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**Water Regime Resilience and
Community Rights to Resource Access
in the Face of Climate Change**

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Abstract

This paper begins by arguing that an analysis of social vulnerability seeking to enhance social resilience must take into account the social construction of vulnerability, namely, the economic, institutional and political factors which promote or constrain options for adaptation. Drawing on a case study of water security in the Lower Mekong Basin, this paper further argues that in the area of water governance, a critical hydropolitics approach would indicate that what some perceive as creativity and adaptation in the activities of the water regime may be argued to demonstrate constraints imposed by the dominance of law, engineering and economics. This informs a central concern of the paper, that of the relationship between the apparent resilience of institutions and the resilience of individuals and communities. In response to this concern, this paper explores people-centred approaches to resilience that focus on community rights and access to resources.

Biography

Keokam Kraisoraphong is Assistant Professor at the Faculty of Political Science, Chulalongkorn University. She teaches politics of public policy, politics of environmental policy, and politics and government of Thailand. She is a member of the executive committee and a senior fellow at the Institute for Strategic and International Studies (ISIS), Thailand, as well as a member of the working committee at the Institute for Peace and Conflict Studies (IPCS), Chulalongkorn University. Her research focus has been on non-traditional security as well as security sector governance and reform. Her current research interests are in environmental policy and human security under climate change, water regimes of the Lower Mekong Basin, community rights and access to resources, environmental policy instruments, institutional dimensions of environmental security and food security within the Greater Mekong Sub-region (GMS), security sector governance and peacebuilding, and security sector reform for Thailand.

This Policy Series presents papers in a preliminary form and serves to stimulate comment and discussion. The views expressed are entirely the author's own and not that of the RSIS Centre for Non-Traditional Security (NTS) Studies. The paper is the result of research conducted under the Asia Security Initiative programme on internal challenges supported by the MacArthur Foundation. Visit www.asiocluster3.com to find out more about this initiative. More information on the work of the RSIS Centre for NTS Studies can be found at www.rsis.edu.sg/nts.

Policy Recommendations

- Improve the knowledge base on the natural resource stocks and the dynamic relationships between people and the eco-service systems of the Mekong River Basin. Local knowledge and expertise which are drawn from the people's living understanding of the resources and eco-service systems upon which they depend should be included, recognised and encouraged. This task is a prerequisite to informed policymaking, particularly when considering policies based on the recommendations below.
- Secure access of the Lower Mekong Basin community to local natural resources so as to secure their livelihoods and hence enhance their resilience. The precondition of this endeavour would be to address underlying social and economic trends which underpin the interdependence and growing competition among resource users. It is also necessary to address the social and institutional dimensions of resource use. These should be enhanced to ensure rights of resource access based on the principles of equitable allocation of natural resources and more sustainable resource use.
- Focus decisions on a rights-based and sustainable livelihoods approach. The basic human need for sustained local food production to improve people's livelihoods should be made a priority, one that must be met relative to any development or investment demands.
- Address the issue of scale – local, national and regional – and establish mechanisms to strengthen the accountability of those with authority over the rights and responsibilities associated with resource use.
 - *At the local level:* Establish and protect equitable community rights to local natural resources through government and community partnership in rule enforcement and in managing resource disputes.
 - *At the national level:* Establish horizontal accountability, addressing the need to balance between institutional incentives which promote rapid economic growth and those which encourage sustainable resource use. This involves focusing on basin-wide ecosystem management and the development of institutions to enforce equitable resource access rights.
 - *At the regional level:* Work towards a water regime founded on mutual gains of riparian countries. Mechanisms for cross-border accountability should be established within the context of political and economic benefits generated through improved cooperation in the sharing and use of sustainable resources.

Introduction

Climate change analysis has increasingly indicated that changes will occur in a number of ways, of which one of the most notable is that the majority of these changes are likely to be felt through modification of the hydrological cycle.¹ Furthermore, impacts on both natural and human systems are estimated to be particularly severe in developing countries, areas where a large number of inhabitants (many of whom are already marginalised) are those with primary-resource-dependent livelihoods. While levels of vulnerability to climate change determine the adaptation options available to individuals and communities, the ability of individuals and communities to act collectively determines their resilience and hence capacity to adapt to the changing climate.² In this sense, individuals and communities have interdependent relationships ‘with each other, with the institutions in which they reside, and with the resource base upon which they depend’.³

In such interdependent relationships, vulnerabilities are often created by the underlying distribution of power, which determines the fairness of the rules upon which resource-managing institutions base their decisions.⁴ How inequality and differential political and economic power increase the vulnerability of poor and marginalised groups is a critical element of vulnerability analysis.⁵ This is also where distributional consequences reflect how patterns of vulnerability are shaped by social, economic and political trends and characteristics.⁶

The Lower Mekong Basin (LMB) is a case in point. It is home to approximately 65.7 million people⁷, who reside within areas of four riparian countries: Lao PDR, Thailand, Cambodia and Vietnam. Covering 77 per cent of the overall Mekong River Basin (MRB), the LMB is regarded as the most important part of the MRB, environmentally and economically.⁸ In terms of the key issues of natural resource and development⁹, LMB inhabitants largely rely on subsistence agriculture based on rice and fish.¹⁰ While the Mekong River provides the MRB with abundant water resources, the monsoon rainfall pattern dictates the wide variability in water availability within it. The livelihoods of those living off the floodplain ecosystem, where productivity is sustained by the flood pulse generated by annual monsoon floods together with the mainstream water level, are thus dependent on variations in climatic conditions. In this regard, inhabitants of the LMB have long demonstrated that societies have inherent capacities to adapt to climate change¹¹, as they have adjusted to cope with climatic variations to sustain their livelihoods. This illustrates a case in which the drive for adaptive resource management could in fact be attributed to the vulnerability of individuals and societies that have experienced risks of climate hazards.

¹ Keskinen, M. et al. 2009.

² Ibid.

³ Adger, W.N. 2003.

⁴ Adger et al., 2005.

⁵ McLaughlin, P. and Dietz, T. 2008.

⁶ Adger et al. 2005

⁷ Sukhsri, C. 2009.

⁸ Aerts, J. and Droogers, P. 2004.

⁹ Ibid. The LMB’s five key areas of natural resource and development include agricultural production, fisheries, hydropower generation, forest resource management and use of biological resources for conservation, tourism, trade and local livelihoods.

¹⁰ Sukhsri, C. 2009. (interview).

¹¹ Adger, W.N. 2003. Adger noted that ‘...individuals and societies have adapted to climate change over the course of human history and will continue to do so...’

According to climate change estimates, it is likely that as the LMB faces new challenges from climate change impacts, pre-existing challenges will also be exacerbated. As the majority of environmental changes occur through 'modification of hydrological cycles'¹² in the form of 'floods, droughts and storms'¹³, those within the MRB, who are amongst the poorest in the world¹⁴, are likely to be disproportionately affected due to their low potential to adapt to such changes.¹⁵ They are the people most at risk and most vulnerable as their natural resource base will become severely stressed. In most cases effective response is beyond the capability of their governing system.¹⁶ (Here, governing system refers to the structures, processes, values and attitudes that shape the decisions in resource allocation, and exercise control and coordination over their implementation.)

As a way of emphasising the human dimensions of such cases, studies of vulnerability to climate change generally use the term 'social vulnerability' to encompass individual and collective vulnerability, manifested in disruptions to livelihoods and loss of security.¹⁷ For this reason, analysis of social vulnerability which seeks to ultimately enhance social resilience must take into account the 'social construction of vulnerability', or in other words, the socioeconomic, institutional and political factors which would affect levels of vulnerability and thus promote or constrain options for adaptation.¹⁸ Inequitable distribution of resources is one of the many underlying causes of social vulnerability that could well constrain adaptation. On the other hand, 'poverty reduction; risk-spreading through income diversification; respecting common property management rights; and promoting collective security'¹⁹ have been cited as priorities for improving situations of social vulnerability.

