

Disaster Preparedness at National Level

Natural Hazard management in Pakistan has been restricted in perspective to rescue and relief. There is a general feeling also that disaster management is the exclusive responsibility of the Pakistan Army. Every time there is an emergency in the wake of a flood, earthquake, or landslide, the Pakistan Army is called to the rescue and to provide relief. There is a consensus that, on every such occasion, the Pakistan Army has responded effectively and efficiently to the emergency. This is mainly because of its strength in being the only institution in the country with sufficient resources in terms of manpower, transportation, communications, and, above all, discipline and unity of command. Although the army should continue to play a leading role in natural disaster response and relief, increased participation from the civilian administration at all levels and from communities affected is essential. The responsibility for disaster management, especially in mitigation, preparedness, and long-term relief and rehabilitation should be jointly that of all sectors of the population. On many occasions in the recent past, although the Pakistan Army responded effectively to an emergency, once the rescue and immediate relief phase was over, people were left stranded to solve their rehabilitation problems on their own. Civilian institutions are necessary to ensure reconstruction and rehabilitation.

The level of preparedness for flood disasters is in far better shape than preparedness for other natural hazards. Severe floods in the mid seventies forced the government to take serious action in terms of mitigation of flood hazards. Two ten-year plans spanning from 1977 to 1998, accompanied by several sector projects, have resulted in sound efforts on mitigation of flood hazards. Torrential rain in isolated mountain areas, as well as in congested cities, still causes many casualties every year. The country has sufficient capacity through structural interventions to stop the overflowing of rivers and, where such measures are not possible, early warning systems are in place to lower the risks. Coordination between agencies responsible for flood warning, protection, and rescue is reasonably efficient and relief is available and is in full operation at the time of floods. However, many lives are lost every year, not because of lack of early warning systems or lack of rescue and relief resources, but simply because of sheer negligence on the part of the local governments and the public.

National strategy for disaster management

Emergencies, especially those related to security issues, are monitored by the Ministry of the Interior through the National Crisis Management Cell, which has a round-the-clock operational control room for collecting information. It coordinates with the provincial Crisis Management Cells and all other security agencies to provide an updated knowledge base for any emergency situation. It is also responsible for calling for immediate response through the relevant departments and agencies. In practice, in the past, this key institution has been less effective in responding to emergencies arising out of natural disasters. The earthquake disaster of October 8, 2005, exposed this critical shortcoming in Pakistan's preparedness strategy.

In case of an emergency, the entire government machinery is placed on alert through directives from the Ministry of the Interior, or through a direct call from the President's or Prime Minister's Secretariat. Practically, apart from the community affected, it is the Pakistan Army which, because of its superior communications, transportation facilities, and skilled human resources, gives the first and most effective response. This response is concentrated on rescue of lives and property; restoration of the communication system including telephone, roads, and rail links; and provision of first aid, food, and water. In case of floods, engineers from the Pakistan Army are stationed at embankments to strengthen the embankments, spurs, gabions, and flood walls and to fill the breaches. Likewise, many landslide and debris flow hazards, especially those blocking the principal roads in mountainous areas of the north are cleared by army engineers or their affiliated bodies such as the Frontier Works' Organisation.

The Emergency Relief Cell (ERC), established in the Cabinet Division, serves as the focal point for relief activities. In coordination with provincial relief cells, the ERC is responsible for arrangement and collection of relief items, immediate distribution of relief goods to the people affected, and receipt of grants, donations, and funds for distribution through the President's or Prime Minister's Disaster Relief Fund.

Institutional framework for disaster management

A variety of organisations and departments at federal (as well as provincial) level are involved in disaster management. Most of these institutions, prior to the 2005 earthquake, were geared towards flood disasters, some of them being exclusively dedicated to deal with mitigation and preparedness for flood disasters (e.g., Pakistan Flood Commission and the Flood Forecasting Division). None of the other natural disasters received such priority.

Pre-2005 disaster management institutions in Pakistan can be classified into three broad categories: 1) mitigation and preparedness; 2) response (call, search, rescue, and evacuation); and 3) relief. The concept of reconstruction and rehabilitation did not exist prior to the 2005 Kashmir earthquake. Institutions assigned with responsibilities for disaster preparedness in Pakistan and details about their responsibilities are given below.

Mitigation and preparedness in federal government institutions

Pakistan Meteorological Department (PMD)

The Pakistan Meteorological Department (PMD) was established in 1947 from the previous Central Meteorological Organisation (British India). It is both a scientific and a service department, and functions under the Ministry of Defence. It is responsible for the following.

- Meteorological expertise; services and information with the objective of traffic safety in the air, on land, and at sea; agricultural development based on the climatic potential of the country; and weather forecasts
- Information on geophysical matters
- Mitigation of weather-related as well as seismic hazards

The department has established the following services.

- A network of observing stations to generate meteorological, geophysical, and phonological data
- A telecommunication system for speedy dissemination of data
- Meteorological offices to analyse data for issuing forecasts and warnings for aviation, agriculture, shipping, sports, and irrigation
- Climatological and data processing units to scrutinise, compare, and publish data for appraisal of long-term weather trends and earthquakes

Over the years, the Department has widened its focus to areas of expertise in agrometeorology, hydrology, astronomy and astrophysics (including solar physics), geomagnetism, atmospheric electricity and studies of the ionosphere and cosmic rays, global warming, and climate change.

