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Armed Forces Response Plan to Disaster Management

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The Centre for Land Warfare Studies (CLAWS), New Delhi, is an autonomous think tank dealing with contemporary issues of national security and conceptual aspects of land warfare, including conventional and sub-conventional conflicts and terrorism. CLAWS conducts research that is futuristic in outlook and policy-oriented in approach.

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About this series

CLAWS Working Papers are unedited works in progress. Disseminated online, the final version of this paper may nevertheless appear in future CLAWS publications, peer-reviewed journals, or edited volumes.

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PREFACE

Bhuj earthquake on 26 January 2001, the great tsunami and the devastation that it raked up in 2004 and J&K earthquake in 2005 reminded us of the fury that the nature can bring to the doorsteps of human existence. While taking up study leave in February 2009, when it came to taking a decision on the subject of my research, I was inclined to educate myself on the disasters. Being from non-technical background, I preferred to study the Armed Forces response to disasters, also supported by the fact that military background and experience in managing organizational behavior as well as in handling aspects of tri services response to disaster both within the country as well as in neighbouring countries would help in analyzing the Armed Forces capacities in dealing with disasters.

The timing for such an examination too seemed appropriate. A large number of initiatives, in the wake of changed paradigm of managing disaster with focus on prevention and mitigation, establishment of National Disaster Management Authority and other organizations at all levels, Disaster Management Act and many other such measures were in the process of being implemented. The conceptual format of managing disasters as such was in transition. It provided an opportunity to examine the transition, its progress, the response of Armed Forces and its capabilities.

The finalized project includes a brief commentary on the initiatives and measures implemented / in the process of being implemented, an analysis of role and capabilities of the Armed Forces during disasters and recommendations where warranted. The much of facts for the purpose of analysis have essentially been drawn from the Service HQs, HQ IDS, NDMA Guidelines on various types of Disasters, HQ IDS SOPs on CBRN Disasters and International Aid for ensuring reliability and credibility of the factual details.

The broad frame of reference for analysis and the consequent recommendations is primarily based upon organizational effectiveness and development. This is keeping in view the fact that the inputs of the study should relate and contribute towards the effective and efficient employment of the Armed Forces for managing disasters in India. The success of any plan, policy, strategy and SOPs depend on its effective implementation. The organizational behaviour that is responsible for its effectiveness is the most important and the key element responsible for implementation. The focus of analysis and the recommendations therefore, is towards making the institutional mechanism comprising government, Armed Forces and non-government organizations, more responsive

through an interactive, participative, collaborative and professional approach to managing disasters.

During the course of this project, I have drawn a lot of inspiration and ideas from the International Seminar on Disaster Management in December 2005, organized by OL Directorate, HQ IDS, and guidelines and policies issued by NDMA for various types of disasters. I have also drawn many inputs from a large number of other seminars, workshops, Disaster Management Congress, Workshop on Regional Cooperation among BIMSTEC countries for Disaster Risk Reduction and Management and a large number of other publications. My special gratitude goes to Brig Gurmeet Kanwal, the present Director, Centre for Land Warfare Studies for providing me an enabling environment for the project, Maj Gen DC Katoch, Col Ravi Tuteja, Col Mittal and other colleagues and staff at the Centre.

Finally, it would not have been possible for me to finish this project in time, had my wife and my children not contributed in terms of motivating me and supporting me in my endeavour to bring this project to a satisfying end. I thank them profusely for their support, empathy and good wishes.

Daya Chand

ACRONYMS AND ABBREVIATIONS

AA	Ambulance Assistant
ACAS (Ops)	Assistant Chief of Air Staff (Operations)
ACIDS	Assistant Chief of Integrated Defence Staff
ACNS	Assistant Chief of Naval Staff
ADGAFMS	Additional Director General Armed Forces Medical Services
ADGMO	Additional Director General Military Operations
ADS	Advance Dressing Station
AFMC	Armed Forces Medical College
AGSS	Aerial Gamma Spectrometry Survey
AH R&R	Army Headquarters Research and Referral Hospital
AIR	All India Radio
ANC	Andaman Nicobar Command
BAI	Builders' Association of India
BARC	Bhaba Atomic Research Centre
BD Coy	Bomb Disposal Company
BSF	Border Security Force
CAC	Central Air Command
CAG	Comptroller and Auditor General
CBRN	Chemical, Biological, Radiological and Nuclear
CDS	Chief of Defence Staff
CH	Command Hospital
CH (AF)	Command Hospital (Air Force)
CII	Confederation of Indian Industry
CISC	Chief of Integrated Staff to the Chairman Chiefs of Staff Committee
CISF	Central Industrial Security Force
CMDS	Counter Measure Dispersing System
CME	College of Military Engineering
CMG	Crisis Management Group
COS	Chief of Staff
COSC	Chief of Staff Committee
CPMF	Central Para Military Forces
CPWD	Central Public Works Department

CRF	Calamity Relief Fund
CWC	Central Water Commission
DACIDS	Deputy Assistant Chief of Integrated Defence Staff
DCMG	Defence Crisis Management Group
DCNS	Deputy Chief of Naval Staff
DDP	Desert Development Programme
DGAFMS	Director General Armed Forces Medical Service
DGDIA	Director General Defence Intelligence Agency
DGMO	Director General of Military Operations
DIA	Defence Intelligence Agency
DMA	Disaster Management Act
DNO	Director Naval Operations
D Ops (T&H)	Director Operations (Transport & Helicopters)
DRDE	Defence Research and Development Establishment
DRDO	Defence Research and Development Organization
DTC	Decontamination and Treatment Centre
EAC	Eastern Air Command
EGM	Empowered Group of Ministers
ENC	Eastern Naval Command
EOC	Emergency Operations Centre (Control Room)
FAP	First Aid Post
FEMA	Federal Emergency Management Agency
FNBCP	Faculty of NBC Protection
GIS	Geographical Information Systems
GOC	General Officer Commanding
GOI	Government of India
GPS	Global Positioning System
HA/DR (Ops)	Humanitarian Assistance/Disaster Relief (Operations)
HQ	Headquarters
HQ ANC	Headquarters Andaman Nicobar Command
HPC	High Powered Committee
IAF	Indian Air Force
IAS	Indian Administrative Service
IB	Intelligence Bureau
IBHS	Institute for Business & Home Safety

ICT	Information and Communication Technology
IDNDR	International Decade for Natural Disaster Reduction
IDRL	International Disaster Response Laws
IDRN	India Disaster Resource Network
IDS	Integrated Defence Staff
IMD	Indian Metrological Department
INCP	Interim National Command Post
INCOIS	Indian National Centre for Ocean Information Services
INHS	Indian Naval Hospital Service
INSARAG	International Search and Rescue Advisory Group
IPCC	Intergovernmental Panel on Climate Change
IPE	Individual Protection Equipment
IPS	Indian Police Service
ISDR	International Strategy for Disaster Reduction
IT	Information Technology
ITBP	Indo Tibetan Border Police
JCO	Junior Commissioned Officer
JS (G)	Joint Secretary (G)
MCU	Movement Control Unit
MEA	Ministry of External Affairs
Met Deptt	Metrological Department
MHA	Ministry of Home Affairs
MH	Military Hospital
MIS	Management Information System
MO	Medical Officer
MoD	Ministry of Defence
MOPP	Mission Oriented Protective Posture
MRE	Meals Ready to Eat
NA	Nursing Assistant
NBC	Nuclear, Biological and Chemical
NCCM	National Centre for Calamity Management
NCMC	National Crisis Management Committee
NCO	Non Commissioned Officer
NDMA	National Disaster Management Authority

NDMRC	National Disaster Mitigation Resource Centre
NDRF	National Disaster Response Force
NEC	National Executive Committee
NEOC	National Emergency Operations Centre
NERF	National Emergency Response Force
NGO	Non Governmental Organisation
NHQ	Naval Headquarters
NIDM	National Institute of Disaster Management
NISA	National Industrial Security Academy
NITSRDR	National Institute of Training for Search, Rescue and Disaster Response
NSS	National Service Scheme
NYKS	Nehru Yuvak Kendra Sangathan
OIC	Officer in Charge
OL	Operational Logistic
PBOR	Personal Below Officer Rank
PD (Ops)	Principal Director (Operations)
PRO	Press Release Office
QRMT	Quick Reaction Medical Team
QRT	Quick Reaction Team
RAW	Research and Analysis Wing
RDD	Radioactive Disposal Device
RRCs	Regional Response Centers
SAC	Southern Air Command
SAR	Search and Rescue
SITREPS	Situation Reports
SOP	Standard Operating Procedure
STD	Subscribers Trunk Dialing
SWAC	South Western Air Command
TC	Training Command (Air Force)
TDS	Time, Distance and Shielding
TV	Television
UNDP	United Nations Development Programme
UN/ISDR	United Nations / International Strategy for Disaster Reduction
UT	Union Territory

VCAS	Vice Chief of Air Staff
VVIP	Very Very Important Person
WAC	Western Air Command
WNC	Western Naval Command

CHAPTER 1: PRE-DISASTER PLAN

Background

India has been traditionally vulnerable to natural hazards due to its geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities. Over 40 million hectares (8%) is prone to floods and about 8 % of the total area is prone to cyclones. The recent disaster caused by Tsunami has further added to our vulnerability. In addition, the possibility of occurrence of manmade disasters by nuclear, biological or chemical means cannot be ruled out. These could be accidental or intentional.

Rapid growth in population leading to mushrooming of settlements in vulnerable areas; accelerated urbanization and substantial modes of construction has added to our vulnerability. Development can not be sustained unless mitigating measures are made a part of the developmental process. If the huge losses caused almost every year to private, social and community assets are taken into account, the returns from investment in mitigation far outstrip the returns from investment in other projects.

Our recent approach to disasters is re-active, focusing on post disaster relief and rehabilitation. Very little attention has been paid to prevention[1], mitigation and preparedness. It is possible to reduce our vulnerability by instituting adequate mitigation and preparedness measures. It is important that adequate pre-disaster preparation/ actions are taken by various agencies involved in provisioning and execution of aid. To ensure timely and efficient rendering of aid, there is a need to ensure integration of various Government agencies, identify actions to be initiated by various Organisations and aid items required to be provisioned for various types of Disasters well before their occurrence. The significance of providing humanitarian assistance by India to other countries merits no emphasis. Such a role is of greater significance in the Asia-Pacific region where India has a bigger role in view of its resources and size.

It is also important that relief provided to the affected countries is suitable, timely and of good quality as also gets wide media publicity. To ensure efficient rendering of aid, there is a need to ensure integration of various Government agencies involved in provisioning and execution and also to identify their roles and modus operandi. The overall responsibility of managing major CBRN related disasters is that of the Ministry of Home Affairs (MHA) as laid down in the Union War

Book. Notwithstanding this, it is inbuilt in the charter and role of the Defence Services to provide aid to civil authorities during all types of calamities and disasters. For this purpose Services HQs have earmarked Quick Reaction Teams (QRTs) and Quick Reaction Medical Teams (QRMTs). These QRTs/QRMTs are dual tasked to be prepared to assist the civil administration for a contingency involving CBRN related disasters/acts of terrorism. The Disaster Management Act 2005 was passed in Dec 2005. The nodal agency mandated for response to CBRN related disasters is the National Disaster Management Authority. The act explicitly spells out the organisations, functions and responsibilities at the National, State and District levels for management of all types of disasters. The act also authorises the raising of eight battalions of National Disaster Response Force (NDRF), for responding to disaster situations, under the control of the NDMA. Four of these NERF battalions are to be trained and equipped to deal with CBRN related disasters/acts of terrorism.

Consequent to the passing of the act, the MHA has promulgated three SOPs for responding to terrorist attacks involving use of radioactive materials, terrorist attacks using chemical weapons and terrorist attacks using biological agents. The SOP for dealing with the aftermath of a nuclear attack was promulgated by the MHA in May 2004.The Armed Forces, by virtue of their inner strength, motivation, discipline and operational preparedness, have always risen to the occasion during major disasters, and earned the admiration of the environment for their singular contribution to disaster response. We are well organised and managed to provide support to a full range of public relief services during major disasters and our structures are intended to respond rapidly in a fully mobile and self-contained manner, to reach out to the remotest areas of the country.

While the arrival of the Armed Forces instils confidence in the local populace[2] and gives a boost to the administration, their omnipotence and omnipresence should not engender a sense of fulfilment in the psyche of the State Governments. Over the years, the Armed Forces involvement in aid to civil authority has been steadily increasing and the administration too has steadily increased its dependence on our resources. Fortunately, the Government, of late, has arrested this trend, and has reviewed its policy on disaster management, which now envisages the development of a more self reliant administrative structure, through a pro-active strategy. These reforms notwithstanding, the Armed Forces continue to maintain themselves in a high state of preparedness, so as to save that crucial day for the Nation.

Need for a National Policy on Disaster Management

Mitigation /reduction of vulnerability is an activity which has to be undertaken as a part of Government endeavour in all spheres – it is not an activity to be undertaken by one department alone. Schemes addressing mitigation would need to be given priority under rural development programmes. Hazard[3] risk analysis needs to be carried out in every major project in areas / zones prone to earthquakes/ cyclones/ floods etc. Afforestation would need to be given priority by taking up coastal shelter belt plantation in areas which are vulnerable to cyclones and storm surges. In brief, progress and development in all sectors have to be designed to reduce vulnerability. Therefore, a National Policy on Disaster Management which will educate all spheres of Government about the mitigation and preparedness measures required to be taken, will be the most crucial aspect of our endeavours to tackle disasters.

Types of Disasters

Indian Armed Forces cater for the following types of Disasters:-

Earthquakes - The Indian sub continent is divided into five seismic zones.

- **Zone V** - This Zone is the most vulnerable to earthquakes[4] and includes the Andaman & Nicobar Islands, all NE states, and part of NW Bihar, eastern Uttaranchal, and Kangra Valley in HP, Srinagar and the Rann of Kutch in Gujarat. Details of Formations of three Services most likely to be responsible for Disaster aid in the states most vulnerable to earthquakes are given below:-

States/Area	Army Command	Navy Command	IAF Command	HQ IDS
Andaman & Nicobar Islands	Southern	ENC	SAC	ANC
NE States	Eastern	ENC	EAC	-
Bihar & Uttaranchal	Central	ENC	CAC	-
Himachal Pradesh	Western	-	WAC	-
J & K	Northern	-	WAC	-
Gujarat	Southern	WNC	SWAC	-

- **Zone IV** - Four of the major metropolitan areas lie in Zone IV. Details of Formations of three Services most likely to be responsible for Disaster aid during earthquakes in metropolitan areas are :-

Area	Army Command	Naval Command	IAF Command
Delhi	Western	-	WAC
Calcutta	Eastern	ENC	EAC
Chennai	Southern	ENC	SAC
Mumbai	Southern	WNC	SWAC

- **Zone III -** Much of India lies in Zone III, where a max intensity of 7 can be expected.
- **Zone II -** Part of southern peninsula and central region of the country fall in this category.
- **Zone I** - A large section of south central India lies in Zone I.

The earthquake is measured through seismic observatories presently located at 35 places in India. IMD is responsible for seismic monitoring and dissemination on the occurrence of earthquake. Major effects created by earthquakes include:-

- Shaking and grand rupture causing severe damage to buildings and other rigid structures.
- Cause landslides and avalanches, which may cause damage in hilly and mountainous areas.
- Fires can be generated due to breaking of the electrical power or gas lines.
- Spread of diseases, loss of life and property damage.
- Cause Tsunami.

Tsunami - The entire coastal belt of Indian subcontinent is prone to Tsunamis[5]. Tsunami have great potential of erosion, stripping beaches of sand, flooding hundreds of meter inland, can crush homes and other coastal structures. It may reach a max vertical height of up to 30 meters. The Ministry of Earth Sciences with Dept of Space and Technology has formulated a plan of Tsunami warning system in the Bay of Bengal and the Arabian Sea. Indian National Centre for Ocean Information Services (INCOIS) Hyderabad is designated Tsunami early warning centre for Indian region and is operational on 24 x 7 bases.

A Tsunami is generated when the plate boundaries abruptly deform and vertically displace the overlying water. Sub direction earthquakes are particularly effective in generating Tsunami. Some of the indicators of approaching Tsunami are :-

- An earthquake felt near a body of water may be considered an indication that a Tsunami will shortly follow.
- Often large Tsunamis are accompanied by a loud roar that sounds like a train or an aircraft
- A noticeable rapid rise or fall in the coastal water is a distinct sign of Tsunami danger.
- Certain animals sense the sounds of the tsunami as it approaches the coast. The animal's reactions are to go in the direction opposite of the noise and thus go inland.

Cyclones - The storm surge, gale winds and flooding due to torrential rains associated with cyclone are the major causes of destruction and damage. On an average 5-6 cyclones[6] form every year over Indian seas affecting both Bay of Bengal and Arabian Sea. They are rare from Jan to March. Most of the cyclones occur during Pre Monsoon (Apr-May) and Post Monsoon (Oct - Nov) seasons. Orissa coast is most vulnerable to cyclonic storms along the east coast whereas Gujarat is most vulnerable on the west coast. The entire eastern parts of Orissa and West Bengal, falls in high-risk zone of cyclone. Low lying delta region of Tripura is also prone to tornadoes and cyclones. The coastal belt of Andhra Pradesh between Ongole and Machalipatnam and Tamil Nadu, South of Nagapatnam is highly prone to cyclones. The coastal belt of Gujarat, Maharashtra and Goa is prone to tropical cyclones of Arabian Sea and Bay of Bengal.

Details of Formations of three Services most likely to be responsible for Disaster aid during Cyclones are:-

States	Army Command	Naval Command	IAF Command
Orissa	Eastern	ENC	EAC
Andhra Pradesh	Southern	ENC	SAC/ TC
Gujarat	Southern	WNC	SWAC
Maharashtra	Southern	WNC	SWAC
Goa	Southern	WNC	SWAC
West Bengal	Eastern	ENC	EAC
Tamil Nadu	Southern	ENC	SAC/ TC
Tripura/ NE States	Eastern	ENC	EAC

Cyclone Warning - "Four Stage Warning Scheme" is followed to facilitate cyclone[7] distress, prevention and mitigation. "Pre – Cyclone Watch" the first stage warning is issued when a depression forms which may subsequently develop into cyclone. This is followed by "Cyclone Alert" which is issued 48 hours in advance of the expected commencement of the adverse weather over the coastal area. The third stage warning known as "Cyclone Warning" is issued 24 hours in advance of the commencement of bad weather. The fourth stage is the "Post Land fall" outlook through which warnings are issued about 12 hours before expected landfall. IMD is responsible for issuing cyclones warning for Indian regions. At the regional and state level, there are Area cyclone warning centers at Chennai, Mumbai, Kolkata, Visakhapatanam, Ahmedabad and Bhubneshwar. Both cyclone "Alert and Warning" messages are passed to the TV/AIR stations for repeated broadcast. This information can also be obtained through TV, Radio and Internet on weather sites.

Floods - Prolonged, heavy and widespread rainfall and failure of natural and man made dams is the main cause of large floods i.e. flash floods, high peak floods, multiple peak floods and synchronized floods. Most of the flood prone areas lie in the Ganga and Brahmaputra basins (i.e. UP, Bihar, West Bengal, Assam and Orissa). The other states that are recurrently affected by floods are Haryana, Punjab, AP, Maharastra, HP and Gujarat.

Avalanches - The ice avalanches generally occur on slopes covered with glaciers and occur due to the development of weakness in the ice mass deposited as integral part of a glacier. These avalanches are capable of traveling for long distances even on flat slopes. Snow avalanches comparatively travel with low velocity. The avalanche areas of our country lie along the northern part of J&K, HP, Uttaranchal, Sikkim and North Western Arunchal Pradesh. The avalanche danger increases with the increasing slope angle and maximum avalanche activity is experienced from slopes between 30° and 45°.

Land Slides - Landslides are known to occur in the mountainous regions of the Indian subcontinent. Unstable geographical conditions, indiscriminate construction activity, heavy rainfall, cloud busters and flash floods coupled with poor drainage due to urbanization have been the main causes of landslides. Rain induced and earthquake triggered landslides are of prime concern to us. Land slides are very common in western Sikkim, Kumaon, Garhwal, HP, Western Ghats in the south, Nilgiris and Konkan coast.

Nuclear, Biological and Chemical disasters - Very unlikely but cannot be ruled out by terrorist org.

Early Warning Systems and Dissemination

This is one of the many aspects that need significant emphasis during preparedness. It is one of the most important elements required for initiating an effective and efficient response. We as a nation need to be well prepared in terms of well developed and advanced early warning systems[8] with inherent redundancies in terms of communication. A lot has been done in this field in the last few years and still remains a priority area. The goal of any warning system should be to maximize the number of people who take appropriate and timely action for the safety of life and property. All warning systems start with detection of the event and with people getting out of harm's way.

A large number of initiatives have been launched at the international, regional and national levels, especially in the last decade. As part of IDNDR, early warning has always been considered as the cornerstone of disaster risk reduction. As one of the goals of IDNDR, all nations were to have access to global, regional and national early warning systems by year 2000 and also should have achieved satisfactory arrangements for dissemination of warnings.

The Second International Conference on Early Warning, held in Bonn, Germany over 16-18 October, 2003, was a signal event in the international development of early warning. The conference was promoted and developed by a working group on early warning that was set up under the Inter-Agency Task Force on Disaster Reduction. The primary aim of the working group was to improve global coordination in early warning activities and its effective use as an instrument in disaster reduction activities. The group sought to involve as many parties as possible from national, regional and international organizations to ensure its inter-sectoral and multidisciplinary dimension. The conference focused specifically on political commitment and responsibilities, calling upon all national, regional and international authorities to act with resolve. Participants recognized the progress that had been achieved in understanding the importance of early warning since the first International Conference on Early Warning held in Potsdam in 1998 and the International Decade for Natural Disaster Reduction (IDNDR, 1990-1999). The participants, representing political leaders, organizations engaged in disaster risk management and humanitarian aid, the private sector, as well as the scientific community, identified the need to strengthen capacities for early warning as a crucial element to reduce risk and vulnerability to natural and technological hazards and thus securing sustainable development. The Conference identified five main areas of focus aimed at more coherent action at the international, regional, national and local levels: -[1]

- Better integration of early warning into public policies is needed, particularly into development policies and programmes.
- The improvement of technical aspects such as data collection, forecasting and information exchange.
- The need for capacity-building and training, especially in developing countries, to strengthen early warning systems.
- A greater focus on the human aspects of early warning, to build people-centered warning systems that address the needs of those most at risk.
- Concrete means for sustaining the early warning dialogue, such as through a platform (organizational capacity) to promote international cooperation, to develop information and guidelines, and to promote early warning in international agendas, including the World Conference on Disaster Reduction in January 2005 (Kobe-Hyogo, Japan).

In India, IMD and CWC have been able to review their existing systems and facilities and have achieved a fair degree of up-gradations, especially in the realm of tsunami warning systems. Existing facilities for forecasting and monitoring are being strengthened[9]. There is however lots of scope for further improvement of flood, cyclone and storm surge warnings. The projects dealing with such developments should be encouraged at all levels and given higher priorities in the overall developmental plans, as recommended by the report of the working group on disaster management for Eleventh Five Year Plan.

From the point of view of building an effective institutional mechanism, early warning systems must be so developed that they are foolproof, reliable and accurate. The components of the system can be categorized into three sub-systems namely identification and continuous monitoring of hazard, communication setup and response to warnings. To serve people effectively, systems must be integrated and should link all actors in the early warning chain including the scientific and technical community, public authorities and local communities. Accurate, timely, reliable and comprehensible communications are essential. Effective early warning procedures should be part of the national institutional and legislative framework for disaster management. They equally need to have redundancy built into the system. Early warning must be complemented by professional services, training and capacity-building activities and the allocation of resources to enable timely actions to be taken to avert loss. Whereas technologies[10] have been well integrated into the systems leading to timely identification of hazards, the communication arrangements and response to early warnings lack proper integration between various stakeholders. There is a need to improve upon early warning system infrastructure and services, institutional framework to respond to early

warnings, resources to respond to early warning and public education and awareness to be receptive to early warnings. Even with the best of early warning systems' results will still be catastrophic if early warning signals are not properly interpreted and communities are not educated and trained to respond to the early warning signals in real time. India has reportedly launched a technology wherein for the first time in the world, we can simultaneously translate an SMS into 14 languages. Since technology can be used by disaster management authorities, projects linking the technology to early warning, on the one hand and, community response to early warning on the other, will need encouragement. There is a need to mould public perception and opinion and make administration and communities responsible for their participation in planning as well as implementation and enforcement of plans both pre and post disaster. National Disaster Management Authority has launched itself in an exemplary manner to promote awareness through media campaigns as well as through activities on ground at the grass roots level. Other government departments, local administration, NGOs, public and private organizations have to join the efforts and make the campaign successful. As recommended by the report of the working group on disaster management for the eleventh five year plan, the national emergency communication network, involving the contemporary space and terrestrial-based technologies in a highly synergistic configuration and with considerable redundancy, will need to be developed and deployed countrywide. With almost a hundred per cent reliability, this network will ensure real-time dissemination of warnings and information direct to the affected community and local authorities.

It will also be ensured that the information disseminated is user-friendly. The variety of ICT-enabled, community-level resource /information centres /kiosks being set up in India by various governmental agencies as well as NGOs will need to be strengthened and utilized for developing preparedness and resilience of disasters at the grassroots level. Real time warnings and information to affected people and the disaster managers and decision makers with inbuilt redundancies is the most essential element of preparedness with a view to respond effectively and minimize the loss of life and property.

The recommendations offered by the Third Report of the Second Administrative Reforms Commission on the Crises Management are noteworthy. These are enumerated below:

- Though it is the responsibility of the government machinery and the local bodies to disseminate the warning, peoples' participation has to be enlisted. For this purpose, the role of community leaders, NGOs and others should be clearly defined in the emergency response plan and they should be fully trained and prepared for their respective roles.

- Communication networks, with sufficient redundancies should be established between the data collection point to the points where hazard is likely to occur. The communication channels from the point of alert generation to the point of disaster should have enough redundancies so as to maintain line of communication in the event of a disaster striking. Care has to be taken to put in place systems to disseminate warnings to all sections of the people.
- The early warning system should be evaluated after each disaster to carry out further improvements.

In our context, it must be ensured that the warnings are easily understood by the people with respect to the actions to be taken at the individual and at the community level. Clear and concise messages tailored to respective social and cultural contexts must be delivered. The early warning systems need to be linked with the response mechanism of the local environment, their capacities, resources and traditions.

It has been observed world wide that despite being highly sophisticated, systems and advanced technologies that are capable of generating precise forecasts of impending hazards fail to elicit desired response. Even where procedures do exist, communities often do not respond appropriately to warnings because of lack of community engagement and lack of planning, training, resources or viable response options.

