SWOT Analysis Report

Deliverable 5

Preparing Long Term Training and Capacity Building Strategy for Disaster Risk Reduction in India, under NCRMP




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Towards disaster free India

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EXECUTIVE SUMMARY

The Study

This Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis has been carried out as the base study for the project on Preparing Long Term Training and Capacity Building Strategy for Disaster Risk Reduction in India under the National Cyclone Risk Mitigation Project (NCRMP). Extensive qualitative and quantitative surveys were carried out in the six selected sample states of Andhra Pradesh, Bihar, Gujarat, Odisha, Uttarakhand and West Bengal to gather data based on questionnaires designed for representative information gathering. A total of 18,000 persons and 200 Key Informants were covered in the study, besides extensive literature review and consultations with experts at NIDM. Key findings are presented in this report and will be used in the subsequent stages of the study.

SWOT Analysis

The study has resulted in a very in-depth view of the strengths, weaknesses, opportunities and threats in the sector, which are presented in detail in the report. At a broad level, the following findings emerge:

Strengths:

- Strong legal framework and policy regime cutting across sectors
- Extensive Institutional Infrastructure already in place
- Rich experience, good practices and related learning
- Availability of resources under different programmes

Weaknesses:

- Lack of common multi-sectoral vision for disaster management, and related frameworks, perspectives, plans and benchmarks
- Disconnect between policy and practice
- Primary focus on disaster response and relief, and lack of attention on risk reduction
- Gaps in policy, design and delivery of training and capacity building programmes

Opportunities:

- Various national flagship programmes provide a ready platform
- Growing capacity building institutions and related infrastructure are readily available
- Strong network of civil society organisations is already working on the subject in vulnerable parts of the country
- Community organisations are emerging in a fast growing movement and can form the base of national capacity building efforts

Threats:

- Investment in long term benefits of disaster risk reduction is overshadowed by opportunity costs of short term projects with immediate gains
- Ongoing trends of unsafe development are creating risk at a pace faster than risk reduction efforts

The SWOT Analysis is carried out in further detail along the primary areas of the study and some cross cutting issues:

A. Training and capacity building
B. Research and education
C. Public awareness and media
D. Organisation/institutional development

E. Mainstreaming disaster risk reduction
F. Cross-cutting issues

Context and Capacity Analysis

Situational analysis, investment analysis, capacity needs assessment and communications needs assessment comprise the study of context and capacity. The extent of vulnerability to natural hazards is a primary determinant, but issues of small and localised disasters also emerged as a significant concern in the field study. The impacts of climate variability are clearly visible in all the states, and they pose a serious challenge for risk reduction systems that are based on addressing predictable risks. It is found that the availability of financial resources has increased substantially both at national and state levels, but brings with it challenges of managing resources at a large scale and in a multi-hazard, multi-sectoral and multi-level manner. Capacity constraints are found to be severe at all levels, including the capacity to build capacity.

Specific concerns at the local level context arise from the high proportion of families below poverty line, prevalence of structurally vulnerable housing, lack of disaster mitigation and preparedness measures, and the large scale needs of disaster response and recovery where disasters are recurrent and of large magnitude. Climate change is bringing with it a new set of shocks and stresses, which are still not clearly understood, resulting in an urgent need to study and design systems for climate change adaptation. Compound disasters, a combination of a number of linked events, is another emerging risk that is following the pathways of rapid and large scale development. While studying the potential solutions for risk reduction, indigenous knowledge emerged as a very significant local resource, which with appropriate support of technological developments can provide affordable and sustainable answers.

The national financial system for disaster management comprises of the national Disaster Response Fund (NDRF), the State Disaster Response Fund (SDRF), and various programmes and schemes that make available resources to states as per their need. For the purpose of disaster risk reduction, funding can also be tapped from various developmental programmes that are closely aligned to the subject, since risk reduction is more developmental in nature as opposed to disaster response. The private sector has also emerged as a significant resource, and the value of community action and the role of the informal sector recognised as valuable elements of a holistic disaster risk reduction approach.

The stakeholder analysis follows the Authority, Responsibility, Accountability and Capacity (ARAC) framework, and reviews the role of government, non-government, academic, corporate, media, and community role-players in detail. The resultant framework of institutions forms the basis for a capacity needs assessment. The key dimensions of capacity are taken as organisational structure, culture and competencies; human resources; financial resources; information management, infrastructure and community coping mechanisms. While existing systems for capacity building were found in place across all the dimensions, significant gaps were identified across all dimensions in view of the large scale and variable nature of disaster risks the country faces. Capacity gaps and needs were found at the policy level across various organisations studied, at the district and sub-district level in the administrative systems, and also at the local governance and community level. Similarly, communication needs assessment reviewed the tools and media presence, nature and outreach, and found that despite variable penetration levels there is very significant potential of the media to address the community level and help build capacity from the bottom up and facilitate the implementation of capacity building programmes by preparing the community appropriately. Messaging, deployment of appropriate media and two-way communication are some key areas where strategic interventions are required.

Analysing Institutional Capacities

India has a well established institutional system for training and capacity building, which has been developed over years and across many developmental and academic sectors. A careful review of the national, state, district and local levels shows that the need to create cross-sectoral linkages and to strengthen capacity of the institutions at all levels but particularly at the sub-national levels are major priority areas of work.

Analysing the Techno Legal Framework

A very significant part of disaster risk arises from unsafe buildings and infrastructure. Traditional construction systems have given way to ways of building with modern materials, but technology and skills have not percolated down to the construction sector's implementation levels to adequately include safety features. Lack of regulations in rural contexts, and lack of enforcement in rapidly growing urban settlements are building in risk within the developmental process. Vulnerability assessments, regulations and codes, capacity building initiatives addressing all levels from engineers down to construction workers, and programmes to support safe construction and retrofitting are clearly required in all areas, and in known hazard prone areas on an urgent basis.

Identification of Training Gaps and Needs of Different Sectors

Training gaps and needs have been studied along the training cycle of needs identification, design, delivery, application of learning, and evaluation. Training needs have been identified for institutions based on the emerging gaps, and address key institutions including the Ministry of Home Affairs, the National Disaster Management Authority, National Institute of Disaster Management, State Governments, State Disaster Management Authorities and Key line departments at the state level as a priority. At the district and sub-district level specific gaps are identified and needs established for the District Magistrates, District Development Officers and Block Development Officers. Training needs of local governments and the community are defined with a specific focus also on local elected representatives, women, children and volunteers/voluntary organisations.

In addition, sectoral training needs are identified at national and state (policy), state and district (management), and district and sub-district (operational) levels for the key focus sectors of this study, which are health, education, rural development and local governance.

While addressing training needs, accreditation and quality management of training and certification needs to be ensured. Currently this is almost non-existent, and institutions are awarding their own certificates without any accreditation mechanisms. In most cases these are certificates of participation, with little or no assessment of quality of performance. Institutional arrangements, processes and tools will need to be developed to establish a system for quality management of short term disaster management trainings.

Quantification and Prioritisation of Training Needs

Considering the 1.2 billion population, living across 127 different agro-climatic zones with 60% in areas vulnerable to significant disasters, the scale of training and capacity building required is accordingly large. It is projected that 81,62,000 (about 8.16 million) persons needed to be trained under the key sectors of the study. These include 6,50,000 doctors, nurses, ANMs and health workers; 5,00,000 Anganwadi workers and helpers; 6,00,000 education sector personnel; 15,94,000 rural development personnel, 28,18,000 personnel from Panchayati Raj Institutions and Urban Local Bodies, 20,00,000 central and state government employees in related positions; and 18,000 NGO and CBO personnel at state and district levels.

It is recognised that a base exists through the various training programmes already in place, and specific interventions such as the GOI-UNDP Disaster Risk Management (DRM) Programme (2002-09) that trained close to 3.5 million people in 176 districts across 17 states. While much of the traction is lost when one-off programmes are ceased after some time, the remaining impact is of use while strategising a national approach.

The scale of trainings to be carried out is very large considering the current capacity of training institutions as analysed in this study. A process of prioritisation has thus been carried out and the training needs articulated in the form of 12 major training themes to be taken up as a matter of priority. These are:

S.N.	TRAINING THEME
1	Mainstreaming DRR into development planning
2	Mainstreaming DRR into rural development policies and programmes
3	Mainstreaming DRR into City Development Plans (CDPs) and their implementation strategies
4	Strengthening PRIs for mainstreaming DRR into development on the ground
5	Preparing the health functionaries for emergency health services
6	Creating a culture of safety and resilience through knowledge, innovation and education
7	Strengthening emergency communication including early warning and last mile connectivity
8	Community led hazard risk vulnerability and capacity (CLHRVC) assessment
9	Participatory training and capacity needs assessment (PTCNA)
10	Participatory evaluation and action learning (PEAL)
11	Integrating gender approaches in disaster management plans
12	Use of media in generating mass awareness on disaster management

Present Status of DM Related Education and Research

The analysis of research and education gives clear indications of gaps that need to be addressed. In the area of research, there has been significant development in recent years with a number of institutions addressing the sector, but the approach remains fragmented and ad-hoc. Initiatives by NIDM and other institutions on documentation of disaster events and practices need to be strengthened and scaled up. Applied research has to be planned and carried out through the national network of institutions that exists and is set to be strengthened. Quality management of research happens in educational institutions through the institutional accreditation arrangements, and in cases such as doctoral research through programme design. The approach needs to be formalised, sectoral quality management measures included, and the network approach strengthened.

Education in disaster management is still an emerging sector in India. At the school level disaster management has been introduced in the middle school curriculum, and at the level of higher education close to twenty institutions are offering degree and diploma courses in disaster management. In addition, a number of institutions and organisations also offer technical courses leading to certification in aspects of disaster management. Some sector based disaster management courses are also part of core curriculum of sectoral education such as architecture, engineering and medicine.

The need for a national system for accreditation and quality management is clearly felt. The model for scope and range of accreditation will need to look at the two primary dimensions of scope and range as follows:

- **Scope** of the structure and programming, including accreditation of institutes/organisations; faculty/trainers (including accreditation of trainers/resource-persons and master trainers), programmes/courses, process, and the individuals being trained.
- **Range** of accreditation, including awareness/sensitisation, short term trainings, role-based/sector-based courses, education certificates, diplomas, degree courses, and quality management of research.

Public Awareness and Media

India's teeming population can be covered through effective disaster risk reduction programmes only with the help of a significant, well organised, and sustained public awareness effort. The role of the community as a first responder, and the media as the communication channel to influence community behavior, emerge very strongly from the study, and have to form the fundamental basis of a national public awareness and media strategy. The need for investment in the specific issues of knowledge, attitudes, public references and operational environment emerges as an area requiring attention while developing a national public awareness strategy. Community groups that have survived on traditional knowledge are now faced with erosion in such knowledge systems and the invasion of technological practices that are locally not understood and cannot be managed in entirety. Changing contexts and new threats such as climate variability are also leading to disruptions in existing local coping systems, and new knowledge is yet to emerge on these subjects locally. Public awareness efforts will need to focus on priority stakeholders at the local level, primarily including special vulnerable groups, and will need to deploy specifically designed and customised messages and media.

The role of the media itself also emerges as a critical element of a disaster risk reduction approach, and it is found that media personnel are not adequately trained and skilled to report about disasters and disaster risks in ways that are sensitive to the subject and technically sound in understanding and portraying disaster terminologies, magnitudes and management processes. Capacity building of journalists will thus have to address these needs accordingly.

Application of this Study

The findings of the SWOT analysis are comprehensive and spread across types of hazards, levels of governance, sectors of development, phases of the disaster cycle and range of stakeholders, in alignment with the expected outputs of the training and capacity building project. They will be used in the subsequent stages of the project to develop appropriately targeted policy and strategy documents, guidelines, plans and training modules.

SUMMARY OF SWOT

The SWOT analysis of the disaster management domain in India has been carried out on the basis of a comprehensive situational analysis of capacities in the context of five hazards – earthquakes, landslides, cyclones, floods and drought- in four sectors of education, health, rural development and PRIs/ULBs, across four key components of training and capacity building, research and education, media and public awareness and organisational/ institutional development. An attempt has been made to identify factors that help or hinder the broader disaster management agenda.

Component wise SWOT is as follows:

SWOT: Training and Capacity Building

An Overview

Strengths	Weaknesses	Opportunities	Threats
•Legal Framework and Policy •Extensive Institutional Infrastructure •Good Practices and the Related Learning •Availability of Funds under Different Programmes	•Lack of Vision, Frameworks, Perspectives, Plans, and Benchmarks •Policy-Practice Disconnect and the Missing Middle •Focus on Response and Relief •Gaps in Training Policy, Design and Delivery	•National Flagship Programmes •Extensive Institutional Infrastructure •A strong network of civil society organisations working on DM and DRR issues in multi-hazard prone states and districts •A fast growing movement of SHGs and emerging power of organised groups of grassroots women	•Huge opportunity cost •Unsafe Development with greater disaster risks

A. TRAINING AND CAPACITY BUILDING

Strengths

- There is a strong legal framework with national and state level policies with extensive training infrastructure from national to district level

- Availability of adequate funds for undertaking disaster management and disaster risk reduction

Weaknesses

- Lack of a common strategic vision and action plan at national and state level.

- No clear standards or systematic assessments of training needs or effectiveness of training. The only criterion for assessment is usually the number of people trained.

- A narrow approach to capacity building that defines it as one time, ad-hoc training events (rather than continuous learning) focused on emergency response.

- Training has not significantly impacted local communities.

- Interventions are largely supply driven and are not tailored to context-specific roles and responsibilities of different actors, local realities, micro-level vulnerabilities and community needs.

- State training institutes are understaffed. There is no organised and dedicated pool of master trainers who can sustain capacity building agenda and no comprehensive data base.

- Very little appreciation of urban earthquake and technological risks.

Opportunities

- National Flagship Programmes such as NRHM, SSA, MGNREGA, IAY etc offer a huge opportunity to mainstream DRR into development

  There is an extensive institutional infrastructure for training in India: administrative training structure across the nation has a high potential for providing training on disaster mitigation, which has yet to be exploited.

- A strong network of civil society organisations working on DM and DRR issues in multi-hazard prone states and districts offer an opportunity to engage them in training and capacity building efforts.

- A fast growing movement of SHGs and emerging power of organised groups of grassroots women offer another massive opportunity to position women and their groups as community leaders and disaster managers.

Threats

- Unless training is located within a larger vision and approach that clearly frames capacity development in the context of disaster risk reduction and development, it will continue to be a piece-meal, ad-hoc activity undertaken simply because there is a given mandate and money available, rather than being an effective approach to on-going, practical learning that reduces the impacts of disasters.
- The absence of a systematic, widespread, comprehensive capacity building and training programme compromises the effectiveness and efficiency of utilisation of the country's rich human resource base in countering the adverse impacts of natural hazards and climate change.

- With rapid rural and urban development processes underway, development resources of both the state as well as individuals will be wasted if institutions and individuals are not capacitated to protect their development gains.

B. RESEARCH AND EDUCATION

Strengths

- Extensive research related to disaster management has been undertaken by professionals, government institutions, non-government organisations, focusing primarily on risk, vulnerability and losses.

- Several products, projects, tools and methodologies for documenting and modelling levels of risk and vulnerability have been prepared by different government agencies at national and state levels (egg. Vulnerability Atlas, National Flood Atlas, etc) which can be drawn upon by state and district authorities to inform state, district and district disaster management plans.

- There are a large number of professionals from government and non-government organisations and private sector with knowledge and expertise in disaster risk mitigation.

- There are several existing educational institutions and new private institutions that have introduced disaster management in degree or elective courses.

- Government agencies have issued directives to higher education institutions to integrate disaster management education

- National Institute of Disaster Management provides online courses to practitioners and disaster management personnel.

- Central Board of Secondary Education (CBSE) have included disaster management in the curriculum of secondary education and issued circulars to address standard operating procedures for emergencies.

- National disaster management legislation clearly articulates the need for conducting hazard risk and vulnerability assessments with the idea that these assessments are the basis to formulate disaster mitigation strategies.

- Community level risks and vulnerability assessments have been carried out by non-government organisations.

Weaknesses

- Investment appears to be primarily in risk, vulnerability and loss analysis. No investment in policy research, or lesson learned from recent mega disasters, to assess the effectiveness of policies and programmes for disaster management.

- Research outputs are primarily theoretical rather than applied and hence not used by public or private institutions.

- Risk scenarios don't take into account climate change projections.

- There are no standardised research tools or methodology for multi-hazard risk assessment that can be used from national to local context, and similarly no standard tools for cost benefit analysis, which can be customised for different contexts.

- Aside from for some research that is undertaken at the graduate and doctoral level, little thought has been given to accreditation and certification. There are also no clear quality assurance standards for research or education. At community level too, no identity cards or certificates have been issued to trained volunteers in an organised and quality controlled manner. In many cases no certification is given at all.

- There is inadequate integration of DRR into professional education programmes.

- Critical infrastructure is yet to be assessed in terms of disaster resilience.

- Greater coordination across agencies handling disaster management data and information sharing protocols is required to increase information accessibility at all levels.

- At school level, teachers themselves not well versed in disaster management.

- Targeted interventions for children with special needs as well as those covered through non-formal education have yet to be taken up.

- Damage assessments are designed for macro level analysis and not utilised to estimate loss and integrate these into recovery, reconstruction and development plans.

Opportunities

- There is a unique opportunity to target the 18-23 year age group – which is about 150 million people in India – through higher education and different modes of education to create a workforce that is oriented to disaster management issues.

- There are new courses and new institutions emerging with disaster management programmes. These would be of higher quality if there were clearly prescribed standards for programmes offered.

- There is a need for more research that is accessible and applicable at the local level as well as a need for cross-fertilisation of professional, scientific and technical knowledge with traditional local knowledge.

- Rich experience of past events and traditional wisdom based practices are available in abundance in all regions and can be a useful knowledge pool.

Threats

- Without a strong, research and education programme in disaster management, which complies with high standards, the quality and number of experts and specialists with a strong practical and theoretical knowledge in the field of disaster management is likely to be compromised. This will widen the capacity gap in the country's disaster management sector.

C. PUBLIC AWARENESS AND MEDIA

Strengths

- NDMA has initiated TV and radio spots, media advertisements and mock drills for sensitising people on the need to be prepared for disasters.

- National programmes and initiatives including DRM Programme 1 and 2 have created awareness about DM and DRR issues across various government and non-government organisations and participating communities across programme states and districts.

- State governments have set up emergency control rooms/ Operation Centres and early warning communication systems. SEOC and DEOC are in existence and operational at least during the hazard months.

- A Communication Hub has been set up by Indian Space Research Organisation and connected to strategic nodes placed at national and state levels for sharing of disaster related information including early warning.

- The role of SHGs and community groups represent community information networks that have been effective in communicating information in the context of disaster

Weaknesses

- Public education campaigns for risk-prone communities and local authorities engaged in reducing disaster risk have been weak in terms of outreach and content.

- There is a need for more effective early warning systems, particularly last mile connectivity.

- In order to be effective, awareness of disaster issues has to be continuous and well-coordinated; at present it is adhoc and not well coordinated.

- There is no focus on behaviour change communication so far.

Opportunities

- India has a vibrant, multi-lingual, print and electronic media, which cumulatively, have an outreach covering almost the entire country up to village level.

- The emergence of mobile telephones, social media and citizens reporting through the use of digital phone cameras and other information and communication technologies have opened up huge opportunities for rapid and instant communication during emergencies.

- Networks of self-help groups and other kinds of community based organisations that have the potential to act as effective information dissemination networks.

Threats

- The high speed of communication can allow undesirable communications and rumours to spiral out of control.

- The absence of large scale, effective communication and messaging with regard to disaster will severely impede the capacities of people to reduce disaster risk and respond effectively in the event of disaster.

D. ORGANISATION / INSTITUTIONAL DEVELOPMENT

Strengths

- A legal institutional policy framework is in place, providing directives on how to address disaster from national to local levels.

- Some state governments have enacted their own legislation.

- There are several high quality academic, research, technical and training institutions for different sectors like education, health, rural and urban development

- Disaster Management Act of 2005 is currently under review to address gaps and new developments, Civil Defence Act recently amended

- Various guidelines for hazard management, on minimum standards for relief have been issued or are being formulated.

- SAARC Disaster Management Centre has been established

- Alliance for Adaptation and Disaster Risk Reduction has been set up by NGOs – with a membership of more than 200 NGOs.

- National Disaster Response, Mitigation and Capacity Development Plans are being prepared.

- Most states have their Disaster Management Plans

- Plans and guidelines being developed at national and state level

Weaknesses

- There is lack of synergy between the existing institutions and the newly created authorities due to lack of role clarity.
- The National Disaster Management Plan has not been finalised.

- The National Executive Committee is non-functional and has not been able to pay attention to measures related to disaster risk mitigation entrusted to it under DM Act. This is also true in respect of majority of SECs.

- Most of the SDMAs have all officio members and do not have any exclusive secretariat support, thus the SDMAs have become virtual authorities and meet once or twice a year, meeting primarily in the event of disaster emergencies. Similarly with DDMAs whose members are all ex-officio and lack dedicated staff, meet rarely. Therefore, the functions assigned to DDMAs, particularly relating to disaster risk mitigation, are not being performed.
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- Although most of the SDMPs and DDMPs have been put in place, these are not being updated annually.
- At sub-district level, there is no institutional mechanism in place for advancing disaster risk reduction.

- Functions assigned to local authorities are being discharged by revenue officials, without taking PRIs into confidence. There is either no financial allocation or inadequate allocation to PRIs for taking up DRR measures on their own.

- The existing institutional approach is primarily government oriented, rather than multi-stakeholder, and there are no coordination mechanisms for collaboration with other stakeholders.

- There is no convergence of national flagship programmes with disaster management.

- The techno legal regime, though in place on paper, has not been implemented aggressively resulting in increasing vulnerabilities due to unsafe building stock.

- ATIs do not have ownership of disaster management even though there are DM cells In the ATIs.

Opportunities

- The mandate provided by the National Disaster Management Act at state, district and local level, particularly for disaster risk mitigation needs to be fully exploited.

- National HR & CD Plan presenting a road map for the states to follow.

Threats

- At sub-district level, unless effective institutional systems are in place capacities built, allocation of adequate budget for disaster risk mitigation may be counter- productive as it may not be gainfully utilised.

MAINSTREAMING DRR

Strengths

- Government institutions and plans clearly state the importance of mainstreaming DRR into development and provide guidelines for achieving this.

- Provision of funds by planning Commission (Rs. 525 crore) and 10% of SDRF allocations for training and equipment has ensured that there are adequate funds for disaster management.

- Ministry of Finance, at the instance of NDMA, have issued instructions revising formats for EFC/ DPRs to address disaster management concerns so that it would function as a self-audit, a system of self-certification, to ensure DM concerns have been mainstreamed in development plans and projects.

- The impacts of disaster risk that are created by major development projects are taken into account in Environment Impact Assessment (EIA)

- Poverty reduction, social welfare and development programmes are contributing to vulnerability reduction.
- Ministry of Panchayati Raj has initiated Backward Regions Grant Fund (BRGF) for meeting critical infrastructural gaps and other developmental requirements.

- BMTPC guidelines and NBC, 2005 inter alia provide for disaster related structural safety.

Weaknesses

- In accordance with national guidelines, State governments need to evaluate and certify development programmes to ensure that they do not add to vulnerability and increase risk

- Though several steps have been taken to integrate DRR with development, these are primarily remain on paper have yet to be realised in the functioning of different departments at state and district level.

- Mainstreaming DRR into on-going development plans and programmes requires strong advocacy at all levels, political will and aggressive implementation strategy which is lacking at present.

- Structural safety measures have yet to show impact at ground level

- Non-structural measures are still at a nascent stage and have yet to show visible impacts at community level.

Opportunities

- National flagship programmes including SSA, NRHM, MGNREGS, JNNURM, IAY offer a huge opportunity for mainstreaming DRR into development programmes and planning.

Threats

- If DRR is not integrated into development and development programmes not assessed in terms of disaster risk – there are possibilities that development programmes will increase risk and vulnerability, particularly for the poor.

CROSS - CUTTING ISSUES

Strengths

- On the issue of climate change, the National Workshop on Post-2015 Framework held in April 2013 reiterated the need for the convergence between the DRR and CCA policies, plans and programmes and identified several strategic action points to implement this, including the need for a comprehensive accountability and monitoring mechanism and dedicated funding.

- Eight prioritised national missions on climate change with the intent to study and develop in detail the mitigation and adaptation issues of Climate Change and DRR are currently active.

- Ministry of Home Affairs is working with USAID on "Climate Risk Management in Urban Areas through Disaster Preparedness and Mitigation" and undertaking initiatives on Climate Change Adaptation with UNDP and World Bank.

Weaknesses

- Need to mainstream climate risks, environmental risks and disaster risk assessments with development planning and programming.