Flood Forecasting Division (FFD)

The Flood Forecasting Division (FFD) is a subsidiary of the Pakistan Meteorological Department. It plays a central role in flood forecasting and warning. The department receives hydro-meteorological data from various national and international sources, including satellite data, to prepare flood forecasts that are disseminated to various flood management and relief organisations.

With help from the Asian Development Bank, a comprehensive Indus Flood Forecasting System has been developed since the heavy floods of 1992. The system involved installation of radar in the upper catchment area for rainfall estimation, and a decision-support system was developed for improved flood management.

The above-mentioned programme also emphasised the need for better communication among various government agencies and departments involved in flood management. This objective was achieved by acquiring and installing high frequency (HF) radio sets in various agencies and departments. A flood warning manual was prepared that defines the tasks of various government departments in the event of flood emergency. The manual also spells out the measures that are to be undertaken by various departments for prompt and efficient management of flood events. One important aspect that has been addressed in the manual is the dissemination of flood forecasts to the public in an orderly and coordinated way to avoid the confusion of statements being issued by various departments. In addition, the improvements in the flood forecasting system are being achieved by preparing computer models for the simulation of runoff from the rainfall data acquired in real-time and for routing this runoff through the river system.

Water and Power Development Authority (WAPDA)

The Water and Power Development Authority (WAPDA) was established in 1958 as a semi- autonomous body for the purpose of carrying out accelerated and unified development of water and power resources, which until then were being dealt with by the provisional government.

The authority contributes to flood management by 1) reservoir management through regulating the release of water from the country's reservoirs such as the Mangla and Tarbela dams and 2) contributing to flood forecasting by collection and dissemination of rainfall data from telemetric rain-gauge stations and flood data at various locations in the Indus River system. The data acquisition apparatus for rainfall and flood water at WAPDA's gauge stations has recently been upgraded with new equipment using the meteorburst communication (MBC) system. WAPDA supports another hydrometric data measurement and transmission system through the Surface Water Hydrology Project.

Coordination between FFD and WAPDA improved considerably after the flood in 1992. WAPDA's telemetric network is directly linked to the Flood Forecasting Division. Additionally there daily meetings take place in the office of the General Manager (Planning), and these ensure coordination between the crucial flood-controlling agencies, especially when serious floods are forecast.

Being the custodian of Pakistan's major water reservoirs, the WAPDA established major seismic observatories in the early sixties. The Tarbela seismic observatory has produced

valuable data for more than 40 years; and this has led to recognition of several seismic zones in north Pakistan, including the Indus Kohistan Seismic Zone (Jacob et al. 1979; Seeber and Armbruster 1979), which was involved in the 2005 Kashmir earthquake. Out of a few strong-motion instruments, three belonged to WAPDA and they recorded valuable strong-motion data during the event.

Federal Flood Commission of Pakistan (FFC)

Up to 1976, Provincial Irrigation Departments were responsible for the planning and execution of flood protection works. The disastrous floods of 1973 and 1976 resulted in heavy losses of life and property, indicating that the existing flood protection facilities were inadequate to provide effective measures for the country. This resulted in the establishment of the Federal Flood Commission (FFC) in January 1977 under the auspices of the Ministry of Water and Power. FFC is the lead federal agency providing the necessary institutional framework to support provincial flood management measures. The Commission has been successful in modernising the flood management policy of the country through two major projects: Flood Protection Sector Projects I and II. The second project is currently underway and is expected to increase the flood forecasting capabilities of the Flood Forecasting Division substantially. In addition, construction of added embankments and spurs along major rivers will be undertaken by this project. The Commission has also been instrumental in preparing the National Water Policy.

The primary objectives of the FFC are given below.

- a) Preparation of the National Flood Protection Plan
- b) Approval of flood control schemes prepared by federal agencies and provincial governments
- c) Review of flood damage to public sector infrastructure and review of plans for restoration and reconstruction
- d) Measures for improvement in the flood forecasting and warning system
- e) Standardisation of designs and specifications for flood protection works
- f) Evaluation and monitoring of the implementation of the National Flood Protection Plan (NFPP) and Comprehensive Flood Management Plan
- g) Preparation of a research programme for flood control and protection
- h) Recommendations regarding the regulation of reservoirs for flood control

The Indus River Commission

Much of the catchment area for the Indus River system lies outside Pakistan in India, China, and Afghanistan. In addition, upstream controlling structures such as dams and barrages occur outside the territory of Pakistan where water release is beyond its government's control. Effective flood-control management in Pakistan is not possible, therefore, without rainfall and flood-water data from across its borders, especially from

India. Consequently, an agreement was signed between the two countries establishing the Indus River Commission. Each country has a Commissioner for the Indus Waters and they communicate through their respective Commissioners for the Indus Waters, and it includes a provision to receive from India river flow and rainfall data that are considered important for flood forecasting in Pakistan. Several river flow stations have been identified for this purpose. Normally, the data are received by the Pakistan Commissioner for the Indus Waters once a day; and the Commission for Indus Waters is then responsible for providing these data to the Chief Meteorologist, FFD Lahore, for use in flood forecasting models. The frequency of data reception is increased to six hourly and even to hourly depending upon the prevailing flood situation in Pakistan. The Commission for the Indus Waters is the only forum through which any clarification or information can be obtained from India with regard to flood data or flood control structures.

