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Vulnerability, resilience and development discourses in context of climate change

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Abstract The paper discusses how the current climate change debate influences the way in which development is conceptualised, negotiated and implemented. The objective of the article is to explore some of the underlying controversies that characterise development discourses in the context of climate change. Adaptation to climate change goes along with a significant shift in discourses used to deal with what is normally called development. This is reflected in shifting research interests and perspectives, from vulnerability studies to resilience thinking. However, the paper argues, this shift is problematic for the normative contents of development and especially for a pro-poor and grass roots perspective.

Keywords Vulnerability · Resilience · Adaptation · Development · Discourse analysis

1 Climate change—a challenge for development

Anthropogenic climate change is rapidly creating new conditions for development in poor countries, and a new context for how development is thought about—what could be termed the "development context" of climate change. It is doing this in at least four ways, and because global warming is being caused by human action, these are all the more "socially constructed" problems. First, climate change is directly affecting the living conditions of most of the people in developing countries, through increasing variability and uncertainty of the conditions in which people try to pursue their livelihoods (IPCC 2007). It is doing this primarily through its effects on agricultural, pastoral, fishing and forestry resources that form the main livelihoods of the rural population. It will also affect infrastructure,

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housing, public services, employment, the informal sector and the urban economy, although less research has been carried out on this. As a result, there will also be impacts on rural–urban interactions, including the movement of goods, services, money and labour between rural and urban livelihoods (this has also received relatively little attention).

Second, and although it is inappropriate scientifically to attribute any single extreme event to global warming, there is scientific consensus that climate-related hazards are becoming increasingly frequent and more intense. As well as tragedies of death, injury and disease, these also affect people's livelihoods through the destruction of production resources. Given that existing policies to support development (in poverty reduction, health and education, livelihood diversification etc.) are rarely (if at all) "proofed" against disasters, this aspect of the "development context" of climate change is especially pertinent in the discussion of development discourses (Wisner et al. 2004).

Third, as the discussion of how to respond to global warming evolves, much more attention is being paid to *adaptation* as well as mitigation. Adaptation involves billions of people in less developed countries who are already the object of development policies for many NGOs, governments and donors. It is therefore impossible to separate adaptation from "development". However, what the connections between adaptation and development mean is not yet sufficiently clear (Tanner and Mitchell 2008). For instance, is adaptation a type of development or something much more? Does development facilitate adaptation? And what is meant by development in the context of climate change? Is adaptation the form that development must take under conditions of climate change? The discussion is just beginning (Kok et al. 2008; Agrawala and van Aalst 2008), and it will be a key issue in the negotiations and implementation of a Kyoto- or Copenhagen protocol within the UN framework convention on climate change.

Fourth, and as an outcome of the first three, climate change is having an effect on development discourses, and on discussions of the goals and pathways of development. The discussion of climate change (and the scientific interpretation of it) is therefore influencing development policy and practice. In other words, climate change is having an effect not only on the *object* of development practice (people, natural resources and other assets, livelihoods) but also on the way that the development process is conceived and translated into policy by the *subjects* of those processes. In particular, there is a need to bring clarity to the concepts used to negotiate these discussions. This is especially the case in order to understand in what ways *adaptation* is (or is not) related to the two concepts that are most often used in the analysis of disasters: resilience and vulnerability. In particular, we are concerned about how the use of *resilience* is being extended beyond the discussion of disasters and the environment (especially in relation to ecosystems or "social–ecological systems" in the term used by the Resilience Alliance) into the wider context of adaptation to climate change, and the potential damage this is doing to ideas of development and the concept of vulnerability (Berkes et al. 2003; Anderies et al. 2006).

This paper is primarily concerned with the third and fourth of these issues, and especially with the interactive relationships between the climate change debate and concepts of development. In particular, we argue that the existing discussion in the disaster risk reduction (DRR) sphere (in which vulnerability and resilience are crucial concepts) can be usefully extended to climate change and adaptation. This will involve acknowledging that disasters are socially constructed events: the product of the impact of a natural hazard on people whose vulnerability has been created by social, economic and political conditions. By extension, this means that resilience, and now adaptation to climate change should also be treated as being socially constructed. In doing so, we will assert that the resort to the language of "governance" (generally in relation to development and especially as in

"adaptive governance") disguises the essence of the issue: *power relations* and the behaviour of different actors with differing levels of power. In particular, the notion of resilience—whether derived from natural (ecosystem) or technological (physics or engineering) usage—is dangerous because it is removing the inherently power-related connotation of vulnerability and is capable of doing the same to the process of adaptation.

