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# Disaster risk reduction legislation as a basis for effective adaptation

Silvia Llosa & Irina Zodrow

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## 1. Introduction

Disasters claimed the lives of more than 2.2 million people between 1975 and 2008 and cost the global economy US$ 1,527.6 billion in the same period (ISDR 2009). Storms, floods, droughts, heat waves and other weather-related phenomena are responsible for two thirds of the fatalities and economic losses from disasters. Climate change is expected to further increase disaster risk. Disaster risk and climate change are also linked more positively: methods and tools to reduce disaster risk provide powerful capacities for adaptation to climate change. One such tool is legislation, as it is a critical basis for effective and accountable action at national and local levels.

The development or strengthening of legislation to reduce disaster risk is among the priorities identified in the Hyogo Framework for Action (UNISDR 2005a), the international framework to reduce disaster risk. Given the urgent need to respond to climate change, governments may consider developing specific legislation or strengthening their disaster risk reduction legislation to adapt to climate change. This paper examines legislation models for disaster risk reduction with a focus on South Africa and the Philippines and explores critical provisions for good legislation, identifying key elements that are essential to the success of both disaster risk reduction and adaptation. After a short overview of the status worldwide and need for disaster risk reduction legislation, as well as its relevance for climate change adaptation, the paper identifies triggers that lead to legal development and the elements that effective disaster risk reduction laws share. The paper concludes with recommendations for legislators when developing or revising disaster risk reduction or adaptation legislation. The goal of the paper is to motivate the development of legislation that integrates both disaster risk reduction and climate change adaptation.

## 2. Reducing climate-related risk and the role of legislation

Climate change will increase disaster risk in two ways: by increasing weather and climate hazards, and by increasing the vulnerability of communities to natural hazards, particularly through ecosystem degradation, reductions in water and food availability, and changes to livelihoods (UNISDR 2008). The actions taken to reduce disaster risk "through systematic efforts to analyse and manage the causes of disasters, including through avoidance of hazards, reduced social and economic vulnerability to hazards, and improved preparedness for adverse events" (UNISDR Terminology[2]) likewise promote adaptation to climate change.

Reducing climate-related risk will involve protecting critical infrastructure, such as schools and health facilities, retrofitting buildings, relocating settlements and restoring ecosystems, or better yet, avoiding risky development in the first place. For risks that cannot be reduced cost-effectively, risk transfer measures such as insurance and catastrophe risk pools/bonds can mitigate disaster impacts on physical assets and enhance governments' ability to respond effectively (UNISDR 2010).

To implement such actions effectively, legislation is necessary. A legal framework establishes "legal authority for programs and organizations that relate to hazards, risk, and risk management (Mattingly 2002). These laws may dictate—or encourage—policies, practices, processes, the assignment of authorities and responsibilities to individuals and/or institutions, and the creation of institutions or mechanisms for coordination or collaborative action among institutions". Britton (2006) asserts that

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[2] Definition of disaster risk reduction in UNISDR Terminology, available at http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm

"without a comprehensive and binding legal directive that obliges actors and agencies to take action, the natural inertia of bureaucracies means that non-specified essential tasks are unlikely to be undertaken". Law can be used to provide penalties and incentives by enforcing standards, to empower existing agencies or establish new bodies with new responsibilities, and to assign budget lines (Pelling and Holloway 2006). In short, legislation enables and promotes sustainable engagement, helps to avoid disjointed action at various levels and provides recourse for society when things go wrong.

## 3. Status of disaster risk management legislation worldwide

Most States have some form of disaster risk management legislation or are in the process of enacting it (UNISDR 2005b, UNDP 2007), with the majority of the existing disaster risk reduction legislation drafted or reformed since the mid-1990s, falling within the United Nations International Decade for Natural Disaster Reduction (1990–1999) and the subsequent International Strategy for Disaster Reduction (from 2000 onwards) (Pelling and Holloway 2006; UNDP 2007, UNISDR 2005a, ISDR 2009). Despite growing awareness and commitment to climate change adaptation, relatively few States have enacted climate change legislation to date (United Kingdom, Canada, France and Philippines have such legislation).

Because legislation promotes accountability and coordination, the *Hyogo Framework for Action 2005-2015– Building the Resilience of Nations and Communities to Disasters*, the international guidance tool on disaster risk reduction adopted in 2005, calls on governments to "Adopt, or modify where necessary, legislation to support disaster risk reduction, including regulations and mechanisms that encourage compliance and that promote incentives for undertaking risk reduction and mitigation activities" as the first priority for action (HFA, Priority 1(*i*)(c)) to provide the umbrella under which effective strategies for disaster risk reduction can be carried out *in coordination* and from which *accountability* can be derived (UNISDR 2005a). Although the Hyogo Framework is non-binding, it has led to change in many States.

According to government reports submitted on the implementation of the Hyogo Framework, good progress was made between 2005 and 2009 in strengthening disaster risk management legislation to address deficiencies in disaster preparedness and response (ISDR 2009). By 2011, 48 countries reported substantial achievements developing national policy and legislation; importantly, almost half are low or lower-middle income countries. And though burgeoning national legislation for *disaster management* does not necessarily include a *disaster risk reduction* orientation (Pelling and Holloway 2006), evidence suggests a global paradigm shift from the former responsive approach to disaster management toward more long-term, sustainable preventive action (Britton 2006, Benson 2009).

However, many challenges remain. While many States, in particular high- and middle-income States (ISDR 2009), report the existence of sector policies and legal instruments, national-level policy and legislation on disaster risk reduction remains weak (ISDR 2009). This correlates with a survey carried out by the Global Network of Civil Society Organisations in June 2009, which identified a "significant gap between national and local action" with "reports of progress fad[ing] as activities get closer to vulnerable people." It further confirmed that "many governments have legislation and to some extent structures in support of decentralised ways of working – but with huge gaps in implementation and working culture (GNCSO 2009)." In addition, many low-income States, particularly in Africa, reported a lack of adequate financial, human and technical resources as the major reason for underachievement concerning effective legislative systems. Even in countries with well-developed legal systems, such as Germany and Austria, competencies allocated to different actors at the federal and provincial levels and the lack of coordination and coherence between a magnitude of individual risk-reducing laws in different sectors and different provinces jeopardize more effective risk reduction (Fuchs, Holub 2009).

## 4. The role of international and regional legal agreements in effective national legislation

International and regional legal frameworks can play an important role in giving guidance and direction, and where needed, enforcing the implementation of disaster risk reduction at national and local level.

At the international level, the Hyogo Framework for Action is the only agreement on disaster risk reduction, albeit non-binding. As discussed above, national progress reports and the mid-term review of the Hyogo Framework for Action show that many States are fulfilling their Hyogo Framework commitments and implementing disaster risk reduction nationally.

