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Are We There Yet? Reflections on Integrated Disaster Risk Management after Ten Years[1]

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Abstract Integrated disaster risk management (IDRiM) is a lofty and ambitious goal. It would bridge scales from the global to the local, involving a wide range of actors or stakeholders. It would draw on local as well as outside specialist knowledge, and this external knowledge would come from a wide array of professional and scientific fields from economics and the social sciences to the earth and biological science and engineering, public administration and communication. Above all the word 'integration' implies that established distinctions are bridged, such as between planning for development and planning for disaster risk management. This paper argues that over the past ten years some progress has been made in laying out the road map, but that we are not there yet. In fact, the journey has only begun. There have been key events that have motivated people to seek IDRiM such as the Indian Ocean tsunami and Haitian earthquake and their aftermaths. New institutions have been created that have the potential to move us toward IDRiM such as UN-ISDR. Finally, a series of concepts have emerged from many reports, evaluations, and research. These ideas are discussed, and the challenge for the next 5-10 years mapped out.

Key words Integrated disaster risk management

INTRODUCTION

This essay discusses the evolution and future of integrated disaster risk management (IDRiM) from the point of view of key events, concepts and challenges. First, however, it's necessary to consider the meaning of the word 'integrated'.

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'Integration' and the adjective 'integrated' are very common in disaster management literature. The UN-ISDR's Hyogo Framework of Action exhorts countries to 'integrate disaster risk reduction (DRR) into plans and policies for sustainable development and poverty reduction' (UNISDR 2005). The UN's Food and Agriculture Organization states that 'the integration of DRR into sustainable development and sectoral policies and planning is recognized as priority number one by the international community (FAO 2007).

There are several problems here. Firstly, one needs to define 'sustainable development' – itself a very murky subject and a task I shall not undertake here. Secondly, the sense of 'integrate' in such statements usually boils down in practice to mean 'add'. A planning and policy apparatus exists already with its methods, mandates, timelines and resources (human, cybernetic and financial). So the task is to 'add' DRR into this pre-existing and on-going activity. But that apparatus is stronger, has credibility with an existing audience or group of consumers (ministers, members of parliament, business leaders, donors, etc.) and DRR does not. It is the weaker of the two, and it would appear to be clamouring for attention among many other 'issues' such as HIV-AIDS, gender equality, indigenous rights, etc. It is also vying for attention alongside its very large and powerful (well-funded and highly credible) cousin, climate change adaptation. The third problem is that such statements do not question whether 'sustainable human development' is itself internally integrated or, in fact, if DRR itself enjoys integration among its part processes (e.g. awareness, training, legislation, risk assessment, monitoring, warning, etc.).

In short, there are two issues of integration here. Logically prior is the question of DRR's own status. Is it integrated internally? Secondarily, then, one can ask about its inclusion as a function, goal or pillar of sustainable human development.

WHAT IS INTEGRATED DRM/DRR?

There are many formal and even more working definitions of 'integration'; however, the most interesting and promising ones go deeper than simply 'adding' disaster prevention to existing programmatic activities. That richer notion of 'integration' involves doing existing activities differently, in a risk aware manner.

For example, the World Bank's Global Facility for Disaster Reduction and Recovery entitled its 2009 annual report Integrating Disaster Risk Reduction into Poverty Reduction and gave numerous examples of how sectors such as water, agriculture and housing have been made risk-sensitive in a number of countries (GFDRR 2009).

Getting beyond the bureaucratic constraints and divisions of labour among agencies, an intellectual grounding for 'integration' can be sought in the nature of the diverse phenomena that make up a contingent world where risk occurs. The International Council for Science finds a rationale for integrated research into disaster risk in the mutual causation that links social and natural systems. It therefore sets out a framework within which numerous natural science and social science disciplines should bring their methods and concepts in order to understand such complexity. The work they recommend should involve not only multiple disciplines but multiple scales (ICSU 2008).

