Managing the Earthquake of 2005

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Abstract

On 8 October 2005, Pakistan was struck by the most devastating earthquake in its history, affecting an area of 30,000 sq km, causing over 73,000 deaths and massive destruction to public infrastructure. The scale of devastation warranted an organized swift response, while existing infrastructure was either very poor or totally destroyed. In the given situation, the Federal Relief Commission, entrusted with a comprehensive mandate to manage the entire spectrum of relief effort, conceived and implemented an elaborate National Action Plan for coherent response in coordination with Government departments, foreign governments, international agencies, INGOs, NGOs and civil society. The relief and rescue efforts and subsequent reconstruction and rehabilitation programmes in the earthquake-affected areas, not only set the contours for future disaster management policies and strategies in Pakistan but also defined universal benchmarks for similar efforts in the event of future disasters.

Introduction

Disaster management is an extremely difficult undertaking, each disaster posessing its own problems and challenges. There can be no set blueprint or plan to deal with every disaster—the approach and strategy to dealing with each is only really decided as it happens. Survival is not just a product of luck; there are best practices, effective strategies, good techniques and things to avoid which emerge from the experience of disaster management, and which provide a very useful—indeed crucial—base of knowledge from which to tackle each new disaster. This paper highlights the main lessons, best practices and strategies, as well as mistakes or weaknesses, which emerged from Pakistan's experience of handling the earthquake in 2005.

The 8 October 2005 earthquake, measuring 7.6 on the Richter scale, struck at 8.52 a.m. The epicentre of the quake was situated 90 km north-north-east of Islamabad, in Azad Jammu and Kashmir (AJ&K). Covering a total area of some 30,000 sq km, five districts of Azad Kashmir, viz., Muzaffarabad, Bagh, Poonch, Rawalakot and Neelam, and five of NWFP, viz. Mansehra, Battagram, Kohistan, Abbottabad and Shangla were the most badly affected, with damage on a massive scale. It took a while for the full extent of the disaster to become clear: the final death toll was well over 73,000 and almost double that number of people were seriously injured. In terms of physical damage, almost 600,000 homes were destroyed—rendering 3.5 million people homeless—along with 6,000 schools and colleges, and 574 health facilities (over 73% of the total). It should be stressed that the 2005 earthquake disaster was not a one-off event. There were hundreds of after-shocks and tremors, some reaching as high as 6.0 on the Richter scale, and there was the danger of a further disaster posed by the looming harsh northern winter. Both these factors added to the urgency of rescue, relief and recovery operations and the difficulty of the task faced.

Overall Approach and Strategy

Establishment of the Federal Relief Commission. When the 2005 earthquake struck Pakistan, the country did not have a central disaster management body. As it soon became apparent that Pakistan had been hit by a massive natural disaster, which would require coordinated efforts by Government, civil society and the international community, one of the first steps the Government took was to create an agency to manage this. The Federal Relief Commission (FRC) was formed on 10 October 2005, with Lt. Gen. (Retd.) Farooq Ahmed Khan appointed as the first Federal Relief Commissioner. The mandate assigned to the FRC was straightforward: to manage and coordinate the entire relief effort. The FRC's organizational structure reflected its coordination role. It comprised a civil and a military wing, each headed by a Chief Coordinator. The civilian wing was further sub-divided into ministerial and institutional wings, the former encompassing all the key ministries involved in the earthquake response, the latter the main institutions (e.g. National Logistics Cell, Emergency Relief Cell, Utility Stores Corporation, NCMC, NADRA, SCO).

The initial challenges facing the FRC were immense. Thousands of people had been killed: their bodies needed to be recovered and buried. Thousands more were seriously injured and in need of rescue and medical attention, but the local health services had been badly decimated. The survivors needed food, water, clothing and emergency shelter. This entire search, rescue and relief work had to be carried out over a vast and physically very difficult terrain: mountainous and hilly areas, hundreds of remote

villages rendered more inaccessible by destroyed roads and infrastructure. It was also important to ensure effective coordination of the assistance being provided by the plethora of different domestic and foreign organizations, institutions and individuals in response to the disaster; to ensure that basic ethical principles were followed, and that disputes and clashes were kept to a minimum.

Priorities The FRC's focus in the immediate aftermath of the 2005 earthquake was primarily on rescue and relief. Later stages of recovery, reconstruction and rehabilitation were left to the Earthquake Reconstruction and Rehabilitation Authority (ERRA) which was formed in November 2005. Within rescue and relief, the FRC prioritized a number of areas:

1. Rescue of trapped survivors
2. Medical treatment of the injured
3. Provision of food and water to survivors
4. Provision of emergency shelter, clothing and bedding
5. Restoration of communications and access to remote areas
6. Damage control and maintenance of law and order
7. Support to local efforts and capacity building
8. These were immediate priorities, while in the medium- to long-term its goals were:
9. Management of displaced people
10. Restoration of civil administration
11. Restoration of basic amenities
12. Early recovery (including restoration of livelihoods)
13. Dealing with psychological trauma and stress

Formulation of a National Plan Within days of its formation, the FRC formulated a National Plan of Action which was then shared with all stakeholders, domestic and foreign. The FRC was also able to coordinate the employment of volunteers mobilized through the National Volunteer Movement. Of all the ministries and organizations involved in the initial rescue and relief effort, those who played a particularly critical role included: the Armed Forces of Pakistan, various ministries, Utility Stores Corporation, PTCL, SCO, WAPDA, NLC and the Cabinet Division's Emergency Relief Cell. The Ministry of Foreign Affairs (MoFA) was the focal liaison point for foreign governments, coordinating their contributions and dealing with the many diplomatic teams to visit the region. Meanwhile, the Emergency Relief Cell had the very important task of purchasing relief goods. Of the 'external' or non-Pakistani institutions involved, NATO and other foreign troops, friendly countries, the UN System and civil society stand out for playing an especially vital role in greatly assisting relief and rescue operations, providing medical assistance and helping in debris removal and restoration of services.

