

Rethinking Community Resilience to Climate Change: Does a Social Capital Lens Help?

Joanne Jordan

School of Planning, Architecture and Civil Engineering, Queen's University Belfast
jjordan03@qub.ac.uk

Abstract

This paper explores key concepts of resilience, vulnerability and social capital in the context of communities vulnerable to climate change, using a case study of rural Bangladesh. The case study focuses on two coastal communities in South-West Bangladesh, which involved largely qualitative analysis in order to capture the richness of how social capital is expressed and experienced and its relationship with resilience for climate change. This detailed community level study involved observation of household activities, group semi-structured interviews and household semi-structured interviews; this grassroots study was supplemented with a broad range of semi-structured interviews with local NGOs, international, governmental and research based organisations.

This paper provides an understanding of the variables and relationships that determine community resilience to climate change, in particular, examining the links between social capital and community resilience. Do the existing theoretical frameworks for understanding social capital and resilience to climate change stand up to such an extreme context?

The findings offer a critique of the simplistic assumptions made about community highlighting the uneven power relations at the community level. It specifically, examines how the internal exchange system works in these communities, focusing on micro credit; highlighting the barriers that exist for vulnerable groups in accessing credit as a mechanism to move towards livelihood resilience; identifying the winners and losers in adaptation to climate change.

Climate Change Context

The Intergovernmental Panel on Climate Change (IPCC) has authoritatively predicted the likelihood of increased temperatures, sea level rise and increase in extreme weather events due to anthropogenic activity (IPCC, 2007), with potentially devastating impacts on food production, health, loss of biodiversity and inundation of large heavily populated areas. The economic analysis of the impacts of climate change undertaken by the UK government estimate that climate change could lead to a loss of at least 5% of global GDP each year, and it could rise to 20% if a wider range of risks and impacts is taken into account (Stern, 2006). It is difficult to predict all the consequences of climate change, but it does appear that it will be those societies that are already suffering severe development stress (e.g. in South and South-east Asia and Africa) who will be the most heavily effected and in particular, the most vulnerable sections of those societies. The IPCC (2007) note that 75-250 million people in Africa will be suffering increased water stress by 2020 as a result of climate change, while in Asia declining freshwater availability could affect over one billion people by 2050. In order to minimise global instabilities caused by climate change induced crises, such as mass migration, famine, drought or acute weather events, it is essential that the international community invest heavily in adaptation strategies for those identified as being the most vulnerable. Indeed, the IPCC (2007:19) notes that action on adaptation is as urgent as mitigation, and that *“A wide array of adaptation options is available, but more extensive adaptation than is currently occurring is required to reduce vulnerability to future climate change. There are barriers, limits and costs, but these are not fully understood”*.

While adaptation is needed to encompass a range of aspects of the affected community (e.g. technological; economic; behavioural; and managerial), this study focuses on community resilience as a way of strengthening their ability to withstand the adversities arising from climate induced stress. While the community resilience perspective is a relatively new and evolving concept in the UK, Tompkins and Adger (2004) argue that emerging insights from adaptive and community based resource management suggest that building resilience into both human and ecological systems is an effective way to cope with environmental change characterised by future surprises or unknowable risks. Given the global importance of climate change, Kelly and Adger (2000) and Smit et al. (2000) argue that adaptation options, adaptive capacity and ways to reduce risk should be prioritised. Hence, the distinct

need to explore how communities can constitute a model of resilience to adapt to climate change.

Defining Resilience

Resilience is a complex multi-interpretable concept with contested definitions and relevance. Holling (1973) introduced the resilience concept into the ecological literature as a way to understand nonlinear dynamics. The Resilience Alliance (2002) identifies three defining characteristics:

- the amount of change the system can undergo and still retain the same controls on function and structure, or still be in the same state, within the same domain of attraction;
- the degree to which the system is capable of self-organisation; and
- the ability to build and increase the capacity for learning and adaptation.

It is suggested that a resilient community, like ecosystems can better withstand disturbances and adapt to change when required. The concept of resilience has been widely used by various authors concerned with people-nature interactions (e.g. Adger, 2000; Berkes et al., 2003; Brooks et al., 2005; Folke, 2006; Glavovic, et al., 2002; and Walker, et al., 2002.).