Several international sectoral agreements, such as the Convention on Biological Diversity, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), and the Ramsar Convention on Wetlands**,** indirectly support disaster risk reduction. However, in order to ensure a comprehensive, cross-sectoral approach, much remains to be done to promote disaster risk reduction through the implementation of international agreements.

Efforts have recently been made to link the international frameworks and legislation for disaster risk reduction and for climate change. For example, the Hyogo Framework for Action calls for the development of integrated strategies for disaster risk reduction and climate change. In 2008, the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) acknowledged the link between disaster risk reduction and climate change in the Bali Action Plan. Finally in 2010, the UNFCCC Cancun Adaptation Framework formally recognized disaster risk reduction as an essential element of climate change adaptation and encouraged governments to consider linking adaptation measures to the Hyogo Framework for Action (UNFCCC 2010, Paragraph 14(e)).

Regional legislative frameworks have often proved a successful way to address region-specific characteristics and challenges, such as disaster risk. Although disasters occur locally and often require locally specific action, their transboundary nature calls for collaborative action between neighboring states. Regional framework laws can support the necessary national processes. Several regional agreements aiming at improved regional cooperation have recently been adopted to complement member state activities at national, regional and local levels through, for instance, enhanced coordination, information sharing and coherent policies.

In the European Union, legislation can influence decisions even at the local level; however, the transformation of regional agreements into national and local implementation remains a challenge. Though framework legislation exists in common areas such as the environment, agriculture and fisheries, there is no common framework for disaster risk management or risk reduction. So far, risk reduction is regulated through sectoral directives such as the Water and Flood Directives (EC 2000 and EC 2007).

The European Commission's Water Framework Directive seeks to reduce the impact of droughts and floods (EC 2000, I(e)) and delegates drought risk management to member states. The Water Directive's 2010-2012 work programme supports integrated implementation at multiple scales of government by identifying concrete deliverables at those scales (EC 2009). Triggered by a dramatic increase of flood damages between 1998 and 2004, the Flood Directive was enacted in 2007 in an attempt to address major deficiencies reported in the transposition of the Water Framework Directive into national law, until 2007 the major framework for EU water risk management (EC 2007). Applying a phased approach, the Flood Directive requires States to undertake flood hazard and flood risk maps and devise flood risk management plans by 2015. Reports show that despite challenges concerning the required data and the coordination concerning international, transboundary river basins, the Directive has initiated review of national flood legislation and policies in many European States. So far, many States have reported revision of their national flood legislation. At the same time, the binding nature of the Directive allowed the EU to remind those who lagged behind to increase their

efforts. For example, in 2010, the European Commission took France to court and gave Luxembourg a warning over its failure to notify the EU by 2009 about the establishment of national flooding legislation as established by the Directive (EU 2010).

As a result, and in light of the devastating floods in 2010, France adopted its 'Grenelle de l'environnement', or environment roundtable, with legislation that brings multiple competing stakeholder groups together to develop policies that can reduce flood and risks in a coherent manner (Deboudt 2010; France 2010). Official stocktaking on the status of implementation, the deadline for member states to conduct preliminary assessments to identify their flood risks, will take place in 2011.

To further support the implementation of the Water Directive and Flood Directive, EC Water Directors created a Working Group on Floods (responsible for evaluating the implementation of the two directives with respect to climate change and in light of new risk maps, vulnerability assessments and flood risk assessments) and a Water Scarcity and Drought Expert Group that inputs into a Temporary Expert Group on Climate Change and Water (EC 2009).

The EU reported that at the national and sub-national level, implementation of these directives has facilitated EU members states' efforts to address simultaneously multiple processes that impact drought and flood risk, including agricultural policies and integrated water resource management, and land use (EC 2000; EC 2009).

Another major development that will likely lead to legislation for disaster risk reduction is the resolution endorsing the EU White Paper on Climate Change Adaptation, which was adopted by the European Parliament in May 2010[3]. Though non-binding, EU resolutions have shown substantive effects on the implementation mode of national governments. As such, it is possible that the White Paper will further trigger collaborative disaster risk reduction in the EU.

In Asia, the Agreement on Disaster Management and Emergency Response (AADMER) was signed by heads of the ASEAN member states in 2005, however, it took until 2010 for it to enter into force. The AADMER is seen as an important step for the region, as it is the first binding agreement on managing disasters regionally. The agreement aims to transform the ad-hoc nature of disaster preparedness formerly applied in the region to a more cooperative and preventive approach, including cross-sectoral cooperation. Among other actions, ASEAN members are required to set up early warning systems, identify high-risk areas, and cooperate with one another on technological and scientific research. It remains to be seen if the agreement can encourage ASEAN member states, many of which already have disaster management plans in place, to cooperate more effectively.

Also in 2010, Central American heads of state adopted the legally binding Central American Integrated Policy on Disaster Risk Reduction (PCIGR). The policy aims at an improved regional commitment to disaster risk reduction through the provision of a guiding framework for the region. To that end, a major focus of the policy is to strengthen the links between political decision-making and timely and effective use of mechanisms and instruments on the ground. It also aims to connect disaster risk reduction to economic management, social cohesion and environmental management.

## 5. Elements that trigger legislative development and sustain efforts over time

As is illustrated by the cases of South Africa, Philippines and Indonesia detailed below, the development of disaster risk reduction legislation is often triggered and sustained by (individually or complementarily):

- Major disasters
- Political shifts

[3] http://www.europarl.europa.eu/sides/getDoc.do?pubRef=//EP//TEXT+TA+P7-TA-2010-0154+0+DOC+XML+V0//EN

- The engagement of particularly dynamic individuals
- A well-educated and participative population (UNDP 2007a)

In South Africa, legislative efforts were galvanized by devastating floods and droughts, and the country's high motivation for change in the post-Apartheid era (Pelling and Holloway 2006). The first steps undertaken were public consultation on a green and white paper on disaster management. The green paper encouraged and solicited wide-ranging public participation, input and debate. The white paper translated these responses into priorities and expressed needs into various policy options for further technical administrative and authoritative debate. This highly participative process was innovative and recognized as being a valuable effort to gain wide interest and support. Despite its pioneering approach in public consultation and the emphasis on disaster prevention, South Africa's legislative process also faced challenges. According to Pelling and Holloway (2006) these included inconsistent public consultation in the law's drafting and the exclusion of local authorities; insufficient interdisciplinary engagement; and limited executive authority to promote interdepartmental integration. However, perseverance, strong advocates and supportive events and an increasing awareness of the importance of prevention led to the passing of three disaster management bills, the promulgation in 2003 of the Disaster Management Act No. 57 of 2002 and the adoption of the National Disaster Management Framework in 2005 (SANDMC 2006; Pelling and Holloway 2006) now internationally reputed for its emphasis on prevention and its comprehensive approach to disaster risk reduction.

