2013

Human Resource and Capacity Development Plan for Disaster Management and Risk Reduction in India

Government of India

National Institute of Disaster Management
New Delhi

Human Resource and Capacity Development Plan for Disaster Management and Risk Reduction in India

(Government of India)
2013

NATIONAL INSTITUTE OF DISASTER MANAGEMENT
NEW DELHI-110002

Foreward

Acknowledgement

Abbreviations

NGOs	:	Non Government Organization
HRD	:	Human Resource Development
NIDM	:	National Institute of Disaster Management
HR plan	:	Human Resource Plan
IIPA	:	Indian Institute of Disaster Management
DoPT	:	Department of Personnel & Training
IIT	:	Indian Institute of Technology
IIM	:	Indian Institute of Management
NDMA	:	National Disaster Management Authority
EPCO	:	Environmental Planning and Coordination Organization
NORAD	:	
UNICEF	:	United Nation Children's Fund
WWF	:	World Wildlife Fund for Nature
DMI	:	Disaster Mitigation Institute, Bhopal
UGC	:	University Grant Commission
MoEF	:	Ministry of Environment and Forests
ATI	:	Administrative Training Institute
UNDP	:	United Nation Development Programme
WALMI	:	Water and Land Management Institute
FRI	:	Forest Research Institute, Dehradun
KVKs	:	Krishi Vigyan Kendras
DRR	:	Disaster Risk Reduction
APELL	:	Awareness and Preparedness for Emergencies at Local Level
IGNOU	:	Indira Gandhi National Open Uneversity

BHU	:	Banaras Hindu University, Varanasi
CSIR	:	Council of Scientific and Industrial Research
IDMC	:	India Disaster Management Congress
B.Tech	:	Bachelor of Technology
AICTE	:	All India Council for Technical Education
NITs	:	National Institute of Technology
CBSE	:	Central Board of Secondary Education
NCERT	:	National Council of Educational Research and Training
MHA	:	Ministry of Home Affairs
NDRF	:	National Disaster Response Force
NCC	:	National Cadet Corps
TNA	:	Training Need Analysis
FEMA	:	Federal Emergency Management Authority
USEPA	:	United States Environmental Protection Agency
NCDC	:	National Civil Defense College, Nagpur
TISS	:	Tata Institute of Social Sciences
EIA	:	Environment Impact Assessment
WHO	:	World Health Organization
AIIMS	:	All India Institute of Medical Sciences, New Delhi
NIOH	:	National Institute of Occupational Health, Ahmadabad
ICMR	:	Indian Council of Medical Research, New Delhi
ICSE	:	Indian Certificate of Secondary Education
LBSNAA	:	Lal Bahadur Shastri National Academy of Administration, Mussorie
IGNFA	:	Indian Gandhi National Forestry Academy
ASCI	:	Administrative Staff College of India, Hydrabad
PPP	:	Public- Private-People Partnership
MHRD	:	Ministry of Human Resource and Development

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CHAPTER 1

1. Context

India's geo-environmental settings, ecological fragility as well as its high degree of socio-economic vulnerability make it one of the most disaster prone countries in the world. During the last 30 years time span the country has faced more than 430 disasters[1] resulting into enormous loss to life, environment and economy. Indian land is highly vulnerable to floods, droughts, cyclones, earthquakes, landslides, avalanche, forest fires, pest-attack, pandemic, industrial/chemical disasters. Mishaps of the recent past like urban floods, oilspills, radioactive waste, dam breach floods, epidemics, building collapse, building fire, bomb blast, stampede have added the complexity of the challenge. Increasing incidences and resulting damages due to road and rail mishaps are adding dimensions to disaster risk. Understanding a disaster's origin matters as key to disaster risk and vulnerability reduction and to strategize disaster management preparedness.

A '**natural disaster'** is one that emerges in the environmental settings – be natural, managed or civilized. In understanding the origin of a 'natural disaster' the term 'natural' implies to 'nature' of an event, process, condition or material (a hazard) that is responsible for causing catastrophe, damage or major loss. It may be related to one or more of geological, hydro-meteorological, industrial, urban or other natural environments.

A '**human-induced disaster'** is one that 'trigger/cause (hazards)' of which is generated by some human influence or anthropogenic activity but the 'disaster' is not created directly by human-being but develops as outcome of 'nature' of initiated event, process, condition or material.

A **'man-made'** disaster is the direct creation/activity of human-being(s) with direct/indirect knowledge of the risk/resultant catastrophe/damage/loss or due to serious human/technical failure and 'hazard(s)' are created or utilized to generate the outcome. These are mostly related to disciplinary performance or security failure, defense/war and mass management/ law & order aspects.

Disaster as defined by United Nations International Strategy for Disaster Risk Reduction (UNISDR) UNISDR, "A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources."

Disaster as defined by the National Act on Disaster Management 2005, Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from **natural** or **man-made** causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to and destruction of property, or damage to, or degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area.

[1] MHA (2011) *Disaster Management In India*

Out of 35 states and UTs in the country, 27 are multi-hazard prone. Almost 58.6 percent of land is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12 percent of land) are prone to floods and river erosion, coastlines close to 5,700 km is prone to cyclones and tsunamis; 68 percent of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches. Nearly 22 states and UTs have industrial establishments with Major Accident Hazard (MAH) units and are posed with risk of chemical industrial disasters. Increasing trend of e-waste generation, plastic waste, use of agrochemicals, Genetically Modified Organisms (GMOs) are posing new risks.

It is critical for our strategies that the disaster related damages and losses are increasing. Climate-change implications coupled with ecological degradation especially in the Himalayas, coastal areas, and in urban areas, have aggravated the disasters like floods, drought, cyclone, fire, pest-attack and extreme events. Increasing population density and biotic pressure on land, ecosystems and resources are key contributors of people's vulnerability to the disasters. Level of education and knowledge, income, technology, innovations, traditional wisdom, social cohesiveness, level of alertness and attitude all together determine the capacity to withstand the hazards and to cope with a disaster.

1.1 Disaster Risk Reduction and Management in India

Disaster Management in India until 2003 was primarily looked after by the Ministry of Agriculture. A more systematic institutional framework is provided by the Disaster Management Act 2005. Now, the multidisciplinary, multi-departmental coordinated framework of disaster management in the country functions under the coordination of the Ministry of Home Affairs, and the National Disaster Management Authority at National level. NIDM as an apex institute on capacity development and training, functions with the broad guidance of NDMA and affiliated with the Ministry of Home Affairs, is mandated for development of national human resource plan for disaster management. Disaster management in India has drawn the concept of a tiered institutional approach of holistic planning and implementation from the Emergency Preparedness Planning and Response Rules 1996 under the Environmental Protection Act, 1986. The traditionally existing dealing of 'disaster management' as synonym with 'revenue and relief' department with the State/UT Governments has witnessed a shift towards an institutional mechanism that focuses more on prevention, mitigation and preparedness through adequate pre-disaster planning and pro-active actions.

District administration with DDMA is a key unit of disaster risk reduction planning and disaster management actions, whereas the State DMAs are mandated for development and implementation of state level plans and policies. NDMA at the national level is entrusted with the primary responsibility of development of policy and guidelines. Given the new dimensions of climate-change impacts and ecological degradation pace, the national and state frameworks are focused towards more multi-institutional settings in planning and actions. However, the central coordination necessarily remains with the interdisciplinary with multifaceted knowledge and authority. District and State plans of disaster management that incorporate the components of hazard, risk and vulnerability assessment; prevention and mitigation plan, and a response plan also provide the strategies for sustainable reconstruction and recovery mechanisms in post-disaster situation, disaster impact (damage and loss) assessment, and integration of DRR into environmental action and developmental planning so as to mainstream disaster

management into the process of sustainable development so as to ascertain economic efficiency and resource efficiency for the present and future generations as well.

The High Powered Committee on disaster management set up by the Government of India has identified 33 type of disasters categorized into various subgroups as hydro-meteorological, industrial & chemical, geological, biological and accident related disasters. Tsunami was added later to the list. A neo-classification of disasters that are relevant to the India and the region is given below to help facilitate a better understanding as the origin matters in of management strategies for a disaster type.

1. **Environmental disasters** (of natural or man-made origin)
   a) Earthquake, landslides, flood, drought, cyclone, etc.
   b) Extreme weather events – storms, thunder, coldwave, heatwave, cloudburst, etc.
   c) Chemical – aquatic arsenic, fluoride, rock gas release, etc.
   d) Fires – forest fire, agriculture or plantation fires, etc.
   e) Epidemics –human, animal or plant disease outbreak, pandemics, pest attack, etc.

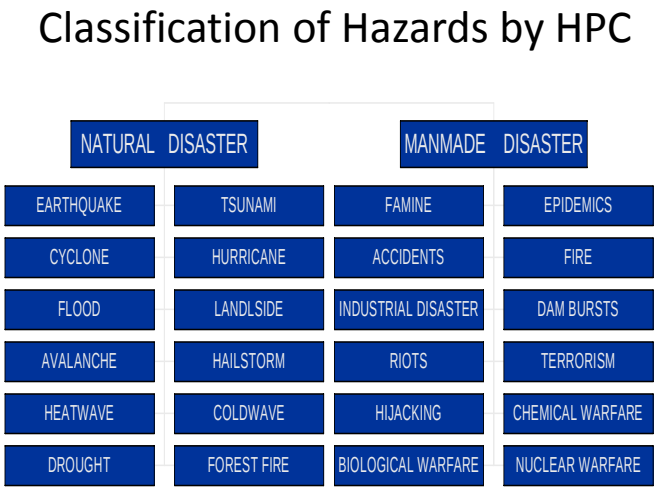
2. **Technological / Sectorial disasters**
   a) Industrial (Chemical, Mining, Electrical/Power, etc. – fire, explosion, toxic release, high reaction radioactivity, etc.
   b) Rail, Aviation, Nuclear mishaps (technical or operational failures)

3. **Security threats & civil disasters**
   a) Terrorism, sabotage, bomb blast, etc.
   b) Road accidents

4. **War disasters** (war is an extra-ordinary circumstance therefore separately categorized)

5. **Festival related disasters –** Stampede, etc. (purely related to organizational or law & order concern/ panic – behavioural challenge / rumor or confusion)

However, High Powered Committee has given the following classification of disaster



1.2 Approaches to Disaster Management and Risk Reduction

Over the past couple of years, the Government of India has brought about a paradigm shift in the approach to disaster management. The new approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process. Another corner stone of the approach is that mitigation has to be multi-disciplinary spanning across all sectors of development. Further a new era of 2nd paradigm shift is underway in the awakening brought in by climate-change awareness, livelihood and sustainability concerns and growing focus on the importance of ecosystem services in addressing hazards and peoples socio-economic vulnerability (Figure 1).

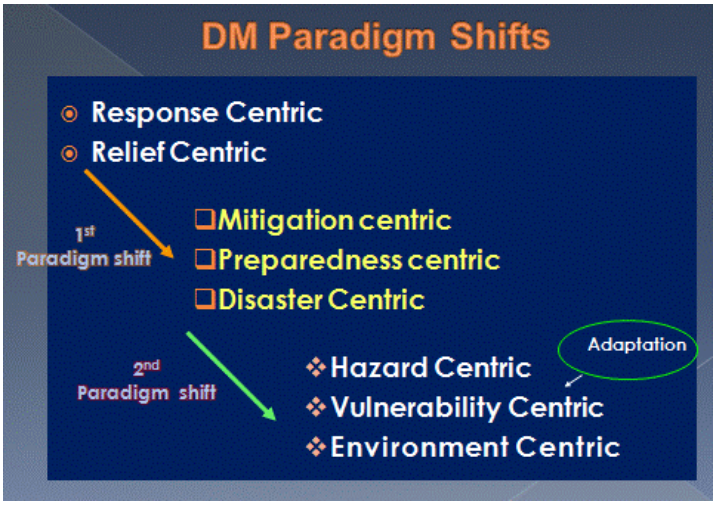


Figure 1: Paradigm shifts in disaster management approach worldwide

The Paradigm shift approach has been translated into a National Disaster Framework covering institutional mechanisms, disaster prevention strategy, early warning system, disaster mitigation, preparedness and response and human resource development. The expected inputs, areas of intervention and agencies to be involved at the National, State and district levels have to be identified. Mitigation, preparedness and response are multi-disciplinary functions, involving a number of Ministries/Departments. Institutional mechanisms which would facilitate this inter-disciplinary approach are being put in place. It is now planned to create Disaster Management Authorities, both at State levels and district levels, with representatives from the relevant Ministries/Departments to bring about this coordinated and multi-disciplinary plan with experts covering a large number of branches. Hence the Training Need Analysis is required to be conducted by each sector to identify the knowledge, skills and attitude gaps for all the stages of disaster management cycle i.e. Response, Relief, reconstruction, recovery, mitigation and preparedness. Please see the Disaster Management cycle (Figure 2).

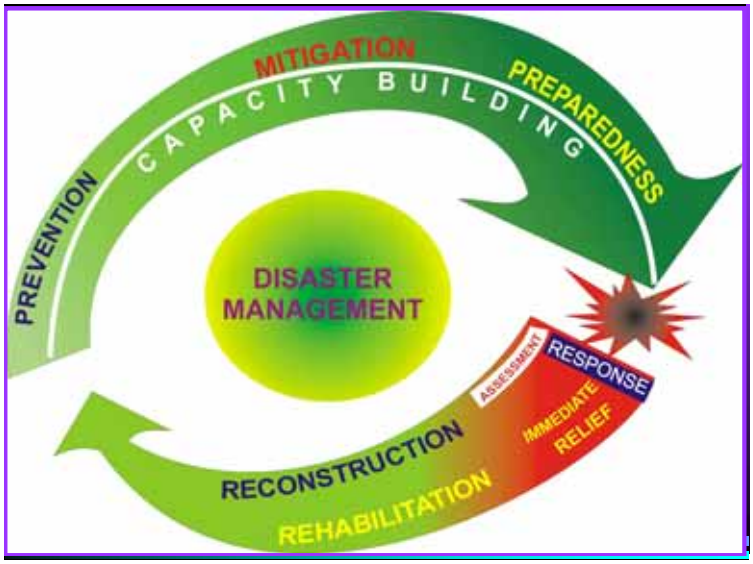


Figure 2: Disaster management cycle – an approach to holistic DM

There have been developments in approach to disaster management at different levels and directions, for example, 'bottom up approach' that emerged from the experiences and initiatives of the people, whereas the 'top down approach' adopted by the Governments showing great awakening and commitment towards institutionalizing the disaster risk management within planning and implementation framework. However, the understanding of disaster's impacts and management revolved primarily in relief actions shifted focus towards engineering based interventions. Finding the gaps in these approaches emerged the ground action of community based risk reduction and DM until the recent emergence of environment based approach that

advocates the blending of the approaches towards sustaining the outcome of mitigation while maintaining the concerns for livelihood, environment and resources for the future as well.

Figure 3 manifests the different approaches worldwide in practice in DRR, where more integration is now in call of the strategy. An 'incident management system' approach that primarily born in the military operations and well practiced by the United State's natural resource department for forest fire management system, were later evolved by Federal Emergency Management Authority (FEMA)/ United States Environmental Protection Agency (USEPA) for prompt and effective response initially in chemical emergencies and later for all natural or complex disasters as well.

