

Social Justice and Low Carbon Development

Thomas Tanner and Blane Harvey

AAM version of book chapter. Please cite as:

Tanner, Thomas and Harvey, Blane (2013) '[Social justice and low carbon development](#)'. In: Urban, Frauke and Nordensvard, Johan, (eds.), [Low Carbon Development: Key Issues](#). London, UK: Routledge, pp 55-65.

Abstract

The shift to low carbon development implies winners and losers. This chapter explores some of the different dimensions and interpretations of equity and social justice in the context of climate change and development. It initially examines the dominant application of social justice through the lens of equity within global mitigation agreements. Using examples drawn from Ghana's low carbon development planning processes, the chapter then demonstrates how greater attention is required to the consideration of social justice in decision making and implementation of low carbon development at national level.

Introduction

Social justice generally refers to a societal value or institution that is based on the principles of equality (the egalitarian belief that all people ought to be treated equally) and fairness (referred to here as equity). In this chapter, we relate social justice to equity in both process and outcome, known as *procedural equity and distributive equity* (see Box 4.1). It is important to recognize the multiple interpretations or 'framings' for equity and social justice. These create very different 'takes' on equitable low carbon development issues. For example, there are fundamentally different approaches to regulating the use of the planetary resources. Some focus on living humans, such as utilitarian views that are usually characterized as calling for 'the greatest happiness for the greatest number' (Bentham, 1962). Others focus on equity between generations (Page, 2006) or extend equity considerations by allocating rights to other living creatures or even the non-living world (Pepper, 1993).

Climate change represents a global collective action problem with causes and effects unevenly distributed geographically and across generations. This implies differentiated responsibilities for action and a central role for ethics and social justice in determining responses (Barker *et al.*, 2008). This chapter seeks to examine social justice as a critical component of low carbon development across scales. To date, most attention in this regard has been at the international scale, particularly under the UNFCCC. We extend this focus to demonstrate that justice and equity considerations also need to be made more explicit in low carbon development policy and decision making at national and subnational levels.

After introducing social justice concepts and framings, the chapter examines the equity considerations of the international climate agreements under the UNFCCC, before exploring issues at national scale using Ghana as a country case study. Throughout, we stress the existence of different and contested visions of social justice at different scales that generate different policy decisions from those in international fora. Box 4.1 discusses the key concepts and terms.

Box 4.1 Key concepts and terms: social justice and equity

Social justice, equity, morality and ethics are often used interchangeably. Social justice is most commonly used to refer to *equity* in society, which refers to the state, quality or ideal of being just, impartial and fair. This is underpinned by *morality*; judgements about right and wrong that people hold and act upon in their daily lives. It is informed by our understanding of *ethics*, which concerns the systematic evaluation of such beliefs.

Social justice and equity refer to the perception of fairness in both process and outcome.

Analysis of social justice is therefore generally split into aspects of:

- **Procedural equity:** Concerned with the position of people and groups in the processes of decision making. Includes whether their competing ideas and interests are recognized, their ability to participate and the distribution of power in decision making.
- **Distributive equity:** Concerned with the way that costs and benefits should be distributed among people and groups with competing claims. This involves both specifying people's entitlements (for example to welfare or income) and the obligations of others to respect these entitlements.

Adapted from Page, 2006

Low carbon social justice across scales

Putting social justice considerations at the heart of low carbon development responses is important for two main reasons. First, there is an instrumental rationale for mitigating climate change as a core part of development policy. If we are to make further widespread improvements in human welfare, these must be combined with efforts to ensure the sustainability of the planetary system on which development is founded (UNDP, 2007; World Bank, 2010). This includes avoiding dangerous interference with the climate system that would impose an inequitable burden of impacts on those least responsible for the problem (Adger *et al.*, 2006). There is also potential to implement low carbon development that specifically tackles poverty, inequality and equity, such as health benefits gained from widening access to clean energy or providing payments to incentivize forest protection among indigenous peoples (Haines *et al.*, 2007; Kok *et al.*, 2008; Angelsen *et al.*, 2012).

