



Entrenchment or enhancement: could climate change adaptation help reduce poverty?

Thomas Tanner
Tom Mitchell

Institute of Development Studies (IDS)
University of Sussex, Brighton, BN1 9RE, UK

What is Chronic Poverty?

The distinguishing feature of chronic poverty is extended duration in absolute poverty.

Therefore, chronically poor people always, or usually, live below a poverty line, which is normally defined in terms of a money indicator (e.g. consumption, income, etc.), but could also be defined in terms of wider or subjective aspects of deprivation.

This is different from the transitorily poor, who move in and out of poverty, or only occasionally fall below the poverty line.



Abstract

In the context of climate change, the poorest people are commonly seen as having the least capacity to adapt. However, to date, there has been a limited examination of the dynamic and differentiated nature of poverty. Through bringing together both the chronic poverty and adaptation literature, this article presents a new pro-poor adaptation research agenda underpinned by a more nuanced understanding of poverty. Whilst recognising that poverty reduction efforts are threatened by climate change, this article investigates ways in which proactive adaptation could offer opportunities to create pathways out of chronic poverty through targeted vulnerability reduction and adaptation efforts.

Keywords: Climate change, adaptation, vulnerability

Acknowledgements

We would like to express our sincere thanks to Moushumi Chaudhury for preparing the initial inputs for this paper and to Armando Barrientos and colleagues at CPRC for comments and feedback. The ideas discussed in the paper stimulated the formation of the ESRC Poverty and Adaptation Research Network, which brings together a core of researchers from IDS, London School of Economics, Tearfund, Christian Aid, University of Leeds, Overseas Development Institute and the Chronic Poverty Research Centre to develop cooperative partnerships to explore the theoretical and policy challenges related to making climate adaptation work for the poor.

Thomas Tanner and **Tom Mitchell** are both Research Fellows with the Climate Change and Development Centre at the Institute of Development Studies (IDS).

Email: t.tanner@ids.ac.uk; t.mitchell@ids.ac.uk



Contents

1 Introduction and overview	4
2 Adaptation and chronic poverty: bringing together the communities.....	5
2.1 Climate change, poverty and adaptation.....	5
2.2 Defining chronic poverty	7
2.3 Vulnerability, poverty and climate change.....	8
3 Linkages and challenges: climate change and chronic poverty.....	9
3.1 Ideological drivers linking poverty and adaptation.....	9
3.2 Poverty-centered adaptation: pathways out of poverty.....	11
3.3 Potential testing grounds for poverty-centered adaptation	13
4 Conclusion: Critical areas for linking adaptation and chronic poverty	14
References.....	15



I was seldom able to see an opportunity until it had ceased to be one.

– Mark Twain.

1 Introduction and overview

How to tackle climate change impacts in the context of sustainable development and poverty reduction is becoming a major and pressing concern in many parts of the world. Having moved from the realms of environmental debate to major development fora, climate change was billed in the recent UK International Development White Paper as the ‘biggest threat facing the world’ (DFID, 2006). While efforts to mitigate the rate and extent of climate change by limiting greenhouse gas emissions are a crucial component of our response, two driving factors are clear. First, that whatever stabilisation or reduction in emissions we achieve, we are already bound into some change by existing atmospheric greenhouse gas concentrations locked into the system. Second, anomalous and extreme weather events have increased in recent decades in ways consistent with modelling projections, indicating that climate change is already happening (IPCC, 2007a, b).

The impacts of both gradual climate change-related extreme weather events are already being felt on the ground and are differently distributed across different parts of human society (Smit *et al.*, 2001). Mounting evidence and the prevailing discourse suggest that without dramatic policy interventions, existing and future climate impacts will frustrate pathways out of poverty (DFID, 2006; IPCC, 2007b). This discourse frequently cites the poorest people in the world as having the least capacity to adapt to a changing climate, lacking the assets, social networks, mobility and political power, commonly cited as being critical for adaptation (AfDB *et al.*, 2003).

However, the assertion that the poorest communities are the most vulnerable to climate change is commonly made as a generalisation, with limited examination of the dynamic and differentiated nature of poverty. This article aims to unpack this orthodoxy through an examination of the climate change and chronic poverty literature, thereby creating the case for a more nuanced understanding of poverty for vulnerability and adaptation to climate change. Through such an understanding, the article suggests ways in which climate change may actually be an opportunity to create pathways out of chronic poverty through targeted efforts to enhance vulnerability reduction and adaptation. Finally, it develops a set of research questions and a vision for the collaborative framework needed to propose a pioneering research and policy agenda on pro-poor adaptation (Tanner and Mitchell, 2008).



