

# **Disaster Risk Reduction and Sustainable Development**

*Fouad Bendimerad*

## **Correlation Between Disasters and Development**

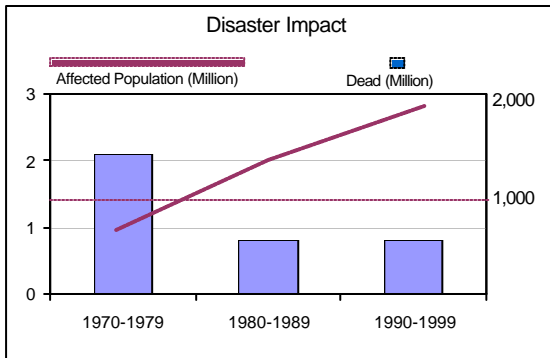
### **Impact of Disasters on Development**

Disasters resulting from natural hazards such as floods, drought, earthquakes, cyclones, forest fires, desertification and insect infestation impact development in several ways. Disasters damage infrastructure, lifelines and critical facilities, resulting in human, financial and environmental losses. Rehabilitation requires funding, often resulting in the diversion of monies originally planned for development and service provision. Thus, disasters delay development programs by reducing available assets and interrupting planning. Disasters also decrease the economic potential of society by exacerbating poverty, disrupting small business and industry activities, and disabling lifelines vital for economic activity and service delivery. Disasters also reduce human capital as a result of the deaths, injuries and long-term trauma suffered by affected individuals.

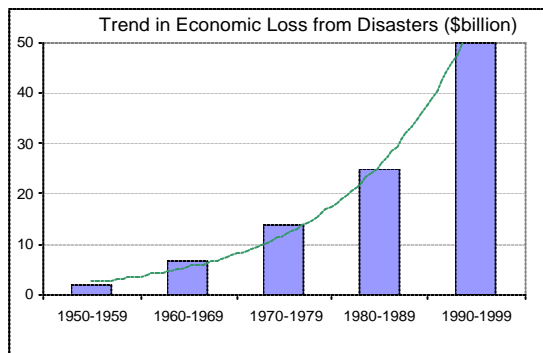
### **Cost of Disasters**

According to the World Meteorological Organization, floods caused hardship for more than 17 million people worldwide and accounted for losses of more than US\$30 billion in 2002. Statistics indicate a significant increase in the frequency and cost of disasters in the last half century. The average globaleconomic cost of disasters increased approximately six-fold from 1970 to 2000 (Munich Re; 2001). Losses from disasters related to climate change could reach US\$300 billion annually if safeguards to mitigate its impact are not implemented (SEI, IUCN, IISD; 2001). On average, about 100,000 people are expected to lose their lives due to natural hazards each year. Moreover, disasters disproportionately affect least developed countries. An estimated 97 percent of natural disaster-related deaths occur in developing countries (World Bank, 2000-2001) and

economic losses (measured as a percentage of gross national product) are some ten times greater.



Source: OFDA/Cred International Disaster Database, 2002



Source: Munich Re, 2001

### Collision Between Human Development and Natural Hazards

The increase in the cost and frequency of disasters is the direct result of human action. Disasters are not completely natural phenomena. Disasters are directly correlated with development that increases vulnerability to natural and manmade hazards. Development impacts the frequency and severity of disasters, exposing a growing proportion of the world's population to hazards. In the last half century, human development has been characterized by rapid and unplanned urbanization in the developing world. Ninety percent of global population growth is taking place in the least developed countries. These countries do not have the ability and resources to manage the high rate of urban growth. Between 1950 and 2000, the urban population in developing countries increased from less than 18 percent to more than 40 percent. By 2030, the increase is expected to reach 60 percent. By 2010,

eight out of ten of the largest cities of the world will be in developing countries. The greatest potential for disasters exists in the hundred most populous cities. Over three-quarters of these are exposed to at least one natural hazard. No less than seventy of these cities can expect, on average, a strong earthquake at least once every fifty years (ISDR; 2002).

### **Unsustainable Development and Unsustainable Risk**

Unplanned and ill-planned urbanization has been the cause of environmental degradation (e.g., deforestation), overexploitation of natural resources (e.g., water), ecological disturbances (e.g., pollution), and social destitution (e.g., increase in poverty). These factors turn hazards into disasters. Increased population concentrations and substandard construction increase the vulnerability of the built environment and the fragility of socioeconomic systems. Land use and urban development practices often do not take into account susceptibility to natural hazards. United Nations statistics indicate that in the 1990s, close to 70 percent of construction in developing countries was built illegally. Hence, year after year, exposure to natural hazards increases as a result of unsustainable development.