Challenges

Rescue and Relief Operations. The immediate priority of the earthquake response was rescuing those trapped in rubble and ensuring medical treatment for the injured. At the same time, huge sections of the population of AJ&K and NWFP were left without food or basic supplies. The relief operation had to supply people in the affected areas with immediate provisions for survival. In addition, given that it would take considerable time for restoration of livelihoods and local businesses to come about, as well as for roads and other vital infrastructure to be restored, it was necessary to ensure continued supply of food and other provisions during the transition phase. Efforts were made to provide these to people where they were (in or near their places of origin) so as to prevent mass migration to other areas. In order to ensure effective supply of goods to the quake survivors, 'Operation Lifeline' was launched. Not surprisingly, it had to overcome numerous challenges.

Management of Casualties and Health Care Provision. Pre-quake health services were, to a large extent rendered non-functional by the disaster—over 70% of health facilities were destroyed/damaged, many local medical personnel were killed. Emergency medical care was thus an immediate priority of the earthquake response, followed closely by the restoration of basic health services. It was also one of the most challenging aspects of the immediate response.

Terrain Difficulties. The terrain, spread over 30,000 sq km, was difficult at the best of times, but made infinitely more so by the destruction of roads, bridges and other infrastructure due to the earthquake.

Huge Quantities of Goods. The affected population numbered 3.5 million, meaning that huge quantities of goods were required.

Looming Winter. The looming winter, which would cut off some routes and bring severe cold, added to the urgency of the relief operation.

Absence of Local Human Resources. Normally provincial and local government personnel and resources would play a lead role in such operations, but following the earthquake there were practically no local human resources available in AJ&K and even in affected districts of NWFP.

Cargo and Goods. Huge amounts of cargo and goods were being sent in from around the country and abroad, but the country's airports and sea ports were not set up to handle such large air traffic, goods and so on.

Channelization of Philanthropists, Diaspora, NGOs/IOs and International Community

There was an outpouring of sympathy for the affectees by the galvanised never witnessed earlier by the nation. A large diaspora from Kashmir and Pakistan was keen to contribute their bit and a huge number of NGOs, both local and foreign, international organizations and eighty-eight friendly countries were eventually involved in this massive relief. All these stakeholders were to be catered for, their effort coordinated to produce a synergetic effect and each one listened to and guided. This was a very serious challenge as most of the stakeholders had different past experiences, different character and expectation. To keep all of them on board you had to be available to them and have a forum to resolve issues so that strategic direction and national priorities were kept in focus by all. The UN, IOs and NGOs operated feverishly in close cooperation with the Pakistan Army and other governmental departments even in the remotest affected areas and very effectively sprinkled relief across. They pursued their mandate and operational framework while seeking an independent and interference-free atmosphere for relief and early recovery of the affectees. We respected their operational framework, created a conducive environment from the port of entry to the remotest affected area. The via media devised, brought them in league and close cooperation with all the governmental agencies, especially the Pakistan Army. It is an example of unique environment and cooperation.

Coordination. With so many different agencies and organizations involved, huge quantities of different kinds of relief goods, supplies coming in from different sources, which were meant to be transported and distributed in the affected areas, coordination of the whole operation and integration of relief efforts was extremely challenging.

Response

There were various issues with transport of goods: finding the required number of vehicles, ensuring security of relief convoys (this was an issue in the early phase of the relief operation), bringing in the huge quantity of goods donated by the Pakistani public and restoration of essential services, communications infrastructure and civil administration through a graduated approach. With such a vast affected area and a huge number of people in need of relief, it was prudent for the FRC to involve all stakeholders to take part in the relief operation and share the load. The key agencies involved were assigned responsibility for specific areas of AJ&K and NWFP, ensuring that the areas given to a particular agency were geographically contiguous.

Rescue Operations. Rescue operations were particularly difficult because of the lack of professional expertise and specialized machinery. Debri removal, searching for and rescuing

the trapped and injured was carried out by local people supported to a limited extent by Pakistani and foreign soldiers, specialist teams and so on. Equally problematic was evacuation of the injured, given that the road network had been so badly damaged. Despite these problems, the rescue operations tried to ensure that the search for trapped/injured survivors was followed by rapid rescue and evacuation, and also that expert medical services were made available as soon as feasible in the circumstances. In total, more than 129,000 injured people were evacuated from the affected areas, either to hospitals in other parts of the country or to field hospitals. Of the total injured moved out, 17,000 were evacuated by helicopter. Alongside these airborne evacuations, vigorous efforts were made to restore the road system and enable evacuations to take place by road. Thanks to the efforts of Army Engineers and others the three main arteries for road traffic to the affected areas were opened for light traffic within 24–36 hours and for heavy traffic within 72 hours.