UN/ISDR (2004: 16-17) define resilience as: *the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structuring. This is determined by the degree to which the social system is capable of organising itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures*. This highlights the degree of anticipatory or proactive adaptation before the event occurs (Levina and Tirpak, 2006). It also underlines the importance of learning from past events, the need to adapt to potential risk and the ability to deal with uncertainty. Also, it highlights the importance of people's capacities before a disrupting event. While UKCIP (2004: 3) defines resilience as: *the ability of a system to recover from the effect of an extreme load that may of caused harm*; this implies unlike the latter definition that damage can occur and the system will be able to recover. This type of adaptation can be termed reactive; hence it takes place after the impacts of climate change have occurred.

Pelling's (2003:48) definition of resilience merges proactive and reactive resilience: *'the ability of an actor to cope with or adapt to hazard stress. It is a product of the degree of planned preparation undertaken in the light of a potential hazard, and of spontaneous or premeditated adjustments made in response to felt hazard, including relief and rescue'*. These definitions do not explain in detail what the outcomes of resilience are; what are these acceptable levels of functioning and structuring? Does it mean an improvement in circumstances before the climate change event occurred, a similar level of vulnerability or a situation that is worse? This highlights a need for a robust understanding of people's capacities in order to understand their ability to deal with a climate change event before it occurs.

Pelling's definition introduces the terms *'cope'* and *'adapt'* in his interpretation of resilience. Within the climate change discourse *'coping capacity'* and *'adaptive capacity'* are often used interchangeably. Resilience includes both coping strategies and adaptive strategies. Coping refers to the actions and activities that take place within existing structures; often short-term strategies. While Adger (1996) argues that adapting frequently involves changing the framework within which coping takes place and involves a long term change in behaviour patterns. Coping strategies are more likely to emerge at the micro level, while adaptive strategies, which are related to social and cultural values, are long term processes, which are more likely to emerge at larger spatial scales. This distinction between coping and adapting highlights the variation in responses at different scales from the micro . macro. These responses do not exist at either ends of the spectrum of change; resilience is not a fixed state, it changes over time, for example coping mechanisms may develop into adaptive strategies over time.

It is necessary to distinguish between *'adaptive'* or *'coping'* capacity, which represents *'potential'* rather than *'actual'* adaptation. Thus, current stocks of adaptive capacity only reduces a system's vulnerability to future climate change events or to climate change events that involve slow change over relatively long periods (e.g. salinity intrusion), which the system can adapt reactively. Hence, current levels of resilience to climate change are created from adaptive and coping capacity in the past, which determine current levels of vulnerability.

Also, it is constructive to think about resilience as a layered concept: ranging from the individual to the household, ethnic group and even global level. It's important to highlight that resilience at one level of the system does not necessarily create

resilience at other levels (Glavovic et al., 2002). For instance, if some people in a community have high levels of resilience, this may be a barrier or limit for other people in the community to adapt to stresses, for example the expansion of shrimp cultivation improved the income of the elite, but the resulting increase in salinity has led to a number of negative impacts for poorer households, such as declining agricultural productivity and the resultant income insecurity.

This demonstrates how the impacts of salinity caused by both climatic forces and non-climatic forces represented in the uneven power relations manifested in broader society has caused the poor to become increasingly vulnerable to climate induced stress. This highlights how resilience is socially differentiated and often involves tradeoffs, often for the most vulnerable. This differentiation can also extend down to the household level, for example the elderly have a decreased ability to engage in livelihood activities, which creates a reliance on familial and kinship networks, though due to sheer poverty and lack of material resources, the support these networks provide can be weak and can lead to destitution.