- Inadequate understanding of the provisions of relevant legislations by government agencies and other stakeholders concerned, more particularly on how their respective roles relate to complement and reinforce those of the others.

- Absence of broad framework and detailed guidelines to assist the government officials and other stakeholders in policy formulation and law implementation

Threats

- Inadequate attention to cross-cutting issues may result in DRR concerns being skewed in planning and programming.

CROSS CUTTING ISSUES: SPECIFIC REFERENCE TO GENDER

Strengths

- The 73rd and 74th Amendments to the Constitution have contributed positively to women's empowerment by placing millions of women in decision-making positions.

- Various enabling measures taken up like setting up of gender budgeting cells in various Ministries of Government of India and reflection of a gender budget statement in the Union Budgets are yet other additional positive measures.

Weaknesses

- Gender disaggregated data is not available thus impeding the process of designing gender sensitive DRR, recovery and reconstruction policies based on quantitative data.

- Women are largely seen as a vulnerable group rather than as managers and leaders with the capacity to advance disaster reduction and development actors, thus their skills, knowledge and networks are unrecognised and underutilised.

Opportunities

- India has a rapidly-growing movement of self-help groups (SHGs) of women with millions of women, who are members of SHGs across states. Many of these SHGs are engaged in micro-finance (including providing crisis credit, livelihoods loans, housing loans and insurance) and development activities, both of which have significant risk reduction and resilience building implications. Similarly, there are other grassroots groups of organised women including Mahila Mandals and Mahila Samakhyas, which can be involved in DM and DRR activities as primary stakeholders at the community level.

Threats

- Failure to involve women in disaster management reinforces their low status and marginalisation, which contributes to their vulnerability;

- Failure to recognise and involve women also misses the opportunity to utilise women's organised networks, knowledge and practices, thus reducing the efficiency and effectiveness of disaster management programmes at local level.

1. SWOT ANALYSIS

India has over the decades evolved very well designed and robust legal and institutional systems for disaster response as well as risk mitigation. Development in the last few years has introduced state-of-the-art arrangements in terms of legislative and institutional mechanisms. India's economic growth has also made available resources that were never before so abundant. The single area with the most significant gap is that of capacity. In the absence of adequate capacity all the benefits of development will be of no consequence for reducing the impact of disasters. Convergence of efforts from all stakeholders at all levels, and the option of mainstreaming risk mitigation in developmental streams provide the best opportunities for mitigating disaster risks that the country faces.

"We do not need any international aid for disaster risk reduction. We have sufficient funds of our own that we are willing to spend. Our biggest problem is one of capacity. Our funds earmarked for disaster risk reduction efforts will lapse again this year because our institutions have not been able to spend them. They have no capacity to do so."

- *Senior official of a State Disaster Management Department*

SWOT is generally used by organisations to analyse their internal strengths and weaknesses, and its operating environment's opportunities and threats. It is used at preliminary stages of planning and decision making and acts as a precursor to developing a plan or finding a solution that takes into consideration many different internal and external factors. This exercise aims at maximising the potential of the strengths and opportunities while minimising the impact of the weaknesses and threats in order to achieve best results.

This study has taken the approach of an overall established definition of terms used in SWOT analysis. However there were many nuanced issues that emerged in the course of the study particularly in the field surveys and the in depth interviews. These have been captured within the SWOT framework with appropriate details so that they may be taken up during the future course of action for developing project deliverables and evolving strategies and modules. Broadly these fall under the following categories:

Strengths are the qualities that enable to accomplish the overall mission of capacity building and its respective components dealt with in the study. These are the basis on which continued progress can be made and continued/sustained. Strengths can be either tangible or intangible. In some cases these are what institutions are well-versed in or what they have expertise in, the traits and qualities the employees possess (individually and as a team) and the distinct features that give the organisation its consistency. Strengths are hereby seen as intrinsic features and where possible will be related to opportunities for their optimal utilisation and with threats for their mitigation.

Weaknesses are the shortcomings that prevent the system from accomplishing its mission and achieving the full potential in the area of capacity building and its respective components dealt with in the study. These weaknesses deteriorate influences on the success and growth. Weaknesses are the factors which do not meet the standards they should meet. Weaknesses are controllable. They must be minimised and eliminated. For the purpose of the study, weaknesses are seen as intrinsic features. Where possible, they will be related to strengths to address them internally and opportunities to exploit external factors that will help reduce them.

Opportunities are presented by the environment within which the capacity building systems operate. These arise when an initiative can take benefit of conditions in its environment to plan and execute strategies that enable it to become more effective. Institutions and programmes can gain competitive advantage by making use of opportunities. Organisation should be careful and recognise the opportunities and grasp them whenever they arise. Selecting the targets, that will best serve the purpose while getting desired results, is a difficult task. Opportunities in the study are seen as avenues for advancement and where possible will be related to strengths for their optimal utilisation and with weaknesses for addressing them in concerted ways for required areas.

Threats arise when conditions in external environment jeopardise the reliability and success of the capacity building efforts. They compound the vulnerability when they relate to the weaknesses. Threats are uncontrollable. When a threat comes, the stability and success of the initiatives can be at stake. Threats are therefore seen in the study as external conditions that hamper or can hamper the capacity building efforts, and where possible will be related to strengths and opportunities for their mitigation.

The SWOT analysis is based on in-depth analysis of primary and secondary data. Data analysis has been carried out in different manners for the purpose of capturing inputs from literature review, interviews of key informants, case studies, and field surveys. The data is herein included in SWOT analysis report in dimensions that directly address the SWOT, and will also be presented in future reports as directly applicable to the respective components of the study. In addition, the state-wise data sets are being used for the purpose of the study components on training, research and education, public awareness and organisational development.

The SWOT analysis of the disaster management (DM) domain in India has been carried out on the basis of a comprehensive analysis of the situation. This covers five hazards (earthquakes, landslides, cyclones, floods and drought); four sectors (education, health, rural development, PRIs/ULBs); and three levels (policy, management and operational). These are looked at across four key components of training and capacity building, research and education, media and public awareness and organisational/institutional development. This forms quite a complex matrix and defies simplified solutions of a generic nature that can be applicable across all the different variables.

In view of this, an attempt has been made to identify and isolate factors than can help or hinder the broader DM agenda in the country in general and DRR efforts and initiatives in particular. This has been done with a sustainable, inclusive and resilient development perspective. Disasters are a veritable threat to safe and sustainable development. Disaster by its very definition is an extreme event (natural or human induced or in most cases, both) that causes widespread damage and loss to infrastructure, environment, natural resources, basic services and the lives and livelihoods of people. Disaster is defined by the fact that the impact of an event of this nature is beyond the coping capacities of people and communities affected. Within the community itself, different stakeholder groups including women, men, children, the elderly and people with disabilities have different levels of coping capacity. The SWOT analysis can help yield insights into the kind of solutions that can help engage in effective disaster management and disaster risk reduction in the country.

Within the conventional SWOT framework, while strengths and weaknesses are considered to be of internal origin, opportunities and threats are supposed to be presented by the external environment. But in the course of identifying the strengths, weaknesses, opportunities and threats of the disaster management domain, it became clear that in a multi-hazard, multi-level and multi-sector context on the national scale, not only strengths and weaknesses, but opportunities and threats also are many a time internal in nature.

For the purpose of preparing a long term training and capacity building strategy for disaster risk reduction in India, SWOT has been essentially used as an analytical tool, as against its

conventional planning function. As a tool to help comprehend the complex character of disaster management and disaster risk reduction, SWOT seeks to map out the strengths, weaknesses, opportunities and threats in terms of their inter-linkages across multiple hazards, sectors and levels. Given the orientation of SWOT as a tool to simplify things for the purpose of understanding and use, it has not been easy to carry this out in the context of a highly complex, dynamic and volatile reality of disaster and development with multiple dimensions, factors and forces at work.

In order to lend empirical rigour to the exercise, SWOT analysis is preceded by an in-depth analysis of the primary and secondary data gathered on various aspects of DM and DRR domain in India in the larger context of safe and sustainable development, as available in subsequent chapters and sections. It is taking an overall view of the strengths, weaknesses, opportunities and threats in the various components being studied. It is further classifying the elements into compatible groups of agendas and activities. The next step in the study process is to:

- encourage, replicate and scale up the strengths
- address the weaknesses through suggestion of corrective actions
- optimally utilise the opportunities by deploying the strengths with these, and
- mitigating the threats by addressing weakness areas associated with them and by deploying strengths to reduce them.

This process of mapping is being taken up in the various upcoming activities of the study and will eventually lead to various deliverables addressing the weaknesses and threat in respective areas largely by building on the strengths and utilising the opportunities. These will be recommendations and strategies that will emerge in due course in the study.

The SWOT Analysis also looks at the entire bandwidth of all the phases of disaster management, though it keeps it primary agenda of disaster risk management as a central theme. As such, the findings in each section are addressing different phases of disaster management. The lessons emerging from the study are more focused on the response related aspects since this is most prevalent in the approach of the organisations currently working on disaster management and is the most impactful dimension in public memory. The broad identification of research and education issues along disaster management phases is as follows:

Relief Phase	▪ This is where major initiatives have been taken up that need to be documented ▪ Systemised approaches of response need to be standardised for learning purposes ▪ Short term trainings are conducted mostly for this phase, but need to be made consistent and sustained ▪ Educational curriculum focuses on this phase in detail but using international contexts. National and local contextualised content (with case studies), and processes (with action learning) need to be developed and deployed.
Recovery Phase	▪ Early recovery is an area highlighted as a major concern by international agencies such as the UNISDR and also by Government of India. This phase requires concerted and collaborated actions from multi-sectoral role players. Cross-sectoral lessons need to be learnt and imparted through the

	capacity building initiatives for this. ▪ Technical aspects in health, needs and issues of special groups, safe reconstruction of buildings, education in emergencies and spatial planning emerge as areas requiring attention for this phase. ▪ **Documentation** of past major disasters and their recovery processes is required. ▪ **Research** on application of lessons learnt from past disasters, and approaches to address future risks needs to be planned and institutionalised. ▪ **Training** programmes need to be developed to address the capacity gaps, and deployed at different levels and to address different sectoral needs. ▪ **Education** programmes need to be strengthened and scaled through curriculum development and design of courses addressing sectoral needs.
Rehabilitation Phase	▪ Rehabilitation is the longest event specific phase in disaster management and is often the most resource intensive. There have been various experiences referred, including Uttarkashi Earthquake of 1991, Latur Earthquake of 1993, Chamoli Earthquake of 1999, Odisha Supercyclone of 1999, Gujarat Earthquake of 2001, Kosi Floods etc. The process documentation of these events is available only in fragmented grey literature and needs to be consolidated. ▪ Rehabilitation planning is most resource intensive and liable to be challenging in the areas of infrastructure, shelter, livelihoods, education and health. These sectoral areas need to be researched and included in local contextual perspective in training and education curriculum. ▪ Field exposure and learning through action and engagement needs to be brought in to the pedagogy for all disaster management courses covering this phase.
Development (Mitigation and Preparedness) Phase	▪ It has repeatedly emerged that risk management is a development subject and not disaster response. Mainstreaming of disaster management learning and capacity building in development streams is the primary requirement in this aspect. ▪ As the study reflects, DRR aspects need to be covered in core areas of health, education, rural development, rural local governance and urban local governance. ▪ Areas such as housing, infrastructure, livelihoods, water, sanitation, and public works are prime candidates for

	mainstreaming of disaster risk management ▪ All emergency support function areas and developmental streams need to also address safe development aspects in their respective training and capacity building measures as well as plans. ▪ Besides mitigation activities, disaster preparedness needs to be built into the research and education in all sectors. Education is one sector that has so far demonstrated this through disaster management curriculum and school safety programmes coming together.

In order to address the complex matrix of multiple variables related to different hazards, sectors and levels, without losing focus and with a sense of direction and purpose, SWOT analysis has focussed on the four key components of the study, along with mainstreaming of DRR and cross cutting issues as separate themes. The structure of the SWOT analysis is as follows:

1. Training and Capacity Building
2. Research and Education
3. Public Awareness and Media
4. Organisational / Institutional Development
5. Mainstreaming DRR
6. Cross Cutting Issues

1.1 Training and Capacity Building

It is important to underline the distinction between training and capacity building at the very outset. Capacity building includes but is not limited to training. While training aims at upgrading the knowledge and skills of individual functionaries, capacity building as an exercise is larger in its scope and includes both individuals and institutions that they work in. This underlines the critical role of a favourable work culture and an enabling environment that allows trained functionaries to perform and produce desired results as intended. Thus whereas training aims at enhancing the capacity of available human resource through their up gradation of knowledge, skills and attitude, capacity building aims also at creating an enabling environment and fostering a positive work culture.

Capacity development is 'a process through which individuals, organisations and societies obtain, strengthen and maintain the capabilities to achieve their own development objectives.'[1] Training is one of the many ways of capacity development which aims at enhancing knowledge, skills and attitude that go into developing the required capabilities of the actors involved.

STRENGTHS	**S1: Legal Framework and Policy** ▪ A comprehensive legal framework which mandates training and capacity building from national to local level.

[1]Annual report to the Economic and Social Council (E/2010/6–E/ICEF/2010/3).

- A national policy regime that promotes training and capacity building: this is embodied in national level policies including National Training Policy 2012 and National Policy on Disaster Management 2009
- State level policies with emphasis on investment in training and capacity building as in the states of Gujarat, Odisha and Bihar.

S2: Institutional Infrastructure

- An extensive institutional Infrastructure for training from national to district level: NIDM at national level; SIDMs/ DM cells of State ATIs at state level; training centres of various sectors and departments like Rural Development (SIRDs, RIRDs and DIRDs), Education (DIET), Health (NIHFW, SIHFW and its allied institutes at lower levels), ULBs and PRIs (AIILSG) etc: most of these training institutions across sectors and levels have linkages with the disaster management domain in the sense that they address disaster management concerns in their training.

S3: Good Practices and the Related Learning

- GOI-UNDP DRM 1 and DRM 2 Programmes (West Bengal, Gujarat, Odisha, Uttarakhand, Bihar etc.) and GOI-UNDP Disaster Risk Reduction Programme across the country (2009-2012) have not only laid a good foundation stone for effective DM and DRR in the country. Despite the fact that the results are not so visible on ground (as indicated by this study), general awareness amongst the government functionaries and NGOs about the need for community based disaster management in the country is indicative of the constructive role that these and other similar initiatives have played in creating this kind of awareness.
- NDRF has adopted a good model of training programmes; it not only trains different stakeholders, but simultaneously develops Master Trainers among them so that future training programmes including refresher training programmes may be organised in-house by such organisations obviating the need to depute trainees again and again to NDRF. The functioning of this model has yielded significant learning about institutionalisation of training capacity within government systems.

S4: Availability of Funds under Different Programmes

- Availability of adequate funds for undertaking disaster management (DM) and disaster risk reduction (DRR) functions in most of the states.
- Availability of funding for Disaster Management has increased manifold over the past decade with multiple initiatives already

	underway. ▪ To build the capacities of the state governments' functionaries and help dispersal to grassroots level, GOI has provided support for training and capacity building in DM through dedicated faculty and support to the DM Cells in State Administrative Training Institutes/Colleges and other Institutes. Dedicated funding of Rs.525 crore has been provided to State Governments which will inter alia also include it. ▪ A dedicated fund to the tune of US$ 6717 million has been earmarked for the States under the State Disaster Response fund. 10% of this SDRF can be utilised for training and capacity building activities. ▪ To build the capacity of the community, a national scheme on revamping of Civil Defence System is being implemented across the country at a cost of US$ 20 Million. Civil Defence Volunteers are representatives from the community and are being involved at the local level in disaster management initiatives. ▪ There is an added emphasis to provide training to officials of Local Authorities. NDMA/ IGNOU project on training and capacity building of ULBs and PRIs with a cost of 2.18 cr. An initiative in 54 districts of 11 states that has just concluded in 2012 is the most recent targeted initiative for the ULBs and PRIs. ▪ Another programme on Capacity Development for Local Governance (2008-12) has been launched by UNDP and Ministry of Panchayati Raj with an initial budget allocation of US$ 5.9 lakh. ▪ A National School Safety Programme has been launched by GOI as pilot project in 22 states across the country covering 8800 schools.
WEAKNESSES	**W1: Lack of Vision, Frameworks, Perspectives, Plans and Benchmarks** ▪ Lack of strategic vision, framework and action plan regarding training and capacity building for DM and DRR at the national and state levels. ▪ Inadequate comprehension/ knowledge of Legal, Institutional and Policy Framework across departments at state, district and local level as also among other stakeholders ▪ Capacity building initiatives narrowly construed as being limited to training activities. The focus is more on the number of people trained than on the nature of training. Training is being designed and organised more as an end in itself than as a means to build specific capacities of specific groups. ▪ There are no capacity benchmarks for disaster management initiatives and this appears to be one of the major reasons for widespread practice of ad-hoc planning and management of

capacity development initiatives including training programmes across sectors.

W2: Policy-Practice Disconnect

- Despite the paradigm shift in the disaster management approach from a reactive and response mode to a proactive prevention mitigation and preparedness mode, the major focus of trainings continues to be preparedness for an improved emergency response, rather than long term risk reduction.[2]
- While policy focuses on long term risk reduction, actual DM practice on the ground continues to be response and relief oriented. This represents a major policy-practice disconnect in the context of DM and DRR. This gets more evident in the case of constitution and awareness of the community task forces for disaster management.[2]

W3: Focus on Response and Relief

- The rural household survey revealed the fact that the support extended by government organisation has been mostly relief oriented rather than training and awareness generation.[3]
- Rural households associate government support in times of disasters more with relief aid than with training for capacity building.[4]

W4: Gaps in Training Policy, Design and Delivery

- Training is largely being designed and organised as an end in itself, and not as part of a larger capacity development vision and strategy. As a result, a large number of training programmes are being organised as one-off events with practically no backward (training needs assessment) and forward (impact evaluation of training) linkages.

[2]As per rural household survey, of the people who were aware of the village task force, when asked what kind of work is being done by the task force, 7.4% said preparedness, 50% said response and 42.6% said relief. In other words, no work has been done at all on risk mitigation even in the few villages where such task forces exist. It is therefore obvious that there are generally no task forces and even the few which have been formed have not been given any training on mitigation.

[3] 14.5% respondents stated 'training and awareness generation' whereas 51.3% stated relief materials other than food, 9.0% stated food and water, 5.3% medical help, 10.5% mentioned 'compensation', 5.3% stated 'house and only 1.3% mentioned 'rescue'.

[4]As per the rural household survey, respondents were asked what type of support has been provided by government organisations. Only 14.5% respondents stated 'training and awareness generation'. 51.3% stated relief materials other than food, 9.0% stated food and water, 5.3% said medical help, 10.5% mentioned 'compensation', 5.3% stated 'house and only 1.3% mentioned 'rescue'. One has to keep in mind that most of the respondents may not have distinguished between government and non-government organisations. Also, the responses for training and awareness generation could include one or the other or both. It is also obvious that most of the assistance is relief related. Besides considering that only 76 of the total 535 respondents even replied to the question, one can well imagine how frugal training attempts at the grassroot level have been. Even more revealing is the fact that none of the respondents in West Bengal selected training and awareness generation in response to the question.

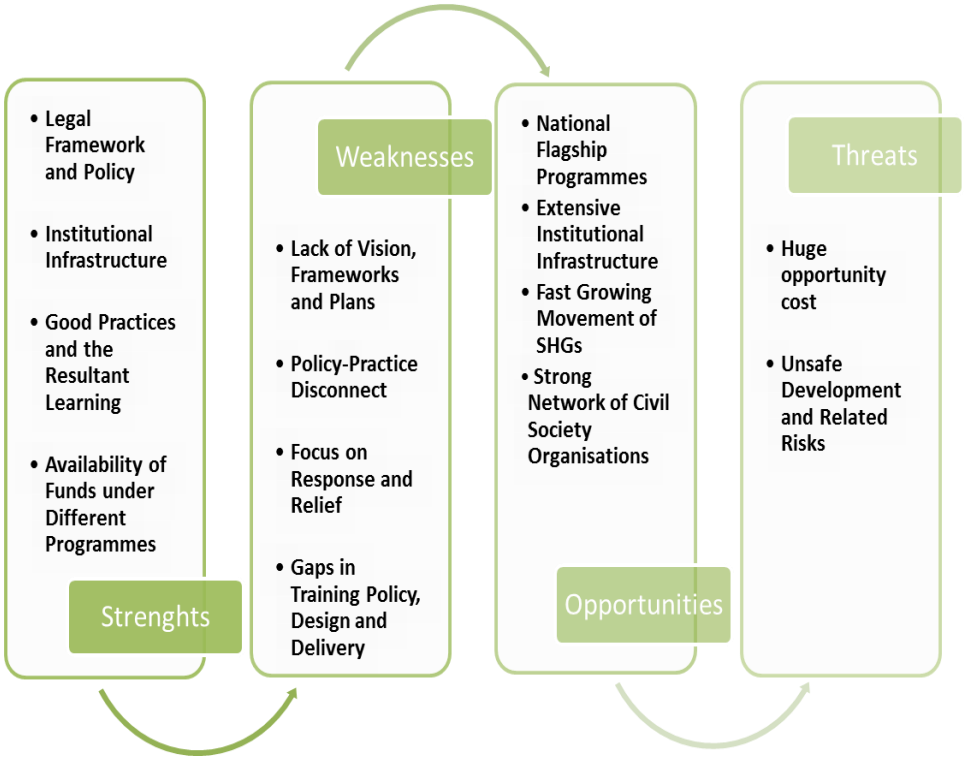
- Linkages between climate change and DRR are not incorporated as part of the training agenda.
- DM Training to elected representatives (PRI/ ULB Members) is being provided through inclusion of a very brief capsule in their general training programme; it is neither vulnerability based nor need based. Micro level vulnerabilities and community needs are not being addressed.
- Training is not generally organically linked to the roles and responsibilities. This basically implies that training design and delivery are not in view of the assigned roles and responsibilities of the functionaries involved, as generally there are standardised training for all stakeholders, not tailored to specific roles and not targeting specific capacities to be built.
- There is no organised and dedicated pool of master trainers, who can sustain the disaster management capacity building agenda on the ground. Nor is there an organised, public database listing trainers and their expertise.
- There is very little appreciation of urban, earthquake and technological risks. Techno-legal regime has not been implemented aggressively. Technical training such as training of engineers, architects, town planners, masons, doctors and paramedics is still in infancy although few state governments like Bihar and Gujarat have initiated it.
- Training programmes at present mainly focus on theoretical training; practical training component is almost negligible at most of the training institutes, except the training programmes being organised by NDRF and Red Cross.
- State training institutes are under-staffed; even sanctioned posts, which itself are inadequate, are not filled up.
- As there is hardly any system at the national and state levels to track the quality of training programmes and evaluate their impact, there are practically no ways to assess the efficacy of the training programmes being organised.
- There is no organised system for nomination of trainees or their deployment on functions where the training imparted can be optimally utilised.
- Training interventions are largely being supply driven, rather than responsive to demand. They are being designed and conducted as per the mandate and capacity of the concerned training institutes instead of being based on clearly identified training needs of the target audience.
- No systematic capacity gaps/needs analysis and training needs analysis have been conducted at any level except few States leading to the training programmes being usually ad-hoc, short term, not supported by structured content and tools, and devoid of accreditation and quality assurance, along with other contributory factors related to policy, planning and strategy.

	▪ Non-training aspects of capacity related to policy, planning, strategy, and enabling environment including HR issues are the blind spots of a capacity development programme within government: lack of internal HR policy and personnel management systems within NIDM resulting in vagueness about faculty appointment, tenure, service rules including superannuation benefits and the resultant frustration and demotivation among the faculty members is a good case in point of a capacity challenge that calls for a non-training solution. ▪ Community trainings are the weakest link, as there are hardly any community training other than provided during GOI-UNDP DRM Programme and a few externally funded NGOs.[5]
OPPORTUNITIES	**O1: National Flagship Programmes** ▪ A number of on-going national flagship programmes with emphasis on training and capacity building. These include: Sarva Shiksha Abhiyan (SSA); National Rural Health Mission (NRHM); Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS); Jawaharlal Nehru National Urban Renewal Mission (JNNURM); Indira Awas Yojana (IAY). Mainstreaming DRR into development planning and implementation through these programmes will help address some of the underlying drivers of risk and vulnerability related to education, health, housing, employment and income. **O2: Extensive Institutional Infrastructure** ▪ The extensive institutional infrastructure for training available across states in the form of state ATIs, SIRDs, and a large number of training institutions of line departments currently remains under-utilised. The knowledge and skills of the available human resources in these institutions by way of trainers and managers are also not fully utilised. This offers an opportunity to deploy existing physical and human resource for organising DM and DRR related training programmes with appropriate incentives. **O3: Strong Network of Civil Society Organisations** ▪ A strong network of civil society organisations working on DM and DRR issues in multi-hazard prone states and districts offer a huge opportunity to engage these networks in training and capacity building efforts for effective DM and DRR.

