Earthquake - 8/10

Learning from Pakistan's Experience

National Disaster Management Authority

October 2007

Dedicated to the victims of the
8 October 2005 earthquake
and all those who strived to help them.

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ABBREVIATIONS

AIMS	Abbas Institute of Medical Sciences
AJK	Azad Jammu and Kashmir
ALC	Army Logistics Control (Chaklala)
AMC	Army Medical Corps
ARI	Acute Respiratory Infections
BHU	Basic Health Unit
CBO	Community Based Organization
CGI	Corrugated Iron (sheets)
CMH	Combined Military Hospital
DDMA	District Disaster Management Authority
DEWS	Disease Early Warning System
DHQ	District Headquarters Hospital
DHO	District Health Officer
DMO	Director Military Operations
DRM	Disaster Risk Management
EDO	Executive District Officer (District Government)
ERC	Emergency Relief Cell (Cabinet Division)
ERFO	Earthquake Relief Fund for Orphans
ERRA	Earthquake Reconstruction and Rehabilitation Authority
FAB	Forward Air Base
FRC	Federal Relief Commission
FWO	Frontier Works Organization
HMIS	Health Management Information System
HRCP	Human Rights Commission of Pakistan
IASC	Inter-Agency Standing Committee (IASC)
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Persons
IFRC	International Federation of Red Cross and Red Crescent Societies
ILO	International Labour Organization
I/NGO	International/Non-Governmental Organization
IOM	International Organization for Migration
ISPR	Inter-Services Public Relations
LHV	Lady Health Visitor
LHW	Lady Health Worker
LOC	Line of Control
MASH	Mobile Army Surgical Hospital
MDMA	Municipal Disaster Management Authority
MOB	Main Operation Base
MoFA	Ministry of Foreign Affairs
MoH	Ministry of Health
MoI	Ministry of Information

MSF	Medicins Sans Frontiers
NATO	North Atlantic Treaty Organization
NCHD	National Commission for Human Development
NCMC	National Crisis Management Cell (Pak Army)
NDMA	National Disaster Management Authority
NDMC	National Disaster Management Commission
NEOC	National Emergency Operations Centre
NHA	National Highways Authority
NLC	National Logistics Cell
NOC	No Objection Certificate
NRF-5	Nato Response Force 5
NSET	National Society for Earthquake Technology (Nepal)
NVM	National Volunteer Movement
NWFP	North-West Frontier Province
OCHA	Office for the Coordination of Humanitarian Assistance (UN)
PAF	Pakistan Air Force
PDMA	Provincial Disaster Management Authority
PDMC	Provincial Disaster Management Commission
PIPOS	Pakistan Institute of Prosthetic and Orthotic Sciences
PPAF	Pakistan Poverty Alleviation Fund
PRRO	Protracted Relief and Recovery Operation (WFP)
PTCL	Pakistan Telecommunications Limited
RSPN	Rural Support Program Network
SCO	Special Communications Organization
SOP	Standard Operating Procedures
UNDAC	UN Disaster Assessment and Coordination (Team)
UNDP	United Nations Development Program
UNFIP	UN Foundation for International Partnerships
UNFPA	UN Population Fund
UNHAS	UN Humanitarian Air Services
UNICEF	United Nations Children's Fund
UNJLC	UN Joint Logistics Cell
UNOPS	UN Office for Project Services
UNV	UN Volunteers
USC	Utility Stores Corporation
VCGS	Vice Chief of General Staff
WAPDA	Water and Power Development Authority
WFP	World Food Program
WHO	World Health Organization
WLL	Wireless Loop

FOREWORD

It is two years since Pakistan was struck by a devastating 7.6 magnitude earthquake. Killing over 73,000 people and causing injuries, suffering and destruction on a massive scale, the disaster posed an unprecedented challenge not just to the survivors but to the Government, the entire nation and the international community.

I was appointed Federal Relief Commissioner on 10 October 2005. In that capacity I was at the forefront of Pakistan's earthquake response and witnessed firsthand the many problems that were faced and the often innovative ways in which we were able to overcome them. My memories of that period are, of course, of tremendous hard work, new challenges cropping up daily and demands from all sides. But I also remember with reverence those few individuals of the Federal Relief Commission whose selfless devotion and dedication helped make the relief effort a success story. I would also like to mention the tremendous spirit and contribution made by numerous organizations and hundreds of thousands of individuals at home and abroad.

Thanks to all their efforts we were able to mount what the world describes as an effective earthquake response. The biggest proof of this lies in the non-appearance – despite many doomsday predictions – of second and third waves of death due to injuries and disease, and by the avoidance of a further winter disaster.

But even as I feel proud of the way our country, with its limited resources, was able to respond to a disaster that would have challenged the world's richest nations, I am very conscious of things that could have been done better. We did a post-disaster evaluation of various aspects of our response – evacuation of casualties, management of camps, provision of health care, collation, transport and distribution of relief goods, coordination and so on – in an attempt to find out what we did right and, more importantly, where we fell short so that we are better equipped next time.

This report is by no means a comprehensive assessment but it provides a good overview of our disaster response and the lessons we learned from it. Already we are trying to apply those lessons and the National Disaster Management Authority is one such lesson applied. I hope that this report will raise awareness of all decision-makers, responders and many other stakeholders who are involved in disaster management.

The most important lesson of my experience is the importance of collective effort. Disaster management is a task that can never be accomplished by one agency or organization; it has to be a joint endeavour. I am grateful to all those who joined hands with us after the disaster of 8 October 2005. I urge everyone to strive and ensure that the next time disaster strikes our collective response is even stronger.

Lt. Gen. (Retd) Farooq Ahmad Khan
Chairman, National Disaster Management Authority

INTRODUCTION

On 8 October 2005 Pakistan was struck by the most devastating earthquake in its history. Affecting an area of some 30,000 sq. km, largely in Azad Kashmir and the North-West Frontier Province, it caused over 73,000 deaths, left many more people seriously injured, and destroyed homes, schools, hospitals and infrastructure on a massive scale.

This report describes Pakistan's experience of handling such a huge disaster. Written from the perspective of the Federal Relief Commission, it focuses on the period up to March 2006 (when the FRC was merged with the Earthquake Reconstruction and Rehabilitation Authority, ERRA) and details the response to the earthquake including rescue and relief operations, management of displaced people, restoration of infrastructure, and so on. The report deliberately does not provide extensive figures and statistics. Its focus is rather on the overall approach and strategy taken by the authorities and the many other organizations and agencies involved in the quake response, and on the effectiveness of that approach.

As well as documenting experiences and providing a historical record, the aim of the report is to highlight the key lessons learned. Disaster management is an extremely difficult undertaking: each disaster poses its own problems and challenges, and there can be no set blue-print or plan to deal with every disaster – the approach and strategy to dealing with each is only really decided as it happens. But 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 report highlights the main lessons, best practices and strategies, as well as mistakes or weaknesses, which emerged from Pakistan's experience of handling the 2005 earthquake.

This report will clearly have tremendous utility for Pakistan, and for the National Disaster Management Authority (NDMA) which was established in March 2007 in the aftermath of the 2005 earthquake. But it will also be useful for other countries. Sadly, massive natural disasters – earthquakes, floods, hurricanes, cyclones, forest fires – are becoming increasingly common and disaster management is a challenge for developed and developing countries alike. It is hoped that the experiences and lessons documented in this report will help all of us to deal with such calamities more effectively.

8 OCTOBER 2005 EARTHQUAKE

'The morning of 8 October started as any normal day but...What happened that morning, a massive earthquake covering many parts of Pakistan, Azad Kashmir and occupied Kashmir, changed the lives of thousands of people. What was built in decades and generations was lost in seconds.'

Prime Minister of Pakistan, Address at FRC Seminar in March 2006

The 8 October 2005 earthquake, measuring 7.6 on the Richter scale, struck at 8.52 am. The epicenter of the quake was situated 90.2 km north-north-east of Islamabad, in Azad Jammu and Kashmir (AJK). Covering a total area of some 30,000 sq. km, five districts of Azad Kashmir – Muzaffarabad, Bagh, Poonch, Rawalakot and Neelam - and five of NWFP – Mansehra, Battagram, Kohistan, Abbotabad and Shangla - were the most badly affected with damage on a massive scale. But the impact was felt as far away as Islamabad and northern parts of Punjab. The 11-storey Margalla Towers Apartment Complex in the capital collapsed killing dozens of residents.

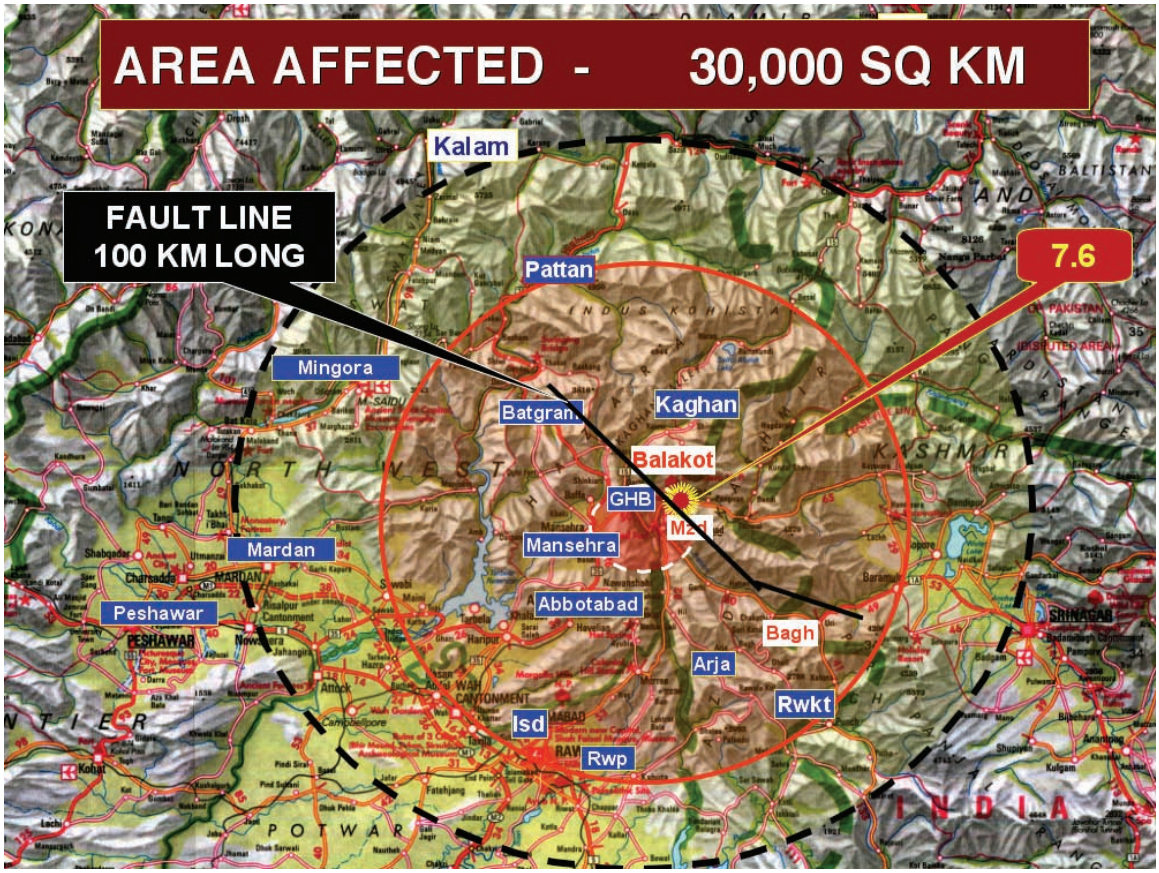

Fig 1: Epicentre and area affected by the 2005 earthquake.

It took several days and weeks 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 (see Table 1). 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). There was also extensive destruction and damage caused to roads, water pipes (one-third of primary roads in AJK and NWFP were affected), sanitation facilities, power supplies, telecommunications and other amenities. (See Table 2) And there was the environmental damage caused by the quake: dozens of landslides, blocked rivers and springs, destroyed woodland. Civil administration in the quake-hit areas was seriously eroded as government buildings were destroyed and government personnel killed alongside the civilian population. Army barracks and regiments present in NWFP and Azad Kashmir were also decimated.

Table 1: Earthquake Damage - Human Toll

	Dead	Injured
Muzaffarabad	34,173	56,526
Mansehra	24,511	35,306
Bagh	8,157	24,000
Battagram	3,232	3,279
Rawalakot	1,078	2,021
Kohistan	661	2,000
Abbotabad	515	2,500
Army (AJK)	456	766
Shangla	423	957
Islamabad	74	101
Others	58	853
TOTAL	**73,338**	**128,309**

Table 2: Earthquake Damage - Physical Toll

Housing Units

No. Destroyed	Pre-Quake Total	% of Total Destroyed	Population Affected (mn)
600,152	787,583	76.2%	3.5

Schools and Colleges

	Destroyed/ Damaged	Pre-Quake Total	% Destroyed/ Damaged
AJK	3,685	3,879	95%
NWFP	3,984	7,577	53%
TOTAL	7,669	11,456	66.94%

Health Care Facilities

Destroyed/Damaged	Pre-Quake Total	% Destroyed/Damaged
574	782	73.4%

Roads: Length Affected/Total Length (km)

	Damaged	Pre-Quake Total	% Total
AJK	2,366	5,305	45%
NWFP	2,063	6,658	31%
TOTAL	4,429	11,963	37.02%

Telecommunications

	Exchanges	Lines		
	Installed	Disrupted	Installed	Disrupted
AJK (SCO)	132	48	134,841	114,404
NWFP (PTCL)	119	38	20,294	12,902
TOTAL	251	86	249,245	34,196

Fig.2: Human Toll of 2005 Earthquake

Hence, while on the one hand, Pakistan faced 'the most debilitating natural disaster in its history', on the other even the normal administrative capacity was not there to deal with it – let alone the massive organizational, human and material resources needed for the task.

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. These factors both added to the urgency of rescue, relief and recovery operations and the difficulty of the task faced.

Box 1: Seismological Explanation for 2005 Earthquake

The epicenter of the October 2005 earthquake was 11 km NNE of Muzaffarabad, the capital of AJK. It took place along the boundary between two tectonic plates, the Indian Plate and the Eurasian Plate. Movement of the Indian Plate northwards has created a seismic boundary and, as it is pushed under the Eurasian Plate, the potential for massive seismic activity. Several mountain ranges found in the region, including the Himalayas. Pamir, Karakoram and Hindu Kush Ranges emerged as a result of the Indian Plate moving under and pushing the Eurasian Plate upwards. The same compression has also led to huge fault systems developing in the region.

The movement of the Indian Plate is a continuous process that has been taking place over millions of years. Earthquakes are a means for releasing the pent-up energy between the plates. Ironically, the longer an earthquake does not occur, the greater potential there is for large-scale seismic activity, i.e. for an earthquake of high magnitude. [Conversely lots of small quakes would release energy and reduce the chances of a big disaster.] While it is difficult to predict precisely when and where an earthquake will strike, potential for this can definitely be identified. It has long been known that the north of Pakistan is highly vulnerable to earthquakes.

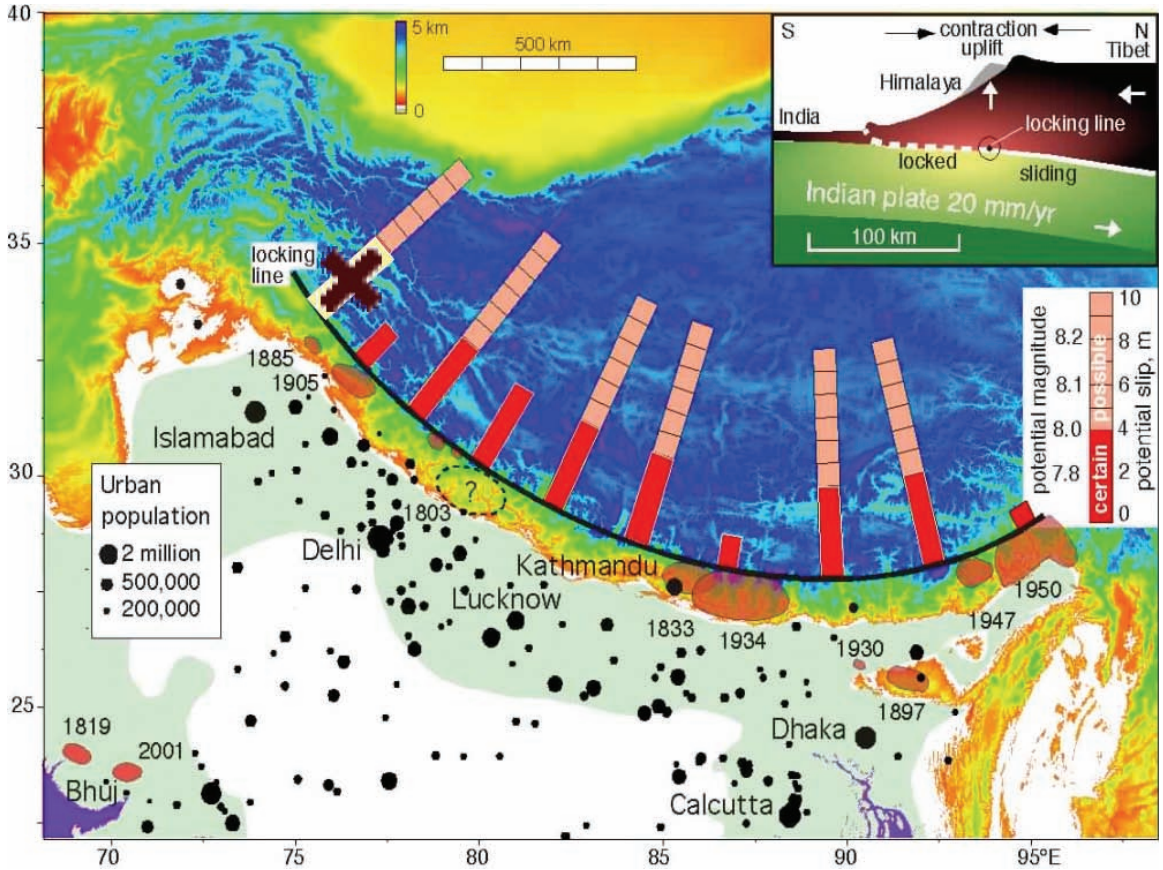

Fig. 3: Previous Quakes in northern Pakistan and India, and Quake Potential

FEDERAL RELIEF COMMISSION

'Strategic direction, planning and coordination through a central authority ensuring integration of all key players at operational and tactical level have been the hallmark and guiding principle of Pakistan's earthquake response.'

Federal Relief Commissioner, Address at FRC Seminar in March 2006

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 Ahmad Khan appointed the first Federal Relief Commissioner. The mandate assigned to the FRC was straightforward: to manage and coordinate the entire relief effort [see Box 2].

Box 2: Role of the Federal Relief Commissioner[1]

"The Federal Relief Commissioner shall coordinate and monitor the relief efforts. He shall report directly to the Prime Minister. All agencies concerned with the relief and rehabilitation efforts, including cabinet, health, interior, foreign affairs, communication and information divisions shall function through him and form a part of the team. For this purpose their representatives will be attached with him. Representatives from the concerned agencies of the armed forces shall also be a part of the team."

The FRC's organizational structure reflected its coordination role [see Fig.4]. It comprised a civilian 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 role of the civilian wing was to ensure effective coordination and inter-agency cooperation.

The military wing had primary responsibility for all rescue and relief operations. It comprised a Relief Planning Cell, Relief Operations Cell, Information Management Cell, Air Liaison Cell and Foreign Collaboration Cell. The broad tasks assigned to these were to: supervise, coordinate and deal with all administrative and other aspects of all rescue and relief operations; collate and provide up-to-date situation reports; coordinate all air operations; and serve as the point of contact with foreign military contingents and aid agencies, monitoring and keeping abreast of their relief efforts.

1 Gazette Notification No. 60/1/2004-E-1, dated 10 October 2005.

Provincial Relief Commissioners were also appointed to ensure proper implementation of the FRC's policies, coordinate relief efforts with the federal government, and identify and highlight priority areas or issues for aid agencies to address.

The FRC was the 'focal point' of the multiple initiatives launched in the earthquake response by numerous individuals, domestic and foreign, government and non-government organizations. It had the critical role of ensuring coordination, avoiding duplication of effort and ensuring that aid reached all those in need. Thanks to strong support from all its constituent organizations and partners, as well as to the active patronage of the country's top leadership and generous assistance from the people of Pakistan, the FRC was largely able to fulfill its mandate. It was merged with the Earthquake Reconstruction and Rehabilitation Authority (ERRA) in March 2006.