In sum, the following factors correlate disasters and development:

- Poor land management
- Increased population concentrations in hazard areas
- Environmental mismanagement, resulting in environmental degradation
- Lack of regulation and a lack of enforcement of regulation
- Social destitution and social injustice
- Unprepared populations and unprepared institutions
- Inappropriate use of resources.

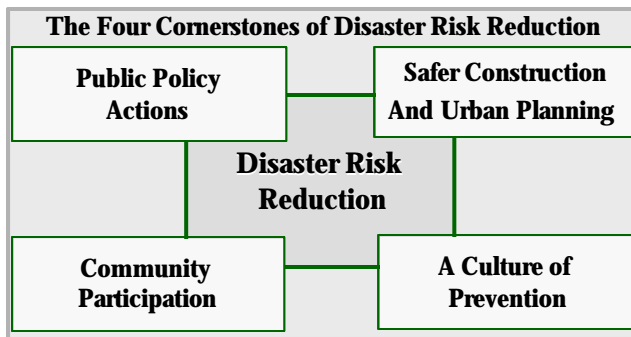
These interrelated factors create a trend that increases susceptibility to natural disasters and reduces resilience.

### **The Four Cornerstones of Disaster Risk Reduction**

Disasters impact sociopolitical factors. Actions aimed at reducing risk should address the social factors that determine vulnerability as well as changes in the political environment that could increase the resilience of communities. Four parallel and complementary lines of actions can be

considered to reduce exposure to disasters and achieve a more sustainable approach to development:

- Community/stakeholder participation
- Public policy actions
- Safer construction and urban development
- Development of a culture of prevention.



### **Reducing Vulnerability through Community Participation**

Experience has shown that some of the most successful risk reduction initiatives have closely involved communities in understanding risks and designing appropriate response plans. Community-based disaster management (CBDM) transforms vulnerable groups into disaster-resilient communities. Communities understand the socio-environmental constraints that define vulnerability and the parameters that determine the success of risk reduction policies and actions. Communities also have perceptions that may or may not be based on reality, but nonetheless are important to consider and incorporate in the development of risk reduction initiatives. Communities also represent different interests and thus, their involvement is essential in the process of reaching consensus and achieving acceptability.

Community involvement ensures transparency and disclosure and favors responsibility sharing, important mechanisms for disaster risk reduction and sustainable resource use. The top-down approach, still in practice in many countries, fails to involve people in development planning, vulnerability identification and disaster reduction. Community participation, on the other

hand, builds capacity and trust at the local level and reduces political manipulation by special interest groups. Community involvement helps not only in identifying vulnerability, but also the trade-offs involved in achieving sustainability. Furthermore, disaster risk reduction is a dynamic process that should adapt to new conditions. In this respect, community participation provides an inherent mechanism for adaptation and control.

Various techniques have been used to engage communities in disaster mitigation. By its nature, community participation creates partnerships around a common agenda. Hence, it relies on developing participatory mechanisms among stakeholders by identifying leaders, understanding interests, gaining trust and attaining commitment. However, to be successful, communities should be construed as “being part of” rather than “taking part in” an activity. Disaster risk reduction issues must be framed within a community’s social, cultural, environmental and economic context. Garnering community participation often requires a catalyst for change (e.g. experts who can provide knowledge and facilitate discussions), as well as self-motivated participation. Community participation involves a process that first identifies linkages between formal government structures and a community’s social structures and then creates mechanisms to integrate them into a common agenda.

Lessons learned with regard to community participation and managing disaster risk include:

- Progress with risk management concerns are easier when fully integrated into the development agenda
- Informed civil society is a potent force in moving risk management forward and in generating responsible, people-oriented policies
- The basis for sustained work and intervention for disaster preparedness and response correlates directly with a community’s level of organization and information
- Community participation requires an honest commitment to a process from government, community leaders and stakeholders where the interests of the community at risk determine the final goal
- Communities often view disaster protection in the context of improved livelihood security, hence disaster reduction should be seen in light of sustainable economic, social and physical development.