Early warning is now widely acknowledged as being much more than a scientific or technological issue related to hazard monitoring, forecasting and telecommunications. Adequately evolved warning processes along with commitment from the well trained and rehearsed community through mock up drills would be much better poised to derive maximum benefit of technologies. Suitable institutional arrangements for both detection as well as dissemination are required. There is a need to lay emphasis on the areas of concern viz. monitoring and evaluating hazard onset, learning from experience to improve future policies and operational practices, the effectiveness of internal communications systems, communicating with potential victims and advising them of appropriate actions, providing adequate levels of pre-hazard training and mobilizing resources for response activities. The success of early warning systems depends greatly on a mix of technological and human aspects related to public understanding, communication and confidence. The conscious shift of many national meteorological services away from a predominantly science-centered approach to a more user-oriented philosophy is a welcome step toward improving the overall effectiveness of early warning systems. A conscious effort needs to be made to promote awareness among vulnerable communities to the hazards and encourage them to evolve practical measures to be taken to reduce loss of life and property. Similarly, governments at national and states level

should ensure development of knowledge and capacity building to translate early warnings into concrete actions and processes, depending on the peculiarities of the vulnerability, risks, nature of hazards and the local resources and traditional coping mechanisms and practices. Keeping in view the experience of Tsunami in 2004, linkages should be established to share the expertise and knowledge of the neighbouring countries of the region in monitoring, forecasting and early warning systems. Since disasters transcend national boundaries, the countries of the region should combat disasters in the spirit of mutuality through sharing and collaborating. Regional institutions need to provide specialized knowledge and advice in support of national efforts to develop or sustain operational capabilities, especially for countries that share a common geographical environment. This aspect is very much relevant in our context. Indian Meteorological Department (IMD) has been issuing cyclone advisories to neighbouring countries in the past. Regional organizations are crucial to linking international capabilities to the particular needs of individual countries and in facilitating effective early warning practices among adjacent countries. International bodies need to provide the means for the exchange of data and knowledge as a basis for the efficient transfer of advisory information as well as the technical, material and organizational support for the development and operational capabilities of national institutions officially designated as responsible for early warning practice.

Communities and NGOs are crucial in operating early warning systems. They must be involved especially in disseminating messages and coping strategies, operating and maintaining warning equipment. They also have important roles in organizing training, public education and conducting regular testing to ensure reliable performance during a crisis. It is important for them to raise awareness about the responsibility people have for their own survival, by providing motivation and building confidence for systems in place. Experience shows that informal and social networks in addition to community awareness and understanding of hazards contribute to more effective early warning systems.

References to historical events and direct personal experience of hazard events contribute greatly to how people respond to threats and warnings. Warnings must be delivered by multiple credible sources to a receptive audience in a manner that is able to personalize the risk associated with the warning. Familiar, structured, practiced and sustained contingency action plans can then therefore elicit proper responses following clear, consistent and user-friendly messages, especially when speed of response becomes crucial. In this regard regular simulation exercises and public education campaigns develop confidence. National Disaster Management Authority in this regard has already initiated commendable activities throughout the country. Awareness campaigns and mock drills[11]

would help in sensitizing the community to combat disasters effectively and feel responsible to plan safety of their own lives and property.

Endeavour should be made to educate the communities to rehearse and consolidate the warning response so as to minimize the exposure to adverse effects of the hazards. Past experiences must contribute towards a better and more matured response to warnings. Frequent brainstorming sessions involving the administration and the locals should be organized especially prior to conduct of mock exercises and during the formulation of plans with the aim of arriving at community friendly operating procedures. A continuous dialogue with the government bodies will help eliminate the apprehensions of the people at large and streamline the warning dissemination and response process. For instance, the needs and perceptions of the people regarding safety and security of their belongings in the event of evacuations or displacements / dislocations should be kept in mind while formulating the warning periods and warning levels.

Considerable responsibility rests at local levels for producing detailed information on risks, communicating warnings and ultimately responses to warnings for facilitating appropriate community actions to prevent loss and damage. This requires detailed knowledge and experience of local factors and risks, decision-making procedures, roles and mandates of authorities, means of public communication and established coping strategies.

Role of Media in Warning Dissemination / 'On The Site' Coverage

Media can play an important role in not only effective dissemination of warning and relevant information but also live coverage of action being taken at the site of disaster. Besides relaying the real time situation to affected people, the media can be an effective communication means for mobilizing human and material resources and in turn can influence emergency operations in a positive manner. It can provide real time visuals to all the stakeholders and hence offer inputs for decision-making. Media is a very potent medium and a great force multiplier. It must be fully integrated into the system of disaster management. It could be well utilised to further information dissemination, and mobilize national resources in a short time. Publicity can go a long way in harnessing help from neighboring states, countries and from the world bodies. It can also help in raising required funds to deal with the calamity. Media while covering such incidents should come out with innovative strategies and should be prepared to take on additional role. Similarly, the planners at the emergency operations centre and on the site should be able to integrate the media's role in their planning well in advance. Media should be co-opted during the mock up exercises and

rehearsals at all levels. Similarly, the mobile telephone operators should also be co-opted in the planning stage as well as during rehearsals and mock up exercises.

Initial Reporting About Disasters

Intimation about occurrence of a Disaster shall be shared by the following Ministries/ Departments/ Organisations:-

- Met Department
- MHA
- MoD
- CISC Secretariat on receipt from MoD/ MHA
- Media

HQ IDS on receipt of information about occurrence of a Disaster shall warn the Service HQs, Coast Guard and DCMG members telephonically as well as through Fax message. Existing land line communication and personal mobiles shall be used for inter Ministry and inter Service HQs communication. As regards Cyclone Warning, depending on the development and progress of cyclone, IMD shall share the information with HQ IDS Ops Room through Fax messages as follows :-

- Pre-Cyclone Watch (First Stage) First stage warning issued when a depression forms.
- Cyclone-Alert (Second Stage) Issued 48 hours in advance of adverse weather over the coastal area.
- Cyclone Warning (Third Stage) Issued 24 hours in advance of the commencement of bad weather.
- Post Land Fall Outlook (Fourth Stage) Issued 12 hours before expected landfall.

On receipt of information from IMD, duty officer/ Staff at HQ IDS Ops Room/ INCP shall keep Op Lgs Dte informed. Once 'Cyclone-Alert' is issued by IMD, DACIDS (OL)/ Dir (OL), Op Lgs Dte shall keep ACIDS (Jt Ops) informed on the progress of Cyclone and shall also warn the Services HQ.

Preliminary Actions at HQ IDS

On receipt of Disaster warning/ instructions for aid to be provided, following actions shall be initiated by Op Lgs Dte being the nodal Dte for co-ordination of Disasters:-

- Issue instructions to INCP for activation of IDS Ops Room.
- Convene DCMG meeting and inform all members on telephone/ through Fax message.
- Obtain info about the disaster from various Ministries and Departments i.e. Type of Disaster, Exact time and place of occurrence of a Disaster, State of affected population in terms of fatal casualties, injured persons and damage caused to infrastructure, houses and property and Check availability of decided items with three Service HQs, Ministries and vendors.

Co-Ordination of Disaster Aid

Activation of INCP Ops Room - Dir INCP would nominate duty officer and duty Clerk as per Routine Order being published by INCP to man the Ops room round the clock. Prepare and issue entry passes for DCMG members for the meeting.

Collect and despatch all Signals, Fax and other correspondence related to Disaster to concerned Org/ HQs. Duty Officer shall maintain Log Book and also keeps Op Lgs Dte informed all the time. Make administrative arrangements for the meeting.

DCMG Meeting - During DCMG Meeting, based on inputs already collected and discussion, the decision on following aspects shall be taken :-

- Decide on type of items and their quantity to be provided including approx cost.
- Work out mode of transportation i.e. ac/Ships/Road/Rail and finalise the time plan for execution of aid.

Media Interaction - MoD PRO shall be responsible for preparation of Press release and media interaction before despatch of aid.

Procurement of Aid Items - Service HQs nominated shall be responsible for procurement, packing, transportation and timely despatch of aid. Service HQs shall also convene Board of Officers for

checking correctness and timely despatch of aid including providing manpower and transport for packing and positioning of items at designated place.

Chairman COSC Directive - DACIDS (Op Lgs) shall be responsible for preparation, approval and issue of Chairman COSC Directive.

Government Sanction - Op Lgs Dte, HQ IDS shall obtain the Govt sanction prior to be procurement of the aid items.

Aid Items for Various Disasters

Based on past experience, the items which may be required for various types of disasters[12] are identified. However, additional items as per the situation could be added.

Relief Modules for likely contingencies are given below:-

Earthquakes /Land Slides / Mud Slide - Tents, Blankets, Ground Sheets/ Plastic Sheet/ Cover Water Proof, Medicines , Plastic Jericans, MREs/ General Food Items, Bed Sheets, Net Mosquito, Sand Bags, Utensils, Water Purifiers – Chlorine Tab, Bleaching Powder, Life Straw etc, Hygiene & Chemicals and Alum.

Tsunami - Tentage, Blankets, Medicines, MREs/ Food Items, Ground Sheets, Cover Water Proof, Hygiene & Chemicals, Water Purifiers – Chlorine Tab, Bleaching Powder, Life Straw etc, Personal Hygiene Kits (Hand Towel, Tooth Paste, Tooth Brush & Soap with Case), Generator Sets and Alum.

Cyclones - Tents (TEFS), Blankets, MREs/ Food Items, Medicines, Water Purifiers – Chlorine Tab, Bleaching Powder, Life Straw etc, Milk Powder, Alum and Generator Sets.

Floods - MREs/ Food Items, Tentage, Medicines, Water Purifiers – Chlorine Tab, Bleaching Powder, Life Straw etc, Ground Sheet, Cover Water Proof, Life Jacket,
Poly Sheet (Rolls), Sand Bags, Hygiene & Chemicals and Alum.

NBC Disasters - Medicines, MREs/ Food Items/ Milk Powder, Water Purifiers – Chlorine Tab, Bleaching Powder, Life Straw etc, Tentage , Blankets and Decontamination Kits.

Notes

1. "Towards A Regional Roadmap for Disaster Risk Reduction and Management", New Delhi Declaration – South Asia Policy Dialogue, August 22, 2006.
2. "A Culturally Sensitive Approach to Risk – Natural Hazard Perception in UK and Egypt"; An Article by Jacqeiline Homan, School of Geography and Environment Science, University of Birmingham, UK, published in Australia Journal of Emergency Management; Winter 2001- P 17.
3. "Encyclopedia of Disaster Management", SL Goel; 2006, Volume 1; P5-6.
4. An Awareness Guide By Directorate of Metrology, Air Headquarters, New Delhi – 2005; P 3.
5. "Panel alleges bungling in Tsunami relief funds". Times News Network, The Times of India, New Delhi, Apr 26, 2008.
6. Note 4 ibid P 5.
7. Note 2 ibid P 5.
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9. "Crisis Management – From Despair to Hope", Third Report, Second Administrative Reforms Commission, Government of India, September 2006.
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11. "Mockery of a mock drill in Gurgaon", Vishal Thaper, CNN-IBN, December 01, 2006.
12. "Pre Disaster Plan", Headquarters Integrated Defence Staff, New Delhi, 2008.

CHAPTER 2: ARMED FORCES EMERGENCY RESPONSE TO DISASTERS

Role and Employment of the Armed Forces in Disaster Management

The Ministry of Defence is the 'Primary Agency' for the Search and Rescue (SAR) function, and a 'Support Agency' for provision of communications, transportation, rehabilitation, engineering, power and medical services. However, as I mentioned earlier, over the years, the Armed Forces role has gradually expanded from the SAR function, to also include major responsibilities in the supportive functions. We are also expected to provide sizeable quantities of disaster relief material, for both national and international contingencies.

Of late, the Central Government has taken corrective action and accordingly shifted focus from a reactive policy of calamity relief to a proactive policy on disaster management, which includes all essential aspects of prevention[1], mitigation, preparedness, response and relief. Further, disaster management has been mainstreamed with the planning and development process[2], which would ensure adequate funding and up gradation of infrastructure. It will, however, be reasonable to assume that the far-reaching changes will take some time to be absorbed by the Government, and even longer for the structures, institutions to be placed in an executive mode. In the interregnum, the administration will continue to be overly dependent on military service assets for disaster response. It is hoped that with the Disaster Management Bill 2005 enacted and its policies fully implemented and effective on ground, the role of the Army in disaster management would gradually reduce.

Capabilities and Quality of Responses

The Armed Forces are so structured that they are capable of a rapid response and dispatch self-contained mobile and composite task forces to any part of the country, or even overseas. We are well organised to meet most of the needs, ranging from immediate life supporting assistance to short term rehabilitation requirements. Some typical capabilities of the Armed Forces in responding to disasters are: -

Army

- Survey, reconnaissance and damage assessment.

- Provision of infrastructure for command, control and communications.
- Provision of composite task forces to assist in search, rescue, evacuation and provision of immediate relief services, to include medical aid, trauma management, water, food and establishment of relief camps.
- Transportation and supply of relief material.
- Maintenance of essential services, especially in the initial stages.
- Restoration work on bridges, roads and helipads.
- Public Health, sanitation and prevention of epidemic outbreak.
- Restoration of basic utilities, especially water supply and electricity in coordination with local authorities.
- Stage Management of international relief, when so requested.
- Explosive ordnance detection, disposal or deactivation.
- Assistance in maintenance of law and order.
- Nuclear, biological and chemical disaster response.

Navy

- Setting up infrastructure for control and coordination.
- Undertaking initial and subsequent surveillance of the affected areas.
- Deploying relief teams to provide initial succour in areas inaccessible from land.
- Providing medical teams, hospital ships ensuring prevention of epidemic.
- Transporting relief material, food or water.
- Establishing relief camps.
- Maintaining essential services and supplies.
- Evacuating survivors to safer areas including medical evacuation.
- Providing diving assistance for underwater tasks.
- Undertaking damage control in the form of fire fighting, demolition of obstacles, clearance of debris, provisioning of emergency lighting etc.

Air Force - The transport air craft and helicopters of Indian Air Force may be employed for the following tasks:-

- Reconnaissance of disaster area.
- Air transportation of personnel, medical teams, materials, supplies and disaster equipment.
- Airdropping of food, water and medicines etc.
- Air evacuation of casualties/marooned people.

- Air transportation of VVIPs, Air Force, Army, Civilian Officials and NGOs.

The emphasis in each disaster may vary. While earthquakes create a special need for search and rescue as well as for medical care and shelter, floods very quickly create a scarcity of safe drinking water and food. On the other hand, the Tsunami disaster was unique in the sense that very few were injured; the waves left only the dead. The Armed Task Forces are versatile enough to handle any such contingency. The Gujarat Earthquake, followed by the Tsunami Disaster, and the Kashmir Earthquake, are excellent examples of the Armed Forces capabilities on behalf of the Central Government, to reach out to the affected in the remotest parts of the country. I must also highlight the fact that the way in which relief is delivered often has a profound effect on a community's ability to recover from the disaster. I can daresay, that the Armed Forces are perceived by the general population as humane, impartial and neutral in providing aid to civil authorities. We take care to respect local culture[3] and customs and Armed Task Forces emphasise the need to maintain good relations with local authorities.

Phases of Relief Operations

Phase I - It centers on urgent mobilisation and execution of movement, to provide immediate succour and medical first-aid. There would almost certainly be a requirement to undertake reconnaissance and rescue followed by relocation of survivors to safer environs. In this phase, as far as supplies are concerned, essentials of life must receive primacy, like medicines, drinking water, food and clothing. Items have to be pre-stocked for ease of distribution. There also, might arise, a need for diving operation and hydrographic surveys. In Phase I, however, the key word remains urgency, which finally dictates the means.

Phase II - It will see the Armed Forces synergising with other agencies. Establishment of relief and medical camps with a focus to prevent outbreak of epidemic would be one of the important operations in this phase. This phase will also involve tasks like clearance of debris and salvage operations aimed at providing support and restoring normalcy in the affected area. The operations in this phase would be aimed primarily at setting a stage for reconstruction and rehabilitation, the Phase ends with de-induction of the Armed Forces ensuring that the transition of relief operation from Armed Forces to civil authorities is smooth and uninterrupted.

Resources Management

Preparedness would require the ability to mobilize the resources to disaster affected areas. Availability of resources, their storage, accounting, serviceability, turnover and plans to move these to designated areas require detailed planning and coordination. Information and Communication Technology (ICT) in the form of Internet, GIS, Remote Sensing, satellite-based communication links and other such technologies can play an important role in designing early warning systems, providing foolproof communications and generating inputs for decision making as part of managing disasters. These have already in a big way improved the quality of hazard and vulnerability assessment. GIS based systems have contributed towards a more authentic vulnerability analysis. These tools can further be used in planning, organizing and coordinating resource mobilization during crisis situations. ICT tools are already being widely used to build knowledge warehouses using internet and data warehousing techniques. These knowledge warehouses can facilitate planning and policy decisions for preparedness, response, recovery and mitigation at all levels.

A comprehensive database of disaster management related inventory and organized information dissemination system on availability of specialized resources is very essential for mobilizing the specialized equipment and skilled human resources to respond immediately during disaster. Lack of adequate information about availability has hampered quick and measured response resulting in delays which could be critical in case of sudden eventualities. Therefore, a need to prepare a database of such resources, from District to State level was strongly felt[4]. When disasters strike, the disaster managers at the District/State level respond with the resources at their command. While the Disaster Manager (District Magistrate/Collector) is generally aware of the resources at his command within the District, he may not be aware of the resources available in the neighboring Districts or in the neighboring States. The disaster manager at the State level [the Relief Commissioner] does not have an inventory of resources available within the State. Therefore, all the resources available within the State are not brought to bear for saving lives, and when some specialist equipment is required, there is a lack of knowledge as to the whereabouts of the equipment for Disaster Risk Reduction in the neighboring District or in the neighboring State. Lives can be lost because of such delays or lack of required resources. There are number of ICT based initiatives, tools and applications developed to help the disaster managers function efficiently. One of these is the India Disaster Resource Network (IDRN). It has facilitated to offer an online inventory of emergency resources.

The IDRN is a nation-wide electronic inventory of essential and specialist resources for disaster response, covering specialist equipment, specialist manpower resources and critical supplies. IDRN has been initiated by Ministry of Home Affairs (MHA) in collaboration with United Nations Development Program (UNDP) to systematically build the disaster resource inventory as an organized information system for collection and transmission of information about specific equipments, human expertise and critical supplies database from District level to State level to provide availability of resources for disaster response, so that disaster managers can mobilize the required resources within least response time. The IDRN lists out the equipment and the resources by type and by the functions it performs and it gives the contact address and telephone numbers of the controlling officers in-charge of the said resources so that the equipment can be promptly mobilized. The IDRN is a live system providing for updating of inventory every quarter. Entries into the inventory are made at two levels – District and State level. This online information system can be accessed by authorized Government officials, District level nodal persons, corporate bodies and public sector units. District nodal authority will be responsible for collecting, compiling and updating their inventory data to the central server with the help of concerned District departments.

Adequate authorization and security has been in-built and is being maintained in the portal to prevent unauthorized access to this inventory. The users and partners of IDRN initiative are: 602 District administrations of 35 States and UTs, all 35 State/ UT administration of India, around 5000 member corporate bodies with Confederation of Indian Industry (CII), around 33,000 builders, contractors and construction companies with Builders' Association of India (BAI), the entire Indian Railways and numerous public sector undertakings in the country. The India Disaster Resource Network is a web-based application with controlled access to the database. 226 items mainly consisting of equipments, human resources and critical supplies are categorized in the system. The data related to these items are collected from the line departments and various organizations at the District level. The data is entered in to the portal at the District level. The user may avail the facilities like analyzing or querying the information resource inventory through given user friendly interfaces to get a list of resources available in the District and State level. Notwithstanding the facilities offered by the IDRN, the most significant aspect of preparedness would be to have an efficient mechanism so that at any point in time, these resources (the details of which have been brought into the knowledge of disaster managers), should be in a state to be transported to the site of disaster as part of response and relief. There needs to be a dedicated resource in terms of transport and manpower. Rescue teams and others who have to use/deliver these resources should know the details. Ideally, the resources should be in charge of those who are finally to use these or else transport or deliver these. It remains a major responsibility on the part of administration as well as NGOs / other establishments to ensure that the resources required to reach affected people

are mobilized in an efficient manner. Coordination, which is indeed a highly complex process involving interface and interactions with many stakeholders and varied organizations, should remain the focus while managing resources. A sound coordination strategy would need to be evolved for implementing plans and policies. Preparedness should include and cater for well laid down standard operating procedures to mobilize these resources to the designated areas in least time using minimum instructions and paper work.

The concept of National Disaster Mitigation Resources Centres (NDMRCs) has been evolved to help the states in capacity development, running mock drills and facilitating the process of central assistance to the states. These will be co-located with the NDRF battalions and set up at nine locations on a pilot basis. A reserve of relief stores[5] for 325,000 persons will be created at the national level, for use in the event of a disaster of a severe magnitude. These will include stores for 100,000 persons affected in high altitude areas. These reserves are intended to augment the resources of the states with the Mitigation Resource Centers. To ensure speedy response, each of the NDRF battalions will have Regional Response Centers (RRCs) at various locations of the country based on disaster vulnerability. To start with 32 RRCs are being set up. At each RRC, one self contained team will be located for speedy response. For road mobility, the NDRF would be self contained and would have its own resources. For air movement it will have to depend upon the resources of the Indian Air Force and the Civil Aviation Ministry. Such an arrangement would be better suited and this needs to be further streamlined and evolved.

Another important aspect that needs to be ensured is the inventory of resources that would be required to be dispatched immediately as relief stores, essentially comprising food, clothing and medical aid. What must be kept in mind are the nature of crisis, the terrain and climate at the disaster site and possibly the nature of people who are going to use the relief material. During the earthquake in Jammu and Kashmir in 2005, it was very perturbing to find the relief supplies not catering for the cold climate. Supplying rice and lentils would have served better purpose than sending loads of canned food that was lying scattered all over the place. The urgent need was to fight the cold and hunger. Preparatory stage should cater for such requirements being met, coordinated and well integrated into the response mechanism.

Institutional Framework for Managing Disasters in India

High Powered Committee (HPC) - HPC constituted in August 1999, under the Chairmanship of Mr JC Pant, former Secretary to the Government of India, reviewed Disaster Management in India. It

was the first attempt in India towards evolving a systematic, comprehensive and holistic approach towards all disasters. The major recommendations are enumerated below:-

- Vision - To create disasters free India through confluence of cultures of preparedness, quick response, strategic thinking and prevention.
- Constitutional Framework - Appropriate mention of the subject of disaster management to be included in any one of the lists in seventh schedule.
- Disaster Management Acts - It was recommended that a suitable legislation to provide appropriate legal framework at the national and state level be introduced. A national act for Calamity Management and State Disaster Management Act to be enacted.
- Regulations - Certain regulations, codes and laws relating to various aspects of disaster management exist eg. coastal regulations, building codes, chemical accidents and fire safety. However, the implementation and enforcement of these remain weak in the country. For making the laws stringent and to act as a deterrent it was felt that suitable mechanisms be evolved for stringent enforcement.
- Cabinet Committee on Disaster Management - At the highest level, the all party National Committee under the Prime Minister and the Working Group set up under the Vice Chairman were recommended to be institutionalized as permanent standing bodies, as the former will help generate the necessary political will, consensus and support while the later that is the Working Group being a body of experts will evolve the appropriate strategies for implementation of broad policy guidelines of the Cabinet Committee on disaster management as well as the National Committee.
- Ministry of Disaster Management - HPC recommended a separate ministry of disaster management at the national level and a department of disaster management at the state level.
- National Centre for Calamity Management (NCCM) - The NCCM was recommended to be set up at New Delhi. Many State Governments have Disaster Mitigation and Management Centres such as the Centre for Disaster Mitigation and Management at Chennai and Disaster Management Institute at Bhopal. Few states are in the process of establishing such centers. The National Centre for Calamity Management was recommended to be the nodal agency for all calamities and provide advice to State Governments and local bodies and provide adequate technical and financial support for programmes required to be implemented. It shall consist of Director General of the rank of Joint Secretary.
- Re-designation of State Relief Commissioners - To be called Commissioner / Secretary in charge Disaster Management. The resident commissioners of States posted at Delhi to be re-

designated as ex-officio Special Commissioner for Disaster Management. Similarly, the District Relief Committee to be rechristened as the District Disaster Management Committee.

- Disaster Management Institutes - A National Institute for Disaster Management to be established as a center for excellence for creation of knowledge. An Emergency Operations Centre (EOC) to be established at the Institute which would serve as alternate / backup of national EOC, during times of disasters and act as a training institute during normal times.

The HPC Report was submitted in November 2001 and was accepted in principle by the Government of India. During this period, two disasters struck viz the Orissa Super Cyclone in October 1999 and Gujarat earthquake in January 2001. Lessons from these were also incorporated in terms of improving the proposed strategy to cope with disasters. The HPC presently stands converted into a Working Group.

National Disaster Management Act 2005

This legislation has put in place a dedicated and exclusive mechanism at all levels – National, State and District - to engage in a holistic, integrated and continuous manner with the process of Disaster Management. This mechanism is extremely useful in developing capacities to cope with disasters, prepare plans for disaster prevention and management and keeping all systems in readiness for a rapid and quick response[6].

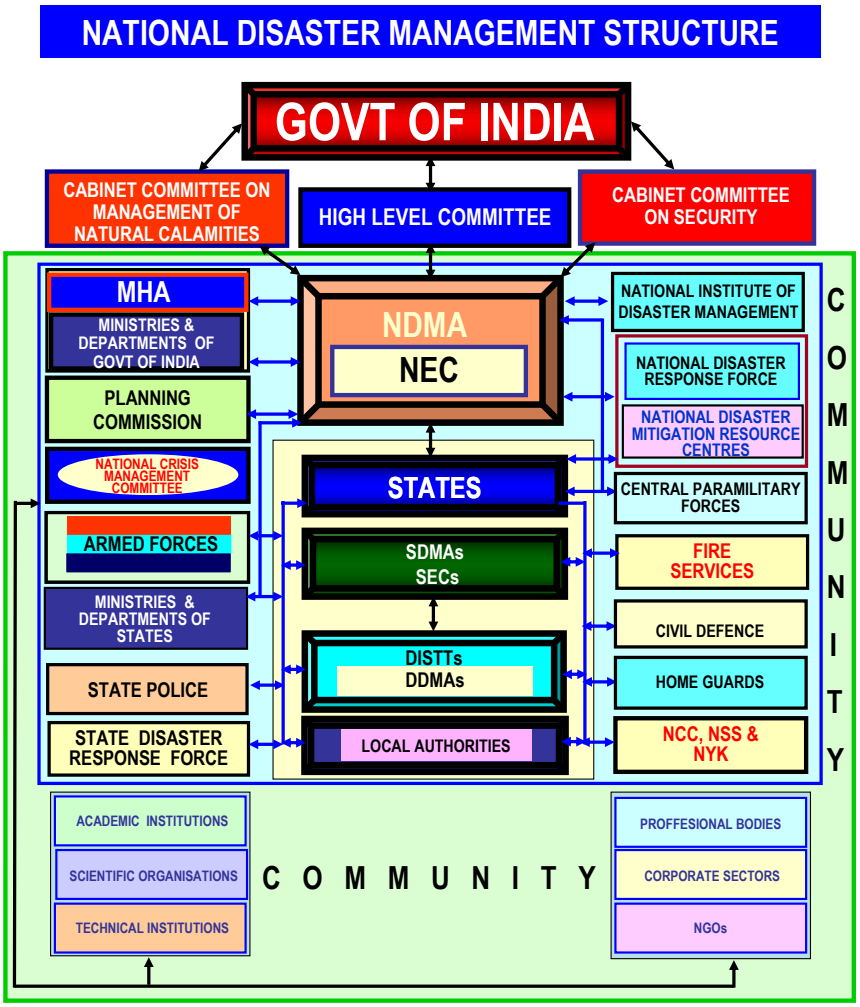
Institutional Mechanism in Transition

Based on the recommendations of HPC and after the Gujarat earthquake in 2001, the nodal responsibility for managing disasters was shifted from the Department of Agriculture and Cooperation to the Ministry of Home Affairs (MHA). Ministry of Agriculture remains the nodal ministry for droughts. The Disaster Management Division has been functional in MHA since July 2002. However, in view of the highly technical and specific nature of certain disaster events such as air accidents, rail accidents, chemical and biological disasters and nuclear accidents, the ministries dealing with the subject have the nodal responsibility to handle these disasters.