Dam Safety Council

In 1987 a Dam Safety Council (Ministry of Water and Power) was established to carry out periodic inspections of dams, review the planning for new dams, and liaise with international organisations. Its objectives are as follows.

- To carry out periodic inspections of dams and advise WAPDA and provincial governments about the repair and maintenance of dams and reservoirs
- To review the plans for new dams to ensure adequate structural safety
- To review the plans and specifications for enlargement, modification, major repairs, revival, or abandoning of dams or reservoirs.
- To supply technical data and maintain general liaison with the World Bank and UN organisations.
- To liaise closely with the International Commission on Large Dams based in Paris, France

Pakistan Engineering Council (PEC)

The Pakistan Engineering Council is a statutory body established by an Act of Parliament (1976). The purpose of the council is to regulate the engineering profession and contribute to its rapid and sustainable growth in all national economic and social fields. The council is to set and maintain realistic and internationally relevant standards of professional competence and ethics for engineers.

The Council's main statutory functions include registration of engineers and consulting engineers, accreditation of engineering programmes run by universities or institutions, ensuring and managing continuing professional development, assisting the federal government as a think tank, and establishing standards for engineering products and services as well as safeguarding the interests of its members. The council encourages, facilitates, and regulates the professional engineering bodies for creativity and sound engineering practices.

PEC interacts with the government, at both federal and provincial levels, by participating in commissions, committees, and advisory bodies. PEC has also been providing support to the government in carrying out technical enquiries and recommending remedial measures on the referred subjects. It forms an effective bridge between government, industry, and education. PEC maintains a secretariat at its headquarters in Islamabad and branch offices in all the provincial capitals.

Geological Survey of Pakistan

As a component of the Ministry of Petroleum and Natural Resources, the Geological Survey of Pakistan was derived from the Geological Survey of (British) India. The survey is responsible for the study of geology in all pertinent details and to assess resource potential. In the context of natural hazards, the Geological Survey plays an important role in preparing engineering geology maps of landslides and related mass movements and suggesting remedial measures. Mapping of fault structures and measuring their kinematic properties (e.g., sense, direction, and rate of slips) are an important data input in calculating the potential hazards of earthquakes. The Geological Survey also undertakes geophysical studies to supplement the understanding of tectonic structures.

The functions and responsibilities of the Geological Survey of Pakistan relevant to disaster preparedness planning include the following.

- Geological mapping of the country on appropriate scales
- Geological investigations in connection with the construction of heavy civil engineering projects, soil conservation, range and watershed management, agricultural development, and land use and town planning
- Study and evaluation of geological hazards associated with earthquakes, volcanic activity, waste disposal, landslides, subsidence, and other ground failures; and to develop methods for hazard prediction and mitigation
- Improvement of existing mapping techniques and development of new skills for the collection, analysis, and interpretation of geoscientific data
- Provision of scientific support and technical advice for legislative, regulatory, and policy decisions by the federal, provincial, and local governments
- Geoscience-based environmental impact analysis (EIA)
- Education and popularisation of geology and related fields and creating public awareness about geological issues and problems of societal value

Survey of Pakistan (SOP)

The responsibility for topographic mapping and aerial photography lies with the Surveyor General of Pakistan. Established in 1947, the Survey of Pakistan is a component of the Ministry of Defence and is based in Rawalpindi with a number of regional offices distributed at urban centres throughout Pakistan.

Topographic mapping and aerial photograph procurement, photogrammetry, printing and map publication, and survey training are among its services. The SOP is the central mapping agency for Pakistan.

Pakistan Space and Upper Atmosphere Research Commission

Pakistan's national space agency, namely Pakistan Space and Upper Atmosphere Research Commission (SUPARCO), was established in 1961 as a committee and was granted the status of a commission in 1981. It worked under the Cabinet Division of the Federal Government until 2000, when it was placed under the direct control of the National Command Authority.

SUPARCO is devoted to research and development work in space sciences and space technology, and their applications for the peaceful uses of outer space. It works towards developing indigenous capabilities in space technology and to promote space applications for the socioeconomic upliftment of the country.

The SUPARCO launched its first satellite in 1962 called Rehbar-I, followed by Rehbar II the same year. The data received from Rehbar-I and Rehbar-II gave scientists information on wind shear and structure in the layers of the upper atmosphere extending beyond the stratosphere. The data collected also helped in the study of cloud formation, cyclones, and weather over the Arabian Sea. SUPARCO launched Pakistan's first experimental satellite BADR-1 in 1990 and the second, Badar –B in 2001.

The main functions of the SUPARCO relevant to disaster preparedness planning are summarised below.

- Research and pilot studies based on the applications of satellite remote sensing (SRS) data and geographic information system's (GIS) technology to natural resource surveying, mapping, and environmental monitoring
- Research studies in space and atmospheric sciences including satellite meteorology, satellite radiance, troposphere and stratosphere studies, atmospheric pollution, satellite geodesy, and astronomy
- Research studies relating to the ionosphere and associated radio wave propagation and geomagnetism
- Development, design, fabrication, assembly, and launching of:
 - sounding rockets for upper and middle atmospheric research,
 - earth observation satellites for various scientific and technological applications,
 - acquisition of data for atmospheric and meteorological studies, and
 - reception of signals from vehicles in distress under the satellite-aided search and rescue COSPAS-SARSAT programme.