Successes in community participation come mostly from experience in rural areas. In rural environments, individuals rely more heavily upon local

communities and mechanisms for engaging communities in the decision-making process are easier to devise. Experience with community participation in complex urban environments is limited and more research is needed to understand the factors for success and develop effective mechanisms for engaging communities in large metropolises.

### **Reducing Vulnerability through Public Policy Action**

Public policy generally consists of a set of decisions that guide the actions of government, business and civil society. Disaster risk reduction policy deals with the course of action adopted by government and civil society to understand hazards, assess vulnerability, evaluate risk and adopt measures for risk reduction. Examples of risk reduction policy include legal and institutional arrangements that govern land use, urban planning, enactment and enforcement of construction regulations and risk financing. However, experience has shown that risk reduction policies are more likely to be successful if the linkage between disasters and development and disasters and societal needs are recognized. Experience has also shown that even in cases where policies have been enacted by law, the absence of enforcement can negate the effectiveness of the legal structure. For example, most developing countries have competent building codes, yet code provisions are ignored in the implementation process due to a lack of enforcement mechanisms.

Government has the responsibility of protecting life and property, maintaining security and providing services. Government at every level is obliged to protect citizens from the risks caused by natural and technological hazards. Government uses legal instruments and institutional arrangements to impose a set of societal rules that order and protect society. Disaster risk reduction and its relationship to sustainable development are to a great extent determined by the existence or lack of government regulations for land use and urban planning, construction standards, civil protection and public safety. Unfortunately, pressure from special interest groups, lack of competency and bureaucratic hurdles often hinder the effectiveness of public policy in protecting the environment and reducing vulnerability. Often, these issues are not in line with the objectives of government that may have short-term goals and often react rather than plan ahead.

Change within governmental structures is slow and sometimes difficult to implement. Currently, advocacy is turned towards risk reduction, yet most public policy is aimed at improving disaster response capabilities and examining prevention alternatives. Mitigation is often too complex to be implemented by government because it involves proactive inter-agency interventions, inter-governmental coordination, and reaching out to

communities and other stakeholders. Government is sometimes reluctant to engage in mitigation because short-term benefits can be difficult to evaluate. Moreover, mitigation policies often raise fundamental socioeconomic issues such as livelihood safety and resource distribution equity, which government is reluctant to tackle. Hence, other more dynamic mechanisms to impact disaster reduction policy are needed. These include grassroots advocacy groups, stakeholder partnerships, and knowledge and risk dissemination.

Several actors in society have a role in the promotion of disaster mitigation policy. In particular, elements of civil society that are active in development, environment, social action and humanitarian work operate under defined policies. At the same time, they influence government attitudes and impact policy. Unfortunately, disaster risk reduction is seldom included in the agendas of these organizations. Thus, the disaster management community should reach out to other civil society organizations to gain more influence on policy. The roles of the scientific community and the media are particularly important. Policy making for disaster risk reduction requires a clear understanding of issues, scientific consensus and packaging of scientific knowledge in a way that can be translated into policy. Political feasibility must be part of the knowledge development and dissemination process to facilitate implementation. The scientific community has the ability to play a leadership role in being an agent for change and influencing policy makers, practitioners, and the public. But the impact of the scientific community is only efficient when action is linked and coordinated with other civil society actors.

Linkages among civil society actors have the potential to go over bureaucratic hurdles and trigger action. In the developing world, donor and inter-governmental development agencies influence government policies and institutional arrangements for disaster management. By introducing new processes and technologies, integrating local communities into the decision-making process and requiring the inclusion of comprehensive disaster risk reduction action in development processes, these agencies can immediately impact government policies. However, while there is a growing concern among development agencies about disaster risk reduction, integrating disaster risk reduction into development is not yet standard practice.

Collaboration between government, civil society and external agents provides excellent opportunities to create policies and processes that integrate disaster management and development. In the face of complex and competing demands, success is strongly correlated with two factors. First, the ability of government to put in place legislation and administrative arrangements that reduce hazard risk and secondly, the ability of government

and civil society to work together around a common agenda aimed at avoiding catastrophic losses from natural and technological hazards.

