Chapter 4

Integrating Disaster Risk Reduction into Development

This concluding chapter summarizes each of the broad disaster risk scenarios identified and characterized in Chapter 2. It also relates this risk analysis to the progress reported by countries and regions in addressing disaster risk reduction – as presented in Chapter 3. On the basis of these conclusions, this section identifies a number of 'cross-cutting' challenges for the ISDR System and the objectives of the Global Platform for Disaster Risk Reduction. It is expected that these challenges will inform ISDR System planning and work programming at all levels by influencing the formulation of appropriate goals, targets, plans and monitoring indicators by ISDR partners across all levels.

Chapter 2 revealed important differences in the risk patterns and trends emerging in intensive risk hotspots characterized by high impact geological hazards (e.g. earthquakes, volcanic eruptions and tsunamis) and climatic hazards (cyclones, floods, droughts). These trends were in contrast to those observed in areas of extensive disaster risk, mainly characterized by large numbers of highly localized climatic hazards (e.g. flash floods, landslides, mudslides, wildland fires). The concluding analysis looks at how the trends in disaster risk reduction identified from the reporting will address both mortality and economic risk in the case of three specific risk scenarios: earthquake risk hotspots; climatic risk hotspots; and regions of extensive risk.

It could be argued that this three-fold categorization of risk scenarios is far too broad to be useful for analytical purposes at country and regional levels. For instance, the causes and consequences of risk are completely different in drought-prone countries in the Sahel - and in Asian mega-cities prone to cyclone, even though both could be broadly classified as climatic risk hotspots. Similarly, earthquake risk is very different in a mega-city such as Tehran compared to a densely populated rural area such as Kashmir. However, the purpose of the analysis presented here is to identify and compare broad global trends in risk and in disaster risk reduction, rather than specific regional and national characteristics of manifest risk. From that perspective, the three scenarios examined, aim to provide a useful starting point for analysis of risk trends.

4.1 Earthquake Risk Hotspots

This Review indicates that a substantial and growing proportion of future disaster mortality will occur in large-scale catastrophes in earthquake risk hotspots, if current trends in both disaster risk and its reduction continue. Both hazard exposure and relative vulnerability are increasing in countries located in highly seismic regions that experience rapid urban growth. A number of key patterns and trends in global earthquake risk have been identified in this Review.

Disaster risk trends and impacts

Patterns and models of economic and urban development

The patterns and models of economic and urban development that characterize countries experiencing exponential urban growth, are leading to increased earthquake risk, both in terms of mortality as well as economic loss.

Earthquake mortality risk is increasing at a particularly alarming rate in rapidly expanding large cities and mega-cities, where a significant proportion of urban development may be unregulated or informal and where the application of seismic-resistant building and planning standards is uneven.

An earthquake in such contexts may also exceed the financial capacity of a country to absorb the loss and recover. Some major cities concentrate a substantial proportion of national GDP and may play important roles in both the regional and even the global economy. Many earthquake risk hotspots therefore increasingly pose threats in terms of both growing mortality risk as well as significant direct and indirect economic loss with global implications.

In contrast, earthquake mortality risk is far lower in cities in highly developed countries, with regulated urban growth incorporating seismic-resistant building and planning standards, even though the economic loss risk may be very high.

In rural and remote mountainous areas in less developed countries, earthquake mortality risk is particularly high and may be accentuated by remoteness and lack of health facilities, food supplies, communication and infrastructure. However, given the tendency towards urbanization in most countries, it is unlikely that mortality risk in rural areas is increasing at the same rate as in rapidly expanding cities. Absolute economic loss risk is less in such areas because the monetary value of the assets exposed is far less, although the relative value of local lost assets such as housing, infrastructure and livelihoods may be very high for populations affected.

Early warning for earthquakes

In contrast to climatic hazards, early warning for earthquakes is still a scientific challenge. While cases of successful earthquake early warning have been reported in China, Iran and elsewhere, these experiences are at an experimental stage and have yet to be validated for mainstream use. Until earthquake early warning is validated and mainstreamed into development planning, mortality risk will be only partially sensitive to a reduction through improvements in disaster preparedness and response.

Infrequency of major earthquakes

The relative infrequency of major earthquakes in many countries conspires against public awareness of risk, political will and commitment to reduce risk and maintaining levels of effective disaster preparedness. Risk is undoubtedly highest in cities that have not experienced a major earthquake in decades or even centuries and where significant urban growth and area development plans have not taken earthquake risk into account.

Preparedness and response only partially reduces earthquake mortality

It is important to highlight that improvements in disaster preparedness and response contribute only partially to reduced earthquake mortality. Given that most earthquake mortality is often directly related to structural failure, even well developed disaster preparedness and response systems may not result in a significant reduction in earthquake mortality risk.

Earthquake risk for women, children and the elderly
Earthquakes pose particular risks to women, children and the elderly, given their daytime presence in unsafe houses, schools and community facilities. While

global data on earthquake risk is not disaggregated by gender or age, many case studies have shown a disproportionate impact on these groups.