Response (first calls for action, rescue and evacuation) in federal government institutions

Prior to the 2005 earthquake, Pakistan did have in place institutions to respond to natural disasters for operations like alert and call for action and mobilisation; search, rescue, and evacuation; landslide and debris clearance; and restoration of communications. Despite the loose structure that did link these institutions, a written and rehearsed plan for coordination between these institutions and specifications of functions and responsibilities during the course of disaster response was not in evidence.

National Crisis Management Cell

The National Crisis Management Cell operates under the Ministry of the Interior. The cell is assigned the responsibility of monitoring emergencies, including those caused by natural hazards, on a round the clock basis through an operation room. In coordination with Provincial Crisis Management Cells and relevant security agencies, the cell is responsible for coordinating plans for emergency response services in case of emergency or disaster.

Civil Defence Department

The Civil Defence Department was established through an ordinance in 1951 as a component of the Interior Ministry. It is now governed through the 1952 Civil Defence Act and assigned with the additional task during peace times to take remedial measures against natural or man-made disasters. Specifically, the Civil Defence Department is assigned to 1) assist local administration and the army in rescue, evacuation, and relief measures; 2) supplement the anti-flood equipment of the army; and 3) provide personnel for anti-flood training in rescue and relief work.

Pakistan Army

The Pakistan Army has an efficient system of peace-time disaster management. In the wake of a disaster, first-hand damage assessment helps the army to move necessary material and human resources not only for search and rescue but also for immediate relief in terms of food, medical assistance, and shelter. Army engineers concentrate on clearing the roads from landslide debris and on re-establishing the communication and road network. Several army organisations performed functions that were important to the civilian sector across the country. For example, the National Logistics Cell was responsible for transporting food and other goods across the country; the Frontier Works' Organisation built the Karakoram Highway to China; and the Special Communication Organisation maintained communications' networks in remote parts of Pakistan.

Over the years, the Pakistan Army has developed sound expertise in flood disaster management. The Engineering Corps is responsible for providing the necessary help to civil authorities to carry out rescue and relief operations during and after floods. It is the responsibility of the provincial governments (see following chapter) to provide all the support equipment (boats, life jackets, vehicles, tents, etc) to the army for such operations.

The army is actively involved in all stages of flood disaster management. Pre-flood meetings are held to help coordinate the activities of other organisations and agencies providing support to the army. Pre-flood inspections of flood-protection structures are also carried out by the respective commanders of the corps of engineers in their respective areas to ensure that structures (bunds, barrages, spurs, and so on) are in satisfactory condition. Weaknesses, if any, are brought to the notice of the Relief Commissioner. Since the Punjab is the most flood prone province, it is the Relief Commissioner, Punjab, who provides the bulk of the flood fighting equipment to the Army. The 4th Corps of Army Engineers stationed in Lahore acts as a liaison for the purpose.

An army officer is placed on duty in the Flood Warning Centre, Lahore, to keep a close watch on the flood situation. All flood forecasts and warnings are communicated to the Engineering Corps. As the flood arrives, army personnel move out to their respective areas of responsibility to carry out relief and rescue operations in coordination with the civil administration. A post-flood meeting is held to discuss the performance of all the agencies involved in flood management with the objective of making improvements in future.

Frontier Works' Organisation

This is a subsidiary of the Pakistan Army, under the Ministry of Defence, and it was established during the 1966-1978 construction of the Karakoram Highway in the northern areas. After the road opened in 1978, it needed clearing and maintenance continually because of landslides and debris flows. The Frontier Works' Organisation is in charge of maintaining all roads subject to landslides and rock falls, and is the main organisation after the Engineering Corps to respond to landslide disasters: its focus is on clearing the roads.

Army Aviation Corps

Pakistan Army Aviation Corps gained autonomy from the Pakistan Air Force in 1958, and gained full corps status in 1977. The corps has a fleet of helicopters and aircraft which facilitate speedy transport of expert manpower to disaster areas and help with medical evacuation and transportation of relief supplies to disaster sites.

Army Engineers Corps

Dominated by qualified civil engineers, the Army Engineers Corps play a major role in disaster response. They are particularly well prepared for floods, with a dedicated Flood Commission at their headquarters. They have a close lien with the Federal Flood Commission, Flood Forecasting Division, WAPDA, and the federal and provincial relief departments. These corps are regularly called for flood protection engineering work, clearing roads from debris and landslides, and building temporary bridges.

Army Medical Corps

The role of the Army Medical Corps is exemplary in terms of the efficiency of emergency medical services. They have trained doctors and para-medical staff with expertise in emergency situations. Ranging from first aid to surgery, the Corps is capable of providing on-site medical emergency services through temporary and mobile dispensaries and hospitals.

Relief organisation of federal government institutions

Emergency Relief Cell (ERC)

The Emergency Relief Cell (ERC) works under the Cabinet Division and is supervised by the Cabinet Secretary. The Cell is headed by the Director General, Relief.

