

Vulnerabilities and displacements: adaptation and mitigation to climate change as a new development mantra

Pablo S Bose

Department of Geography, University of Vermont, Burlington, VT 05405, USA

Email: pbose@uvm.edu

Revised manuscript received 7 December 2014

The past decade has witnessed significant growth across the globe of domestic and international initiatives designed to ameliorate both existing and potential impacts of climate change. The threat of altered environments and possibility of mass migrations of people have spurred intensive planning as well as the commitment of considerable resources to addressing such threats. Indeed, the primacy of climate change adaptation and mitigation efforts and planning has become so pronounced that one might argue that this is a new and pre-eminent form of development in the international arena. As with previous developmental preoccupations such as progress, modernity, gender, microcredit, participation and good governance, climate change adaptation and mitigation is today a central part of the development mantra. In this paper I examine the 'climate change turn' in development work by focusing on the case of Bangladesh, a country often discussed in both scholarly literature and popular discourse as one of the most vulnerable countries in the world to the possible effects of climate change. Images of rising waters, flooded fields and displaced farmers in the region have become an iconic symbol deployed during debates on climate change both locally and globally. As a result Bangladesh has emerged as a laboratory of sorts in which a series of national-level strategic plans, projects, programmes, trust funds and financing schemes are being designed and tested in partnership with international donors and development agencies, all built around the idea of climate change and resilience. Looking specifically at some of the most marginalised communities in Bangladesh – such as char dwellers and slum populations – I question in this paper what impact these efforts to combat climate change may have, in particular the possibility of being displaced not by climate change but rather by development processes meant to ameliorate its effects.

Key words: *environmental displacement, Bangladesh, climate change, adaptation/mitigation*

Introduction

This paper explores the relationship between global or international development and the phenomenon of environmentally induced displacement (EID). Such processes take many forms that can either remove people physically from their lands or restrict their access to areas that they rely on for livelihoods, community connections and cultural significance. Examples include populations displaced by conservation schemes or extractive industries, by sudden onset disasters or more gradual and long-term degradation of their landscape, by development projects that transform various environments and by violent con-

flicts over natural resources. A majority of public attention tends to be centred on one of the most iconic and well-publicised forms of EID – the current or predicted effects of climate change. Visions of coastal towns, villages and small islands drowned by rising oceans, farmlands left cracked and barren by desertification, or Arctic peoples left adrift amid a melting snowpack predominate popular culture and policy discussions on global environmental relations alike. EID due to climate change also conjures fears of a mass of humanity on the move, particularly in industrialised countries that are assumed to be the destination for an apparently new category of forced migrant, the environmental refugee. The numbers of such refugees

are wide-ranging – from 150 million to over a billion – and are controversial in estimation, accuracy and cause (Myers 1999; Brown 2008; White 2011).

Yet regardless of their visibility or the scale of their impact, the intersections between climate change and displacement are much more complex than popular discourse might suggest. Extractive industries, for example, such as coalmining and timber harvesting, might increase emissions and decrease sequestration capacities respectively and may also displace local residents from homes and productive lands (Fox and Campbell 2010; Chhatre and Agrawal 2009). Development projects such as large-scale dams that drown fields and villages with massive reservoirs also contribute to increased carbon emissions (Fearnside 2012). And conservation initiatives including biofuels and REDD+ have begun to create what some scholars have termed a system of ‘carbon colonialism’ (Baldwin 2009), displacing local populations or severely restricting their use of traditional forest lands in service of broader global climate change mitigation objectives.

In this paper I explore the conceptual connections between environment, development and displacement by looking at one of the most common examples of the threat posed by climate change in the contemporary world in one of the most paradigmatic locations: Bangladesh, a country often described in scholarly literature and popular media as especially vulnerable (Rahman 2011). Images of rising waters, flooded fields and displaced farmers in the region have become iconic symbols often evoked during debates on climate change both locally and globally. Partially as a result of such perceptions, recent years have witnessed significant investments by international financial institutions as well as a variety of domestic actors in Bangladesh to develop schemes meant to mitigate the effects of climate change and/or to help local populations adapt to transformed landscapes. Bangladesh is not unique in this dynamic – such projects are becoming commonplace across the world. But the intensity and scope of climate change adaptation and mitigation planning in Bangladesh allows us to examine in greater detail the significance of such activities. The questions that motivate this paper are therefore:

- 1 Have climate change mitigation and adaptation efforts become a central concern for international development institutions and if so why? What links do such organisations draw between environment, development and displacement?
- 2 What kinds of financing have emerged in the case of Bangladesh to combat the effects of climate change? What kinds of projects are being contemplated?
- 3 Who are the subjects and objects of such efforts? What constitutes environmental vulnerability in the new

landscape of climate change mitigation and adaptation and how is risk to be averted or managed?