Disaster risk reduction progress

Taking into account these earthquake risk patterns in the context of varied development trends, the progress reported by countries in earthquake risk hotspots is unlikely to have more than a marginal impact on increasing mortality and economic loss risks.

Building codes, retrofitting and regulation

A number of countries do report important progress in terms of enhancing building codes and planning regulations and in the retrofitting of important buildings including schools and hospitals, and these efforts should certainly be highlighted. Unfortunately, the progress reported is still in terms of isolated efforts in specific countries and is not proportional to the scale of the problem. Similarly, country reporting on broader efforts to reduce risk through addressing the underlying patterns of economic and urban development is scarce.

Risk transfer facilities

A few countries report efforts to reduce economic loss risk through introducing risk transfer or contingency financing facilities but again there is no evidence of a major trend in this direction.

Public awareness and preparedness for response

Most of the progress being reported continues to be broadly centred on public awareness, disaster preparedness and response. As mentioned above, important as these efforts are, they will have only a limited effectiveness in reducing mortality or economic loss risk in earthquake risk hotspots. It is not clear from the reporting whether these efforts take into account the needs of specific vulnerable groups such as women, children and the elderly.

There may be far more progress at the country level than has been reported. In some countries, the modernisation of the urban sector may be leading to an improvement in building standards, which though not linked to disaster risk reduction efforts, over time reduces earthquake risk. At the same time, considerable progress has been made in the identification of earthquake risk in many hotspots, with support from international initiatives[68]. However, the country reports give few indications that this risk information has been mainstreamed into urban planning, building and management and there is even less evidence of effective implementation. Similarly, there is already a strong body of good practices on all aspects of earthquake risk reduction from countries around the world. The challenge, therefore, would appear to be one of adoption and mainstreaming, rather than of lack of know-how per se.

[68] See for example: the International Decade for Natural Disaster Reduction (IDNDR) project: RADIUS - Risk Assessment Tools for Diagnosis of Urban Areas against Seismic Disasters at: www.geohaz.org/contents/projects/radius.html; Geohazards International, a non-profit organization working toward global earthquake safety see: http://www.geohaz.org/contents/news/media.html, Japan International Cooperation Agency (JICA) at: http://www.jica.go.jp/english/index.html; Earthquake and Megacities Initiative at: www.earthquakesandmegacities.org

Challenges and opportunities

To conclude, therefore, if current development trends continue, both mortality and economic loss risk will continue to increase. Given this scenario, major reductions in earthquake risk will only be possible through a drastic realignment of disaster risk reduction priorities in the countries concerned. Some of the challenges to be addressed in achieving such realignment, and for which many 'good practice' examples already exist, are:

- Rapid urbanization per se does not have to lead to increased earthquake risk and, on the contrary, can bring substantial economic and social benefits to a country. Nevertheless, if urban growth is to be other than a fast track to accelerated earthquake risk, new urban development must be guided through planning, regulation and incentives towards increased resistance and resilience. This implies an increased application of risk-sensitive planning for land-use and infrastructure development and an effective application of appropriate building standards, through improving codes and norms to ensure that new additional risks are not generated.

- However, a substantial proportion of the population of both large and mega-cities in earthquake hotspots, as well as in rural areas, live in unregulated, informal settlements or in unplanned villages and unsafe structures, where the impact of conventional planning and building regulation is very limited. In many countries, therefore, it is necessary to complement regulation with innovative approaches to planning and building, such as through strengthening the capacities of informal sector builders and participative settlement planning.

- To be sustainable, reduction in earthquake risk will have to be supported by policies to address the kind of structural urban processes that can generate physical vulnerability in the first place. Land tenure, insecure livelihoods, access to transport and infrastructure and urban poverty trends are instances. To be effective, technical measures need to be accompanied by legal and financial mechanisms, addressing issues such as property rights, rent laws and financial incentives.

- Many earthquake risk hotspots already have very high levels of risk accumulated over decades. Even in developed countries, it is physically and economically impossible to retrofit entire mega-cities. Yet, existing risk can be reduced by retrofitting and strengthening key facilities such as schools and hospitals, lifeline infrastructure such as water, sanitation and electricity networks, and transport hubs such as railway stations and airports. Urban redevelopment similarly provides opportunities for risk reduction, assuming that appropriate standards and norms are in place to guide new development.

- Strengthening preparedness and response capacities should include the strengthening of local search and rescue capabilities, recognizing that most success in rescuing victims occurs in the hours immediately after an earthquake. Vulnerable women and children should be empowered to lead the strengthening of preparedness capacities in homes, neighbourhoods and schools.

- Economic loss risk can be significantly reduced by wider application of risk transfer measures such as insurance and the development of contingent financial facilities for both Governments and the private sector, particularly in those countries where the likely impact of a major earthquake would exceed economic resilience capacity.