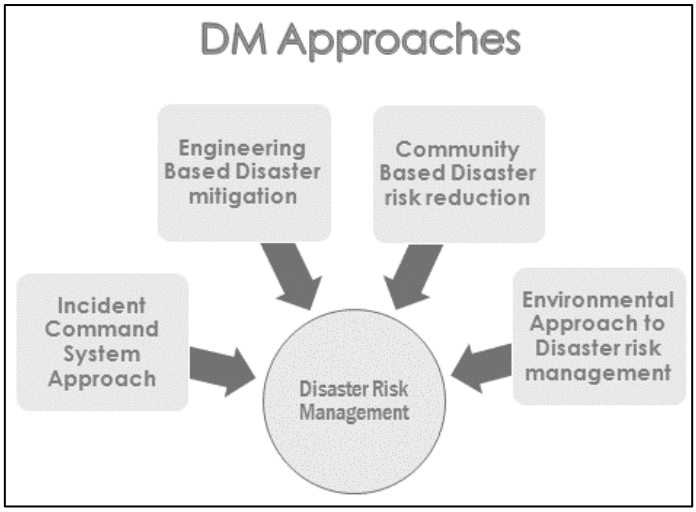


Figure 3: Converging different DM approach worldwide towards a holistic DRM

Disaster Management Cycle

Multi hazard capacity building is required for all the stages of disaster management cycle.

Disaster: A hazardous event that causes unacceptably large impact on life, overwhelming property damage, ecological impacts and thereby causing human-sufferings and socio-economic impacts**.** It may be of origin from the environmental system or processes – natural, human-induced or man-made; technological or human failure, civil or security related challenge. Increasing human interventions in the natural environment – be directly or indirectly, has made the line between so called natural man-made disasters as blurred.

Response: Immediate response to disaster for saving life, property and environment, i.e. evacuation, search & rescue activities, emergency medical aid, site clean-up, protection from further impacts, emergency restoration, debris removal and disposal, drainage clearance, etc.

Relief: Aimed at reducing grieves of the affected, the provision of assistance or intervention during or immediately after a disaster incidence for life preservation and basic subsistence of those people affected. It can be of an immediate, short-term, or protracted duration, including shelter, water & sanitation, safe food, environmental-health, waste management, psychosocial care, law & order, etc.

Recovery: Planning decisions and actions taken after a disaster for restoring or improving the pre-disaster living conditions of the community, while reducing undue burden on ecological resources and natural systems, encouraging livelihood sustainability, health and community harmony, facilitating necessary adjustments to reduce future disaster risk.

Reconstruction: Restoration of the housing and infrastructure damaged during a disaster. Sustainable reconstruction includes up gradation and modernization of infrastructure along with the inclusion of disaster resistance and green technology, resource optimization while taking account of environmental and social impacts.

Prevention: Activities to provide outright reduction or avoidance of the hazards and its impacts at the source or origin level and means to minimize any related natural or anthropogenic, technological or civil disasters. Disaster prevention involves the broader array of resistance – avoidance, tolerance and impact absorbance. A blend of the three is sometimes referred to as 'Resilience' and emphasizes on a 'Culture of Prevention & Safety'.

Mitigation: Structural and non-structural measures undertaken adopting physical, environmental, engineering, social, economic and/or regulatory approaches to contain the hazards from causing adverse impact on people, environment, property or any kind of human well-being. Mitigation encompasses wider range of activities starting from knowing the hazards and reducing vulnerability to preparedness and post-disaster actions to reduce the impacts, with different approaches based on regulatory planning, engineering, ecological and community based interventions.

Preparedness : Planning and readiness activities and measures taken in advance to ensure effective response to an arising disaster situation, including the issuance of timely and effective early warnings and the temporary evacuation of people and their resources from threatened locations, for clean-up, search & rescue, emergency medical aid, drainage clearance, emergency protection, emergency reserve of resources, etc.

CHAPTER 2

2. Needs and Capacity Assessment

Achieving the goal of an holistic approach to disaster management need a framework of a capable institutional setup with competent professionals, educators, trainers and field practiceners in different aspects of the disaster management, starting from addressing hazards and vulnerability, prevention and mitigation, preparedness, early warning, relief and recovery to be planned and their deliveries organized in a systematic fashion. It is also required to have the capacities to ensure the disaster mitigation and management actions do not create future risks or jeopardize the sustainably of the natural resource of the livelihood systems. It is, therefore, necessary to identify the existing deficiencies in the system, based on experience with respect to previous disasters as well as the emerging needs of changing disaster risk scenarios, for example, the growing challenges due to climate-change impacts, urban agglomeration, migration, environmental degradation, and industrial development.

India's disaster management institutions and systems are largely with the government as the key responders and other institutions such as corporate, civil society, NGOs and the community assist as support at the time of disasters. The disaster managers located with the govt departments, professionals in the private sector and people working with the NGOs are actually not trained to take up such job. Most of the disaster managers and their temperament is not suited for disaster mangers but they are involved in disaster management. Professionals working with the government posted in the vulnerable districts as district collectors or as second in command and down the line and in other line department officers hardly get an opportunity to get trained on the issues related to disaster management. Disaster management is a very specialized and highly skilled job. This cannot be undertaken unprofessionally with ad-hoc approach. In the most vulnerable and disaster prone districts of the country there is absolutely no practice of checking the background of the person of his or her experience in disaster management. There are many different considerations for the posting in the district rather than disaster management considerations. And, hence, there is a wide gap in the knowledge, skills and attitude of the "disaster managers" to cater the need for disaster prevention, mitigation, preparedness and response.

Department of Personnel and Training (DoPT), the nodal ministry for the training and capacity building in the country, has hardly taken any initiative to streamline the disaster management related training. Also, it is important to understand that disaster management is just not one department approach. It is a cross- sectoral issue. In India most of the sectors have not visualized their role as disaster managers and that is why whole planning assumption is based on the linear approach principle. Hence it has created a large gap in the skills required and the existing skills of the professionals working in the field. To bridge this gap it is important to have HRD plan supported with the Strategy for Implementation. The human resource and capacity development plan need to focus on (a) Knowledge, (b) Skills and (c) Attitude to help improve the proficiency of the performing stakeholders. The means of achieving the DRR objectives, the goal set for Disaster Management and Risk Reduction Capacity Development (DMRR) are following:

Goal of DMRR capacity development

Goal of the national capacity building efforts for DMRR is "**Developing self reliance in understanding risks associated with hazards & vulnerability, planning & reducing risk and preparing for the residual risk of disasters, with maintaining ability of resilience for recovery",** through the following two aims:

1. Reducing disaster's risks and impacts to help foster the process of sustainable development
2. Inculcate the culture of prevention & safety in living and actions, and maintaining people's right to live in good health and safe environment.

In order to achieve the above goal and its above envisaged two key aims, following objectives of human resource capacity development have been agreed upon. The principal routes of improving proficiency and capacity are (1) education and (2) training. Research is an inseparable area or intervention for effective education and training. Research is also imperative for sustaining the abilities and for the culture of innovation and continual improvement. Though education and training are treated separately in the human resource and capacity development framework, these two are to some extent overlapping in their modes of implementation and achievements particularly the case of higher and professional education. There are certain dedicated training institutes where education and research goes hand in hand along training interventions, whereas higher education especially those using exercise and field based learning, observation and experiments, including sampling, analytical, design and planning related contexts are actually training intensive education. Therefore, the broad framework of human resource and capacity development shall revolve around the central framework of education, training and research to be spread across the government, society, corporate and cooperation among various stakeholders.

Objectives of capacity development in the context are following:

DMRR Capacity development propounds for following four key objectives:

a. Developing Knowledge, Skills and Attitude – with sense of accountability
b. Wisdom based planning and harmonious mechanism of implementation (rather than plumpy or jargonous)
c. Developing self motivation and participatory understanding and cooperation
d. Proficiency for understanding, analysing, coordinating, managing the risk reduction strategy and actions.
e. Prepare community by informing community for risk management and disaster reponse
f. Build the capacity of institutions and individuals engaged in disaster risk management and response.

2.1 Present Scenario:

Currently, the key institutions for imparting training in the disaster management sector at the national level is National Institute of Disaster Management and at the state and the district levels, Centre for

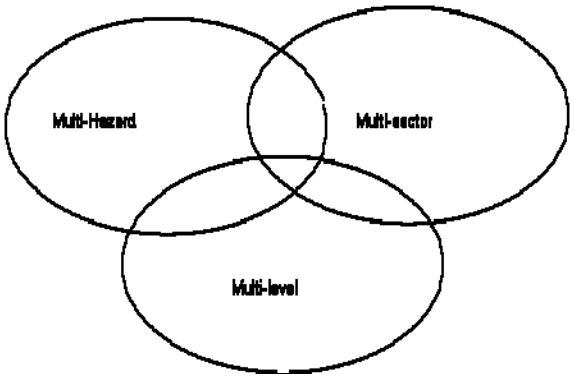
Disaster Management located at the Administrative Training Institutions. All these institutions are organizing nearly 450-500 programmes in a year. They are largely providing training to the government officials. Other than this, a few NGOs are also engaged in training and capacity building activities by organizing programmes for the community and the local level functionaries. In almost all the training programmes the methods which are being used predominantly is the lecture method. Almost 90 percent of the inputs in these training programmes are based on the method which is most suitable for child learning (Being Told). The inputs with adult learning process (thinking, trial and error, simulation based learning) are very negligible. Participants, over the years, who all are attending these programmes are giving regular feedback to these institutions that they need practical training instead of theoretical only. Hence, there is an urgent need to revamp the training delivery methods which are currently in use. The paradigm shift is needed in the country for making a judicious mix of various adult learning methods. But, this is not a simple task. Most of the training institutions are dependent on the resource persons who are either working with the government and discharging various duties or retired as civil servants. They are having lot of experience with them to share with the participants but they are not trainers. Hence there is a need to create cadre of trainers who understand the various methods of adult learning so that they may plan their lessons accordingly. Also, the simulation based training is an expensive one. The cost dedicated to the training programmes need to be enhanced. There is also a dilemma with the institutions. Persons to be trained are huge number so the focus would be on quantity and the quality gets compromised. Conducting a simulation and field based training is very intensive exercise. The current approach adopted by these institutions probably will not allow in the desired shift. Hence the HR plan suggests some policy change in the training and capacity building if we are really concerned about the quality change in the training which may bring some substantial change at the ground, we do not have any option but to change the focus.

NIDM, over the years is trying to put in the application of various training methods. Case study, interactive, field exposure and simulation based training has wider acceptance and is found to be useful than the restricted class room oriented programme. HR plan would emphasize in redesigning the programmes by using much more simulations, case study methods, group exercises, field visits etc which will have more of adult learning methods than the child learning in the existing as well the new programmes.

High multi hazard vulnerability of the Indian continent poses a great challenge before the national and sub-national governments to mitigate and prevent the impact of disasters through an integrated approach. Building human resource capacities at all levels of the Government and the community is one of the key elements in the national roadmap prepared by Govt. of India for disaster prevention, mitigation, preparedness and response. Hence we need to conceptualize the Capacity Development framework with muti-hazard, interdisciplinary (blend of sciences, humanities and engineering) and multi-levels commiserating with the prevailing environmental, socio-economic, cultural and technological background.

2.2 Capacity Development Framework

Capacity has been defined as the ability of the people, organisations and society as a whole to manage their affairs successfully. *Capacity Building* is the creation of an enabling environment with appropriate policy and legal frameworks, institutional development, including community participation (of women, in particular), human resources development and strengthening of managerial systems. Therefore, capacity building is a long term, continuous process, in which all stakeholders participate. It is much more than training and hence involves human resource development, organisational development and development of an institutional and legal framework. Every individual, community and organisation has some inherent capacity which needs to be acknowledged and further developed. Therefore, focus is on *Capacity Development* as a process whereby people, organisations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time.



Capacity Development Framework is an integrated framework that involves all the sectors and stakeholders at all levels in relation to all hazards. Multi hazard includes all the hazards confronting hazards. Multi-sector involves all the stakeholders involved with the management of risks in all the phases of disaster management cycles, which include various branches of the government, scientific, technical and academic organisations, civil society, media, corporate sector, community, family and even individuals. Multi-level implies regional, national, provincial and local levels. This widens the scope of capacity development to include a whole range of actors. This plan should be viewed in the context of this overarching Capacity DevelopmentFramework.

CHAPTER 3

3. Institutional Analysis

Institutions and institutional networks in India have been working on DM and RR related training and educational activities, are given in Table1. Primarily the institutions pioneering education and training in the area of disaster preparedness and relief were following:

1. National Centre for Disaster Management (now NIDM)
2. Disaster Management Institute, Bhopal
3. National Civil Defense College, Nagpur
4. National Fire Service College, Nagpur
5. Institute of Ecology & Environment – Sikkim Manipal University
6. Tata Institute of Social Sciences, Mumbai
7. School of Environment Management, Indraprastha University Delhi
8. Indira Gandhi National Open University Delhi.

A brief description of strengths & weaknesses and opportunities in the existing institutional settings of disaster management HRCD – training and education is being given here:-

3.1 National Institute of Disaster Management:

A Centre for Disaster Management was established at Indian Institute of Public Administration in 1995 by the Ministry of Agriculture. NIDM was created by an office order in 2003 to upgrade the Centre for Disaster Management of IIPA which is an autonomous institution under the Department of Personnel & Training (DoPT). However, since its inception the status of institute as autonomous academic institute in the pattern of Indian or National institute like IIT/IIM or a University has been officially unclear despite of its birth from IIPA with carry forward of the academic staff of NCDM at IIPA to the NIDM. Although born originally in 1995 and upgraded to NIDM in 2003 the institute has freshly prescribed its mandate in the DM Act of 2005 but the dilemma regarding the staffing, pay-pattern and institute's faculty and capacity development has been vague. However, NIDM at its campus and with responsibility of implementing and coordinating the Central Sector Scheme, achieved continual improvement in terms of its achievements fulfilling the mandate areas of training, taken up certain research and documentation activities and networked at national and international levels. Broad guidelines for NIDM are prescribed by NDMA whereas its affiliation is with the Ministry of Home Affairs. The lack of career advancement and personnel growth opportunities, need of academic and functional autonomy in particular for research &

development promotion, policy analysis and advancement of faculty capacity are the current key challenges with the institute.

3.2 Disaster Management Institute Bhopal:

By carving out a professional section from the State Government's Environmental Planning and Coordination Organzation (EPCO) in the backdrop of Bhopal gas tragedy, DMI was established in 1987 with the mandate of training, documentation, research and awareness in industrial and natural disasters and environmental related other urban and rural planning issues targeting at capacity development of Govt. officials, public/private sector, etc. The geographical coverage of activities was entire country, and was supported by the NORAD, Central Ministry of Environment and Forests, Central Ministry of Agriculture, UNICEF, World Bank Aided Project, WWF, DOAP, etc. Later DMI was registered as a Society under the Deptt of Housing & Environment of Madhya Pradesh, with staffing pattern in UGC system for academic staff and Ministrial system for administrative staff. The MoEF plans to support and upgrade DMI as National Disaster Management and Risk Reduction Institute for activities in the area of industrial/chemical disasters, climate-change and other issues of concern in disaster management and risk reduction.

