – unlike the public project cycle – the private contracting cycle, which includes the commercial terms of CDM projects, is non-transparent (Klijn, Gupta, & Nijboer, 2009). The literature has highlighted a bias towards business interests at the cost of host communities (Benecke, 2009; da Cunha et al., 2007; Gilbertson, 2009). In some cases, polluting industries have benefited from additional revenue offered by the CDM while continuing to pollute, and CDM projects have also been implemented despite opposition from local communities and NGOs (Böhm & Dabhi, 2009; Ghosh & Sahu, 2011). In this regard, certain waste gas projects from refrigerant and nylon industries have proved rather controversial (Estrada et al., 2008; Wara, 2007). Although such projects have been discontinued from the CDM, they are still included in certain VCM standards (Estrada et al., 2008).

A range of private sector and business actors play important roles in these mechanisms. The influence that local communities have on projects relative to businesses raises crucial procedural justice concerns. CDM projects are typically developed by private-sector actors seeking additional revenue. In VCM and REDD+, the private sector may be involved in developing projects or in funding them (depending on the specific context). Procedural justice demands that local communities have a voice and influence on projects alongside the private sector. In the CDM, procedural injustices are created due to the host communities' inability to influence important decisions, which are taken by project developers, host-country governments, and investors (Löwbrand, Rindeljäll, & Nordqvist, 2009). Provisions for meaningful public participation are expected to address this challenge. However, as tends to be the case with environmental governance more generally, the way in which participatory processes are understood and pursued by practitioners tends to be instrumental (Wesslink, Paavola, Fritsch, & Renn, 2011). From a procedural justice perspective, an instrumental participatory process cannot address the issues related to the recognition of communities and their interests, or the relative power between local communities and businesses.

2.4. Axis 4 – within the local communities

Even when projects do create local benefits, these may not be distributed fairly among the members of local communities. Community-driven development projects often do incorporate principles of 'good governance' advocating the equitable distribution of benefits accruing from these projects (Fritzen, 2007). However, many such projects do not benefit the poor and are susceptible to elite capture (Mansuri & Rao, 2004). Weak formal and informal institutions allow benefits to be appropriated by local elites (Iverson et al., 2006). A growing number of studies on carbon markets or payment for ecosystem services projects are highlighting how their local benefits may be distributed in an unjust manner (Brown & Corbera, 2003; Gross-Camp et al., 2012). In some cases, this could worsen local conflicts (Brown & Corbera, 2003). However, a focus on formal institutions, such as requirements for participatory processes or the constitution of representative committees, ignores the embeddedness of institutions in complex social processes and the role of informal institutions (Cleaver, 2002). Hence, an approach that recognizes heterogeneity within local communities and focuses on cross-scale social processes is needed (Mehta, Leach, & Scoones, 2001).

To ensure procedural justice, it is important that all those who are impacted by the project are recognized, have opportunities to participate, as well as power to influence. However, existing research has highlighted how selective inclusion of participants from local communities for stakeholder consultation can undermine both procedural and distributive justice (Boyd, 2009; Cole, 2007; Corbera &

Brown, 2008). Recognizing existing inequalities and power relations within host communities brings into question the potential of participatory processes to recognize diverse actors and their interests. Furthermore, however well-designed, participation within pre-defined carbon market activities is not likely to challenge any existing marginalization in communities. Hence, from a procedural justice perspective, it is important to assess who within the local communities has opportunities to participate and influence the projects.

3. Evidence from case studies

Using the multi-level justice framework outlined, this section reviews the empirical evidence from the experience of host communities with varied carbon market projects along all four axes. The cases are taken from recent and ongoing research in Africa and Asia and are chosen to provide a range of experiences across diverse institutional contexts from predominantly negative to relatively encouraging. They offer useful insights into the challenges faced in ensuring that local communities are positioned in a just manner in the multi-level governance of carbon markets and how some of the challenges could be addressed. At the end of this section, a summary is presented of the key justice issues identified across all the case studies.