2 Adaptation and chronic poverty: bringing together the communities

2.1 Climate change, poverty and adaptation

The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), states unequivocally that the global climate is warming. Both Africa and South Asia have been identified as two of the most vulnerable regions to both current variations in climate (climate variability) and future climate change (Nkomo *et al.*, 2006; IPCC, 2007b). Within Africa, projected temperature increases of 0.2-0.5°C per decade (Commission for Africa, 2005) are likely to adversely affect livelihoods through impacts upon agricultural production, biodiversity and food and water security. Similarly in South Asia, crop yields are projected to decrease by up to 30% by the mid-21st century (IPCC, 2007b), severely impacting food security. Alongside flooding from the Himalayan glacial melt, highly populated coastal areas are seen to be at greatest risk from increased flooding from the sea and, in some mega-deltas, flooding from the rivers (IPCC, 2007b).

The impacts of climate change are not evenly distributed, in part due to the differentiated nature of hazards in different parts of the globe, but also due to differences in the ability to cope with and adapt to the negative effects and harness beneficial effects of climate shocks and stresses. The common generic conclusion is that those exposed to the most severe hazards are also those least able to cope with the associated impacts (Smit *et al.*, 2001; AfDB *et al.*, 2003; Adger *et al.*, 2003). Poverty levels are therefore important determinants of climate change impacts, which in turn pose multiple threats to the achievement of the Millennium Development Goals (see Figure 1).

**Figure 1. Potential impacts of climate change on poverty and the MDGs**

Changes in mean climate, variability, extreme events and sea-level rise	Impact on poverty	Impacts on the eight Millennium Development Goals
Increased temperature and changes in precipitation reduce agricultural and natural resources	Lowered industrial output and labour productivity, high inequality, impacts on trade, and fiscal and macro-economic burdens lead to reduced economic growth , and poverty-reducing effects	1 Eradicate extreme poverty and hunger Food security jeopardised; more intense disasters threaten livelihoods.
Change in precipitation, run-off and variability leads to greater water stress	Reduced productivity and security of poor people's livelihood assets , and reduced access for the poor to their livelihood assets	2 Achieve universal primary education More vulnerable livelihoods mean more children engaged in employment; infrastructure damage from disasters.
Increased incidence or intensity of climate-related disasters leads to damage to assets and infrastructure	Less effective coping strategies among the poor, and increased vulnerability of poor people	3 Promote gender equality and empower women Women make up two-thirds of world's poor and are more adversely impacted by disasters.
Temperature, water and vegetation changes contribute to increased prevalence of disease		4 Reduce child mortality Children more vulnerable to malaria and other diseases, which are spread more widely by climate change.
		5 Improve maternal health Pregnant women particularly susceptible to malaria.
		6 Combat HIV/AIDS, malaria and other diseases Increased prevalence of mosquito-borne diseases.
		7 Ensure environmental sustainability Climate change indication of unsustainable practices. Move towards more energy-efficient models of consumption.
		8 Promote global partnerships Wider forums must acknowledge the role of climate change in impacting MDGs.

Source: Mitchell and Tanner (2006), adapted from DFID (2004)

In the face of these challenges, a growing body of work and international implementation has formed around adapting systems to prepare for and respond to climate change. Known as adaptation, this is defined by the IPCC (2001) as:

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Early approaches to adaptation were based on modelling to project future climate changes and secondary impacts (e.g. on crops and water availability). This then provides the basis for decisions on how to adapt to cope with this given change (McCarthy *et al.*, 2001). Although able to be applied to wide areas and provide quantified estimates for decision-makers, such



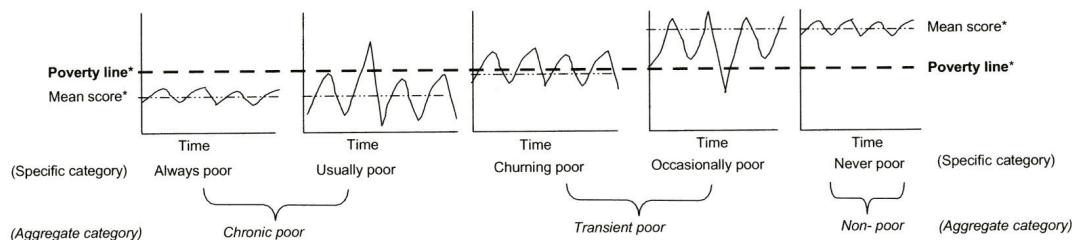
approaches are complicated by the inherent uncertainty of predictions, and a tendency to ignore wider factors affecting vulnerability to climate change. (Klein *et al.*, 1999, 2007).

An emerging alternative approach has developed which provides resilience to future changes by building on improving the ability to cope with existing variations in climate (Burton and van Aalst, 2004). Drawing more heavily on field assessments of existing vulnerability and coping mechanisms to climate variations (Mitchell and Tanner, 2006) this approach is able to take measures to address the underlying causes of vulnerability to climate change, such as structural factors that can cause and entrench poverty, including poor access to natural resources or services (AfDB *et al.*, 2003; Klein *et al.*, 2007).