Sustainable Livelihood Approach

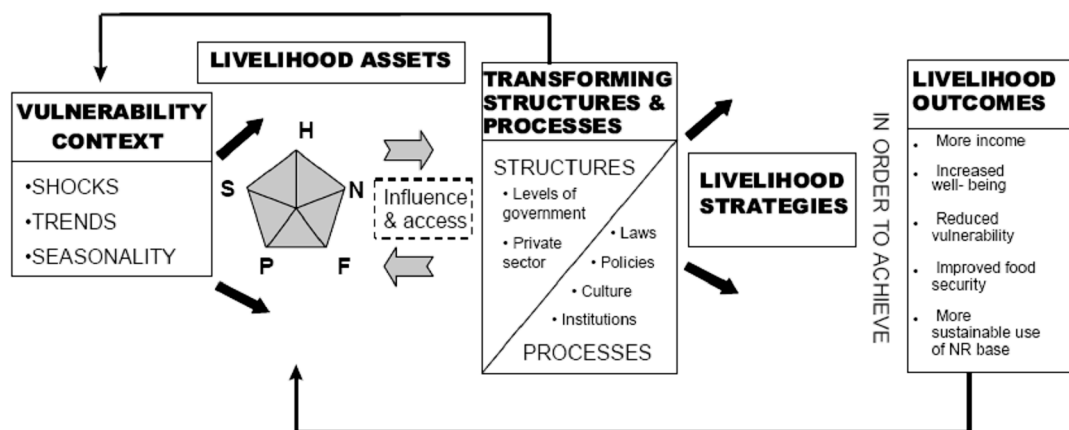
Households and communities have differential resources in their adaptation to climate change; the climate change discourse has increasingly paid attention to such capitals and assets as a base to understand the complex variables and factors that allow communities to move towards resilience or limit their resilience. The Sustainable Livelihood Approach (SLA) (see figure 1) is a way of looking at how an individual, a household, or a community behaves under specific conditions. Ellis (2000; cited in Goulden, (2006: 33) defines a livelihood as: “...*the assets (natural, physical, human, financial and social capital¹), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household*”.

The SLA places a renewed emphasis on identifying and building capitals and capabilities, rather than just examining vulnerability and needs of communities as in the traditional needs assessment approach. This focus on strengths rather than

¹ In addition, to the five capitals/assets identified, other commentators have argued for the addition of other capitals. Religion and culture are intrinsically linked to social capital and is fundamental in understanding complex social relationships and the resulting norms and values.

vulnerabilities has clear synergies with a focus on adaptation and resilience to climate change rather than on vulnerability to climate change. In this way SLA and resilience approach are complementary perspectives that focus on maximising the positive (capitals or assets) rather than minimising the negative (vulnerability and needs). This does not mean that the SLA is only relevant for examining those who are wealthier within communities, but it highlights everyone's potential. However, it's important to highlight that for the poor, reducing their vulnerability and increasing the overall sustainability of their livelihoods may well take precedence over seeking to maximise the positive (DFID, 1999).

Figure 1: DFID's Sustainable Livelihood Framework



Source: DFID (1999:1)

In its simplest form, the SL framework views people as operating in a context of vulnerability, which Glavovic et al. (2002) defines as, 'waves of adversity'. For instance, during a cyclone people have access to a range of capitals or assets to draw upon, which are essential to sustain a livelihood; Glavovic et al. (2002) argues they act as 'layers of resilience' when the system experiences stress. These capitals or assets are shaped by the social, institutional and organisational environment (structures and processes), as they create assets, determine access and influence rates of asset accumulation (DFID, 1999). Thus, the SL framework is a highly interrelated system with complex relationships between vulnerability, assets and capitals and policy, institutions and processes, which in turn determine the strategies (livelihood strategies are also known as adaptive strategies) used to adapt to climate change.

However, it is important to highlight there are a number of criticisms of the SL approach, for instance: it is unclear how to define, analyse and measure capital

assets; that it should further recognise political and cultural factors; and that the overall concept is ethnocentric and not easily translatable. While it is acknowledged that the SL approach is problematic, it offers a conceptual framework to understand the complex web of variables and relationships that make different communities more resilient to climate-induced stress. It is suggested here that the SL framework can be developed into an evaluative framework to assess the extent and role of social capital in enhancing community resilience in terms of climate induced stress.

Vulnerability context . ~~Waves of Adversity~~

Note: the structure of this paper is not intended to suggest that the starting point for all adaptation to climate change is the vulnerability context.

This paper will now explore the vulnerability context - ~~waves of adversity~~ that communities face and the inherent capitals and assets - ~~layers of resilience~~ that communities can draw upon in adapting to these ~~waves of adversity~~. The factors that make up the vulnerability context (shocks, trends and seasonality) are important because they have a direct impact upon people's asset status, and thus the strategies they can adopt. For instance, shocks to the system, such as, cyclones can destroy assets directly and force people to dispose of assets, such as livestock prematurely as part of a coping strategy. Thus, the probability of a given shock, trend or seasonal variation occurring is an important consideration (DFID, 1999).

