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REDD+ AND SOCIAL JUSTICE: ADAPTATION BY WAY OF MITIGATION?

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Abstract

This chapter discusses the interplay between mitigation and adaptation by examining the social justice issues relating to REDD+ and how they complicate our understanding of successful adaptation. It finds that successful adaptation to climate change cannot be achieved without boarder and deeper, i.e. more radical, geographical and structural changes. If REDD+ ignores these broader connections, it will not go far in achieving either mitigation or adaptation objectives.

INTRODUCTION

Mitigation and adaptation to climate change are still largely being approached as separate types of activity. We examine here the case of Reducing Emissions from Deforestation and Forest Degradation (REDD+) given its relevance for both climate change mitigation and adaptation. This evolving mechanism as part of a post-Kyoto agreement under the United

Nations Framework Convention on Climate Change (UNFCCC) expanded in 2009 from an earlier narrower focus on deforestation and degradation (REDD) to also including conservation, sustainable forest management and enhancement of carbon stocks, which is what the "+" in REDD+ now stands for (Campbell 2009). The aim of this chapter is to examine the social justice dimensions of REDD+ and how these complicate our understanding of how to define successful adaptation.

Although REDD+ was initially framed and designed to be a mitigation opportunity for developed and developing countries, limitations in available funding and other competing priorities – above all adaptation to climate change in developing countries – have brought up the idea of REDD+ as an adaptation programme (Long 2009). Attempting to achieve not only climate mitigation and poverty reduction, but also building resilience to the impacts of climate change is now being referred to as "triple wins" (Mitchell and Maxwell 2010). An example of a synergy of adaptation and mitigation objectives is that protecting forests through REDD+ can provide a form of insurance in that forests can act as natural safety nets for poor households, which can turn to forests for sustenance and income in the face of external shocks (Campbell 2009). A number of approaches building on such synergies are currently being developed, including "climate compatible development", "climate smart agriculture " or "ecosystem-based adaptation."

Ecosystem-based adaptation is based on the notion that societies derive benefits from ecosystem structure and functions. Ecosystem services yield human well-being through (1) provisioning (e.g. fuel and food); (2) regulating (e.g. water filtration, climate); (3) cultural services (i.e. recreation, aesthetics, education, and spiritual meaning); and (4) supporting services (e.g. nutrient cycling) (MEA 2005). Changes in climate will make it increasingly

difficult for local and indigenous people to benefit from these and maintain their livelihoods as well as to manage their forests and retain the carbon stored in them.

In recent years, much discussion has taken place regarding the possible externalities of REDD+, in particular for communities who depend on forests for their livelihoods (Larson and Ribot 2007). Possible co-benefits from REDD+ for biodiversity conservation and poverty alleviation, fair benefit sharing and notions of social justice have been injected into the discussions on REDD+ (Long 2009; Persha *et al.* 2011; Sikor and Stahl 2011). While this broadening of scope can be seen as productive for the sake of developing institutions that have wide synergistic effects, it is crucial to be aware of the possible pitfalls of such an approach. This chapter contributes to this discussion on the interplay between mitigation and adaptation by examining the social justice issues implicated in REDD+ across levels of governance and how they affect understanding of successful adaptation.

It will do so by, firstly, unpacking the evolution of REDD+ and how it has developed from a narrow stance to an increasingly multilevel and multivalent approach to avoiding deforestation. The chapter will then focus on social justice as a way of addressing some of these implementation challenges and how this relates to adaptation objectives. Next, it identifies the implications for defining successful adaptation before it ends with a discussion of how low carbon development and wider climate governance can be linked.

THE EVOLUTION OF REDD+

Deforestation and forest degradation are occurring mainly in tropical forest countries which are non-Annex 1 countries under the 1992 UNFCCC and thus do not have binding emission reduction obligations under the 1997 Kyoto Protocol. Deforestation and forest degradation were not included in the Kyoto Protocol; it was unclear how to overcome methodological uncertainties and concerns by developing countries over ceding their sovereignty. Deforestation has since come into focus as a major contributor to rising global greenhouse gas (GHG) emissions, accounting for 13-17 per cent of annual global GHG emissions (van der Werf *et al.* 2009; Eliasch 2006).