After having considered the recommendations of the HPC and consequent to the enactment of National Disaster Management Act 2005, the changes that have been made by the Government and being implemented are discussed below.

Organisational Structure at National Level - The decision-making body at the Centre is the Union Cabinet, headed by the PM and continues to remain the overall in-charge. Cabinet Committee on Security, Cabinet Committee on Management of Natural Disasters and the High Level Committee as mentioned earlier are other important organizations that would continue to play an important role during crises and disasters. The role performed by Inter-Ministerial Committee may be taken over by the National Executive Committee. The other apex bodies include: -

- National Disaster Management Authority (NDMA)
- National Executive Committee (NEC).
- Empowered Group of Ministers (EGM).
- National Crisis Management Committee (NCMC).
- Crisis Management Group (CMG).
- Technical and other organizations such as Indian Metrological Department, Central Water Commission, Bureau of Indian Standards, DRDO, Civil Defence, Home Guards etc.



Notes: 1. This diagram reflects interactive linkages for synergised management of disasters and not a hierarchical structure.

2. Backward and forward linkages, especially at the functional level, are with a view to optimise efficiency.

3. Participation of the Community is a crucial factor.

National Disaster Management Authority (NDMA)

The National Disaster Management Authority (NDMA), under PM has already been constituted in 2005. It has nine members including the Vice Chairman. It has sub committees constituted under it, to address various aspects of disaster like relief, rehabilitation etc. The National Authority shall have the responsibility for laying down the policies, plans and guidelines for disaster management. The Authority may constitute an Advisory Committee of Experts in the field of disaster management.

National Executive Committee (NEC)

A National Executive Committee of Secretaries of the Central Ministries/ Departments shall assist the Authority. The National Executive Committee shall prepare a National Disaster Management Plan in consonance with the National Policy as laid down by the National Authority and in consultation with the State Governments and expert bodies and organizations in the field of disaster management, to be approved by the National Authority. The National Plan shall include measures for prevention and mitigation of disasters, integration of mitigation measures in the development plans, preparedness and capacity building to effectively respond to disasters. Amongst other major organizational initiatives, it is also proposed to establish specialized response teams for dealing with nuclear/ biological/chemical disasters, establish search and rescue teams in each state and strengthen communication systems.

Empowered Group of Ministers on Disaster Management

Headed by the Minister of Home Affairs, it comprises 14 additional members – ministers from the Ministry of Rural Development, Railways, Coal and Mines, Power, Textiles, Consumer Affairs, Food and Public Distribution, External Affairs, Defence, Agriculture, Finance, Information and Broadcasting, Health and Family Welfare and the Deputy Chairman of Planning Commission.

National Crisis Management Committee

A National Crisis Management Committee (NCMC) has been in existence under the Chairmanship of Cabinet Secretary, as mentioned above. The other members are secretaries MHA, MEA, MoD,

IB, Railways, Power, Petroleum and Natural Gas, Civil Aviation, Planning Commission, Secretaries of Department of Animal Husbandry and Dairying, Drinking Water and Supply Expenditure, Food and Public Distribution, Health, Road Transport and Highways and Rural Development and CISC, HQ IDS. An officer of Cabinet Secretariat is the Convener. When a situation is to be handled also by the NCMC, it will give such directions to the Crisis Management Group of the Ministry as deemed necessary. The Director Disaster Management, MHA is responsible for prompt notifications of all ensuing development to the NCMC and directions to Ministries / Departments / Organizations for specific action to meet a crisis situation.

Crisis Management Group (CMG)

The Group has also been functioning in the past. A Relief Commissioner is appointed at the Centre, preferably a Special Secretary from MHA, to deal with matters relating to relief[7] in the wake of major natural calamities. The CMG consists of representatives of the level of joint secretaries in the ministries and departments of Finance, Defence, Food, Civil Supplies, Railways, Power, Urban and Rural Development, Health, Petroleum, Planning Commission, Tribal Affairs, Women and Child Development, ACIDS (Joint Operations), Animal Husbandry, Directors General of India Meteorological Department and Civil Defence, and Communication and Surface Transport. The CMG reviews plans of Ministries / Departments / Organizations in respective sector, coordinates activities of Central Ministries and State Governments and also coordinates with Relief / Resident Commissioners of affected states.

Organisational Structure at State Level

The States are also in the process of setting up State Disaster Management Authority under the Chief Minister as chairperson with Ministers of relevant Departments viz. Water Resources, Agriculture, Drinking Water Supply, Environment & Forests, Urban Development, Home and Rural Development as members. Departments of Relief & Rehabilitation that already exist are being restructured[8] into Departments of Disaster Management to cater for aspects related with mitigation and preparedness besides relief and rehabilitation that were earlier being handled. States will also constitute State Advisory Committee and State Executive Committee. The details with respect to members, functions[9] and power are included in the Disaster Management Act 2005. The States have been advised to restructure/re-group the officers/staff within the Department of Disaster Management with definite functions to pursue the holistic approach to disaster management. The

four functional groups to be assigned with specific tasks within the departments are as indicated below: -

- Functional Group 1: Hazard Mitigation.
- Functional Group 2: Preparedness and Capacity Building.
- Functional Group 3: Relief and Response.
- Functional Group 4: Administration and Finance.

Organizational Structure at the District Level

Every state government will establish a District Disaster Management Authority in each district. Collector, District Magistrate or Deputy Commissioner, as the case may be shall be the Chairperson, along with elected representative of the local authority as the co-chairperson. The other members will include the chief executive officer of the district authority, superintendent of police, chief medical officer and two more district level officers appointed by the state. The Chief Executive Officer will be appointed by the state government and will not be of the rank below Additional Collector, Additional District Magistrate or Additional Deputy Commissioner. Besides directing, supervising and monitoring relief operations, the District Authority[10] will be responsible for coordinating all activities to include prevention, mitigation and preparedness. The erstwhile 'District Coordination and Relief Committee' is being restructured accordingly with a view to ensure that mitigation and prevention is mainstreamed in the short and long term development plans of the district. The details regarding constitution of advisory committees and other committees at district level and the functions as well as powers of the District Authority and its chairperson are outlined in the Disaster Management Act.

Organizational Structure at Local Level

Disaster Management Committees are also being constituted at sub-divisional, Block/Taluka and village level. Disaster Management Teams are being constituted at village level. Each village in a multi-hazard prone district will have a Disaster Management Plan. The process of drafting the plans at all levels has already begun. The Disaster Management Committee, which draws up the plans, consists of elected representatives at the village level - Government functionaries including doctors/paramedics of primary health centers located in the village, primary school teachers etc. The plan encompasses prevention, mitigation and preparedness measures. The Disaster Management Teams at the village level will consist of members of youth organizations like Nehru

Yuvak Kendra Sangathan (NYKS) and National Service Scheme (NSS) and other non-governmental organizations as well as able-bodied volunteers from the village. The teams are provided basic training in evacuation, search and rescue, first aid trauma counseling etc. The Disaster Management Committee will review the disaster management plan at least once in a year. It would also generate awareness among the people in the village about dos' and don'ts for specific hazards depending on the vulnerability of the village. A large number of village level Disaster Management Committees and Disaster Management Teams have already been constituted.

National Disaster Response Force

The Central Government is in the process of training and equipping eight battalions of CPMFs. It is proposed to group together these eight battalions of CPMFs earmarked for specialized emergency response as "National Emergency Response Force". There will be 144 Specialist Search and Rescue Teams in the earmarked eight battalions. Each team will consist of 45 personnel including doctors, paramedics, structural engineers etc. These teams are being trained in collapsed structure search and rescue, medical first response, rescue and evacuation in flood and cyclone, under water rescue etc. In effect they will have the capability to operate[11] in all types of terrain in all contingencies/disasters. These specialist response teams are being provided modern equipments and also dog squads for search and rescue. They will be provided with special uniforms made of fire retardant materials with enhanced visibility in low light and having equipment carrying capacity. The general superintendence, direction and control of the force shall be vested and exercised by the National Authority and the command and the supervision of the force shall vest in an officer appointed by the Central Government as the Director General of the National Disaster Response Force.

Apart from specialist search & rescue units, it has been decided that all personnel of Central Police Organizations should also be imparted training in search and rescue so that they can be requisitioned to the site of incident without loss of time. Pending arrival of the specialist teams, the battalions located near the site of incident would be deployed immediately. For this purpose, a curriculum has already been drawn up and integrated into the training curriculum of CPMFs.

Setting up of Search and Rescue Teams in States

The States have been advised to set up their own Specialist Teams for responding to disasters. Ministry of Home Affairs will provide assistance for the training of the State trainers. Many States/UTs have initiated action for setting up of specialized SAR units. They have also identified

trainers who will be imparted training at CPMF training institutions. Some states e.g. Maharashtra, Orissa, Gujarat and Delhi have trained search and rescue teams. States have been advised to include training in search and rescue in the training of State Armed Police. 10% of the annual inflows into the CRF can be used for the procurement of search and rescue equipment and communication equipment.

Regional Response Centres

Fourteen Regional Response Centers (RRCs)[12] have been / are being set up across the country to enable immediate response to floods, cyclones, earthquakes, landslides etc. Standard cache of equipment and relief materials will be kept in these RRCs and Specialist Response Teams will be stationed during the flood/cyclone seasons for immediate assistance to the State Governments.
A Steering Committee has been constituted in the Ministry to oversee the creation of capabilities for emergency response.

Emergency Operations Centre

To coordinate the entire disaster/emergency operations effectively, the existing Control Room at the national level has been upgraded as National Emergency Operations Center (NEOC). The National EOC is equipped with satellite phones, GPS, computers, emergency lights and GIS information system. Staff in the NEOC has been trained. A State-of-the-art underground and all-hazard resistant, National EOC with superior structural features and communication facilities is being set up. A Committee of CPWD/BARC/DRDO has been constituted to finalize the design parameters. The States are being assisted to set up control rooms/emergency operations centers at the State and district level. Assistance for this is being given under the GOI – UNDP project in the States covered by the project. Assistance under the Modernization of Police Scheme is also available for setting up EOCs. The control rooms, which will function round the clock, will be composite control rooms to look after law and order issues as well as disaster management. Equipment is also being provided for these control rooms under the disaster risk management programme. Hazard zone-wise standard layout, structural design and construction drawings have been developed for State and District EOCs and shared with all the States.

National Institute of Disaster Management

Human Resource Development at all levels is critical to institutionalization of disaster mitigation strategy. The National Centre for Disaster Management at the national level has been upgraded and designated as the National Institute of Disaster Management. It is being developed as a Regional Centre of Excellence in Asia. The National Institute of Disaster Management will develop[13] training modules at different levels, undertake training of trainers and organize training programmes for planners, administrators and command functionaries. Besides, the other functions assigned to the National Institute of Disaster Management include development of exhaustive National level information base on disaster management policies, prevention mechanisms, mitigation measures[14]; and providing consultancy to various States in strengthening[15] their disaster management systems and capacities as well as preparation of disaster management plans and strategies for hazard mitigation and disaster response. It has been decided to incorporate elements of disaster management in the training curriculum of Civil Services. Training curriculum for the three All India Services (IAS, IPS and Indian Forest Service), have already been drawn up and integrated into the training with effect from 2004-2005. For other Civil Services at the national and state levels, training modules are being developed. The details are outlined in the Disaster Management Act 2005.

The Indian Armed Forces are supposed to be called upon to intervene and take on specific tasks only when the situation is beyond the capability of civil administration. In practice, the Armed Forces are the core of the government's response capacity and tend to be the first responders of the Government of India in a major disaster. Due to their ability to organize action in adverse ground circumstances, speed of operational response and the resources and capabilities at their disposal, the Armed Forces have historically played a major role in emergency support functions such as communications, search and rescue operations, health and medical facilities, transportation, power, food and civil supplies, public works and engineering, especially in the immediate aftermath of disaster. Disaster management plans should incorporate the role expected of them so that the procedure for deploying them is smooth and quick.

Defence Crisis Management Group (DCMG)

The Defence Crisis Management Group was institutionalized under the chairmanship of CISC in Jul 05. It has nine members to include CISC-Chairman, DG DIA, DCIDS (Ops) HQ IDS, DGMO Army HQs, ACNS (IW Ops) NHQs, ACAS (Ops) Air HQs, ACIDS (Jt Ops) HQ IDS, JS (G) MoD,

ADGAFMS, DACIDS (Op Lgs) Secretary and DRDO representative. The DCMG has a watch, analysis, over all plan formulation and coordination role. Detailed planning, execution and management will be carried out by the respective Services. DCMG prepares detailed strategic estimates for each crisis situation.

QRMTs and QRT - There are total of 09 Quick Response Medical Teams – 06 from the Army and 03 from the Navy to provide emergency medical relief to people affected by the NBC attack. In addition, there are 10 Quick Reaction Teams – 06 from the Army, 03 from the Navy and 01 from the Air Force, to provide quick response to any crisis situation that may arise out of an NBC attack. Formation of the QRTs and QRMTs has been sanctioned from within the manpower resources of the respective Services while their additional equipment as per scale is being procured through special/additional funds sanctioned for the purpose. These teams will provide aid to civil authority during peace time, when requested during a CBRN attack.

Since 1999, we, as a Nation, have come a long way in restructuring our disaster management mechanisms and ushering in a sense of synergy and integrity between the concerned ministries and departments. The central nodal agency for all disasters is Ministry of Home Affairs (MHA). The response to any disaster is through the Disaster Management Committee under the Central relief Commissioner. Response of Ministry of Defence is in coordination with MHA through the Disaster Crisis Management Group (DCMG) which controls the tri service response.

Human Resource Development

Information and Communication Technologies are indispensable in planning and successful implementation of most disaster risk reduction initiatives. However, the potential of most advanced technologies is required to be harnessed in early warning, preparedness and response systems along with adequate emphasis on building human capacities to use these tools and technologies. Human capacities[16] in the form of skills and expertise in diverse fields would also require to be developed with a view to fight disasters in a comprehensive and effective manner. These activities should be planned by the concerned agencies as part of preparedness stage and should be undertaken as a continuous and evolving process with built in feedback mechanism so as to constantly improve upon the quality of skills. The efficacy of human resource capacities and the systems is best assessed during rehearsals, training and mock drills. Our preparedness and readiness can not be ascertained and assessed without going through some kind of evaluation process. Training must be institutionalized and should be based on systems approach and the whole process needs to be

managed by objectives. A fragmented approach to training and preparedness could only lead us to inefficient and amateur establishments capable of operating in compartmentalized spaces resulting in further compounding the adverse effects of the disaster. An ill-prepared apparatus in terms of central and state mechanisms executing plans in an unprofessional manner with fragmented agendas would be the least desired / expected way to combat disasters. The only way to integrate and optimize the institutional mechanisms at all levels would be to prepare them through collective mock exercises. These exercises should be objective oriented and must include assessment, appraisals, feedbacks and strategy to overcome shortcomings and weaknesses. Exercises should be conducted periodically and should be a continuous process. Disaster Management Authorities at State and Districts levels will be required to be proactive and dynamic in their approaches and should take a cue from National Disaster Management Authority as the latter should not be expected to run the whole business of managing disasters throughout the country, all by itself.

Training of Stakeholders

The current initiatives include review of training of engineers, architects and masons in structural designs catering for disasters, training of officers in administrative services, training of professionals like fire fighters, home guards and civil defence, training of police, training of newly raised National Disaster Response Force, training of other technocrats and scientists involved in many diverse fields of geology, oceanography, information technology and communications and many other departmental fields including medical and engineering. Awareness programmes have been launched across the country through print and electronic media. A number of guidelines have been issued on different kinds of hazards and disasters. The subject on disaster management has been included in schools. National Institute of Disaster Management has been mandated a whole lot of responsibilities and is to be evolved into a centre of excellence in the field of disaster management related aspects. Training of technical manpower like scientists, engineers, paramedics, architects, fire and rescue services, masons and other specialists could continue in their respective institutions with adequate emphasis on subjects dealing with disasters, the training of first responders to include teams earmarked at the local level, NDRF, Home Guards, Civil Defence and rescue teams earmarked by the Defence Forces needs to be further streamlined and institutionalized to meet the objectives of the newly structured edifice of managing disasters. The training process needs to be well established.

At present the NDRF battalions are being trained at their respective training centers. ITBP is training its units at the National Institute of Training for Search, Rescue and Disaster Response

(NITSRDR) at Rampur, in the foothills of Shivalik Ranges. CISF trains its units at the National Industrial Security Academy (NISA) in Hyderabad; BSF is training at Tekanpur near Gwalior and in other institutes at Kolkatta and in the North East. Despite the plans, the NDRF is yet to develop its own training facilities. NDRF is in the process of acquiring land near Ramgarh and has plans for creating state of the art training facilities for combating disasters in mountainous region. We must not lose sight of the fact that the men in these battalions are on deputation from the paramilitary forces and are basically trained to perform a different kind of role. Disaster response force would require an altogether different set of skills and hence it is important that these battalions first and foremost train themselves as a specialized response force for the task for which these have been reorganized into teams. We also need to emphasize upon a culture suitable for team work during disasters. There would be a requirement of having a standardized training for performing similar tasks. This can be achieved only by having nodal institutions organized and equipped to cater for imparting standard training required for specific skills. Personnel from paramilitary forces sent on deputation to these battalions without desired specific training and then again turned over after completing the tenure may not be a satisfactory arrangement. A separate cadre for manning these battalions and separate institutions for specialized training is mandatory for developing an efficient and effective force. However, the scenario is not bleak but optimistic and a lot of ground has been covered in the aspects of organization and training of these battalions. Each NDRF battalion as of now is expected to be capable of dealing with all kinds of disasters. However, emphasis is being given on imparting a specialized training based on local vulnerability. NDRF battalion based at Chandigarh and covering the states of J&K, Himachal Pradesh and Uttarakhand has specialized training to deal with landslides, avalanches and earthquakes. Similarly, the NDRF battalion at Guwahati has specialized training in water rescue and earthquake.

Out of the eight battalions, four located near the metros are specially trained and equipped to deal with Nuclear, Biological and Chemical (NBC) disaster. The Bhabha Atomic Research Centre (BARC), Mumbai, Defence Research and Development Establishment (DRDE), Gwalior and College of Military Engineering (CME) have been assisting in training the NDRF personnel to deal with NBC emergencies. The NDMA is training NDRF officers in Singapore Civil Defence Academy for specialized training in NBC. Similarly, the Indian Air Force is helping in training the NDRF personnel in heli-slithering operations. For Water Rescue operations, the NDRF personnel are receiving specialized training at the Rashtriya Life Saving Society, Kolkata and Sea Explorer Institute, Kolkata. Some of the NDRF personnel have also been trained in Water Rescue Operations at the Naval facilities at Kochi. For collapsed structure Search and Rescue the personnel are being trained as per the guidelines issued by the International Search and Rescue Advisory Group (INSARAG).

Types of Disasters

Disasters are primarily classified into two types. These could be artificial or manmade wherein the final impulse has been provided by a group or an individual in a very deliberate and incisive manner to set about the pre-adjured consequences; or natural wherein the natural forces have interplayed and a certain imbalance has occurred which often cause ferocious and violent balancing act between various natural elements. Disasters could be classified as follows: -

- *Man Made Disasters*

    - Civil Riots – Bombay Riots of 1992.
    - Warfare – Conventional, NBC etc.
    - Refugees – Forced movement of large number of people, usually across frontiers. e.g. Bangladesh, 1971
    - Pollution – Bhopal Gas Tragedy in 1984 and Oil Slicks off Bombay High & Gulf in 1991.
    - Nuclear Related – Chernobyl Nuclear leak in the then USSR.
    - Accidental – Oil Depot Fire (Hempstead, UK, Dec 2005), Mine Flooding (China, Nov 2005), Major Air / Rail / Road Accidents (Kanishka, Air India)
    - Deforestation.
    - Global Warming.

- *Natural Disasters*

    - Meteorological – Cyclones, Tornados, Hurricanes, Cold / Heat wave, Drought, Floods etc.
    - Geological – Earthquakes, Avalanches, Landslides, Dam Bursts etc.
    - Biological – Epidemics like Plague in Surat in 1994, Pest attacks, Food poisoning etc.

The division between natural and manmade disasters is to some extent an over simplification, as many disasters are actually caused by combination of various forces. Some disasters can set a chain reaction; such as floods can lead to epidemics, which may in turn lead to refugees. A long-term perspective will reveal to us, that disaster is an interaction of combination of political, social, economic and environmental factors. There is no wonder that disasters occur more in developing nations than developed ones.

Disasters may occur suddenly in time (a quick onset), or they may develop over a period of time (a slow onset). Most occur suddenly and perhaps unexpectedly. However, some events develop gradually, including some floods and famines related to drought. Categorization of crisis as mentioned by the Second Administrative Reforms Commission in their Third Report titled 'Crisis Management – From Despair to Hope' (September 2006) is as follows:

- Crisis caused by acts of nature. These can further be divided into the following two sub-categories:-
  - Climatic events: cyclones and storms (associated sea erosion), floods and drought and
  - Geological events: earthquakes, tsunamis, landslides and avalanches;
- Crises caused by environmental degradation and disturbance of the ecological balance;
- Crises caused by accidents. These, again, can be further classified into: industrial and nuclear mishaps and fire related accidents;
- Crises caused by biological activities: public health crises, epidemics etc;
- Crises caused by hostile elements: war, terrorism, extremism, insurgency etc;
- Crises caused by disruption/failure of major infrastructure facilities including communication systems, large-scale strikes etc; and
- Crises caused by large crowds getting out of control.

Disasters are categorized at three levels: -

- A district level disaster within the capabilities of the District Administration.
- A State level disaster within the capabilities of the State Government.
- A National level disaster requiring major direct intervention of the Central Government.
- A No Disaster Situation. The level at which surveillance, preparedness, prevention and mitigation activities must be focused on.

Stages of Emergency Response

Disaster Management has the following four sequential, though not necessarily exclusive, stages:-

- Preparatory - This corresponds to the pre-disaster period and includes disaster prediction, warning and alert systems, preventive measures, issue of contingency plans and checklists for potential disasters. During this stage appropriate organization and infra structure provisioning could be set up, standard operating procedures formulated, equipment and communication provisioned and rehearsals conducted.

- The Emergency Stage - This stage commences from the warning of disaster to the period immediately after the disaster and aims at providing immediate relief to the affected people and bringing a semblance of order in the disaster areas.
- Rehabilitation - This period covers short term measures to restore[17] essential services, communication and normal community life.
- Reconstruction - This is a long-term measure aimed at providing adequate relief to the affected people.

Principles of Effective Disaster Relief Arrangements

Effective Disaster Relief arrangements are governed by the following principles:-

- Primacy of Civil Administration - Disaster management is the primary responsibility of the civil administration both at the Centre and State levels. All other organisations are supplementary.
- Organisation - To be effective, counter disaster arrangements must be supported by an organisational structure in which they should operate.
- Command & Control - Prior to the disaster arrangements, the responsibility of overall command and control of the situation, each organisation with all involved elements would need to be clearly specified in the disaster plan as also communicated to all concerned agencies.
- Co-ordination and Support - Resource management and co-ordination is essential for its optimal and speedy application.
- Information Management - Effective management of information is essential for dealing with disaster. Communication network between organisations and agencies is essential to ensure that preparedness measures and responses are properly coordinated.
- Timely Activation - Timely activation of plan is vital to disaster management. Authority must be delegated to the designated controller to ensure prompt implementation of plans and avoid bottlenecks.
- Communications - The Department of Telecommunication has recently allocated four-digit telephone numbers to the Relief Commissioners of Centre/State. All agencies associated with Disaster Management can communicate on the given telephone numbers for updated information from the respective control number.

Role of the Armed Forces

The Armed Forces are perhaps the best organized and managed to provide support to a full range of public services such as public works, communications, transport, health, emergency medical services, rescue and support activities. They can react quickly and respond rapidly in a self contained and self-sufficient manner and with mobility. There are enormous potential inherent in the Armed Forces to serve as an additional instrument for the effective delivery of emergency assistance. Every year Armed Forces are called for providing assistance to civil authorities throughout the length and breadth of the country, for carrying out rescue and relief operations during floods or other natural calamities.

Guidelines

Armed Forces will have no role in disaster relief during active hostilities or when these are imminent. Therefore their role should be restricted to 'peace time' only. Even during peacetime, the Armed Forces should be deployed only to support immediate succour and relief efforts in case of major disasters, which are beyond the scope of State Governments/UTs. In the short and medium term, duration of such assistance should not exceed 15 days.
A Coordinating officer from the Operations Branch of the Services should be a part of the disaster management team at the national and state level. The tri-service representation will henceforth be done through DCIDS (Ops) at HQ IDS.

Legal Provisions

The constitutional and the legal framework provide for the Armed Forces to render assistance during disasters/calamities when the situation is beyond the capability of the local civil administration. This is enunciated under the subject. "Aid to Civil Authorities by the Armed Forces" both in orders issued by the Government of India vide the Ministry of Defence Pamphlet dated 30 Nov 1970 and also by the respective Services. This enables organized and clearly defined support from the Armed Forces as also provides necessary sanction (financial and otherwise) for deployment of defence resources. The Armed Forces may also be called upon to render such assistance to another friendly country, on request.