We identify a significant part of this problem as being a result of the systems theory approach that is inherent in the term resilience. Its source in natural systems makes the concept of resilience inadequate and even false when it is being uncritically transferred to social phenomena, precisely because human systems embody power relations and do not involve analogies of being self-regulating or "rational". The resilience argument exists within a very limited explanatory framework that gives privilege to "rationality", is "scientistic", has idealised ideas of actors behaving in an "optimal" way, and has a general unwillingness to accept people's behaviour on the basis of alternative and equally valid "rationalities".

This echoes early debates in development studies (in the 1960s and 1970s) about whether peasants are profit seeking or satisficing (content with a livelihood outcome that satisfies rather than maximises "profit"), risk-averse, or entrepreneurial—or a combination of two or three of these. In effect, satisficing and risk-averse behaviour could be interpreted as a rational way of smoothing production over the longer term, and it only appears to be irrational to those whose notion of efficiency is derived from an economic growth perspective. The failure by outsiders to take people's own rationality and cultural determinants as equally valid has led to the emergence of a widely accepted participatory approach to grass roots development (signified by Participatory Rapid Appraisal [PRA] and its many variants). It has also often led to DRR interventions being inadequate or inappropriate, especially through the failure to take account of different rationalities that are often thought about as "culture" (Cannon 2008b; Aalst et al. 2008).[1] We suggest that there are parallel dangers for the use of adaptation as the socially constructed concept to be used more specifically in regard to climate change. This is especially worrying given that the vast majority of people who have to adapt their livelihoods may not have "resilience" under existing conditions, let alone those of climate change.[2] Vulnerability is therefore a more valid concept, since its social construction is valid under existing and new conditions, and is rooted in economic and political processes that can be analysed alongside those of climate and ecosystems.

2 Controversial issues of adaptation and development

The current debate about integrating adaptation to climate change and development policy is circling around a number of controversial issues that need to be clarified. Much of the confusion arises because of the way that the concept of development has been captured (or even "polluted") by the economic growth discourse and especially the domination of that

[1] It could be argued that this is one of the most important reasons why disaster risk reduction interventions have failed. There is a growing interest in what might be called "cultural" explanations for different attitudes to disaster risk, including a recent electronic conference conducted by ICIMOD (Hewitt 2008).

[2] In much of the literature on disasters, authors and NGOs conflate resilience with "coping mechanisms/strategies", despite the fact that when people are forced to cope it usually means that they are having to dispose of assets, undermine their nutrition and health, and generally erode their ability to survive in the present and the future. Over-romanticised views of coping have no place in a proper definition of being "resilient".

discourse by proponents of neo-liberalism. As a result of this capture, economic growth is perceived in the past 20 years to be much more widely valid as a means of reducing poverty, even though it is led by actors whose goal is not to improve people's lives but predominantly to seek profits for private gain.[3] The discussion of the development context for climate change must now decide whether this is an acceptable approach for adaptation.

In the development debates of the 1970s and 1980s, there was a relatively clear distinction between the two notions—development was not regarded as the same as growth. This was a result of the widespread discrediting of the so-called "trickle-down theory of development", in which pro-growth proponents argued that eventually the wealth that was acquired by richer groups as a result of growth would generate benefits for the poor as it trickled down through the economy. The discourse on growth has become so dominant that it is often conflated with development, even in relation to climate mitigation where people speak of "clean development".

More specifically in regard to climate change, the confusion affects a number of problems. In each of them, there is a lack of clarity as to whether the issue is development or economic growth. First, can "development" help to reduce risks, including the ones created by climate change, or is it itself—at least to some extent—responsible for the manufacturing of risks? Put another way, do development processes lead to a parallel process of adaptation to climate change, or are they a part of the problem? This is particularly relevant because the neo-liberal discourse asserts that the best way to reduce poverty is through economic growth. In other words, the goal of *development* is transmuted into forms of economic activity that are in reality *economic growth*. The illusion is given that it is possible to achieve the goal of development while at the same time allowing (even encouraging) increasing income and asset disparities and in general harming the environment.[4] Much of this "development" has been shown to increase people's exposure to hazards and add to the vulnerability of the poor (who may then also be forced to degrade the environment to survive) (Wisner et al. 2004; DFID 2004; UNDP 2004).

