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climate and development

CASE STUDY

Knowledge flows in climate change adaptation: exploring friction between scales

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Effective mainstreaming of climate change adaptation (CCA) into related policy and development initiatives relies on comprehensive knowledge sharing between multiple stakeholders. In Bangladesh, community-based adaptation (CBA) practitioners are critical for facilitating communication among global, national and local scales. They can also take responsibility for finding appropriate channels through which to share relevant information. Interviews with CBA practitioners examine how knowledge is gained and transmitted between practitioners and other CCA stakeholders, focusing on the challenges experienced. These challenges represent friction in knowledge transmittal. Key to lubricating smooth knowledge flows is an understanding of the specific contexts within which knowledge is to be exchanged. At the professional level, multidisciplinary knowledge must be made accessible through provision of widely comprehensible content shared in an appropriate format. At the local level, understandings of trust, priorities and power relations are vital for ensuring relevance in the knowledge shared by professional stakeholders. Mobilizing appropriate knowledge can allow widespread comprehension of adaptation aims, enabling the mainstreaming of CCA and ensuring that resulting action is beneficial at the local level, for communities that are vulnerable to the impacts of climate change.

Keywords: Bangladesh; knowledge sharing; climate change; adaptation; mainstreaming; communications

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1. Introduction

Climate change is an international problem discovered by the global scientific community. With widely agreed certainty about its damaging effects, efforts are being made to increase climate change adaptation (CCA) action. This process comprises adjustment in human and natural systems in order to cope with or benefit from environmental changes (Smit et al., 1999). It is acknowledged that local communities develop their own coping strategies, yet there is a notion that specialist support must be provided due to the pace of witnessed and predicted climatic change. As such, anthropogenic adaptation is receiving much consideration from climate change scientists (Grothmann & Patt, 2005), while global climate policy aims to bring adaptation to the centre of the contemporary climate change discourse (Adger et al., 2009).

This focus enables mainstreaming of CCA into policy and development initiatives. The problem of climate change is brought to the attention of policy-makers through the reports of the Intergovernmental Panel on Climate Change. Associated global policy-making takes place under the aegis of the United Nations Framework Convention on Climate Change (Dirix et al., 2013). Such policy affects the extent of national and international support for CCA and encourages the prioritization of adaptation activities within governance and development approaches.

In order to be effective, CCA mainstreaming relies upon widespread comprehension of adaptation aims and issues at multiple scales. This requires strong communicative connections between multi-scalar CCA stakeholders (Crate, 2011). Stakeholders include climate scientists, national and international policy-makers, government bodies, research institutions, development workers, community groups, and, critically, those who are vulnerable to the impacts of climate change and, as such, need to adapt. Knowledge sharing between stakeholders can create and maintain connections, inform effective policy and ensure that emerging policies benefit those communities who are under pressure to adapt. However, integration between multiple scales is a complex ambition characterized by friction (Tsing, 2005). To address this, reciprocal communications along 'strong chains' with 'short links' (Brown & Fox, 1999) are beneficial (Agar,

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2005; Blackburn & Clark, 2007; Peacock, 2010; Root & Schneider, 1995). They can encourage smooth knowledge flows between stakeholders, achieving widespread comprehension and, thereby, supporting effective mainstreaming of CCA.

While some channels of communication are well established, such as those from global scientists to global policymakers, others are not. The weakest link is with vulnerable communities at the local level, in terms of both gaining their knowledge of local climate and adaptation and sharing climate change knowledge with them. The global focus on CCA manifests itself at the local level through community-based adaptation (CBA) projects. CBA projects are designed to promote and protect sustainable livelihoods through building capacity for community-level adaptation to unpredictable and risky climates (Ayers & Forsyth, 2009; Ireland & McKinnon, 2013). Practitioners working within this field provide a direct link with local communities. As such, they can operate as vehicles for the reciprocal transmittal of knowledge between scales and stakeholders. This case study explores knowledge sharing in relation to CCA from a national-level practitioner perspective in Bangladesh, drawing from research conducted with CBA practitioners from the national platform 'Action Research for Community Adaptation in Bangladesh' (ARCAB).

2. Knowledge exchange in Bangladesh

Bangladesh provides a national platform upon which to explore CBA. Recognition of the country's vulnerability to the impacts of climate change means that much internal adaptation research and implementation is occurring (Rashid, Khan, & Khan, 2013). The lessons learnt through this work can be applied in similarly vulnerable countries. Within Bangladesh, there is a wide network of developmental organizations (Zohir, 2004). Strong partnerships among these organizations can provide a pivotal portal for the crucial exchange of ideas, strategies and viewpoints (Benson, Twigg, & Myers, 2001).