2.2 Defining chronic poverty

There are up to 420 million chronically poor people in the world and the majority live in South Asia and sub-Saharan Africa (CPRC, 2007). In most cases, chronic poverty is defined as the deepest level of poverty where some are always or usually poor because their income expenditure/consumption is below the poverty line (Jalan and Ravallion, 2000). Whereas some authors have focused on the duration spent below the poverty line, others have differentiated the poor further by separating the ‘very poor’ (those with no apparent prospects of reversing the downward trend in their livelihood) from ‘poor-but-coping’ households (those who are able to sustain their livelihoods but who are intermittently vulnerable to a downward spiral of their livelihood) (Cleaver, 2005). Figure 2 depicts various types of poverty.

Figure 2: Categories of poverty



Depending on data availability poverty could be assessed in terms of household expenditure, income, consumption, a nutritional measure, a poverty index, a poverty scale or an assessment of assets/capitals.

Source: Hulme *et al.* (2001) (adapted from Jalan and Ravallion, 2000)

Income and levels of consumption are commonly used as metrics to understand and define chronic poverty, enabling quantification and cross-comparison. However, this limits understanding of the multidimensional nature of chronic poverty and has led to greater exploration of the social and political factors that describe and explain chronic poverty. These examine why chronic poverty occurs based on the lack of basic assets, entitlements and capabilities (Sen, 1999). These capabilities are usually measured at the household level and



include education, health, human and civil rights (Hulme and Shepherd, 2003). Mutual reinforcement is at play: a lack of capabilities worsens chronic poverty and being chronically poor also limits capabilities.

2.3 Vulnerability, poverty and climate change

Vulnerability is a key concept linking research and discourse around chronic poverty and climate change adaptation. It has been approached and interpreted in different ways, and conceptualised in particular along ecological and social lines (Adger, 2006; Chambers, 1989; O'Brien et al., 2007; Prowse, 2003). From an ecological perspective, vulnerability can be understood through the frequency and magnitude of a system's response to an external event, such as a hazard, defined in poverty terms as a risk of inability to cope with a shock, leading to catastrophe (Hulme and Shepherd, 2003).

This approach takes different shocks and stresses, such as ill health, economic collapse and natural disasters as the basis for studying vulnerability (Birkmann, 2006; CPRE, 2007). In addition to shocks, people can be adversely affected by trends such as gradual environmental degradation, oppressive political systems or deteriorating terms of trade (IISD, 2003a). Barrientos (2007) notes that for such approaches, it is the depth, strength or repeated nature of the shocks that lead to chronic poverty.

This perspective is also reflected in the systems approach of the Intergovernmental Panel on Climate Change (McCarthy et al., 2001), which defines vulnerability as:

The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.

The IPCC's definition reflects a natural science-driven conception of vulnerability as the residual effect of a given climate impact after any adaptation activities are undertaken. This tends to favour technical issues in analysis and development of adaptation solutions, for example, focusing on the provision of weather forecasting information (Klein et al., 2007).

Increasingly, however, social approaches to vulnerability stemming from the poverty literature have become influential (Chambers, 1989; Wisner et al, 2004). In conceiving of vulnerability as representing a general set of characteristics influencing the capacity to adapt and respond to shocks and stresses, the ability to cope with shocks is seen as depending on a wide range of factors in relation not only to the nature of shocks but also the characteristics of a population and assets people possess. In general, the less one possesses assets such as education, health and social networks (Adger et al., 2004), the greater the likelihood that



vulnerability is high, with greater likelihood that shocks and stresses will lead to chronic poverty.

This social conception of vulnerability emphasises the need to take broader elements of vulnerability into account such as human security, empowerment, corruption, or access to natural resources (Swift, 1989; Yamin *et al.*, 2005; Klein *et al.*, 2007). More recently, there has been increasing examination of resilience as a concept applicable to both ecological and social systems (Adger, 2000; Gallopin, 2006; Tompkins and Adger, 2004; www.steps-centre.org; www.resalliance.org). The poverty literature cites building resilience as a means of reducing vulnerability in terms of the ease and rapidity of a system's response to an external event (Moser, 1998; Scott, 2006). Similarly, climate change researchers have identified characteristics of resilient societies and applied these to adaptation, including the ability to buffer disturbance, to self-organise, and to learn and adapt (Tompkins and Adger, 2004, Tanner *et al.*, 2007b). Resilience therefore encapsulates both people's assets, and also the services provided to them by external infrastructure and the networks of societal and institutional relationships to which they have access (IISD, 2003b).

3 Linkages and challenges: climate change and chronic poverty

Having introduced the two fields, this section highlights some of the linkages and challenges raised by each of the two fields. We argue that despite advances informed by diverse ideologies in linking poverty and climate change adaptation, much analysis and rhetoric remains around an undifferentiated poor with the community as the unit of analysis. We then go on to suggest ways for engaging chronic poverty with adaptation debates and practices in the future, and the research implications for doing so.