Responsibilities

- Planning and assessment of relief requirements for major disasters
- Stockpiling of basic necessities for emergencies and establishing a central inventory of resources
- Establishing an emergency fund upon the declaration of any part of the country as affected by a calamity
- Providing in cash as well as kind to supplement the resources of the provincial governments in the event of major disasters
- Coordinating the activities of federal ministries, provincial governments, and government, semi-government, international, and national aid agencies in carrying out operations for disaster relief
- Maintaining contact with international aid agencies and voluntary organisations and donor countries for disaster relief measures.
- Administering relief funds maintained at the federal level
- Making arrangements for disaster relief assistance from other countries
- Providing assistance to calamity-stricken, friendly countries

Operations

- The ERC maintains an Emergency Control Room which coordinates the situation during calamities by liaising with relevant agencies such as the National Crisis Management Cell, Federal Flood Commission, Pakistan Meteorological Department, and the provincial governments.
- The ERC maintains a warehouse in the capital, Islamabad, which stocks essential non-perishable items such as medicines, blankets, clothing, and tents.
- The Relief Goods' Dispatch Organisation, Karachi, receives and dispatches all relief goods from foreign and local agencies in the event of a disaster. (During the Kashmir earthquake, a similar organisation was temporarily established in Islamabad to receive the unprecedented supply of relief goods from abroad and to arrange their immediate dispatch and distribution to the earthquake hit area.)
- ERC has access to a fleet of helicopters belonging to the Army Aviation Corps and these are used by the ERC for relief missions.

Changes in the institutional framework after the 2005 earthquake

The unprecedented dimensions of the disaster caused by the 2005 Kashmir earthquake resulted in almost instant realisation on the part of the Government of Pakistan that immediate establishment of institutions, beyond and above the existing institutions responsible for disaster response, was necessary. Commencing from the establishment of the Federal Relief Commission within two days of the disaster, authorities were established at federal, provincial, and state levels for reconstruction and rehabilitation of the communities affected, followed by the establishment of a commission (the most recent) encompassing authorities from national to district levels dedicated to disaster management.

Federal Relief Commission

The Federal Relief Commission was established on October 11, 2005, by the Prime Minister's Secretariat. The commission was assigned the immediate task of coordination of the massive rescue and relief operations following the Kashmir earthquake. The commission was asked to streamline relief operations in collaboration with the provincial governments, the relevant ministries, non-government organisations (NGOs), the Red Crescent, and other international agencies.

The commission completed its work on March 31, 2006, and handed over the residual relief work to the Earthquake Reconstruction and Rehabilitation Authority, which then became the focal organisation for disaster preparedness and planning.

Earthquake Reconstruction and Rehabilitation Authority (ERRA)

The Government of Pakistan established ERRA on October 25, 2006, to carry out post-disaster damage assessment and reconstruction and rehabilitation of the October 8, 2005, earthquake-affected areas. The headquarters of the authority were established in the Prime Minister's Secretariat, Islamabad, with two counterpart authorities at provincial and state level; one called Provincial Earthquake Reconstruction and Rehabilitation Authority in Peshawar, the capital of NWFP, and the other called State Earthquake Reconstruction and Rehabilitation Authority in Muzaffargarh, capital of Azad Jammu and Kashmir.

The authority is administered by a council under the chairmanship of the Prime Minister. Other members are the Chief Minister of Azad Jammu and Kashmir (AJK); Chief Minister of NWFP; the Federal Minister for Kashmir Affairs and Northern Areas; the Adviser to the Prime Minister for Finance; Deputy Chairman, Planning Commission; and a Member and Chairman of ERRA. The authority is governed by a board under the Chairman of ERRA. The board is responsible for the implementation of the approved programmes, projects, and policy decisions of the council as well as for the day-to-day operations through the administrative and financial authority delegated to it by the council

The authority and its provincial and state subsidiaries will run for three years initially. Most probably this authority will then be merged with the newly established National Disaster Management Authority (NDMA).

Responsibilities

- Reconstruction, rehabilitation, and development of earthquake-affected areas through surveys to assess damage and needs in those areas and formulate comprehensive development programmes to provide for:
 - planned settlements, housing, government buildings and offices, utilities and services, infrastructure, health and education facilities, irrigation and agricultural facilities as well as defence requirements
 - rebuilding the environment, including cleaning of watersheds, reforestation programmes, and other environmental interventions to restore the ecosystems
 - preparing resettlement plans for the people affected in consultation with local communities, ensuring an appropriate mechanism for the resolution of land titles and land tenure issues
- Getting general approval of its comprehensive development programme from the Executive Committee of the National Economic Council
- Identifying, preparing, approving, and executing projects

- Taking measures to ensure execution of the approved projects and development programmes in accordance with the time schedule approved by the council
- Prescribing cost-effective technology, building codes, architectural designs, specifications, and construction material for housing and other buildings in earthquake-prone areas to protect against future seismic activity
- Reviewing the building codes of various urban development authorities and recommending appropriate changes to ensure quality construction and maintain building standards
- Facilitating the establishment of reconstruction enterprises in the zones affected
- Performing any other function assigned to it by the federal government that is related to any of the aforesaid functions

ERRA is involved in preparation and reconstruction activities. Seismic zone and fault mapping, surveys of vulnerable groups, development of databases, and reconstruction packages are among its vital preparatory activities. In terms of housing to withstand earthquakes, a master plan for Muzaffargarh has been prepared and a first draft plan for Bagh city. Plans for Balakot and Rawkot are in process. Assistance comes from the Japanese Agency for International Development (JICA), the World Bank (WB), Asian Development Bank (ADB), and the International Development Bank. ERRA is also involved in livelihoods, education, health, water supply, and sanitation and other infrastructural projects. Support comes from the UNDP, ADB, and other international donors. ERRA has formulated a comprehensive earthquake monitoring and evaluation framework.