4.2 Climatic Risk Hotspots

This Review indicates that an increasing proportion of future disaster economic loss will occur in climatic risk hotspots, particularly in developed countries, if current risk trends and risk reduction efforts continue. In contrast, mortality rates are very sensitive to improved development conditions and to enhanced early warning, disaster preparedness and response, and have been reduced in most developed and some developing countries. However, climate change is increasing both climatic hazard and vulnerability and may reverse the trend to reducing mortality. A number of key patterns and trends in climatic risk have been identified in this Review.

Climatic risk trends

Mortality risk decreasing

Mortality risk in climatic risk hotspots in developed countries has so far been minimized due to improved development conditions in areas such as health, sanitation, infrastructure and communications, as well as through enhanced early warning, disaster preparedness and response.

High climatic mortality risk is now associated primarily with poor, predominantly rural countries, with low levels of human development. In these countries, mortality rates are still at a high level but are stable, with a tendency to decrease. Enhanced early warning, preparedness and response can minimize mortality in climatic disasters – for instance, through the orderly evacuation of people to safe areas, the application of cyclone shelters, emergency water and sanitation and improved health care, food distribution and others. A number of developing countries have achieved very substantial reductions in mortality risk in this way.

Economic loss risk increasing, particularly in developed countries

Economic loss risk will become increasingly concentrated in climatic risk hotspots particularly in developed regions, due to increased exposure of economic assets, for example as a result of urbanization of coastal areas. In other words, the same patterns and models of economic and urban development that are contributing to reduced mortality risk are actually leading to increased economic loss risk.

Economic loss risk is only partially sensitive to reduction through enhanced early warning, preparedness and response. Reduced loss and destruction of economic and livelihood assets are sometimes possible through the interim protection or removal of transportable assets to safe places, or, in the case of drought, through decisions in agricultural planning. Yet, considerable volumes of assets cannot be protected in these ways.

In climatic hotspots in poor rural areas, while the absolute economic value of asset loss may be low, the disruption of livelihood assets can be devastating and, due to factors such as environmental degradation and rural poverty, overall risk levels may increase.

The impact of climate change on mortality risk

The trend towards reduced mortality may be reversed due to increased climatic hazard and vulnerability due to global climate change. This could reverse the trend towards reduced mortality even in developed countries, particularly when existing warning, preparedness and response capacities do not evolve to address newly emerging risks - as demonstrated by the 2003 heat wave in Western Europe, or in scenarios whereby capacities have been allowed to lapse, as demonstrated by the impact of Hurricane Katrina in the United States of America in 2005.

In developing countries, such a possible reversal in the trend could be far more dramatic. For example, while reduction in drought mortality in Sub-Saharan Africa, in particular, has been impressive over recent decades, this tendency may be unsustainable if increased vulnerability, associated with food and water stress and HIV/AIDS prevalence, coincides with more extreme drought events.

Increasing economic loss risk due to climate change
More frequent, stronger and less predictable cyclones, floods and droughts due to climate change, when they coincide with the increasing exposure and vulnerability of economic assets, will also accentuate the trend towards increasing economic loss risk particularly in developed countries.

The impact of climate change in specific hotspots may be devastating, especially in low-lying, heavily populated coastal areas, small island developing

states (SIDS), semi-arid areas and areas that depend on glacier melt for their water supply, leading to unsustainable levels of risk.

Climate risk management progress in countries

Taking into account these noticeable climatic risk trends and projected impacts across climatic risk hotspots, the following measures reported by countries will perhaps be 'first steps' towards addressing global impacts by unfolding climate-related risks.

Institutional and legislative mechanisms for early warning and preparedness strengthened

Many countries exposed to climatic risks are reporting improvements in the development of institutional and legislative arrangements for enhancing early warning, preparedness and response capacities and for strengthening public awareness and education. In contrast to earthquake risk hotspots, these measures are leading to a significant and continued reduction of climate-related mortality risk in a large number of countries.

Improved risk identification and analysis

Improved scientific knowledge has enabled increasingly accurate modelling of patterns of weather and climate variability, such as tropical cyclones and the El Niño Southern Oscillation, as well as the likely consequences of global climate change on existing climate variability in different regions.

There is little evidence, however, that these models have been translated into hazard scenarios at the country level, although a number of countries also report efforts to reduce climatic hazard exposure, through measures that include rainwater harvesting, coastline protection and the maintenance of drainage systems, which can contribute to a reduction of mortality and economic loss.

Even less progress is reported in identifying the specific risks associated with these hazard scenarios in a way that can usefully inform development planning and investment decisions. Analogous to the situation in earthquake hotspots, little progress is reported in addressing climatic risks through measures such as risk sensitive land-use planning or the introduction of drought-resistant agriculture, underlying processes of urbanization, environmental change and rural poverty which can reduce exposure and vulnerability.

Risk transfer mechanisms

A number of countries report efforts to reduce economic loss risk through risk transfer or contingency financing facilities but these, as examined under the previous analysis on earthquake risk hotspots, remain isolated cases rather than a generalized trend.