3.1 Ideological drivers linking poverty and adaptation

To date, the principal inter-play between the two fields has been through analysis and projections on the extent to which climate change impacts will perpetuate or deepen poverty across the world. Such analyses, through stressing the disproportionate effect of climate change on poor communities relative to richer communities through loss of assets, lives and repeated shocks (IPCC, 2001, 2007b; AfDB *et al.*, 2003; Commission for Africa, 2005; DFID, 2006; Stern, 2006) has driven advocacy campaigns around the need to reduce greenhouse gas emissions to levels that will avoid dangerous levels of human-induced climate change (Simms and Reid, 2004). Increasingly, however, it has become apparent that poor people are already, and will continue to be, at the forefront of exposure to extreme weather events and the impacts of climate change. Within the development community, this has driven a growing momentum for improving the capacity of developing country governments and poor communities themselves to manage and adapt to impacts today and in the future.



This growing momentum for adaptation has been informed by different sets of ideological drivers, with different implications for engagement with chronic poverty debates. Within both, there remains a strong imperative to provide the evidence base regarding the impact of changing climate on poor people. In particular, this informs the negotiations around international climate change adaptation agreements and funds in order to focus adaptation on achievement of the Millennium Development Goals (MDGs) and targeting the most vulnerable communities.

Instrumental effectiveness has been the principal driver in the World Bank and many donor cooperation agencies in shaping approaches to tackling adaptation through development of risk management approaches (Burton and Van Aalst, 2004; Tanner *et al.*, 2007a). Here, economic analysis forms an important part of the case for adaptation as a cost-effective process of preventing future negative impacts on development investments and ensuring that development finance is effective in meeting targets for poverty reduction, including the MDGs (Stern, 2006; UNDP, 2007). Development agencies have operationalised this approach through the screening of programmes and projects to assess current and future climate sensitivity and risk, building in adaptation to development project design in a risk management framework (Klein *et al.*, 2007; Tanner *et al.*, 2007a).

At the same time, approaches to adaptation are also informed by equity and justice dimensions of the issue of human-influenced climate change. This presents adaptation in poor communities as a necessary response to a problem caused by the richer sections of society across the world but with impacts felt most severely by poorer members who have contributed least to the problem (Paavola and Adger, 2006; Adger *et al.*, 2006). This has formed the backbone of adaptation as an advocacy and campaigns issue, particularly among international NGOs (Simms and Reid, 2004; Christian Aid, 2006).

Where informed by equity and justice ideology, the need to tackle adaptation in the context of chronic poverty is therefore considered a moral necessity, with new and additional finance for adaptation being provided by richer parts of the global community, who are those primarily responsible for the problem. This finance should target the poor and most vulnerable globally; those who are most reliant on climate sensitive resources, living in the most marginal environments, and with the least resources to cope with shocks and adapt to stresses and change (Christian Aid, 2006; Mitchell and Tanner, 2006). In necessarily focusing initially on this division of rights and responsibilities between rich and poor, particularly at an international level, this approach has yet to narrow down on subdivisions of poverty or targeting the chronically poor, instead taking a broader community-based view of vulnerability and adaptation (Huq, 2007).

Although there are grounds for both these ideological strands to focus on chronic poverty dimensions of adaptation, there has been limited progress in doing so to date. Some



attention has been given to examining how poverty characteristics influence vulnerability (Adger, 2006), but limited engagement on the dynamic and differentiated dimensions of poverty within the theory, process and practice of adaptation. Instead, they describe general conditions in which vulnerable people have been able to improve their capacity to manage climate impacts and adapt to future change in general terms, and at most at community level.

3.2 Poverty-centred adaptation: pathways out of poverty

While strong drivers for a poverty-centred adaptation approach therefore exist from both ideological standpoints, there is an urgent need to provide an improved understanding of how different dimensions of poverty influence the design and implementation of adaptation processes and projects. As a first step to improving poverty-centred adaptation, Table 1 demonstrates how different adaptation processes might be more or less suited to different categories in the poverty continuum identified by (Davies *et al.*, 2007, 2008; Jalan and Ravallion, 2000).

A poverty-centred approach to adaptation also seeks to assess how climate change may affect routes into and out of chronic poverty due to differences in the necessary assets and access, which is considered to be the key components of adaptive capacity. This will need to ask whether climate change-related vulnerabilities will render poor people's coping mechanisms inadequate or how climate change may present an opportunity to chart a pathway out of chronic poverty for others. For some, this may include changes to ecosystems that may render them more productive and offer a greater range of environmental assets (IPCC, 2007b). We go further, suggesting that increasing streams of adaptation finance, targeted at the poorest groups and accompanied by broader institutional strengthening and attention to the drivers of vulnerability, could provide a significant opportunity. Considering climate change as an opportunity for the chronically poor also presents intellectual and practical challenges around a hypothesis that a lower level of assets situates the chronically poor in a position of strength regarding their willingness and ability to be flexible in their livelihoods strategies.

Assessing these opportunities to make adaptation effective for the chronically poor will require moving beyond analysis at the broad community level to examine not only the location and asset context of communities, but also how vulnerability varies within locations according to socio-economic characteristics that include the multi-dimensional aspects of deprivation. By focusing attention on the household, it will be possible to increase understanding of the transfer and uptake of adaptive practices and provide a more nuanced appreciation of how households take decisions about risks based on climate information (Thomas *et al.*, 2005).