The ICSU science plan defines key questions, and these in turn suggest the diversity of disciplines required to answer them:

- What are the places at risk, the people most at risk, the level of risk; and how does risk change over time? (p. 19)

- How can natural hazards be forecast confidently?
- What factors contribute to future risk and related uncertainties, and can uncertainties be reduced?
- Can forecasts, their limitations and uncertainty be communicated effectively? (p. 20)
- Whose decisions make the most impact on the level of risk?
- How much and what kind of authority do different decision makers have?
- How do different decision makers and agencies interact?
- How do decisions made at the local, national or international level impact on each other? (p. 22)
- How do actors perceive the risk associated with a given hazard; what options to they believe they have open when faced with such hazards?
- What do they perceive are the likely consequences of these options?
- How are disaster risks perceived in relation to chronic risks such as unemployment, lack of income or threats to cultural or personal identity? (p. 23)
- What is the quality of information available to all decision makers at all levels?
- What factors influence whether or not such information is used?
- What factors influence whether risk communications are trusted?
- What government structures may influence better decision making practice? (p.24).

This is an impressive list. However, research and knowledge are one thing, application to the real world and implementation are another. A higher order 'integration' is required to see, in the words of the Society for IDRiM (2010), 'implementation of success[ful] models for efficient and equitable disaster risk management options'.

Shi et al. (2007) provide a functional definition of 'integration' with the example of China's multi-level, multi-hazard risk management system based on the principle of giving 'priority to disaster prevention and combin[ing] prevention with disaster resistance and relief' (p. 9).

The deepest level or meaning on 'integration' seeks out the causal chain or cascade begins with root causes that may be distant in historical time and global in spatial scale and studies how they are transmitted through dynamic pressures such as weak government, unplanned urbanization, etc.so that they shape particular unsafe conditions (Wisner et al. 2004).

Why IDRiM?

One reason why disaster risk management needs to be integrated is that risk itself has become integrated in the sense of 'systemic' in the modern world. Ikeda *et al.* (2005) refer to 'systemic risk in a modern post-industrial society where a single physical disaster can trigger secondary and tertiary effects on other social systems or organizations'.(see also Beck 1991; 1999;` Perrow 2008). Another reason is that *reduction*, as opposed to mere *management*, of risk implies digging into its root causes and making the changes in economic and political systems, policies and practices that continue to reproduce these root causes (Wisner et al. 2004; see also www.radixonline.org). Otherwise even the best recovery work and DRR/DRM only reproduces the status quo ante following a disaster, and people are left as vulnerable as they were to the next extreme natural event (Susman et al. 1984).

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KEY EVENTS

A number of key events have driven mounting interest in IDRiM during the ten years during which these various aspects of 'integration' attracted increasing attention. In a variety of ways each of these showed failures in planning and governance before the events and insufficient learning from these disasters. Of course, what the UNISDR calls 'extensive risk' – the accumulated, erosive influence of many small hazards impacts on the livelihoods of the poor – has a great effect on vulnerability to disaster and capacity to cope (UNISDR 2009). In addition, there are numerous crises that affect livelihoods and well being of people without ever being officially recognised as 'disasters' (Wisner and Gaillard 2009). Nevertheless, a number of large scale disasters have had a major effect politically and added momentus to thinking and programming in an more integrated fashion. The following are a few of these key events.

Hurricane Mitch (1998)

Hurricane Mitch (1998) took place outside the time frame under consideration but can be seen as a major driver of a more integrated approach to disaster risk management, especially when one considers the Stockholm Declaration by affected countries in Central America and donors and its commitment to recovery as transformation (Consultative Group 1998). In Stockholm major donors met with Central American presidents to work out a recovery approach that would simultaneously build resilience to natural hazards. A major break through was participation of Central American civil society organizations at these planning talks (Wisner 2001;Christoplos *et al.* 2009).

Mozambique floods (2000)

Mozambique floods (2000) was a cameo case of the need for transnational coordination at one scale extreme and, at the end, the need for local planning of development and risk reduction as a comprehensive exercise. Heavy rain in the international watershed of the Zambezi River led engineers at the Kariba dam upstream of Mozambique in Zimbabwe to release large amounts of water without notifying engineers at Mozambique's Cahora Basa dam. These, in turn, opened their flood gates without communicating adequately to the people who lived further downstream. A chain of warning involving technicians, the hierarchy of government officials and villagers was broken. At the local level there were no plans for village or district level response (Wisner et al. 2004: 256-61; Hanlon and Christie 2001). This disaster set in motion many changes in Mozambique. To some extent what began has worked well in subsequent flood events. There is now good communication among technical river managers and a district and local scale plans and organizations have been created.