Climate change is just one of the many ~~layers of vulnerability~~ the poor face, they are exposed to a variety of social, economic, political, ecological and other ~~disturbances~~ that vary in *intensity, scale, frequency, location, duration and character*. These ~~layers of vulnerability~~ are intertwined; for example, salinity intrusion is caused by shrimp cultivation, embankment projects and climatic factors. This highlights the difficulty for communities to adapt to climate change and the need to focus attention not just on climatic factors, but also on non-climatic influences and indirect and direct impacts of climate change.

In social systems, resilience is influenced by, among other things, the institutions or norms and networks that enable people to access resources, learn from experience, and develop flexibility in adapting to change (Carpenter et al. 2001 and Gunderson and Holling, 2002). Periods of crisis also, offer opportunity for transforming adversity into opportunity, this is important if the transformatory challenges presented by climate change are to be addressed (Leach, 2009)

Assets and Capitals . Layers of Resilience

The vulnerability of the poor reflects what Glavovic et al. (2002) terms thin layers of resilience to cope with waves of adversity when there is a low asset/capital base and institutions are unable to adapt to change this results in limited and inflexible strategies to adapt to change. While in the SL approach, capitals or assets provide people with layers of resilience to overcome waves of adversity for example, physical capital, i.e. basic infrastructure influence the ability of people to access markets in order to sell assets in times of crisis. The SL pentagon highlights the possibility of substitution of a particular capital by an increase in other types of capital. The feasibility or acceptability of interchanging types of capital will depend on the type of environment in which people live (e.g. the types of shocks or trends that they are likely to face, the reliability of markets and institutions.) (DFID, 1999). Also, it is important to note that theorists, particularly those from a strong sustainability perspective argue that different types of capital cannot readily substitute for each other. It is important to highlight that each type of capital has something vital to offer, and a single asset can generate multiple benefits. Indeed, different combinations of capital will be called upon to cope with and recover from different kinds of risk and adversity (IFRC, 2004).

The strategies adopted by households and communities to increase their resilience are diverse, ranging from physical measures (e.g., strengthening houses) to social network actions (e.g., formal social networks, such as establishing local disaster preparedness committees and micro credit groups to informal social networks involving the transmission of information and resources in disaster preparedness, response and reconstruction) to education (e.g. awareness raising activities on climate change risk) and income generation (e.g., livelihood diversification).

These various strategies communities use can create positive adaptations, for example changing to saline tolerant crops or can be maladaptive, hence limit the long term sustainability of their livelihoods, for example by disposing of productive assets. Goulden (2006) argues that this undesirable aspect of resilience can seem to be at odds with the focus of the livelihoods approach, which seeks to enhance routes out of poverty, rather than maintain resilience

Social Capital

This paper will focus on one aspect of the livelihood framework social capital as one of the potential layers of resilience in times of crisis. Social capital is multi-faceted concept with contested definitions and interpretations, but, nevertheless it is a major driver of development aid. Putnam (1995: 665) defines social capital as: '*...features of social life - networks, norms, and trust - that enable participants to act together more effectively to pursue shared objectives... Social capital, in short, refers to social connections and the attendant norms and trust*'. It is acknowledged that there are a number of perspectives on the concept of social capital including that of; *horizontal associations*, associated with Putnam (1993); *vertical and horizontal associations*, associated with Coleman (1988); and *enabling social and political environment*, associated with Olson (1982) and North (1990).

Social capital in the form of links between individuals can either be considered as private assets held by individuals or close groups of individuals such as a household, or public assets held collectively by society. The social relationships that give form to social capital can be categorised in bonding, bridging and networking social capital. Bonding social capital represents relationships between family members, friends and neighbours; it is frequently used for adaptive strategies by individuals in response to climate induced stress, (e.g. borrowing boats to collect water during periods of high salinity in exchange for collection of water), while these networks are vital during times of stress they do not necessarily create proactive adaptation. Bridging social capital involves links with others in the village or local area that are connected by weaker bonds than those of friendship or kinship, but share similar economic or social status. Bridging capital is less commonly used by individuals for household level responses to a shock, but important for the functioning of collective action groups, such as micro credit groups. Linking or networking social capital involves links with outsiders to village who have more political or economic power; it is rarely used by individuals for household responses to a crisis, but exists in those collective action groups that have close links with state institutions (Goulden, 2006).