3.1. Biomass-based renewable energy CDM projects, Gorakhpur, India

India Glycols Limited (IGL) and Rayana Paper Board Industries Limited (RPBIL) have added biomass-based co-generation to their existing industrial units at Gorakhpur in the state of Uttar Pradesh in North India. The IGL distillery will use biomass residue from the distillery and rice husk sourced from the vicinity to generate steam and electricity for use within the distillery, with surplus electricity being sold to the grid. The RPBIL factory will use rice husk for combined heat and electricity generation for internal use. These 'energy from waste' projects were registered with the CDM, as they reduce fossil-fuel use and contribute to reducing carbon emissions. The IGL distillery and the RPBIL factory are expected to reduce their CO₂ emissions by 110,157 tonnes and 10,100 tonnes, respectively, on an annual basis, over a period of ten years (UNFCCC, 2012a, 2012b). The projects aimed to create direct local benefits in terms of employment and opportunities to sell rice husk for use as a fuel. Both projects conducted consultation meetings with stakeholders, including local communities, as part of the CDM process, to inform them of the project and seek their feedback (UNFCCC, 2012a, 2012b).

The villages of Bhabsa and Judiyan are located in close proximity to the IGL distillery, while Dhaurahra is located close to the RPBIL factory. Our case study was based on an analysis of project documents and primary data collected at these project sites. Twenty-one semi-structured interviews were conducted with residents ($n = 15$), village leaders ($n = 3$), and senior representatives of the industrial units ($n = 3$). Initial interviews were conducted with elected village heads in each of the villages. Snowball sampling was used to select further participants. The interviews were supplemented with on-site observations to generate evidence related to local pollution impacts and physical infrastructure development. Important distributive and procedural justice issues emerge across all four axes. Both projects prioritize global carbon emission reductions, national development goals, and business interests, while offering minimal benefits and say in decision making to host communities. Within the local

communities, the impacts of the projects are distributed in an unjust manner and only a few selected residents were provided with the opportunity to participate.

Residents of all three villages found it difficult to differentiate between the benefits from the CDM projects *per se* and those from the industrial units (Singh, Paavola, & Mathur, 2013). Even the IGL distillery's management agreed that employment created by the CDM project could not be distinguished from the overall employment at the distillery. Although the expected global emission reduction contributions are clearly defined, the local benefits are not, raising important distributive justice concerns along the first axis, i.e. between local and global levels. There are also procedural justice concerns along this axis. The CDM process requires that the project documents are made available through the UNFCCC website for thirty days to invite comments. However, literacy levels were very low, access to the internet extremely limited, and the Project Design Documents were available only in English. Hence, members of local communities were not able to participate through this particular forum.

DNAs in host countries are responsible for assessing the local sustainable development contribution of a CDM project before approving it. In India, the DNA assesses the local sustainable development contributions of projects based on very broad set of criteria. Moreover, it does not have any procedures for verification of the sustainable development contributions on the ground, or for direct engagement with local communities to incorporate their sustainable development priorities. These cases therefore highlight the challenges for ensuring both distributive and procedural justice along the second axis, i.e. between local and national levels.

Bhabsa and Judiyan villagers had concerns about the IGL distillery's negative impacts on the local environment and their livelihoods (Singh et al., 2013). They complained about untreated effluent discharge to the local stream, the high concentration of ash in the air, as well as smell and noise. Residents of Dhaurahra also complained of air, noise, and water pollution from the RPBIL factory. The fact that these industrial units continue polluting regardless of the CDM highlights justice concerns along the third axis, i.e. between local community and business. Although the CDM enabled the industrial units to access an additional revenue stream for contributing to climate change mitigation, it did not provide the opportunity to address the non-GHG pollution that was affecting the local communities more directly.

Local power relations shaped the projects' consultation processes as well as the distribution of benefits between and within the villages, raising justice concerns across the fourth axis, i.e. within the local communities. Bhabsa and Dhaurahra individuals who had close relationships with the industrial facilities were the ones informed about the projects and included in the consultation process. However, relations between the IGL distillery and the Judiyan village have been hostile because of an earlier conflict and, for this reason, the distillery did not offer jobs to the residents of Judiyan or buy rice husk from them. In Bhabsa, a few individuals with close relationships with the distillery have captured most of the benefits. Similarly, few Dhaurahra residents were employed at the RPBIL factory, which was also not buying rice husk from the village. Moreover, all RPBIL employees from the village belonged to the same caste, raising suspicions of discrimination in the village.