3.3 State Disaster Management Training Centre(s)

State level (or UTs) Centres for Disaster Management were made functional in many states/UTs primarily at the State Administrative Training Institutes. In some states these have been created by amending/enhancing the scope of previously existing institutes of Land Management or Management or Development, whereas case of State DM centres in Universities/Research Institutes (e.g. in Tezpur University, GB Pant Hinalayan Environment Institute Sikkim) also existed. In some states like Gujarat – the state institute of DM were created (proposed in Jharkhand, Chhattisgarh, etc.) but despite the better infrastructure developed (or proposed) these lack professional and trained interdisciplinary faculty dedicated to work on disaster management and risk reduction issues. Most of the times the faculty were drawn from the surplus officials or retired persons from line departments/secretariat on contract or deputation and the stability of talented faculty staff has been a common issue of challenge. There were also issues relating to disparity in staffing pattern, qualification, pay pattern etc. of the CDM faculty as were in aberration sometimes in the same centre, for example, in Anna Institute Chennai, HIPA Himachal, HIPA Haryana, DMI Bhopal, and many other DMCs follow UGC pattern, whereas in many others salaries given were consolidated amount (like at ATI Mysore, Chhattisgarh, etc.). Although, some of these State DM Centres got support from DoPT, UNICEF, UNDP, etc. besides Central Scheme prevailed, ad-hoc approach caused strategic obstacles especially to continue the centres from 2012 onwards.

3.4 Disaster Management in Other State Training Institutes

DM related trainings and CD activities in the States/UTs remained centred at ATIs and suffered many challenges due to lack of involvement of other state level training and CD institutions including Universities and corporate institutes. Within states, there are institutions, viz., WALMI, Forest Research/Training Institute, Institute of Local Self Government, Environment Planning/Training Institute, SIRD, Regional Soil & Water Conservation Training Institutes, Krishi Vigyan Kendras (KVKs),

NGC's state network, Regional Science Centre, Agricultural Training Institutes, Urban Development Centre, Health Training Institute, etc. which on their own undertaking activities that related to DM and DRR, and need to be mainstreamed into the HR and CD network at state level. National Safety Council has state chapters in the state with trained professional members, and have implemented APELL (Awareness and Preparedness for Emergencies at Local Level) and the framework may be mainstreamed in holistic DM CD initiaitives.

3.5 Disaster Management in Higher Education Sector

There are 562 Universities in the country including Central Universities and Deemed Universities, and this vast and capable network of institutions, infrastructure and proficiency need to be involved in HR and CD activities for DM and DRR. DM in higher education has been in place primarily under the modules of EIA and natural resource management, urban studies, in the Universities abroad like Bradford University School of Environment, EIA Centre of Manchester University, Colorado Natural Hazard Centre, Potsdam Institute of Germany, UNU School of Peace and Sustainability, etc. In India, the DM higher education started quite late with the advent of a Certificate and then a Diploma course at IGNOU, followed by M.Sc. course in IIEE of Sikkim Manipal University. Later the M.A./M.Sc. course in DM was started by TISS School of Habitat Studies and an weekend MBA for working professionals in DM at Indraprastha University School of Environment Management. However, disaster management being of interdisciplinary nature based on blend of sciences and touch of humanities and application of technology, caused increased recognition of disaster management as a discipline in the University starting X and XI plan period. Modules/specializations and courses were started by the Universities primarily under their environmental studies curriculum but in certain instances in geography, social work and management as well.

However, research inputs took pace across wider range of disciplines starting social sciences - economics, anthropology, law, to sciences – ecology, geology, biology, chemistry, to engineering – information technology, geoinformatics, civil engineering and planning. Currently, most Central Universities have either/ or are in process of creating Disaster Mangement Centre under the interdisciplinary school of environmental studies (BHU, Ambedkar Univ. Lucknow, Allahabad Univ., Central Universities of Haryana, Punjab, Rajasthan, Gujarat, Bihar, Assam, Sikkim, Amarkantak Tribal University, etc.), whereas certain State Universities (for e.g., Mahatma Gandhi University Kerala, Doon University Dehradun, Ambedkar University Delhi, Gautam Budh University, Bundelkhand University, Jiwaji University Gwalior, etc. have started DM studies under their faculty of environment and regional studies. In some cases like in Bhavnagar University, the DM Diploma course runs in Humanities whereas the Punjab University has dual sector DM courses – one in environmental geography (Masters course) and another in Defense Studies (Diploma) under Public Administration faculty. IGNOU also takes up course on DM under Public Administration in Social Sciences and also in Interdisciplinary Environmental Studies under Sustainability Chair. Chitrakoot University has launched DM course under faculty of chemical sciences.

Central Building Research Institute (a CSIR institute) has started a M.Sc. in disaster mitigation, whereas Punjab Technical University launched full courses on industrial disaster and fire management. University of Delhi transformed its courses from purely science based to make intersciplinary environment studies to include disaster management the module, whereas Jawaharlal Nehru University adapted offering elective on disaster management in combination with EIA and natural resource management within the

Environment Science course itself. Dr B R Ambedkar University aimed at social science studies has a dedicated module on disaster management under the faculty of human ecology. However, the IDMC-2 has recommended to maintain the interdisciplinary context of disaster management studies despite of its reference as a disaster ecology, disaster economics, disaster sociology or disaster engineering. UGC has now considered promoting disaster management education through its scheme of vocation education and support for refresher and orientation courses. IIMs, IITs and IISc have incorporated DRR related aspects in their interdisciplinary curriculum primarily aimed at promoting research and professional development, but have not established dedicated educational and research facility on DM related aspects. However, recently established IISERs and new IIMs/IITs have intangibly DRR related aspects in their scope of work.

3.6 Disaster Management in Basic College Education

On the initiative of NDMA and with the involvement of NIDM, UGC has developed a model suggestive curriculum of an optional/specialization module on disaster management for all undergraduate studies across the country to fit in all subject combinations. The course has been designed recognizing the interdisciplinary inputs required in the teaching of the course and to attract interest of the students. The compulsory UGC module on environmental studies implemented in all UG studies – 1st year or Semester 2, as per directive of Hon'ble Supreme court of India, has a dedicated module on disaster management and the expert committee recommended for its strengthening with project work and field based exercises/learning. Besides, it was also recommended to strengthen DM knowledge in infusing mode across other modules in science, social science, arts, commerce, agriculture, medical, engineering, biology, pharmacy, management, etc. to cover relevant topics of disaster risk reduction. Recently, there are initiative to induce DM and DRR knowledge through the system of NSS, NCC, college eco-clubs, and cultural programmes of students.

3.7 Disaster Management in Engineering Education

Despite of safety and reliability being an established engineering disciplines in institutions abroad, Indian engineering education has rarely incorporated hazard risk management and disaster risk reduction as curricular components, except few modular inputs in environmental engineering, chemical engineering and industrial engineering modules of B.Tech and B.E.. However, introduction of disaster management in mining engineering course has been prevailing. Recently, AICTE on the initiative of NDMA and involving NIDM has developed a model curriculum on disaster management for the students of Civil engineering. Besides this, the compulsory course of Environmental studies as per directive of Hon'ble Supreme court has incorporated DM module as been improved by AICTE. The capacity development in terms of faculty members to deal with the interdisciplinary nature of disaster management is a challenge that has not yet been looked into either by AICTE or the technical universities or boards of education. IITS and NITs being centrally funded have the capacity of establishing dedicated DM centres but have not yet taken such initiatives.

3.8 Disaster Management in Medical Education

Hazard assessment and preventive approach of health related disasters and health impacts of disasters have been dealt in the medical institutions/colleges at two levels (a) emergency medicine, and (b)

environmental health, whereas first medical response is part of the emergency responders training and not for the medical or health professionals. Recently the institutions are setting up Trauma care centres along the emergency medical system with training facilities. WHO has supported AIIMS, NIOH and Madras Medical College with Poison Control Centres. Department of community medicine and, preventive & social medicine divisions are the natural place for infusion of disaster medical training curriculum and training courses. Maulana Azad Medical College, PGI Lucknow, Chandigarh have been active in disaster management related curriculum, study materials development and training. Initiatives from ICMR, Ministry of Health and Indian Medical Board are yet to be visible in order to promote HR and CD in the area of disaster management involving all systems of medicine – modern, traditional, ayurvedic and alternative medicine.

3.9 Disaster Management in School Education

Disaster management in school education got a concern starting UN-IDNDR itself during 1990s but has been recognized by education boards – Central Board of Secondary Education (CBSE), ICSE and recently by the state boards, promoted by the efforts of the Central Government and National Council of Educational Research and Training (NCERT). NCERT has been arguing the concept of infusive model of promoting disaster management and risk awareness among school teachers and students and for developing capacities to save students life, property and environment by including related topics in all subjects of studies rather than additional books. However, later NCERT and school boards in states/UTs have included disaster management books under geography, value education, environment and social sciences. Project mode of DRR awareness and through the value education/foundation course a culture of prevention and safety may be promoted in the students.

3.10 Disaster Management Education in Civil Services

Following the recommendations of the High Powered Committee, United Nations- International Strategy for Disaster Reduction (UN-IDNDR), and Disaster Management (DM) Act, the disaster management related module in the training of Civil service officials were initiated during past decade. However, the module was inducted in the training of probationers of IAS whereas it remained a token module within the mid-term career advancement training of IFS officers. Recently a model curriculum has been suggested by NDMA in cooperation with NIDM for inducting DM and DRR components in all 4 level training of IAS officers. Similarly there are initiatives for induction of DM course in IFS training starting from probationers course. Induction of DRR within the training of other civil services including IFS, IPS, IES, IRS, Indian Economic Service, Statistical Service, Medical Services, is yet to be institutionalized. Initiatives are needed from LBSNAA Mussorie, IGNFA Dehradun, ASCI Hyderabad, Indian Police Academy, Hyderabad, etc. under coordination of NDMA.

3.11 Capacity Development Programmes of NDMA/MHA

NDMA and Govt. of India initiatives towards human resource and CD in area of DM and DRR were significant, but most of such programmes did not yield the institutional mechanism for follow-up or continuity of efforts on sustainable basis. Such efforts need to be relooked from viewpoint of sustainability and continuity by way of institutionalizing and establishing the mechanism for follow-up. Following are major programmes of capacity development operated by NDMA:

(a) CD component of National Cyclone Risk Mitigation Project

(b) School Safety Capacity Development Programme

(c) Capacity Buildings of Architects and Engineers in Earthquake Risk Management

(d) Programme for Enhancement of Emergency Response

Table 1: Institutes and Institutional network working on Disaster Management in India

Institution	HRCD Activities	Support and limitations	Needs and suggestions
1. National Institute of Disaster Management	DM and DRR Training needs analysis, Trainer's modules / manuals, Networking, Teaching/ education, awareness HR Planning, Research, documentation & internship, Knowledge sharing, etc.	• Broad guidelines of NDMA; MHA patronage, Aims to be University. • Lack of professional capacity growth, lack of support professional & technical support, Lack of career advancement and employee benefits. • Pending and delayed strategic decision making. • Dilemma of status (Govt. deptt. / Institute / Academic / Ministrial?) at par with NIT / IIT / IIPA / Universities / Subordinate office?	• Clarifying status of the national level capacity building academic institute. • Clearing faculty career advancement dues and professional growth avenues. • Research and extension support grants. • Medium term (5 years) and long term (10 years) participatory vision plan of institute. • Institute status par with IIT/IISERs/IIMs.
2. Indian Institute of Public Administration	DM modules in APPA Course/ M.Phil. level course, DM courses in S&T, urban, rural dev., climate-change, etc. Origin of Centre for DM, evolved to NIDM.	• MoEF support on climate-change related capacity building. DST support for short courses, • UNDP support. • DoPT support. • Limited professional and senior staff on DM and DRR issues, DM as part of environmental policy and DM centre.	• Dedicated and capable Centre for Disaster Management and DRR Governance with experienced faculty. • Support of NDMA, MHA, MoEF, ICFRE, Planning Commission and Ministry of Agriculture, Water resources, etc.
3. DM Centres (at State	Training design, Conduct	• Central Sector scheme of support,	• Mainstreaming DM faculty with permanent

ATIs)	of courses and workshops, Networking resource persons, awareness, etc.	• UNDP, UNICEF and DoPT support, State Govt. support. • Limitation in terms of sustainable professional faculty and staff. • Diversity of background and interests.	/ established set-up of faculty, like urban, environment, water, geography, public administration. • Consortium with other state training / research institutes and University.
4. DM Centres (at SIRDs)	Only few SIRD functional in DM (e.g., UP), training courses on CBDRM, water, environment, climate & DM.	• Central Sector scheme of support, • MoRD, UNICEF and DoPT support, State Govt. support, other schemes. • Lack of professionally capable faculty on DM and RR.	• SIRD to engage in state DM consortium for training and CD along ATIs/DM Centre, other state training institutes and University. • NIRD to develop faculty on DM in Rural context
5. Geological Survey of India	Training courses on field methodology, risk analysis of Landslides and other geo-hazards, mining, etc.	• Departmental funding • Collaboration with DST, IBM, Ministry of Mines, MoES, etc. • Lack of clear mechanism on DRR related activities.	Dedicated centre for DRR cutting across Environmental, Engineering, Mining Social Geology divisions of GSI and collaborating with NIDM and NDMA.
6. National Remote Sensing Agency, Hyderabad / IIRS Dehradun	Training of faculty members, research scholars on RS-GIS applications in Land-use, EIA, risk analysis for NDM, etc.	• ISRO/ Deptt. of space funding. • NNRDMS programme support. • Institutional mandate. • Lack of professionally developed modules for interdisciplinary target groups.	Collaborative programmes with NDMA, NIDM and Universities CDM, with pre-developed and tested training modules with adequate emphasis on conceptual and field application aspects of RS-GIS for holistic DRR framework.
7. LBS National Academy of Administration	DM modules in all stages of IAS training, in other civil services	• DoPT, NDMA support • Lack of professionally qualified / experienced interdisciplinary faculty for DM & RR training	Centre for DMRR to have interdisciplinary qualified and experienced faculty members; Collaboration with NIDM & other institutes - IITs/IIMs, Universities, etc.
8. Forest	Training IFS	• NIDM joint programmes	• A dedicated centre on