What emerges here then is the absolute necessity to distinguish development from economic growth. There is a broad consensus that conventional economic growth not only damages the environment in general, but that it is also specifically linked to fossil fuel use and therefore the major source of global warming. It is therefore completely counter to any process of adaptation. Even to the extent that it may 'lift people out of poverty' (as with the claims for economic growth in China and other countries), there is no guarantee that the 'lifted' people are less exposed to climate change or that their lifestyles are carbon-neutral: in fact the opposite is the norm.

To understand this, we argue that it is now imperative to make a clear distinction between purposeful development and economic growth. Development must be purposeful in the sense that its goal is directly to improve people's lives (e.g. by reducing poverty, enhancing livelihoods, improving health and education) and is carried out by actors who

[3] Corollaries of this include the way that markets are promoted by private sector actors in "development projects" as a solution to problems of education, health and water supply. Yet it is manifestly obvious that these sectors are those of classic market failure (not least for health in the USA). With this comes the emergence of what Klein (2005, 2007) calls "disaster capitalism" through the marketisation of supposed solutions to emergency assistance. The issue of the failure of markets to deal with health and poverty in the USA is argued by Giroux (2004) to be an inevitable result of neoliberalism, where the ideology of selfish profit-seeking can easily regard a section of the population as being expendable.

[4] The start of the Chinese economic reforms in the 1980s were led by Deng Xiaoping's statement "Let some get rich first" and even "let some regions get rich first", a neat restatement of the trickle-down theory of economic growth.

have this as their principal goal. It must not be a side-effect of what other actors (e.g. corporations or governments) do in their pursuit of profit and growth. By contrast, economic growth is promoted by actors who do not have purposeful development as their main goal, even though they argue that growth can bring employment, poverty reduction and improved welfare. In most cases, such growth also brings increasing inequality and social conflict, increased greenhouse gas emissions, environmental damage and reduced well-being. In other words, the stark problems brought by climate change and the need for adaptation should be forcing a reopening of the classic argument about the difference between development and economic growth (or as Herman Daly calls it, "Uneconomic Growth" [inter alia Daly 2007]), and challenging the received wisdom (another way of defining a dominant discourse) that economic growth (e.g. as in the Chinese and Indian examples) is the best way to solve poverty. As the New Economics Foundation argues:

> Global economic growth is an extremely inefficient way of achieving poverty reduction and is becoming even less effective. Between 1990 and 2001, for every $100 worth of growth in the world's per person income, just $0.60 found its target and contributed to reducing poverty below the $1-a-day line. As a result, to achieve a single dollar of poverty reduction, $166 of extra global production and consumption is needed, with enormous environmental impacts which counter-productively hurt the poorest most. We need to move decisively away from the inefficiency of relying on global growth for poverty reduction, towards a system in which policies are designed explicitly and directly to achieve our social and environmental objectives, treating *growth* as a by-product. (NEF 2006: 3)

Second, we want to suggest that it is pointless (or even irresponsible) to consider the risks resulting from climate change in isolation from the others that people in the developing world have to encounter, such as food prices, unstable markets for cash crops, debt or state failure. There is a parallel here with conventional approaches to DRR, where outsiders' interventions to reduce disaster risk have often ignored people's own "grass roots" hierarchy of risks. In an analysis of hundreds of vulnerability assessments carried out to inform disaster reduction measures by many national societies of the Red Cross and Red Crescent, a clear pattern emerges that communities have a different set of priorities to those of outsiders who want to help protect them from extreme risks (Cannon 2008b). This has been corroborated to the authors by NGOs involved in many other vulnerability assessments in developing countries. People rarely mention sudden disasters in their list of the risks they face, and often give higher priority to problems like illness, water supply, security, unemployment or traffic accidents. We also know that even when faced with severe crisis conditions, people will behave "culturally" in ways that do not seem to fit with (externally designed) pattern of rationality in relation to those risks (Cannon 2008b). How does this affect their capability and willingness to adapt to climate change, and how are these social–environmental adaptations related to other adaptations that people are forced to undertake, for example in the scope of economic globalisation?