### **Reducing Vulnerability through Safer Construction and Urban Planning**

In many ways, urbanization issues lie at the heart of safer cities and sustainable development. Unplanned urbanization, caused by population growth and migration, is a key factor in vulnerability and environmental degradation. In large cities, sustainable development and disaster risk reduction goals are often in conflict with pressure to provide housing, employment, social services and education. Cities attract new inhabitants because they offer better prospects for employment and access to social services and education. Because cities are not able to keep up with housing needs, a significant portion of urban growth takes place in an unplanned manner, resulting in illegal construction and a lack of compliance with safety standards. Homes are built on a city's periphery, and in areas of cities subject to hazards such as flooding and landslides. People in more established housing are also at risk because building regulations may not have been followed during construction. As a result, large urban areas are often vulnerable, leaving the poor in the worst position of all should a disaster occur. In developing countries, institutions in charge of urban planning, land use management and construction supervision are often overwhelmed by the challenges of urban growth. This situation may require a new approach in conceiving land use management, urban planning and housing development plans. One option is to ensure adequate services, improve infrastructure and provide employment in rural areas and small and medium cities to slow the growth of large and megacities.

Most human and financial losses from disasters are related to the collapse of dwellings, often built by their owners or by traditional contractors without any institutional supervision. Hence, improving traditional construction practices should constitute an important action in the risk mitigation agenda of any community. However, only a few programs aim at the above agenda. The National Society of Earthquake Technology (NSET) of Nepal has received international recognition for training local masons in earthquake-resistant construction. Following the September 2001 Gujarat earthquake, Nepalese masons went to Gujarat to share techniques with Indian masons for improving earthquake resistance in construction. Such programs are generally low cost and have multiple returns: they improve skills, build capacity, and empower communities. It should be recognized, however, that the extension of this approach to a megacity scale would require long term and sustained efforts as well as government support. New building

regulations in Ecuador, for example, were the product of an effective partnership of academia, business and government. But without action to insist on compliance, the regulations remain a good example of joint work, while the desired outcome has not yet been achieved.

Retrofitting existing building stock to reduce vulnerability involves social, economic and political issues. Substandard buildings that could collapse, causing harm and injury, put populations at risk. Retrofitting is practical and desirable, but without strong incentives, people are reluctant to make investments that may or may not be needed. Sometimes people are unaware of the risks associated with their dwellings. Furthermore, critical facilities such as schools, hospitals, infrastructure and lifeline facilities could also be at risk. Retrofitting can seem complex. As a result, few communities have retrofit existing facilities. Government might want to consider providing the impetus and funding for such protective measures. Furthermore, for megacities, the potential task is so large that it will have to be programmed over a prolonged period of time and the actions will have to be prioritized. A viable option is to retrofit buildings to a minimum standard that would protect buildings from collapse but not necessarily from damage. Without such measures, losses from disasters will continue to be high.

Techniques such as microzoning and risk mapping can be helpful tools for urban planning and informing the public about potential risks. Such techniques produce technical information for the identification of hazardous areas, and thus could serve in developing zoning regulations and establishing population density levels. They could also serve as a means to design mitigation action (e.g. soil stabilization) to reduce hazard risk. Unfortunately, urban planning is often made irrelevant by unplanned human settlements, technical deficiencies, and interventions by special interest groups which sometimes profit from high housing demand. In addition, zoning studies often deal only with hazards and do not take into consideration an area's socioeconomic factors. Hence, the effectiveness of zoning studies in defining land use policy remains questionable. The integration of risk factors in urban planning also lacks advocates. In view of pressing demands for housing and services, city governments often see risk reduction measures as additional restrictions on land use. In such an environment, advocacy to incorporate hazard mitigation measures typically does not find strong voices among decision makers.

Scenario loss analyses are powerful tools for understanding vulnerabilities and studying schemes for risk reduction. Scenario studies can be more effective than zoning studies since they integrate socioeconomic factors and technical factors (housing, infrastructure, lifelines, and critical facilities).

Moreover, scenario loss analyses can determine the vulnerabilities of existing populations and infrastructure and produce parameters for planning response and mitigation actions. However, to be efficient and credible, scenario loss analyses must be undertaken locally, with input from stakeholders and experts. A holistic approach to address structural and non-structural vulnerabilities to develop a plan acceptable to decision makers and the public is recommended. With advances in information technology and the ability to store, manipulate and analyze large amounts of data, scenario loss analyses are becoming increasingly a powerful tool for risk communication. Such analyses can constitute an effective instrument to influence urban planning policy and for undertaking housing and infrastructure mitigation programs.