[5]At community level, by and large no training is being imparted. As per the rural household survey, when asked whether any of the family members has received training or exposure, only 6.2% stated YES and 93.8% stated NO. From amongst those who stated yes, 31.9% were trained in medical first aid, 34% in search and rescue, and 14.9% in preparedness. Again disciplines like damage assessment, communication or even evacuation were mostly not covered (1 each trained in damage assessment and communication and 3 in evacuation).

	O4: Fast Growing Movement of SHGs ▪ A fast growing movement of SHGs and emerging power of organised groups of grassroots women offers an opportunity to position women and their groups as community leaders and disaster managers
THREATS	**T1: Huge opportunity cost** ▪ Lack of required capacity may result in huge opportunity cost by way of increased severity of disasters both in terms of their immediate impact on and long term blow to infrastructure, environment, natural resources, basic services and the lives and livelihoods of people, as amply indicated of Uttarakhand flash floods and landslides in June 2013 resulting in widespread destruction of human life and habitat. ▪ In the absence of a strategic vision and action plans for effective disaster risk mitigation in the country, training is likely to remain ineffective in countering the threat of growing disaster and climate change impacts. Training without clear vision and goals may be like shooting in the dark and may result in massive loss of time, effort and resources. ▪ Deployment of financial resources now available with government agencies without adequate trained manpower may result in unutilised funds and unmet targets. **T2: Unsafe Development with Greater Disaster Risks** ▪ Rapid rural and urban development in areas with no techno-legal checks are likely to result in increased housing stock and infrastructure that is structurally unsafe and can be a major threat to people and their lives and habitat. ▪ The techno-legal regime is at present not applicable to rural areas. Over the period of about last two decades, lot of pucca constructions have come up in villages (as in Uttarakhand) and, with economic development, these would grow much faster. It is time to develop a strategy to regulate constructions in villages so that such pucca constructions are structurally safe. ▪ Periodically, several unauthorised colonies are regularised in mega-cities. However, no conditions to ensure structural safety of such unauthorised constructions, which were built without obtaining any approvals from concerned agencies, are imposed. If an appropriate mechanism is not put in place soon, it will further add to urban vulnerability. ▪ The growing impacts of climate change pose serious challenges and will exacerbate disaster risks. Upcoming development must keep in mind unprecedented catastrophic events and prepare accordingly. However, climate change adaptation is as yet not a mainstream agenda in disaster management and risk reduction.

SWOT Linkages



As shown in the figure above, there are connections across strengths, weaknesses, opportunities and threats. While the presence of a legal framework and policy is an obvious strength, a policy-practice disconnect is a weakness that needs to be addressed. Appropriate training and capacity building efforts as envisaged in policy can be undertaken by making use of the available opportunities like national flagship programmes, extensive institutional infrastructure, strong network of civil society organisations and a fast growing movement of women SHGs. This is also expected to result in minimising the threats of huge opportunity cost and unsafe development with greater disaster risks.

Seen from a multi-sector perspective, strengths, weaknesses, opportunities and threats are all internal to the operating environment. Major efforts are required to strengthen the missing middle of robust systems and capacities to translate policy into practice as intended.

1.2 Research and Education

STRENGTHS	

S1: Initiatives on Disaster Management education and research

- A huge volume of knowledge on various aspects of disaster management including disaster risk reduction has been generated by various government and non-government organisations, research and academic institutions.
- University Grant Commission (UGC) has issued circulars to all the universities accredited by UGC to introduce courses on Disaster Management. Several universities have already started professional courses on Disaster Management.
- Government of India has set up a Technical Committee for developing the approach and methodology and issued directions to all universities across the country to integrate and institutionalise disaster management education within the formal systems of higher education.
- National Institute of Disaster Management has introduced standardised model online courses on disaster management for a range of DM personnel and practitioners.
- With large number of professionals engaged in these academic and research organisations along with those engaged with the government, non-government and private sectors, there is significant number of experienced and knowledgeable resource persons available in all aspects of risk mitigation in the country.
- Central Board of Secondary Education (CBSE), as well as various State Education Boards have included Disaster Management in the curriculum of secondary education for some classes.
- Supplementary text books have been prepared by NCERT and some of the state boards and teachers have been trained for effective curriculum transaction: Central Board has taken up training programmes for their teachers.
- CBSE has also issued a number of Circulars to address such issues like preparation of Standard Operating Procedures, (SOPs) in case of terrorist attacks, mock drills and safety in science laboratories.

S2: Hazard and vulnerability Database development

- The Disaster Management Act and the National Policy on Disaster Management in India have clearly articulated the need for conducting hazard risk and vulnerability assessment. Several state governments are conducting such assessments. The scope of these assessments include analysing exposure to various hazards, physical vulnerability, environmental vulnerability and socio-economic vulnerability based on which appropriate mitigation measures may be formulated.
- The Vulnerability Atlas prepared by BMTPC (Building Materials

	and Technology Promotion Council) provides macro scale hazard maps with risk statements of various housing types in different hazard zones. ▪ The National Flood Atlas has been prepared by Central Water Commission (CWC). ▪ Different State governments and organisations like Geological Survey of India (GSI), India Meteorological Department (IMD), National Remote Sensing Agency (NRSA), India Institute of Remote Sensing (IIRS), Indian Space Research Organisation (ISRO), National Spatial Data Infrastructure (NSDI), National Agricultural Drought Assessment and Monitoring System (NADAMAS) are also generating database for disasters. Based on these available risks information, Disaster Management Plans are expected to be prepared at state, district and local levels. ▪ Some state governments have also taken up initiatives to design methodologies/tools for hazard risk and vulnerability assessment. ▪ For assessing drought risk National Agricultural Drought Assessment and Monitoring system has been developed for in-season assessment and monitoring of drought through application of satellite imageries and geo spatial technologies. ▪ Large numbers of non-governmental organisations have carried out community level hazard risks and vulnerability assessments in different parts of the country ▪ The two major Mitigation Projects (National Cyclone Risk Mitigation Project and Disaster Management Support Programme of ISRO) undertaken for implementation by Government of India also provide scope to conduct risk analysis in disaster prone districts in select states across the country. ▪ Geological Survey of India (GSI) has been designated as a nodal agency for conducting landslide risk analysis and state specific studies are already carried out by GSI. Geological Survey of India is also conducting a study on landslide risk assessment, which includes landslide hazard zonation mapping, site specific study to understand the causative factors and suggest ameliorative measures to prevent further sliding. ▪ Ministry of Earth Sciences (Department of Science and Technology), Government of India has developed a model for seismic micro-zonation with Indian perspective and piloted it in selected cities of India. The model was designed to assess earthquake hazard risks and evolve suitable mitigation strategies. Seismic micro zonation study has also been carried out in select earthquake prone cities with support from Ministry of Earth Sciences. ▪ The central government is also contemplating a multi hazard risk assessment in select states in partnership with the World Bank.

- Nodal agencies have been identified for collecting and analysing information on various hazards such as: India Meteorological Department for cyclone, earthquakes and rainfall, strong wind and storm surge; Central Water Commission for flood data and information relating to various dams and dam bursts; Geological Survey of India for landslide; Indian National Centre for Oceanic Information Services (INCOIS) for Tsunami; Ministry of Agriculture for drought related information and; Ministry of Defence (DRDO) for avalanche information.
- National Spatial Data Infrastructure, Indian National Centre for Oceanic Information Services (INCOIS), Indian Institute of Remote Sensing (IIRS), National Remote Sensing Agency (NRSA) and Indian Space Research Organisation (ISRO) provide spatio-temporal information on various hazards and disasters. These nodal agencies have been identified to provide and maintain key hazard data and information.
- Disasters and hazards are monitored and losses reported. Disaster loss databases exist and are regularly updated.

S3: Knowledge sharing and dissemination

- India acts as a Regional Specialised Meteorological Centre for monitoring, prediction and early warning of cyclone over North Indian Ocean as designated by WMO. It provides advisories to the WMO/ESCAP panel member countries.
- India Disaster Knowledge Network (IDKN) has been established for knowledge sharing and development among various stakeholders.
- SAARC DMC (SDMC) based in Delhi is also promoting sharing of knowledge and information among the SAARC countries and has set up the SAARC Disaster Knowledge Network (SDKN) that is expected to be engaged in establishing and resourcing regional and sub-regional strategies and frameworks.
- NDMA and NIDM and State specific web portals are being developed by the national agencies/ State Governments for information sharing and knowledge management where information is disseminated with guidance to manage disaster risk.
- Resource inventories like India Disaster Resource Network (IDRN) and State Disaster Resource Network (SDRN) exist / are coming up at national and state levels.
- Mechanisms for access / dissemination of information and knowledge (internet, public information broadcasts - Radio, TV, and Print Media) are being developed. This should come under public awareness and media
- Rich experience of past events and traditional wisdom based practices are available in abundance in all regions and can be a useful knowledge pool. In areas where this knowledge has been

	applied, it has clearly shown its effectiveness. ▪ Educational institutions are well established and new private institutions are coming up in a significant way in all the regions, with initial efforts in place on inclusion of disaster management in elective courses and a few degree courses.
WEAKNESSES	**W1: Inadequacies of disaster education system** ▪ The vast network of universities, colleges and research institutes and their professional excellence remain largely untapped and have yet to be creatively utilised and mainstreamed. ▪ Introduction of disaster management education in school curriculum, graduate and post graduate programmes is only the first step towards knowledge building and mainstreaming disaster management into education system. It has generally been observed that most of the teachers who are expected to teach / train students are themselves not adequately trained / oriented on the subject. ▪ Adequate efforts for creating domain experts in the country for which appropriate opportunities for skill development are required have yet to be mounted in the right earnest. **W2: Targeted interventions of DRR** ▪ Lack of adequate investment in research, documentation and knowledge management despite availability of funds across different departments, programmes and projects. ▪ Targeted interventions for children with special needs as well as those covered through non formal education system have yet to be taken up seriously. ▪ Integration of DRR into professional education programmes such as engineers, architects, town planners, doctors, paramedics etc has yet to receive the desired amount of attention and results. ▪ Though DRR is included in the national scientific applied-research agenda, the budget allocation/fund availability for the same is still an issue to be addressed. ▪ Programmes and projects on various aspects of DRR including vulnerability reduction are highly insufficient both qualitatively and quantitatively. Moreover, research outputs, products or studies are more theoretical than applied and are hence not being used by public and private institutions. There is a clear need for basic and applied research to understand various hazard risks and associated vulnerabilities. **W3: Availability of data** ▪ Although data has been made available in the public domain,

their accessibility and actual usage are the two key issues which need to be addressed.

- Availability of the data on IDRN and SDRN for research and other applications and its regular updating is a major issue.
- No significant efforts have been made on organised accreditation and certification. At community level, no cards or certificates have been issued to certify the trainees as first aid volunteer, search and rescue volunteer, evacuation volunteer etc. or if issued these are ad-hoc, single agency based without any quality control or accreditation process.
- As per rural household survey, of the 33 respondents who had been trained, only 2 (6%), both from Uttarakhand, stated that they have received certificates of participation, one from Government of India and the other from Red Cross. Remaining 31 (94%) did not receive any thing, not even a certificate of participation. Of these 31, when asked whether they would like a certificate to be issued to them, 22 (71%) said YES, and 9 (29%) said NO. The possibility that these 9 may no more be active in the field cannot be ruled out.

W4: Data Sharing

- Improving coordination among various agencies handling DM database will help in increasing information accessibility of key hazards and database at all levels.
- There is a need to enhance the data sharing protocols and mechanisms at national and state levels and ensuring that the experiences and data percolate to the operational / implementation level.

W5: Standardisation of research methodology

- Agreed national standards for multi-hazard risk assessment have yet to be developed and shared across sectors.
- Common user friendly format for risk assessment, which can be further contextualised, and customised by users that include all future/probable risks and all angles/ dimensions of vulnerability (including gender disaggregated vulnerability and capacity assessments) have yet to be developed.
- No standardised research methodology or tool exists in the country for multi-hazard assessments and cost benefit analysis.
- Checklists and tools are needed for damage assessments post-disaster; which currently vary widely from state to state and organisation to organisation.
- Potential risk scenarios are to be developed taking into account climate change projections and preparedness plans which need to be regularly updated.
- Limited capacity in loss modelling and interpretation of hazard

information to estimate the potential risks.

- Standardised research methodology needs to be developed for all four disaster phases – relief, response, preparedness and mitigation.
- Agreed standards for research across all of these areas are needed at all four levels: PRI/ULB, district, state and national.

W6: Applying research to policy planning and practices

- While situation/damage assessment reports are generated on a regular basis in a post disaster situation there is a need to analyse the information to estimate the loss and integrate these into recovery, reconstruction and development plans.
- Studies on the economic costs and benefits of DRR, good practices and lessons learnt are critical for awareness and training / sensitisation initiatives and management decisions in this regard have yet to be undertaken.
- The real challenge lies in applying the scientific knowledge and research findings into policy planning and practices. There is limited use of the hazard information and disaster database while designing long term development programmes.
- There is a need to strengthen the mechanisms in place to reach out to the grass-root level with information on hazard, risks and measures for preparedness.
- Most of the databanks and assessment reports are not compatible with each other. For example there are more than a dozen highly specialised agencies in India engaged in landslide hazard zonation and risk mapping in different geographical settings but none of these are compatible with each other to the extent that even a basic national database has yet to be developed.

W7: Better risk assessments

- Critical public infrastructure especially schools and hospitals are yet to be assessed for their disaster resilience.
- There is an immediate need for national to GP level multi-hazard meso and micro risk assessments with a common methodology to inform planning and development decisions.
- Limited understanding of disaster and development realm exists: inter-dependencies across key sectors and socio-economic vulnerabilities arising out of hazard risks are yet to be studied at ground level.
- The damage assessment techniques followed at national and state levels are generic and often do not give a realistic picture.

	W8: Improvement in documentation and research ▪ For planning resources for reconstruction and rehabilitation it is important to calculate the actual loss that has occurred and state specific templates for damage and loss assessments need to be designed. ▪ Standardised PDNA methodology and formats are yet to be developed. Reports for all major and minor disasters are generated on different non standardised PDNA formats and hence in most cases the databanks are not compatible. ▪ The level of documentation and research is very poor and several major disaster events in different states have not been documented systematically and comprehensively.
OPPORTUNITIES	**O1: Tapping existing opportunities** ▪ With about 150 million of India's population being in the 18-23 age group (target group for higher education) there lies a very unique opportunity with respect to training and capacity building of this huge work force that can lead the change to the next generation. ▪ There is an excellent network of Universities (659), Colleges (33,023), Diploma granting organisations (12,748) and Research Institutes throughout the country. Together, these enrol about 25.9 million students. There is also a huge opportunity to train and build the capacity of India's work force through other innovative modes of education like online, distance and correspondence courses based on blended learning. This will help further strengthen and streamline research, education and documentation. ▪ New colleges and new courses are coming up with disaster management content, and, if encouraged with quality content support, can be further scaled up and replicated.
THREATS	**T1: Lack of incentives for disaster management education** ▪ In the absence of contextual local research and documentation, theoretical and copied information from international sources will lead disaster management learning in the country. ▪ Without adequate incentives, educational programmes in disaster management will not scale up and replicate, leaving the gap of disaster management professionals unfilled.

1.3 Public Awareness and Media

STRENGTHS

S1: Exploiting the reach of media

- India has a free and vibrant print and electronic media. These together reach out to every part of the country and, taken together, have outreach covering all stakeholders up to village level.
- NDMA has already initiated TV spots, radio spots and newspaper advertisements to sensitise the masses on the need to be prepared, as well as 'dos and don'ts' in the event of specific disasters.
- NDMA has initiated mass scale mock drills under its series of Emergency Exercises across the country that have been designed on a multi-media and person to person contact model and have generated interest and knowledge in the public.

S2: Initiatives

- National programmes and initiatives including DRM Programme 1 and 2, have also helped create awareness about DM and DRR issues across various government and non-government organisations and participating communities across programme states and districts.
- A Communication Hub has been set up by Indian Space Research Organisation and connected to strategic nodes placed at national and state levels.
- Respective state governments have set up their emergency control rooms/ Operation Centres and early warning communication systems (audio, video and data communication facilities) to reach out to vulnerable districts. SEOC and DEOC are in existence and operational at least during the hazard months.

S3: Knowledge Networks

- Various civil society organisations, often aided by corporate groups, have established a national grid of village knowledge centres, setus, e-chaupals and other such community based knowledge and information infrastructure that is very valuable for disaster risk management related awareness generation.
- Communication systems and protocols are worked out in many states for use and application up to the district level.
- Increased public exposure to national and international events has made a ready base for a generally sensitised community.
- The role of SHGs and community groups in almost all situations including disaster related situations has been a major strength. As per rural household survey, 81.2% of respondents knew

	about an SHG in their village and only 18.8% respondents stated that they were not aware of any SHG in their village. In Bihar, Gujarat and West Bengal 100% respondents were aware of SHG or community group in their village whereas the corresponding percentages of awareness of such community based organisations in Andhra Pradesh, Odisha and Uttarakhand were 88.5%, 47.0% and 62.5% respectively.
WEAKNESSES	**W1: Weak Public awareness campaigns** ▪ Public awareness campaigns for risk-prone communities and local authorities' engagement in reducing disaster risk through public engagement have been generally weak both in terms of outreach and content. ▪ Public awareness initiatives have been largely event based, ad-hoc, one off efforts, and hence have had limited sustained impact. ▪ Campaigns and awareness programmes by various government agencies and civil society organisations have been in isolation from each other and the value of coordinated campaigning has not been tapped. DM awareness is ad-hoc and it is not well coordinated across various departments, NGOs, educational institutions and the media. ▪ At best public education campaigns and the media (reporting on disaster events) have led to an enhanced awareness of risk but no significant progress has been achieved on disaster management (preparedness and emergency response), preventive risk management (risk and vulnerability) and guidance for risk reduction both at the level of community and other concerned stakeholders. ▪ Awareness programmes have largely centered on giving basic knowledge, but behavioural change dimensions such as social referencing, motivational aspects etc. are mostly missing. ▪ Adequate efforts have yet to be made to strengthen the capacity of the States and Districts in setting up local level early warning systems. Establishing effective last mile connectivity in early warning and other areas is both a major weakness and challenge. **W2: Establishing effective last mile connectivity** ▪ As per the Rural Household Survey, 19.3% respondents stated that they had heard about *any* government organisation on disaster, whereas 71.2% had not even heard about any government organisation on disaster and 9.5% responded by saying "don't know". This would show how fragile the government presence on disasters has been in rural areas. ▪ Though community is aware about SHGs/ CBOs working in their villages, the rural household survey revealed that when asked

	whether anyone from their family was a member of these organisations, 23.2% stated YES, 23.0% said NO and 53.8% responded that "they did not know". In other words, although awareness is there, participation is poor. ▪ Media reporting on disaster risk management is very low. Reporting on disaster events is often over-hyped and focused on damage and inefficiencies of relief efforts. ▪ Reporters and media personnel do not have sufficient technical knowledge about basic dimensions of disasters and disaster risk to be able to report correctly.
OPPORTUNITIES	**O1: Vast media network** ▪ A vast, multi-faceted and multi-lingual media network across the country offers a huge opportunity to use media for mounting effective DRR campaigns not only nationally but also across highly vulnerable states and districts in particular. ▪ Emergence of mobile telephony, social media as a channel for communication, and citizen reporting with prevalence of digital and phone cameras and other information and communication technology (ICT) tools have opened up huge opportunities for fast and instant communication during disaster related emergencies as well.
THREATS	▪ Instant exposure and speed of communications can allow undesirable communications such as rumours to spiral out of control. ▪ Very strong communications in the absence of credible and reliable forecasting and other information can lead to erosion of trust in state systems of disaster management. ▪ Delay in adopting a coordinated approach involving media and other stakeholders would be a major negative factor for awareness generation.

1.4 Organisation/ Institutional Development

STRENGTHS	**S1: Legal, Institutional, Policy and Guidelines Framework** ▪ A legal, institutional and policy framework for DM has been put in place from national to local level. ▪ Few state governments have enacted their own legislation also like Gujarat, Bihar and Uttar Pradesh. Some state governments have enunciated their own policy related to DM like Gujarat, Odisha, Bihar and West Bengal. ▪ There is a good number of academic, research, technical and training institutions for different sectors like education, health, rural and urban development, PRIs and ULBs in place at national and state level. ▪ The Disaster Management Act, 2005 is under review at present to take care of the gaps and developments since 2005. ▪ The Civil Defence Act, 1968 has been amended recently to include disaster management as one of the functions of civil defence and home guards personnel. ▪ 16 hazard specific guidelines have been formulated and issued by NDMA to assist the state governments and other stakeholders. ▪ National guidelines on minimum standards for Relief in Relief Camps are under development. **S2: Regional Centre** ▪ The SAARC Disaster Management Centre (SDMC) has been established at New Delhi for managing disaster risks in the region. **S3: NGOs' Alliance** ▪ An Alliance for Adaptation and Disaster Risk Reduction (AADRR), has been put in place by NGOs at the apex level which is the largest civil society with more than 200 NGOs.
WEAKNESSES	**W1: Lack of Secretariat and gaps in existing systems** ▪ The National Executive Committee, most of the SDMAs and SECs with ex-officio members and no separate secretariat are more or less non-functional and meet rarely, mostly in the backdrop of a major disaster. ▪ The DDMAs also do not have exclusive staff and all members are ex officio members. The result is that its meetings are rarely held on the plea that District Magistrates already consider disaster management as one of the agenda items in their regular meetings.

	▪ Therefore, the functions assigned to DDMAs, particularly relating to disaster risk mitigation, are not being performed. **W2: Lack of institutional base at sub-district level** ▪ At Sub district level, there is no institutional mechanism in place; in majority of cases, there are no VDMCs or Task Forces at community level, both in rural and urban areas. [6] ▪ Even in few villages where Task Forces are in place, the participation of villagers is minimal.[7] ▪ There is either no financial allocation or inadequate allocation to PRIs for taking up DRR measures on their own. **W3: Local Authorities** ▪ Although local authorities have been assigned specific functions under DM Act, their role is minimal in actual practice; the functions assigned to local authorities are being discharged by revenue officials without taking PRIs into confidence.
OPPORTUNITIES	**O1: Building up DRR** ▪ The mandate given under the National Disaster Management Act at state, district and local level, particularly for disaster risk mitigation needs to be fully exploited. ▪ The human resource development in states should be undertaken based on a forward looking HR & CD Plan, to be implemented from state to local level.
THREATS	**T1: Institutional base at sub-district level** ▪ At sub-district level, unless effective institutional systems are in place and their capacity is adequately built, allocation of adequate budget for Disaster risk mitigation may be counter-productive as it may not be gainfully utilised.

[6]As per rural household survey, when asked if there is any disaster task force in the village, 6.5% said YES, 33.3% said NO and 60.2% said "they did not know". If we add the responses of no and did not know, it would mean that 94.5% showed their ignorance about any such institutional structure at village level. Further, when asked whether the Task Forces were active, only 6.2% stated YES and 93.7% said NO or did not know.

[7]Further, when asked whether anyone from their family was a member of a task force, only 3.9% said YES and 96% said NO or did not know. The interesting fact is all positive responses are from Andhra Pradesh only and in the remaining five states (Bihar, Gujarat, West Bengal, Odisha and Uttarakhand), there was not a single positive response. Therefore, except Andhra Pradesh, where task forces in a few villages exist, respondents from all other five states have said that there is no such task force or they did not know about any such task force.

	T.2: Building up DRR ▪ If Disaster Management is treated as a separate subject, it may not get integrated with development. DRR should necessarily be a component of all development schemes and plans to derive optimum benefits.