ARCAB is a programme directed by the International Centre for Climate Change and Development in Dhaka, which brings together national and international organizations to research and implement local-level CBA activities. In doing so, it provides a platform upon which CBA practitioners exchange knowledge. As ARCAB organizations are incorporating CBA initiatives into their central development activities, associated practitioners can take responsibility for gaining and transmitting appropriate climate change knowledge among the vulnerable communities within which they work. In turn, they can also feed back to political stakeholders at national and international scales to advocate for adaptation needs and measures for consideration in policies. There is growing appreciation within these organizations that knowledge management must be based on inclusive access to trustworthy, effective and widespread communications (Action Aid Bangladesh, 2012; Practical Action, 2013). However, problems remain due to complex contrasts between the specific contexts within which knowledge for CBA is generated and shared.

The discussion that follows is based on qualitative research conducted with 12 CBA practitioners from the national offices of 12 international ARCAB partners. One-to-one semi-structured interviews were employed to critically examine the challenges experienced in gaining CCA knowledge and sharing it at the local level. These participants were strategically targeted with the knowledge that ARCAB institutions are directly involved with CBA and knowledge sharing around CBA. It is acknowledged that in sampling solely from ARCAB partners, a potential diversity of communication methods employed by different institutions involved in CBA in Bangladesh may not be represented and, as such, the results cannot claim to be wholly representative of the national-level practitioner community. Nevertheless, these interviews have revealed some significant frictions that hinder smooth knowledge flows between multiple scales, in the context of CBA (see Figure 1).

3. Results

3.1. *Practitioner acquisition of climate and adaptation information*

While ARCAB practitioners reported no problems with gaining knowledge from local communities, they identified some challenges with regard to gaining climate change and adaptation knowledge from alternative sources. Information to support local adaptation strategies is sought from a variety of sources. These include national government ministries, national and international knowledge platforms, national and international non-governmental organizations (NGOs), universities, scientific bodies, research institutions, media and internal research. The challenges identified are indicated in Figure 1 and are discussed further below to illuminate how they disrupt smooth knowledge flows.

3.1.1. *Personal networks*

The personal networks of NGO practitioners were identified as hugely significant in gaining climate change knowledge and information. Personal networks interlink practitioners with multi-scale knowledge sources, including partner organizations, other NGOs, research institutes, government members and local-level stakeholders. The professional relationships developed throughout individual practitioners' careers are pivotal to the acquisition of knowledge and support. As such, when employees leave their role, the connection between the organization and

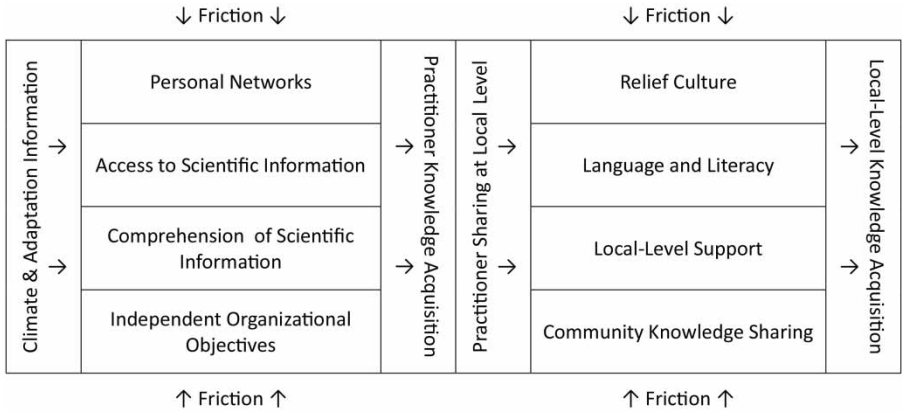


Figure 1. Frictions affecting smooth knowledge flows to and from CBA practitioners.

knowledge source is disrupted. Consequently, the institution's ability to gather essential information is weakened. Longer serving employees who have developed extensive networks are likely to have more leverage within their role (Benson et al., 2001). This leverage can increase efficiency in gaining appropriate climate change knowledge. It is inevitable that the personal circumstances of CBA practitioners will change depending on individual desires, opportunities and situations. Hence, it is crucial that development organizations explore practical avenues for the transfer of information and contacts across programmes and through successive generations of staff (Benson et al., 2001).