Legal and regulatory frameworks comprise the laws, executive orders and other legal instruments that set the ground rules for governmental and non-governmental activities relating to disasters and risk reduction. They define the authorities, responsibilities and roles of officials and organizations,

establish legal authority for organizations and programmes, and sometimes create organizations and co-ordination mechanisms. They may dictate or encourage relevant policies, practices and processes. Our administrative and bureaucratic culture in vogue would have to go through a radical transformation, if we have to succeed in being competent and professional in our approach to dealing with disasters. No amount of documents, policies, guidelines, legislation and enforcement procedures would be of any use until and unless there is a shift in our attitudes and values. Many a times the process of legislation is triggered by the experience of a recent major disaster. However, it is most successful where it is owned and driven by stakeholders in country (including civil society), expectations of the time and effort needed are realistic, and inter-institutional collaboration is enhanced.

Disaster Management Act 2005

The Parliament has enacted the Disaster Management Act, 2005. Few states have also passed laws governing disaster management.

The Act has empowered NDMA and the NEC to not only approve the national plans and the plans of the respective union ministries / departments, they will also lay down guidelines for the state authorities, coordinate the enforcement and implementation of the policies and plans for disaster management and ensure timely Response. The present enactments by the union as well as state governments may not prove to be effective on ground. An expert body may be called upon to discuss the nuances of a regulatory mechanism and to formulate a coherent, cohesive and integrated framework. An endeavour should be made to strike a fine and workable balance between centralized and decentralized set of activities and charter. The Act should also lay out an elaborate code relating to utilization of funds[18] allotted for relief and rehabilitation by the government and NGOs.

Another aspect that needs to be addressed suitably by the legislative mechanism is to bring all other disaster related acts and provisions on the single platform, essentially to integrate the whole process to affect consistency. Similarly, the Act should facilitate integration of varied organizations working for the same purpose and ensure a well coordinated mechanism with a view to provide a coherent approach[19] to disaster management across all phases from preparedness and mitigation to response and recovery. The role of planning commission at the national level and the departments at the State level dealing with developmental plans and projects should also be included in the Act. The role of military during disasters need not be elaborated. The Army and other Services have always played a significant role in all the major disasters in the past.

Laying down legal framework[20] and establishing a regulatory mechanism should be viewed as part of holistic approach towards disaster management. Besides defining authorities and assigning leadership responsibilities and accountability, the mechanism should also emphasize and provide for suitable linkages to national economic and social development plans.

Inter-institutional collaboration should also be enhanced organizationally and legally. This should form part of overall coordination mechanism. Organization and the authority responsible and accountable for the collaboration need to be earmarked / assigned and strengthened in terms of legal powers. India has made a good beginning in evolving the processes associated with managing disasters. Disaster Management Act 2005 is good step in this direction.

Another aspect that merits to be mentioned in the realm of legislation is the rules and regulations that facilitate aid from across the borders. Disasters often transcend the traditional and man made boundaries of nation states. In this regard, law and policy makers should seek to incorporate the various international laws, rules and principles which promote the facilitation of international disaster response in areas such as customs, telecommunications, transport and immigration. They should also aim to promote and encourage adherence to quality and accountability standards for international relief. The law should lay down the provisions both for receiving as well as offering aid during disasters. The International Disaster Response Law can facilitate disaster response by addressing operational concerns in the field, clarifying the roles and responsibilities of relief workers, encouraging and assisting States to establish and improve systems for coordinating and facilitating humanitarian assistance, developing model principles and standards for incorporation into national laws, providing a shared framework for humanitarian actors and States to raise issues of concern relating to the facilitation and coordination of relief, utilizing the resources of the Red Cross and Red Crescent, in particular National Societies and by building local capacity.

Techno-Legal Aspects

The new approach to managing disasters will have to not only ensure application of technical norms and bye laws but also achieve technological resilience by exploiting the advantages of current developments in science and technology. Disaster prevention, one of the key elements in the new approach to deal with disasters, encompasses activities designed to provide permanent protection from disasters. It includes engineering[21] and other physical protective measures, legislative measures controlling land use and urban planning. The prevention should ensure that all new buildings are designed and constructed with proper engineering intervention taking due care

for safety against natural hazards in urban as well as in rural areas so that no unsafe buildings are added to the huge existing stock of unsafe buildings and also to ensure upgrading the safety[22] of buildings in the public sector by retrofitting techniques and encourage similar action regarding buildings in the private sector.

Types of Assistance

Infrastructure for Command and Control - Infrastructure for setting up of command and control organization for providing relief is an important task for Armed Forces and involves provisioning of communications both telephone, radio and specialist manpower.

Medical Aid - Provisioning of medical care with the help of medical teams including treatment at the nearest Armed Forces hospital.

Transportation of Relief Material Provisioning - of logistic back up aircraft/ helicopters/ships/boats/inflatable water crafts/vehicles for transportation of relief material to the affected area.

Establishment of Relief Camp - Setting up and running of relief camps could be done by the Armed Forces.

Construction and Repair of Roads and Bridges - Armed Forces' engineers could undertake construction and repair of roads and bridges to enable relief teams/material to reach affected areas. This would also include provisioning of technical and plant equipment such as cranes, bulldozers, boats etc.

Maintenance of Essential Services - Repair, maintenance and running of essential services may have to be undertaken in the initial stages of disaster relief.

Evacuation of People to Safer Areas - Assistance in evacuation of people to safer places before and after the disaster is an important task assigned to the Armed Forces.

Diving Effort - The Armed Forces especially Navy may be called upon to provide assistance of divers.

Management of International Relief - The handling of international relief could be undertaken by the Services if requested to do so by the Ministry of Defence / Ministry of External Affairs.

Use of Territorial Army - In highly disaster prone areas, raising specialized Disaster Management Battalions, on the lines of eco battalions could be considered.

Disaster Task Force of Ex-servicemen - The potential of ex servicemen should be exploited for disaster management.

Principles of Employment of Armed Forces

Operations of the Armed Forces, whenever called upon to assist the civil authorities in rendering relief are governed by certain guiding principles[23]. These are enumerated below.

- Judicious use of Armed Forces - The assistance by Armed Forces should be requisitioned only when it becomes absolutely necessary and when the situation cannot be handled by civil administration from within its resources.
- Immediate Response - When natural and other calamities occur; the speed for rendering aid is of paramount importance. It is clear that under such circumstances prior sanction for assistance may not always be possible. In such cases the Armed Forces when approached for assistance should provide the same without delay. No separate Government sanction for aid rendered in connection with assistance during natural disaster and other calamities is necessary.
- Command of Troops - The Armed Forces units whilst operating for disaster relief continue to be under the command of their own commanders and aid rendered is based on task basis.
- No Menial Tasks - While assigning tasks to the troops it must be remembered that troops are not employed for menial tasks. Troops should not be employed for disposal of dead bodies.
- Requisition of Aid on Tasks Basis - The requisition of Armed Forces should not be in terms of number of columns, engineers, diving teams, medical teams, helicopters, boats etc. Civil administration should spell out the task and leave it to the Armed Forces authorities to decide the force level, equipment and methodology to tackle the situation.
- Regular Liaison and Co-ordination - In order to ensure that optimum benefit is derived, regular liaison and co-ordination need to be done at all levels and contingency plans made and disseminated to the lowest level of civil administration.
- Advance Planning and Training - The Army Formations, Naval units and Air Force stations located in areas prone to disaster must have detailed plans worked out to cater for all possible contingencies. The troops should be well briefed and kept ready to handle any contingency.
- Integration of all Available Resources - All available resources, equipment, accommodation and medical resources with civil administration, civil firms, NGO etc need to be taken into account while evolving disaster relief plan. All the resources should be integrated to achieve optimum results. Assistance from outside agencies could be super-imposed on the available resources. Similarly, all assets of the Armed Forces must be integrated to obviate duplication or overdose.

- Early De-requisitioning - Armed Forces should be de-requisitioned as soon as the situation in disaster affected area has been brought under control of the civil administration.

Planning - Planning is carried out by the Armed Forces at the national, state and field level. The Ministry of Defence including HQ IDS and the Services Headquarters are involved at the highest level. At the State Government level, the Command/Area Headquarters of the Services interact through periodic civil-military conferences with the local administration, police and other organisations. Once contingency plans for disaster management have been prepared, regular rehearsals need to be carried out and the contingency plans periodically updated. These detailed contingency plans are also graded at different levels to cater for different types and intensity of a disaster necessitating different approaches.

DCMG in HQ IDS will act as the nodal agency of the Armed Forces. All necessary data will be maintained by the nodal agency for possible disasters in the country. During planning stage tri Service responsibility will be undertaken by DCIDS (Ops)/ACIDS (Jt Ops) to ensure expeditious results. Based on the type of relief requirements and core competencies of Services, HQ Integrated Defence Staff, on behalf of Chairman COSC/CDS (when appointed), may task individual Services HQs. Some tasks would need the combined expertise of two or more Services.

At the apex level, the Defence Crisis Management Group (DCMG) would co-ordinate the emergency response of the three Armed Forces. This is primarily to obviate time delays and sub optimal utilization of assets. The DCMG would meet as soon as a disaster is reported/anticipated to formulate broad guidelines to deal with the crisis. The initial action is to ensure early establishment of communication link and creation of a tri-Service organization on ground at the disaster site to co-ordinate the efforts of all three Services. On assessment of the nature of crisis and relative core competence, the Service best suited to deal with the crisis, would be nominated as Lead Service to co-ordinate the operation and interact with the concerned State government. A geographical command in the affected area would be nominated to execute the plans and provide immediate relief. Joint Task Force comprising elements from the three Services and Coast Guard deployed in the general area of disaster would be placed under its command. The lead Service Headquarters would thereafter co-ordinate the assistance of the other two Services while the DCMG would continue to interact with the Ministry of Defence. 'A Joint Inter Services Control Room' would be set up at the Headquarters of the nodal agency, INCP so earmarked. Geographical Command operating in the disaster area would report through their Service reps at INCP and approach the respective Services Headquarters to obtain advice with respect to instruction for units of a particular service.

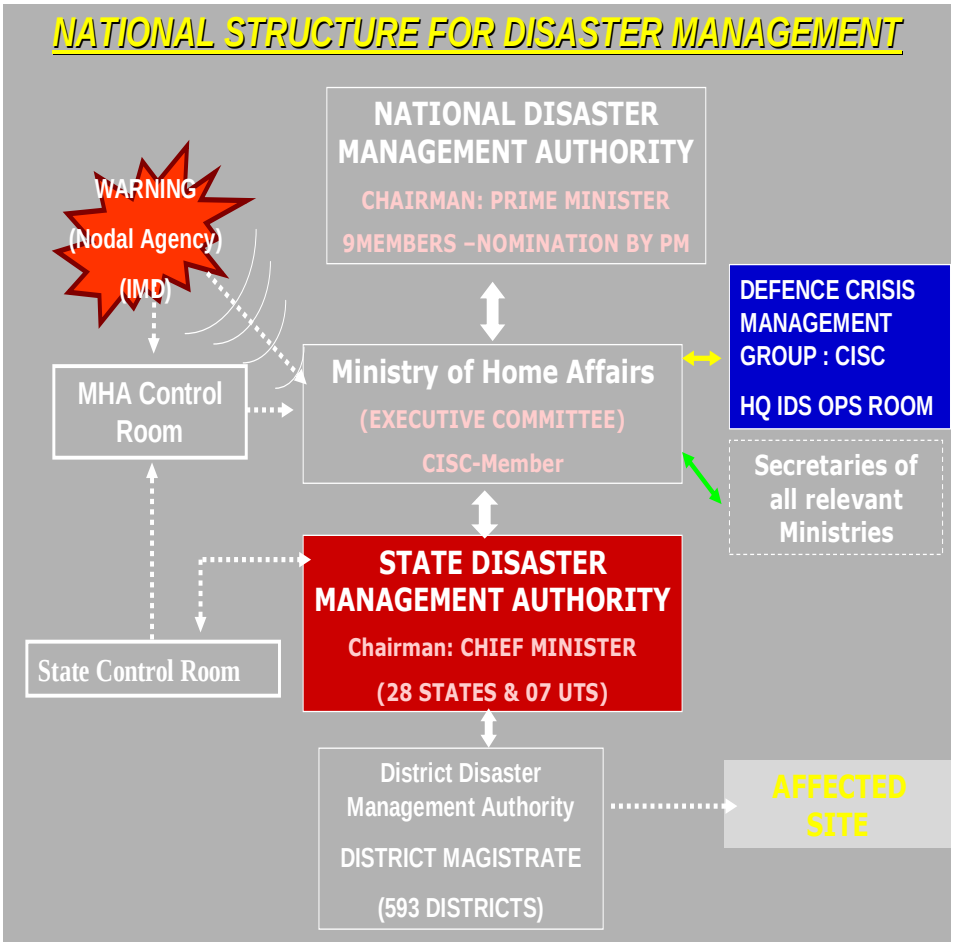
Organisation - The organisational structure of the Armed Forces is built on a layered system of units and sub units that enables a force of any size to function and adapt to any situation. These are specialist teams who are trained to assist local governments and departments in co-ordination with outside agencies. The operations in a particular area are co-ordinated by an Operations Headquarters (Geographical Command so nominated) usually set up in the affected area.

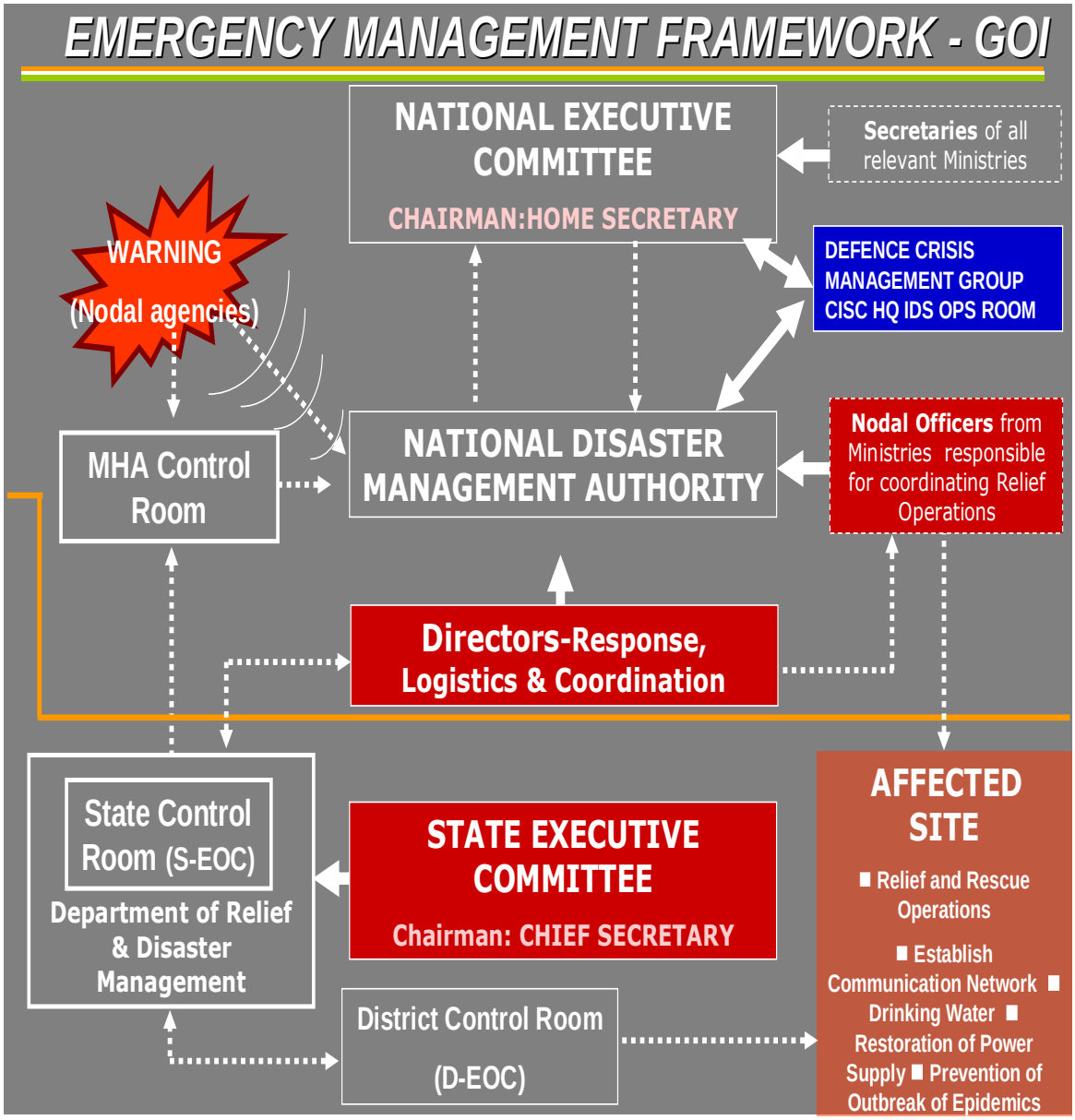
Services Headquarters - The DGMO, ADGMO (A), DIR MO 6 in Army Headquarters; DCNS, ACNS (IW & Ops), DNO in Naval Headquarters and VCAS, ACAS (Ops), D Ops (T&H) in Air Force Headquarters are charged with co-ordinating the Emergency Response measures for disaster management.

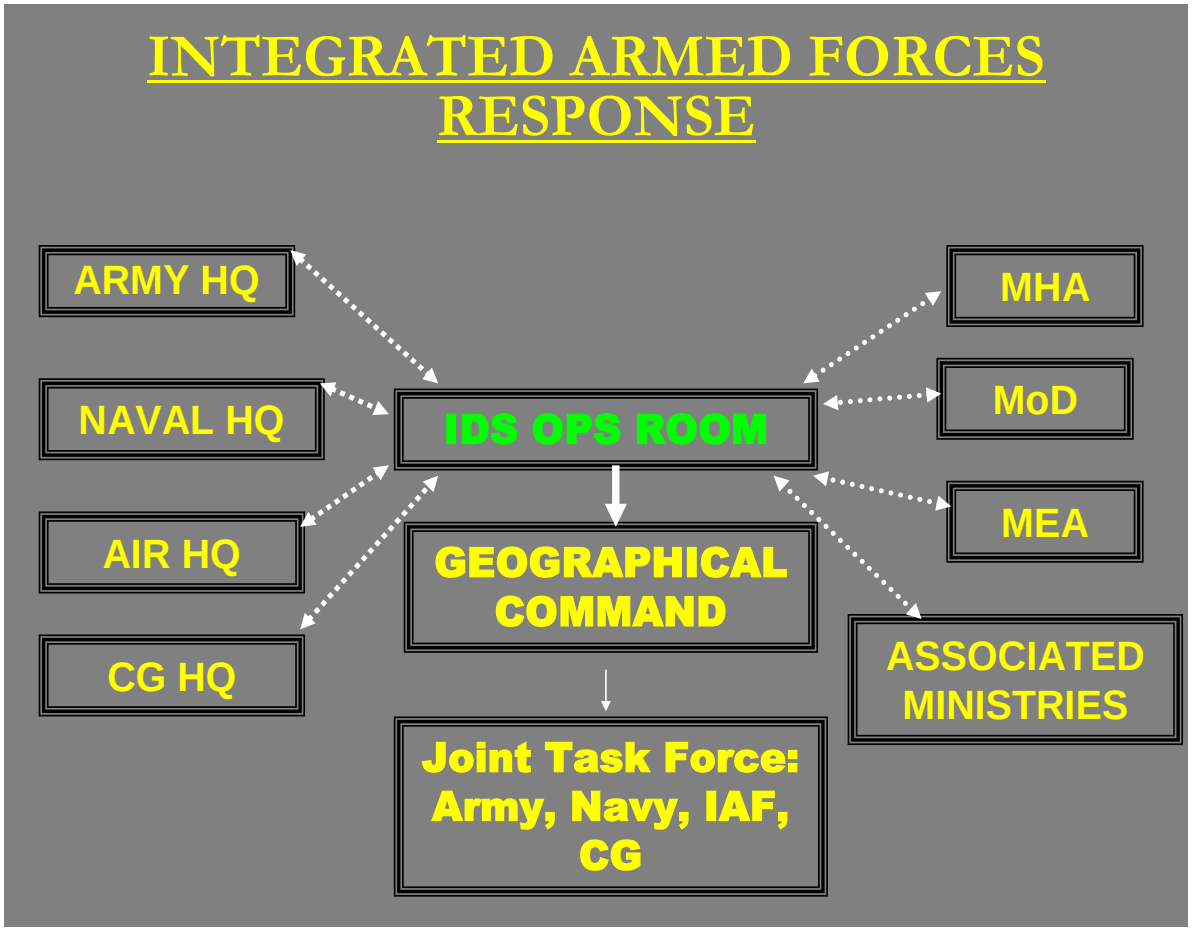
Command Headquarters - The respective Services Commanders, through their staff officers, maintain constant liaison with the respective State Governments. The respective Service Command Headquarters thus prepare comprehensive contingency plans and detailed checklists in consultation with the State Governments. The Command Headquarters carry out the following functions: -

- Co-ordination/Control/Deployment of various agencies involved – be it relief columns, engineers, technical equipment, ships, aircraft, helicopters, boats, logistic supplies, repair effort, medical assistance etc during Disaster Relief. The Centre of all activity is the Operations Room/Centre, which is manned round the clock throughout the year and in such contingencies, additional staff is provided.
- Close liaison with State Government and other Services authorities/Civil agencies during early warning stage and during conduct of disaster relief operations.
- Keeping respective Services Headquarters informed of the actions initiated, the situation on ground by passing regular SITREPS and conveying any requirement from other agencies at the centre, logistic support from the Commands/Services.

Initial Control - Disasters in the recent years have shown that in the after-math of major calamities, there is no likelihood of any communications, infrastructure and civil set-up remaining intact. Therefore, in the initial stages, suitable key personnel, both civil and military and infrastructure/communications equipment will have to be moved by the fastest means to the affected areas. Transport aircraft/helicopters would have to be earmarked and kept ready to move such elements, at short notice.


NATIONAL STRUCTURE FOR DISASTER MANAGEMENT
NATIONAL DISASTER MANAGEMENT AUTHORITY
CHAIRMAN: PRIME MINISTER
9MEMBERS –NOMINATION BY PM
WARNING
(Nodal Agency)
(IMD)
MHA Control Room
Ministry of Home Affairs
(EXECUTIVE COMMITTEE)
CISC-Member
DEFENCE CRISIS MANAGEMENT GROUP : CISC
HQ IDS OPS ROOM
Secretaries of all relevant Ministries
STATE DISASTER MANAGEMENT AUTHORITY
Chairman: CHIEF MINISTER
(28 STATES & 07 UTS)
State Control Room
District Disaster Management Authority
DISTRICT MAGISTRATE
(593 DISTRICTS)
AFFECTED SITE


EMERGENCY MANAGEMENT FRAMEWORK - GOI
NATIONAL EXECUTIVE COMMITTEE
CHAIRMAN:HOME SECRETARY
Secretaries of all relevant Ministries
WARNING
(Nodal agencies)
DEFENCE CRISIS MANAGEMENT GROUP
CISC HQ IDS OPS ROOM
MHA Control Room
NATIONAL DISASTER MANAGEMENT AUTHORITY
Nodal Officers from Ministries responsible for coordinating Relief Operations
Directors-Response, Logistics & Coordination
State Control Room (S-EOC)
Department of Relief & Disaster Management
STATE EXECUTIVE COMMITTEE
Chairman: CHIEF SECRETARY
AFFECTED SITE
Relief and Rescue Operations
Establish Communication Network
Drinking Water
Restoration of Power Supply
Prevention of Outbreak of Epidemics
District Control Room
(D-EOC)



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CHAPTER 3: RESPONSE TO CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR DISASTERS

Concept of Employment: Governing Parameters

The QRTs / QRMTs are dual tasked; hence the type and extent of aid to civil authority during hot war will be limited by their primary operational role. The QRTs/QRMTs being dual tasked will not be available to respond to CBRN disasters during war situations as they would be employed in their primary tasks. The strength and equipment of the QRT/QRMT is limited. Therefore, for large scale management of evacuation, crowd control, traffic management, medical treatment and large scale decontamination, resources of the NDRF (NDMA), Civil Administration and other agencies, including NGOs would also be utilized.

CBRN incidents[1] are likely to be marked by a law and order situation. Therefore, as part of our philosophy all Command HQs should cater for requisite additional columns to assist the state law and order machinery. These columns will, however, be provided only if specifically requisitioned by the civil administration. All Areas/Sub Areas/Stations should carry out regular appraisal of all CBRN related establishments, chemical, pharmaceutical, ice plants etc related industries independently and in concert with the civil administration. Contingency plans for these and the likely terrorist targets in population centers should be worked out. In case the incident is of a large magnitude, there would be a requirement of additional NBC equipment. All Command HQs should be prepared to allocate NBC equipment from their operational bricks in such emergencies.
The equipment held by the QRTs/QRMTs affords protection only against known "war gases" and not against leaks of poisonous gases from chemical plants and other such establishments. The NBC suits of the Armed Forces prohibits ingress of radio active dust. The civil administration should be sensitized during civil military liaison conferences of this limitation and suitable canisters, breathing equipment and suits of the DAE should be catered for by the civil administration. While the capability to respond in aid to civil authority has been created in terms of QRTs/QRMTs and its interface with the NDMA has been catered for, once the capability of the NDMA is fully developed, the QRTs/QRMTs should adopt the profile of second responders, the first responder being the local civil authorities.

Types of Aid - The Armed Forces could be tasked to undertake the following:-

- *Rescue Mission* - Provision of trained troops, fully equipped with individual protection equipment (IPE) to operate in a CBRN environment and attempt rescue if possible.

- *Detection* - Detection, identification and constant monitoring of the nuclear/ radioactive/ chemical / biological agents.
- *Monitoring* - Constant monitoring of the radiation state and render advice to evacuate population and restrict the hazard.
- *Decontamination* - Decontamination to sanitize contaminated personnel and of those areas that the troops require to carry out their task.
- *First Aid* - Rendering of limited initial first aid.

Types of CBRN Disasters

The type of CBRN disasters/acts of terrorism for which the Armed Forces could be asked to give assistance to the civil administration are as follows:-

Disaster/Terrorist Attack Using Radioactive Materials - A terrorist can attack by using a dirty bomb. A dirty bomb is a Radioactive Dispersal Device (RDD) with which radioactive material[2] is dispensed in conjunction with conventional explosives. Terrorists may plant radioactive material at public places. Assist in controlling collateral damage, which is likely to take place due to a mishap in nuclear facilities.

Disaster / Terrorist Attack Using Chemical Agents - Terrorists can use lethal toxic agents[3] in the form of Chemical Weapon attack on dense population centers. The agents used could be nerve agents, choking agents or blood agents. The likelihood of blister agents which acts late cannot be ruled out. These agents could be disseminated as vapours or aerosols.