The 2004 Indian Ocean tsunami had similar triggering effects on the development of national legislation in affected countries. It spurred disaster risk reduction legislative reform in Indonesia (IFRC 2010) by revealing serious gaps in preparedness for emergency response. To its credit, the government saw the shortcomings quickly, introduced ad-hoc legislation, institutions and policies, and most importantly recognized that 'the system needed more than patching' (IFRC 2010). By 2007 a comprehensive disaster management law (Law No. 24) was enacted and a national disaster management agency established. This agency was tasked with coordinating risk reduction efforts as well as strengthening response and leading emergency operations.

As in the case of South Africa and Indonesia, change in the Philippines' came about as a result of rising concern about increasing disasters in the country (Benson 2009). Between 1999 and 2009, dozens of bills were submitted to Congress with the aim of changing the primarily reactive 1978 disaster management legislation to a more pro-active, preventive law (Benson 2009, Britton 2006, World Bank 2004). However, progress in passing a disaster risk reduction bill in the Philippines was thwarted in part by lack of coordination among the many, often conflicting bills, as well as additional submissions for piecemeal change around specific issues (Benson 2009).

Another trigger may be the increasing disaster losses and economic damages and the consequent recognition of the economic benefits of prevention, which may help motivate governments to enact or revise their disaster risk reduction legislation. Studies attempting to quantify the advantages of prevention in comparison to disaster response in dollar terms are emerging; however, no hard data has yet been developed. Various studies have calculated that one dollar of prevention can save between four and ten dollars of emergency response (see for example UNDP 2007b). A World Bank study, "Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention", endeavoured to quantify the costs and benefits of disaster risk reduction (World Bank 2010). Despite over two years of research, the complexity of the topic hindered concrete findings; however, the overarching message of the report is that preventing deaths and destruction from disasters pays, if done right. Reflecting the importance of the economic side of disaster risk reduction, the Global Platform for Disaster Risk Reduction, the major international forum for disaster risk reduction, has made the topic one of the three major themes for 2011.

The second major challenge after the initiation of a legal development or revision process is to sustain political will over the full period of time required to adopt the legislation. Devastating disasters can rouse the public and mobilize the government into legislative reform, but an active citizenry and

skilled, high-level political champions are needed to provide impetus for building commitment to disaster risk reduction. Nevertheless, political champions of disaster risk reduction are rare (Benson 2009) and public pressure inevitably dwindles some time after disaster relief begins. In addition, political support for change tends to last only as long as the supporting government stays in power – which is often less than the development or revision process takes.

Advocates of South Africa' Disaster Management Act and Framework persevered over eleven years to develop a comprehensive disaster risk reduction and risk management law. The will to complete the Act and Framework in South Africa was stimulated by public concern about worsening disasters that stirred political interest, skilled political leadership that championed the cause, continuous commitment by highly capable disaster risk reduction professionals, and local professional interest in aligning South African legislation with international frameworks (Pelling and Holloway 2006).

As in South Africa, in the Philippines the participation of a number of individuals and focus groups, such as senators and other parliamentarians (Benson 2009), national specialists and international consultants (Britton 2006) was crucial for success in the adoption of the disaster risk reduction and climate change laws. Public concern about the effects of climate change, both amongst politicians and the general public triggered the development and adoption of new climate change laws. The combination of sustained commitment and new climatic concern led to the adoption of the Disaster Risk Reduction and Management Act 10121 after almost 10 years of continuous efforts in 2009, in the wake of the adoption of the new Climate Change Act, which took a mere 3 years to conclude.

The next section will explore some of the elements that a robust DRR-adaptation framework should include.

## 6. Key elements of comprehensive DRR legislation

Some of the elements that effective DRR and adaptation laws have in common include the following:

A. The law provides legal and policy coherence by explicitly linking to other laws and policies from relevant sectors and throughout all administrative levels.
B. The law allocates adequate funding for implementation at all levels with clarity about the generation of funds and procedures for accessing resources at every administrative level.
C. The institutional arrangements the law establishes provide both access to power for facilitating implementation and opportunities to "mainstream" disaster risk reduction and adaptation into development plans.
D. The law is based on comprehensive, up-to-date risk assessment that mandates periodic reassessment as risks evolve and knowledge of climate change impacts improves.
E. The law includes provisions that increase accountability and enable coordination and implementation of disaster risk reduction and adaptation—i.e., the clear identification of roles and responsibilities, requirement to establish and maintain a national risk database, mandate to provide public access to risk information, education and training, as well as enable access to participate in decision making.

These elements are illustrated below.

### 6.A Linking laws and policies across sectors and levels

Some states successfully implement disaster risk reduction through a number of sectoral laws, such as Sweden[4], Slovenia,[5] and most countries in the European Union[6], as well as Indonesia and Vietnam.

[4] For example, the Seveso Act, the Environmental Code, the Planning and Building Act, the Land Code, the Water Directive, the Flooding Directive, and the Civil Protection Act.

Others, such as Colombia, South Africa and the Philippines, develop one overarching, comprehensive legal framework for disaster risk reduction. Although both approaches can work for individual states, many high-income developed countries reported that a challenge to reducing risk is the lack of an overarching national policy and legal framework to facilitate a holistic approach (ISDR 2009). An overarching framework can generate cost-effective policies that balance a multitude of sometimes contradictory laws and decrees, such as 20,000 legal acts in Kyrgyzstan (UNDP 2007a), or Indonesia's 120 different pieces of disaster risk management related legislation[7] (UNDP 2009). Italy and the Czech Republic have developed novel approaches to promote legislative coordination: Italy established a national platform for disaster risk reduction through a decree to address coordination and coherence of its sectoral laws, and the Czech Republic enacted a so-called "crisis management laws package" in 2000 (in force since 2001) that is considered a model for its clear allocation of responsibilities and competencies for disaster risk reduction.