Where underlying causes of social vulnerability constrain adaptation, studies have also shown, through community-based vulnerability assessments, that the conditions which interact with political, social and economic processes to create such situations are community-specific.²⁰ At the community scale, the ability to access resources is facilitated by social processes and social relations together with the ecological integrity of the resource base which invariably differs by geographic location and climate of the region. Based on the understanding that practical initiatives required to reduce social vulnerability, maintain social resilience and hence improve societal adaptive capacity occur at the community scale²¹, this paper examines one of the three cornerstones²² of adaptation for the LMB: increasing the resilience of social and ecological systems by focusing on the enhancement of resilience of communities through rights of access to resources. It rests on the argument that the capacity of communities to sustain their livelihoods, and hence maintain their resilience, depends on their ability to access productive resources as well as to control and to use the resources effectively.²³ For communities within the LMB, productive resources are heavily water

¹² Keskinen, M. et al. 2009.

¹³ Ibid.

¹⁴ Cogels, O. 2005.

¹⁵ Smit, B. and Wandel, J. 2006.

¹⁶ Aerts, J. and Droogers, P. 2004.

¹⁷ Kelly, P.M. and Adger, W.N., 2000.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Smit, B. and Wandel , J. 2006.

²¹ Ibid.

²² Adger, W.N. et al. 2005. The three cornerstones of adaptation are reduce the sensitivity of the system to change; alter the exposure of the system to climate change; and increase the resilience of the system to cope with changes.

²³ Berry, S. 1989.

resource-related. The emerging patterns of change in climate coupled with competing demands from both within and outside the LMB to 'harness the river's tremendous development potential'²⁴ are seen to have increasingly come to deprive communities within the LMB of their regular source of livelihood capabilities. How communities can be assured of their entitlements to these resources, so that their resilience may be maintained, depends to a large extent on whether their rights to access is acknowledged and legitimised.

Through examining the issues of scale and the contestations to the expert-produced knowledge²⁵ of the MRB, critical approaches have revealed how the Mekong River Commission (MRC) illustrates a case of conceptual incompatibilities between the state-centric reasoning currently underpinning the MRC management of the Mekong River and the calls for a new water governance paradigm to assist communities in making more relevant choices regarding the access, sharing and managing of water for their security in food and energy.²⁶

Social Vulnerability and the Social Construction of Vulnerability

The human dimension of vulnerability to climate change is most clearly illustrated by Kelly and Adger who define social vulnerability as the capacity of individuals and social groupings to respond to – that is, to cope with, recover from or adapt to – any external stress placed on their livelihoods and well-being.²⁷ In this conceptualisation of basic vulnerability relationships,²⁸ adaptive capacity at the local or community level is shaped by both exposure and sensitivity. Here exposure refers to the degree of climate stress the community, as a system, experiences. It may manifest as either changes in climate conditions or climate variability such as in the magnitude and frequency of extreme events. Sensitivity, on the other hand, implies the degree to which the community as a system could be affected either adversely or beneficially by climate-related stimuli. Efforts toward increased adaptive capacity thus aim at achieving decreased exposure-sensitivities.²⁹ In the context of climate change, the stresses are a product of interactions among environmental and social forces that arise from conditions posed by the changes in climate. Exposure, sensitivity and adaptive capacity are therefore elements of vulnerability, which is in part determined by the broader stresses and forces of social, economic and political trends and characteristics. These broader forces have been known to determine who is to gain and who is to lose. In certain cases they have led to poverty reduction and increased access to resources resulting in reduced vulnerability, while in other cases existing inequalities have been reinforced and any impact on the alleviation of underlying vulnerabilities has been negligible.³⁰

In sum, then, in the context of climate change impact, social vulnerability is a function of, first, the exposure and sensitivity of individuals and social groupings at various scales to a range of hazardous conditions, and second, the resilience or ability of individuals and social groupings to cope with, adapt to or recover from the impact of those conditions. In this connection, adaptation strategies of these individuals and social groupings are manifestations of their adaptive capacity that also reflect ways by which they can reduce

²⁴ Sneddon, C. and Binh, N.T. 2001.

²⁵ Kakonen, M. and Hirsch, P. (2009) point out that such knowledge produced by experts appear in the form of models, impact assessments and scenarios dealing with risk.

²⁶ Dore, J. and Lazarus, K. 2009.

²⁷ Ibid.

²⁸ Smit, B. and Wandel, J. 2006.

²⁹ Ibid.

³⁰ Adger, W.N. 2003.

their vulnerability.³¹ Analysis of vulnerability is thus an important task in defining the magnitude of the threat and in determining effective means and remedial action that can limit the impact of climate change.

Most climate impact studies define vulnerability in terms of 'the residual consequences once adaptation had occurred'.³² In other words, the level of vulnerability is determined by the adverse consequences that persist after a process of adaptation has been implemented. From this perspective, in line with the Intergovernmental Panel on Climate Change (IPCC) process, vulnerability is defined as contingent upon potential climate change and estimates of adaptive response.³³ Vulnerability is thus not only about a system's sensitivity. It is also about a system's ability to adapt to new climate conditions. It also assumes that it is possible to clearly define the extent of climate change damage to a system.

Another approach, one that differs from most climate impact studies but which is also considered to provide an effective conceptualisation of vulnerability, finds that the nature of the potential impact of climate change does not necessarily have to be precisely defined. Rather, one could conceptualise vulnerability by analysing the nature of stress and the degree of exposure to climate impacts, focusing on pre-existing constraints that individual or social groupings face in their capacity to respond.³⁴ In this respect, the social construction of vulnerability – or how different socioeconomic and political characteristics, processes or trends influence levels of vulnerability³⁵ – identifies the overarching issues of concern. In other words, an analysis of social vulnerability must take into consideration the 'architecture of entitlements', which Kelly and Adger define as 'the social, economic and institutional factors that influence levels of vulnerability within a community or nation and promote or constrain options for adaptation'. This recasts the question as '[h]ow do social, economic and political trends and characteristics shape patterns of vulnerability?'.³⁶

This rethinking of questions about vulnerability also engages more firmly with debates about entitlement. The *concept* of entitlement provides the basis for considering the *architecture* of entitlement. According to Sen, the ability of individuals and communities to cope with or adapt to stress is determined by the extent to which they are entitled to make use of resources.³⁷ For communities within the LMB, resources would imply water for agriculture as well as water-related resources such as wetlands, floodplains, fish and other aquatic species – all of which constitute their main source of livelihood. No less significant are the resources which form their social assets such as networks and information. These entitlements (and hence level of vulnerability) are in turn affected by individual, household or community characteristics.³⁸ Among these characteristics, access to resources is a significant indicator of vulnerability because it is directly related to poverty and the process through which people are marginalised.³⁹ Increasing inequality as a result of reduced common resource allocation (and hence less risk sharing) could increase collective vulnerability. At the same time, response options could be constrained due to the strong correlation between inequality and poverty, and inequality and lack of income source diversification.

³¹ Ibid.

³² Kelly, P.M. and Adger, W.N. 2000.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Langridge, R. et al. 2006.

³⁸ Sen, A. 1981.

³⁹ Kelly, P.M. and Adger, W.N. 2000.

