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DISASTER MANAGEMENT SYSTEM OF PAKISTAN

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Abstract: Disasters, natural or manmade, are part of challenges faced by human beings while they are living on the earth in any community. One thing common with all the disasters is that they cannot be averted. For the nations, the task is to deal with circumstances emerging sequel to any disaster. This paper is focused on the analysis of Disaster Management (DM) system in place in Pakistan. It initiates with an insight into the challenges faced by the country while focusing only on major natural disasters like earthquakes and floods that are perpetually causing damage to life and property over the years. Nevertheless, other significant challenges have also been enlisted. This is followed by a review of the system that has been put in place by the government to deal with the situation created consequent to any disaster. In this part, a detailed analysis of the organization and functioning of various bodies has been discussed; highlighting the shortfalls in resources and the methodology employed to apply these resources. At the end, pertinent recommendations have been proffered to address the observed shortfalls. Mainly, the paper is a summary of a host of writings available on the issue, prepared with a focused approach towards core issues prevalent in our country with regards to disaster management. Apart from studying the articles and analyses available on the issue, direct consultation has also been made to official documents of concerned government bodies.
Keywords: Disaster management, challenges, natural disaster, Pakistan

INTRODUCTION

Pakistan is a 3rd World, underdeveloped country and is densely populated. A review of DM policies and System states "Situated between latitudes 24 and 37 degrees north and longitudes 62 and 75 degrees east, it covers a total land area of 796,095 sq km". Pakistan is prone to various forms of disasters due to diverse land and climatic conditions. Provinces of Gilgit-Baltistan (GB), Balochistan and AJK are highly susceptible to disasters being vulnerable seismic regions. Punjab and Sindh, especially the low lying areas, perpetually suffer from floods. Each year, colossal damage to life and property is experienced by the populace as a result of one or the other form of natural disasters.

Disasters cannot be averted; nevertheless, consequent damage can be significantly controlled with a planned approach towards DM. After years of unfortunate experiences, some actions have been initiated by the government to meet these continual challenges. Governing bodies for DM have been put in place, however, it is evident from the latest disasters faced by the nation that there is a lot left to be done to mitigate losses and alleviate the sufferings of people in affected areas. Disasters are perceived to be a result of insufficiently and incompetently managed risks [1]. These risks arouse consequently by a combination of hazards and vulnerabilities. Hazards striking the areas with low vulnerability will never become disasters, as is the case in less populated regions. Natural disasters can set back years of urban development by destroying infrastructure with colossal human and material losses. A report suggests "Approximately, over 90% victims of disasters in the world are habitants of developing countries", and the consequent losses and damages are about twenty times more in developing nations as compared to developed countries [2].

In addition to natural disasters like floods and earthquakes, incidents like outbreak of fires, train accidents and industrial accidents are also experienced in Pakistan, with consequent damages. Magnitude of destruction caused by such disasters can be significantly lowered if proper procedures are in place. Generally, however, it has been observed that there is a lack of planning and coordination between various agencies/ setups responsible to deal with such situations. Moreover, critical deficiencies in resources also come to limelight when any disaster of this kind occurs in the country. In addition to the deficiencies pointed out above, which by and large fall in the domain of government, a general lack of awareness in the public is also a major factor contributing towards an incident or accident getting into the realm of Disaster. Knowledge of DMis the only effective step in which one can ensure participation of the general public wholeheartedly [3]. Therefore, any DM Regime is of use only when some degree of awareness to the general public about the disaster is imparted. DM is all about applying adroit ways and methods of controlling a disaster. While the occurrences of disasters in Pakistan are many, only the salient ones have been short listed and will be subsequently discussed. These have been categorized according to their scope and gravity, which either require an effort of all relief agencies, including armed forces or those which only require intervention of one or few concerned agencies. Likewise, the ones on broader scale are being classified as disasters, while the others are termed as crisis.

CHALLENGES FACED BY PAKISTAN

Natural and Manmade Disasters

As highlighted above, Pakistan being an under developed and densely populated country is prone to a large spectrum of disasters;

both natural and manmade. Salient ones are discussed in subsequent paragraphs [4].