Relief Operations

Procurement of Goods. With regard to purchase and procurement of relief goods, a President's Relief Fund was established soon after the earthquake to provide a central target point for donations and resource mobilization efforts. All financial transactions and procurement were handled by the Emergency Relief Cell of the Cabinet Division, on the direction of the FRC which was responsible for identifying what goods were needed and in what quantities, arranging transport for supply of these, and ensuring their judicious distribution. The ERC took the lead in procuring additional items needed for the relief effort. It helped build up the seven days' reserve rations in forward areas stipulated in the relief supplies' policy. Thousands of tonnes of relief goods were provided by the people of Pakistan. Local and national NGOs, individuals, schools and colleges and many others sent supplies to help the quake survivors. Also notable was the contribution of the Utility Stores Corporation (USC) of Pakistan. The USC opened 33 containerized outlets in the affected areas and distributed over 15,000 tonnes of rations. Its contribution included supply of 73,610 bags of composite rations packs between 9 October and 14 November 2005, provision and transport of 7 days' reserve stocks for 1.5 million people (10,354 tonnes), distribution of 1,500 tonnes of rations to people short of food, and provision of CGI sheets to people in the affected areas at subsidized rates. The international community also responded generously. A total of 68 countries sent supplies to help the quake affecters. Lists of notable contributions are in Annexure A. The ICRC carried out its own needs assessment and launched its independent, self-contained relief operation. It chartered helicopters which flew 8,000 sorties and distributed 12,791 tonnes of food and 1,275 tonnes of non-food items.

Receipt and Handling of Relief Goods. All relief assistance, foreign and domestic, coming by sea, road and air, was received at a number of major bases—Islamabad, Karachi, Lahore, Peshawar and Quetta—from where it was dispatched to six forward bases in the affected areas, in accordance with their respective requirements. Chaklala-Islamabad was the main hub for receipt of goods from across Pakistan and abroad, and for onward distribution to the affected areas. as many as 983 relief flights landed at the Airbase, with a further 644 relief flights received at other civil airports: Karachi, Lahore and Peshawar. Goods from different parts of the country were transported using private civilian (hired and voluntary) vehicles, as well as NLC containers. Four hundred of the latter were used to move goods from Karachi to Rawalpindi. An Army Logistics Control Headquarters was set up in Chaklala by the Logistics Directorate to support the relief operation. It had two infantry battalions and one air Dispatch Company. It was primarily responsible for the receipt of relief goods from Islamabad International airport and Chaklala Airbase. Forward bases were established at Muzaffarabad, Bagh and Rawalakot in AJ&K, and Mansehra, Batagram and Balakot in NWFP. Transport was undertaken using truck convoys and heavy-lift helicopters. The ERC had additional roles as well. It made use of its own storage space and arranged extra warehouses for the FRC to stock commodities. With regard to transport, the ERC requisitioned a large number of trucks for transport of relief goods.

Transport to Affected Areas and Distribution. The transport of relief goods to the affected areas began as soon as they arrived. On 9 October aircraft began dropping supplies into the quake zone, the start of what was to become the largest air operation in the history of relief operations. Simultaneously movement of goods by land began, in which over 50,000 troops participated. Army Engineers, SCO and Signal Corps resources were mobilized to restore communications in the affected areas and reopen the main supply routes. Because of the massive destruction to road infrastructure wrought by the quake, initially the main means of getting goods to stricken populations in AJ&K and NWFP was by air. Based on guidelines from the FRC, a number of parameters were devised for the provision of aviation support. The main ones were that the primary transport route for relief goods would be by road; aviation support would be used to target inaccessible areas, to carry out emergency medical evacuations and meet other emergency needs. In terms of specific tasks and responsibilities, aviation support was used for: damage assessment, transport of rescue and medical personnel (as well as medical equipment and engineering plants) to affected areas, evacuation of injured and supply of relief goods. Helicopters and C-130s were extensively used; 129 helicopters (73 international, 56 domestic) conducted about 33,300 sorties; lifted some 6,000 tonnes of

relief goods/rations to the forward areas and evacuated 17,150 casualties. The Air Force carried out 491 sorties for transportation of goods from Karachi to Islamabad, and to drop them into the affected areas. A summary of relief assistance after the Earthquake is given in Annexure B. The Air Liaison Cell of the FRC also arranged 51 visits by civil and military dignitaries to the affected areas. Helicopters played a major role in the immediate earthquake response, helping evacuate survivors and carry relief goods. Mules and even human porters were used to ensure supply of relief goods to otherwise inaccessible areas. From the main bases relief goods were sent to distribution points by air/road. From distribution points they were sent to distribution nodes established by the army units, using all transport means including animals. From the nodes either the survivors collected relief goods themselves or army soldiers man-packed the items and took them to inaccessible areas. A major criterion applied in deciding the distribution of relief goods and services was height above sea-level: those areas more than 5,000 ft above sea-level were prioritized followed by those between 4,000 and 5,000 ft and then by those at low risk (under 4,000 ft). However, a detailed ground survey was also carried out to precisely assess damage. Needs were determined and relief goods provided according to set time-lines. Local people were co-opted into this initiative, through the formation of village committees. Records were maintained at village, UC and district level.

Scale of Relief Operation. The overall scale of the relief operation was massive — certainly the largest of its kind ever conducted in Pakistan. A baseline figure of 3.5 million affectees was agreed upon for relief planning and operations started to supply this number of people with the necessary goods. Also, initially it was thought that AJ&K had been hardest hit and there was greater need there than in NWFP, so the distribution of relief goods between the two provinces was done on a 60:40 ratio. However, as damage assessments were carried out and accurate information came in from different locations, this ratio was adjusted to 50:50.