Research Institute, Dehradun	officers, State forest officials, Scientists from other organizations on DM, climate-change and DM, forest fire, Pest attack, IAS, erosion, etc.	• FSI /ICFRE / MoEF schemes • Lack of dedicated facility on DM related CD actions, lack of qualified or experienced faculty on DMRR.	DM at FRI in collaboration with Silviculture and Ecology Divisions. • FRI Consortium on DM with IIRS, FSI, Wadia Institute, NIH, Doon University and DMMC for DM activities.
9. Disaster Management Institute, Bhopal	Training design and conduct on natural and chemical disasters, for Govt. officials and public/ private sector and NGOs.	• State Govt. society, MoEF, GIZ, World Bank supported. Supported by MoAg, now by MHA schemes. • MoEF to upgrade to National Disaster Management & Risk Reduction Institute. • Lack of experienced interdisciplinary faculty at senior level; over-emphasis on consultancy to private sector.	• Muti-disciplinary faculty strengthening for education, training and research. • Develop balance of HRDC mandates with consultancy – Govt. support and guidance of NDMA / MoEF for this. • Develop consortium with EPCO, TCPO, LAMP, University, NSC, IIFM, WALMI, ICAR, RMNH & other regional institutes.
10. MDC for SHE, Bhubaneshwar	One year course in Safety, Fire, Health and short-courses for Govt. officers, Corporate, Community, NGOs, etc.	• Patronage of State Govt. in PPP mode. • Support of Corporate, State Govt. OSDMA, Dept. Factories. • Lack of multi-hazard focus in the courses, • Lack of Central assistance/ support to utilize the excellent infrastructure and devoted professionals.	• Strengthening MDC-SHE on natural and industrial multi-hazard management, with central assistance. • Strengthening cooperation of State Relief Deptt., MDC-SHE. • Enhancing curriculum to include new and emerging topics.
11. IITs/ IIMs / IISc	Training courses for officials, faculty, professionals and	• Good infrastructure and logistic facilities and learning environment. • Support of faculty and students. • Lack of regularly planned	• Establishing disaster management studies interdisciplinary centre. • Short/Medium and long term

	researchers.	courses (occasional and sponsored under schemes) • Lack of a dedicated centre / division of interdisciplinary nature to address DM studies.	(specialization) professional courses in disaster management. • Research activities to support case studies and course modules to support training.
12. Central Universities – Centre for DM Studies	DM short-term training courses, DM specialization in PG & M. Phil. courses, Diploma course	• Most Central Universities have planned DM Centre, few have already functional. • UGC funding and research grant, DST, MoEF, MoES, CSIR, ICAR support.	Specialization module on DM in interdisciplinary courses at PG and M. Phil., Certificate and Diploma course. UGC model syllabus to be customized accordingly.
13. State Universities (Interdisciplinary Faculties)	Diploma course, Specialization module in PG courses.	• Some have functional DM studies centre, some others have in their plan. • Lack of faculty with interdisciplinary expertise and DM related experience.	• Universities located strategically may be preferred for State Govt. support. • UGC may consider plan / scheme grant support.
14. TERI University	Workshops, training and PG courses with module on DM	• Specialization module on DM in courses on environment, NRM, policy, GIS and Climate-change. • Lacks a dedicated module on DM and DRR.	• Interdisciplinary Centre for DM may be created by TERI. • UGC may consider plan / scheme grant.
15. Academic Staff Colleges	Refresher and Orientation courses, training.	• Some with UGC funds included DM module course in environment, geography and social work courses. • Lacks linkage with Govt. Higher education department and DM Deppt.	• Dedicated share of UGC funding under interdisciplinary areas for courses. • Networking with State DM Deptt with Higher Education and ASCs.
16. Tata Institute of Social Sciences	MA/M.Sc course in Disaster Management	• Centre for Disaster Management under Habitat Management. • Lacks interdisciplinary faculty inputs on S&T based, policy planning approach.	• Centre for DM studies be strengthened with interdisciplinary faculty staff. • UGC may consider plan / scheme grant.
17. CEPT University Ahmedabad	Short-courses on DM for officials,	• Interdisciplinary faculty strength, field exposure based studies.	• Interdivisions Centre for DM studies may be established.

	faculty, Modules in Graduate, PG courses	• Good institutional network. • Environmental planning Div. coordinates but lacks a dedicated centre.	• State Govt. or Corporate grant may be mobilized. • UGC may consider plan / scheme grant.
18. Indian Institute of Ecology & Environment	Pioneered on DM education in the country. PG courses in DM, Sustainable development, etc.	• Degree awarded by Sikkim Manipal University. • Comprehensive course content and good study materials. • Lacks course updating with recent issues and emerging topics.	• Cooperation with NGOs, corporate and Govt. may improve the standard of delivery. • May affiliate with the University in the region and improve the facilities of teaching.
19. Directorate General of Mines Safety	Courses for Mines safety officers	• Courses with international standards. • Lacks multidisciplinary inputs and exposure to intersectoral issues in the contents.	• Networking with Engineering Institutes, State DM Centre and Training Institutes. • Exposure of DM professionals desired.
20. National Safety Council	Short-courses in safety, DM, emergency management, planning, health, etc.	• Courses for officials, industry, private/public, NGOs, etc. on disaster risks in industry, tourism, natural hazards, etc. • Lacks dedicated training set-up and training professionals.	• Dedicated training and research facility may be developed by NSC in states. • Cooperation from SDMAs be mobilized. NDMA and MoLE may support.
21. Directorate General of Factory Advise Service & Labour Institutes	Certification Diploma course on Safety, short-courses	• Internationally accredited course and good market reputation. • Lacks diversification and multi-hazard exposure. • Lacks focus on risks in case of natural hazards or responders issues.	• Course may be updated and / or optional module may be added to improve the delivery. • MHA, NDMA and MoEF may network to support with incentive.
22. Training Institutes of Central Para Military Forces	Training to NDRF Battalions	• Four training institutes: National Industrial Security Academy, Basic Training Centre, Central Training College, BSF Institute Tekanpur. • Battalion level training	• Creation of NDRF Academy for coordination of training, under NDMA guidance and MHA affiliation. • NDRFA to network

		institute. • Lack of consortium mode and inter-affiliation of institutes at one point.	with 4 institutes, NIDM, National Police Academy, National Fire College, NCDC for NDRF's training.
23. Centre for Environment Education (CEE)	Training Materials, design and conduct of courses on DM	• Multi-hazard focus approach • Special emphasis on coastal and mountain hazards, ecoDRR • Coordinating National Green Corps programme of master trainers, training, eco-clubs national network • Lack of continuous and dedicated DM programmes	• A DM education facility to be set-up at CEE, with support of MoEF / NDMA, or MHA. • Coordination and networking of CEE zonal groups with Universities, NIDM, SDMAs, State Climate-cell, etc. • Key NGC interventions in teachers training.
24. Centre for Science & Environment	Training courses on Analytical and Planning methods in DM	• Courses for corporate, Govt., scholars, NGOs on EIA, social impact assessments, risk analysis, etc. • No dedicated programme for DM and DRR	• Potential for DM and DRR facility at CSE for role of Media, Science and Environmental coverage. • Down to Earth may regular feature on DM.
25. National Civil Defense College	Training on disaster, relief, response, community mobilization.	• Targeting network of civil defense, Govt. and NGOs • Being institutionalized with NDMA and MHA's DM framework • Lack of adequate faculty and interdisciplinary professionals on its core mandate – first response, relief, WATSAN, food, etc..	• To be upgraded to National Institute of Relief Actions and Civil Defense. • Network with Ministry/Dept of Youth Dev., Sports, School Education, Women & Child, etc. • Vision planning.
26. National Fire Service College	Short Training and Diploma in Fire Management	• Full time courses, established institute. • Lack of adequate network with users in DM sector, ULBs except industry/ police.	• To be upgraded to National Fire Management Institute • Courses to be improved to include holistic DM on fire management.
27. Central Building Research	Short courses on safe buildings, M.Sc.	• Courses on structural safety and resilience.	• To be a centre of excellence on building safety.

Institute	disaster mitigation.	• Green building and Bio-concrete innovations. • Poor network with users and training Institutes.	• Courses be in network of NDMA, NIDM and Universities.
28. Wadia Institute of Himalayan Geology	Short courses on Landslide RM, seismicity, Glacier studies	• Capacities on geo-risk analysis and forewarning. • Lack of network for performance in HR and CD actions.	• DST / MoES may support a DM centre for case studies. • Courses in collaboration with petroleum Univ., FRI and NIDM.
29. GB Pant Institute of Himalayan Environment	Short-courses at Sikkim Unit, Almora on DM issues, Research studies.	• Supporting a DM Centre under Central Sector scheme. • Available but capable professionals not engaged in DM training.	• Institutionalizing DM Centre and mobilization of MHA, NDMA, MoEF support. • Networking with other institutes in hilly areas.
30. National Safety Council	Training of Industrial, Corporate, Govt. and NGOs on safety, DM, etc.	• International exposure, trained professionals • Implemented APELL programme • Lack formal institutional integration with DM framework.	• NSC to be in formal network with NDMA and NIDM. • NSC may coordinate with MoEF and MARGs, MoLE and corporate houses.

CHAPTER 4

4. Capacity Gaps

Looking to the various functions and need of capacities of performance in different stages of disaster management: pre-disaster assessments and planning, mitigation and preparedness, disaster response, relief, reconstruction and recovery, and feeding the lessons into future strategies of disaster management, following are some key proficiencies identified for human resource developments:

- Risk Analysis and Vulnerability Assessment
- Mitigation Selection and Planning
- Climate-change Adaptation and Resilience Planning
- DRR and DM policies and legislation
- Safety Design, implementation and monitoring
- Mitigation Analysis and risk auditing Risk Communication and Spatial planning
- Residual risk and emergency risk analysts
- Emergency preparedness planning
- Emergency response management planning
- Emergency responders (search, rescue, first aid, critical care)
- Relief (shelter, water, sanitation, waste, food, rehab) management
- Impact (Damage & Loss), , needs assessment
- Safe construction and retrofitting
- Recovery (livelihood, environment, sustainability) planning
- Mainstreaming DRR into developmental planning
- Knowledge support system to support planning and implementation
- Integrating DRR into sustainable development

Looking to the multi-disciplinary inputs and interdisciplinary coordination needs, the HR plan need to address DM and DRR infusion across the various disciplines, besides developing core professionals with advanced knowledge and skills on DM related assessments, policies, planning, monitoring and evaluation and field level coordination. Capacity building is much more than training and includes the following:

a) Human Resource Development, the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively,

b) Organizational Development, the elaboration of functional concepts, structures, processes and procedures, not only within the organizations, but also the relationships between different factors, approaches and sectors (public, private, community), and

c) Institutional, Legal and Policy Framework, making legal and regulatory changes, strategies and enabling organizations, institutions, agencies and the people at all levels and in all sectors to enhance their capabilities.

Different sectors work for their own organizational goal and their software and hardware are developed accordingly. The human proficiency of the organizations is built to respond to the respective job responsibility. Disaster Management in the form of emergency response and relief has been confined to one department (Relief and rehabilitation department of the state) and also it was not considered or seen as regular work of the department. Hence the capacity to respond to disaster was never seen as a priority. Now with the changed mandate, the new job and tasks have been added to the job profile of every sector. Now there is a need to develop a detailed exercise by each sector to identify the capacity of individuals and of Institutions in respect to the new job task need for disaster management capacity building. Therefore, it is important to plan the development of human resources with clear objectives. Following four objectives are defined to set the motives and goal of the envisaged human resource plan (STRAT-HRD):

a. Systematic approach to empowering human-performance to the functions of disaster management and risk reduction.

b. Institutionalization and institutional development for promotion of disaster management and risk reduction education and practice.

c. Mainstreaming 'DRR knowledge & skills' into higher and basic education, R&D sector and personnel proficiency development.

d. Development and implementation of programmes and projects enabling the proficiency and performance of professional and practicing personnel in disaster management.

4.1 Creation of Cadre of Disaster Management Professionals

In order to develop proficient capacities of disaster management and risk reduction related expertise and services in the country, it is utmost important to raise a section of practitioners, professionals, educators and trainers as an identified Cadre of DM Professionals. Following are the means envisaged in this HR and CD plan towards developing and promoting a DM Cadre of professionals.

(a) Paradigm shift from 'in-service training centric' to 'induction training and education' centric

(b) Honors mode of Specialization-cadre Raising on DRM (from Civil and allied services)

(c) Specialization modules of interdisciplinary higher education on DRM,

(d) Super-specializations DRM related modules of research based courses in higher and professional education.

(e) Specific course programmes on specific aspects of DRM (Degree, Diploma and Post-Graduation).

(f) DRM educators and trainers.

(g) DRM service practitioners (emergency service managers).

(h) Emergency service volunteers.

Keeping DM professional cadre isolated would not be appropriate looking at the administrative and governance system of developmental planning and disaster management in India. Besides this, disaster response being the activity based on an event, the isolated cadre of DM shall not be economically viable strategy and would also contradict with the in-pace approach of HRCD (except the dedicated NDRF). Developing specializations and super specializations of knowledge and skills related to handling DRR and DM functions in the person's own area of work shall be an effective option (for example, a medical professional specializes in emergency medicine, and further super-specializes in handling burn injuries). The DM professional cadre development plan is discussed below:

Induction training and higher education: There is need to give more emphasis on developing DRM capacities by introducing it at the induction/probationers training and in the higher education curriculum itself, rather than orientation courses. Re-orientation of in-service personnel often faces the challenge of un-learning and mal-adaptations. Therefore, the notion is to boost up the training efforts at all stages for a plan period and then gradually phase out the training with the institutionalization of DRM education. However, the training and re-training of practitioners like emergency responders (S&R), fire fighting, first medical aid, etc. shall continue for regular updation of new advances and to keep the personnel upto mark in their fitness to the job.

Specialization-cadre on DRM: In order to raise specialized cadre of DM professionals, a 2-5% of Civil service (IAS, IFS, IPS, IES, IMS, ISS, etc.) officials need to be identified for induction to the specialization cadre of DRM after they undergo a specialization course on DRM at a Central University, IIM/IIT/IISER/IIPA or NIDM. A mechanism for the same may be developed by DoPT in coordination with MHRD.

Specialization modules of interdisciplinary higher education: Option of higher education aimed at professional development towards specialized functions of DRM or the holistic approach of disaster management may also help in promoting the cadre of professionals to cater to specific needs of DM framework at different levels.

Super-specializations DM modules in research courses: DRM specialization cadre may also be developed among the research based programmes aimed at developing proficiencies of analysis, logical interpretation, futuristic projections and theorem solving. Incentives and fellowships may also be offered for undergoing such courses.

Specific course programmes: Where needed some specialized needs to be fulfilled by promoting professional development programme in specific areas of intervention, for example, a course on Safety &

Reliability Engineering, EIA and Risk Analysis, Emergency Planning, Climate-change and DRR Strategy, Damage and Loss Assessment, and/or DRM law and policy planning, etc. need to be designed and conducted by the relevant institutions to help raise the professional cadre of specific services in DRM.

DM educators and trainers: Pacing towards achieving HR and CD objectives of DRM in India, a cadre of educationists and trainers also need to be raised from the relevant disciplines or preferably from the interdisciplinary areas of studies with academic and professional background of blend of sciences, humanities and exposure to technological advances.

Emergency service managers: As mentioned above, the dedicated cadre of professionals need to be raised in particular for the specific services during emergency response and relief management. This may include Search & Rescue, First Medical Response, Debris Removal, Emergency Logistics, and Management of Relief Operations.

Emergency service volunteers: Cadre of trained and dedicated volunteers on DRM related emergency response functions from among the volunteers with NGOs, NSS, NCC, Nehru Yuva Kendras, and other formal or non-formal and government and non-government groups may be raised and kept in network as capacity reserves.

CHAPTER 5

5. Prioritization of Training Needs

Strategic Approach of DMRR Human Resource Capacity Development (STRAT-HRD, 2012-17 and beyond, unto 2021):

The concurrent strategy of human resource and capacity development plan for Disaster Management and Risk Reduction (DMRR) shall aim at enabling the shift in the prevailing scenario and following six approaches identified:

a. Shifting 'Reactive & Compensatory' to 'Preventive & Proactive Culture' approach

b. Improving 'Isolated And Compartmentalized' to 'Integrated & Holistic' centric approach

c. Evolving 'State & Engineering' centric to broad 'People & Environment' centric approach

d. Changing 'Externality & Assistance' centric to 'Local/Regional & Self Reliance' approach

e. Enhancing 'Training & Command' to interdisciplinary 'Education & Management' approach

f. Integrating 'Disaster Management' into academic system, R&D, extension and governance.

Key intervention areas for different disasters for their management have been identified from the respective NDMA guidelines, other strategic and research based documents. Following list (Table 1) enumerates the key interventions in different stages of management cycle in reference of common disasters in India.