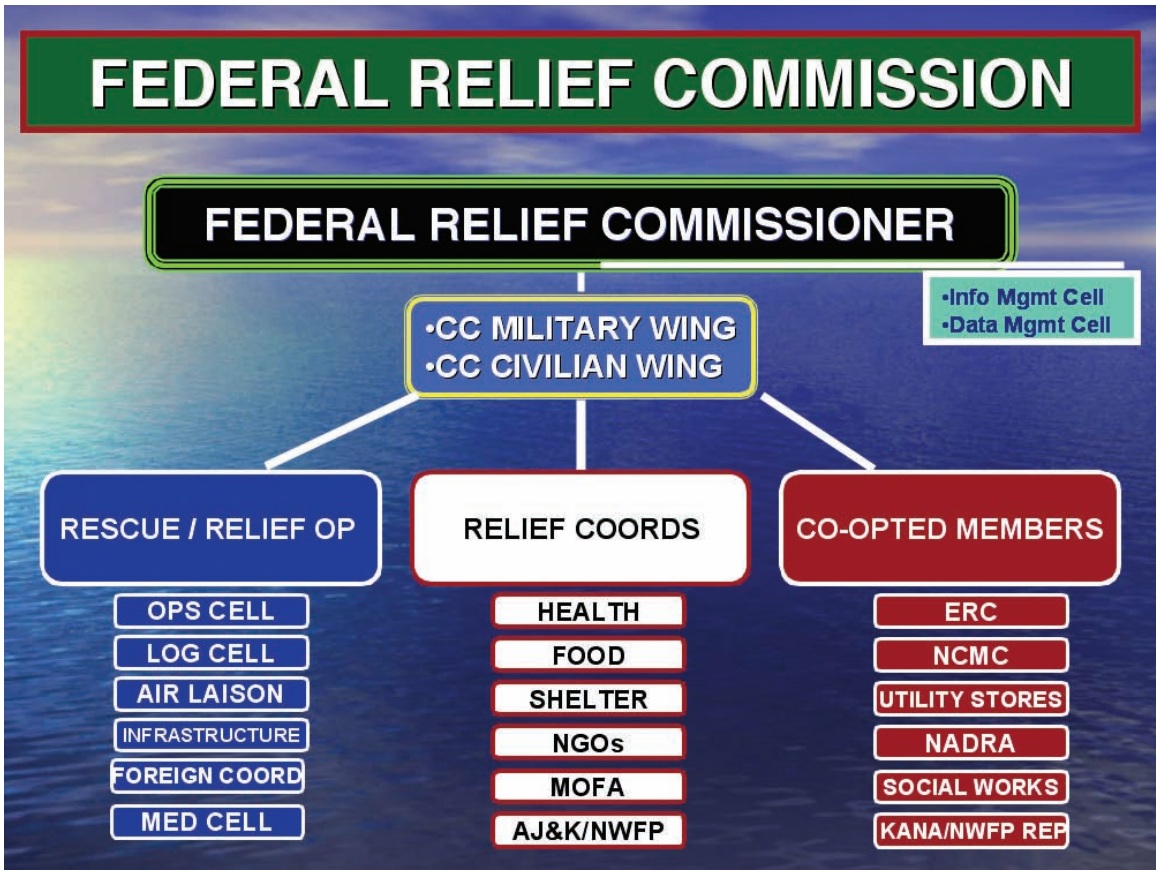

Fig 4: Organizational Structure of the Federal Relief Commission

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The remainder of this report is divided into two main sections. 'Part A: Earthquake Response' details the actions taken in regard to various aspects of the earthquake response – rescue and relief operations, health care, displaced persons, and so on. 'Part B: Role of Key Partners' examines the part played by key stakeholders such as the Pakistan Armed Forces, foreign military contingents and the UN System. This is followed at the end by an assessment of challenges faced and lessons for the future.

PART A:

EARTHQUAKE RESPONSE

1 OVERALL APPROACH AND STRATEGY

'My dear countrymen, we have to face this catastrophe with courage, confidence and unity....Those who died cannot come back, but it is in our hands to work for the better future of the affected areas and their people. And Inshallah, we will succeed.'

President of Pakistan, Address to Nation, 12 October 2005

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. All this 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 basic ethical principles were followed, and that disputes and clashes were kept to a minimum.

The scale of the task facing the FRC was immense as survivors needed everything – food, clothing, shelter....

Any disaster response comprises of a number of stages: immediate rescue and relief to survivors; (early) recovery; reconstruction and rehabilitation. While there is an obvious sequence in which these are carried out, they are not completely discrete stages and there can be considerable overlap between them. Indeed, planning and coordination for recovery begins virtually immediately – thereby laying the foundation for effective reconstruction and rehabilitation. 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 January 2006.

Within rescue and relief, the FRC prioritized a number of areas:

- Rescue of trapped survivors
- Medical treatment of the injured
- Provision of food and water to survivors
- Provision of emergency shelter, clothing and bedding
- Restoration of communications and access to remote areas
- Damage control and maintenance of law and order
- Support to local capacities and efforts

These were immediate priorities, while in the medium- to long-term its goals were:

- Management of displaced people
- Restoration of civil administration
- Restoration of basic amenities
- Early recovery (including restoration of livelihoods)
- Dealing with psychological trauma and stress

The FRC also laid down a number of policy contours or principles to be followed in rescue and relief operations. These were designed to ensure effectiveness and avoid other dangers, such as exploitation of vulnerable people. They included focusing on severely damaged areas, quick evacuation of the injured and/or provision of medical treatment, and utilizing local capacities and available resources such as NGOs. [See next chapter for details.]

The FRC's overall approach to disaster management had a number of critical features, key among which was coordination and strategic planning. Within days of its formation the FRC formulated a National Plan of Action which was then shared with all stakeholders, domestic and foreign. The aim was to evolve consensus on the approach to take in the earthquake response.

Meetings of the so-called 'Strategic Leaders' Group' began within days of the FRC's formation, and these continued on a weekly basis. The group included senior armed forces representatives, foreign military contingent commanders and the heads of all major international organizations/agencies involved in relief operations. Depending on the scope and agenda of each meeting, area specialists also attended. Under the chairmanship of the Federal Relief Commissioner, the group reviewed progress, discussed strategies and decided policies – all through consultation. [This approach was replicated in Bagh, Muzaffarabad and Mansehra with local military headquarters ensuring tactical level coordination and implementation by all concerned agencies, government departments and military units.]

Lower level regular stakeholder consultations also continued, part of a constant effort to develop common operating practices, take strategic decisions and ensure that guidelines were issued to all concerned agencies. To further this objective, permanent focal persons/liaison officers were nominated in each agency; their role was to support inter-agency coordination and integration of effort, and to resolve tactical issues. Specifically in regard to logistical arrangements a Joint Operational Centre, with representation from all logistical support elements, was set up to plan, coordinate and implement the logistics effort (including air traffic). The FRC was also able to coordinate the employment of volunteers mobilized through the National Volunteer Movement.

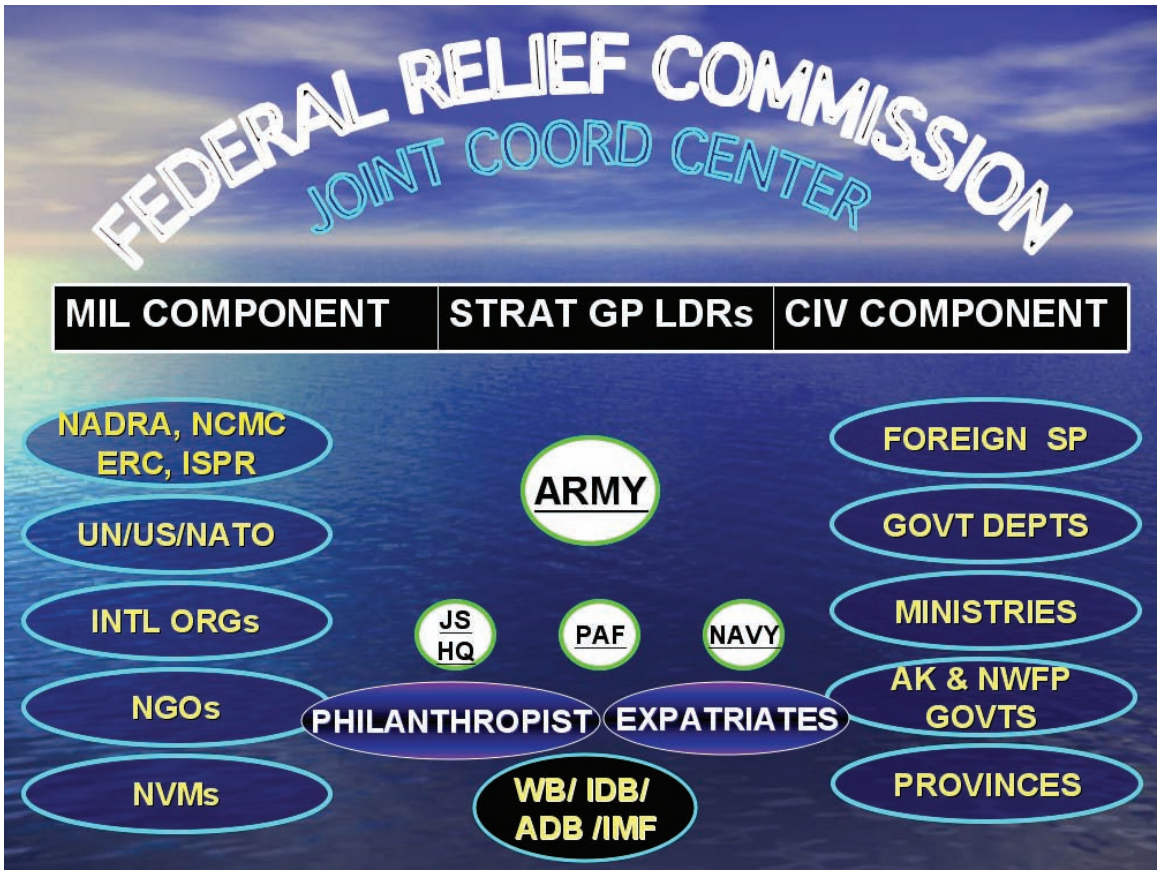


Fig.5: FRC's Position in Relation to Major Stakeholders in Quake Response

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 Pakistan Army was in the forefront of search, rescue and evacuation operations, and the provision of emergency relief supplies. It was ably supported in this by the PAF, which coordinated air operations including with foreign aircraft. The 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 and the UN System stand out for playing an especially vital role. NATO, US and UN troops greatly assisted relief and rescue operations, provided medical assistance and helped in debris removal and restoration of services. The UN System's quake response was coordinated by the UN

Humanitarian Coordinator. For the first time in Pakistan, a cluster approach was followed whereby all assistance was divided among thematic clusters, each with its own leader [see section 8.2]. The FRC followed the same cluster approach, thereby ensuring effective coordination of relief efforts. Donors coordinated directly through the FRC.

The response to the 2005 earthquake was also characterized by remarkable support from the Pakistani public (at home and abroad), NGOs and civil society organizations. The nation mobilized in an unprecedented way to provide food, clothing, other items and services (medical, psychological, teaching, etc) to the earthquake survivors. The media played an important role in this by raising awareness of the plight of the survivors. The challenge for the FRC was to ensure that all the public help was channeled effectively to where it was needed.

In short, the Pakistan Army, PAF, MoFA, ERC, NATO, UN, INGOs and many other organizations worked together under the auspices of the FRC to try and achieve a coordinated, rapid and effective response to the massive disaster that had struck Pakistan. The following sections describe the experience of handling various aspects of the earthquake response.

Under the leadership of President Musharraf and Prime Minister Shaukat Aziz, and thanks to the strategic direction and coordination provided by the FRC, Pakistan was able to mount an effective quake response. Friday prayers after a meeting at Prime Minister's Secretariat on 14 October 2005. [Federal Relief Commissioner Lt. Gen. (Retd) Farooq Ahmad Khan is on the far right.]

2 RESCUE AND RELIEF OPERATIONS

'Rescue and relief was not a small thing particularly as we did not have any expertise in rescue and relief operations and did not have any national disaster management agency...But the success story is that at the end of the day when we traveled through the earthquake area, we found that every house had a tent, everybody had rations, everybody had medical aid, everybody had some type of relief available to him – that was the success of this operation.'

Saeed Ahmed Khan, Chief Coordinator FRC speaking at FRC Seminar in March 2006

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 AJK 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 the continued supply of food and other provisions during the transition phase.

2.1 Rescue Operations

Rescue operations were particularly difficult because of the lack of professionals and specialized machinery. Debris removal, searching for and rescuing the trapped and injured was carried out by local people supported to the limited extent possible 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 as they became established in the quake zone. Of the total injured moved out, 17,000 were evacuated by helicopter. On 8 October 2005 alone 709 casualties were evacuated by helicopter to hospitals in Islamabad, Rawalpindi and other places. The first batch of casualties had arrived by 11.25 on the morning of the quake. 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 (see section 5.2).

Rescue operations were challenging, whether in Islamabad (top) or AJK (bottom).

2.2 Relief Operations: Challenges and Overall Approach

The main thrust of relief operations was on the provision of basic human needs to the survivors, i.e. food, water, clothing, bedding, shelter and medicines. 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.

- An immediate issue was the emergency situation – the fact that large numbers of people were in desperate need of food and other basic provisions.
- The terrain, spread over 30,000 sq. km, was difficult at the best of times, but made infinitely more so by the destruction to roads, bridges and other infrastructure caused by the earthquake. Many remote areas were rendered completely inaccessible by any means but air transport. The heavy influx of vehicles into the affected areas as part of the earthquake response caused further blockages.
- The affected population numbered several hundred thousand, meaning that huge quantities of goods were required. However collection and collation of information took time, so relief planning had to be carried out without an accurate assessment of the total numbers of people affected, where they were and the quantities of relief goods they required.
- The looming winter, which would cut off some routes and bring severe cold, added to the urgency of the relief operation.
- 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 AJK and even in NWFP it took a long time for these to come into play.

Providing relief to 3.5 million affectees across a 30,000 km² area was a huge undertaking.

- 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. Clearance of goods on entry was problematic for similar reasons.
- With so many different agencies and organizations involved, huge quantities of different kinds of relief goods, supplies coming in from different sources, and all needing to be transported to and distributed in the affected areas, coordination of the whole operation and integration of relief efforts was extremely challenging.
- There were various issues with transport of goods: finding the necessary numbers 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 diaspora (this was arranged for priority goods through PIA and other airlines).

Quake survivors waiting for relief goods at a centre established by the Army.

The FRC identified at the outset a number of policy contours for relief operations. Though not always easy to achieve in practice, these were important for ensuring the maximum benefit could be gained from relief efforts and those most in need could be reached. The policy contours included:

- Pursuit of emergency relief efforts by air, focusing on severely damaged areas, whilst simultaneously continuing efforts to restore road access and communications;
- Mobilization and integration of relief efforts by local administration, various organizations and aid agencies, local people and volunteers – thereby converting diversity into strength – and allowing greater outreach and access to survivors;
- Distribution of relief goods to take place from front to rear, from heights to lower grounds and from urban to rural areas;

- Ensuring smooth road and air traffic management, and maintenance of law and order;
- Ensuring the provision of temporary shelters to house displaced persons/the homeless, and bringing about the restoration of essential services, communications infrastructure and civil administration through a graduated approach.

With such a vast area involved and such huge numbers of people, 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 therefore assigned responsibility for specific areas of AJK and NWFP, ensuring that the areas given to a particular agency were geographically contiguous. With regard to food supplies, the distribution of localities among agencies was as follows:

a) AJK Government – areas of AJK affected by the quake;

b) NWFP Government – areas of NWFP affected by the quake;

c) WFP – a population of 1 million located in certain inaccessible and remote areas of AJK and NWFP, just for distribution of food which was provided by the Government.

This division of responsibility was until 31 March 2006; thereafter the provincial governments were responsible for supply of goods to all their respective populations. In addition, smaller NGOs and other organizations were allowed to supply goods wherever they could. The other major institutions involved in Operation Lifeline were the FRC, ERC and the Pakistan Army, as well as the International Committee of the Red Cross (ICRC) and the Utility Stores Corporation (USC) which provided the whole food chain [see 2.3 below].

The implementation strategy and mechanisms for relief provision were formulated in the light of ground realities, including availability of transport, storage capacity, the weather and so on.

2.3 Procurement of Goods: National and International Community Assistance

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 stipulated in the relief supplies' policy.

Thousands of tons of relief goods were provided by the people of Pakistan. The Government and people of Punjab were especially generous and active in mobilizing supplies [see Box 11 in Section 9.1]. Local and national NGOs, individuals, schools and colleges and many others all sent supplies to help the quake survivors. Also notable was the contribution of the Utility Stores Corporation (USC) of Pakistan. USC opened 33 containerized outlets in the affected areas and distributed over 15,000 tons of rations. Its contribution included supply of 73,610 bags of composite rations between 9 October and 14 November 2005, provision and transport of 7 days' reserve stocks for 1.5 million people (10,354 tons), distribution of 1,500 tons 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 to the plight of the earthquake survivors, particularly as the massive scale of the disaster became apparent. A total of 68 countries sent supplies to help the quake affectees. Particularly notable, and useful, were the contributions of Turkey (including 55,000 tons of rations, over 1 million blankets); Sri Lanka (3,000 tons of rations), China (210,880 blankets, 14,000 tents, 64 tons medicines); Saudi Arabia, Japan and the US (incl. 189,827 blankets).

Box 3: Relief Contributions by Turkey

The relief contributions by Turkey proved extremely useful in meeting the food requirements of the earthquake survivors. Turkey sent 100 containers of rations by road. It provided 55,000 tons of food, over 1 million blankets and 9,000 tents. The combined food stuff donated by Turkey and Sri Lanka was divided between AJK and NWFP as follows:

AJK – 20,000 tons flour, 300 tons soybean oil, 200 tons rice, 100 tons sugar;

NWFP – 20,000 tons flour, 300 tons oil, 100 tons rice, 100 tons sugar;

Reserve – 10,000 tons flour, 150 tons oil, 194.7 tons rice, 50 tons sugar.

Turkey also set up 9 field hospitals and provided 114 tons of medicines. And it made cash donations of $3.5 million and $3 million respectively to the President's Relief Fund and UN agencies, and pledged a further $150 million in assistance at the Donors' Conference held in November 2005.

The Turkish Red Crescent Society was very active in supporting Pakistan deal with the quake disaster. It launched three campaigns in Turkey to raise funds for the survivors: 'They were always with us, now it is our turn', a 'Qurbani campaign' and 'Lets have a house in Pakistan', which together raised over $60 million. Its activities in Pakistan included setting up two tent villages catering for 5,000 people, running bakeries in Muzaffarabad and Bagh, setting up a field hospital (delivered within 24 hours of the quake) in Muzaffarabad, distributing relief goods to nearly 1 million people through a military relief team. The Turkish Red Crescent is continuing its support with projects for reconstruction and rehabilitation.

The international community also gave support in other forms. Japan sent 120 rescue workers; China sent a 50-member rescue team with sniffer dogs to rescue survivors; and Germany sent a search-and-rescue team. Cuba sent 2,575 medical personnel who set up 30 field hospitals in the affected areas. Iran provided two helicopters to support the relief effort and 22 vehicles (15 ambulances, 4 buses, 2 vans, 1 jeep). It also set up two 50-bed field hospitals and gave 4 tons of medicines. The US set up 2 MASH hospitals and provided 159 tons of medicines. Japan set up a field hospital and provided heavy machinery to clear rubble (10 excavators and 10 bulldozer-cranes). [See section 7.2 for support by foreign military contingents, and Annexes 1 and 2 for details of donations from individual countries.]

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 tons of food and 1,275 tons of non-food items.

2.4 Receipt and Handling of Relief Goods

Clearance of foreign relief goods was assigned to the ERC – it issued 2,170 NOCs to various consignees. However in order to facilitate the import of relief goods, the FRC issued a clear policy for certification of these. Consignments in the name of the FRC, for example, had to be certified by an authorized FRC officer; those for ministries, departments or provincial bodies

had to be certified by officers from the respective organizations; shipments for non-government parties such as international organizations had to be certified for clearance by the ERC. This clarification of procedure and responsibility proved a great help in ensuring rapid clearance of relief goods. The entire process of securing clearance for relief goods did not take more than 24-36 hours.

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. The first aircraft bearing relief goods from abroad, came from Iran and landed at Chaklala Airbase on 9 October. Chaklala-Islamabad was the main hub for receipt of goods from across Pakistan and abroad, and for onward distribution to the affected areas. 983 relief flights landed at the Airbase, with a further 644 relief flights received at other civil airports: Karachi, Lahore and Peshawar.

Massive quantities of relief goods came from the international community and the Pakistani people.

Goods from different parts of the country were transported using private civilian (hired and voluntary) vehicles, as well as NLC containers. 400 of the latter were used to move goods from Karachi to Rawalpindi. In addition large numbers of containers came by road from other countries: 100 each from China and Turkey, for example, and 40 from Iran. Goods were also moved by train and in the later phase of the supply operation all relief goods from abroad received in Karachi, e.g. wheat flour and oil from Turkey and rice from Sri Lanka, were sent onwards by train. Some relief goods also came from Iran by rail. 530 containers, carrying 17,660 tons of relief supplies, came by sea to Port Qasim and Karachi Port.

Soldiers at Chaklala Air Base helped load relief goods for transport and distribution to forward areas.

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. The warehouse at Chaklala was managed by 12 AK Regiment. They helped in loading and unloading supplies from aircraft, sorting and warehousing relief supplies, maintaining an inventory of all goods received, and packing goods in bags for distribution in forward areas.

The ALC HQ also organized onward dispatch of relief goods. Commander Corps Logistics and Divisional Logistics coordinated the forward movement and distribution of goods. Forward bases were established at Muzaffarabad, Bagh and Rawalakot in AJK, and Mansehra, Batagram and Balakot in NWFP. Transport was undertaken using truck convoys and heavy-lift helicopters. Chinooks provided by the US Army made a major contribution to the relief effort. In total 23,552 tons were transported by the Army Logistics Control HQ.

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.

2.5 Transport to Affected Areas and Distribution

The transport of relief goods to the affected areas began as soon as they arrived. On 9 October Army 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.