- ***Earthquakes.*** *Pakistan lies in an earthquake prone seismic area and therefore it is likely to suffer frequent earthquakes. Mountainous ranges of Himalaya, Hindu Kush and Karakoram are significantly vulnerable. The earthquake hazard is also derived from Pakistan's position on the eastern margin of the collision between Indian and the Eurasian Plates. The result is the potential for major earthquakes in the north, where the Indian Plate thrusts under the Himalayas and along the western edge of the country, while transverse motion of the Indian Plate relative to the Iranian and Afghan micro-plates results into Chaman fault. The Arabian Plate sub ducts beneath the Iranian Plate along Makran Coast, where the 1945 earthquake of 7.9 magnitudes resulted in a tsunami with 12 meters high waves. Karachi has significant seismic risk due to several nearby faults. Chronology of the major earthquakes of the area constituting Pakistan is appended in Table 1.0.*

Table 1*: Major Earthquakes of the Pakistan*

Year	Area	Magnitude	Casualties
1909	Loralai-Sibi	7.0	100
1929	Buner-Hazara	8.0	Data not available
1935	Quetta	7.7	35,000
1939	Badakhshan	6.9	Data not available
1945	99 km SE of Gwadar (at sea)	8.2	Plus of 4,000
1974	Swat &Hazara	6.2	5,300
1981	GB	6.1	220
1997	Harnai	7.3	50
2001	Kutch (Bhuj)	7.7	20,023
2002 (3)	GB-Astor	5.5, 5.3,6.3	11,723
2005	Muzaffarabad&Balakot	7.6	80,361

- ***Floods.*** *Generally floods occur due to high to moderate intensity rainfall over sufficiently longer duration. S. Sreekesh states "Flood can also occur due to dam or reservoir failure or improper management of high water level conditions in reservoirs and consequent sudden release of the water especially during the period of high intensity rainfall". Pakistan is prone to floods as a result of heavy downpour during monsoons and its province of Punjab is most vulnerable to floods from its rivers. Katcha area of Sindh Province is also affected by these floods significantly. Recently, flash floods have occurred in Khyber Pakhtun Khawa (KPK), Balochistan and Sindh. Coastal floods in Sindh and Balochistan are rare; however the one in 2004 caused lot of damage including washing away of coastal highway [5,6]. Though Indus River System Authority (IRSA) has installed a telemetric system at each barrage and other flow control points providing useful flood forecast yet there are no worthwhile arrangements to manage floods. Irrigation and Planning departments work in isolation with little focus on managing a disaster jointly. Inadequate means at the disposal of provincial governments, i.e. power boats, life saving equipment, relief rations, epidemic control medical etc., eventually leaves the entire responsibility on the shoulders of Armed Forces. Major floods with their effects are given in Table 2.0.*

Table 2*: Major Floods of Pakistan*

Year	Financial Losses (Billion Rs)	Lives Lost	Villages/districts Affected	Area (sq miles)
1950	9.1	2,910	10,000	7,000
1959	5.9	160	11,609	29,065
1973	5.5	474	9,719	16,200
1975	12.7	126	8,628	13,645
1978	41.4	393	9,199	11,952
1992	56.0	1,008	13,208	15,140
1995	7.0	591	6,852	6,518
1996	3.5	307	3,769	3,852
1997	Data not available	607	3,245	2,300
2003	450,000 acres crops 20,000 cattles, 100,000 houses	215	10,000	400
2005		424		400
2010		1802	79	1,54,000
2011	8.9 million affected, million acres land damaged, 1.52 million homes damaged	434	16	1.7 million acres

- ***Accidents in Nuclear Facilities.*** *Pakistan operates some nuclear fuel conversion, research and weapon grade enrichment facilities that could be prone to nuclear accidents. Fortunately, no major accident has occurred on any of these sites, primarily as a result of adherence to procedures and cognizance of nuclear safeguards.*

Various Crisis Situations

- ***Tropical Cyclones.*** *Cyclones usually occur between April & May and from October to December. According to a research "Cyclonic storms cannot be prevented; only the loss of lives and damage to the properties can be mitigated if prompt action is taken after receiving timely warnings". Cyclones can cause huge damage to the coastal belts of Balochistan and Sindh. 14 Cyclones were recorded from 1971 to 2001.*
- ***Droughts.*** *Generally, these occur when a region receives consistently below average precipitation. Very little rainfall occurs in Balochistan, parts of Sindh and south-eastern parts of Punjab. These areas are hence most susceptible to drought. Annual wastage of 27 MAF of water into sea could be controlled and storage dams constructed to facilitate water availability for cultivation. Intense drought in 2000-02 was devastating for the affected populace of 2.2 million people.*
- ***Locust Attack on Crops.*** *Locust attack is a sort of pest plague that can damage crops, fruits and trees. Medium sized swarms came to Pakistan from across the Indian border in late 2010, which settled and bred in Ghotki and Bahawalpur desert areas, sparking fears that the total cotton production may fall further after the floods which had "damaged two million bales earlier".*

