Northumbria Research Link

Climate Change, Local Governance and Resilience in the UK

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Introduction

Accelerated climate change and increasing climate variability caused by anthropogenic greenhouse gas emissions is the single largest environmental problem to the attainment of international goals of sustainable development and disaster risk reduction. Responding to the threats posed is a challenge for the international community. There is no single response adequate to meeting this challenge. Globally there is convergence between disaster management, climate change and sustainable development that recognises the need for risk reduction and capacity development to respond to current and future climate driven change. Resilience is a key concept for responding to this challenge. Embedding resilience within communities requires innovative approaches. Current approaches to disaster management are too prescriptive and need to embrace more holistic preparedness strategies. Responding to the climate challenge requires a greater focus on pre-disaster planning.

This paper argues that the UK approach to disaster management has too great a focus of institutional resilience. Responding to the current climate episode and future events is a challenge. Reactive approaches, that is responding to events as, and when, they occur could lead to an overwhelming of the response agencies when faced with the multiplicity and frequency of climate driven events. Stern argues that it is more cost effective to tackle the problem now, as the long term cost to the global economy will far exceed the current and ongoing costs of action (Stern, 2006). Though weather related disasters can often appear to be

infrequent, but high profile events, such as hurricane Katrina, the reality is that they account for some 90%, or $1.4trillion, of disaster related economic losses. 60% of losses derive from mundane events such as temperature extremes and moderate droughts (McCarthy et al 2001, Mills, 2005, Murnane, 2004). Approaches to disaster management must incorporate pre-planning. It must shift from reactive to proactive. Broadly, there are two ways of responding to climate risk. Mitigation has its focus on reducing future risks. Adaptation has it focus on reducing risk to the current episode of change loaded into the atmosphere and on continuing to seek risk reduction in the face of future ongoing changes. Disaster management should have its focus on adaptation; that is pre-planning to reduce risk, both now and in the future.

UK Resilience

In an increasingly uncertain and rapidly changing world, nations such as the United Kingdom are vulnerable to distant events, ranging from economic crises on the other side of the world, diseases spread by air travelers and cyber attacks on global networks, to long term changes in the planetary climate system induced by anthropogenic activities. Managing these risks in the UK will be more difficult in the skeptical and questioning environment that has developed throughout the latter half of the 20th century. In today's world many people are likely to have access to the same information from the media and World Wide Web as the policymakers and can thus develop their own independent risk assessment. It is against this background that the reforms to UK Emergency Management should be viewed. The BSE (bovine spongiform encephalopathy) epidemic of the 1990s reinforced public skepticism of officialdom. Events during 2000/1 such as Y2K, floods, fuel blockade and the Foot and Mouth outbreak persuaded government that the existing arrangements for UK Emergency Management were outdated and inadequate to the problems that were likely to be faced in the new millennium. A new approach to managing and communicating risk was needed. A review process was launched in at the beginning of 2001, scheduled for completion by October, under the banner of UK Resilience. This was defined as:-

"The ability at every level to detect, prevent, prepare for and if necessary handle and recover from disruptive challenges." (Great Britain. Cabinet Office Civil Contingencies Secretariat, 2004, p. 1).

The terrorist attacks of September 11th 2001 in the USA directly influenced the review process. The outcome of the review and subsequent reforms has seen a focus on institutional resilience and terrorism. A new legislative base has been introduced, the Civil Contingencies Act, 2004. A new structure has been imposed with the Civil Contingencies Secretariat acting

as the central co-ordination body. The Capabilities Programme seeks to strengthen institutional capacity to respond to terrorist attacks and civil disruption. A regional structure has been introduced, the Regional Resilience Forums. At the local level a duty has been placed to undertake Emergency Planning. Previously this was discretionary. Additional funding has followed these reforms, but the majority of this has been allocated to preparing for terrorist attacks (O'Brien and Read, 2005, O'Brien, 2006).

Though many of the reforms are welcome, there are concerns that the focus on institutional resilience ignores the wider resilience agenda. Though the terrorist threat should not be ignored or underestimated, there is a need to ensure that the wider threats, including climate change and climate variability, are not ignored.

Resilience

Resilience, as a concept, has emerged from ecological studies (Holling, 1973). The concept of resilience is defined by scholars as either flexibility in the face of a perturbation or the ease of returning to the original state following a perturbation (Walker et al 2004, Gallopin, 2006). With its' origins in ecology, resilience retains its emphasis on networks and interdependence. When applied to climate change adaptation studies of coupled human-environment systems it is usually combined with vulnerability analysis to inform the concept of adaptive capacity. Adaptive capacity is the ability to reduce exposure to climatic risk, absorb and recover from losses and exploit new opportunities in a changing or changed environment (Adger, 2006, Janssen et al 2006, McCarthy et al 2001, Smit and Wandell, 2006).

