

The Role of Collective Action in Enhancing Adaptive Capacity to Climate Change

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As the predictions of dangerous climate change have intensified in recent years there has been a growing focus on adaptation. There is broad consensus that, in addition to mitigating global emissions now, we must develop and implement strategies to adapt to changes that are already happening as well as future changes that are likely to occur because of past emissions. The literature on climate change adaptation (CCA) is still relatively young and continues to develop. Recently, we have seen a widening of the CCA discourse through an engagement with approaches for reducing vulnerability to environmental risks and uncertainties more broadly. Examples include the consideration of the pre-existing development methodology, Disaster Risk Reduction (DRR), as the 'first line of defense in adapting to climate change' (UNFCCC, 2008).

In order to design and implement effective policies and strategies that enhance adaptive capacity at the local level we must examine how development methods, that are useful for CCA, interact with contemporary governance systems. Some literatures have identified that systems which facilitate collective management of resources have reduced vulnerability to climate hazards (e.g., Toni and Holanda 2008; Eakin et. al. 2008). The potential role of collective action in contributing to adaptive capacity has not been considered sufficiently in the CCA debate.

In this paper we examine the role of collective action in assisting communities to adapt to climate change. Through a review of the relevant literature and exploration of two case studies, we critically explore the factors that enable and hamper collective action and the components that are particularly relevant to the development of adaptive capacity. We contend that one of the key components of collective action, which has a significant role to play in the enhancement of adaptive capacity, is social networks. In addition, it is clear that formal governance in our case studies, particularly at the local level, more often represents an impediment to collective action rather than an enabler. The CCA discourse currently lacks a critical engagement with the dominant economic and governance paradigms that contribute to vulnerability and stand to impede the enhancement of adaptive capacity. If governance systems are to adapt to an evolving global environmental and political context, a comprehensive engagement with a broad range of stakeholders, sectors and pathways to ensure a more sustainable future is required.

Introduction

Climate change is moving faster than previously thought and as a result there is a developing sense of urgency around understanding and planning for adaptation. Despite an increasing wealth of knowledge and practical experience, many questions remain that need to be explored if we are to develop robust adaptation frameworks that are adequately financed and aimed at decreasing the vulnerability of communities around the globe. Individuals and communities have been adapting to variability and change for millennia and have tremendous traditional knowledge and practices in coping with and adapting to change. Whilst adaptation is happening amongst local actors the dominant discourse, particularly in international climate negotiations, around adaptation to climate change has so far been dominated by top down approaches that focus predominantly on technical solutions. In this paper we explore what role collective action at the local level plays in enhancing adaptive capacity to climate change.

Collective action has always been a feature of communities. In recent decades it has been utilised in a range of grassroots based development methods. This can be seen in programmes focusing on community-based natural resource management (CBNRM), DRR and community development more generally. A range of authors (Batima et al. 2008, Eakin et. al. 2008; Toni and Holanda 2008) have recently explored some of the dynamics between collective action, environmental vulnerability and governance which has helped us to frame some of the questions in this paper.

In the context of international climate negotiations and the development of financing mechanisms it is crucial that we develop our understanding of the role of collective action in adaptation to climate change. In this paper we attempt to do this through an exploration of two specific case studies; women's collectives in the rural town of Nepalgunj in Nepal and community-based disaster risk management (CBDRM) in the context of post-disaster recovery and resilience building in the Indian Ocean region after the 2004 tsunami. This paper makes three key points relating to this theme. Firstly, collective action has a significant role to play in the enhancement of adaptive capacity and should be further considered in the development of adaptation frameworks. Secondly, the development of social networks is a particularly important component of collective action in relation to adaptive capacity. Finally, it is evident in the case studies presented that local formal governance, in many cases lacks the mandate, capacity and structure to effectively support collective action.

In this paper we present three key sections. In the first section we will define and explore the key terms; ‘collective action’, ‘adaptive capacity’ and ‘social networks’ before moving to outline our methodology. We will then move to explore the case studies to present our data and to investigate how the collective actions presented enhance adaptive capacity. In our discussion we will summarise the key points from the case studies in a matrix and then discuss the roles of social networks and local government. In the conclusion we will raise a number of questions for ongoing research that will assist us in developing our understanding of how contemporary adaptation frameworks can support action that reduces vulnerability and builds the capacity of communities to adapt to social and environmental variability and change.

Key Terms and Concepts

Collective action

Collective action as a practice has been around for much of human kind’s history and its presence in the literature spans many decades. Since the late 1970s poor communities around the world have been affected by a range of economic and governance failures and this has gradually lead to a re-emergence of the consideration of the importance of collective action (Meinzen-Dick, DiGregorio and McCarthy 2004). In terms of climate change, Adger (2003) argues that collective action is at the core of adaptation decisions related to the management of resources associated with agriculture, forestry and other resource dependant livelihoods. In this section we will explore the literature on collective action and identify how we will use the term in this paper.

Definitions of collective action generally assert that it involves a group of people that voluntarily engage in a common action to pursue a shared interest. Members of the group can contribute in a range of different ways, for example by providing goods or labor. Meinzen-Dick, DiGregorio and McCarthy (2004) note that collective action can be understood as an event, an institution or a process. Accordingly, Poteete and Ostrom (2004) suggest that collective action can take the form of resource mobilisation, activity coordination, information sharing or the development of institutions. Poteete and Ostrom (2004) and Agrawal (2001) identify a range of factors that facilitate collective action. These include: characteristics of the collective action or group, institutional arrangements and the actions of external actors such as national governments. Matta and Alavalapati (2006) argue that the central prerequisite for successful collective action is the active and effective participation of local people. In addition, they suggest that a collective group rarely evolves in a voluntary manner without prior knowledge of what might be gained by membership. Nor will participation be sustained

without perceived successes of the collective action itself (Matta and Alavalapati 2006). For the purpose of this paper we are in agreement with these descriptions. Between the two case studies the collective actions take different forms, however, both involve a group of people that voluntarily engage in a common action to pursue a shared interest.