REDD+ received international attention as a viable mitigation strategy following the 2006 Stern Review, which stressed the cost-effectiveness of reducing emissions from avoided deforestation (Stern 2006). The 2007 Bali Action Plan took up the idea of creating incentives to keep forests intact by making trees more valuable standing than felled and launched the process for designing a mechanism to 'reduce emissions from deforestation in developing countries' (REDD). The 2009 Copenhagen Accord committed to funding activities toward REDD including conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+) as well as adaptation. It also included appendixes with both developed and developing countries' emissions reduction pledges. Developing countries have thus begun to pledge Nationally Appropriate Mitigation Actions (NAMAs), which in the case of countries such as Brazil and Indonesia have mainly consisted of actions to reduce the deforestation rates. Likewise, developing countries are eligible for funding for National Adaptation Programmes of Action (NAPAs), and some countries are beginning to include ecosystem-based adaptation measures recognizing that ecosystem services play an important role in reducing people's vulnerability to climate change (Pramova *et al.* 2012).

The 2010 Cancun Agreements encourage all countries, as well as companies and consumers that create the demands that drive deforestation (e.g. demands for timber, oil palm, soy and cattle), to find effective ways to reduce the human pressures on forests that result in GHG emissions. They also contain provisional language on social and environmental safeguards, including the clause to be "consistent with the adaptation needs of the country", "respect for the knowledge and rights of indigenous peoples and members of local communities… and noting … United Nations Declaration on the Rights of Indigenous Peoples" (UNDRIPS) and "the full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities." The 2011 Durban Platform made progress on sources and delivery of finance for REDD+ as well as on social, environmental and governance safeguards for local communities and biodiversity. Despite much work ahead, REDD+ is well on track to become a key element of a post-2012 international climate agreement. However, the Durban Platform has delayed negotiations, which will now be concluded no later than 2015 in order for a new agreement to come into effect and be implemented from 2020 (UNFCCC 2011). The future of the international climate regime – and with that REDD+ – is indeed uncertain.

While the rules and provisions of a UNFCCC REDD+ mechanism are still being negotiated, funding has been flowing to tropical forest countries to enable capacity building and to take countries through three phases: (1) REDD+ readiness[1]; (2) policy reforms; and (3) reducing emissions. Two major programs include UN-REDD and the World Bank's Forest Carbon Partnership Facility (FCPF). Multiple actors (e.g. international agencies and non-governmental organizations (NGOs), national governments, timber consumers and local communities) and sectors (e.g. forestry, agriculture, energy and transport), all operating at

[1] REDD-readiness refers to supporting countries build their institutional, technical and human capacity; prepare national strategies; design and implement monitoring, reporting and verification of emission reductions and forest accounting systems; develop national systems for determining baselines; develop safeguards to protect the interests of forest communities; and clarify forest and carbon tenure rights.

different levels of governance (local, regional, national and international) are all implicated in the emerging REDD+ regime. They are both contributing to developing and implementing REDD+ in its various guises.

To what extent REDD+ will be based on funding or on markets remains an open question, and countries remain split on this question (Okereke and Dooley, 2010). For now, the funding approach seems to have more traction. Several countries have already pledged REDD+ funds: Norway, Denmark, Spain, Japan and the EU are some of the countries funding UN-REDD to assist 13 countries in preparing REDD+ national strategies (totaling some US$120 million).[2] The World Bank FCPF, a readiness and a carbon fund supporting 37 countries, includes donations by Norway, Australia, Japan and Spain (totalling some US$435 million).[3]

Although the commodification of carbon is occurring at the international level, the extent to which it will contribute to REDD+ is uncertain. The EU Emission Trading Scheme excludes REDD+ credits until 2020, an indication that the private sector might be unlikely to contribute to REDD+ at large scale. A market-based approach is resisted by countries such as Brazil and Bolivia as well as by transnational movements such as the Global Forest Coalition, a coalition of NGOs and Indigenous Peoples' Organizations. Their stance is that market-based schemes exacerbate many of the social and environmental problems that already exist in local communities, further marginalizing economically less powerful groups in forest policy because they are not strong enough to defend their interests against powerful corporate interests (Bolin and Taku Tassa 2012).