The concept of resilience is increasingly expressed in international agendas that are aimed at risk reduction. Sustainable development is aimed at reducing the risk of damage by inappropriate, unsustainable or mal-development to the ecosystems needed to maintain a healthy and productive environment. It advocates through Agenda 21 and Action 2 that local solutions to local problems are the mechanism for a sustainable future and these should be developed through governance mechanisms closest to the people. The UNFCCC (Framework Convention on Climate Change) and its Kyoto protocol advocate climate risk reduction in the future through mitigation and climate risk both now, and in the future, through adaptation. The Hyogo Framework articulates a number of areas of action such as governance, risk identification and reduction and preparedness and sees knowledge of social vulnerabilities as the starting point for embedding resilience for reducing disaster risk (Hyogo, 2005). In this context resilience is defined as:-

"the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organising itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures." (UN/ISDR, p4).

From this definition it can be seen that resilience can operate at a number of scales and is dependent upon its existing internal capacity and access to resources in order to adapt to changing conditions. It is a learning function and requires a breadth of indigenous knowledge and experience. And it is this learning function that is key. In the instance where there is insufficient capacity to learn then external help can be used to facilitate the process. However there must also be recognition that the goal of the process is the need to establish societal resilience. This requires engagement and learning at all levels.

Learning takes place in many ways and forms and in many contexts. Learning is a dynamic and ongoing process. Social learning theory focuses on the learning that occurs within a social context. It considers that people learn from one another, including such concepts as observational learning, imitation, and modelling. Social learning is seen as a cognitive process. (Bandura, 1989, Ormrod, 1999, Rotter, 1982). Organisational learning has been part of the management literature for many years and explores how learning takes place in response to changing conditions (Senge 1990, Easterby-Smith et al, 1999). The conceptual origins of the learning organization are closely associated with knowledge management and the increased importance of knowledge as a source of value for companies, institutions and societies, and the advancement in cognitive theory. Organizational learning has its focus on the management of change rather than strategy. Two types of learning are distinguished; single-loop learning on how to do things better and double-loop on testing assumptions and re-thinking strategies or learning how to learn. Other scholars have introduced the concept of triple-loop learning that questions the role of the organization (Flood and Romm, 1996). Learning organizations are able to adapt and respond to change and are seen as being in a state of permanent revolution (Mintzberg et al 1998).

The science of complexity has generated insights into organizational learning. This parallels natural processes where complex systems innovate and repeat patterns that enhance the ability to adapt successfully to its environment. Complex adaptive systems see groups of autonomous actors that share a goal and have set of individual and collective rules. The rules may be in tension with each other and over time one rule may be replaced by a new rule. This is innovation and leads to change and is seen as learning (Holland, 1995, McElroy, 2000).

From Reactive to Proactive Disaster Management – A Learning Agenda?

The approach to disaster management in the UK is characterised as an all-hazards approach. The objective of the approach is a return to normal. The all-hazards approach is characterised by risk assessment that leads to the establishment of norms and standards and is regulated through the governance structures of the state. It functions through the interlinked plans of emergency responders from the local through to the national level. At national level disaster management is usually underpinned by legislation. It is usually well funded and equipped and staffed by a mixture of full-time professionals and volunteers. At times of a major crisis it is able to use resources from beyond its normal operating boundaries. (Alexander, 2002, Lindell and Perry, 2003, O'Brien and Read, 2005, McEntire et al, 2002).

Learning within this context is focused on plan validation realised through exercising and training. In this context the role of learning is to test the assumptions in the plan and to reinforce the capacity of the response organisation to undertake its role. In the UK context this had the affect of reinforcing organisational capacity and institutionalising resilience within the disaster management structure. The wider public is not normally involved in this process. One of the weaknesses of this approach is that it can be subject to political influence and have its attention focused on what the political classes perceive as the current or more immediate threat, for example terrorism. Longer term or less obvious threats can be overlooked. Community involvement or participation is minimal at best (O'Brien, 2006).

The result is that a Command and Control approach dominates disaster management in the UK, whereas a bottom-up participatory approach is needed to embed resilience. These competing views are shown in Table 1.