Within the modern context collective action exists within a contested space in development theory and practice that is in some ways incompatible with contemporary economic and governance paradigms. A few studies have touched on these ideas outside the context of adaptation to climate change. For example, Toni and Holanda's (2008) study of the effect of land tenure to droughts in north-eastern Brazil found that farmers involved in commons, as opposed to individual management, were on average less dependant on market forces and less vulnerable to climate variations. Utilising a similar framework Eakin et. al. (2008) found that neo-liberalisation in Mexico and Argentina has significantly diminished the capacity of small scale farmers and has increased their vulnerability to climatic changes. Furthermore, Jodha (2005) found that the integration of many mountain communities in the Himalayas into the mainstream market economy, away from a collectivised one has negatively affected traditional adaptive capacity. These examples demonstrate that the idea of collective action is tied up in broader debates around the market and neo-liberal development approaches. Whilst we will not be focusing on these critiques our exploration of this topic is inevitably entwined in these complexities.

Adaptive capacity

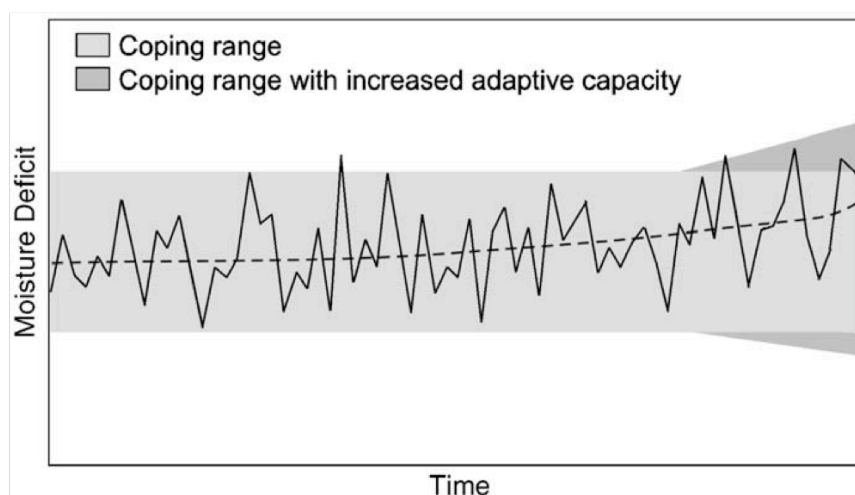
For the purposes of this paper we are defining adaptive capacity as the ability of human or environmental systems to respond and recover to a specific changing context. Adaptive capacity is closely related to a range of terms including: coping ability, stability, robustness, flexibility and resilience (Smit and Wandel 2006). Adaptive capacity has a particularly strong connection to resilience. Tomkins and Adger state that "adaptive capacity, which is often used to refer to the set of preconditions that enables individuals or groups to respond to climate change, is a synonym for many characteristics of resilience." Similarly Galopin (2006) identifies that resilience is "obviously more related" to adaptive capacity, however, notes that it is unclear as to whether the concept of resilience includes a capacity of response and suggests that it should be considered a component of response.

In terms of human social systems Smit and Wandel (2006) identify that at the local level adaptive capacity is determined by factors such as managerial ability, access to financial,

technological and information resources, infrastructure, the institutional environment, political influence and kinship networks. The Inter-governmental Panel on Climate Change (2007) states that adaptive capacity is the degree to which individuals or groups can adapt to risk at any given time.

Adaptive capacity has been explored in a variety of ways. Smit et al. (2000) identify that one of the key ways this adaptive capacity has been examined has been through the concepts of thresholds and coping ranges. These terms are defined by the “conditions that a system can deal with, accommodate, adapt to and recover from” (Smit and Wandel 2006, p. 287). Thresholds and coping ranges identified here are not static and change over time. Figure 1 diagrammatically presents this perspective. For example, increasing population pressure in most cases reduces a system’s coping range whilst the development of more robust institutions may strengthen it. Despite these broad understandings, to date, there is very little consensus in both the academic and policy literature around a specific model or understanding of adaptive capacity.

Figure 1 - Coping ranges and extreme events



Source: Smit and Wandel (2006)

Social networks

Social networks have been related to both collective action and adaptive capacity (e.g., Adger 2003; Ensor and Berger 2009). Wasserman and Faust (1994) identify that social networks contain interdependent actors with linkages that facilitate the flow of material or non-material resources. Goulden et al. (in Adger eds., 2009) define social networks as those that “comprise links or relationships between individuals and exist within and between households, communities and institutions of governance” (p.450). In terms of climate risks, Ensor and

Berger (2009) suggest that local social networks can offer marginalised groups an opportunity to develop adaptive strategies. When considering social networks we must also mention social capital which Adger (2003) defines as “*relations of trust, reciprocity, and exchange; the evolution of common rules; and the role of networks*” (p. 389). Uphoff (2000) suggests that collective action should be understood as one of the flows associated with social capital. Adger (2003) argues that within the idea of social capital social relationships are either bonding or networking. Bonding capital refers to relationships of kinship and friendship whereas networking capital pertains to relationships beyond the immediate group and can involve actors at different levels in the community. For the purposes of this paper our conceptualisation of social networks incorporates both these terms and we will differentiate between the two when it is useful for the analysis. Ensor and Berger (2009) suggest that social networks are the “glue between many elements of adaptation” (p. 27). In this paper we affirm this claim and go further to argue that social networking is a key component of collective action, which enhances adaptive capacity.

Methodology

In this paper we draw on data from two different case studies on collective action. In the first case study we explore the development of women’s collectives in rural Nepal in response to a context of poverty. These collectives were facilitated through a development project and the data for this section was provided with permission from two key sources. Firstly, an NGO employee who worked with the project provided two interviews and an unpublished masters thesis on the project. Secondly, we utilised an extensive independent review report of the same project which was commissioned by the NGO.

