



Reimagining Resilience

Bringing resilience, transformation and vulnerability
closer for tackling climate change

Asian Cities Climate Change Resilience Network (ACCCRN)

Monitoring the Field: February 2013

Reissued 2016



VERULAM ASSOCIATES LTD

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Acronyms

3PT	Protection, prevention, promotion, transformation
ABM	Agent-based modeling
ACCRN	Asian Cities Climate Change Resilience Network
CAC	City Advisory Committee
CCR	Climate change resilience
DRR	Disaster risk reduction
IDS	Institute of Development Studies
IPCC	Intergovernmental Panel on Climate Change
M&E	Monitoring and evaluation
MTE	Mid-term evaluation
ODI	Overseas Development Institute
SES	Socio-ecological system
SLD	Shared Learning Dialogues
STS	Socio-technical system
TA	Technical assistance
UCCR	Urban climate change resilience

Preface

This paper was originally written in 2012-2013 as part of The Rockefeller Foundation's monitoring and evaluation (M&E) of its Asian Cities Climate Change Resilience Network (ACCCRN) Initiative.

The ACCCRN M&E work was undertaken by Verulam Associates Ltd and ITAD between the years of 2010–2015. Monitoring reports were produced from 2010–2013, the Mid-term Evaluation was undertaken in mid-2011, and the Final Evaluation in 2014–2015. The evaluation reports are available on both the ACCCRN and the Foundation websites.

In 2012, Verulam undertook work to better understand and monitor shifts in conceptual thinking about resilience, emerging policy and changes in practice in relation to urban climate change resilience. Though the data for this report was collected in 2012–2013, the report has been reissued because of its ongoing relevance to the fields of resilience and resilience measurement.

Acknowledgements

Verulam invited Aditya Bahadur to join the monitoring team specifically to produce this study as part of “monitoring the field”. Aditya is currently a PhD researcher at the Institute of Development Studies, Sussex University, UK. His research focuses on the interplay between climate change resilience approaches and their policy process contexts. In addition, Aditya has conducted research directly related to ACCCRN and the field of UCCR. He is therefore ideally positioned to reflect on the development of resilience as an academic concept and to critically analyze opportunities and gaps in the resilience concept in the context of climate change. Aditya’s current research uses ACCCRN as a case study, but this current study has been kept separate from his academic research.

This paper would not have been possible without advice and guidance from Ben Ramalingam (ODI, London), Dr. Thomas Tanner, and Terry Cannon (IDS, Sussex), Maggie Ibrahim (World Vision), Paul Thornton, and Dr. Hilary Thornton (Verulam Associates). Within the Verulam M&E team, peer review was provided by Julian Barr, Chris Albertyn, and Paul Thornton.

Executive summary

Resilience is fast gaining traction as an important concept in the fight against climate change. A small but significant number of organizations are attempting to integrate the tenets of “resilience thinking” into their work around climate change. With this increased interest in examining the possibilities that resilience offers, there is also a burgeoning understanding of the problems the concept itself presents.

At a conceptual level, resilience lacks a normative element. First, there is ambiguity regarding directions or goals of resilience activities. Due to ongoing disagreements as to the characteristics that define resilience and the ways of measurement, determining the problems or risks against which resilience needs to be deployed is a matter of subjective appraisal. Second, theorists have cautioned against defining the “positive outcomes” of resilience-building approaches without recognizing that the process involves a number of trade-offs within scales of governance, within time scales, and within different groups seeking to build resilience. Third, resilience thinking fails to distinguish between the resilience of certain functions, such as electricity supply, and the structures put in place to achieve them, such as non-renewable energy sources.

Theorists also argue that resilience is strongly “functionalist and technocratic” in its understanding of the challenges that people face, and it does not adequately acknowledge the inherent political complexity in issues of managing risk. As such, resilience also faces the charge of embodying a vision of change that is “incremental”.

Furthermore, in crossing over from a social context to a concept considered mainly in the natural sciences, such as ecology, resilience loses some of its tenability as a construct to understand and prepare for change in dynamic social settings. Resilience seems to couple environmental and human systems too simplistically – a rationality that is incongruent with the complex reality of how socio-economic issues combine with ecological systems. Resilience thinking also has a tendency to ignore individuals, their relationships, and their social systems. Finally, there is a growing concern about the dearth of research on how compatible the ideas of governance embodied in resilience are with institutional or governance structures in various parts of the world.

Recognizing that ACCCRN is an operational, resilience-building initiative, the ACCCRN Mid-Term Evaluation (MTE) addressed these critiques in a number of ways. First, issues concerning resilience’s lack of a clear definition and normativity emerge from the debate on whether to classify a number of the ACCCRN interventions as adaptation or as disaster risk reduction. Second, the problems between the resilience concept and issues of scale can be partly seen through ACCCRN gaining traction only at certain governance scales. Third, ACCCRN acknowledges the problems regarding trade-offs and attempts to engage with them through methodologies such as the Shared Learning Dialogues (SLDs). Fourth, the perspectives of “ordinary citizens” and vulnerable populations do not seem to have been included to the extent that the evaluators deem appropriate, which further highlights the critique that resilience pays limited attention to individuals and social systems. Fifth, the lack of a clear understanding

of the congruence of diverse institutional cultures with principles embodied in resilience are seen through ACCCRN's strong uptake by certain government bodies and a more limited uptake by others.

Vulnerability and transformation can prove useful in helping plug some of these gaps in resilience thinking. Although resilience and vulnerability spring from different epistemic bases, have different assumptions on space and time scales, adopt different units of analysis, and place different emphasis on ecological-biophysical or social-political aspects of problems, they still offer opportunities for integration, particularly as they are both oriented toward responses to stress. Insights on how the pairing may occur are provided by methodologies such as agent-based modelling and the “bifocal approach”.

Transformation is conceptually nascent, but drawing on insights from it provides potentially valuable opportunities for those designing resilience initiatives. Through its thrust toward “substantive change” – by focusing on structures not just on functions – transformation could help resilience embody a vision of change that is more than merely incremental. Furthermore, through its central engagement with equity and power, the concept can imbue resilience with value and help rectify problems around the lack of normativity in resilience thinking.

This review of the current understanding of resilience – conceptually and specifically in relation to urban climate change – finds strong evidence for “reimagining resilience” as a concept that includes useful tenets from vulnerability and transformation. This deepening of resilience and reframing of its conceptual definition will, it is argued, enable it to become a valuable tool in the battle against climate change.





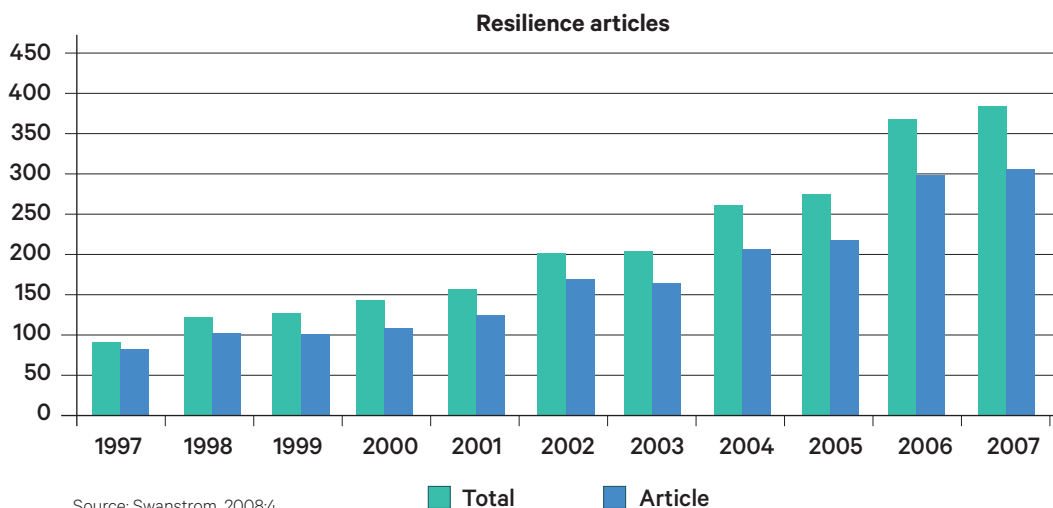
Introduction to resilience thinking

Resilience is increasingly employed as a concept to guide praxis on climate change and development. Figure 1 demonstrates the spike in academic interest around this subject in the last decade or so and, corresponding with this, a small but increasingly significant number of organizations are attempting to integrate the tenets of “resilience thinking” into their work.

Resilience is a contested concept, and the number of disciplines that employ it in one way or another are as vast as they are diverse, e.g. ecology, psychology,

engineering, mechanics, computer science, and corporate strategy (Bahadur, *et al.*, 2010). However, for work on climate change, development, and natural hazards, it is the conceptualization of resilience employed by ecology that has had the most significant influence (Schoon, 2005). In his seminal thesis on resilience, Holling (1973) considered resilience to be the ability of ecosystems to absorb changes and still persist. Klein, *et al.* (2004) referred to the ability of systems to return to a stable state or equilibrium, positing that the stress on the “persistence of

FIGURE 1. Citations of “resilience” in the *Social Science Citation Index*, 1997-2007



relationships” in dynamic systems is a contrasting property to stability. Springing from Holling’s ideas of resilience in ecosystems, a number of theorists have attempted to extend the principles of this idea to better understand the functioning of coupled socio-ecological systems (SESs). Folke (2006:259) defined the idea of applying the resilience concept to SESs as the ability of systems to “absorb disturbance and re-organize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks.” This understanding of resilience has led to a substantial amount of interest in the social sciences “where it is applied to describe the behavioural response of communities, institutions and economies” (Klein, *et al.*, 2004:9).