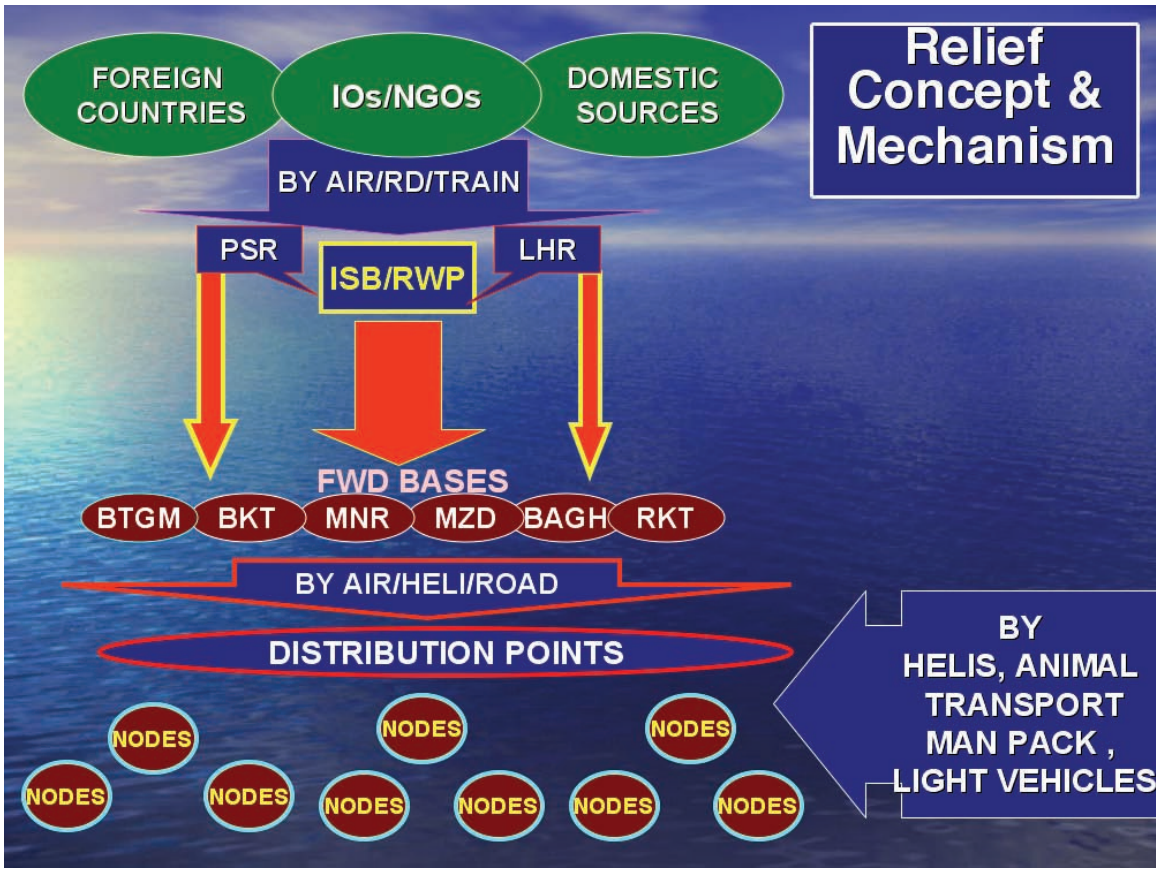


Fig.6: Flow of relief goods to affected areas.

Because of the massive destruction to road infrastructure wrought by the quake, the main means of getting goods to stricken populations in AJK 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 28,639 sorties; as well as transporting some 6,000 tons of relief goods/rations to the forward areas they evacuated 17,150 causalities. The Air Force carried out 491 sorties to move goods from Karachi to Islamabad, and to drop them into the affected areas. The Air Liaison Cell of the FRC also arranged 51 visits by civil and military dignitaries to the affected areas. The aviation support operation is described in detail in section 7.3.

Transport and distribution of relief goods became easier as landslides and other debris were cleared and the main roads were opened (see section 5.2 for details). No amount of aviation effort can compensate for the massive relief effort sent by roads. But where roads could not be cleared and to reach the more remote and inaccessible areas, other modes of transport had to be used such as three Animal Transport Regiments of the Army which used hundreds of mules.

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 farmost 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 [see Fig.6].

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.

2.6 Scale of Relief Operation

The overall scale of the relief operation was massive – certainly the largest of its kind ever conducted in Pakistan. As seen initially there was a dearth of accurate information about the extent of damage, precise numbers and location of affectees and hence of the goods required. 3.5 million affectees was agreed as the baseline figure for relief planning, and operations started to supply this number of people with the necessary goods. Also initially it was thought that AJK 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.

In the immediate relief phase, whatever was available in ordnance stores and ration stock of the army was issued and transported to the affected region. This amounted to 100 tons of rations, as well as 7,475 blankets, 385 tents, 15 tons of medical equipment and supplies, and 0.2 million litres of fuel. The massive escalation in the relief operation can be gauged from later figures for relief goods sent to the affected region, given in Table 3:

Table 3: Relief Goods Provided by end March 2006

Item	Quantity
Tents	950,440
Blankets	6.5 million
Rations	256,400 tons
Miscellaneous Items	131,000 tons
Medicines	3,054 tons
K-2 Oil	2 million liters
Compensation Paid	Rs.22 billion

Much of this came from various Pakistani government entities, notably the Pakistan Army, Utility Stores Corporation, and ERC; Table 4 gives figures of total expenditures incurred by these.

Table 4: Expense Incurred on Relief Operations

Organization	Assistance Provided	Expense Incurred
Armed Forces	Relief activities	Rs.5,733.293 million
Utility Stores Corporation	Rations	Rs.371.668 million
Emergency Relief Cell	Relief goods and transportation	Rs.659.337 million
	Total	**Rs.6,764.298 million**

2.7 Coordination

A number of mechanisms were put in place to promote effective coordination of the massive relief effort, which it must be stressed involved many many different organizations, institutions and individuals.

The FRC had a central coordination role, with responsibility for overseeing the overall provision and distribution of relief, monitoring and streamlining operations. It also supported the provincial governments in the procurement of goods, and ensured the equitable distribution of foreign governments' donated food supplies, along with arranging the opening of Utility Stores in the affected areas.

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 (see section 9.2) 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.

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. Coordination meetings were regularly held at Army Divisional Headquarters. These included the FRC, UNOCHA, cluster heads, the civil administration and local people in the affected areas. 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 – assist in this. The provincial governments provided details of relief camps to all other stakeholders. In addition, to ensure grassroots level coordination, periodic 'conferences' were held between local army commanders, civil administration personnel and local elected officials. An important coordination mechanism was the cluster approach pioneered by the UN. This provided strategic direction to relief efforts, clearly identifying areas in which relief assistance was needed, and assigning overall responsibility for each cluster to one agency.

2.8 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 AJK and NWFP.

Prior to the 2005 earthquake only a limited number of foreigners were allowed into AJK by the Pakistani authorities. Exchange of fire between Indian and Pakistani forces was a regular

occurrence across the LOC, and even with the recent Indo-Pak peace initiatives it remains a troubled region. Additional concerns were posed by the conservative nature of society. Because of these concerns most countries, including the US, Britain and Australia, had issued travel advisories to their nationals urging them to keep away from Kashmir and advising at best restricted movement in NWFP. Many international aid workers came from those countries.

The widespread destruction caused by the quake could have led to law and order issues, but these were effectively controlled.

Restrictions on entry to the quake zone were lifted quickly. Security was provided for these personnel, primarily by the Army and within it the Rangers. But the Government also showed flexibility, in that for foreigners and aid organizations who did not want a police escort, their wishes were respected. No restriction was placed on their access to the affected areas. Thanks to the provisions put in place, the various international organizations and personnel working in the affected areas never faced any threat.

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, acting as interpreters and interlocutors, 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 was stable.

Thanks to all these measures a relief operation that could have been a logistical nightmare, was able to function relatively smoothly – though of course problems constantly cropped up. The effectiveness of the overall approach taken to relief provision can be gauged from the following: no notable cases of duplication of relief goods were reported in any sector; there were no reported gaps in the execution of relief operations; and there was no major breakdown in law and order. Furthermore the typical second and third waves of death that follow any disaster – due to people dying of injuries and to the spread of disease and epidemics respectively – were not seen, and nor was the predicted 'winter disaster' (large numbers of deaths due to people's incapacity to survive the severe cold in the winter months).

Key Lessons

- A dedicated permanent disaster management body should be established to ensure a speedy, unified response to any disaster. This must be a 'one window' operation. [See Section 10 for details]

- In the wake of a disaster arrangements should be made for effective information management enabling monitoring, collation and dissemination of information to all stakeholders. There should also be proper secretariat support for disaster management, possibly with secondments from key partners under pre-determined agreements.

A) Rescue

- Specialized search and rescue teams equipped with the latest equipment and trained personnel should be available domestically to participate in rescue missions and avoid the dependence on foreign rescue teams.

- A central database should be maintained of personnel and equipment available with all organizations.

- Training in rescue operations should also be provided at school, college and university level.

- Arrangements must be made to ensure members of the public have easy access to information and can get their queries (about loved ones, what donations to give, etc) addressed quickly. These could include posting updated information on a website, setting up call centres, giving telephone numbers of personnel on ground.

B) Relief

- The arrival of relief support from lots of different sources (aid agencies, NGOs, civil society, individuals) should be anticipated and mechanisms put in place to ensure coordination and prevent wastage/duplication

- For effective relief operations geographic (and/or sectoral) areas of responsibility should be assigned from the outset and strictly implemented.

- The presence of national and particularly international experts should be availed for capacity-building of local personnel and planning of reconstruction work.

- Local community participation in relief and recovery efforts should be encouraged so as to avoid a 'dependency mentality' and speed up the recovery process.

3 MANAGEMENT OF CASUALTIES AND HEALTH CARE PROVISION

'There was a strong focus on medical care and evacuation as every second matters. You lose a life if you are late.'

Prime Minister of Pakistan, Address to FRC Seminar in March 2006

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. At the same time there was a pressing need to provide treatment to thousands of casualties, many with serious injuries, and to deal with the longer-term health risks posed by the disaster. Emergency medical care was thus an immediate priority of the earthquake response, closely followed by the restoration of basic health services. It was also one of the most challenging aspects of the immediate response.

3.1 Emergency Medical Care Providers and Coordination of Efforts

The Government, national and international NGOs, the donor community and the Pakistani public were quick to mobilize medical supplies and personnel to help the survivors of the October 2005 disaster.

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) were embedded in the FRC to undertake this daunting task under one strategic direction. It laid down policies, priorities, kept track of patients, coordinated deployment of local and international medical assistance. Simply put it was the nerve centre of the biggest casualty management operation in Pakistan's history.

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. CMHs and Army Hospitals in the affected areas were also destroyed but outside facilities, e.g. CMH Rawalpindi, played a major role in treatment of earthquake survivors. The Army also had a key role in the supply and management of medicines and other items, which were sent by the FRC along with other relief goods. In later stages, the combined resources of station health organizations of different garrisons were mobilized to place preventive/public health teams in Muzaffarabad, Bagh, Rawalakot and Mansehra.

The civilian response was equally impressive. Within hours and days many national and international teams of medical experts, as well as other volunteers, started arriving in the quake-affected areas bringing with them a range of medical and non-medical supplies. They were able to bring about a huge increase in local capacity to deal with the large numbers of casualties.

Parts of the Turkish medical contingent that arrived to help quake survivors, working alongside Pakistani doctors (left); and the huge Cuban team of doctors and other medical personnel (right).

The earthquake had badly damaged all the local hospitals: the District Headquarters Hospitals at Mansehra, Battagram and Bagh, and the Tehsil HQ Hospital at Balakot. Because CMH Abbotabad was intact it received most of the initial casualties. However within the first two days a 500-bed facility was established in the DHQ Hospital Mansehra, partly inside the Nursing School and partly under tents. The Abbas Institute of Medical Sciences (AIMS) Muzaffarabad was also operationalized. With the help of various medical teams and supplies coming into the region, the Mansehra facility had increased its capacity to 2,500 beds within one week of the disaster, and the number of beds at AIMS also increased.

Many casualties evacuated by helicopter were brought to these base hospitals at Mansehra, Muzaffarabad, Bagh and Rawalakot. They were able to treat many of the injured, but serious cases were referred to tertiary care hospitals in Abbotabad, Islamabad and Rawalpindi. [Because the Abbotabad Ayub Teaching Hospital was damaged, most patients were kept in tents on the hospital premises.] Given the limited capacity of helicopters and the urgent need for their services to evacuate casualties from the affected areas, a lot of the subsequent evacuation of casualties to tertiary facilities in Islamabad and elsewhere took place by road. Shortage of ambulances was an issue, particularly in the early acute phase of the rescue operation. The Edhi Trust and other NGOs provided ambulances but these were not enough to meet demand. Private hospitals and clinics also assisted in the treatment of earthquake survivors. 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 [see Box 4].

Given the vast number of medical supplies and personnel coming into the quake-affected regions, and the large number of organizations and countries they represented, coordination of medical care provision was extremely important. A number of measures were taken to ensure this. As

Field hospitals were quickly established in the affected areas to enable the injured to be treated there, rather than evacuated to far away hospitals.

part of its cluster approach, the UN had a health cluster for which the lead was assigned to the World Health Organization (WHO). This cluster coordinated 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. The health cluster also worked closely with government agencies to ensure that all assistance supplemented Pakistani initiatives and the overall strategy laid down for health care.

Box 4: Health Policy for Patients Discharged from 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 to be collected by NADRA,
- All patients fit for discharge to be sent to convalescence centres with proper documentation,
- Hospitals ensuring the provision of continued care to them in the centres,
- Patients fully recovered being sent to shelter homes,
- All patient data being submitted to the Ministry of Health, Army Surgeon General and the FRC.
- In the case of fully recovered orphans, destitute women and the disabled, they would be handed over to the Ministry of Social Welfare.

The FRC played an important role in coordinating efforts from the government's side. Continuous liaison was maintained by the Chief Coordinator Health of the FRC with both the MoH and the Medical Directorate, GHQ to ensure that medical teams were placed where they were most needed and could be most useful, that the right kinds of health interventions were carried out, to facilitate interaction between different agencies and streamline the supply of medical goods, and to gather health information – crucial to effective planning and use of resources. Army medical personnel were also heavily involved in coordination efforts.

In the initial acute phase of the earthquake response daily meetings of all the major health partners were held at the FRC to share information, discuss emerging issues and challenges, and provide technical guidance. These later became weekly meetings between WHO as head of the UN (donor) health cluster and relevant officials in the local administration (EDO Health and DHO). Information collection was extremely difficult in the initial days but a Health Management Information System (HMIS) was quickly instituted, which greatly facilitated the process. This entailed computerized data collection of all injured people, deaths, transfers, amputations, and so on from all health outlets in the disaster zone.

3. Public Health Concerns

As well as the immediate casualties caused by the earthquake, the disaster posed a number of additional serious threats to public health:

a) Disease

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. In order to prevent such outbreaks a number of measures were put in place focused on hygiene promotion and safe water use, immunization and use of fumigation, and regular disease monitoring and surveillance.

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.

Local and army health authorities worked closely with WHO and UNICEF to monitor diseases and carry out immunization activities. 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 [see Box 5]. Reports collected at camp and sub-district level were collated by the Disaster Management Cell of the MoH and by WHO.

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, Aga Khan Foundation and AMC units. The goal was to achieve 90-100% vaccination of the populations in the tent villages. Tetanus was a particular concern because of the number of injuries and urgent arrangements were made for vaccines, as these were initially in short supply. In addition MSF (France) established a 20-bed hospital at Mansehra for tetanus patients. AMC and MoH teams also sprayed insecticide in affected areas to control disease spread.

Mass immunization campaigns were carried out in the camps to prevent the outbreak of disease.

Box 5: Disease Early Warning System (DEWS)

Surveillance is the best way to detect and monitor outbreaks of disease, and it allows preventive measures to be put in place before full-scale epidemics occur.

The WHO defines surveillance as 'ongoing systematic collection, collation, analysis and interpretation of data; and the dissemination to those who need to know in order that action may be taken'. The Disease Early Warning System specifically tracks the outbreak of diseases such as cholera, typhoid, malaria. The main goal of the system is to minimize morbidity and mortality due to communicable diseases by detecting epidemics at their earliest possible stages. Under the DEWS, one Medical Officer and one laboratory technician at each basic health facility are given training to focus on the suspected signs and symptoms rather than the probable or the confirmed cases. This information is passed to district and then provincial level.

The effectiveness of all these measures to control disease can be gauged from a comparison of pre-quake disease patterns (average levels between October and February for the previous five years) with those in the months after the quake [Table 5]. With the exception of tetanus cases, which increased slightly, disease levels remained the same or actually fell. Even the onset of winter did not bring the feared rise in cold-related diseases because of the good medical support provided to survivors.

b) Malnutrition

Malnutrition among quake survivors was another concern, and ensuring their nutritional needs were met was a major challenge. The World Food Program (WFP) carried out a major drive to provide food relief, donated largely by the Government, to the affected population in

Table 5: Comparison of Pre- and Post-Quake Disease Patterns		
Disease	**Pre-Quake Level**	**Post-Quake Level**
	(% of patients visiting health clinics)	
Acute Respiratory Infections (ARI) [chest infections, flu, sore throat]	25%	16%
Diarrhea	12%	9%
Measles	Less than 1%	Less than 1%
Diphtheria	Very very low	Very very low
Meningitis	Less than 1%	Very very low
Jaundice (infectious Hepatitis)	Very very low	Less than 1%
Tetanus	Very very low	Less than 1%

collaboration with the army. A survey of camp residents did indicate malnutrition: 10.5% of those in the Mansehra camps had acute malnutrition and 6% of those in the NWFP camps as a whole. However, levels of chronic malnutrition in these camps were 44.5% and 54.8% respectively. Along with high levels of stunting, these indicated malnutrition over a long period of time – pre-dating the October 2005 earthquake.

Even if malnutrition was not primarily due to the earthquake, it was important to tackle it – particularly among children and women. Efforts taken in this regard included: provision of free cooked meals in the large camps, prepared in properly designed kitchen houses; targeted supplementary feeding for children and pregnant/lactating women; and stress on the need to set up nutritional therapy feeding centres.

c) Burns

Burns injuries caused by fires in tents were a hazard that emerged as a result of the earthquake. The cold and need for lighting led many tent dwellers to light candles, lamps and fires inside their tents, which in some cases spread out of control and caused severe burn injuries and even deaths. To prevent these stringent preventive measures were highlighted and implemented at the various tent villages. Treatment of those who did receive burns was initially difficult because there was no burns treatment unit in the disaster area; patients had to be evacuated to the Ayub Teaching Hospital Abbotabad, PIMS Islamabad or the Burns Centre in Kharian. However a Korean team later established a burns treatment facility at Mansehra.

d) Physical and Psychological Trauma

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. However for long-term treatment a number of specialized centres were established in the affected areas: PIPOS[2] set up one at DHQ Hospital Mansehra, and the Limb Loss Foundation (UK) set up a Rehabilitation Unit at Ayub Teaching Hospital. Some excellent facilities were also set up by private philanthropists and social workers, e.g. the Melody Rehabilitation Centre set up by Mrs Khattak (see Box 10 in section 9.1). In addition, as part of health data collection, information about amputees, spinal and other serious injuries and follow-up consultations/treatment was collated.

2 Pakistan Institute of Prosthetic and Orthotic Sciences.

Not surprisingly many thousands of people were severely traumatized by the 2005 earthquake and the death and destruction it wrought. Many children became orphans, wives became widows – of these many also had to cope with the death of one or more children. Helping people overcome such massive psychological trauma will require long-term support. Teams of psychological experts and counselors sent by the MoH, Medical Directorate GHQ and volunteer groups were actively engaged in assessing and providing psycho-social support to the affected population. In addition facility-level health workers were given short training courses in psychological support and counseling. While trauma therapy was very crucial it was a weak area. However, the strong family bonds in affected societies, where relatives provide solace and comfort to traumatized survivors, is effective in such situations.

Helping survivors, especially the young, overcome the trauma they have experienced will take time and effort.

3.3 Revival and Restoration of Health Services

While emergency medical care provision and interim measures such as the establishment of tented health facilities addressed the needs of people in the immediate to short-term, in the long-term it was important to restore the pre-quake health system. Planning for this had to begin early to avoid a vacuum as NGOs and other 'short-term' care providers withdrew their services. A strategy was evolved to bring this about. It comprised the following elements: revival of primary health care, facility-based services, community-based and outreach services, revival measures, instituting mechanisms for secondary care, and long-term rehabilitation of health facilities.

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 fiberglass 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 counseling 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. Several made pledges of support at a workshop held in early November 2005 in Abbotabad, organized by WHO and the MoH (NWFP). WHO itself committed to revive 100 health facilities; the provincial authorities prioritized which these would be, using the criterion of maximum utility. 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. The EDO/DHO office would provide medical staff either from those already available or through fresh recruitment.

For secondary care, revival of the DHQ hospitals was made a priority and considerable progress was made on this. The DHQ Hospitals at Mansehra, Batagram and Bagh and CMH Muzaffarabad and Rawalakot all resumed operation with support from the FRC as well as a number of local and foreign NGOs. In addition a number of hospitals established by the donor community in response to the quake were offered to the local population to maintain as the foreign personnel left. These included the Italian Field Hospital with 200 beds at Mansehra, ICRC Hospital at Muzaffarabad, and 30 Cuban field hospitals at different places. In some cases, where DHQ hospital staff, medical/para-medical and administrative support staff had already been working alongside 'external' (NGO, etc) personnel at the hospitals, they were able to ensure a smooth handover. But in others lack of local capacity meant the hospitals became non-functional. Ultimately, the FRC arranged for 30 state-of-the-art Cuban hospitals and a MASH hospital to be handed over to the Pakistan Army. For tertiary care, sufficient health infrastructure existed at Abbottabad with the Ayub Teaching Hospital, and this was supplemented by other hospitals such as Shaheena Jamil and Gilani Hospitals in NWFP and AIMS in Muzaffarabad AJK.

By 31 March 2006, mid-term revival of health infrastructure had been achieved and most of the 'external' health partners had left the disaster area. The next challenge was the long-term reconstruction and rehabilitation of health facilities. This required physical resources in the form of infrastructure, equipment, furniture, etc and suitable staff. This is an on-going effort which is being undertaken through proper planning and consultation with relevant experts. However, already there has been a marked improvement in the quality and availability of health services in the affected areas – health care is definitely better than it was before the 2005 earthquake. This is in keeping with the Government's goal to 'Build Back Better'.