Disaster / Terrorist Attack Using Biological Agents - Terrorists could carry out an attack on population centers using biological agents[4]. Unlike a Chemical agent attack, the effect of a biological agent is delayed and requires an incubation time. The mode of attack would depend on the type of agent[5] used. The potential agents which may be used could range from pathogens like Bacillus Anthracis (Anthrax), Yersienia Pestis (Plague) etc to organisms such as Veriola (Small Pox) that have been certified as globally eradicated. The terrorists could also use biological toxins or genetically modified pathogens. The use of new agents or organisms such as drug resistant or genetically engineered pathogens cannot be ruled out.

The Aftermath of a Nuclear Attack - This contingency is likely to arise only in the case of hostilities with our adversaries. The hostilities may start in the form of a conventional war which escalates

into a Nuclear conflagration or the hostilities may begin with a sudden Nuclear attack[6]. Such attacks are likely to be focused on specific type of targets which are likely to be Command, Control and Communication Systems/Centers, sites/bases where Nuclear assets are located, Defence and other vital installations and major metropolitan Centers.

In such an eventuality, the capabilities and the operational constraints preclude the employment of the QRTs/QRMTs to respond to such situations. The primary responsibility to respond to a Nuclear attack in the civil domain during hot war will be of the civil administration.

Phases of Operations

The QRTs/QRMTs should be prepared to undertake their task in the following four phases[7]:-

- Phase 1 - Preparatory Phase.
- Phase 2 - Warning Phase.
- Phase 3 - Damage Control Phase.
- Phase 4 - De-induction Phase.

Phase 1: Preparatory Phase

This phase will include all actions that are required to be undertaken during peace time in order to ensure that the QRTs/QRMTs are prepared to respond to any CBRN related contingency and are maintained in a high state of operational preparedness. Some of the actions that will be ensured during this phase are as follows:-

- Training of QRT/QRMT personnel at FNBCP, CME Pune, Command NBC Schools, at station/unit level, DRDE, Gwalior for advanced training & imparting knowledge on chemical and biological defence and Defence Lab, Jodhpur for nuclear defence.
- Scaling and procurement of equipment.
- Periodic serviceability check of all equipment and updation of its shelf life. Readiness of all equipment must be ensured and load tables worked out.
- Conduct of regular simulated exercises on a yearly basis. Aspects required to be coordinated with the civil administration should be ensured.

Regular Co-ordination with Civil Administration - The command and control structure as well as duties and responsibilities at National, State and District level in respect of the civil agencies have

been clearly spelt out in the SOPs issued by MHA. Command HQs should ensure that a copy of the same is disseminated to the environment. All efforts are to be made locally to familiarize with the MHA SOPs and the civil agencies nominated for response in disaster situations.

Phase 2: Warning Phase

In most CBRN situations relating to disaster/acts of terrorism, no warning would be available, hence, the QRTs/QRMTs may be employed directly in the Damage Control Phase. However, if some warning is available through intelligence agencies or otherwise, the QRTs/QRMTs should be placed on a high state of readiness. After receipt of warning the QRTs/QRMTs should be ready for mobilization to the incident site within three hours. On receipt of the warning, the following actions will be ensured:-

- Ensure all persons of the QRT/QRMT are available in the station/unit lines.
- Functional check and packaging of all equipment is completed.
- Rehearsals for the likely contingency are carried out.
- Transport for the movement of the QRTs/QRMTs has been catered for. In case airlift is required, all coordination with the Indian Air Force should be carried out.
- Liaison with the civil administration and agencies likely to be involved in the contingency should be ensured.

Phase 3: Damage Control Phase

The concerned Command/Area/Sub Area/Station will give the executive orders for movement of the QRT/QRMT. Liaison with the civil administration at the National, State, District and Local levels will be carried out simultaneously. All available details will be passed to the QRT/QRMT prior to its mobilization. The details of methodology for response by the Armed Forces and the method of operations are given in the subsequent paragraphs. This phase will broadly involve the following:-

- Mobilization - The QRTs/QRMTs will move to the site of the incident in their designated transport. Airlift will be requisitioned from the Indian Air Force by the Command / Area / Sub Area HQ / Station when needed.
- Establishment of Cordon - Immediately on arrival at the site of the incident, the QRTs/QRMTs will establish a cordon based on type of emergency i.e. whether it is RDD mishap at nuclear facilities or placement of radio active power in public to earmark an exclusion zone and well equipped QRTs will then enter the exclusion zone. The entry in the area having radiation dose of 1 Mr/h or more needs to be restricted. Liaison will be carried

out with the agencies of the civil administration deployed and their resources will be co-opted during the establishment of the cordon. KIO3 or KI tablets should be distributed for protection against radiation.

- Detection - Ground reconnaissance of the area will be carried out by personnel of the QRT using appropriate resources for detection of the source of radiation/contamination/disease. The Aerial Gamma Spectrometry Survey (AGSS) of the Indian Air Force / BARC can be requisitioned for aerial reconnaissance in case of radiation hazards through staff channels.
- Hazard Prediction - On detection of the source, hazard prediction will be carried out by the OIC of the QRT so that civilian / Defence personnel can be cleared from the likely hazard area. It will be ensured that the QRTs are trained for carrying out the hazard prediction.
- Neutralization of the Source - Efforts will be made to immediately contain and neutralize the source, if possible. Since Radio isotope cannot be neutralized, use TDS (Time, Distance and Shielding) for protection from ionizing radiations.
- Rescue and Evacuation - The resources of the QRT/QRMT are not adequate for large scale rescue and evacuation of personnel and equipment. The resources of the co-opted troops and the civil administration will have to be used for this purpose.
- Decontamination and First Aid - Decontamination and first aid as given in the subsequent paragraphs of this SOP will be carried out in this phase.
- Long-Term Effects - Soil and water samples will be collected by QRMTs as per laid down procedure and sent to the authorized laboratories to assess the CBRN hazard in further details.
- Disposal - Contaminated stores, equipment and dead bodies must be disposed off as per the laid down instructions on the subject.

Miscellaneous Issues

Maintenance of law and order - Such disasters are likely to result in a law and order situation. The resources of the QRTs/QRMTs are not adequate to deal with such situations. Formation HQs / Stations must therefore ensure that additional columns are kept ready to move at short notice during such situations for maintenance of law and order and traffic management. Such columns should however, be deployed only on specific requisition from the civil administration.

Media - Such incidents will invariably attract large media presence. The concerned Formation must, therefore, establish a 'Media and Public Information Cell' near the site of the incident to fulfill the aspirations of the media and the public. This cell should be manned by a Senior Officer from the Formation / Station who will be responsible to interact with the media in consonance with

the policy on the subject. A true account of the situation should be provided highlighting the assistance provided by the Armed Forces. The tendency of senior officers and others to congregate at the site of the incident should be avoided.

Sharing of Information - Modalities and procedures for sharing of information and feedback within the Services and other agencies concerned with disaster management will be worked out at all levels. All Command/Area/Sub-Area HQs/Stations will ensure that these aspects are clearly spelt out in their SOPs.

Internal Contamination - The QRT will constantly monitor the CBRN contamination levels in the air. The OIC of the QRT will declare the Mission Oriented Protective Posture (MOPP) level to be followed in various zones. These instructions will be strictly followed by the personnel of the QRT/QRMT.

External Radiation - Unlike Biological and Chemical agents, even MOPP IV level does not guarantee protection against radiation. Hence, external radiation has to be kept within limits by following the principles of time, distance and shielding. It will be endeavored to keep the exposure levels to the minimum levels by rotation of troops. The guidelines for operating in nuclear contaminated environment needs to be prepared by Service HQs and forwarded to all Command HQs. Various external dose limits are as follows:-

Absorbed External Dose	Risk
50 rads	Negligible short term and long term risk.
50-70 rads	Moderate short term and long term risk. To be undertaken when task is operationally important.
70-150 rads	More than moderate risk. To be undertaken only if task is operationally inescapable. In no case personnel are to be exposed beyond 150 rads.

Phase 4: De-induction Phase

After the damage control activities have been completed, the QRTs/QRMTs will be de inducted from the incident site. Prior to its de-induction, it shall confirm to the competent authorities that the site of attack has been sensitized and normal activity may resume in the affected area. All

personnel will undergo a medical examination, personnel requiring treatment will be given specialist treatment and all medical records updated. Necessary action to replenish the equipment will be initiated. A report will be submitted by the OIC QRT/QRMT to their formation HQ, who in turn will forward it to HQ IDS through Service HQs.

Modus Operandi for Response by Armed Forces

Response by HQ IDS

At HQ IDS level, the Defence Crisis Management Committee (DCMG) will meet immediately on occurrence of a major disaster to coordinate the response of the Armed Forces, obviate time delays and to ensure optimal utilization of resources of the three Services. Lead Service will be nominated by HQ IDS after due deliberations. The Lead Service will coordinate the efforts of the other two Services while HQ IDS will interact with the MoD. If considered necessary, the Interim National Command Post (INCP) will be activated.

Methodology of Response by the Services - In the event of a CBRN disaster/act of terrorism, the civil administration may requisition the QRTs/QRMTs of the Armed Forces in aid to civil authorities. As the normal units of the Armed Forces are not trained to handle CBRN related incidents, the Services have created trained QRTs/QRMTs, region wise, to deal with such contingencies. These will be the first units to be pressed into service. They will be supplemented by normal troops as the situation demands. The QRTs/QRMTs have been raised and are being equipped in various Commands.

Requisitioning of Aid - The procedure for requisitioning of aid by civil authorities for CBRN related disasters is the same as governed by GoI (MoD) publication, 'Aid to Civil Authority-1970'. However, on humanitarian grounds, proactive aid will be provided as per the existing policy of the Armed Forces. Concurrent action for requisition and sanction will be undertaken at all levels.

Command And Control - The overall command of such operations will be vested in a senior officer detailed by the Formation / Station rendering the aid. He will work in close coordination with the Incident Commander. The Incident Commander will be detailed by the civil administration to co-ordinate the resources of the civil administration. The concerned Area/Sub Area HQ / Station will exercise command and control over the operations on behalf of the Command HQs. The channel for passage of orders and forwarding of reports and returns will be through General Staff at

intermediate Formation HQs.

Detailed SOPs by Command/Area/Sub Area HQ - Detailed SOPs will be drawn up by all Command/Area/Sub Area HQ/Station, for various contingencies related to CBRN disasters/terrorist actions. These SOPs should be in consonance with the four SOPs promulgated by MHA. Prior to formulation of these SOPs, it is imperative that the Command/Area/Sub Area HQ liaise with their respective State and District Disaster Management Authority.

Capacity Building

Detailment of QRTs/QRMT - The executive orders for the movement / deployment of the QRTs and QRMTs will be given by the respective Command /Area/Sub Area HQ. It is envisaged that in most contingencies the QRTs/QRMTs will be deployed together. In case the teams have to be airlifted to the place of the incident, the Command/ Area/ Sub Area HQ will demand the requisite air effort through normal staff channels.

Location of QRT/QRMTs - Details of loc of QRTs/QRMTs along with personnel to be contacted are given below:-

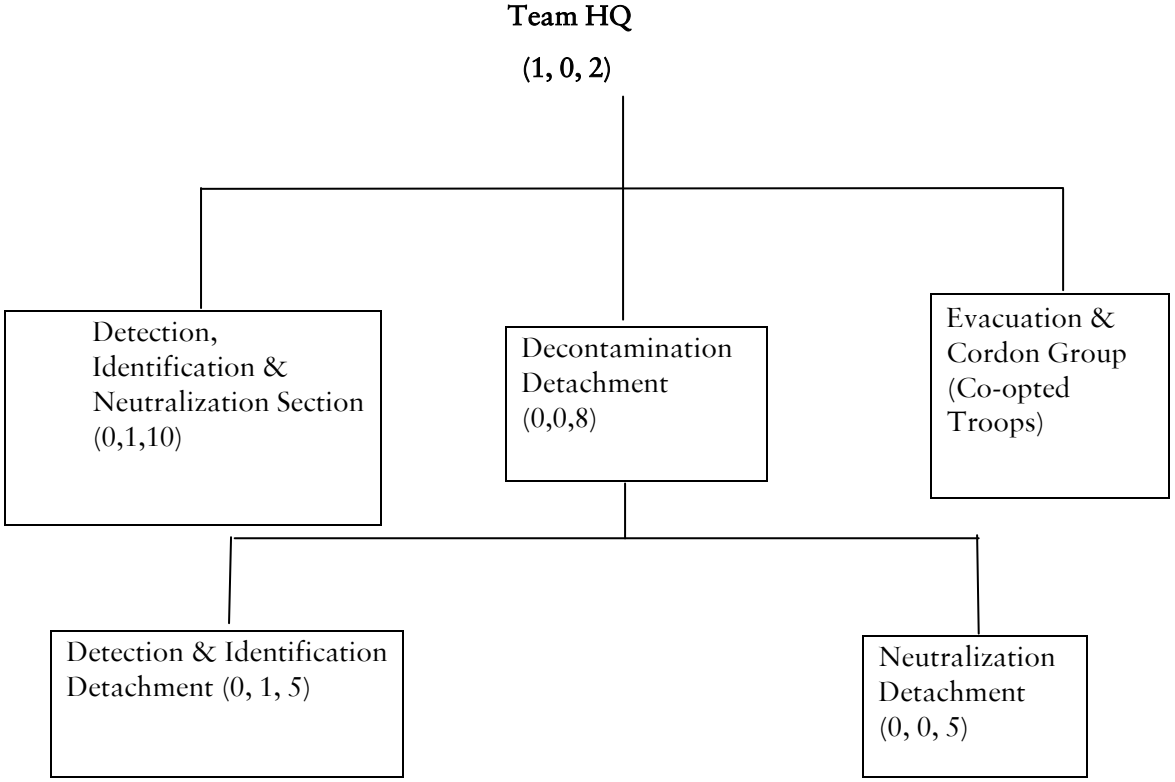
Command	**QRT**	**QRMT**	**Personnel to be contacted**
	Location	**Location**	
Northern Command	Nagrota	Akhnoor	COS HQ Northern Command Cdr Jammu Sub Area Cdr Srinagar Sub Area
Southern Command	Pune	Pune (ADS ex 311 Field Ambulance)	COS HQ Southern Command GOC M&G Area Cdr Pune Sub Area
Eastern Command	Kanchra-para	Binaguri	COS HQ Eastern Command GOC Bengal Area
Western Command	Jallandhar	Jallandhar	COS HQ Western

			Command Cdr Jallandhar Sub Area
-do-	Delhi	Delhi	COS HQ Western Command GOC Delhi Area
Central Command	Barabanki	Allahabad	COS HQ Central Command GOC UP Area
	Mumbai	Mumbai	CSO (Ops) / CNBCDO
	Vishakhapatnam	Vishakhapatnam	
	Cochin	Cochin	
Air HQ (VB)	Air HQ (VB)	- -	ACAS (Ops) PD Ops (Off)

QRT Organisation and Equipment - Each QRT will consist of one officer, one JCO/ equivalent and 20 other ranks/ equivalent.

ORGANISATION OF QRT

(1 Officer, 1 JCO/Equivalent & 20 OR)



Vehicles

Gypsy / Jeep - 2

2.5 Ton - 1

ALS - 1

EQUIPMENT FOR QRTs/QRMTs

ITEM	QTY AUTH	QTY PER PERSON
NBC Suit Permeable	135	1
Respirator w/o Canister	110	1
Canister	405	3
Facelet Mask	135	1
Overboot	135	1
Gloves with Inners	135	1
Integrated Hood Mask	25	-
Haversack	135	1
Three Colour Detector Paper	135	1
Personal Dosimeter Watch Type	50	-
Reader- Personnel Dosimeter	1	-
Autoject Injector (Atropene Sulphate & PAM Chloride)	1165	6
Pocket Type Dosimeter	10	-
Dose Rate Meter	3	-
ACADA	2	-
Residual Vapour Detector Kit	5	-
CAM	2	-
Personal Decontamination Kit	135	-
Decontamination Solution	300 L	-
Decontamination Suit	10	-
Naps Tablet	405	3
Water Testing Kit	2	-
Multi Purpose Decontamination Sys	1	-
Portable Decontamination Apparatus	6	-

Fire Fighting Suit	4	-
Individual Communication Set	8	-
Torch Four Battery	35	-
Flood light with Charger	10	-
Night Vision Goggles	5	-
Portable Gen Sets 1000 Watts	1	-
Portable Communication Set VC Type	2	-
Air Crew Ensemble	36	-
Industrial Portable Gas Chromatograph	1	-
First Aid Kit Type – A	20	-

Functions - The main functions of the QRT in CBRN disaster/acts of terrorism are as follows:-

- Detection and identification of the source of contamination. Nuclear/ radiological agents detection and identification should be done with suitable alpha and beta radiation counters and gamma spectrometers.
- Neutralize the source in case of Biological and Chemical emergencies.
- Determine the likely extent of hazard to enable civil administration to carry out evacuation of the same.
- Immediate decontamination of affected persons.
- Evacuation of casualties to the Decontamination and Treatment Centre (DTC) set up by the QRMT in the vicinity.

Method of Operation of QRT

Mobilization - The mode of mobilization would depend upon the proximity of the place of incident to the permanent location of the BD Coy. When it is close, the QRT and QRMT will move to the location in own unit transport. When the site is at a distance, the teams with their equipment would be required to be air lifted, and dropped in close vicinity of the incident and will mark an Exclusive Zone. Requisite transport and co-opted troops would be detailed by Area/Sub Area HQ at the destination. In most cases, the Armed Forces would be called for only in a reactive scenario. The civil agencies would have, to an extent, carried out certain preparatory actions prior to arrival of the QRT at the site of the incident and would have marked an Exclusion Zone. The team leader in co-ordination with DAE/DRDO teams so nominated must make all efforts to obtain technical information on nature of incident/accident and its effects prior to move to the site. The detection instruments must be switched 'on' while, nearing the incident site, and continuous monitoring

carried out. On arrival at the site, the latest situation must be ascertained from the civilian officials/police already engaged in the relief work. The team leader must position him self in a location outside the hazard area preferably where telephone and STD facility is available. Full IPE will be donned by the team prior to entry into suspected contaminated area.

Detection & Identification Detachments - Three detachments of two persons each will perform the task of detection, identification and survey of the contaminated area. Each detachment would be in possession of detection instruments (i.e. Radiation sensors for nuclear / radiological emergencies and gamma spectrometers for gamma radiations) with the help of which the nature of contamination and extent would be ascertained. Continuous air monitoring and environmental radiation monitoring shall be carried out. This information would be passed on to the OIC team who would in turn assess the likely hazard area and direct the civil authorities to evacuate the same. As a precaution, an initial Exclusion Zone of 450m around the source must be evacuated on priority. Meanwhile, the OIC QRT would carry out a quick hazard prediction depending upon the meteorological conditions and the estimated quantity of contaminating agent which has been released into the atmosphere. The civil authorities would then be advised to carry out timely evacuation of this predicted hazard area. The detachments would continue monitoring the area to confirm spread of hazard as predicted and keep the team leader informed accordingly.

Neutralization Detachment - This detachment would function in close coordination with the detection and identification detachments. They would carry requisite amounts of general purpose decontaminants with them and attempt to neutralize small sources of contamination within their capability. In case of nuclear active substances spread by terrorists/subversives, the substance would require to be detected and enclosed in special lead containers for further disposal. Detailed procedures for carrying out reconnaissance and neutralization of source would be done during the initial training of the team at FNBCP/Command NBC Schools.

Decontamination Section - This section is responsible for carrying out decontamination of severely affected personnel and casualties in case of incident involving persistent liquid chemicals. This will be done with help of pads of Fullers Earth, Personal Decontamination Apparatus and Mobile Decontamination Apparatus which has been authorised to each QRT. One or two decontamination stations could be set up as the situation demands. These would be situated outside the initial exclusion zone. Victims requiring medical attention would be sent to the First Aid Posts, set up by the QRMT, for further treatment and disposal. The detachments would not get involved in decontamination of vehicles attempting to leave the exclusion zone. No vehicles would be permitted to proceed out of this zone in case there is evidence of liquid contamination. This would

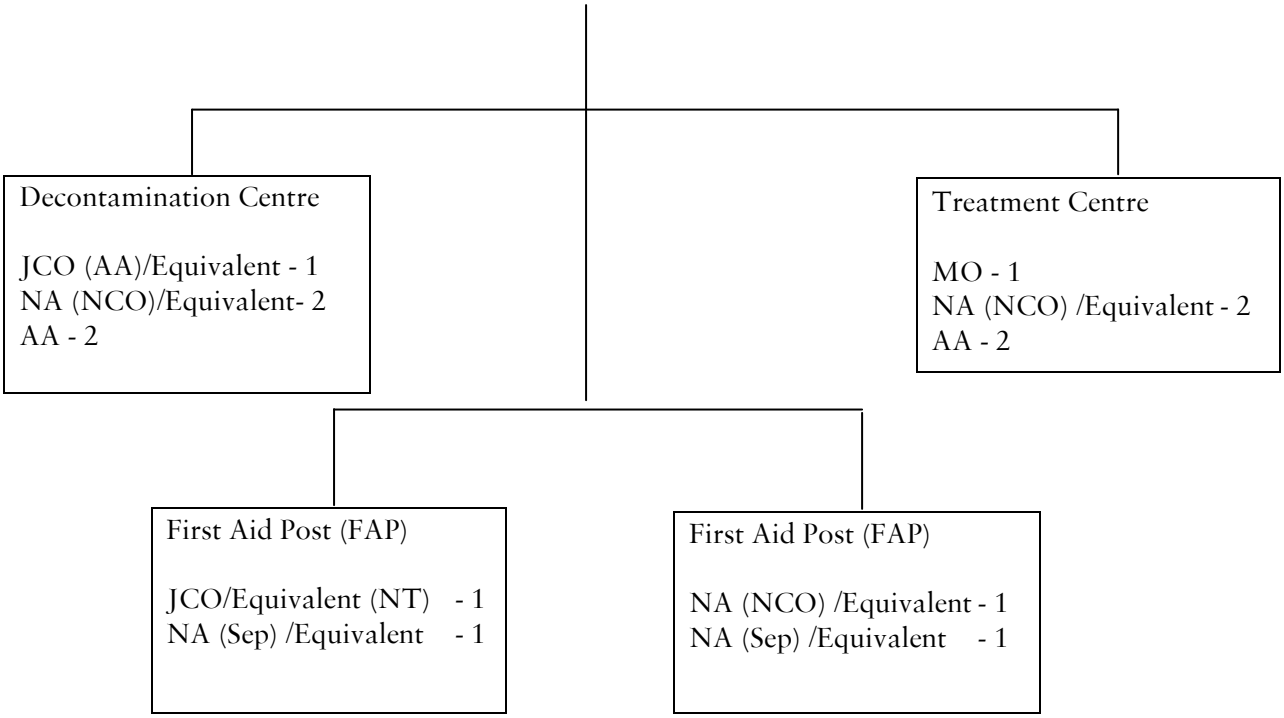
have to be ensured by co-opted troops in coordination with the civil police.

QRMT Organisation and Equipment - Each QRT will be accompanied by a QRMT. The QRMT will consist of one officer, two JCOs/ equivalent and 11 other ranks/ equivalent. The detailed organisation of the QRMT is given below:-.

ORGANISATION OF QRMT

(1, 2, 11)

DECONTAMINATION AND TREATMENT CENTRE (DTC)



Vehicles

(i) Gypsy / Jeep - 1

(ii) 2.5 Ton - 1

(iii) ALS - 2 (including one under arrangements of station HQ)

(iv) 2.5 Ton Ambulance - 4

(v) Lt Ambulance - 4 (from civil resources)

Additional medical staff may be co-opted from civil/military hospitals as the need arises. QRMTs have been authorised adequate stores to provide basic treatment to 400-500 casualties. For further treatment, military/civil hospitals have been earmarked by DGAFMS and the civil administration.

24 Military Hospitals laboratories are being upgraded to BSL-2 level and AFMC Pune lab is to be upgraded to BSL-3 level.

List of Earmarked Armed Forces Hospitals in States

	Place	Name of Hospital
Metros		
	Delhi	AH R&R
	Kolkata	CH (EC)
	Mumbai	INHS Ashwini
	Chennai	MH Chennai
States		
	J&K	CH NC (Udhampur)
	Punjab	MH Jalandhar
	Haryana	MH Ambala
	Rajasthan	MH Jodhpur
	Gujarat	MH Ahmedabad
	Maharashtra	CH SC Pune
	Himachal Pradesh	MH Shimla
	Uttaranchal	MH Dehradun
	UP	CH CC Lucknow
	MP	MH Jabalpur
	Karnataka	CH AF Bangalore
	Andhra Pradesh	MH Secunderabad
	Tamil Nadu	MH Willington
	Kerala	INHS Sanjivini (Cochin)
	Bihar	MH Danapur
	Jharkhand	MH Namkum
	West Bengal	58 Base Hospitals
	Assam	151 Base Hospitals
	Meghalaya	MH Shillong
	Nagaland	165 MH Dimapur
	Arunachal Pradesh	181 MH Tenga

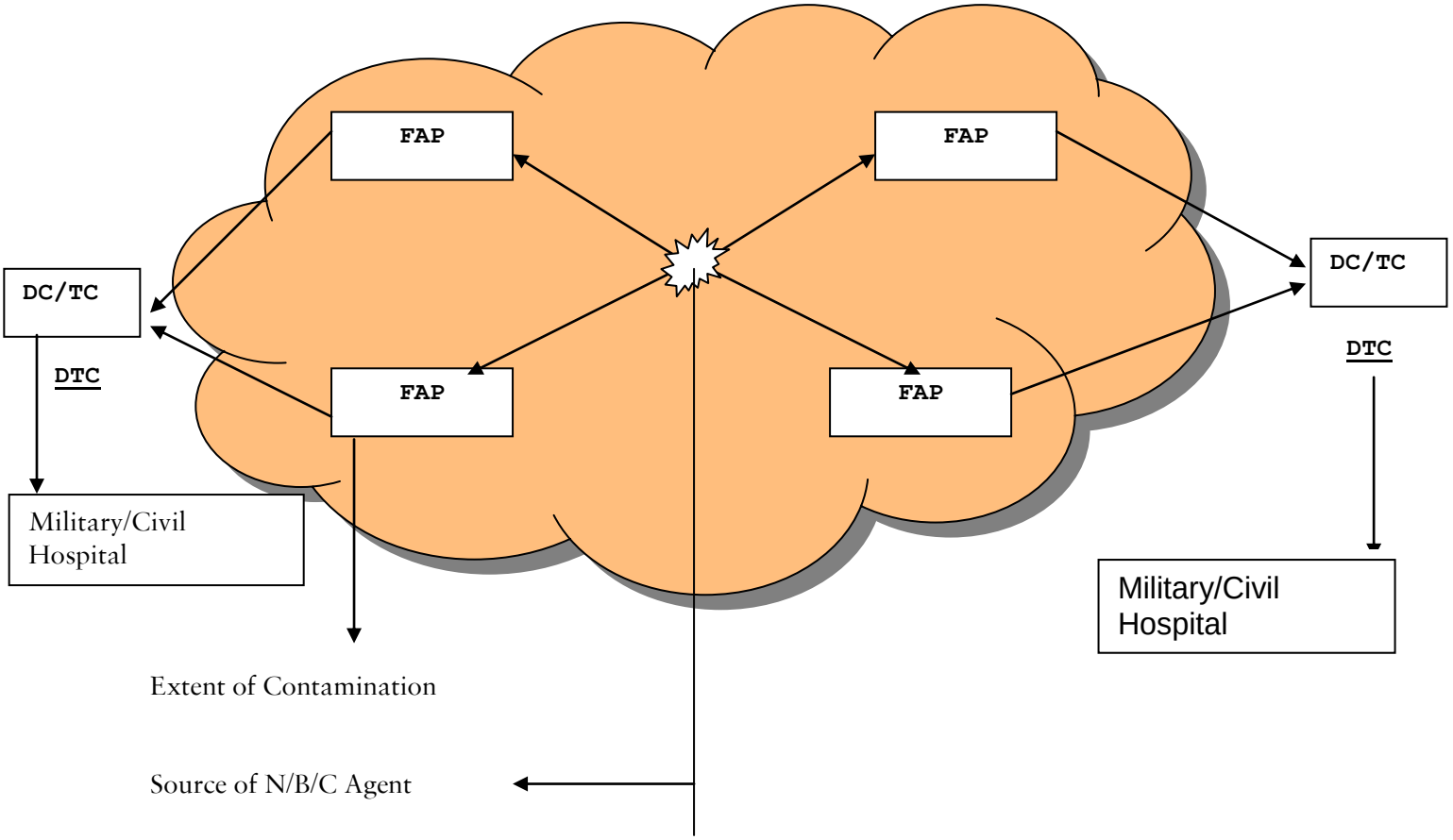
- Identified Military Hospitals have adequate provision for stocking of requisite medicines as per the requirements of MHA.