Another no less significant indicator of vulnerability is the institutional context, as factors that shape vulnerability such as poverty, access to the use of resources, and wealth and income distribution are all institutionally determined.⁴⁰ For this reason, it is critical that analyses of social vulnerability take into account the social construction of vulnerability and examine the political, economic and institutional structures. This could help to identify constraints on institutional adaptation and evolution and in turn the constraints that these institutions exert on individuals and communities.⁴¹ In this sense, institutions constitute the 'sets of rules, decision-making procedures, and programs that define social practices, assign roles to the participants in these practices, and guide interactions among the occupants of individual roles'.⁴² According to this approach, institutions do more than hold societies together. They also have the primary role of enabling societal adaptation to variabilities such as those brought about by climate change.⁴³

An analysis of social vulnerability to climate change within the LMB, then, should involve examining the ways in which vulnerability is socially constructed. This approach would concentrate on the architecture of entitlement where human access to the use of resources could be considered as a function of the socioeconomic and political and institutional contexts within which climate change impacts occur. Such an approach could help identify opportunities to enhance the capacity of individuals and communities within the LMB to respond effectively to climate change impacts, or pinpoint constraints that limit their ability to do so.

Enhancing Social Resilience

Resilience is a concept used in close proximity to the concept of adaptive capacity.⁴⁴ Given that resilience is a desirable characteristic of social and ecological systems that face a variety of stresses, an important element of a sustainable response to climate change is a system's capacity for resilience and its ability to absorb perturbations 'without being undermined or becoming unable to adapt and learn'.⁴⁵ For some social systems, becoming resilient is something that has to be learnt. According to Tompkins and Adger the type of adaptive management that can best increase social resilience must take into consideration ecosystem heterogeneity and the success and failure of different modes of access to resources inherent in community-based management systems.⁴⁶ This type of adaptive management process is believed to help achieve the dual goals of resource management: higher ecological stability and more flexible institutions. In other words, an effective way to cope with a changing climate would be to build resilience into human as well as ecological systems.

While it is generally believed that societies have inherent capacities to adapt to climate change, it is also known that these capacities are bound up in their ability to act collectively.⁴⁷ In this view, the networks and information flows between individuals and

⁴⁰ Ibid.

⁴¹ O'Riordan, T. and Jordan, A. 1999.

⁴² Young, O.R. 2002.

⁴³ O'Riordan, T. and Jordan, A. 1999.

⁴⁴ Smit, B. and Wandel, J. 2006. According to Smit and Wandel adaptive capacity is similar to or closely related to a host of other commonly used concepts, including adaptability, coping ability, management capacity, stability, robustness, flexibility and resilience.

⁴⁵ Tompkins, E.L. and Adger, W.N., 2004.

⁴⁶ Ibid.

⁴⁷ Kelly, P.M. and Adger, W.N. 2000.

groups that enable collective action are a significant component of social capital, which can facilitate security and resilience. This is particularly the case in the context of resource-dependent livelihoods where the significance of social capital interactions with natural capital is most prevalent.⁴⁸ Examining how social resilience is developed is thus critical in determining the mechanisms through which communities may build their capacity to cope with and adapt to stress.⁴⁹ Several studies have identified elements believed to increase social resilience. These include 'flexibility and diversity in management regimes, the existence of ecological knowledge and of polycentric, multi-layered, and accountable institutions with a capacity for learning, and the existence of coalitions, networks, and leadership'.⁵⁰ Several studies have, on the other hand, pointed out that building social resilience must be done within the context of sustainable development⁵¹ since the main sectors affected by climate change generally include 'water supply, food security, human health, natural resources and protection against natural hazards'.⁵² It being a fact that climate change impacts within these sectors involve cross-cutting issues, decisions on measures to increase multi-sector resilience and coping capacity would need to take the approach much like that identified within the sustainable development context. This implies an approach which addresses development in relation to equity issues. Such a notion is also relevant to the LMB where there appears to be tremendous development pressures as well as anticipated risks from climate change impacts.

Studies also contend that entitlement is a crucial element in enhancing social resilience⁵³ as people with a stake in their community are more likely to be resilient. This fits with Sen's research conclusion that with sufficient entitlements to enable households to cope with the stress of inadequate food stocks, their vulnerability could be reduced.⁵⁴ Communities' entitlements are, in turn, amplified by their ability to gain, control and maintain access to critical resources, such as water and its related ecosystem services as in the case of the LMB. Through this ability to gain, control and maintain access to critical resources, a buffer for times of scarcity is generated and the communities' ability to manage stress is heightened.⁵⁵ Some have pointed out that a community's ability to access resources is configured by the powers embodied in and exercised through certain social, economic and political mechanisms.⁵⁶ Such mechanisms, in turn, reflect the underlying distribution of power within those institutions, which through their management of resources determine the fairness of the rules by which decisions are made.⁵⁷ These institutions are thus often those that create vulnerabilities. Therefore, to understand how social resilience is generated, one would be required to answer the question of 'who achieves access, why, and with what impacts'.⁵⁸

⁴⁸ Adger, W.N. 2003.

⁴⁹ Langridge, R. et al. 2006.

⁵⁰ Ibid.

⁵¹ Examples of literature on climate change which point out the linkages between adaptation and development issues include those by R.J.T. Klein, E.L.F. Schipper and S. Dessai (2005), K. Urwin and A. Jordan (2008), I. Burton, E. Malone and S. Huq (2004), UNFCCC (2007).

⁵² Klein, R.J.T. et al. 2005.

⁵³ Bohle, H.G. 2001.

⁵⁴ Sen, A. 1981

⁵⁵ Langridge, R. et al. 2006.

⁵⁶ Ibid.

⁵⁷ Adger, W.N. et al. 2005.

⁵⁸ Langridge, R. et al. 2006.

The Lower Mekong Basin (LMB) in the Face of Climate Change

According to recent reports on the MRB's climate change scenarios, and analyses of their hydrological impacts,⁵⁹ the MRB is expected to become slightly warmer, over more extended durations of each year, and covering wider areas than at present. Trends of rainfall intensity are also seen to be on the increase for the latter half of the century. It is also expected that hydrological impact from climate change will be felt largely through changes in the flow of the Mekong River.

Currently, the ecosystem-based services provided through the Mekong River sustain the approximately 65.7 million people within the LMB.⁶⁰ (The LMB has 84 per cent of the total overall MRB population.⁶¹) This implies that other than issues of water availability per se, concerns regarding enhancement of social resilience within the LMB are in fact matters of the relationship between water and other resources. For example, studies of climate change impacts within the LMB have pointed out that other than the changing climate, large-scale hydropower dams are also a change factor impacting the Mekong River both in terms of quantity as well as quality of the flow.⁶² Keskinen et al. indicate that these major changes could multiply the effect of other factors to an extent beyond the coping capacity of the LMB's social and environmental systems. This could result in 'unexpected and substantial changes such as the collapse of fish stocks'⁶³ which would drastically impact the livelihoods of communities, particularly those heavily reliant on the high aquatic productivity of a floodplain system like the Tonle Sap.

Resilience of the LMB Water Regime

In attempts to cope with the consequences of climatic variations such as crop damages, collective action on a regional scale emerged in the LMB in the form of river basin planning among riparian countries. This started with the formation of the Mekong Committee in 1957. The Committee evolved into the Interim Mekong Committee (IMC) and then in 1995 into the Mekong River Commission (MRC). It has been argued that this evolution reflects the MRC's capacity to adjust and respond to changes, thus indicating its 'high degree of institutional resiliency'.⁶⁴ In fact, reviews of the Committee's history of activities since its inception, in areas such as basin-wide hydro-climatic data collection and dissemination, hydro-graphic survey, sponsorship of tributary dams and reservoirs, flood forecasting and warning systems, have been used to further demonstrate how these long-standing programmes directly link the Committee's work to issues of regional climatic variability and climate change. Based on this track record of institutional resilience and climate-related programmes, some believe that the MRC has been forced by its operating environment to be creative and adaptive and that it should therefore be able to continue to play an important role in assisting LMB inhabitants in their adaptation to climate change.⁶⁵

⁵⁹ Keskinen, M. et al. 2009.

⁶⁰ Sukhsri, C. 2009.

⁶¹ Ibid.

⁶² Keskinen, M. et al. 2009.

⁶³ Ibid.

⁶⁴ Jacobs, J.W. 1996.