1.5 Mainstreaming DRR

STRENGTHS	**S1: Legal, Institutional, Policy and Planning Mechanism** ▪ The successive Five Year Plans emphasise the need of mainstreaming of Disaster Risk Reduction into development planning process and programmes. ▪ Mainstreaming has legal mandate as per the provisions of DM Act, 2005 such as development of National, State and District Disaster Management Plans; inclusion of measures to be taken for prevention of disasters or mitigation of their effects and integration of mitigation measures in development plans; provision for inclusion of vulnerability assessment in state plans etc. ▪ NDMA Guidelines for preparation of SDMPs include integration of DRR with development as a guiding principle. ▪ The National Policy states that NDMA will ensure mainstreaming of DRR in the developmental agenda of all new & existing development programmes & projects which shall incorporate disaster resilient specifications in design & construction and further that the Planning Commission will give due weightage to these factors while allocating resources. ▪ Ministry of Finance, at the instance of NDMA, have issued instructions revising formats for EFC/ DPRs to address disaster management concerns so that it would function as a self-audit, a system of self-certification, to ensure DM concerns have been mainstreamed in development plans and projects. ▪ The impacts of disaster risk that are created by major development projects are taken into account in Environment Impact Assessment (EIA) ▪ The Government of India have advised all states that it is imperative for all lifeline structures to be made disaster resilient in line with the national vision of disaster management. ▪ Some of the major development programmes directly or indirectly contributing to vulnerability reduction are MGNREGS), JNNURM, NRHM, SJSRY, IAY, IAY, RAY etc. ▪ Several other Ministries/ Departments have taken up schemes which directly or indirectly contribute to DRR such as Backward Region Grant Fund by Ministry of Panchayati Raj, National Agricultural Insurance Scheme by Ministry of Agriculture (Vision

	2020) and Rural Business Hub. ▪ BMTPC guidelines and NBC, 2005 inter alia provide for disaster related structural safety.
WEAKNESSES	**W1: Gaps in existing systems** ▪ State Governments need to issue instructions to their respective departments and District Administrations for self certification of development projects to ensure these do not add to vulnerabilities, on the lines of instructions issued by GOI. ▪ Though several steps have been taken to integrate DRR with development, these primarily remain on paper and have not really been integrated in the functioning of different departments at state and district level. ▪ Mainstreaming DRR into on-going development plans and programmes requires strong advocacy at all levels, political will and aggressive implementation strategy which is lacking at present. ▪ There is need to integrate DRR with CCA at all levels. ▪ Implementation of structural safety measures have yet to show impact at ground level. ▪ It is necessary to move from macro to micro level assessment of vulnerabilities and risk analysis, which has yet to take place.
OPPORTUNITIES	**O1: Development Programmes** ▪ A number of national flagship programmes including SSA, NRHM, MGNREGS, JNNURM, IAY offer a huge opportunity for mainstreaming DRR into development programmes and planning.
THREATS	**T1: Impact of delays in mainstreaming** ▪ Delays in mainstreaming DRR into regular development planning and administration run a major risk of derailing the process of disaster resilient inclusive development thus endangering development gains

1.6 Cross Cutting Issues

Disasters and disaster management functions are cross cutting in nature because of their inescapable linkages with larger development processes including infrastructure development, natural resource management, and provision of basic services and creation of sustainable livelihoods.

STRENGTHS	**S1: Actions initiated for convergence of DRR with CCA** ▪ The National Workshop on post-2015 Framework for DRR (27 April, 2013) held at New Delhi has articulated the need for convergence of DRR and CCA. ▪ The agenda is being taken forward through National and Global Platforms for DRR. ▪ 8 (Eight) prioritised national missions on climate change with the intent to study and develop in detail the mitigation and adaptation issues of Climate Change and DRR are under implementation by Ministries concerned. ▪ Ministry of Home Affairs is working together with USAID on "Climate Risk Management in Urban Areas through Disaster Preparedness and Mitigation" and taking other initiatives on Climate Change Adaptation with UNDP and World Bank.
WEAKNESSES	**W1: Existing gaps in convergence of DRR with CCA** ▪ Various facets of environmental vulnerabilities especially in the context of hazard related risks and the ways in which they can affect the natural ecosystem and environmental resources are not yet fully appreciated within mainstream development planning processes. ▪ Inadequate understanding of the provisions of relevant legislations by government agencies and other stakeholders concerned, more particularly on how their respective roles relate to complement and reinforce those of the others. ▪ Absence of broad framework and detailed guidelines to assist the government officials and other stakeholders in policy formulation and law implementation.
OPPORTUNITIES	**O1: Advocacy through global and national platforms** ▪ Inter-Agency Groups and multi-stakeholder platforms such as NPDRR offer ample opportunities for interactive sharing and learning around cross-cutting issues of importance.
THREATS	**T1: Risks in delayed action** ▪ Inadequate attention to cross-cutting issues may result in DRR concerns getting skewed in actual planning and programming

1.6.1 Cross Cutting Issues: Specific Reference to Gender

STRENGTHS	**S1: Positive Actions Taken** ▪ The introduction of local self governance has contributed positively to gender empowerment. ▪ Increase in women's education, both in terms of quality and numbers, has further contributed to women empowerment. ▪ Various enabling measures taken up like setting up of gender budgeting cells in various Ministries of Government of India and reflection of a gender budget statement in the Union Budgets are yet other additional positive measures.
WEAKNESSES	**W1: Gaps in existing systems in place** ▪ Gender disaggregated data is neither available nor being applied to decision making for risk reduction and recovery activities. ▪ Women are largely seen as a vulnerable group rather than as capable development actors with knowledge, skills and other capacities as practicing disaster managers at the community level. This presents itself as a barrier in carrying out gender sensitive disaster management planning on the ground.
OPPORTUNITIES	**O1: Non Governmental Women's Groups** ▪ India has a fast growing movement of self-help groups (SHGs) of women with millions of women, who are members of SHGs across states. Many of these SHGs are not only engaged in conventional savings and inter-loan arrangements, but also in development activities having significant risk reduction and resilience building implications. ▪ There are other grassroots groups of organised women including mahila mandals and mahila samakhyas which can be involved in DM and DRR activities as primary stakeholders at the community level.
THREATS	**T1: Unsustainable development without involvement of women** ▪ Failure to involve women is more likely to result in unsustainable DM and DRR activities ▪ Considering women as vulnerable will drastically reduce the available human resource base

The SWOT analysis as presented in the tables above draw on the in-depth analysis that, besides the footnotes in this section, are available in subsequent chapters.

2. CONTEXT AND CAPACITY ANALYSIS

The context and capacity analysis is comprised of situational analysis including investment analysis, stakeholder analysis, capacity needs assessment, and communications needs assessment. These are detailed as individual sections as follows. Assessments and analyses have been carried out with a view to understanding the current capacity gaps in DM and DRR in general and the resultant capacity and training needs in particular.

2.1 Situational analysis including investment environment

Besides the core hazards of earthquake, cyclone, flood, drought and landslide, there are a number of other hazards, secondary impacts of hazards and underlying risks that render the risk context of India very complex. Small, day-to-day disasters have emerged as the main priority in a number of locations studied. The impacts of climate variability are clearly visible in most of the states, and they pose a serious challenge for risk mitigation systems that are based on addressing predictable risks. The availability of resources has increased substantially, but brings with it challenges of managing resources of a scale that have never previously been seen in the sector, and doing so in a multi-hazard, multi-sectoral and multi-level manner.

"Yes, we know that the government has set up systems to give early warning for cyclones and a lot of money has been spent on that. But our biggest problem is of drinking water. Our children are always falling ill because of bad quality water. I don't know when the next cyclone will come, but this is today's problem. Can you help solve this?"

- *Woman resident of Adarsh Nagar, a coastal slum in Machilipatnam, Andhra Pradesh*

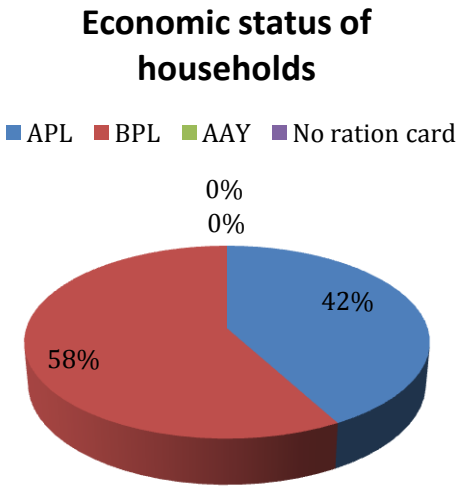
The situational analysis aims to use the six states under study to map out hot spots of disasters. This includes looking at the macro and micro risks (both across the country in general and the study states in particular). It considers the hazard, risk, vulnerability and capacity profile of communities at risk. The unpredictability related to extreme weather events induced by climate change and their implications for disaster risk mitigation initiatives including climate change adaptation (CCA) strategies is also studied. Finally, it looks at the current investment environment within which resources have to be identified and deployed for disaster risk mitigation.

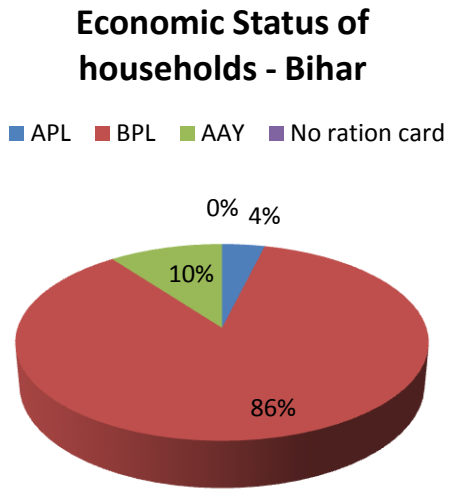
2.1.1 Hazard, Vulnerability and Capacity

There is dispersal of vulnerabilities, not only among the states, but also within a state and even within a district. In the six states covered in this study (Andhra Pradesh, Bihar, Gujarat, Odisha, Uttarakhand and West Bengal), droughts / water stresses and floods are common to all states. While Uttarakhand, Gujarat, Bihar and West Bengal are seismically vulnerable; Odisha, Andhra Pradesh, Gujarat and West Bengal are vulnerable to cyclones; Uttarakhand and some districts in West Bengal are also vulnerable to landslides. Fire is a common hazard for all states/ districts. Therefore, these six states taken together encompass all disasters on which the study was required to focus, namely, earthquakes, floods, droughts, cyclones and landslides.

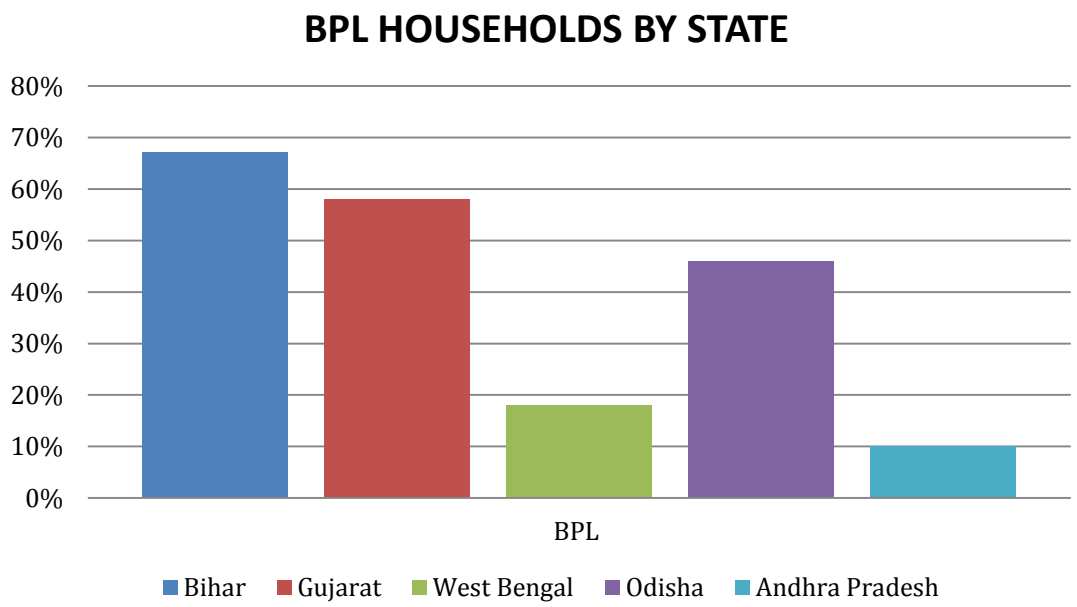
However, macro-level vulnerability profile is of minimal help unless micro-level vulnerabilities are analysed and remedial measures put in place to ensure that existing vulnerabilities are reduced further. Macro level vulnerability analysis alone is not useful for identifying mitigation strategies which have to be implemented at micro level. Besides physical vulnerabilities, the socio-economic vulnerabilities further escalate the vulnerability profile, particularly at community level, both in rural and urban areas, inhabited by socially and /or economically disadvantaged segments of population.

Some top line indicators of vulnerability as observed through the household surveys are illustrated in the following figures. An in-depth view of the statistical data, the observations and the information obtained from key informants shows that there is a wide variation across states and across communities within states on all parameters of hazard and risk exposure, physical and socio-economic vulnerability, and internal coping capacity. These factors will be of great use in determining the training modules, strategies, public awareness campaigns and overall plans for disaster risk management in India.

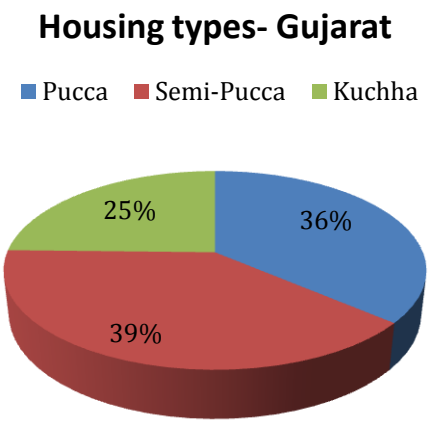


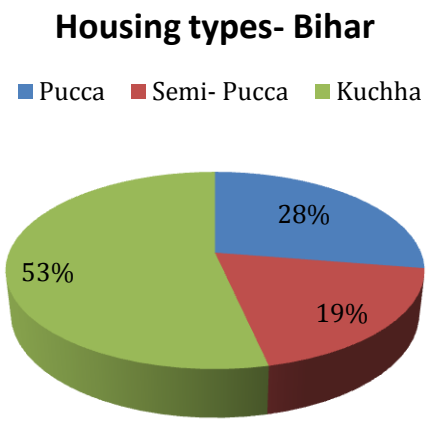


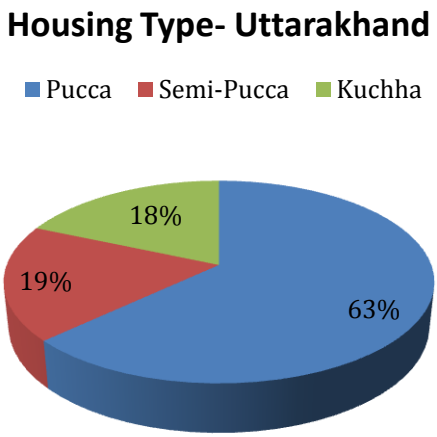
The household survey in the villages of the six states gave an average of 58% households that were identified as below the poverty line and 42% from above poverty line. However, across the states, the situation was worst in Bihar where 86% of the households lived below the poverty line. At the overall level this demonstrates the skew in the distribution of poverty across the study states. It must be noted though that the sample of villages across states being small and the selection being determined based on the recommendations of the local administration, there may be margin that needs to be kept in mind while considering this statistics.

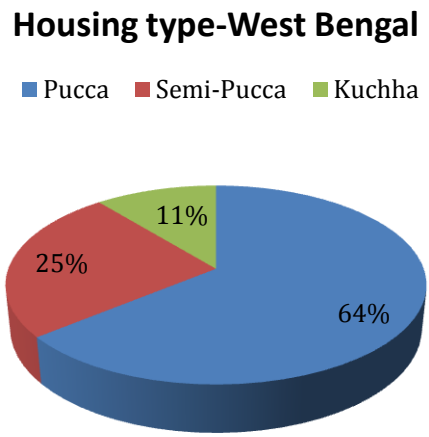


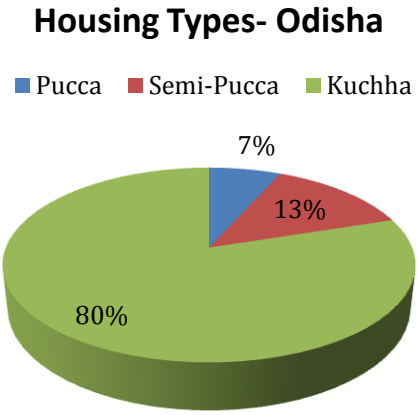
Across states the highest percentage of below poverty line houses within the selected sample was in the state of Bihar and Gujarat, and the lowest in Andhra Pradesh and West Bengal.

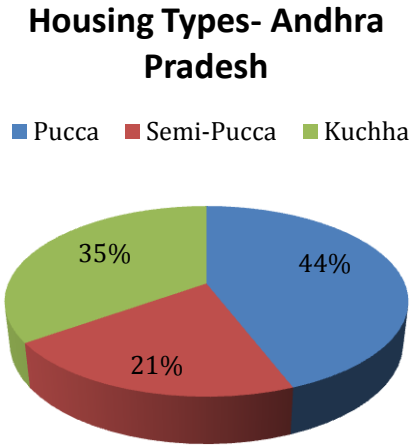












Housing statistics directly relates to not only physical vulnerability as the capacity to take a direct disaster hit, but is also an indicator of other underlying risk factors such as poverty, legal tenurial status, and climate change vulnerability. Housing typology showed great variation across states, with Gujarat having 25%, West Bihar 53%, and Odisha 80% kutcha (temporary) houses. West Bengal fared as the best positioned state with only 11% kutcha and 64% pucca (permanent) houses.

Lack of awareness

Study of the states indicated that communities face recurrent seasonal disasters such as floods, cyclones and droughts. Many have evolved their own coping mechanisms. However, lack of awareness was still found to be the biggest issue amongst the communities. Reasons for this ranged from illiteracy to the lack of awareness initiatives amongst the communities. A top down, response oriented approach is largely responsible for the problems. A number of training agencies do exist at state, district and village levels. Despite this, capacities to prepare for, respond to and recover from disasters were found to be grossly deficient in the stakeholders responsible for doing so.

Prevention

Considering the disaster history of the states and their vulnerability to recurrent disasters it is imperative for the states to introduce structural and non structural measures. However, such measures were either found to be missing or were weakly enforced resulting in increasing or stagnating vulnerability of communities. Structural and non-structural measures need to be enforced to reduce regular disaster losses. Most of the states visited did not have provisions to regulate constructions in hazardous areas or provisions to ensure that constructions follow the necessary codal provisions for safe constructions. Awareness initiatives have also been lacking. For example Andhra Pradesh witnesses a large influx of migrants in May for harvesting. These migrants are ignorant about the prevalent hazards and are the most vulnerable to disasters. Thus there are a number of initiatives that need to be introduced by governments in various states.

Mitigation

It is a known fact that development cannot be sustained unless disaster mitigation is built into it. Mitigation has to be inter-disciplinary and span across all sectors of development. Examples in developed countries have shown that effective mitigation measures have been able to reduce the impact of hazards. Repeated disasters in countries with inadequate mitigation measures, on the other hand, have multiplied the suffering. Although India has incorporated mitigation into a few long-term recovery programmes, the effort has not been replicated across the country resulting in continued disaster losses over the years. For example, parts of Bihar are located in seismic zones IV and V (BMTPC Vulnerability Atlas) and major earthquakes that have caused major devastation have been experienced in the past. The most prominent example is the historic 1934 Bihar earthquake which had a magnitude of 8.1. However, retrofitting and urban renewal efforts have been virtually non-existent resulting in profusion of un-engineered and dilapidated buildings in Patna city. Necessary augmentation of physical and social infrastructure has also not been done to mitigate the impacts of prevalent hazards. It is important for the states to invest in mitigation and build capacities for mitigation to save on response costs and avoid diversion of financial resources for making up loss of development gains accumulated over the years.

Preparedness

The increasing frequency and magnitude of disasters notwithstanding, the management process has always been traditional and disasters looked upon as aberrations or interruptions in normal day-to-day functioning of society, to be responded to primarily with relief. The cultural ethos of the most vulnerable people, facing frequent disasters with little resilience and a poor quality of life, was one of fatalism and acceptance of loss as the wrath of nature. A similar attitude prevailed within the administrative machinery too, with a focus only on post-

disaster relief and rehabilitation. The prevalent nomenclature of the nodal officials and departments dealing with disaster management; viz., relief commissioners and departments of relief, indicate the significance of relief in the administrative system. The fund earmarked for disaster management (previously called the Calamity Relief find – CRF) is now referred to as the State Disaster Response Fund (SDRF).

In the federal structure of the Indian administration, disaster management is the responsibility of the states, with the national government playing a supportive role. However, it was noticed that little attention has been paid to preparedness for prevalent disasters and even the resources that could have helped to strengthen preparedness have been neglected. Many of the cyclone shelters constructed in Andhra Pradesh were being used for storage purpose. In some cases, such multi-purpose use can actually be beneficial where it helps ensure maintenance and optimum usage. However, this is also dependant on the types of materials stored and its impact on the community's ability to immediately use the shelter in an emergency. For example, a large number of these shelters in Andhra Pradesh had dysfunctional service connections. Thus a greater emphasis on preparedness is required at the state level.

Response

In the aftermath of disasters rapid action is required to reduce loss of life and property. A pre-planned response mechanism would go a long way towards reducing the toll taken by disasters. Preparedness activities like Development of standard operating procedures, training of response professionals, stockpiling and maintenance of necessary equipment, finalisation of emergency plans and augmentation of lifeline facilities to accommodate disaster needs are some interventions which can help in proper response. Although relief also forms a part of response efforts it has been found that emphasis of most of the states is only on the distribution of relief, leaving the communities to cope with the other immediate disaster impacts. It was evident from the encroachments, dense developments and weak infrastructural facilities that large parts of the state and urban areas within the state would be deprived of assistance from the response teams. The states were also found to be lacking in essential equipments and the necessary expertise to operate them. For example, in some states, response officials were found to be unable to operate generators and chainsaws. Thus states need to invest more in developing skills, response plans and overcoming the shortage of essential equipment.

Recovery

A good disaster recovery is essential not only to avoid recurrence of damage and destruction but also to ensure efficient use of available resources. Recovery needs to be based on the concept of 'build back better'. The recurrent disaster losses in the states reveal the gaps in recovery planning and implementation. It was noticed that after disasters, settlements develop in the same hazardous location.

Detailed analysis of context and capacity of each of the study state is given below.

Andhra Pradesh

Andhra Pradesh is exposed to cyclones, storm surges, floods and droughts. A moderate to severe intensity cyclone can be expected to make landfall every two to three years. About 44 percent of the state is vulnerable to tropical storms and related hazards. In the Bay of Bengal, cyclones develop in the pre-monsoon (April to May) and post-monsoon seasons (October to December), but most of them tend to form in the month of November. Cyclones on the east coast originate in the Bay of Bengal, the Andaman Sea or the South China Sea, and usually

reach the coastline of Tamil Nadu, Andhra Pradesh, Orissa and West Bengal, which are the most vulnerable to these types of hazards. Two of the deadliest cyclones of this century, with fatalities of about 10,000 people in each case, took place in Orissa and Andhra Pradesh during October 1971 and November 1977 respectively. The super cyclone of Orissa in 1999 caused large-scale damage to life and property. Along the Andhra coast, the section between Nizampatnam and Machilipatnam is the most prone to storm surges. Vulnerability to storm surges is not uniform along Indian coasts.

Despite this relatively low percentage of communities affected, the level of human and property loss that cyclones cause around the Bay is very high. Once the cyclones enter the mainland, they give way to heavy rains, which often translate into floods, as it was the case with the damaging cyclone-induced floods in the Godavari delta, in August of 1986. Many drought prone areas adjacent to coastal districts in eastern maritime states are thus vulnerable to flash floods originated by the torrential rains induced by the cyclonic depression. In addition to cyclones and its related hazards, monsoon depressions over the north and central areas of the Bay of Bengal move until reaching north and central India, including portions of Andhra Pradesh, bringing heavy to very heavy rains and causing floods in the inland rivers between June and September.

Effect of Repeated Disasters and Unique Vulnerabilities

The regular occurrence of disasters, both natural and manmade, in coastal Andhra Pradesh has had a series of repercussions on the state economy, its development policies and political equilibrium and daily life of people living in the most vulnerable zones. Andhra Pradesh is vulnerable to all types of natural disasters. It has experienced both tremors and drought. The coastal region is repeatedly battered by cyclones and floods. The 1977 cyclone and tidal wave, which resulted in great loss of life, attracted the attention of the central and state Governments of India and the international donor communities, as did those of 1979, 1990 and 1996. The floods in the Godavari and Krishna Rivers caused havoc in the East and West Godavari and Krishna districts.

Earthquakes in the recent past have occurred along and off the Andhra Pradesh coast and in regions in the Godavari river valley. Mild tremors have also hit the capital city of Hyderabad, for example in September 2000.

Social and economic life of AP's population is characterised by recurring natural disasters. The state is exposed to cyclones, storm surges, floods, and droughts. According to the available disaster inventories, AP is a state that has suffered the most from the adverse effects of severe cyclones. It has been estimated that about 44 percent of AP's total territory is vulnerable to tropical storms and related hazards, while its coastal belt is likely to be the most vulnerable region in India to these natural phenomena. Khammam district in the Telengana region is affected by monsoon floods, along with five districts in coastal AP. Four districts in Rayalaseema and five in Telengana experience drought. Along the coastline, the section between Nizampatnam and Machilipatnam is the most prone to storm surges. The fertile Delta areas of the Godavari and the Krishna rivers, which contribute substantially to the state's economic prosperity, face flood and drainage problems, and more so in the aftermath of cyclones.