Third, adaptation is often discussed in connection with resilience building, but that involves some underlying conceptual contradictions that need to be resolved on a theoretical basis (Sabates-Wheeler et al. 2008). The resilience approach focuses mainly on the "social–ecological system", and so when it relates to climate change and adaptation, it is not sufficiently conducive to the inclusion of the other risks and crises that affect the majority of people who are linked to the ecosystem through their livelihoods. Moreover, it is a scientific and technical approach that finds it difficult to escape the scientistic and "imposed rationality" discourses that is alien to the daily practice of ordinary people who

are actually at the heart of the way that the coupling takes place between socio-economy and ecosystem (Folke et al. 2005).[5]

Finally, adaptation and "adaptive governance" are embedded in an institutional setting that needs to be critically assessed, especially as they tend to be "depoliticised" and reliant on systems approaches that play down the significance of self-interested actors who have disproportionate access to and control over ecosystems.[6] We suggest that the types of institutions that are emerging to deal with adaptation, and which are likely to arise in the coming years as part of the enormous adaptation spending that is expected from the Kyoto Protocol and the UNFCCC negotiation process, are not likely to fit into the need for a livelihoods, vulnerability, development discourse but are rather going to be more congruent with a version of adaptation that is focused on resilience, and is scientistic rather than people-centred. There is no space to justify this claim in this article, but we consider that the arguments made here should open up a discussion of this danger.

3 Adaptation and development—an interactive relationship

Warnings of climate change are almost immediately followed by an urge for adaptation, as for example in a speech of former UN Secretary-General Kofi Annan:

> "The impact of climate change will fall disproportionately on the world's poorest countries, many of them here in Africa. Poor people already live on the frontline of pollution, disaster, and the degradation of resources and land. For them, adaptation is a matter of sheer survival."[7]

The growing awareness of climate change is reflected in debates about how development policy and practice should react to the problem. Primarily that means how adaptation can be given a higher priority. This almost inevitably leads to a reorientation of development goals and to competition between different fields of policy. The contradictions have to be addressed in order to avoid adaptation policies dominating and deforming the original objectives of development, especially with respect to vulnerability and poverty reduction. In short, the thrust of adaptation must be by those with goals that fit with purposeful development rather than economic growth.

The relationship between strategies of adaptation to climate change and development policies is an emerging research issue.[8] This is reflected in an exponential increase in the number of publications on issues of adaptation, vulnerability and resilience since the mid

[5] While Folke et al. discuss the significance of people-centred involvement in the governance of social-economic systems in this substantial paper, it reflects an assumption that powerful actors will respond to ecosystem problems by engaging in co-management (as in adaptive governance) without much consideration of self-interest and power relations that have damaged the ecosystem in the first place.

[6] Adaptive governance is defined by Carpenter and Folke (2006) as: "Institutional and political frameworks designed to adapt to changing relationships between society and ecosystems in ways that sustain ecosystem services; expands the focus from adaptive management of ecosystems to address the broader social contexts that enable ecosystem based management".

[7] Opening speech at COP 12 (12th Conference of the Parties to the UN Framework Convention on Climate Change), 15 November 2006, Nairobi.

[8] See the special issue "Development policy as a way to manage climate change risks" of Climate Policy 8 (2), April 2008, edited by Bert Metz and Marcel Kok, and IDS Bulletin 39 (4), September 2008 on "Poverty in a Changing Climate", edited by Thomas Tanner and Tom Mitchell. See also: Markandya and Halsnaes (2002), Smith et al. (2003).

1990s. However, there are two deficits in this work. First, as Janssen et al. (2006) showed in a bibliometric study of more than two thousand publications, the fragmented pattern of the research area is only now seeing attempts to explore the relationship between resilience and vulnerability. Second, the conceptualisation of climate change and adaptation has so far been largely dominated by natural science perspectives. These deficits are closely related, and they present a strong argument for a more intensive involvement of the social sciences in the issue.

An integration of perspectives presents a major challenge that may indeed be called "a bridge over troubled waters" (Agrawala 2005). This is because the objective is not only the linking of adaptation and development, but also of different forms of policy interplay between top–down and bottom–up strategies (Aalst et al. 2008; Urwin and Jordan 2008), and of natural and social science perspectives. Until now, studies have either been from primarily a climate change perspective or from the side of development; they have seldom been from a perspective of mutual influences and an interactive relationship. Accordingly, international climate change policies and research efforts have focused more on global questions of mitigation and adaptive management, with comparatively little concern for local development potentials and problems (Huq and Reid 2004, Aalst et al. 2008).

In development policy and practice on the other hand, it took a while to address climate change as an additional issue on top of many other urgent problems already on the agenda. In discussions with people working in development agencies, one often hears the argument that the reduction of poverty and vulnerability is the best strategy to support adaptation to climate change, as well as for DRR. The "mainstreaming" of adaptation into development policy is not welcomed by everyone, because "climate change raises a series of uncomfortable challenges for the theory and practice of development." (Newell 2004).