**Table 1: Adaptation options by poverty category**

Specific poverty category	Always poor	Usually poor	Cyclical poor	Occasionally poor	Never poor
Aggregate category	Chronically poor		Transient poor		Non-poor
Autonomous adaptation	<ul style="list-style-type: none"> Selling of last assets Sending younger children to work Conflict, crime, sex work Move to more exposed locations Use fragile ecological assets 	<ul style="list-style-type: none"> Intra-community transfers/charity Sending children to work Migration Extended families Conflict, crime, sex work 	<ul style="list-style-type: none"> (Seasonal) Migration Less risky production Working multiple jobs, longer hours Investment in social capital/reciprocity 	<ul style="list-style-type: none"> Diversify livelihoods Investment in social capital/assets 	<ul style="list-style-type: none"> Investments in multiple financial assets Buy drought-tolerant seeds, new technology Diversify livelihoods Invest in ethical/green options (biofuels)
Market-based adaptation		<ul style="list-style-type: none"> Promote micro-savings, micro-credit, micro-insurance Cattle insurance 	<ul style="list-style-type: none"> Weather-indexed insurance Cattle insurance Promote micro-savings, micro-credit, micro-insurance Selling assets 	<ul style="list-style-type: none"> Weather-indexed insurance Promote micro-savings, micro-credit, micro-insurance Selling assets 	<ul style="list-style-type: none"> Crop insurance Farm asset insurance and domestic insurances (health, life, assets) to prevent flight of capital out of agriculture Price hedging
Public policy-driven adaptation	<ul style="list-style-type: none"> Social pensions Assisted migration Democratisation of natural resource management / ecosystem rehab. Right to adaptation/redistribution? Promotion of health and nutrition services Cash for work schemes Conditional cash transfers 	<ul style="list-style-type: none"> Community restocking schemes Subsidised seed banks Ecosystem rehabilitation Cash for work schemes Promotion of health, disease reduction Democratisation of natural resources 	<ul style="list-style-type: none"> Community restocking schemes Improved remittance schemes Subsidised seed banks Improved climate information (seasonal forecasting) Ecosystem rehabilitation Irrigation schemes 	<ul style="list-style-type: none"> Improved remittance schemes Improved climate information (seasonal forecasting) Employment assurance schemes Social insurance programmes (health, crop, employment) Irrigation schemes/urban service provision 	<ul style="list-style-type: none"> Taxation to pay for adaptation of poor Marketing of green agenda Incentives for adaptation and mitigation choices



Further reading/ case studies	Davies et al. (2007, 2008)	Mitchell and Tanner (2006)	Munich Climate Insurance Initiative (www.climate-insurance.org)	Holzmann and Kozel (2007)	
----------------------------------	-------------------------------	-------------------------------	---	------------------------------	--

3.3 Potential testing grounds for poverty-centred adaptation

In developing a poverty-centred adaptation approach, issues of social protection, insecurity and migration may provide good analytical lenses for research into chronic poverty-adaptation linkages. Encompassing a broad range of centrally and locally planned adaptation measures covering income and asset transfer to enhanced rights of the marginalised¹ (Devereux, 2001; Barrientos, 2007; Devereux and Sabates-Wheeler, 2004, 2007), climate change poses many questions for the design of social protection programmes. For example, does climate change impose an asset threshold, beyond which adaptation becomes impossible, and beyond which social protection measures cannot be successful? Does climate change require different approaches to social protection or is business as usual just as effective?

On the issue of insecurity, recent research clearly suggests that violent conflict plays a central role in creating and sustaining chronic poverty (Goodhand, 2001; Justino, 2006). Purvis and Busby (2004) suggest the relatively slow pace of climate change means that it is likely to be the invisible, but not the primary, cause of armed conflict. More conflicts, added to drought, disease and the potential for economic stagnation and humanitarian crises linked to climate change, may contribute to the growing fragility of states (Smith, 2007). One potential dimension of investigating this nexus would be to view climate change as an opportunity in a fragile-states context to build flexible and chaotic institutions that are considered better suited to the challenge of adapting to climate change by some adaptation theorists (Pelling and High, 2005).

Linkages between migration, chronic poverty and climate change also remain largely unexplored. If forced migration increases, as is likely, improving our understanding regarding the influence of climatic factors on migratory flows relative to other influencing factors among the chronically poor would enable proactive measures to facilitate migratory flows among the poor, enhance opportunities, and limit negative effects on chronically poor people.

¹ Social protection refers to all initiatives that transfer income or assets to the poor, protect the vulnerable against livelihood risks, and enhance social status and rights of the marginalised with the overall objective of extending the benefits of economic growth and reducing the economic or social vulnerability of poor, vulnerable and marginalised people (Devereux and Sabates-Wheeler, 2007).