More than sixty cyclones have affected AP in the past century. The incidence of cyclones seems to have increased in the past decades, to the extent that severe cyclones have become a common event occurring every two to three years, repeatedly and severely affecting the state's economy while challenging its financial and institutional resources. Almost 9 million people are vulnerable to cyclones and their effects in coastal AP. 3.3 million of these people belong to communities located within five km of the seashore. The deadliest cyclone in the last twenty

years took place in November 1977 killing over 10,000 people. The May 1990 cyclone, with a death toll close to 1,000 people, caused about US$ 1.25 billion in damage in ten districts along the coast. Between 1977 and 1992, about 13,000 lives and 338,000 cattle were lost due to cyclones and floods, and nearly 3.3 million houses damaged. On the other hand, mitigation measures taken by Andhra Pradesh Government in the aftermath of 1977 cyclone demonstrated a massive positive impact during the 1990 cyclone. Though more or less of the same intensity, the 1990 cyclone claimed less than 10% of the human lives lost in 1977 cyclone.

In this region, cyclones are relatively rare during the month of May and only about 13 have affected AP in this century. However, when they do occur, the number of people in danger rises more than usual. Since May is rice harvesting season, a large number of migrant labourers come to the delta from less fertile areas of AP in search of work. Since they lack awareness of the area's most prevalent hazards, this migrant population is more vulnerable than the permanent delta residents. Similarly, entire families have come to the delta districts to engage in activities related to shrimp farming, which have taken off recently in the area. They are involved in the collection of fingerlings; living for several months a year in makeshift shelters along the marshes. The warnings may not reach them on time and, even when they do, their inexperience renders them highly vulnerable.

The Godavari and the Krishna rivers have well-defined stable courses and their natural and man-made banks have usually been capable of carrying flood discharges, with the exception of their delta areas. Traditionally, the flood problem in AP had been confined to the spilling of smaller rivers and the submersion of marginal areas surrounding Kolleru Lake. However, the drainage problem in the delta zones of the coastal districts has worsened, thereby multiplying the destructive potential of cyclones and increasing flood hazards. Moreover, when a storm surge develops, as it was the case during the severe November 1977, May 1990 and November 1996 cyclones, threats to humans and property multiply as the sea water may inundate coastal areas which are already being subjected to torrential rains. Finally, a critical additional factor affecting the flood management and the irrigation systems is the lack of maintenance. On several occasions, such as the May 1979 cyclone, most of the deaths were caused by breaches to the chains of tanks and canals, and over-flooding due in part to the choking of drains by silting and growth of weeds.

The case of the urban centre of Machilipatnam was studied in detail as it is a coastal city and the administrative headquarter of Krishna district. It is however, losing prominence to the nearby Vijayawada, to the extent that it is one of the rare cities of India that has shown a decrease in population over the past decade. Even important senior officials of the district, with their offices in Machilipatnam, live in Vijayawada. Machilipatnam is exposed to the risk of cyclones, with particular vulnerability in its urban slum areas that are low-lying and its peri-urban areas that are along drainage channels.

Bihar

Bihar is highly prone to various natural disasters. Due to its geographical and topographical location, Bihar is prone to floods, droughts, fires and earthquakes. According to seismic zoning, some parts of the state are in Zone-IV and Zone-V, which can cause devastation as faced in the Bihar-Nepal earthquake of 1934. More than 14 districts of the state are vulnerable to natural hazards such as floods, wind storms, droughts, earthquake, cold wave and heat wave. The combination of poor socio- economic conditions, lack of awareness and inadequate preparedness at community level for disaster risk reduction as well as the impact from frequent disaster events have led to recurrent economic losses, thereby slowing down progress on human development.

Recent major disasters in the state include the Kosi Floods of 2008. Bihar is India's most flood-prone State, with 76 percent of the population in north Bihar living under the recurring threat of flood devastation. About 68,800 sq km out of total geographical area of 94,160 sq km (comprising 73.06 %) is flood affected. Bihar has been taking active steps to improve disaster management planning and has established significant institutional systems and taken legislative steps in this regard in recent years.

Patna, the capital of Bihar state, is a city with an ancient past. The original name of Patna was Pataliputra or Patalipattan and its history develops from 600 B.C. Patna lies on the south bank of the Ganga River. Patna is surrounded on three sides by rivers—the Ganga, Sone and Poonpun. It is vulnerable to different kinds of disasters due to its geographical and topographical location. It is mainly prone to floods, water stresses, fires and earthquake. According to seismic zoning, it lies in Zone-IV and also falls in the risk zone of floods. A series of bunds/embankments have been constructed to control the floodwaters. The low income areas, which are primarily on low-lying land and the old city with its old and dilapidated buildings and congested lanes are particularly vulnerable.

Darbhanga is one of the most flood prone districts of North Bihar. The district is bounded on the north by Madhubani district, on the south by Samastipur district, on the east by Saharsa district and on the west by Sitamarhi and Muzaffarpur districts. The District of Darbhanga can be segmented into four natural divisions. The eastern portion consisting of Ghanshyampur, Biraul and Kusheshwarsthan blocks contains fresh silt deposited by the Kosi River. This region was under the influence of Kosi floods till the construction of Kosi embankment in the Second Five Year Plan. It contains large tracts of sandy land covered with wild marsh. The second division comprised of the anchals lying south of the Boorhi Gandak river and is the most fertile area in the district. The third natural region is the doab between the Burhi Gandak and Baghmati and consists of the low-lying areas dotted over by chaur and marshes. It gets floods every year. The fourth division covers the Sadar sub-division of the district. This tract is watered by numerous streams and contains some up-lands. Numerous rivers originating in Himalayas actually water this district. Out of these rivers Kamla, Baghmati, Kosi and Kareh are of most importance. Average rainfall is 1142.3 mm, which is an indication of good precipitation across the district.

Gaya is one of the most drought prone districts of the state of Bihar. It is located in the southern part of Bihar. Gaya is 100 kms south of Patna, the capital city of Bihar. Situated on the banks of Falgu River it is a place sanctified by both the Hindu and the Buddhist religions. It is surrounded by small rocky hills on three sides and the river flowing on the fourth (western) side. The temperature of Gaya rises to above 45 degree C in the summer and comes down to 02 degree C in the winter, making it highly vulnerable to both heat and cold waves.

Almost 90% area of Gaya district is affected by naxal extremism. Factors responsible for breeding of naxal problem in this area are mainly extremely poor level of literacy, inadequate implementation of land reforms policies and perceived negligence of the most marginalised communities. To counter the growing unrest and threat, security has been strengthened and developmental activities are being promoted in parallel. Necessary risk mitigation measures should be integrated into this development; helping make it inclusive and sustainable and ensuring that it does not enhance vulnerabilities.

Supaul is another flood prone district of Bihar. The area has been referred to as the fishery area (MatsyaKshetra) in the Hindu mythology. Supaul district is a part of the Kosi division. The river Kosi flows through the district which is considered the sorrow of the area. Tilyuga, Chhaimra, Kali, Tilawe, Bhenga, Mirchaiya, Sursar are its tributaries. The state capital Patna is about 300 kms away. The nearest airport is also at Patna. The district is bounded by Nepal in the north, Saharsa district in the south, Araria district in the East and Madhubani district on the west. In 2008, at the time of Kosi flood, Supaul was one of the most affected districts of the state. The

area was unexpectedly affected due to change of course of the river after a breach of river embankments in upstream Nepal. The type of soil is sandy in this region. The areas of wasteland full of kans and pater (Jungles) lying mostly in Supaul subdivision have been largely reclaimed and are yielding crops. Here, it is pertinent to note that Supaul receives the earliest and highest rainfall in the state.

Gujarat

Gujarat is vulnerable to earthquakes, cyclones, floods, storm surges and salinity of river water due to egress of sea water during high tides in coastal areas. The Bhuj earthquake in January, 2001 resulted in massive loss of lives and property triggering constitution of Gujarat SDMA followed by various actions taken by the State Authority for rehabilitation, re-construction, recovery as also preparedness and mitigation. Although, the vulnerability profile of the State is well known at macro level, it needs to be identified at district and sub-district level also with involvement of District Planning Boards so as to facilitate mitigation projects for DRR.

Ahmedabad District falls in seismic zone III. However, in case of earthquakes of high magnitude in areas falling in seismic zone V and IV, the impact, though at comparatively modest level, has been felt in Ahmedabad also such as damage during Bhuj earthquake of 2001. The Fire incidents are quite common in Ahmedabad; the Fire Services, which attend to both fire fighting and rescue work, reported that there were about 10-12 incidents every day. In rural areas of Ahmedabad, the main vulnerability was stated to be flash floods and salinity of river water due to high tides.

Jamnagar District is in seismic zone IV and therefore it is vulnerable to earthquakes. It is also cyclone and flood prone. There are 52 villages which are flood-prone and 57 villages are cyclone-prone; these villages have experienced disasters recurrently. Besides, since there are several petro-chemical industries, there is always risk of man-made disasters. It is even otherwise a sensitive district since it is a border district. It was stated that Gorinja is the most disaster prone GP. The rainfall pattern varies significantly. If the rainfall is 700-800 mm, it results in floods. If it is around 300 mm or less, it results in drought. Cyclones used to be frequent earlier (about 10-15 years back), but the frequency and intensity has now reduced. However, there is no reason to become complacent as there isn't any scientific study to establish that this is based on climate change or other established factors. It may recur with devastating impact. It was also mentioned that, post the 2001 earthquake, attention is primarily focused on earthquakes. Other disasters, though recurrent, are not receiving adequate attention. The community and GP members at Gorinja GP mentioned that cyclones normally occur once in 3-4 years; and have hit the coastal belt about 2-3 times in last 10 years. The last major cyclone occurred in 1998. 2001 earthquake had also affected the village; about 10-15 houses were destroyed and about 100 were damaged; these were all kutcha houses; there were only 20-25 pucca houses before 2001; there were no deaths but 13-14 persons got injured. The low lying areas (village extension) have water logging problem; people have to be evacuated to village school. There is also damage to crops in extended parts of village due to wild animals; hence several villagers live there to protect their crops; there is need for a boundary wall to safeguard it from animals. Sea water also seeps in during high tide. It was further mentioned that floods affect in June-July due to heavy rainfall but the rains are dispersed now over 4 months so the problem is negligible. The reason for dispersal of rains was not known; it could be due to climate change.

Kutchh District is in seismic zone V and is extremely vulnerable to earthquakes and cyclones. The 2001 earthquake had resulted in massive loss of lives and property. The last major cyclone occurred in 1998. Since then, no major cyclone has occurred. Some of the villages in the area

are highly vulnerable to flash floods. Every year, when rainfall occurs, water logs in their houses for 2 to 3 days. Besides, Narmada River water, which is otherwise clean and potable, becomes saline during high tides which have posed a major problem for the community.

The city of Bhuj is in seismic zone V and has suffered several recurrent earthquakes. The Bhuj earthquake of 2001 was massive resulting in substantial loss of lives, property and livestock. It badly affected the means of livelihood. The infrastructure including hospital, schools and roads suffered heavy damage. It is also affected by cyclones and salinity of water particularly in villages in coastal belt. Bhuj City falls under very high damage risk zone for wind and cyclones besides earthquakes. There are major earthquake faults near Bhuj. Slippage is believed to have occurred on the south dipping North Wagad reverse fault in the failed rift. This has been further confirmed by aftershock studies following the earthquake. Initial speculation held the Kutchh Mainland Fault (KMF) responsible for seismicity of Bhuj town. However, further studies and field observations show that it might have been caused on the previously unknown NWF lying in the vicinity of the KMF. Slip is believed to have between 1 to 4 meters. The buildings most badly damaged in the earthquake were earthen buildings, old masonry buildings and simple reinforced concrete frame buildings. The statistics of damage from the earthquake identified the vulnerability of a range of building type characteristics to earthquakes of different strength likely to occur in the future. It is desirable to identify buildings with high vulnerability factors, through RVA and other techniques, and where these buildings also have large numbers of residents, these may be declared uninhabitable, until engineering solutions for retrofitting of such buildings are worked out and implemented. The buildings with highest projected future earthquake losses, based on RVA, may be graded for suitable priority for detailed evaluation and retrofitting. Bhuj also suffers from the problems of urban flooding and water logging besides fire though these are usually not given due importance due to the greater emphasis on earthquake vulnerability, post 2001 earthquake. In the slum areas, the vulnerability gets further accentuated due to lack of civic amenities, dense population, lack of hygiene, poor drainage, water and sanitation.

Odisha

The unique geo-climatic conditions of Odisha make the state vulnerable to various natural disasters. Odisha has a history of recurring natural disasters including floods, droughts and cyclones. On the east, the state is surrounded by Bay of Bengal and has a coast length of 482 kms. Though the coast line is about 17% of the east coast, Odisha has been affected by nearly 35% of all the cyclonic storms that have inundated large tracts of coastal districts.

Similarly, Mahanadi and Subarnarekha are the major rivers flowing through the state and their tributaries have the potential to cause major floods. The problem is further accentuated when floods coincide with high tide. The silt deposited constantly by these rivers in the delta region raises the bed levels and the rivers often overflow their banks or break through new channels causing heavy damages. The entire coastal belt is prone to storm surges, which are usually accompanied by heavy rainfall, thus making the region vulnerable to both storm surges and river flooding.

The frequent intensity of droughts in the state, especially in the KBK region, is another major concern. This is leading to crop failures, decline in surface and groundwater levels, increasing unemployment and migration. A portion of state is prone to moderate earthquakes. In addition, the state is also affected by disasters like heat waves, epidemics, forest fire and prone to industrial hazards and major accidents. Despite being rich in minerals, Odisha is one of the poorest states in India. Its poverty and backwardness coupled with recurring natural disasters make the state and its people one of the most vulnerable in the country. Agriculture continues

to be the mainstay of the state's economy and a large percentage of people are dependent on this sector. Due to lack of adequate irrigation facilities, agriculture is particularly dependent upon the monsoon. As a matter of fact, nearly 80% of rainfall in the state occurs within 3 months, which also coincide with the main cropping season. Further there is very little or no forest covers in the flood prone and coastal areas, which also increases the vulnerability of the people living in and around this area. Odisha has a unique history of a series of natural disasters. In 1831, a major cyclone claimed 22,000 lives in Balasore. In 1855, Mahanadi rose to a height of 127.13 feet at Cuttack and breached the embankments at 1365 places and affected thousands of people. Later in 2001, and in later years of the decade, the state of Odisha faced widespread floods in various districts, and at the same time KBK region also got affected due to drought, epidemic and allied problems.

Considered to be one of the four holy 'Dhamas' of India, the historic town of Puri is located on the Bay of Bengal coast, along a distinctive stretch of sandy beaches. Geographically Puri town is bound by the sea on the south east, Musa river in the north, Sunamuhin River in the west and Balukhanda reserve forest on the east. The city is vulnerable to multiple disasters. Due to its location, the city is prone to tropical cyclones, storm surges and tsunamis. The city lies under Zone III of the seismic zoning map of India, which is a moderate risk zone. The rivers in the nearby areas with heavy load of silt have very little carrying capacity, resulting in frequent floods. The city also lies in very high damage risk zone for cyclones, though it escaped major damage in the 1999 Super cyclone. It gets a very heavy load of pilgrims, particularly during festive seasons, and faces challenges of crowd control. The poorer areas of the city, which are in the form of coastal fisher slums and inland colonies, are the most vulnerable. There are also frequent incidents of drowning, mainly involving tourists at the beach.

This district of Kalahandi has been in the news since the middle of 1980s when a story of the sale of a child by the parents due to poverty came into light. The incident led to the then Prime Minister to visit the district and as a result brought attention of the entire nation to its acute poverty, severe drought and famine issues. In later years this entire region of Kalahandi – Bolangir – Koraput (KBK) got a special package to uplift the standard of living although the basic infrastructure is still in dismal state and development progress is very slow. Kalahandi is known for repeated droughts. Droughts have occurred in Kalahandi in 1868, 1884 and 1897. The famine of 1899 is otherwise known as Chhapan Salar Durbhikshya. The famine left a terrible socio-economic impact in this area. A series of droughts, in 1922, 1923, 1925-1926, 1929-1930, 1954-1955 and 1955-56 occurred in Kalahandi. The terrible drought of 1965-66, which occurred in Kalahandi, had a severe impact. Due to lack of rain, three fourth of the total crop production was lost. The effect of the drought continued to be felt in the following years. Besides a long history of drought, the socio-economic traditions are also seen as a cause of suffering of the poor behind the class distinction among the people of Kalahandi. Caste plays an important role in the socio economic life of the district.

Interestingly, on one hand this district is notorious for drought and starvation deaths, and on the other hand, the same district also boasts of the highest number of rice mills in Odisha; it stood 2nd in the state in paddy production in 2012, which actually needs more water. The climatic conditions and geography of this district is very unique, with an annual rainfall of a high 1330 mm. Actually, one part of this district receives excess rainfall, however the behaviour of monsoon is quite erratic in terms of time and space, which also results in a perennial drought like situation in the district almost every year. Along with the drought problems such as rural unemployment, non-industrialisation, growth of population and rapid deforestation are some of the major problems of Kalahandi.

Balasore is a coastal district that is highly prone to severe floods and cyclones. Especially during the rainy season all the major rivers in the district carry huge amounts of water and pose potential threat of flood. River Subarnarekha is the main source of flooding in recent years, and has led to devastation in a number of blocks of Balasore. It may be noted that not only has the

district been at the receiving end of floods a number of times in recent years, it suffers from multiple waves of flooding in a single season. As the district lies in the coastal belt of Bay of Bengal, it is highly vulnerable to cyclones and the tidal surges. Cyclones bring in their trail heavy rains causing severe floods and saline inundation. Balasore, Baliapal, Jaleshwar, Bhograi, Basta and Soro blocks have been identified as the severe cyclone prone blocks. Parts of the district are also prone to droughts, tsunamis, fire accidents, and earthquakes. Though the district has not faced any severe earthquake so far, but some part of the district comes under Zone III, hence the possibility of earthquake cannot be ruled out.

> *"SEC is working typically in government fashion where the approvals have to be taken from the concerned secretary"*
>
> *ED, DMMC*

Khorda district was carved out from Puri district in 1993, incorporating Khordha and Bhubaneswar sub-divisions. The major hazards of this district are floods, cyclones and droughts. Especially floods and heavy rainfall have occurred almost every alternate year in this region in recent times. The district is also prone to fires, heat strokes and earthquakes. The district comprises 10 blocks and 8 rivers, mainly tributaries of Mahanadi. Balianta and Balipatna are the most affected and vulnerable blocks as per the recent records. The climate is typically tropical and the above mentioned two blocks fall under the low lying areas, and hence these get affected most of the time. Unsafe impact of recent developments and unsafe construction are additional major concerns in this region. The district includes the state capital of Bhubaneswar, and the issue of urban risk is among the major concerns. Notably, Bhubaneswar and its adjoining city Cuttack are now being seen as an urban agglomeration with dedicated planning and development plans and authorities, and the district administration does not consider Bhubaneswar urban risk as a major concern in its work.

West Bengal

West Bengal presents a range of vulnerability situations on the ground across the state. Though the state is vulnerable to earthquakes, cyclones, landslides, floods and drought, the vulnerability to specific hazards is dispersed in different regions.

Kolkata city, being in seismic zone III is vulnerable to earthquakes. The recurrent vulnerabilities observed during the last one decade are primarily fire incidents, particularly in jhuggis in densely populated areas and heavy rains resulting in water logging due to lack of adequate drainage facilities. The vulnerability is further accentuated due to social disabilities such as poverty, lack of hygiene, water and sanitation, as also lack of civic amenities, dense population and inadequate health facilities.

In South 24 Paragnas district (Sundarbans area), the recurrent vulnerabilities can be observed due to cyclones and floods. The Aila cyclone that hit the Sunderbans on 25th May 2009 caused loss of life and injuries and also damage of property and livestock. There was a series of high and low tides accompanied with high velocity winds over 36 days following Aila. In some villages almost 95% of the houses were partially or fully damaged; 80% of the harvest was lost, besides severe loss of livestock.

Darjeeling district is vulnerable to earthquakes, landslides and floods. In 1968 there was heavy rainfall of about 1500 mm in a short span which resulted in widespread damage due to collapse of various buildings. There was recurrence of similar incident in 2007. The main cause of recurrent landslides is that Eastern Himalayas are now densely populated. Darjeeling is in seismic zone IV/V. Before 1986, some measures had been taken for landslide prevention, social forestry etc which ceased due to political agitation. There is no perceptible change in rainfall

pattern and soil conditions but vulnerability has increased due to human influx. During AILA cyclone in 2009, Darjeeling including Kalimpong was severely affected; 32 people died due to landslides. One major reason for recurrent landslides and enhanced vulnerability, particularly in Kalimpong, is that foothills are being dug up for construction of roads which has weakened the foundation and resulted in cracks in buildings at crest (hill top); even the trees can be seen which have bent. Lack of mitigation measures despite GSI survey in 1990s has further accentuated the vulnerability.

Jalpaiguri district is primarily vulnerable to landslides, floods and earthquakes besides the area is prone to high wind velocity which detaches the roofs of kutcha houses. Also some of the pockets such as village Mundaline have an additional problem of wild elephants passing through village every evening from a nearby forest area in search of food. They have damaged Kutcha houses and killed/injured few people. About 70-90% of the population in several marginalised villages of the district belongs to the BPL category. Few other villages like Motiachar have become vulnerable since they are located in the river bed which is very close to river Teesta river tributary. The village is not easily accessible since one has to walk about 2-3 kms and in between cross a river tributary to reach the village. It is affected by flash floods 3-4 times every year since it is not protected by an embankment and lies between the river and the embankment.

Uttarakhand

Uttarakhand is a Himalayan state that was carved out of the hill districts of Uttar Pradesh on 9th November, 2000. It is thus highly prone to Himalayan disasters such as earthquakes, landslides, flash floods, avalanches, forest fires and also water stresses. It however has a relatively new administrative set up and has made use of this opportunity by creating mechanisms for disaster management. In recent years (1990 onwards), Uttarakhand has experienced two major earthquakes (magnitude >6) in Uttarkashi(1991) and Chamoli (1999) and a series of landslides/cloud bursts such as Malpa (1998), Okhimath (1998), Fata (2001), Gona (2001), KhetGaon (2002),Budhakedar(2002), Bhatwari(2002), Uttarkashi (2003), Amparav(2004), Lambagar(2004), Govindghat(2005), Agastyamuni(2005) Ramolsari(2005), Pithoragarh(2009), Almora (2010), Ukhimath (2012) and several districts in 2013.

Chamoli occupies the north-eastern corner of the Garhwal tract. It is vulnerable to earthquakes, landslides and forest fires. Chamoli was badly hit by a moderate earthquake in 1999 which caused the loss of about 100 human lives and rendered around 100,000 people homeless. Landslides in Chamoli are a recurrent phenomenon in the monsoons for past few years. In Chinka, the Alaknanda River flowing in the valley continuously cuts the bottom of the hill and thus the village is sinking. It is actually a classic example of how climate change and developmental activities induce vulnerabilities. According to the villagers, BRO during major road building operations dumped the debris in the Alaknanda River which changed its course towards the village. The impact of the change was not felt until 3 years back when it rained heavily and continuously for around 10-12 days and the river started cutting the bottom of the hill. From then on, the village has started sinking. Out of 518 households, 158 houses are highly vulnerable and have been identified for relocation.

Ganai too has similar hazards but added to them is its location. It is 3 kms uphill and poorly connected from the main highway. The only way to reach there is by walking on a kutcha road which is also severely damaged and becomes inoperable during rains. It becomes arduous especially for children as they have to walk through forest and it takes them around one hour to reach the school; children narrated that they feel scared as they have seen wild animals and in monsoon they cannot go to school at all as the road collapses. In case of any emergency, a

patient has to be carried on a chair to the main road and the steep climb makes it even more dangerous.

At the village level, there is no administrative infrastructure present for disaster management or coordinated planning to increase the overall capacity of the community to deal with disasters.

> *"There is not much system established at the village level"*
>
> - DM, Chamoli

Rudraprayag is vulnerable to recurrent landslides.
On September 14, 2012, Ukhimath block in Rudraprayag district was the worst hit as a cloudburst in the early hours of morning (just past mid-night) occurred, resulting in a major landslide and flattening large numbers of houses in eight villages. ChunniMongoli was one the most affected GPs in Ukhimath block. Bhatwari village did not face any loss of life but there was huge loss of agricultural land which impacted the livelihood of the people living there. For Rudraprayag, this was the first instance of cloudburst resulting in landslide and probably that is why there were so many losses as the district administration as well as the community was not expecting a disaster like this. It rained around 134 mm in the time span of 2 hours on 13th September which was an exceptional case. The average rainfall for the month of September in the previous year was 112.18 mm. So looking at these figures, one can imagine the havoc these rains must have caused. As per the description of the disaster on the website of the district, the recent natural disaster has been described as a "daiviaapda" rather than a "prakratikaapda". This is important to note since it changes the entire perception of the community and sometimes the government authorities too towards a disaster.