- MHA/State Governments shall provide list of drugs/labs reagents, along with quantity for all identified Military Hospitals.

Functions - The main functions of the QRMT in a scenario of CBRN disaster/act of terrorism include providing immediate first aid, evacuate casualties out of the contaminated area away from source of nuclear/chemical/ biological agents to DTC with the help of the co-opted troops, carry out limited decontamination of casualties, provide specific treatment to casualties and evacuate casualties to earmarked military/civil hospitals.

Method Of Operation Of QRMT - The QRMT on arrival at the site will establish the FAP at a suitable site and reasonable distance from the source of radiological/ chemical/ biological agents. DTC will be located outside the contaminated area away from the source of chemical/biological/radiological agents. It will receive casualties from FAP, provide facilities for decontamination, administration of antidotes to counter the effects of NBC agents and other life supporting measures before evacuation of casualties to near by military/civil hospital or nominated hospitals. Each QRMT on arriving near the site of occurrence along with QRT may establish a DTC outside the contaminated area and one or more FAPs ahead of it which may be in the contaminated area. The casualties will be brought to FAPs by the personnel of QRT, given immediate first aid and will be evacuated to DTC with the help of personnel of QRT/by co-opted troops. Each DTC will be divided into two parts-the 'Decontamination Centre' for limited decontamination of contaminated casualties received from FAPs and the "Treatment Center" which will provide limited treatment to casualties after decontamination but before evacuation to hospitals. Additional FAPs/DTC may be established with the help of additional medical/para-medical staff from civil/military sources, if situation so warrants, under the guidance of OIC QRMT. Additional equipment for this purpose will be authorised/ear-marked for QRMT. Likely chain of evacuation may be as given below:-

CHAIN OF EVACUATION



The manpower and non-NBC specific medical stores/equipment for QRMT will be pooled from existing medical resources of Armed Force. The NBC specific equipment/drugs will be procured immediately and will be kept in the 'Medical Stores Section' of ear-marked Field Ambulance.

Pooling of Personnel - The personnel will be pooled from the earmarked Field Ambulance and nearby military hospital as follows: -

Nomenclature	From Fd Amb	From Military Hospital	Total
Medical Officer	01	-	01
JCO (NT) /Equivalent	01	-	01
JCO (AA) /Equivalent	01	-	01
NA (NCO/Sep) / Equivalent	04	03	07
AA (NCO/Sep) / Equivalent	04	-	04
	11	**03**	**14**

Equipment - The personnel of QRMT will carry out their task in IPE stocked with the Field Ambulance. The Field Ambulance will be responsible for periodic turn over of medical stores /maintenance/indenting of medical stores/equipment so as to keep it in ever ready state for use.

Stocking of Medicines - Military hospitals identified as associated hospitals for handling CBRN emergencies will have adequate provisions for stocking of requisite medicines as per the requirements of MHA. DGAFMS/DGMS (Army) have passed appropriate instructions for the same. The QRTs/QRMTs have been authorised extra equipment/stores for establishing additional medical echelons (DTC/FAP), if need be, with the help of additional medical/paramedical staff from local civil/ military hospitals and co-opted troops. The stores are so authorised so as to be adequate to look after about 400-500 casualties. Adequate quantity of life support equipment and drugs to include oxygen cylinders, IV fluids, antibiotics, syringes, dressings, burn dressing, stretchers, ordnance stores etc would also be catered for by the QRMT from existing resources of MH/ Field Ambulance.

Mobilisation - The QRMT should be mobile both by air and by road. Air effort when required would be coordinated by the Area/Sub Area HQ. The load tables for move both by road and by air should be prepared and rehearsed for quick mobilization.

Hospital Beds - Hospital beds in the local military/civil hospitals will be created by immediately discharging old cases/by putting up additional beds in the suitable space such as information room/verandahs etc. The casualties received from contaminated area will be housed in separate wards and their full decontamination will be ensured before they are allowed to mix up with other patients of the hospital. The hospital staff will have to be in IPE while dealing with the casualties till they are fully decontaminated. A detailed SOP will be prepared on this aspect by each military hospital.

Co-opted Troops

Additional troops will be co-opted depending upon the magnitude and nature of the disaster/incident by the Command/ Area/Sub Area HQ. Full IPE for 100 troops will be kept with each QRT to be issued as required either at QRT location or at the incident site. In situations when the QRT/QRMT are required to be air lifted to place of incident, the IPE sets would be transported along with the teams to be issued to the co-opted troops detailed by the Command/ Area/Sub Area HQs at the destination. The co-opted troops would be self contained for transport and radio sets.

In addition, two water bowzers would also be detailed under arrangement of the Command/ Area/Sub Area HQ / Station concerned, to accompany these troops.

Functions - The following tasks are envisaged to be carried out by the co-opted troops: -

- Evacuation of casualties to the DTC set up by the QRMT.
- Helping in evacuation of the exclusion zone, through the decontamination stations setup.
- Manning of control points at the periphery of the exclusion zone, along with civil police, to prevent entry into contaminated area.
- Aiding the personnel of the decontamination section to carry out their task.
- Helping the QRMT and civil medical authorities to further evacuate casualties to civil/military hospitals.

Communications - Efficient communications between the QRT, QRMT and the co-opted troops as well as within these organizations will be vital. The OIC of the QRT would be in continuous radio contact with all sections/detachments as well as the OIC QRMT and the co-opted troops.

Radio Sets - Presently, the QRTs and the QRMTs do not have any radio sets on the WE. Sufficient radio sets are, therefore required to be pooled under the directions of HQ Command/ Area/ Sub Area / Station and placed with each QRT and earmarked QRMT accordingly. Co-opted troops will be self sufficient in radio sets from detailed units at the scale of two ANPRC, for each platoon strength co-opted for relief. Mobile phones could also be co-opted at the local level to facilitate communications.

Training - Initial training of key personnel of QRT/QRMT is to be carried out at FNBCP, CME Pune or at the nominated NBC School of Indian Navy & Indian Air Force. Two QRT/QRMT Courses are being conducted at FNBCP for this purpose. Subsequently, refresher and continuity cadres would be conducted at the Command level. Concurrently selected officers, JCOs and NCOs should be detailed to attend regular familiarization and NBC Courses within and outside country. The earmarked Field Ambulance / medical units will conduct training during peace time for: -

- Technical training of members of QRMT.
- Training of members of QRT and co-opted troops on the following aspects of medical management of casualties:-
- Use of autoject injectors.
- First aid and evacuation of casualties.
- Use of casualty bags and Resuscitator (NBC).

- Decontamination of casualties.
- Nuclear Radiation Dose Assessment Procedure.
- Orientation training to Doctors, Nurses and Para Medical staff to sensitize them on emerging infectious disease is being conducted regularly at identified hospitals.

Mock Exercises - Joint training of QRTs and QRMTs needs to be carried out on a regular basis in order to improve co-ordination and drills so as to reduce time for mobilisation and deployment which in effect would be the vital aspect in any such operation. Command wise rehearsals/mock exercises are, therefore, mandatory and should be carried out at least once a year under the directions of respective Command HQs. For specialist advice, these exercises could include a representative from FNBCP, CME Pune. A feedback on the same should be submitted by the respective Commands to HQ IDS through Service HQs once a year, after completion of the training year.

Administration

Transport - The QRT would be self sufficient for transport in case the accident/incident is in close proximity of the permanent location of the teams. In case air lift is necessary, the QRT would use transport of the local unit upto the air field. At disembarking air field, Area/Sub Area would coordinate provision of vehicles to transport the teams to the incident site. Co-opted troops would be self sufficient for transport. Specially designed vehicles should be provided in case of nuclear / radiological incident if available. One ALS vehicle is to be made available to the QRMT under the arrangement of local Station HQ. In addition, ambulances from civil hospitals in the vicinity would have to be catered for on as required basis.

Ration and Water - The Area/Sub Area/Station would be responsible for provision of food and water to the QRTs and QRMTs operating in their areas of responsibility. The co-opted troops should be self sufficient for ration and water. In addition, two water bowzers will move along with the co opted troops to the incident site.

Limitations of The Armed Forces - There are certain limitations of the Armed Forces which must be made known to the civil authorities during the civil - military liaison conferences held at various HQs and during interaction with the State and District authorities for Disaster Management. The limitations of the Armed Forces are as follows:-

- The Armed Forces will not be in a position to carryout large scale evacuation, crowd

control, traffic control, protection duties or patrolling of the area, for which civil administration may utilise its own resources, resources of the NDRF (NDMA) or seek assistance from other agencies, including NGOs.

- The QRTs do not have the capability to carry out large scale decontamination of personnel, vehicles, equipment and roads etc within the affected area.
- The canisters of the respirators are basically manufactured to afford protection against known "war gases." In case of leaks of poisonous gases from chemical plants and other such establishments, canisters specific to that gas or other specialized breathing equipment would have to be provided by the civil authorities.
- Like wise, medical kits with the QRMTs do not contain antidotes/drugs to manage casualties resulting from industrial toxic chemical agents. Medical treatment specific to that chemical would become necessary. The same should be catered for in nominated military/civil hospitals.
- The services do not hold any clothing/equipment/vehicles providing protection against radiation hazard. As such, troops employed for duty within nuclear contaminated areas should be turned over so that they are not subjected to radiation hazards beyond acceptable limits. The equipment available with the DAE could also be provisioned by the civil administration for this purpose.

Notes

1. Living with Risk: A global review of disaster reduction initiatives; ISDR 2004; P 37.
2. National Disaster Management Guidelines on Radiological Disasters, National Disaster Management Authority, Government of India, 2007.
3. National Disaster Management Guidelines on Chemical Disasters (Industrial), National Disaster Management Authority, Government of India, April 2007, P ix.
4. National Disaster Management Guidelines on Medical Preparedness and Mass Casualty Management, National Disaster Management Authority, Government of India, October 2007, P ix.
5. "Sting Operation; Editorial", Times of India, October 4, 2006.
6. National Disaster Management Guidelines on Nuclear Disaster, National Disaster Management Authority, Government of India, May 2008.
7. "Response To Chemical, Biological, Radiological and Nuclear Disasters" by Armed Forces; Headquarters, Integrated Defence Staff, New Delhi; 2008.

CHAPTER 4: INTERNATIONAL AID TO COUNTRIES AFFECTED BY DISASTERS

Role of Various Agencies Involved In Disaster Relief Operation

When the Armed Forces are called upon to render international aid[1], the Ministries/Departments involved in organizing[2] international aid would include Ministry of External Affairs, Ministry of Defence and the Indian Armed Forces. The suggested role of these Departments/Organisations is given in succeeding paras.

MEA shall be responsible for making the decision to provide aid[3], nominate the agency responsible to provide the aid, decide the total cost of the aid and the type of items to be provided, ensure that the items to be procured should be in consonance with the local requirements and cultural sensibilities and facilitate the Armed Forces transit through intermediate territories.

Ministry of Defence shall work out the suitable decision mechanism for rendition of aid, according an 'in principle' financial sanction, issuance of Government letter and budgetary allocation from MEA where applicable.

Indian Mission shall organise reception and distribution of aid and media coverage at the destination.

HQ IDS - Obtain Government of India sanction for providing aid by the Armed Forces. Also, organise DCMG meetings and co-ordinate response of the three Services in execution of the aid.

Army HQ - Procure, pack and dispatch the required items.

Air HQ and Naval HQ - Provide required means of transportation of aid items to the affected country and procure, pack and dispatch items as and when tasked to do so.

DG AFMS - Provide required medical assistance in terms of mobile hospitals, manpower and medicines.

Defence PRO - Ensure immediate and adequate media coverage in International and National media for the overseas assistance.

Responsibilities of Agencies Involved In Relief Operations

MEA shall be responsible for the following:-

- Confirm acceptance of aid by affected country and intimate the destination airfield.
- Obtain required flight clearances from countries en route for overhead flying and refueling of the aircraft en route and at destinations. Expedite political clearances for aircraft and material. Arrange flight and diplomatic clearance and arrange/ facilitate visas on arrival where required by receiving countries. Also, arrange for parking, ground handling, refueling, transportation and accommodation for the crew.
- Facilitate IAF in obtaining Passport for the crew at the earliest.
- Assist in obtaining visas for the persons being evacuated and also provide details of such persons likely to be evacuated in return flight.
- Obtain inputs from Indian Mission on safety and security of flight at the destination and share the same with HQ IDS and IAF.
- Organise unloading of the aid at the destination in consultation with Indian Mission.
- Provide required funds for procurement of aid items. Also, nominate MEA representative as a member of the Board of Officers for procurement of the aid items.
- Co-ordinate reception of persons in return flight, if any
- MEA shall intimate date and time of arrival of aid to the affected country and to the Indian Mission/Defence Attaché. Also, explore making reciprocal arrangement with other countries for waiver of landing, parking and over flight charges for HA/DR operations.

Ministry of Defence shall obtain Government sanction for the expenditure incurred, nominate MoD member for the Board of Officers for procurement of aid items and liaise with MEA for timely decision on providing aid and other relevant details.

Indian Mission - In consultation with MEA, Indian Mission staff shall obtain required clearances/visa from the affected country for aircraft/ships/men, co-ordinate refueling of ac at destination, organise reception and accounting of aid at the airport/port, oganise handing over the aid to the affected country, and provide details of evacuees from affected country to MEA and HQ IDS. Also organise adequate and immediate National and International media coverage, organise administrative requirements of Indian crew/ men and provide time plan for dispatch of aid to HQ IDS and MEA in consultation with Government of affected country and Indian Mission.

HQ IDS - Being the nodal agency for co-ordination of the Indian Armed Forces response shall conduct DCMG meetings for coordination and forward daily Situation Reports (Sit reps), issue instructions to the nominated Service HQs for procurement of aid items and positioning of aircraft/Ships, consolidate the final costing of the aid provided and forward to MoD for obtaining Government sanction and pursue Government sanction for the expenditure incurred from MEA through MoD. Provide inputs to the Service HQs about total cost of the aid items, details of items to be procured, broad time plan for provisioning and execution of aid and type of ac/ Ship required for transportation in consultation with IAF and Naval HQ. HQ IDS shall also ensure that items are loaded in containers/ pallets provided by IAF. Provide a team of four Jawans – headed by a JCO at the affected country to assist in receiving, checking and handing over aid, provide a security team with arms and ammunition subject to requirement and necessary clearances from MEA/MoD for safety of aid items till they are handed over to the affected country, obtain inputs from RAW, IB, DIA and three Services Intelligence Organisations on safety and security of flight at destination and share it with IAF and facilitate IAF to obtain Passport for the ac crew and space clearance in consultation with MEA.

DG AFMS - Convene separate Board of Officers for procurement of required medical stores from local market and their inspection. Medicines available in Armed Forces Depot should be avoided as far as possible. The medicines procured should have adequate residual shelf life i.e. minimum six months residual life to be ensured. The medicines should be packed in a manner amenable to quick loading and unloading by mechanised means. Standard of packing should be of high quality. Expiry dates should be prominently marked without ambiguity and the approved logo of India in colour needs to be affixed on the cartons. DGAFMS shall display the items at airport/ Port for media coverage before dispatch, load and dispatch the medical equipment/medicines from the nominated Airport/ Port along with cargo manifest and maintain the relevant records.

Army HQ - Army Headquarters shall be responsible for the following:-

- Ensure items procured from local markets are of standard make/quality, have adequate residual life and packed in a suitable manner amenable for mechanized loading and unloading.
- Aid items are procured in the given time frame. The items being used/ held by the Armed Forces should be avoided as far as possible.
- The contents of items and the expiry dates of items, where applicable, should be suitably marked along with the Indian logo in colour.
- Aid items should be dispatched as a composite load. List of items/ accessories/ contents should be pasted on each carton.

- Expiry date should be marked on all consumable items without ambiguity. Minimum six months residual life is to be ensured.
- Display the items at airport/ Port for media coverage before dispatch.
- Prepare cargo manifest with details of weight.
- Position the aid items at designated place for dispatch.
- Maintain the relevant records.

Air Headquarters shall earmark and position required type of aircraft[4] at the nominated place in time, nominate aircrew including reserve aircrew and prepare required documents in consultation with MEA to include Issue/ Renewal of Passports and visa for the aircrew. As far as possible, aircrew holding valid passports should be detailed. Where necessary, reserve crew should be nominated and accompany the aircraft to reduce halts en route and provide adequate rest to the aircrew. Also provide the expenditure details pertaining to air effort and aid items (when procured by IAF) and daily details of load transported to HQ IDS. Co-ordinate air space clearances and refueling en route and at destination with HQ IDS who in consultation with MEA shall assist in obtaining clearance. However, ground level co-ordination shall be carried out by IAF with MEA.

Provide Flight route and Flight timings to HQ IDS and cater for Counter Measures Dispensing Sys (CMDS) as per the situation at the destination. AHQ shall co-ordinate final dispatch[5] activity at the airport to include entry pass for loads and concerned representatives of Army, MEA, MoD and Media persons.

Earmark place for display of items being sent and enclosure for Media Teams. Also procure and position the aid items at designated place for dispatch when nominated to do so. The loads should preferably be in containers/ pallets for ease of loading/ unloading into the aircraft. Air HQ may ensure procurement and availability of aircraft specific containers/ pallets in their parent aircraft bases/ 31 MCU Palam.

Naval Headquarters shall nominate the required type of ship keeping in view the requirement and urgency and Intimate the type of ships being tasked/employed, time and route details to HQ IDS. As and when tasked to provide/procure relief material, l ensure that items of standard quality are procured and packed in good packing. A minimum of six months residual life is to be ensured. Mark the items and the expiry dates prominently and without ambiguity, wherever applicable, along with the approved logo. Display the items at Port before dispatch for media coverage. In case Ships are diverted to affected sites from high seas, items available on board ship, with

sufficient shelf life only should be issued. Provide expenditure details to HQ IDS on daily basis as well as on termination of relief operations to obtain Government sanction.

Defence PRO shall ensure that wide publicity is given to the aid to be provided and shall organise International and National Media Press briefings at Airport/Port before dispatch of aid. Also prepare and issue suitable and comprehensive Press Release and handover to media, cater for all administrative requirements for media coverage and keep HQ IDS updated and forward relevant copies of coverage in the Media.

Communications

Existing land line communication and mobiles shall be used for inter ministry and inter Service HQs communication. Indian Mission and various Desks contact details shall be communicated as on required basis.

Notes

1. Yokohama Strategy and Plan for Action for a Safer World, 1994.
2. South Asia Policy Dialogue on Regional Risk Reduction Vigyan Bhawan, New Delhi; August 21-22, 2006; Inaugural Speech of Shri Shivraj Patil, Hon'ble Home Minister, Government of India.
3. 'Disaster Management – The Development Perspective' Chapter 7 in Tenth Five Year Plan Document.
4. 'The Army and the Central Paramilitary Forces will Always be Required During Disasters', interview with Mr KM Singh, IPS (Retired), Member, National Disaster Management Authority; Force, Volume 5 No 3, November 2007; P 50.
5. "Provisioning of International Aid To Neighbouring Countries Affected by Disasters", Headquarters Integrated Defence Staff, New Delhi, 2008.

CHAPTER 5: RECOMMENDATIONS

Analysis of the revamped institutional mechanism, the capabilities of the Armed Forces and the recent initiatives that are in the process of being implemented, in the context of managing disasters in India, has been the core theme of this study. The processes concerned with the management of disasters are inevitably slow paced. Outcome of endeavors spanning across a number of fields are primarily responses that are dependent on the level of sensitivity of people, their willing participation, sense of commitment and many other intangible drivers that are manifestation of a culture. Development and sustenance of a new culture is a time consuming process and hence the overall process of building capacities for managing disasters has to be painfully slow. These processes have adequate scope for mid-course corrections and are amenable to analyses and periodical reviews. It is in this backdrop that this examination was undertaken with a view to discuss some of the major concerns relating to institutional mechanisms for managing disasters, provide inputs and recommend suitable measures to improve the overall framework.

Changes that have been anticipated and intended to be incorporated in concert with changes that are being affected worldwide are necessary for building a safer future. Translating conceptual changes into the specifics requires changes in the organizational structures along with changes in the way we look at disaster management. The most important function in this regard would be the management of change itself. It will necessitate development of strategies for affecting transition in a smooth manner. Organizational development and effectiveness can not be achieved in absence of a willing response from the community, government and non-government organizations. As mentioned before, the most critical factor would be to bring about a change in the culture. What is perhaps required is the change managers at all levels with appropriate strategies and required expertise to manage the change, utilizing bottoms-up as well as top-down approach.

The Challenge

Our experience gained over the years, and more recently, our adept handling of the Tsunami Disaster, the Jammu & Kashmir Earthquake, as also our observations on the way the US handled the Katrina Disaster, make one fact stand out loud and clear, i.e. India's basic disaster management mechanism and structures are fairly matured, and our response quite cogent and effective. However, we still need to consolidate on our attempts to create a functional and responsive organisation and institutionalising various mechanisms and structures, for formulation of a comprehensive response at all levels.

Conceptual Paradigm

The concept now being evolved looks upon the whole gamut of managing disasters in a holistic manner. There are still considerable gaps in the conceptual clarity and the understanding of the integral linkages and dynamics between hazards, disasters, natural environment, social and economic variables, and development interventions. There is therefore a need to have long term and comprehensive institutional arrangements to address disaster issues with a long-term vision, keeping in view these inter-related linkages.

Integrated planning between disaster management, development planning and environmental management institutions is virtually absent and must be institutionalized. Disaster risk reduction and preparedness should be integrated with developmental projects.

Endeavors should be made to engage community and especially the people at risk. There is a need to consider the different ways in which people respond to natural phenomenon and how the ideas raised by people might be translated into a culturally appropriate means to increase risk literacy. It is therefore essential that people are asked their perceptions and potential solutions to a situation in order that a mitigation project might be produced that is culturally sensitive, meaningful and workable in practice. The eclectic nature of society and the diversity that exists within any one tradition means that a broad-brush approach to hazards is erroneous and dangerous. Instead, the subtleties of the society must be taken on board and the community should be involved more in decision-making processes rather than less.

Mitigation strategies should be based on the notion of opportunity rather than enforcement.
Management of change in itself will require serious interventions in the political, social, economical, psychological and cultural dimensions. A positive change in our values, attitudes and behavior is the most essential aspect that will further help in realizing the new concept of managing disasters and finally help in translating action plans into visible positive transformation.

Institutional Framework

Function of Good and Effective Governance - Disaster management is an important function of governance. Good and effective governance is the key to achieving sustainable human development. An effective administration therefore must endeavor to limit the disruption that disasters cause to

socio-economic systems which in the case of developing countries tend to become unaffordable. Other aspects related with the governance are:-

- Disaster reduction in our country should be sufficiently prioritized as a policy at the national level. Legal and regulatory régimes though formulated must be enforced in true spirit.
- Sincere political commitment and adequate participation must be the driving force to make the institutional framework effective.
- Administration should play an important role in organizational building and organizational effectiveness.
- An earnest endeavor should be made to operationalise the new concept and the institutional mechanism supporting it and take the lead in bringing in a sense of professionalism.

Need for Awareness and Cultural Change - The government and non-government organizations and the people forming part of community which are integral part of the institutional mechanism for managing disasters need to bring in awareness about disaster risk reduction and positive changes in the culture so as to effectively work towards disaster prevention and mitigation. Risk management, in the broadest sense, should be an integral part of strategy, procedures and culture.

NDMA as a Nodal Agency - NDMA should be developed into a strong and central key element in the institutional mechanism and should function as a nodal agency providing a framework for coordinated action. It should demonstrate leadership and professional competence, and earn the confidence and support of stakeholders at all levels. MHA should play a supportive role to assist NDMA. NDMA should be given an inter-ministerial and independent status. MHA should however remain the nodal ministry for management of disasters working towards implementation of the policy and plans formulated by NDMA. Most of the agencies and establishments working towards managing disasters should in a way be linked with the NDMA.

Overlay of Responsibilities - There are far too many organizations resulting in the overlays of responsibility. It is recommended that National Executive Committee should be appropriately structured and retained as an executive body under NDMA. National Crises Management Committee and Crisis Management Group could be done away with.

National Disaster Response Force - It is too late to be judgmental on the viability of the concept behind raising of such a force and too early and premature to assess the efficacy of this force. It is however recommended that once the NDRF is put through few tests and depending upon its efficacy, an option to establish a separate and dedicated force is considered. The merit of a dedicated organization (and not seconded as in the case of present NDRF) would be in the relative

ease of being amenable to nurturing and developing it with the desired culture and ethos. It would have a sense of singular purpose and would be driven by the vision more focused and relevant for managing disasters (as compared to a seconded force on deputation for a specific period, coming from an organization originally meant for a different purpose and from a culturally different organization with its own biases and prejudices. Other options of consolidating the existing organizations such as home guards, civil defence and ex-servicemen under the aegis of district disaster management authority and also of having a force based on the concept of Territorial Army could also be examined in an objective and comprehensive manner.

Disaster Management and Development - Disaster management in its new embodiment should be viewed as an integral component of development process. It should form part of projects and plans contributing towards development and should accordingly be interfaced and integrated.

