

Reducing risk and vulnerability to natural hazards in the Commonwealth



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Many Commonwealth nations are subject to natural hazards – earthquakes, volcanic eruptions, landslides and extreme weather events such as floods, hurricanes, tropical storms and drought. The world is experiencing a dramatic upsurge in the frequency and intensity of hazards, and these are affecting more people than ever. This article is a call for action for the integration of disaster risk reduction into development planning and practices, to reduce human, social, economic and environmental losses from natural hazards. With particular reference to the recent World Conference on Disaster Reduction and its resulting Hyogo Framework for Action, the author discusses how states, regional and international organisations can build resilience to disasters through reducing risk and vulnerability.

The tsunami tragedy of 26 December 2004, Hurricane Katrina and Rita, and the South Asia earthquake this year are shattering reminders of how people's lives and property can be swept away in a matter of minutes. The recent earthquake that hit two commonwealth members, Pakistan and India, leaving more than 50,000 people dead and colossal loss of livelihoods and infrastructure, has again highlighted the long-term failure to reduce disaster risk by rapidly developing countries. In the last decade alone, disasters affected three billion people, killed over 750,000 people and cost around US\$600 billion. In 2004 more than 240,000 people perished in 396 natural disasters that affected over 146 million people. Over 225,000 of these deaths were a result of the Indian Ocean tsunami that hit 12 countries on 26 December 2004. Of the 12 countries directly affected, seven were members of the Commonwealth: India, Kenya, Malaysia, Maldives, Seychelles, Sri Lanka and the United Republic of Tanzania.

While the large disasters generate front-page news in worldwide media, the tsunami alone raising more than US\$1 billion in funds for relief and recovery activities, many other disaster-hit communities suffered in silence in the face of earthquakes, volcanic eruptions, floods, drought and medium and small disasters. Weather-related disasters continue to affect the greatest numbers, which in 2004 totalled 116 million people following the violent hurricane season in the Caribbean and catastrophic flooding throughout Asia.

The South Asia Earthquake and the tsunami and other disasters are a wake-up call to what should have been realised long ago. Disasters are undermining the world's development as never before. The current widespread disregard for disaster risks, hazards and their impacts presents an extraordinary challenge to communities and nations in their efforts to move closer to the Millennium Development Goals (MDGs).

Now is the time to realise that we are far from powerless: communities and nations *can* build their resilience to disasters by investing in proactive measures to reduce risk and vulnerability. Disaster risk reduction is essential to meet global challenges including sustainable development and the eradication of poverty.

The *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters* adopted at the World Conference on Disaster Reduction (Kobe, Hyogo, Japan, 18-22 January 2005) provides a guiding framework to address risk reduction issues through concrete actions at all levels for the next decade.

"The tsunami catastrophe confirmed a trend that was already evident before. Over the past 10 years, the number of people killed by natural disasters has increased by almost 50% from the previous decade. The loss of human life has been matched by a rise in the loss of livelihoods and a huge cost to development."

UN Secretary-General Kofi Annan in his opening message at the World Conference on Disaster Reduction, 18 January 2005

Lessons learned from the South Asian earthquake and the tsunami

The huge and costly rescue efforts mounted after the South Asia disaster by international agencies could save less than a dozen lives, while immediate action by neighbouring communities was more effective. This is a central lesson to learn, that by strengthening local community preparedness, greater resilience can be achieved. It is a main objective of the Hyogo Framework for Action. Despite the fact that the Kashmir region in Northern Pakistan and India is known for its seismic active faults, most of the public buildings such as schools, hospitals and roads and bridges did not conform to seismic standards, which led to colossal loss of developmental assets. This underscores the need to build back better, by mainstreaming seismic risk reduction through application of relevant building standards to all new constructions, schools, hospitals, housing, and to retrofit undamaged but vulnerable development assets to future risks.

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In the immediate aftermath of the tsunami disaster, the world watched helplessly while rescue teams searched for survivors and the number of fatalities rose. It was impossible to ignore the question on everyone's lips: what could have been done to avoid the widespread death and destruction caused by the tsunami? What can be learned to ensure that such a disaster never occurs again?