This line of thinking is now being extended into an emerging understanding of “urban resilience” within a

range of disturbances, including a small body of work examining issues of cities’ resilience to climate change. While definitions are scarce, Mileti (1999:32) argued that urban resilience is when an urban locale “is able to withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life and without a large amount of assistance.” Another view, from a global initiative on urban resilience led by the Resilience Alliance (2007), referred to this as a function of metabolic flows (e.g. supply chains), governance networks, social dynamics, and the built environment.

However, with this great increase in interest in examining the possibilities that resilience offers, there is a parallel burgeoning understanding that there are problems associated with the concept.

Gaps in resilience thinking

A critical analysis of the burgeoning body of thought on the gaps and potential pitfalls of resilience thinking yields a number of very interesting results. At the broadest level, critiques can be clustered around two subheads: i) lack of a normative element in resilience, and ii) lack of emphasis on issues of power and politics in the thinking on the concept.

2.1 Lack of normativity

The concept of resilience, as discussed in Section 1, is not inherently invested with a direction or goal. In addition, it is ambiguous regarding the subjects and objects of resilience building, e.g. “Resilience toward what? For whom?” (Swanstron, 2008:19). It is also relatively silent on the issue that resilience is not necessarily a positive property.

Ambiguity regarding direction or goal

A number of theorists have commented on the fact that resilience springs from extremely diverse epistemic roots, which leads to a lack of clarity on whether these diverse conceptualizations are compatible or even comparable (Boyden and Cooper, 2006; Leichenko, 2011). Moreover, “there is disagreement on both the characteristics that define resilience and the appropriate analytical unit for the measurement of

resilience” (Leichenko, 2011:1). Therefore, the concept is not naturally imbued with a direction or goal towards which it must proceed.

The diverse conceptual roots of resilience make for confused directions or goals due to mixed assumptions about spatial dynamics. Those understandings of resilience that spring from the ecological sciences and discuss resilience in the context of socio-ecological systems (SESs) conceptualize it as a property or characteristic that is place-based. However, those that take socio-technical systems (STSs) as their unit of analysis contest this notion, pointing out that STSs, e.g. energy systems, operate across spatial-temporal scales (Berkhout, 2008). In addition, studies of resilience in psychology reveal that the concept is only relevant when there is “risk” (Boyden and Cooper, 2006). Therefore, this risk, or the problem against which resilience needs to be deployed, is critical to the concept (ibid). “But, in practice, defining a problem for an individual or a society incurs normative judgments; what is ‘bad’ is predicated on values, interests and assumptions,” and therefore the goal of resilience is not an objective reality but highly dependant on subjective interpretation (ibid:6).

Overall, this lack of engagement with the normative dimension has led theorists to argue that “resilience is in fact a neutral characteristic which, in itself, is neither

good nor bad,” (Béné, *et al.*, 2012:13). They also have argued that it should be paired with other concepts that will help provide a direction or goal towards which resilience-building actions should be focused (Adger, 2008).

“Theorists have cautioned against the uncritical definition of “positive outcomes” from resilience-building approaches ...”

Lack of clarity on subject and object

In addition to ambiguity regarding direction or goal, theorists also discuss the notion that resilience is only relevant when applied to particular “objects” in the context of individual “subjects”. “There is a need to reflect on what precisely it is that is being made resilient, in the face of which specific dynamics, for whom and by what criteria this is good or bad, and whether such resilience is consequently problematic or not” (Smith and Stirling, 2010:10). Theorists have cautioned against the uncritical definition of “positive outcomes” from resilience-building approaches, as there are a number of trade-offs involved in the process. This includes the problem regarding scale, where building resilience at one scale within a system could have a negative impact on resilience at other scales. For example, small towns may develop sophisticated planning systems through the central government diverting resources towards them from larger towns in the region (Berkhout, 2008).

Trade-offs can also mean that resilience for one group within a system may come at the cost of resilience for another group. For example, upper castes in India can be resilient through the institutionalized exploitation of lower castes (*ibid*). Describing how this issue was considered in an operational initiative, Brown, *et al.* (2012) discussed a project aimed at enhancing the resilience of people in a flood-affected informal settlement that incorporated “a citywide perspective from the outset, or improvements in one specific location could transfer risk (in this case flooding) to adjacent, equally poor communities” (*ibid*:552). Jasonoff (2008) extended

this point by highlighting ways in which resilience is also about how people frame problems and solutions, indicating the need for highlighting how people and groups frame or seek resilient systems in order to meet their particular or institutional needs.

Emphasizing the importance of acknowledging that there are competing frames of resilience, Berkhout (2008) argued that there is a need for “an analysis of how groups seek resilience in relation to other resilience-seeking groups, exploring the processes through which certain framings acquire credibility, legitimacy, authority and power” (*ibid*:12).¹ Moench and Tyler (2012) presented a framework for operationalizing resilience in urban areas, acknowledging that negotiating trade-offs – such as the enhanced vulnerability of one area as a result of the enhanced resilience of another – continues to present challenges. Also, there are trade-offs between resilience and well-being, and a growing realization that “one can be very poor and unwell, but very resilient” (Béné, *et al.*, 2012:14).

Point of view is another critical factor in resilience-building processes. For example, Boyden and Copper (2006) presented a case study of child labor, arguing that it could be seen as a strategy that enhances household resilience or be seen to diminish it. Therefore, judging whether a phenomenon such as child labor “is a risk or protective factor remains contentious and the debate is likely only resolvable through careful attention to specific contexts’ local values in relation to this activity and perhaps even individuals’ particular situations,” as well as the parameters and time scales selected for understanding the degree to which resilience has been built” (*ibid*:7).

Scant attention to negative resilience

Resilience also lacks a normative component through the possibility of “negative resilience”. “Resilience is not always a desirable feature of social or economic systems ... there may be good reasons for wanting to

¹ The issue of trade-offs is explored in the next paragraph further.

destroy or transform a system – as, for instance, with slavery, fascism, Al Qaeda and fossil-fuel based energy systems” (Berkhout, 2008:11). This is partly due to the failure to distinguish between the resilience of certain functions and the structures put in place to achieve them. For instance, constant electricity supply may be desirable, but the resilience of current fossil-fuel-based methods to provide this may not be (ibid).

“In addition to trade-offs between structure and function, there can be trade-offs between resilience in the short term and in the long term.”

In addition to trade-offs between structure and function, there can be trade-offs between resilience in the short term and in the long term. For example, developing new maize seed varieties may be one way to deal with shocks in food availability, but a move away from maize cultivation may be what is needed in light of a shift towards a drier climate. “The focus on building resilience to shocks and ignoring long term stress may lead to robustness which inhibits adaptability and transformability” (Smith and Stirling, 2010:4).

Theorists studying resilience in the context of psychology make a similar point, arguing that responses may resemble features of resilience and positive adaptation in the short term but yield very different results in the long term. For example, in one study, children whose mothers suffered from depression responded well when becoming caretakers of siblings in the short term but were more susceptible to anxiety and depression in the long term (Boyden and Cooper, 2006). Speaking in the specific context of ACCCRN, Brown, *et al.* (2012) noted, “in the context of climate change, the trade-offs between investments that yield immediate benefits and those that address longer-term impacts are difficult to negotiate” (ibid:551).

The trade-off between human wellbeing and environmental services is yet another trade-off about

which resilience thinking is ambiguous (Turner, 2010). Resilience does not pay adequate attention to how conditions of society (e.g. human health and livelihoods) can come at the cost of environmental services (ibid). Theorists studying the applicability of resilience when dealing with poverty note that definitions of “risk” are variable, relative and sometimes difficult to determine by external researchers. Therefore, it is also difficult to define what positive adaptation and resilience may look like and what, in reality, may end up reinforcing undesirable structures that may block routes out of poverty for some (ibid). This argument has been extended to include the issue of “adaptive preference”, meaning that resilience to one kind of disturbance might lead to vulnerability to another kind (Béné, *et al.*, 2012). Such insights have led to the observation that resilience literature has a tendency to overlook its potential negative aspects (ibid).

2.2 Lack of emphasis on issues of politics and power

Along with its lack of a normative element, theorists also critique resilience for its lack of emphasis on how issues of politics and power mediate responses to disturbances. For instance, Béné, *et al.* (2012) analyzed a number of definitions of resilience, noting that, with one exception, none include the word “power”. Points of critique here are clustered around three closely related findings: i) the technocratic idea of change embedded within resilience thinking, ii) epistemic translatability, and iii) resilience’s lack of engagement with organizational culture.

Technocratic understanding of change

Theorists exploring the value of resilience when faced with climate change and disasters argue that it is strongly “functionalist and technocratic” in its understanding of the challenges people face. They have argued that it focuses on changing practices and policies without adequately acknowledging the inherent political complexity of risk management (Kuhlicke, 2010), and that by being sharply focused

on responding to challenges, resilience does not pay adequate attention to the structures and forces that shape these challenges (Swanstrom, 2008). “Resilience tends to treat stressors as generated by basically unpredictable forces in nature, such as storms, climate change, or forest fires. A forest cannot prevent fires or stop climate change. Humans can” (ibid:18).

“Some have also argued that resilience looks at the technical and the rational while paying inadequate attention to the human and social.”