Second, there are moral and ethical issues around developing a low carbon development approach that seeks to impose greenhouse gas mitigation on developing countries that have historically done little to cause the climate change problem (Najam, 2005; Page, 2006; Barker *et al.*, 2008; Roberts and Parks, 2006). This is particularly the case for low income countries that not only have a legacy of low emissions but are also unlikely to make a major contribution to global emissions rises in the near future (UNDP, 2007). In addition, these countries are often in a less powerful position in terms of the international negotiations on tackling climate change, providing a barrier to distributive equity through procedural inequity (Najam, 2005). As a consequence:

'The problem of equity (across social groups living today and across generations) raised by climate change, and the need for urgent and deep mitigation, are ethical problems, and should be informed by moral philosophy (drawing on scientific findings with respect to climate change impacts) and not just by economics in isolation' (Barker *et al.*, 2008: 317–18).

Box 4.2 discusses the key issues relating to social justice and low carbon development.

Box 4.2 Key issues

There is no single definition of social justice. It is interpreted differently within climate change by different groups depending on their interests and values (Ikeme, 2003). Developing a common normative framework for balancing low carbon objectives with those of development objectives, equality and fairness remains a key challenge. A process of deliberation and negotiation among stakeholders on a common vision for socially just, low carbon development is therefore itself an important goal (Barker *et al.*, 2008).

Social justice considerations are crucial for low carbon development both because of:

- The instrumental rationale of promoting sustainability and climate stability in order to make progress on improving human welfare.
- The ethics of imposing greenhouse gas mitigation on poorer countries, who have historically done little to cause the climate change problem.

For low carbon development, most attention to social justice has been on burden sharing for global mitigation agreements. By contrast, there is more limited understanding of the

implications of internationally driven climate policy actions at national and subnational levels (Thomas and Twyman, 2006; Tanner and Allouche, 2011).

Social justice considerations highlight the trade-offs and tensions between climate change objectives and development objectives. In developed countries, policy may focus on energy security goals or emissions reductions targets at the expense of the consequences for poor households and their well-being (Gough, 2011). For many developing countries, the overriding concern is with enhancing economic growth and employment opportunities (Kok *et al.*, 2008). Low carbon development is often therefore focused on fitting with this paradigm rather than on social justice issues at national level.

At the global level, a tension exists between efficiency and equity. On the one hand, climate change must be tackled as an urgent problem, so focus should be on reducing emissions wherever it is quickest and most efficient. The cheapest emissions reductions economically are often found in developing countries (Stern, 2007; World Bank, 2010). But demanding that developing countries take an uncertain development pathway and forego their own fossil fuel resources as an economic driver may not be seen as equitable given that the problem was caused by richer nations in the process of becoming rich (Roberts and Parks, 2006).

At national and subnational levels the impacts of climate change are unevenly distributed across communities, social groups or classes and demographics. This is often, although not always, in line with other forms of marginalization or vulnerability such as assessment lack of political representation (for example, in the case of some groups) or poverty (Tanner and Mitchell, 2008). As such, questions of procedural and distributive equity remain crucial to responding to the costs and opportunities presented by climate change, but take on somewhat different features.

Procedural considerations, for example, may centre around questions of who determines how strategies for responding to climate change (including low carbon development) are set and resources are allocated, and how, The high degree of variability in transparency and participation in policy-setting from one country to another, and the absence of a standard model of practice between and within nations, means procedural justice is less easily scrutinized than in international forums such as the UNFCCC. Distributive considerations, on the other hand, may interrogate the extent to which the costs and benefits for responding to climate change equitable with respect to need and responsibility. Gough (2011) suggests that, for countries in the global North, the distributional consequences of climate mitigation programmes' action will create new social injustices and impose new demands on the welfare state. The same is likely to apply for developing countries where service provision and social safety nets are often limited in both availability and coverage.

Low carbon development and international social justice

While the UNFCCC reflects a cosmopolitan approach to creating binding decisions based on an international vision of equity, communitarian perspectives on equity and justice are also reflected in the different positions taken in the negotiations (Roberts and Parks, 2007).

Distributional equity issues have been crucial to determining the nature of, and frustrating the progress on, international agreement on climate change. The Convention and Kyoto Protocol differentiate commitments between countries based largely on a binary distinction between two groups of countries (Annex 1 and non-Annex 1). There have historically been contrasting views regarding equity among these groups (Najam *et al.*, 2003; Roberts and Parks, 2009):

Industrialized countries of the OECD and former Soviet Union (Annex 1) have regarded equity primarily in terms of 'meaningful participation' of other countries to ensure fairness in sharing the costs of mitigation efforts, especially given the growing emissions contribution and international trade competition from large, rapidly industrializing countries such as Brazil, India and China (Richards, 2003). They argue that this is consistent with the polluter-pays principle underpinning the Convention.