» ***Major Fires in Oil and Gas Wells***. *Natural as well as human induced fires are common in Pakistan. Apart from causing human and wildlife loss, they have disastrous effects on the environment and economy. Forest fires are common in AJK, KPK, Murree and Margalla. Fires in urban commercial and residential centres as well as rural areas are also frequent as exemplified by recent factory fires in Karachi causing tragic loss of life. Gas and oil fields, transmission lines and oil depots are particularly vulnerable to this hazard.*

» ***Health Epidemics***. *Cholera is a serious health issue in Pakistan, with a large number of cases every year. Between May and Aug the disease becomes intense, due to monsoon rainfall combined with poor sewerage system and inadequate water supply. The disease involves comparatively older population and majority of the patients are poor, refugees or immigrants, living in crowded refugee camps under humble living conditions.*

SUMMARISED CHALLENGES

Pakistan has a serious vulnerability to both natural and manmade disasters. Major natural disasters like earthquakes, tsunamis and cyclones cannot be avoided or altered but deliberately planned risk management can minimize the resulting damages both to life and property. Industrial accidents can be averted through failsafe procedures and better oversight. Disasters like floods, cyclones, drought and epidemics can be predicted well before occurrence thus allowing planning and mobilization. KPK, Northern Areas, AJK, Karachi, and Balochistan are extremely vulnerable to earthquakes. Gwadar and other big cities are also exposed to this hazard. A major earthquake has occurred once in every 8 years in the last century. Floods in Pakistan are frequent phenomena and cause extensive damage. A major flood has struck Pakistan once in every six years. Drought is also a serious disaster in Pakistan. If not addressed, it is likely to cause huge human, economic and social loss in the future. Disasters like earthquake, traffic accidents, industrial / fire hazards, etc. can occur at any time and without any warning.

Statistics show that lack of resource management and awareness in developing and under developed countries causes much more damage than developed countries. No nuclear accident has occurred in the country but there is no room for complacency. Construction of dams and barrages is becoming call of the day.

ANALYSIS OF DM REGIME

Pakistan's DM policies were limited to flood disasters with primary focus on rescue and relief operations. Resource constraints and neglect of departments and organizations meant to deal with disasters resulted in an inefficient DM Policy. Disasters require huge finances to cope with, however, no fund for disaster relief/ management used to be placed in government's planning. In addition, the response activities have not been properly institutionalized to ensure all inclusive and coherent response e.g. Emergency Relief Cell (ERC) had only been responsible to deal with post disaster situations alone. Conventional national emergency services such as Police, ERC, Crises Management Cell, Fire Services, Civil Defence Agency, Federal Flood Commission and Meteorological Department were the key agencies for DM in Pakistan. In case of larger emergencies Armed Forces were invariably assigned the role of DM.

According to NDM Act 2010 "The National Disaster Management Act 2010 provides National DM Commission (NDMC) as the apex body for managing disasters, with National DM Authority (NDMA) as its administrative arm". The Act also establishes DM commission and authorities at provincial as well as district tiers. A brief review of these institutions is as under [7]:

» ***National DM Commission (NDMC)***. *Led and chaired by the Prime Minister, its members include key Federal ministers, leaders of opposition in both the Houses, Chief Ministers of all the provinces, Prime Minister AJK, Governor KPK (also represents FATA), Chief Executive GB, Chairman Joint Chiefs of Staff Committee or his nominee, and representatives of civil society. It is mandated to formulate policies and develop guidelines for national Disaster Relief Management (DRM).*

» ***National DM Authority (NDMA)***. *The NDMA is an executive limb of the NDMC to coordinate DRM activities at the national, provincial and district levels. The authority is responsible for preparing national disaster risk management plan, developing policy guidelines and providing technical assistance.*