As this paper is exploratory and conceptual, I draw on existing documentary sources to conduct my inquiry – planning documents and reports produced by international institutions, government agencies and non-governmental organisations (among an array of others) to articulate the threat of and response to climate change in Bangladesh. My analysis suggests that the intersection of environment, displacement and development in contemporary Bangladesh involves overlapping, complex and often contradictory narratives of environmental justice, equitable social change, deeply entrenched developmentalism and neoliberal restructuring. I suggest, furthermore, that protection – primarily of the nation-state and the economy – from the effects of climate-related EID has become a preoccupation for global institutions and national authorities, one that often conflates long-term change with recurrent environmental hazards or planning challenges. As a result, I argue that environmental adaptation and mitigation efforts have emerged as a new form of global development that has the potential to leave many of the most marginalised subjects of EID more vulnerable not only to climate change but to the development processes meant to ameliorate its effects.

This paper proceeds in three parts. In the first I examine some of the literature regarding EID. In the second I discuss the growing trend of climate change adaptation- and mitigation-related financing for international development organisations. In the final section of the paper I discuss the case of Bangladesh and highlight some of the specific projects and initiatives regarding climate change that are relevant for this argument.

Literature review: environmental displacement

Environmental displacement has often been associated with natural disasters, so-called ‘acts of God’ to which no human blame can be attached. Yet as many scholars have increasingly pointed out, there is often very little that is ‘natural’ about the processes and events that lead to the forced displacement of populations because of changes in their environment (Hartman and Squires 2006). Studies have shown, for example, that far from being a zone that is inevitably threatened by tsunamis and hurricanes, coastal areas have been made much more vulnerable by urbanisation and development practices that have stripped away mangroves and wetlands (Barbier and Enchelmeyer 2014). Other communities, including those that live in floodplains or along coastlines, are often implicitly blamed for ‘choosing’ to live in perennially vulnerable regions. Such accusations are not only

ignorant of the various contexts that put populations in particular places; they also ignore the culpability that others might have for the changing environment. For such reasons, we have seen in recent years communities in the low-lying islands of the South Pacific threaten lawsuits against industrialised consumer societies for the latter's role in exacerbating climate change (Koivurova 2007; Jacobs 2005).

As a result of such dynamics the literature on environmental displacement has turned increasingly towards an examination of the different ways in which human agents can play an active role in transforming landscapes. In part this work has overlapped with a related set of studies of forced migration caused by development projects – whose effects, as scholars and social movements have argued out, may displace many more individuals and communities than political conflicts and persecution, the traditional creators of refugee populations (Ray 2011; De Wet 2005). Such development projects are diverse in nature and far-reaching in scope, including the building of large-scale infrastructure, the extraction of natural resources, reforms to existing land tenure regimes, the imposition of neoliberal economic policies, the expansion of urbanisation and the growth of conservation areas (Vandergeest *et al.* 2007; Bennett and McDowell 2012; Oliver-Smith 2009). Many of these projects and policies not only cause forced migration, land use change, livelihood displacement and dispossession, but are also examples of EID (Bose and Lunstrum 2014).

As the emerging literature on EID points out, a significant challenge for those who are most affected is not simply the fact of their dislocation but also that their condition is often considered secondary to the goal of protecting the biophysical environment (Büscher and Davidov 2014). This is perhaps most apparent in the case of conservation, as many scholars have noted in their discussion of the 'parks without people' phenomenon (Goldman 2011; Lunstrum 2010; Schmidt-Soltau 2009; West *et al.* 2006). How do communities and individuals protect their land, property and livelihoods when such efforts are weighed against the need – and apparent consensus – to save forests, resources or endangered species? The dissonance between Western forms of environmentalism and the conditions in the Global South (Gadgil and Guha 1995) has led to the disempowerment and disenfranchisement of many of the victims of EID through what some call the emergent and evolving forms of green globalism, green colonialism (Shiva *et al.* 2011) and 'land-grabbing' in the name of environmental protection (Fairhead *et al.* 2012; Levien 2013; Rai 2012). It is crucial, therefore, in any discussion of EID and climate change that we not engage in the same kinds of discourse and action, and as Ireland and McKinnon (2013) suggest, we remain wary of approaches that directly or indirectly