⁶⁵ Ibid. Jacobs sees the MRC's future roles of addressing climate-related problems to be in the area of data gathering and dissemination (including monitoring changes in climatic and hydrologic data), flood forecasting and warning, low flow forecasts, smaller-scale structural measures (e.g., salinity intrusion control and pump irrigation) and liaising between basin water managers and users and climate change researchers.

However, from a critical hydropolitics perspective, governance of the Mekong River has been criticised as historically 'dominated by an institutional regime that stressed the rapid collection of hydrologic data to convert the Mekong into a working river'⁶⁶, an approach informed by the dominance of law, engineering and economics. Along the same lines, observations indicate that community-based systems for water have arisen where there has been a failure of the state-based arrangements within the MRB.⁶⁷ While it is clear that access to resources affects baseline vulnerability and coping capacity under impacts of extreme events, the general lack of linkages between basin-wide and small local scale management⁶⁸ ultimately raises the question of whether the MRC, being a state-centric institution, will be capable of supporting and facilitating the needed coping strategies and adaptive capacity of local communities. This is especially so when the problem of climate change are spatially and socially differentiated, such that impact is experienced at a scale and level that may not correspond to that of a decision-making body like the MRC.

For transboundary river basins, such as the LMB, hydro-geographical extensions of a watershed or river basin transcend national boundaries and therefore determine what constitutes appropriate adaptation strategies for water resources management.⁶⁹ But where existing administrative boundaries remain the norm that structures the mode of governance, scale and unit of analysis becomes an issue. From this perspective, the MRC has been identified with the mainstream water resource paradigm which focuses on the capacity of states to achieve cooperation over shared river resources and on ways that such cooperation among states can be negotiated and implemented. It is argued that the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, which created the MRC, mainly express concerns with watercourses and river channels, thus ignoring the Mekong River's existence as a multi-dimensional river basin. The overarching question for institutional regimes such as the MRC would then be how sovereign states could cope with the challenges of co-ordination in their use of this common resource, when (as a result of their political nature) each state is forced to pursue its national interest and those policies that will best assure each regime's survival.⁷⁰ Institutional arrangements such as the MRC are thus seen to have oversimplified the MRB's spatial and temporal dynamics. From this critical point of view, the sociological networks which exist within the basin do not correspond to the geo-political scale at which the MRC is created and operated.⁷¹ This becomes an issue particularly when adaptation to climate change will likely require a local response by individuals and communities.

Since its initiation, the MRC has been and remains an intergovernmental body funded by contributions from its member countries and one that is highly dependent on funds from donor agencies for its existence.⁷² It has as its operational arm the MRC Secretariat headed

⁶⁶ Ibid.

⁶⁷ Lebel, L. et al., 2005.

⁶⁸ Hirsch, P. 2004.

⁶⁹ Aerts, J. and Droogers, P. (2004) addressed the need for integrated basin-wide climate change and water resources studies by using the following argument: '... first, a regional hydrological cycle is bounded by its watershed and is therefore a more appropriate geographical entity than an administrative region or country. Secondly, upstream water-related activities, processes and adaptation have clear effects for downstream water availability. Thirdly, regional water resources management becomes increasingly important in policy making as, for instance, outlined in the EU water framework directive (EU, 2000). From a water management perspective, a basin-wide approach for developing and evaluating adaptation strategies is needed.'

⁷⁰ Sneddon, C. and Fox, C. 2006.

⁷¹ Ibid.

⁷² Sunchindah, A. 2005.

by a Chief Executive Officer who is appointed by the MRC Council from one of the donor countries or agencies, not from a riparian nation. For this reason, activities of the MRC are seen to be donor-driven, reflecting the non-homegrown nature of the organisation.⁷³ The present source of the MRC's knowledge is the Decision Support Framework (DSF), which forms the foundation for the development scenario assessments of its Basin Development Plan (BDP) and its Water Utilization Programme (WUP) through which key elements of the 1995 Agreement are supposed to be implemented.⁷⁴ However, this mode of knowledge production has been highly criticised for being reduced to relatively simple hydrodynamic models which underplay the complexity in ecology and livelihood inter-linkages, and hence neglect to account for significant factors that affect the vulnerabilities of LMB populations. This in turn undermines their social resilience. Critics of this knowledge production mode also take the view that this type of modelling 'conveniently serves economical rationalities and power relations shaping the MRC's approach to water issues'.⁷⁵ And, as the focus of this approach is on water quantities and the maintenance of its minimum flows in the dry season, the MRC has established an allocation paradigm that makes the Mekong River 'legible to state-centric reasoning'.⁷⁶

A recent Mekong Programme endorsed by the MRC⁷⁷ to implement Integrated Water Resources Management (IWRM) at basin scale has been described as 'most sophisticated and ambiguous'.⁷⁸ In international discourses on the IWRM, those critical of the MRC's state-centric nature see IWRM as an 'apolitical framing of water governance', an attempt by the MRC to promote generic principles of good governance across a wide range of contexts.⁷⁹ The comprehensiveness of the MRC's IWRM programme notwithstanding, the increasingly apparent difficulty of applying the concept has led some to believe that IWRM only exemplifies a discourse the MRC has employed to justify the shift in its role toward investment promoter or facilitator.⁸⁰ In connection with this, the MRC has been observed to be moving away from the role it used to take: a science-based agency with an agenda of knowledge production that supports informed, equitable and sustainable decision-making. Instead, it is seen to be taking a turn under its new directorship towards facilitating investment in large-scale projects such as hydropower dams.⁸¹

As a consequence of taking this path, the MRC's role in defining the water regime of the LMB has been increasingly questioned, more so since the launch of the Greater Mekong Sub-Region (GMS) programme by the Asian Development Bank (ADB) in 1992. The ADB's GMS programme, intended to set a path towards economic integration, has emphasised the region's physical interconnectedness through major infrastructural projects, including those most controversial hydropower dam projects. The GMS's priority programme to integrate electricity markets through 'a regional transmission grid and the establishment of a regional

⁷³ Ibid.

⁷⁴ Kakonen, M. and Hirsch, P. 2009.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ The orientation of the Mekong Programme to implement Integrated Water Resources Management (IWRM) at basin scale was endorsed at the MRC's 11th Ministerial Council meeting of 8–9 December 2004 in Vientiane, Lao PDR.

⁷⁸ Lebel, L. et al. 2005.

⁷⁹ Hirsch, P. 2006.

⁸⁰ Hirsch, P. (2004) as well as Dore, J. and Lazarus, K. (2009) noted this to be the case under the directorship of CEO Oliver Cogels.

⁸¹ Hirsch, P. 2004.

competitive power market⁸² was supported by the ADB through its 2002 consolidated plan which recommended ‘a US\$43 billion generation and high-voltage transmission system in the Mekong region fuelled exclusively by hydropower, with 12 dams in Cambodia, China, Laos and Myanmar’.⁸³

Endorsed by the region’s governments, the GMS programme through its focus on regional economic integration has been able to attract the involvement of the two other upper riparian states, China and Myanmar (to date, they remain as non-MRC members). Unhindered by the task of managing the Mekong River, the GMS programme has, under the principal framework of channelling economic development assistance into regional projects,⁸⁴ managed to keep its focus on regional economic development. Criticisms against the negative impacts seen through the social, economic and environmental transformations associated with the region’s economic dynamism notwithstanding, the GMS programme has, through rhetoric about how water development projects will help eradicate poverty, been accommodating to the development pressures of governments and developers. The MRC, on the other hand, is tasked by public demand to engage in critical issues of managing the Mekong River and its related resources, namely, negotiating new flow regimes after the construction of dams and diversion schemes, and making informed decisions with regards to the surge of water resource development projects.⁸⁵

While it is evident that climate change impacts will bring many challenges to the LMB, the belief that the MRC will continue to play an important role in assisting inhabitants of the LMB to adapt to climate change raises a number of questions. As an institutional regime with a history of a high degree of resiliency, in what ways might the MRC have to adjust and respond to sustain its resilience, given that climate change impacts will bring about new challenges and likely exacerbate already existing ones? How does the resilience of the MRC relate to the resilience of individuals and communities within the LMB? In other words, how might the linkage between basin-wide and small local-scale response to climate change be developed so that the MRC, in the process of adjusting and responding to the new challenges of climate change, also enhance the resilience of the LMB inhabitants? Related to this, what implications do the MRC’s move towards the direction of IWRM and its climate change adaptation initiative have for the livelihoods of the LMB inhabitants in terms of their resilience and capacity to adapt to water-related changes?