» ***Provincial DM Commissions***. *PDMCs are the apex bodies at the provincial tier, headed by Chief Minister (CM) of the Province as ex officio Chairperson.*

» ***Provincial DM Authorities (PDMAs)***. *PDMAs are primarily responsible for implementation of DRM plans and related activities. PDMAs have been established in Sindh, Balochistan, KPK and Punjab, whereas State DM Authorities (SDMAs) are working in AJK and GB.*

» ***District DM Authorities (DDMAs)***. *National DM Ordinance provides for the establishment of DDMAs in all the districts of Pakistan including AJK, GB and FATA.*

RESPONSE AGENCIES

» ***Institutional Perspective***. *Prior to establishment of NDMC and NDMA in 2010, there were four key agencies for DM at national level, i.e., The Civil Defence Department, Emergency Relief Cell (ERC), Federal Flood Commission (FFC) and National Crises Management Cell (NCMC).*

» ***National/Provincial DM Authorities (DMAs).*** *DMAs' vision entails achieving sustainable social, economic and environmental development in Pakistan through reducing risks and vulnerabilities with a mission to manage complete spectrum of disasters by adopting a DRR perspective in development planning at all levels and enhancing institutional capacities. NDMA is the principal coordinating body to facilitate implementation of DM with all stakeholders, including ministries, divisions, departments, and humanitarian organizations at respective*

levels for emergency response. Its functions are very generic, holistic and at macro level, mainly addressing policy formulation, coordination and monitoring, since implementation of DM has been passed on to the provinces under the Devolution Plan 2010.

- ***Civil Defence**. Civil Defence undertakes various measures for suitable response against natural or manmade disasters.*
- ***Pakistan Red Crescent Society (PRCS)**. Relief & recovery besides reconstruction and capacity enhancement are the areas of main focus for PRCS.*
- ***Punjab Emergency Services (Rescue 1122)**. Being the most efficient and largest emergency service in Pakistan, Punjab Rescue 1122 has a well laid out infrastructure in all districts of Punjab and is rendering good assistance to other provinces befittingly. It has very successfully rescued over 1.7 million victims while maintaining its response aptly below 7 minutes to reach incident sites. It has Rescue & Fire services and Community Emergency Response Teams in all districts of Punjab. The service is successfully placed in KPK also".*
- ***Merger of ERC and 6th Aviation Squadron into NDMA**. In keeping with the spirit of National DM Ordinance (NDMO), it has recently been proposed that the 6th Disaster Aviation Squadron, as well as ERC of the Cabinet Division be merged with NDMA, amending Rules of Business accordingly. The proposal has been concurred by NDMC.*
- ***Integration of Civil Defence Department into DMAs**. In order to streamline DM capacities at the provincial and district levels, the NDMC decided that Civil Defence Department at district and provincial levels be integrated into DDMAs and PDMAs, respectively. However, despite consistent pursuance by NDMA, no provincial government reported any substantial progress on the issue.*
- ***Role of Pakistan Army**. The Army's role has always given a clear evidence of careful planning, optimal utilization of resources and sharp focus. It involved itself in every aspect of the challenges, and rendered full support in terms of resources and rescue efforts. It helped in controlling the damage to a large extent thereby saving not only lives, but also the means of livelihood.*

Relief efforts are handled by NDMA, Army, Provincial Governments and international and local humanitarian organizations. Planned interface mechanism at National/Strategic level is NDMA and MO Directorate. At Provincial and Operational level is joint Coordination Group of PDMAs, Provincial Government, Corps Headquarters, national NGOs and international donors. And at District level is the District management with local Brigade/ Unit Commanders.

The principal responsibility of Army is its involvement in damage control stage and revolves around rescue and relief operations to assist the civil administration as and when required. Major tasks assigned to the Armed Forces include, relief, rescue and evacuation of casualties in aid to civil power, provision of aviation and medical support besides relief and recovery utilizing available national assets, provision of required assistance to the civil administration for camp setting, organization of medical camps, establishing tent villages and preparation of flood relief plans, and if needed the provision of requisite security during DM operations.

The Army DM Cell functions at General Headquarters to act as focal point for NDMA and nerve centre for Army DM operations. This cell is responsible for implementation, monitoring and coordination of Army policies, strategies and plans.