Some have also argued that resilience looks at the technical and the rational while paying inadequate attention to the human and social (Cannon and Muller-Mahn, 2010). Resilience brings a “systems perspective” to understanding interlocked social-ecological-technological processes and in analysis across multiple scales, whereas, vulnerability chooses to concern itself centrally with actors (Jasonoff, 2008). “There is a need to move beyond this to analyse networks and relationships, as well as to attend to the diverse framings, narratives, imaginations and discourses that different actors bring to bear” (ibid:14). This becomes especially important when viewed in the context of studies of psychological resilience in children, which find resilience to be greatly dependent on the children’s social relationships (Boyden and Cooper, 2006).

Similarly, Turner (2008) found an apparent lack of emphasis on how the concept of resilience is framed or interpreted differently by different people in a system. There is a need to highlight how people and groups frame or seek systems that are resilient for realizing their particular or institutional needs (ibid). This calls for analyzing how groups seek resilience in relation to other resilience-seeking groups, exploring the processes through which certain framings acquire “credibility, legitimacy, authority and power” (Berkhout, 2008:12). It also calls for recognizing that resilience as a term and narrative can be hijacked by particular

interests to marginalize particular actors in a particular setting (Kuhlicke, 2010). Moench and Tyler (2012) acknowledged the importance of power-based issues to resilience, and also emphasized that these are important to any planning processes, not just those concerned with climate resilience.

Closely associated with this is the charge of “incrementalism” that is levelled at resilience thinking. Theorists have argued that through its sharp focus on the development of practices to manage change (through concepts such as adaptive management), resilience thinking ignores transformative changes that may be needed to rout particular unsustainable structures (Leach, 2008).² Some have suggested that the concept of “vulnerability” involves a clear engagement with an economically and politically induced condition that theorizes the way that people are exposed to a lesser or greater degree of risk. This resilience and the ecosystem focus inhibits the idea that socioeconomic systems themselves expose people to different levels of risk and these may “need substantive/transformational change instead of better management” (Cannon and Mueller-Mahn, 2010:12).

Epistemological dissonance

The literature review also found that in crossing over from a concept considered mainly in the natural sciences, such as ecology, to social contexts, resilience loses some of its tenability as a construct to understand and prepare for change. B.L. Turner (2008) discussed the weaknesses of conceptually coupling social and environmental systems when thinking of “creative destruction” or the “adaptive cycle” – the foundation of resilience thinking. He noted that numerous historical examples prove that environmental systems may complete cycles of creative destruction, but social systems attached to these may not or vice versa (ibid). For example, the collapse of the Central Maya lowlands civilization (850-1050 ACE) was hastened

² For example, “proponents of adaptive management recognize that it is the economic imperatives of modern extractive and agro-industries that are the root cause of the management ‘pathologies’ that lead to decreased resilience as their proposed solutions do not address these larger issues” (Horborg, 2009:255).

by environmental changes (rising aridity) and, even though the environmental system and forest cover regenerated, the human civilization was lost forever (ibid). In their paper on urbanization and resilience, Ernston, *et al.* (2010) touched upon problems with uncritically coupling social and environmental systems, arguing that environmental systems are functional and “take the form of food webs that transfer energy and genetic information,” whereas social systems are “self-constructed by society allowing different people to understand each other, share values and beliefs,” and therefore have structurally different compositions and dynamics (ibid:537). They also argued that thinking of urban systems as SESs is problematic because different combinations of coupled socio-ecological systems secure different ecosystem services within cities, and resilience theory does not accommodate this adequately (ibid).

“... there seems to be a growing understanding of the lack of adequate engagement with the “political” in resilience thinking.”

Apart from the problems with coupling the social with the environmental, theorists also point out that the limited understanding of risk within the resilience concept is due to its roots in the relatively neutral realm of the natural sciences. In the context of climate change adaptation, as resilience concerns itself primarily with SESs, it is not sufficiently conducive to the inclusion of the other risks and crises that affect the majority of people who are linked to the ecosystem through their livelihoods. It imposes a rationality that is incongruent with the complex reality of how socioeconomic issues combine with ecological systems (Cannon and Mueller-Mahn, 2010). Long-term shifts in population size, use of energy, and deployment of technology have had and will have enormous implications for the development of social-ecological systems at all scales but are inadequately represented in thinking on resilience in the context of climate change that is geared towards improved management in the face of disturbances or shocks (ibid). This observation was

reflected by Leichenko (2011) who noted in a paper on urban resilience, “Climate change is one of many types of shocks that cities face ... promotion of urban resilience will thus require that cities become resilient to a wider range of overlapping and interacting shocks and stresses” (ibid:165).

Along with issues in coupling environmental and social systems unproblematically, and the limited understanding of risk, there seems to be a growing understanding of the lack of adequate engagement with the “political” in resilience thinking. Swanstrom (2008) examined regional resilience and the resilience of metropolitan areas, arguing that in looking at what are essentially issues of governance through the lens of ecology, resilience ignores the role that political authority plays in designing the institutions and structures within which resilience-building interventions take place. As he noted, “Power and conflict are present in governance in ways they are not present in ecosystems” (ibid:3).

The argument here is that resilience in ecology does not adequately address the ways in which risk/changes/disturbance can be actively constructed and “we do not start from a state of nature but from a civil society in which resilience is shaped by laws, policies, and very human institutions...when applied to human systems, ecological resilience overlooks the crucial role of authorities in both nurturing and undermining resilience” (ibid:16). This lack of attention to the role of a central authority, politics and the government has also led to certain theorists labelling resilience as a neo-liberal concept that diverts attention away from the state and other actors with power, and charges populations living in poverty with using their own resources to support themselves through crises (Boyden and Cooper, 2006).

Congruence with organizational and institutional cultures

While there has been a substantial increase in the level of rigorous analysis exploring the nuances of the resilience concept and its potential to help communities better deal with a range of disturbances, Garschagen

(2011) noted the clear lack of understanding of how this concept interacts with organizational and institutional environments, adding that there is a need to better understand how this concept, developed by Western academia, is diffused and institutionalized, and how it shapes management processes for a variety of organizations across extremely diverse cultural and policy environments. For example, a case study from Vietnam demonstrated that resilience, with its emphasis on flexible systems and acknowledging uncertainties, is incongruent with a policy environment that is “characterised by notions around centralised control and command, manageable steady states, the preservation of the status quo, linear developments, reactive response, stability, predictability and neglect of uncertainties” (ibid:15).

“The emphasis on theorization can be an impediment to getting climate change and development practitioners to buy into the concept ...”

One of the reasons for examining the congruence of resilience with organizational and institutional culture is that lack of clarity on how more complex elements of resilience theory (e.g. multiple stable states and panarchy) can be translated into concrete guidance for those executing initiatives in the sphere of climate change and development (ibid). The emphasis on theorization can be an impediment to getting climate change and development practitioners to buy into the concept as “practitioners – particularly at decentralised levels – are less interested in theoretical academic discourses but seek workable solutions for day-to-day problems” (ibid:16). As an extension of this point, some have also argued that it is difficult to

measure and evaluate resilience, therefore it remains a useful concept but one whose practice has not been studied rigorously (Boyd, *et al.*, 2008; Béné, *et al.*, 2012; da Silva, *et al.*, 2012). For instance Moench and Tyler (2012) noted, “with few exceptions, the term resilience is used in a general sense, and operational guidelines cannot be usefully derived from its definition.” Overall, more clarity is needed on how resilience interacts with existing politics, norms, values, planning paradigms, and regulative regimes of the institutions in which it seeks to be embedded (Garschagen, 2011). Specifically for urban areas, there is need for “tools to bridge and put urban resilience analysis findings into urban planning, economy, and policy realms and practices” (Chelleri, 2012:300).

Other issues regarding the ambiguity in alignment between the resilience concept and institutional culture include the scant evidence of ex-ante organizational change (Garschagen, 2011). While there is robust empirical evidence as to how organizations or institutions may have changed for the better and become more resilient after shocks, there is a gross under-emphasis on empirical study of “how radical institutional change – as urged by resilience theory – can in the context of climate change be initiated on the basis of minor creeping changes, and before large disasters are experienced” (ibid:9). Another aspect of the fit between organizational cultures and the resilience concept is to be mindful of how, within organizations, there may be a divergence between the rhetoric and practice of resilience (ibid). The case study from Vietnam mentioned earlier in this section shows that organizations are hesitant to genuinely employ the resilience approach within their organizational structures because it would expose existing approaches as inadequate (ibid).

Interplay with the ACCCRN Initiative

This section attempts to examine how ACCCRN speaks to the dominant bodies of critique of resilience reviewed in the previous section. It employs the initiative's MTE report (March–April 2011) as the primary source of information.³

Far from being a critical appraisal of ACCCRN, this is a brief illustration of how select strands of theory discussed in the previous section are reflected in an operational initiative.

3.1 Definition, scale and trade-offs

Section 2.1 illustrated certain problems concerning the lack of normativity, definition, and direction within resilience thinking, and some of these issues also came to the fore within ACCCRN. First, this is illustrated through the debates among those involved in ACCCRN regarding the degree to which the initiative is an adaptation intervention and the relationship of resilience with climate change adaptation. The MTE report referred to an international partner meeting where the advisory board suggested that the initiative employ the idiom of climate change adaptation “at the very least for tactical

reasons in the adaptation funding arena” and frame resilience as the desired “end state of adaptation” (Barr, 2011:9). The report went on to reflect that the notion of resilience as an end state “does not seem to cohere with the dynamic systems definition used by the Foundation” (ibid:9). In part, this lack of clarity over definition is emblematic of the fact that there is no agreement on the precise characteristics and ways of measuring resilience, as discussed in Section 2.1 (Leichenko, 2011). Therefore, some could argue that resilience and adaptation are part of the same continuum of activity, while others could put up an equally strong case that resilience has a more independent conceptual and operational identity.