The LMB Social Resilience in Relation to MRC Regime Resilience

From a hydrological regime standpoint, the floodplain ecosystem of the LMB is characterised by a flood pulse system whereby ‘the annual monsoon floods, following the Mekong mainstream water level, sustain the high productivity of the area ... [through] the interaction between the terrestrial and aquatic phases ... [as] the flood water integrates the terrestrial vegetation into the aquatic phase of the ecosystem’.⁸⁶ The MRB is thus known to be one of the most productive and intensive inland fisheries in the world.⁸⁷ But while the MRB’s wetland and natural variability would need to be maintained in order to sustain this ecological characteristic and so uphold the provision of livelihoods for its population, other competing

⁸² Middleton, C. et al. 2009.

⁸³ Ibid.

⁸⁴ Molle, F. et al. 2009.

⁸⁵ Middleton, C. et al. 2009.

⁸⁶ MRC/WUP-FIN 2007 as quoted in Keskinen, M. et al. 2009.

⁸⁷ Keskinen, M. et al. 2009.

demands on the water resources have emerged in all riparian states. Some of these demands have been from hydropower projects where benefits are concentrated in the hands of national governments and project operators at the expense of communities' livelihoods. The Theun-Hinboun Hydropower Project (THHP) is an illustration of such a case. Reported to have earned approximately US\$27 million in royalty fees and US\$9 million in taxes for the Government of Lao PDR since it was commissioned in 1998, the project is known to have severely impacted the livelihoods of the 30,000 people living downstream and upstream of the dam.⁸⁸ According to Middleton et al., manifestations of the impacts were reported to be 'reduced fishery catches by between 30 and 90 per cent along the three rivers it affected, extensive river erosion and severe downstream flooding resulting in repeated loss of livestock from drowning and disease'.⁸⁹

The direct dependence of these communities on water-related resources is apparently an influence on their social resilience and their ability to cope with sudden disturbances.⁹⁰ The widespread impact of water resource development projects such as the THHP project outlined earlier can severely undermine communities' social resilience. As social, economic and political trends privilege national governments and developers while marginalising communities, they have shaped 'levels of poverty and inequality and, hence, vulnerability by differentially distributing entitlements within the population'.⁹¹ When further faced with future climate change impact, communities like these struggling to sustain their subsistence-based rural livelihoods could risk being stressed beyond their experienced coping range if their entitlement to access the once productive resources is not reinstated.

Policy choices justified by existing state-centric reasoning such as these have often failed to focus on the crucial elements of human security. These elements include a reasoned focus on the downside risks to human lives, particularly the risks for those who are highly dependent on the integrity of the basin's ecosystem and hence least capable of absorbing perturbations such as those associated with the impacts of climate change without being undermined or becoming unable to adapt and learn. It is in the context of this policy incoherence that the current mode of knowledge production dominated by state scientific arguments is being increasingly contested by evolving domains of knowledge.⁹² These evolving domains of knowledge are generated and advocated through 'knowledge networks involving various regional universities, policy research institutes and civil society organisations, such as the coalition implementing the Mekong Programme on Water,

⁸⁸ Middleton, C. et al. 2009.

⁸⁹ Ibid.

⁹⁰ Adger, W.N. 2000.

⁹¹ McLaughlin, P. and Dietz, T. 2008.

⁹² According to Kakonen, M. and Hirsch, P. (2009) evolving domains of knowledge comprise the discourse generated through critical questioning of the existing knowledge 'produced by experts in the form of models, impact assessments and scenarios dealing with risk' which are being used to legitimise policy and development plans within the MRB. These evolving domains are generated to support contestations against national development aspirations which manifest in such forms as large-scale dams and hydraulic controlling structures. Results from alternative research such as the Thai Baan Research approach is an example of such evolving domains of knowledge. Established in 2000 by academics from Chiang Mai University, the Southeast Asia Rivers Network and villagers affected by the Pak Mun Dam, the Thai Baan Research approach has enabled villagers to 'collect data on issues such as local knowledge of fish, traditional fishing gear, natural plants and herbs, ecosystems and activities'. Since this form of knowledge production takes into account 'the complexities of the relations between water, ecology and livelihoods', it provides 'a basis for more informed, balanced negotiations between local stakeholders and government'.

Environment and Resilience (M-POWER).⁹³ Such contestations indicate that knowledge production dominated by state scientific arguments has been non-inclusive of knowledge which inhabitants themselves have acquired from managing their own livelihood interests.⁹⁴

Calls from critical approaches, which recognise the bias inherent in the present mode of knowledge production, to correct such policy incoherence have pointed to alternative development visions of the basin. No less significant, from this perspective, is the need to recognise the relevance of issues of scale. At this stage, the MRC's work that has been most progressive on participatory and inclusive knowledge production is the MRC Fisheries Programme (MRCFP), where there is potential for the complexities of the water, ecology and livelihood relations to be addressed.⁹⁵ Nonetheless, it has been noted that '...appreciation of local knowledge still remains somewhat superficial...'⁹⁶ The Basin Development Plan (BDP), which divides the basin into 10 key sub-areas in an effort towards area-based management, also reflects, to a certain extent, recognition of the issue of scale.⁹⁷ But to date, there has yet to emerge any report of real progress in furthering such a concept of area-based management. Taking into account the standpoint of local inhabitants, critics of the MRC's role as the LMB's water regime and regulator of public good have taken the view that achieving public goods is often a political problem, and one which requires a broader political-economic approach that could take into account incompatibilities between policies at the national level and those at the regional and global levels in cases where issues are complex and politicised.⁹⁸ For regimes to be effective and thus achieve public goods through appropriate policies, the incompatibilities between scales would need to be addressed when designing policy alternatives – hence the necessity for a more pluralistic approach⁹⁹ than that of the MRC.

Geo-politically the scale at which the MRC currently operates does not correspond to the determinants of adaptive capacity which exist and function differently under the different context of each community within the LMB. These are cases where increased adaptive capacity could be achieved by communities through such determinants as the presence of a strong kinship network that could provide greater access to economic resources, supply of supplementary labour, increased managerial ability and buffers for psychological stress.¹⁰⁰ For subsistence-based societies, which most LMB communities are, the presence of a strong kinship network plays an important role in influencing adaptability. So, while the general social, economic, political and ecological conditions do affect adaptive capacity, they will be diverse when exhibited at the community scale. Seen in this light, adaptive capacity is context-specific and could vary from community to community¹⁰¹, depending on its architecture of entitlement.

Criticisms of the MRC's incompatibility with the community's adaptive needs notwithstanding, the transboundary nature of the LMB inevitably makes pertinent its management by a body at the scale of the MRC. Only at such a regional scale could certain issues beyond the purview of communities be handled. These issues may involve 'novel and

⁹³ Dore, J. and Lazarus, K. 2009.

⁹⁴ Keskinen, M. et al. 2009.

⁹⁵ Ibid.

⁹⁶ Kakonen, M. and Hirsch, P. 2009.

⁹⁷ Sukhsri, C. 2009.

⁹⁸ Ibid.

⁹⁹ Ibid.

¹⁰⁰ Smit, B. and Wandel, J. 2006.