- ***Earthquake Reconstruction and Rehabilitation Authority (ERRA)***

It was created after the earthquake of 2005 for planning coordinating and regulating the reconstruction and rehabilitation work in the affected areas. It is an umbrella organization which provides platform to all stakeholders in their post damage efforts and activities. ERRA Ordinance came in 2009 and finally ERRA Act was passed in 2011, making it a permanent post DM authority nationwide under the Prime Minister Secretariat.

ERRA has worked in 12 priority sectors which are at various phases of implementation. These sectors are broadly categorized into three clusters, with environment falling under the cross-cutting themes of Direct Outreach to rural housing, livelihoods and cash grants, and social protection. These sectors assist the affected population directly through housing design, cash, loans and training, Social Services to education, health, water and sanitation. Services provided under these sectors, focus not only on physical facilities, but also on the quality of service delivery and public infrastructure of governance, transport, power, and telecommunication. These aim to put in place high-quality, seismically-safe public infrastructure to facilitate resumption of government departments and reinstatement of power, transportation and communication in the affected areas.

ISSUES REQUIRING ATTENTION

The NDMA's Legislated Authority is the main issue. Implications arising from the 18th constitutional amendment and NFC Award pose momentous challenge to the existing DM system in the country. NDMA does not have authority to control PDMAs that result in considerable difficulties in mounting centrally organized and cohesive national response to the disasters. The ERRA is an autonomous body which does not work directly under Ministry of Climate Change. Existence of parallel tiers affects national DM capacity and prohibits synergy of national effort. NDMA, PDMAs and DDMAs are facing serious challenges of capacity building. Shortage of trained manpower and specialized equipment remain crucial in managing the entire flood relief activities. Clear policy on resource management needs to be spelled out. The Lack of disaster hazard mapping and poor EW system prevent preparing contingency plans and contingencies for responding to disasters. Lack of coordination amongst NDMA, PDMAs and the Armed Forces has been observed during last two floods of 2010 and 2011. Furthermore, very limited or no coordination amongst DDMAs, DCOs, Development Authorities and Irrigation & Power (I&P) Department has also been noticed during

same floods. Although every agency has documentedits role, responsibilities and mandate in some form but the information is not accessible to the public. For example list of key appointment holders, their duties and contact numbers are not publically available; hence people face difficulty in contacting the responsible individuals when needed. DM plans for various contingencies down to tehsil level, which should have been the basis for preparation of master plans by NDMA/ PDMAs, mostly do not exist. No database for disaster prone areas is prepared at national or provincial levels that can be used to ensure delivery of relief goods and award of compensation to the affected people. Though some measures have been taken for institutional level training but a huge void exists in preparing a disaster resilient society. Lack of DM education results in poor response by the departments.

Our electronic media plays negative role on occurrence of any disaster. Sensational reporting creates unrest amongst the masses. No standard mechanism exists to share lessons learnt with each other for education of all concerned. Although NDMA has started documenting the disasters yet there is a need to improve on this aspect for future reference.

SUMMARY OF ANALYSIS

DM in Pakistan is centrally controlled and national DM authority works under the federal government. Provincial management is done under provincial government and chairmanship of chief minister of the province. District DM Organizations (DDMOs) are established at district level under the district administration. Armed forces can be called upon by federal government in any eventuality. No concrete/ practical plans at national and provincial levels are made/ rehearsed in the realm of DM. There is no worthwhile task force for DM exists at national/ provincial levels except the armed forces for post disaster efforts. There is no system of community teams is established to work at the grass root level. And unfortunately no pre-disaster organizations/ institutions are established in Pakistan for early warning and preparedness. Pakistan is primarily working on the Post disaster issues and rescue efforts. Most of the causalities occur because of lack of knowledge and awareness amongst the common people which has not been addressed so far. Pakistan Medical Association (PMA) is not brought into the DM system of Pakistan which is a serious shortfall in the system. Lack of planning in urbanization is clearly visible in Pakistan which may exacerbate impact of any disaster in Pakistan. No media campaign is observed in the DRM system of Pakistan. Due to lack of funds, organizations like Civil Defence and Relief Commissioners that are important component of DMare activated on required basis. In the wake of a disaster most of the responsibilities rest with Army. In devolution plan, district governments were empowered to deal with disasters but in a bid to devolve authority, the plan to articulate disaster response has become weak. Having faced the brunt in 2005, Pakistan has gone a long way in institutionalizing DRM framework by enacting National DM Act 2010 and National DM Authority in 2007. It was hoped that with the raising of these authorities and working bodies the damages to human life and property will decrease, yet the devastation caused by floods in 2010 and 2011 resulted in alarming surge in deaths.