The second case study is an exploration of community based disaster risk management (CBDRM) committees in the context of post-tsunami DRR efforts and early warning system (EWS) development in the Indian Ocean region. Data for this section were provided through several recent projects on the sustainable recovery and resilience building after the 2004 Indian Ocean Tsunami undertaken by the Stockholm Environment Institute (SEI), Macquarie University and range of regional partners in Thailand, Indonesia and Sri Lanka. This research included a review of emerging social vulnerabilities in post-disaster recovery efforts (Larsen et al., 2009a); a vulnerability assessment of Thai tourist destination communities (Calgaro et al., 2009); a participatory multi-stakeholder assessment of EWS-community linkages (Thomalla et al., 2009a); a detailed case study of community disaster preparedness and early warning in

Krabi Province, Thailand (Thomalla et al., 2009b); and an Online Dialogue on Early Warning (Paul et al., 2009).

We explore these two case studies as examples of collective action in two different contexts. Key similarities between the two case studies are that they both deal with poor communities, both are located in Asia, and both are current examples. The key differences are that the case study from the Indian Ocean Region focuses on environmental hazards whereas the case study from Nepal focuses on the reduction of vulnerability more generally. They address different issues and are located in different countries with different languages, cultures, religions and governments. By focusing on two case studies we are able to undertake a comparative analysis and make some broader claims that may be useful outside the specific situations and contexts of these communities.

Women's collectives in Nepalgunj, Nepal

In this section we explore a case study from rural Nepal which saw the rise of 50 women's collectives that engaged in a range of vulnerability reducing activities. We contend that the collective action positively contributed to the adaptive capacity of the community and that the development of social networks had a key role to play in this process. In addition, it was apparent that local government lacked the capacity and finances to support the collective action and at times provided a barrier for progress. We will firstly identify the context of the collectives and explore how they emerged. This will be followed by an exploration of how they function and interact with formal governance structures. Then we will unpack the key enabling and disabling factors before moving to conclude with a description of how the collective action impacts adaptive capacity.

The context of the collectives

Nepalgunj is located in the Banke district of Nepal in the mid-west region. The town is located approximately 8km from the Indian boarder (identified in Figure 2). The women's collectives grew out of a specific context of vulnerability. Over the past 15 years Nepalgunj, has experienced rapid urbanisation and population increases in large part due to regional conflicts and changing work migration patterns (Worboys 2003).

Figure 2 - Nepalganj (with arrow), Nepal



Source: Creative Commons.

Hancock (2007) identifies that these demographic shifts and other associated factors contributed to the following issues for a significant portion of the community:

- Stressed local health services with the poorest in the community suffering from lack of access
- A lack of social cohesion, in part due to the religious and cultural differences
- A lack of a sense of empowerment and forums for communication
- Limited access to funds
- Low level of infrastructure development, including a lack of serviceable roads, toilets and clean drinking water
- Poor employment opportunities

In response to these issues the NGO International Nepal Fellowship (INF) sought to develop a program to address the poverty and powerlessness of poor and marginalised communities. In coordination with discussions with the town council, INF created the project called Banke Community Development (BCD). Through the facilitation of self-help women's groups this project aimed to provide ongoing empowerment and support for the poorest inhabitants of the town Nepalgunj. The overall stated goal of the BCD project is: "The empowerment of the poor and disadvantaged women of Nepalgunj to enable them to access necessary services to raise the health and socio-economic status of their families" (Hancock 2007). In order to establish these collectives INF employed and trained local facilitators. The next step of the project involved these women physically exploring the town to identify specific areas they thought would benefit from the collectives program. Over a period of several years the facilitators visited each area fortnightly to develop relationships with women. During their visits the facilitators invited the women to discuss together issues that were negatively impacting them using a group action

process and encouraged the formation of collectives to work on solutions to the problems. In order to address some of the issues identified, the project adopted a micro credit and loans scheme in which collective members could deposit and borrow funds. In most instances the facilitators promoted this action. The number of established groups increased over time.

Functioning of the collectives

The groups functioned initially with a relatively uniform operational structure. The facilitator employed by INF led the initial formation and functioning of the groups. Each group consisted of 6 to 35 members. As time passed the groups elected a leader and an assistant leader from within their women's collective. These leaders would organise the group in the area and the facilitator would serve as a resource and guide for the group with gradually diminishing presence. Facilitators would attend group meetings for the first few years and assist by taking minutes and developing the skills of other members of the groups. As the number of groups increased the project developed area committees which were attended and run by group leaders. This process was partly driven by the groups and partly driven by INF as it suited the long term aims of the project to hand it over to the locals.

As mentioned previously one of the main functions of the initial groups was to manage a credit and saving scheme. This differs from the more common micro-credit agencies in that the capital available for loans was raised and managed by the group. The NGO acted as a facilitator of the process rather than a source of credit. Meetings were generally taken up by the coordination of loans and repayments. Money was contributed to the group by its members as a form of forced savings and could be drawn upon when it was necessary. At times, other donors also contributed money to the groups and individuals. Through a consensus voting system groups autonomously decided on priorities for expenditure. Examples of this include the financing of labor for the installation of donated toilets and assistance to those in the group who were in most desperate need (Hancock 2007). As groups became more established they also organised to meet with local government representatives to request certain services and goods.

Interaction with governance processes

In general people in the community did not trust the government because of widespread issues of corruption. An NGO actor stated "it is generally understood by Nepalis that government is corrupt and filled with nepotism" (Hancock 2007). These factors, among others such as regional conflict, had led the majority of the population of Nepalgunj to being disconnected from local government.

In terms of the project, the Nepali government had very little contact or input. The collectives largely ran in isolation to the government. It should be noted that there were instances where the local government pledged finances, however, these commitments were rarely met. In terms of the long-term procession of the project rather than the government being constraining or enabling, it was ineffective.

A different interaction with the government of note is one of advocacy. Participants involved in the project were a part of the marginalised section of the community. This and factors identified above contributed to women participating in the project feeling voiceless and being reluctant to talk to government. Through the collectives participants engaged in the group action process and were encouraged to identify and find solutions to issues impacting their lives. Over time, participants in the collectives reported that they felt more confident to talk to their local government officials to request funds and services. As their sense of empowerment augmented, their perception of themselves changed and they became increasingly bold. In a few instances, local government officials, attended functions put on by the collectives.