The usual distinction between anticipatory and reactive adaptation is necessary, but not sufficient to differentiate adaptive processes in the context of climate change (see Box 1 for a typology of adaptations). We would argue that adaptation must be specific to climate change and designed to anticipate it. Spontaneous, responsive adaptation is basically what people have always done in everyday practice. The challenge of anticipatory adaptation is that it involves a high degree of risk, because the conditions to which an adaptation is sought are more or less unknown. In addition to changes in trends that are beyond the experience of the affected people, there will also be extreme events that are unprecedented and for which anticipation is difficult. Uncertainty and the possibility of surprise imply that successful adaptation cannot be guaranteed. That means that risk-averse behaviour, including for example diversification of crops and livelihoods generally, might be best for small farmers. But for them, climate change is just one of many problems: in global terms their ability to achieve diversified livelihoods and crops would be undermined by growing competitiveness of markets, subsidies to corporate agriculture and the obsession with economic "rationality". Being "risk averse" is actually nothing more than "profit maximisation" over the longer term, and is "rational" within a different cultural context. But with climate change, the risks to which it is necessary to be averse are much less knowable. And there is in any case no guarantee (as discussed previously) that even when people are made aware of impending new risks that they will respond with adequate risk reduction measures.

The terms adaptation and development have been defined in many ways, which itself indicates the complexity and contention over the matter. Adaptation is defined by OECD/IEA (2005) as "*a process by which strategies to moderate, cope with and take advantage of the consequences of climatic events are enhanced, developed, and implemented*". The IPCC report of 2007 uses a slightly different definition, which focuses more on regulatory

Box 1 What is the meaning of adaptation—a typology

Tanner and Mitchell (2008) distinguish between ex ante (anticipatory) and ex post (reactive) adaptation, and between planned and autonomous adaptation. In a modified way, we suggest the following typology

Responsive or spontaneous adaptation—this is the spontaneous and routinized reaction of people (especially farmers and pastoralists) who may be unaware of climate change but who are responding to changes in the weather they experience by changing planting times, crop varieties, grazing patterns etc. It could be described as coping with trends. This kind of ex post reaction is largely determined by previous experiences and local knowledge of the people, but in the context of unprecedented climate change it may be inadequate or too late

Development as adaptation—involving "development" as purposeful interventions that are intended to improve people's lives through poverty reduction, better or more diverse livelihoods, improved health and education. Purposeful development has so far not included any "climate proofing", just as it has been very slow to incorporate disaster risk reduction (e.g. there are few specific references to DRR and none to climate change, in the Millennium Development Goals—MDGs). In the context of climate change, it will be necessary to integrate development and climate policies, especially with respect to the poor (Kok et al. 2008). Whether or not purposeful development has any significant function in climate adaptation is open to question, and a key aspect of our discussion here

Economic growth as non-adaptation—This has been the dominant objective of economic and social transformations in the South, but as the recent examples of China and India show, economic growth, industrialisation and modernisation may be mal-adaptive. Growth without an appropriate amount of redistribution of wealth may increase poverty and social unrest, intensify negative social–ecological interactions and create a risk for sustainability. Not only is most existing economic growth counter-productive in terms of climate change, it is generally profit-driven, market led and is not "designed" to incorporate adaptation. So far, the experience of most economic growth is that it fails completely to incorporate adaptation, even where it is supposed to be successful in reducing poverty

Specific (anticipatory) adaptation for climate change—this would seek to anticipate and predict likely impacts at a micro-level (adaptation requirements are likely to vary considerably over relatively short distances). Would it resemble "development" in terms of strengthened and diversified livelihoods? Another set of issues surrounds whether or not specific forms of climate adaptation will be adequate for all the different aspects of climate change that alter the risk conditions and production environment for those who depend on natural capital. For instance, does adaptation need to be different when it deals with climate shocks (severe and more frequent hazards) than in dealing with everyday changes in trends around the average (e.g. in temperature or rainfall regimes)? It is possible that measures needed to deal with shocks are significantly different from those required to deal with changing trends

Moreover, how would specific adaptation deal with the wide range of risks and problems that often take priority for many poor people? We argue that adaptation that is not in tune with people's wider needs and priorities is unlikely to succeed

reactions within systems (IPCC 2007, p. 6): *Adaptation is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.*

In this sense, adaptation can be understood as a regulatory process that aims at preventing damages or taking benefits from current or future environmental changes. Development, on the other hand, focuses more on the transformation of the present (with the assumption that it will endure for the future), on problems of poverty, malnutrition, health, education, access to resources and assets. We have already discussed it in relation to purposeful development, defined as managed change that improves peoples' lives. At first sight, both concepts have a similar core, as they both denote processes of target-oriented change. However, there are some fundamental differences between them in respect to time frames, objectives, assumptions and scientific background.