Early warning saves lives

A primary lesson learnt from the tsunami was the importance of early warning systems in protecting people and property. Unlike the Pacific Ocean basin, countries located along the Indian Ocean do not have a regional early warning system. The Intergovernmental Oceanographic Commission of UNESCO, as the leading agency on tsunamis, is addressing this gap, in conjunction with other partners of the International Strategy for Disaster Reduction's (ISDR) Platform for the Promotion of Early Warning (ISDR-PPEW). A regional tsunami early warning system is expected to be in place for Indian Ocean countries by mid-2006 using a network of national, sub-regional and regional warning centres. Discussions are already under way on the proposal for tsunami early warning systems for the Atlantic Ocean as well as the Mediterranean and Caribbean.

The Indonesian Meteorological and Geophysical Agency, BMG, is implementing a US\$60 million tsunami early warning system. However, lead times

Box 1: Coastal protection: coral reefs, mangrove forests reduce tsunami destruction

The tsunami had less impact in areas where coastal ecosystems were protected. Sand dunes, mangrove forests and coral reefs helped reduce the energy of tsunami waves in Sri Lanka by acting as natural barriers, as described in *After the Tsunami: rapid environmental assessment* [UNEP, 2005].

Coral reefs stretch from the surface of water down to the limit of light penetration – about 30m deep. A healthy reef acts much like a natural breakwater and there is evidence they can protect coastlines. In Peraliya, the tsunami wave reached 10m high and swept 1.5km inland, and carried a passenger train about 50m off its track, causing 1,700 fatalities; whereas just 3km to the south, in the town of Hikkaduwa, Sri Lanka, the wave was only 2-3m in height, travelled only 50m inland and caused no deaths. Fernando et al. in *Eos* 86 [2005] observed that the key factor to this pattern of patchy inundation was the presence or absence of coral and rock reefs offshore. For example, from Hikkaduwa to Dodanduwa, an area partly fronted by rock reefs and partly sheltered by coral reefs, the damage was relatively modest. In areas from Hikkaduwa north to Akuralla, where coral reefs had been destroyed, the damage and loss of life was extensive. Coral reefs seemed to have visibly reduced the height of the water wall and deflected the wave action parallel to the shore. The authors noted as well that the low-lying Maldives islands experienced less damage, probably as a result of the surrounding presence of healthy coral reefs.

There are many examples around the Indian Ocean of mangrove vegetation absorbing the energy of the tsunami waves and shielding inland areas from destruction. It was observed in Ranong Province, Thailand, and in Pichavaram and Muthupet (Tamil Nadu, India) that coastal mangrove areas suffered fewer human casualties and less damage to property.

Box 2: Indigenous knowledge and education

Reports from around the Indian Ocean rim after the 26 December tsunami – such as from fishing communities in Thailand, tribal communities on India's remote Andaman and Nicobar islands, and even tourist resorts – powerfully demonstrate that knowledge gained from experience or from education are critical to reducing disasters. Leaders of Indonesia's Simeulue community received a prestigious UN award for saving thousands of lives during the tsunami. Thanks to faith in their own knowledge of how the sea behaves and the reaction of buffaloes ahead of the tsunami, this community of some 80,500 people fled the shore for nearby hills on that fateful Sunday morning. Consequently, only seven people died from the tsunami in this island community, while 163,795 died across the rest of Indonesia's northern Aceh province [UN/ISDR, 2005].

"The story of what happens to the sea before a tsunami and how the buffaloes rush towards the hills has been shared by families for years along with other stories about our ancestors," said Mohamed Ridwan, a leader of the Simeulue community. The flight and the thousands of lives saved as a result are all the more remarkable given that Simeulue people were located close to the epicentre of the powerful Indian Ocean earthquake that triggered the tsunami.

The power of knowledge and education was also demonstrated at a tourist resort near Phuket, Thailand, where a British girl recognised that the turbulent sea and loud noise of the waves meant a tsunami was coming, as she had learned at school. She alerted her parents and other people present to the danger, resulting in the saving of dozens of lives.

between the earthquake and tsunami can be very short for centralised tsunami warning systems to save lives. One of the lessons learnt from the recent Tsunami, where despite Indonesia being part of the Pacific tsunami early warning system more than 130,000 lives were lost, is to shorten the route between the original event – in this case the earthquake – and the dissemination of warning to people. The example from Simeulue Island where people preserved ancestral knowledge from the past tsunami of 1904 through community drills, and could evacuate upland in time to avoid human losses, needs to be replicated. ISDR partners are supporting a regional project for assessing and upgrading regional early warning capacities. Lessons learnt from application of community-based and local and indigenous knowledge-driven early warning systems are being replicated through support by the UN/ISDR to UN Development Programme (UNDP) projects in India (Tamil Nadu), Indonesia and Sri Lanka.