4 Conclusion: Critical areas for linking adaptation and chronic poverty

This article acknowledges that the impacts of climate change are already being realised and are likely to be most severe in Africa and South Asia, two regions with the highest concentrations of chronically poor people. To avoid a rapid growth in the number of chronically poor, research on the specific design of institutional support mechanisms, such as social protection, conflict prevention and service delivery must accompany the work on climate change impacts. While shocks are likely to increase in frequency and magnitude, so is the funding available for institutional support. ‘Pro-poor adaptation’ therefore has the potential to provide an opportunity to move people out of chronic poverty. To achieve this goal, our understanding of the interrelationships between poverty, vulnerability and adaptation must be improved in order to design and tailor adaptation measures with the needs of the chronically poor in mind.

In conclusion, this article points to a need for a new *poverty-centred adaptation* research agenda. We suggest a range of fruitful areas for research areas, including:

- Understanding that vulnerabilities and adaptation options may change according to different poverty categories;
- Conducting household level analysis to facilitate a more targeted approach appropriate for households in different poverty categories;
- Investigating the adaptive flexibility of the chronically poor;
- Developing the evidence base for designing adaptation programmes that target different poverty categories;
- Developing a pro-poor adaptation agenda for adoption in future international agreements, particularly to ensure pro-poor adaptation financing;
- Investigating adaptive institutional and legal structures that can respond to current and future climate risks by reducing vulnerabilities of the chronic poor;
- Linking scientific modeling with a deeper understanding of the impacts of climate change on shifting people into and out of poverty.



5 References

- Adger, W.N. (2006). 'Vulnerability'. *Global Environmental Change*, 16 (1), 268-281.
- Adger, W.N. (2000). 'Social and ecological resilience: are they related?'. *Progress in Human Geography*, 24 (3), 347-364.
- Adger, W.N., Paavola, J., Huq, S. and Mace, M.J. (Eds.) (2006). *Fairness in Adaptation to Climate Change*, Cambridge: MIT Press.
- Adger, W.N., Brooks, N., Bentham, G., Agnew, M. and Eriksen, S. (2004). 'New indicators of vulnerability and adaptive capacity'. In *Tyndall Technical Report 7*, Norwich: Tyndall Centre for Climate Change Research.
- Adger, W.N., Huq, S., Brown, K., Conway, D. and Hulme, M. (2003). 'Adaptation to climate change in the developing world'. *Progress in Development Studies*, 3 (3), 179-195
- African Development Bank; Asian Development Bank; Department for International Development; United Kingdom; Directorate-General for International Cooperation: the Netherlands; Directorate General for Development: European Commission; Federal Ministry for Economic Cooperation and Development: Germany; Organization for Economic Cooperation and Development; United Nations Development Programme; United Nations Environment Programme; World Bank (2003). 'Poverty and climate change: reducing the vulnerability of the poor through adaptation'. Available at: <http://www.undp.org/energy/povcc.htm>.
- Barrientos, A. (2007). 'Does vulnerability create poverty traps?' Chronic Poverty Research Centre Working Paper 76. Manchester, UK: IDPM/Chronic Poverty Research Centre (CPRC).
- Birkmann, J. (Ed.) (2006). *Measuring Vulnerability to Natural Hazards*. Tokyo: United Nations University Press.
- Burton, I. and van Aalst, M. (2004). *Look Before You Leap: A Risk Management Approach for Incorporating Climate Change Adaptation in World Bank Operations*. Washington DC: World Bank.
- Chambers, R. (1989). 'Editorial introduction: vulnerability, coping and policy', *Institute of Development Studies Bulletin*, 20 (2), 1-7.
- Christian Aid (2006). 'The climate of poverty: facts, fears and hopes'. Available at www.christianaid.org.uk/Images/climate_of_poverty_tcm15-21613.pdf
- Chronic Poverty Research Centre (2007). 'Chronic poverty: an introduction', Chronic Poverty Research Centre Policy Brief No. 1. Manchester, UK: Chronic Poverty Research Centre (CPRC).
- Cleaver, F. (2005). 'The inequality of social capital and the reproduction of chronic poverty'. *World Development*, 33 (6): 893-906.
- Commission for Africa. (2005). 'Our Common Interest: Report of the Commission for Africa'. Available at www.commissionforafrica.org/english/report/introduction.html
- Davies, M., Guenther, B., Leavy, J., Mitchell T., and Tanner, T.M. (2008). 'Adaptive Social Protection': Synergies for Poverty Reduction'. In Tanner, T.M. and Mitchell, T. (Eds.) 'Poverty in a Changing Climate'. *IDS Bulletin*, 39 (4).
- Davies, M., Mitchell, T.C., Slater, R. and Peskett, L. (2007). 'Can Cash Combat Climate Change? Adaptation and Social Protection'. Presentation to DFID Environment Adviser's Retreat, Wyboston Lakes, July 2007. Available at



http://www.ids.ac.uk/UserFiles/File/poverty_team/climate_change/Can_Cash_Combat_Climate_Change_4_July_07.ppt.