Adaptation to climate change and disaster risk reduction

Only a handful of countries reported linkages between efforts to adapt to climate change, to reduce disaster risk and to manage environmental change due to emerging (and often quite severe) impacts on livelihood options and poverty trends. There would appear to be little synergy among institutions responsible for disaster reduction and those responsible for climate change, environment or other areas such as social development.

There may be far more progress at the country level than has been described here. Many specific programmes and projects, in areas such as environmental protection and increased community resilience, may significantly reduce disaster risk but are generally not reported here, for example, community environmental management projects implemented by NGOs.

From the evidence examined, and if current trends in disaster risk reduction continue, economic losses continue to increase in climatic risk hotspots, while due to climate change future potential reductions in mortality will be challenged.

Challenges and opportunities

As in the case of earthquake risk hotspots, if these conclusions are approximate to the unfolding realities, there is a need to revise and reorient approaches to disaster risk reduction, for which a number of broad parameters can be outlined. A number of 'good practices' exist for these parameters – some of which have been highlighted in Chapter 3, under analysis of country progress made with the HFA priorities.

- Major reductions in climatic mortality risk are possible through a more generalized application of effective preparedness, early warning and response systems. Current progress in this area should be encouraged and maintained, in particular by enhancing the articulation between warning providers such as the meteorological services and disaster risk management agencies, and by ensuring effective links between the national and the local and community levels.

- Improved climatic risk information can make ongoing investments in early warning, disaster preparedness and response more focused and could lead to greater reduction in mortality risk. A first step is to prioritize improvements in climatic risk identification in hotspots, in order to clearly profile existing risk patterns and trends as well as potential effects of increase in frequency of hazards due to global climate change.

- Economic losses in the agricultural sector can also be reduced by the implementation of early warning systems and the application of early warning information to agricultural planning. If combined with a greater application of risk transfer mechanisms, such as catastrophe insurance for farmers, this could lead to significant reduction in the exposure and vulnerability of the agricultural sector.

- On the basis of improved climatic risk identification, factoring the likely impact of climate change (where this can be modelled), increased investment in environmental protection measures and sustainable livelihoods can reduce hazard exposure and vulnerability in many areas, particularly when this fully involves community and informal sector capacities. Such measures include improved water and river management, the promotion of sustainable agriculture and livelihood diversification, as well as mechanisms such as conserving and extending natural coastline protection, reforestation and recharging groundwater reserves.

- As in the case of earthquake risk hotspots, new urban and infrastructure development must be guided through planning, regulation and incentives towards increased resistance and resilience. This implies a comprehensive application of risk sensitive planning for land-use and infrastructure development, accompanied by the effective application of appropriate building standards, through improving codes and norms to ensure that new risk is not generated. In particular, approaches to planning and building should be made applicable to unregulated and informal settlements.

- Given the potentially catastrophic impact of global climate change on both mortality and economic loss risk, there is an urgent need to achieve greater synergy and explicit links among international protocols and national policy frameworks. In addition, it will be important to decentralize institutional arrangements with a view to mitigating existing risks, enabling communities to adapt to climate change and reducing underlying factors of risk through to the local level.

- Although increased disaster risk is only one outcome of climate change, global efforts to mitigate climate change through reducing emissions are now an essential part of any global strategy to reduce disaster risk. There is need to address the issue of global responsibility for climatic disaster risks.

- Similarly, if efforts to adapt to climate change include investments to reduce climatic disaster risks, the benefits will outweigh the costs of climate-related disasters. However, the economic feasibility of reducing extreme climate risks in some areas, particularly in the case of low-lying small island developing states vulnerable to sea level rise, will be challenging.

4.3 Extensive Disaster Risk

This Review indicates that the greatest threat to livelihoods and human development in less developed countries is due to the increasing impact of frequently occurring but highly localized climatic hazards, such as flash floods, landslides, wildland fires and storms over extensive areas, affecting the rural poor as well as urban marginal communities and households. A number of trends and patterns in what has been classified in this Review as 'extensive risk' have been identified.

Extensive disaster risk trends

Increasing manifestations of extensive risk

The rapid increase in disaster occurrence reported in global databases in recent years is associated with frequently occurring, highly localized mainly climatic hazards, such as flash floods, wildland fires, landslides and storms, which affect small concentrations of people and livelihoods over extensive areas as well as within intensive risk hotspots.

Rapidly growing mortality and livelihood risk associated with climatic hazards

The mortality associated with localised risk is not globally significant but accounts for a substantial proportion of total disaster mortality in many countries. For localised risks, the mortality associated with climatic hazard is growing rapidly while that associated with geological hazards is decreasing.

Direct economic losses associated with extensive risk are likely to be low in global terms, given the impact in poor rural and marginal urban communities. Nonetheless, in relative terms, they may be huge in particular localities and regions.