This point, regarding problems with definition, is also seen in the number of activities being carried out at the city level – under the aegis of this “resilience” initiative – that actually resemble disaster risk reduction activities instead. The MTE report noted that “Much of what is evident as ACCCRN activity in the 10 ACCCRN cities is closer to disaster risk reduction (DRR) than climate change resilience (CCR)” (Barr, 2011:34). While this is partly due to DRR providing an effective entry point for action on climate change resilience in cities (and some argue that DRR could be the first step in the resilience-building process), it is also due to the lack of normativity and the inherent fuzziness of boundaries between resilience and other concepts. As seen in Section 2.1, this makes space for diverse actors to frame resilience differently (Berkhout, 2008).

³ We recognize that there may well have been developments in ACCCRN after the MTE, but this analysis limits itself to this period.

Section 2.1 also discussed the inherent problems regarding “scale” within resilience thinking. Here, theorists primarily have looked at how building resilience at one scale may not necessarily have positive impacts at other scales, or have thought of resilience as a place-based property, while others conceptualize it across spatial-temporal scales (Berkhout, 2008; Leach, 2008). Issues of scale were also outlined in the MTE, which highlighted substantial progress with resilience thinking gaining traction at one scale – the city level – but found that the picture at higher scales of governance, particularly at the national level, was quite different. Commenting specifically in the case of India, the evaluators observed that little attention was paid “to the national-level governance and policy context.

National policy was not prioritized, as the ACCCRN theory of change emphasized building a body of credible practice in cities as a driver for UCCR” (Barr, 2011:21). Even though this is partially a function of management systems and processes employed by this initiative in particular, in part it is reflective of the confusion regarding the very nature of the resilience concept. Even though resilience underlines the importance of working across scales, “interventions” to build or operationalize resilience after all need to take place in local settings (Gunderson and Holling, 2001). This has led a number of theorists, such as Klein, *et al.* (2003), to note that “resilience remains at the conceptual level and approaches to making the concept operational are not provided” (ibid:41).

“... theorists argue that resilience thinking has a tendency to ignore individuals, their relationships, and their social systems.”

As another illustration of how certain strands of theory discussed in the previous section speak to operational aspects of ACCCRN, it would be valuable to examine how ACCCRN engages with trade-offs. As shown in Section 2.1, understanding the conceptual weakness of resilience requires looking at: i) problems around the manner in which resilience for one group may erode

resilience for another, ii) how defining the risk against which resilience must be deployed is predicated on individual values, and iii) how the “point of view” is critical to determining or shaping resilience concepts (Leach, 2008; Berkhout, 2008; Boyden and Cooper, 2006).

ACCCRN employs Shared Learning Dialogues (SLDs) precisely to navigate these conundrums within resilience thinking. These are an “approach to participatory planning and problem solving in complex situations, characterized by non-extractive, mutual learning among participants” (Moench, *et al.*, 2011). With their emphasis on the iterative, multi-directional sharing of information that involves a variety of stakeholders that cut across scales and disciplinary boundaries, SLDs help avoid the close definition of resilience by one group.

The MTE noted that while there were some deficiencies in the range of participants in the SLDs, these had been “successful processes through which to engage a range of city stakeholders across a range of institutions, and develop amongst the practice of working together in a non-silo fashion on cross-sectional issues” (Barr, 2011:23). The role of SLDs in helping negotiate trade-offs became even more important because of ACCCRN’s pioneering introduction of the idea of climate change resilience in local policy settings for the first time (ibid). The novelty of the issue meant that a number of policy actors could interpret the meaning that “resilience” had for them and, in turn, SLDs could help construct an inclusive definition that was not tailored to the priorities of only one group.

3.2 People, power, and politics

Section 2.2 outlined a set of critiques focused on shortcomings of resilience when engaging with issues of power and politics. As a subset of this broad critique, theorists argue that resilience thinking has a tendency

to ignore individuals, their relationships, and their social systems (Jasonoff, 2008; Cannon and Muller-Mahn, 2010; Boyden and Cooper, 2006).

A number of issues in the MTE report spoke to these findings. First, in a number of places the MTE found that ACCCRN engaged inadequately with social systems and individuals (Barr, 2011). For instance, in discussing “entry points” for resilience actions, the report noted, “social systems and community engagement is less prominent in ACCCRN than might be expected from an organization such as The Rockefeller Foundation with a strong social orientation” (ibid:36). At another point, the MTE observed, “Given the need to impact people, citizens are surprisingly absent from ACCCRN...” (ibid:x). Second, the MTE critiqued the networking aspect of this resilience initiative and claimed that instead of focussing on building a network of cities “aiming to connect a number of dynamic, engaged and influential individuals is likely to be a better value proposition for ACCCRN” (ibid:37).

Similarly, in discussing outputs in Phase 2, the evaluation rightly underlined a number of studies and assessments as important achievements but also noted gaps, such as those in sector studies that “missed the perspectives of the most vulnerable” (ibid:27). A particularly illustrative section from the report touched upon how this urban resilience initiative had a natural tendency to engage with the relatively neutral systems of urban infrastructure and service delivery (which come with an attendant emphasis on centralized planning) at the cost of social systems and community engagement (ibid:26). Again, this is possibly partly a function of operational issues such as tight timelines (that make deep community engagement more difficult) and specific capacities of particular actors, but it also reflects the tendency within resilience thinking “for the biophysical always to trump the social” (Turner, 2008:9).⁴

⁴ Moench and Tyler (2012), perhaps in response to such critiques of resilience theory, acceded high importance to “agents” in the resilience framework that they presented. At the same time, they also acknowledged the challenges of engaging communities that, according to them, are common to a range of planning processes (not just those around climate change resilience).

Another set of critiques discussed in Section 2 looked at how resilience – with its focus on flexible systems, engaging with uncertainty, ex-ante organizational change, and complex theoretical constructs (such as panarchy) – is incongruent with organizational culture in many parts of the world (Garschagen, 2011; Chelleri, 2012; Boyd, *et al.*, 2008). A number of similar issues regarding the interaction of organizations with the resilience concept also emerge in ACCCRN.

The MTE noted how in Vietnam, the government was preparing a climate change response strategy for the whole country, and ACCCRN, had gained considerable traction by aligning with this effort (Barr, 2011). At the same time, in other countries where planning systems were less centralized and where the need for action on climate change was less well articulated at the central level, ACCCRN had not achieved the same degree of alignment with major policy directives (Barr, 2011) – leading to an understanding of the need for highly disaggregated approaches. In Indonesia, there had been instances of introducing this resilience project with considerable bureaucratic inertia at the city-level meeting, as “officials do not consider the outputs of ACCCRN or the decisions at CAC5 to be binding and, thus, cannot accept these for immediate implementation in their departmental work” (Barr, 2011:28). Similarly in Gorakhpur, India, there had been only piecemeal governmental participation because this resilience initiative – with its focus on, e.g. cross-sectoral participation and flexibility – was at odds with local institutional cultures. Therefore, for example:

“the key functionaries of the city government have often attended the CAC meetings, but as guests of honor or presided, rather than being fully engaged. They have not carried any messages from the CAC into their day-to-day functioning or in planning their future activities” (Barr, 2011:29).

Looking at this from another angle, it is possible to see that the varied institutional environments with which

⁵ The City Advisory Committee (CAC) is a congregation of local experts in each city where the project is operational, and it helps the project move forward.

ACCCRN engages across the four countries offer a possible advantage. They allow ACCCRN's planners and implementers a unique insight into what works in which contexts for resilience planning – a learning that can inform future interventions.

A final point of interplay between ACCCRN and the body of critique on resilience centers on the understanding of risk. In Section 2.2, we saw how critics have pointed out that – owing to its antecedents in the neutral realm of the natural sciences and its singular concern with socio-ecological systems – resilience excludes a range of risks, crises, and other shifts that affect vulnerable populations (Cannon and Muller-Mahn,

2010; Leichenko, 2011). ACCCRN, being mindful of this potential pitfall, has adopted a syncretic risk framework that includes a wide variety of issues such as urban systems, climate change, and vulnerable groups (Barr, 2011). This frame includes an analysis of the way in which the city works, “the direct and indirect impacts of climate change” and “groups who are least able to respond” – thus making space for an engagement with natural as well as social systems (ibid:2). While there have been some gaps in how this framework has been implemented and realized (as presented in the preceding sections), it provides a valuable approach to analyzing a wide variety of risks against which resilience needs to be deployed.

Filling the gaps

Adger (2008) argued that due to inherent weaknesses within resilience, it is a concept that should be used in conjunction with other concepts. This section will demonstrate how many of the gaps identified in resilience thinking can be at least partially filled through pairing the concept with the concepts of “vulnerability” and “transformation”.

