

Medellin: A City-Wide Effort Shows that "Prevention Pays"

Medellin is representative of dilemmas facing many developing world cities, where hope and despair coexist. Despite natural and technological hazard threats, civil conflicts, rapid population growth and poverty, a city-wide commitment has emerged to reduce vulnerability to disasters. The efforts of Medellin citizens were recognized at the first Latin American Conference of Local Organizations Confronting Disasters and Emergencies in Santiago, Chile, where it was mentioned as a leading city in disaster prevention and response organization.

Medellin is notable because it integrates risk management practices in everyday activities -- from environmental protection, to urban housing, technical research, scientific monitoring and civic education. Dynamic teams of people, in universities and government offices, are working in neighbourhoods throughout the city in a wide range of programmes. They are motivated because Medellin faces frequent threats from landslides, floods and earthquakes, and because socioeconomic vulnerability is growing. The process is made easier because recent changes in the national constitution have encouraged decentralization of disaster-related issues to local governments.

Local governments in Colombia have a short history of decentralization on disaster-related (and other) issues. In 1985, the city of Armero was buried by mudslides from the volcanic eruption of Nevada del Ruiz, killing about 25,000 people. This event, a turning point in Colombian efforts to mitigate disasters, led to the creation of a National System of Disaster Prevention and Response. The new system explicitly delegates responsibilities to regional and local authorities. Local authorities were encouraged to form committees headed by the mayor, with representatives from health, civil defense, Red Cross, police, planning and other offices. As city administrators have taken a greater role in making a safer environment, communities have become more involved. Cali, Manizales and Ibaque are other examples of a new social and political commitment to disaster mitigation in Colombia.

Medellin, Colombia's second largest city, has 1.8 million people, and an 18% annual growth rate. Nearly all of the city's slums, which house 200,000 people, are on the city's steep hillsides. Situated in a narrow valley at 1,500 meters, the city is surrounded by steep hillsides, rivers and flood basins. Floods and landslides are an annual reality. Medellin is also in a high-risk zone for earthquakes.

Since a 1987 landslide killed more than 500 and left 3,500 homeless, city inhabitants have committed themselves to making Medellin safer from natural hazards. A new municipal system for prevention, response and rehabilitation has been able to integrate risk management strategies with municipal physical, social and economic planning. Community participation has changed local attitudes about reducing risks, and the new strategies are bearing fruit. Landslides have decreased from 533 in 1993, to 222 in 1994 and 191 in 1995.

Sources: "Prevention of Disasters in Medellin," Luis Fernando Gonzalez M., UNDP-City of Medellin, June 1996, and "Disaster Mitigation in Medellin: A Social Commitment," Helcha Molina Valdes, IDNDR Regional Office for Latin America/Caribbean, June 1996. For more information, contact: Nora Eugenia Villegas Menas, Directora, Sistema Municipal de Prevencion y Atencion de Desastros, Calle 44 No. 52-165, Centro Administrativo La Alpujarra, Oficina de la Alcaldia, Piso 12 Oficina 1206, Medellin, Colombia. Ph: (57 4) 262-3732. Fax: (57 4) 3811497.



Medellin's city-wide commitment to reducing risks includes:

- ▶ **Political and financial commitment.** Disaster prevention and management strategies are incorporated in the *Strategic Development Plan of Medellin*, approved by the city council and by popular consensus through open discussions and exhibits. This strategy includes the creation of a *Municipal System of Prevention, Response and Rehabilitation* that depends on the Mayor's Office, and an *Executive Board* (12 committees, including education, planning, housing, response, rehabilitation, etc.) and a *special financial management account* within the municipal budget. Luis Fernando Gonzalez, coordinator of a joint UNDP-City of Medellin disaster prevention project, notes that the aim is "to overcome the common problem in this field: applying multiple, unconnected expedient measures, which imply relatively large financial outlay, but which have relatively little impact on the community."
- ▶ **Scientific research and monitoring.** Universities and local authorities have worked together to develop risk assessment maps for most neighbourhoods, software to predict and analyze risk levels, and a disaster prevention geographical information system. Special programmes for landslide, flood and seismic monitoring are constantly updated. City administrators regularly meet with representatives from the university and the community at large to determine and address prevailing vulnerabilities
- ▶ **Environmental programmes.** The "My River" Institute, created to protect the rivers of Medellin, incorporates disaster prevention and preparedness measures in activities for sanitation, environmental protection, education, social organization and public information.
- ▶ **An integrated programme to improve slum neighbourhoods.** The local government community members, UNDP and the German government agency are working together in high-risk areas to stabilize slopes, improve sites, and, if necessary, relocate families.
- ▶ **Civic education.** An educational programme "Our commitment to the earth," launched in 1992, has raised awareness about links between man, the environment, society and disasters. It has focused on primary and secondary schools, universities, community leaders and public servants. The second phase, launched in 1995, is called "Disaster Prevention in Medellin: a commitment to development on a human scale" and includes a two-year, city-approved Educational Plan for Prevention, a training plan for community leaders, teachers and public servants; a public information programme through local media; and an "adopt a tree" campaign, targeted to families through media and schools