RECOMMENDATIONS

Important aspects needing special attention include sound policy formulation and legislation, capacity building of various institutions, infusion of responsiveness through efficient interface between various tiers and effective employment of various elements of the national power. Subsequent paragraphs contain various steps to nudge our nascent DM system towards greater maturity.

Formulation of strategy at national level should be led by political/ civilian leadership and must have legislative approval. It should give out broad guidelines to Civil Governments at Federal, Provincial& District levels and other components visualized to be involved in DM. It should focus on lasting, inclusive and coherent institutional arrangements to address disaster issues with a long-term vision. Pakistan needs strong federal institutions to handle large scale disasters. A clear and unambiguous legislation needs to be put in place at priority to retain the strong centralized character of the DM Regime. DM institutions cannot become effective without guaranteed budgets. Legislation to this effect is necessary. A percentage of budget to be decided by an expert panel must be allocated to DM Regime. Involvement of local and grass root mechanisms need legislative authorization. Community teams if incorporated will cover the extant gap in our response mechanism.

Necessary linkages may be established between PMA and the DMRegime through legislative process. Strict punishments for criminal activities like looting and fraud during national emergencies need to be legislated to deter their perpetration. A transparent and speedy trial through special courts is suggested to enhance the impact. Legislative measures need to be taken to ensure proper planning for housing/ construction in disaster prone areas with special emphasis on safety issues, for restrictions on construction in areas with potential risk, and to avoiding concentration of population in hazard prone areas.

A commission to be set up to undertake detailed study of major disasters and vulnerability profile in order to categorize the areas as per disaster vulnerabilities down to district level. Basing on this risk profile, contingencies may be worked out to minimize the disaster effects. Necessary amendments may be made in NDMO 2010 to incorporate ERRA as part of DM Regime. If deemed suitable its name may be changed without changes to organizational structure and core capabilities. It should either be amalgamated under NDMA or be taken as an organization parallel to NDMA for handling the post disaster rehabilitation works under ministry of DM. Predictable disasters like floods and epidemics need timely coordination between various organs of state to help mitigate scale of destruction. An effective interface between global, regional and domestic early warning and response mechanisms must be established to minimize impact. Effective pre-disaster coordination between various DM

agencies is essential to deal with sudden disasters so as to save as many lives as possible. Coordination between and within various ministries, executives and agencies must be done during peace timeso as to waste minimum time to operationalize requisite response. Currently, no concrete plans at national and provincial levels exist in the realm of DM. Small scale Earthquake and Flood Rescue Exercises are suggested to help formulate the standing operating procedures and infuse interoperability between various DM tiers.

It is suggested to have better legislation for town and infrastructure planning in coordination with DM Regime. To avoid information scarcity which leads to sensationalism and negative reporting, proactive coordination mechanism between media and DM Regime must be established. A greater degree of transparency in fund utilization through coordinated media involvement will convince the public to remain sensitive to community needs in stressful situations. Greater public support and donations can be gathered if people trust the government. DM exercises, if conducted among the nations of region like Afghanistan, Iran, China and Gulf countries, will enhance skills and regional cooperation. A better interface with International community and NGOs who have helped in disaster relief in the past will prove instrumental in future DM tasks. An effective liaison with them will result in timely infusion of foreign assistance in the disaster zones.

Ministerial Committee recommendations to resolve various institutional issues pertaining to NDMA including merging of ERC and Aviation Squadron into NDMA needs to be implemented on priority to ensure organizational strengthening and functional autonomy of NDMA. A well-funded institute may be established with mandate to study and recommend measures for legislation and capacity building. It should also have institutional linkages with global and regional centres for early warning and disaster mitigation.

Construction of new dams and water storage facilities may be pursued earnestly to fight floods. Such projects will also have an indirect contribution towards capacity building due to their positive effects on energy sector and economy. Requisite wherewithal for flood relief and urban disasters needs to be procured, after necessary evaluation. All civil and military teams should have interchangeable equipment and communication. Wireless, line and data links should exist between civil agencies and military. Data maintained by National Database and Registration Authority (NADRA) and other departments must be available to all.