The most significant impacts of localised risks over extensive areas is associated with physical losses of livelihoods assets, houses, local infrastructure and public facilities, which have a devastating effect on poor rural and marginal urban households and which represent a serious threat to human development and to the achievement of the MDGs. Frequently occurring small-scale losses have a cumulative negative impact on already vulnerable livelihoods, eroding development gains and failing human development.

The 'drivers' of extensive risk

The key drivers of highly localized, frequent risks are concurrent processes of urbanization, environmental change and the economic development of new territories occurring in regions of low human development and high social and economic vulnerability. When regions are subject to these processes, the extent, frequency and magnitude of highly localized flooding, drought, flash flood, landslide and wildland fire events and the exposure of population and economic assets to these events, increases, creating new accumulations of disaster risk and potentially leading to the configuration of new intensive risk hotspots.

The impact of climate change

Global climate change will ratchet up current patterns of extensive risk with rapidly increasing climatic hazard levels in degraded environments, affecting increasingly vulnerable and fragile livelihoods and living conditions, increasing poverty and stretching coping capacities with evidently negative impacts on nutrition, health, education and income. The rural and urban poor that experience extensive risk are particularly sensitive and susceptible to the impacts of global climate change and in many ways are on the 'front line' where even small changes can have devastating consequences.

Country progress in addressing extensive disaster risk

Taking into account these patterns and trends, the progress on disaster risk reduction reported by countries has the potential to stabilize and reduce the mortality associated with extensive risk. In contrast, other impacts of extensive risk such as livelihood disruption and development setbacks are not being addressed.

Extensive risk is 'invisible' risk

Given low mortality rates and direct economic losses, extensive risk is ignored by the international humanitarian community. The scale of the impacts and the diffuse nature of the losses do not have the political

and humanitarian impact of a single large event, even though the accumulated impact of losses on human development may be considerable. Similarly, most small disasters are essentially local in character and affect rural and urban communities rather than strategic economic interests.

Strengthened local-level disaster preparedness reduces mortality but does not necessarily protect livelihoods A relatively large number of countries report efforts to strengthen the capacities of local governments and vulnerable communities to manage disaster risk. This includes the development of local early warning systems and preparedness and response capacities and for strengthening public awareness and education. It has been shown that these efforts can dramatically reduce mortality in risk-prone localities. Although this is not often highlighted by Governments, large-scale programmes implemented by non-governmental actors are contributing substantially to strengthening local and community capacities.

Little progress is reported in the strengthening of local capacities for other aspects of disaster risk reduction, particularly in areas such as livelihood diversification, environmental management, safe building practices, risk-sensitive planning, hazard mitigation and vulnerability reduction. There is likewise little evidence of links between efforts to strengthen local disaster risk reduction capacities and efforts to adapt local economies to the impacts of climate variability.

There may be far more progress at the county level than is currently being reported - driven by local governments and communities themselves, by non-governmental actors and by other governmental sectors. Nevertheless, if the above trends continue, reductions in mortality may be achieved through improvements in early warning, preparedness and response. However, unless the underlying risk factors are addressed, economic and livelihood losses will increase - particularly among poor rural and urban communities - with extremely negative effects on economic indicators of poverty, health, nutrition, education and human development in general. If extensive risk continues to accumulate in many regions, new intensive risk hotspots may form.

The deterioration in human development associated with extensive risk will be magnified by climate change impacts on the resilience of vulnerable social groups, in particular that of women-headed households and girl children in rural and urban areas.

Challenges and opportunities

The problem of extensive risk, therefore, calls for a radical change in approach, for which a number of broad parameters can be outlined.

- To address extensive risk requires a new vision by the international disaster risk reduction community. The current emphasis on saving lives needs to be complemented with a vision of protecting and strengthening livelihoods and human development. Addressing localized, recurrent exposure to risk is the most effective way of protecting the livelihoods of vulnerable communities and realistically meeting the MDGs.
- A greater decentralization of national disaster risk reduction efforts to the local level is essential. To be sustainable, local efforts by communities, local governments and NGOs require support through national-level programmes. Such a strategy offer greater possibilities of success and sustainability in countries where there is a tradition of decentralizing authority and resources to the local level. In countries with a highly centralized tradition of governance, strengthening local capacities on a sustainable basis is far more challenging.
- Alongside efforts to strengthen preparedness and response, local disaster risk reduction strategies should also address underlying risk factors through measures such as livelihood diversification and protection, environmental management, safe building and risk sensitive planning. Such measures require both local involvement and ownership as well as public and private investment.
- Disaster risk reduction and adaptation to global climate change should be seen as mutually supportive goals at the local level. Strengthening the social, economic and environmental resilience of communities and reducing exposure to local hazards are effective ways of reducing risk to existing climatic variability. Strengthening capacities to reduce risks associated with the climate as it is today is the most effective way of dealing with changes in climatic hazards of the future.