Children plant trees on Medellin hillsides to prevent landslides and floods, as part of the "Adopt a Tree" campaign and reforestation effort. Photo credit City of Medellin, Disaster Prevention and Response Office

Kobe Rises from the Ashes

Two related messages stand out from the Kobe earthquake of January 17, 1995. The first is a stark reminder that many cities are at risk to disasters of tremendous scale and complexity, like the disaster of Kobe. The second message from Kobe is that disaster mitigation can be successfully integrated in urban development plans in the reconstruction phase. There are tradeoffs, however, in carrying out mitigation measures only after disaster strikes. During reconstruction, protective measures will not help those whose lives have been lost, cultural treasures that cannot be replaced, or businesses that cannot be revived.

Scale. The Kobe earthquake was the costliest disaster ever, and the first major earthquake to hit an urban area in postwar Japan. Economic damage is about \$100 billion – about half of Kobe region's normal yearly economic output. Over 436,000 buildings burned. About 6,300 people died and 34,000 were injured. 230,000 were homeless.

Complexity. The earthquake triggered a remarkable range of secondary disasters and disaster threats, and shows the need to plan for compound disaster threats. First, tremendous shaking devastated buildings and infrastructure and triggered landslides. Within minutes, sixty fires blazed from the earthquake. More landslides threatened ten days later, as water from heavy rains penetrated cracks in buildings. Six months later, a typhoon affected the area, causing flooding in temporary housing units.

Reconstruction. Both the scale and the complexity of the disaster have posed formidable economic, emotional and logistical challenges for Kobe citizens. The reconstruction price tag is at least \$120 billion. Moreover, the psychosocial trauma of a shattered community remains, as those who lost children, parents, relatives, friends, homes and jobs struggle to readjust. At the same time, the disaster provides a window of opportunity for sustainable development plans that take disaster threats into account. "It's not enough merely to repair the quake's damage," said Atsushi Shimokobe, head of Kobe's Reconstruction Committee. "We have great dreams concerning Kobe's role as a centre in the future of Asia."

Reconstruction efforts have been impressive. Electric power, gas, water, telecommunications, and major road and train routes were restored within months. About 20% of the population needed temporary housing. The local government provided 48,000 units within several months, after dealing with issues such as finding available land for rent with utilities in place. 70% of port operations were restored within a year (the port was handling 30% of Japan's container cargo). Kobe mayor Kazutoshi Sasayama considers speedy and efficient removal of debris one of the city's most important (if underrated) achievements in the reconstruction process to date. 60% of the debris was successfully reused in landfills.



Scene from the world's costliest urban disaster

T. Wagner/Schock/Contrasto

The images of Kobe's disaster riveted world attention, and triggered humanitarian assistance, for a time. But while the world's attention has shifted to other issues, Kobe citizens will continue to rebuild for years. The urban centre still has burned and cracked buildings, and some people are still in temporary housing. As Sasayama noted to a Time magazine reporter, "It will take five more years to finish the reconstruction and another 10-20 years to heal all the wounds."

Lessons learned. Kobe residents have had ample opportunities to assimilate lessons of the quake. Not only can they rely on their own vivid memories, but also on the hundreds of conferences and research studies that have analyzed the Kobe experience from many professional

Kobe includes “disaster-resistance” measures in reconstruction plan

There is a clear link between the “lessons learned” from the quake and Kobe’s new urban development plan. A part of the plan is dedicated to “creating a disaster-resistant metropolis, where societies can live in confidence.” A variety of measures are underway to protect the Kobe area from earthquakes and related secondary disasters such as fires, landslides and industrial explosions. Among these measures are:

- ▶ Underwater storage tanks added to buildings
- ▶ Firebreak zones along rivers and roadways
- ▶ A new Rokko Mountains Greenbelt to reduce landslide risks
- ▶ Hanshin Canal Project to ensure reliable water supply
- ▶ Ten-year community reconstruction committee
- ▶ Backup systems for utilities and hospitals

points of view. At a recent international conference on local disasters, the Kobe mayor highlighted these “lessons learned” in his keynote speech and a private interview.