¹⁰¹ Ibid.

largely unknown risks' associated with climate change such as the 'expansion of the ranges of pathogens, diseases, and pests that affect human and nonhuman populations'.¹⁰² In such cases, where pursuance of individual or community self-interest is inadequate to achieve the necessary level of social resilience, the ability to mobilise individuals and communities to act collectively becomes the task of national governments and regional bodies. From this perspective, the MRC being an inter-governmental body has its merits. This is because if, according to Tompkins and Adger, 'societies adapt to climate change through collective action, mediating and trading off the elements of effectiveness and legitimacy through negotiated outcomes'¹⁰³, then the resilience of LMB communities and that of the MRC are interdependent. For the MRC in its role as regulator of the public good of the LMB to maintain the resilience it has been known for in the past, it must continue to build management systems that are sufficiently flexible to account for knowledge from alternative sources at the community scale. This may require modifications to its present management systems toward more inclusiveness. On the other hand, for the resilience of LMB communities to be realised, the MRC must generate cross-scale linkages to allow for the shifts in rights and responsibilities that would encourage local resource users to collectively share their access to resources.

Social Resilience through Community Rights and Access

Studies have indicated that by building networks to cope with extreme events and by retaining the resilience of underpinning resources and ecological systems, community-based natural resource management can enhance adaptive capacity.¹⁰⁴ When adaptation, in terms of access to resources and the ability of people to cope, is considered as a response to stress, studies such as those in the field of entitlements and food security have shown that social, political and economic processes at higher scales do shape and constrain individual and household adaptive capacity.¹⁰⁵

For those in the developing world, such as those living in the LMB, a high natural resource dependency, limited ability to adapt financially and institutionally, and a lack of safety nets are among the main factors cited as contributing to such high levels of vulnerability and low adaptive capacity.¹⁰⁶ Furthermore, while reliance on natural resources hinders adaptation, it is compounded by inequitable access to that natural resource base¹⁰⁷, a phenomenon common to many natural-resource-dependent societies. So, it is crucial to note that though the need to adapt to a changing climate has come to be more widely acknowledged and adaptation has come to be placed as a significant issue on the climate change agenda, adaptive action cannot be taken under the terms of climate change alone. Issues of equity and justice, and rights and power, are in fact inherent in the institutional structure under which communities and societies experience changing conditions and by which the process of decision-making affects livelihoods, practices and ability to adapt. In most cases, such institutional structures were in place long before climate change became an issue. Whether from a collective-action approach or a social-practice approach¹⁰⁸, individuals and

¹⁰² Tompkins, E.L. and Adger, W.N. 2004.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ Smit, B. and Wandel, J. 2006.

¹⁰⁶ Thomas, D.S.G. and Twyman, C. 2005.

¹⁰⁷ IPCC. 2001.

¹⁰⁸ Young, O.R. (2002) describes collective-action models as models which '...[encompass] constructs that draw on the intellectual capital of economics and public choice and treat actors as decision makers basing their choices on utilitarian calculations'. Social-practice models are described as models which '...[include]

communities alike rely in large part on resource access institutions to legitimise their entitlement to their natural resource use and their management of the environment in response to climate variabilities. Here, resource access institutions would involve the set of rules (either articulated in constitutive documents or implicitly accepted in social practices)¹⁰⁹ which determines the conditions and enables individuals and communities to derive benefits from the resources in question.¹¹⁰

Ribot and Peluso define access as 'the ability to derive benefit from things' and point out that, broadened from the definition of property which they define as 'the right to benefit from things', access refers more to a bundle of powers than a bundle of rights.¹¹¹ By this definition, access relates to the notion of social relationships by which people could be constrained or enabled in terms of benefiting from resources.¹¹² On the other hand, environmental circumstances can also affect access because social systems are embedded in their physical environment such as 'geographical location, climate of a region and the ecological integrity of the resource base'.¹¹³ When natural resource systems are faced with added stresses because of climate change, this inevitably poses challenges for socio-ecological systems. In such cases, community engagement has been known to provide a means for reducing social vulnerability to the natural hazards caused by climate change.¹¹⁴

Community can be understood as a 'definable aggregation of households, interconnected in some way, and with a limited spatial extent'.¹¹⁵ Community access, then, would mean the ability of the community to benefit from a particular resource, and from processes and relationships of access beyond those derived from property rights. Studies by Kelly and Adger¹¹⁶ have shown that levels of vulnerability within the LMB are reduced through increase in access to resources. Also pointing out that creating social resilience is associated with a community's ability to access critical resources, Langridge et al. suggest that a community's resilience to water scarcity (for example) could be enhanced through the strengthening and diversification of structural and relational mechanisms for accessing water.¹¹⁷

From a security perspective, the water-related natural resource base and the environment are the fundamental bases for other security components. In their function as the support for all life forms, they also constitute the foundation for sustainable development.¹¹⁸ Important development and human security issues are threatened by anticipated climate change impacts. Food security, human health, water supply as well as other natural resources and environmental protection are but a few examples of development issues subject to impacts of climate variability. As such, adaptation of natural-resource-dependent communities must be considered within the broader context of sustainable development¹¹⁹ and the existing

constructs that stem from anthropology and sociology and emphasize the roles of culture, norms, and habits as sources of behavior'.

¹⁰⁹ Young, O.R. 2002.

¹¹⁰ Sterner, T. 2003.

¹¹¹ Ribot, J.C. and Peluso, N.L. 2003.

¹¹² Ibid.

¹¹³ Ibid.

¹¹⁴ Tompkins, E.L. and Adger, W.N. 2004.

¹¹⁵ Smit, B. and Wandel, J. 2006.

¹¹⁶ Kelly, P.M. and Adger, W.N. 2000.

¹¹⁷ Langridge, R. et al. 2006.

¹¹⁸ Siwaraksa, P. and Sukkumnoed, D. 2002.

¹¹⁹ Klein, R.J.T. et al. 2005.

institutional structures, which involve issues about who decides, who responds, and the framework for taking and facilitating actions.

In a practical sense, adaptation in the area of climate change needs to be considered in terms of 'local or community-based adjustments to deal with changing conditions within the constraints of the broader economic-social-political arrangements'.¹²⁰ Thus adaptation could engender attempts to change those broader economic-social-political structures especially when they constitute binding constraints.¹²¹ In this context, the effects of national decisions and policies on local opportunities and abilities to adapt are pertinent for the effective design of adaptation strategies in the process of formulating national responses. Reaffirming that communities' access to productive resources is a right constitutes one such response needed for an effective design of adaptation strategies .

For cases like the LMB where the issue of access and control features prominently in matters of livelihood security, rights analysis could provide insights with regards to the distribution of power. A rights approach, according to Conway et al., is a way through which the operation of institutions and political processes that influence people's livelihoods can be examined.¹²² Rights analysis identifies those who lack effective rights and those who deny rights to others; it therefore helps to identify the root causes by which poverty and vulnerability are generated and perpetuated.¹²³ As a complement to this, sustainable livelihood analysis (SLA) can identify constraints on people's livelihoods and determine 'which kinds of rights are most important for a particular group at a particular time, or the sequence in which rights should be approached for a given group'.¹²⁴ The principle of equity in outcome is a salient point of this approach. The degree of equity in adaptation outcomes can be determined by identifying those who gain and those who lose from particular impacts or adaptation policy decisions. Critical assessments of the MRC's present-day state-centric water management approach generally demonstrate that many decisions actually reinforce existing inequalities and in fact do little to alleviate the underlying vulnerabilities of the LMB's communities.¹²⁵

Such an observation underpins the argument of those contesting the MRC's present mode of knowledge production and reaffirms Ribot and Peluso's point that access to knowledge is a crucial determinant of who can benefit from resources.¹²⁶ Accordingly, the MRC's present mode of knowledge production is being contested on the grounds that the current discourse generated by proponents of the MRC and the MRC's ability to shape discursive terms deeply influence the LMB's entire framework of resource access.¹²⁷ The rationale of evolving domains of knowledge within the LMB thus coincides with Ribot and Peluso's view that '(S)cientists' forms of knowledge production and practices (also) have greater legitimacy in policy circles than do those of "local resource users" and thus influence their relative abilities to maintain access and control the access of others.¹²⁸

¹²⁰ Thomas, D.S.G. and Twyman, C. 2005

¹²¹ Smit, B. and Wandel, J. 2006.