As Lamiss-Khakzadeh (2009) points out: '(T)he starting point of all legal action is the allocation of the related competency within a government, in most countries regulated in the constitution. In Austria, for example, the constitution doesn't regulate 'natural hazards' or disaster management, per se. Rather, responsibility is given if an area of competence is linked to one or more natural hazards. This approach to allocation of responsibility tends to lead to fragmented and unclear legislation for natural hazards, as regulations are found in different laws on federal and 'Laender' (state) level, which are related to disaster risk management. Another issue resulting out of such an approach as compared to a hazard based legal framework is the lack of flexibility because of the "Legalitaetsprinzip' (legality principle), which defines the strict legal obligation for the administration and thus requires all states to be precisely defined and predictable for the individual civilian. However, this limits the often requested flexibility in natural hazard management, in particular in the light of the changing climate. In addition to transcending pre-existing areas of competence for institutional actors, natural hazards also touch upon different scientific disciplines. In order to ensure a solid and effective knowledge base, including risk analysis and assessment before the development of new laws and legislation, an inter-disciplinary approach from economic, legal and scientific perspectives should be adopted.

The following section sets out two possible legislation models to ensure comprehensiveness, cross-fertilization and information exchange:

*South Africa and Colombia: the comprehensive legislation model*
In South Africa, the 2002 Disaster Management Act provides a comprehensive framework for disaster risk reduction implementation at all levels (Pelling and Holloway 2006). The South African Act defines the structure that governs disaster risk management in the country through a hierarchical disaster management structure including a cabinet committee at the apex; an advisory forum with representatives from national and provincial departments, local government, business and civil society; as well as disaster management centres at national, provincial, metro and district levels (SANDMC 2007). It also establishes disaster management frameworks for all levels of government with clear roles and responsibilities, mandates for each government level and the creation of a national disaster management information system (SANDMC 2007).

Similarly, Colombia has framework legislation that organizes disaster risk management in the country at all levels of government. Colombia has also enacted dozens of sector-specific laws that govern and support disaster risk reduction (Vásquez 2006, Colombia Ministerio 2009). Colombia's framework

[5] For example, the Protection Against Natural and Other Disasters Act 3535 Official Gazette of the Republic of Slovenia, 64/94, 51/2006, the Fire Protection Act 3636 Official Gazette of the Republic of Slovenia, 71/93, 3/2007, the Fire Service Act 3737 Official Gazette of the Republic of Slovenia, 1993, 2005, the Slovenian Red Cross Act 3838 Official Gazette of the Republic of Slovenia, 7/93, the Recovery from the Consequences of Natural Disasters Act 3939 Official Gazette of the Republic of Slovenia, 75/2003, the Protection against Drowning Act 4040 Official Gazette of the Republic of Slovenia, 42/2007.
[6] For example, Germany, Austria, Italy, France, in addition to the above.
[7] The latter was addressed in the 2007 Disaster Management Bill that aims to provide leadership for comprehensive disaster risk reduction (UNDP ILS Indonesia 2009).

legislation, Law 46 of 1988 and Decree 919 of 1989, created the National System for Prevention and Response to Disasters, SNPAD (its Spanish-language acronym). SNPAD is supported by a national plan that establishes a holistic policy within the framework of sustainable development planning and implementation (Cardona and Yamín 2007). SNPAD created committees at all levels of government with defined roles and responsibilities, taking an approach that is systemic, participatory and decentralized. This approach has been supported by a number of norms embodied in legislation in the 1990s in other sectors, in particular environment, land use, housing and urban development, and education, among others (Vásquez 2006).

*The Philippines: the linked legislation model*
The Philippines Climate Change Act, enacted in 2009, closely links climate change and disaster risk. At the outset, it adopts the UNFCCC's ultimate objective of stabilizing greenhouse gas emissions and the Hyogo Framework for Action's "strategic goals in order to build national and local resilience to climate related disasters." In recognizing that "climate change and disaster risk reduction are closely interrelated and [that] effective disaster risk reduction will enhance climate change adaptive capacity, the State shall integrate disaster risk reduction into climate change programs and initiatives" (Act 9729, Sec 2). The Philippines Disaster Risk Reduction and Management (DRRM) Act, enacted in 2010, conversely includes several references to climate change (Act 10121, Sec 2 (a), (d), (e), (g)).

The linkage between disaster risk reduction and climate change processes in the Philippines is likely to be facilitated by both laws' specific references to the other's processes in their mandates. For example, like the Philippines' DRRM Act, the Climate Change Act creates a commission to be chaired by the president and attached to the president's office, thus ensuring highest-level political support for collaborative implementation. The commission is composed of the secretaries of all relevant departments as well as the "Secretary of the Department of National Defense, in his capacity as Chair of the National Disaster Coordinating Council," and representatives from the disaster risk reduction community. The main functions of the Commission are to "[e]nsure the mainstreaming of climate change, in synergy with disaster risk reduction, into the national, sectoral and local development plans and programs" (Act 9729, Sec 9 (a)) and to create a panel of technical experts, consisting of practitioners in disciplines that are related to climate change, including disaster risk reduction" (Act 9729, Sec 10).

**6.B. Budget allocation and adequate funding for prevention**

UNDP (2007a) characterises the provision of adequate funding as the ultimate "litmus test" of government commitment to disaster risk reduction. Benson (2009) points out that the "integration of disaster risk concerns into government budgets should be tackled from two angles, ensuring that levels of public expenditure on risk reduction are sufficient and that there are adequate financial arrangements to manage the residual risk". However, as reported in government Hyogo Framework progress reports in 2011, the lack of efficient and appropriate budget allocations remains one of the major challenges for effective disaster risk reduction legislation (ISDR 2011).

In South Africa, eight years after the promulgation of the Act, most district municipalities had not established the centres required by the Act and did not have disaster risk reduction plans in place (SACoGTA 2009) mainly due to a lack of resources to cover costs related to start-up, continuous operations, disaster risk reduction projects, response recovery and rehabilitation activities, and training and capacity building programmes, which are specifically stipulated for funding in the Framework (SANDMC 2009, Visser and Van Niekerk 2009; SACoGTA 2009).

Reasons for the lack of funding include a lack of clarity of the Act on the funding sources for developing and maintaining the centres it establishes at all levels and the management plans they are to prepare (Visser and Van Niekerk 2009). Moreover, the Act and Framework do not provide adequate guidance to municipalities on funding arrangements for disaster risk reduction, response and recovery. Though the Act states specifically that the legislation must provide a framework within which organs of the state may fund disaster management, with emphasis on preventing or reducing disaster risk, it is

not clear which processes should be followed by municipalities to access funding, especially when it should be provided by national or provincial government. It is also not clear to what extent municipalities should fund disaster risk management out of their own budgets (Visser and Van Niekerk 2009).

Similarly, in Colombia, more than 80 percent of municipalities are able to assign only 20 percent of their own unearmarked resources to risk reduction and disaster response. Because the law does not stipulate percentages and amounts, municipalities allocate minimal sums for disaster risk reduction (Colombia Ministerio 2009) given competing infrastructure and social spending needs (Cardona and Yamín 2007). Colombia's National Fund for Calamities lacks clear rules for capital accumulation and disbursement; its funding stems from unreliable sources and the national government has been reducing its budget allocation. As a result, actions by the National System for Prevention and Response to Disasters are limited, and the Fund's resources are directed to emergency response rather than prevention (Cardona 2007).