Key Lessons

- Specialized and additional medical personnel, equipment and supplies should be mobilized on a priority basis to provide treatment to casualties both in the affected areas and in health facilities.
- Emergency medical units should be set up at district level, stocked with necessary supplies and with lists of volunteer doctors and other medical staff in place to be mobilized quickly.
- In order to avoid over-stretching medical facilities, prioritization of casualties for treatment should be made on site (for evacuation) and then again at the evacuation centre/advance medical post.
- Donors and others should be informed about the kinds of medicines and supplies that are needed, so as to ensure appropriate goods are sent. Supply of ATG should be arranged in the first days and weeks after a disaster so as to prevent tetanus and other infections to those suffering bone trauma, and measures should be put in place for their effective healing and to prevent long-term disabilities.
- Arrangements should be made for proper storage of donated blood (as well as to deal with excess supplies by passing these on to regular hospitals).
- Data collection and a proper health information management system should be instituted as soon as possible and records kept of all injuries, deaths, transferals, and so on.
- Local health staff should be mobilized to take up their duties as soon as possible and revive the health system: if necessary, punitive measures should be introduced to ensure this.
- The MoH should have ready prepared Mass Casualty Management Plans for various contingencies which should be practiced. When a disaster occurs, the Ministry should have a team of specialists embedded with the NDMA to manage casualties. It should also nominate liaison officers for the health cluster.
- All medical equipment donated in an emergency should be donated quickly to rehabilitate local damaged health facilities.
- The MoH should develop and practice casualty tracking SOPs and systems. These should be well known to all to avoid losing track of a single child or female patient. It also needs to develop digitalized data for each casualty.
- The MoH should have MoUs with various medical and pharmaceutical associations for the provision of assistance in emergencies.

4 DISPLACED PERSONS

'We had to move people from rubble to tents. The rubble to tent journey is a very traumatic journey; it is a very difficult journey.'

Prime Minister, Address to FRC Seminar in March 2006

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 these also had to cope with loss of family members (parents, spouses, 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.

Tens of thousands of people were rendered homeless by the earthquake and had to be accommodated in emergency camps.

4.1 Emergency Shelter: 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. These entailed:

- making every effort to enable people who wished to remain in or close to their place of origin to do so;
- ensuring that those living in non-camp conditions received all assistance possible;
- Government retaining overall responsibility for camp management but providing support to local authorities, NGOs and community organizations to increase their capacity in camp management;
- ensuring camp inhabitants' fundamental needs such as food, water, sanitation, education and health services were met;
- ensuring that an appropriate protection/assistance framework was in place for internally displaced people, in accordance with UN guiding principles and the HRCP's Operational Guidance for the Protection of Human Rights of People Affected by the 8 October Earthquake.

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 AJK. Capacity-building of these organizations was carried out by the Pakistan military, 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 (see Box 6).

Aerial view of a tent village established in the affected areas.

A number of challenges were faced in following the above guidelines, one of which was finding suitable land for planned camps, particularly in AJK. It was also not possible to meet international standards in all the spontaneous camps, where land was limited and over-crowding common. When efforts were made to 'decongest' these by moving people to planned camps with better services, reluctance and even resistance was sometimes faced by those who wanted to stay close to their property. Unbalanced service delivery, more specifically the inability to improve conditions in some of the scattered settlements (note these were never denied services or assistance), remained an issue. In many cases scattered settlements were abandoned or only used during the day by displaced persons to get distributions. As well as providing essential services, camps had to be readied for winter, e.g. with insulation materials, warm bedding and tent upgrades – given the time constraints this was difficult but was eventually done. A related issue was coming up with suitable and safe heating arrangements for tents and promoting fire safety; mass information campaigns, training of fire-fighting teams and provision of adequate fire-fighting arrangement were all carried out.

Box 6: Classification of Camps for Internally Displaced People

The Government of Pakistan, with the camp management cluster, agreed upon the definition of various settlements throughout the affected area:

a) *Planned camp* - where IDPs find accommodation in purpose-built sites with an essential range of services provided, usually exclusively for the population of the site. These camps are established only in areas which are accessible by road throughout the winter so that the provision of essential services is not interrupted.

b) *Spontaneous (self-settled) camp* – comprising displaced groups who have settled independent of assistance from the local government or the aid community. These camps are usually situated on state-owned land, private land or communal land.

c) *Scattered settlements* - groups of people living in the immediate vicinity of their homes/land or village or within the ruins of their villages or towns. The scale of these settlements may vary from a few tents to larger groups of up to 50 tents. While these settlements do not constitute "camps" this does not mean they should be denied assistance.

A number of issues remained a challenge. One of these was defining an equitable, manageable and harmonious return strategy, adhering to the guiding principles. A mass information campaign to ensure informed choice to displaced people about the return and reintegration process was vital but could not be carried out.

Despite the challenges faced, the achievements in camp management were impressive. At one point some 200,000 internally displaced people were receiving assistance in 153 planned as well as spontaneous camps throughout the affected area. There were no major disease outbreaks, no catastrophic fires (though tent fires did lead to some injuries and even deaths), no cold-related deaths, and no security-related incidents. Between mid-January and mid-February 2006 a comprehensive 'level one' registration of the camp populations was carried out, the results of which are being used in the return and rehabilitation phase.

It should be noted that most of the affectees remained close to their destroyed homes and only about 275,000 came down to camps. Although this made relief operations harder, because of the difficult terrain involved, it also highlighted the fact that if people's food, shelter and health care needs can be taken care of close to their places of origin, they will prefer to stay put.

4.2 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 AJK 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. As of March 2006, of 148 unaccompanied children registered in hospitals, camps and shelters, 62 had been reunited with their families. [Note this does not include the many orphans who were simply absorbed by their extended families and never formally registered as orphans.] Where children were claimed by family members, every effort was made to ensure these were genuine. In one case where the 'family attendant' was discovered to be fake, the minor girl involved was recovered and handed over to her parents in Balakot. In some cases no family members came forward to take unaccompanied mentally disabled men. Since the Ministry of Social Welfare had no facility to house such people, special arrangements were made with reputed organizations to do so.

The Government banned the adoption of children orphaned by the disaster, deciding instead to have them taken care of by the state.

During relief operations, basic facilities like separate toilets for women, kitchens and separate community rooms were ensured and no major case of trafficking or abuse of vulnerable groups was reported.

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. The Ministry of Social Welfare also signed an MOU with the Earthquake Relief Fund for Orphans (ERFO) to set up an orphan supervision program. The Government would provide seed money and other aid for this, while ERFO would provide training for program implementation and mobilize more funds.

Data collection and ensuring accurate information about vulnerable people was an important aspect of measures to protect them. 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 that 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. This entailed:

- Assessment and analysis of the magnitude and nature of vulnerability, classified by age, gender and geographic locations;
- Identification and prioritization of their rehabilitation/resettlement needs;
- Development of policy and legal steps to address their needs.

To carry this out, the Task Force formed a number of technical working groups who addressed different aspects of the issue: i) Registration and rehabilitation of unaccompanied children; ii) Protection and rehabilitation of widows/heads of households; iii) Rehabilitation of disabled people (including mental); and iv) Establishment of national data collection/information management system for vulnerable groups.

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 (see Box 7). 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 or 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.

Box 7: Compensation Policy for Quake Survivors

Compensation amounts were set by the Government as follows:

a) Dead – Rs.100,000 per death (however, in cases of multiple deaths in the same family only Rs.100,000 compensation was paid 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.

4.3 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. These were 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 parts 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 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 and mobilize and

guide local people to construct shelters themselves, in time for the winter. By week 10 all these had been reached, and the operation was redirected to vulnerable groups below 5,000 ft. A Rapid Shelter Security Assessment, undertaken between weeks 8 and 10, provided an empirical planning baseline. It showed that 82% of tents supplied to affectees were not winterized. To address this, technical guidelines were established for shelter options and standards, tent winterization, fire safety and heating; these were implemented through weeks 11-20, alongside accelerated distribution of necessary non-food items.

Coordination of measures being undertaken by Government and different organizations was somewhat slow to start with. As well as the army and aid organizations, many NGOs and individual volunteers were involved in the winterization effort, and communities themselves were mobilized to participate. This led to some problems with consistency of policy and approach. The situation improved as the FRC and other stakeholders became involved in the Emergency Cluster. By week 6 co-chairing of the cluster by the FRC was well-established. By week 9 coordination meetings of the Camp Management, Housing and Emergency Shelter Clusters were being held, and by week 23 these had been merged (just prior to handover to ERRA). By week 21 a Strategic Information Cell (SIC) was fully established, with integration of Government and UN data. Participatory resource mobilization supported implementation of Cluster initiatives.

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 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.

Timely construction of semi-permanent shelters helped avert a winter disaster

Key Lessons

- A Disease Early Warning System (DEWS) should be established as soon as possible as well in order to prevent the outbreak of disease and epidemics.

- A system should be put in place to control the establishment of spontaneous tent camps and villages, which could pose a serious risk to health because of lack of facilities and proper management. However, it should also be kept in mind that some communities will always wish to remain in their own small camps, and not join larger ones.

- Both immediate and future needs should be assessed to determine the types of shelter provided to people. While tents can fulfill immediate needs, in situations where people will soon face winter and need more durable shelter, this should be foreseen and provisions for winter-proof shelters made at the outset or at least well in time.

- A rapid 'shelter security assessment' should be carried out as soon as population movements have stabilized to establish baselines, and this should be repeated at regular intervals. In addition assessments should be widened to cover other categories of displacement as conditions allow.

- Shelter provision should be addressed from the outset to include all aspects: temporary (semi-permanent) solutions in the relief-early recovery phase; as well as livelihoods (e.g. animal shelters) and protection issues (e.g. land dispute resolution). Shelter should not be approached simply as an engineering/technical challenge.

- To avoid time wasted in testing and refining models for shelters, 'off-the-shelf' regional solutions should be developed in advance and applied when disaster strikes, with local variations researched and tested in parallel.

- Owner-driven shelter strategies should be promoted, whereby people are incentivised (e.g. through monetary payments) to return to their places of origin and rebuild their homes at the first opportunity.

5 RESTORATION OF INFRASTRUCTURE

'We are building the infrastructure, the schools, the universities, the colleges, the basic health units, the clinics, the hospitals, the government offices, the roads, the bridges, the telephones, the electricity, there is a whole massive program....which will result in infrastructure in these areas much better than they had before. That is one of the opportunities to come out of this adversity....nobody hopes something like this will happen but since this has happened let's create a better infrastructure than what was there and create it with engineering solutions so that if there is another situation like this, those structures can face the test of time.'

Prime Minister of Pakistan, Address to FRC Seminar, in March 2006

The earthquake caused massive damage to infrastructure in the affected areas of AJK and NWFP. It meant that people in many parts of the quake zone were not only cut off physically – because of destroyed bridges, roads and landslides – but also deprived of telecommunications and amenities such as electricity and water supply. 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.

5.1 Strategy

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. At the strategic level this was done through the FRC, working with representatives of other stakeholders. 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. Resources were also mobilized from foreign governments, NGOs and international donor agencies.

Coordination of the identification, mobilization and use of resources and between the different organizations – both those providing resources and those carrying out implementation (including Army Engineers, FWO, UN, NATO and US Army resources and personnel) – was carried out through the FRC. Constant monitoring was important in ensuring the smooth-running of the infrastructure restoration operation, which as stated focused initially on road clearance. Monitoring was also important for economy of effort, to ensure that precious resources were deployed for just as long as needed on priority sites, and then switched to other priority tasks. Such adjustments were carried out on a daily basis.

5.2 Progress on Infrastructure Restoration

After conducting a damage assessment of the road and telecommunications networks, electricity and water supplies, work began immediately to restore these.

Restoration of the road network was an obvious priority. Of the total 4,427 km of roads in AJK and NWFP, 2,400 km were damaged. The three main arteries for road traffic (Murree-Kohala-Muzaffarabad, Abbotabad-Ghari Habibullah-Muzaffarabad, Mansehra-Battagram) to the affected areas were opened for light traffic within 24-36 hours and for heavy traffic within 72 hours. This was achieved with the help of 9,500 personnel from the Army Engineers, the Frontier Works Organization (FWO) and National Highways Authority (NHA). 181 pieces of heavy machinery and equipment were used. Simultaneously work started on the valley roads; despite active landslides soldiers worked relentlessly and kept opening tertiary roads. It took almost two weeks to make the Kaghan and Neelam Valley roads vehicle-worthy.

All the heavy machinery for various NHA projects and other government departments was commandeered and deployed to open different valleys. As the strata was unstable land-sliding made the task more difficult. Roads kept closing and engineers kept reopening them. At places first a mule track was created over landslides, this was later converted to a jeepable track and ultimately prepared for heavy traffic.

Army Engineers and others were able to open the main roads in the affected areas within 24-36 hours of the earthquake.

Extensive damage was done to the telecommunications network. Responsibility for the provision, operation and maintenance of telecommunications networks rested with the Special Communications Organization (SCO) in AJK and the Northern Areas, and with PTCL in NWFP. Total losses to PTCL as a result of the earthquake were estimated at Rs.100 million. All telecom buildings in Muzaffarabad, Rawalakot and Bagh Districts were damaged to some extent, but at two sites - Datoot and Danna – alongside destruction of buildings there was so much damage to equipment that this needed immediate replacement in order to restore communications.

Progress was made quickly on restoring communications. In AJK 36% of exchanges and 18% of lines were affected but were made operational within a week. Similarly, in NWFP 15% of exchanges and 10% of lines were affected but were restored within two weeks. In addition, 78 free satellite PCOs were set up in the disaster areas (45 in Muzaffarabad, 15 in Rawalakot and 18 in Bagh) and SCO mobiles were distributed, with exemption from bills for two months (equivalent to Rs.85 million). Particular efforts were made to provide telecommunications services to those engaged in the rescue and relief operation. For example, 200 SCOM (SCO mobile phones) connections were provided free of charge to civil management and international agencies; and 100 free SCO CDMA (WLL) connections were given for relief operations in Muzaffarabad, Rawalakot and Bagh. The telecom companies also distributed free rations and stores to people in the affected areas.

Following the initial phase of the earthquake response, more lines were restored and new lines and exchanges set up. For example, three new digital exchanges were installed in the Neelam Valley with satellite-based connectivity, 49,000 SCO GSM (SCOM) connections were provided to subscribers in just two months, a 100,000 line SCO CDMA system for AJK was inaugurated

at the end of December 2005. Communications links were even established at crossing points on the Line of Control (LOC) when this was opened between November and December 2005. The Danna MW site was shifted because the old location was unstable. Thanks to such efforts, telecommunications provision in the affected areas was not only restored and made fully functional, but improved on the pre-quake situation.

Electricity supply was badly disrupted after the earthquake because of damage to both distribution systems and major installations. Electricity was provided via generators to hospitals, tent villages, essential urban facilities and pumping stations by the Army, WAPDA and international relief agencies. Substantial restoration of electricity by WAPDA and MES was achieved within 15 days in urban areas and within 30 days in rural areas.

Water supply was also severely affected by the earthquake. In Muzaffarabad the main treatment plant was damaged along with 9 pumping stations, while in Bagh and Rawalakot only water supply lines were damaged. There was extensive damage to supply lines at Balakot and Ghari Habib Ullah, and minor damage at Battagram, Shangla, Abbotabad and Mansehra. The main lines of major urban centers were restored within 15-20 days, and purification plants were installed within days, thanks to the help of NGOs and foreign relief agencies. Initially 75 million liters of water was supplied to the affected population.

Though there was massive damage to houses and other buildings, rebuilding these was left to the later recovery and rehabilitation phases of the earthquake response. The initial priority was to ensure people had emergency shelter (the bulk of this was tents) and there after that they had adequate accommodation to be able to survive the harsh winter. About 371,000 transitional shelters were constructed with the help of the army and NGOs.

5.3 Challenges

A major factor in the extensive damage to infrastructure – and consequently loss of life – caused by the 2005 earthquake was poor construction. With regard to the earthquake response – road clearance, removal of debris, rescue of survivors from collapsed buildings – this was hampered by a number of additional factors:

- As well as a lack of expert rescue teams, there was no census data on buildings and people living in major cities.
- There was a shortage of equipment to remove debris. Heavy utility choppers which could have provided considerable lift capability were not available. Provincial departments lacked road-clearing and bridging equipment, which could have greatly facilitated the relief operation.
- Back-up systems for electric supply, telecom and water supply were not available and there were limited resources such as water bowzers (water tankers equipped to allow easy filling) and purification units.
- A related problem was ensuring the security of property of affected people.

Key Lessons

- Accurate records need to be maintained of land ownership, infrastructure (roads, telecommunications, water supply systems, etc) so as to provide a baseline for damage assessment when disaster strikes.

- Measures should be implemented to minimize loss of communications in the event of a disaster, e.g.: telecommunications equipment and essential facilities should be housed in pre-fab accommodation or quake-proof buildings; exchanges of major towns should be linked to a minimum of two media to provide fall-back options; fixed line networks should be kept to a minimum with more use of GSM and Wireless Loop (WLL) technologies.

- Provisions should be made to ensure effective communication between affected areas and those coordinating the disaster response: portable GSM set-ups should be maintained at national level for speedy deployment in disaster zones; spare equipment such as switches, satellite phones and MW links should be readily available to support emergency rescue and relief efforts; in emergency conditions detailed documentation and everyday Standard Operating Procedures (SOPs) should be relaxed to avoid unnecessary delays in relief operations.

- The permanent disaster management authority (see Section 10) should have a dedicated disaster communication wing.

- A cadre of engineers and other technical personnel should be identified and trained in disaster response operations, e.g. road clearance, bridge reconstruction.

- Contingency plans should be made for restoration of infrastructure, communications and other services in the event of a disaster.

6 EDUCATION

'One of the most significant things we did, once the tents were set up, was to open the schools. When you are dealing with trauma, if children can go to school quickly, even an improvised school, it helps reduce the trauma. The mother feels good because she is dressing up her kids, the kids go with their books to school, their dad or mum leaves them at school and picks them up, and that cycle starts. So people feel they are returning to some element of normal life, very important.'

Prime Minister of Pakistan, Address to FRC Seminar in March 2006

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 I/NGOs 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.

67% of schools and colleges in AJK and NWFP were destroyed/damaged by the earthquake, and 18,000 students killed.

For Muzaffarabad University students who could be housed in Islamabad, arrangements were made to attend evening classes in educational institutions in the capital.

Resumption of some form of education provision was a very time-sensitive operation in order to ensure that the affectees did not waste a whole educational year. It was made harder by the fact that arrangements had to be made for everything from class shelters, to provision of basic pens and pencils and books.

Restoration of education services was important to give children a sense of normality

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.

As well as provision of more robust shelters, a strong focus of early recovery efforts was on restoration of livelihoods. 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 programs 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.

The FRC was the coordinator of early recovery activities, responsible for ensuring implementation of all policies until the situation stabilized, and it was subsumed in ERRA at the end of March 2006.

Key Lessons

- There must be no gap between relief and reconstruction phases, but 'residual relief' efforts should continue alongside reconstruction efforts.
- People should be supported to return to their homes with information, technical guidance, material support, and so on, but those unable to do so should also be provided for.
- Compensation should be paid to people without delay to enable them to rebuild their lives.
- In reconstruction, there should be strict adherence to proper building codes, appropriate land use should be ensured, quake-proof construction techniques deployed so as to mitigate against a future disaster. This particularly applies to health and education facilities.
- Efforts should be made to promote livelihood opportunities for people, e.g. food-for-work or cash-for-work reconstruction schemes.

PART B:

ROLE OF KEY PARTNERS

7 PAKISTAN (and foreign) ARMED FORCES

The Pakistan Armed Forces in general, and the Pakistan Army specifically, provided the backbone for the operationalization of multi-agency and multi-organizational relief efforts.'

Federal Relief Commissioner, Address to FRC Seminar in March 2006

The Pakistan Armed Forces were deeply involved in the earthquake response from the outset. Indeed, with hundreds of military personnel stationed in the quake-hit zone killed or injured in the disaster, they were victims alongside the civilian inhabitants of AJK and NWFP. Overall coordination of all military operations in the affected areas was carried out by a core group of senior military officials, led by the DMO, who joined the FRC immediately after it was established. This group was later augmented by the VCGS[3].

7.1 Contribution of Pakistan Army

The overall approach and utilization of military personnel and resources was in many ways determined by the disaster itself. The immediate priority was search and rescue, evacuation of casualties and provision of emergency supplies to the survivors – a massive logistical operation. Road clearance was integral to this, as well as mobilization of all available air transport (especially helicopters). Removal and burial of the dead was also important. Once the emergency phase was over, the next issue was creating a stable environment – made even more urgent by the looming winter and threat of a new disaster. This stage of the response entailed the continued supply of relief goods and assistance to help people survive the winter, restoration of communications and basic amenities like electricity and clean drinking water, and support to help the civil administration to get 'back on its feet'. It also entailed ensuring the maintenance of law and order. The third stage was focused on monitoring the on-ground situation to ensure sufficient supplies of food, shelter and medical support, as well as preparation for the transition/recovery phase.

While these three stages of the earthquake response by the armed forces followed a chronological order (roughly 8-20 October, 20 October-31 December, and 1 January-31 March respectively) it should be stressed that there was considerable overlap between them.

With regard to the first stage, as soon as the magnitude of the disaster was realized the Armed Forces were put on stand by to move to the affected areas. Army Aviation were the first to get into action, with the initial casualties airlifted out just after 11.00am on 8 October – within two hours of the earthquake. The Pakistan Army ordered the movement of fresh troops to manage search and rescue and relief operations. These began arriving in the quake zone within 24 hours and immediately began search and rescue operations, adding their efforts to those of surviving soldiers deployed in AJK before the earthquake who, despite suffering losses themselves, were already engaged in rescue work.