Nainital, which is known as 'Lake District', is vulnerable to multiple hazards like earthquakes, landslides, forest fire and cloudburst. In Bhumiadar GP, landslides are a recurrent phenomenon especially in Khupi hamlet. There are a number of seasonal springs flowing through the village creating erosion. Many hamlets of the village were affected during the 2010-11 landslides. Padli village has been identified by the government as being especially vulnerable to landslides. In 2010-11 the area was hit by a cloud burst which caused major devastation in the village. Farmlands got eroded and cracks developed in houses due to the land subsidence caused by the cloudburst. Another observed risk to the village is the approach road of 4 kms to the main road from the village which is on a difficult mountain terrain and lacks any maintenance.

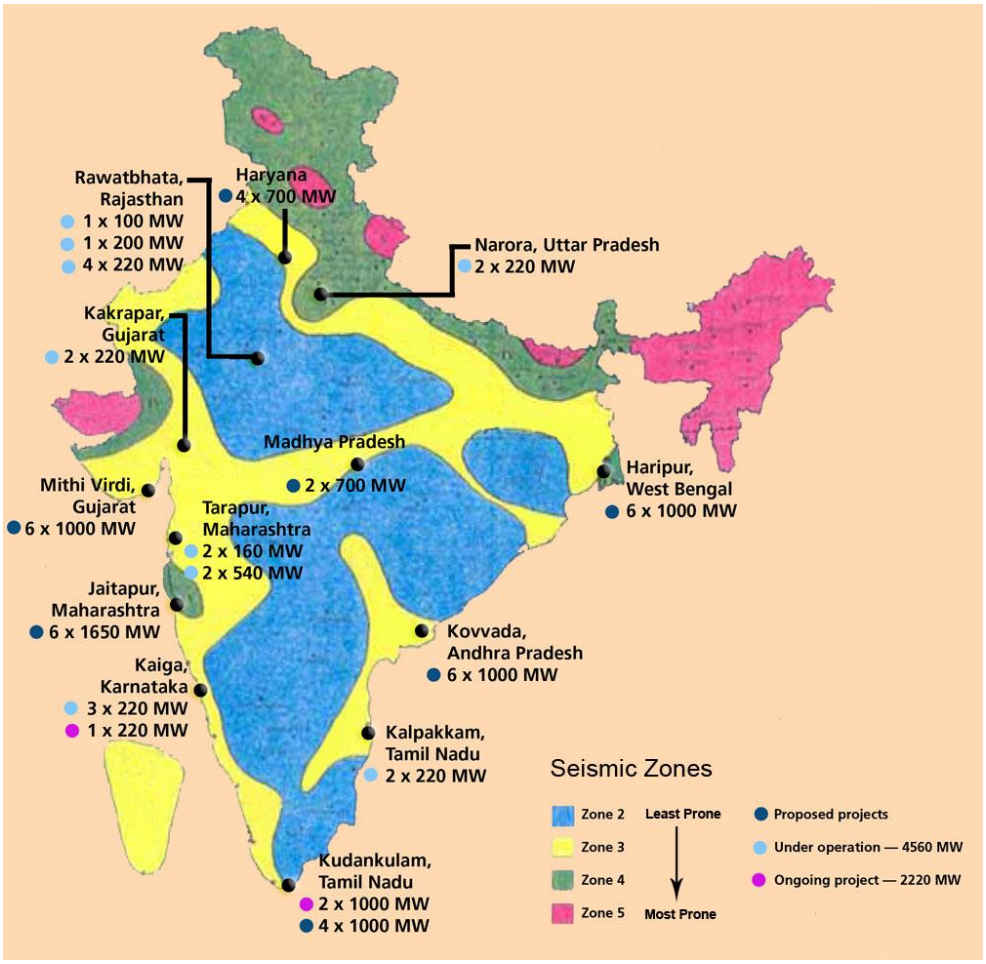
Risk of Compound Disasters:

Case of India's Nuclear Power Plants and their Vulnerability to Earthquakes

Nuclear power plants are designed to withstand natural disasters like earthquakes. In France, for instance, nuclear plants are designed to withstand an earthquake twice as strong as that experienced in the past 1,000 years. In India, the Kakrapar Atomic Power Station, Rajasthan Atomic Power Station, Tarapur Atomic Power Station and Narora Atomic Power Station operated safely when earthquakes of lower intensity were felt. However, their performance in a high-intensity earthquake or a compound disaster is questionable. For example, the campus of Kalpakkam Atomic Reprocessing Plant flooded when the tsunami hit Tamil Nadu's coast in 2004.

Source: `How Vulnerable are India's Nuclear Power Plants to Disasters'. Down to Earth, March 15, 2011.

[8] http://www.imd.gov.in



Lesson to Learn from East Japan Disaster of 2011

Even though it withstood the earthquake, the Compound Disaster of the East Japan Earthquake and Tsunami of 2011 lead to a catastrophic meltdown at the Fukushima nuclear reactor once it was breached by the rising tsunami water. Earthquake-prone regions are categorised between Zones I and IX from least earthquake prone to most earthquake prone. Indian nuclear power plants are situated in Zone II and III except Narora plant in Uttar Pradesh, which is situated in Zone IV. There is a need for India to learn from Japan's experience.

Source: `How Vulnerable are India's Nuclear Power Plants to Disasters'. Down to Earth, March 15, 2011.

2.1.2 Climate Change and its Implications for DRM

India is faced with the challenge of sustaining its rapid economic growth while dealing with the global threat of Climate Change. This threat emanates from accumulated greenhouse gas emissions in the atmosphere; anthropogenically generated through long term and intensive industrial growth and high consumption lifestyles in developed countries (National Action Plan on Climate Change, Govt of India). India, recognised as one of the twelve mega-diversity countries of the world, is facing grave ecological challenges.

Impacts of Climate change

Warming climate across the globe is changing the Himalayas faster than any other region in the world, and the mighty glaciers feeding most of the Indian rivers are melting. According to study titled "The Changing Himalayas" by the International Centre for Integrated Mountain Development (ICIMOD), the warming in Himalayas has been greater than the global average of 0.74 degree Celsius over the past hundred years. The study suggests in many areas, a greater

proportion of total precipitation appears to be falling as rains than before. As a result snow-melt begins earlier and winter is shorter. This affects river regimes, natural hazards, water supplies, and people's livelihoods. India has a long coastline, endowed with rich ecosystems. The coastal and marine ecosystems include a variety of mangroves, coral reefs, sea grasses, estuaries, and lagoons etc. However, according to a World Bank report, "Protecting India's Coastline," in spite of their ecological richness and contribution to economy, the country's coastal and marine areas have not received adequate protection and are under stress. It also states that about 34 percent of India's mangroves were destroyed during 1950-2000 (although substantial restoration and conservation has taken place over the past 10 years); almost all coral areas are threatened; marine fish stocks are declining; and several species of ornamental fish and sea cucumbers are fast disappearing. The report further points out that only 9 percent of waste-water from India's coastal towns is treated before entering coastal waters, adding to their already heavy chemical burden from the huge volumes of agricultural run-off that routinely flow into them. (http://www.theepochtimes.com/n3/16376-the-face-of-climate-change-in-india/)

Likely Impact of Climate Change on Disasters in India

India is among the world's most disaster prone areas. Of the 35 States and Union Territories, as many as 27 are disaster prone.[9] Most disasters in India are water related. At aggregate country level, India ranks third with 21 significant disasters recorded (China recorded 38, followed by US which recorded 31). In terms of victims India ranked third with 7.3 million victims after China-88 million and Philippines-8.6 million. China, US and India also remained the countries reporting the highest damages (China- 13.5 billion US $, US- 5 billion US $ and India -3.3 billion US $) (CRED, 2007). The available data for 2007/08 also has India reporting third highest number of significant disasters, viz, 18 as against 22 reported by US and 20 by China. These trends are likely to exacerbate in future with climate change. The projected increase in precipitation and rainfall, the glacial meltdown and rising sea levels will affect India particularly severely, creating conditions for more hazardous events and will lead to increase in incidence of floods, cyclones, and storm surges. Though it is not possible to predict the future frequency or timings of extreme events but there is evidence that the risk of drought, flooding, and cyclone damage is increasing and will continue to do so. Climate change is also likely to threaten India's food security, increase water stress, and increase occurrences of diseases especially malaria.

Lack of availability and access to technological and financial resources coupled with a high dependence on climate sensitive sectors-agriculture, fisheries, forestry-have made India highly vulnerable to climate change. A large and growing population densely populated and a low-lying coastline, and an economy closely tied to its natural resource base, further intensifies this vulnerability.

Floods - In India, 40 million hectares are prone to floods with 8 million hectares being affected every year. The Brahmaputra and the Gangetic basin are the most flood prone areas. The other flood prone areas are the North West region of west flowing rivers such as the Narmada and the Tapti and Central India and the Deccan region with major rivers flowing like Mahanadi, Krishna and Cauvery.[10] As the impacts of climate change intensify, the changing rainfall patterns and intensity of precipitation will only increase the flooding challenges. The growing informal settlements along the river banks as cities rapidly expand and other infrastructural problems will exacerbate this challenge.

[9] http://nidm.gov.in/PDF/India Disaster Report 2011.pdf (Accessed August 2013)

[10] http://r4d.dfid.gov.uk/PDF/Outputs/Mis_SPC/R7893CSRIndia.pdf (Accessed August 2013)

Cyclones: India has an 8000 km-long coastline with two cyclone seasons, during the southwest and northeast monsoons. Cyclones are more frequent in the Bay of Bengal than the Arabian Sea. Consequently the states of West Bengal, Orissa, Andhra Pradesh, and Tamil Nadu along the Bay of Bengal are the most affected. Most of the destructive cyclonic storms usually occur during the transition periods: pre - (April-May) and post- (September-December) monsoon, the latter being the most active period. The coastal districts of Orissa, Andhra Pradesh and Gujarat are most prone to the impacts of cyclone (GoI, 2006).

Drought leads to acute water shortage in parts of India. Of the net area sown in the country, 68 percent is prone to drought, and of this 33 percent is chronically drought-prone, receiving rainfall of less than 750 mm per annum, while 35 percent receives rainfall between 750-1,125 mm per annum (GoI, 2002). The steady shrinking of the Himalayan Glacier ranges has drastically cut down water availability in downstream plains of Uttar Pradesh and Bihar.

Landslide hazards are located in the hilly tracts of the Himalayas, Northeast India, Nilgiris, Eastern Ghats and Western Ghats. With the melting of the glaciers in the Hindukush-Karakorum- Himalaya region, and the foreseeable increase in heavy rain events and intensity of tropical cyclones (Parry et al, 2007), the incidences of landslides are increasing.

The Coastal Zone is densely populated and stretches over 800 km with the Arabian Sea in the West and the Bay of Bengal in the East. Some of the main climate related concerns in the context of the Indian coastal zones are erosions, flooding, submergence and deterioration of coastal ecosystems, such as mangroves and salinisation.

Climate Induced Stresses

Climate Change may alter the distribution and quality of India's natural resources and adversely affect the livelihood of its people. With an economy closely tied to its natural resource base and climate – sensitive sectors such as agriculture, water and forestry, India may face major threat because of the projected changes in Climate. (NAPA)

India's Economic Times, quoted a top U.S. State Department official as saying that while nearly two-thirds of the world's countries will be water-stressed by 2025, the problem is going to be more acute in Asia, in particular India which is likely to be water stressed by 2020. People on the field interviewed in 6 states complained on non availability of clean potable tap water. Most of the communities in Bihar, Odisha and Andhra Pradesh have to stand in line for hours to get a couple buckets full to use for the day. The problem persists all round the year and gets more intense during summers both in rural and urban areas. Water tankers are used to fulfil the daily demands.

Women are on the frontlines facing the maximum brunt of climate change. Many of the world's poorest people are women living in rural areas in developing countries who are currently dependent on subsistence agriculture to feed their families and who are disproportionately affected by the lack of modern fuels and power sources for farming, household maintenance and productive enterprises (FAO, 2010). In states like Bihar, Odisha and Andhra Pradesh, women have to walk daily 2-3 kms on foot to fetch water for drinking. Climate change can also increase the vulnerability of households due to migration. Here women's livelihoods could be markedly threatened, since they are much more dependent on agriculture than men, who have shifted in larger proportions to nonfarm jobs. It would affect the children's food security and human development. Remittances may not be able to compensate the vulnerability of households. The migrants at destination places also face many vulnerabilities of non-local status.

Climate change is a major challenge for agriculture, food security and rural livelihoods for billions of people including the poor in the Asia-Pacific region. Agriculture is the sector most

vulnerable to climate change due to its high dependence on climate and weather and because people involved in agriculture tend to be poorer compared with urban residents. More than 60 per cent of the population is directly or indirectly relying on agriculture as a source of livelihood in this region. Food security and livelihoods depends on sustainable agriculture. Achieving food security requires adequate food availability, access and absorption. Agriculture plays a vital role in contributing to all the three components of food security.(Climate Change, Rural Livelihoods and Agriculture (focus on Food Security) in Asia-Pacific Region, S.MahendraDev)

Indigenous knowledge and appropriate technologies for viable DRR-CCA solutions

The CCA paradigm often takes us back to the time tested sustainable and locally appropriate technologies that are found embedded in indigenous knowledge. Such technologies are not only environmentally appropriate, but also culturally acceptable and economically viable. Among such technologies solutions for our current CCA-DRR endeavors can be found. In most cases, the indigenous knowledge provides a base, that needs to be augmented with cost effective advanced technological applications to make them more appropriate in the present day context. Further in-depth research in this domain is required. Some of the observed practices in this domain are:

a. Drought resilient fodder and livestock, Gujarat
b. Flood resilient housing for the desert region of Rajasthan
c. Flood resilient housing for the coastal region of Orissa
d. Bamboo based construction in the flood plains of Bihar
e. Water harvesting and management in West and North India

2.1.3 Investment Environment on Disasters

The Government of India has taken various investment initiatives in planning for, responding to and reducing risk from disasters. In the wake of natural calamities, financial assistance is provided in accordance with relief fund schemes. Budgetary provision is done by the Ministry of Finance, while State Government requests are processed by the DM division of the Ministry of Home Affairs. The present schemes of the State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF) are based on recommendations of the 13th Finance Commission (operative from 1st April 2010 to 31st March 2015). This also allocates funds to strengthen disaster management institutions, capacity building and response mechanisms.

The Margin Money Scheme (MMS) under this has the objectives of assisting States in accordance with need; quick relief to the victim; greater functioning avenues of states; and more accessibility to states.

GoI has approved an allocation of Rs. 33580.93 crore in the State Disaster Response Fund to all the states; with Rs. 25847.93 crore as central share and Rs. 7733 crore as state share. The scheme provides for release of the central share SDRF in two equal instalments in June and December.

The National Disaster Response Fund (NDRF) was constituted on 28th September, 2010 with guidelines issued by the Finance Ministry. The existing National Calamity Contingency Fund merged into this new Fund.[11] NCCF, initially formed in 2000, thus ceased to exist.[12]

Funds for NDRF are raised by levying the 'National Calamity Contingency Duty' on imported petrol and products, crude oil, motor cars, imported multi-utility vehicles, two wheelers,

[11] http://ndmindia.nic.in/guidelines%20for%20ndrf&sdrf-100211.pdf

[12] http://www.ndmindia.nic.in/management/nccfscheme.html

mobile phones, pan masala and certain tobacco products. The collection in 2009-10 was Rs. 3160 crores. Over and above the provisions of SDRF, funding from NDRF is given in the case of severe calamities.

The 13th Finance commission also recommended an initial grant of Rs. 0.250 crores for an NDRF revolving Fund for a national inventory of equipment and material to provide immediate relief.

Rs. 525 crore was allotted to states to take up capacity building activities for the administrative machinery. The guidelines provided for the preparation of a 2010-15 action plan as well as individual action plans for each financial year.

A grant of Rs. 87519 crore was recommended for local bodies (such as municipalities) a portion of which could be used to revamp fire services.

Plan Schemes and Impact of Developmental Programmes

Strengthening of fire and emergency services: A scheme to strengthen fire and emergency services was launched in 2009 with an outlay of Rs. 200 crores. Revamping of Civil Defence Setup: In April 2009, the GoI launched a centrally sponsored scheme to revamp civil defence setups with an outlay of Rs. 100 crore.

Besides these funds (and other non-plan schemes launched during this times), efforts have been made by the government to mobilise resources from external funding agencies. This has included the UNDP-GoI disaster risk reduction programme and the GoI-USAID disaster management support project.

Besides the fund allocation with direct impact on disaster response or risk reduction, there are a number of areas wherein risk reduction gets addressed through mainstreamed impacts of developmental activities. One such example is the Mahatma Gandhi National Rural Employment Guarantee Act (earlier known as National Rural Employment Guarantee Act), enacted in 2005 that aims to enhance the livelihood security of people in rural areas by guaranteeing hundred days of wage-employment in a financial year to a rural household (whose adult members volunteer to do unskilled manual work). Though the main aim of the Act is to provide guaranteed employment to rural poor, long term disaster risk resilience actions and environmental concerns of sustainability and adaptation to the changing climate have been built into the MGNREGA guidelines. A study conducted by the Indian Institute of Science and Centre for Sustainable Technologies, assessed the environmental services provided by the MGNREGA activities and the vulnerability reduction potential for Chitradurga district of Karnataka. Preliminary results of the assessment unfolds that MGNREGA activities, apart from providing employment and income, provided multiple environmental services such as increased ground water recharge, increased water percolation, enhanced water storage in tanks, increased soil fertility, enabled reclamation of degraded lands and carbon sequestration.

Investments by Civil Society Aside from direct interventions on disaster reduction and response programmes that humanitarian agencies are best known for, NGOs are also helping mobilise communities and resources for watershed and ecosystems development and sustainable management that has indirect impact on risk reduction. In rural areas, ecosystem services- forests, fisheries, pastures, farm lands – provide most of the wherewithal for livelihoods and sustenance. It is estimated that as much as 80% of a rural household's basket of consumption (food, fodder, fuel, fibre, bio fertilisers, timber, water) is drawn from the local environment they live in. CSOs can help protect watersheds and local ecosystems by organising and provisioning rural communities (financially, technically and managerially) to conserve and regenerate their watersheds (their "areas of survival"), guard against illegal access and capture by vested interests, incentivise down-stream users to contribute towards upstream

maintenance through PES arrangements and assist authorities in developing resource conservation programmes that also advance the interest of the poor. CSOs and NGOs can play a facilitating and advocacy role in securing an enabling regulatory framework in regard to nature based enterprises of the poor.

Investments by the Private Sector

The private sector, especially under the avenue of corporate social responsibility, is beginning to play a more active role in financing disaster response projects. For example, Tata Steel has come to the aid of the cyclone-ravaged in Orissa and constructed over 435 houses for them. It has set up 13 schools that also act as cyclone shelters in the affected villages. In Gujarat's Rapar Taluka, Tata Steel has constructed 21 school buildings. In its immediate vicinity, Tata Steel has started a rehabilitation programme for the victims of a severe hailstorm that affected the rural areas in Singhbhum district (East and West) in March, 2003. The project, which costs about Rs. 1.60 crores, will provide 5,000 victims with shelter. Soon after the natural disaster, Tata Steel also distributed plastic sheets for quick relief in these areas.

Likewise, several other companies have come forward in the aftermath of recent devastating disasters to lend a hand with reconstruction and other pressing issues. This includes FIICI after the 2001 Gujarat Earthquake; Reliance in Gujarat and for relief after the 2013 Uttarakhand flash floods; and Microsoft in the Andaman & Nicobar Islands and Tamil Nadu after the 2004 Indian Ocean Tsunami.

Community Action and Informal Sector Investments

Though community investments are usually not enumerated and acknowledged in disaster management investments, a very large part of the country's investment comes from individual families and community based groups. This is not only in the form of reconstruction of private houses and very local infrastructure, but also in the form of risk reduction measures such as local embankments, raised homesteads, community infrastructure such as kitchens in religious places that also act as emergency relief shelters and more. For example, raised community-level structures in Assam are an effective flood risk management measure where no other help is available. The district of Lakhimpur in the state of Assam lies in the north bank of the Brahmaputra River. Here the steep slope of Eastern Himalayas abruptly drops, forming a narrow valley which makes the region, as well as the whole Upper Brahmaputra River basin, immensely vulnerable to flooding. This affects 50% - 70% population every year. In addition, extensive anthropogenic interventions (deforestation, river stripping, construction of mega dams etc.) on the Brahmaputra River Basin compounded with the impending climate change are gradually making the whole of the Brahmaputra Basin immensely vulnerable to multiple hazards. It is community owned and community manageable structure within the periphery of traditional practice which provides immediate shelter provisions for flood affected people along with their livestock and other household belongings; provides provision for continuing the emergency services viz. public health, schools, etc locally. The other potential factor for scaling up the "raised earthen flood shelter" because it provides opportunity for income generation to the flood affected through extending unskilled manual labour(earth works) on constructing the flood shelter.

2.2 Stakeholder Analysis

'A strategic approach to capacity development can be addressed effectively only with the active and enthusiastic participation of the stakeholders.'

- *National Policy on Disaster Management, 2009*

Stakeholder analysis is essentially about delineating the roles and functions of each stakeholder group so as to map out what drives their behaviour, and how it can be changed. The underlying purpose of the analysis is also to examine how the different perspectives, capacities, etc can converge to create a multi-stakeholder collaboration culture and capacity. This forms the basis of SWOT analysis from the perspective of the major actors in the field of disaster management.

Though SHGs and INGOs are dealt with in the same category for the purpose of broad analysis, it is based on the recognition of the fact that these have very different kinds of authority (power), responsibilities(roles), accountability and capacities (which includes the resource base) to function n and produce results.

The stakeholder analysis seeks to understand the role of stakeholders in disaster management (DM) in general and disaster risk reduction (DRR) in particular in India. There is a growing recognition of the fact that effective disaster management systems are critically dependent on a number and variety of stakeholders. While in terms of given mandate, government has traditionally been the main stakeholder, in terms of real stakes, communities are the most primary stakeholders, as most of the damage and loss due to disasters and the initial response to them takes place at that level. There are a range of other actors who play and can play crucial roles as stakeholders in a disaster management situation. These include: NGOs including INGOs; private organisations including big corporate groups; and the media. This underlines the need for a multi-stakeholder approach to disaster management in the country.

Given the complexity and cross-cutting nature of disasters (that brings into play numerous government departments dealing with infrastructure including roads, electricity, telecommunication and housing; essential services including food supplies, water supply, sanitation, education, and health; and livelihoods), there is also a need to base DM and DRR initiatives on a multi-sector approach.

As disaster management functions are conceived and executed at various levels of policy, management and operations at the grassroots across disciplines, the approach also has to be multi-level and multi-disciplinary

In view of the above, it is well recognised that Disaster Management in India has to be undertaken with a multi-disciplinary, multi-sector, multi-level and multi-stakeholder approach. This was initially advocated in the Report of the High Powered Committee on Disaster Management, 2001 and the National Disaster Management Framework, 2002 & 2004 and mandated in the Disaster Management Act, 2005 as also the National Policy on Disaster Management, 2009. Disaster Management can no more be considered a government function alone, though it is a fact that governments at national, state, district and local level are the major stakeholders.

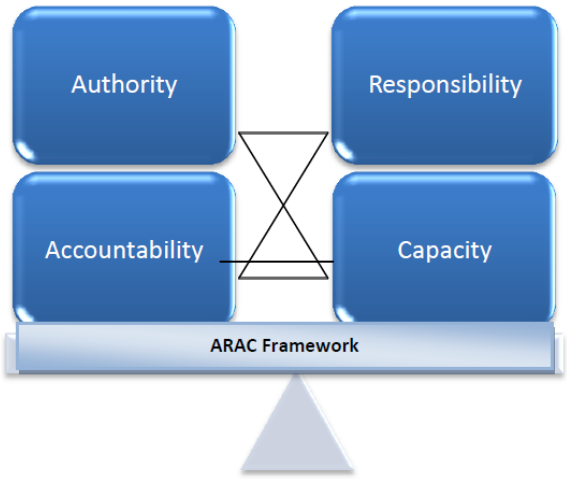
Disasters impact directly on communities, which are the victims and also the first responders. Besides, Civil Society Organisations, volunteers, corporate sector, media and other role players are also key stakeholders. There is need to have total convergence and coordination among all stakeholders to ensure disaster resilience and inclusive development in the country. To begin with, national and state governments have to take a lead to bring all stakeholders together on one platform at all levels-state, district, block and village/ULB level. It is therefore prudent that

stakeholders' analysis is undertaken as a key input to the exercise for training and capacity development.