blame some of those who are most affected by environmental change for their predicament. Such a situation has been all too familiar in various kinds of displacement, from the urban poor pushed aside by the forms of 'bourgeois environmentalism' remaking Indian cities (Baviskar 2003) to the local communities uprooted by the national interests and 'common good' justifications embedded in projects such as dams (Penz *et al.* 2011). Does such a danger exist in the case of those affected by climate change? To explore this question more fully, I turn to the context of contemporary attempts to address a changing global environment.

Climate financing as global development

Globally, the past decade has seen a tremendous growth in both local and international initiatives designed to ameliorate the impacts of climate change. In many ways, climate change adaptation/mitigation¹ has become as much of a part of the development mantra today as progress, modernity, gender, microcredit, participation and good governance have been in earlier eras. One might indeed say that this represents one of the new frontiers of development, certainly as we see it through financing and planning by development agencies, national governments and NGOs. These strategies are aimed in particular at areas conceived to be especially vulnerable and at-risk, such as low-lying coastal zones, islands in the South Pacific and the Arctic. These areas and their populations are of course not uniform in their capacities (financial, political and social) to adapt to a changing environment; Rotterdam is not Dhaka and the Maldives are not islands in the Canadian far north. For the most part, however, many of those who are most directly in the path of the effects of climate change live similarly precarious lives. They often occupy the most vulnerable of lands in the most tenuous of tenure arrangements and are more often than not from marginalised and impoverished groups. Many of the climate-affected are also from indigenous or racialised communities who find themselves excluded from meaningful political participation. Some of these groups are already dealing with the effects of a changing climate and have had to adapt their lives and livelihoods to match. Adger *et al.* (2003, 181) note, for example, the resilience strategies of pastoralists in West Africa, small-holder farmers in Bangladesh and Vietnam, and indigenous hunters in the Canadian Arctic, though they point out that many of these are ways of coping with immediate survival rather than longer-term community growth and sustainability.

For development agencies and organisations, however, climate change adaptation is – according to them – not about a quick fix but constitutes rather a fundamental rethinking of the ways in which development is to be

implemented (which is, of course, distinct from rethinking development itself). As Tanner and Allouche point out, 'climate change financing initiatives are an increasingly prominent part of international development activities, through mechanisms both inside and outside the UN Framework Convention on Climate Change' (2011, 1). The World Bank, for example, has declared one of its top current priorities as '[helping] clients mitigate climate change with programs that focus on energy, solid waste management, transport and forestry' (2012, np). Dutta *et al.* suggest that 'climate change is the new package through which the World Bank is reinventing itself' (2011, 16). In particular, the World Bank offers its partners the opportunity to 'benefit from revenues through the carbon finance program or access to Global Environmental Facility co-financing' (2012, np).

A similar offer is made by the Asian Development Bank in its role as an executing agency of the Global Environment Facility and its promotion of climate change adaptation measures into country-level programming as well as by its creation of the Asian Development Bank Climate Change Fund (CCF). The CCF has an initial capitalisation of \$40 million to support 44 projects ranging from integration, mitigation and adaptation efforts in multiple sectors including energy, transportation, forestry, sustainable land use and commitments to the REDD initiative (Asian Development Bank 2012). The Asian Development Bank is also partnering with other multilateral agencies and banks to disburse Climate Investment Funds, essentially a programme to bridge the financing gap for countries working towards the Millennium Development Goals between the present context and the next international agreement on climate change. Overall the Asian Development Bank claims to have invested some \$10 billion in 110 projects on climate change adaptation in 40 countries in just four years:

In doing so, we are promoting the integration of climate change mitigation and adaptation considerations in development activities. These efforts include analyzing the national and local consequences of climate change and identifying cost effective measures to improve the resilience of infrastructure and vulnerable populations to adverse impacts. (Asian Development Bank 2012)

Evidence of climate change adaptation-related measures and financing can also be seen in the work of other key actors in the international development arena (OECD 2012; CIDA 2012; DFID 2012).