4.1 Resilience and vulnerability

Ever since researchers and practitioners started to consider the value of resilience as a means of engaging with change, there has been considerable debate on the relationship of this concept with the notion of “vulnerability”.⁶

Points of difference

There are clear points of difference between the two concepts. First, theorists have pointed out the different epistemic origins of the two. Resilience (as used in the context of climate change) springs from the natural sciences, is seen as more “positivist”, and emphasizes the ecological and biophysical. Vulnerability, on the other hand, speaks more to the social sciences, is more

“constructionist” in its approach, and has a tradition of engaging with the socio-political (Janssen and Ostrom, 2006; Miller, *et al.*, 2010; Cannon and Mueller-Mahn, 2010). Béné, *et al.* (2012) mirrored this argument when they noted that “resilience still has more to say about ecology, and vulnerability more to say about society” (*ibid*:17). Both also engage with issues of governance, but resilience has a more apolitical approach as compared with “the more politically nuanced understanding of social change and equity present in much vulnerability research” (Miller, *et al.*, 2010:6).

Cannon and Mueller-Mahn (2010) extended this argument to argue that vulnerability is rooted in economic and political processes and is centrally concerned with issues of power, which are overlooked by the more “scientific” and rational concept of resilience (*ibid*:3). Second, there are differences in the manner in which these two concepts engage with time and space. Resilience, with its emphasis on systemic cycles of creative destruction, tends to adopt longer time horizons, whereas, certain approaches to vulnerability, such as those centrally concerned with hazards, tend to engage with shorter time horizons (Miller, *et al.*, 2008). Also, resilience adopts “the ecologically bounded scales of the ecosystem, landscape, and region” and “vulnerability research tends to consider socially defined scales of the household, community, region” (Miller, *et al.*, 2010:10). Finally, there are differences in the units of analysis adopted by these concepts.

⁶ There is a substantial diversity in the manner in which resilience has been conceptualized. Annex 1 provides more detail.

Vulnerability approaches tend to adopt actor-oriented approaches, and resilience is centrally concerned with system dynamics (Miller, *et al.*, 2010). Therefore, some contend that vulnerability is focused on people at the “grassroots” and the social processes that expose them to risk, while resilience depoliticizes these processes and “subsumes politics and economics into a neutral realm” of systems thinking (Cannon and Mueller-Mahn, 2010:13). Béné, *et al.* (2012) linked this issue with that of “agency” and claim that in discussions on resilience, “the agency of people is often veiled, focusing instead on the ability of the ‘system’ to recover from shocks” (ibid:12).

“Despite this diversity of opinion on resilience-vulnerability dynamics, what becomes clear is a consensus that the two concepts are inherently linked.”

Points of convergence

At the same time, there are a number of points of connection and certain synergies between vulnerability and resilience. First, at the highest level, both concepts are centrally concerned with how individuals and systems anticipate change. This is in terms of both “shocks and surprises, as well as slow creeping changes,” but also with institutional responses, networks and knowledge systems as means of responding to such changes (Miller, *et al.*, 2008:3). Second, in trying to understand the relationship of vulnerability and resilience conceptually, some theorists argue that resilience is the opposite of vulnerability, and the increase in resilience implies a decrease in vulnerability (Gaillard, 2010). There are others, however, who consider “resilience as one of the components of vulnerability” (ibid:301). Gallopin (2006) argued that resilience is strongly akin to adaptive/coping capacity, which is a component of vulnerability. Still, others consider vulnerability to be “the current baseline that establishes pathways of adaptive management which (might) lead to resilience. In this case, vulnerability is static ... and resilience an outcome” (Bharwani, *et*

al., 2008:7). Despite this diversity of opinion on resilience-vulnerability dynamics, what becomes clear is a consensus that the two concepts are inherently linked. Béné, *et al.* (2012) supported this point when they argued that it is desirable for development practitioners to maintain a “from vulnerability to resilience” perspective. A third set of points is centred around how resilience and vulnerability researchers share themes, problems and “rely on many similar methodological elements,” although, along with these, there remains a difference in motivation and terminology as well as in emphases/biases in data collection and interpretation (Miller, *et al.*, 2010: 7). Overall, it can be argued that:

“Resilience and vulnerability, as they differentially emphasize ecological-biophysical or social-political dimensions of problems under investigation, offer real opportunities for integration, particularly as they are both oriented toward responses to stress and perturbations, and the interaction of slow and rapid changes” (ibid:16).

Pairing

Continuing from an understanding of the differences as well as points of convergence between the two concepts, there is a growing understanding of how the pairing of these concepts (and the reduction of a distance between communities of research and practice attached to each) can yield potentially rich dividends. There is a growing acceptance of the notion that social and environmental changes, as well as approaches of dealing with these (e.g. resilience), lead to social processes that create winners and losers (Miller, *et al.*, 2008). Vulnerability, through its central occupation with issues of politics and power as well as its focus on actors and individuals, “makes important contributions to our understanding of such social processes” (ibid:4). This has led to a call for co-production of knowledge between the two communities of research and practice, as well as joint problem definition (ibid). Béné (2012) argued that “it is vital that the shortcomings of resilience thinking ... are compensated for by drawing on this wide cannon of vulnerability concepts, tools and experience” (ibid:17). Another way forward is with integrated assessments

that allow for a clearer understanding of “socio-political processes and environmental linkages,” extended by vulnerability research, alongside a better analysis of “system dynamics and interconnections, ecological thresholds,” contributed by resilience thinking (Miller, *et al.*, 2010:6; Miller, *et al.*, 2008:4).

The potential benefits of harnessing the synergies or “complementarities” of the two concepts has led to the proposed “bifocal approach”. Miller, *et al.* (2008), in their influential colloquium report on the convergence of resilience and vulnerability, argued that the mechanics of resilience and vulnerability working together should resemble the operation of a bifocal optical lens. They contended that such an approach is needed, as it would allow:

“both vulnerability and resilience scientists to focus on system drivers and nuanced local realities. This would enable development responses that integrate local priorities with an holistic understanding of the system, and that are based on qualitative and quantitative analysis at a range of scales” (ibid:7).

A different paper offered illustrations of what this bifocal approach may look like in practice, introducing a Ceara, Brazil, project dealing with climate variability by focussing on current vulnerability, including local priorities, through local planning systems that reduce exposure and enhance coping capacity (Miller, *et al.*, 2010). This is undertaken without a loss of systemic focus on changes in governance and resources flows, “thus developing a foundation that encourages learning, diversity, and flexibility in response to ongoing change” (ibid:10).

Similarly, agent-based modelling (ABM) is seen as another possible illustration of how dual assumptions on, e.g. space, scale or agency, can be accommodated in the same methodological approach (ibid). This is because ABMs simulate the interactions of agents or individuals, in order to assess their effects on the “system” as a whole (Castle and Crooks, 2006). Miller, *et*

al. (2010:7) commented on the potential that principles embodied in ABMs hold, noting:

“Much of what is interesting to ABM researchers in the sustainability field is also that which interests vulnerability and resilience scientists, i.e., that which emerges from a close coupling of each agent to its natural and social environments, producing nonlinearity, indeterminacy, and path dependency while incorporating risk, perceptions, and imperfect information. By highlighting emergent properties, “surprises”, or new vulnerabilities, such holistic models can allow the formulation of “better” questions for empirical work targeting gaps in the understanding of interdisciplinary domains.”

“A small number of academics have considered the relationship between resilience and transformation.”

In summation, this section has argued that a closer collaboration between bodies of academic inquiry and praxis in resilience and vulnerability can contribute to reducing the pitfalls of using only one or the other approach. Vulnerability, with its focus on people/individuals/agents, social systems and politics, can do much towards filling the gaps in resilience identified in Sections 2 and 3. In the next section, we will briefly analyse the potential that emerging understandings of the concept of “transformation” hold for further bolstering resilience thinking.

4.2 Resilience and transformation

Apart from calls for a reduction of the distance between resilience and vulnerability, there is a growing discussion on the value that principles associated with the notion of “transformation” can bring to resilience thinking. Walker, *et al.* (2004) mirrored the arguments made in Section 2.1 of this paper to note that resilience needs to

TABLE 1. Resilience and transformation

	RESILIENCE	TRANSFORMATION
Goal	Functional persistence in a changing environment	Reconfigure the structures of development
Scope	Change in technology management practice and organisation	Change overarching political economy regime
Policy focus	Resilience building practices. E.g. new seed varieties	New political discourse redefine the basis for distributing security and opportunity in society and socio-ecological relationships

Adapted from Pelling 2011:51.

be managed because it is not always appropriate or in the interest of all stakeholders. They therefore posited transformation as a concept that could help navigate such conundrums.

Transformation as “substantive change”

A small number of academics have considered the relationship between resilience and transformation. Pelling and Navarette (2011) argued that resilience initiatives working in the context of socio-ecological systems aim for “status quo”, and in this way may not always yield results that are “transformational”.

Explaining this further, Pelling (2011) charged resilience with seeking change “that can allow existing functions and practices to persist and in this way not questioning the underlying assumptions or power asymmetries in society” (ibid, 2011:50). Transformation, on the other hand, is seen as “the deepest form of adaptation indicated by reform in overarching political-economy regimes and associated cultural discourses” (ibid). This idea of transformation being akin to deep, fundamental and substantial change, and resilience being inherently “incremental” finds resonance elsewhere too. For example, Walker, *et al.* (2004:4) noted:

“There is a major distinction between resilience and adaptability, on the one hand, and transformability on the other. Resilience and adaptability have to

do with the dynamics of a particular system, or a closely related set of systems. Transformability refers to fundamentally altering the nature of a system.”