What should have been integrated?

In the Mozambique case, full understanding of the situation and prevention of a recurrence require knowledge of:

- History of settlement and resettlement along the Zambezi
- Village land use and settlement patterns
- Intra and inter-village communication and leadership patterns

- Relations between villages and Mozambican authorities
- Physical geography of the river's flood plain
- River hydrology, including the effects of storms
- Reservoir management practices and protocols.

Indian Ocean tsunami (2004)

The Indian Ocean tsunami (2004) was the trigger for international institution building and, to some extent, conceptual re-framing of disaster risk management within the context of sustainable development and human rights. Regarding the first, there was evidence that communities where coastal vegetation was undisturbed suffered less from the tsunami wave. Some of its energy had been absorbed traversing the wetlands (Wetlands International 2010). Land use and the valorisation of eco-system services such as provided by coastal wetlands turn out to be major gaps in previous frameworks for 'integrated' approaches to disaster risk. This will emerge again later in the decade very forcefully with the floods in Pakistan.

Concerning human rights, there were attempted 'land grabs' after the tsunami in the course of which less powerful groups such as the Sea Gypsies of coastal Thailand struggled to maintain control over their former village sites against the claims of more power and well-connected groups such as tourist hotel owners and other investors (Action Aid 2006; Roper 2006: 13). Rights discourse had entered the mix of IDRiM in a muted way in 1997 with the SPHERE Project that developed a consensus among INGOs, IFRC and others concerning minimum standards for disaster recovery assistance (SPHERE Project 2010). However, the many controversies in tsunami affected countries over land rights (e.g. land grabbing in Thailand and Indonesia, the 'one hundred meter set back' in Sri Lanka, etc.) brought human rights fully into the picture. The theme of human rights has subsequently been further elaborated in the context of climate change and disaster risk (Kalin and Haenni Dale 2008, Wisner 2000; Kent 2002)).

Hurricane Katrina (2005)

Hurricane Katrina (2005) reinforced the points that the Asian tsunami made evident but in the heart of a wealthy and technically sophisticated country. In particular, the question of wetland management emerged prominently. The fragmentation of the coastal wetlands in the course of decades of cutting access channels for petroleum pipelines and other land use changes, as well as the loss of nutrients due to engineered changes in the flow of the Mississippi River, had caused the loss of thousands of hectares of delta vegetation that could have acted as a buffer against hurricane wind and storm surge (Verchick 2010). On the rights side, still at the time of writing many of the residents of the African American neighbourhood called the Ninth Ward had not returned and or had been unable to rebuild. The fact that 120,000 low income people, elderly and disabled, the majority of them African Americans who had no access to private vehicles were left without hope of evacuation also raised many issues of discrimination and human rights (Wisner 2006; Walker and Wisner 2005, Verchick 2010)).

Haiti earthquake (2010)

The earthquakes in Haiti and Chile (also in 2010) stood in stark contrast as regards economy, society, politics and the use of science. Despite the fact that the energy released in the Chile earthquake was an order of magnitude greater, only 1,000 people died – many of them not due collapsed structures but to the failure of the tsunami warning system. By contrast, 220,000 people died in Port-au-Prince and

surrounding towns, and there was massive structural damage. The difference lies in the strength of Chile's economy, relatively good governance, a strong and enforced building code and high level of education including many qualified engineering and scientists who engage with authorities and the private sector as sources of knowledge and advice. All of that was missing in Haiti. In addition, recovery has been complicated by weak government capacity, poor integration of civil society efforts into national recovery plans and controversy over election results.