It should also be noted here that local government played a role in the conception of the project. In the first instance when the NGO approached the government to inform them that they would like to work in the community, government actors encouraged them to engage with a particular demographic in the community. This guidance, in part, formed the conditions in which INF could operate in the community. The government had minimal engagement with this demographic for a range of cultural and social reasons.

Key enabling factors

The set of key enabling and constraining factors we identify here is by no means exhaustive, however it provides a framing for further discussion. In terms of the enabling factors this can be narrowed down to the capacity of key actors, long term commitment of the NGO and the development of social networks. Hancock (2007) identifies that the level of commitment of facilitators and group leaders provided a long-term and committed engagement with the communities which ultimately precipitated the formation of the collectives. In synergy with this the engaged NGO, INF, had committed to a long term financing and staffing commitment. This both provided confidence to the local staff and the collectives that support would continue and enabled the program to develop and improve its methods over time, further supporting the cultivation of collectives. Finally, Worboys (2003) and Hancock (2007) identify that the

development of relationships within the collectives and across the community to other collectives both strengthened the continuing functioning and formation of new collectives. The enhancement of social networks in the community enabled the collectives to include more participants and help a larger number of people.

Key constraining factors

There are a range of constraining factors that limited the success of the groups. The factors mostly pertain to culture, religion, politics, capacity and resource availability. Issues around formal governance are found in all these categories. Whilst we cannot list all the constraining factors here we will identify some of the key points. Firstly, different religions and political affiliations both impeded the relationship of some groups with the community and restricted access to local government. For example Worboys (2003) reports that some government members refused to acknowledge or meet with some groups because they were a member of a different religion or political party. Secondly, gender (i.e. the collectives were composed only of women) provided an impediment for some women being able to participate in the collectives and created a barrier in meeting with some male government members. Worboys (2003) observed that one Government member felt like he had lost status by interacting with the group and subsequently “fermented lack of trust among the group members” (p. 40). Thirdly, the overall lack of resources, and poor mechanisms to access the available resources, at the local level of government made it difficult for some groups to reduce their vulnerability. Finally, Hancock (2007) notes that the general context of widespread poverty and the issues that go along side that, such as low levels of literacy and poor access to healthcare provided a range of challenges for the functioning of the groups.

Contribution to adaptive capacity

This case study demonstrates that in terms of adaptive capacity for the women’s collectives in Nepalgunj, Nepal collective action:

- enhances social networks which can serve as communication channels for planning and in times of emergency
- reduces the economic vulnerability of the community
- provides a framework from which to discern and solve problems
- contributes to individual and collective empowerment which can strengthen links with local government

We will now briefly explore each of these points respectively.

One of the key aims of the project in Nepalgunj was to develop and enhance relational networks. A range of authors have identified the potential role of social networks in adaptation (Ensor and Berger, 2009). It was these networks that formed the foundation of the collectives and their subsequent growth. A development actor involved in the project stated: “the development of new relationships and networks among the participants was just as valuable as the practical, or tangible, outcomes of the project” (Hancock 2006). In terms of climate change and adaptation these networks have the potential to serve as: 1) communication channels for new knowledge around environmental changes and planning 2) emergency communication channels in time of environmental stress and disasters. Adger’s (2003) differentiation of bonding and networking social capital does not fit well here as these networks would incorporate both forms. Given the uncertainties around climate predictions and the range of potential surprises we face, networks that can rapidly disseminate new and evolved information will be important to adaptation. In addition to a range of other co-benefits associated with social networks it is clear that these contribute to the enhancement of adaptive capacity.

By developing the economic and social capacity of the participants the vulnerability of the individuals and communities involved was reduced. The savings scheme developed a financial reserve that individuals could draw on in times of hardship. In terms of climate impacts, it was identified that these funds were not uncommonly used to help people after a crop had failed due to adverse weather (Hancock 2007). The ability to adapt to or to survive through environmental uncertainty was enhanced by the micro-credit and savings scheme. The organisation, ownership and management of this scheme was managed by the collectives. In synergy with the previous point we made, the operation of these saving schemes could have further strengthened the social networks.

The collectives provided a system from which to discern and solve problems. The group action process facilitated the identification of both the problems and solutions. Local and regional climate projections are limited by inadequate models and in many cases adaptation options will need to be discerned and implemented by local actors. The development of more robust decision making frameworks could enhance the capacity of local actors to adapt to a range of climate changes and surprises.

Finally, it could be argued that the adaptive capacity of the community was enhanced through empowerment which subsequently precipitated advocacy. Many of the participants of the women’s collectives noted that they felt more confident in the community as a result of their

participation in the collectives. This empowerment resulted in members of the collectives meeting with local government officials to request certain social provisions, such as improved access to clean drinking water. This could also be said to be a development of the networking capital form of collective action. Very little materialised from these interactions however, links with local government members were established. Indeed, the network of the collectives was expanded to include different actors. It should be noted that from data available for this paper it appears that government lacked the capacity and perhaps the willingness to support the collectives.

Community-Based Disaster Risk Management in the Indian Ocean Region

In this section we explore collective action in the context of community-based disaster risk management (CBDRM) and early warning system (EWS) development in the Indian Ocean Region after the 2004 tsunami. In our analysis of stakeholder agency and collective action we draw on insights from a review of emerging social vulnerabilities in post-disaster recovery efforts (Larsen et al., 2009a); a vulnerability assessment of Thai tourist destination communities (Calgaro et al., 2009); a participatory stakeholder assessment of technology – community linkages in early warning in Thailand, Indonesia and Sri Lanka (Thomalla et al., 2009a); a detailed case study of CBDRM and EWS development in Krabi Province, Thailand (Thomalla et al., 2009b); and an online dialogue on early warning (Paul et al., 2009). The insights from this work show that social networks are an important component of implementing and sustaining collective action in communities. By reducing hazard vulnerabilities and increasing preparedness to future disasters, collective action plays a significant role in enhancing resilience and adaptive capacity. This case study also highlights the importance of local government actors in facilitating and supporting collective action and the existing barriers due to limited resources and capacities, different priorities and approaches, distrust and tensions, and a lack of coordination of local government and NGO actors.