While acknowledging the relatively limited potential of resilience in its current form, O’Brien (2011:3) also argued that the paradigm of adaptation is aimed at “accommodating change, rather than contesting it” and that, within this, “current systems and paradigms are accepted and in some cases modified, but rarely critically questioned or challenged.” In contrast, she understood transformation as a process leading to “physical and/or qualitative changes in form, structure or meaning-making” and examined transformational changes as those that alter “entrenched systems maintained and protected by powerful interests” (ibid:4,5). Béné, *et al.* (2012) also buttressed this view to argue that transformation is akin to changing the status quo. Similarly, Francis, *et al.* (2003), speaking in the context of organizational change, argued that the idea of substantive change is embedded in the notion of transformation, noting:

“it is almost inconceivable that a firm can achieve a radical transformation through the building up of “normal” or incremental capabilities...Instead, it may be necessary to destroy, at least in part, the existing approach to business as well as the capabilities that underpin this to enable transformation to occur” (ibid:19).

Therefore, it seems that transformation provides an effective set of principles with which to rectify the charge of “incrementality” levelled at resilience thinking discussed in Section 2.2 (Leach, 2008; Cannon and Muller-Mahn, 2010). The paragraph above also demonstrates that even though many of these theorists approach the notion of transformation from varied epistemological perspectives, they all seem to recognize the potential value derived from integrating its principles in processes of change.

Transformation as “empowerment”⁷

After establishing that there is some consensus on transformation being associated with “substantive change”, it would be useful to briefly review the key principles that underpin this idea. It is impossible to categorically assert that there is one cogent, objective understanding of transformation, but a review of relevant literature reveals that many consider “empowerment” to lie at the heart of this idea.

First, a substantial contribution to the conceptual and practical exploration of the idea of transformation in development comes from those engaged in work around social protection. In *Transformative Social Protection*, Devereux and Wheeler (2004) noted that theory and praxis of social protection can only reach its full potential and become transformative if it moves beyond its current focus on “targeted income and consumption” transfers, also acknowledging the importance of “equity” and “rights” in protecting the lives and livelihoods of the marginalized (2004). They equated transformation with the need to “pursue policies that relate to power imbalances in society that encourage, create and sustain vulnerabilities” (ibid:9). Béné, *et al.* (2012) engaged with this literature to argue that transformation is about “changes to entrenched systems maintained and protected by powerful interests,” stating that it is this facet that makes realizing a transformative agenda a deeply challenging process (ibid:22).

Second, another group that has looked at transformation in the context of development includes those working in the field of education. Transformative education aims to extend the ability to “critically reflect” on their world to students in “disempowering contexts” – for education to be transformative, it must focus on helping students in such contexts to regain a “sense of identity and self-determination” (Bivens, *et al.*, 2009). Therefore, transformative education aims to ‘transform’ by sensitizing students to oppressive power structures (ibid).

Third, Pelling (2011) extended these insights into managing risk from climate change. He observed that critical awareness is important for a transformational approach – dealing with climate change by breaking away from certain malignant institutionalized positions, such as the “dominant preference for maximizing personal economic wealth beyond aspirations for social or environmental aspects of well-being or sustainability ... The result is a sense of lock-in with the institutionalized status quo generating feedback loops that support further entrenchment.” Pelling (2011:10) also argued that for climate risk management to be transformative, it must be a tool for “opening dialogue and contributing to wider, inclusive forms of governance.” He made a telling distinction between “transitional” and “transformational” adaptation, observing that the latter carries the potential for climate change adaptation to be a mechanism for shifting the balance of political and cultural power in society. Last, hailing from the domain of Future Studies, Kapoor (2007) extended this argument, noting that social transformation entails engagements with issues of power at two levels: on one hand, it entails changes in the social structure and, on the other, changes in individual “values, capabilities and choices” (ibid:478). He also argued that alterations in consciousness such as those at the individual level are key to bringing about wider social transformation (ibid).

Achieving transformation

Apart from arguing that empowerment and transformation go hand in hand, the literature sheds light on features that could help achieve this through change processes in the face of disturbance. This is

⁷ Section 4.2 on transformation partially draws on insights from Bahadur and Tanner, 2012.

not a prescription of actions to be undertaken, but examples of the conceptual directions that those designing and implementing resilience programmes can choose to consider.

First, theorists highlight the role of innovation and experimentation for transformation. Radical change results from innovation, generating new knowledge, and testing new approaches (Francis, *et al.*, 2003; Biggs, *et al.*, 2010; Bruce, 2007; Pelling, 2011). Specifically for climate change, Pelling (2011) argued innovation is critical for managing risks through new processes such as adaptive management, increased participation of a larger variety of voices in decision-making, and more inclusive governance mechanisms that support transformation.

Second, effective leadership is understood to be important to processes of transformation (Kotter, 1995; Francis, *et al.*, 2003; Kapoor, 2007; Olsson, *et al.*, 2004; Smith and Stirling, 2010). Olsson, *et al.* (2004) discussed the transformation in the governance of ecosystems in Kristianstads, Sweden, noting that leadership was essential to transformation, as the leader in this case built ecological knowledge among key stakeholders, developed social networks, took advantage of an opening in a window of political opportunity, and consolidated cross-scale linkages.

Third, developing a vision or a “picture of the future” is also seen by many to be integral to transformation (Kotter, 1995; Francis, *et al.*, 2003; Folke and Carpenter, 2006; Biggs, *et al.*, 2010). Folke and Carpenter (2006) discussed the need to sensitize populations to the importance of ecosystem services through “integrated information in the form of visions for positive change in the approaches of society toward ecosystem services” (ibid:314). They found that crises create opportunities for a reorganization of relationships between man and the environment, and a “vision must be well formed by the time the crisis arises, because the opportunity for change might be short-lived” (ibid:314).

Fourth, including a diversity of perspectives in processes of change is key to making them transformational

(Smith and Stirling, 2010; Biggs, *et al.*, 2010; Folke and Carpenter, 2006; Kotter, 1995; Dabhi, 2004; Mezirow, 1997; Bivens, *et al.*, 2009). Biggs, *et al.* (2010) discussed strategies that can transform ecosystem management using a number of case studies, and underlined the importance of diverse perspectives. They noted, “The engagement of key stakeholders appears to have been central to developing new approaches to ecosystem management and enabling these ideas to be successfully implemented” (ibid:14).

Fifth, to achieve the vision of transformation as empowerment, there is need to embed within individuals the ability to reflect critically, think autonomously and ensure “conscientization” (Boyd and Myers, 1988; Bivens, *et al.*, 2009; Mezirow, 1997; Biggs, *et al.*, 2010; Pelling, 2011; Pelling and Navarette, 2011). Pelling (2011:9) describes this as an ability “that can enable the marginalized to perceive social, political, and economic contradictions, develop a critical awareness and challenge oppressive elements of reality.” Approaches such as transformative education can help develop this (Mezirow, 1997). Along with this, many have also highlighted the importance of rectifying power imbalances in society through, for instance, an explicit inclusion of rights and issues of equity; supporting inclusive forms of governance; and engaging with culture, value, and beliefs (Devereux and Wheeler, 2004; Kapoor, 2007; Bivens, *et al.*, 2009; Pelling, 2011).

Overall, this section has attempted to demonstrate the value that principles associated with the notion of “transformation” can bring to resilience thinking. Certain theorists have extended similar insights and developed conceptual/analytical frameworks linking these concepts. Two notable examples are Pelling (2011) and Béné, *et al.* (2012). Pelling (2011) attempted to reframe adaptation, arguing that it has three levels – resilience, transition and transformation – while Béné, *et al.* (2012) argued that resilience emerges from a combination of absorptive, adaptive, and transformative capacities and combined this insight with the protection-prevention-promotion-transformation (3PT) social protection framework developed by Devereux and Sabates-Wheeler (2004).

Conclusion: reimagining resilience

This paper began by reviewing the dominant critiques of resilience. These encompassed issues around the lack of normativity in the concept and its lack of emphasis on issues of politics and power. The short discussion that followed employed the ACCCRN MTE report (2011) to illustrate how some of the gaps in resilience thinking were embodied in an operational initiative. The subsequent section then posited “vulnerability” and “transformation” as two concepts that could help fill some of these gaps and suggested the integration of insights from these paradigms as the ways forward or next steps for those designing and implementing resilience programmes.

Drawing on the body of work around vulnerability was seen as potentially beneficial to resilience in a number of ways. The concept of vulnerability, with its antecedents in the social sciences and its roots in political-economic processes, was seen as better suited to engaging with issues of politics and power than the more scientific notion of resilience that stems from the natural sciences. The lack of attention to politics and power was illustrated in Section 2.2 as an important critique of resilience – thus, indicating that drawing on vulnerability could help navigate around this pitfall. Also, vulnerability adopts actor-oriented approaches that could help the resilience concept negotiate the point of critique identified in Section 2.2,

which charged the concept with paying inadequate attention to people and privileging the “system” as a neutral, apolitical point of focus.

“... the concept of vulnerability could also help those designing and implementing resilience initiatives to better navigate trade-offs that create winners and losers in any change process ...”

Through its capacity to appropriate issues of politics, power and people, the concept of vulnerability could also help those designing and implementing resilience initiatives to better navigate trade-offs that create winners and losers in any change process (a point of critique discussed in Section 2.1). In this way, vulnerability could help redress operational weaknesses identified in Section 3.2 that discuss the MTE report’s observations that the ACCCRN project engages inadequately with individuals and social systems, and misses the perspectives of the most vulnerable.