Coordination. A number of mechanisms were put in place to promote effective coordination of the massive relief effort. The FRC had a central coordination role, with responsibility for overseeing the overall provision and distribution of relief, monitoring and streamlining operations. The FRC established an information management system to promote coordination and effectiveness of relief operations. This comprised a website which hosted the latest situation updates, relief data, important decisions, directives and policy matters. In addition, regular media briefings were held on a daily basis to ensure continual provision of updated information. A 20-line call centre was established to facilitate access to information by the general public. Thousands at home and abroad

wanted to know the whereabouts of loved ones, what kinds of relief goods they should donate, to whom, and so on. The call centre set up by volunteers was a help in addressing these queries but insufficient to deal with the huge demand. Hence the FRC published complete information about military units in the affected areas, including locations, names of commanding officers and telephone numbers. This enabled people to access information directly from those on the ground, and thereby eased the pressure on the call centre. FRC issued a National Action Plan for giving strategic direction to all stakeholders. It also created a 'Strategic Group Leaders' Forum' which met under the FRC once a week to coordinate activities. It included all major stakeholders including military, foreign contingent commanders, INGOs, UN and civil society representatives. It was replicated at the Army Divisional Headquarters for robust coordination at operational and tactical levels. The Army also played an important role in coordinating relief efforts. It had frequent and extensive interaction with all stakeholders involved in the earthquake response. The Army was also instrumental in creating an information database, and sharing this with all relief actors. Effective coordination of the supply operation was further ensured by having focal persons in all the key agencies—WFP officials, NWFP and AJK Governments Food Secretaries.

Security. With so many foreigners—INGO and foreign aid workers, foreign military and medical personnel—coming into the country and to the affected areas, ensuring their security was a major responsibility for the Government. This was made more so by the sensitivity, from a security perspective, of AJ&K and NWFP. Security was provided for these personnel, primarily by the Army and Rangers. The Army also played an important part in ensuring security for transport of relief goods through a number of measures: route protection, provision of mobile guards, securing camps and installations, regular sharing of information, and by co-opting the Pakistan Rangers and civil police to increase security coverage. The Motorway Police played an important role in regulating traffic flows to the affected areas from other parts of Pakistan. While some law and order issues were faced in the initial days, particularly with regard to desperate people stopping relief convoys, the overall security situation in the affected areas remained stable.

Emergency Medical Care Providers and Coordination of Efforts. Mass casualty management was the biggest concern of the FRC. A team of medical experts of the Army Medical Corps (AMC) and the Ministry of Health (MoH) as embedded in the FRC to undertake this daunting task under one strategic direction. It laid down policies, priorities, kept track of patients, and coordinated deployment of local and international medical assistance. The Pakistan Army was among the first to provide emergency medical care. All Combined Military Hospitals were immediately put on high alert to

prepare to receive casualties. Cuba made a particularly big contribution to health care for the survivors, sending 2,575 medical personnel who set up 30 field hospitals and formed 15 medical teams. A total of 1.3 million out-patients attended the facilities, 7,768 were admitted, 12,406 operations were conducted and 100,000 patients given physiotherapy. To ensure continuity of care and protection to survivors being discharged from hospitals to convalescence centres or elsewhere, a health policy was formulated. UN health cluster World Health Organization (WHO) played an important role too and coordinated with FRC medical evacuation services, international medical teams, supply of medicines, establishment of mobile clinics and field hospitals, and other assistance provided by donor agencies and the international community. Field hospitals were quickly established in the affected areas to enable the injured to be treated there, rather than evacuated to faraway hospitals. The Health Policy was designed to ensure that patients received all the care that they needed and that they were protected. The Policy called for: All hospitals maintaining complete records of all patients treated, Data (including fingerprints and digital photographs) on all patients were collected by NADRA. All patients fit for discharge were sent to convalescence centres with proper documentation, Hospitals ensured provision of continued care to them in the centres. Patients fully recovered were sent to shelter homes. All patient data was submitted to the Ministry of Health, Army Surgeon General and the FRC. Fully recovered orphans, destitute women and the disabled, were handed over to the Ministry of Social Welfare.

Public Health Concerns. The threat of disease and epidemics breaking out was considerable, given the crowded unhygienic conditions in the tent villages, the lack of water and bathing facilities, the cold weather and the already vulnerable state of the quake survivors. Efforts were made to provide survivors with safe drinking water, and to promote personal hygiene and basic sanitation in the tent villages and camps. Regular inspections were carried out and advice provided on food safety, disposal of solid and liquid waste and so on; health education material was distributed to raise awareness about hygiene and disease prevention, but this issue remained a matter of concern. The Disease Early Warning System (DEWS) was used, which entailed regular surveillance for communicable diseases so as to detect incidents early and take action to control their spread. Immunization against infectious diseases including cholera, typhoid, measles and tetanus was carried out by Expanded Program of Immunization (EPI) teams of the MoH, WHO, UNICEF, AMC units and other stakeholders. Thousands of people were seriously injured in the October 2005 earthquake. Many had broken/fractured bones and some developed bone infections which required proper follow-up to prevent long-term disabilities. However, there were also many who had limbs amputated or were otherwise

rendered disabled. Physical rehabilitation of these people was important to promoting their long-term recovery. As an interim measure, paraplegic patients were managed at three centres: Cantonment General Hospital in Rawalpindi, the National Institute of the Handicapped in Islamabad, and PIMS Satellite Hospital. Also, some philanthropists also established such care centres, the most famous being by the owner of Melody Cinema in Islamabad which exclusively looked after female patients. However, for long-term treatment a number of specialized centres were established in the affected areas: Teams of psychological experts and counsellors sent by the MoH, Medical Directorate GHQ and volunteer groups were actively engage in assessing and providing psycho-social support to the affected population. While trauma therapy was very crucial it was a weak area. However, the strong family bonds in affected societies, where relatives provided solace and comfort to traumatized survivors, were effective in such situations.