[2] UN-REDD Programme Fund, available at: http://mptf.undp.org/factsheet/fund/CCF00 (accessed April 2012).

[3] Forest Carbon Partnership Facility, available at: http://www.forestcarbonpartnership.org/fcp/node/12 (accessed April 2012).

THE SOCIAL JUSTICE DIMENSIONS OF REDD+

A rich literature on the justice, equity and fairness dimensions of REDD+ is emerging. These various terms are often used interchangeably although they reflect somewhat different epistemologies and therefore differ in connotation and the contexts in which they tend to be used (e.g. Sikor and Stahl 2011; Okereke and Dooley 2010; Schlosberg 2007; Fraser 2009). This chapter will, for the purpose of simplicity, refer to their common ground as social justice. The social justice dimensions of REDD+ have received such vociferous attention (Larsen and Ribot 2007) because whilst forests are inhabited by between 350 million (World Resources Institute 2002) and 1.2 billion people (World Wide Fund for Nature 2002: 2), these 5–17 per cent of the global population have been historically marginalized from decision-making processes and market activities.

Justice, equity and fairness are a core building block of the UNFCCC (1992). They are most fundamentally enshrined into its fabric through Article 3.1: "parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities."

While the UNFCCC mentions the need to promote policies that facilitate adequate adaptation to climate change, subsequent efforts to address climate change have until recently focused mainly on mitigation. Different countries and in particular the least developed countries, have regularly asserted their right to financial support toward the adaptation needs of their populations in the face of adverse impacts from climate change. Several UN climate documents recognize that least developing countries have a right to development and with the financial support of developed countries (Bolin and Taku Tassa 2012).

Some literature on justice distinguishes between process and outcome (Gardiner 2004; Grasso 2007). Procedural justice relates to how decisions are made, who is allowed to participate in the policymaking process and under what terms (Schroeder 2010). Distributive justice is concerned with the fair distribution of benefits and burdens across populations (Okereke 2008). There are many principles and potential formulas for distributing benefits and burdens associated with climate change. These include responsibility, need, merit, capability, willingness to pay, equality etc. (Okereke and Dooley 2010; Okereke 2010).

Other dimensions of equity frequently mentioned in the literature in connection with global climate governance include contextual justice, compensation and recognition. Contextual justice refers to the pre-existing conditions under which different stakeholders interact or engage in benefit sharing (Shue 1993; Okereke and Schroeder 2009; Okereke 2010). Compensatory justice deals with how to calculate and offset the negative effects of historical injustice (Klinsky and Dowlatabadi 2009). Recognition deals with arguments and methods for integrating rights and privileges established through other global agreements as well as domestic rights enshrined in national constitutions (Sikor *et al.* 2010).

REDD+ evokes several issues of social justice, especially as many of its aspects appear to integrate mitigation and adaptation strategies. Internationally, states are keen to maximize the benefits associated with REDD+ while minimizing potential risks. Primarily, developing countries are keen to attract as much finance as they can through REDD+ while also protecting their sovereign rights over their forests. Developed countries, on their part, seek to ensure that REDD+ provides the maximum climate benefit in terms of carbon emissions offset and to avoid being financially exploited by developing forest countries (Okereke and

Dooley 2010).

As had been the case in Europe and North America centuries earlier, forests are cut down in developing countries to earn revenue from the timber, extract minerals from the soil, expand cattle ranching, and cultivate the land for lucrative cash crops. Such drivers of deforestation are spurred by domestic and foreign consumer demands, making it difficult to address the issue of deforestation effectively through the problem of leakage. Now that forests have become an issue of international concern given their capacity to retain carbon and standing forests are being given an economic value through REDD+, some countries such as Brazil and Indonesia are recalibrating their regard for forests and some Brazilian states have already cut back on tax incentives to develop the land (Toni 2011).