Transformation, through its emphasis on substantive change, could help those designing and implementing resilience projects to take the concept beyond just marginal improvements, and therefore avoid the

charge of resilience being akin to only incremental measures (as seen in Section 2.2). Even though the word continues to be used in different ways, a number of prominent actors working/researching in the field of climate change and development have argued that the principle of “more equal power relations” in a system lies at the very core of the idea of transformation. Therefore, resilience initiatives, by actively integrating insights from the small but burgeoning body of work around transformation, could imbue this concept that lacks a normative dimension (as discussed in Section 2.1) with value. This would, for instance, reduce the possibility of “negative resilience” (as discussed in Section 2.1) by decreasing the current, heavy emphasis on function (e.g. crop production) and paying greater attention to structure (e.g. land tenure regimes). Through these attributes, transformation could also strengthen initiatives such as ACCCRN, because it would provide ideals to be strived for and make discussions around nomenclature (such as those discussed in Section 3.1) less relevant.

“...the principles of resilience thinking can also fill essential gaps in the concepts of vulnerability and transformation.”

Vulnerability enjoys considerable conceptual and practical exploration in the context of climate change and development. Therefore, there are examples of how its pairing with resilience may be operationalized, including how the current state of knowledge on transformation can at best indicate directions to be pursued or issues to be considered by those planning

and executing resilience-building initiatives (discussed in Section 4.2 and also in the Pelling (2011) and Béné, *et al.* (2012) discussions of analytical frameworks of that bind these concepts).

It is not the purpose of this paper to analyse the numerous benefits that resilience thinking brings to our understanding of methods of dealing with the exigencies of a changing climate. At the same time, the objective of the critique included here is in no way an argument for its rejection in favor of the other concepts that have been explored. Adopting a different perspective, it is possible to argue that the principles of resilience thinking can also fill essential gaps in the concepts of vulnerability and transformation. For instance, through its focus on systems and systemic change, resilience helps understand critical feedback generated by actions sharply focussed on reducing vulnerability in one place and at one point in time (Béné, *et al.*, 2012). Similarly, while the emerging understanding of transformation provides useful insights, it lacks a rigorous history of conceptual exploration or practical application. Thus, it is only through a coupling with the relatively more established body of thought and praxis on resilience that these insights can prove useful in defining action.

Therefore, this paper does not argue for the discarding of one concept and the promotion of another. Instead, it argues for “reimagining resilience” as a concept that includes useful tenets from vulnerability and transformation. In doing so, resilience can become a valuable tool to be deployed in the battle against climate change.

Postscript: monitoring the field

This report acknowledges the debt that it owes to other important pieces of work that engage with similar themes. It posits itself as an extension of this growing body of work that directly or tacitly seeks to argue that “something is missing in the current paradigm of resilience”. For those interested in reading further on this issue, here is a commentary on five seminal papers and their interplay with the arguments made in this report.

First, a widely cited report edited by Leach (2008) critiques resilience and brings up a discussion on vulnerability and transformation. That said, it stops short of elucidating the mechanics of how vulnerability and resilience could be paired and, further, does not discuss factors that are important for achieving transformation.

Second, Canon and Muller-Mahn (2010) provide a penetrating insight into the disadvantages of discarding the body of knowledge around vulnerability for an uncritical adoption of the resilience discourse. However, their critique of resilience is sharply focussed on its inadequate engagement with power/politics, whereas this paper has attempted to go beyond this, in order to include insights on the incongruence of resilience with organizational cultures and the lack of a normative element within resilience thinking.

Third, O'Brien (2011) unarguably heralds the growing number of voices underlining the importance of deliberate transformation. However, he uses adaptation as a point of focus – unlike this paper that posits resilience at its core, as a concept fast gaining traction among powerful actors engaged in action on climate change and development.

Fourth, Pelling (2011) puts adaptation at the centre of his arguments subsuming resilience and transformation as “levels” within it. This report, on the other hand, makes no claim of dissecting adaptation to reveal its internal layers. Also, while Pelling (*ibid*) subsumes resilience within adaptation, this report works with the internal logic that the community of practice is moving on from adaptation that gave strong credence to engaging with vulnerability – through, for instance, what Intergovernmental Panel on Climate Change (IPCC) calls “vulnerability approaches” to adaptation – to a focus on resilience that stems from different epistemic roots and does not appropriate insights from vulnerability adequately.

Fifth, the ambitious and extensive working paper by Béné, *et al.* (2012) that was published while this report was under review supports many of the key points included in this paper. It also demonstrates that resilience has been charged with an inadequate

engagement with issues of power/politics, which can be remedied to a certain extent through insights from vulnerability, and highlights the importance of considering transformation. Despite these strong points of convergence with Béné, *et al.*'s (ibid) work, this report attempts a different engagement with transformation drawing on a wider range of disciplines that include education, future studies and management studies apart from climate change and development. It also explores its meanings and provides examples of characteristics, measures and attributes that can help achieve transformation. This apart, there also remain certain differences in the critique of resilience that these two papers provide and their treatment of the vulnerability-resilience linkages. Importantly, Béné, *et al.* (2012)

extended their insights by developing a sophisticated framework for evaluating social protection programmes which they tested through a number of case studies, whereas this report set out to monitor the directions in which resilience thinking is moving conceptually. Overall, despite substantial differences in the literatures that they draw on, the arguments of both papers result in a clear call for rethinking the current paradigm of resilience.

In essence, this paper adds another voice to this growing consensus on the need for a more critical approach to engaging with resilience and for analyzing the possibility of greater linkages with allied concepts such as vulnerability and transformation.

References

- Adger, W.N. 2006. Vulnerability. *Global Environmental Change* 16 PP 268-281.
- Adger, N. 2008. Resilience and Vulnerability. in Leach, M. *Re-framing Resilience: a Symposium Report*. Brighton: STEPS Centre STEPS Working Paper 13.
- Adger, W.N. & Kelly, P.M. 1999. Social vulnerability to climate change and the architecture of entitlements, *Mitigation and Adaptation Strategies for Global Change* 4, 253–266.
- Alwang, J., Siegel, P.B. & Jorgensen, S. L. 2002. *Vulnerability as Viewed from Different Disciplines*. International Symposium Sustaining Food Security and Managing Natural Resources in Southeast Asia - Challenges for the 21st Century and resilience building, 22-28 July 2007, Munich, Germany.
- Bahadur, A. & Tanner, T. 2012. Transformation: Theory and practice in climate change and development. Brighton: IDS Briefing Note.
- Bahadur, A., Ibrahim, M. & Tanner, T. 2010. *The Resilience Renaissance?* Brighton: SCR Discussion Paper.
- Barr, J., Albertyn, C., Hong, V. X. N., Kundu, A. & Zaituni, F. 2011. *Asian Cities Climate Change Resilience Network Mid Term Evaluation*. UK: Verulam Associates Ltd. for Rockefeller Foundation.
- Béné, C., Wood, R., Newsham, A. & Davies, M. 2012. *Resilience: New Utopia or New Tyranny? Reflection about the Potentials and Limits of the Concept of Resilience in Relation to Vulnerability Reduction Programmes*, Brighton: IDS Working Paper # 405.
- Berkhout, F. 2008. Order In Socio-Technical Systems: The Dark Side Of Resilience. In: Leach, M. *Re-framing Resilience: a Symposium Report*. Brighton: STEPS Centre STEPS Working Paper 13.
- Bharwani, S., Magnuszewski, P., Sendzimir, J., Stein, C. & Downing, T.E. 2008. *Vulnerability, adaptation and resilience: Progress toward incorporating VAR concepts into adaptive water resource management*, Oxford: Stockholm Environment Institute.
- Biggs, R. Westley, F.R. & Carpenter, S.R. 2010. Navigating the back loop: fostering social innovation and transformation in ecosystem management, *Ecology and Society* 15(2):9.
- Bivens, F. Moriarty, K. & Taylor, P. 2009. Transformative education and its potential for changing the lives of children. In Moncrief, J. *Disempowering contexts in Intergenerational transmissions: cultivating agency?* UK: IDS Bulletin Volume 40 No. 1.
- Blaikie, P., Cannon, T., Davis, I. & Wisner, B. 1994. *At Risk: Natural Hazards, People's Vulnerability and Disasters*. Routledge: London.
- Boyd, E., Osbahr, H., Ericksen, P., Tompkins, E., Lemos, M. C. & Miller, F. 2008. Resilience and “Climatizing” Development: Examples and Policy implications. *Development* 51(3):390-96.
- Boyd, R. & Myers, J. 1988. Transformative education. *International Journal of Lifelong Education*, 7:4, 261-284.
- Boyden, J. & Cooper, E. 2006. Questioning the Power of Resilience: *Are Children Up To the Task of Disrupting the Transmission of Poverty?* UK: CPRC Working Paper 73.
- Brooks, N. 2003. *Vulnerability, Risk and Adaptation*. Norwich: Tyndall Centre Working Paper.
- Brooks, N., Adger, W.N. & Kelly, P.M. 2005. The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change* 15 151-163.
- Brown, A., Dayal, A. & Rumbaitis, C. 2012. From practice to theory: emerging lessons from Asia for building urban climate change resilience. *Environment and Urbanization* 24: 531.
- Bruce, T. 2007. The Intergovernmental Panel on Climate Change: A global scale transformative initiative. *Futures* 39, 614–618.
- Castle, C. J. E. & Crooks, A. T. 2006. *Principles and Concepts of Agent-Based Modelling for Developing Geospatial Simulations*. UK: Centre for Advanced Spatial Analysis (University College London) Working Paper 110, London, England.
- Cannon, T. 2000. Vulnerability Analysis and Disasters, In: Parker, D.J. (ed.) *Floods*. UK: Routledge.
- Cannon, T. & Muller-Mahn, D. 2010. Vulnerability, resilience and development discourses in context of climate change. *Natural Hazards* Volume: 55, Issue: 3.
- Chambers, R. 1983. *Rural Development: Putting the First Last*. London: ITDG.
- Chelleri, L. 2012. From the Resilient City to Urban Resilience. A review essay on understanding and integrating the resilience perspective for urban systems, *Documents d'Anàlisi Geogràfica* 2012, vol. 58/2.
- Da Silva, J., Kernaghan, S. & Luque, A. 2012. A systems approach to meeting the challenges of urban climate change. *International Journal of Urban Sustainable Development*.