### **Reducing Vulnerability through a Culture of Prevention**

Developing a culture of prevention to reduce the vulnerability of society to hazards—natural and manmade—constitutes the foundation of disaster risk reduction. Cultural factors dictate how people perceive risk and their motivation to enhance resilience or aggravate vulnerability. Developing a culture of prevention develops human potential which provides a community with the skills, knowledge and confidence to cope with the impacts of hazards to proactively reduce the negative consequences of future events. Human potential capacity translates into sustainable livelihood actions and infuses its influence into sustainable human development and sustainable resource use.

Typically, socio-environmental constraints of rural communities make individuals more environmentally aware and more receptive to collectively adopting safeguards against hazards and environmental degradation. However, in an urban environment, especially in areas of high urban growth, individuals are pressured to address every day needs, sometimes causing them to favor personal risk adversity. Developing a culture of prevention within communities under stress that may be skeptical about government intentions is a challenging task. However, a common denominator is the creation of mechanisms and opportunities to involve stakeholders in the capacity building process. The principal stakeholders should be identified and their roles in disaster management clarified to enable the development of sustainable partnerships. While government is traditionally identified as a principal stakeholder, affected people, corporate bodies, civil society organizations and educational and religious institutions are also now recognized as having an important role. The key actions for developing a culture of prevention are:

- Awareness raising

- Societal arrangements
- Accountability forging
- Empowerment.

### **Awareness Raising**

Awareness raising makes individuals, communities and institutions aware of vulnerabilities and the negative impacts of disasters on their livelihoods. Armed with this knowledge, they can better understand their environment and take an active role in its management. Awareness raising efforts have mainly targeted school children and educators; following the mantra that today's children form tomorrow's society. While this is a good strategy, it is not sufficient in and of itself to ensure safer communities. Children do not retain and apply the full body of knowledge that they are taught. Children also grow up in complex environments and are influenced in several ways. For example, if children live in an environment indifferent to risk due to the harshness of everyday life, their idea of safety may not include natural hazard risk since it seems irrelevant to the daily struggle.

To be effective, awareness raising must target several segments of society. Awareness raising should be aimed at governmental and non-governmental institutions and civil society organizations to reform existing sociopolitical structures to make them more responsive to community needs. Educational processes aimed at raising awareness must also be put in the context of the everyday challenges of a community in order to attract attention. Everyday risks related to human safety constitute an opportunity for preparing for less frequent but potentially more disastrous events.

Awareness raising should be viewed as a long-term educational process, and therefore, should have built-in mechanisms for sustainability. Long term funding commitments and evaluation processes must be devised to ensure sustainability, measure efficiency, and make corrections when necessary. Awareness raising is the first level of action to impact individuals and societal attitude towards vulnerability reduction and towards building a culture of prevention.

### **Societal Arrangements**

Societies organize themselves to link individuals in a community. This involves both the strengthening of government institutions and the creation of organizations representing civil society. Active civil society organizations represent the interests of stakeholders in the policy and decision making process. They place community concerns in discussions surrounding policy

development. Civil society organizations can also improve transparency by disseminating information and initiating reform. Societal organizations can also be effective actors in capacity development by providing training and creating partnerships. They can also mobilize resources and implement disaster risk reduction programs. As actors of change, societal organizations can prepare communities to address their own needs and protect their interests. Sometimes in developing countries, however, civil society is weak due to a lack of resources and capacity.

### **Forging Accountability**

Where there is accountability, institutions and individuals tend to act responsibly towards society. The process of forging accountability among institutions and individuals is a powerful mechanism for building a culture of safety because it incorporates penalties and rewards. It forces individuals at every level of society to think about the consequences of their actions. Accountability is an enforcement instrument for good governance that favors community interest over the interest individuals and powerful groups. Accountability is essential to achieve sustainable development and reduce disaster vulnerability. In developing countries, a lack of accountability is often a major impediment to disaster risk reduction. It can be seen through the disregard of regulations related to building construction, land use and resource allocation. Forging accountability requires leadership within all branches of government as well as within civil society. Accountability starts with a vision and is followed by good policies that give communities and individuals a voice in governing and managing their lives.