South Africa's and Colombia's experiences are replayed around the world. Except for some high-income countries, governments report a lack of systematic policy or institutional commitment to providing dedicated or adequate resources for disaster risk reduction, in particular in the absence of legislation that makes financial allocations legally binding (ISDR 2009). Even in countries, such as those discussed here, in which funding for disaster risk management is mandated by law, actual resource allocation for disaster risk reduction remains low and is concentrated in preparedness and response (UNDP 2007a). Further, allocations to address the underlying risk factors by development sectors are not adequately documented and accounted for (UNDP 2007a).

The Philippines appears poised for change. The old Philippines legislation allocated its disaster-related budget primarily for post-disaster response, through calamity funds that could only be accessed after a disaster. Money for preparedness was only paid out on the basis of an official state of calamity. According to IFRC (2010) often available money was not used for disaster management, and while all local governments allocated five per cent of their annual state income to the National Calamity Fund, the old law allowed them to dispense the money to staff, as bonuses and incentives if no disaster occurred in the course of the year. As a result, risk reduction activities were often insufficient and unplanned as they had to be implemented through line agencies and regional and local disaster coordinating councils, thus financed through their own budgets. There were neither mandatory requirements relating to local government unit (LGU) expenditure on risk reduction nor any dedicated funding. LGUs were not required to establish disaster risk management offices either, making it extremely difficult to create budget lines to support the basic functioning of such offices where they existed (Benson 2009).

The Philippines' new legislation attempts to address these issues. The new Disaster Risk Reduction Act 10121 renames the Local Calamity Fund as the Local Disaster Risk Reduction and Management Fund and stipulates that no less than 5 percent shall be set aside for risk management and preparedness. Thirty percent shall be allocated for quick response to disasters (Act 10121, sec 21 and 22). Further, to carry out the provisions of the Act, the Commission allocated one billion pesos or 21.5 million USD (Act 10121, Sec 23). Unspent money will remain in the fund to promote risk reduction and disaster preparedness.

Even when funding is available in the government's disaster fund, it is often not used for preventive measures. Austria's disaster fund, which is administered by the Federal Ministry of Finance, addresses both preventive measures and loss compensation, consisting of a defined percentage of federal taxes, with the allocation of the resources legally prescribed within the Federal Act related to the Disaster Fund of 1996. A considerable share of the budget is allocated for preventive measures, for example the prevention of damage resulting from floods and avalanche, the funding of passive flood mitigation measures, survey of water quality, the funding of early warning devices, and the subsidy of crop hail insurance. However, Fuchs and Holub (2009) identified several problems with the Austrian fund, including a liquidity strain caused by the legally limited maximum reserve for resources not spent in a

respective year, and reduced compensation and thus less incentive for disaster risk reduction for citizens who undertake preventive measures or have private insurance. Most importantly, direct government interventions, such as insurance schemes unconditional to preventive measures, do not offer any incentive for individuals to minimize risk voluntarily (Fuchs, Holub 2009). An example of the pitfalls of such systems was the devastation caused by Katrina hurricane in New Orleans in part because government insurance was a disincentive for citizens and industries alike from implementing measures to reduce the risks of natural hazards known for the area. Thus, as pointed out by Raschky and Weck-Hannemann, "(L)imited public resources and steadily increasing financial losses from natural hazards demand a more efficient allocation of public expenditures (Raschky, Weck-Hannemann, 2007), which might be only achievable by raising risk awareness and consequently encouraging private expenditures in local structural protection measures, including through the possible implementation of a compulsory hazard insurance system (Schieferer, 2006; Holub, Huebl, 2008).

**6C. Institutional arrangements for access to power and integration into sectors and development planning**

A factor that affects the political authority of the national disaster risk management body is its positioning in relationship to the highest level of government (UNDP 2007a, ISDR 2009). According to UNDP (2007a), "(N)ational disaster risk management offices attached to prime ministers' offices usually can take initiatives vis-à-vis line ministries, while their colleagues operating at the sub-ministerial level are likely to face administrative bottlenecks." High-level support is particularly important to enable disaster risk reduction legislation to provide a framework for strategies to build risk reduction into development and reconstruction (Pelling and Holloway 2006).

According to the interagency thematic discussion paper "Governance: Institutional and Policy Frameworks for Risk Reduction" (UNISDR 2005b), ideally the disaster risk management office should be located in the prime minister's office, however "it is vitally important that such agencies demonstrate leadership and professional competence, and earn the confidence and support of stakeholders at all levels. In practice, such calibre and commitment are often lacking. It must be acknowledged that in many if not most countries such agencies originated to undertake disaster response/civil defense activities and have found it difficult to adjust to new, holistic, approaches to risk management." A major concern of delegating the establishment and coordination of institutional systems for disaster risk reduction to civil defence and protection organisations traditionally responsible for emergency response is that they usually do not have the competence in development planning and regulation necessary to engage with other sectors nor the necessary political authority within government to do so (World Bank 2008).

A recent study of disaster risk reduction in Asia and the Pacific (UNESCAP and UNISDR 2010) found that although national disaster management offices in the region are typically situated within relatively powerful ministries, they are "often politically weak, poorly resourced, lack people with specific sectoral knowledge or with socio-economic policy or development planning skills, and [are] far removed from central development and planning processes." Hence, the same study proposes that national disaster management offices should be relocated in ministries of planning. In the short term disaster risk reduction focal points could be identified within individual line agencies and local governments to provide sector-specific technical support.

South Africa's Intergovernmental Committee on Disaster Management was established by the president and is accountable to the president through the Cabinet response once a disaster has occurred (SANDMC 2007). In Colombia, the original robust institutional structure for risk reduction was weakened through a series of reforms that have reduced its standing in the hierarchy and diminished its political power, although recently the president convened entities at all levels to motivate them to fulfill their disaster risk reduction mandates (Colombia Ministerio 2009). In Bolivia and Nicaragua, hybrid versions of Colombia's disaster risk reduction structure give maximum authority to a national committee headed by the president which includes representatives from the major ministries, the

national department of planning, civil defence, the Red Cross Society and private sector members (UNDP 2007a).

Creating an active link to the development sphere, the South African Act mandates the development of risk management plans to form an integral part of the Integrated Development Plan (IDP) of each municipality. South Africa is among the world's few to have made a legal connection between disaster risk reduction and national development planning frameworks. Others include Comoros, Djibouti, Ethiopia, Hungary, Ivory Coast, Mauritius, Romania and Uganda (Pelling and Holloway 2006).