Table 2: Disaster and their management at different level

Disaster type	Pre-disaster	During-disaster	Post-disaster
1. Landslides	Slope failure risk assessment, land stability, landscape ecology, slope protection bioengineering, rehabilitation, Warning and alert	Search & Rescue, Debris removal, Rehabilitation, Relief, transport/ road management	Mass stabilization, geo-bioengineering, eco-rehabilitation, landscape management.
2. Flooding	Catchment rehabilitation, soil & water conservation, climate-change adaptation, risk analysis, early warning, zoning, resistant housing, cropping, river basin management, bank stabilization, siltation check, Community preparedness	Evacuation, Search & Rescue, Relief – water & sanitation, food and food safety, waste and environmental health; Law & order control, transport, panic management	Rehabilitation, Eco-rehabilitation, Crop-adjustments, Reconstruction & recovery

3. Urban flooding	Heat-island, urban drainage, solid waste, sewage and run-off management, land-use master plan, wetlands, rainwater harvesting, risk analysis, alert & warning, Climate-change adaptation	Alert & warning, Traffic management, Floodwater relief, Food, water & sanitation; environmental health	Rehabilitation, Site clean-up; Drainage improvement, landscape regulation and ecosystem functions
4. Earthquake	Risk zonation, Building design/ structure, Materials, Retrofitting. Personal safety behavior	Evacuation, Search & Recue, Debris removal, Medical response. Shelter management	Trauma care, Maintenance / re-building, Retrofitting, Recovery
5. Drought	Risk and vulnerability analysis, Land & water, Forestry & grassland management, Land-use alternatives, Cropping models, Resistant crops, Soil conservation, watershed, wetlands & wastelands, Food, fodder & fuel storage, Climate-change adaptation, insurance	Cropping adjustments, Irrigation, Water use – reuse, recycling, Environmental health, Relief – food, sanitation, medicine, employment	Crop and livelihood recovery, Environment – vegetation, water & health management, land-use
6. Cyclone / coastal hazards	Coastal protection, mangrove and coral reefs, Dune and sand flora, Erosion control, Sewage and waste management, cyclone shelters, housing design, preparedness & communication	Alert & warning, Communication, Response S&R, Medical, relief – Water, food, sanitation, debris, waste management	Rehabilitation, Replanting trees and gardens, Sustainable recovery.
7. Forest fire	Fire-weather assessment, fire risk mapping & rating, Litter management, Water & climate, Planning, Preparedness, Community engagement	Fire alert, Warning and communication, Fire fighting, Incident management, Community involvement	Loss reporting, relief/ compensation to affected people, Incentives, Recovery
8. Chemical	Land-use & Site assessment, multi-hazard risk analysis and mapping, Enviro-legal compliance, HAZOP/HAZAN, DMP/EMP, Audit, Mock-drill, preparedness, Public awareness, On-site – Off-site, DDMP coordination, etc	Warning, Evacuation, Incident response, Clean-up operation, Plan improvement, Coordination, Accident reporting	Accident analysis, Fault tree, Relief and compensation, Litigations, Cause rectification, Audit.
9. NBC	Risk profiling, Mass awareness, Capacity mapping, Institutional Alertness, etc.	Shielding, seizing & source control, Detection – protection, decontamination, Panic management.	Effects assessment, Relief, compensation, Litigations, Community resilience and peace.
10. Pest attack	Pest weather risk assessment, Risk	Control of pest spread	Relief and

	reduction – infestation check, People's alertness, Plant protection, Preparedness.	and survival, Damage remediation.	compensation, Future planning.
11. Epidemics	Water & waste management, disease prevention, source mapping and control, Altert and counter capacity, Immunization.	Cause identification – source check, Spread control, Treatment of affected, Remediation.	Relief and compensation, Future planning and environmental-health.
12. Railway accidents	Techno-managerial improvement, hazard & risk analysis, signaling, communication, Accident prevention, Planning, Emergency communication & response van	Search & Rescue, Coordination with local/district government, community, medical response	Accident investigation, Litigation, penalties, Incentives, Relief, Compensation, System recovery
13. Stampede	People management, information control, law and order, planning, awareness	Site control, dislocation relocation of people, information check, panic control, aid.	Medical and other relief, food, safe return home, etc.
14. Inter-sectional areas in all disasters	Disaster risk analysis, Socio-economic, Environmental & health impact assessment, DRR strategy and DM planning, integrating DRR with environment, housing and infrastructure development, Insurance; Capacity development & education.	Situation & need assessment, Impact (damage & loss) assessment, Rapid EIA of disasters, Social & Environmental needs assessments, System coordination.	Damage and Loss Assessment, Sustainable reconstruction and recovery; Preventing secondary risks; Future DRR actions, Law and policies.

Looking at the various aspects of knowledge, skills and motivations required in promoting the culture of safety, prevention and preparedness for effective disaster management environment in the country, the priority areas of education and training need to focus on the following:

5.1 Training

Training in disaster management in India has taken a pace during last decade. However the programmes, targets and contents were not strategically planned. Training in DM needs to be in balance between need and supply driven. On one hand, it has to consider the needs of the target group and stakeholder as realized by them based on their own understanding. However, the training strategy and scope should not miss out the advances, research and strategic recommendations and emerging approaches at international levels as well. Thus, mode of local diagnostic inputs but integrated approach of remediation may work well in addressing the challenge. Training shall target for the following capabilities:

A. Interdisciplinary proficiency of disaster related assessments, planning, coordination, implementation and monitoring, DRR approaches, and addressing emerging challenges.

B. Department specific/sector specific functions in disaster management, e.g. finance, housing, water, sanitation, land, health, law & order, agriculture, forestry, industry, infrastructure, etc.

C. Response specific training for Search & Rescue, debris removal, first aid, etc. under effective incident command mechanism

D. Relief management including planning and managing shelter, water & sanitation, environmental health, food, psychosocial and special needs, rehabilitation, etc.

E. Analytical and assessments approaches and skills including risk and vulnerability analysis, damage/loss assessment, EIA, mapping and information support to planning and decision making.

F. Training of faculty members (teachers, trainers) on DM & DRR curriculum design, notes and methods, module development and course delivery with input on DM concept, objectives and scope of contents.

Training approach and methodologies may include the following:

(a) Probationers/Induction Training (at Central/State Civil Services – Administrative, Forests, Revenue, Economic, Statistical, Medical, Railway, etc.)

(b) Practical Training (training to standard job performance – S&R, police, medical, laboratory and analysis, survey, mapping, etc.)

(c) Refreshers (in-service) or Orientation Training (mid-career training, promotional training)

(d) On-line (web-enabled) Training

(e) Blended Learning (Online+face-to-face)

(f) Educational Training (professional advancement courses – B.Tech. / Diploma, Masters, Research degrees)

(g) On-job Training (training in the form of learning by doing at work/practice)

(h) Interactive Training (Mutual learning peer-to-peer in a working group)

Table 3: National Capacity Development (Training): Institutional Framework

Institute/ Organization	Areas of intervention	Activities - level
1. National Institute of Disaster Management	DM & DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training & research needs and strategies, Documentation, Policy analysis and law, Planning, Strategic and analytical tools, International, regional & institutional cooperation, Human resource planning, Interdisciplinary coordination, etc.	Training need analysis, Development of training design, modules / manual and toolkits, Diploma and higher level programme on interdisciplinary curriculum of disaster management. National/ international and state levels.
2. National / Regional Science Centre(s)	Disaster Risk Management Training and Awareness, Culture of safety and prevention, etc.	Short courses and Orientation for School Principals, Teachers and School Volunteers, Members of Eco-club, etc.
3. National Institutes of Technical Teachers Training	Safety and risk reduction in technical education / institutes, lab safety, electrical and chemical safety, earthquake safety, pandemic control, disaster risk reduction, awareness, etc	Short courses and Orientation for College/School Principals, Teachers and Demonstrators. Technical staff, Members of Eco-club, etc.
4. National Labour Institute and Regional Labour Institutes	Safety risk analysis, multi-hazard risk reduction and emergency planning, culture of prevention and preparedness, coordination, Occupational health & safety, etc.	Diploma course on Safety Risk Management, Occupational health & Safety, Response preparedness, Short-courses for Govt. officials, etc.
5. Academic Staff College(s) in Universities / Sponsored Orientation programmes in University Departments	DM & DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training & research needs and strategies, Risk analysis and impact assessment, Regional and local cooperation, Planning and preparedness, Role of NSS, NCC, Infusing DM and DRR into higher education, etc.	University Department Heads/ Deans, College/ Teachers, Technical Staff, etc. – Zonal/ state level courses under UGC refresher/orientation course under environment studies and sponsored by other Ministries – NDMA/MoEF/DST, etc.
6. Indian Institute of Technology (IITs) / Indian Institute of Management (IIMs) / Indian Institute of Science Education &	DM & DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training & research needs, mitigation strategies, Risk analysis and impact assessment, Mutli-hazard risk analysis and management, EIA, Auditing, Chemical disasters, Climate-change, Coastal and forest related disasters, Disasters related with water, sanitation and health, waste	Training of Faculty members of Universities/ Management / Technical Institutes, Senior officials / executives from Government, Corporate or NGOs, Professional and management development courses, etc.

Research (IISERs) / IISc Bangalore	management, climate-change; Law & policy, vulnerability, Planning & management, etc.	
7. National Institute of Food Technology & Management	Disaster risks related to food insecurity and food safety, Risk analysis, Disasater risks during processing, transport, storage and use. Risk reduction, Food management during disasters and emergencies.	Training to Food, Environment and Agriculture sector officials, Traders, Disaster managers, etc.
8. Institute of Economic Growth	Role of policies and legislation in disaster risk reduction, economic evaluation of environmental impacts of disasters, natural resource policies and DRR, disaster impact assessment, financial instruments of DRR, Environmental statistics for disaster management.	Training to officials of Indian Economic Service, Indian Statistical Service Officials; Faculty members of economics, environment, agriculture, geography, management, etc.
9. Indian Institute of Forest Management Bhopal / 10. Forest Research Institute, Dehradun	DM & DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training & research needs and strategies, Risk analysis and impact assessment, Forestry sector & disaster management, Forest fire management, etc.	Training of IFS Officials, State Forest Service Officials, Faculty members/Scientists in forestry/ environment, S&T, agriculture institutes, etc.
11. NDMRRI (DMI Bhopal)	DM & DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training & research needs and strategies, Risk analysis and impact assessment, Mutli-hazard risk analysis and management, Industrial disasters, Climate-change and related disasters, Coastal hazards and risk management, mining and forest related hazards, Housing and DRR, etc.	Training of Government officials from Ministries/departments – DM, environment, revenue, agriculture, forestry, water resources, rural development, etc. and faculty members from institutes in the above fields, Executives from public/private sector industries, etc.
12. National Environmental Engineering Research Institute (previously Central Public Health Institute), Nagpur	Disasters related with water, sanitation and environmental-health, waste management, food safety, climate-change; Management of these during disasters and emergencies, EIA, Risk analysis, Auditing, their infrastructure and recovery planning.	Scientists/engineering and planners in Government/ outside, NGOs, Disaster managers, and Faculty members from related institutes, Officials from pollution control board, water supply, health, DM, etc.
13. National Institute of Rural	DM & DRR Approaches, Integration and mainstreaming, Adaptation; mitigation strategies, Risk analysis and impact	Training of officials from Government department – Rural development, water, environment,

Development	assessment, Mutli-hazard risk analysis and management, Climate-change and natural resources related disasters, Food security and livelihood issues in disaster management, rural institutions and community participation in DRR.	land-use, agriculture, etc. and faculty from Institutes of Government and outside, NGOs, PRIs, etc.
14. Indian Agriculture Research Institute	DM & DRR Approaches for agriculture, food and natural resources, Integration and mainstreaming, Climate change adaptation; mitigation strategies, Mutli-hazard Risk analysis and impact assessment, Agro-chemicals, GMOs, biotech and microbial disasters, Coastal and forest hazards; Plant protection, land-use, rural livelihood and DRR, etc.	Training of officials of deptt. – agriculture/ forestry, land-use, environment, KVKs, WALMI, faculty of related institutes/ colleges, NGOs, etc.
15. Lal Bahadur Shashtri National Academy of Administration	DM & DRR Approaches, Integration and mainstreaming, Adaptation; planning needs and strategies, Coordination, Strategic and analytical tools, regional local cooperation, Human resource planning, ground action evaluation and monitoring, disaster reporting, institutions, Incident management, etc.	Training of IAS officers (all levels) and other Civil service officers, and faculty members in Administrative Training Institutes at states/UTs, etc.
16. Indian Institute of Public Administration	DM & DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training & research needs and strategies, Risk analysis, EIA, Cooperation, Planning and preparedness, Infusing DM and DRR into higher education, environment and development, Environmental law and policy role in DM, Policy analysis and governance for DM, etc.	Training of officials from Central/State Government, Corporate, Public/private sector, NGOs, and faculty members from Institutes /Universities; APPA participants, Elected members, Civil service officials, Scientists and Technologists from Govt. Institutes/Departments, etc.
17. Centre for Disaster Management (in Central Universities)	DM & DRR Approaches; Integration and mainstreaming, Risk analysis, damage assessment, Climate change adaptation and mitigation strategies, Financial strategies, Climate-change, Coastal and forest related disasters, Auditing, Chemical disasters, Urban risks, Disasters related with water, sanitation and health, waste management, EIA, Law & policy, vulnerability, Planning & management, , community participation, Psychosocial care, etc.	Professional training courses – Diploma and Post-PG courses; Training to Faculty members of Training institutes/colleges and Universities, NGOs, Corporate, Govt. departments, etc.

18. National Remote Sensing Centre, Hyderabad / 19. Indian Institute of Remote Sensing, Dehradun	DM & DRR Approaches for agriculture, food and natural resources, housing; Integration and mainstreaming, Climate change adaptation; mitigation strategies, Mutli-hazard Risk analysis and impact assessment, Coastal and forest hazards; land-use and DRR, using principles and application of space technology, multi and hyperspectral remote sensing, Geoinformatics application, data integration and presentation for decision support system, web-enabled systems of event reporting, planning, etc.	Training to Faculty members of Training institutes/colleges and Universities, NGOs, Corporate, Govt. departments, etc., Professional training courses – Diploma and certificate.