National Disaster Management Commission (NDMC) and Authority (NDMA)

On December 23, 2006, the President of Pakistan promulgated the National Disaster Management Ordinance, paving the way for establishment of the National Disaster Management Commission. The ordinance also provides for establishment of the National Disaster Management Authority to act as the implementing, coordinating, and monitoring body for disaster management. Similar disaster management authorities are being established at provincial, district, and municipal levels. The NDMA will provide technical guidance to national and provincial stakeholders about formulation of plans, strategies, and programmes for disaster risk management. The NDMA would also work towards capacity building of national, provincial, and local stakeholders in collaboration with provincial and district authorities.

The United Nations Development Programme (UNDP) assisted the government in formulating a 'National Disaster Risk Management Framework' to guide the work of the entire system in the area of disaster risk management. Broad-based consultations were carried out with stakeholders from local, provincial, and national levels to formulate the framework.

The framework envisions: “achieving sustainable social, economic, and environmental development in Pakistan through reducing risks and vulnerabilities, particularly those to the poor and marginalised groups, and by effectively responding to and recovering from disaster impact.”

Nine priority areas were identified to establish and strengthen policies, institutions, and capacities over the next five years, and they include, i) institutional and legal arrangements for disaster risk management; ii) hazard and vulnerability assessment; iii) training, education, and awareness; iv) disaster risk management planning; v) community- and local-level programming; vi) a multi-hazard early warning system; vii) mainstreaming disaster risk reduction into development; viii) an emergency response system; and ix) capacity building for post-disaster recovery.

The roles and responsibilities of key national, provincial, and local stakeholders have been defined in the framework. Broadly speaking, all stakeholders are expected to undertake the following actions to promote disaster risk management: i) integrate risk assessment in the planning and design stages of all new infrastructure and projects; ii) assess the vulnerability of people, infrastructure, assets, and services related to their sector; iii) develop disaster risk management plans; iv) integrate vulnerability reduction measures in new construction; v) develop the technical capacities of their departments or sectors to implement disaster risk management strategies; and vi) allocate funds for disaster risk management in annual development budgets. Other responsibilities include i) conducting post-disaster damage and loss assessments; ii) organising emergency response as per the mandate of the department; and iii) organising recovery and rehabilitation as per the mandate. The principles established in the framework are, i) promoting multi-stakeholder, multi-sectoral, and multi-disciplinary approaches; ii) reducing the vulnerability of the most vulnerable social groups; iii) strengthening community- and local-level risk reduction capacities; iv) combining scientific and local knowledge; v) developing culturally, socially, economically, and environmentally relevant technologies; vi) strengthening sustainable livelihood practices; vii) acquiring specific capacities in view of the hazard-risk profile of the area and country; and viii) working with other countries and the international community to promote disaster risk reduction. Figure 1 depicts the flow chart of the framework.

National Disaster Management Commission

Structure

- The Prime Minister of Pakistan who shall be the Chairperson, ex-officio
- Leader of the Opposition in the Senate
- Leader of the Opposition in the National Assembly
- Minister of Defence
- Minister of Communications
- Minister of Finance

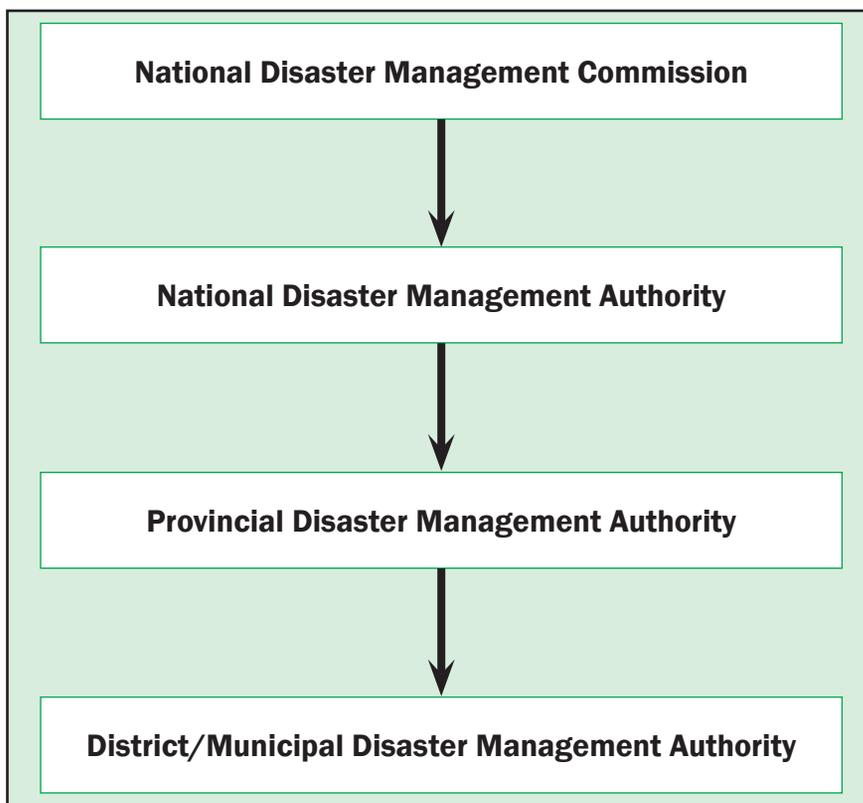


Figure 1: Flow chart showing the broad structure of the newly established National Disaster Management Framework in Pakistan (December 2006)

- Minister of the Interior
- Governor the NWFP (for the Federally Administered Tribal Areas [FATA])
- Chief Ministers of the Provinces
- Prime Minister, AJ&K
- Chief Executive, Northern Areas
- Chairman, Joint Chiefs of Staff Committee (JCSC) or his nominee
- Representative(s) of Civil Society or any other person appointed by the Prime Minister.
- The Director General of NDMA shall act as the ex officio Secretary of the National Commission.