- ▶ **Improve seismic resistance of existing buildings.** “Many lives were lost due to collapsed buildings,” noted the mayor. “Many of the old houses did not meet seismic standards established in 1981. Retrofitting of old houses is necessary and will need to be done over time.”
- ▶ **Improve firefighting capability** by using all available water sources from rivers and sea. (After the quake, the many simultaneous fires overwhelmed the existing fire services. Roads were blocked; hydrants didn’t work. Water hoses had to be joined over a distance of several kilometers to get water from the sea)
- ▶ **Protect lifelines.** “We should have backup systems for public facilities, if possible,” noted Sasayama. “Of course this costs alot. We are trying to pay attention (to this issue) as we rebuild.” With telecommunications, for example, Kobe is considering a duplicate system with optic fibers. (After the quake, many lines were damaged; the few working ones were jammed. People poured into the city for information and were stranded, compounding logistical problems.)
- ▶ **Community participation.** “People – individuals and corporations – must participate in *preventive plans* in the community to avert future disaster risks.” Community members need to have *basic tools* on hand: after the quake, most search and rescue was done by Kobe citizens, who were lacking tools such as crowbars. Community members also need to be better informed through *awareness and education programmes*, particularly for basic firefighting and stockpiling measures. They must also work closely with NGOs. (During the quake, NGOs and community volunteers played a key role, for they were flexible in ways that official authorities were not)

Highlights of the Hyogo Phoenix Plan

The emphasis is on:

- ▶ **Vulnerable groups** (handicapped, aged, etc. receive special public services)
- ▶ **Cultural exchange** (especially internationally)
- ▶ **Disaster-resistant metropolis** (see details, left)
- ▶ **Economic growth** (strengthening existing industries and encouraging new ones)
- ▶ **Communications** (positioning to be an Asian communications/transportation hub)

“What is needed for the reconstruction,” noted Kobe’s mayor, “are three things: money, technical skills and the understanding of people in the community. Most important is the latter. None of these goals are easy; but the community must pay for reconstruction, and they must participate in the process, with a good understanding of the situation...People pay attention to their own problems, (but for successful reconstruction), they must pay attention to community as a whole. So we try to provide professionals to give them guidance, and councils for consensus building. It is a time-consuming process, but it seems to be the only way to get support”

Message to Communities

Asked for just one message to share with other communities facing disaster threats, Kobe’s mayor said: “Wherever you live, city or village, you have to keep in mind that you must protect yourself. You are the first person to protect yourself. You have to prepare to protect yourself. You cannot fight alone. You must have a system to fight disasters. You have to have cooperation with relations and your colleagues. Each community has to have its own plan to respond in case of emergency. Your community may not be enough. If not, **then** you can work with other countries. But first you must protect yourself, for yourself – wherever you are in the world.”

Sources Interview with K. Sasayama, Amsterdam, 23 April 1996

K. Sasayama. Keynote speech and video, 2nd International Conference of Local Authorities confronting Disasters and Emergencies, 22 April 1996

Hyogo Prefecture, “Hyogo Rises from the Ashes Recovering from the Great Hanshin-Awaji Earthquake,” video, 1996

J. Wilsh. “Kobe One Year Later,” *Time*, 22 Jan 1996

Harnessing the Power of the Private Sector

Worldwide, the private sector is becoming increasingly involved in urban disaster management. Disaster response generally has been the entry point. In some countries, however, NGOs, private firms, business foundations and associations are now beginning to take steps to protect their own assets, and to initiate preventive measures in the community.

The Philippines provide an example of the evolving role of the private sector in urban disaster management. Philippine NGOs number in the thousands, and are a dynamic local force in disaster and development issues. Since the end of the Marcos regime in 1986, NGOs have evolved rapidly in their managerial and networking skills. New roles for Philippine NGOs in development activities were set out in the 1987 national constitution, and further emphasized in the 1991 Local Government Code.

Because frequent natural hazards make the Philippines one of the most disaster-prone countries in the world, NGOs and private companies have been deeply involved in disaster relief in the 1990s. They are now moving to incorporate mitigation measures in their activities.

Involvement in disaster issues for some private sector partners came after the 1990 earthquake of Baguio City and the volcanic eruption of Mount Pinatubo a year later. Some members of the Philippine Business for Social Progress (PBSP), established 20 years earlier to address local development issues through NGO-business partner-

ships, created the Corporate Network for Disaster Response (CNDR). These organizations realized that their development work was being disrupted and resources were being diverted to disaster relief. New approaches were needed to address links between disasters and development. Since 1992, CNDR has worked in relief and recovery programmes for the Mount Pinatubo eruption, Typhoon Ruping, Typhoon Ormoc, Mount Mayon lahar flows, and other disasters.