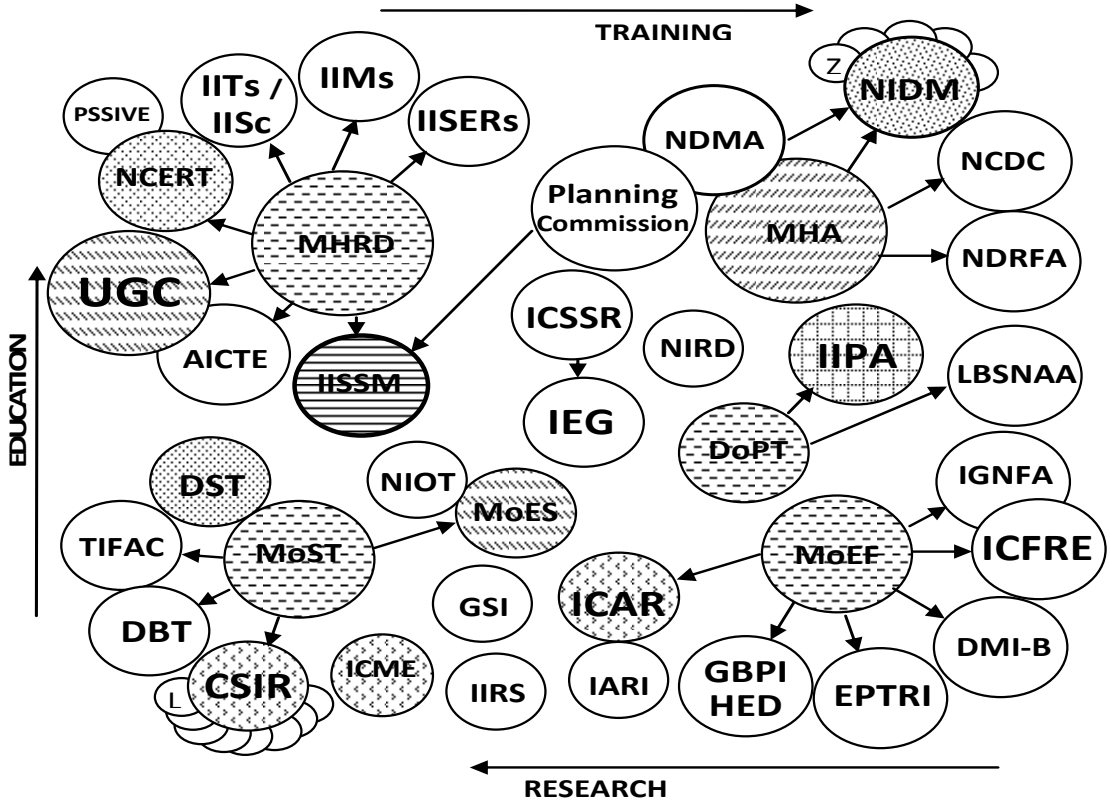


Figure 4: Institutional mapping for education, training and research in DM

5.2 Education

'Education' component of human resource development and CD shall encompass the following:

(a) School education

(b) Basic college education

(c) Higher education (educational training)

(d) Non-formal education

School education: Strengthening DM education at schools aims at basic DM awareness and sensitization curriculum across other subjects of school education in infusion mode especially in foundation courses, environmental studies, geography and within cultural activities and science promotion projects like NGC, eco-clubs, etc. It shall have following strategies:

A. School safety and disaster management system at schools levels – integration with school affiliation and development mechanism.

B. Provisioning and implementing safety audit in schools including evaluation of teachers, staff and student's awareness and preparedness.

C. Provisioning DM and DRR related contents across the course of studies starting primary education upto middle school in infusion model to account for around 2-5% of the overall learning in each standard.

D. Provisioning DM and DRR as integral component within environment and value education module of teachers training (B.Ed., D.Ed., L.T. and M.Ed.) courses.

E. Integrating disaster safety and emergency preparedness issues with the school eco-clubs and National Green Corps's activities and maintaining activities report for audit.

College level Basic Education: Targeting undergraduate students largely aims at promoting the culture of aware and prepared citizen who can also contribute to the national and community efforts of disaster risk reduction and emergency preparedness. This will also promote the section to develop a motivation for future higher studies leading to professional contribution towards any specific aspect of DM.

A. Optional/elective paper on DM in all undergraduate studies in all Universities and colleges and/or integration with relevant compulsory courses.

B. Customized study units on DRR and DM with discipline relevant topics across subjects like, biology, chemistry, geology, geography, economics, psychology, agriculture, medicine, pharmacy, ecology, forestry, home science, engineering, etc. at undergraduate basic, professional and vocational studies.

C. Provisioning Teachers Refresher course and Orientation programmes at Academic Staff College (at least one such course every year to focus on DM and DRR).

Higher and professional education: Higher studies in disaster management and DRR shall aim largely at developing specialized professional capabilities in the section of qualified citizen to contribute to the functions of disaster management, many of them opting it as a career option as well. Interdisciplinary background with blend of sciences and humanities will be useful for DM planning and coordination functions whereas specialization in professional, technical and allied studies institutions shall cater to the need of specific functions within DRR and DM.

A. Interdisciplinary full courses at Certificate or Diploma level programme in DM and DRR with inputs from relevant disciplines of teaching.

B. Over and above education in DM and DRR as specialization within the interdisciplinary areas of higher studies like environmental studies, social work and public administration.

C. Specialization/optional and full, research based special courses (like M.Phil., Ph.D.) on DM and DRR area of study.

D. DM specific professional development courses for delivery of a specific DM function (for e.g., Multi-hazard risk assessment; DRR Strategic Planning; Safety and reliability engineering, Climate-change and DRR, Emergency medicine, WATSAN in Emergencies, etc.) as Diploma/Degree/PG degree, indicated in Table 4.

Table 4: List of indicative key functions/ interventions in management of different disasters

Institutes/ Faculty	Course/ Modules	Related sub-disciplines	Course Contents - Key Words
1. Engineering & Tech. Institutes (NITs, IITs, Tech. University, etc.)	Safety & Reliability Engineering (B.Tech.), Optional module on DM in M.Tech.	• Environmental Engineering • Structural / construction engineering • Industrial Engineering • Mechanical Engineering • Geology/Geo-technology	Hazards and disasters; Construction materials and housing, design, Seismology, Safety and failure risk analysis; mechanical, electrical and chemical and technological safety, dam safety, drainage, wastewater, climate control, green building, railway safety, risk communication, Signaling and alarm, Safety automation, Retrofitting & construction, mainstreaming into development, etc.
2. University Schools of Environmental Studies, FRI, IARI.	PG and M.Phil. Specialization Modules, Post PG Diploma in DM	• Applied/ Human Ecology & Law • EIA , Auditing & Emergency Plan • Disaster risk management	Natural and anthropogenic hazards, climate-change, chemical accidents, EIA in DM, socio-economic aspects, vulnerability, mitigation, land-use, sustainable agriculture, coastal management, impact minimization,

		• Abiotic/geological environment • Environ. Mgmnt, Tech. Planning • Climate-change management • Natural resource Management	relief shelter, water & sanitation, waste mgmt, preventive health, food safety, damage & needs assessment, reconstruction, green building, green recovery, livelihood, rehabilitation, role of environmental & NRM law & policies, mainstreaming into development, etc
3. University Schools of Social Science & Management, ICSSR, Institutes, etc	Specialization Modules in MSW, MBA, M.Phil.	• Welfare (MSW) • Master of Business Administration • Developmental / environmental & social economics • Regional planning & Geography	Environmental, technological and security related hazards and disasters, vulnerability concept and components, disaster risk reduction, climate-change, housing, ecological risks, fiscal instruments, insurance, disaster relief, psychosocial and trauma care, gender issues and care of old, women and children, economy of social & environmental impacts and recovery, business continuity, law & development policies, mainstreaming into development, etc.
4. National Law University, Law Schools/ Institutes/ Colleges	Modules in Diploma, LLB, Sub-specialization in LLM.	• Environmental Law • Human Rights Law • Business & Corporate Law	Hazards and disasters, concept of vulnerability; environmental and climate-change, land-use; role of environmental jurisprudence, EIA and natural resource laws in DRR, PIL, *suo moto* directives on environment and disasters, liability, insurance, compensation laws; green tribunal, Rights to life, health, environment, etc. duties of state and citizen, Case laws, etc.
5. Medical & Health Faculty (PGIs, Medical Institutes, Colleges, etc)	Emergency Medicine; DM Mod (PG), Module in MBBS, Optional in Diploma, PG courses	• Community Medicine • Environmental-health (PSM) • Orthopedics • Trauma-care • Critical Care Medicine	Natural, anthropogenic technological hazards and security threats, health vulnerability, Injury, Trauma risk reduction, Relief, GMOs and risks, food safety, water borne risks, resistance & disease management, climate-change, bioterrorism, pandemics, health disasters, waste management, water & sanitation, environmental health in disasters, epidemiology, etc.

Non-formal education: Targeting non-formal education to infuse and inculcate DM awareness and culture of safety and prevention opens a wide window of programmes and activities at different levels. These may include – Sarva Shiksha Abhiyan, Aangan Wadi, AASHA, Adult education, Open Schooling, National environmental awareness campaign, etc. to include across the components of disaster risk knowledge, mitigation and preparedness.

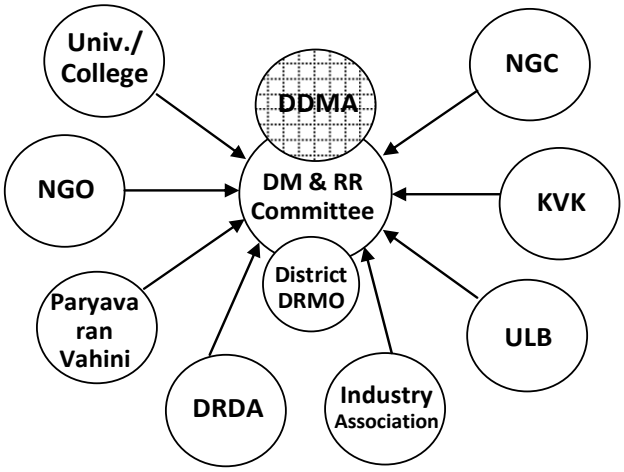


Figure 5: District level institutional network for DM related capacity development

5.3 Training and Capacity Development Framework at District and State levels

Local solutions and regional/district level strengthening is most important in disaster risk reduction strategy integration with other district level plans, developmental planning process, environmental action plan, natural resources, infrastructure and other sector plans, under broad framework of integrated district planning. In order to enhance DM and DRR capacities at local levels, an institutional framework is proposed at district level as well. In present times the progress in technological and information system advances, network of expertise with educational institutes like degree and post-graduate college, NGOs, etc. can be better organized to help promote the culture of prevention and safety at all levels. The HR and capacity development organization at district level may involve the following:

(a) District Disaster Management Authority

(b) Disaster Management Committee

(c) Disaster Management Office

(d) Industrial Association

(e) University/Colleges

(f) NGC District-lever Trainers

(g) District Paryavaran Vahini

(h) NGOs

(i) Urban Local Bodies

(j) Krishak Vigyan Kendra

(k) District Rural Development Agency (Training Unit)

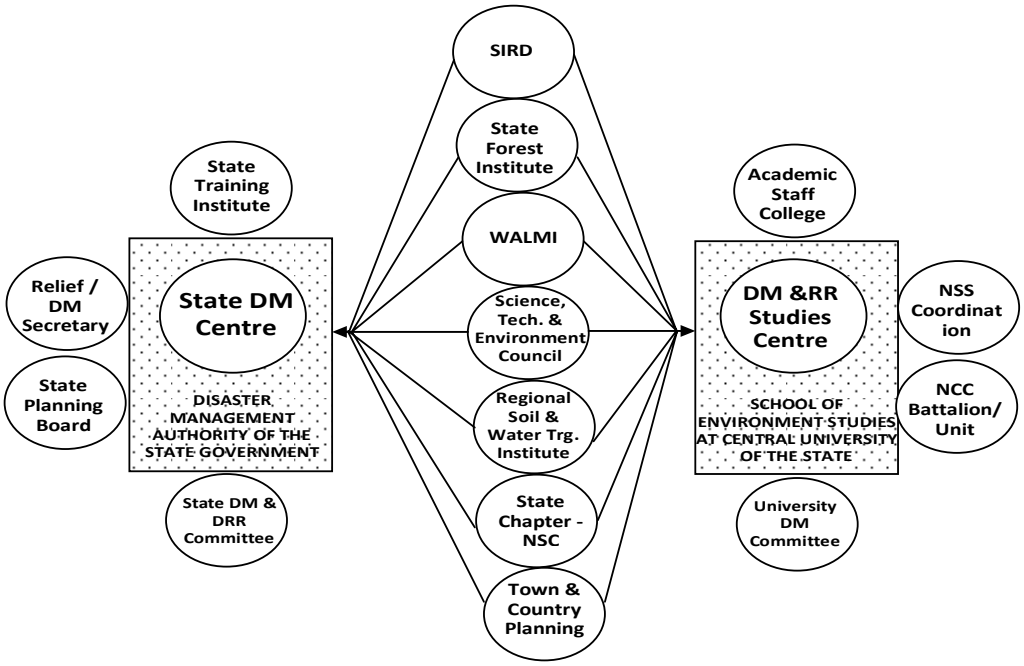


Figure 6: State level institutional framework for DMRR HR and capacity development

At a strategic level, the role of state disaster management HR and CD framework shall be of great significance in mainstreaming disaster risk reduction into state policies and plans across different sectors, higher education, financial mechanisms and technological applications. There need to be a close integration of disaster management training and education (including research) framework at the state level. This integration will be able to support the professional support and knowledge inputs to the planning and implementation of DRR programmes as well. DM centre at a University shall extend important support to the educational development and also professional training towards developing skilled human resources for catering the needs of DM and DRR functions. DM Centre established with the support of Central Sector Scheme of 13th Finance Commission grant or proposed with the state support need to be sustained by mainstreaming in the non-plan budget of the host institute along the other faculty/centres of environment, urban or health management, etc. Besides, the DM Centre need to develop close coordination with other institutes in the state. Following are the key components in the proposed statewide framework.

(a) State DM Authority (Relief/DM Secretary, DM Centre, State DM and DRR Committee)

(b) State Planning Board/Deptt.

(c) Town & Country planning Deptt.

(d) University (DM Committee, School of Environment DM Centre, NSS, NCC, Academic Staff College)

(e) State Institute of Rural Development

(f) State Chapter National Safety Council

(g) Regional Soil & Water Conservation Training Institute

(h) State Forest Institute

(i) Science, Technology, Environment & Remote Sensing Council

(j) Water & Land Management Institute.