Table 1:   Resilience and Disaster Management

Dominant Paradigm	New Paradigm
Isolated Event	Part of Development
Risk Not Normal	Risk of Disaster/Conflict
Techno-legal	Social Capacity
Centralized	Participatory
Low Accountability	Transparent
Post Event Planning	Predisaster Plans
Status Quo Restored	Transformation
Cross-Cutting Theme: Public Education	

Source: O'Brien, 2006

The UK, Climate Change and Governance

Preparedness for any eventuality is a partnership between government and people (Bermann and Redlener, 2006). Climate change and climate variability is an area that requires that active participation of all actors. In the case of the UK this is limited by the centralized nature of government. Social changes in the latter half of the 20th century saw the rise of individualism and consumerism and increase questioning of the role and legitimacy of institutional structures. In parallel with this central government increasingly eroded local government. The result today is that local government effectively acts as an administrative body for certain central government functions with other functions enacted through government departments or agencies. In the case of agencies democratic accountability is either minimal or non-existent. Autonomy at the local level is severely impaired. It would be fair to say that the Command and Control approach to disaster management in the UK reflects the Command and Control approach of UK central government.

Embedding resilience requires a partnership. For climate change and climate variability this has its focus on two areas. The first is finding meaningful and sustainable ways of mitigating greenhouse gas emissions. The second is adapting to changes.

In the first case energy policy must recognise that behaviour and lifestyle are important determinants. Energy users must be encouraged to think about and use energy in different ways, to adopt alternative systems and to be efficient. This requires a government that is prepared to support those trying to actively change and requires the right signals and

consistency in policy approach. It has to empower, both locally and regionally, approaches that meet local needs. Energy policy in the UK is supply-side led. Though attempts have been to improve efficiency, these have been largely unsuccessful, as government has not enabled an active dialogue between users and energy advisors. It has encouraged renewables but provides insufficient financial support or incentives and frequently revises or changes programmes, leading to confusion and cynicism. This is not partnership.

In the second case the UK government has established an adaptation programme. However there are still many practices, for example, developing in flood prone areas that are allowed. There is increasing understanding of the areas where adaptation measures are needed and examples where active work is being undertaken. However at a policy and institutional level there is little evidence of the changes needed to ensure that adaptation moves at an appropriate pace. This is a concern.

Promoting more resilient approaches requires active participation at all levels and with regard to climate change and climate variability it requires a focus on adaptation to reduce current risks and mitigation to reduce long term risks. From a disaster management perspective this requires pre-planning. Table 2 sets out the principles needed to underpin pre-disaster planning.

Table 2: Pre-Disaster Planning Principles

Pre Disaster Planning Principles
Sustainable Development
Risk Avoidance
Embedded in Policy and Practices
Distributed to the appropriate level
Shared responsibility
Learning from scientific evidence, indigenous knowledge and experience
Adjusting to changes
Institutional Development, Organisational and Social Learning

Can the disaster management community in the UK incorporate these principles? One of the positive aspects of the changes to UK disaster management has been the changes in the definition of an emergency in the Civil Contingencies Act. It is much broader than previous definitions and incorporates an environmental aspect. This provides a basis for broadening the role of the disaster management community. There is considerable evidence of proactive work by the disaster management community in the UK and a willingness to work in partnership and with a range of stakeholders at the local level. It is fair to argue that there is a culture of change at the local level. This forms a strong base for the shift needed to develop societal resilience and to focus that on responding and adapting to climate change and climate variability. To support this needs institutional development that recognizes the value of bottom-up collaborative working. It is not clear at this time if the UK institutionally is ready to develop in this way.

Closing Comments

Where there is a fragmented policy response from central government to communities in need, this can often lead to situations where vulnerable groups are adversely affected by

disastrous events. Hurricane Katrina in the USA exposed the fragility of response to such a major event and has been described by some as the result of too great a focus on terrorism. This is evidenced in the decline of FEMA and the rise of the Department of Homeland Security. Following hurricane Katrina the US federal government declared a state of emergency. This began the flow of funding and resources to those in need. Though there are still many problems to resolve, progress is being made. For the Inuit people in Alaska the situation is very different. A warming climate is eroding the land their communities are built upon and threatening their livelihoods. This is a climate change disaster. However federal rules do not allow this situation to be declared an emergency. Federal help is not available and the Inuit are trying to get support from other sources. The words of an Inuit spokesperson are worthy of thought:-

"There is a reason native people have been able to survive for centuries in the harshest of conditions, in the strangest of times; it is because of our resilience and our adaptability.

And it is that strength from within that our communities now have to rely upon as we face an uncertain future." (Patricia Cochran, 2007).

This does raise a question of how many societies and communities have the resilience to respond to, and cope with, climate change and climate variability hazards and has the disaster community sufficient capacity to respond? The answer is probably few and probably not. Promoting societal resilience is a pressing need.

Bibliography

Adger, W.N., 2006, Vulnerability Global Environmental Change, Vol 16 pp 268- 281. Elsevier

Alexander, D. (2002) Principles of Emergency Planning and Management. Terra Publishing, Harpenden.