'Developing countries' (non-Annex 1) on the other hand regard equity in terms of the need for those with historic responsibility (Annex 1 countries) to take action first, consistent with the principle of 'common but differentiated responsibilities' enshrined in the Convention. Equity is then used to lobby for redistribution and resource transfers for both mitigation and adaptation on the basis that these countries contributed least historically to its causes and are likely to suffer most from its consequences (Barker *et al.*, 2008; Roberts and Parks, 2009).

With the emergence of rapidly growing middle income economies however, this binary distinction may need to evolve into new forms of differentiation (Bodansky, 2011). Negotiations for a post-2020 climate agreement are taking place in a global context that is radically different from that when the Kyoto Protocol was agreed in 1997. The Protocol has not delivered reductions at a large scale, due to both poor performance against targets and the absence of major emitters such as the USA. At the same time, developed countries no longer account for the majority of greenhouse gas emissions, with non-Annex 1 countries, particularly emerging economies such as China and India, now contributing over half of CO₂ emissions and making up seven of the largest 15 emitters (World Bank, 2010).

Nevertheless, the historic and current contribution to global emissions by low income countries remains small, even including the influence of land-use change. As a consequence, negotiations for a post-2020 regime are providing an evolving vision for equity that begins to distinguish between existing Annex 1 countries, higher emitting developing countries and the poorest developing countries, who have little historic responsibility and little prospect of significant emissions growth in the near future (La Viña *et al.*, 2012).

As a normative proposal for international climate equity, the *Greenhouse Rights Development Framework* developed by Paul Baer and colleagues linked a population-based emissions allocation with a GDP-based proxy for the ability to pay for actions (Baer *et al.*, 2009). What makes this approach innovative is that it examines distributional equity *within* as well as between countries (see Box 4.3). The result is that under this proposal, almost all countries of the world have some allocated responsibility to mitigate emissions and pay for adaptation, based on the wealthier and higher emitting members of their societies. This idea is central to creating more nuanced definition than the current binary divide between 'rich' and 'poor' countries when allocating commitments in the international regime.

In line with these social justice considerations, Box 4.3 elaborates the greenhouse rights development framework.

Box 4.3 The Greenhouse Rights Development Framework

The 'Greenhouse Development Rights' (GDRs) framework combines a per capita approach to global emissions distribution with arguments that costs should be borne by those most able to afford them. In doing so, it allocates obligations to pay for climate policies (both mitigation and adaptation) on the basis of capacity (ability to pay) and responsibility (contribution to the problem).

Both aspects include a 'right to development' by excluding the income and emissions of individuals below a 'development threshold' (set at \$7500 per capita per year, purchasing power parity adjusted) from the calculation of responsibility and capacity. Capacity is derived from aggregate incomes above this threshold, while responsibility assumes that emissions are linearly proportional to income within a country and derived by aggregating total CO₂ emissions of a country since 1990 that are above the development threshold, while the rest is excluded.

In doing so, it examines the distribution of income *within* countries and treats people of equal wealth similarly, whatever country they live in. Thus even poor countries have some obligations, proportional to the size and wealth of their middle and upper classes. The result is a global distribution that places very limited obligations on low income countries, a limited but growing burden on middle income countries and a large but declining burden on high income countries. This demonstrates the considerable differentiation that is masked by the Annex 1/non-Annex 1 groupings under the UNFCCC, which groups the low and middle income countries together. Table 4.1 shows the responsibility and capacity index for various countries for climate change.

Table 4.1 Responsibility and capacity index for climate change

	Responsibility and capacity index for climate change (% of global accumulated emissions total) ¹	
	2020	2030
High income countries	69%	61%
Middle income countries	30%	38%
Low income countries	0.3%	0.5%

¹The single 'responsibility and capacity index' (RCI) is derived as a percentage of the global total of accumulated emissions using a simple weighted sum: $RCI = aR + bC$, where a and b are weightings that can be applied to the index. Baer *et al.* use equal weightings of 0.5 and 0.5. (Source: Baer *et al.*, 2009)

Notions of social justice and equity have been central to many of the global climate change advocacy campaigns driven by pressure groups, especially those with an international development dimension (Pettit, 2004). These have commonly attempted to emphasize the need for richer nations to step up and take action in light of the distributive inequity of climate causes and effects. For example, the Mary Robinson Foundation for Climate Justice (MRFJ) was founded on the basis of a set principles of climate justice that include the need to:

Respect and protect human rights; Support the right to development; Share benefits and burdens equitably; Ensure that decisions on climate change are participatory, transparent and accountable; Harness the transformative power of education for climate stewardship; and to use effective partnerships to secure climate justice (MRFCJ, n.d.).