3 DMO – Director Military Operations; VCGS – Vice Chief of General Staff.

At its peak there were three divisional headquarters (Mansehra, Muzaffarabad, Bagh), sixteen brigade groups, eighteen engineer battalions, five units of civil armed forces, three animal transport battalions, and two military police units as well as a large number of supporting personnel and services participating in the quake response – a total of over 60,000 troops. Even those troops were mobilized who traditionally do not operate in mountainous areas, e.g. mechanized troops. Two armoured brigade groups were moved to NWFP; these did a commendable job in relief operations in what was very difficult terrain.

The Pakistan Army was actively involved in all aspects of the earthquake response. [Photo courtesy of IRIN]

It should be noted that movement of such a large number of men and equipment over long distances to the affected areas was itself a challenge, as the units had to be self-sufficient. Furthermore, the Pakistan Army was already heavily engaged on the western borders of the country – Pakistan being a front-line state in the 'war against terror'. Despite these pressures the Armed Forces were able to play a very major role in the quake response.

The Army's implementation strategy in the earthquake response had a number of key features: coordination at operational levels as per the FRC's National Plan of Action; establishment of an effective logistics chain; outreach to all affected areas; the systematic, timely and equitable provision of relief goods and services; and speedy construction of temporary shelters.

Coordination mechanisms and the Army's role in these have been described in section 2.7. To briefly recap, they entailed frequent and extensive interaction with all stakeholders involved in the earthquake response; regular coordination meetings involving all stakeholders (including UNOCHA, NGOs, cluster representatives, civil administration and local people) at Army Divisional Headquarters; and sharing of an information database with all relief actors. The three Divisional HQs at Mansehra, Muzaffarabad and Bagh became the hub of all activities in the affected areas – including by foreign military contingents, civil society and international aid organizations. The Army facilitated the deployment of relief agencies and all other stakeholders. The FRC's instructions and policies along with all the relief sent was managed through these three Divisional HQs.

The Army Logistics Control HQ at Chaklala received, processed and dispatched relief goods to forward areas. A logistics chain was in fact established which operated from abroad to Pakistan, then from across the country to forward bases in the affected areas, and thereafter to survivors at the grassroots level. Primary on-ground responsibility was assigned to 10 Corps and 11 Corps: charged with providing relief in AJK and NWFP respectively. For onward transport to affected areas all available means of transport were used: helicopters, vehicles, mules and human 'porters' (see section 2.5). Much of this transport was provided by the Army (its role in aviation support is detailed in section 7.3). The Army also helped create a secure environment for the transport of goods (described in section 2.8).

Outreach to all affected areas and equitable distribution of efforts was achieved through the Divisional HQs and the systematic creation of relief bases at company and platoon levels, most with helipads. For shelter construction military teams were deployed on a large scale, alongside civilian teams, to construct shelters and train local people in how to do so.

Table 6: Corps-Wise Summary of Relief Goods Distributed in Affected Areas[4]

Items / Details	10 Corps	11 Corps	Total
Tents / Shelters (Nos)	85,782	42,988	1,28,770
Shamianas / Kanats / Tarpaulin (Nos)	2,725	2,385	5,110
Blankets (Nos)	5,69,141	444,452	10,13,593
Rations (Tons)	2,371.32	1,058.44	3,429.76
Medicines (Tons)	253.19	92.03	345.22
Miscellaneous (Tons)	3,752.67	1,392.03	5,144.70
Generators (Nos)	842	326	1,168
Trucks / Sorties (Nos)	2,274 / 1,178	856 / 717	3,130 / 1,895
Casuality Evacuation (helicopter only)	5,515	1,426	6,941

The Pakistan Army was thus actively involved from the outset in all aspects of the earthquake response. Some of the specific contributions of military elements are as follows:

a) Corps of Engineers

The main tasks assigned to the Army's 18 Engineers Battalions and other engineers involved in the earthquake response were to: open the main arteries and access roads; clear rubble to rescue victims; assist in the restoration of essential services; provision of water to the local population; and assist in the construction of transitional shelters. Army Engineers and FWO personnel constituted the main force undertaking these tasks, with support from NATO forces, US engineers, rescue teams from different countries and a number of NGOs.

4 These figures are only for relief goods distributed by the military.

The operation was carried out in three phases, according to priority and changing needs. In Phase I the focus was on opening main supply routes and helping restore essential services. In Phase II secondary roads were opened and assistance provided to restore community facilities like schools and hospitals, as well as in shelter construction. Phase III, the long-term phase, focusing on rehabilitation and reconstruction, the Army Engineers were to assist ERRA.

Thanks to the development of an overall conceptual approach and good coordination, progress in achieving this daunting task was impressive. Road links to the affected areas were established within the first three days: 356 km of the Karakoram Highway were cleared by 12 October. Major roads were opened and kept so by regular clearance of fresh slides. Helicopter-lift of bulldozers was also used to expedite the work and reach inaccessible areas. In the weeks following the quake considerable lengths of main and secondary roads throughout the affected areas were cleared: e.g. 45 km of the worst affected main road in the Neelam Valley up to 20 November, 59 km in the Jhelum Valley by 31 October, 333 landslides cleared from main and secondary roads in Bagh by 25 October. A total of 12 bridges were restored and 8 bridges were launched. Other statistics are equally impressive: 8.6 million cubic feet of rubble removed; Rs.937 million worth of valuables recovered and given to their owners; over 40 million litres of water provided to the population; 375,000 'one room out of the rubble' and a large number of transitional shelters constructed. At the same time all foreign engineer contingents were assisted as needed, and the deployment and departure of NATO and US Engineers was coordinated.

b) Rangers

Having realized that the police in the quake-affected areas had also suffered greatly, and that law and order could become an issue, the FRC decided to requisition two Wings of Rangers. These played a key role in maintenance of law and order. The Punjab Rangers were immediately ordered to move two Wings (7 and 9) to the affected area and by 12 October they were in location. They were assigned responsibility for maintaining law and order within Muzaffarabad City, and providing protection along various routes. They were also tasked with providing security to the American MASH Hospital and the UN Compound. The mission assigned to the Rangers was both difficult and sensitive, but they were able to carry it out effectively.

7.2 Contribution of Foreign Military Contingents

The Pakistan Armed Forces were supplemented by a number of foreign military contingents. These were largely involved in provision of logistical support (to transport relief goods), setting up field hospitals and providing medical treatment to survivors, and assisting in road clearance and restoration of infrastructure. Australia, Cuba, Jordan, the UAE and US all set up field hospitals. The Cuban medical contribution, described in section 3.1, was particularly significant.

NATO signed an MOU with the Government of Pakistan to provide NATO Response Force-5 (NRF-5) for a period of 90 days. NRF-5 comprised NATO field hospitals (manned by the Dutch), NATO engineers (Italian), and Spanish, Polish, British and Lithuanian engineer assets. The NATO field hospitals treated 7,490 patients and a further 9,724 via mobile medical teams, and carried out 2,300 immunizations. NATO engineers removed 41,500 m^3 of debris at 12 major sites, carried out repairs on 59 km of roads at 3 locations, constructed 20 retaining walls, built 110 high altitude structures, and deployed 8 water purification plants. NRF-5 also set up 13 tent schools.

Foreign military personnel made a significant contribution to the rescue and relief effort.

All this was in addition to the significant air support provided by NATO to supply relief goods to the affected areas. Considerable numbers of helicopters were deployed; they carried 1,740 tons of relief goods as well as 7,750 displaced/sick/injured people. NATO set up refueling facilities at Abbotabad: the North site was used for civilian refueling (600,000 litre capacity and 7 refuelling points), the South for military and heavy lift helicopters (300,000 litre capacity, 3 refuelling points).

The US Army provided an engineering detachment (SEABEES) comprising 116 people. They brought with them 15 plant pieces and a number of generator sets. The Company commenced work in the first week of November, and was replaced by 40 personnel in December 2005. On departure, the Company handed over 25 plant pieces to Pakistani engineers to use in rescue and relief operations.

7.3 Aviation Support

Aviation support played a vital role in the relief operation, particularly in the emergency phase to access cut-off areas. Planes and helicopters for the earthquake response came from the obvious sources – Pakistan Air Force, Pakistan Army, domestic agencies – as well as from foreign air forces, governments and organizations. All these planes/helicopters were gathered at Qasim Aviation Base, Rawalpindi or Islamabad Airport under the HQ 101 Army Aviation Group.

While aviation assets from across the country arrived very quickly, those from military contingents of allied countries arrived within a week of the disaster, and those from international

donor organizations by the third week of October. At its peak the total number of aviation assets was 141, 65 Pakistani and 76 of foreign origin. Almost two-thirds of the former came from Army Aviation (42). Of the latter, the biggest contributors were the US Army (24), UN organizations (17), ICRC (8) and NATO (6). Table 7 gives the distribution by goods carried:

Table 7: Load Carried by Air as of 7 March 2006

Organization	Tons of Relief Goods Carried (tons)
UN	21,018.74
US Military	12,304.75
ICRC	8,101.2
Pak Aviation	7,004.25
NATO	1,747.1
Others	587.25
TOTAL	**50,763.29**

As stated, Qasim Army Aviation Base and Chaklala were the main hubs for all planes and helicopters involved in the relief operation. Qasim Base was already insufficient to accommodate all the army aircraft, and with the additional planes congestion was a challenge: parking and recovery of vehicles in such limited space was an operation in itself. After thorough reconnaissance, deliberation and coordination with the UN authorities, Abbottabad was developed as an Aviation hub for UN and other international donor agencies to support the entire affected area. US assets were accommodated at Qasim Army Aviation Base, while the spillover from Chaklala and Qasim Bases was accommodated at Islamabad Heliport. Ghazi Airfield (Tarbela) was also prepared to be activated as a Main Operation Base (MOB) if needed.

The FRC provided the guidelines for the relief operation. But in order to regularize the large volume of air traffic, and ensure effective and integrated utilization of the various aviation assets, an Aviation Operation Centre was established at Chaklala. This comprised an Aviation Planning Cell and Logistics Cell, both of which were linked to MOBs and thence to Forward Air Bases (FABs) [see Figure 7].

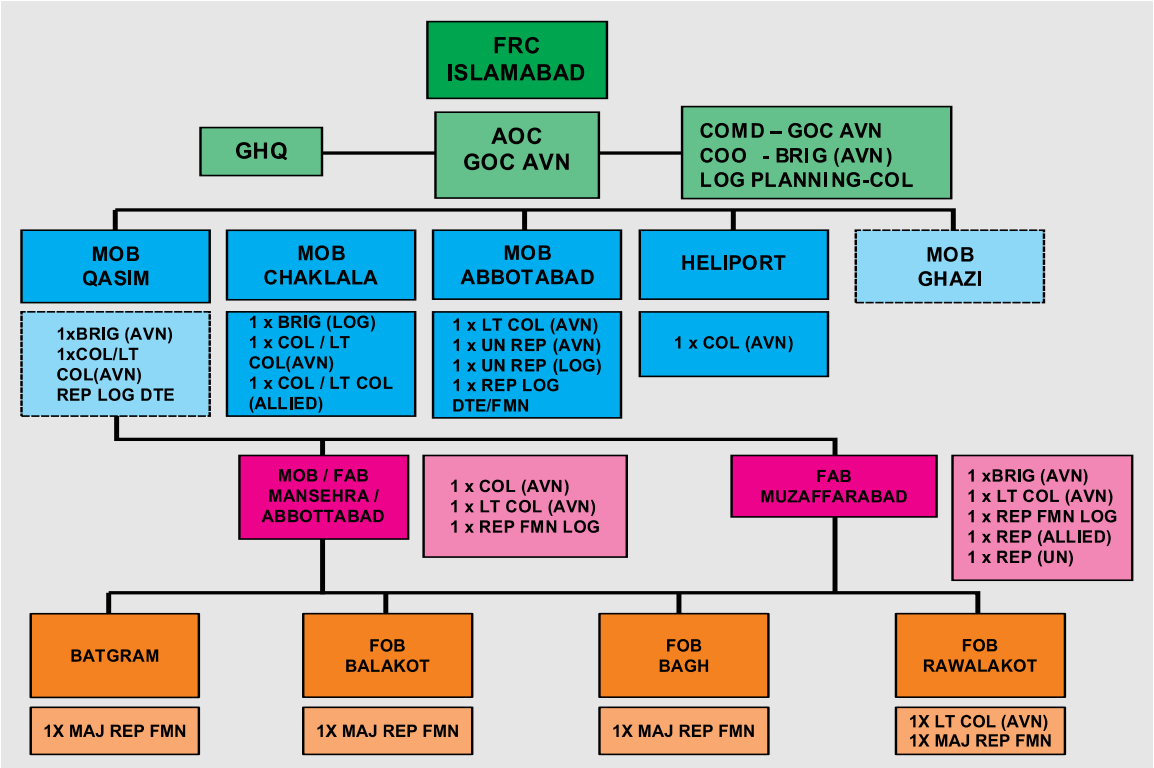


Fig. 7: Organization of Air Relief Operation

The Aviation Planning Cell received sector-wise input from field formations on the type and quantity of relief goods needed. The Cell then prepared and disseminated a Joint Air Task Order (Schedule) and monitored its execution. Feedback from the various aviation agencies involved was used to refine and improve operations. At the same time updated data was forwarded to the FRC and Military Operations Directorate, GHQ, to ensure coordination with the overall relief effort. Airspace management and Flight Safety aspects were further coordinated through Pakistan Air Force (Air Defence).

The Logistics Planning Cell sorted and prioritized relief goods for air transport to FABs and affected areas. It coordinated loading of relief goods with Air Movement Control and maintained and shared data on relief goods sent by air. The FABs provided backward information to the Aviation Planning Cell on where to use aviation assets and coordinated with field formations. The FABs executed and monitored forward relief operations and provided information to the MOBs, situated at Chaklala, Qasim Air Base, Abbotabad and Mansehra.

Decisions about where to utilize air support were actually the result of joint planning based on input from field formations, FAB commanders, UN assessment data, Allied aviation data and pilots' feedback. 24 hours prior planning / tasking cycles were followed on receipt of relief requirements from supported formations. Execution was coordinated, implemented and monitored by MOBs and FABs. A combination of large, medium and utility helicopters, placed at FABs, were used as needed, with Night Vision Device equipped helicopters based at Muzaffarabad and Mansehra for emergency missions at night. A safety pilot accompanied every foreign helicopter to facilitate operations along the LOC and advise on special landing procedures in valleys and helipads.

The air relief operation was the largest in the country's history: at its peak 141 aircraft were involved.

A number of challenges were faced in the air relief operation – not least the huge scale of the task and the unconventional nature of missions that had to be undertaken. The area of operation was characterized by rough terrain and high mountains which provided limited flight routes.

During initial operations, pilots had to fly without radar or air traffic services in deep and narrow valleys – a completely new experience for most. The difficult terrain also posed a serious threat to air space management - further aggravated by the large numbers of aircraft involved. It was addressed by specifying entry and exit routes and levels, and through vigilance and skilled airmanship.

Another threat to flight safety was posed by crews having to work long hours, accompanied by the adverse conditions and emotional trauma they undoubtedly experienced. All pilots and ground staff were exposed to long flying stretches with rapid rotation and minimal rest. Their spirit and determination helped them cope with the stress. With regard to maintenance of planes, normally Army Aviation follows a systematic maintenance schedule. This is prepared and executed based on anticipated flying time within a specified period, as well as the availability of funds and spare parts. The earthquake relief operation greatly increased the amount of time the planes were in the air, and thus put the maintenance schedule under great stress. This was addressed by resorting to innovative techniques such as telescoping the maintenance schedules and pooling existing resources. The Aviation Engineering personnel worked tirelessly in this regard. A related challenge was provision of ground support equipment to such a large and dispersed air fleet.

With so many planes/helicopters and crews from diverse organizations and countries, there were obvious differences in Standard Operating Procedures (SOPs) and drills. For Army Aviation in particular, as the lead domestic provider of aircraft and responsible for overall coordination, adjusting to this in a very short space of time was extremely challenging. A related issue was the presence of so many foreign (military) personnel on what were high-security bases.

Key Lessons

- The Armed Forces can be the best option for implementation of a post-disaster response, providing a common operating platform and a reliable and readily available network. However, lead and guidance should be provided by a national disaster management authority.
- The Armed Forces should work in conjunction with local authorities, law enforcement and civil defence agencies.
- Efforts must be made to promote open and frequent communication between national and international stakeholders participating in relief operations, particularly where they come from diverse backgrounds such as the military and aid agencies. There should be no hesitation about working with different kinds of organizations: all should focus on the common goal of disaster management.
- Names, locations and telephone numbers of commanding officers down to unit and sub-unit level should be published in the print media so people could directly contact them for information and support.
- As opening of roads is extremely important for casualty evacuation and logistical movement, all earth-moving machinery with the government departments and civil contractors should be requisitioned for this purpose.

8 UN SYSTEM

'This has been a success and as always success tends to have many parents...of course there can only be two parents and I think that the first one is strong national leadership and the FRC's openness and flexibility in dealing with international organizations and NGOs and the UN. The second parent is on our side, well coordinated humanitarian community and military partners from overseas.'

Jan Vandemoortele, UN Resident Coordinator, Address to FRC Seminar, in March 2006

The UN System comprises one of the biggest international humanitarian entities working in Pakistan. As such, it played a major role in coordinating and managing the aid community's response to the 2005 earthquake. As well as the formidable challenges posed by the disaster, the task was made harder by the fact that a new UN Resident Coordinator had only recently been appointed to Pakistan, and was being briefed in New York when the disaster struck. He was thus very much 'thrown in at the deep end'. Despite these challenges the UN System was able to make a significant contribution to the relief and recovery effort.

8.1 UNDAC Mobilization

Even though it took a while for the full scale of the disaster to become clear, it was obvious from the beginning that considerable assistance would be needed from outside Pakistan. The UN System in Pakistan made preparations for the arrival of an international UN Disaster Assessment and Coordination (UNDAC) Team. Pakistani officials with training and experience in the UNDAC system were approached for assistance requirements. A pre-existing standby agreement with the Government of Switzerland was activated to provide rapid transport for a rescue and relief team. Thirdly a potential UNDAC team was identified from pre-existing rosters, and members put on four hours' notice to move. Both personal and institutional arrangements were thus initiated.

An official request from Pakistan for UN support, including an UNDAC team, came on the afternoon of 8 October and members arrived the following morning – within 24 hours of the disaster. The UNDAC team was closely followed by the Turkish Red Crescent Society's search and rescue team. Pakistani civil defence officials, in particular those trained in the UNDAC system, met the UNDAC team and organized transport to the key affected regions, while the UN Country Office organized office facilities and coordination meetings with UN agencies and major international NGOs already present in Pakistan.

The UNDAC team's initial tasks were critical. With support from Pakistani officials and the UN Country Office, it was possible to immediately set up an onsite coordination centre in Muzaffararbad, as well as an international reception centre at Islamabad Airport and a functioning coordination hub in Islamabad. Within the first two weeks it was able to establish 'Humanitarian Hubs' (the term 'UN Offices' was deliberately avoided) in Bagh, Batagram, Mansehra as well as

Muzaffarabad. The UNDAC team also established communication links back to headquarters and acted as the information focal point for international search and rescue teams, donors and NGOs, through the online Virtual On-Site Coordination Centre (OSOCC).

One simple but vital task was the creation of the first situation report (sitrep). This was sent to headquarters and published both on the Virtual OSOCC and on Reliefweb[5]. In the early days of a large emergency such as this, it is the UNDAC sitreps that are a primary source of information for many actors. From the outset it was decided to prepare the sitrep using a format based on the cluster approach to humanitarian responses (see Box 8). Following the first sitrep the UNDAC team decided to issue a rapid Flash Appeal. Although the Flash Appeal is well known to donors as a rough and ready initial guide to the costs of a relief operation, it can sometimes take weeks to issue, thereby hampering initial donor support. To avoid this a Flash Appeal was issued within 48 hours, based on the cluster approach.

Following the massive earthquake, relief goods of all kinds – food, water, blankets, clothing, tents, cooking utensils, and medicines – were required urgently in huge quantities.

All NGOs, international organisations, donors and interested parties represented in Islamabad were issued draft guidelines for a Flash Appeal as well as a short description of the cluster process. In addition cluster leads were appointed. These lead agencies appointed individuals to lead the process of gathering data, projections and project proposals and submitting costed proposals for consolidation in the Flash Appeal. While the initial total figure was very large, subsequent discussions and removal of duplications, as well as a pragmatic assessment of what was feasible within six months, led to the final figure of $266 million.

5 www.reliefweb.int/rw/dbc.nsf/doc100?OpenForm.

The first two weeks of any emergency response are always going to be chaotic and Pakistan was no exception. But by the end of the first week numerous international search and rescue teams were on the ground, supplemented by the Pakistan Army. While coordination was admittedly haphazard, strong direction was provided by the FRC, local military commanders and the UNDAC OSOCC in Muzaffarabad.

The UNDAC Team saw the UN System through the initial critical days after the 2005 earthquake. The early request for and deployment of the Team was crucial in its effectiveness, but so too was the fact that Pakistan had within its civil and military structure people who had been UNDAC trained and personally knew UNDAC members – this proved of great benefit. Thereafter the UN Resident Coordinator assumed lead responsibility for the UN System's earthquake response and the UNDAC team transformed into the OCHA support office to the Coordinator.

8.2 Cluster Approach

In discussions between the UNDAC team and the Resident Coordinator, it was decided that the cluster approach would be applied for the entire earthquake disaster response. The idea was discussed with the FRC who approved the cluster approach and nominated focal persons for each cluster within the FRC. The clusters were: emergency shelter, protection, water and sanitation, education, IT/communications, logistics, nutrition, health, camp management, and early recovery and reconstruction. UNDP was cluster lead for early recovery, WFP for nutrition, IOM for emergency shelter, and so on.