Bandura, A. (1989). Social Cognitive Theory. In R. Vasta (Ed.), Annals of child development, Vol. 6. Six theories of child development (pp. 1-60). Greenwich, CT: JAI Press

Bermann, D., A., Redlener, I., 2006, National Preparedness Planning: the historical context and current state of the US public's readiness, Journal of International Affairs, Spring/Summer 2006, vol. 59, no. 2. pp 87 - 103 © The Trustees of Columbia University in the City of New York, USA.

Easterby-Smith, M., Burgoyne, J. and Araujo, L. (eds.) (1999) Organizational Learning and the Learning Organization, London: Sage.

Flood, R., L., Romm, N., R., A., 1996, Diversity Management: Triple Loop Learning, Wiley. ISBN: 978-0-471-96449-0

Gallopin, G.C. 2006, Linkages between vulnerability, resilience, and adaptive capacity, Global Environmental Change Vol 16 pp 293-303. Elsevier. P. 297

Great Britain. Cabinet Office Civil Contingencies Secretariat (2004), Dealing with Disasters, rev. 3rd ed., p.1. The Stationery Office, London.

Holland, J. (1995), Hidden Order: How Adaptation Builds Complexity, Perseus Books, Reading, MA

Holling, C.S., 1973. Resilience and stability of ecological systems. Annual Review of Ecology and Systematics 4, 1–23. Available at: http://www.jstor.org/view/00664162/di975347/97p0062a/0

Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. Available at: http://www.icsu-asia-pacific.org/resource_centre/ISDR_Hyogo-framework-for-action_HFA.pdf

Janssen, M.A., Schoon, M.L. 2006, Ke, W. Borner, K., 2006, Scholarly networks on resilience, vulnerability and adaptation within the human dimensions of global change, Global Environmental Change Vol. 16, pp 240-252, Elsevier

Lindell, M.K. and R.W. Perry (2003) 'Preparedness for Emergency Response: Guidelines for the Emergency Planning Process'. Disasters. 27(4). pp. 336–350.

McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J., White, K.S. (Eds.), 2001. Climate Change 2001: Impacts, Adaptation and Vulnerability. Cambridge University Press, Cambridge.

McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J., White, K.S. (Eds.), 2001. Climate Change 2001: Impacts, Adaptation and Vulnerability. Cambridge University Press, Cambridge.

McElroy, M., W., 2000, Integrating complexity theory, knowledge management and organizational learning, Journal of Knowledge Management Volume 4, Number 3, 2000, pp. 195±203. MCB University Press . ISSN 1367-3270. Available at: http://www.macroinnovation.com/images/IntegratingandOL.pdf

McEntire, D.A., C. Fuller, C.W. Johnston and R. Weber (2002) 'A Comparison of Disaster Paradigms: The Search for a Holistic Policy Guide'. Public Administration Review. 62(3). pp. 267–281.

Mills, E., 2005, Insurance in a Climate of Change, Science 309 (2005): 1041

Mintzberg, H., Ahlstrand, B., Lampel, J. 1998, Strategy Safari: A Guided Tour Through the Wilds of Strategic Management, Prentice Hall

Murnane, R., J., 2004, Climate Research and Reinsurance, Bulletin of the American Meteorological Society 85, no. 5

O'Brien, G., (2006), UK Emergency Preparedness – A step in the right direction? Journal of International Affairs, Spring/Summer 2006, vol. 59, no. 2. pp 63 -85 © The Trustees of Columbia University in the City of New York, USA.

O'Brien, G., Read, P., (2005) Future UK Emergency Management: New Wine, Old Skin? Disaster Prevention and Management, Vol. 14(3) pp 353-361. Emerald, UK

Ormrod, J.E. (1999). Human learning (3rd ed.). Upper Saddle River, NJ: Prentice-Hall

Patricia Cochran, Executive Director of the Alaska Native Science Commission and chairwoman of the Inuit Circumpolar Council, "Alaska natives left out in the cold," BBC News Online, 4th January 2007, http://news.bbc.co.uk/1/hi/sci/tech/6230731.stm

Rotter, J. B. (1982). The development and application of social learning theory. New York: Praeger

Senge, P. (1990) 'Building learning organizations' in D.S. Pugh (ed.) (1997) Organization Theory (4th edn), New York, NY: Penguin.

Smit, B., Wandel. J., 2006 Adaptation, adaptive capacity and vulnerability, Global Environmental Change, Vol 19 pp 282-292. Elsevier

Stern Review: The Economics of Climate Change, 2006, Available at: http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

UN/ISDR, "Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disaster," http://www.unisdr.org/wcdr/intergover/official-doc/L-docs/Hyogo-frameworkfor-action-english.pdf

Walker, B., Holling, C.S., Carpenter, S.R., Kinzig, A., 2004. Resilience, adaptability and transformability in social-ecological systems. Ecology and Society 9 (2) art. 5 [online], URL: http://www.ecologyandsociety.org/vol9/iss2/art5