In the Philippines, the highest policy-making and coordinating body for disaster management, the National Disaster Risk Reduction and Management Council (formerly called the National Disaster Coordinating Council) sits within the Department of National Defense. As such it is focused on disaster preparedness and response and does not have sustainable development and poverty reduction responsibilities. However, the new Act of 2010 attempts to redress this issue by including experts from all relevant fields as members of the Council (Act 10121, Sec.5; Sec 11(2)) and expressively defining its mandate on mainstreaming disaster risk reduction into sustainable development and poverty reduction strategies, policies, plans and budgets at all levels (Act 10121, Sec. 2).

**6D. Dynamic assessment of risk knowledge**

Effective legislation for climate change will need to address appropriate temporal scales and incorporate evolving information on climate change impacts and risks. This knowledge must be generated, acted upon and evaluated continuously to ensure appropriate adaptive responses. To ensure that legislation for disaster risk reduction and adaptation is dynamic and relevant, clauses about the periodicity of specific tasks mandated in the law can be included. For instance, the Philippines' Disaster Risk Reduction Management Act calls for the development of a framework to guide disaster risk reduction and management efforts to be reviewed "on a five-year interval, or as may be deemed necessary, in order to ensure its relevance to the times" (Philippines Act 10121, Sec 6 (a)). The Act also calls for the development of assessments on hazards and risks brought about by climate change (Philippines Act 10121, Sec 6 (j)). Likewise the Philippines Climate Change Act calls for the framework strategy that will guide climate change planning, research and development, extension and monitoring of activities to be reviewed every three years or as necessary (Philippines Act 9729, Sec 11). Similarly, the United Kingdom's Climate Change Act establishes the preparation of a report informing parliament on risks of current and predicted impact of climate change no later than five years after the previous report (United Kingdom Act 2008, Section 56 (1)).

**6.E Attribution of roles and responsibilities and provisions for broad participation, risk information, education and training**

*Attribution of roles and responsibilities*
As discussed earlier, the attribution of roles and responsibilities is among the most critical functions of framework legislation to ensure coordinated action and accountability. In addition to the clear hierarchies established by the legislation of South Africa, Colombia and Philippines, each entity in the hierarchy has been assigned concomitant responsibilities (see section 6A). Nevertheless a South African government survey ((SACoGTA 2010) found that "there is no formal indication of which organ of state at which sphere of government should coordinate or manage what disaster and which organ of state at which sphere of government should perform a supportive role in the disaster." To its credit South Africa undertook this survey precisely to understand and overcome the obstacles its entities face in implementing their disaster management plans as mandated. South Africa's experience is common: legislation often provides the general structure but not the details needed for stakeholders to exercise their roles and responsibilities.

*Public and private participation*
As civil society and business also play roles in reducing disaster risk, South Africa's and the Philippines' Acts have provisions for the involvement of NGOs, traditional leaders, volunteers,

community members and private sector in disaster risk reduction. According to IFRC (2010), "NGOs have four seats in the Philippines' National Disaster Risk Reduction and Management Council, an unmistakable opportunity for stronger grassroots advocacy". The Philippines law also mandates the establishment of provincial, city, and municipal disaster risk reduction and management councils, as well as local disaster risk reduction and management offices in every province, city and municipality, in addition to a *barangay* (local community) disaster risk reduction and management committee (Act 10121, Sec 12(3)). Colombian legislation likewise calls for the participation of public and private entities and for the participation of civil society in disaster prevention and response committees (Cardona 2007).

In line with the finding that relatively few States actively involve business despite its crucial role in effective disaster risk reduction (UNDP 2007a), South Africa does not explicitly mandate the private sector to incorporate disaster risk reduction in its working processes. In Colombia, industry's participation, including insurance, in risk prevention has been minimal, according to Cardona (2007), mostly as a result of a strategy to actively engage the sector in prevention. Some positive examples can be found in the Philippines' legislation, which includes representatives of the private sector as members of the disaster risk management council (Act 10121, Sec 5), and Indonesia's legislation which requires businesses to comply with disaster management organization policy, report to the government, transparently inform the public and support humanitarian activities financially (UNDP 2009).

*Provisions for risk information, education and training*

The Hyogo Framework states that "The starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge" (UNISDR 2005a). South Africa's Act includes mandates for capacity building, training and education, research and the inclusion of traditional knowledge. Under the Philippines' new DRR law, money unspent on disaster response will be used by communities to assess and address the hazards they face, map the dangers, analyse why they are vulnerable to them, and then develop action plans (IFRC 2010). The Philippines Act also calls for "multi-stakeholder participation in the development, updating, and sharing of a Disaster Risk Reduction and Management Information System and Geographic Information System-based national risk map as policy, planning and decision-making tools" (Philippines 2010, Section 6d).

## 8. A yet unaddressed issue – the role of the private sector

About 80 percent of GDP derives from the private sector. Additionally, the private sector endures the majority of losses from disasters. According to preliminary estimates by Swiss Re, insured losses from natural and man-made disasters in 2010 amounted to 36 billion USD, with overall economic losses of 222 billion USD (Swiss Re 2010).

Despite these numbers, the key role of the private sector in disaster risk reduction has so far been an issue largely ignored in national disaster risk reduction legislation. For example, most legislation reviewed in this paper focuses almost exclusively on the role and responsibilities of the public sector, and the private sector is only mentioned, if at all, as a possible member of advisory bodies, such as the National Disaster Management Centre in the Philippines (Act 10121 sec 16 (1) d and e)). "National government institutions responsible for disaster risk reduction [..] lack the skills necessary to engage […] the private sector effectively' (UNDP 2009), and consequently the need for private sector investment does not feature in any of the laws studied. Although, seed investments from the public sector is essential to provide the necessary framework for effective disaster risk reduction, legislation to reduce disaster risk and adapt to climate change can have a major impact on private investments as well, particularly since most major investments will be made by the private sector.

The business community has already picked up on the issue. At the sixteenth Conference of the Parties

to the United Nations Framework Convention on Climate Change (UNFCCC) in Cancun in 2010, a new study by PwC, in collaboration with the UNFCCC, and supported by the World Business Council for Sustainable Development and the United Kingdom's Department for International Development, concluded that adapting to climate change is no longer an issue for governments to resolve alone, but that business has an important role to play in adaptation, and that better engagement of business is needed in the policy-shaping process to harness this. The role of business is not just in preparing its own assets and operations for anticipated climate change, but also providing know-how, solutions and resources to the adaptation challenge. This ranges from climate risk assessment, to designing disaster risk management and financing vehicles, and designing and deploying new technologies (PwC 2010).