Functions

- Lay down policies on disaster management.
- Approve the national plan.
- Approve plans prepared by the ministries or divisions of the federal government in accordance with the national plan.
- Lay down guidelines to be followed by the federal and provincial authorities.

- Arrange for, and oversee, the provision of funds for mitigation measures, preparedness, and response.
- Provide support to other countries affected by major disasters as determined by the federal government.
- Take such other measures as considered necessary for the prevention of disaster, its mitigation, or preparedness and capacity building.

National Disaster Management Authority

Structure

The NDMA will be headed by a chairperson as Director General, equivalent in status to the Federal Secretary and appointed by the Prime Minister. He will be assisted by members, advisors, and directors, but these have not been fully defined to date.

Powers and functions

- The National Disaster Management Authority acts as the implementing, coordinating, and monitoring body for disaster management.
- It prepares the National Plan to be approved by the National Commission.
- It implements, coordinates, and monitors implementation of the national policy.
- It lays down guidelines for ministries, departments, and the provincial authorities for development of disaster management plans.
- It provides necessary technical assistance to the provincial governments and the provincial authorities for preparation of disaster management plans in accordance with the guidelines issued by the National Commission.
- It coordinates response in the event of a potential disaster situation or disaster and issues guidelines and directs the ministries or provincial governments or authorities concerned regarding measures to be taken by them in response to any potential or actual disaster.
- It requires any department or agency of the government to make available to the national or provincial authority the human or material resources available for the purposes of rescue and relief.
- It promotes general education and awareness about disaster management and carries out any other functions required by the National Commission.
- It determines measures to be taken for the prevention of disasters or the mitigation of their effects.
- It determines measures to be taken for the integration of mitigation measures into development plans.
- It determines measures to be taken for preparedness and capacity building to respond effectively to any potential or actual disaster.
- It determines the roles and responsibilities of different ministries or divisions of the government in the context of disaster management.
- It is responsible for the annual review and revision of the National Plan.

- It ensures that appropriate provisions shall be made by the federal government to finance the measures to be carried out under the National Plan.
- Subject to the directions of the National Commission, the National Authority shall lay down guidelines for the minimum standards of relief to be provided to persons affected by disaster, including the minimum requirements to be provided in the relief camps in relation to shelter, food, drinking water, medical cover, and sanitation. (Special provisions are to be made for widows and orphans.)
- It provides *ex gratia* assistance on account of loss of life and assistance for damage to houses and for restoration of means of livelihood.
- It provides other types of relief as necessary. Subject to the directions of the National Commission, the National Authority may, in cases of disasters of severe magnitude, give directions regarding relief in repayment of loans or for grants of fresh loans to persons affected by disaster.

National disaster management plans

Pakistan started national development plans in 1957, each with a scope of five years. The First Five Year Plan (1955-1960) did not include any specific measures, strategies, or programmes relevant to disaster management. It was the Fourth Five Year Plan (1970-75) which included, for the first time, a flood control programme in East Pakistan. The Fifth (1979-83), Sixth (1983-88), Seventh (1988-1993), and Eighth (1993-98) Plans did not even mention any measures or strategies for disaster management. The Five Year Plan of 1998-2003 did include objectives related to disaster management, however. Unfortunately this, the Ninth Plan, became virtually redundant because of international sanctions following nuclear tests by India and Pakistan and then the attack on the World Trade Centre in New York. The Tenth Plan (2001-2011) suffered the same fate. Meanwhile the government changed. Now, finally, the Government of Pakistan, through the Planning Commission, launched a Medium Term Development Framework (MTDF) 2005-2010, and this drives the current development programmes. In the following passages, a brief outline is given of the three recent development plans highlighting the aspects related to disaster management components.

Ninth Five-Year Plan (1998-2003)

Disaster management in Pakistan's development plans first appeared in the Ninth Plan (1998-2003). This was limited to water resource management with an emphasis on flood warning and forecasting systems. The clauses included the following.

- Effective use of surface and groundwater
- Equitable and assured distribution of water
- Use of river water flood surpluses through storage or carry-over dams
- Limiting the extent of waterlogged lands
- Prompting water-related research studies

- Using flood flows, including harnessing of hill torrents, to augment water supplies for irrigation
- Augmenting investments in flood control management, including flood warning and forecasting systems

Tenth Perspective Development Plan (2001-2011)

This ten-year perspective development plan includes measures for protection of land and infrastructure from water logging, salinity, floods, and soil erosion. Flood control and protection was included in this plan. A Risk Mitigation Fund of US\$5 million was established to assist the poor in case of loss of income-generating assets due to circumstances beyond their control.

National Medium Term Development Plan (2005-2010)

The MTDf 2005-2010 reflects disaster management for the first time in Pakistan's development programme as a tool for poverty reduction. In the wake of the 2004 tsunami, followed by the 2005 Kashmir earthquake, the MTDf 2005-2010 included a pledge to prepare and implement a multi-sectoral and multi-disciplinary programme for disaster risk reduction. The proposed five-year programme estimated a cost of US\$ 15.5 million for undertaking a comprehensive review of the existing capacity of the government sector and civil society for disaster preparedness and management.