1. The difference of time frames refers to the fact that development activities usually aim at an improvement in the present or foreseeable time span, whereas anticipatory

adaptation points into the future by addressing emerging (and even unknown) problems. Adaptation differs from development as it includes problems that so far are not even perceived by the people who may become victims of environmental changes such as sea level rise, floods or droughts.

2. The different objectives of adaptation and development become visible when examining the visions behind the two concepts. Development involves a promise of improvement, of some kind of progress towards better living conditions, higher incomes or longer lives, whereas adaptation does not necessarily make life better, but simply renders it possible—under the conditions of anticipated changes. The question whether pro-poor adaptation could eventually offer new pathways out of chronic poverty still remains open (Tanner and Mitchell 2008).
3. The distinction between the objectives of adaptation and purposeful development partly comes from different normative foundations. Concepts of development essentially involve notions of justice, equality and human rights, whereas this appears to be less clear and obvious for adaptation. The concept of "just sustainabilities" (Agyeman et al. 2003) focuses on environmental and inter-generational justice, but this is not identical with concepts of social justice in a development context. A key issue in the negotiations for a renewal of the UN Framework Convention on Climate Change in Copenhagen is the notion of "adaptation debt" that should be paid as a kind of compensation by developed countries for harm done to developing countries.
4. As for the scientific background of the two concepts, development studies has so far been the domain of disciplines like economics or the social and political sciences, whereas the leading disciplines in the booming climate change studies are to be found in the natural sciences, such as climatology, hydrology or ecology.

These divergences have implications for the relationship between the two types of processes and attempts to integrate them. Although we do share the general contention that climate change adaptation and development are closely related and have strong mutual influences, it would be insufficient to subsume one under the other. On the contrary, a clear distinction between adaptation and development concepts may help to combine their strengths in the sense of "adaptive development".

In some literature (e.g. Adger et al. 2003, 2007; Smith et al. 2003), it is suggested that linking adaptation and development should focus on the concepts of social capital and adaptive governance. Social capital is immediately relevant for the nexus, because it concerns the cost and capacity of adaptation in local contexts, especially with respect to the poor, i.e. for those people who have only limited capacities to adapt (Prowse and Scott 2008; O'Brien et al. 2008). Social capital is usually defined as an essential part of the assets that people command in their livelihoods, or as "features of social organisation, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam et al. 1993: 67). The importance of social capital for adaptation comes from its essential role for risk management especially among poor and vulnerable groups. Moreover, it is a prerequisite for any form of coordinated action. It is an essential element of adaptive capacity, because successful adaptation depends to a large extent on the capacity of a society or a community to coordinate decision making, to act collectively, and to give collective action some stability by means of an institutional framework. As Adger (2003) points out, it is particularly important in this context that institutional settings give collective action some sort of continuity and direction beyond spontaneous and often unstructured reactions to environmental variability or changes.

This is where the concept of adaptive governance becomes relevant, because it links adaptation and formal development processes. Decision-making about how to react to current or anticipated impacts of climate change is embedded in formal and informal institutions at different scales (Adger et al. 2005). It is the result of negotiations between different actors and stakeholders, whose influence and negotiating power largely depend on their position in social and political hierarchies. Adaptive governance can be defined as a multidimensional process that is determined by the capacity for decision making under uncertainty, the capacity for learning and self-organisation in response to environmental changes, and institutions that frame and stabilise adaptation. Adaptive governance links the present with the future, the social with the ecological and local developments with national and even global contexts.

In that sense adaptation may be understood as a regulatory process within coupled social–ecological systems at different scales (Berkes et al. 2003). The question is how it is brought about in practice, and under which conditions societies or social groups decide to modify livelihoods or production practices in order to avoid harm or take advantage of anticipated changes in climate. Against this backdrop, it may be useful to study the communicative practices and discourses that are both the expressions and the means of regulation within social–ecological systems.