However, much of the programming, analysis and advocacy for climate justice is focused on the international scale, with much more limited attention to national and subnational scales (Thomas and Twyman, 2006; Tanner and Allouche, 2011). In the following section, we examine how issues of equity are embedded in discussions around national low carbon development planning. In doing so, we suggest that creating common, deliberated visions for low carbon social justice are vital at the national level in a similar way to those at international level.

Low carbon social justice at national and subnational scales

Debates over social justice at the international scale have highlighted issues of procedural and distributional equity between major emitters and countries who bear less current or historical responsibility for the current unsustainable level of GHG emissions. At national and subnational scales similar debates remain equally relevant, where decisions on low carbon development pathways or adaptation strategies will bring about different costs and benefits to differently situated groups of people. Indeed, the debates may ultimately be more complex at smaller scales given the range of interpretations that differently situated communities and groups of stakeholders within communities may bring to the concept of socially just, low carbon development and the frequent absence of forums for deliberating the tensions between these interpretations. Research from the UK, for example, suggests that 'while general principles of climate justice for low carbon communities can be identified [...] multiple, sometimes overlapping forms of just low carbon community responses exist in practice.' (Bulkeley and Fuller, 2012: 14).

The social differentiation of climate impacts has been explored in considerable depth in the context of policies and practices aimed at helping those who are most vulnerable adapt to climate impacts from national, to subnational and even household levels (Stern, 2007; Tanner and Mitchell, 2008). However, considerably less attention has been paid to differentiation at these scales in the context of articulating, selecting and pursuing low carbon development pathways. This gap is particularly significant in considering how the balance of emphasis is decided between low carbon development strategies that place greater or lesser emphasis on emissions reduction potential or development and poverty alleviation. Without consideration of how concerns about procedural and distributional justice are addressed, the assumed benefits of low carbon development may either reduce or reinforce national or subnational inequalities in terms of poverty and development. While particularly relevant in the context of development, this gap is also relevant to developing countries, where the distributional impacts of action on climate change may engage and impact the poor differently than other socio-economic groups (Gough, 2011).

There are a number of reasons that social justice considerations – or spaces for debating such considerations – may be absent in these contexts. First, the distributive benefits of low carbon transitions may be assumed to be pro-poor, but such assumptions may not necessarily reflect procedural elements of choice around different options, configurations or benefits that would

see certain options yielding greater benefits to some groups or regions than others. For example the competing interests between developing small scale hydro-electrical installations which may feed an existing power grid that leaves particular segments of a country's population under-served on one hand, or solar panel installations which may bring electrification to new households but not offer significant new benefits to more developed areas of a country may be seen more as question of cost-benefit analysis than of distributive justice in some contexts (see Byrne *et al.*, 2011). As in other cases of access or allocation to resources for development at community scales in particular, these benefits may be allocated depending on who has a voice and access to decision making processes rather than by who could derive the greatest benefit (Kumar and Corbridge, 2002).

A second related issue is that LCD remains, in the eyes of many, a predominantly technical process focused upon the identification and implementation of feasible and cost-effective strategies identified by specialists in the fields of energy, finance and planning, many of whom are often external consultants (see case study in Box 4.4 below). Even in those cases where opportunities for participation are present, the technical and expert-oriented nature of these discussions may preclude meaningful participation among communities and interest groups whose development pathways are at stake.

Box 4.4 Case study: social justice in Ghana's low carbon development strategy

Ghana, a fast-developing lower middle-income West African country, offers a useful study in the complexities and contrasting interests that may shape national low carbon development strategies. Ghana is rich in natural resources, many of which (forestry, agriculture, fisheries and hydro-electricity, for example) are exposed to current and future impacts of climate change and variability, as well as an emerging oil industry that promises to change the national political and economic landscape. It is also marked by high levels of inequality and income disparity, with rural and northern populations being both poorest and most directly exposed to climate impacts, with widely recognized adaptation needs. Long considered a 'model' of good governance and inclusive development in Africa, a look at Ghana's actions towards low carbon growth reveals that even in such a context decision making has paid scant attention to the considerations outlined in this chapter.