Revival and Restoration of Health Services. Revival of primary health care entailed the use of mobile service delivery, establishment of a robust disease surveillance system to minimize the chance of epidemics, and the use of alternative structures for primary care facilities, e.g. tents, prefab containers, temporary structures made of fibreglass or other low-cost material, and use of existing buildings once they had been assessed for safety. Facility-based services were quite wide-ranging covering general outpatient consultations, first aid provision, some physical rehabilitation or reconstructive procedures, reproductive health services, limited in-patient care, basic lab services, ORS distribution, TB treatment, health and hygiene education, psycho-social counselling as well as referrals. Two areas in which health service provision had been considerably eroded as a result of the quake were treatment of patients with chronic conditions and maternal and child health care. Chronically ill patients were initially left without their medications as the stress was on the severely injured. Thus there was non-availability of insulin, anti-hypertensive drugs and TB (DOTS) treatment. However, once the acute phase was over, priority was given to filling this gap and care of chronic patients restored. With regard to Reproductive Health and Maternal Child Health, as well as damaged facilities, the shortage of female medical staff remained a serious concern. UNFPA, with contributions from the Aga Khan Foundation, arranged for mobile Reproductive Health Units at Ghari Habib Ullah and Shinkiari, which made the situation relatively comfortable. UNFPA was later able to establish Reproductive Health Units (made of prefab containers) at all important sites, and in some of these was able to provide high quality care. Community-based services largely revolved around Lady Health Visitors (LHVs) and Lady Health Workers (LHWs). These carried out home visits, imparted health and hygiene education, as well as vitamin supplementation and

immunization. An issue that emerged was that, because many LHVs and LHWs were also among the affectees, their services were not available in the affected areas, creating problems in attending to female patients. Outreach medical camps were set up to facilitate access to health services. Looking beyond the acute phase of the earthquake response, a number of NGOs and organizations made commitments to support the revival of health facilities. Pre-quake facilities that were under-utilized or had been established for political reasons were thus not chosen; multiple facilities serving essentially the same catchment area were merged into one, and so on. WHO agreed to provide a pre-fab structure comprising four rooms for each facility, as well as standard medicines and electro-medical and cold chain equipment. Staff would be drawn locally —largely LHVs, medical technicians, vaccinators and Class IV employees.

Displaced Persons. Handling of displaced persons was a major component of the earthquake response. Some 3.5 million people were rendered homeless by the earthquake — many of them also had to cope with loss of family members (parents, spouses and children), injuries and loss of livelihood. The Government's policy on displaced persons was designed to ensure people were kept in their own territory as far as possible; the vulnerable were protected (in particular women and children); and adequate arrangements were made to support the transition from emergency shelter to reconstruction of permanent homes. The FRC coordinated and maintained records for the establishment of camps, distribution of relief and medical assistance through medical units and local governments. The Ministry of Interior was asked to coordinate and control movement of refugees outside the affected areas.

Emergency Shelter and Camp Management. The Government followed the UN OCHA Guiding Principles on Internal Displacement in formulating its strategy for establishment and management of camps for displaced people. The Government set up a number of organizations specifically mandated to carry out camp management: the Regional Relief Commissioner's Office in NWFP and the Camp Management Organization in AJ&K. Capacity-building of these organizations was carried out by the Pakistan Army, NGOs, and the camp management cluster. This comprised both formal and on-the-job training on camp establishment, camp management criteria, equipment, supplies, etc. and provision of resources such as telecommunications equipment to enhance capacity for this. The camps themselves fell into three broad categories: planned, spontaneous, and scattered. The Army did a commendable job of managing large number of tent villages where vocational training, educational and recreational facilities were also ensured.

Protection of Vulnerable People. Those considered 'vulnerable' after the 2005 earthquake included orphaned and unaccompanied children, widows with children and