Fig. 8: Cluster Approach taken by Donors and FRC

The cluster approach was adopted even though it had still to be approved by the IASC. It was the first time the cluster approach was introduced by the UN System in a country. This meant that an essentially experimental approach would be used for what was quickly becoming a very large and complex humanitarian response (in a sense more difficult than the tsunami response). Lead agencies had neither institutional nor personal knowledge of cluster implementation, and basic tools such as Terms of Reference and guidelines simply did not exist.

Two key institutions activated to support cluster implementation: the UN Country Team and the Cluster Heads Forum. The UN Country Team group convened regularly to discuss UN administrative issues. The Cluster Heads Forum – including all cluster coordinators, the Resident (later Humanitarian) Coordinator, focal points from the Pakistan Government (FRC) – became the cross-cutting forum at which most major strategic decisions were taken. The FRC also followed the cluster approach leading to good coordination between its operations and those of the UN System. [See Fig.8]

Box 8: Cluster Approach to Humanitarian Responses[6]

Following the tsunami and what was seen as a poorly coordinated relief effort by all international actors, the UN Inter-Agency Standing Committee (IASC) asked UN OCHA to come up with recommendations for an alternative humanitarian response. Throughout the summer of 2005 a wide-ranging consultation process involving all major stakeholders was held. This resulted in the recommendation that a 'cluster approach' be taken to humanitarian response operations. This would organize all support to rescue, relief and early recovery efforts into nine clusters: health, nutrition, water and sanitation, logistics, camp management, emergency shelters, telecommunications, protection of vulnerable groups and early recovery. A cluster for education was considered but rejected.

Key features of the cluster approach are that one agency be assigned the lead for each cluster, with responsibility for coordination, decision-making, policy setting and monitoring in the cluster, as well as being the 'provider of last resort' (i.e. if requisite goods could not be procured from any other source the lead agency would provide them). Global cluster leads have been designated and, as far as possible, the same agencies are to be designated cluster leads at country level – but there is flexibility in this to take into account capacities and strengths of humanitarian organizations already working in the country concerned.

The cluster approach is designed to ensure a comprehensive, systematic, coordinated and effective response to humanitarian crises. At the global level it aims to strengthen system-wide preparedness and technical capacity to respond to humanitarian emergencies by ensuring predictable leadership and accountability. At the country level the aim is similarly to improve responses through predictable leadership, and by achieving better prioritization of resources and better defining roles and responsibilities of organizations within sectors.

The cluster approach recommendations were finalized in September 2005 and were due to be placed before the IASC for approval in December. Hence at the time of the October earthquake the cluster approach was very much a 'work in progress', neither formally approved nor fully developed.

While the cluster approach has been questioned, it should be stressed that alternative previous disaster response methods had been discredited in the tsunami, and clusters - even if not fully developed and ready for use - offered more potential for effectiveness. The consensus among most stakeholders, from NGOs to the UN System to the Government, was that there were

6 For more details see www.unhic.org.

definitely errors and room for improvement, but that on the whole the cluster approach had led to a better response than normal.

8.3 Civil-Military Cooperation

The immediate earthquake response saw personnel from two very different backgrounds – the military and the humanitarian world – having to work together; that too in a very sensitive area (see section 2.8). These various factors did cause initial tension between the military and civilian humanitarian, particularly international, groups. However, this was alleviated by a combination of common approach, common objective and common hardships faced. The cluster approach adopted by the UN System and other donor agencies was replicated by the FRC and military. This greatly facilitated coordination of the relief operation, and enabled military-civilian counterparts to easily identify each other and work together. The FRC and UNDAC played a key role in promoting military-humanitarian cooperation: the former 'selling' humanitarian groups to the military, the latter doing vice versa. The experience of working together, both centrally and at field operational level, was the ultimate factor that overcame mistrust and suspicions and eventually led to close personal friendships being forged.

Civilian (local and international) and military personnel worked alongside each other to help the earthquake survivors.

8.4 Funding Crisis

While the issue of working alongside the military in a very sensitive area was resolved relatively easily, the UN System faced a much bigger challenge – indeed crisis - with regard to funding. One week on from the UN Flash Appeal hardly any funds had come in. UNHCR had expended almost all its emergency funds, as had UNICEF, WHO, other major organizations in the UN System as well as the key international organizations, e.g. IFRC[7].

7 International Federation of the Red Cross and Red Crescent Societies.

A crisis meeting was called of a small core UN group to discuss strategies to deal with the crisis. One option was for the complete withdrawal of the UN from operational work, restricting itself to provision of technical support and asking the Pakistani authorities to fund the vital UN relief helicopters. What was actually agreed was an '80:20 strategy', whereby the Pak military would deliver roughly 80% of relief goods, and humanitarian agencies 20%. [Note: this division was not clear-cut in that, for example, UN helicopters brought relief goods to a base in the affected areas, but military personnel then delivered them to people on-ground – in effect a joint operation.] To implement this, considerable effort was put into orienting the military about humanitarian relief operation concepts such as 'earmarked funding', 'feeding supplements', 'SPHERE standards' and so on.

Efforts were also made to mobilize funds. In conjunction with the UN's Emergency Relief Coordinator the Resident Coordinator initiated an aggressive media strategy to raise awareness of the funding situation. A countdown of days left for helicopter funding – at that time less than seven – was made public, as was the call for many more tents. A revised Flash Appeal was issued, based on new information and assessments, which raised the estimated cost of the relief operation to US$560 million. Thanks to these efforts money did begin to come in – only just in time.

In the meantime a new crisis loomed: a winter disaster. With 3.5 million people without proper shelter and only a few weeks until the onset of the harsh northern winter, there were real fears that there could be a new wave of cold-related deaths or, alternatively, a mass evacuation from higher, colder regions into the valleys. This would put great strain on resources there, cause congestion in existing camps and the associated risk of disease and epidemics. To counter this threat 'Operation Winter Race' was launched.

8.5 UNDP Initiatives

UNDP, as one of the biggest organizations in the UN System in Pakistan, made a significant contribution to the relief efforts. Its main initiatives were for the provision of emergency shelter (tents and bedding) and later construction of transitional shelters; provision of heating and cooking energy and stoves; rubble removal; and support to volunteerism. It was assisted in all these projects by funding from a number of countries and other organizations and implementation support from international, national and local partners.

a) Emergency Shelter

UNDP decided to focus in this project on people in spontaneous camps, who often get less/later help than those in the planned camps. 60,000 quilts, largely procured from local markets, were distributed in AJK and NWFP. For procurement of winterized tents and kitchen sets, UNDP signed an agreement with IOM and UNOPS. To ensure speedy delivery of items, most supplies were transported directly from vendors to UNDP/IOM sub-offices for onward distribution to the affected population. Tents purchased from outside Pakistan were transported by NATO aircraft and the UN Joint Logistics Cell (UNJLC).

A total of 11,654 tents and 8,562 kitchen sets were distributed with a further 1,000 winterized tents provided by the People's Republic of China through UNDP. These were distributed both through government and local administration authorities and partner organizations, and directly from the UNDP offices in Mansehra and Muzaffarabad. Target groups were identified in consultation with the Pakistan Army, local union councils and community leaders. Selection took place on the basis of demonstrated need, including scale of damage and vulnerability of the

family. Female-headed households, families with children and/or disabled members, and those living at altitudes more than 2,000 m above sea-level were prioritized.

b) Transitional Shelter

As part of the FRC's 'one warm room' strategy, UNDP's transitional shelter project aimed to provide safe shelter for people to get through the winter, and also to raise public awareness about earthquake-proof construction techniques. Thus it entailed the provision of both materials – CGI sheets, tool-kits – and capacity-building support.

With regard to materials, 798,783 CGI sheets, 35,774 tool kits and 171 boxes of children's clothing[8], had been distributed as of August 2006. UNDP assisted in the construction of over 53,252 transitional and semi-permanent shelters in AJK and NWFP. Distribution to remote/cut-off areas was speeded up through the use of UNHAS and UNJLC helicopters to transport building materials. The same approach was taken to selecting target groups: working with local NGOs, government authorities and community leaders to identify those most in need. Local communities were also mobilized by UNDP teams to construct the shelters themselves.

Training in quake-resistant construction was provided by partner NGOs and to masons, builders and engineers by the Nepalese National Society for Earthquake Technology (NSET). A series of such training on Earthquake-Resistant Construction of buildings were conducted in different locations of AJK and NWFP, for a total of 231 local engineers, 185 local contractors, over 800 community masons, 865 self-builders. The NSET program also entailed training 97 local resource people from local governments, Public Works Dept, NGOs and local communities to in turn act as trainers themselves. Shake-table demonstrations were held in Muzaffarabad and Bagh, in

An international aid worker packs tool kits for construction of semi-permanent homes.

8 These boxes of children's winter clothing were contributed by Children's Place, a US-based clothing company, in collaboration with the United Nations Foundation for International Partnerships (UNFIP).

which scale models – one constructed using traditional building techniques and the other quake-proof techniques – were exposed to seismic tremors. The traditionally constructed houses collapsed while the others remained standing, effectively showing how quake-proof construction can save lives. This initiative was further supported by the dissemination of posters showing quake-proof construction techniques.

Many of the transitional shelters constructed with UNDP assistance were later made into permanent homes through reinforcement and the addition of paneling. The $11.5 million Transitional Shelters Project was supported with funds from Germany, Switzerland, New Zealand and Japan, UN Foundation, UNICEF-UK, Liechtenstein, the City Council of Wessiach (Germany) and UNDP's own resources.

c) Heating and Cooking Energy

This project aimed to provide people with cooking and heating facilities to see them through the winter, and thereby also protect the environment which was endangered by the affected population's need for fuel – obtained by cutting down trees. The project entailed needs-based provision of gas stoves and cylinders, heaters, geysers, fire extinguishers and coal bags. The main challenge was identifying the target population and what their specific needs were. A related issue was ensuring sustainability of support, as gas cylinders would have to be continuously refilled. Meticulous strategies had to be evolved for procurement of goods, distribution and monitoring, and ensuring uninterrupted supplies.

Over 40,000 families were provided with LPG cooking stoves by UNDP. In a separate agreement with UN-Habitat, coal-based stoves were distributed to affected people. In total 78,000 families were provided with stand-alone cooking and heating facilities. To prevent the risk of fires breaking out in tents 3,000 fire extinguishers were given and positioned at strategic locations, and communities were trained in fire safety and specifically in their use.

In addition the project provided equipment and fuel for 36 community kitchens set up in Muzaffarabad and 14 in Bagh. Heating facilities and fuel were given for 100 Basic Health Units (BHUs) and 80 UNICEF child protection centres. 50 kerosene heaters and fuel supplies were provided to medical camps in Rawalakot and 100 patio heaters for emergency communal hospitals. The project also established 12 '*hamams*' (public baths) in Balakot, with separate facilities for men and women.

The project cost a total of US$4.8 million and received funding support from Canada, Finland, Italy, Sweden, Switzerland and Turkey, as well as WHO.

d) Rubble Removal

UNDP's rubble removal project had two aims: clearance of rubble and retrieval of recyclable material from collapsed public buildings, and generation of employment for those left without a source of living by the earthquake. Using a combination of heavy machinery and manual labour school and hospital sites (prioritized by the Government to support restoration of education and health services) in Bagh, Battagram and Ghari Habibullah were cleared for reconstruction. By saving as much recyclable material as possible, the project facilitated the reconstruction process. UNOPS was the implementing partner for the project, which also had participation by local authorities, the Army and affected communities themselves. Individuals working on the project were paid for their labour, thereby enabling them to begin to support themselves and generating local economic growth. As of August 2006, 554,030 cubic metres of

rubble had been cleared from 1,448 sites – in the original three districts as well as Kohistan and Shangla – and 178,758 labour days generated by the project. It was initiated with $2.4 million funding from Sweden, and later extended with a further $2.6 million from Japan.

e) Support for Volunteerism

The UNDP supported the Government's efforts to promote effective volunteerism in the wake of the 2005 earthquake, both by assisting the National Volunteer Movement (NVM) established by the Government, and through UNDP's own UN Volunteers (UNVs). The former comprised technical support to assess NVM's capacity needs, design its organizational structure, partnership strategy and provision of human and capital resources. UNDP helped NVM organize the first consultative meeting with civil society on 16 November 2005. It was officially launched by President Musharraf and Prime Minister Shaukat Aziz on 23 November 2005. As of March 2006 NVM had 4,000 registered volunteers, who were being provided training and subsequently rendering services in areas such as mountain rescue operations and trauma counseling.

Meanwhile a national UNV scheme was officially launched in Islamabad on 6 February 2006. This was designed to mobilize and deploy national and international UNVs to support UN agencies, government agencies and civil society organizations working for recovery and reconstruction. As of April 2006, 11 UNVs (5 national and 6 international) were deployed with various UN agencies under the $5 million three-year program.

Box 9: Summary of UNDP Interventions and Achievements[9]

a) Emergency Shelter
- 11,654 families provided with winterized tents through IOM and UNOPS
- 18,801 families provided with shelters through IOM as cluster leader
- 8,562 families provided with kitchen sets

b) Transitional Housing
- 798,783 CGI sheets distributed to affected families
- Assisted construction of over 53,252 transitional/semi-permanent shelters
- Distributed 35,774 tool kits for construction of transitional shelters
- Trained 221 local engineers, 185 local contractors, 168 community masons, 97 trainers
- Distributed 171 boxes of children's warm clothing and 60,000 quilts

c) Heating and Cooking Energy
- Stand-alone heating and cooking facilities provided to 78,000 affected families
- 1,200 kerosene heaters, 4,400 litres of kerosene oil, 250 tons charcoal distributed
- 3,000 fire extinguishers provided at strategic locations and communities trained in fire safety and their use
- Heating equipment and fuel provided for 100 basic health units, 80 UNICEF child protection centres
- 50 kerosene heaters and fuel supplies to medical camps in Rawalakot; 100 patio heaters for emergency communal hospitals
- 9,500 cylinders and stoves being distributed to teachers
- 52 community kitchens (*langars*) and 12 communal baths (*hamams*) established

d) Rubble Removal and Cash for Work
- 554,030 cubic metres of rubble cleared from 1,448 sites
- 178,758 labour days generated, equivalent to one month's work for 7,150 men

9 Figures as of August 2006. Source: *'UNDP and The 2005 Pakistan Earthquake'*, (UNDP Pakistan, October 2006), p. 22.

8.6 World Food Program

WFP's role in the wake of the 2005 earthquake has been referred to earlier: provision of food supplies to the affected population. Specifically, WFP led the inter-agency Joint Rapid Food and Nutrition Assessment which indicated that 2.3 million people were in need of food assistance. Of these 1 million in the most remote and inaccessible areas of AJK and NWFP, and people in some camps, were assigned to WFP. Of these 400,000 were to be supplied food by air.

To carry out this task WFP made the following arrangements:

- Approval of Emergency Operation (EMOP) 'Food Assistance to Affected Persons – South Asia Earthquake'
- Humanitarian Air Cargo and Passenger Services (UNHAS)
- Logistics support for warehouses, trucks, base camps, etc
- UN Joint Logistics Centre (UNJLC)
- Provision of Information and Communication Technology (ICT) services under UN OCHA's lead.

WFP provided dry rations comprising wheat, pulses, oil and salt as well as ready-to-eat rations. Distribution was calculated on the basis of 535 grams/person/day for a family of 6 people. As of February 2006 the organization had dispatched more than 83,000 metric tons (mt) of food, to an estimated 1,047,579 people. Note that owing to funding problems, the Government of Pakistan donated tons of wheat to WFP to distribute to survivors. UNHAS airlifted 18,099 mt of food items, 4,901 mt non-food items and 30,513 passengers. Road transport and adapted vehicles were rented to access remote areas, but many – especially in the initial phases – could only be accessed by air. However, resource constraints were faced in the air operation. UNHAS

quickly ran out of funds, and military air support ended on 31 March 2006 leaving it with just 13 aircraft (a reduction of 50%).

In March 2006, the WFP Executive Board approved a 2-year Protracted Relief and Recovery Operation (PRRO) for the earthquake hit area, which began on 1 April. The program is designed to support the shift from relief to recovery. Interventions being undertaken include: targeting food insecure households through food for work and asset creation; flour fortification to address malnutrition; provision of food to homeless people lacking remittances and other family support as they return to rebuild their homes; school feeding for 450,000 children. These interventions are being undertaken in remote villages where food production, access to markets, employment and credit facilities will be constrained until basic infrastructures and trade can be restored. Communities and local NGOs are active participants. The PRRO is being implemented under the overall authority of ERRA and with technical guidance from the Ministries of Food and Agriculture, Health and Education, as well as the ILO. Material support is being provided by FAO and several bilateral and multi-lateral funding facilities. However, as with EMOP, PRRO faced funding constraints: as of March 2006 it had mobilized 6.66% of the US$67,849,078 it required.

Key Lessons

- Effective coordination among donors must be accompanied by strong leadership and direction from Government. External partners will be most effective when they work in tandem with national strategies.
- Efforts should be made to ensure a unified response by all those involved in humanitarian responses.
- The cluster approach to humanitarian response operations does yield efficiency and coordination gains. The development of guidelines and Terms of Reference (TORs) would make the approach more effective and would help avoid the sorts of 'teething problems' seen after the 2005 earthquake.
- In order to ensure effective participation by all agencies in the cluster, they should be involved in collective decision-making processes (as opposed to merely being told what to do). Cluster leadership should be selected to ensure they have the capacity for working with multiple partners and consensus-building skills.
- Cluster decision-making should be representative, including all stakeholders. However, given the large numbers of people that this could entail, streamlined strategic groups should be constituted. Donor cluster leads, government representatives, lead aid agencies/INGOs should be included in these but smaller agencies and NGOs should be distributed amongst strategic groups to keep numbers down and facilitate decision-making.
- The UN System needs to establish a global emergency relief fund, so that resources are on hand the moment a disaster strikes and there are no delays whilst these are mobilized. [Note: since the 2005 earthquake there has been progress on establishing a UN Central Emergency Response Fund (CERF).
- Efforts should be made to avoid duplication of effort by different agencies and donors. This requires accurate and regular data collection and sharing of this. Even where this is not possible, rapid 'snapshot' assessments should be carried out and feedback gauged from those on-ground, to ensure that relief efforts are not being wasted/duplicated and that all areas of need are being addressed.
- WFP as well as other donor agencies need to ensure they have sufficient in-country expertise to be able to carry out humanitarian response operations, and they should identify local partners (e.g. NGOs) to assist in implementation and ensure this is speedy and effective.
- Donor agencies should strive to minimize the number of parallel/overlapping forums/meetings in which they participate (internal agency meetings, UN System meetings, cluster meetings, etc) as these take up considerable time which could be spent on operational matters.

9 PUBLIC, MEDIA, NGOs AND DONORS

*'People from all walks of life, men, women of all ages, groups and all classes of all societies got instantly mobilized to help their brothers in need...Every citizen of Pakistan had something to give. People not only opened their hearts but also their pockets....I know a labourer when we started Melody Cinema (*rehabilitation centre*) who came up to me when he found out what we were doing, put his hand in his pocket and gave me all the money he had. Thirty rupees that he had saved for his lunch, dinner and his journey back home.'*

Nafisa Khattak, social worker, speaking at FRC Seminar in March 2006

While the Government had lead responsibility for handling the earthquake response, the overwhelming scale of the disaster prompted many national and international NGOs and donor agencies to send goods and provide their services to help in the relief operation. Added to this was the massive response by the Pakistani public. The challenge was to ensure their efforts complemented those of the Government and other agencies.

9.1 Public Response

The public response to the 2005 disaster was unprecedented. From across the country people from all walks of life donated money, supplies and volunteered their services to help the quake survivors. The whole nation united to support the relief effort. Tens of thousands of quilts, items of clothing, stoves, heaters, food rations and other goods were donated. Thousands of people left their homes to travel to the affected areas – leading in some cases to congestion on the already blocked roads. TV channels, the press, celebrities, the fashion industry all carried programs and special events to raise awareness of the plight of the quake survivors and raise resources for them.

While donations and support for the quake victims came from all over Pakistan, the Government and people of Punjab were particularly active and generous. At one point there were literally hundreds of trucks carrying relief goods going from Lahore and other parts of Punjab to the affected areas. The initiative was led by the Punjab Government, and personally by Governor Khalid Maqbool, but was characterized by very active public participation [see Box 11]. The scale of Punjab's contribution can be gauged from the fact that 23% of total food rations came from there, and 2.2. million quilts (36% of the total). Sindh was equally helpful, with huge quantities of relief supplies collected at Karachi and other cities. These were sent to the FRC by air, rail and road for distribution to the affectees.

The public response within Pakistan was supplemented by that of the Paksitani diaspora in the UK, US and other countries. Tons of relief goods were donated by expat Pakistanis, and many came to Pakistan especially to participate in the relief effort.

Box 10: Melody Rehabilitation Centre

The Melody Rehabilitation Centre was opened by Mrs Khattak in a fire-damaged building in Melody Market. The building was converted within days into a working hospital, providing care and physical therapy for those injured in the 2005 earthquake. Mrs Khattak's hard work and determination played a major role in its success, but so too did generous support from members of the public – so extensive that the administrators never had to worry about finding the resources to operate the Centre.

People would come and ask questions until they identified something they could donate. Many donors did not even leave their names – they simply gave supplies. On top of this were the many volunteers who came to work in the Centre. These included those who would never normally do those kinds of duties: helping patients with physical therapy, children overcome trauma, massaging patients, washing their hair, cutting their nails and so on. Consultant doctors made free visits to see the patients, labs carried out tests and scans at cost price.

The combination of good management by Mrs Khattak's team and generous support from the public led to the Centre becoming a model facility. Mrs Khattak was one of those introduced to President Bush when he visited Pakistan, and she received the Sitara-e-Eisaar medal for her services.