4.4 Cross-Cutting Challenges

The Hyogo Framework outlines five priorities for action to reduce disaster risk and, within each priority for action, identifies a range of specific themes. All these priorities are relevant to achieving the strategic goals and objectives of the Hyogo Framework. Taking into account the Hyogo Framework as an overall framework for guiding the ISDR System, the present Review, through the analysis presented above, has highlighted a number of key cross-cutting challenges which should receive particular attention.

The challenges are outlined in substantive and indicative terms, with analysis around some of the key reasons why these issues should be addressed with urgency by members of the ISDR System. This Review does not attempt to identify how these categories of issues could be addressed by ISDR System partners.

For some issues such as institutional and legislative arrangements, risk identification, early warnings, climatic risk reduction and adaptation, public-private partnerships and mainstreaming disaster risk reduction, amongst others, while progressive efforts have been initiated, more concerted action is urgently required if the world's commitment to the Hyogo Framework and the Millennium Declaration are to be respected.

The challenges are derived from the comparative analysis of current risk trends, coupled with country progress reported until 2007 vis-à-vis the commitments endorsed by the Hyogo Framework in principle. The analysis below must not be read as recommendations to national authorities on behalf of the ISDR System. Attention, in this case, is drawn back to the ISDR guidance document entitled Words into Action: Implementing the Hyogo Framework for Action[69], which provides practical guidance on how to start addressing some of these issues for activities undertaken under each of the five priorities for action of the Hyogo Framework.

Institutional arrangements for disaster risk reduction

Inadequate institutional arrangements remain the single largest challenge identified in this Review. Existing arrangements have different degrees of effectiveness, depending on their positioning within the National Government, their degree of decentralization and multi-sectoral participation, the level of political support and their share of national budgets.

However, with a few notable exceptions, both single-institution disaster management offices as well as multi-institutional national systems for disaster risk reduction are still fundamentally focused on early warning, disaster preparedness and response. In most cases, the coordinating entity is the one responsible for disaster response, bringing with it a perspective focused solely on emergency management approaches and skills, rather than a complementary developmental risk reduction perspective. Where development sectors and line ministries are engaged, it is also often from an emergency response perspective rather than with a focus on mainstreaming development concerns.

A major effort is therefore required to design, test, promote and support new institutional arrangements for disaster risk reduction that are integrated into national development planning and public investment. They must engage with and be integrated into institutions which address climate change, environmental degradation, risk transfer, urban planning and gender, with the necessary political authority and resources. The benefit of regional approaches in supporting assisting national capacity development in disaster risk reduction, especially in framing model policies, instruments and programmes, need to be further utilized.

Addressing local-level risks is fundamental if areas of extensive disaster risk are not to evolve into new intensive risk hotspots. This is a hidden problem that is not receiving sufficient attention from the international community. A key challenge is to ensure that existing programmes of local-level disaster risk reduction that are primarily focused on strengthening capacities for preparedness and response, begin embracing capacities for reducing underlying risks through planning and environmental management as well as through investments in specific projects to reduce existing risks. The role and commitment of local authorities to such an agenda is crucial.

[69] Words into Action: Implementing the Hyogo Framework for Action to download at: http://www.unisdr.org/words-into-action

Mainstreaming disaster risk reduction into development

The Hyogo Framework recognizes risk reduction as both a humanitarian and development issue – in the context of attaining sustainable development. The Hyogo Framework endorses three strategic goals in the context of achieving the above outcome: (1) the integration of disaster risk reduction into sustainable development policies and plans; (2) development and strengthening of institutions, mechanisms and capacities to build resilience to hazards; and (3) the systematic incorporation of disaster risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes. To achieve these strategic goals, efforts at mainstreaming disaster risk reduction would have to cut across the five priorities for action identified in the Hyogo Framework.

As has been recognized across the chapters of this Review, efforts at mainstreaming disaster risk reduction have often been piecemeal by Governments and international institutions alike. A concerted understanding of what constitutes mainstreaming activity, and how this is to be practically achieved remain 'blockages' at the national and international level. While such gaps in knowledge and practice of mainstreaming disaster risk reduction institutionally and into development practices at large do exist, there have been some considerably successful experiences with mainstreaming disaster risk reduction into particular strategic goals of the Hyogo Framework. The challenge now is of course to be able to integrate efforts made across the Hyogo Framework strategic goals and priorities for action, so that mainstreaming disaster risk reduction into one priority sphere of activity may have an equally meaningful impact on other spheres of required activity.

Disparate and isolated efforts at addressing risk management issues at the national and local level are not sufficient to truly address the underlying causes of risk, and realize the potential of both forward looking and corrective risk-sensitive development planning, which could change current and projected risk trends for millions of people.

Risk identification

Risk identification remains a challenge at all levels and scales, given that it provides an essential baseline for any disaster risk reduction application, from response preparedness through land-use planning to the programming of investments to reducing existing risks. At present, the country reports indicate that some progress is being made in hazard identification and mapping. Insufficient progress is being made to integrate hazard exposure and vulnerability information in order to generate risk information that can be accessible to planners and decision makers on an appropriate scale. And the issues of risk perception based on gender, gender and age-disaggregated data and the use of vulnerability analysis - especially for women, children, the elderly and care givers – are not addressed.