- Dabhi, J. 2004. Development and social transformation-role of the voluntary sector, *Social Change* 34:86.
- Devereux, S. & Wheeler, R.S. 2004. *Transformative social protection*. Brighton: IDS Working Paper 232.
- Dow, K. 1992. Exploring Differences in Our Common Future(s): the Meaning of Vulnerability to Global Environmental Change. *Geoforum* Vol. 23. Pp 417–436.
- Ernstson, H., Leeuw, S., Redman, C., Meffert, D., Davis, G., Alfsen C and Elmqvist, T. 2010. Urban Transitions: On Urban Resilience and Human-Dominated Ecosystems. *AMBIO* 39:531–545.
- Folke, C. 2006. Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses. *Global Environmental Change* 16: 253–67.
- Folke, C. & Carpenter, S. 2006. Ecology for transformation. *TRENDS in Ecology and Evolution* Vol.21 No.6.
- Francis, D. Bessant, J. & Hobday, M. 2003. Managing radical organisational change, *Management Decision*; 41.
- Fussler, H. 2007. Vulnerability: A generally applicable conceptual framework for climate change research. *Global Environmental Change* 17 PP 155–167.
- Galliard, J.C. 2010. Vulnerability, capacity and resilience: perspectives for climate and development policy. *Journal of International Development*, 22:218–232.
- Gallopin, G. 2006. Linkages between Vulnerability, Resilience and Adaptive Capacity. *Global Environmental Change* 16:3.
- Garschagen, M. 2011. Resilience and organisational institutionalism from a cross-cultural perspective: an exploration based on urban climate change adaptation in Vietnam. *Natural Hazards*: 29 March.
- Gunderson, L. & Holling, C.S. 2001. *Panarchy: Understanding Transformations in Human and Natural Systems*. USA: Island Press.
- Holling, C.S. 1973. Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics* 4:1–23.
- Horborg, A. 2009. Zero-Sum World: Challenges in Conceptualizing Environmental Load Displacement and Ecologically Unequal Exchange in the World-System, *International Journal of Comparative Sociology* 50:237.
- Janssen, M. & Ostrom, E. 2008. Resilience, vulnerability, and adaptation: A cross-cutting theme of the International Human Dimensions Programme on Global Environmental Change. *Global Environmental Change* 16:237–239.
- Jasonoff, F. 2008. Survival of the Fittest. In Leach, M. *Re-framing Resilience: a Symposium Report*. Brighton: STEPS Centre STEPS Working Paper 13.
- Kapoor, R. 2007. Introduction. *Futures* 39 (2007) 475–486.
- Klein, R. Nicholls, R. & Thomalla, F. 2003. Resilience to natural hazards: How useful is this concept? *Environmental Hazards* 35–45.
- Kotter, J.P. 1995. Leading change: why transformation efforts fail. *Harvard Business Review*, 00178012, Mar/Apr95, Vol. 73, Issue 2.
- Kuhlicke, C. 2010. Resilience: a capacity and a myth: findings from an in-depth case study in disaster management research. *Natural Hazards*.
- Leach, M. (ed) 2008. *Re-framing Resilience: a Symposium Report*. Brighton: STEPS Centre STEPS Working Paper 13.
- Leichenko, R. 2011. Climate change and urban resilience, *Current Opinion in Environmental Sustainability*, 3:164–168.
- McLaughlin, P. & Dietz, T. 2008. Structure, agency and environment: Toward an integrated perspective on vulnerability. *Global Environmental Change* 18.
- Mezirow, J. 1997. Transformative learning in action. *New Directions for Adult and Continuing Education* No. 74.
- Miller, F. Larsen, R. and Thomalla, F. 2008. *Hybrids, Bifocals, Tipping Points and Speed Dating: Report from the Resilience- Vulnerability Colloquium – From Theory to Practice, From Disconnect to Synergy in Support of Sustainable Development*. Sweden: Stockholm Environment Institute.
- Miller, F., Osbahr, H., Boyd, E., Thomalla, F., Bharwani, S., Ziervogel, G., Walker, B., Birkmann, J., Van der Leeuw, S., Rockström, J., Hinkel, J., Downing, T., Folke, C. & Nelson, D. 2010. Resilience and vulnerability: complementary or conflicting concepts? *Ecology and Society* 15(3):11.
- Mileti, D. 1999. *Disasters by Design: A Reassessment of Natural Hazards in the United States*. USA: Joseph Henry Press.
- Moench, M. Tyler, S. & Lage, J. (eds.) 2011. *Catalyzing Urban Climate Resilience*. USA: ISET.
- Moench, M. & Tyler, S. 2012. A Framework for Urban Climate Resilience, *Climate and Development Vol 4 Issue 4*.
- O'Brien, K. 2011. Global environmental change II: From adaptation to deliberate transformation. *Progress in Human Geography* 1–10.

- O'Brien, K., Eriksen, S., Schjoden, A. & Nygaard, L. 2004. Conflicting interpretations of vulnerability in climate change research. Norway: Center for International Climate and Environmental Research.
- Olsson, P., Folke, C. & Hahn, T. 2004. Social-ecological transformation for ecosystem management: the development of adaptive co-management of a wetland landscape in southern Sweden. *Ecology and Society* 9(4):2.
- Pelling, M. 2011. *Adaptation to climate change: from resilience to transformation*, Oxon: Routledge.
- Pelling, M. & Navarrete, D. 2011. From resilience to transformation: the adaptive cycle in two Mexican urban centers. *Ecology and Society* 16(2):11.
- Prowse, M. 2003. *Towards a clearer understanding of 'vulnerability' in relation to chronic poverty*. Manchester: Chronic Poverty Research Centre Working Paper No. 24.
- Resilience Alliance. 2007. "Urban Resilience", a Resilience Alliance Initiative for Transitioning Urban Systems towards Sustainable Futures. Available at citiesforpeople.ca/wp-content/uploads/2014/02/urbanresiliencere-searchprospectusv7feb07.pdf.
- Schoon, M. 2005. *A Short Historical Overview of the Concepts of Resilience, Vulnerability, and Adaptation*. Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, IN, 29 January. Working Paper W05-4.
- Smith, A. & Stirling, A. 2010. The politics of social-ecological resilience and sustainable socio-technical transitions. *Ecology and Society* 15(1):11.
- Smit, B. & Wandel, J. 2006. Adaptation, adaptive capacity and vulnerability. *Global Environmental Change* 16:282-292.
- Swanstrom, T. 2008. "Regional Resilience: A Critical Examination of the Ecological Framework". Working Paper 2009-07: Berkeley Institute of Urban and Regional Development, USA.
- Turner, B.L. 2008. A Skeptic's Comments On Resilience and Alternative Approaches to Coupled Human-Environment Systems. In: Leach, M. *Re-framing Resilience: a Symposium Report*. Brighton: STEPS Centre STEPS Working Paper 13.
- Turner, B. 2010. Vulnerability and resilience: Coalescing or paralleling approaches for sustainability science? *Global Environmental Change* 20:570-576.
- Walker, B. Holling, C.S. Carpenter, S. R. & Kinzig, A. 2004. Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* 9(2):5.

ANNEX 1

Views on vulnerability

There is substantial variety in how theorists have conceived the idea of vulnerability. A review of key literature in vulnerability reveals that they fall into four broad categories. First, there is one interpretation of the term that acknowledges vulnerability to be a characteristic of a system that exists within it independently of external factors; it is determined by the way in which society functions and the manner in which relationships within it are structured (Brooks 2003, Brooks, *et al.*, 2005; Smit and Wandel, 2006; Dow, 1992; O' Brien, *et al.*, 2004; Alwang, *et al.*, 2002; McLaughlin and Dietz, 2007). Second, closely associated/overlapping with the first school of thought on vulnerability is another that gives credence to political and economic factors such as assets, entitlements and institutional structures. This school of thought seeks to move towards empirical measurements of vulnerability through quantifiable metrics (Adger, 2006; Leary,

2002; Prowse, 2003; Cannon, 2000; Adger and Kelly, 1999; Blakie, *et al.*, 1994). A third set of approaches is clearly distinguishable from the first two in that they do not consider vulnerability to be largely a result of underlying pre-existing drivers (poverty, inequality) but of physical, natural and structural factors that are often external to the system in question (Brooks, 2003; Dow, 1992; O' Brien, *et al.*, 2004; Adger, 2006; Smit and Wandel, 2006). Finally, there are integrated approaches that borrow elements from the first three discussed above (Moser, 1998; Chambers, 1989; Gallopin, 2006; Fussler, 2007). Ever since researchers and practitioners started to consider the value of resilience as a means of engaging with change, there has been considerable debate on the relationship of this concept with the notion of vulnerability. This paper, while drawing more on the first two schools of thought, employs these diverse understandings of vulnerability.



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