### **Empowerment**

Empowerment comes from several sources. First, good governance empowers individuals and communities and makes them active participants in society. Knowledge is also an instrument of empowerment. A community that is aware of its vulnerability to disasters is more likely to take action. Knowledge engenders confidence and vigilance. More importantly, knowledge constitutes the active ingredient in the participatory process that enables communities to make informed decisions about environmental and resource allocation issues.

The post-disaster period provides a window of opportunity to build networks aimed at empowering local communities in disaster management, preparedness and response. During this period, when fear and awareness of hazards and feelings of helplessness run high, community members are more receptive to learning about how to cope with life-threatening hazards. They

become survivors with resources that can be mobilized and strengthened instead of being passive, helpless victims. However, sustaining programs for community participation and developing a culture of prevention cannot be motivated by fear and anxiety alone. It should be backstopped through funding for community training, building networks, and developing a sense of community ownership by involving individuals in the development of action plans for disaster mitigation and preparedness.

## **Agenda for Global Disaster Risk Reduction**

### **Specific Actions**

The global disaster reduction agenda should focus on recognizing that human intervention to reduce vulnerability reduces exposure to disasters. The correlation between human development, environmental degradation and disasters is now well accepted. Yet, disaster risk reduction is seldom integrated as an explicit component of development and environmental programs at the national, regional and international level. In view of the spiraling human and economic costs of disasters, a more aggressive attitude must be adopted in overcoming impediments to sustainable development and its implication for disaster risk reduction. The chances for success depend on a major shift in collective attitudes. There must be common responsibility, accountability and an active role in the participatory process. In particular, government responsibility must be increased. Protection against avoidable risk should be promoted and accepted as a right. A government's first responsibility pertains to the protection of its citizens and institutions; for this purpose, governments spend significant amounts of money and resources in building military defense capabilities that may never be used; why not spend some of these funds and resources to protect citizens from hazards that are certain to happen? The elusive challenge of reducing vulnerability to disasters in developing countries requires more than a passive acknowledgement of problems; it entails a commitment from governments, civil society and the international community to a sustained effort at disaster risk reduction. Supporting vulnerability reduction hinges on the following actions:

- Strengthening vulnerable buildings that constitute a threat to their occupants and strengthening critical lifelines and infrastructure to ensure essential services after an event
- Improvement in and implementation of construction standards and risk-based urban planning standards to build away from hazardous areas

- Development of disaster assessment technology and early warning programs to identify hazardous and unsafe areas, to disseminate risk knowledge, to improve response and recovery and to support risk-based decision-making processes
- Implementation of training and educational programs (at all levels) to build knowledge, educate civil society and policymakers, and develop local and global capacity
- Accepting and promoting safety from avoidable risk as a public welfare principle and basic right
- Development of a culture of prevention through awareness programs, organization of civil society, empowerment of communities and transparent governance
- Undertaking public relations and advocacy programs to mobilize political will and public commitment in support (financial, technical and structural) of a global disaster preparedness and disaster mitigation agenda.

### **Providing Resources**

Most developing countries have limited financial and human resources to fund disaster reduction. In a few cases where political will and public commitment exist, resources are too few to result in a meaningful impact. At the same time, projected losses from disasters continue their upward spiral. Extraordinary human and financial resources are needed from governments, international and inter-governmental agencies, humanitarian agencies, the research and professional community, and other stakeholders to focus on vulnerability reduction. With current funding levels, risk will continue to increase. Additional funds and human resources need to be allocated at the national and international levels to address past deficiencies and build more resilient communities.

### **Ensuring Sustainability**

Many disaster reduction initiatives fail to reach their objectives and only marginally impact capacity building and vulnerability reduction because they are short-lived. Often, funds are allocated on a short-term basis and unrealistic expectations are attached to capacity building projects. Disaster mitigation should be recognized as a difficult process, where progress can only be achieved through well-planned and sustained efforts. Sustainability of initiatives is critical to overcome difficulties, survive administrative turnovers, and start impacting socioeconomic structures and parameters

associated with disasters. Sustainability requires commitment in providing long-term funding, human resources and institutional support and backing. Lack of sustainability should be viewed as a major impediment to disaster risk reduction.