Beyond providing access to global financing mechanisms, what do these investments in climate change adaptation mean in practice for development banks and agencies? For the most part at this stage they seem to take the form of exercises in assessment and planning. The Asian Development Bank, for example, has focused both

on immediate plans to reduce emissions that contribute to climate change (such as projects on waste composting) as well as longer term national assessments (in test cases such as Nepal, Palau and Bangladesh) to produce 'countrywide adaptation roadmaps' that will gauge the 'increasing climate resilience of vulnerable sectors' (Asian Development Bank 2011, 23), with a focus on adjusting current environmental and disaster risk assessment strategies. The Asian Development Bank is particularly interested in

identifying gaps between current and future adaptation and mitigation activities, proposed measures to fill those gaps, and identifying possible activities for Asian Development Bank consideration in accordance with existing climate change adaptation and mitigation funding. (2011, 29)

Bangladesh is one of the primary laboratories in which such evaluations are currently underway.

Bangladesh as a test case

In Bangladesh we see the emergence of this new form of developmentalism as well as a nexus between development, displacement and environment through a series of national-level strategic plans, projects, programs, trust funds and financing schemes all built around the idea of climate change and resilience, in partnership with international donors and development agencies. Bangladesh has long played an important role as a site of what some have come to call 'developmentality' (Deb 2009; Rist 2008) – applying Foucault's framework for understanding the ways that the state produces its citizens, the manner in which such subjects are governed and the discursive practices used to help materialise such relationships to the pervasive nature of international development work in this South Asian country. In such a light Bangladesh and its inhabitants have been perennial objects of the 'salvation' and 'improvement' efforts of the international community.

It is also, as mentioned previously, a particularly paradigmatic example of the potentially devastating effects of climate change. Because of its geographic location, low deltaic floodplain, the unpredictability of the seasonal monsoons and its history of cyclones and floods, the country is seen as being particularly vulnerable, regularly appearing on international registers for 'countries most at risk' (Harmeling 2012). While Bangladesh has had a long and vexed history with developmentality – as a perennial object of 'improvement' and what some have called a kind of 'basket case' illustrating the failures of international and domestic efforts – recent years have seen a changing perception of the country. Indeed Roy (2010) has gone so far as to coin the term 'Bangladesh

Consensus' to describe the embrace of the microcredit and NGO-driven model of development patented by the Grameen Bank and BRAC by global institutions. Bangladesh has been lauded by the international development agencies for its relative political stability in recent years as well as its steady movement towards achieving many of the Millennium Development Goals (World Bank 2007; Rahman 2011; Mourshed 2011). The possibility of climate change-related adverse effects, then, threatens to undo this progress; the Asian Development Bank calls this 'a pressing development concern for Bangladesh' (2009, 2), while others describe the issue as 'a serious threat to Bangladesh's desire to become a middle income country by 2021' (Alam *et al.* 2011, 53).

As a result, the Government of Bangladesh has engaged in several different efforts to try and address the impacts of climate change. Some have involved collaboration with international partners and agencies such as the Asian Development Bank to engage in risk management planning. The others have been national-level domestic investment, primarily in the formulation of a Climate Change Strategy and Action Plan (BCCSAP) and the establishment of a \$200 million Bangladesh Climate Change Trust Fund. In 2010 the Government of Bangladesh established a donor-funded \$120 million Bangladesh Climate Resilient Fund and the Climate Change Unit housed in the Ministry of Environment and Forests (Asian Development Bank 2011). The 2008 and 2009 BCCSAP include some 44 programmes and 145 projects currently underway, to be completed by 2018 (Asian Development Bank 2009). These initiatives include raising awareness of climate change, capacity building (both institutional and technical), a focus on vulnerable regions, and prioritising food security, agriculture and water resources, health, low-carbon development, social protection and health, and comprehensive disaster management (Asian Development Bank 2011). The Government of Bangladesh has also included climate change as key pillars in its 2016–2020 five-year economic plans and increased its involvement with global financing mechanisms such as CDM, REDD and REDD+ in order to support its long-term climate change adaptation measures. Given the centrality of NGOs in Bangladesh's developmental strategies it is also not surprising to see that they are integral to the state's climate change adaptation and mitigation schemes, both as partners and through their own initiatives (Ayers *et al.* 2014; BRAC 2014).