Department for International Development (2006). 'Working internationally to tackle climate change'. In *Eliminating World Poverty: Making Governance Work for the Poor*. A White Paper on International Development, DFID: London. Available at <http://www.dfid.gov.uk/pubs/files/whitepaper2006/wp2006section4.pdf>.

Department for International Development. (2004). Climate Change and Poverty Keysheet No.1. Available at <http://www.dfid.gov.uk/pubs/files/climatechange/1povertyPRS.pdf>.

Devereux, S. (2001). 'Livelihood Insecurity and Social Protection: A Re-Emerging Issue in Rural Development', *Development Policy Review* 19 (4), 507-519.

Devereux, S. and Sabates-Wheeler, R. (Eds.) (2007). 'Debating social protection'. *IDS Bulletin*, 38 (3), 1-7.

Devereux, S. and Sabates-Wheeler, R. (2004). 'Transformative Social Protection', IDS Working Paper No. 232, Brighton: IDS.

Gallopin G.C. (2006). 'Linkages between vulnerability, resilience, and adaptive capacity'. *Global Environmental Change*, 16 (3), 235-316

Goodhand, J. (2001). 'Violent Conflict, Poverty and Chronic Poverty'. Chronic Poverty Research Centre Working Paper No. 6. Manchester, UK: Chronic Poverty Research Centre (CPRC).

Holzmann, R. and Kozel, V. (2007). 'The role of social risk management in development: a World Bank view - reply to comments'. *IDS Bulletin*, 38 (3), 20-22.

Hulme, D. and Shepherd, A. (2003). 'Conceptualizing Chronic Poverty'. *World Development*, 31 (3), 403-423.

Hulme, D., Moore, K. and Shepherd, A. (2001). 'Chronic Poverty: meanings and analytical frameworks'. Chronic Poverty Research Centre Working Paper 2. Manchester, UK: Chronic Poverty Research Centre (CPRC). Available at http://www.chronicpoverty.org/pubfiles/02Hulme_et_al.pdf.

Huq, S. (2007). *Community based adaptation: An IIED Briefing Note*. London: International Institute for Environment and Development.

Intergovernmental Panel on Climate Change (2007a). *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change: The Physical Science Basis Summary for Policymakers*. Available at: <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>.

Intergovernmental Panel on Climate Change (2007b). *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change: Impacts, Adaptation and Vulnerability Summary for Policymakers*. Available at <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>.

Intergovernmental Panel on Climate Change (2007c). *Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change: Mitigation of Climate Change*. Available at: <http://www.ipcc.ch/ipccreports/ar4-wg3.htm>.

Intergovernmental Panel on Climate Change (2001). *Climate Change 2001: Working Group II: Impacts, Adaptation and Vulnerability*. Available at: http://www.grida.no/climate/ipcc_tar/wg2/index.htm.



- International Institute for Sustainable Development (2003a). *Lessons from case studies on the application of climate change adaptation strategies in the development world*. Available at: <http://www.eldis.org/cf/search/disp/DocDisplay.cfm?Doc=DOC20819&Resource=f1lca>.
- Jalan, J. and Ravallion, M. (2000). 'Is transient poverty different? Evidence for Rural China'. *Journal of Development Studies*, 36 (6), 82-99.
- Justino, P. (2006). 'On the Links between Violent Conflict and Chronic Poverty: How Much Do We Really Know?' Chronic Poverty Research Centre Working Paper No. 61. Manchester, UK: Chronic Poverty Research Centre (CPRC).
- Klein, R.T.J., Eriksen, S.E.H., Næss, L.O., Hammill, A., Tanner, T., Robledo, C. and O'Brien, K.L. (2007). 'Portfolio screening to support the mainstreaming of adaptation to climate change into development assistance'. Tyndall Centre Working Paper 102. Norwich: Tyndall Centre
- Klein, R.T.J., Nicholls, R.J. and Mimura, N. (1999) 'Coastal Adaptation to Climate Change: Can the IPCC Technical Guidelines be applied?', *Mitigation and Adaptation Strategies for Global Change*, 4 (3-4), 239-252.
- McCarthy, J., Canziani, O.F., Leary, N.A., Dokken, D.J. and White, K.S. (Eds.) (2001) *Climate Change 2001: Impacts, Adaptation, and Vulnerability*. Cambridge: Cambridge University Press.
- Mitchell, T. and Tanner, T.M. (2006). *Adapting to Climate Change: Challenges and opportunities for the development community*. Middlesex, UK: Tearfund.
- Moser, C. (1998). 'The asset vulnerability framework: reassessing urban poverty reduction strategies'. *World Development*, 26 (1), 1-19.
- Nkomo, J.C., Nyong, A. and Kulindwa, K. (2006). 'The Impacts of Climate Change in Africa'. Report prepared for the Stern Review. Available at http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_supporting_documents.cfm.
- O'Brien, K.L., S. Eriksen, L.P. Nygaard, and Schjolden, A. (2007). 'Why different interpretations of vulnerability matter in climate change discourses'. *Climate Policy*, 7 (1), 73-88.
- Paavola, J. and Adger, W.N. (2006). 'Fair adaptation to climate change'. *Ecological Economics*, 56, 594-609.
- Pelling, M. and High, C. (2005). 'Understanding adaptation: What can social capital offer assessments of adaptive capacity?'. *Global Environmental Change A*, 15 (4), 308-319.
- Prowse, M. (2003). 'Towards a clearer understanding of 'vulnerability' in relation to chronic poverty'. Chronic Poverty Research Centre Working Paper 24. Manchester, UK: Chronic Poverty Research Centre (CPRC).
- Purvis, N. and Busby, J. (2004). The Security Implications of Climate Change for the UN System. *Environmental Change and Security Project Report*, 10.
- Resilience Alliance. Accessed at <http://www.resalliance.org>.
- Scott, L. (2006). 'Chronic Poverty and the Environment: a Vulnerability Perspective' Chronic Poverty Research Centre Working Paper 62. Manchester, UK: Chronic Poverty Research Centre (CPRC).
- Sen, A.K. (1999). *Commodities and Capabilities*. Oxford: Oxford University Press.
- Simms, A., Reid, H. (2004). *Up in Smoke*. New Economics Foundation, London.