3.2. N'hambita Community Carbon Project, Mozambique

The N'hambita Community Carbon Project (NCCP) in Sofala District, Mozambique, was initiated in 2003 with project communities who had been displaced by the civil war that affected the region. The project has been coordinated by a private-sector carbon-trading company, Envirotrade Ltd, with the

aim to improve rural livelihoods, engage in habitat restoration and forest management, and conserve biodiversity, while generating verified emission reductions (VERs) as a funding mechanism through the VCM (Goodman, 2010). The project has been endorsed by the Rainforest Alliance and Plan Vivo Foundation and was validated for the second edition of the CCBA standard at the Gold level in all three evaluation areas of climate, community and biodiversity (Rainforest Alliance, 2010), leading to its portrayal as a model project from which others could learn. In terms of climate change mitigation, the aim of the project is to sequester more than 250,000 tonnes of CO₂ (WRI, 2011). A series of academic analyses have examined the impacts of this project on land management practices (Palmer & Silber, 2012), household decision making in terms of labour allocation (Groom & Palmer, 2012), and local institutional structures for project design and implementation (Dougill et al., 2012).

Although some local-level successes are acknowledged in the above-mentioned analyses, the project has been beset with difficulties arising from the limited possibility to fund forestry and land-use carbon sequestration activities through compliance markets (Kill, 2013). Since 2008, project activities were planned to be funded from VCM carbon credit sales, but the reduced demand and price for such credits has led to delayed community-level payments. Semi-structured household-level interviews ($n = 9$), community focus groups ($n = 4$), and expert interviews with private sector ($n = 4$) and government staff ($n = 4$) were undertaken across three project communities in 2012 (Dyer et al., submitted), and highlighted that many respondents remain positive about the project's impact on livelihoods. Justice concerns, however, emerge across all four axes.

The concerns along the first axis (between local and global levels) are related to the vulnerability of the delivery of local benefits to fluctuations in global carbon markets. The VCM has shrunk in recent years as a result of the economic downturn, and the anticipated carbon offset compliance market is yet to be realized. As a result, carbon credit trading has not met the demand from local communities for project involvement. Although the project has realized some co-benefits to host communities, vulnerability to these fluctuations in the global carbon market prices has raised questions as to whether these will be endured over the longer term. Lessons from this project demonstrate the role of international-level factors, over which a community has no control.

The concerns along the third axis (between community and business) are also related to the fact that the project is currently unable to sell enough carbon to be financially viable and its continuation has been based on donations from the Envirotrade founder and board members. This dependence on donations positions local communities in a weak position relative to the private-sector actor, posing challenges to ensuring distributive and procedural justice. Moreover, there is evidence of communication breakdowns between Envirotrade and the communities, particularly in communities further away from the N'hambita headquarters. Focus-group participants said that there had been little communication on the issue of delayed payments, and one extension officer noted that he did not know the reason for payment delays and that there is now community mistrust of project staff. This mistrust not only creates further challenges to project delivery, but also creates barriers to distributive and procedural justice issues along this axis.

Unlike the CDM and REDD+, national-level governance does not play a direct role in the VCM. Hence, the importance of the second axis of our framework (between local and national/regional levels) is relatively limited for the VCM. However, the interactions between communities and the other regional/national-level institutions can affect the positioning of local communities. In N'hambita, the role played by agricultural extension workers in providing support to local communities

emerges as an important issue. It emerged from household-level interviews that community members saw the extension workers only twice a year, leading to significant challenges for local communities in terms of opportunities to influence, hence impacting procedural justice across this axis.

At the community level there have been reports of elite capture of benefits, with male-headed, high-income households perceived to be favoured as project participants (Hegde, 2010). This indicates significant challenges in ensuring justice along the fourth axis (within local communities). The difficulty of needing to provide formal evidence of land ownership has added to the difficulty of addressing this justice challenge within communities.

3.3. The Angai Villages Land Forest Reserve, Tanzania

A community-led REDD+ initiative in the Angai Villages Land Forest Reserve (AVLFR) in the Liwale District of Lindi Region, Tanzania, highlights how distributive and procedural justice issues complicate the ability of host communities to develop community-led projects (Mustalahti et al., 2012). The AVLFR is one of the largest Participatory Forest Management (PFM) sites (139,420 ha) in Tanzania, owned by 13 villages. A union of the 13 villages (MUHIMA) was created to protect the villages' interests and to coordinate negotiations with district officials. According to the Clinton Climate Initiative, which conducted the feasibility study, the project's carbon offset potential is 820,000 tCO₂/hectare (CCI, n.d.). In two of the Angai Villages, Mihumo and Lilombe, local goals for REDD+ included the following: (1) the AVLFR should be managed and controlled by the villages themselves; (2) the forest should be preserved for future generations; and (3) funds generated from the AVLFR should be used to improve social services and infrastructure in the villages (Mustalahti et al., 2012). However, the Angai villages' ability to pursue these goals is limited.