destitute women. The Government made special arrangements to ensure protection of these people. The FRC played a central role in this. It coordinated with relevant ministries, the AJ&K and NWFP governments and their concerned agencies, the UN and NGOs to share areas of concern and convey policy directions: thus the FRC focal person for vulnerable people regularly attended meetings of the Protection Cluster. A policy was issued for discharge of patients from hospitals and other health care units to guard against possible abuse. Orphans, the destitute, unattended women and children and the disabled would, on full recovery, be handed over to the representative of the Ministry of Social Welfare. One of the key decisions made early on by the Government was to ban the adoption of child survivors and instead have them taken care of by the state. Custody of 'quake orphans' in AJK was given to SOS Villages. In addition, the Social Welfare Ministry set up a protection camp ('Aashiana') at Hattian to look after vulnerable women and children. Run by an NGO, Aashiana had the capacity to house 1,000 children and 500 women, but optimal use was not made of these facilities. The Hattian centre was directed to make arrangements to meet the special needs of amputees and paraplegics. In this regard the National Database and Registration Authority (NADRA) was asked to register IDPs, and standard operating procedures for quake survivors admitted to hospitals and health care units were developed whereby updated records would be kept of all those being treated. However, early data collection remained weak. The main reasons for this were: the Government could not clearly define the various vulnerable groups; decisions on a standardized data collection form and the agency to conduct surveys were made very late; in the meantime I/NGOs and other organizations conducted surveys based on their own specific needs. This led to duplication of some data and gaps in collection of others—in the absence of comprehensive data a comprehensive policy could not be formulated. NADRA was unable to complete its task of IDP registration. Of the 3.5 million people affected by the earthquake, NADRA had registered only 83,000 IDPs. Its failure stemmed from a lack of staff and resources, and from slow processing of data entry. Following consensus on a standardized data collection form, a new two-phase survey was launched in the new year with the first phase (camp populations) results available in mid-February; data on non-camp resident quake affectees was to be collected in the second phase. In late December 2005, the Social Welfare Ministry set up an Inter-Ministerial Task Force to formulate a national strategy and plan of action for vulnerable people. The Task Force formed a number of technical working groups who addressed different aspects of the issue. The National Plan of Action provided for the distribution of several billion Rupees to compensate survivors for loss of life, injuries and damage caused to property. Responsibility for distribution was assigned to the respective governments of AJK and NWFP assisted by the Pakistan Army,

while the FRC closely monitored the whole process to ensure transparency. In the case of orphans who had lost their parents in the quake, compensation was to be given to family elders. However, in practice this was problematic because neither the AJK nor NWFP governments had separate data about extended families looking after quake orphans. The need to ensure that widows and orphaned children were not deprived of their rights to land inheritance was also stressed. As of end March 2006, the FRC had paid out Rs. 22 billion in compensation.

Transitional/'One Room Out of the Rubble' Shelters. In the immediate aftermath of the 2005 earthquake, the focus was on providing emergency shelter to all those rendered homeless. However, since reconstruction of their homes would take considerable time and since the cold northern winter was rapidly approaching, the focus then moved to provision of semi-permanent (transitional) winter-proof shelters. This was the next step on the road to long-term recovery and would prevent mass migration from the affected areas. The FRC deliberately stressed the need for people to move from tents to what would eventually be part of their permanent homes. It discouraged the concept of a 'half-way house', fearing that people would remain in those and not make efforts to rebuild permanent homes. Its policy of 'one room out of the rubble' entailed construction of one room initially, that would eventually be reinforced and added onto as the family rebuilt their permanent home. The aim was to provide 3.5 million affectees with secure shelter before the onset of winter. Thus the initial tent-based strategy was, from week 3, complemented by semi-permanent shelter solutions based on a 'one warm room' policy. Most of the materials for construction of semi permanent shelters came from the rubble of destroyed houses, but the FRC provided and Army distributed CGI sheets free of cost. People were also given tools and other non-food items based on technical specifications and guidelines, disseminated by the Emergency Shelter Cluster. In week 4 'Operation Winter Race' was launched by Pakistan and the aid community. Its initial priority was on provision of transitional shelters to 'at risk' populations above 5,000 ft. The FRC placed an order for one million corrugated iron (CGI) sheets and arranged transportation of these via rail/through the NLC, and distribution through the military to the affectees. Military and civilian construction teams were deployed on a large-scale to both construct shelters—including one room out of the rubble'—for vulnerable and needy families. Moreover, Government announced compensation policy for the earthquake affectees as under:

a. Dead — Rs.100,000 per death (however, in cases of multiple deaths in the same family only Rs.100,000 compensation was paid in first phase so as to ensure equitable distribution of resources).

b. Injured — seriously injured people were to get Rs. 50,000; injured Rs.25,000 and mildly injured Rs.15,000.
c. Housing — Initially, irrespective of the size and value of houses destroyed/damaged, all owners were given Rs. 25,000 in compensation. For reconstruction the Government agreed to pay money to survivors in tranches, administered through the FRC and ERRA. The tranches were as follows: i. Rs. 25,000 by the FRC, ii. Rs. 75,000 by ERRA, iii. Rs. 50,000 by ERRA, iv. Rs. 25,000 if survivors followed the correct dimensions and guidelines for house reconstruction.

The transitional/'one room out of the rubble' shelter policy and Operation Winter Race can be considered a success. By the end of January 2006, over 300,000 room shelters had been built for quake survivors. The feared winter disaster was averted, and nor was there mass migration from the affected areas. This success was due in large measure to the fact that the winterization strategy was rapid and focused, and implementation was greatly helped by the scale and reach of the Pakistan military.

Restoration of Infrastructure. The earthquake caused massive damage to infrastructure in the affected areas of AJK and NWFP. While the priority of the earthquake response was opening of roads to ensure supply routes for relief goods to those in need, restoration of communications links and of electricity and other services was also important. The FRC played a lead role in efforts to restore infrastructure in the quake-hit regions. In order to ensure effectiveness, a strategy was evolved which had a number of distinctive features and components. The first was unified command, control and decision-making. Assessment of damage and prioritization of assignment of resources was done on a daily basis. These decisions were then conveyed to the operational level, where responsibility for implementation rested with the respective army field formations, in collaboration with the local civil administration and other relief agencies. A second component was the identification, mobilization and utilization of human and material resources needed for priority infrastructure restoration. The FRC made an immediate assessment of required resources. Various concerned agencies were approached and they confirmed which of these were available with them, and these resources were then allocated to specific sub-sectors and placed at the disposal of the respective army formations in charge of implementation. All this was done in a very short period of time, enabling the majority of the affected population to be reached within the first two weeks of the earthquake striking.