4 Discourses as means of social–ecological regulation

Modifications of development or climate policy do not simply happen as a reaction of policy makers to newly emerging problems, or because new facts are becoming available. Rather they are brought about because certain types of knowledge, perceptions, awareness, interests and values are negotiated and become powerful in public discourses. From such a constructivist perspective, adaptation to climate change is not simply a response to meteorological parameters, but it is primarily driven by discourses about these phenomena in a society.[9] The constructivist position does not deny climate change as a "man-made" environmental phenomenon, but it is primarily concerned with the practice by which this particular view of 'nature' is brought about (Demeritt 2002).

Before we can discuss the relevance of discursive practices for adaptation, some remarks about discourse analysis are necessary. In general, discourses are distinctive practices of expression that seek to give meaning to objects in specific fields. Discursive practices are considered as drivers of social change, and this includes processes of development and adaptation. In general, discourses can be defined through four elements (Fairclough 2003):

1. a common but controversially perceived and discussed object, such as global environmental change;
2. specific individual or collective actors who lead and feed the discourse, for example scientists, journalists, politicians or NGO activists;
3. an audience to which the discourse is presented;
4. an arena where the contest over the disputed object is carried out, for example the media, international conferences, public debates etc.

[9] In that respect, even global warming may be called a "social construct" (Demeritt 2001), even though this is rejected by many natural scientists who follow a "realist" view of climate change or extreme events (Schneider 2001).

Discourses are not carried out over material objects as such (e.g. the damage of hurricane Katrina), but about meanings that are ascribed to the objects (i.e., why a particular natural event became a disaster, who was responsible and what should be learnt from it). In other words, discourses are virtual arenas in which actors meet to carry out controversies over a particular object in order to gain influence over the way the object is going to be transformed or managed. Therefore, discourses are not just practices of opinion-building and decision-making, but they can be considered as expressions of social relations, particular interests and power. They are means to exert and expand control (Watts 1993). In that sense, discourse analysis may help us to reveal underlying frictions, currents and transformations in a society. That is why an analysis of development discourses in the context of climate change is so interesting: because it may help us to understand why certain issues are handled the way they are.

One characteristic feature of discourses is their inherent tendency to seek domination over competing actors and directions of the debate. The aim is to gain control over the arena of the discourse either by winning support of the audience or by marginalising other actors in the arena. Consequently, discourse analysis focuses on understanding the power of particular "performances" and the way they create subjective realities that become objects of human agency. For the study of current debates about development and climate change, we apply methodological elements of critical discourse analysis (Fairclough 2003). Its objective is to understand discourse as "a practice not just of representing the world, but of signifying the world, constituting and constructing the world in meaning" (Fairclough 1992: 64). Discourse in this sense is seen as a social practice which aims at the reproduction or transformation of society and its inherent structures. What is essential about discourses is that they are constituted by groups of actors who are linked by controversies, and who try to gain superiority over the other participants in a particular discourse by pushing or even forcing the others to accept their position. Competing tendencies of domination are decisive for the constitution and the direction of discourses, and hence for processes of adaptation.

What does that have to do with adaptation to climate change? If we consider adaptation as a regulatory practice within coupled social–ecological systems, we have to understand how regulation is brought about. In order to explain processes of regulation in a society, it would be insufficient to just look at challenge and response mechanisms at the interface between the two subsystems of the coupled social–ecological system, i.e. nature and society. Any interference between society and nature is based on the way 'nature' is conceptualised, and how that particular act of conceptualisation is negotiated in public discourses. That explains why adaptation is not a direct reaction to climate change as such, but to the way changes are perceived, discussed and evaluated in a society, and how the reactive measures are negotiated. The meaning of the "coupling" in a coupled social–ecological system is the product of different ways that nature is perceived, and from the way that the social is constituted with particular types of economic and political processes that determine which bits of nature are useful and how it is going to be used.

This argument is sometimes misinterpreted as an attempt to question the "reality" and seriousness of climate change. However, even from a constructivist perspective one would not seriously debate the "hard facts" and "inconvenient truth" about climate change, but rather how these facts and truths are put into practice, how they are used to influence political decision making, and which repercussions they may have on a society. As Demeritt (2001: 307) points out, the "specific scientific framing of global climate change has reinforced and been reinforced by the technocratic inclinations of global climate management". As a consequence, he raises questions about the legitimacy of the experts

who produce the relevant knowledge and the politicians who make decisions based on that knowledge. Two reasons are given for that scepticism: first, the scientific production of knowledge is guided by the structure of research funding. Second, political decision-making does not only reflect the "hard facts".