While much of this planning speaks of Bangladesh on the national scale, there are two particular areas that are of especial concern to planners and locals alike. These are the ever-increasing slums of the capital and mega-city of Dhaka and the chars (riverbanks and islands) of north-western and southern Bangladesh. Both are home to some of the poorest of the country's inhabitants – the so-called

'ultra-poor' who additionally find themselves politically and socially marginalised. Characterised by low levels of literacy, formal title to land and property, informal housing, and seasonal and insecure employment, those living in chars and slums are often viewed as especially threatened by the effects of climate change. Such populations often live in the most flood-prone areas, have the least income and assets, and are the least prepared for damage to their lives (Brouwer *et al.* 2007).

Yet a passive view of char and slum dwellers as victims misses the fact that many have long been dealing with other types of environmental risks, including seasonal flooding. Few (2003), for example, suggests that learning the specific coping strategies used by the poor to address such hazards holds valuable lessons for those seeking to address climate change and displacement. Other studies of community resiliency in the face of changing environments concur, emphasising the importance of local knowledge, preparedness and communications to avert disaster (López-Marrero and Tschakert 2011). In the case of char and slum dwellers, coping mechanisms include diversifying income through seasonal and day labour, temporary migration, building houses on stilts, storing goods in upper floors, purchasing some form of flood insurance and growing crops that are adaptable to changing conditions (Pender 2008).

The prevailing wisdom regarding protecting megacities from climate change is rooted in technocratic solutions. In the Dhaka metropolitan area, for example, an improved emergency response mechanism has been combined with an early warning system and technical measures including canal improvements, embankments, upgraded drainage systems, raised roads and flood walls (Haque *et al.* 2012; Roy 2009). Yet in the case of informal settlements such initiatives might be of little use due to haphazard construction, an inability to notify residents who do not have legal title to property or residence, and a general impermanence of community. Instead, locals resort to other strategies, as shown in Jabeen *et al.*'s (2010) study of household and community coping strategies by low-income households for flooding in Dhaka's largest informal settlement, Korail. These include physically building houses at higher elevations, using savings strategies, enhancing social networks and strengthening safety nets. The authors suggest that it is incumbent on policymakers to learn from the ad-hoc methods of the poor in order to understand what constitutes vulnerability for them and to create adaptation/mitigation strategies in tandem with development plans (including savings schemes and insurance programmes). But slums are neither static nor predictable in their growth; estimates are that over half a million people arrive in Dhaka's slums each year, 70 per cent of them displaced by environmental effects themselves and adding to the nearly five million already in

low-income and informal settlements (Friedman 2009). In this sense slums represent a growing vulnerability to climate change due to an increase in size as well as any specific environmental factor.

If slum dwellers find themselves in precarious positions due to a lack of legal and especially property rights, for the millions who live in Bangladesh's char-lands – along riverbanks, sandbars and areas of new land formed through a continual process of erosion and deposition, especially in the northwestern parts of the country – their lot is further exacerbated by the physical instability of the land that they inhabit. Like many slum dwellers, char dwellers are counted among the extreme or ultra poor and find themselves excluded from most government services and participation in the broader society (Saifullah 2010). Their lives have long been marked by indeterminacy as the ground literally shifts beneath their feet; a common saying in the region is that 'we have to keep rolling like silt' (Zaman quoted in Sarker *et al.* 2003, 76). Population pressure and the lack of available land means that the fertile char regions retain their appeal for many of the rural poor – many char dwellers have lived in the region for generations – but seasonal flooding and the intense effects of erosion mean that they have little opportunity to solidify or improve their lives. Among other effects are long-term cuts in standard of living, mental illness in families and the loss of valuable assets (Onneshan 2008). The chars are also marked by significant lawlessness and the use of extreme violence in order to exert control over land, especially when it reappears through the accretion process (Saifullah 2010).