While Ghana's total GHG emissions represent a minute contribution to global totals, it has pursued a low carbon agenda through its proposed 'National Climate Change Policy Framework' (NCCPF) (MEST, 2010), which has *low carbon growth* as the first of its three objectives, alongside adaptation and social development. The NCCPF's discussion document states the key motivations for pursuing the low carbon growth agenda are to make longer-term development more robust and less carbon intensive, access business opportunities and cost savings in the near term through low carbon strategies, and access international funding such as those around Reducing Emissions from Deforestation and forest Degradation (REDD+) (Angelsen *et al.*, 2012; MEST, 2010). Early steps towards implementing this strategy have been shaped by a donor-funded technical assistance package that proposes using Ghana's 55 existing NAMAs as a starting point for prioritizing action (Tilburg and Würtenberger, 2010). Civil society organizations, however, have criticized the strategy for relying primarily on these market-based schemes – which rarely benefit the poorest most – and for a lack of meaningful integration of gender and equity concerns (Social Watch, 2012). Elsewhere concerns have been raised that

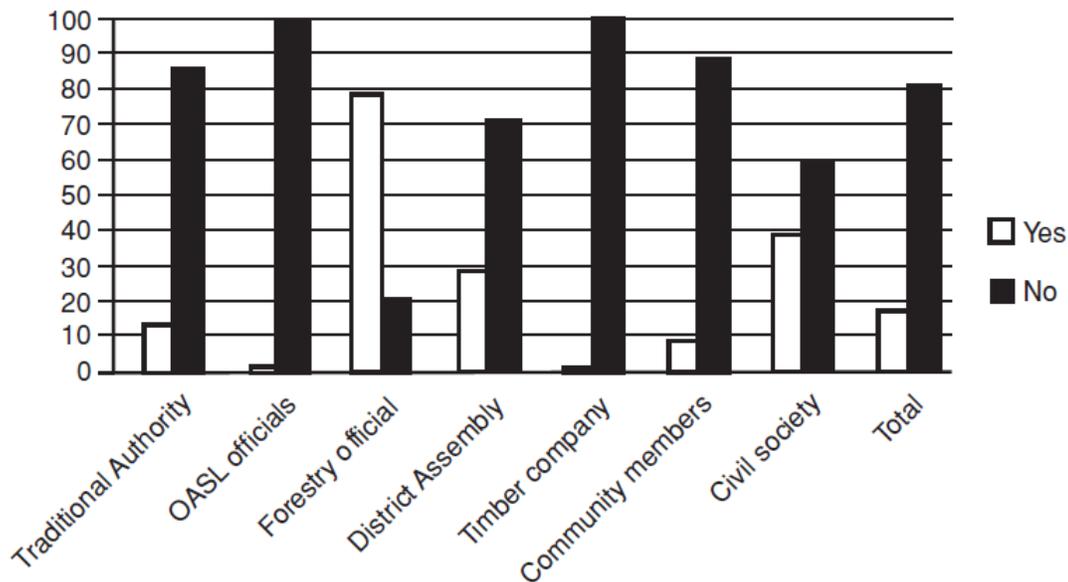
insufficient transparency and coordination between existing initiatives will hamper attempts at a more cohesive framework approach (Würtenberger *et al.*, 2011).

A review of climate change initiatives in Ghana from 1995 to 2010 reveals that of a total US\$240 million of funding over this period, \$126.4 million has been directed towards low carbon growth initiatives and \$28.5 million (or less than 12 per cent) towards adaptation activities (Würtenberger *et al.*, 2011). Major low carbon initiatives highlighted in this review focus on *energy efficiency* (including the distribution of 6 million compact fluorescent light bulbs and promoting energy-efficient refrigerators); *renewable energy* (both integrating renewables into the grid and increasing off-grid access); *transportation* (public transportation and infrastructure); and *forestry* (primarily REDD+ readiness). In this light the government's position that adaptation is expected to be Ghana's main priority in addressing climate change (MEST, 2010) is striking given that the \$15 million investment into compact fluorescent light bulbs alone represents over 50 per cent of the total investment into adaptation programming.