This case study is informed by extensive data collected through multiple methods at the project level, as well as in-depth data collection in two of the Angai villages. Overall, 25 semi-structured interviews were conducted with key informants at village ($n = 13$), district ($n = 4$), and national ($n = 8$) levels. Participant observation was conducted at village, inter-village, and assembly meetings. Participatory Rural Appraisal (PRA) techniques such as focus group discussions, transect walks, pairwise rankings, pathways and scenarios exercises were conducted at a village level. Based on the analysis, important findings related to three of the axes emerge.

The setup costs of carbon-market projects are substantial, typically beyond the means of poor, rural communities. The project seeks to support local communities' control and management of forests, as well as improve facilities and infrastructure in the villages. However, these outcomes are difficult to realize without support or access to finance from carbon markets. This leaves them dependent on external support and expertise, thereby raising concerns along the first and second axes. The Angai villages have received sporadic donor support for forestry-related activities for over 15 years. Yet, the PFM and the operation of the inter-village union MUHIMA have not progressed much over this time due to the on/off nature of the support. When externally supported and led activities cease, progress halts because of a local lack of the resources and expertise needed for taking action. Furthermore, the priorities identified by the Angai communities – i.e. water scarcity, rural development, and food security – are not necessarily aligned with the overarching aim of REDD+ at the national level in Tanzania, namely poverty reduction. This leads to significant barriers to procedural justice from the perspective of local communities vis-à-vis the national level and the international donors.

Weak local institutions and lack of trust limit the ability to act collectively, bringing up issues relating to the fourth axis. For example, participation in meetings is customarily rewarded with allowances to cover transport and opportunity costs, but people understand them as benefits that have to be shared. However, allowances only barely cover expenses, so the pressure to share them creates a disincentive to participate and to disseminate any information gained from meetings. For example, MUHIMA has rarely convened and has had little impact to date. The disincentives to participate limit the number of people to those who can afford to do so and thus create a risk of elite capture. For example, if those few people who currently benefit from timber harvesting represent their village in MUHIMA, there is a conflict between their interests and the pursuit of sustainable forest management. This raises critical procedural and distributive justice concerns along our fourth axis, i.e. within the local communities.

The experiences of the Angai villages suggest that while community-led projects could offer the best way for host communities to benefit from carbon-market projects, there remain substantial challenges in making them actually happen. The gap between local and national levels often remains too big to be closed by bottom-up action. Linking solutions are therefore needed and, in Tanzania, the emergence of MJUMITA – the Tanzanian community forest network of forest owners and managers – may be one such solution. MJUMITA has a capacity-building programme (training academy) and a carbon cooperative to help communities reduce transaction costs, engage with buyers in the VCMs, and manage and distribute funds to participating communities.

3.4. The Kamoja Sustainable Livelihoods Programme, DRC

The Kamoja Sustainable Livelihoods Programme (KSLP) is a pilot integrated community development and environmental conservation project initiated by the mining company African Minerals (Barbados) Ltd, a subsidiary of Ivanplats. Much of the forested area around the site will be destroyed by the new copper mine, exacerbating the significant poverty already existing across the area in southern Katanga Province. The KSLP seeks to build a sustainable, independent economy in communities that live in the project's concession areas, aiming to limit the climate change contribution of forest loss and enable community development from the agricultural sector. The KSLP's community development and environmental management contractor, Ecolivelihoods, has invested in capacity building, training, and building appropriate local institutions, starting with the structures that were already there. The project has usefully been framed as a community development activity, not as a climate change mitigation initiative.