As part of the overwhelming public response to the quake disaster, volunteers from all over Pakistan traveled to the affected regions to help in relief efforts.

Box 11: Punjab Support for Earthquake Response – Personal Account by Lt.Gen. (Retd) Khalid Maqbool, Governor of Punjab*

"We were all inspired by the way the Government led this whole effort – the President and Prime Minister were involved personally at every stage – and by the massive and very complicated coordination that the FRC did.

"When we organized this effort we kept three principles in mind: one was to build a partnership between the public and the Government…we took the money and resources of the public and channelled them through the government, in particular the district government. Secondly we provided aid which was need-based, and we constantly monitored and adjusted the quantity and quality of aid. Thirdly we were very flexible in our approach. Nobody bothered whether this organization had this or that role. These were the principles we followed in Punjab. Our aid could be divided into three stages.

"Stage one was provision of food, medicines and blankets. We collected food and made up packages with rations that we thought a family of six would need for ten days. We realized people had nothing to cook with so we sent cooking utensils, and men and equipment to set up langars (communal kitchens). Of the total rations sent to the affected areas, we estimate some 23% came from Punjab. For blankets and quilts there were not enough available in the market to meet demand so we appealed to every household to give one quilt. We collected 2.2 million quilts, almost 36% of the total number donated in the relief effort. We initially supplied 800,000 medicines but then realized this need was being met by international agencies and others. We focused on goods that were not, e.g. toys for children. Demonstrating our flexible approach, where goods were not available on the local market, we got them from elsewhere: Dubai, even India.

"We constantly updated ourselves on what was needed and, when we realized food was not such a priority, shifted to stage two: helping people back on their feet. We sent 23,000 packages with tools and essential equipment to help people repair their homes. Realizing there was a shortage of manpower, we sent 95 teams of 10 people (masons, carpenters, etc) each to help in building work. Each team went equipped and fully supplied so as not to add to the burden on resources. We then supplemented this with 75 teams–almost 800 people–of university students whom we trained and equipped to participate in civil works in the affected areas. They came back with incredible experiences.

"Stage three was hosting people who came into Punjab. Lots of patients accompanied by their relatives came to Lahore with absolutely nothing. We launched appeals from the public to give these people clothes, bedding and basic supplies – at no cost to the government. For long-term rehabilitation we came up with the scheme of people with resources 'adopting one family' for a period of one year, at Rs.6,000 per month. We hope to adopt 100,000 families in this way. In addition the Punjab Government is asking donors and philanthropists to pay for reconstruction of a school, a clinic, etc. We also want to use our young people, notably in universities, to provide psychological counselling to victims, veterinary services, and so on.

"We think our success was due to a number of factors: the generosity and innate philanthropy of the Pakistani people, the constant guidance we got from Government, the excellent unified command structure established for the relief effort, the awareness-raising role of the media. However, there were also weaknesses and areas for improvement. Looking ahead, we need an effective disaster management system especially at district level. We need to train people and promote a culture of public participation in government (civic) affairs. At the end of the day we feel very encouraged that the world came to our help, and that we can reconstruct and create a better life for the people who have gone through this tremendous shock."

**Adapted from account presented by Governor Maqbool at FRC Seminar in March 2006.*

9.2 Role of Media

The FRC was set up to be a 'one window operation' responsible for everything including media management. The Prime Minister's media advisor, press information officer, and ISPR representative all joined the FRC's team and were a great help in handling the media, making all press arrangements, interviews, discussions, etc. All the latest information on relief activities was posted on the FRC website and often, during press briefings, written handouts were also issued to media personnel. The FRC served as the sole spokesperson on the relief effort, thereby avoiding conflicting stories.

The media played a significant role in raising public awareness of the scale of the disaster and the plight of the quake survivors. Constant TV images of destroyed towns and villages and desperate people undoubtedly contributed to the huge public response seen after 8 October 2005. The greatly increased number of TV channels, most privately owned, and increased TV ownership among Pakistanis – as well as transmission of Pakistani programs to communities abroad (the UK, US, Dubai and the Middle East, etc) – were all significant factors. However, the media's handling of the crisis was not without challenges and controversy.

The media was pivotal in helping raise awareness across the country, as well as internationally, of the scale of the disaster and the plight of the survivors.

With regard to challenges, some of those faced by the electronic and press media included:

- Lack of awareness of the magnitude of the disaster – particularly initially;
- Many local journalists were killed or otherwise personally affected by the earthquake.

Journalists going to the affected areas from other parts of Pakistan were unfamiliar with the territory and people;

- With the destruction to telecommunications, etc. transmission of information and particularly of visual images needed expensive high-tech equipment – which not all media organizations could afford. Related to this was the expense entailed in traveling around the affected regions and ensuring representative coverage;
- Information was coming in from lots of different sources, some of it conflicting, and it was not always easy for the media to sift through it and determine which was accurate;
- Radio coverage, especially by unlicensed operators, remained restricted by PEMRA[10]. In rural areas, more people still depend on radio than on TV for their news. Thus a good opportunity to reach those people and raise their awareness of the disaster and needs of survivors was wasted.

Some of the controversial issues surrounding media coverage of the disaster were:

- Defining the role of the media: was it there to support the national effort or to play its typical role of critic? – most media agencies opted to follow a policy of not serving as public relations (PR) mouthpieces for the government, whilst highlighting all positive developments and being guided by the interests of quake survivors.
- Some media stories were criticized for lack of sensitivity to the sentiments of quake victims and/or their families, e.g. a story which showed a woman dying, or another in which camera crews went into people's tents and showed the conditions in which they were living.

Some of the key lessons, with regard to media coverage, to emerge from the 2005 earthquake were: the need for the media to have strategy for disaster reporting; the need for one-window information dissemination by the Government; for reliance on more than one source of information; and for a constructive, collaborative relationship between media and Government, but falling short of PR and embedded journalism.

9.3 Contribution of NGOs and Donors

The contribution of NGOs and donors to the earthquake relief effort can be gauged both from the numbers involved and the goods and services they provided. Prior to the 2005 earthquake some 34 INGOs were operating in Pakistan. Following the quake and the subsequent 'open door policy' (see below) adopted by the Government many more came into the country. Added to these were domestic NGOs. While a total of 140 NGOs formally registered with the FRC, there were hundreds more small-scale and/or local level NGOs who participated in the relief effort.

Goods provided by NGOs and donors included rations, medicines, blankets and clothing, tents, stoves, and much more. Indeed, donor agencies and NGOs were the main providers of CGI sheets for the construction of semi-permanent shelters, which helped people survive the winter and averted the need for a mass migration out of the affected areas. Of the 370,000 shelters constructed using CGI sheets, in 175,000 the sheets came from NGOs and donors. Support in terms of services included volunteers to help in rubble clearance and rescue work, distribution of goods, construction of shelters, and medical personnel to provide treatment to the survivors.

10 Pakistan Electronic Media Regulatory Authority.

Donor governments, international organizations and NGOs also gave logistical support by providing helicopters.

a) Positive Features

The success and scale of NGO and donor contributions to the earthquake response was helped by a number of factors – these could be considered 'positive features'.

The first was the flexibility shown by NGOs and donor agencies, particularly the larger ones. They did not confine themselves to their traditional scope of work and expertise, but tried to provide whatever was needed to help the quake survivors. Related to this was the implementation approach they took: many, especially INGOs and especially those working in Pakistan for the first time, took the sensible option of partnering with local NGOs and CBOs for needs assessments and distribution of goods. Such partnerships, as well as the general experience of seeing INGOs and donor agencies at work, provided considerable capacity-building for national and local NGOs – many of whom were being exposed to such a large-scale disaster for the first time.

Many international aid workers came to support the relief operation in northern Pakistan.

As stated above, the Government adopted an 'open door policy' to NGOs and donor agencies, whereby it relaxed visa and landing permit requirements for anyone wanting to come and help in the relief effort. Registration procedures were also streamlined. Experience from previous large-scale disasters has shown that the advantages of such an open door approach far outweigh the disadvantages. In Pakistan's case the policy enabled foreign rescue, medical and other teams to quickly reach the affected areas and provide help. The same reasoning led the Government

to relax customs regulations and waive all duty on relief goods. Responsibility for issuance of NOCs was assigned to the ERC. The system worked well, greatly facilitating the rapid supply of relief goods to the quake survivors.

Coordination of the activities of different NGOs was carried out through the FRC - part of the overall 'one-window operation' with everything managed by the FRC. Because the FRC was also the designated body coordinating relief efforts by all the stakeholders and organizations involved, it was able to promote harmonization. This was not an easy task. Over-regulation of NGOs, national or international, could have stifled the motivation and flexibility needed in such operations. The FRC tried to ensure that NGOs were given freedom to carry out relief work, but that as far as possible this was coordinated with government and other agencies to ensure timely and adequate coverage of the maximum number of affectees, and to prevent duplication of effort. To a considerable extent this was achieved, both at federal and local level – though there were problems. Furthermore, cooperation between the FRC, NGOs and donors enabled the latter to provide their inputs into the formulation of relief strategies, e.g. advising winterization of tents and construction of transitional shelters.

b) Challenges and Constraints

One of the major challenges in the initial phase of the earthquake response was simply organizing the vast quantity of goods coming in from different NGOs and donor agencies – handling logistics. The problem of custom clearance was quickly resolved, as the Government issued rapid NOCs to all consignments of relief goods, but that of storage and transport remained. This was due in large measure to the lack of storage capacity (both personnel and warehouses) of the NGOs. Local NGOs in particular were unable to process goods they received, or keep track of what they had and where it was going. A related problem was that NGOs and even more donor agencies were unclear about what goods were needed in the quake-affected areas. Because of lack of guidance about this, funds were to some degree utilized on inappropriate goods such as electric blankets and second-hand western clothes. Clarity of requirements could have averted this 'wastage'.

A second problem was that many NGOs tended to converge on the more accessible areas, particularly in the early phase of the relief operation when many areas were completely cut off. This led to a 'glut' of relief goods in those areas, while people in more remote locations were desperately in need of basic provisions. This issue might have been avoided if NGOs had been assigned specific geographic locations in which to work. But in practice, this would probably have led to them doing nothing as many would not have been able to access the areas assigned to them. On balance it was probably better to have duplication of effort than none at all. Once the emergency phase was over coordination improved leading to more equitable distribution of relief goods.

Data management was a constraint throughout the relief operation. In the emergency phase, for example, there was a rush of relief goods dispatched by NGOs and other organizations without proper recording and documentation, so vital data was not available. Similarly, the FRC experienced delays in receiving information from different NGOs and donor agencies, which hampered its ability to plan the overall response. A related issue was that many different NGOs and agencies conducted their own independent assessments of damage and needs in the quake-hit areas. This led to fragmented assessments which, when coupled with limited sharing of information, again hampered overall planning and effectiveness. Both the FRC and UN were engaged in large-scale data collection: since the UN was technically much better equipped for

the task it could have been assigned it, thereby avoiding the duplication of effort that was seen.

While there was appreciation of the cluster approach taken by donor agencies, led by the UN, and of the Government's efforts to align its relief operations with the various clusters, there was criticism that Government leadership was not sufficiently visible. One option could be for the cluster approach to be led by Government in future. Another criticism made by NGOs and donors was that transitional aspects of the earthquake response should have been planned earlier, and clarity provided to them about this.

Key Lessons*

- Mechanisms should be put in place to guide the public response (ensuring the right kinds of relief goods are donated, the right services offered, etc) and coordinate it. The best modality for this is through government, i.e. public response should be channeled through government.

- The media should be provided open and regular access to information. Ideally a central cell should be made for disseminating information and to avoid inconsistencies.

- Media management is very important: this entails feeding them correct information, facilitating field visits, educating them on the latest developments, participating in interviews and talk shows. Equally important is monitoring of the public mood and taking proactive steps.

- The media should retain its independence and objectivity, but at the same time should be sensitive to the feelings of disaster survivors and should not undermine the national effort through overtly negative coverage. Criticism of disaster management by the authorities and others should be constructive.

- NGOs and donors should ensure that their efforts complement national strategies, they should ensure effective coordination amongst themselves and with others (e.g. through participation in clusters). They should show flexibility in their areas of work – responding to need rather than being guided by their traditional scope of operations.

- The Government should adopt an 'open door policy' to all aid agencies and organizations wishing to participate in relief operations.

* *Many of the lessons listed at the end of the previous chapter, for the UN System, will also be applicable for NGOs and donors.*

10 CHALLENGES, LESSONS AND THE WAY AHEAD

'We created an implementation organization (the FRC). *I personally think one very important aspect, and one can never underplay this, is to select the right man for the right job, select the right people for heading these organizations. That makes the difference. The wrong man will not deliver; the right man does deliver. May I give credit to General Farooq, whom we selected – he delivered.'*

President of Pakistan, Address at FRC Seminar in March 2006

Many of the specific challenges faced in different aspects of the earthquake response have been detailed in the relevant sections. Here the main overall challenges are assessed and summarized, along with lessons for the future.

10.1 Challenges in Pakistan's Earthquake Response

As seen in this report Pakistan's earthquake response was impressive and rescue and relief operations were carried out very effectively. This can be gauged from the number of agencies, organizations and stakeholders who participated in the quake response; the numbers of people helped; the scale of relief goods provided to survivors; the fact that second and third waves of death following the immediate quake death toll, as well as the feared winter disaster were averted; and so on. However, this success was achieved in the face of enormous challenges.

The 2005 earthquake struck in a region that was known among experts to be a quake-prone zone with considerable (potential) seismic activity. Despite this no building codes for quake-proof construction were issued in the vulnerable areas, and there was no enforcement of any kinds of building regulations. Because of a dearth of seismic monitoring centres in the country, and the fact that those in existence lacked capacity and resources, there was no early warning system in place – something that could perhaps have saved lives. The result of all this was that the earthquake caused massive destruction of life and property.

The next challenge was that, in the face of such a huge disaster, there was no central national disaster management authority in place to coordinate an effective response. There was also no contingency planning at the national level to map out action strategies for when a disaster strikes. The FRC was established within two days but had to begin operating from scratch and under extreme pressure to deliver. Lack of an accurate information database – about population numbers, geographic spread, location of facilities, infrastructure, and so on – delayed proper damage assessment and meant it took some time for the full magnitude of the disaster (and required response) to become clear.

The country's capacity to undertake rescue operations was very poor: there was a lack of trained personnel and specialist equipment. There was an over-dependence on foreign search-and-rescue

teams which, by definition, took time to reach the affected areas. When coupled with the massive destruction to road and communication networks and constraints on air transport capacity, this very likely meant lives that could have been saved were lost. Problems were also faced with treatment of casualties as 'front-line' medical facilities were limited and took time to be established.

Relief operations were hampered by a number of factors:

- Limited warehousing capacity at provincial and national level, which meant makeshift arrangements had to be made by the FRC;
- Lack of air-lift capacity internationally and nationally which meant, for example, that tons of relief goods donated by Pakistani expatriates and international community were stuck at foreign airports;
- As the airlift operation got underway with Pakistani and foreign aircraft issues were faced with shortage of airports and aviation bases in the affected areas, which had limited capacity to support large numbers of flights;
- The destruction to road and other infrastructure caused by the quake made access to affected areas difficult. It was made more so by the absence of back-up planning, machinery and provisions for delivery of essential services;
- In some cases inadequate goods were provided or there was duplication of effort. It took time for effective guidance to emerge on what relief goods were needed and where.

Handling the vast quantities of relief goods provided by the Pakistani public was in itself a major task.

Some of the other problems faced by the quake survivors could have been avoided. There were a few lapses in the protection of vulnerable groups such as destitute women and orphans because of the lack of accurate information, facilities to accommodate and cater for such people, and the insufficient number of law enforcement agencies personnel. The compensation policy for survivors was perhaps not clearly conveyed leading at times to confusion, misinterpretation and frustration on the part of those seeking to secure compensation. The situation was exacerbated by lack of accurate data, e.g. of land ownership.

Other aspects of the earthquake response that could have been handled better were volunteerism and the media. Thousands of people volunteered their services and many rushed to the affected areas. But in the absence of a coordinated volunteer movement and strategy, this resource was perhaps not deployed as effectively as it could have been. Furthermore the full potential for volunteerism in Pakistani society was much greater than that seen – had efforts been made prior to the disaster to infuse a national spirit of volunteerism, particulalry in the young, more of this potential would have been realized. The media played an important role in raising awareness, particularly among Pakistanis at home and abroad, of the scale of the disaster and in mobilizing support from them. But there were issues with media coverage (discussed earlier) and its ability to engage and retain the attention of the international community proved to be limited.

10.2 Lessons for the Future

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) 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.

c) 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.

d) 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.

e) Contingency Planning and Preparedness

Contingency plans should be prepared by the NDMA to deal with all potential threats and climatic hazards. These plans should also be prepared by national, provincial and local level authorities, laying out the roles and responsibilities of various ministries, departments and agencies at each level. The NDMA should work with these to ensure that they can respond in a proactive – rather than reactive – manner when a disaster occurs. Emergency procedures, cutting down the traditional red tape found in bureaucratic operations, should be developed and all involved should be familiarized with them in advance. Particular efforts should 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 centre and lines of command, e.g. the DCO or Nazim should be overall in charge.

f) Logistics Planning

The management of logistics of rescue and relief operations is one aspect of contingency planning that needs especial attention and focus. The NDMA should calculate requirements (type and quantity) of relief goods in the event of different types and scale of disaster. Likely availability of such goods, in particular basic commodities, should be assessed beforehand. Storage, transportation and other logistical facilities at national, provincial and even local levels should 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. The NLC, being a major asset, could become logistics handler for the NDMA during any emergency.

g) 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 and NLC, 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.

In conclusion, Pakistan's handling of the 2005 earthquake – 'the most debilitating 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.

This report has detailed the approach taken to disaster management following the earthquake of 8 October 2005 and the main lessons to emerge from it. It is our collective responsibility to learn these lessons and implement strategies to ensure that the next time disaster strikes – for it really is a question of 'when' not 'if' – we are better prepared.

11 POSTSCRIPT

11.1 Current Status of Earthquake Response

The FRC was merged with ERRA in March 2006. As its name indicates, ERRA's focus is on long-term reconstruction in the affected areas and rehabilitation of the population. This encompasses physical reconstruction of homes and other buildings, restoration of services such as health care and education, restoration of amenities and utilities such as electricity and water, restoration of infrastructure, environmental preservation, restoration of livelihoods (creating opportunities for employment and economic growth), and physical and psychological rehabilitation of quake survivors. All of these are major challenges which will require considerable funds and time.

ERRA's approach to this daunting task entails identification of sectors for reconstruction activities, and development of strategies for each of these. The main sectors are: housing, education, health care, livelihoods, transport, agriculture and livestock, environment, power generation, protection of vulnerable groups, water and sanitation (watsan), industries and tourism, telecommunications and governance.[1] In the housing sector, for example, ERRA's strategy is to promote rebuilding by owners themselves, using quake resistant construction designs, rebuilding in situ using familiar methods and readily accessible materials. Local communities are being assisted in this with technical and financial assistance.

Funding for these various reconstruction activities is coming from the pledges made at the November 2005 International Donors' Conference in Islamabad (totaling $5.87 billion) as well as from Government and NGOs. With regard to implementation, ERRA developed (in consultation with the UN and other stakeholders) an Early Recovery Plan. This was to run for one year from 1 June 2006, but its term was extended to enable utilization of all resources. The Plan focuses on the transition from relief to recovery, and thereafter from recovery to reconstruction in eight sectors: education, health, livelihoods, watsan, housing, shelter and camp management, support to the vulnerable, governance and common services and coordination.

Over one year on, much has been achieved under the Early Recovery Plan[12]. In the education sector training and support for district educational managers has featured strongly in projects. Several thousand teachers in AJK and NWFP have also been given basic training in disaster preparedness and response, psycho-social support and participatory learning. In health a joint response has been implemented by UN agencies, I/NGOs and health authorities. As a result almost all health facilities in the affected areas are now functional. Most health professionals have been trained in their relevant fields. The DEWS is being practiced and is considered a major success. A network of Community Health Workers (CHWs) has been established for outreach to under-served areas.

11 For details of ERRA's strategy and progress in each of these see: www.erra.gov.pk/WebForms/Home.aspx.
12 See *'ERRA-UN Early Recovery Plan Final Report Jun 2006-May 2007'* (ERRA and UN IASC Country Team, Pakistan).

Specific progress in the health sector includes:

- Out of 305 health care facilities to be built, 266 have been pledged;
- Progress on 211 health facilities has been made against the target of 165 for year 2006-07;
- 9 facilities have been completed and handed over to the respective Departments of Health, AJK & NWFP;
- 97 prefab health facilities have been constructed (69 AJK, 28 NWFP);
- 53 health facilities are being supported by INGOs/NGOs.[13]

Over 80 international humanitarian organizations have effectively implemented programs in the livelihood sector. These include: cash for work, training, cash grants for small enterprises, restocking of animals and provision of feed as well as support in livestock shelter construction, livestock extension training, backyard poultry farming for widows, plantation of fruit trees and agricultural inputs (e.g. seed distribution). Activities in housing have followed the ERRA strategy outlined above. As of May 2007 damage assessment had been carried out on 600,000 houses and most affectees given financial assistance to begin rebuilding their homes; this had started in over two-thirds of destroyed houses. Training had been provided to 160,906 engineers, sub-engineers, masons, carpenters, steel fixers and home owners.

Thanks to such initiatives, considerable progress has been made on the return of IDPs to their homes. Nine months into implementation of the Early Recovery Plan only 11% (39,000 people) of the original IDP population were still living in relief camps in AJK and NWFP. These were mostly people unable to return because of loss of land, injuries and other factors.

Social protection activities carried out to date include the establishment of child and women friendly centres, provision of psycho-social support and counseling, provision of artificial limbs, prostheses and orthotics devices to physically disabled people, and a cash grant program (Rs.3,000/month for six months – later extended) for vulnerable families.