- Smith, D. (2007). 'The double-headed risk of climate change and armed conflict'. International Alert Briefing Note, March 2007.
- Smit, B., Pilifosova, O., Burton, I., Challenger, B., Huq, S., Klein, R., Yohe, G., Adger, N., Downing, T., Harvey, E. (2001). 'Adaptation to climate change in the context of sustainable development and equity'. In McCarthy, J. J., Canziani, O., Leary, N. A., Dokken, D.J. and White, K.S (Eds.) *Climate Change 2001: Impacts, Adaptation and Vulnerability*. IPCC Working Group II. Cambridge: Cambridge University Press.
- STEPS Centre. Accessed at <http://www.steps-centre.org>.
- Stern N. (2006). *The economics of climate change: the Stern review*. Cambridge: Cambridge University Press.
- Swift, J. (1989). 'Why are rural people vulnerable to famine?'. *IDS Bulletin*, 20 (2), 8-15.
- Tanner, T.M. and Mitchell, T. (Eds.) (2008). 'Poverty in a Changing Climate'. *IDS Bulletin*, 39 (4).
- Tanner, T.M., Hassan A., Islam K.M.N., Conway, D., Mechler, R., Ahmed A.U. and Alam, M. (2007a). 'ORCHID: Piloting Climate Risk Screening in DFID Bangladesh'. IDS Research Report. Brighton, UK: Institute of Development Studies.
- Tanner, T.M., Mitchell, T.C., Polack, E. and Guenther, B. (2007b). 'Urban Governance for Adaptation: Assessing Climate Change Resilience in Ten Asian Cities'. Report to the Rockefeller Foundation. Brighton, UK: Institute of Development Studies.
- Thomas, D., Osbahr, H., Twyman, C., Adger, W. N. and Hewitson, B. (2005). 'Adaptations to climate change amongst natural resource-dependant societies in the developing world: across the Southern African climate gradient'. Tyndall Centre Technical Report 35. Norwich: Tyndall Centre for Climate Change Research.
- Tompkins, E.L. and Adger, W.N. (2004). 'Does adaptive management of natural resources enhance resilience to climate change?' *Ecology and Society*, 9 (2), 10.
- United Nations Development Programme (2007). *Human Development Report 2007/2008 Fighting Climate Change: Human Solidarity in a Divided World*. New York: United Nations Development Programme.
- Wisner, B., Blaikie, P., Cannon, T. and Davis, I. (2nd Ed.) (2004). *At Risk: Natural Hazards, People's Vulnerability and Disaster*. London and New York: Routledge.
- Yamin, F., Rahman, A. and Huq, S. (2005). 'Vulnerability, adaptation and climate disasters: a conceptual overview', *IDS Bulletin*, 36 (4), 1-14.
- .



Chronic Poverty Research Centre

www.chronicpoverty.org

The **Chronic Poverty Research Centre** (CPRC) is an international partnership of universities, research institutes and NGOs, with the central aim of creating knowledge that contributes to both the speed and quality of poverty reduction, and a focus on assisting those who are trapped in poverty, particularly in sub-Saharan Africa and South Asia.

Partners:

Bangladesh Institute of Development Studies (BIDS),
Bangladesh

Development Initiatives, UK

Development Research and Training, Uganda

Economic Policy Research Center, Uganda

FIDESPRA, Benin

HelpAge International, UK

Indian Institute of Public Administration, India

IED Afrique, Senegal

Institute of Development Studies, UK

Overseas Development Institute, UK

Programme for Land and Agrarian Studies, South Africa

University of Legon, Ghana

University of Manchester, UK

University of Sussex, UK

Contact:

cprc@manchester.ac.uk