Therefore, greater emphasis is required in compiling and institutionalizing disaster risk information at national and sub-national levels, including detailed disaster loss databases, applications of indicators and indexes, and detailed risk mapping and analysis. Moreover, specific efforts are needed to systematically incorporate such information into programmes to reduce underlying risk and to tailor preparedness for response to present risks.

Early warning

Early warning is one of the areas identified in this Review where most progress is being made in a relatively large number of countries and regions. Almost all countries have a monitoring and early warning system for the main weather and climate-related hazards.

While this progress is encouraging, a number of challenges have been identified. These include improving institutional linkages between hydrological and meteorological services and the organizations responsible for disaster risk management at the national level. This is necessary to ensure vertical linkages between the national and local levels so that local communities have access to understandable warning information and local capabilities to use warning information are strengthened. Another challenge is to ensure sustainability, given the cost of maintaining infrastructure, equipment and capacities in many countries. The use of early warning information in the agricultural sector is another challenge that has not been described in most of the country reporting. There is also a greater focus needed on 'soft issues' of early warning, including the communication of early warning and information to people of different communities, gender and age.

Public and private investment in disaster risk reduction

This Review has identified few programmes of public investment oriented towards reducing existing disaster risks, although in many countries funds have been created to support disaster relief and, to some extent, recovery.

A key challenge is to introduce disaster risk reduction as an investment item in public sector budgets, with a specific focus on identifying and reducing risks associated with publicly owned infrastructure, buildings, social services, cultural heritage and other elements of national patrimony. At the same time, most development investment in risk-prone countries is made by the private sector. Reporting on private sector investment to reduce risks is absent from the country reporting. While much more may be happening than is reported, another challenge is to more effectively engage the private sector to invest in reducing its own risks, for example in surrounding areas and communities it depends on for labour and resources. Urban risk reduction has been identified in this Review as a challenge in both earthquake and climatic risk hotspots. Efforts need to be made to secure greater engagement of both the municipal authorities of urban areas and the national agencies responsible for land-use planning and urban development in governance arrangements for disaster risk reduction.

Another key challenge is to ensure the application of urban disaster risk measures, such as enhanced urban planning and building regulation, innovative mechanisms appropriate to reducing risk, in informal, unregulated and rural settlements; measures designed to address the causal factors of urban risk related to land tenure and urban poverty and wider application of risk transfer mechanisms and others.

Climatic risk reduction

This Review identifies the need for greater integration of national efforts to reduce disaster risk with those efforts to adapt to global climate change. From the country reports, it would appear that there is little systematic integration between the institutional frameworks, legislation, policies and strategies to address disaster risk with those related to adaptation to climate change. Given the potentially enormous impact that climate change already has on patterns of climatic risk, a key challenge is to strengthen national and local capacities to manage and reduce risks associated with existing climate variability. To achieve this, closer linkages need to be forged between the policy arenas of climate change and disaster risk reduction, at both national and international levels. The implementation of the Hyogo Framework needs to be more clearly recognized as a primary tool to achieve the adaptation goals of the UN Framework Convention on Climate Change (UNFCCC). In addition, monitoring and analyzing trends, including the way in which communities are coping with adverse circumstances linked to climate change and other crisis settings (such as conflict and HIV/AIDS) in the case of both slow-onset and sudden-onset hazards, will be important.

The issue of environmental or risk-induced migration has not been discussed in this Review. However, the likelihood of increasing internal and external migration due to worsening climatic risk is real and will have to be addressed by the international community in the near future.

Post-disaster recovery

Given the inevitability of future large-scale catastrophes, post-disaster recovery will continue to offer a major entry point for disaster risk reduction in many countries. National authorities, the UN System and NGOs at national and local levels have made use of recent major disasters to encourage a culture of 'building back better' so that previous risks are not re-built in a post disaster scenario. Instead, emphasis has been on developing new structures and mechanisms to ensure that new buildings, cities and village communities are better prepared to reduce future risks and respond to frequent hazards more effectively.

Experience shows that recovery works best to reduce risk when appropriate technical, legal, institutional and financial risk reduction mechanisms are already in place before the disaster happens. In a large-scale emergency context, it is extremely difficult to change pre-existing patterns of planning and building, even when the political will exists, if the necessary disaster risk reduction framework does not exist.

Other cross-cutting challenges

There are also other issues, such as recognizing the psycho-social needs of communities, gender inequities, NGO involvement, and human security and rights,

which have still to be sufficiently acknowledged in risk reduction priorities for action at the national level. While these issues were only marginally addressed and analyzed in the national reports, they have been addressed in this Review as challenges and a reflection of major gaps in current practice.