Education. As most of the educational institutions had either collapsed or were seriously damaged, killing over 18,000 students, resumption of classes in the affected areas

was a major undertaking. Where possible, the FRC provided large tents for establishment of schools, augmented by INGOs and UNICEF. Classes thus began in temporary schools. As teachers were among the affectees and many had shifted to refugee camps, they were enrolled to run schools in the camps. The military also contributed to the running of schools in camps managed by them, as well as helping repair damaged schools. For Muzaffarabad University students who could be housed in Islamabad, arrangements were made to attend evening classes in educational institutions in the capital.

From Relief to Early Recovery and Reconstruction. The shift in the earthquake response from relief to early recovery and reconstruction was a graduated one. While recovery efforts got underway, relief operations also continued. This 'residual relief' included, for example, provision of CGI sheets for people to construct semi permanent shelters — since it would take much longer for homes to be rebuilt. One of the crucial aspects of this so-called 'transitional phase' was the need to ensure there were no gaps between relief, recovery and reconstruction, and that planning for recovery and reconstruction took place alongside relief operations. Along with everything else, the earthquake had destroyed the sources of income generation for many people. Food-for-work and cash-for-work schemes and similar programmes were introduced to enable people to start to provide for themselves; the nature of the work, e.g. rubble clearance, had the dual benefit of supporting post-quake reconstruction. For those returning to their homes and/or starting reconstruction, efforts were made to ensure they were fully informed about 'high risk', 'low risk' and 'risk-free' zones, and that the specified reconstruction materials were available, compensation had been paid, and technical support was provided for rebuilding. One of the important factors determining all reconstruction initiatives was the need to prevent, or at least mitigate against, similar disasters being repeated. This entailed, for example, ensuring strict adherence to new building codes and strengthening of existing buildings to make them quake-resistant.

Lessons and the Way Ahead

Based on the challenges and problems faced in the handling of the 2005 earthquake, the following key lessons for the future can be identified:

a. **Permanent National Disaster Management Authority.** There is a clear need for a permanent body to deal with various aspects of disaster risk management, including mitigation, preparedness, emergency response and recovery. Such an organization should have a permanent core staff but with capacity to greatly increase this at short notice. It should have access to a constantly updated national database of information and, based on this, should prepare and constantly refine contingency

planning. The organization should have the authority and ability to coordinate and harness support from different Government agencies and departments, as well as wider aid agencies, NGOs and civil society. It should be In regular contact with all these stakeholders to ensure effective coordination when disaster strikes.

b. **Robust Mandate and Political Support.** The Disaster Management Authority must have a strong mandate to control and synergize national effort. It must enjoy absolute political support and accessibility to the chief executive for quick decision making.

c. **One-Window Operation.** Disaster Management has to be a one-window operation. However, the procedure must be such that it does not cause a bottleneck. All government departments involved in relief and rescue including Armed Forces must become part of apex body and take instructions from it.

d. **Disaster Risk Reduction.** One of the most important lessons learnt in the aftermath of the 2005 earthquake was that promotion and adoption of risk reduction approaches from national down to community and family levels is the key to reducing loss of lives and property. Over 73,000 lives were lost because the communities in the affected regions were not aware of safe construction technologies, nor did they know what to do to save lives in the event of an earthquake. The huge losses to public sector infrastructure (including schools, health facilities, roads and bridges) showed the need to integrate an element of risk assessment and vulnerability reduction into sectoral development planning and implementation. This is essential for Pakistan to reduce losses and damage from disasters and thereby achieve sustainable social, economic and environmental development.

e. **Early Warning Systems.** Early warning systems can play a significant role in reducing loss of life and casualties in a disaster. Early warning centres should be established in various parts of the country, particularly those that are highly vulnerable to disasters, and equipped with the necessary equipment, technology and staff to enable them to function properly. Dissemination procedures and modes should be developed in advance to ensure rapid transmission of warnings to all affected (at risk) populations. Experts at these centres and other institutions should work with the NDMA and other agencies to create public awareness of the risk of disasters, measures they can take to mitigate against these, and what they should do in the event of a disaster. The media, in particular TV and radio, could be utilized for this.

f. **National Database.** A national database is an essential requisite for effective disaster risk management, including emergency response. It should contain information on population numbers and spread, livestock, demographic characteristics, infrastructure and facilities, topography, and so on. The database should be updated

regularly and, while centrally controlled for effective coordination and retention of information in one location, should be readily accessible to all relevant stakeholders. Local and Wide Area Network (LAN/WAN) facilities should be provided, which can facilitate links with the various bodies involved in relief operations and thereby ensure real-time information for planners and decision-makers.