The emerging landscape of old and new efforts to preserve forests also implicate issues of justice within states. Paying those who are leaving forests intact through REDD+ has raised the question of forest tenure. Forest tenure is highly complex and varied not only across but also within countries. Both (traditional) customary and (legalised) statutory tenure systems co-exist, making the question of who owns the forest and therefore should rightly receive international payments highly political and contested (Doherty and Schroeder 2011). On-going efforts in forest conservation, such as community forestry, co-management of forests and protected areas, are bringing these complex issues to the fore as many such projects have now been turned into REDD+ projects (Leggett and Lovell 2012).

The result so far is mixed. Reported cases span from REDD+ working to support the transfer of tenure rights to forest people, REDD+ exposing people to new competition for the rights they already hold, to REDD+ leading to elite capture and land grabbing, ridding forest-

dwelling communities, including indigenous peoples, of their ancestral homes and their livelihoods (Larson 2011).

The UNFCCC and other multilateral processes and programs to facilitate the implementation of REDD+ are making efforts to protect poor people from such atrocities by establishing social and environmental safeguards (McDermott *et al.* 2012). Such safeguards might include democratic, decentralized and transparent forest governance structures and support mechanisms, rights and participation of indigenous peoples and local communities in REDD+ implementation and conservation of biological diversity and enhancement of ecosystem services (Schroeder 2010; McDermott *et al.* 2012). But are safeguards equitable enough? Do they sufficiently address the concerns of the poor, including strengthening their resilience to climate change?

Evidence is still inconsistent but there are indications that these safeguards provide protection and equitable distribution of benefits to the local forest communities (Merger *et al.* 2011). However, documentation of poverty reduction and community participation in community-based forest management is rather weak. Unsuccessful experience in this regard over the past three decades leads Bolin and Taku Tassa (2012: 14) to conclude that "power relations have constantly been underplayed in policy and development interventions." The result is that these programs have done little to change the status quo. Indigenous communities and NGOs supporting them have therefore been keen to ensure that REDD+ is not designed simply to protect the forest and enrich federal governments but that enhancing human adaptation and resilience are equally central aspects. However, the danger is that REDD+ could end up being "overloaded" to the effect that it does not satisfactorily achieve any of the desired objectives.

REDD+ AND SOCIAL JUSTICE: IMPLICATIONS FOR DEFINING SUCCESSFUL ADAPTATION

A focus on distributional justice issues in REDD+ raises several challenges for climate governance, in particular how to define and understand successful adaptation. As one would expect, the main aspects of this challenge closely mirror the key dimensions of justice discussed above – who should make decisions, what should be the focus of decisions, and how to measure successful adaptation. We discuss these in turn.

The first is *who* determines what counts as successful adaptation? Previous sections have highlighted the many different actors whose roles are vital in one form or another for the successful design and implementation of REDD+. No doubt any actor would agree (at least in principle) that it is desirable (even imperative) to ensure that REDD+ projects are designed to contribute to both forest and human adaptation. However, it is not difficult to imagine that different actors have different views about how this should be achieved and how to define success in practice (Corbera and Schroeder 2011; cf. Adger *et al.* 2005). For example, countries recognise that public funding will be needed at least initially to build capacity to implement REDD+ activities in developing countries. However, while Brazil has promoted a fund-based approach, Australia and New Zealand have argued for total reliance on carbon markets. In the middle of these extremes are Cameroon, Guyana and Papua New Guinea favouring a mixed or phased approach that accommodates the differing capacities across tropical forested countries (Okereke and Dooley 2010). This diversity of views was highly characteristic of the politics of defining REDD+ within the UNFCCC. The result was that REDD+ eventually became defined in the broadest possible sense to "provide flexibility in

implementation and reach consensus" (Peskett *et al.* 2011: 3; cf Peskett and Yander 2009). Likewise, adaptation is also broadly defined and subject to different interpretations.