¹²² Conway, T. et al. 2002.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Molle, F. et al. 2009.

¹²⁶ Ribot, J. and Peluso, N.L. 2003.

¹²⁷ Ibid.

¹²⁸ Ibid.

By means of secured community rights to resource access, natural-resource-dependent societies like the communities of the LMB could build resilience into their human and ecological system in order to strengthen their adaptive capacity. In this sense, social resilience is institutionally determined because community rights are associated with approaches to governance in which equity and legitimacy are key determinants of adaptation effectiveness. But whereas the ability of communities to access their natural resource base plays an important part in reducing their vulnerability and in increasing their coping capacity, the experience of some communities has shown that policy change can re-route the benefits of community-based management away from communities.¹²⁹ Such phenomena indicate that maintaining access over the long term can be difficult to achieve. This reinforces the argument that, for sustained benefits to accrue to communities, their ability to access their natural resource base cannot be left to come only from policy interpretation but rather must be anchored in rights.

Conclusion

In the context of adaptation to climate change impact, the coping capacity of individuals and households is, to a certain degree, dependent on the enabling environment of the community, while the community's capacity to adapt is, in turn, related to the resources and processes of the region.¹³⁰ The fact that vulnerability and the process of adaptation are intrinsically linked means that adaptation can be facilitated by reducing vulnerability. The vulnerability of communities to conditions related to climate change can be examined by considering the magnitude of the disturbance they can absorb and the speed of their recovery when faced with stress. So, in terms of degree, a community's vulnerability is related to the nature of stress as well as the resilience of the system. But whereas stress is external to the system, in the form of perturbations, resilience is internal as it is the capacity of the system to cope with and adapt to stress.¹³¹

Comprised of communities highly dependent on water-related resources to sustain their livelihoods, the LMB is illustrative of an area subject to climate variabilities and anticipated climate change impact. Given that already existing problems will likely be exacerbated by these climate issues, the MRC's present-day method of knowledge production in support of its water management decisions has been increasingly contested, with issues of scale widely addressed. While the ongoing debate within the MRC recognises the need for community-based adjustments to deal with changing climate conditions, the constraints of the broader economic-social-political arrangements are still very much a reality. Local inhabitant initiatives to enhance livelihoods and hence likely future adaptive capacity have been seen to be constrained or even nullified by broader social, economic and political forces, many of which are beyond the MRC's reach¹³², but which effectively shape the LMB inhabitant's vulnerabilities.

¹²⁹ Conway, T. et al. 2002.

¹³⁰ Smit, B. and Wandel, J. 2006.

¹³¹ Langridge, R. et al. 2006.

¹³² Broader social, economic and political forces have determined China's development decisions related to the upper Mekong River which lie within its territory. These development decisions are questioned by the LMB riparian states for the negative effects they have and will likely have on local livelihoods. However, China is not a member of the MRC and is therefore not under any obligation to discuss these matters with the MRC. Furthermore, such broader social, economic and political forces also underpin LMB riparian states' decisions in their development projects along the tributaries of the Mekong River within their territory. However, because these development projects are not on the mainstream Mekong River, LMB riparian states, while having agreed

In the context of an approach that concentrates attention on the socioeconomic and political context within which the climate change impact process will likely occur, this paper has argued that studies of social resilience and adaptation cannot be isolated from the broader but also immediate and lasting issue of sustainable development. For the LMB, the adaptation issue has become a question of development and the role of local inhabitant initiatives relative to MRC's water management approach amidst the broader social, economic and political forces looking to exploit the Mekong River.

Analysis of the architecture of entitlements, that is, access to resources, has led studies to highlight measures that are argued to assist those most vulnerable to improve their situation: poverty reduction, risk-spreading through income diversification, the preservation of common property management rights, the promotion of collective security, and the addressing of the fundamental causes of the mal-distribution of resources.¹³³ While these measures have become more widely studied, contestations of the MRC's mode of knowledge production have brought to the fore issues that are fundamental to the mal-distribution of resources. The challenge of addressing those fundamental causes thus seems to have become the highlight of ongoing debates surrounding the MRC's role within the LMB. Issues of scale have also been increasingly brought up, particularly the incompatibilities between the MRC's water management approach and what LMB communities actually need in order to sustain the livelihoods of their inhabitants.

Communities' exposure and sensitivity to a changing climate and hence their adaptive response are known to occur at the local or community levels. But while broader forces do shape and influence communities' vulnerabilities, experience from implementation has shown that successful adaptation can be achieved when existing decision structures relating to sustainable development tasks such as 'risk management, land use planning, livelihood enhancements, water and other resource management systems, [and] development initiatives',¹³⁴ make provision for measures that address climate change risks of communities. The fact that the resilience of a community is defined by its ability to self-organise through its interaction both cross-scale and within-scale¹³⁵ suggests that ensuring a community's access to resources, while involving processes at the level of the household and community, must also mitigate the interests and power of those who define the problems at the larger scales. The evolving domains of knowledge within the LMB are a promising example of mitigation against the current regime, one that has produced categories of knowledge to shape resource access within the LMB for the past several decades. Kates argues that 'if the global poor are to adapt to global change, it will be critical to focus on poor people, and not on poor countries as does the prevailing North-South dialog'. He goes on to observe that the 'interests of the poor are not always the same as the interests of poor countries, since in the interest of "development", the poor may grow poorer'.¹³⁶ As argued in this paper, a community-rights-based approach that focuses on securing and sustaining community access to resources offers a viable alternative for the enhancement of communities' resilience and as a result prevents the poor from growing poorer.

to 'inform' the MRC of their decisions before proceeding with any development decisions, are not obliged to do so.

¹³³ Kelly, P.M. and Adger, W.N. 2000.

¹³⁴ Smit, B. and Wandel. J. 206.

¹³⁵ Adger, W.N. et al. 2005.

¹³⁶ Kate, R.W. 2000.

References

Adger, W.N. 1999. 'Social Vulnerability to Climate Change and Extremes in Coastal Vietnam'. *World Development*, 27(2): 249–269.

Adger, W.N. 2000. 'Social and Ecological Resilience: Are They Related?' *Progress in Human Geography*, 24(3): 347–364.

Adger, W.N. 2003. 'Social Capital, Collective Action, and Adaptation to Climate Change'. *Economic Geography*, 79(4): 387–404.

Adger, W.N., Arnell, N.W. and Tompkins, E.L. 2005. 'Successful Adaptation to Climate Change across Scales'. *Global Environmental Change*, 15(1): 77–86.

Aerts, J. and Droogers, P. 2004. 'Adaptation for Regional Water Management' in Aerts, J. and Droogers, P. (eds) *Climate Change in Contrasting River Basins: Adaptation Strategies for Water, Food and Environment*. Oxfordshire: CABI Publishing.

Berry, S. 1989. 'Social Institutions and Access to Resources'. *Africa: Journal of the International African Institute*, Access, Control and Use of Resources in African Agriculture, 59(1): 41–55.

Bohle, H.G., Downing, T.E. and Watts, M.J. 1994. 'Climate Change and Social Vulnerability: Toward a Sociology and Geography of Food Security'. *Global Environmental Change*, 4(1): 37–48.