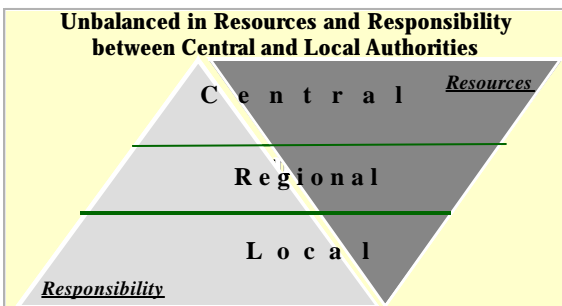
### **Achieving Institutionalization**

Risk reduction initiatives will not be able to balance the continuous increase in risk if they remain on the agenda of only a few specialized NGOs and research institutions. Real progress will come when vulnerability reduction and disaster risk management are integrated into the day-to-day management of local, national, regional and international institutions. Furthermore, institutionalization should not be limited to the conventional disaster management functions of government. Risk reduction should be a part of urban/rural planning, land-use planning, housing and infrastructure development, natural resource distribution, environmental and industrial management, and the treasury. The role of government in institutionalizing disaster risk reduction is critical. Legal and administrative policies and procedures should be enacted and enforcement procedures put in place to structure and empower institutions in their disaster management and mitigation mission. Institutionalization goes beyond governmental institutions. Civil society must be active and responsible participants in the process. Institutionalization implies both empowerment and accountability and will benefit sustainable development and its relationship with disaster risk reduction.

## **Disaster Management in the Context of Local Government**

### **Unbalanced Authorities and Responsibilities**

In most countries, the central government retains authority over disaster management programs, which often focus on developing response capabilities rather than proactive mitigation. With regulatory environments concentrating on decision making and resources at the central level, local government action for disaster management is often given a lower priority.



Faced with competing priorities and limited resources, local governments seldom allocate financial resources to disaster management programs. In this environment, it is difficult to create the political engagement necessary to institutionalize disaster management at the local level. The weakness of local institutions deters any proactive decision-making process related to mitigation and preparedness. Disasters impact local communities, which have to be prepared to respond and recover. During a disaster, local governments are immediately confronted with the responsibility of providing relief to victims but often do not have the resources and adequate legislative authority. Local governments also have difficulty accessing mitigation funds because funding and relief agencies typically work directly with central governments.

### **Benefits of Decentralization**

Experience and modern disaster management practice recognize the importance of a strong and well-structured local disaster management capacity, and the need for decentralized authority to achieve effective response and mitigation. The lack of local authority in disaster management further exacerbates vulnerability, since risk reduction efforts cannot inherently be linked to land use planning, urban settlement and construction control. While national coordination of disaster management activities must remain at the central level, decentralization for programs and resources to the local authorities ensures a more coherent and efficient approach because disaster management programs can be developed when local realities are considered. Furthermore, the critical link between disaster risk reduction and factors of urban sustainability are more likely to be addressed by local rather than central government since local government typically has authority over urban planning and construction supervision. Reaching out to local governments to help them build capacity, acquire knowledge and resources and provide them with decision-making authority is essential for loss reduction in hazardous events and building resiliency in urban settlements.

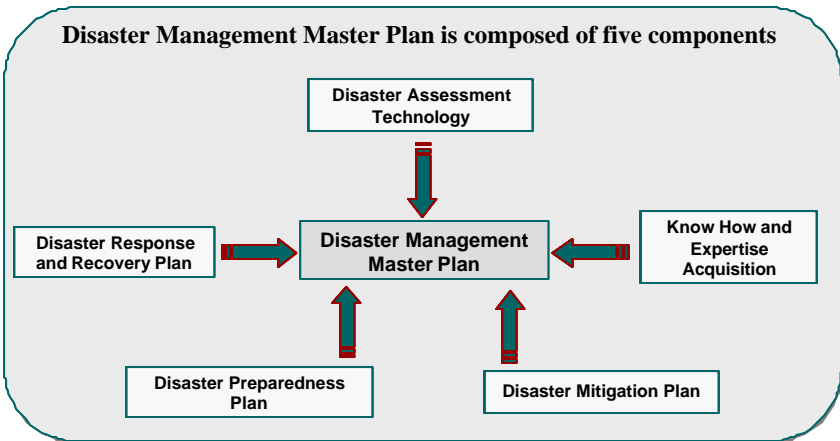
### **Integrated Disaster Management Model**

Urban disaster risk reduction is a process involving the identification of risk, institutional knowledge building, the integration of disaster management into day-to-day government action and dedicated financial and human resources. For large metropolises, a comprehensive approach to managing disasters is the development and adoption of a citywide *Disaster Management Master Plan (DMMP)* which includes the following five components:

- Disaster Assessment
- Disaster Preparedness

- Disaster Response and Relief
- Disaster Mitigation
- Know-how and Expertise Acquisition.