Pakistan floods (2010)

In some ways the floods in Pakistan raise most clearly the full array of disciplinary and scale aspects of 'integration' as well as the practical political difficulty of institutional capacity and making change (Oxley 2010). In order to prevent a recurrence of flooding a very large number of physical and human processes and systems must be addressed, including:

- International management of the Indus River watershed
- Comprehensive land use mapping, planning and management in the entire Indus watershed
- Livelihoods, assets, needs and motivations of all those living in the flood prone region
- Land ownership patterns among large and small holders and patronage and dependency relations among different actors
- Government-private sector relations in the affected region
- History, evolution, current management and maintenance of the hydraulic infrastructure (dams, levees, canals)
- Mapping of the governmental and non-governmental institutions involved in regulating and managing the Indus River and its tributaries
- Hydrology of the river system
- Effects of climate change.

NEW INSTITUTIONS

Global cooperation for disaster risk reduction has advanced during the past decade. 2000 witnessed the creation of the UN Secretariat for International Strategy for Disaster Reduction (UN-ISDR) as the follow up to the International Decade for Natural Disaster Reduction (UN-IDNDR) which ran from 1990-1999. At the first-ever World Conference on Disaster Reduction, held in Kobe, Japan, in 2005, 168 countries signed the Hyogo Framework of Action (HFA). This framework is supposed to guide the world toward a 'significant reduction of disaster deaths' (UNISDR 2005) by 2015. At this writing a formal mid-term review of the HFA is underway, and progress of its implementation was studied and reported in 2009 (UNISDR 2009; GNDR 2009).

Reform and restructuring of the world's humanitarian architecture has also taken place. A new divisions of labour and new modes of cooperation among the many UN agencies, INGOs and donors have been established under the so-called 'cluster approach' to humanitarian assistance. New institutions for monitoring and evaluation have also emerged such as the Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP http://www.alnap.org/). Scores of new research and

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learning platforms have also been developed, and the Society for IDRiM is the most recent of these (http://idrim.org/).

In the past decade many governments have passed laws that set up institutions at national level that at least on paper go beyond conventional 'civil protection' and 'emergency management' and attempt to reduce risk. The World Bank's Global Fund for Disaster Reduction and Recovery list 19 countries where 'disaster risk reduction is an integral part of the national development strategy' (GFDRR 2009: 7). The UNISDR's *Global Assessment of Disaster Risk Reduction 2009* lists others (UNISDR 2009).

However, despite increasing discussion of integration and mainstreaming in all these forums and new institutions, there is still very slow implementation of these ideas in the daily practice of government. Certain key concepts need to be further internalized into policy, programming and practice. Among these key concepts are the following.

KEY CONCEPTS

Complexity

Life is complex. The world is complex. Complexity should not be feared but grasped. The fact that complexity can and should be understood must be communicated to policy makers and practitioners, and tools provided to help them work within that larger and more uncertain context. Much human action takes place in the face of uncertainty, and consequences of action are not always foreknown or immediately evident. The challenge here is that hierarchical institutions of governance work on the basis of rules and routines. Complexity and uncertainty are foreign to this method of work.

Webs of Relations

One approach to complexity is a systems analytical one. Inspecting the phenomenon of disaster risk and the human project of risk management and reduction, key sub-systems are apparent. Key sub-systems involve people—and hence history, politics, culture, psychology, technology and the built environment, economics, and social relations—as well as the interaction of people with the world around them, including nature and the hazards that emerge from these interactions. Much research and policy is focused too narrowly on hazards and not on the web of relations and cascade of consequences that characterize the interactions among these sub-systems. Most of all, political and economic power and differential access to the means of production and means of protection are often ignored. Also frequently ignored are violence and treat of violence (means of destruction) as they structure vulnerability to hazard through marginalization and displacement (Wisner 2009).

Time and Space

To incorporate complexity and key sub-system interactions into analysis of disaster risk management, multiple scales across space and time need to be linked. The project known as CASiFiCA is a good example of an attempt to take a longitudinal and multi-scalar approach to learning lessons about IDRiM as is also the ambitious science plan developed by the International Council for Science (ICSU 2008). In the case of CASiFiCA, the name stands for 'case station – field campus' and involves long term research and teaching in disaster prone areas and among

disaster vulnerable people using participatory action research methods as well as the technology available to Western science (Okada and Takeuchi 2006).