Assessment is essential for rescue, evacuation and subsequently for a viable second phase response. Sources like UAVs and satellite streams should be made available for this purpose. There is an acute shortage of military and civil aviation assets especially helicopters for transportation of personnel and logistics. This needs to be addressed as dependence on helicopter transport is high in any disaster related scenario. NDMA is mandated to address all DM operations which essentially revolve around preparedness, mitigation, prevention, response, recovery and rehabilitation and reconstruction. In order to deliver, the organization needs to have professional expertise with required financial, logistics and human resource. Major areas of capacity building are creation and training of National Disaster Response Force (NDRF), formulation of National DM Fund (NDMF), DM equipment, machinery and means of communication and logistic support storage including essential food and other relief items.

It is suggested that requisite capacity building be undertaken for Civil Armed Forces and other Law Enforcing Agencies for interoperability with regular armed forces. Armed Forces will have to develop a coordinating headquarters, preferably at Joint Staff level which will should able to harness all the services capacities. Within this the services will have to define their individual areas of responsibility. Training of military personnel does not match the one imparted to professionals all over the world.

The Military Training Directorate to appropriately train senior and junior leadership for DM. As an interim measure, an introductory DM Module may be included in the training curricula of courses at schools of instructions. Simulated exercises at formation level to refine the drills and procedures in the perceived threat environment and interaction with foreign institutions to gain training for 'rescue teams' and other specialized DM skills.

Hazard risk profiles of the country till district level be made public through print and electronic media. DM must be introduced in syllabi of education institutions. First aid, casualty evacuation and survival training be imparted in the school/colleges. Identification of the disaster prone areas and taking measures in advance can minimize the impact of potential calamities. Pre-positioning of stocks of food and non-food items is proposed to be adjusted in relation to the degree of disaster risk. During the earthquake 2005 and floods of 2010/11 it was observed that the relief support could not be managed appropriately at national level. This causes a serious setback with political ramifications. A credible and transparent body having interface with national and foreign donors needs to be established to oversee the entire process of camp management and relief distribution.

In order to enhance local capacities, there is a need to establish 'Rapid Reaction Teams' at city, district and region level. These teams should be trained to undertake independent and immediate search and rescue operations in their affected zones. In Pakistan this form of participation is not yet common as against a common practice in other countries. Leaders at various political, religious and youth level should strive for a change in the attitude of the people in this regard through motivation and campaigning. The idea was practiced during Earthquake - 2005, which proved to be quite useful especially during reconstruction and rehabilitation phase of the disaster.

CONCLUSIONS

Disasters are sudden, adverse and extreme events which cause great damage to human beings as well as plants and animals. Disasters occur rapidly, instantaneously and indiscriminately. These have always coexisted with civilizations. Human beings have learned to

live with these catastrophes and effort has always been made to mitigate the impact of disasters with the available tools in a particular era. DM has become a precise and useful branch of knowledge in the present times. A brief mention of recent major calamities indicates the growing role of technological prowess in risk mitigation as well as increasing severity of the natural disasters. The increased frequency of floods, cyclones, tsunamis, vicious disease and the industrial disasters reflects impact of changed global environment, partly as a result of human actions. Industrial disasters are especially painful as greater foresight and procedural efficiency can render many a catastrophe avoidable.

Various regional and international protocols exist in the realm of DM. However, the world seems least able to coordinate the response to natural disasters which cause such acute suffering on so great a scale. Pakistan's DM institutions have evolved over time as necessitated by the need for effective measures. However, lack of resources, bad planning and lack of focus render the whole process weak, ineffective and unresponsive. Pakistan like other poor countries relies heavily on its armed forces to act as first responders in almost all crisis situations. The comparison of floods / earthquakes in Pakistan and recent hurricanes in United States of America are illuminating in terms of response. Although, huge gap in resources and technology exists between the two nations, some common features are discernible. The unpredictability of nature, limitations of technology, poor coordination and lack of preparations to meet the challenges plague the post disaster phase. While developed countries can easily make up for initial mistakes through pouring of huge resources, poor countries like Pakistan have to bear greater pain and sufferings. Although natural phenomena can hardly be altered by human ingenuity, yet a determined effort at the right time and place can always mitigate risks to manageable limits.

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