Mental health and psycho-social issues

Including mental health and psycho-social issues in disaster risk reduction remains a challenge to be addressed. While some countries recognize this important issue, few progress reports discuss the topic. The protection and promotion of psychosocial well-being and the prevention and treatment of physical and mental disorder is recognized as integral to humanitarian efforts and social development, and as essential to building resilient communities for disaster risk reduction. As a result, psychological issues should be integrated into all policies, plans and programmes in the ISDR System, in the implementation of the Hyogo Framework, and in all sectors (e.g. health, education, security, shelter, sanitation, organizational management and systems) through inter-agency collaboration and training of personnel. Specifically, these policies, plans and programmes should assess and monitor mental health needs, build community capacity, provide resources for interventions, and develop education and training programmes to increase psycho-social preparedness in community and institutional settings, and provide for the psychological care of all disaster workers and humanitarian aid workers involved in disaster response.

At present however, assessing from the country reports reviewed, very few countries have mechanisms and structures in place to systematically incorporate mental health and psychosocial issues in disaster planning. Notably, few professionals are trained in countries to deal with these issues, as has been shown in the case of recent disasters. For example, when the Indian Ocean tsunami hit, there was only one psychiatrist in the entire northeast coast of Sri Lanka, and only a small team of psychosocial support aides (many of whom dealt with alcoholism problems) to cover an entire coastal region of disaster-affected people.

Structural safety of schools

Barring a few countries, attending to the structural safety of schools has been given insufficient attention by national, and previously international, planning for preparedness or reducing underlying risks. In Chapter 3, reference is made to the gap in addressing schools' structural safety, whereby past experiences across Asia and Latin America and the Caribbean are cited where ensuring school shelter safety has been paramount to ensuring risk reduction gains – and to meeting the MDGs. School safety is important to emphasize both as a sound preparedness measure against exposure to recurrent or pervasive hazards, and also as a risk reduction measure to ensure that all communities are resilient and self-sufficient to consider immediate recovery measures with secure lives, livestock and food supplies. Experiences have shown how safe structures, especially in remote areas vulnerable to floods, cyclones, rising sea levels, and earthquakes, can provide a whole community and their livestock with multi-purpose shelter, to mitigate risks associated with a range of frequency and severity of hazards.

While anecdotal reports of such experiences have been collected from Algeria, Bangladesh, Cambodia, Canada, Colombia, Fiji, India, Indonesia, the Islamic Republic of Iran, Italy, the Lao People's Democratic, Nepal, New Zealand, Pakistan, the Philippines, Peru, Sri Lanka, Turkey, the United Kingdom of Great Britain and Northern Ireland, the United States of America, Uzbekistan, their approaches, scale and impact have not been fully documented.[70]

Gender equity and related issues

Although there has been a history of engagement in the subject of gender and disaster risk management and recovery - on behalf of international agencies, NGOs and even some ministries in select countries, serious efforts to incorporate the issue into risk reduction and recovery practices is conspicuously absent. The country reports analyzed in Chapter 3 are a stark pointer to the lack of gender-sensitive planning, institutions and practices for risk reduction and recovery.

[70] Good practices in school disaster risk reduction - both in disaster-resistant construction and retrofitting of school buildings and in education of children and local communities in disaster risk reduction - are currently being solicited by the UN/ISDR secretariat Advocacy and Outreach Unit, using a simple but comprehensive case study template. These practices will serve as a touchstone for a plan to develop guidelines for ministries, departments and boards of education in Member States for the many ways that disaster risk reduction can be successfully integrated into school curricula.

The irony is that gender remains one of the most important underpinning factors influencing who does risk reduction at the local level, and who can access its benefits. If disaster risk reduction is to be realistically addressed across communities, gender equity issues, gender-disaggregated data and gender roles need to be understood by context, and incorporated into risk reduction and recovery practices. If disaster risk reduction internationally and locally have to have any meaningful impact on human development and well-being in the light of the MDGs, gender roles and realities have to be a key consideration.

Human security and social equity issues in disaster risk management

There have been some recent and ongoing attempts to explore the links between human rights, social equity and disaster risk management issues, especially in recent post-disaster contexts of the 2004 tsunami and the 2005 Kashmir earthquake. The Indian National Institute of Disaster Management hosted a working seminar on the subject in August 2007, as the first of its kind in Asia. The UN System in the Pacific also attempted – through a consultative workshop - to integrate the issue of human rights into disaster risk reduction practices earlier in 2007. However, the issue is still only tentatively approached by national institutions and international agencies working on risk reduction and recovery across all regions. The challenges posed pertain to the different kinds of governance contexts which support discussions around how social equity can be objectively ensured in the face of disaster risks and different socio-political vulnerability contexts.

While the issue remains of academic concern at present, it will be vital to operationalize international standards – such as produced by the Inter Agency Standing Committee (IASC) in 2006[71], for addressing basic minimum claims for assistance and social insurance which poor communities at risk worldwide would be in principle entitled to.

[71] IASC Operational Guidelines on Human Rights and Natural Disasters (2006)