The threat that climate change poses to the chars is to destroy them fully through more extreme weather events, more serious flooding and rising water levels (Onneshan 2008). The response, as articulated by national and international development agencies, is multifaceted. One answer is to introduce technological solutions – shoring up eroding riverbanks, building houses on stilts and planting crops that are more conducive to higher water levels (such as some species of rice, for example). Another is to alter property relations in the chars – one controversial proposal has been to designate chars that reappear through the accretion process as government land, contrary to a past – if often violently contested – practice of local families reclaiming these territories (Sarker *et al.* 2003). Yet another approach has been to improve economic conditions and the capacity of local populations through such initiatives as the Char Livelihoods Program, funded by the British and Australian development agencies and focused on job and food security of char dwellers in the northwest (Brocklesby and Hopley 2003). Finally, in an initiative that brings perhaps the most influential developmental innovation from Bangladesh into the climate change adaptation/mitigation discussion is the use of

microinsurance as a safety net against environmental risks (Agrawala and Carraro 2010). However, as Akter (2012), in her five-year study of microinsurance programmes in Bangladesh points out, there has so far been low demand for these initiatives, they are poorly governed and there is little chance to make them commercially viable; in short they are too complex and have little appeal to the poor.

Conclusion

It is clear from the increased amounts of capital invested in planning for the eventuality of climate change that adaptation/mitigation schemes are becoming a paramount concern for international organisations and national governments alike. This is especially true in countries such as Bangladesh where the forward developmental momentum of recent years appears fragile in the face of a potentially radically altered environment. A major response has been to incorporate foreign expertise and local knowledge in order to effect technological and cultural solutions to the threat – securing the physical environment while strengthening local livelihoods.

And yet critics have questioned whether these solutions are sustainable and/or just. Technological solutions and livelihood programmes, while they draw from local knowledge, are expensive and difficult to maintain without continued inputs of foreign expertise and capital. And the proposal to fundamentally transform community practices with regard to communally held land hints at a darker potential for climate change adaptation/mitigation efforts in Bangladesh. The lessons from other cases of EID – such as conservation – are troubling, if instructive, in this regard. If char dwellers or slum dwellers are seen as populations who not only are in the way of solutions (because of their past practices or tenuous title to land) but pose through their very vulnerability to climate impacts a threat to the developmental trajectory of the nation, it is not a far leap to think of preventative displacements of them by the state as a way of lessening such risks. If that is indeed the case, then climate change adaptation/mitigation efforts will have as much potential to displace populations as any environmental transformation might.

Indeed, as the discourse of climate change and especially the efforts to mitigate its effects through the apparatus of global development become hegemonic, we may begin to see the production of a new form of environmental refugee – not simply those displaced by climate change, but instead those who are displaced by preventative measures meant to lessen the potential of future impacts. Are those who oppose moving in response to climate change adaptation/mitigation schemes running the risk of being seen as irresponsible, negligent or obstructionist – and will their displacement as 'bad' environmental citizens be made all the easier?

Acknowledgements

I would like to thank Kevin Ward and two anonymous referees for their comments and suggestions and also Mustafa Alam, Peter Penz, Jay Drydyk, Elizabeth Lunstrum and Anna Zalik for many productive discussions that helped me to develop the arguments in this paper.

Note

1 My collapsing of these terms is not meant to imply that they are in any way synonymous. Broadly understood, adaptation measures are meant to respond to an environment that is (perhaps irrevocably) changed, while mitigation attempts to lessen or minimise damage. Both sets of responses to climate change are often linked and work in tandem and together they help to comprise what I argue is a global climate change regime. For more on the relationship between adaptation and mitigation, see Ayers and Huq (2009).