Returning to the factors that may lead to an absence of social justice considerations in national and subnational low carbon development strategies noted above, we can find many of these features playing out in the case of Ghana. There is little evidence of a systematic assessment of the distributional benefits of the various low carbon initiatives, or of a deliberative process in collectively assessing these. In the case of REDD+, for example, even basic awareness of this mechanism is limited to a small subset of stakeholders, who are largely technical experts, making open deliberation a major challenge (see Figure 4.1).

Figure 4.1 Awareness of REDD among stakeholders in Ghana

Source: CIKOD, 2011¹



Reports point to a lack of data and capacity for assessing the impacts that various initiatives would offer, suggesting an insufficient understanding of the potential negative impacts of initiatives on the poorest. Further, while the NCCPF process involves a discussion document

aimed at collecting feedback, the development and implementation is heavily reliant on outside expertise and their information sharing among stakeholders and experts is notably limited (Würtenberger *et al.*, 2011). Finally, perhaps the most widely documented justification for Ghana's pursuit of low carbon strategies is to capitalize on international incentive structures – while work on the most frequently cited of these, REDD+, has been problematized for undermining social justice concerns and lacking in transparency and informed debate (Friends of the Earth – Ghana, n.d.; CIKOD, 2011). More broadly, specific mention of social justice is almost entirely absent from existing documentation outlining proposed actions or strategies – though the concept of equity features in the NCCPF discussion document.

The case of Ghana reveals how, even in a country with a strong tradition of open governance processes, concerns of procedural and distributional equity in low carbon development rarely feature in the shaping of low carbon development strategies. Consequently, there is limited scope for those who are often excluded from decision making processes (non-experts, marginalized communities, etc.) to provide input into how decisions should be made, on the balance of emphasis in low carbon strategies, or on the extent to which low carbon development should be prioritized over other actions on climate change. This calls into question who will bear the costs, and reap the rewards of these initiatives.

Finally, both the distributive and procedural dimensions of developing and selecting low carbon strategies, particularly in LDCs may be shaped more fundamentally by the international incentives and instruments developed to support low carbon development (REDD, technology transfer, CDM, etc.) than by national or subnational agenda-setting. This is highlighted by Byrne *et al.* who argue that the dominant technical and economic framing of low carbon development strategies articulated through international instruments 'actually fails to address how communities can develop greater control over their own low-carbon pathways' (Byrne *et al.*, 2011: 17).

Conclusion

This chapter has outlined the reasons for and challenges of viewing low carbon development through a social justice lens. We argue that it is important to understand how the negotiation of interests and priorities plays out in the process of identifying and implementing low carbon development strategies. Questions of procedural and distributive justice will have an important bearing on how these strategies are developed, whose priorities they reflect, where the benefits will be felt the most and whether the balance of emphasis in these strategies prioritizes emissions reductions or development dividends (or a 'development first' approach).

The case from Ghana sheds light on a number of important issues, including the role of government and governance in dictating distributional and procedural outcomes. Governance and institutional architecture, from international to subnational and local scales, have a significant bearing on how equity issues arising from low carbon development options and actions are tackled in different countries. Highly centralized or autocratic regimes are less likely to engage in public consultation or public debate over the nature, costs and benefits of low carbon development options, and where capacity levels are limited and concentrated within a small number of actors the potential for meaningful engagement is significantly weakened.

Further, poor people's ability to derive direct benefits from international instruments within the climate change regime is often predicated on their ability to establish or draw upon effective multi-stakeholder structures or alliances that can advocate for their interests (Perez *et al.*, 2008). As such, the development benefits of international low carbon development instruments for those who are most vulnerable may depend on how well support mechanisms can enable their access to deliberative spaces at national or subnational levels. Similar to the evolution of adaptation thinking, which emerged as predominantly 'hard' responses to climate impacts (through technical and engineering-orientated interventions) and later grew to enshrine participatory process into standard models of practice such as the National Adaptation Programmes of Action (NAPAs), low carbon development may require the emergence of more participatory models of planning and implementation to support procedural justice.