ARAC Framework

The stakeholder analysis is based on an analytical framework that we call authority, responsibility, accountability and capacity (ARAC) framework. This basically implies that all the four components of ARAC have to come together in a judicious manner in order to make sure that all the different stakeholders are truly effective in their respective roles as disaster managers.

Figure: ARAC Framework



Source: MPS, 2013

The four key terms of the ARAC Framework may have slightly different connotations for government stakeholders and non-government stakeholders, since the respective roles in government are clearly delineated whereas in case of non-government stakeholders, these could be more open ended with relatively broader connotations.

Authority as legitimate power to do things, in all cases, be it government or non-government, includes legal/statutory, administrative and financial authority, as it is normally linked to either superior position held by an officer or a statute from which the legal authority flows. Authority is both formal and informal in nature. While in the context of government agencies most of the authority is formal in nature, in the specific context of civil society organisations including NGOs and CBOs, most of it is informal in nature.

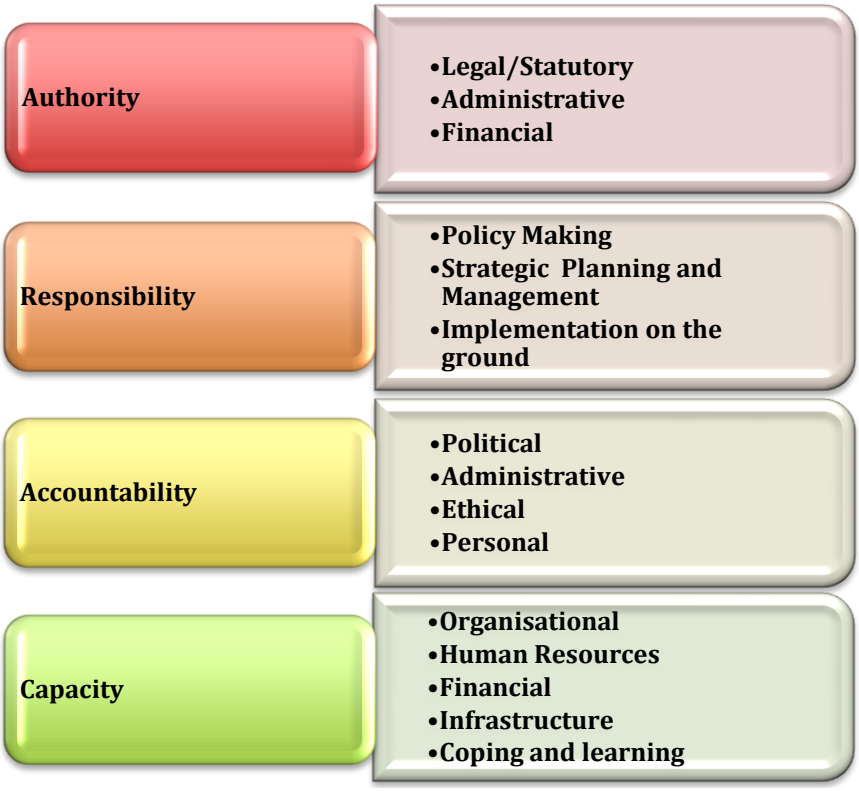
Responsibility comprises the set of mandated tasks to be undertaken and the results to be achieved: this usually rests with the second tier of officers/ stakeholders who are assigned the responsibility by the person in authority.

Accountability, as an imperative to be answerable to someone (individual or institution) normally rests with the next tier of officers, particularly in government, who are assigned specific tasks by the person having the responsibility. Accountability, in the government context, refers to stakeholders within the government system against whom action, be it

disciplinary action or prosecution or any other form of action including warning or censure can be taken. In non-government sector, accountability has broader definition which subsumes ethical accountability also. Besides being accountable to donors, who may have a global perspective, they are also accountable to community.

Capacity, though larger in its scope as a working concept, has to be seen in the context of knowledge, skills and attitude-as-in-action in the specific context of training as a means to capacity development. If a person is assigned a job, it has to be ensured whether s/he has the requisite capacity including the need to identify and build required capacities through training and non-training interventions. Capacity building in case of a functionary or agency, be it an individual or a team of members, means they should have the requisite knowledge and skills to perform the assigned job and the necessary attitude and orientation to perform the functions in question. Attitude thus subsumes both motivation and commitment in its scope.

Sub-Components of ARAC Framework



Source: MPS, NK, AV, 2013

Stakeholder Matrix with ARAC framework

Stakeholder Groups	Authority	Responsibility	Accountability	Capacities	Other Remarks
National Government Agencies					
Ministry of Home(DM Cell)	Legal/Statutory Administrative Financial	Policy making	Political	Limited time, resources and skills for guiding DM and DRR activities	
NDMA	Legal/Statutory Administrative Financial	Policy advisory services National guidelines on thematic issues related to DM and DRR Programme/Project management including National School Safety Programme and WB assisted NCRMP	Administrative	Limited in-house technical expertise on DM, DRR and CCA	
NIDM	Legal/Statutory Administrative	Strategic planning and management	Administrative	Primary experience and capacity in training design and delivery Limited capacities in research and consultancies Very limited experience and capacity in programme/project management	
NDRF	Legal/Statutory	Implementation	Administrative	An interesting model of institutionalisation of training through trained master trainers	
State Government Agencies					
SDMA	Legal/Statutory/ Administrative/Financial	Strategic Planning and management	Administrative		
SIDM	Legal/Statutory/ Administrative		Administrative		
District Authorities					
DDMA	Legal/Statutory	Planning and implementation	Administrative	Capacity to coordinate capacity building initiative at the district level	DDMAs are virtual bodies in most of the districts
District Administration	Legal/Statutory	Planning , coordination and implementation	Administrative	Capacity to implement	

				programmes and projects at the district level	
Sub District Level					
Municipality	Legal/Statutory	Planning and implementation	Administrative	Capacity to implement programmes and projects at the municipal level	
Village Councils/ Panchayat	Legal/Statutory	Planning and implementation	Political	Capacity to implement programmes and projects at the village level	
Community			Personal		
Civil Society Organisations					
INGO	Formal Financial	Strategic support for policy, planning and implementation support for effective DM and DRR efforts	Ethical	Ideological perspectives including development focussed and rights based approaches 'Smart, strategic and catalytic' use of available financial and other resources	
NGO	Informal	Strategic Planning and management Implementation on the ground	Ethical	Capacity to engage with communities closely at the local level	
CBO/ SHG	May or may not have legal /statutory authority, but carry lot of informal authority at the local level	Planning and implementation at the grassroots	Ethical	Capacity to be leading social change agents including leaders and disaster managers at the community level	
Corporate Sector					
Development consultancies	A mix of formal and informal authority	Sharing and learning responsibility	Ethical	Organisational Skilled Human Resource Financial Infrastructure Coping and learning	
Corporate firms	A mix of formal and informal authority	Corporate social responsibility	Ethical	Organisational Skilled Human Resource Financial Infrastructure Coping and learning	

The stakeholder analysis is presented in the following four broad categories of stakeholders:

1. Stakeholders in the Government sector or Government supported entities
2. Non-Government Organisations including INGOs, NGOs, CBOs, SHGs etc,
3. Academic and Research institutions, Corporate/ Private Sector and Media
4. Community Members &Representatives, Volunteers, Professionals; GP& ULB members

2.2.1 Stakeholders in the Government sector or Government supported entities

There is considerable awareness among government officers and employees about disaster management at state level. In the states where mega disasters have taken place, which include Odisha (Super cyclone in 1999), Gujarat (Bhuj earthquake in 2001), Bihar (Kosi floods), the recognition and awareness about disaster management issues among the government functionaries is visibly much higher than in other states. Moreover, many of the government officers have been provided basic training in government institutions in most of the states. In few states, they are highly active in institutionalising the disaster management systems, and have got sensitised especially after the experience of a major disaster. Overall, there is a reasonably good level of energy and enthusiasm across the government sectors and allied entities. Many of the UN agencies and INGOs that work closely with the government on disaster management and development issues including UNDP, UNICEF, and Red Cross etc are major stakeholders. There are evidences of systems of coordination as in Gujarat, where GSDMA interacts and involves other agencies and leading NGOs including IIT, ADPC, AIDMI; there are similar efforts in Bihar and Odisha. Individual officials in key positions are generally well informed and motivated.

On the other hand, while the government officers and employees have the authority, responsibility and accountability, though dispersed at different levels, their capacity building is still in infancy. Using the ARAC framework of analysis, it can be observed that in the case of government functionaries, capacity emerges as the blind spot of disaster management in general and disaster risk reduction in particular. While planners and disaster managers including implementers have by and large been sensitised, no specific training modules focused on functions being discharged by them have been developed nor is any intensive training being provided. This emerges as a major capacity gap that needs to be addressed upfront. In particular the officers/employees entrusted with the responsibility of implementing flagship developmental programmes or engaged in supervising construction activity have not been exposed to focused training programmes related to their respective functional areas with the result that there is no convergence in their functions so far as different phases of disaster management are concerned. It is for this reason that disaster management has mostly not been mainstreamed into the developmental programmes undertaken by the state governments or the national programmes being implemented through the state governments such as NREGS, IAY, SSA, SGSY, NRHM, JNNURM etc. Due to lack of orientation and exposure to specific training programmes, DRR has not been taken up in right earnest in the states and the functions of government officers and employees and other government stakeholders are primarily response-oriented.

There are also bottlenecks in coordination mechanisms in place at states' level that do not facilitate dialogue between stakeholders on issues of mutual concern around disaster risk reduction. Disaster management is still perceived as the function of Disaster Management Departments with other Departments coming together only during the response and relief phase and that too only in respect of subjects assigned to their respective departments. There is also no effective coordination mechanism in place with non-government stakeholders such as NGOs, corporate sector, media, academic and research institutes in public and private sector and elected representatives of local self-governments.

At district level, although awareness exists among government officers and employees, training has been provided to a few of them only. The district level officers have good experience of response related functions based on vulnerabilities of their respective districts. This is true in respect of almost all the states and districts visited, as they all know about their local vulnerabilities and how to respond to it but they are clueless about mitigation measures in general; there is very little, if any, realisation of their functions related to Disaster Risk Reduction.

The concerned officials and employees have not been adequately exposed to focussed training programmes on DRR issues related to their respective functional areas. This could be one of the reasons for the gaps that exist between the level of expected outcomes from concerned government officials and the actual deliverables from their end. This gap can be filled with appropriate trainings on the subject matter and the convergence in their functions. In addition, the sensitisation on what a good and quality assured training and education approach can do to the sector, is also absent, and there are misconceptions that cross sectoral engagement will lead to loss of time. While in the short term these hindrances do exist, these must be overcome and measures introduced for long term gains on this subject. Officials need to be convinced on this. This would be feasible through intensive sensitisation and training campaign for all government officers and employees from state to local level.

At sub-district level, though there is awareness, functions being discharged at grass root level are response oriented only. If we look at this in terms of role definition (formal as in job description), role perception (the actual world view that informs action) and role play (reality in terms of actual work behaviour in practice), there seems to be an inherent bias towards response orientation in the government structure and functioning. It is true on all three counts- role definition is clearly marked that response is part of job description, role perception is also same due to lack of holistic training and role play is also prominent in practice of what their predecessors were doing and what their superiors expect and direct. The officials have generally not been exposed to training on disaster risk mitigation. There are also issues between government functionaries and community. For instance damage assessment is generally undertaken through revenue officials who are neither trained in the subject nor have adequate time or motivation to appreciate problems at ground level.

Besides, in many cases, there is corruption and favouritism and these officials do get influenced by political representatives. On the other hand, there are also instances of officials having close bonds with the community such as GTA areas in West Bengal. They have only rudimentary knowledge of legal and institutional systems in place with their respective functions and its linkages with the functions being discharged by them at grass root level. The main handicap is that they do not have realisation of their role in disaster risk mitigation. Most of them have not been exposed to specific trainings relevant to functions being discharged by them, particularly trainings for micro level interventions for disaster risk mitigation.

In view of the above, lack of clarity about one's own role as a disaster manager among the stakeholders is a major challenge to be addressed.

The other key stakeholders within the government system are National Disaster Response Force (NDRF) and Civil Defence and Home Guards (CD & HG). NDRF is imparting training to State Police Forces, SDRFs and also community through conduct of mock drills in some states. The modalities of providing training by NDRF are good since they not only train the entire batch but also develop Master Trainers among them so that training to additional batches and refresher training can be provided by these Master Trainers. With the amendment of the Civil Defence Act, 1968 in 2010, disaster management has been included as one of their functions. They are also involved in providing training to different stakeholders including community, though to a limited extent. However, both NDRF and CD & HG are providing training in response and have not taken disaster risk mitigation on board. It is desirable that, when these

institutional systems are already available, their capacity may be built to address disaster risk reduction aspects also. At present, not much thought has been given to this aspect.

The Public Sector Undertakings are preparing their disaster management plans. However, off site plans are prepared only by PSUs dealing in hazardous materials. If the PSUs can organise training programmes for their employees/ workers, based on vulnerabilities of the areas where these are located, these employees/ workers could prove to be a good instrument in generating awareness in the community where they are living.

2.2.2 Non-Government Organisations including INGOs, NGOs, CBOs, SHGs etc

It is now an accepted fact that disaster management in general and disaster risk reduction in particular is not an activity which can be handled by the government stakeholders alone. The multi-stakeholder approach necessarily involves civil society organisations in private sector and corporate sector for taking up several activities under corporate social responsibility and the media, not only as a watch dog but also as a facilitator for awareness generation, documentation, development and publicising good case studies. The only distinction between the government and non-government stakeholders is that while the government stakeholders are statutorily and mandatorily responsible to discharge their duties and can be held accountable for any action of commission or omission, the private sector, corporate sector, media and others have no such statutory responsibility.

The NGOs including INGOs, CBOs, and SHGs are quite sensitised about disaster management and are carrying out various activities at their levels. These stakeholders have realised their social responsibilities pretty well and have come to the fore at the time of disasters and also smaller localised events such as storms and fires. Moreover they have come forward as a unit, and formed an effective network across the state, and helped the highly vulnerable and excluded people at the time of need. For instance, the Inter Agency Groups in Bihar and West Bengal have worked as an effective platform for the NGOs in the respective states and also for external stakeholders including aid agencies and government departments to engage with the civil society organisations. They have carried out rapid assessments, issued situation reports in emergencies, pooled resources to carry out joint exercises, taken up training and awareness programmes and operated as a think tank on finding ways of collaborative action primarily on disaster response but have also encompassed disaster risk reduction, though to a limited extent.

In Odisha, OSVSWA does capacity building work in rural areas on livelihood issues, and through this channel addresses disaster risk mitigation. They are building capacities of local community members to obtain infrastructure services under government schemes. They have established community governance committees at GP level. The committees have created block level plans and got them accepted through BDOs. The plans include risk reduction elements and there are linkages with the programmes of OSDMA. The organisation feels that there are gaps between provisions contained in government plans and those that are implemented on ground. They tried to tie up with OSDMA for training activities but were not successful in having the desired programmes. In West Bengal, In Sundarbans, Tagore Society for Rural Development has been working in Lahiripur GP on mangrove conservation and livelihood promotion. In Darjeeling district, Save The Hills, an NGO located in Kalimpong has been working for landslide mitigation particularly awareness generation (organised more than 80 community level workshops), dissemination of information related to rainfall data and early warning and new landslide vulnerabilities coming up due to digging at the foot hills making the entire habitation at hill crest unsteady, and applied research by bringing out papers and limited documentation for knowledge sharing as also dissemination of information. The Japaiguri Sewa Sadan is undertaking community preparedness before floods at the family level encouraging constitution of SHGs, formation of task teams for early warning, rescue, coordination, first aid and CBDP. CARITAS India is supporting Community Managed Disaster Risk Reduction in

Jalpaiguri primarily focused on mitigation including Participatory Disaster Risk Assessment (PDRA) and Community Contingency Plan (CCP).

The NGOs are active in the field of disaster management in almost all states. It was observed that NGOs are more active in the rural areas, and hence they can play a very vital role at the time of disasters. Despite a large number of NGOs and extensive work being carried out by them, their capacities are limited and they also need to be trained and equipped further in order to take up long term disaster risk mitigation efforts efficiently and effectively. Some of the NGOs have been exposed to short term trainings in disaster response through Red Cross and St. Johns; however there is need to go for specific trainings pertaining to disaster risk reduction, school and hospital safety, conducting mock drills, train and sensitise community and construction workers, and volunteers. There is need for sustained efforts with trainings that are linked to plans, and the inclusion of refresher trainings and plan revisions in the long term. At the same time, the NGOs have their own financial constraints since by and large, state governments do not extend financial support to these organisations unless it is for a specific project or programme entrusted to them by the state governments. There is very significant scope for providing appropriate disaster management training to NGOs and allied groups, and there is also a high level of interest in these groups. Further, the involvement of NGOs in disaster management committees and local platforms at district and sub district level has been initiated but needs to be strengthened substantially.

There are SHGs in most of the villages which raise money from women and advance it to them in case of need. The limitation is that they function in an isolated manner and inter-SHG coordination is invariably lacking unless an NGO active in the village extends support. A coordination mechanism for SHGs would not only facilitate development of alternate means of livelihood but also encourage greater involvement of women in different facets of disaster management. Women, as a potential human resource for disaster management, have still not been tapped to the optimum level and are perceived more as vulnerability rather as a resource. This perception has to change. There may be a small percentage of women who may be vulnerable and that too for a temporary period such as expectant and nursing mothers, women with infants, severely undernourished or malnourished women due to economic or social compulsions. However, this does not make the entire women population vulnerable. In fact, it has been observed that women are as good as men, if not more, in responding to disaster situations or spreading the message of disaster risk mitigation, if trained adequately. The rationale is that their stakes in family and community are generally more than men; more so when men are given to drinking on regular basis. This was widely reported in the context of both urban and rural communities in Gujarat visited during the study despite liquor being completely prohibited in Gujarat.

Notwithstanding the constraints, it has been observed that a fair number of NGOs are working in a mission mode in almost all the states. The handicap they invariably face is the trust deficit between the government and non-government stakeholders, lack of coordination with government agencies, lack of accreditation which will give them a sense of ownership and lack of coordination both with government stakeholders as also within the civil society organisations. Despite these handicaps, it was observed that some of the key civil society organisations have been doing excellent work in different facets of disaster management.

2.2.3 Academic and Research institutions, Corporate/ Private Sector and Media

There are a good number of academic and technical institutes in several states which can undertake research and documentation related to disaster management on board through their course curricula, innovative projects and outreach interventions. However, at present these institutes are not sensitised enough about disaster management research and education

and have inadequate capacities of their own. The Universities and Colleges can make a dent by running academic and applied courses on disaster management but the limiting factor is that there is not much demand for these courses due to lack of adequate employment opportunities. For instance TISS, Mumbai and I.P. University, Delhi are running post graduate courses in disaster management but face considerable difficulty in finding placement for their students. Placements, even if available, are not lucrative, discouraging the students from joining these courses. Besides, academically brilliant students look for other courses and a post graduate course in disaster management is opted only as a last resort. The job opportunities will improve when disaster safety is mainstreamed into the development process, both in public and private sectors.

As an example, Bihar, Odisha and Gujarat have a large number of academic and research institutions. For instance, Seismological Research Institute and IIT, both at Gandhi Nagar in Gujarat and many across other states have huge potential to contribute to the disaster risk reduction agenda in terms of knowledge generation and action learning. However, again, these institutions are demand driven which is at low ebb in this field. These institutes can assist the government in developing course curricula, innovative projects and other interventions. However, it would be necessary to sensitise them in the first instance. A DRR Framework may be developed in conjunction with such institutes and selected NGOs which could then be taken up for implementation by involving all stakeholders who are active at different levels.

IITs have come to the forefront during the last one decade or so to develop training courses for master trainers for earthquake risk mitigation. These institutes were closely associated initially with the Ministry of Home Affairs and subsequently with NDMA for developing the course curricula and training master trainers under two schemes taken up by MHA for training of engineers and architects. However, the state governments did not take keen interest in deputing their engineers/ architects and the private sector was also lukewarm to take advantage of this facility. The reason is that implementation of techno legal regime has not been taken up so far by state governments aggressively and therefore the demand has not been generated to the desired level.

Private Sector, including corporations and associations has done very little towards disaster management in the states. This is an untapped potential, which can be a source of support to the sector in coming times as the states progress rapidly on an industrial and economic fast track. The State Governments need to work closely with the corporate sector, given the current corporate environment and the new policies on corporate social responsibility, to ensure that the potential for DRR professionals and managers, which is very significant, is tapped. The interest and actions of educational institutions and corporate bodies will help not only in the training and capacity building aspects but also in the education, research and documentation, and public awareness pertaining to disaster risk mitigation.

There are many new private universities and colleges that have come up in recent years, and are taking interest in the subject of disaster management though it is still only at the level of elective courses under subjects of rural management, engineering etc. There is however a very significant potential to develop this area and create new graduate and post graduate programmes on disaster management, with a strong focus on disaster risk mitigation. At the same time, unless there are adequate job opportunities in governments, public and private sectors for DRR professionals, such initiatives are not likely to receive a fillip.

Currently the research on risk considerations in development patterns, particularly so in the face of rapid development and urbanisation, is not included in comprehensive development planning which is the only instrument currently in use in guiding development planning in several states. Need for good practice guides on risk management planning and emergency considerations are felt by the academics, and they see a definite felt need for risk sensitive development planning. The bottleneck is that this concern has not been integrated with

development planning either in government or in private sector. It is necessary that all sectors are sensitised so that they engage themselves on safety issues. The potential to tap CSR resources for disaster risk mitigation is very significant and it needs to be channelised properly.

The state governments or the district administrations have not proactively involved corporate sector through training and capacity building which has a direct impact on industrial disasters and environment degradation. Besides, the corporate sector can be an asset to the state governments by taking up several initiatives related to DRR as a part of corporate social responsibility. The big corporate houses would even be willing to adopt vulnerable villages for holistic development, given the ownership and visibility.

Media has a key role to play in awareness generation and reducing panic in disaster situations. Disaster risk mitigation related stories during normal times would go a long way in changing the mindset of community as also keeping state and district governments on alert for any act(s) of omission or commission. However, media reporting is at present mainly response oriented and, that too, on a fault finding mission. They are guided more by their commercial interests than social responsibility. The media reporting should be balanced which is not the case at present. However, media alone is not to blame for such aberrations. The government officers, both at state and district level, are averse to share the factual report as also challenges being faced in a difficult situation with media representatives. The briefings are routine which reveal less and conceal more. Therefore, when media obtains reports on their own, even if such reports are not always fully correct or tend to ignore the positive things being done by the governments, they prefer to go ahead and publish such reports as 'investigative reporting'. Such situations arise since governments do not show adequate transparency which again is due to lack of training of government officers including Public Information Officers who interact with media.

The mutual mistrust between the government organisations and the media has become a handicap in making use of media as an effective tool for awareness generation and dissemination of information including early warnings. These handicaps can be mitigated by developing a strategy for training and capacity building for private stakeholders, formation of specific training modules and imparting training and developing master trainers among them.

2.2.4 Community Members & Representatives, Volunteers, Professionals; GP & ULB members

It is well known, not only in India but throughout the world, that community is the first responder everywhere. In past decades, the system of local response had been the only recourse to the communities. Unfortunately poverty, lack of education, social inequities and inadequate means of livelihood have rendered the community rather helpless and very little capacity has been generated for organised response. Most of the DM programmes have not reached below the block levels. Though there are disaster management plans and procedures on record, at least in some of the states, particularly the states where DRM programme was being implemented till 2009, at the grass root level, people are not clear even on basic issues as to whom they should contact in an emergency, or how they will be informed to deal with such situations.

This shows the real story of ground zero, where community volunteers/ workers/ RWAs/ Ward/ GP and Village members are still struggling with the disaster management issues. They hardly manage fire fighting; for them disaster risk mitigation is a long way to go. As they are not aware of the general procedures, safety guidelines, building safety codes to be followed at their level, there is little evidence of state programmes benefitting local communities on disaster risk mitigation. Livelihood issues take precedence over safety issues. For instance, in West Bengal (Kalimpong town and Jalpaiguri), despite the villages being landslide-prone, the community is not prepared to be relocated since relocation will not provide them agricultural

land. In some Uttarakhand villages, which are recurrently affected by landslides, the community has rejected relocation plans since these directly impact on their livelihood issues. According to them, when their day to day life itself is a disaster, where is the time to think of disasters like earthquakes, cyclones or landslides, which, in any case, are God given calamities (Daivi Aapada). What is more, even government literature in Uttarakhand refers to such natural calamities as daivi aapada. The nomenclature is bureaucratically and politically convenient as they cannot be blamed for sufferings of community.