References

- Adger N, Huq S, Brown K, Conway D and Hulme M** 2003 Adaptation to climate change in the developing world *Progress in Development Studies* 3 179–95
- Agrawala S and Carraro M** 2010 Assessing the role of microfinance in fostering adaptation to climate change OECD Environmental Working Paper No. 15 (<http://www.oecd.org/environment/cc/44844835.pdf>) Accessed 5 December 2014
- Akter S** 2012 The role of microinsurance as a safety net against environmental risks in Bangladesh *The Journal of Environment & Development* 21 263–80
- Alam K, Shamsuddoha M, Tanner T, Sultana M, Huq M J and Kabir S S** 2011 The political economy of climate resilient development planning in Bangladesh *IDS Bulletin* 42 52–61
- Asian Development Bank** 2009 *People's Republic of Bangladesh: supporting implementation of the Bangladesh Climate Change Strategy and Action Plan* Asian Development Bank, Dhaka
- Asian Development Bank** 2011 *People's Republic of Bangladesh: climate change capacity building and knowledge management* Asian Development Bank, Dhaka
- Asian Development Bank** 2012 Asian Development Bank – climate change (<http://www.adb.org/themes/climate-change/main>) Accessed 24 April 2012
- Ayers J and Huq S** 2009 The value of linking mitigation and adaptation: a case study of Bangladesh *Environmental Management* 43 753–64
- Ayers J, Hug S, Faisal A and Hussain S** 2014 Mainstreaming climate change adaptation into development: a case study of Bangladesh *Wiley Interdisciplinary Reviews: Climate Change* 5 37–51
- Baldwin A** 2009 Carbon nullius and racial rule: race, nature and the cultural politics of forest carbon in Canada *Antipode* 41 231–55
- Barbier E and Enchelmeier B** 2014 Valuing the storm surge protection service of US Gulf Coast wetlands *Journal of Environmental Economics and Policy* 3 167–85
- Baviskar A** 2003 Between violence and desire: space, power and identity in the making of metropolitan *Delhi International Social Science Journal* 5 89–98
- Bennett O and McDowell C** 2012 *Displaced: the human cost of development and resettlement* Palgrave Macmillan, London
- Bose P and Lunstrum E** 2014 Environmentally induced displacement and forced migration *Refuge* 29 5–10
- BRAC** 2014 *Disaster, environment and climate change programme* (<http://decc.brac.net>) Accessed 5 December 2014
- Brocklesby M A and Hobley M** 2003 The practice of design: developing the Chars Livelihood Programme in Bangladesh *Journal of International Development* 15 893–909
- Brouwer R, Akter S, Brander L and Haque E** 2007 Socioeconomic vulnerability and adaptation to environmental risk: a case study of climate change and flooding in Bangladesh *Risk Analysis* 27 313–26
- Brown O** 2008 *Migration and climate change* International Organization for Migration, Geneva
- Büscher B and Davidov V** 2014 *The ecotourism-extraction nexus: political economies and rural realities of (un)comfortable bedfellows* Routledge, London
- Chhatre A and Agrawal A** 2009 Trade-offs and synergies between carbon storage and livelihood benefits from forest commons *Proceedings of the National Academy of Sciences* 106 17667–70
- CIDA** 2012 Climate change – Canadian International Development Agency (<http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/JUD-1118152429-RXG>) Accessed 27 April 2012
- De Wet C** 2005 *Development-induced displacement: where to from here?* Berghahn Books, New York
- Deb D** 2009 *Beyond developmentality: constructing inclusive freedom and sustainability* Earthscan, London
- DFID** 2012 DFID – Adaptation (<http://www.dfid.gov.uk/What-we-do/Key-Issues/Climate-and-environment/Adaptation/>) Accessed 27 April 2012
- Dutta S, Munshi A, Khanna P and Athialy J** 2011 *World Bank, climate finance and Bangladesh: a briefing note* Bank Information Center, New Delhi
- Fairhead J, Leach M and Scoones I** 2012 Green grabbing: a new appropriation of nature? *Journal of Peasant Studies* 39 237–61
- Fearnside P** 2012 Carbon credit for hydroelectric dams as a source of greenhouse-gas emissions: the example of Brazil's Teles Pires Dam *Mitigation and Adaptation Strategies for Global Change* 1–9
- Few R** 2003 Flooding, vulnerability and coping strategies: local responses to a global threat *Progress in Development Studies* 3 43–58
- Fox J and Campbell J** 2010 Terrestrial carbon disturbance from mountaintop mining increases lifecycle emissions for clean coal *Environmental Science and Technology* 44 2144–9
- Friedman L** 2009 *Adaptation: a city exploding with climate migrants, Bangladesh and climate migration* (<http://www.eenews.net/public/climatewire/2009/03/16/1>) Accessed 30 December 2014
- Gadgil M and Guha R** 1995 *Ecology and equity: the use and abuse of nature in contemporary India* Routledge, London
- Goldman M** 2011 Strangers in their own land: Maasai and wildlife conservation in Northern Tanzania *Conservation and Society* 9 65–79