Social capital has been viewed as a positive attribute of communities (e.g. improved access to information and services and greater influence over policies and legislation) and may consist of networks, groups and connectedness, either vertical (patron/client) or horizontal (between individuals with shared interests) that increase people's trust and ability to work together and expand their access to wider

institutions; membership of more formal groups in which relationships are governed by accepted rules, norms and sanctions; and relationships of trust, reciprocity and exchanges between individuals. However, there are a number of critics of social capital (e.g., Harriss and De Renzio, 1997; Law and Mooney, 2006; and Portes, 1998). It is important to highlight that more networks, greater reciprocal relations and social commitments are not always positive, for example the relationship between informal money lenders and community members is based on exploitation and their objectives weaken the resilience of others in the community. This highlights the need not to focus solely on building social capital, but to focus attention on the underlying inequities, which constrain people's livelihoods and thus reduce their capacity to adapt to climate induced stress.

In addition, to informal credit and lending arrangements between family, friends, colleagues and traders, which rely mostly on bonding social capital there are also collective groups, such as micro credit groups. (Goulden, 2006) argues that these groups could be characterised as having either bonding or bridging social capital and occasionally linking social capital, depending on their membership and the links that they make use of. Although, micro credit groups are not formed with the specific objective of creating strategies to adapt to climate impacts, they can nevertheless contribute to resilience to climate impacts, for example by creating opportunities to invest in livelihood activities, which can allow them to recoup their losses from climate impacts. In this sense micro credit can allow the diversification of livelihoods and lead to positive livelihood outcomes thereby increasing resilience to climate induced stresses. Though, while micro credit can create positive outcomes, its scope should not be overestimated considering there is some debate about its ability to create livelihood outcomes for the poorest of the poor and its role to empower women.

The case studies highlight that the decision making power, regarding the spending of loans was with male household members, while females remained responsible for repaying the loan instalments, while micro credit programmes may alter women's subordinate position in some respects, are these loans for men via women? However, studies highlight that there are empowerment level outcomes from lending to women; group membership and income generation by women made it less likely that they would be deserted by their husbands (Hashemi et al., 1996).

While micro credit can create livelihood outcomes, there are cases of borrowers taking overlapping loans, using one loan to pay another loan or using micro credit for non-productive purposes (e.g. buying their children's clothes) rather than using it for income generating purposes. This clearly leads to problems in repaying loans and questions the applicability of micro credit as a means for the poorest of the poor to move beyond safety nets towards strategies that create resilience to climate change.

Perhaps the most important finding of the case study in this regard is that while there was insufficient micro credit available in the initial recovery period (3 - 4 months after the cyclone), bonding capital was extremely important in providing short term coping mechanisms. Though, social capital in the form of bonding capital cannot be interpreted as always positive in this respect, as the poorest of the poor often do not have access to familial or kinship networks that can offer monetary support during this period of crisis. In this sense they often have fewer and often inflexible strategies available and are often forced into borrowing from informal money lending who charge higher rates of interest during times of crisis. This clearly hinders the poor from making sustained gains in income through productive investments.

Building resilience

In order to strengthen layers of resilience and thus, create robust adaptive strategies, it is necessary to improve poor people's access to assets and to make the structures and processes that shape asset accumulation more responsive to their needs, as those who are amply endowed with assets tend to have a greater choice and flexibility in their adaptive strategies, hence increasing their resilience to shocks and stresses. In comparison, when assets are diminished and institutions are unable to adapt to change (limits or barriers), available adaptive strategies become weak, thus the poor are forced into a given strategy because it is their only option. This results in reduced resilience and increased vulnerability to disturbance. Glavovic, et al. (2002) argues that vulnerability is an antonym for resilience, (while Adger, 2000 argues resilience increases the capacity to cope with stress and, hence is a loose antonym for vulnerability) as in practice vulnerability also means the deficit of capacities or assets to cope with shocks or disturbances to the system, and resilience exists only in the context of adversity, so these two concepts co-exist.

Conclusion

The SL approach focuses our attention on people's capitals or assets, which provide people with layers of resilience that, can help deal with waves of adversity. Considering the vulnerability facing communities in adapting to climate change, the key challenge is to build resilience and hence, strengthen these layers to build robust adaptive and coping strategies, and even transform adversity into opportunity. However, there is a need to focus attention on the uneven power relations that are embedded in the multiple layers of vulnerability such communities face rather than manufacturing a social capital base that is based on inequities and has limited value when devastation occurs in the form of climate induced stress. Similarly, there is a need to focus on gender histories and cultural dynamics at the micro community scale that seem to stall or at least mediate against more robust forms of community organisation.

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