3.1.2. *Access to scientific information*

Practitioners reported access limitations as an obstacle to gaining scientific climate change information. While models of specific impacts may not be necessary to inform policy (Dessai & Hulme, 2004) there is pressure on practitioners to provide relevant and localized information to communities. The premise of this is that individuals are more likely to adapt if they have some certain, tangible and reliable information about probable climatic impacts on their livelihoods (Adger et al., 2009). Practitioners reported that where such knowledge exists, it is publicly unavailable and, hence, unobtainable for these development organizations. Such shortcomings reflect an acknowledged institutional disconnect between scientific bodies and local-level stakeholders (Benson et al., 2001).

3.1.3. *Comprehension of scientific information*

Some practitioners reported that their scientific understanding of climate change is not as comprehensive as they desire. Within CBA there is an overriding focus on social issues relating to adaptation. However, a restricted understanding of the scientific forces at play in climate change can hinder a full comprehension and, in turn, can weaken the ability to explain related concepts to a wider audience. As such, the knowledge of climate change scientists is not easily transferable to practitioners. These limitations cause frustration and, in the long term, a lack of motivation to find the specific information that could help to inform adaptation programmes.

3.1.4. *Independent organizational objectives*

Interviewees reported difficulties in gaining knowledge from other development organizations. ARCAB partners rarely consider CCA in isolation. Instead, they aim to mainstream CCA within existing development agendas. Each organization has its own commitments, defined by certain aims and principles and the expectations of the donors that are financing their programmes (Stirrat & Henkel, 1997). This self-guided aspect to each organization can detract from using and sharing appropriate knowledge within and between collaborative knowledge platforms.

3.2. *Sharing knowledge at the local level*

Within ARCAB there is no standard model for sharing climate change knowledge with local communities. Practitioners reported different channels and techniques, each with their own successes and challenges. Face-to-face communication is the main means of both sharing and gaining knowledge at the local level. These personal interactions occur between local partner NGO field staff, community volunteers, children, community groups and government extension officers. Personal interaction is supported through various media, employing visual (flip charts, posters, maps), written (documents, school books), audio (loudspeaker) and interactive (knowledge centres, drama) channels. Yet, face-to-face communication is considered the most effective, taking precedence over communication through written material (Benson et al., 2001). The frictions

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apparent to disrupting smooth knowledge flows between CBA practitioners and local-level stakeholders are outlined in Figure 1 and explored below.

3.2.1. *Relief culture*

Practitioners reported that a significant obstacle to adequately sharing knowledge at the local level is an expectation and desire for relief within vulnerable communities. This expectation overcomes the desire to learn skills and develop the theoretical knowledge offered by development organizations. Instead, it was reported that community members are more willing to act if they expect to receive something tangible in return. In acknowledgement of this, participation in adaptation activities is encouraged by small material provisions. However, persistent dependence on official aid can ultimately disempower communities (Rowlands, 1995; Toomey, 2011). The focus remains on the aid being received rather than the knowledge being shared and can therefore negatively impact the sustainability of adaptation activities. As such, this 'relief culture' poses a major obstacle for developmental organizations working on adaptation (Benson et al., 2001).

3.2.2. *Language and literacy*

It is obvious that language is a pivotal aspect in any type of knowledge exchange, yet several language issues were identified. First, it was reported that the technical terminology that is used in climate change discussions is hard to translate. The inclusion of technical terms and external concepts is often uncomfortable and unappealing to stakeholders at the community level. Second, participants suggested that a balance must be maintained with regard to the complexity of information shared. Their experience found that information that is too simplistic and broad is as ineffective as information that is too complex and abstract to community perspectives. Third, ARCAB practitioners gain much internationally generated information in English. Some organizations have shared knowledge with local communities without translating it into the appropriate dialect. Literacy and language barriers often exclude certain groups within societies, such as the rural poor, ethnic minorities and women (Roncoli, 2006). This goes against the principles of adaptation, which should target the most vulnerable (Rashid et al., 2013). Hence, rather than aiding the adaptation process, poorly translated information can serve as a deterrent, alienating people who make no connection with the material. These issues indicate that it is vital to account for the specific linguistic context within which knowledge is being shared.

3.2.3. *Local-level support*

Local-level knowledge transmission from ARCAB partners is supported by local-level stakeholders. For example, CBA practitioners work alongside local government officials and field extension staff to provide agricultural adaptation advice. However, each actor assuming some responsibility for transmitting knowledge must be working towards similar aims in order to avoid confusion and ambiguity. This research found that government information is sometimes outdated. While CBA practitioners can work with governments to ensure agreement in the knowledge being employed, governments must also work to ensure that they access and make available the most up-to-date information. This requires the whole process of knowledge sharing to include a feedback mechanism between actors at the local level and beyond in order to ensure mutual understanding between stakeholders.