CHAPTER 6

6. Implementation Strategy

As stated in previous sections, drawing a line dividing training, education and research would be incorrect as there stands lot of overlap in objectives, scope and functions of these areas of CD interventions. Education at higher level itself is a type of training as it develops professionally competent personnel. Research is a part of knowledge development, involves innovations, monitoring, hypothesis testing and information development, that helps advance education, training and professional practice as well. An schematic of proposed activities, responsibilities and options for identified agencies involved in education and research in the country are given (in Table 5) below:-

Table 5: Education & Research Promotion Framework

Agency/ Ministry	Education	Research Promotion
1. Department of Personnel & Training	Induction of core module in Courses of IIPA and LBSNAA	Research promotion/support on quantification and/or assessment of professional capacities in DMRR
2. Ministry of Human Resource Development	• Induction of Core Modules/ Specialization on DMRR in the PG and M.Phil. courses at IIMs, IIT/IISc/ IISERs • Supporting/ Establishing Disaster Management Interdisciplinary Centres at IITs/ IISc/ IISERs and Central Universities • Envisaging dedication centre/deptt. on DM in the envisioned Indian Institute of Sustainability Science & Management	• Establishing Chairs in Universities / Institutes on DMRR for conducting and promoting research • Sub-allocating research grant on DMRR under environment/inter-disciplinary and geography/ planning section of ICSSR funding • Inclusion of disaster risk management as area of faculty exchange programmes and grants under various bilateral and multi-lateral cooperation, e.g. Fulbright fellowship, DAAD, STA, Commonwealth, etc.
3. Universities Grants Commission	• Supporting Universities for courses/Centre for Disaster Management as a dedicated sub-section of grant a) under plan grant for environmental / inter-disciplinary studies b) under innovation/	• Allocation of grant on research related to disaster management as dedicated sub-section of environment & interdisciplinary studies: a) Major research project scheme b) Minor research project scheme c) Grant/funding for attending research conference/seminars

	emerging areas scheme c) under vocational courses (environment & water section) scheme d) under SAP/CAS and related scheme • Strengthening DM as sub-module under UGC compulsory UG module on Environmental Studies • Strengthening DM as optional/specialization in the model PG curriculum of environmental studies.	d) Faculty development programme • Allocation of grant/positions to disaster management as dedicated sub-section of environment & interdisciplinary section in the: a) Scholarships to doctoral and post-doctoral research students (e.g. Rajiv Gandhi fellowship, JN Fellowship for Advanced Studies) b) Faculty Recharge Programme of UGC (FRP-UGC) to support DM. c) Faculty ENCORE scheme of UGC. • Strengthening DM as core sub-module of syllabus for environmental/ earth studies for UGC / UGC-CSIR NET for JRF.
4. All India Council of Technical Education	• Strengthening DM as sub-module under UGC/AICTE compulsory UG module on Environmental Studies • Promoting DM sub-module as optional across all B.Tech. disciplines and MBA • Promoting Safety & Reliability Engineering as a B. Tech. discipline • Strengthening DM as core sub-module of syllabus for environment and humanities for GATE exam.	• Allocation of grant/positions to disaster management as dedicated sub-section of environment & humanities/ interdisciplinary section • Coordination with Institute of Applied Manpower Research and National University of Educational Planning & Administration for research promotion on educational technology for disaster management. • Allocation of grant /funding on disaster management, to Universities/colleges : a) attending research conference /seminars b) research support grant for engaging PG / UG students c) grant for improving laboratory / analytical facilities
5. National Council of Education Research & Training	• Development and promotion of curriculum contents on disaster management in school education: a) across all subjects in	• Research grant to the Universities/ institutes on education research in disaster management and its integration / mainstreaming in environment/value education, National green corps programme,

	infused mode b) core sub-module in environment / value education c) in foundation courses • Coordination with National Council for Teachers Education, CBSE and State Boards and induction of DM as sub-module in B.Ed. and M.Ed. courses.	Ecoclubs and science clubs, etc. • Conduct and promotion of model study material development on DMRR for schools. • Promotion/grant for research on school safety and disaster management system – coordination with NDMA, Deptt. of School Education, KVs, and National University of Educational Planning and Administration.
6. Ministry of Environment & Forests	• Infusion of disaster management across national network of National Green Corps (NGC) programme • Support to the institutes/Universities on disaster management education on under the Centre of Excellence scheme of grant • Supporting/establishing Centre for DM, EcoDRR, Forest Fire, EIA in DM, Sustainability Science, Green-recovery, Climate-change & DM in Universities/Institutes • Strengthening Core module on DM in the courses at IIFM, FRI, IGNFA. • ICFRE to establish DM education cell and coordinate with state Forest institutes for Module on DMRR	• Promotion of DMRR research through allocation of grant under 'Environmental Research' scheme and DM related research funding to the Universities/institutes under: a) ENVIS b) State of Environment Report c) Environmental statistics (with CSO) d) HSMD e) Climate-change research (coordination with DST, MoES and Prime Minister's council for grant allocation to DM research) f) Coastal zone management g) Environmental education h) EIA i) River Conservation Directorate j) Himalayan Environment k) ICFRE grant allocation l) Research funding from Planning Commission under Environment & Forests Section. m) Research funding/support from Central Pollution Control Board. n) World Bank Aided projects.
7. National Institute of Disaster Management / MHA, NDMA.	One year Orientation course in DM&RR (Post-PG or M. Phil level) including for in-service professional/officials	Research grant to NIDM faculty members, Externally funded/ sponsored research, Internship research, Grant to DM Centres in States/UTs.
8. Ministry of Science	• Promotion of disaster	• Promotion of research on DM by

& Technology	management education DST support to Universities under FIST for infrastructure support – allocation from environment/earth science and biology sections. • TIFAC Centres/Chairs on Sustainable development and technology – provision to support to disaster management education • DST, CSIR Support for organizing faculty development programme as dedicated allocation from environment section for disaster management and risk reduction • DBT support grant for faculty related with disaster management and risk reduction – biohazards, climate-change, bioengineering, GMOs, etc.	allocation by DST from: a) SERC scheme grant from environment/earth science section b) Science & Society scheme c) Women Scientists scheme d) NNRDMS scheme/programme e) Support from TIFAC schemes • Promotion of research on DM and DRR related aspects by allocation of in-house research expenditure and allocation of extramural research grant by CSIR: a) CSIR grant scheme (research projects, Research fellowship and associate-ship, Scientist's pool) from environment/earth science and biology groups. b) CSIR grant for attending research conferences c) CSIR Seminar grants d) Promoting DM and DRR research in CSIR institutes, like. NEERI, NPL, CRRI, NIO, NGRI, NBRI, ITRI, RRL-B, CFTRI, etc. • DBT grant for research on biohazards, climate-change, bioengineering, GMOs, bioremediation, etc.
9. Planning Commission, Govt. of India	Coordination with UGC, MoEF, ICAR, ICMR, MoST, ISRO, and MHRD for planning & promotion of educational programmes in area of disaster management in Universities/Institutes including FRI, IARI, IIMs, IITs/IISERs, etc, as a sub-set of research allocation for education.	Coordination with UGC, MoEF, ICAR, ICMR, MoST, MoES, CSIR, ISRO and for planning and promotion of research programmes/ grants to Universities/ Institutes including FRI, IARI, IIMs, IITs/IISERs, etc. and doctoral and post-doctoral fellowships in area of disaster management as a sub-set of allocation for environmental planning/research.

Key Responsibilities in order to implement different components of this HR and CD plan shall adhere to various agencies including Ministries and organizations/agencies. Follow-up and assessment of the overall progress need to be vouched by NDMA and the Ministry of Home Affairs. The implementation schemes need to be drawn in a time-bound manner (short term: 0-2 years, medium term: 2-5 years, and long term: 5-10 years), in following ways.

A. **Component 1 (Training):** Detailed implementation programme for short-term, medium-term and long-term may to be developed by NIDM in participatory mode using consultative process involving NDMA, Ministry of Science & Technology, Environment, Agriculture, Planning Commission, IIPA, DoPT, ISTM, NCDC, GIZ-ASEM, NFSC, NIRD, IGNFA, and other national level training institutes.

B. **Component 2 (Education):** Further divided into 3 categories to be coordinated at MHRD:

   1) Higher Education: Detailed implementation programme to be developed by UGC by involving interdisciplinary subject experts, Central Universities, IISERs, IISc, Association of Indian Universities, MoEF, DST, Planning Commission, IIPA, PSSIVE, Bar Council, etc.

   2) School Education: Detailed programme be developed by NCERT by coordinating with CBSE, ICSE, State Boards, Schools Associations and NGC, KVS, etc.

   3) Technical/Management Education: Detailed implementation programme to be developed by AICTE in consultative process involving NITTT, Technical Universities, IIMs, UGC, DST, DGMS, HUDCO, DGFASLI, TCPO, FICCI, CII, etc.

C. **Component 3 (Research):** A Detailed implementation programme for promotion of interdisciplinary applied research to be prepared by the Planning Commission involving a consultative process with Ministries Science & Technology, DST, DBT, CSIR, MoEF, ICFRE, ICAR, ICMR, ICSSR, CSO, UGC, ISRO, DRDO, UNDP, UNESCO, SAARC University, WHO, UNICEF, WWF, World Bank, UN-IUCN, Lead-India, etc.

The above sub-plans will enumerate detailing of the implementation plan with phasing of activities and responsible agency with source of financial support.

D. **International Institutes:** Besides these, following international institutions in India may integrate to country's HRCD efforts in area of DRR, to contribute ultimately to regional capacity.

   a. SAARC University, Delhi

   b. WWF Centre for Environmental Law Studies,

   c. Mahatma Gandhi Institute of Sustainability, Peace and Rural Development (UNESCO),

Disaster management education, research and training support may be extended by these international institutions located in India, and the Ministry of External Affairs to coordinate with their parent organizations and the institutions to mobilize support and engagements.

E. NDMA Coordinated Research Capacity Development (CRCD):

A transparent mechanism of research facility support to the researchers and teachers in the institutes and Universities, Research institutes, and NGOs, can be coordinated in the form of a programme by NDMA. Preference may be given to the applied research utilizing interdisciplinary knowledge, aiming at developing self reliance, sustainable solutions, cost effective - socially and ecologically relevant approaches of disaster risk reduction including innovations, traditional knowledge, policy research, etc. Research provisions need to be open for breakthrough and non-conventional ideas beyond the known and tested approaches. NDMA funding is in addition to the Research Support network to be detailed by Planning Commission.

F. NDMA Guidelines

NDMA as the apex body is mandated to lay down the policies, plans and guidelines for disaster management and to ensure timely and effective response to disasters. The National Policy framework has been prepared after due deliberations and keeping in view the National Vision 'to build a safe and disaster-resilient India by developing a holistic, proactive, multi-disaster and technology-driven strategy for DM. This will be achieved through a culture of prevention, mitigation and preparedness to generate a prompt and efficient response at the time of disasters. The entire process will centre-stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies and Non-Governmental Organizations'. It has through its various publications on disasters' guidelines has emphasized on building capacity of HR for various kinds of disasters.

CHAPTER 7

7. Time frame and Budget

7.1 Guiding Principles

Following are the guiding strategies for implementation:-

1. Whole capacity building initiatives will focus on strengthening capacity at local level with the "bottom-up" approach for DRR activities
2. Strengthening Community skills for taking L0, L1 and L2 level disasters.
3. Incentivizing training specially in the government sector
4. Investment to strengthen local level institutions
5. Reforms in the capacity building sector by bringing corporate and civil society in implementation
6. The implementation of HR Plan is to be done in Public-Private-People partnership mode
7. Internal and external collaboration will be encouraged.
8. Internationally supported projects for capacity building will be integrated with HR Plan
9. Research and Development needs greater focus for incorporating new ideas and dimensions
10. Specific projects and programme
11. The courses to be undertaken by Universities and other Institutions must have accredition from NIDM or any institution suggested by Government.
12. Strengthening of local level institutions such as SDMA, DDMA, PRI, ULBs..etc

7.2 Principal Strategies

The Human Resource plan has been formulated as an effort to provide an integrated and a wholesome approach to Capacity building initiatives for the country. As Capacity Building is a cross sectoral issue, cutting across all sector, all levels of functionaries and through the whole gamete of disaster management cycle of various disasters, it requires multi-pronged approach. Further, capacity building is much more than training and hence involves human resource development, organisational development and development of an institutional and legal framework. Every individual, community and organization has some inherent capacity which needs to be acknowledged and further developed. Therefore, focus is on Capacity Development as a process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time.

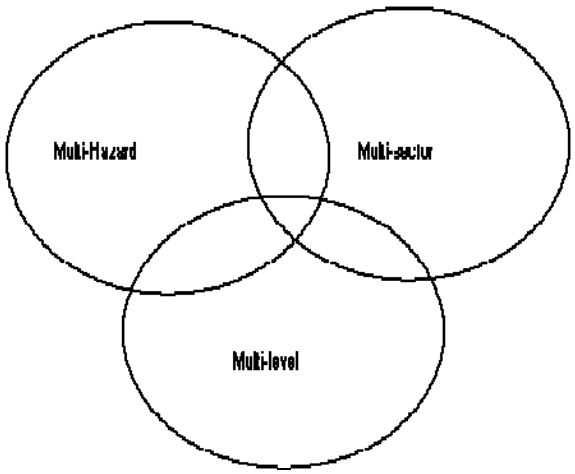


Figure 7: Capacity Development is an integrated framework

Capacity Development Framework is an integrated framework that involves all the sectors and stakeholders at all levels in relation to all hazards. Multi hazard includes all the hazards confronting the coastal areas. Multi-sector involves all the stakeholders involved with the management of risks in all the phases of disaster management cycles, which include various branches of the government, scientific, technical and academic organizations, civil society, media, corporate sector, community, family and even individuals. Multi-level implies regional, national, provincial and local levels. This widens the scope of capacity development to include a whole range of actors.

Keeping in mind the Capacity Development Framework and scope of activities to be undertaken under capacity building core area, the impact of initiatives for capacity building can be seen on the community only when a united approach of Private sector, Civil Society and the lead partner being the Government, is put forth. Further to streamline the overall efforts under the overarching gamete of Capacity Building, the initiatives have been broadly grouped under four heads i.e.

a) Training

b) Research & Education

c) Public Awareness

d) Organizational/ Institutional Development

The principal strategy for implementation is taking up the formulation followed by implementation in a project based mode. This would insure timely accomplishment of set objectives and goal with target population being benefited. Thus the impact and it's related value can be judged easily and quantified. The activities envisaged under each pillar can be taken up as one project or the other option is making a selective combination of various activities outlined under each pillar, so that an integrated, wholesome approach is adopted for implementation.

The National Institute of Disaster Management has already commissioned two studies under the National Cyclone Risk Mitigation Project Component- 'C'. These studies are "Preparing Long term Training and

Capacity Building Strategy for Disaster Risk Mitigation" and "Post Disaster Need Assessment for India". This is a befitting example of implementation of HR Plan activities in a project mode wherein combination of initiatives under the four pillars of HR Plan have been envisaged so that the target population gets an integrated wholesome approach to Disaster Risk Mitigation.

Although another practical approach for implementation would be to earmark a nodal ministry/ department to be overall responsible and a consortium of various line ministries with the responsibility of formulating and implementing activities as per their niche' of responsibility. This would further ensure ownership and sustainability to the initiative. And it's linkages rooted to the Government of India's Five year plans, so that it is funded, monitored and evaluated.

The options for rolling out the activities as envisaged under the HR Plan have been suggested above which can be opted on need- basis.

ROPOSED ACTIVITIES FOR THE HR PLAN

A. TRAINING

S. No.	Activity	Sub Activity	Proposed Partners	Suggestive budget (in Rs. Lakhs)
1.	**Identification of organisations/institutions** for Disaster management in the country across sectors	Identification of organisations/institutions in various sectors and states across the country including NGOs, which could be engaged in capacity building for disaster management and compilation of the related data		# explained below
2.	***Impact Evaluation: of training in the country for governmental as well as non-governmental organisations and institutions like NIDM, ATI, CDM, NDMA, SDMA & DDMA**	• Training Gap Analysis • Training impact assessment • Institutional Gap analysis		# explained below

3.	***Mainstreaming DRR training into other sectors** (prioritised sectors may be Health, Revenue, Rural Development, Education, PRI/ Local Bodies)	• Prioritize Sector • Evaluation of Sectoral Programmes & Institutional Strength of the prioritized sectors • Training Need Analysis (TNA) for integration at different levels • Module development (basic and specific to responsibility) • Development of teaching aid • Conducting of Training of Trainers (ToT) and Trainer Development • Strategy for rolling out trainings for each sector • Implementation strategy • Refresher Training • On going evaluation of the trainings being conducted • Conduct Inter-departmental trainings for better co-ordination		# explained below
4.	**Maintaining a data base of the trained Human resource**	• Developing a format for e-database with regular updating and linkages to portals like IDRN/IDKN • Maintaining a Database of DM trained person department wise • Maintaining a roaster for their employability in DM related issue.		# explained below
5.	**Policy addressing non-training implications**	• Policy for retaining trained manpower • Incentivising DM training by linking it with incentives/ promotion/ postings in all the sectors		# explained below
6.	**Training Infrastructure**	• Provide support for upgrading Infrastructure of existing Institutes • Programme support to Corporates/ Civil Society/ Training support to NCC/ NYKS/ NSS • Support to Civil Defence/		# explained below

		NDRF/ Home Guards		
7.	**Exposure Visits – National/ International**	Sending a team to National/ International disaster sites to get first hand experience		# explained below
8.	***Quality & accredition of DM trainings (short term) being imparted**	Strategy to develop accredition method, quality management methods/ tools for maintaining a standard of all trainings being imparted by any Institute or Organisation and criteria for awarding certificates**.**		Already initiated by NIDM under NCRMP
9.	**Centre of Excellence for each sector**	Identification of an existing centre as "centre for excellence" in DM. This will be identified in each sector and will be responsible for all DM related initiatives and expertise in the field.		# explained below
10.	**Rolling out trainings for civil defence, NCC, NSS, NYKS volunteers**	Training volunteers for better response mechanism		# explained below
11.	**Development of professionals across sectors**	Development of following professionals across the sector • 100 Trainers • 100 Risk Analysts • 100 PDNA experts • 100 Recovery Experts • 100 DM Planning experts 100 at National level then at State level		# explained below

***** Some of the activities for these sectors are being undertaken under the Capacity Development and Training component of the National Cyclone Risk Mitigation Project with the support of World Bank through NDMA**.** The result of the study will feed into the proposed activities of the HR plan.