Many Kinds of Knowledge

To deal effectively with complexity and uncertainty, many forms of knowledge are required. Local knowledge and practice are as important to take into consideration as outside specialist, technical (or Western) knowledge; yet there are obstacles to a fruitful dialogue between local and non-local (Mercer et al. 2010). Returning to the challenge of bureaucratic practice mentioned earlier, one can appreciate that technical departments in government are filled with people who believe that their formal education and training is superior to the knowledge and skill of local people. A bridge needs to be built so that practical risk reduction can be achieved on the basis of both outside and inside (or local) knowledge.

Linking Development, Environment, Climate and Disaster Risk

There has been a gradual awakening to the fact that adaptation to climate change and reduction of disaster risk are not separate, specialist fields of activity alongside 'mainstream' or 'routine' poverty reduction and sustainable development efforts. One of the things that link them is their common need to understand livelihoods and obstacles to people gaining access to what is needed to stabilize their livelihoods and make them hazard resistant. These necessities include access to knowledge and information, technology, credit, land (whether rural farm plots, grazing reserves or urban home sites), water and other natural resources and markets arise as constraints whether the question is provision of payment for climate and eco-system services (such as the REDD[3] scheme), flood-proofing agriculture where people 'live with floods' (as in Bangladesh) or introduction of a high value tree crop with the potential increase in family income.

Ordinary people experience change and risk holistically. Change and risk manifest themselves at the scale of 1:1 where people live out their lives and pursue their livelihoods. Therefore, vulnerability to disaster risk, to the changes brought by climate change and poverty can be tackled only by treating them as a complex condition built up over the long-term and rooted in life routines. Solutions are not one-off exercises and are not about interventions that 'do the job' and leave. Solutions should be a part of normal, day-to-day life (Wisner 1993).

Material interests may clash over access to resources and spaces from which marginalized people were previously excluded. Such conflicts can and should be negotiated non-violently as part of the process of development and risk reduction. A common uncritical assumption is that such processes are harmonizing, but quite the contrary; they are conflictual (Wisner 1988). Skill in mediating such conflict is one of the things that are required under the umbrella of capacity building. Also, the many actors mentioned earlier as well as many activities at different scales in time and space require integration in order to achieve desirable development ends as well as risk reduction. Here, too, there will be resistance, if not overt conflict, because of established bureaucratic and other territorial and professional interests. Such resistance should be recognized and negotiated.

Application of these key concepts to the events reviewed earlier yields a number of focused areas

[3] REDD, or Reduction of Emissions from Deforestation and Degradation, is an international program that, when implemented fully at national level, would pay land users to preserve forest cover and to reforest degraded land (see http://unfccc.int/methods_science/redd/items/4531.php).

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where policy and practice could affect risk. These are suggested in Figure 1.

CHALLENGES

There are persistent patterns evident over the past ten years that continue to obstruct the path toward IDRiM while, ironically, making it all the more important in order to deal with these challenges in a timely and systematic manner.

Weak and Poor Governance

The civil wars of the 1990s, break up of the USSR and regional wars (some of which are continuing) have left a legacy of so-called 'failed' and 'fragile' states. A review of progress toward the Millennium Development Goals (MDGs) shows very little progress in these countries (OECD 2010). The approach to fragility needs to be multi-faceted and include DRR and CCA as well as more conventional programme components – for example those of Australia's development cooperation agency, AusAID (2010):

- Building sustainable government institutions
- Strengthening political governance and targeting corruption
- Providing opportunities to stimulate economic growth
- Maintaining the delivery of services to minimize the impact of system failure on the poor
- Investing in analysis.

If it is true, as I asserted above, that development, DRR and CCA are linked, is one to suppose that risk governance in these troubled territories is any more advanced than progress toward meeting the MDGs? In other countries, the non-fragile, corruption remains an enormous challenge to building trust with communities and effective DRR (Transparency International 2005).

Marginalization and Discrimination

Minority castes, ethnic groups and religious adherents continue to suffer discrimination and marginalization in much of the world. This includes cultural groups who have credible claims of being 'first nations' in various territories now governed by non-indigenous groups of people. These are likely to be some of the people worst affected by climate change and who often live in regions with poor accessibility and limited infrastructure and public services. They are often three times marginal – economically, ecologically and politically (Blaikie and Brookfield 1987). Ironically, among some of these people local knowledge and practices have been preserved that enables them to survive extreme natural events (Mercer et al. 2010), yet this knowledge seldom becomes the starting point for a dialogue with outside specialists about advancing DRR and CCA in ways that are compatible with needs and expectations of the community.