Both, disaster risk reduction and climate change adaptation laws should better reflect the role that the private sector can and must play in these areas. Risk reduction and adaptation efforts can only be effective if all parts of society are engaged.

## 8. From "linking" to "integrating" DRR and adaptation in legislation

When crafting climate change legislation, policymakers might chose to strengthen existing risk reduction legislation by integrating new climate change provisions, thus resulting in a robust framework for reducing existing risks and adapting to those related to climate change. Alternatively, legislators might enact stand-alone adaptation legislation, in which case a review of the country's experience in both developing and implementing disaster risk management laws would be helpful to avoid previous pitfalls and benefit from lessons learned.

As discussed earlier, the Philippines is at the forefront of this development: the new disaster risk reduction legislation addresses climate change, and the Climate Change Law of 2009 addresses disaster risk reduction. The Philippines' two new laws provide a good model for governments choosing to keep their disaster risk reduction and adaptation laws separate. As explored in section 6A, both the disaster risk reduction and climate change laws refer to each other, recall the other's mandate, and include key institutions and stakeholders from the other field in relevant committees. Moreover, it is clear that the climate law has benefitted from disaster risk reduction experience, as evidenced by its participatory approach and budgetary allocations. This level of harmonization could be termed "linking" the laws.

A deeper level of harmonization that could be termed "integration" would involve using existing disaster risk reduction legislation as the basis and with amending it to fulfill climate change needs. One such amendment might be the mandate to evaluate changing climate hazard return-periods and to reassess the adequacy of risk reduction measures such as building codes. The provision should mandate periodic evaluations as climate change science develops, as suggested in section 6D.

The integrated law could also require the inclusion of disaster risk reduction-and-climate change education in the school curricula, as well as the development of joint training programmes for teachers (see section 6E) based on the experience gained in delivering interactive, behaviour-changing DRR education, as well as emerging social science research on taking action on climate change. The law might mandate coordination and joint programme development, as appropriate, by the ministries of environment and the national disaster risk management agency. Such programming might include hazard and vulnerability assessment, the collection and management of risk information, and joint efforts to share risk information with the public. Holub and Fuchs suggest that a due diligence process as a legal obligation should include increased consideration of hazard maps during the construction-permit procedures, ongoing inspections by the respective authorities, associated certification and final approval of work and the mandatory involvement of the respective disaster management authority during the entire process.

It is noteworthy that in many countries, such as the Federated States of Micronesia, Colombia, Peru and The Gambia, among others, policy makers are implementing such integrated activities through national strategies, whilst the legislation is under development.

## 9. Conclusion

The preparation of this study revealed a dearth of analysis about existing disaster risk reduction laws and their effectiveness. Although most states have national disaster risk reduction and management laws, most of which are available online, an analytical review of the global body of disaster risk reduction laws has not been undertaken. UNDP's eleven-country study (UNDP 2005) and its three Institutional and Legislative System studies in Asia Pacific, as well as the ISDR's Global Assessment Report (ISDR 2009 and 2011) of government reports are good bases on which to build. Addressing the lack of research, IFRC is undertaking is producing five legal case studies to be finalized in 2011. Parliamentarians in Africa are discussing the option of a model law to be used across the region. However, further comprehensive, comparative research, including on the elements and challenges of good disaster risk reduction legislation, is needed to aid public authorities chart the course for future action. Closely connected, further in-depth analysis of the economics of disaster risk reduction could provide impetus to encourage governments to focus on development and revision of disaster risk reduction and climate change adaptation laws.

Despite the limited availability of studies, some preliminary findings emerge:

**Legislation is a key requirement for effective, coordinated disaster risk reduction *and* for climate change adaptation**. Both, **disaster risk reduction and the climate change actors should work closely together when developing new or revising existing legislation**. Two major benefits can be identified from such cooperation:

1. *Knowledge exchange and avoidance of duplication:* Legislation to facilitate climate change adaptation at national and local level will in large part mean preventing, preparing for and responding to extreme events—functions that good disaster risk reduction legislation guides. Thus, assessing the adequacy of existing disaster risk reduction legislation and strengthening these laws rather than starting a wholly new drafting and negotiations process for adaptation can help to avoid mistakes and inefficiencies, and prevent overlap between the disaster risk reduction and climate change adaptation agendas. There is great value in avoiding the development of parallel systems for disaster risk and climate change, each with its own institutions, programmes and budgets competing for power and resources. This can result in substantial economies, lessening the potential burden on over-stretched budgets. Most importantly, and as frequently reported (e.g. UNDP 2005; UNDP 2007a; UNISDR 2009), an overload of laws and regulations without a coherent and comprehensive framework, clear competencies and budget allocations hinders the effective implementation of disaster risk reduction legislation.

2. *Economy of time:* As is evidenced by the efforts of the States studied here, it takes a considerable amount of time and perseverance to develop and enact disaster risk reduction legislation. Linking the development of disaster risk reduction legislation to the politically prominent climate change adaptation discussion can substantially increase the sense of urgency and thus speed of parliamentary processes. A good example is the new legislation in the Philippines: it took a decade to enact a comprehensive disaster risk reduction framework, yet only 2 years of consideration by the Fourteenth Congress to enact the State's Climate Change Act. This disparity reflects the higher political interest generated by climate change (Benson 2009)—an interest that disaster risk reduction advocates should seize to strengthen disaster risk reduction law by reinforcing disaster prevention functions and ensuring the law adequately addresses the additional challenges posed by climate change.

**References**


Benson, Charlotte. 2009. "Mainstreaming Disaster Risk Reduction into Development: Challenges and Experience in the Philippines". International Federation of Red Cross and Red Crescent Societies / the ProVention Consortium.

Britton, Neil R. "Getting the foundation right: in pursuit of effective disaster legislation for the Philippines". Second Asian Conference on Earthquake Engineering 2006. March 10-11, 2006. Manila.

Cardona, Omar Darío and Yamín, Luís Eduardo. 2007. "Información para la gestión de riesgo de desastres. Estudio de caso de cinco países". Colombia. United Nations and Inter-American Development Bank.

Colombia Ministerio del Interior y de Justicia, Dirección de Prevención y Atención de Desastres, Government of Colombia. 2009. "Informe Nacional del Progreso en la Implementación del Marco de Acción de Hyogo".

European Commission (EC). 2000. "Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy". (Directive 2000/60/EC). European Commission. Brussels. Belgium.

European Commission (EC). 2007. "Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks". (Directive 2007/60/EC). European Commission, Brussels. Belgium.