The project has three phases (Ecolivelihoods, 2012). The first phase establishes conservation agriculture, an indigenous tree nursery, rehabilitation of drilling sites, market gardens, and a composting unit. The second phase focuses on vegetable and honey production, aquaculture, and improved food processing. Finally, the third phase encompasses the introduction of draft power, poultry production, micro-enterprises with a gender focus, and seed storage and processing infrastructure such as solar driers. Our case-study research involved community focus group meetings in four villages within the project area and interviews with tribal/village leaders ($n = 2$), private-sector representatives ($n = 6$), and community extension officers for each study village (Dyer et al., submitted) with an emphasis on exploring community engagement and the benefits (both perceived and realized) by the project.

TABLE 1 Summary of the key justice concerns across the four axes in our case studies

	Local vs. global	Local vs. national/ regional	Community vs. business	Within the community
Biomass-based renewable energy CDM projects, Gorakhpur, India	Local benefits from the projects were not clearly identifiable, in contrast to global mitigation outcomes. Local community participation was hindered due to literacy, language and technological barriers.	Local communities' development priorities were not taken into account by the DNA. Local communities did not have opportunity for direct engagement with the DNA.	The focus on carbon emissions has not provided opportunities to communities for engaging with the industrial units on other pollution impacts that matter to them.	Only those villages and individuals already sharing a close relationship with the industrial units were consulted and benefited.
N'hambita Community Carbon Project, Mozambique	Fluctuations in the carbon market at the global level have put the maintenance of local benefits over the longer term at risk.	Owing to the limited presence of agricultural extension workers, local communities have not had sufficient opportunities to influence project decisions.	Carbon market problems resulted in the project relying on donations from the carbon trading company. Delayed payments and poor communications created conflicts and lack of trust.	Elite capture of benefits by male-headed, high-income households has been reported. Groups have been excluded due to requirements for formal evidence of land ownership.
Angai Villages Land Forest Reserve, Tanzania	Local communities are unable to access carbon markets due to their dependency on international donor support for expertise and resources.	Local development priorities and national REDD+ goals are not aligned.	Not applicable, given that the project is managed by the inter-village union, MUHIMA.	Limited funds for covering costs for participation in meetings disadvantage the poor, thereby again opening up the possibility of elite capture.
Kamoa Sustainable Livelihoods Programme, Democratic Republic of the Congo (DRC)	The project's participation in global voluntary carbon markets is still pending.	A lack of national-level governance involvement in the project has been noted. This avoids conflicts but leads to the private sector needing to resource extension support.	Private sector has invested in participatory processes focused on both community development (livelihoods) and environmental conservation (carbon & biodiversity) as part of its CSR agenda.	Owing to inclusive participatory processes and diversity of activities, benefits have been reaching across diverse local groups.

The KSLP is now (in 2013) preparing to apply for accreditation via the Plan Vivo Foundation to allow the communities to benefit from trading carbon credits on the VCM. As a result, whether justice issues emerge with respect to the first axis remains to be seen. National-level governance has not played any role in the project, meaning that private-sector actors have taken on a larger role. Hence, the third axis has gained in importance whereas that of the second axis has diminished. The KSLP pilot began in 2010 by using traditional authorities to approach the communities. Traditional leaders then organized meetings in which all key stakeholders actively participated. Such inclusive participatory processes have addressed procedural justice concerns along the third axis to a great extent. The project has also been set up in a way that allows community groups to have complete control over how proceeds from the project are spent, thereby attending to distributive justice concerns along this axis. Interested community members have grouped together to decide on an activity that delivers development benefits but which also benefits climate change mitigation. Groups receive regular support from project representatives. Extension officers trained in conservation agriculture and paid directly by the mining company are also placed within the communities. Visits to a demonstration garden have been used to further train community members in horticulture and conservation agriculture approaches (including the use of bio-char). Such constant engagement means that the communities have been able to access help and advice at any time.

The project's focus on livelihoods and diversity of activities has had clear implications for distributive and procedural justice issues along the fourth axis. Some groups opted for vegetable production through conservation agriculture, in which proceeds from the vegetable garden are wholly controlled by the groups. Another village group has invested its initial earnings in planting groundnuts, while another hired a tractor to plant maize. Awarding diverse local groups control over profits has therefore allowed them to also exert influence over the outcomes of the project.

The key lesson from this project is its framing as a development initiative with potential carbon benefits, rather than as a carbon project with potential development benefits. This framing allows local-level benefits to be delivered independently from the dynamics of the global carbon market and focuses on the co-benefits associated with carbon storage (Stringer et al., 2012).