While progress has been impressive, the scale of the reconstruction task should not be under-estimated. A great deal of work remains to be done. Continuous support by the international community is needed for initiatives undertaken by the Government.

11.2 National Disaster Management Authority

One of the major lessons of the 2005 earthquake – the need for a permanent body to manage disaster responses – has since been acted on.

On 21 December 2006 the NDMA Ordinance was passed, paving the way for the establishment of the NDM Commission. Owing to time needed for preparatory work (development of organizational framework, rules of business, budget, etc) the first meeting of the Commission was not held until 5 March 2007. Members attending included the Prime Minister (ex officio Chairman); Ministers for Communications, Defence, Finance, Foreign Affairs, Health, Interior, Social Welfare and Special Education; Chief Ministers of all provinces; NWFP Governor; AJK Prime Minister; civil society representatives and the Chairman NDMA (secretary to Commission). At the meeting it was agreed to formally launch the NDMA under the

13 http://www.erra.gov.pk/Reports/Health/Healthupdates140907.pdf.

chairmanship of Lt.Gen. (Retd) Farooq Ahmad Khan.

The NDMA has been set up as the focal point and coordinating body to facilitate implementation of disaster risk management (DRM) strategies. It thus interacts directly with all key stakeholders (Ministries, Divisions, Departments, armed forces). Disaster risk management – and thus the work of all these diverse stakeholders involved in an emergency response - is to be conducted as a one-window operation through the NDMA.

The 'macro' structure for DRM comprises the NDMC, NDMA as well as Provincial (Regional) Disaster Management Commissions, Provincial (Regional) DMAs, District and Municipal DMAs, in addition to Tehsil and Town Authorities and community-based organizations. The PDMCs and PDMAs have corresponding roles and functions at provincial level to the NDMC and NDMA. DDMAs are to be established by provincial governments in hazard-prone areas on a priority basis. These and the MDMAs in urban areas/cities will be responsible for district level disaster risk management. National, Provincial and District DMAs can constitute Technical Committees to focus on specific disaster threats and issues, e.g. floods, early warning systems, disaster risk communication. Together all these institutions and entities (NDMC, NDMA, PDMCs.....CBOs) form what will, hopefully, be a more effective disaster risk management structure in Pakistan.[14]

Returning to the NDMA, its specific functions include:

- Coordinate complete spectrum of DRM at national level;
- Act as Secretariat to the NDMC;
- Map all hazards in the country and conduct risk analyses on a regular basis;
- Develop guidelines and standards for national and provincial stakeholders regarding their role in DRM;
- Organize training and awareness-raising activities for stakeholders, particularly in hazard-prone areas;
- Serve as the lead agency for international cooperation in DRM, and for NGOs to ensure their performance reaches accepted international standards;
- Coordinate emergency response of the federal government in the event of a national level disaster through the National Emergency Operations Centre (NEOC);
- Require any government department of agency to make available such personnel or resources as needed and available for the purpose of emergency response, rescue and relief;
- Establish a National Disaster Management Fund.

To carry out these functions the NDMA has a sanctioned staff strength of 111, comprising 26 officers and 85 supporting staff. It is organized into a number of wings: Operations; Coordination; Human Resources and Procurement; Aviation; Finance and Accounts; Recovery, Reconstruction and Rehabilitation. Of these Coordination, Operations and HR Procurement are the biggest. Operations Wing is actually further sub-divided into an Operations Centre and Military Wing, the latter encompassing medical teams, logistics, engineers, etc. The structure of the NDMA is designed to enable it to meet the various challenges posed by a major disaster and

14 For details see *'National Disaster Risk Management Framework Pakistan'*, (NDMA, GoP), pp. 49-56.

launch an effective response. Note that the core permanent NDMA set-up is very small. Major wings such as the Military, and Recovery and Reconstruction, as well as co-opted members, only become activated within the NDMA when a disaster strikes/as and when required. [See Annex 3 for NDMA Organogram.]

Since its establishment, the NDMA has had to deal with one major national disaster – the cyclone that devastated much of Balochistan and Sindh in June 2007. Cyclone Yemyin struck on 23 June 2007. It caused torrential rains and heavy flooding in southern Sindh and south-western Balochistan, spread over 16 districts initially. Tens of thousands of people were left homeless, without drinking water or basic supplies. They also face long-term prospects caused by destruction of crops and loss of livelihoods. [See Box 12.]

Box 12: 2007 Cyclone Disaster in Balochistan and Sindh[15]

On June 23, 2007, a tropical cyclone Yemyin with winds of up to 130 kmh caused torrential rains in Pakistan. The cyclone, and subsequent torrential rains, caused heavy flooding in parts of the southern province of Sindh and most of southwestern province of Balochistan. Heavy rains also affected most of North-West Frontier and parts of Punjab provinces. More than 6,400 villages in 28 districts of Balochistan and Sindh were eventually affected leaving 420 people dead, 109 people missing, and 371,092 people shelterless, and around 75,600 houses destroyed.* A total of 2.5 million people were affected.

Official estimates of damages for certain sectors are still being reviewed. In addition to loss of lives and houses, floods have also caused loss of livelihoods and damaged economic assets and infrastructure, with social service delivery, commerce, and communications, either debilitated or destroyed. In particular, drinking water supply systems serving over 800,000 people, around 1,000 educational facilities (mostly public sector primary schools), and, over 190,000 hectares of crops were damaged. Vulnerable groups including women and children have borne the brunt of the impact.

It is estimated that the damages caused by the cyclone and floods in the 16 districts covered in the assessment, will result in a substantial cost to Pakistan of about US$ 623 million

** As per NDMA's update of August 31, 2007.*

Thanks to the establishment of a national disaster management structure, the Government was able to respond quickly to the disaster. The NDMA took the lead in organizing and coordinating relief efforts. It laid down policies for the disaster response, covering all aspects of disaster management. Key 'government' stakeholders involved include the ERC, USC, NLC, MoH, MoFA, WAPDA, the Pakistan Meteorological Department, and the Federal Flood Commission and the Armed Forces. Some international humanitarian organizations and NGOs are making important contributions to the quake response. For the first time the NDMA defined the rules of participation for international and national aid agencies/NGOs. During the first two months of the disaster response, coordination meetings were held twice daily (morning and evening) but from September these were reduced to twice weekly.

As with the 2005 earthquake response, the Armed Forces were at the forefront of rescue and relief operations. Troops were deployed in all 16 affected districts. These included army medical support units, working alongside provincial and district health authorities.

15 Taken from '*Pakistan Cyclone and Floods 2007: Preliminary Damage and Needs Assessment Balochistan and Sindh Provinces*', (ADB and World Bank, Islamabad, 4 Sept 2007), pp. 1-2.

The NDMA's disaster response began at the end of June and has been on-going. As of 20 August 2007 2,000 people marooned by floods had been rescued and relief camps set up for them and other affected people; 90,000 tents had been distributed, over 60,000 blankets, some 8,200 tons of rations and 33 tons of seeds. Over 400,000 people had been provided medical assistance. Immediate compensation of Rs.15,000 per household has been distributed to the flood-affected population, with the total paid amounting to Rs.1.2 billion, while a longer-term recovery program is being developed.

Cyclone Yemyin coused massive flooding in Balohistan and Sindh (top)
The NDMA was able to respond quickly to meet the needs of flood affectees (bottom)

ANNEXES

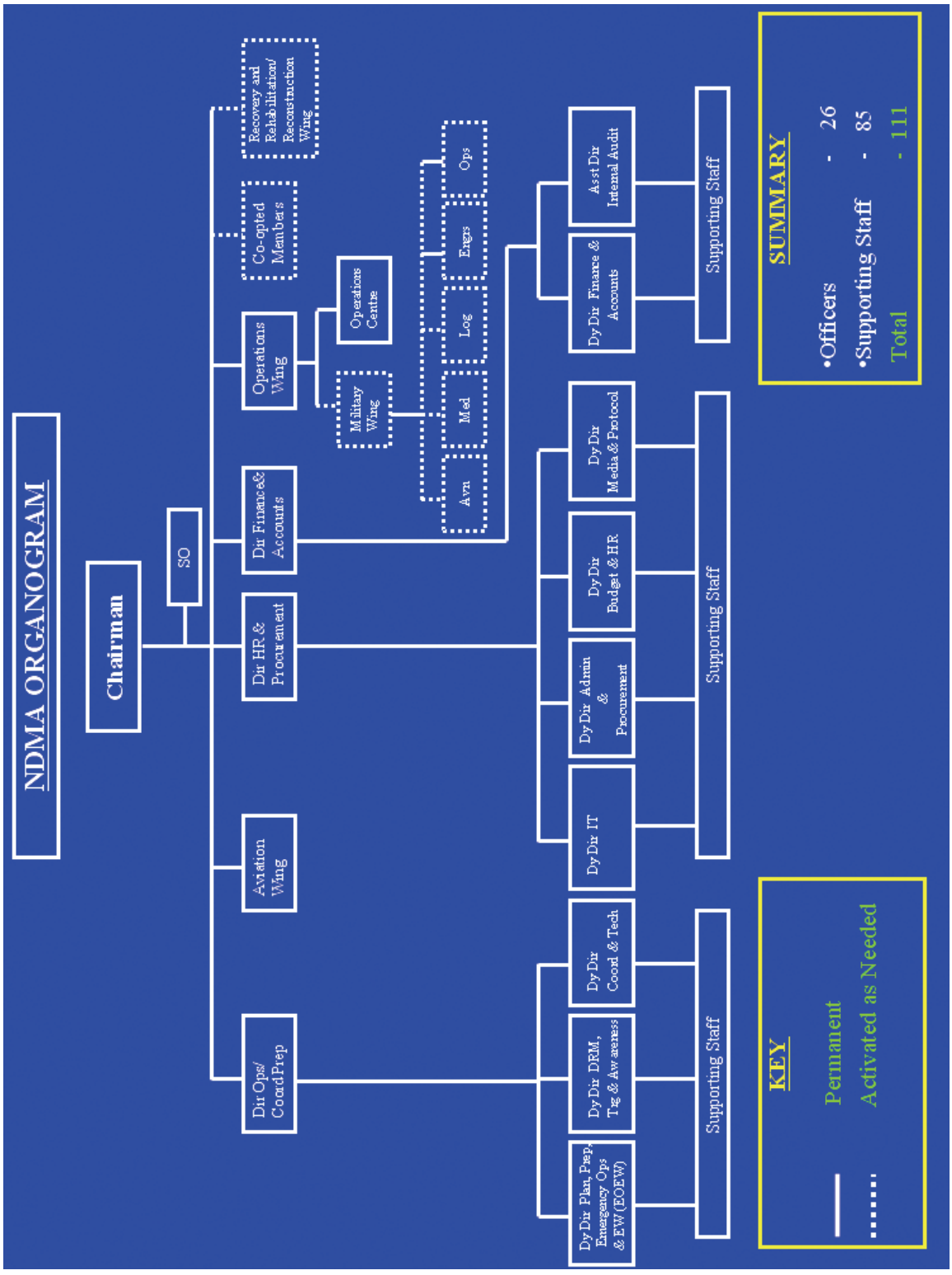
ANNEX 1: Relief Goods by Tonnage Sent by Different Countries

Country	Tonnage	Country	Tonnage
Afghanistan	4	Moldova	4.99
Australia	0.63	Nepal	27.89
Austria	45.62	NGOs	1983.41
Azerbaijan	6	NATO	24.77
Bahrain	8.09	Norway	49.16
Bangladesh	13.11	Oman	158.38
Belgium	48	Poland	29.97
Bosnia	10	Qatar	27.39
Brazil	15.30	Romania	9.15
Canada	46	Russia	32.4
China	1,827.31	Saudi Arabia	1,074.58
Croatia	42.85	Singapore	10.45
Cyprus	0.60	Slovakia	5
Egypt	14.40	Slovenia	1.95
France	56.67	South Africa	39
Germany	187.35	Spain	26.5
Hong Kong	53.25	Sri Lanka	56.84
India	57.84	Sudan	80
Indonesia	20.20	Sweden	10
Iran	147	Syria	52
Italy	32.84	Tajikistan	20.52
Japan	13.73	Turkmenistan	23.62
Jordan	210.98	Turkey	81.01
Kazakhstan	164.84	UAE	600.74
Kuwait	3.79	UK	117.32
Kyrgyzstan	57.04	Ukraine	365.78
Lebanon	20	UN	108.03
Libya	132.88	USA	1,018.57
Luxembourg	47.01	Uzbekistan	16.26
Malaysia	58.93		

ANNEX 2: Relief Goods Sent by Select Individual Countries

COUNTRY	Cash Donation	Amount Pledged	Tents	Blankets	Rations (tons)	Medical Assistance	Misc. Items
China	$1.532 million	$300 million	39,000	210,880	20	64 tons medicines	301 tons 1,124 generators
Cuba						30 field hospital 2,500 doctors and paramedics 75 tons medicines	
Germany	$411,790	44 million Euro	19,078	6,500	4.2	21 tons medicines 1 medical team 2 field hospitals	74.552 tons
Iran	$35,000	$200 million	11,212	40,000	545	2 x 50 bed field hospital 4 tons medicines	110 tons 2 helicopters 22 vehicles
Japan	$1.05 million	$140.21 million	340	1,350	6,000	1 field hospital	10 tons 20 pieces heavy equipment
Saudi Arabia	$629,735	$573 million	43,057	84,800	436	11 tons medicines	2,475 tons
Sri Lanka	$100,000	$93,300	8,719	3,993	3,012	14 tons medicines	10 tons
Turkey	$6.4 million	$150 million	9,000	1,050,000	55,000	9 field hospital 114 tons medicines	48 tons
USA	$4.4 million	$510 million	7,222	189,827	205	2 MASH 105 tons medicines	201 tons 17 helicopters

ANNEX 3: NDMA Organogram



ANNEX 4: Armed Forces and Civilian Officers Who Worked in the FRC

Armed Forces Officers in FRC				
Ser	**PA No Rank and Name**	**Period**		**Appt**
1	PA-12864 Maj Gen Farooq Ahmad Khan[16]	10 Oct 05	31 Mar 06	FRC
2	PA-13812 Maj Gen Nadeem Ahmed	15 Oct 05	31 Mar 06	VCGS/Chief Army Coordinator
3	PA-17634 Brig Agha Muhammad Umer Farooq	10 Oct 05	31 Mar 06	COS to FRC
4	PA-22248 Lt Col Tariq Naseem	24 Oct 05	31 Mar 06	GSO-1 Ops
5	PA-25842 Lt Col Aamir Mirza	10 Oct 05	31 Mar 06	GSO-1 Ops
6	PA-28935 Maj Nawazish Ali Khan	24 Nov 05	31 Mar 06	GSO-2 Avn Cell
7	PA-28242 Maj Muhammad Jamil Asghar	15 Oct 05	10 Jan 06	GSO-2 Ops Cell
8	PSS-28035 Maj Mushtaq Hussain	10 Oct 05	31 Mar 06	GSO-2 Ops Cell

16 Later Lt. Gen (Retd.)

Ser	PA No Rank and Name	Period		Appt
Logistics Cell				
9	PA- 17508 Brig Akhtar Javed Warraich	20 Oct 05	31 Mar 06	Dir Log Cell
10	PA-21190 Lt Col S.M. Samin Jan	20 Nov 05	31 Mar 06	GSO-1 Log Cell
11	PA-26199 Lt Col Muhammad Rafique	12 Oct 05	10 Dec 05	GSO-1 Log Cell
12	PA-29237 Maj Muhammad Abid Khan Baloch	20 Oct 05	31 Mar 06	GSO-2 Log Cell
13	PA- 29557 Maj Naveed Ahmed	19 Nov 05	31 Mar 06	GSO-2 Plans Log Cell
14	Capt Muhammad Salman	13 Oct 05	03 Jan 06	GSO -III Log Cell
Foreign Collaboration Cell				
15	PA-21552 Col Muhammad Sahffi Ghazi	14 Oct 05	31 Mar 06	Dy Dir FC Cell
16	PA- 24109 Lt Col Syed Baseer Alam	15 Nov 05	10 Apr 06	GSO-01 FC Cell
17	PA-28231 Maj Mian Rifat Ullah Khan	15 Nov 05	15 Mar 06	GSO-2 FC Cell
18	PA-341 11 Maj Muhammad Umer Siddique	14 Oct 05	31 Mar 06	GSO-2 FC Cell
19	PA-29548 Maj Sajid Mahmood	14 Dec 05	16 Mar 06	GSO-2 FC Cell
20	Maj Mehdi Hussain	18 Jan 06	31 Mar 06	GSO-2 FC Cell
Engineers Cell				
21	PA-20246 Lt Col Aurangzeb	08 Oct 05	30 Dec 05	GSO-1 Engrs Cell
22	PA- 21174 Lt Col Zulfigar Ali Janjua	26 Dec 05	31 Mar 06	GSO-I, Engrs Cell
23	PA-34226 Maj Tanveer Hussain	10 Oct 05	31 Mar 06	GSO-II, Engrs Cell
24	PA-22306 Maj Ahsan Ali	06 Jan 06	31 Mar 06	GSO-2 Engrs Cell
Call Centre				
25	PA-23124 Lt Col Baseer Haider Malik	12 Oct 05	10 Mar 06	Chief Media and Call Centre
26	Pak- Wing Cdr Mehboob Haider	10 Mar 06	31 Mar 06	
Medical Cell				
27	PA- 112760 Maj Gen Abdul Qadir Usmani HI (M)	10 Oct 05	31 Mar 06	DG Health
28	PA- 101608 Lt Col Usman Jilani Khan	25 Jan 06	31 Mar 06	Dir Health
29	PA- 101977 Lt Col Muhammad Ilyas	10 Oct 05	06 Nov 05	Dir Health
30	PA-11643 Lt Col Abdur Rasheed	06 Nov 05	21 Nov 05	Dir Health
31	PA- 101637 Lt Col Sajid Farooq	03 Nov 05	08 Dec 05	Dir Health
32	PA- 101485 Lt Col Waheed	18 Nov 05	31 Jan 06	Dir Health
33	PA- 101817 Lt Col Iftikhar Ahmed	07 Jan 06	29 Mar 06	Dir Health
Air Liaison Cell				
34	PAK- 7759 Air Cdr Khawaja Abdul Majeed	10 Oct 05	31 Mar 06	Dir Air Liaison Cell
35	PAK- 9053 Wng Cdr Fayyazuddin Faizi	21 Nov 05	04 Jan 06	Dy Dir Air
36	PAK- 9148 Wng Cdr Zia Khan	03 Jan 06	25 Jan 06	
37	PAK- 10188 Sqn Ldr Naveed Riaz	20 Jan 06	31 Mar 06	Staff Offr Air Liaison Cell
38	PAK- 12669 Flt Lt Rizwan Ali	20 Mar 06	31 Mar 06	Staff Offr Air Liaison Cell
39	PAK- 12384 Flt Lt S Masood Shah	01 Nov 05	25 Jan 06	Staff Offr Air Liaison Cell
40	PAK- 12695 Flt Lt Irfan Shaheen	27 Jan 06	18 Mar 06	Staff Offr Air Liaison Cell
Project Management Cell				
41	PA- 19973 Lt Col Muhammad Amir Hafeez	10 Oct 05	08 Jan 06	GSO-1 PMC Cell
42	PA-23759 Maj Muhammad Arshid Mahmood Naz, FF	01 Jan 06	31 Mar 06	GSO-2 PMC Cell

Civilian Officers in the FRC		
Ser. No.	**Name**	**Appointment**
1.	Mr Saeed Ahmed Khan	Chief Coordinator FRC
2.	Mr Ishtiaq Ahmed Khan	Coordinator NWFP
3.	Mr Tariq Masood Khan Khosa	Coordinator AJ&K
4.	Dr Ashfaq Ahmed	Coordinator Health
5.	Ms Arifa Saboohi	NGOs Coordinator
6.	My Hamayat Ullah	Cabinet Division
7.	Mr Khalid Khan Toru	Cabinet Division
8.	Murvat Ali Shah	DIG Rwp
9.	Mr Hamid Ali Khan	DCO Rwp
10.	Mr Saqib Zafar	EDO Rwp
11.	Dr Liaqat Munir Rao	Health
12.	Brig (r) Waqar Durani	PMIC
13.	Brig (r) Javed Iqbal Cheema	DG, NCMC
14.	Brig (r) Hafeez	USC
15.	Mr Junaid Iqbal	PSO to PS PM
16.	Mr Mohsin Razi	MOFA
17.	Sahibzada M. Khalid	Govt of NWFP
18.	Qazi Inam	DSP, Rep Govt of NWFP
19.	Mr Jamil Amjad	Secy Housing, NWFP
20.	Mr Sajjad Ahmed Bhutta	Rep KANA
21.	Mr Farhat Mir	Rep AJ&K
22.	Dr Majeed Rajput	Rep AJ&K
23.	Mr Iftikhar ,Rwp Police	SSP
24.	Mr Qasim Niaz	Coordinator, Donor Agencies

On 8 October 2005 Pakistan was struck by the most devastating earthquake in its history. Affecting an area of 30,000 sq. km, it caused over 73,000 deaths, 128,000 casualties and destroyed homes, schools, hospitals and infrastructure on a massive scale. This report describes Pakistan's experience of handling such a huge disaster. It focuses on the overall approach and strategy taken by the Federal Relief Commission and the many organizations and agencies involved in the quake response, and on the effectiveness of that approach.

The aim of the report is to highlight the key lessons learned. Disaster management is an extremely difficult undertaking: every disaster poses its own problems and challenges, and the strategy to dealing with each is only really decided as it happens. But there are best practices, effective 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 report highlights the main lessons, successes as well as shortcomings, which emerged from Pakistan's experience of handling the 2005 earthquake. It is hoped that the lessons documented here will help all of us to deal with future calamities more effectively.