The context of the collectives

CBDRM activities are initiated by a wide range of international, national and local organisations, and the communities themselves. Much of the work of international and national NGOs and government authorities has so far focused on communities that were devastated by the tsunami, and some communities that are perceived as highly vulnerable to future events.

In many coastal communities a principal source of motivation for investing in CBDRM is the currently high awareness of coastal hazards due to the high loss of life during the 2004 tsunami.

CBDRM projects are hence motivated by the desire to increase awareness and concern about vulnerability to future hazards.

Another motivation is strongly linked to failures of formal governance responses at the local level and a lack of trust in the commitment and capability of government authorities to provide DRM and early warning. Many communities expressed frustration due to a perceived lack of action from the Government. In some villages, there is widespread distrust and suspicion of Government agencies because of negative experiences with issues relating to post-disaster recovery. In the tourism communities of Krabi Province emergency aid relief did not reach all eligible recipients; funding was insufficient and available funds were often misappropriated due to corruption and nepotism at the local level (Calgaro et al., 2009). Tensions between communities and local government authorities exist also because of other unresolved issues, such as the use of illegal fishing gear and practices in some communities. EWS developed by national government agencies are often perceived as having limited efficacy due to a range of technical and non-technical problems.

Finally, concerns over livelihoods are another important driving force for engaging in community-based preparedness activities. Many communities do not have an interest in disaster risk management (DRM) per se, but are willing to engage in DRM activities if they are closely linked to livelihood improvement. Linking DRM with natural resource management hence provides an incentive for communities to engage in DRM and ensures local participation and ownership. Two examples are the linking of DRM with fishing cooperative societies advocated by IUCN in Sri Lanka and the expansion of mangrove ecosystems in Krabi Province to increase food security and reduce hazard impacts.

Generally, the aims of community-based action are to raise awareness about hazards and early warning efforts, to reduce the vulnerability of communities to hazards, to improve disaster preparedness and response to early warnings, and to safeguard and improve livelihoods, and to protect natural resources. In areas with a high economic dependence on tourism there is a desire to demonstrate that the area is safe because DRM mechanisms and EWS are in place.

Functioning of the collective action

CBDRM is frequently organised through disaster preparedness committees in which people act as unpaid volunteers for the greater good of the community. Several informants (e.g., LIRNEasia, Raks Thai) stated that it is important to implement projects in communities that are already organised. The idea to work in organised communities relates to the notion that it is useful to recognise and build on existing strengths within communities and to work with people that are already actively engaged at the local level. For this reason and because it is difficult to

initiate and sustain a new committee, many NGOs work with existing committees, such as funeral or loans committees. Local actors who have a stake in the community need to be involved and need to be supported to be able to fulfill their functions. Local institutions, such as Community-based Organisations (CBOs) need to be strengthened and linked to local government.

The importance of social networking is demonstrated by the role of community leaders in facilitating action within their communities. Such local leaders often play a critical role in enabling or hampering collective action. For example, some village leaders show no interest in DRM despite interest of the community and this can create conflict and may lead to isolation from NGO and government activities. In Thailand the village headman plays an important role in DRM because he is elected as a representative of the central government and he is elected for life. The political context at the community level is therefore strongly shaped by the politics at the national level and there have been cases of bribery and allocation of funds to relatives of the headman.

The initiation of community disaster preparedness activities also depends on strong personalities with good social networks. Leaders include those who may not have a formal position but who nevertheless have influence in their communities (Paul et al., 2009). For example, in Koh Panyee, Thailand, the Rescue Team draws on experience from the village health committee that was already well established. The chairman of the health committee has a key role in the Rescue Team, because he is perceived as competent due to his university education and PC skills (Thomalla and Larson, 2008). Because of a lack of resources at the local levels of governance, CBDRM relies heavily on volunteerism.

Collective actions focus on the enhancement of disaster awareness and preparedness of community members and tourists, capacity building for DRM and early warning, and the mobilisation of support from local government and NGOs. Disaster preparedness activities include the collection and dissemination of existing information; the identification of hazards, potential impacts, high-risk areas, safe areas, evacuation routes and those most vulnerable to hazards; the development of public awareness campaigns and school programmes; the preparation of emergency plans; and early warning and evacuation exercises. Activities aimed at capacity building include the recruitment and training of volunteers in emergency response activities such as search and rescue and first aid skills and the development of alternative warning dissemination infrastructure and procedures. For example, some communities and

organisations disregard the official warning towers and rely on TV, walkie-talkies and alternative speaker systems, and take their own initiatives to warn and evacuate because of the problems in national EWS development. Support is mobilised through established social networks with neighbouring community-based organisations (CBOs). For example, in Thailand the Save the Andaman Network (SAN) is an informal network of NGOs and CBOs that was established in response to a perceived lack of coordination by the international NGOs in post-tsunami recovery. Financial support for community-based action is increasingly provided through micro-credit schemes. For example, Raks Thai use their Revolving Loan Fund as an initial entry point for engaging with communities on CBDRM.

Relationships with governance systems and other organisations

In many cases, there is a lack of financial and staff capacity for DRR activities at the lower levels of government and very little support for CBDRM. Many stakeholders shared a general concern over a lack of human resources, knowledge, experience and skills relating to DRR and a lack of government initiative from sub-national authorities. Contributing to the lack of capacities at sub-national levels are high staff turn-over and a lack of political will to engage in DRM due to many other responsibilities and the prioritisation of other issues that are considered more important. There is also a lack of trust amongst the public in government institutions due to poor public services provision and to corruption, and many communities in Thailand, Indonesia and Sri Lanka have very little trust in the government's commitment and capacity to develop effective DRR strategies.