Field staff members operating at the local level are often employed from within vulnerable communities in acknowledgment that knowledge must be transmitted via reliable and trustworthy sources. The familiarity between such field staff and individuals within target communities is likely to aid the adaptation process and boost trust in the climate knowledge that is shared (Ensor & Berger, 2009). Yet the interviews indicated that here, again, the turnaround of staff can disrupt networks of personal interaction. This can affect levels of trust, which are pivotal to comprehensive knowledge sharing processes (Hasnain & Jasimuddin, 2012).

3.2.4. *Community knowledge sharing*

Knowledge sharing within the community itself was indicated to be a further challenge. It is expected that once useful information has been identified and acquired, community members will share it with neighbours, friends and acquaintances who are experiencing similar problems. Hence, development practitioners perceive their direct audiences to be accountable for mobilizing widespread knowledge flows at the local level. However, some participants reported that this is not always a reliable assumption, explaining that knowledge is not passed on beyond the initial recipients. Information deemed to be irrelevant or abstract by the community may not be shared among its members (Adhikari & Taylor, 2012; Agar, 2005). Instead, individuals are likely to share information that is genuinely deemed to be interesting, relevant and useful to their livelihoods. Therefore, knowledge flows can be enhanced through ensuring contextual relevance in the information shared.

4. Ensuring smooth knowledge flows

Ensuring smooth knowledge flows to enable and enhance the mainstreaming of CCA into policy and development

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is a challenging ambition. It requires flexibility, commitment and persistence from a variety of stakeholders that operate at different scales. These multi-scalar collaborations encompass a disparity in perspectives about what adaptation should be and how it should be prioritized and executed (Agar, 2005; Nuttall, 2009). Moreover, as these interviews have indicated, friction in gaining appropriate knowledge remains apparent, at least for adaptation practitioners. Such frictions continually disrupt and destabilize knowledge flows (Tsing, 2005). However, smooth knowledge flows can be encouraged by accounting for the particular social, political and economic context within which the recipient exists (Action Aid Bangladesh, 2012; Adhikari & Taylor, 2012; Magistro & Roncoli, 2001) to ensure that both the format and content of knowledge shared is appropriate.

A comprehension of specific contexts is particularly crucial for local-level knowledge sharing. In employing face-to-face communication techniques there must be a level of trust between recipient and knowledge provider (Vignola et al., 2013). Social research has highlighted a lack of local-level trust in global information (Ellis, Cambray, & Lemma, 2013). Moreover, at the local level, such global knowledge does not remain neutral, but has been found to insert itself into existing power relations (Broad & Orlove, 2007; Crewe & Young, 2002; Dankelman, 2002; Denton, 2002; Peacock, 2010; Roncoli, 2006). Hence, instead of precise external scientific knowledge, specific worldviews, robust decision-making and personal motivations may be more important to achieving sustainable adaptation (Adger et al., 2009; Grothmann & Patt, 1995; Nuttall, 2009). It becomes apparent that the social and political dynamics of communities within which knowledge is being shared is as significant as the ecological and the economic contexts for ensuring relevance of content and widespread comprehension of adaptation aims.

The disparity between perspectives at different scales poses the question: how can we elicit sympathy for short-term perspectives within the international climate change community, while also encouraging long-term outlooks among local-level stakeholders? Many have suggested that multi-sited ethnography can be employed to understand critical global–local linkages (Crate, 2011; Henning, 2005; Krauss, 2009; Marcus, 1995; Nelson, West, & Finan, 2009; Smart, 1999). Such an approach can serve to encompass scientific, practical and philosophical perspectives related to the various scenarios of climate change. Future research in Bangladesh and other climatically vulnerable countries can focus on ensuring contextual comprehension of specific localities.

By enhancing the flow of relevant knowledge, mainstreaming of CCA can be more effective. Many countries implementing CBA initiatives lack the crucial networks of stakeholders necessary to connect the gaps between global and local. Globally, the responsibilities of specific government and non-government actors have been blurred and fragmented, leaving ambiguity as to who is accountable for ensuring cohesion between scales (Dirix et al., 2013). Communicative connections need to be addressed at each link to achieve appropriate and impactful knowledge sharing and, in turn, ensure smooth and effective knowledge flows. Contributors to adaptation knowledge from a range of disciplinary backgrounds can take responsibility for making appropriate knowledge accessible. Recipients can thereby combine scientific, political and social sciences to inform adaptation policy, projects and knowledge (Sutton, 1999). CBA practitioners, local government officials and other adaptation stakeholders interacting at the local level can ensure that adequate information is collated and integrated into effective responses via policy and action, in order to support adaptation in various contexts. Success in this can ensure that global policies respond to local priorities and, thereby, that the political support achieved through mainstreaming adaptation is effective at the local level.

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