Skutch *et al.* (2011) suggest that the highly complex and technical methodologies associated with REDD+ gives foreign governments, international donor agencies and project consultants undue leverage in determining how REDD+ should be implemented. It has been argued that some elite consultancies like McKinsey employ questionable assumptions which do not generate maximum financial and adaptation benefits for local communities (Ekins *et al.* 2011). Within the UNFCCC the question of overall ownership of REDD+ appears to have been settled in favour of national governments with the decision that countries participating in REDD+ should be responsible for monitoring, reporting and verification (MRV) (FCCC/CP/2010/7Add.1). This would suggest that the prerogative of defining what counts as successful adaptation with regards to REDD+ projects ultimately rests with national governments. But again, evidence abounds regarding the dispute between national governments and local communities over where and how to do adaptation (Peskett and Brodnig 2011; Robles 2011). At the same time, several portions of the UNFCCC text provide for important roles for local communities. The Cancun Agreements refer to the need for "effective participation of indigenous peoples and local communities" in REDD+ schemes. There are also several references that REDD+ projects "must do no harm" to local communities. However, deciding what counts as "effective participation" and "no harm" are no simple tasks.

Currently, several approaches have been developed to ensure that a wide range of actors have a say in deciding how to do REDD+ and what counts as successful adaptation. The World Bank's FCPF has the "Participants Assembly and Committee" which is comprised of

governments and a range of official and non-official observers. UN-REDD has a decision-making mechanism which includes civil society, indigenous people and government representatives (UN-REDD 2010). But while these initiatives all proclaim their commitment to consensus, it is common knowledge that consensus in international politics rarely means unanimity or adequate attention to the concern of all parties involved (Okereke 2008). At any rate, the effort devoted to establishing these complex decision making units, the proliferation of social safeguards (designed to protect local communities) and other measures like Free, Prior and Informed Consent[4] all serve to establish that the question of who defines what is success is a crucial implication of justice issues in relation to the adaptation of forest communities.

The second justice challenge in defining successful adaptation in the context of REDD+ has to do with where the spatial *focus* should be in making a decision on what counts as effectual adaptation (cf. Robles 2011; Peskett *et al.* 2011; Kimbowa *et al.* 2011; Graham 2011). Benefits of REDD+ and related adaptation processes do not necessarily accrue in the same way or at the same level of governance. Hence, conflict between local, national and even global benefits may arise (Brockhaus and Botoni 2009; Caravani 2011). Regardless of the decision-making agent or unit involved, it is possible to have different spatial foci in deciding the adaptation-related merits and demerits of a REDD+ project. On the one hand, a focus on local communities in deciding the adaptation benefits of REDD+ projects is likely to yield maximum advantage for the forest communities. However, such a narrow focus may lead to negative externalities especially in situations where burdens are shifted to non-participating neighbouring communities (Graham 2011; O'Neill 2010). In fact, such externalities can be a source of inequities or even tensions and conflicts between communities. For example, the

[4] "Free prior and informed consent" (FPIC) is the principle that a community has the right to give or withhold its consent to proposed projects that may affect the lands they customarily own, occupy or otherwise use.

conservation of a given forest could lead to agricultural intensification and ultimately land degradation and increased vulnerability of people outside of the forest estate. On the other hand, an emphasis on local communities may result in the under valuation of the adaptation benefits which occur further afield from the location of REDD+ projects. Instances would be when the conservation of a forest estate has positive effects on rainfall, water protection, erosion prevention, and improvements in local fisheries in local communities that lie outside the boundaries of a forest or REDD+ estate.

The need for a broad focus in measuring or determining the adaptation benefits of REDD+ was one of the reasons why some favor the implementation of REDD+ at a national scale. Other benefits often cited include the need to avoid leakage and "leverage significant legislative reform" (Peskett *et al.* 2011: 7) at the national level in favor of forest conservation and sustainable forest development. Low transaction cost is another reason why a national focus is sometimes preferred to local or project-level REDD+.

There are also a number of arguments against a national focus. A key argument is that a national approach will further concentrate power, resources and the benefits of REDD+ projects at the federal level and at the expense of the local forest communities. Another argument is that the nationalization of REDD+ is likely to reverse recent trends in decentralising rights to own and manage forests (Phelps *et al.* 2010). Critically, it is feared that deciding adaptation benefits at a scale other than the local forest communities involved will lead to the abuse and exploitation of local forest communities, most of who are already vulnerable and lack power in national political settings (Graham 2011; Kimbowa *et al.* 2011).