Additional challenges exist in the collaboration and communication between government and other stakeholders, such as universities, NGOs and CBOs and the private sector. Local government representatives are not trained to facilitate processes to engage with communities. NGOs tend to be much better at communicating with communities and have well-established methods. However, some local government authorities are reluctant to facilitate NGO initiatives in communities because they don't want to relinquish authority to the NGOs. Despite this, NGOs often play an important role in supporting communities to initiate planning for CBDRM, to engage with the local government, to access information and guidance, and to receive financial support. We observed several different approaches with which NGOs engage with communities: For example, Raks Thai uses a bottom-up approach, engaging first with the communities and then with the relevant government agencies. The Thai Red Cross on the other hand starts a new project by first signing a Memorandum of Understanding (MoU) with relevant government agencies and conducting monthly meetings with the provincial governor.

In Sri Lanka, Practical Action, Sarvodaya and local government officials work closely together in committees and village information centres. The Sri Lankan Red Cross (SLRC) holds regular meetings with the Disaster Management Centre (DMC) to communicate and coordinate activities.

Key enabling factors

There were a number of factors that enabled the collective action. The relationship of these factors with social networks and local governance will be explored further in the discussion.

The enabling factors included:

-The volunteering of strong leaders with good social networks is an important enabling factor for CBDRM. Many young people volunteer their time to CBDRM activities because of incentives such as free services such as health care, training in language and other skills that are beneficial for seeking employment and advancing careers, and an improved social status. Participation and ownership of procedures and systems by the community is also an important enabling factor.

-There is some evidence that communities that have traditional knowledge and practices for coping with hazards are more inclined to take collective action. For example, in the Indonesian Simeulue Islands there were no fatalities when the 2004 tsunami struck because the people knew how to interpret the natural signs occurring just before the arrival of the tsunami (see also UNISDR, 2005). This knowledge has been transmitted through generations from a tsunami experienced several hundred years ago. In other locations, people had no previous experience with tsunamis and therefore did not know how to interpret the signs of the impending tsunami and what action to take in response.

-Religious leaders can play an important role in building disaster preparedness because they can disseminate information on hazards and disaster preparedness initiatives in their services.

-The integration of CBDRM into strategies that address wider community priorities, such as improving and diversifying livelihoods and building capacity for community-based natural resource management.

-The 'framing' of CBDRM activities is crucial in the process of partnership building and bringing people onboard, where the approach has to be expressed in terms relevant for the partners.

Key constraining factors

There are a range of barriers to collective action. These factors and their associated relationships with social networks and local governance will be further considered in the discussion. The constraining factors included:

-Because of the limited resources and capacities of sub-national government actors, the different priorities and lack of political will of some local authorities, and insufficient coordination between local government and NGO actors, local governments frequently represent a barrier to collective action.

-The lack of resources at the local level negatively affects the ability of committees to act and to induce positive change in their communities. Volunteers also often lack authority. For example, for 'cultural reasons' many young volunteers don't feel comfortable telling older people what to do and many older people do not take them seriously.

-Many CBOs have limited legal status and are not recognised by government authorities as legitimate stakeholders in DRM and EWS planning and implementation processes. Whilst there is an increasing emphasis on participatory planning (ALNAP, 2003; de Ville de Goyet and Moriniere, 2006), participatory practices have not yet been mainstreamed into humanitarian action (ALNAP, 2003).

-In some communities affected by the 2004 tsunami, the importance of disaster preparedness is not fully understood because there is no history of disasters. Awareness of disasters is particularly low in communities where disasters occur infrequently. In communities that were not affected by the tsunami, the initiation of CBDRM activities has been particularly challenging.

-In Indonesia, fatalism based on religious and cultural beliefs about destiny is widespread and often difficult to overcome. Some government authorities are concerned about the negative image disaster preparedness activities might shed on tourism communities as safe and pristine destinations.

-The value of CBDRM and community empowerment is subjective; sometimes it is difficult to convince people that investing in CBDRM is as important as investing in livelihoods. Despite the currently high level of awareness and willingness in many communities to engage in CBDRM, many stakeholders have voiced concern that in the absence of disasters in the longer-term enthusiasm is likely to wane and attention and resources are likely to be diverted to other issues perceived as more pressing.

-Despite the dedication of volunteers, there is concern about the longer-term sustainability of disaster preparedness efforts that rely to a large extent on volunteerism because even volunteers require basic financial support for operational logistics such as transport, food, and

compensation for the loss of income. The high turnover of volunteers and the need to continuously recruit and train new people puts a considerable strain on organisational capacities.

-Guidance for CBDRM is not always available to communities or directly useful in the local environmental and socio-economic context of a particular community. In Ban Tha Klong, Thailand, the village committee described that the government provides information and seminars on tsunamis, landslides, and sea-level rise but that there was a lack of access to information on natural resource management and experience, good practice and technical guidance on DRM and climate change. In order to plan CBDRM activities, committees require detailed information about the community, including infrastructure, population distribution and density, location of vulnerable social groups, geographical maps of the terrain, disaster areas, and tourism areas. These data are usually held by government authorities and requests from village committees to obtain such information are not always successful.

-Some communities experience severe difficulties in securing funding for CBDRM activities. We learnt from the Krabi Provincial Disaster Preparedness and Mitigation Office in Thailand that there is a bias of funding towards communities that have been severely affected by the tsunami. Because CBDRM is strongly dependent on external assistance, funding opportunities and donor priorities are key motivators for action in the absence of a sustained mechanism for the emergence of CBDRM from the communities themselves.

Contribution to adaptive capacity

The insights derived from the participatory assessment of EWS – community linkages (Thomalla et al., 2009a) show that stakeholder agency and collective action is an important source of resilience of communities to hazards. Building resilience to environmental (as well as socio-economic) shocks and surprises is an important step towards adaptation to climate change. An important aspect of the capacity to respond to hazards and to adapt to change is what people can do to help themselves through collective action.