Bohle, H.G. 2001. 'Vulnerability and Criticality'. *Newsletter of the International Human Dimensions Programme on Global Environmental Change*, 1(2).
http://www.ihdp.unibonn.de/html/publications/update/update01_02/IHDPUpdate01_02_bohle.html

Brooks, N. 2003. 'Vulnerability, Risk, and Adaptation: A Conceptual Framework'. Tyndall Centre Working Paper No.38. Tyndall Centre for Climate Change Research and Centre for Social and Economic Research on the Global Environment (CSERGE).

Brown, K. 2003. 'Integrating Conservation and Development: A Case of Institutional Misfit'. *Frontiers in Ecology and the Environment*, 1(9): 479–487.

Cogels, O. 2005. 'Applying WMR at Basin Scale' in *Mekong River Commission*.
http://www.mrcmekong.org/mekong_program_ceo.htm

Conway, T. et al. 2002. 'Rights and Livelihoods Approaches: Exploring Policy Dimensions'. *Natural Resource Perspectives*, No. 78, May.

Dore, J. and Lazarus, K. 2009. 'De-marginalizing the Mekong River Commission' in Molle, F. et al. (eds) *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*. London: Earthscan.

Eldis. n.d. *Livelihoods Connect*. Accessed 9 October 2009.
<http://www.eldis.org/go/topics/dossiers/livelihoods-connect/what-are-livelihoods-approaches/policies-institutions-and-processes>

Hirsch, P. 2004. 'Catchment Management Frameworks and Issues of Scale'. *Southeast Asia Geography Conference: Water Governance in Context*. http://www.mekong.es.usyd.edu.au/projects/wg_working_paper_2.pdf

Hirsch, P. 2006. 'Water Governance Reform and Catchment Management in the Mekong Region'. *The Journal of Environment and Development*, 15(2): 184–201

Intergovernmental Panel on Climate Change (IPCC). 2001. *Climate Change 2001*. Cambridge: Cambridge University Press.

Intergovernmental Panel on Climate Change (IPCC), 2008. *Climate Change and Water*. IPCC Technical Paper VI. Geneva: IPCC Secretariat.

Jacobs, J.W. 1996. 'Adjusting to Climate Change in the Lower Mekong'. *Global Environmental Change*, 6(1): 7–22.

Kakonen, M. and Hirsch, P. 2009. 'The Anti-Politics of Mekong Knowledge Production'. in Molle, F. et al. (eds) *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*. London: Earthscan.

Kates, R.W. 2000. 'Cautionary Tales: Adaptation and the Global Poor'. *Climatic Change*, 45(1): 5–17.

Kelly, P.M. and Adger, W.N. 2000. 'Theory and Practice in Assessing Vulnerability to Climate Change and Facilitating Adaptation'. *Climatic Change*, 47(4): 325–352.

Keskinen, M. et al. 2009. *Water and Climate Change in the Lower Mekong Basin: Diagnosis and Recommendations for Adaptation*. Finland: Helsinki University of Technology (TKK) and Southeast Asia START Regional Center (SEA START RC).

Keskinen, M. n.d. *Water Management and Impact Assessment in the Mekong Basin: Analyzing the Linkages Between Local, National and Regional Levels*. <http://www.newater.info/caiwa/data/papers%20session/D4/CAIWA-fullpaper-keskinen.pdf>

Klein R.J.T., Schipper, E.L.F. and Dessai, S. 2005. 'Integrating Mitigation and Adaptation into Climate and Development Policy: Three Research Questions'. *Environmental Science & Policy*, 8(6): 579–588

Kraft, H.J.S. 2005. *Human Rights in Southeast Asia: The Search for Regional Norms*. Working Paper. Washington: East-West Center.

Langridge, R., Christian-Smith, J., and Lohse, K.A. 2006. 'Access and Resilience: Analyzing the Construction of Social Resilience to the Threat of Water Scarcity'. *Ecology and Society*, 11(2): 18. <http://www.ecologyandsociety.org/vol11/iss2/art18/>

Lebel, L. et al. 2005. 'The Politics of Scale, Position, and Place in the Governance of Water Resources in the Mekong Region'. *Ecology and Society*, 10(2): 18. <http://www.ecologyandsociety.org/articles/1543.html>

Mathur, V., Sitirith, M., and Ojendal, J. n.d. 'Assessing Environmental Governance in the Lower Mekong Basin: A Study of the Hydropower Site Selection Process in the Se San and Sre Pok Basins'. http://pdf.wri.org/mekong_governance_mreg_mathursitirithojendal.pdf

McLaughlin, P. and Dietz, T. 2008. 'Structure, Agency and Environment: Toward an Integrated Perspective on Vulnerability'. *Global Environmental Change*, 18(1): 99–111.

Middleton, C., Garcia, J. and Foran, T. 2009. 'Old and New Hydropower Players in the Mekong Region: Agendas and Strategies' in Molle, F. et al. (eds) 2009. *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*. London: Earthscan.

Molle, F., Foran, T. and Kakonen, M. (eds) 2009. *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*. London: Earthscan.

Ribot, J.C. and Peluso, N.L. 2003. 'A Theory of Access'. *Rural Sociology*, 68(2): 153–181.

O'Riordan, T. and Jordan, A. 1999. 'Institutions, Climate Change and Cultural Theory: Towards a Common Analytical Framework'. *Global Environmental Change*, 9(2): 81–93.

Sen, A. 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press/Oxford University Press.

Siwaraksa, P. and Sukkumnoed, D. 2002. 'Human Security through a Thai Kaleidoscope: Ideas, Situations, and Actions'. Presented at the *International Public Symposium 'Challenges to Human Security in a Borderless World'*, organised by Commission on Human Security and Chulalongkorn University, 11 December 2002. Bangkok: The Health Systems Research Institute.

Smit, B. and Wandel, J. 2006. 'Adaptation, Adaptive Capacity and Vulnerability'. *Global Environmental Change*, 16(3): 282–292.

Sneddon, C. and Binh, N.T. 2001. 'Politics, Ecology and Water: The Mekong Delta and Development of the Lower Mekong Basin'. In Adger, W.N., Kelly, P.M., and Ninh, N.H. (eds) *Living with Environmental Change: Social Vulnerability, Adaptation and Resilience in Vietnam*. London: Routledge.

Sneddon, C. and Fox, C. 2006. 'Rethinking Transboundary Waters: A Critical Hydropolitics of the Mekong Basin'. *Political Geography*, 25(2): 181–202.

Sterner, T. 2003. *Policy Instruments for Environmental and Natural Resource Management*. Washington DC: RFF Press.

Sukhsri, C. 2009. *Reference Data and Information on Water and Its Related Resources of the Mekong Basin*. Department of Engineering, Chulalongkorn University.

Sunchindah, A. 2005. 'Water Diplomacy in the Lancang-Mekong River Basin: Prospects and Challenges'. Presented at *Workshop on the Growing Integration of Greater Mekong Sub-regional ASEAN States in Asian Region*. 20–21 September. Yangon Myanmar.

Thomas, D.S.G. and Twyman, C. 2005. 'Equity and Justice in Climate Change Adaptation amongst Natural-resource-dependent Societies'. *Global Environmental Change*, 15(2): 115–124.

Tompkins, E.L. and Adger, W.N. 2004. 'Does Adaptive Management of Natural Resources Enhance Resilience to Climate Change?' *Ecology and Society*, 9(2): 10.

United Nations Development Program (UNDP). 2004. *Adaptation Policy Frameworks for Climate Change: Developing Strategies, Policies and Measures*. New York: UNDP.

United Nations Framework Convention on Climate Change (UNFCCC). 2007. *Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries*. Bonn: Climate Change Secretariat (UNFCCC).

Urwin, K. and Jordan, A. 2008. 'Does Public Policy Support or Undermine Climate Change Adaptation? Exploring Policy Interplay across Different Scales of Governance', *Global Environmental Change*, 18(1): 180–191.

Young, O.R. 2002. *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale*. London: MIT Press.