The case from Ghana also highlights that the social justice dimensions of low carbon development should not be considered independently of the other range of actions that might otherwise be taken to address climate change. Across all scales, the allocation of funding towards low carbon development activities may come at the expense of other climate initiatives such as adaptation, which could have a significantly greater impact on the poverty and vulnerability levels of marginalized groups. As such, social justice considerations should look at the distribution of resources and outcomes both *within* the LCD agenda, as well as at the interfaces between LCD and other climate and development priorities.

References

- Adger, W. N., Paavola, Y., Huq, S. and Mace, M. J. (eds), 2006. *Fairness in Adaptation to Climate Change*. MIT Press, Cambridge, MA.
- Angelsen, A., Brockhaus, M., Sunderlin, W. D. and Verchot, L. V. (eds), 2012. *Analysing REDD+ challenges and choices*. CIFOR, Bogor.
- Baer, P., 2006. Adaptation: who pays whom?, in Adger, W. N., Paavola, Y., Huq, S. and Mace, M. J. (eds) *Fairness in Adaptation to Climate Change*. MIT Press, Cambridge, MA, pp. 131–53.
- Baer, P., Athanasiou, T., Kartha, S. and Kemp-Benedict, E., 2009. *The Greenhouse Development Rights Framework: the right to development in a climate constrained world*. 2nd edition. Heinrich-Böll-Stiftung, Berlin. Available at: www.ecoequity.org/docs/TheGDRsFramework.pdf (accessed 23 October 2012).
- Barker T., Scrieciu, S. and Taylor, D., 2008. Climate change, social justice and development. *Development: Journal of the Society for International Development*, 51(3): 317-324
- Bentham, J., 1962. An introduction to the principles of morals and legislation, in Warnock, M. (ed.) *Utilitarianism*. Fontana, London.
- Bodansky, D., 2011. W[h]ither the Kyoto Protocol? Durban and beyond. Viewpoints – Harvard Project on Climate Agreements, Harvard University, Cambridge, MA.

Bulkeley, H. and Fuller, S., 2012. 'Low carbon communities and social justice', Joseph Rowntree Foundation Viewpoint, 16 pp.

Byrne, R., Smith, A., Watson, J. and Ockwell, D., 2011. Energy pathways in low-carbon development: from technology transfer to socio-technical transformation, STEPS Working Paper 46. STEPS Centre, Brighton.

CIKOD, 2011. Making the forest sector transparent – annual transparency report card 2010 Ghana, available at: <http://www.cikod.org/Products.html> (accessed 23 October 2012).

Friends of the Earth – Ghana, n.d. REDD in Ghana: an independent monitoring report by Friends of the Earth – Ghana, available at: http://www.ug.edu.gh/fos/vbrp/climate/REDD_in_Ghana.pdf (accessed 23 October 2012).

Gough, I., 2011. Climate change, double injustice and social policy: a case study of the United Kingdom. UNRISD Occasional Paper 1: Social Dimensions of Green Economy and Sustainable Development. United Nations Research Institute for Social Development, Geneva.

Haines, A., Smith K. R., Anderson D., Epstein P. R., McMichael A. J., Roberts I., Wilkinson P. *et al.*, 2007. Policies for accelerating access to clean energy, improving health, advancing development, and mitigating climate change, *Lancet*, 370 (9594), 1264–81.

Ikeme, J., 2003. Equity, environmental justice and sustainability: incomplete approaches in climate change politics. *Global Environmental Change*, 13(3), 195–206.

Kok, M. Metz, B., Verhagen, J. and Van Rooijen, S. 2008. Integrating development and climate policies: national and international benefit. *Climate Policy*, 8(2), 103–18.

Kumar, S. and Corbridge, S., 2002. Programmed to fail? Development projects and the politics of participation. *Journal of Development Studies*, 39(2), 73–103.

La Viña, A. G. M., Ang, L. G., De Leon, A. and Roxas, M., 2012. The UNFCCC after Durban: Recognizing limitations and calling for a multi-track approach to climate multilateralism and action. Working paper, Foundation for International Environmental Law and Development (FIELD), London.

MRFCJ (Mary Robinson Foundation), n.d. Climate Justice, available at: <http://www.mrfcj.org/about> (accessed 23 October 2012).

MEST Ghana, 2010. Ghana goes for Green Growth – national engagement on climate change, discussion document, November, MEST, Accra.

Najam, A., 2005. Developing Countries and Global Environmental Governance: From Contestation to Participation to Engagement. *International Environmental Agreements, International Environmental Agreements: Politics, Law and Economics*, 5(3): 303-321.