As stated, the problem of scale in defining the adaptation benefits of REDD+ is not limited to local and national jurisdictions. It also involves complex considerations about trade-off between national benefits and global impacts (Brockhaus and Botoni 2009). Certain forests may be deemed as playing more critical roles than others in maintaining global environmental conditions. Other forests may be highly valued by the global community because of the rich biological resources they contain. In both cases, the conservation of such forests may be deemed a priority and more beneficial to the global community when the benefits of conversation for the forest nation in question may be quite limited. In fact these kinds of considerations have been common in the politics of the conservation of the Brazilian Amazon to the extent that some have called for the Amazon to be declared a global common good (Barbosa 2000). It may well be that different scales of measurement would be required in determining the adaptation implications of different REDD+ projects but deciding where to draw the boundary for each project would remain a very contentious issue.

The third and often discussed equity implication for defining successful adaptation pertains to *how to measure* success. Regardless of who actually makes the decision and the spatial focus adopted, it is not easy to determine how exactly to measure the success of climate adaptation projects (Adger *et al.* 2005). One dilemma that is frequently mentioned in the literature is whether success should be determined on the basis of processes or outcomes. This is important because it is easy to envisage situations where a similar set of conservation actions do not yield similar results in either increasing forest or human adaptation. A second and equally pertinent dilemma is whether success should be based on the quantity of carbon conserved or whether wider dimensions of wellbeing and poverty reduction should be factored in deciding success (Graham 2011). Moreover, what should be the parameters and steps for deciding success when there is conflict between carbon and human wellbeing? A

third dimension is whether a project should be considered successful if it helps to challenge fundamental issues of inequity in the system but yields little benefits in terms of adaptation and carbon sequestration/forest conservation. The alternative would be to define success in terms of the lives and/or carbon saved with less effort on challenging/upsetting abiding structural injustices at community or national levels. The UNFCCC documents contain the requirement that REDD+ should do no harm to local forest communities. Others say that the requirement goes beyond no harm and includes the enhancement of local benefits. Either way, there remain serious difficulties in determining what this means in practice (Peskett *et al.* 2011; Graham 2011). Yet, it is important to note that the UNFCCC defines REDD+ as "an international financial transfer mechanism developed with the aim of reducing net GHGs from the forestry sector" and that this definition does not make any reference to adaptation benefits.

One issue that is often ignored in scientific and policy debates is how to value forests and ecosystems. It is not enough to say that a particular REDD+ project has been successful in the sense that a forest has been preserved and the adaptive capacity of local community enhanced. There is also a question about whether or not the right price has been paid and even what constitutes the right price. Several debt-for-nature swap projects purporting to help promote conservation and local communities have actually compromised the quality of lives of the local people (Mahony 1992). The question about who decides and what parameters are used in making decisions is also more deeply a question of value – what counts as valuable and how different/conflicting value-orders are reconciled.

LINKING ADAPTATION WITH LOW CARBON DEVELOPMENT AND WIDER CLIMATE GOVERNANCE

It is common knowledge that deforestation and the climate vulnerability of forest communities are caused by a wide and complex set of socio-economic issues both inside and outside the forest sector. Therefore, REDD+ policies and programmes cannot stand in isolation but must be linked to broader development strategies in order to be successful. Such strategies would need to address the root causes of deforestation and the broader political and economic causes of vulnerability. In most cases there would also be a need to look at connections with other polices within the climate regime as well as broader international relations issues.

One of the main causes of deforestation is agriculture. In many developing countries forest conservation and agriculture fall under different ministries and the policies governing each domain are rarely joined up. In fact, in many cases these two are in conflict (Banks 2004; Graham 2011). Given the primary need for food and in many cases the greater contribution of agriculture to foreign exchange earnings, many countries tend to privilege agriculture over forest conservation. Therefore for REDD+ programmes to succeed, they must be placed in the context of national low carbon development strategies which properly balance agricultural and forest conversation needs/policies (Angelsen 2009).