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The tsunami and South Asian Earthquake also highlighted the importance of regional cooperation and communication to reduce risk and vulnerability to disasters as natural hazards have cross-border impacts. Countries in the same region often share the same disaster risks and consequently can benefit from sharing their experiences and resources *before* a disaster strikes. The Commonwealth framework provides a valuable forum to many nations facing shared disaster risks and opportunities to plan and reduce these risks through collective actions. These opportunities exist in the Caribbean to prepare and reduce risk of hurricane impacts, and in the Indian subcontinent for management of shared droughts, floods, cyclones and tsunamis, planning along shared river basins and ecosystems. Similarly, inter- and intra-regional forums play a primary role in promoting partnerships at the regional, national and local levels, such as public awareness and education campaigns.

In his Report to the General Assembly “In larger freedom: towards development, security and human rights for all”, A/59/2005, 21 March 2005, the UN Secretary General, Kofi Annan, calls for the establishment of a worldwide early warning system for all natural hazards, building on existing national and regional capacity to complement broader disaster preparedness and mitigation initiatives. He requested the ISDR Secretariat to coordinate a survey of existing capacities and gaps, in cooperation with UN system entities concerned. In addition to the survey, the ISDR Secretariat is also collaborating with the Government of Germany on the convening of the Third International Early Warning Conference (EWC III, Bonn, 27–29 March 2006), a promising event to address specific gaps and lessons learnt in this field.

Risk reduction: a sound investment for donors and governments

Disaster risk reduction through development co-operation

While recent commitments were made at the 2005 World Summit, by all nations reaffirming their support to assist countries to achieve the MDGs, recent disaster impacts in Commonwealth countries have revealed a woeful neglect of efforts to make the MDGs disaster resilient. Although development aid to scale up the efforts to achieve the MDGs is valuable, it is of utmost importance that this development cooperation explicitly incorporates risk reduction measures. For example, in pursuit of the MDG of universal primary literacy by 2015, building schools is important. However, the earthquake in Pakistan led to loss of large number of children because the school buildings collapsed as they did not conform to

seismic building codes, even though the region was known to be a seismic zone. Similarly, the 2004 floods in Bangladesh and 2005 floods in India again revealed that efforts at halving global poverty by 2015, another MDG, will be wiped away by disaster impacts unless poverty reduction strategies and over all development planning efforts include diversified livelihoods strategies which insulate the livelihoods of the poorest against hazard risks. The UN/ISDR, UN Millennium Office, UNDP and the World Bank, along with ProVention Consortium, are joining efforts to ensure that such measures are integrated in the planning efforts for poverty reduction of countries at high disaster risk.

There are many innovative initiatives that can be undertaken by communities and nations and that respond to both humanitarian and development purposes, as they reduce the risk of future disaster losses.

Disaster risk reduction through humanitarian assistance

The UN-coordinated South Asian Earthquake Flash Appeal for US\$540 million has only received so far approximately 50%. The Flash Appeal for the tsunami succeeded instead in attracting the total of US\$1.1 billion it requested in a shorter period. Of the humanitarian programmes proposed, US\$10 million were directed to the ISDR-PPEW partners, in particular to support work for the regional tsunami

early warning system by UNESCO's Inter-governmental Oceanographic Commission, the World Meteorological Organization, UN Environment Programme, UNDP, UN University and other ISDR-PPEW partners.

While the Tsunami Flash Appeal represented an unprecedented and commendable sum directed towards urgent life saving and humanitarian response, it also provided an opportunity to invest in disaster reduction. There are many innovative initiatives that can be undertaken by communities and nations and that respond to both humanitarian and development purposes, as they reduce the risk of future disaster losses. These are, however, often overlooked by donors and governments when providing assistance through Flash Appeals. Funding risk reduction information, education and awareness campaigns, promoting building standards, people-centred early warning systems, community preparedness activities, including incorporation of vulnerability reduction measures in recovery efforts, to ensure 'building back better', all as part of the assistance provided through Flash Appeals, can be critical in harnessing disasters as opportunities for risk reduction.

It is soon after the disaster occurs that a window of opportunity opens, which must be seized to build knowledge and institutional and technical capacities to reduce risk. Therefore, risk reduction needs to be an integral part of both long-term development assistance and short-term relief aid, the latter being essential for triggering larger investments needed from various development sectors. It has been considered that a 10% or relief funding could be invested in risk reduction for that purpose.