PBSP is part of another successful private sector partnership, the Inter-Agency Network for Disaster Response. In addition to PBSP, the group includes the Philippine National Red Cross, Adventist Development and Relief Agency, the Citizens for Disaster Rehabilitation Network, the Council for People's Development, Catholic Relief Services, the Luzon Secretariat for Social Action, the Philippine National Council of Churches and the Philippine Rural Reconstruction Movement. These networks work closely with the government, particularly through representation on the Social Reform Council, a cabinet-level body that reinforces government and non-government partnerships on disaster management issues.

The tragedy and urgency of disasters often inspire heroic efforts during the disaster response phase, and have brought groups together in the Philippines that otherwise may have been working in parallel. In a typical and understandable pattern, these groups initially focused on disaster response coordination. They have since extended their cooperation to areas of rehabilitation, and then to training and preparedness activities for future disasters. They are now beginning to consider coordination of prevention and mitigation measures.

Private sector organizations involved in disaster management in the Philippines

Environmentalists, psychologists, land-use planners, construction workers, computer specialists, cartographers... the list of professional skills needed to protect cities from disasters is long and varied. So, too, are the types of organizations that can contribute to this process. In the Philippines, the Inter-Agency Network for Disaster Response (IANDR) has identified several types of private sector organizations which have a role in disasters – whether, before, during or after. IANDR is now analyzing their institutional mandates, to better determine their roles. IANDR plans to use the list to coordinate activities in various phases of disaster management.

- ▶ Development NGOs
- ▶ Disaster Management NGOs/ Institutes
- ▶ Issue-Oriented NGOs
- ▶ Religious Organizations
- ▶ Specialized Groups (health professionals, business associations, local civic organizations, academia)
- ▶ Community-Based NGOs
- ▶ Business Foundations
- ▶ Government-initiated NGOs (relief only)
- ▶ Politician-driven local NGOs (relief only)
- ▶ Private companies



N. Dickinson/Still Pictures

Shantytown devastated by a flash flood, Ormoc City, Philippines.

“NGOs need not crowd the relief begging bowl,” notes Marcia Feria Miranda, a Filipina expert on partnership development “There is room for all, and not only when disaster strikes” Explaining the evolution of partnerships for disasters and development in the Philippines, she told participants at the 1994 World Conference on Natural

Disaster Reduction: “There are no partnerships -- particularly in prevention, mitigation or preparedness -- that can be looked on as a model of intersectoral coordination and efficient use of resources What exists are the basic building blocks needed for partnership among NGOs, nationally and at the provincial level; in the corporate sector, and among governments and donors.”

Sources: “Multi-Agency Response to Storm: the Philippine Experience,” Juan Blenn Huelgas, National Coordinator, Inter-Agency Network for Disaster Response and Sectoral Representative Social Reform Council Office of the President Proceedings, conference presentation, and interview at 2nd International Conference for Local Authorities Confronting Disasters and Emergencies, 22-24 April 1996

Marcia Feria Miranda, “Building Bayanihan -- The partnership role of NGOs in a new disaster management paradigm,” in “From Disaster Management to Sustainable Development: How the public sector, private sector and NGOs work together,” World Conference on Natural Disaster Reduction proceedings, Main Committee Session D World Health Organization 1994

Sudan

Flood Committees Help Local Areas Take Protective Measures

The Sudanese government’s decision to form a national network of flood committees is making a difference in how local authorities reduce vulnerability to floods.

Khartoum, Sudan’s capital, is famously situated around a juncture of the White Nile and the Blue Nile rivers. The city has swelled in recent years to 4.2 million people; 1.6 million have migrated to the city due to civil conflict and famine. In 1988, floods from seasonal rains covered nearly 40% of Khartoum. The city’s residents had no warning about the impending flood, which was the worst one to hit the area since 1946. Millions of dollars worth of property was destroyed, and 28% of the people were affected.

The floods were used as a case study at a national workshop of the UN Disaster Management Training Programme, attended by government officials, NGOs and UN agencies in 1993. Following a recommendation of the workshop, the Sudanese government subsequently decided to form a National Flood Committee and sub-committees in flood-prone communities throughout Sudan.

A local community sub-committee immediately started work on flood embankments, with help from the national government, NGOs and community residents. In 1994, Sudan experienced floods similar to those in 1988. The new flood embankments, early warning measures and greater



C. Guenther/Still Pictures

Children in Khartoum, Sudan.

community awareness made a difference. In 1994, there was very little damage to areas previously affected.

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