Some of the ways through which this can be done include having nationally effective agro-forestry policies, such as increasing intensification and greater use of peri-urban lands for agriculture (Ellis 2009). For example, the Low Carbon Development Report for Rwanda recommends that a vital step for promoting low carbon climate resilience growth in Rwanda lies in encouraging an agro-forestry scheme which employs agroecology, resource recovery and reuse, and fertilizer enriched composts (Rwanda Low Carbon Report 2011). An

integrated approach will significantly lower inorganic fertilizer demand, reduce dependence on oil, reduce GHG emissions and increase farm profitability due to reduced input costs for farmers. This will contribute to reducing vulnerability to external shocks. Such approaches also improve soil structure and the water retention capacity of soils leading to climate resilient agricultural ecosystems and sustainable food security (ibid.).

Similarly, intensification through the use of irrigation, fertiliser and the implementation of integrated river or coastal zone management programmes can help agricultural production and forest conservation, if perhaps only in the short term. Furthermore, some might argue that the use of genetically modified crops can help increase yield per hectare and therefore reduce pressure on agricultural lands and forests (Angelsen 2009). Again, this invokes risks as well. Many such policies are shown to have direct implication for the success or otherwise of REDD+ although they lie outside the REDD+ regime.

A second major cause of deforestation is indiscriminate logging. Like agriculture, logging is often encouraged by governments because of the revenues it generates. In many cases the local people who are made vulnerable by logging and associated deforestation have no control over, and do not share in, the benefits of the process. This power relationship has many implications for the success of REDD+. For one, it means that while local communities may have the incentive to participate in a REDD+ project, they may not have the powers necessary to guarantee the conservation of the forest area and thereby the success of the project.

Thirdly, many developing country populations still rely on wood and charcoal/biomass for their primary source of energy. For example, wood fuel provides 80 per cent or more of the total energy in countries like Rwanda, Tanzania and Nepal. Generally reliance on wood for

energy is caused by the lack of supply of clean electricity by the national government. Given the relationship between absence of clean electricity nationally and deforestation, it would be futile to concentrate on REDD+ without addressing the energy need of the forest communities.

The energy and agricultural polices of many countries are intimately linked to wider international political economic issues. Rate of earning from agriculture is closely tied to price of commodities in the international market. International timber certification is a long established practice – even though its effect on logging is mixed and contested (Hock 2001; Rametsteinera and Simula 2003). Energy policy and security in many countries are closely tied to international terms of trade and the availability (and terms/ conditionality) related to international finance.

Finally, there is an intimate connection between the global carbon price and the degree of benefits that can accrue from REDD+ projects. This has led to serious contention about the extent to which REDD+ should be purely market driven or not and the extent to which it should be linked with the global carbon price (Okereke and Dooley 2010). Other critical issues linking REDD+ and the rest of the global climate regime include reference emission levels and the links with historical responsibility, the role of carbon offset and Clean Development Mechanism projects, and the availability of climate finance and implications for trust and commitment among countries. All of these highlight the intimate connection between REDD+ and national as well as boarder global political economy dynamics. So while debates about who should and how to define successful adaptation within REDD+ and the climate regime are not trivial, there are reasons to believe that effective adaptation to climate change cannot be achieved without boarder and deeper, i.e. more radical, geographical and

structural changes (see also Biermann *et al.* 2012). Surely, then REDD+ approaches that ignore these broader connections will not go far in achieving either mitigation or adaptation objectives.

CONCLUSION

This chapter illustrates the significant synergies and trade-offs between REDD+ and adaptation to climate change and how such complexities complicate how we define and understand successful adaptation. In the end, REDD+ can only be a successful instrument if it not only reduces GHG emissions by avoiding deforestation and forest degradation but also avoids causing negative externalities. Some of these externalities have now been formally recognized by the UNFCCC through their inclusion as safeguard provisions (introduced in the Cancun Agreements), including the need to enhance REDD+ adaptation linkages. Limited availability of funds to pay for both adaptation and avoided deforestation are putting pressures on REDD+ project designers to explore potential synergies in areas beyond the forestry sector. This puts REDD+ in danger of failing before it has been formally adopted as an international climate mitigation strategy under the UNFCCC. At the same time, it bears the opportunity to evolve into a mechanism driven not so much by global but by local priorities.

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