Enhancing Institutional Capacity - Besides having nodal and apex organizations in the higher hierarchy of organizational structure necessary for policy formulations, guidance and coordination, what is more important is to have organization with adequate capacities to implement the policies and action plans / strategies. Erstwhile organizations looking after the relief and rehabilitation post-disaster have been instructed to rename 'Departments of Relief and Rehabilitation' to 'Departments for Disaster Management'. There is a need for an earnest review of all the existing organizational setups dealing with disasters at all levels with a view to recommend changes in structure and need for training so as to make these organizations capable to take on the responsibility of executing required tasks with a sense of professionalism and élan. It is recommended that either National Executive Committee be organized so as to perform all the functions or a separate and dedicated organization be created for implementation of policies and action plans, at national, state and district levels. This organization should not be confused with the organization required for emergency response for search, rescue and relief in a post-disaster situation.

Shared Responsibilities and Decentralization - Need for a commitment with a sense of collective responsibility and participation can not be over-emphasized. While disaster management activities with overall response coordination at the highest level can benefit from centralized command, there is a need to decentralize disaster risk reduction efforts and other efforts at the state and district level. Decentralization in our context has to be seen as a way to inculcate a sense of shared responsibility, which perhaps should be the cornerstone of fighting disasters as a community. An effort should be made to popularize this fact and educate people to perceive it in the right spirit. Decentralization should inculcate a sense of ownership and foster participation. The government, however, should remain cautious and prevent disaster risk reduction becoming a victim to isolation

and fragmentation. Local organizational and administrative culture should remain conducive to achieving overall objectives. As the ultimate policy maker, central government should recognize the relevance of decentralizing authority for implementation to local government and institutions, and support the process with resources and efficient co-ordination. It is recommended that a balanced system of having some functions centralized and others decentralized along with a mix of top-down and bottoms-up approach should be evolved keeping in view the past experiences and the lessons that we may learn in future.

Establishing an Interface – Integration - It may not be feasible to achieve synergy without an effective integration. Interfacing these organizations is essential. Institutional frameworks should allow vertical and horizontal co-ordination. NDMA should be proactive in laying down these mechanisms in detail. These should be backed up with adequate legislative support. The interface is required between the people who would be responsible for activities at grassroots level. Management of disasters should be institutionalized as a holistic system integrating varied aspects as sub-systems.

Planning Process and Plan Implementation - Planning commission at the center and the departments dealing with the planning at state levels should integrate all the plans and projects associated with infrastructure building that would result in mitigation and risk reduction. A qualitative and quantitative matrix should also be evolved to grade the preparedness and readiness of the districts, states and the centre to deal with the disasters. Performance evaluation should take place once in two years or at a periodicity laid down by the Authority, essentially to bring out the drawbacks, loopholes and inadequacies in the system for necessary improvement. NIDM could be made responsible for working on models to grade vulnerability reduction, risk mitigation and preparedness.

Legal Framework Supporting Disaster Management

The legislative provisions should distinctly define the responsibilities of not only the newly created organizations but also the existing agencies and departments that are dealing with managing disasters. It may well be prudent to also examine the applicability of joint, shared and collective responsibility for many of the activities concerning and associated with managing disasters. The subjects and aspects should accordingly be identified. Hence, assigning disaster management to the concurrent list without adequate amplification to ward of misinterpretations, may not just serve the purpose.

The responsibility and the authority assigned to each of the agencies and committees will have to be distinct and specific and not generalized. It is recommended that the front-end functionaries should be further empowered and implementation of disaster management efforts should be accordingly delegated to them. Activities that need to be performed as centralized function and activities that need to be decentralized must be identified along with delegation of authority and adequate resource, supported by a proper legislation.

An expert body may be called upon to discuss the nuances of a regulatory mechanism. There should be no scope for parallel processes emerging from different plans and policies making futile efforts to put in place an ineffective and fragmented approach, duly supported by legislation.

There is a need for us as a society to value human life. The legislation should ensure that all the government functionaries who are responsible directly or indirectly to perform activities, omission or commission of which may result in loss of life, in short or long term, should be suitably punished. Imprisonment of one to two years may not be an effective measure to discourage defaulters. It is quite saddening and embarrassing to know that large-scale scams are rampant in utilization of relief funds at all levels. Punitive measures should be instituted to deal with the defaulters. Being within the realm of financial aspects of disaster management related with legislation, it is also recommended that the employers must be enforced to ensure insurance against disasters to all their employees.

There are a number of provisions dealing with crises and disasters, which have been enacted earlier. These should either be repealed or else amalgamated into a comprehensive law, particularly to deal with disasters. This aspect needs to be addressed suitably by the legislative mechanism to bring all other disaster related acts and provisions on the single platform, essentially to integrate the whole process to affect consistency.

Act should facilitate integration of varied organizations working for the same purpose and ensure a well coordinated mechanism with a view to provide a coherent approach to disaster management across all phases from preparedness and mitigation to response and recovery.

The role of planning commission at the national level and the departments at the State level dealing with developmental plans and projects should also be included in the Act. The mechanism and procedure to be followed to mainstream disaster management into the developmental process should adequately be covered. The modalities for implementation of the plans and monitoring the progress of projects should be included in the Act.

In this era of super-specialization in the skills required for core-competence and outsourcing of other skills, even a secondary role need to be well defined. A role – be it primary or secondary, has to be performed with a sense of élan and professionalism. It is hence necessary that the role is properly translated into the specific missions / objectives so that the organization can prepare for it in terms of organization, training and resources.

Community participation is one of the most essential principles of disaster management. Responsibilities of citizens should be adequately provided for in the law.
Regional and international cooperation in dealing with disastrous situations should always remain fine-tuned and the mechanism for receiving aids from outside the country should be well institutionalized so as to prevent delay and facilitate a smooth recovery and relief process.

Enforcement of building regulations, land-use planning and bye-laws is more important. Governments at state and centre level should evolve strategies to ensure that these are not violated.

Our national standards/codes on disaster resistant structures including the National Building Code of the country are second to none in technical contents. However, to make their use mandatory, proper enabling provisions are required in the legal framework of the country. The concerned local bodies should enforce these rules and regulations pertaining to development and building standards as building regulations/building bye-laws in their respective areas. We need to build a strict enforcement regime.

Financial Arrangements

Financial support in terms of Calamity Relief Fund, National Contingency Relief Fund and assistance from World Bank, USAID and UNDP, rendered in the last few years is colossal. In a developing country, such trends may prove to be counter productive for its overall growth. It is reflective of poor management and ill planned developmental strategies. This needs to be corrected. Disaster management has to be integrated into our developmental plans in a meaningful manner. We therefore need to translate prevention and mitigation strategies for disaster management into a pragmatic plan of action on a regular basis.

A prompt action needs to be taken to operationalise “National Disaster Response Fund” and “National Disaster Mitigation Fund” at National, State and District levels, at the earliest. Detailed

Standard Operating Procedures need to be framed for utilization of these funds. Utilization of National Disaster Mitigation Fund need to be dovetailed into the developmental plans for long term mitigation measures.

Planning Commission along with NDMA need to review the existing arrangements and lay down guidelines and modalities for formulation of long term projects for disaster mitigation in consonance with State, District and local authorities. Local communities would need to be involved in planning as well as implementation of these endeavors.

Insurance is another instrument which needs to be viewed as an effective element which can be brought into the folds of disaster relief as a complementary financial tool. The government must review the existing policies in consultation with the insurance companies. The insurance industry will not only provide financial relief but would also ensure to an extent adherence to building bye laws and design parameters resulting in overall mitigation and disaster risk reduction.

Another aspect that needs to be taken stock of is the anomalies in administration of these funds. The most important factor that would enhance the accountability and responsibility is transparency. It must be ensured that transparency is built in the whole process as an intrinsic component.

Ongoing and future projects dealing directly with risk reduction should be identified, funded and progressed separately. There would yet be another category of projects which may be part of planned projects being funded as part of plan expenditure. It is recommended that the departments dealing with all such projects review these projects and consolidate the mechanism of funding the same in consultation with the Planning Commission.

It would be prudent to identify and consolidate all the projects dealing with disaster management under an umbrella organization so as to streamline the execution, monitoring and reviewing processes. This kind of an arrangement would facilitate to firstly keep a track of the progress of all projects by one single nodal agency, secondly it would ensure better coordination, and thirdly the arrangement will ensure that all the requisite data required for either assessment or evaluation is available centrally for objective analyses.

Policy Formulation and Planning

The policy must ensure that the institutional mechanism provides for an integrated approach to deal with managing disasters. The proposed policy should be able to integrate disaster mitigation into development planning. The broad objective of the policy should be to minimize the loss of lives and social, private and community assets and contribute to sustainable development and better standards of living.

The policy-makers must engage all stakeholders and especially the community which should benefit from the new policy should be taken on board to make the process more participatory. Such participation and consultations would also help the government to manage and run the entire process in a more pragmatic and transparent manner. This would provide more invaluable inputs and make them more willing to own and implement the policy. The participatory approach would not only lead to a consensus, but also lend itself to formulating a more inclusive and comprehensive policy including traditional features of coping with the disasters. The consensus in itself would facilitate a more effective implementation of the policies. Policy once formulated through a corroborative and participatory approach should be adopted by way of providing it legitimacy.
The policy implementation process as such would need a well considered and evolved strategy and an action plan. Both of these should form part of the document that articulates the policy. Where as the strategy could be designed in a broad manner, the action plan must be elaborate, detailing each and every activity to include specifying responsibility, accountability, authority and laying down resources required for each activity. The strategy and action plan in the case of managing disasters should be publicly available documents.

Policies must be monitored and evaluated. A framework of performance indicators should also be designed and applied so that the implementation process can be monitored and assessed.

The policy objectives must be very clearly defined as these would be the basic drivers for formulating actionable plans, projects and programme at all levels.

The policy formulations have to cater for a vast spectrum of risk, hazards and vulnerability profiles for each kind of disaster which need to be further amplified by each agency to conform to its context in terms of role and responsibility.

Following aspects are also recommended to be included in the policy:-

- The Central Government should play a more participative role than just a supportive role. Political commitment should be translated into actions.
- Ensure that disaster risk reduction is a national and local priority.
- Capacity building and risk mitigation for ensuring sustainable development should remain the cornerstones of the guiding philosophy for evolving a sound policy.
- The policy should be able to integrate the functional matrix of all stakeholders with a view to achieve synergy of effort.
- Ensure transparency in the whole process of managing disasters by involving affected communities in all spheres of disaster management.
- Stringent action against defaulters, violation of laid down rules, regulations, bye laws and other norms with respect to safety of people, loss of property and misappropriation of funds with a view to discourage malpractice.
- Involve schools, colleges and universities in generating awareness and also in defining a participatory and contributory role for themselves during pre-disaster preparedness and post-disaster response.
- Employment and recruitment of trained and experienced people in organizations working for managing disasters to ensure professionalism; human resource development to make the work force more competent and responsive.
- Policy for extensive use of media for awareness generation.
- Institutionalize a mechanism for learning from failures and documentation of lessons learned.
- Integrate traditional coping mechanisms into the policy framework.
- Policy to ensure effective interface with regional and UN sponsored initiatives and associated organizations.
- There is a need to have a clearly spelt and laid down policy covering all the aspects of demanding, receiving and deploying international aid from various agencies.

The planning for disaster management should be intrinsic part of planning for safe national development.

We need to formulate our own comprehensive framework on disaster management to include enunciation of National Policy, National Strategy and a National Plan of Action in consonance with Regional Plan of Action.

Our long term development activity should remain complementary to disaster mitigation, preparedness, relief and rehabilitation in disaster management cycle. Such activities must be recognized as integrated part of sustainable development.

Planning should be a participatory approach where involvement of all stakeholders is necessary. Communities at the lowest level should be involved in drawing up plans at village, block and district levels. The plans at the district level should be operational plans and comprehensive in layout.
The plan must provide a clear strategic direction and include a comprehensive listing of the objectives, resources, reserves and support required to accomplish each objective.

Laying down modalities for implementation through assigning responsibilities and accountability along with specific milestones and deadlines is more important than formulating plans. There is a need to update it and make the vulnerability atlas more comprehensive and inclusive.

Endeavor should be made by authorities and organizations dealing with disasters to engage in a healthy partnership with the media and exploit the latter are potential to sensitize the people towards their role in building resilience to disasters and contributing towards sustainable development. A responsible and proactive media with the right attitude can be a prominent and effective force multiplier in the national endeavor to deal with disasters and integrate disaster management into the national development process.

Disaster Risk Reduction

Basic Strategy - The most basic strategy would be to firstly limit the potential and intensity of the probable hazard, if feasible (like in case of preventive actions in case of floods, droughts, fires, global warming and other man-made hazards / incidents) and secondly to reduce the vulnerability of the community through a set of measures ranging from development (preventive) to preparedness (proactive), thereby reducing the risk and exposure of people to risk.

Vulnerability Analyses and Risk Assessment - Hazard mapping and vulnerability assessment should be reviewed periodically. Awareness of risk is a necessary condition to engage in disaster risk reduction. Development of a Disaster Risk Index is mandatory. Risk assessment is an essential component of strategic planning. India should take a lead from the UNDP endeavor and commit itself to generate the required data for future analyses leading to a pragmatic set of indicators and

indices that could be fruitfully utilized in risk mitigation. A meaningful indexing should be able to use all possible criterions to ascertain the risk profile.

Institutional Mechanism and Community Preparedness - No policy can be meaningfully implemented until and unless the same is fully backed up by an institutional and legal mechanism. The major role of the institutions that have come up at national, state and district levels should be to firstly organize and adapt themselves to be proactive and secondly synergize their efforts to achieve disaster risk reduction through viable strategies. Effective disaster risk management would also depend on the informed participation of all stakeholders. Awareness campaign need to be organized to ensure that people understand the risk they would be exposed to and the measures those need to be instituted to reduce the level of risk. The traditional knowledge available with the community has to be used along with knowledge acquired through research and past experiences. Awareness amongst the decision makers and all the stakeholders will contribute towards building the resilience of community which is a significant *sine qua non* for risk reduction.

Plan Formulation and Plan Implementation - It is recommended that the National Disaster Management Authority should at priority finalize the national policy and national plan for disaster management and evolves an elaborate mechanism to ensure implementation of plans, monitoring and evaluation at all levels. Planning Commission at the national level and concerned departments at the state and district levels need to review the existing arrangements and put in place a more efficient and effective process for plan formulation as well as plan implementation. It is also recommended that a corroborative and consultative approach may be adopted to identify the plans / projects / schemes of various ministries and departments at centre and state level which may qualify as mitigation project and would contribute toward disaster risk reduction. What needs to be ensured is that the well meaning endeavors initiated by the policy and decision makers are steered through the right course and attain the objectives set for these projects. There needs to be a body of experts nominated by National Disaster Management Authority to oversee such projects and make the process transparent and effective.

Future Challenges and Aspects Requiring Emphasis - Some of the important aspects are as follows:-

- Development of Indicators for Risk Assessment / Reduction - It is recommended that National Institute for Disaster Management should have a faculty for research and development of indices for hazards and vulnerabilities. The goal of the communities and other stakeholders must be to maximize preparedness and minimize vulnerabilities. The indicators must provide in terms of a scale to specify discrepancies between existing and desired performance.

- Building Resilience of Non-Engineered Structures - It remains something of a paradox that the failures of non-engineered buildings that kill most people in earthquakes attract the least attention from the engineering profession. This anomaly needs to be taken seriously and endeavor should be made to build resilience of non-engineered structures, especially in earthquake prone areas.
- Structural Measures for Safe Construction - Local and state level administration must evolve processes and a procedure including techno-legal regimes to ensure that safe construction is resorted by individuals as well as the establishments.
- Enhancing Capacities to Protect Critical Infrastructure - Depending on the areas which are prone to various hazards, the buildings should be so constructed that these can withstand exposure to hazard of reasonably strong intensity to avoid loss of life and property. It may not be cost effective to construct all such buildings to withstand an exceptionally high intensity hazard. Community shelters to be used during tsunamis / cyclones and earthquakes, hospitals, airports, railway stations and buildings used for highly sensitive assets may be accorded higher priority. The criticality should be assigned by the government and such buildings should be constructed / retrofitted to cater for worst hazard impacts.
- Proactive Role of Insurance Industry - The insurance companies abroad are refusing to guarantee losses due to natural calamities unless the buildings which house these businesses adhere to standards specified by them. So they are laying down performance conditions that the structures must comply with before getting the insurance coverage. They do not insure businesses and buildings that do not employ the state-of-the-art earthquake protective measures. Insurance industry can play an important role in enforcement of measures to ensure disaster risk reduction. It would be pertinent to study the US initiative - Wanting to help reduce the human and financial toll from natural disasters the Institute for Business & Home Safety (IBHS) in the United States developed the Showcase State Model for natural disaster resistance and resilience in 1998, to create public/private partnerships and engage communities in protecting people and property from natural disasters.
- Interfacing Development and Disaster Risk Reduction - The guidelines and measures recommended by the working group on disaster management formed for the 11th Plan and the guidelines and recommended action plans as issued by the National Disaster Management Authority should be incorporated by the concerned government departments responsible for formulating projects and plans for disaster prevention and mitigation at central and state levels.
- Management of Funds - Misappropriation of funds has become a systemic malfunction. There is an urgent need to remove this anomaly. Utilization of mitigation funds needs to be so

streamlined that there is no scope for any corrupt practice. Performance based budgeting may be considered for all mitigation and developmental projects.

Preparedness

Institutional and Operational Imperatives for Preparedness - There should be a consolidated plan for each hazard zone and for each kind of disaster to include action oriented plans for prevention, mitigation, preparedness and response. Like mitigation, preparedness and response has to be based on a plan and can not be laid down in general term. Preparedness essentially is readiness for execution of a plan with minimum warning period. There is perhaps a need to define a hierarchy to bind the stake holding organizations / departments working as independent and fragmented modules for managing disasters either in their entirety or in part. The executive committees at the national and state levels may either be expanded / re-structured to perform a more inclusive and dedicated role or else a separate organization be created for performing functions as mandated in the Act. This aspect is recommended to be examined separately in detail. An appropriate institutional and operational framework can not be put in place in absence of well researched criterion for assessing the efficacy of such frameworks. These institutions also need to be supported legally and financially. NDMA should cater for a study to lay down criterion for establishing the institutions to include organizational, financial and legal mechanisms for managing disasters and should periodically assess their performance and effectiveness. Interface with regional, international and UN agencies must be established to share the experiences, best practices and elicit support as and when required, for mutual benefit. Protocols for coordination and cooperation should be evolved as part of preparedness for managing disasters.

Early Warning Systems and Dissemination - In our context, it must be ensured that the warnings are easily understood by the people with respect to the actions to be taken at the individual and at the community level. Clear and concise messages tailored to respective social and cultural contexts must be delivered. The early warning systems need to be linked with the response mechanism of the local environment, their capacities, resources and traditions. Governments at national and states level should ensure development of knowledge and capacity building to translate early warnings into concrete actions and processes, depending on the peculiarities of the vulnerability, risks, nature of hazards and the local resources and traditional coping mechanisms and practices. Regional organizations are crucial to linking international capabilities to the particular needs of individual countries and in facilitating effective early warning practices among adjacent countries. Besides relaying the real time situation to affected people, the media can be an effective communication

means for mobilizing human and material resources and in turn can influence emergency operations in a positive manner.

Resource Management - Notwithstanding the facilities offered by the IDRN, the most significant aspect of preparedness would be to have an efficient mechanism so that at any point in time, these resources should be in a state to be transported to the site of disaster as part of response and relief. There needs to be a dedicated resource in terms of transport and manpower. Rescue teams and others who have to use/deliver these resources should know the details. Ideally, the resources should be in charge of those who are finally to use these or else transport or deliver these. Coordination, which is indeed a highly complex process involving interface and interactions with many stakeholders and varied organizations, should remain the focus while managing resources. Preparedness should include and cater for well laid down standard operating procedures to mobilize these resources to the designated areas in least time using minimum instructions and paper work. Another important aspect that needs to be ensured is the inventory of resources that would be required to be dispatched immediately as relief stores, essentially comprising food, clothing and medical aid. What must be kept in mind are the nature of crisis, the terrain and climate at the disaster site and possibly the nature of people who are going to use the relief material. Preparatory stage should cater for such requirements being met, coordinated and well integrated into the response mechanism.

Developing Decision Support and Communication Systems - Decision support systems and communications though form part of institutional mechanism, it is during the preparedness stage that the endeavor should be made to evolve these systems to meet the specific needs of activities involved in the spectrum of disaster management. A reliable GIS-based database will ensure the mobilization of right resources to right locations within least response time. Such database would also play a fundamental role in planning and implementation of large scale preparedness and mitigation initiatives.

Human Resource Development - Human capacities in the form of skills and expertise in diverse fields would also require to be developed with a view to fight disasters in a comprehensive and effective manner. The efficacy of human resource capacities and the systems is best assessed during rehearsals, training and mock drills. These exercises should be objective oriented and must include assessment, appraisals, feedbacks and strategy to overcome shortcomings and weaknesses. Training must be institutionalized and should be based on systems approach and the whole process needs to be managed by objectives.

Training of First Responders and Other Stakeholders - The training of first responders to include teams earmarked at the local level, NDRF, Home Guards, Civil Defence and rescue teams earmarked by the Defence Forces needs to be further streamlined and institutionalized to meet the objectives of the newly structured edifice of managing disasters. We need to build proper establishments with requisite resources for such training to include simulations for various categories of hazards and realistic operating environment with the availability of collapsed structures for practice in rescue from confined spaces and other such hazard eventualities. Disaster response force would require an altogether different set of skills and hence it is important that these battalions first and foremost train themselves as a specialized response force for the task for which these have been reorganized into teams. Personnel from paramilitary forces sent on deputation to these battalions without desired specific training and then again turned over after completing the tenure may not be a satisfactory arrangement. A separate cadre for manning these battalions and separate institutions for specialized training is mandatory for developing an efficient and effective force. District Management Authority and Committees need to be mandated for training the local community and ensuring preparedness measures. The readiness and performance of these bodies must form part of overall assessment of the district and state preparedness.

Training of Search and Rescue Teams - 'First Responders' by connotation itself is indicative of highly skilled men organized in teams to be well prepared for executing emergency operations. First responders can not be expected to be amateurs. Training requirements are intensive. Training to perform search and rescue is hazardous and should only be undertaken by competent individuals under the supervision of instructors skilled in the various functional disciplines involved. Their training requirements need to be institutionalized for imparting instructions and eventually to imbibe a sense of professionalism. Standardization of training, certification and further research and development in this regard need to be put on track for the purpose of organizational effectiveness. The vast pool of experts comprising scientists, academicians, government officials, military and paramilitary organizations, NGOs and public / private organizations having dealt with combating disasters in the past, can be brought together on a single platform, to contribute in training and synergizing the efforts to streamline, consolidate and develop the mechanisms to fight disasters in future. The training for such operations would require a highly complex and well developed infrastructure to include simulation techniques, built up area, collapsed structures and evaluation mechanisms.

Emergency Support Functions - NDMA must formulate a comprehensive list of such functions; categorize them in terms of tasks to be performed by specific departments and accordingly assign responsibilities to various departments / ministries in the states and at the centre, keeping in view

their roles in the realm of managing disasters. These roles must be made explicit and should not be left ambiguous, subject to interpretations. Once the responsibilities are assigned, suitable organizational changes should be effected and adequate resources must be allocated to the departments and ministries. The present arrangements for working out these functions, in our case, lack purpose and direction. The modalities for formulating emergency support functions and making them tenable through fine-tuning need further deliberations.

Performance Audit - The operational readiness and preparedness of all the establishments mandated for managing disasters must be evaluated at least once in a year. Performance audit of such establishments should be carried out with utmost sincerity to obtain objective feedback with a view to improve their quality of response. There is also a requirement to establish modalities to evaluate the performance of all emergency functions that may need to be performed in the eventuality of combating disasters. Status of Plan Implementation Progress of the ongoing plans could also be assessed. Each district and state along with all the concerned agencies dealing with disaster management should be evaluated in their capability status each year. A model to evaluate preparedness and the award of resilience status could be devised in terms of indices. NDMA should publish the preparedness and resilience indices for each district and state in its yearly report.

National Institute of Disaster Management - NIDM should play an important role in the preparedness of all the possible stakeholders at the national and regional level. The institute must establish linkages with establishments like Asian Disaster Preparedness Centre in the region and also with the UN establishments dealing with disasters. The linkages should develop the coordination mechanism so as to minimize the response time at the time of disaster.

Preparation for Regional Collaboration - Coordination mechanism for exploiting the advantages of regional cooperation should be streamlined. Creating an enabling regional environment contributing towards sharing of knowledge, capacities and resources would help in building disaster resilient nations and communities.

Role of Training in Shaping Attitudes / Behaviour - The most important aspect of preparedness would be to engineer a shift in our approach towards dealing with disasters. A positive change in our attitudes and behaviour is in fact the first stepping stone to our preparedness for fighting disasters. Training should be made to attempt and bring about this change. The behaviour should be driven by the fact that safety is the basic responsibility of the individual. Similarly, the organizations must view the safety against disasters as a human rights issue and should be conscious of the obligations towards the society, in this regard. It must be ensured that the

knowledge and awareness through training translates itself into the expected changes in attitudes and behaviour.

Community Based Disaster Preparedness - Emergency management agencies do not have the resources to comprehensively deal with all emergencies protecting every home and every life. Moreover, the impact of emergencies can be significantly reduced with the involvement of the community in planning, mitigation and preparation. It is better to have people, especially volunteers, trained to deal with disasters in their own specific areas, than move thousands of trained people to disaster scenes across the nation. Local participation will not only ensure no delay in first intervention on occurrence of a disaster but being locals i.e. socially, linguistically and culturally integrated would be of a great assistance in the relief operations. The communities must play an important and proactive role in planning, preparing and implementing the plans for dealing with disasters. They should be the corner stone of the institutional mechanism for managing disasters. Community based initiatives are in fact the essence of developing a preventive culture.

Building Local Capacities - Efforts to build local capacities at the village, block and local community levels must gain momentum. Building local capacities would contribute not only towards improving resilience of community but also provide fillip to self-confidence and self-esteem of the locals. Capacity building must form an essential component of sustainable development. NIDM should take on the task of developing tools and frameworks to analyze and assess the process of capacity development with the help of well researched indicators meant to track the progress on capacity building.

Improving Readiness State of Stakeholders

Following measures are recommended:-

- *Training and Knowledge* - Training objectives for each skill-set required for emergency functions and emergency support functions should be laid down. Training should be organized and conducted either by one institute or else measures should be taken to standardize the training requirements.
- *Mock Up Drills and Rehearsals* - District Collectors must be mandated to carry out mock up drills and rehearsals of the plans at least once in a year. Mock up drills and rehearsals are in fact a medium to generate and develop the essence of the team work and provide an objective assessment of the preparedness and readiness state of the group / team as such.