- Haque A N, Grafakos S and Huijsman M** 2012 Participatory integrated assessment of flood protection measures for climate adaptation in Dhaka *Environment and Urbanization* 24 197–213
- Harmeling S** 2012 *Global climate risk index 2012: who suffers most from extreme weather events? Weather-related loss events in 2010 and 1991 to 2010* Germanwatch, Berlin
- Hartman C and Squires G D** 2006 *There is no such thing as a natural disaster: race, class and Hurricane Katrina* Routledge, New York
- Ireland P and McKinnon K** 2013 Strategic localism for an uncertain world: a postdevelopment approach to climate change adaptation *Geoforum* 47 158–66
- Jabeen H, Johnson C and Allen A** 2010 Built-in resilience: learning from grassroots coping strategies for climate variability *Environment and Urbanization* 22 415–31
- Jacobs R** 2005 Treading deep waters: substantive law issues in Tuvalu's threat to sue the United States in the International Court of Justice *Pacific Rim Law and Policy Journal* 14
- Koivurova T** 2007 International legal avenues to address the plight of victims of climate change: problems and prospects *Journal of Environmental Law and Litigation* 22 267–300
- Levien M** 2013 The politics of dispossession: theorizing India's 'land wars' *Politics & Society* 41 351–94
- López-Marrero T and Tschakert P** 2011 From theory to practice: building more resilient communities in flood-prone areas *Environment and Urbanization* 23 229–49
- Lunstrum E** 2010 Reconstructing history, grounding claims to space: history, memory and displacement in the Great Limpopo Transfrontier Park *South African Geographical Journal* 92 129–43
- Mourshed M** 2011 The impact of the projected changes in temperature on heating and cooling requirements in buildings in Dhaka, Bangladesh *Applied Energy* 88 3737–46
- Myers N** 1999 Environmental refugees *Population and Environment: A Journal of Interdisciplinary Studies* 19 167–82
- OECD** 2012 *Climate change* (<http://www.oecd.org/env/cc>) Accessed 27 April 2012
- Oliver-Smith A** 2009 *Development and dispossession: the crisis of forced displacement and resettlement* School for Advanced Research Press, Santa Fe NM
- Onneshan U** 2008 *Climate change, vulnerability and livelihood possibilities and prospect of the Charlands of Bangladesh* Climate Study Series No 1 Unnayan Onneshan, Dhaka
- Pender J** 2008 Community-led adaptation in Bangladesh *Forced Migration Review* 31 54–5
- Penz G P, Drydyk J and Bose P S** 2011 *Displacement by development: ethics, rights and responsibilities* Cambridge University Press, Cambridge
- Rahman A** 2011 *Climate change mitigation and adaptation in Bangladesh* Nansen Center, Bergen
- Rai N** 2012 Green grabbing in the name of the tiger *Economic and Political Weekly* 47 108–9
- Ray R** 2011 *Development, displacement, and marginalisation* Asiatic Society, Kolkata
- Rist G** 2008 *The history of development: from Western origins to global faith* Zed, London
- Roy A** 2010 *Poverty capital: microfinance and the making of development* Routledge, London
- Roy M** 2009 Planning for sustainable urbanisation in fast growing cities: mitigation and adaptation issues addressed in Dhaka, Bangladesh *Habitat International* 33 276–86
- Saifullah N M** 2010 Char dweller's adaptation to climate change Unpublished MA, BRAC University, Dhaka
- Sarker M H, Huque I, Alam M and Koudstaal R** 2003 Rivers, chars and char dwellers of Bangladesh *International Journal of River Basin Management* 1 61–80
- Schmidt-Soltau K** 2009 Is the displacement of people from parks only 'purported' or is it real? *Conservation and Society* 7 46–55
- Shiva V, Jani S and Fontana S M** 2011 *The great Indian land grab* Navdanya, Delhi
- Tanner T and Allouche J** 2011 Towards a new political economy of climate change and development *IDS Bulletin* 43 1–14
- Vandergeest P, Idahosa P and Bose P S** 2007 *Development's displacements: ecologies, economies, and cultures at risk* UBC Press, Vancouver
- World Bank** 2007 *To the MDGs and beyond: accountability and institutional innovation in Bangladesh* World Bank, Dhaka
- World Bank** 2012 *Climate change mitigation* (<http://climatechange.worldbank.org/overview/climate-change-mitigation>) Accessed 22 April 2012
- West P, Igoe J and Brockington D** 2006 Parks and peoples: the social impact of protected areas *Annual Review of Anthropology* 35 251–77
- White G** 2011 *Climate change and migration* Oxford University Press, Oxford