The proposal included establishment of structures and a mechanism for early warning, preparedness, coordination, and mitigation in the country. It also included the preparation of a national policy, legislation, and plans for an all-risk reduction approach to disaster management. The programme included establishment of a National Disaster Management Agency (NDMA) in the Cabinet Division to serve as the national strategic and policy coordinating body for preparedness, mitigation, early warning, relief, rehabilitation, and recovery activities and establishment of structures and mechanisms at provincial and local levels with the capacity to plan and undertake activities for management of situations emerging from various natural and human-induced disasters.

Legislation for disaster management

Legislation in Pakistan is promulgated through the national or provincial parliaments in the form of a Parliament Act. At times, the legislation can be promulgated by direct notification of the President (at national level) and from the Governor (at the provincial level) in the form of an ordinance, which may be later approved by the parliaments in the form of an act.

Disaster management legislation is rare in Pakistan. Existing acts and ordinances only deal with emergency relief in the context of floods (Annex 1).

Three legislature acts and ordinances are noteworthy in the context of disaster management. One of the earliest legislations was the National Calamities (Prevention and Relief) Act, 1958, passed by the then West Pakistan Assembly (Parliament) on April 3, 1958. This act provides a framework for maintenance and restoration of order in areas affected by certain calamities and for the prevention and control of and relief against such calamities. The office of the Provincial Relief Commissioner was established and assigned the responsibility for disaster management as outlined in the act. Later, under the Federal Government Rules of Business 1973, the responsibility for disaster relief at national level was assigned to the Cabinet Division. An Emergency Relief Cell was established in the Cabinet Division and was assigned responsibility for work related to disaster relief at national level.

A framework for emergency services was drafted for the approval of the President through an ordinance called the Pakistan Emergency Services' Ordinance 2002. This ordinance aimed to deal with emergencies in an effective manner and deal with threats to the public from modern warfare, terrorism, and disasters. The ordinance defines responsibilities at each level. This draft ordinance proposed the establishment of a National Council to monitor the performance of the emergency services and ensure continuity in laying down procedures for the management of emergencies and disasters during peace time. Further the provincial governments were given administrative powers, with the establishment of District Emergency Officers, to enable them to manage the service.

Non-government participation in disaster management

Several non-government national and international organisations have been participating in response and recovery stages of natural calamities (Table 3). In particular, their response to the 2005 Earthquake in Kashmir and Hazara region was unprecedented and extremely effective. These agencies not only helped in search, rescue, and temporary relief but are continuing also in effective rehabilitation more than a year after the disaster. In essence, a major component of the reconstruction of educational and health institutions in the said region is being undertaken by these national and international non-government agencies.

For several years, some of the international agencies have been advising the government to develop an integrated disaster management plan, offering both financial and technical support. In this context, the UNDP (United Nations Development Programme)

Table 3: A partial list of international and national non-government organisations active in disaster management in Pakistan

Organisations	Disaster Management	Emergency Relief	Environment and Natural Resource Management
Action Aid	X	X	X
Catholic Relief Services	X	X	
Concern	X	X	
European Commission	X	X	X
Food & Agriculture Organisation	X		X
Oxfam	X	X	
Save the Children – UK	X	X	
World Food Programme		X	
World Health Organisation	X	X	
UNICEF	X	X	
UNDP	X	X	X
Shell Pakistan		X	
World Bank	X		X
Church World Service		X	
Department for International Development		X	
Asian Development Bank	X		X
AusAid		X	X
Embassy of Japan – GRA			X
NORAD			X
JICA			X
South Asia Partnership – Pakistan			X
Swiss Agency for Development and Cooperation		X	X
Civil Society HID Programme International			X
Rural Development Policy Institute	X		X
Focus Humanitarian Assistance Pakistan	X	X	

carried out a survey of Pakistan's preparedness for disasters caused by natural hazards in 2004 and proposed the formulation of a disaster management authority to meet the challenge effectively. Finally, the President promulgated the National Disaster Management Ordinance on December 23, 2006, paving the way for establishment of the National Disaster Management Commission. The ordinance also provides for setting up the National Disaster Management Authority to act as the implementing, coordinating, and monitoring body for disaster management.

Whereas a great majority of NGOs and international organisations are focused on emergency response, especially relief, a few have started effective programmes in capacity building for disaster management and preparedness at community level. As an example, FOCUS Humanitarian Assistance, Pakistan, had plans in place and a fair level of execution prior to the 2005 Kashmir earthquake. Some of the initiatives of this NGO include the following.

Volunteer training – focused on the northern areas of Pakistan which are most vulnerable to natural disasters. Thousands of people have been selected from the community and trained in disaster risk management such as basic safety practices, first aid, and search and rescue operations. According to a recent estimate, 30,000 trained volunteers are now available throughout Pakistan for disaster response.

Vulnerability assessment – FOCUS has introduced a programme for multi-hazard vulnerability mapping in the northern areas of Pakistan. This programme focuses on developing maps and inventories of landslides, debris flows, and river-incision hazards as the basis for development of vulnerability maps. This information, although in its early stages, is expected to contribute effectively to suitable mitigation and preparedness plans.

A description of disaster-management activities carried out by some of the international organisations is given in Annex 2.