Tanner, T.M. and Harvey, B. (forthcoming 2013) 'Social justice and low carbon development' in Urban, F and Nordensvard, J. (eds) *Low Carbon Development: Key Issues*. Earthscan, London.

Najam, A., Huq, S. and Sokona Y., 2003. Climate negotiations beyond Kyoto: developing countries concerns and interests. *Climate Policy*, 3(3), 221–31.

Page, E., 2006. *Climate Change and Future Generations*. Edward Elgar, Cheltenham.

Pepper, D., 1993. *Eco-socialism: from Deep Ecology to Social Justice*. Routledge, London.

Perez, C., Roncoli, C., Neely, C. and Steiner, J.L., 2007. Can carbon sequestration markets benefit low-income producers in semi-arid Africa? Potentials and challenges. *Agricultural Systems*, 94(1), 2–12.

Pettit, J., 2004. Climate justice: a new social movement for atmospheric rights, *IDS Bulletin*, 35(3), 102–6.

Rawls, J., 1971. *A Theory of Justice*. Harvard University Press, Cambridge, MA.

Richards, M., 2003. Poverty reduction, equity and climate change: global governance synergies or contradictions? Globalisation and Poverty Programme, Overseas Development Institute, London.

Roberts, J. T. and Parks B. C., 2006. *A Climate of Injustice: Global Inequality, North-South Politics and Climate Policy*, MIT Press, Cambridge, MA.

Social Watch, 2012. Social Watch report 2012: the right to a future, Social Watch, 116–17. Available at: <http://www.socialwatch.org/annualReport> (accessed 23 October 2012).

Stern, N., 2007. *The Economics of Climate Change: The Stern Review*. Cambridge University Press, Cambridge.

Tanner, T. M. and Allouche, J., 2011. Towards a new political economy of climate change. *IDS Bulletin*, 43(3), 1–14.

Tanner, T. M. and Mitchell T., 2008. Entrenchment or enhancement: could climate change adaptation help to reduce chronic poverty? *IDS Bulletin*, 39(4), 6–15.

Thomas, D. and Twyman, C., 2006. Equity in resource management amongst natural resource dependent societies: implications for equity in adaptation to climate change, in Adger, W. N., Paavola, Y., Huq, S. and Mace, M. J. (eds) *Fairness in Adaptation to Climate Change*. MIT Press, Cambridge, MA.

Tilburg, X. van, and Würtenberger, L. C., 2010. Technical Assistance Outline: supporting low carbon growth in Ghana. ECN, Amsterdam.

Tanner, T.M. and Harvey, B. (forthcoming 2013) 'Social justice and low carbon development' in Urban, F and Nordensvard, J. (eds) *Low Carbon Development: Key Issues*. Earthscan, London.

UNDP, 2007. Human development report 2007/2008 fighting climate change: human solidarity in a divided world. United Nations Development Programme, New York.

World Bank, 2010. World development report 2010: development and climate change. World Bank, Washington DC.

Würtenberger, L., Bunzeck I. G. and Tilburg, X. van, 2011. Initiatives related to climate change in Ghana: towards coordinating efforts. ECN Policy Studies, Amsterdam. Available at: <http://www.ecn.nl/publications/ECN-E--11-010> (accessed 23 October 2012).

Yamin, F. and Depledge, J., 2004. *The International Climate Change regime: a Guide to Rules, Institutions and Procedures*. Cambridge University Press, Cambridge.

Further readings

Baer, P., Athanasiou, T., Kartha, S. and Kemp-Benedict, E., 2009. The Greenhouse Development Rights Framework: the right to development in a climate constrained world. 2nd edition. Heinrich-Böll-Stiftung, Berlin. Available at: www.ecoequity.org/docs/TheGDRsFramework.pdf (accessed 23 October 2012).

Page, E., 2006. *Climate Change and Future Generations*. Edward Elgar, Cheltenham.

Roberts, J. T. and Parks B. C., 2007. *A Climate of Injustice: Global Inequality, North-South Politics and Climate Policy*, MIT Press, Cambridge, MA.

¹ This figure was first published by CIKOD, 2011. Making the Forest Sector Transparent – Annual Transparency Report Card 2010 Ghana. Available at: <http://www.cikod.org/Products.html>