4. Discussion

Climate justice would demand that developing-country communities who host mitigation projects are able to successfully advance their claims and interests relative to other important actors across multiple scales. Recognizing the multi-level, multi-actor governance of the carbon markets, a framework is proposed that comprises four axes for examining justice concerns from a local community perspective. Examining four case studies with these four axes has allowed an assessment of local communities' positioning in a comprehensive way (see Table 1 for a summary). Several existing studies have empirically examined justice issues across one or two of these axes (Olsen, 2007; Schroeder, 2010), and a few have developed conceptual or theoretical frameworks for the thorough assessment of justice from the perspective of host communities (McDermott et al., 2013). However, few studies have attempted to empirically examine local communities' justice concerns across all levels.

By focusing on the community level and its relationship to other levels and actors, this framework contributes towards challenging the dominant framing of climate justice, which still tends to be at the

international level. Experiences of host communities highlight the relative lack of power they often face relative to other levels and actors. The four axes constitute an accessible analytical framework that can be applied to diverse contexts. Moreover, the framework allows for the perceptions of injustice to be examined from the perspective of host communities without having to select between competing notions of justice that are based on different principles, as discussed in Section 2 (Liu, 2000; Sen, 2009). The framework also allows consideration of distributive as well as procedural dimensions across various scales, taking into account existing power relations between different levels and actors.

Along the first axis (i.e. between the local and global levels) there is a tension between global mitigation benefits, which can be clearly estimated, and local sustainable development benefits, which often tend to be harder to define, measure, and verify. Field observations resonate with the findings of studies suggesting that carbon-market projects tend to prioritize global mitigation outcomes over local sustainable development benefits (Estrada et al., 2008; Olsen, 2007). Moreover, the long-term reliance of local benefits on a fluctuating global carbon market makes communities dependent on factors beyond their control, raising procedural justice concerns in addition to distributive justice concerns. Communities are often unable to pursue their interests at global institutions, as highlighted by the inability of local communities in the Indian CDM case studies to participate in the online consultations through the UNFCCC website. In contrast to other case studies, KSLP from the DRC is a project that manages to protect the interests of the local communities from the uncertainties in carbon markets through extensive efforts in relation to capacity building and strengthening of local institutions. However, because this project has not yet started producing carbon credits, it remains to be seen whether it will be able to continue delivering local benefits while also contributing to global mitigation efforts.

The second axis (i.e. between local and national levels) is particularly important with respect to the CDM and REDD, as both envisage prominent roles for the national level. The Indian CDM cases and the AVLFR REDD+ project in Tanzania highlight how the definition of sustainable development benefits at the national level may not necessarily incorporate the most important development concerns of local communities. Moreover, these cases highlight how local communities are unable to protect their interests without support and facilitation from the national level. Hence, a lack of opportunity for local communities to participate and influence national-level decision-making processes in these mechanisms creates barriers with regards to ensuring procedural justice. In Tanzania, other emerging initiatives highlight the potential role that carbon cooperatives or peer networks can play in bridging the gap between the local and national levels. National-level governance does not play a direct role in the VCM. However, experience from the N'hambita case from Mozambique and the KSLP case from the DRC suggests that this often implies a lack of support to local communities in terms, for example, of agricultural extension activity.

The third axis corresponds to the position of host communities relative to businesses or private-sector actors. The private sector occupies a prominent role in carbon markets. The Indian CDM case studies and the KSLP case from the DRC are projects that were initiated by existing industries. They differ in their focus, with the Indian CDM projects being primarily aimed at emission reductions and the KSLP pursuing a wider development agenda. Despite this key difference, these case studies, together with the N'hambita project in Mozambique (which is coordinated by a private-sector company), highlight the dependence on private-sector actors. Local community interests are better protected in cases where private-sector actors are committed to local development and not just

reliant on carbon-market revenue to fund projects, such as in the case of KSLP. On the other hand, as seen in the Indian CDM projects, the absence of strong norms and supervision of business practice risks weakening the position of local communities within the multi-level governance framework. Although these findings resonate with the bias towards business interests that has been noted in existing studies (Benecke, 2009; Böhm & Dabhi, 2009; Ghosh & Sahu, 2011), they have also brought to attention the ways in which private-sector actors can sometimes provide support to local communities.