Governments need to demonstrate their political will and commitment to risk reduction through concrete measures such as reserving a national budget line for disaster reduction. Donor funds could consequently be put to strategic use to support and build capacity for disaster risk management. At the international level, coordination is also essential to ensure effective disaster prevention, mitigation, preparedness, response and recovery across the entire UN system, inter-governmental and non-governmental organisations, in line with the International Strategy for Disaster Reduction.

The World Conference on Disaster Reduction

Attracting over 4,000 participants representing 168 countries, 78 observer organisations, 161 non-governmental organisations and 154 media organisations, the World Conference on Disaster Reduction (WCDR – report and related documentation at www.unisdr.org/wcdr) in January 2005 proved to be a watershed event, placing disaster reduction at the centre of national, regional and global political agendas.



"Natural disasters respect no borders; they represent global threats that require a global response. Only through international cooperation can we begin to meet the challenges posed by nature."

Jan Egeland, UN Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator

The ISDR system received a strong mandate to support the implementation of the *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*, the programme outcome document adopted at the conclusion of the WCDR. The Hyogo Framework outlines five priorities for action in the next 10 years:

- Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation;
- Identify, assess and monitor disaster risks and enhance early warning;
- Use knowledge, innovation and education to build a culture of safety and resilience at all levels;
- Reduce the underlying risk factors; and
- Strengthen disaster preparedness for effective response at all levels.

Implementation of the Hyogo Framework for Action

The conference clearly stated that states and regional and international organisations should form partnerships among themselves and with members of civil society, to contribute to the implementation of the Hyogo Framework. During 2005 the ISDR secretariat has been developing a matrix of roles and initiatives for the implementation of the Hyogo Framework, designed to act as a 'living tool' to identify existing initiatives, gaps and overlaps in the five priorities for

action and focal points for their follow-up. In addition, ISDR partners are developing benchmarks and indicators to assist governments to assess progress in the implementation of the Hyogo Framework.

National and regional developments and initiatives

The emphasis of the Hyogo Framework on the focus for national implementation and follow-up, with the primary responsibility of states, requires, as a corollary, the development of strong participatory and collaborative ties with civil society and authorities at national and local levels, involving all development sectors (health, education, agriculture, tourism, etc.), national disaster management systems, business sector and academic, scientific and technical support organisations.

The Hyogo Framework specifically calls for the establishment or strengthening of national platforms of disaster reduction. Initiatives are under way in Commonwealth member countries such as Bangladesh, Nigeria, Seychelles, the United Republic of Tanzania and Uganda. As an example, Bangladesh has published its *Corporate Plan 2005-2009: A Framework for Action*. Interactions and collaboration among national platforms are increasing, assisted by ISDR partners.

For the Pacific area, in October 2005 Pacific leaders officially endorsed the *Pacific Regional Framework for Action for Building the Resilience of Nations and Communities to Disasters, 2005-2015*, which reflects the key principles articulated in the Hyogo Framework. Other similar initiatives are also going on in Asia, Europe and the Americas.

The case for disaster reduction is clear. Disaster risk concerns every person, every community, and every nation; indeed, disaster impacts are slowing down development, and their impact and actions in one region can have an impact on risks in another, and vice versa. Without taking into consideration the urgent need to reduce risk and vulnerability, the world simply cannot hope to move forward in its quest for sustainable development and reduction of poverty.

Commonwealth countries face a unique challenge but also have a unique opportunity. While the Commonwealth encompasses countries facing all the known range of natural hazards, including countries facing highest levels of risk from cyclones, drought,

floods and earthquakes, it also includes rich and developed nations with a wide range of resources, expertise and knowledge for reducing disaster risk in their own countries and supporting vast development co-operation programmes reaching out to the more vulnerable countries. The ISDR Secretariat and its partners stand ready to support initiatives that further the implementation and follow-up of the Hyogo Framework for Action 2005-2015 to meet the challenges that lie ahead, in the next decade and beyond.

Sálvano Briceño was appointed Director of the Secretariat of the International Strategy for Disaster Reduction (UN/ISDR) in June 2001. His career spans several decades and has focused on the management of environmental and sustainable development programmes at the United Nations, including the UN Conference on Trade and Development, UN Convention to Combat Desertification, UN Framework Convention on Climate Change and the UN Environment Programme.

The International Strategy for Disaster Reduction (ISDR) aims at building disaster resilient communities by promoting increased awareness of the importance of disaster reduction as an integral component of sustainable development, with the goal of reducing human, social, economic and environmental losses due to natural hazards and related technological and environmental disasters.

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