The DMMP serves as a guide for coordinated city action and policy writing regarding disaster management. It provides a citywide action plan and related protocols for the components listed above and suggestions for undertaking day-to-day activities for plan execution. The implementation of a DMMP is a rational and efficient approach to build local capacity because it fits the conventional operational frameworks of local governments. Local government policy is often driven by similar plans in areas such as urban development, land use planning, capital planning and public safety. These operations are directly related to disaster management activities and can assist in institutionalizing disaster management within a city's operations.



## A View in the Future

### Making a Commitment

Natural hazards become disasters as a consequence of human action. Investing to reduce the impact of future disasters saves lives and protects assets and resources. Mitigation is good public policy and is in the public interest. It preserves a country's human capital and assets. Instead of paying

for large losses as the result of a disaster, one can incrementally reduce future losses by reinforcing existing housing, infrastructure, social buildings, lifelines and critical facilities. Such action can save lives, preserve scarce resources, safeguard development gains, shelter economic output and protect communities.

Significant progress can be achieved in disaster reduction within the next 25 years if countries allocate a portion of average annual disaster losses to preparedness, prevention and mitigation. Development and environmental programs should also include funding for disaster risk reduction. Benefits of such a program would more than offset projected losses from disasters in the next 25 years.

A large body of knowledge exists and can be used to reduce community vulnerability and exposure to disasters. However, procedures to ensure and speed knowledge dissemination are weak. “Natural disasters” are more a failure of foresight and neglected responsibility than the consequences of natural forces. The development of a safer environment implies accepting common responsibility and building moral imperatives, to mobilize political will, and support nations and communities in their development and resource allocation processes. Without such commitment, disasters will continue to collide with human development in ways that cause pain, suffering and tremendous losses.

### **Outcomes from the World Summit on Sustainable Development**

The World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, August 26 – September 4, 2002, recognized the threat to communities from disasters and instituted proactive vulnerability reduction as a strategy for disaster loss reduction ([www.unisdr.org](http://www.unisdr.org)). It also recognized disasters as a crosscutting concern that relates to the social, economic and humanitarian sectors. The WSSD provided the opportunity to integrate disaster reduction in the agenda of sustainable development. The outcome of WSSD brought relevance and commitment to disaster reduction and proposed a multi-hazard approach to reduce risk and vulnerability within the context of sustainable development. The commitment was sanctioned by three actions:

- A political statement adopted by heads of state which identifies “natural disasters” as a severe threat to sustainable development and requiring priority attention
- A broad and comprehensive implementation plan that includes commitments related to disaster and vulnerability reduction and improved preparedness capacities

- A set of initiatives and partnerships (referred to as Part 2 Partnerships), which support the areas committed to in the implementation plan.

How much of the implementation plan will actually be undertaken and how the political commitment made in Johannesburg will translate into funding, policy and programs remains to be seen. The major gain of the summit so far has been an increased awareness and elevation of the issue to attract the attention of policymakers and communities alike.

*“More effective prevention strategies would save not only tens of billions of dollars, but save tens of thousands of lives. Funds currently spent on intervention and relief could be devoted to enhancing equitable and sustainable development instead, which would further reduce the risk for war and disaster. Building a culture of prevention is not easy. While the costs of prevention have to be paid in the present, its benefits lie in a distant future. Moreover, the benefits are not tangible; they are the disasters that did not happen.”* Kofi Annan, Secretary-General of the United Nations.

## References

- ISDR (2002). Living with Risk: A Global Review of Disaster Reduction Initiative, Preliminary Version. ISDR, Geneva.
- Munich Re (2001). Annual Review: Natural Catastrophes .
- SEI, IUCN, IISD (2001). Coping with Climate Change: Environmental Strategies for Increasing Human Security, August 2001 (Source: Munich Re and UNEP).
- World Bank(2000-1). World Development Report.
- [www.unisdr.org](http://www.unisdr.org) Disaster Reduction and Sustainable Development: Understanding the Links between Vulnerability and Risk to Disasters Related to Development and Environment. United Nations International Strategy for Disaster Reduction.