- *Integration of Stakeholders* - Vertical as well as horizontal communications among the various stakeholders would be required to be established. Plans should include these aspects well in advance. Mock up drills and rehearsals should in fact take care of such requirements.
- *Coordination Mechanism* - There would be a need to allocate areas of operation, areas for establishing bases, relief camps, medical camps and for other such activities. This is one of the areas where NDMA and NIDM need to work further and chalk out a strategy to streamline the procedures. NIDM could be made responsible to put in place a suitable command and control structure.

Effective and Efficient Response

Emergency Response Plan (Immediate Response) - A well prepared and rehearsed plan at the grassroots levels, especially at the village, block and district level should form the fulcrum of all the activities. The plan should be thoroughly rehearsed during the preparatory phase, at least once in a year. It should have realistic contingencies worked out and rehearsed. The plan should be updated every year after the mock drill and rehearsals are carried out. Foolproof communications with inbuilt redundancy will positively contribute towards mobilization of resources and conduct of rescue and relief operations. The systems should be tested during the mock drills and rehearsals every year. Communications must be considered as the backbone of immediate response. A Disaster Management Information System should be institutionalized to include GIS based inputs, hazard maps and integrated communication systems available at the control rooms established for managing disasters. These systems should be brought under the scanner for periodic assessment.

Trigger Mechanism - Emergency Response Plan should define the trigger point in unambiguous terms so that there is no delay on the part of the role players to initiate action as laid down in the plan. The Plan should also identify resources, including human resources, logistics, specialized equipments and the way to put them into action.

Early Warning and Dissemination Systems - Traditional procedures followed by specific circumstances in specific regions and which are time-tested should be well integrated into the relatively more modern and advanced systems. Traditional systems at times are more effective as these are better translated and comprehended by the natives. Involvement of local people in warning dissemination is an important requirement. Whereas issuing warning is the responsibility of the administration, the warning dissemination should involve maximum agencies including the community as a whole. NIDM could possibly take on a number of projects to design early warning

dissemination systems. These should be hazard specific and region specific, integrating local capacities and experiences of local community. Public-private partnerships in warning dissemination could also be strengthened to make the response more effective. The response to warning messages – deserves serious attention in the design and operation of any warning system.

Emergency Operations Centre (EOC) and Communications - As also recommended by the Second Administration Reforms Commission, while it is necessary that each nodal ministry handling crisis has an EOC, it is clearly desirable to have an integrated National Emergency Operation Centre for all types of crises. National Network of Emergency Operations Centres with foolproof communication system linkages and mobile EOC for on-site disaster management information systems should be developed into exemplary nerve centres worth a source of world wide emulation.

Coordination - Coordination aspects should be integrated with command and decision-making functions. SOPs must accordingly lay down coordination measures in an elaborate and explicit manner. While carrying out rehearsals and mock exercises, improving coordination should be one of the most important objectives of assessment. Coordination mechanism must form an important part of the Response Plan.

Command and Control - Besides each organization having its own command and control set ups, there would be a need to have in place a unified command and control. NDRF, Home Ministry and the MoD need to develop an efficient system to coordinate the large number of activities. National Incident Management Systems and Incident Command System followed in US could be examined and if found appropriate, could be adapted to suit our own mechanisms. It is however pertinent to mention that ideally it would be better to evolve our own way of combating disasters be it either during pre-disaster phase in terms of prevention-mitigation-preparedness strategies or during post-disaster phase in terms of rescue and relief strategies. It would be necessary to prioritize the areas at the site of incident and accordingly the division of responsibilities should be assigned based on capacities and expertise of the teams. Disparate procedures thus could be accommodated to optimize the results. However, it would be better to achieve standardization of training and procedures during preparatory phase.

Medical Relief - Response plan should dwell elaborately on the aspect of mobilizing medical relief and accord priority to provide medical aid to the survivors. In the pursuit to reduce and minimize the loss of life with the aim of achieving the single most important objective of immediate response, emphasis should be on search, rescue and provide emergency medical aid to stabilize the survivor prior to moving for further medical assistance.

Formulation of Response Plan - The response plan should include only the essential elements of critical instructions and avoid methodology part which should form part of Standard Operating Procedures. This practice would make the response plans simpler on paper and effective on ground. NIDM could well take on the task to standardize the format of plans to suit each hazard and regions accordingly, based on empirical research and update the same periodically, incorporating the lessons learned by others as well as by us. The response plan at the district and lower levels should be more elaborate. Emergency Response Plan should essentially include activities related with two aspects namely rescue (search and rescue) and immediate relief. Recovery and rehabilitation, which comprises long term activities, should remain distinct from immediate response.

Rescue Operations - Following measures are suggested:-

- As stated earlier, the trigger mechanism, warning systems and more importantly the dissemination of warning need to be very effective. The sequence of activities must be thoroughly rehearsed and must unfold in a flawless manner. Issue of warning to first responders and the affected community must take priority over others. Hotline with first responders would be desirable.
- First responders should always be in a high state of preparedness and readiness to prevent adding on to the chaos at the incident site.
- Assessment teams comprising experts with adequate experience for overall analysis and advance planning teams of major organization providing search and rescue teams need to be dispatched in the earliest time frame by fastest means.
- The resources in terms of search and rescue teams, medical teams and relief material should be moved by the fastest means to reach pre-designated areas earmarked and communicated by the assessment teams / advance incident support teams dispatched earlier to the incident site. The teams should have been provided with integral resources in terms of vehicles and equipment, as against teams moving to dump areas or waiting for supplies that are pre-contracted and now delayed to reach the teams.
- Stage management should remain the responsibility of the organizations that are being deployed in the incident site in conjunction with the local nodal agencies responsible for overall coordination. The organization that are planned to be deployed must therefore send their representatives in advance as part of assessment or advance teams. They must thoroughly know the situation and further course of action. The reception centers and the briefing areas should

be away from the incident site but at the same time should be in the near vicinity. The incident site should be isolated / barricaded and all the entry points, especially the choke points should be manned to control and coordinate the movement of only essential resources.

- The training of first responders should be standardized or at least should meet the basic requirements of drills and procedures to be followed in an environment where a large number of such teams are operating. Even military should train their teams in special skills. The best practices followed by other agencies in different countries should be assimilated in our own systems. NIDM could do a lot in this regard.
- Each agency should have its own command, control and coordination mechanism. At the same time, there should also be a unified command system to ensure unity of command and overall coordination. The modalities for the same need to be worked out and formalized soon.

Relief Operations - The measures to make the operations effective could be as follows:-

- The relief activities are organized and conducted little away from the site of incident where search and rescue operations would still be underway.
- Demands projected by the local authorities may have to be conceded for planning purposes but need to be verified and confirmed on ground, as far as possible. The importance of a realistic assessment of relief supplies, keeping in view the climatic conditions and social factors, should always be kept in mind. There is need to evolve objective methods of assessing the damage so that there are no allegations of bias, distortions, exaggeration or arbitrary scaling down. Satellite imagery could be used as a tool to validate the reported damages and NDMA could draw up the necessary guidelines for the assessment teams as recommended by the Second Administrative Reforms Commission.
- Endeavor should be made to prioritize the demand whenever the resources available are limited while the demand is very high. NGOs and other agencies should not be allowed to indiscreetly distribute the relief material. It must be ensured that the necessary relief material are so deployed that all affected people are provided with what they most require without any bias or prejudice. It must also be ensured that unwanted relief material is not mobilized. Media should also be involved in communication of such requirements.
- Effective deployment of resources would go a long way in alleviating the basic problem of essential deprivation, in the aftermath of disasters. Total transparency should be followed in procurement and distribution of relief materials.
- Monitoring of relief supplies and proper accounting at both ends is a must and should be taken seriously, to avoid relief material falling in the hands of undesirable agencies and miscreants.

An audit at an appropriate time should form part of standard operating procedure in such events.

- It is recommended that the guidelines on casualty management issued by NDMA be translated into standard operating procedures and drills for implementation. It must be ensured that all hospitals have elaborate medical response plans catering for different contingencies relating with disasters. Experts must form part of the assessment teams in terms of medical, general hygiene and sanitation requirements. Focus should be on mass casualty evacuation, categorization of casualties and their documentation. Medical response to CBRN disaster is another facet that needs to be developed from the current incipient stage to a more advanced stage. Use of aerial mobility, containerized mobile hospitals and air / train ambulances should be made as part of well organized response system.
- Measures to check spread of epidemics in the aftermath of a disaster must not be neglected as has generally been the norm in the past. Procedures such as sewage disposal, supply of safe water and sanitized living conditions must be institutionalized to revive the systems disrupted during the disaster at the earliest and put in place a system ensuring good hygiene. As recommended in the guidelines issued by the National Disaster Management Authority, it is essential to lay down minimum standards for food, nutrition, water, sanitation, hygiene and shelter.

Long-Term Recovery and Rehabilitation - Important aspects are as follows:-

- Recovery should ensure making the area, in terms of its infrastructure and livelihood, less vulnerable to any future disasters. It must be clearly understood that whereas immediate rescue and relief is important from the point of view of saving lives, what is even more important is to ensure that people whose lives is saved can make a sustainable living and face the next crisis, if it ever confronts them, from the position of strength and resilience.
- The long-term recovery should be integrated as part of development process albeit with some priority over other developmental projects.
- A meticulously executed assessment exercise would provide an ideal base for the rehabilitation efforts. This exercise is best carried out through multi-disciplinary teams which go into all aspects of damage (social, economical, psychological) in participation with the local community.
- Each set of activities need to be planned as a comprehensive project / programme inclusive of all the details supported by necessary funds and other resources including organizational support.

- There would be serious interventions required in social, economic and psychological rehabilitation.
- The strategy must keep in mind the need to integrate the last phase of the disaster management cycle - long-term relief, recovery and rehabilitation with the first phase of the disaster management cycle - prevention and mitigation.
- Traditional coping mechanism should form intrinsic part of the reconstruction process and should be effectively dovetailed in the development process along with modern and contemporary mechanisms.
- There should be a definite strategy which should focus on the implementation of all such plans, supported with adequate legislation, if required.
- The plans should be objective based and the objectives could be assigned to the people responsible for implementation, to match with their tenures.
- It is recommended that the qualitative requirements for assignments dealing with long-term plans having bearing on the national development and security such as disaster management should be very stringent. Authorities on such assignment should have long-term tenures at least for implementing the definite part of a plan to generate a sense of ownership.
- Community based approach to fight disasters must remain as the most vital element of the strategy to drive the whole cycle of disaster management.
- The strategy for recovery and rehabilitation should be all inclusive encompassing recovery and reconstruction in the fields of health, employment, education, welfare and others essential aspects related to social, economic, political and psychological areas.
- It is important to establish an effective interface between the government agencies / institutionalized mechanism with the civil society organizations, so as to streamline the process of relief and rehabilitation.
- We need to develop and evolve strategies to operationalise public-private partnerships in the fields of IT, telecommunications, aviation, manufacturing, financial, services and developmental sectors among others.
- Government agencies, due to constraints such as lack of manpower resources, can not reach each and every individual. NGOs should be integrated into the process of recovery and reconstruction. NGOs must be fully utilized and optimized in the post-disaster recovery and rehabilitation.
- It is vital that the involvement of these local bodies in disaster response is institutionalized in practice, and that they are equipped with necessary capabilities and resources. Similarly, municipal bodies and corporations in the urban areas should be given the legitimate authority and responsibility for specific response during disasters.

- The planning commission and the planning departments at the state levels must ensure that these projects are implemented with a sense of priority and commitment. There is also a need to club the development plans which are purely for prevention and mitigation of disasters. A separate head could be created to cater for the funds for such plans.
- Participatory approach would synergize the efforts and will contribute towards aggregating the outcomes with a positive impact on the results in the long run.
- The strategy for long-term recovery and rehabilitation should ensure that measures for prevention of future disasters and the mitigation of consequences are incorporated.
- The information management system needs to be designed with good endurance. Sharing of information by varied agencies would be essential. Information will be required to put up in public domain to be utilized by administration at all levels, NGOs, international and UN agencies and other stakeholders and participants involved in emergency response, relief activities and rehabilitation.
- The tendency to go slow on the rehabilitation process needs to be curbed. Measures that would help maintaining the momentum should include – participation of the community itself in running the processes; establishing a framework for evaluating the progress of rehabilitation process by the experts with a proper feedback from the community; involvement of local bodies and panchayats; linking performance appraisal of the officials responsible for projects with the progress of projects; providing long-term tenures to officials responsible for running these projects; institutionalizing periodic audit of the processes.
- The government would do well to have serious considerations on the subject of mismanagement of funds and not to leave it alone to charter its own course.
- The agencies involved in managing post-disaster consequences should be made politically and legally accountable to the public. There should be comprehensive grievance resolution mechanisms, supported by an appropriate legislation. Grievance resolution in our context should be made more responsive. Adequate powers should be delegated to panchayats and local bodies to expedite the process and make it more transparent.

Armed Forces in Disaster Management

The chapter on Armed Forces in Disaster Management has essentially included an analysis on the role of Armed Forces, options for organizing, equipping and training. The recommendations for the Armed Forces have been included keeping in view the stated role (as part of the aid to civil authority), past experience and the likely developments in the future, especially in the context of disaster response. The summary is as follows:-

Training Policy - There is a need to lay down a policy to streamline the training needs for performance of our stipulated role in disaster management. Broadly the policy should include role and functions; training goals and measurable objectives; institutionalization of training; curriculum and course structuring to include general and specialized training; joint training; mock up drills, exercises and rehearsals; performance assessment and appraisal; qualification and certification standards and implementation of systems approach to training.

Categorise Skills and Expertise - These need to be examined in the context of various contingencies and disasters in varied terrain.

Search and Rescue - Where as other tasks and activities as part of immediate response may not require much of update, search and rescue capabilities will need to be reviewed in concert with developments in terms of expertise, concepts and skills in this field.

Incident Command System - Since India is by and large drawing upon the US framework for management of disasters, to include concepts such as FEMA, National Incident Management System, Incident Command System, Incident Support Team, and Emergency Support Functions, we may need to examine the interoperability and compatibility of our own role and functions in the overall mechanism of these systems, as and when these get operationalised.

Formulation of SOPs and Training / Operating Manuals - Operation manuals for each type of search and rescue operation need to be formulated. Training manuals also need to be prepared. Doctrine prepared by the Army Training Command few years back could also be updated / reviewed.

Joint Training - We need to identify aspects that require joint ness and integration for an effective joint response. Joint training with the new organizations that are being raised should also be planned.

Links with Specialized Training Facilities - Linkages with training institutes and facilities like National Institute of Disaster Management should be established to draw from their experience and from latest conceptual, training and equipment perspectives.

Performance Audit - There is a need to put in place a formal performance assessment of units / teams earmarked for missions during disasters.

Capability Development - The focus must be on capability development which is essentially a function of availability of trained manpower and equipment. Preparedness for quick response during disasters is of paramount significance as it would otherwise result in avoidable loss of life and property.

Learning from Experience - Our capacity to learn from previous disasters is almost negligible and needs to be improved.

New Management Techniques - There are a number of new management concepts, techniques and tools that can for sure enhance decision-making processes and also contribute towards efficiency in response in terms of mobilization, allocation of resources and quick response.
Application of MIS and IT - We need to include training in management of information system and information technology in the context of rescue and relief operations.

Mock Up Drills and Simulation Exercises - These should be planned with the civil administration and other organizations that would be participating in rescue and relief operations. The planning and conduct of such events must lead to better coordination with a view to facilitate interoperability.

The Way Ahead for Capacity Building

Synergy and Maximising Capabilities - Despite the revamping of the structure, adequate interface between the main stakeholders, i.e. the Administration, Armed Forces, Public/ Private Enterprises, NGO's and the Community is still lacking, resulting in lack of synergy and understanding of each other's capabilities and work culture. Vital equipment like rail medical vans, bridges, earthmoving plants, cranes and so on, should be identified by respective States/ Departments, including BRO, and placed at the disposal of Army columns till additional relief effort is mobilized. It is imperative that all agencies, including Army, are mutually aware of the locations of each other's equipment. To that extent, the operationalisation of India Disaster Resource Network, a web enabled GIS-based resource inventory, is a step in the right direction.

Disaster Relief Bricks - Despite our vast experience and repeated exposure to various types of disasters over the years, specialist equipment and reserve stocks-are not available in the right quantity and at the right place. As a result, the response not only gets delayed, but the civil administration also tends to seek immediate Armed Forces assistance in terms of provisioning of

critical equipment. This can be obviated by adopting the 'brick system'. These bricks could be categorised into immediate rescue and relief bricks and follow up relief and restoration bricks, duly complemented with incremental bricks for each type of disaster, i.e. Cyclone, Floods, Tsunami, Chemical Biological contamination as also 'Medical relief Bricks'. Based on the vulnerability of each region to a specific type of disaster, these bricks could be strategically located in varying combinations, to facilitate timely movement and deployment.

Evacuation of Cities - Apart from natural disasters, evacuation of cities could be triggered off by manmade disasters, to include terrorist attacks. Armed Forces would invariably get involved, and our response plans must cater for such contingencies.

Early Warning and Communications - There is an acute need for state-of-the art early warning systems. However, such warning systems will be effective, only when suitably networked with other means of communication. Army troops, being located in the remotest areas, should be in a position to hook on to the disaster forecasting networks, for timely passage of information. Due thought must be given to achieving a very high level of integration and interoperability, for timely warning and communication amongst the concerned agencies and the affected community.

National Disaster Response Force (NDRF) - The Government is raising a National Disaster Response Force, with the states too acting on similar lines. Requisite impetus must be given to raise, equip and train these task forces so that they become effective on ground at the earliest. These task forces need to work and train alongside the Army task forces for joint strategies and drills. Legislation should exist for employing retired defence officers and ex-servicemen in these units.

State-of-the-Art Equipment - We need to procure state-of-the-art disaster rescue equipment, which would enhance our capability to operate at night as well. Detection sensors, based on audio and video display, would considerably enhance our life saving capability. The equipment, so procured, should be common amongst all responders.

Response and Relief

Dynamic Civil Military Liaison - The initial stages of any disaster are very critical, wherein the communication link between the Army and Civil Authorities must function dynamically on a 'two way' and 'pro-active' basis, to facilitate timely deployments of troops. We must not forget that any

aid provided after the critical period, howsoever hyperactive and dynamic it may be fails to deliver the required impact.

Damage Assessment - On occurrence of a disaster, critical time is lost in ascertaining exact nature and extent of damage. Aerial reconnaissance, utilizing helicopters or UAV's is the most effective method for which the Armed Forces could be incorporated earliest.

Dynamic Leadership - Technological advancements may provide us with adequate warning to prepare for an impending disaster. However, the mere existence of glossy disaster management plans serves no purpose, in case they cannot be effectively implemented on ground. The battle can only be won with the will to act on information and dynamic leadership by the concerned hierarchy.

International Assistance - In any critical situation demanding regional or international assistance from our side, the Armed Forces are expected to procure sizeable material in the shortest timeframe, as also deliver the same. Instead, the Ministry of Home Affairs, in consultation with Ministry of External Affairs, must build on their links with the trade and have standing arrangements for procurement of rate contract items in the shortest possible timeframe. The operational stores of the Armed Forces should be tapped only as an exception.

Conclusion

As of now the armed forces form the core of national response immediately on occurrence of any major disaster. The government functionaries have surmised that with raising of National Disaster Response Force (NDRF), training of para military forces, civil defence, home guards, police and restructuring the Fire Services, and with other initiatives being taken by the central and state governments, the pressure on the armed forces will be reduced. However, the credibility of these forces, as of now, is suspect, until proved otherwise. As discussed, dedicated organization with a vision, missions and objectives would be ideal for tasks involved in rescue and relief work. No matter how we re-organise, restructure, train and equip the existing para military forces, civil defence, home guards, police and fire services, it would not be easy for these to shed the culture that they have been used to, in the past. Motivation, zeal and enthusiasm are much more important than training and equipment. The organizational values and attitudes can not be expected to be changed overnight through training and equipment. Hence, ideally the government should consider raising a special force for disaster management and not concocting something like NDRF.

It is unlikely, that the role of the armed forces will ever become redundant or the pressure is ever going to reduce because of other resources being prepared to deal with the crises emerging on occurrence of major disasters. It is believed that armed forces with its inherent culture and capabilities would continue to perform a vital and crucial role in search, rescue and relief operations during all major disasters, in support of the national endeavor to contain the loss of lives and property. The debate on the rationalization of the role and explicit mention in the Act is unwarranted firstly because the role of the armed forces is secondary - in support of the civilian administration; and secondly it has no role otherwise in prevention, long term mitigation and rehabilitation or in the developmental process linked with disaster management in a larger and more inclusive perspective. Disaster management is very much a part of the overall development process and is a function of governance cutting across many fields and disciplines and with a wide range of stakeholders. Armed forces is one of the many but vital tool used by the government for the purpose of managing a crisis.

Preparedness to respond effectively, in adverse situations, should not be relegated in importance. Training and equipping hence should become a key result area and a significant part of training objectives of units and formations, as and when earmarked for the role. Since it would be an emergency response there will be no time for even orientation and hence the preparedness on a routine basis is a critical requirement, especially for those teams and task forces that are required to perform a specialist's role.

As regards training, the training needs must be assessed and ascertained more realistically. The training for search and rescue should be institutionalized. It should follow a systems approach with an effective feedback for improvement. The training should be standardized and there should be a foolproof process for evaluation and certification. The model being used by the US can be studied and suitably tailored for our needs. There is no harm in learning from others experiences. Training needs to be organized centrally and in states under the arrangements of the Central Government / NDMA through Armed Forces and or civil establishments including NIDM. There is also a need to develop adequate infrastructure for training including buildings that are collapsed or semi-collapsed for training in search and rescue operations involving collapsed structures.

The equipment should be organized in bricks and the stocks located at various centres as planned. The units and formations earmarked for response should always be holding separate stocks for training and for use during disaster relief for the purposes of ensuring the availability, reliability and maintainability of the equipment, as is practiced for operational equipment and stores by the armed forces. Separate additional bricks should be maintained at depots spread all over the country

located in hazard prone areas. Rehearsal and mock exercise should involve mobilization, collection of stores and equipment, reporting at the planned departure area, move to incident site, establishment of base and launching of search and rescue operations and organizing relief and short term rehabilitation of the affected people.

To ensure timely provisioning and dispatch of aid, it is important that all agencies involved in providing International aid have their SOPs in place and interact with each other on daily basis. There is also a need to ensure quality of aid items, time bound implementation of Government decision and adequate publicity both in International and National media.

We can aptly sum up our endeavor to build up on the existing capacity by stating that our approach to disaster management should be based on the four pillars of Integration, Preparedness, Dynamism and Implementation.

The history of Armed Forces is replete with examples, wherein our troops have performed tirelessly, almost as if it were at a self actualization level, when called upon to provide relief and succour to communities distressed by severe disasters. In a developing country like ours, where reforms are still at a nascent stage, the necessity of 'quick response' will inevitably, in the near future, continue to involve the Armed Forces as an agency of first resort. The more cataclysmic the event, the more this will be true, simply because the local response entities themselves, become unwitting victims of the disaster. A balanced involvement of all agencies will manifest, only once we completely refine and upgrade our civil response mechanism in line with the Government's pro-active policies on disaster management. Whether that occurs or not, you can rest assured that the Armed Forces always remain prepared, for a prompt and effective response to any form of disaster.

Planning and co-ordination between various Ministries/ Departments and the Armed Forces will go a long way in providing timely aid to the citizens of our country. All agencies involved in Disaster relief operations should be able to procure, pack and dispatch the aid in the least possible time frame to minimize the loss of life and property.

In the event of the use of weapons of mass destruction by our adversary, large number of personnel are likely to become casualties by their instantaneous effects which may prove deadly. It is, therefore, essential for the QRT personnel to be conversant with the protective measures to be adopted under such circumstances to minimize the number of casualties. The CBRN disaster management will involve multitude of different agencies both civil and military. MHA has specified command and control structure at national, state and district level.

The analysis of the institutional mechanism for managing disasters in India and the recommendations that have been offered are essentially in the overall context of organizational effectiveness and development. There is not even an iota of doubt that the policy, plan and the strategies that would finally be made shall be of a very high quality. Unfortunately, our optimism for implementation of these policies, plans and strategies is impaired with lurking doubts. The mechanism is under transition. It has complexities and is bound to take time. A number of challenges will have to be faced and addressed effectively to charter a successful transition. Management of change in itself would require well thought out strategies. The single most important aspect in the overall spectrum of challenges would be to usher in an enabling culture, which should gradually achieve a smooth takeover in all the organizations and establishments dealing with managing disasters. It has to be viewed as the most significant part of the entire 'change paradigm'.

Not all the recommendations have action specific orientation. Such recommendations would need to be further studied and analyzed to arrive at actionable schemes and plans to achieve the ingrained objectives.

At the national level, the disaster management has to be integrated with the development process through a well-laid down mechanism and need to be sustained over a long period of time to achieve visible results. This is one aspect which requires conscious efforts and a strategy to realize it in a pragmatic manner. Mere mention of it as part of recommendations by the committees and commissions or else making it as part of an academic exercise to include in the Plan documents may not yield any results. There has to be a concrete plan with milestones and strict deadlines to be achieved through assigning responsibility and accountability. Similarly, there has to be a plan to involve community in its participation in managing disasters. If planned meticulously, it can do wonders in the field of implementation of plans and policies. Organizations and establishments forming part of the institutional framework for disaster management at all levels should focus on the organizational effectiveness and development. Finally, the dictum 'disaster management is everybody's businesses must be translated in terms of accountability and responsibility of individuals in everyday life. Simultaneously, an appropriate culture and work ethos has to be imbibed and nurtured so as bring in a participatory and professional approach to managing disasters. The technological and scientific aspects need to be pursued with a pace, zeal and enthusiasm that can prevent us from falling into obsolescence and bolster our capacities to combat disasters in future. Social, economic and cultural aspects should also be kept in sync with overall progress in our endeavors to build capacities. Corrupt procedures and malpractices being resorted by few but significantly retarding our efforts, can be dissuaded and discouraged by the

interventions of majority of our human resource that is working for building the capacity for dealing with disasters. Committing mistakes through omission of well-meaning and duty bound actions are at times more serious than committing mistakes through commission of wrongful acts. Vulnerability assessment, micro-zonation, disaster risk indices, risk reduction measures, preparedness, objective evaluation and assessment and a well-planned post-disaster response to include search and rescue, relief, recovery and rehabilitation are mandatory for a holistic management of disasters. The framework of institutional mechanism including financial arrangements should be well supported by techno-legal and statutory provisions along with a strict enforcement and implementation regime.

A willing, collective, participatory, professional and collaborative approach integrating individuals, communities, organizations at local, district, state, national, regional and international levels is the only way that can lead us to a relatively disaster free environment.

Notes

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