5 From vulnerability to resilience: a dangerous shift in discourse?

A current example of how the "coupling" is undergoing change is in the shift from analysis of *vulnerability* to much greater emphasis on the notion of *resilience* (e.g. Gallopin 2006; Smit and Wandel 2006). This shift is coinciding with the emergence of adaptation in the discussion of climate change, and therefore also connects with the debate about how adaptation is related to the process(es) of "development" (O'Brien et al. 2004).

Vulnerability (in relation to DRR and wider discussions of "vulnerability" to climate change) has been widely accepted as the result of socio-economic systems that put people at risk of hazards (e.g. Hewitt 1983; Blaikie et al. 1994 and Wisner et al. 2004; Bankoff et al. 2004; Cannon 2008a). In the past 10 years or so, many NGOs and other organisations (e.g. International Federation of Red Cross, Asian Disaster Preparedness Centre, Oxfam, ActionAid etc. examples) have developed participatory methods for assessing people's vulnerability to hazards in their DRR work.[10] But more recently, a significant shift seems to be taking place towards a much greater focus on resilience. In short, we are concerned that there is a danger with resilience thinking being too much a part of natural science perspectives. Does it weaken the role of the social science perspectives and the latter's ability to give priority to the social construction of hazards and risk?

We have two concerns about the possible dangers of this. First, being derived from an ecosystems approach, the focus is on nature and natural systems rather than socio-economic systems. In a coupled social–ecological system, there are three components, not two. The third component is the coupling itself, and the type of coupling is crucial to the relations between the other two. The perception of the socio-economic and the natural is derived from the socio-economic. In other words, the relationship between the two "subsystems" is actually constructed through a conception of the coupling that is itself a part of the socio-economic. The coupled system is conceived from the social construction of the socio-economic component.

The danger is that in the resilience approach, there is a shift in the way that human action is "blamed" for the problems of the coupled system (Berkhout et al. 2003). Resilience examines the degree to which human action makes it possible for a social–ecological system to survive, revive or "tip" (Adger 2000). By contrast, the concept of vulnerability involves a clear, economically and politically induced condition that theorises the way that people are exposed to a lesser or greater degree of risk. With resilience and the ecosystem focus, there is a significant loss of the idea that it is socio-economic systems themselves that expose people to different levels of risk.

Second, the policy requirements of a vulnerability approach are clear: the need to reduce vulnerability through interventions in the economic and political allocation of resources. What are the equivalent measures related to resilience, and how do they avoid a technocratic, scientistic approach? While vulnerability is focused on people at the grassroots level

[10] Many of these can be viewed and downloaded from the Community Risk Assessment website of the ProVention Consortium at: http://www.proventionconsortium.org/?pageid=39.

whose exposure to risk is a product of social processes, the resilience approach is in danger of a realignment towards interventions that subsumes politics and economics into a neutral realm of ecosystem management, and which depoliticises the causal processes inherent in putting people at risk.

6 Conclusion

Adaptation to climate change is necessary, but at the same time it poses a threat to the prospects of development in poor countries. The problem we discuss in the paper is that the implicit contradictions and conceptual differences between development and climate change adaptation cannot be overcome by simply giving more prominence to adaptation and to superimpose it over what was previously called (purposeful) development. Much of what is currently presented as adaptation policy is highly unrealistic and it remains unclear how it can be implemented. Adaptation activities could learn a lot from the experiences (and failures) of development practice, for example about the participation of marginalised groups, about linking bottom–up and top–down approaches, or about "ownership" of projects (Jerneck and Olsson 2008). In short, they must be located in the context of power relations that have hampered development efforts over the past 40 years.

In a similar way, we criticise the shift from vulnerability reduction to resilience thinking as a shift of interests and objectives that leaves the poor and vulnerable behind. What is needed is an integration of development and climate change adaptation governance under a pro-poor policy. With climate change, it is impossible to ignore the fact that the expected increase in poverty of hundreds of millions of people in developing countries is being caused by the behaviour of the economies of richer countries. What needs to be made explicit is that the inadequacy of past development efforts (and economic growth even more so) was largely a result of these inherent inequalities of power being ignored (by the powerful). Now they no longer can be. In this context, it is vital to use the most relevant and most politically effective concepts for adaptation. Are these resilience and coupled social–ecological systems, or vulnerability analysis an explicit understanding of power relations?

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