The existing literature has paid some attention to the spatial distribution of carbon-market projects across developing countries as well as within them, and its implications for uneven patterns of development and investment (Boyd et al., 2007; Cerbu, Swallow, & Thompson, 2011; Hamilton, Bayon, Turner, & Higgins, 2007). Through the fourth axis in our framework, attention can be drawn to the impact of power relations within host communities – an issue that has so far received limited attention. The findings highlight the susceptibility of carbon-market projects to elite capture. In the Indian CDM cases, most benefits have been appropriated by a small number of well-placed local actors. In the case of the N'hambita project, male-headed, high-income households have been favoured participants. In the AVLFR REDD+ project, the disincentives associated with participation can disadvantage the poor, again opening up the possibility of elite capture. The case studies demonstrate the varying extents to which carbon-market projects ensure meaningful and inclusive participatory processes that are important for ensuring procedural justice. In the Indian CDM case studies, local consultations were limited to a few actors with most community members not being informed about the projects and their impacts. The N'hambita project demonstrates how a breakdown in communication can create mistrust between local communities and project developers. Similarly, lack of trust and weak local institutions in the AVLFR project in Tanzania pose challenges to procedural justice. The KSLP example from the DRC demonstrates the value of an approach that allows the provision of a diverse range of project activities that are based on the preferences of diverse actors within the host community.

The framework allows for the identification of key justice concerns of local communities across multiple scales as well as for understanding how these issues across different scales interact with each other. For instance, in the CDM cases in India, local communities are positioned unfavourably in relation to business interests; this, in turn, is linked to the fact that the national-level actor does not reach out to them, denying them any say or influence in the national-level governance of the CDM. The decision to assign the national level with the responsibility to define the sustainable development contribution of the CDM was taken at the global (UNFCCC) level. Thus, examining it through our framework it becomes possible to consider the position of local communities within the multi-level governance structures from an explicit justice perspective. In the N'hambita project, the limited availability of revenue from global carbon markets has negatively impacted the relationship between communities and private-sector actors, while limited financial support from international donors has created tensions within the communities in the AVLFR REDD+ project. The lack of direct involvement of the national-level in the VCM has meant that issues across the third axis, i.e. between community and business, have become more critical.

The application of the framework to the case studies has also identified possibilities for addressing some of the justice concerns. The relative lack of power that communities have vis-a-vis the international, national, and business levels emphasizes the importance of bridging this gap. Hence, carbon-market projects should focus more on capacity building in host communities. Alongside the

fostering of local capacities, however, it is important to recognize that efforts are also needed to address the relative power businesses sometimes enjoy at the cost of local communities. This may necessitate stronger norms and supervision of business practice. The fourth axis of the framework has highlighted the manner in which the effectiveness of any bridging solution or capacity building can be jeopardized if local power relations are not taken into account. Thus, it is important to ensure transparent and inclusive decision-making processes that do not marginalize those in local communities who may already be locally under-represented. Moreover, community-based projects that explicitly seek a broader development agenda could be preferred from a climate justice point of view to projects that primarily seek emission reductions.

5. Conclusions

The findings highlight the challenges that carbon-market projects face in ensuring that host communities in these projects are positioned in a just manner relative to other actors across multiple levels. They also draw attention to some relative successes that allow for the identification of factors that can enable carbon-market projects to address some of these challenges. An examination of how host communities in developing countries are positioned in relation to businesses, as well as the national and international levels, can contribute towards addressing the existing gap in our understanding of justice in climate change, which often does not pay adequate attention to the multi-level, multi-actor governance of carbon markets.

Four axes of justice emerge as crucial in relation to carbon markets and projects undertaken in them: global versus local; national versus local; business versus community; and within host communities. Important distributive as well as procedural justice issues emerge across all four axes. The diverse cases have enabled us to analyse how, in different contexts and depending on the specific project circumstances, concerns across some of these axes may be more critical than others. However, in order to capture these differences, it is important to consider all four axes.

Local communities, and in particular the already disadvantaged sections within them, are often positioned within these complex multi-level structures in an unjust manner, with limited opportunities to protect their interests. The research also indicates some of the possible ways in which this gap might be overcome, such as an emphasis on capacity building of local communities; attention to local power relations, stronger supervision of business practices; promotion of projects with primarily development aims and emission reductions as the supplementary objective; and an active role from non-state actors that can act as bridge between local communities and the national/international levels.

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Supplementary data

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