Each activity requires to be developed in a programme/ project form, which will have detailed sub activities that are required to achieve the suggested activity and its corresponding detailed budget.

B.RESEARCH AND EDUCATION				
S. No.	**Activity**	**Sub Activity**	**Possible Partners**	**Suggestive budget (in Rs. Lakhs)**
1	**Inclusion of DRR into the curriculum**			
1a	**For undergraduate engineering and architecture courses** to include mitigation technologies in general and elements of earthquake engineering in particular	• Prepare an implementation plan for revision in the curriculum in consultation with state governments, All India Council for Technical Education, Indian Institute of Technologies and other concerned professional bodies • Ensure that experts are hired and they prepare the revised curriculum, and directives are issued to implement the revised curriculum from the next session		50.00
1b	**For MBBS** to include crisis prevention, response and recovery and trauma management	• Work out the modalities of curriculum revision for medical education in the country to include psycho-social care including trauma management in consultation with Ministry of Health and Family Welfare and Medical Council of India • Ensure that experts are hired and they prepare the revised curriculum, and directives are issued to implement the revised curriculum from the next session		50.00
1c.	**For Higher education**	Mainstreaming into curriculum by introduction of DRR interventions in each relevant sector of education and where required DRR introduced as full fledged discipline		# explained below
1d	**For School education**	Mainstreaming into curriculum by introduction of DRR interventions in each relevant sector of education and where required DRR introduced as full fledged discipline		# explained below
1e	**For Professional Education** like IIM's			# explained below

2	**Research Initiatives**	• **Encourage disaster management research and documentation in the universities through collaboration with different central universities at the states • Support Sectoral/ develop research Institutes for DRR • National/ International collaboration • Encourage action research		# explained below
3	**DRR centric research**	• Setting up a focal institute supporting research in DRR which will also provide a platform for exchange of research outputs and also provide guidance to research in the area.		50.00
4	**School promotional activities**	• Development of school chest in each school with DRR related resources for notice board and practical training • Award to School/ Colleges for best practises in DM		# explained below
5	**Research Consolidated Funds**	• Creating research consolidated funds • Provide Research Pool Funds with NIDM & CDMS • Scholarships to Individuals affiliated with Institutions		# explained below
6	***Policy for accreditation of all disaster management/DRR related technical courses being organised at NIDM & outside**	Identifying and mandating an institution for accreditation of all DM courses for the purpose of streamlining various courses in this field in line to AICT and other such technical bodies		Already initiated by NIDM under NCRMP
7	**Knowledge Management**	• Creation of Knowledge portal • Networking of Institutions • Affiliation of NiC • Integration with Google/ Yahoo		# explained below

***** Some of the activities for these sectors are being undertaken under the Capacity Development and Training component of the National Cyclone Risk Mitigation Project with the support of World Bank through NDMA**.** The result of the study will feed into the proposed activities of the HR plan.

** Five universities may be identified first.

Each activity requires to be developed in a programme/ project form, which will have detailed sub activities that are required to achieve the suggested activity and its corresponding detailed budget.

C.PUBLIC AWARENESS

S. N.	Activity	Sub Activity	Possible Partners	Suggestive budget (in Rs. Lakhs)
1	***Carry out an impact evaluation of the media campaign/interventions**	Strategy paper for national media campaign		Already initiated by NIDM under NCRMP
2	***ToT module for journalist's for disaster reporting**	1. Module for journalist at the job 2. Hand book on reporting disaster events in consensus with the directions issued by the Govt. 3. Guidelines for reporting disaster events for journalists		Already initiated by NIDM under NCRMP
3	***Design and launch the National Mass Media Campaign**	Phase wise plan for 15 years		Already initiated by NIDM under NCRMP
4	***Feasibility study for using Social networking site**	Feasibility report on using Social networking sites as a tool		Already initiated by NIDM under NCRMP
5	**Promoting research on use of electronic media for mainstreaming DRR**	Supporting researcher's and research based organisation for mainstreaming DRR through electronic media		# explained below
6	**Functionality of an**	The Emergency cells of all departments to		# explained below

	operational desk in all nodal departments at all levels for authentic flow of information from Government to media	also identify a focal media information desk for channelizing disaster related information at all levels national, state and district		
7	**Strategy to standardise IEC multi-media material's at all levels national, state and district**	• Formulation of strategy indication method of use, do's and don't, standardising the IEC material with precautionary guidelines • An Institute/ Organisation mandated for scrutinising and keeping a check on the IEC material/ campaigns being used with the focus of streamlining DRR		# explained below
8	**Focus on Social networking sites**	• Awareness raising activities to be designed and encouraged e.g. Social networking sites to carry disaster related information and up dates, In case of disasters an interactive portal for exchange of information • Tracing the missing individuals in case of disasters and this can work across boarders		# explained below
9	**Tapping into resource at Doordarshan**	• Opening of a window initially for two hours on National channel of Doorsdarshan on weekly basis where debates, discussion and awareness on DM related issues can be raised.		# explained below
10	**Knowledge Park**	• Setting up of Museum/ memorallia where disaster events can be simulated and holocaust of disaster memories that have occurred in the past in India are preserved so that individuals are sensitised. • Such Museums can be set up at National and Zonal levels		# explained below
11	**Sound and Drama Division**	• Sound and drama division in every district should be promoted for creating awareness.		# explained below

*Some of the activities for these sectors are being undertaken under the Capacity Development and Training component of the National Cyclone Risk Mitigation Project with the support of World Bank through NDMA**.** The result of the study will feed into the proposed activities of the HR plan.

Each activity requires to be developed in a programme/ project form, which will have detailed sub activities that are required to achieve the suggested activity and its corresponding detailed budget.

D.Organisational/ Institutional Development

S. No.	Activity	Sub Activity	Proposed Partners	Approx. Estimated Cost (in Rs. Lakhs)
1	***Strengthening of local disaster response mechanism - by Organisational Development of Institutions like SDMA/ DDMA**	• Based on evaluation strategy for standardised implementation of SDMA or suggest alternatives in terms of HR, Infrastructure, capacities, structure, strategy for implementation, discharge of responsibilities etc • Guidelines for setting up a centre of excellence for DRR		Already initiated by NIDM under NCRMP
2	***Study for strengthening of Urban local bodies**	• Focus on structure, HR strength and capacities accordingly Budget, structure and strategy for implementation and discharge of responsibilities		Already initiated by NIDM under NCRMP
3	***Study for strengthening of Panchayati Raj Institutions for DM**	• Focus on structure, HR strength and capacities accordingly Budget, structure and strategy for implementation and discharge of responsibilities		Already initiated by NIDM under NCRMP

4	**Develop a separate cadre for DM at all levels**	• Cadre for employability in SDMA, DDMA etc.		# explained below
5	**Identification of an Institute/ Organisation which will provide a platform for maintaining the data base of NGO's and their sector of work and also a co-ordination platform**	• An active platform for NGO interaction and co-ordination		# explained below
	Tapping on the resources under Corporate Social Responsibility	• Sectoral interventions designed and corporate mandate in their area of expertise for response, mitigation and preparedness activities. • Corporate to adopt a village or an area for such interventions so that their impact can be evaluated		# explained below
6	**Tapping on the potential of Market Trading Associations**	• Designing an awareness raising campaign on various issues and their sensitisation		# explained below
7	**Tapping on the potential of religious Organisations and sensitizing their Heads**	• Use of religious organisations for spreading message		# explained below

*Some of the activities for these sectors are being undertaken under the Capacity Development and Training component of the National Cyclone Risk Mitigation Project with the support of World Bank through NDMA**.** The result of the study will feed into the proposed activities of the HR plan.

Each activity requires to be developed in a programme/ project form, which will have detailed sub activities that are required to achieve the suggested activity and its correspondingdetailed budget.

DMRR HRCD Plan Implementation Time-Frame (2012-2021)

Training

Higher and primary education

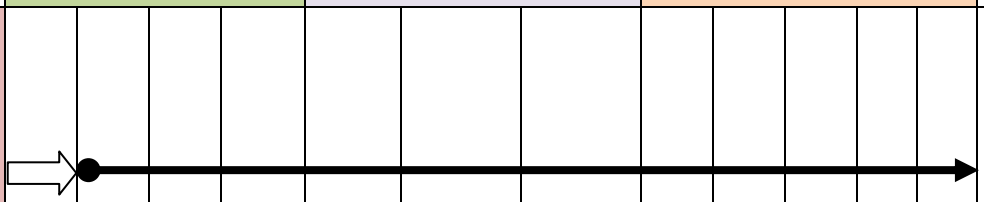
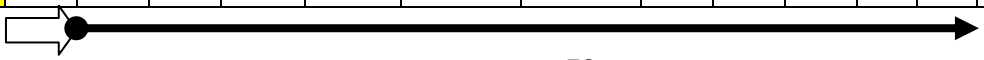
Research

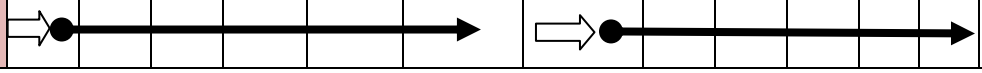
Public awareness

Institution building

Activity Particular	Time-frame			Responsible Agency	Suggestive Budget (in Rs. Crores)
	0-2 years	2-5 years	5-10 years		
1. Detailing Training Programme				NIDM	1.00
2. Detailing Education Programme				UGC, NCERT, AICTE	2.00
3. Detailing Research Programme				Planning Commission	2.00
4. DM in International Institutes				MoEA, MHRD	5.00
5. Research facility Grant (coordination)				NDMA	5.00
6. Training/edu. policy, contents development, modules, ToT				NIDM	5.00
7. DM modules in Probation / Induction				LBSNAA, IGNFA, NPA, IEG, NASA,	10.00

Activity Particular	Time-frame			Responsible Agency	Suggestive Budget (in Rs. Crores)
	0-2 years	2-5 years	5-10 years		
Training (IAS, IFS, IES, ISS, ARS, IES, IMS, State Service)				NAARM.	
8. Cadre Specialization DRR Certificate Course (2-5% from Civil Services IAS, IFS, IES, ISS, ARS, IES, IMS, State Services, etc)				IIPA, IIMs, NIHFW/PGIs, Central Univ., University in State Capital.	10.00re
9. Two weeks Module on DRM in APPA course				IIPA, DoPT	5.00
10. Recognizing NIDM as institute of higher and professional learning				MHRD	5.00
11. Expansion and Strengthening NIDM at par with IIMs/IITs				MHA, NDMA	5.00
12. Quantification/assessment of professional capacities in DRM				DoPT	5.00
13. Advance Diploma in DRM; Masters course Specialization in DRM				IISERs, MHRD, UGC, Central Universities	5.00

Activity Particular	Time-frame			Responsible Agency	Suggestive Budget (in Rs. Crores)
	0-2 years	2-5 years	5-10 years		
14. Coordinated research for case study development; and M.Phil. level 1 year interdisciplinary course on DRM.				NIDM	10.00
15. Strengthening DRM component under Compulsory UG Environment Study course				UGC, AICTE, MoEF	5.00
16. Diploma in DRM, and DRM Specialization in Masters Env. Studies course(s) in State Universities				UGC, State Deptt. Higher Education	10.00
17. DRM as Unit syllabus for environmental / earth studies for UGC / UGC-CSIR NET for JRF				UGC, CSIR, ICAR, DRDO	10.00
18. DRM sub-module as				AICTE, IIMs, NITs	10.00

Activity Particular	Time-frame			Responsible Agency	Suggestive Budget (in Rs. Crores)
	0-2 years	2-5 years	5-10 years		
optional across all B.Tech. and MBA.					
19. Safety & Reliability Engineering as full B. Tech. course				AICTE, NITs	10.00
20. Allocation of grant / positions on DRM in UGC schemes & fellowships.				MHRD, UGC	20.00
21. DRM as core Unit in of for syllabus of environment and humanities in GATE				AICTE, IITs / IIMs	10.00
22. Allocation of grant on DRM in ICSSR fellowships				ICSSR, Planning Commission	5.00
23. Strengthening DRM in NGC programme				MoEF	5.00
24. MoEF Centre of Excellence Grant for DRM in Universities				MoEF	10.00
25. Grant for DRM under Environme				MoEF	20.00

Activity Particular	Time-frame			Responsible Agency	Suggestive Budget (in Rs. Crores)
	0-2 years	2-5 years	5-10 years		
ntal Research					
26. Grant for DRM under Forestry/CC research	→	→	→	ICFRE	10.00
27. Establish Coordination Centre for Risk Assessment, Early Warning &Communication	→	→		MoST with NDMA, MoEF, CSIR, ICAR, IMD, NIH, etc.	5.00
28. Strengthening DRM course infused across schools studies	→	→		NCERT, CBSE, ICSE, KVs.	5.00
29. TIFAC Centre/Chair on DRM	→	→	→	MoST/DST	10.00
30. FIST support on DRM study to Universities & Institutes	→	→	→	DST	10.00
31. Institutionalizing DM system and safety audit in schools	→	→		NCSRT, CBSE, ICSE, State Boards	5.00
32. Raising emergency S&R Cadre – NDRF Academy	→	→	→	NDMA, NDRF, MHA	10.00

Activity Particular	Time-frame			Responsible Agency	Suggestive Budget (in Rs. Crores)
	0-2 years	2-5 years	5-10 years		
33. Raising Emergency Response & Relief Cadre professionals	⇨ ● →	→	→	NCDC, National Fire College	10.00
34. Establishing Chairs for specialized studies at NIDM on Mainstreaming (MoRD), ecoDRR (MoEF), Structural Mitigation (SERC-DST/TIFAC).	⇨ ● →			NDMA	5.00
35. Gradual phasing out of In-service training on DRM with Induction training, basic and professional education (Coordination of efforts, follow-up, monitoring and evaluation of)		⇨ ● →	→	NDMA, UGC, AICTE, DoPT, NIDM (and an independent programme audit team).	10.00
TOTAL					250.00

Phase of Preparation ⇨

Phase of execution by Responsible Agency ● →