The evidence from the case study suggests that local governments often lack the capacity to support collective action and therefore in some cases represent a considerable barrier. This is an important governance issue that is also relevant in the context of adaptation projects. Recently, progress has been made in two areas: the first one is a transition in the approach of many governments and NGOs from a focus on post-disaster emergency response to addressing longer-term development that links DRR with livelihoods, natural resource management and poverty reduction efforts. The second is the integration of DRR and climate change adaptation

(CCA). This is a subject of considerable current debate but a number of synergies have been put forward by various authors (see e.g., Ireland, 2009; Thomalla et al., 2006; Schipper, 2009; Schipper and Pelling 2006; Venton and La Trobe 2008). We argue that in addition to these two integrative steps, the roles and responsibilities of government, NGO and private sector actors need to be better defined and coordinated in order to remove tensions, competition and the duplication of efforts.

In the online dialogue on early warning (Paul et al., 2009) responses on the theme ‘technology versus community’ indicated that efforts to strengthen DRR and early warning are heavily biased towards technology. There is an urgent need to go beyond such technological approaches and to recognise the importance of investing in the capacities of communities by developing and better utilising social networks. The role of social networks has not been recognised sufficiently in the current debate despite its potential as an important part of future adaptation strategies. While response capability depends largely on the community’s own capacity to manage risks, the engagement of government and NGO actors to inspire and support collective action is crucial.

This case study demonstrates that community-based action is positioned in the context of multiple needs and interests and that there is a challenge in coordinating multiple stakeholder agendas. CBDRM, therefore, needs to be integrated in strategies that address wider community priorities, such as improving and diversifying livelihoods and building capacity for community-based natural resource management. Addressing these concerns helps to build resilience and therefore adaptive capacity to climate change because the underlying causes of vulnerability to shocks and surprises are reduced.

Discussion

In this section we explore some general trends that are present in the two case studies. Whilst the studies are issue and context specific they both incorporate collective action amongst poor and marginalised communities in the developing world. It is amongst these groups that adaptation frameworks will need to be applied at the local level. It is clear that in these case studies, and others identified in the introduction that collective action has an important role to play in the enhancement of adaptive capacity. But how is this action supported, or impeded by the contemporary development and governance context? In order to unpack some of these trends we utilise a matrix (Figure 3) and then follow on with discussion which takes into account the contemporary adaptation debate.

Figure 3 - Summary table of key attributes of collective action in the two case studies

	Women's collectives	Disaster committees
What was the context	A poor and marginalised section of the community in a rural town in Nepal	Coastal communities affected by tsunami
How did the collective action emerge?	NGO facilitated the formation and initial running of self-help women's collectives	Initiated by a wide range of international, national and local organisations, and the communities themselves
What was the motivation?	The NGO had a mandate for development and the women involved sought to better their material context	Concern over future coastal hazards, perceived lack of action of the government, and concerns over livelihood security
What were the activities of the collective action?	<ul style="list-style-type: none"> -Group savings -Budgeting -Sustainable business loans, -Advocacy to government, -Organisation for group projects 	<ul style="list-style-type: none"> -Enhancement of disaster awareness and preparedness of community members -Capacity building for DRM and early warning, -Mobilisation of support from local government and NGOs
Does the action utilise or facilitate social networks? How important are they?	Social networks are a core of this project and are both utilised and facilitated	Support for CBDRM is often mobilised through established social networks with neighbouring community-based organisations (CBOs)
Relationship with local government	<ul style="list-style-type: none"> -Widespread mistrust amongst the community of government -Local government offered some financing which was rarely delivered -Established collectives lobbied their local councilors with varying levels of success -Government lacked capacity to support the collectives 	<ul style="list-style-type: none"> -Lack of trust amongst communities in government institutions -Lack of human resources, knowledge, experience and skills relating to DRR and a lack of government initiative from sub-national authorities, -Challenges in the collaboration and communication between government and other stakeholders

What were the constraining factors	<ul style="list-style-type: none"> -Gender issues -Cultural and religious conflicts -General disengagement of local government -Lack of resources at all levels -Political and social disempowerment -context of poverty 	<ul style="list-style-type: none"> -Lack of experience and awareness of hazards. -Religious and cultural beliefs about destiny. -Lack of support from political and religious leaders. -Largely based on volunteerism. -Lack of resources. -Lack of information and guidance.
What are the enabling factors	<ul style="list-style-type: none"> -The commitment of individual actors, -Long-term funding commitment from international donors -Good staffing -Robust social networks 	<ul style="list-style-type: none"> -Incentives such as free health care, training in language and other skills that are beneficial for employment -Existing traditional knowledge and practices. -Existing social networks -Support from some political and religious leaders. -Integration with other priorities.

Social networks: the foundation of adaptation?

We contend that social networks are a key component of collective action that enhances adaptive capacity. Many authors have identified that in general social networks are an important component to reducing vulnerability and the enhancement of adaptive capacity (e.g., Ensor and Berger, 2009; Adger, 2003). Here, we argue that social networks, should not be seen just as a byproduct of collective action, but as a core component which is critical to the ongoing process of adaptation to climate change.

In both examples presented it can be seen that the development of social networks was an important factor in enhancing adaptive capacity. In Nepalgunj the women's collectives provided a framework within which social networking could occur. Utilising Adger's (2003) ideas the collectives enhanced bonding capital within the community and cultivated networking capital with local government actors through the process of advocacy. However, it should be noted that it is difficult to differentiate between these terms as the relationships are rarely delineated into one category or the other and instead exist on an imprecise web of interactions. Furthermore, the nature of the collective action, that is, the group action process and community management of finances, cultivated enhanced social networks. Similarly, in the context of CBDRM committees, it can be seen that social networks are a binding feature of the

collective action. The importance of the collective action and its associated social networking can be identified in the statement by one of the participants of the Online Dialogue for Early Warning (Paul et al., 2009) who noted that “community organisation is more important than investing in high-tech solutions” Thomalla et al (2009) found that effective CBDRM depended upon strong personalities and good social networks. Adger (2003) states this in a different way and argues that “the social dynamics of adaptive capacity are defined by the ability to act collectively” (p.396). It should be noted that some authors have pointed out that enhanced social networks do not always reduce vulnerability (Wolf et al. 2009).