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Unplanned Urbanization

Half of humanity lives in one kind of town, city or urban region or another. Urban growth continues, by natural increase and immigration of rural people, especially in the middle sized cities of the global South. Here there is very little planning of peripheral ('urban or 'peri-urban') settlement and little infrastructure such as drainage and sanitation provided. Many of these areas are exposed to health hazards, floods, storms, liquefaction and landslides, among other hazards (Pelling and Wisner 2009).

	Complexity	**Web of relations**	**Time/ space scale**	**Many kinds of Knowledge**	**Dev, environ. & climate Links**
Hurricane Mitch 1998	Post war recovery on going three countries affected	Long history in region of marginalization of small farmer	Isolated rural villages affected	Civil society demands voice in recovery planning	Deforestation of steep slopes for farming
Mozambique Floods 2000	Post war recovery on going when floods occurred		Watershed communication problems	Traditional flood-retreat agriculture	Poor land management upstream in large international rivers such as Save & Zambezi
Indian Ocean tsunami 2004	Civil war in two affected regions	Caste differences on Indian coast	Deficient or absent warning systems	Minority cultural groups retained traditional knowledge of warning signs	Mangrove & coastal management
Hurricane Katrina 2005	Land and water management pre-Katrina involved many actors from contractors to Army Corps of Engineers to oil companies	Strong race & class divisions with long history	Poor national/ state/ local coordination in response & recovery	Self-help groups and 'green' initiatives in rehousing	Coastal wetland destruction
Haiti earthquake 2010	Post- hurricane recovery on-going & civil disorder when earthquake struck	Land tenure complicates resettlement efforts	Very limited government capacity in informal settlements & small towns	Civil society excluded from recovery planning	Deforestation & soil erosion had pushed many farmers into Port au Prince
Pakistan floods 2010	Violent conflict in some affected parts of Indus	Large farmers use dykes & drainage to	Poor international coordination in	Basin wide planning requires dialogue with many	Deforestation in Indus watershed

	watershed	protect lands by flooding small holdings	Indus basin	kinds of land users, large and small re: soils, water management, agronomy, etc.	

Figure 1. Weak Points and Missing Links in Recent Disaster

Increasing Disaster Loss in the Global North

Even where planning exists, disasters triggered by natural events have occurred during this decade. Wildfires in Greece and Australia, many serious floods, a deadly heat wave in France, the earthquake in L'Aquila, Italy and hurricane Katrina in the USA all caused loss of life and large economic loss. Such events dispel any myth concerning the 'superiority' of planning and governance in affluent countries. On the contrary, they emphasize that there are 'root causes' of disaster vulnerability that are present in all countries, both rich and poor, and that these need to be addressed. What needs to be questioned is the nature of economic growth and whether it is, as is assumed, necessarily a good thing.

Globalization of Risk

The volcanic eruption in Iceland that shut down air traffic over much of Europe was a dramatic reminder of how globalization has produced new dependencies and the need for more coordination and preparedness. Another reminder was the pandemic disease crises caused by SARS, avian flu and H1N1. Climate change is yet a third alert concerning the global nature of risk, and hence the necessity for coordinated, cooperative measures to address it. Climate instability signals are very clear and have implications for future natural hazards including heat and cold waves, unusual monsoon rainfall, drought, very intense coastal storms, landslides, floods, and wildfires (IPCC 2011).

CONCLUSION

A number of dramatic disasters and a variety of institutional responses to them have accelerated the intellectual development IDRiM as a concept and academic project. However, thought has rushed ahead, well beyond the scope of action except in the form of pilot projects. The confluence of the challenges listed above, on top of residual risk built up over decades (and in some cases centuries) of distorted development, makes it all the more urgent that IDRiM move from the seminar room into government offices, corporate board rooms and the editorial meetings within the mainstream media.

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