European Commission (EC). 2009. "Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Work Programme 2010-2012. Supporting the implementation of the first river basin management plans". European Commission. Brussels. Belgium.

European Commission (EC). 2010. Press Release. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/1423&format=HTML

Fuchs, S and M. Holub. 2009. "Mitigating mountain hazards in Austria – legislation, risk transfer, and awareness building". RiskConsult, Sicherheits- & Risiko-Managementberatung GmbH, Vienna. Austria Institute of Mountain Risk Engineering, University of Natural Resources and Applied Life Sciences. Vienna. Austria. 2 April 2009.

Global Network of Civil Society Networks for Disaster Reduction. 2009. "Clouds but Little Rain" -- Views from the Frontline: A Local Perspective of Progress Towards Implementation of the Hyogo Framework for Action".

International Strategy for Disaster Reduction (ISDR). 2009. Global Assessment Report on Disaster Risk Reduction. "Risk and poverty in a changing climate". United Nations. Geneva. Switzerland.

International Strategy for Disaster Reduction (ISDR). Forthcoming in 2011. Global Assessment Report on Disaster Risk Reduction. United Nations. Geneva. Switzerland.

Lamiss-Khakzadeh, Dr. "Rechtliche Aspekte des Naturgefahrenmanagements". Ernst & Sohn Verlag für Architektur und technische Wissenschaften GmbH & Co. KG. Berlin. Bautechnik und Naturgefahren.

Mattingly, Shirley. 2002. "Policy, legal and institutional arrangements. Proceedings. Regional Workshop on Best Practices in Disaster Mitigation". Sept. 24-26, 2002, Bali, pp. 19-36.

Pelling, Mark and Ailsa Holloway. 2006. "Legislation for Mainstreaming Disaster Risk Reduction". Tearfund.

Philippines, Fourteenth Congress of. 2009. Climate Change Act of 2009. Republic Act 9729.

Philippines, Fourteenth Congress of. 2010. National Disaster Risk Reduction and Management Act. Republic Act 10121.

PriceWaterhouseCoopers. 2010. "Business Leadership on Climate Change Adaptation. Encouraging Engagement and Action."

Raschky, P., Weck-Hannemann, H. 2007. "Charity hazard - A real hazard to natural disaster insurance". Working Papers 2007-04, Faculty of Economics and Statistics, University of Innsbruck.

http://www.uibk.ac.at/fakultaeten/volkswirtschaft_und_statistik/forschung/wopec/repec/inn/wpaper/2007-04.pdf

South African Department of Cooperative Governance and Traditional Affairs (SACoGTA). 2010. South Africa National Disaster Management Centre report on National Education, Training and Research Needs and Resources Analysis (NETaRNRA), Consolidated Report 2010. Compiled by the National Disaster Management Centre of South Africa, Arcadia, Pretoria.

South African National Disaster Management Centre (SANDMC). 2007. Inaugural Annual Report 2006-2007. Department Provincial and Local Government, Republic of South Africa. http://www.ndmc.gov.za/Documents/tabid/255/ctl/ViewDocument/mid/634/ItemID/1/Default.aspx

South African National Disaster Management Centre (SANDMC). 2004. South Africa: National Report in preparation for WCDR. http://preventionweb.net/files/940_South-Africa-report.pdf

South Africa, Republic of, Ministry for Provincial Affairs and Constitutional Development. 1998. Green Paper on Disaster Management.

http://www.polity.org.za/polity/govdocs/green_papers/disaster/gpdmindex.html

South Africa, Republic of, Ministry for Provincial Affairs and Constitutional Development. 1999. White Paper on Disaster Management. Pretoria: Government Printer.

http://whitepapers.zdnet.co.uk/0,1000000651,260018221p,00.htm

South Africa, Republic of. 2003. Disaster Management Act, 2002. Act No. 57 of 2002. Pretoria: Government Printer. http://www.info.gov.za/gazette/acts/2002/a57-02.pdf

Swiss Re. Sigma. 2010. Press Release. Available at http://www.swissre.com/media/media_information/Preliminary_2010_catastrophes_estimates_from_sigma.html

United Nations Development Programme (UNDP). 2007a. "A Global Review: UNDP Support to Institutional and Legislative Systems for Disaster Risk Management". UNDP Bureau for Crisis Prevention and Recovery.

United Nations Development Programme (UNDP). 2007b. Human Development Report 2007/2008. Fighting climate change: Human solidarity in a divided world. New York. USA

United Nations Development Programme (UNDP). 2009. "Indonesia: Institutional and Legal Systems for Early Warning and Disaster Risk Reduction". Regional Programme on Capacity Building for Sustainable Recovery and Risk Reduction.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and United Nations International Strategy for Disaster Reduction (UNISDR). 2010. Asia Pacific Disaster Report 2010 - Protecting Development Gains. Thailand.

United Nations International Strategy for Disaster Reduction (UNISDR). 2005a. "Hyogo Framework for Action: Building the Resilience of Nations and Communities to Disasters".

United Nations International Strategy for Disaster Reduction (UNISDR). 2005b. World Conference on Disaster Reduction. Summary and Thematic Discussion Paper Cluster 1, "Governance: Institutional and Policy Frameworks for Risk Reduction".

United Nations International Strategy for Disaster Reduction (UNISDR). 2008. "Policy Brief 1: Climate Change and Disaster Risk Reduction". Geneva, United Nations.

United Nations International Strategy for Disaster Reduction (UNISDR). 2010. "Policy Brief 3: Strengthening Climate Change Adaptation through Disaster Risk Reduction". Geneva, United Nations.

United Nations Framework Convention on Climate Change (UNFCCC). 2010. Cancun Adaptation Framework.

Vásquez Morales and Héctor Jaime. 2006. "Sistematización de la información existente sobre aspectos institucionales, legales y técnicos de la gestión del riesgo en Colombia". Informe Final. Proyecto Predecan. Comunidad Andina. Available: http://www.preventionweb.net/files/9578_InfoSistematizCol.pdf.

Visser, Rian and Dewald Van Niekerk. 2009. “A funding model for the disaster risk management function of municipalities.” South African National Disaster Management Centre.

World Bank. 2004. “Enhancing Poverty Alleviation through Disaster Reduction”. The World Bank, Manila.

World Bank and UNISDR, 2008. “The Structure, Role and Mandate of Civil Protection in Disaster Risk Reduction for South Eastern Europe”. South Eastern Europe Disaster Risk Mitigation and Adaptation Programme (SEEDRMAP).

World Bank. 2010. “Natural Hazards, UnNatural Disasters, The Economics of Effective Prevention”. Published November 10, 2010. World Bank.