There is a range of other observations that can be gleaned from this exploration of social networks. The functioning of the social networks in both examples largely occurs in informal spheres. While some of these networks have been established through existing committees (such as funeral or loans committees) that address other important community issues, others might only be activated in times of disasters. Furthermore, Larsen et al. (2009b) argue that despite considerable progress made in institutionalising international and national formal governance structures for DRR and early warning in the public sector, collective action has largely remained informal in nature and is often not integrated into and therefore not supported by the formal governance system. This contrasts the claims made by Adger (2003) and Ensor and Berger (2009) that in a good scenario a community’s network will produce an open and productive relationship with government. The tension between formal and informal governance raises a number of questions for the development of adaptation frameworks around how we recognise and support the development of adaptive capacity that occurs in informal spheres. The CCA community must therefore further consider the role of informal social networks and governance in adaptation planning.

Local governance: a barrier or catalyst for collective action?

In the broader adaptation debate of the United Nations Framework Convention for Climate Change there is a push for adaptation financing to go through governments (UNFCCC 2009). Within the context of our case studies this raises a range of questions regarding the role of local government actors. In both case studies, the relationship between communities and local governments was problematic. While transparent and effective governance has the potential to support and enhance collective action and hence adaptive capacity, in the examples we have presented, local governance systems were more of an impediment rather than an enabler to community-based efforts.

The case studies we presented in this paper have alluded to a range of issues relating to the role and effectiveness of local governance. Most notably these include issues of corruption and nepotism, a lack of financial and staff capacity, ineffective and poorly-coordinated structure, diverging priorities and a lack of political will of local leaders, strained relations with NGOs and communities, and correspondingly considerable distrust of communities of government authorities. In both examples stakeholders emphasised the importance of strong and motivated individuals with good social networks taking leadership of the common cause. For example one participant noted: “leaders play a critical role in enabling or disabling [community action]” (Hancock 2007). But our examples also show that the notion of collective action is not always compatible with the local governance systems. This theme consistently emerged in both case studies through comments such as “collective action is outside the scope and experience of local government”(Hancock 2007) and “government doesn’t have the capacity to facilitate collective action because they have not been trained with the skills” (Thomalla and Larsen, 2008). This is not a new issue, but many current approaches to DRR continue to lack integration with sub-national and national governance structures. Progress in coordination and integration of different government, NGO and community actors needs to be made if the various levels of government are going to be tasked with the management and implementation of adaptation frameworks.

In terms of enhancing collective action and adaptive capacity, many questions remain as to how institutions can best support community-based adaptation. Do the principals of collective action contradict the culture and assumptions of contemporary governance? Brooks (2003) suggested that it is the vested political and economic relationships that “determine the nature of the adaptation context” (p. 12). Similarly, Ensor and Berger (2009) identify issues of governance and empowerment as key and state: “these political and institutional challenges are at the heart of community based adaptation”(p.6). We agree with Moser (2009) when she argues that we need greater understandings of the barriers and limits to adaptation through critical analyses of the socio-economic and political power dynamics that underpin vulnerability and adaptive capacity. Because collective action has an important role to play in enhancing adaptive capacity, we must carefully consider the potential interactions of adaptation programmes with existing governance structures in order to avoid ineffective programmes and wasted resources.

Conclusions

There is an imperative to assist the developing world to adapt to climate change. Despite this clear need we still lack effective frameworks for both the financing and implementation of CCA. In this paper we have built on the literature and explored case study examples from Nepal and the Indian Ocean region to demonstrate that collective action has a significant role to play in the enhancement of adaptive capacity to climate change. From these case studies we have explored two key points. Firstly, we have identified that social networks are a key component of collective action that enhances adaptive capacity. Collective action can build upon existing networks to develop a more robust nexus of relationships. Both from this paper and a range of other research it is clear that social networks are a core component of community-based adaptation. Secondly, the case studies presented in this paper both show that local governance plays an important role in adaptation because it has the power to enable and support or to constrain collective action. Given that it is expected that a large proportion of adaptation funding and programmes will be channeled through national and sub-national government mechanisms, this situation raises important questions on the governance structures necessary to transparently and effectively formulate, coordinate and implement adaptation policies and strategies. Having competent and committed individuals in local governance processes can act as a strong enabler of effective action. However, in the case studies presented it is clear that many local government authorities lack capacity and face considerable challenges in implementing current policies for DRR and EWS development. Awareness of and action on climate change is even more limited amongst many local actors.

Despite its importance in reducing vulnerability and building capacity to cope with and adapt to change, collective action occurs largely within informal social networks and governance structures (see also Larsen et al., 2009b). These informal governance structures, supported by communities and NGOs, frequently exist in parallel with formal governance structures. There is an apparent need to reconcile informal and formal governance because the current disconnect causes tensions and conflicts between different stakeholders engaged in DRR and CCA. Larsen et al. (2009b) argue that these conflicts hamper the establishment of ethically acceptable processes in which the underlying vulnerabilities of communities can be effectively addressed.

The case studies presented also lead us to ask another question: Are some of the factors inhibiting collective action embedded in certain governance, economic and development paradigms? If so, then what are the consequences for the development of robust adaptation frameworks that aim to utilise the most appropriate methods? The enabling of collective action

could be considered an effective means by which we can determine suitable development approaches. When developing frameworks for the financing and implementation of adaptation, the assumptions of contemporary governance, economic development and development aid must be considered.

There needs to be further consideration of the different forms of collective action within the sphere of adaptation to climate change. The adaptation imperative provides a new opportunity to critique and consider pre-existing development pathways and paradigms. Using this fresh lens we can embark on a new journey, or at least a revised one, of discerning how adaptation can engage with development approaches in order to contribute to a fair, equitable and just future.

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