g. **Contingency Planning and Preparedness.** Contingency plans are a must to deal with all potential threats and climatic hazards. These plans should also be prepared by the provincial and district disaster management authorities, laying out the roles and responsibilities of various ministries, departments and agencies at each level. There is a requirement of close liaison among various agencies involved in disaster management for quick response. Emergency procedures, cutting down the traditional red tape found in bureaucratic operations, need to be developed and all concerned are required to educate themselves in this regard. Concerted efforts are required to be made to build the capacity of local governments and civil administration, as they are on the 'front line' when a disaster strikes. Contingency plans for local governments should include identification of clear chain of command.

h. **Logistics Planning.** The management of logistics of rescue and relief operations is one aspect of contingency planning that needs special attention and focus. The national authority should be able to calculate requirements (type and quantity) of relief goods in the event of different types and scale of disasters. Likely availability of these goods, in particular basic commodities, should be assessed beforehand. Storage, transportation and other logistical facilities at national, provincial and even local levels need to be identified (in the public and private sector) and arrangements made in advance for their mobilization in the event of a disaster. Regional logistics hubs should be identified in areas that are vulnerable to disasters, and supplies of essential commodities stocked there to ensure speedy provision in emergency conditions. Logistics chains should be worked out and arrangements put in place to ensure flow of information in times of disaster. All national-level acquisition, movement and distribution of huge logistical stocks become an intricate exercise. National logistic resources need to be integrated well before time along with making of comprehensive SOPs.

i. **Transport Infrastructure.** Cargo handling capacity at air, sea and dry ports should be enhanced to be able to handle the considerable extra influx of goods in an emergency response. This includes equipping them with the necessary machinery and technology to be able to discharge and transfer goods speedily. In addition the railways, the major national goods carriers within the country, should be improved so as to be able to transport large quantities of goods at short notice.

Conclusion

Pakistan's handling of the 2005 Earthquake—'the most devastating natural disaster in its history'—had much to be proud of. Given the 'back foot' from which the national quake response was launched, and the numerous challenges that had to be overcome in an extremely short period of time, Pakistan did well. However, resting on one's laurels is not an option. Many serious problems and issues were faced, and improved handling of these would have led to an even more effective humanitarian response. The analysis is expected to provide information with regard to disaster management which could be useful in the event of any calamity. It must be remembered that success will depend upon a centralized guided, national and international joint response, with decentralized execution at the operational and tactical level.

Annexure A

LIST OF MAJOR DONORS IN RELIEF ACTIVITIES

Ser	Items	Quantity	Remarks
1.	Tents	950,440	
2.	Blankets	6,500,000	
3.	Ration	256,400 Tonnes	
4.	Medicines	3054 Tonnes	
5.	Miscellaneous	131,000 Tonnes	
6.	Aviation Sorties	33,300	
7.	Compensation Paid	22 Billion	
8.	K-2 Oil	2 Million Litres	

Annex B

SUMMARY OF RELIEF PROVIDED – EARTHQUAKE 2005

Country	Cash Donated	Amount Pledged	Tents	Blankets	Rations (Tons)	Medical Assistance	Miscellaneous Items
Thailand	-	$0.4 million	-	-	-	-	-
Turkmenistan	-	-	150	-	-	-	23.62 Tonnes
Turkey	$6.4 million	$150 million	9,000	1,050,000	55,000	9 x Field Hospital and 114 Tons medicines	81.01 Tonnes
UAE	-	$100 million	-	-	-	-	600.74 Tonnes
UK	-	$121.143 million	-	-	-	-	117.32 Tonnes
Ukraine	-	-	-	-	-	100 Bed Field Hospital	365.78 Tonnes
UN	-	-	-	-	-	-	108.03 Tonnes
USA	$4.4 million	$510 million	7,222	189,827	205	2 MASH and 105 Tons medicines	1018.57 Tonnes
Uzbekistan	-	-	-	-	-	-	16.26 Tonnes
Vietnam	$100,000	$0.1 million	-	-	-	-	-

LIST OF ABBREVIATIONS

S.No.	Abbreviation	Full Word
1.	AJ&K	Azad Jammu and Kashmir
2.	AMC	Army Medical Corps
3.	DEWS	Disease Early Warning System
4.	EPI	Expanded Program of Immunization
5.	ERC	Emergency Relief Cell
6.	ERRA	Earthquake Reconstruction and Rehabilitation Authority
7.	FRC	Federal Relief Commission
8.	GHQ	General Headquarters
9.	ICRC	International Crescent of Red Cross
10.	IDPs	Internally Displaced Persons
11.	INGOs	International Non Governmental Organization
12.	LAN / WAN	Local Area Network / Wide Area Network
13.	LHVs	Lady Health Visitors
14.	LHWs	Lady Health Workers
15.	MoFA	Ministry of Foreign Affairs
16.	MoH	Ministry of Health
17.	NADRA	National Database and Registration Authority
18.	NATO	North Atlantic Treaty Organization
19.	NCMC	National Crisis Management Cell
20.	NDMA	National Disaster Management Authority
21.	NLC	National Logistics Cell
22.	NWFP	North West Frontier Province
23.	PIMS	Pakistan Institute of Medical Sciences
24.	PTCL	Pakistan Telecommunication Company Limited
25.	SCO	Special Communication Organization
26.	TB	Tuberculosis
27.	UC	Union Council
28.	UN OCHA	United Nations Office for Coordination of Humanitarian Affairs
29.	UNFPA	United Nations Population Fund
30.	UNICEF	United Nations Children Fund
31.	USC	Utility Stores Corporation
32.	WAPDA	Water and Power Development Authority
33.	WFP	World Food Programme
34.	WHO	World Health Organization