On the positive side, there is abundance of local skills and manpower, such as that of bamboo artisans who are capable and willing to take up construction of safe houses using local materials and traditional skills along with new knowledge on enhanced climate and disaster resilience. The Owner Driven Reconstruction Collaborative (ODRC) has carried out work on these lines using local communities and artisans to construct large number of houses in Bihar in the Kosi flood affected areas and in Gujarat in earthquake affected areas as part of a government held and World Bank supported programme that links the Indira Awas Yojana of the government with post disaster reconstruction using appropriate technologies and community based processes.

With the improvement in educational level and awareness generation, more and more volunteers are willing to come forward particularly at the community level to function as responders. This resource has by and large not been tapped. The DRM programme had demonstrated that the younger generation can be proactively involved in different task forces in wards/ villages as part of VDMCs. Unfortunately, after the conclusion of this programme, this initiative has not moved forward due to lack of support, refresher training and further capacity building. The DMPs exist only on paper and even if available, are more like a telephone directory than an honest effort to identify the gaps in capacity building. The VDMCs and Task Forces are almost extinct due to lack of follow up action on the part of governments.

Under the GOI-UNDP DRM programme, initial steps have been taken in the form of disaster management plans of districts, blocks and villages, and the creation of task forces at the community level. The creation of village level disaster management task forces was one of the largest initiatives on this front and extended to several villages in the most vulnerable belt in 176 districts of 17 states. The sustenance of the initiative has however been an issue of concern as the task forces have lost momentum over the years as there have been no follow up programmes to consolidate, support, train and motivate them. The local groups are seen to be active where some NGOs have stepped in and taken up related developmental programmes or formation of SHGs for livelihood support. However, even in these cases, the subject of disaster management, and particularly disaster risk mitigation, has been pushed into background over time.

In coastal states, such as Odisha, the committees formed more recently and to be formed for the upkeep of the multi-purpose cyclone shelters are seen as the institutions present in a visible way. These too, however, appear to be riddled with local politics and conflict of vested interests. There are instances where factions are in conflict over control of the shelter and in the process the shelter is not accessible to anybody, and also there are cases where strong political interests have taken control of the shelters. Comprehensive village level plans, where the management of the cyclone shelters and other assets are included, are yet to be prepared and implemented. There is thus a need to integrate community level planning, the local task forces, the committees for management of cyclone shelters and the overall training and capacity building initiatives on disaster risk mitigation into one comprehensive and well planned approach.

An interesting interface is where community volunteers have been identified, recruited, trained and deployed by the government for disaster management functions. One example is of life guards who have been trained by the police department in Odisha to save lives of the drowning

people in the sea, which has emerged as an ongoing risk. Based on interaction with them, it was found that they all belong to fishermen community and are excellent swimmers. The police department hired them and after joining they were provided intense training on rescue. The district emergency management officials acknowledge that this is an important area of work since the largest ongoing disaster in the area is of frequent loss of lives due to drowning. There are similar instances in other states also where community members, even without any support from the government, save lives during floods/ flash floods or even in isolated cases of drowning. One cannot forget the astounding feet of a 12-13 years old youngster in Delhi, who saved the lives of several school kids when their school bus fell in Yamuna River. However, leaving aside such isolated instances, it is a fact that, since no training is being imparted or mock drills organised at the community level, a vast reserve of resources remains untapped or inadequately tapped despite the fact that it is unarguably accepted that community is the first responder. Similarly unskilled/ semi-skilled/skilled workers primarily engaged in construction activity can be motivated to ensure disaster resilient constructions at village level. The training programmes for these stakeholders have to be imaginative and innovative, in tune with their present level of education, and due compensation needs to be paid for the duration of training. In order to instil a sense of pride and confidence, accreditation of such volunteers through issue of identity cards as first aid volunteers, search and rescue volunteers, damage assessment volunteers, law and order volunteers etc would mainstream their efforts which are presently being performed in an isolated manner and may gradually fritter away.

The local self-government system has been in existence for last few decades under Constitutional mandate. However, empowerment of members of PRIs/ ULBs is another matter. It was observed that they are provided a training for 3 to 5 days which contains a brief capsule on disaster management of the duration ranging from one hour to half a day. There is nothing in the course curricula on disaster risk reduction, mainstreaming of DRR in developmental programmes, empowerment of the community, gender equity and special facilities for elderly. The PRI members are generally sincere since they belong to the same community and have to get re-elected through the support of same people. They would prove to be good vehicle to take forward the agenda for DRR and inclusive development to the community. Even if they do not have the capacity to train the community, they can facilitate training of community through block administration or NGOs, provided they have the knowledge and exposure to these issues. At present, they do not even have a role in identification of beneficiaries post disaster or in the exercise for damage assessment, which is carried out by revenue officials or through engagement of anganwadi workers/ health workers/ teachers etc by such officials. The institution of PRIs and ULBs, though strong on paper, has been marginalised in practice so far as disaster risk mitigation is concerned.

The stakeholder analysis brings out the need for development of strategic framework and comprehensive policy on training and capacity building which may inter alia include development of specific training modules imparting practical hands-on training and refresher training, organisation of mock drills and more effective and efficient coordination mechanism which encourages proactive participatory engagement of all stakeholders including government and non-government stakeholders, academic, training and research institutes, corporate and public sector as also volunteers and professionals working as individuals in different phases of disaster management and, above all, the community.

Stakeholders Analysis in ARAC Framework

Stakeholder Groups	Authority	Responsibility	Accountability	Capacities	Other Remarks
National Government Agencies					
a. Ministries/ Departments	DM Act/ Secretaries	Joint Secretary in charge of DM	Under Secretaries/ Desk Officers/ Section Officers	Knowledge, Skills, Attitude-in-action	The main functions at national level are coordination, DRR advocacy, oversee implementation of policies, guidelines and plans, coordinate response, relief, rehabilitation, recovery, provide financial & logistic support
b. NDMA	DM Act/ NDMA	VC/ Members in NDMA	Officers in NDMA, NDRF for response	Knowledge, Skills, Attitude-in-action for officers; NDRF already trained, still there could be gaps based on experience on ground which may have to bridged through training; making available additional equipments	Except in response phase when NDRF is deployed by NDMA in consultation with MHA/ State governments, their main functions are to lay down policies and guidelines, minimum standards of relief and ensure implementation; NDMA has key role in normal times by taking up mitigation & preparedness projects, mainstreaming of DRR/ CCA in development in conjunction with state governments/ SDMAs
c. NEC	Home Secretary	Secretaries of concerned Departments mainly members of NEC	Officers entrusted with specific functions in each Ministry/ Department by their Secretaries	Knowledge, Skills, Attitude-in-action for officers; NDRF already trained, still there could be gaps based on experience on ground which may have to bridged through	NEC is presently by and large non-functional; it has the responsibility for implementing policies and plans of NDMA and ensures compliance with directions of Central Government; capacity building of concerned officers in relevant Ministries is a gap at present.

				training; making available additional equipments Knowledge, Skills and Attitude-in-action	
d. NIDM	Administrative and financial authority presently with MHA/ NDMA	ED, NIDM	Professional Faculty/ staff in NIDM for training, research, documentation and national level information base	Upgrading existing capacity of faculty; exposure to advanced training abroad, encourage motivation by taking care of administrative issues as also team work	NIDM has inadequate capacity & infrastructure at present keeping in view its statutory functions. The focus at present is primarily on training, which is mostly supply driven though few training programmes are demand driven. Needs to have better tie up with state training institutes as also sectoral national training institutes.
State Government Agencies					
a. State Government Departments	DM Act/ SDMA/ Chief Secretary/ Principal Secretaries of relevant departments	Relief Commissioners/ Secretary (DM)	Concerned officers in concerned departments and District Magistrates	Knowledge, Skills and Attitude-in-action	It has statutory functions which are not being discharged fully. Majority of SDMAs are not functional; mainly perform coordination, financial and logistic support but very limited activities on DRR/ CCA undertaken
a. State Government Departments	Chairperson of SDMA (CM)	Members of SDMA	Members being mostly concerned Ministers, their relevant departments	Sensitisation, Knowledge, Skills and Attitude-in-action	Activate SDMAs; sensitise members and concerned officers at senior and middle management level
c. SEC	Chief Secretary	Members of SEC and Secretaries of concerned departments	Officers in relevant departments	Sensitisation, Knowledge, Skills and Attitude-in-action	SECs mostly non-functional; activate SECs, capacity building, particularly for mitigation and preparedness

d. ATIs/ SIRDs/ other state level training institutes	Principal Secretaries of concerned departments administrativ ely in charge of each training institute	Directors of training institutes	Faculties in training institutes	Knowledge, Skills and Attitude-in-action	Strengthen faculty, improve capacity of existing faculty, delegate administrative and financial powers based on need assessment.
District Authorities					
a. District Administration	District Magistrate	Chief Development Officer	Concerned District Department Heads	Knowledge, Skills and Attitude-in-action	Though administrative authority is with District Magistrate, he does not have full financial authority to take up mitigation projects; there is no mitigation or any other discretionary fund at his disposal.
b. DDMA	District Magistrate	Members of DDMA and District Department Heads	Members of DDMA and District Department Heads	Knowledge, Skills and Attitude-in-action; financial resources for taking up DRR/ CCA related projects	DDMAs do not have dedicated staff and professional support. They also do not have financial budget. DDMAs have become virtual bodies and not much attention is paid to DRR/CCA measures required to be taken
Local Authorities (PRIs/ ULBs)					
Village Councils / Panchayat	President, Zila Parishad; Taluka Pradhan, Gram Pradhan	Gram Panchayat	Gram Pradhan and Members of Gram Panchayat	Sensitisation, Knowledge and Attitude-in-action	Local authorities are mostly ignored in DM related functions; members are given very limited exposure; do not have access to funds for DRR/ CCA programmes including training of communities
VDMC/ Task Force	Gram Panchayat	BDO and his officials looking after DM	VDMC	Sensitisation, Knowledge and Attitude-in-action	In most of the villages (>90%) there is no VDMC and Task Forces. This system needs to be put in place or revived where it was in place under DRM Programme
INGO	Global	INGO staff	They are	INGOs which	INGOs need to have

	donors/ UN agencies		accountable to their donors and also to community under ethical accountability	are already working in DM field have the knowledge and skills. Their capacity is to built through sensitisation to local conditions and needs	close coordination among them and also with governments at national, state and district level. They need to tie up with NGOs working at grass root level; build up their capacity and provide financial support; Govts. at different level may involve INGOs to undertake ToT for local NGOs and extend financial support, at least partly.
NGO	Donors	NGO staff	They are accountable to their donors and also to community under ethical accountability	NGOs which are already working in DM field have knowledge, skills and attitude. However, other NGOs which are working in other fields and are prepared to take up DM on board would need their capacity to be built through Knowledge, Skills and Attitude-in-action; would also need financial support	An effective coordination mechanism among NGOs; training in specially designed modules for NGOs which are presently not working in DM field; should work in close association with district and local authorities; should be extended assistance by INGOs and district governments for sensitisation, training and capacity building of VDMCs/ Task Forces as also awareness generation among villagers.
CBO/ SHG	CBO/SHG (At present they are getting minimal assistance from government	CBO/ SHG	Community	They need to be sensitised and given elementary training including on local vulnerability, traditional systems and intervention programmes at local level	CBO? SHG have not come of age in real terms. These need to be encouraged by district and local governments and provided training facilities as also financial support to educate, create awareness and motivate community to discharge their

					functions as first responders in organised manner as also measures needed for reducing local vulnerabilities

In conclusion, the multi-stakeholder approach is still in infancy in most of the states and needs to be put in place in an imaginative manner, without government stakeholders being too intrusive and yet working together with other stakeholders with common objectives.

2.3 Capacity needs assessment

'Capacity building cannot be seen or undertaken in isolation. It is deeply embedded in the social, economic, and political environment. Understanding this environment is critical in order to understand who lacks what capacities, in any given context; why; and why this matters.'

'Women and men, however poor or marginalised, always have many capacities, which may not be obvious to outsiders, and which even they themselves may not recognise. It may take time to discover these capacities and potential. But to intervene without doing so is not only disrespectful; it also wastes an opportunity to build on these existing capacities, and-even more importantly-risks undermining them , and so leaving people even more vulnerable than they were before.'

Capacity-Building: An Approach to People-Centred Development, by Deborah Eade, Oxfam, 1997

'Building the capacity of communities, as they are the first responders to disasters, is a significant part of the capacity development process.'

National Policy on Disaster Management, 2009, India

2.3.1 Context

The study is premised on the understanding that capacity is the key to effective disaster risk reduction. The underlying theory of change is that capacity development of all the concerned stakeholders within government, civil society and communities is the vehicle to reach sustainable, inclusive, and disaster resilient development. This also draws on the growing recognition that capacities of communities are critical and common factors across sustainable development, disaster risk reduction (DRR) and climate change adaptation (CCA) domains. In the specific context of disaster management as a development agenda, there seems to be a common consensus that people from communities at risk and their capacities to cope with disaster triggered emergencies are the most vital resource for developing an effective disaster management (DM) and disaster risk reduction (DRR) strategy. And hence it makes sense to invest in enhancing community capacity and resilience to disasters and disaster related risks.

Capacities and vulnerabilities go together in the context of DM and DRR, as there is a direct, if not absolute, correlation between the two. The enhancement of capacities does imply reduction of vulnerabilities to some extent, even though the reverse may not necessarily be

true, as reduction in vulnerabilities may or may not necessarily mean increased capacities of the concerned communities in all the cases.

The study involving extensive literature survey and field study across six multi-hazard prone states and twenty four districts therein aimed at identifying the major capacity gaps in India for disaster management in general and disaster risk reduction in particular.

While community capacity is the mainstay of capacity needs assessment presented here, the capacity needs assessment exercise has been undertaken with a multi-hazard and multi-stakeholder perspective. This has been done in view of the multiple levels of policy, management and operations that different stakeholders from government and non-government organisations including the larger civil society function in connection with disaster management, particularly disaster risk reduction.

Available literature suggests that capacity is hard to conceptualise and articulate because of its complex character as a notion and its multiple dimensions in practice in the real world. However, there seems to be an increasing consensus on capacity being an all-encompassing concept spanning people, organisations, networks, infrastructure, finance, knowledge, skills and competencies of a wide variety. Disaster impacts the lives and livelihoods of people deeply, particularly the poor, due to their multiple locational, social and economic vulnerabilities. As a result, disaster management functions are invariably cross-cutting, as they involve many sectors related to infrastructure (housing, roads, electricity, and communication) and services (food, water, sanitation, education and health). Elements of capacities to deal with them relate to people, organisations, networks, finance, and human competencies in varying ways and degrees.

All these elements and factors of capacity have been grouped around the following broad categories: organisational/ institutional, human, financial, infrastructure, and coping and learning. These dimensions inform and reinforce each other to create overall capacity of a system to deliver the required results. In the context of disaster management in India, there are gaps across these multiple dimensions of capacity both in terms of time lag and the ways in which they intersect and interact with each other.

2.3.2 Focus, Framework and Scope of Assessment

The capacity needs assessment has been carried out mainly with a focus on four key components of training and capacity building, research and education, media and awareness, and organisational/institutional development, as defined by the scope of the study. Capacities across these components entail both training and non-training factors that have a bearing on the actual work behaviour and the eventual performance of the people and agencies involved. Hence, the overall capacity development framework takes into account factors such as the human resource development, organisational development, financial competencies, IT and infrastructure requirements, and institutional and legal framework development. Capacity needs assessment aims at highlighting the capacity needs of various stakeholders, across the identified key sectors and potentially applicable disaster types.

The capacity needs assessment is a structured analytical process designed to assess and evaluate various dimensions of capacity within the broader institutional or environmental/ systems. The assessment of the capacity specific units and individual within the system is analysed later in this section.

The key dimensions of capacity are summarised in table below:

Dimension	Existing Capacity and Related Issues
Organisational structure, culture and competencies	There is a very well defined institutional structure for DM right from the national to the sub district level: but functionally at the community level it is almost non-existent[13].
Human resources	Despite having a full-fledged institutional structure, there is currently no strategic planning for imparting training nor is there any human resource development plan or framework. National Human Resource and Capacity Development (NHRCD) Plan has recently been developed by NIDM and has yet to be formally approved and adopted by Government of India. An exercise to develop state level human resource development plans with minimum benchmarks has yet to be undertaken: there is a need to identify hazard-wise, sector-wise or level-wise functionaries to be trained from among different stakeholders. While few engineers/architects have been trained under two different national programmes (NPCBEERM/NPCBAERM) the number is insignificant and the level of training imparted has not been assessed whether it is adequate. The Districts do not have adequate trained human resources for undertaking any kind of research and documentation. Women, as a potential human resource for disaster management, remain largely ignored within DM and DRR planning. They offer a huge opportunity for substantive engagement for community led DM and DRR efforts on the ground. Similarly children are also largely seen as a vulnerable group, whereas they need to be involved as major stakeholders in the process of disaster management on the ground. The State Governments are not receptive to have an HR Plan which specifies the numbers to be trained from state to local level since according to them it is "politically inconvenient"(as mentioned by a state official in one of the study states).
Financial resources	There are ample financial resources available with the state governments for disaster management functions, which have also been identified as one of the key strengths. There seems to be no special need for external financial support. But mobility of funds remains an issue to be addressed. This requires re-engineering of existing policy to provide flexibility in norms for utilisation of funds.
Information management	In the present scenario, communication strategy for DM is limited primarily to dissemination of early warning which is also not very effective as shown by recent Uttarakhand disasters in June 2013. Also it excludes a large number of other activities which carry the potential to increase the awareness of people by sensitising them about the need to be prepared for any impending disaster well in advance. In Andhra Pradesh there were some efforts in spreading awareness through conventional IEC material including pamphlets, posters, wall writing, jingles, movies etc. But there is hardly any evidence to suggest that these messages have brought about any perceptible change in the response of people to disaster risks in communities visited.

[13] Out of the total household sample only 8.2% people in urban sample and 6.5% in rural sample mentioned about the presence of a task force in their ward/village.

Infrastructure	The training infrastructure for disaster management is present from national to state level, but in the districts it is quite limited and inadequate. As at the national level, there is a training infrastructure at the state level as well. DM, Rudraprayag, shared that there is no separate training infrastructure at the district level. Even at the village level, there is no administrative infrastructure present for disaster management. Even the DM units in ATI are the smallest and most ignored. The DM cell of West Bengal ATI has no professional staff for imparting training and the two faculty members in position (two posts were vacant) belonged to West Bengal Civil Services, though trained as Master Trainers. Similar is the case of Uttarakhand ATI where only one faculty is running the entire center.
Community coping mechanisms	Coping capacities of communities at risk are limited and uneven across states and districts. There is a lack of effective coping mechanisms at the community level than can enable communities to withstand and survive the impact of disasters and take care of effective post disaster recovery. Families manage on their own during economic slowdown resulting after any disaster. Despite the fact that all the states visited have such a multi hazard profile there is very little market of insurance and reinsurance. The household data suggests that in the entire sample only 13.6% people have taken some kind of insurance and even this percentage is the result of 9 % of vehicle insurance which is mandatory these days with any vehicle purchase. So according to this study only 4.6 % people have taken any life or property insurance. Also despite the fact that more than 50% of the total households owned agricultural land there is no evidence of people using crop or weather insurance which is a state funded scheme.

In view of the recognition of the fact that capacity and training often tend to get mixed up in actual discourse and action, it is important to underline that the focus of this study is on training as a major instrument for capacity development. The study also highlights the need to locate training within larger capacity building and development agenda and framework in order to contextualise training. The study revealed that in actual planning and action across sectors and levels, capacity building activities are mainly looked at as training activities.

Capacity is narrowly conceived and addressed as an issue that can be addressed mainly through training. Factors related to policy, planning, strategy and enabling environment that have a major bearing on the eventual capacities of various stakeholders to perform and produce results are generally not considered as part of capacity building activities. This limited understanding of capacity building is accompanied by a comprehensive lack of agreed capacity benchmarks and indicators to plan and organise capacity development initiatives in the sector. This makes it difficult to track the efficacy of training in terms of concrete results that are quantifiable and objectively verifiable.

Capacity needs of different stakeholders within government, non-government organisations and communities at risk vary across levels and regions. Capacities are invariably linked with the assigned or expected roles and responsibilities of different stakeholders and hence vary considerably across levels and regions. Hence, a uniform model of capacity development is not likely to address specific capacity needs of different stakeholders and institutions. Moreover, the capacity needs of specific groups in specific regions in the state such as Sunderbans need to be separately identified and addressed.

As training is an instrument of capacity development and seeks to upgrade the knowledge, skills and competencies of the actors involved, assessment of training needs is the key to designing and conducting relevant and responsive training activities. This is currently not happening. Most of the training on disaster management is limited to general orientation training on disaster management and response related training on search, rescue and first aid.

Most of the sectoral training in education, health, rural development, and PRIs/ULBs are focused on central and state level programmes in their respective sectors, but with practically no reference to disaster management aspects.

There is a need to focus both on training and non-training aspects of capacity development by integrating them within a strategic framework for training and capacity development for disaster risk reduction (DRR) across states.

GIDM is a good case in point to illustrate that infrastructure is easier to build than the human capacity. This apparently explains the time lag between the coming up of the physical infrastructure and the functioning of the facility as per its full capacity. While physical infrastructure is needed, fully functional capacity of the concerned facility is mainly determined by the quality of the human capacity deployed to run the concerned organisation.

Bihar is an example of a state which has financial resources, however the absence of human resources and expertise prevent the state from fulfilling its roles and functions in the context of working towards long term disaster risk reduction.

A closer look will make it clear that not all of these capacities have training solutions. Training can help upgrade knowledge, skills and competencies. But the time and sequencing of creation of physical infrastructure and human capacity and other related functions are essentially planning and strategy issues, and not really training issues.

Hence, capacity needs assessment has followed a multi-dimensional approach to capacity analysis with focus mainly on institutional, human and financial dimensions. The underlying assumption is that these three capture almost all the possible dimensions of capacity.

2.3.3 Capacity Needs

Capacity needs have been identified at three levels of policy (national and state), management (national, state and district) and operations (district, sub-district, and village/GP/community) on the ground.

The major capacity gaps areas and needs at the policy level are as follows:

Table: Capacity Gaps and Needs at the Policy Level

S.N.	Institution/Organisation	Desired Roles and Functions (in the context of DRR)	Capacity Gap/Need (in relation to desired roles and functions)
1	**Ministry of Home Affairs, Government of India**	Internal advocacy for mainstreaming DRR into development planning within various government departments	Knowledge about instruments and incentives that facilitate mainstreaming DRR into development planning What, why and how of advocacy skills at the policy level Global best practices related to mainstreaming DRR into development planning Mechanisms for carrying out this coordination, particularly related to disaster risk mitigation Action Plan for all stakeholders and follow up measures required to be taken

		Coordination of actions of the Ministries or Departments of the Government of India, State Governments, National Authority, State Authorities, governmental and non-governmental organisations in relation to disaster management (Section 35(2)(a) of DM Act)	Advocacy for concurrent evaluation by stakeholders to ensure functions assigned to each under DM Act are achieved or at least actions initiated.
2	**National Disaster Management Authority (NDMA)**	Lay down policy on disaster management Approve the disaster management plans prepared by the central ministries or departments Coordinate the enforcement and implementation of disaster management plans and policy Recommend provision of funds for the purpose of mitigation Provide such support to other countries affected by disasters	Knowledge about instruments and incentives that facilitate mainstreaming DRR into development planning What, why and how of advocacy skills at the policy level Global best practices related to mainstreaming DRR into development planning Project management Human resource planning and management
3	**National Institute for Disaster Management (NIDM)**	Research on DM, DRR and CCA issues Designing and organising training programmes and extend assistance to other training institutes at the national and state level Formulation and implementation of a comprehensive human resource plan Develop educational material for spreading awareness among other stakeholders Undertake, organise and facilitate study courses, conferences, lectures, seminars within and outside the country Approval of National Plan and Plans prepared by the Ministries and departments of Government of India in accordance with the National Plan	Research design, planning and management Research methodologies for formative and applied research Advocacy with NEC and government departments to ensure national plan and respective departmental plans are prepared and sent to NDMA Professional support to evaluate such plans before according approvals

4	**National Executive Committee**	Ensure functions assigned to it under section 10 of DM Act are taken up	Modalities for undertaking functions Need for an exclusive secretariat with professional support to assist it in taking up these functions
5	**State Governments**	Policy making and strategic planning, coordination and administration for effective DM and DRR initiatives	Policy making processes and protocols How to engage in policy learning in order to generate alternative policy options Strategic planning
6	**State Disaster Management Authority (SDMA)**	Policy and strategic planning, support to the state governments Approve State Plan and DM Plans of departments of state government and coordinate the implementation of State Plan	Policy making processes and protocols Strategic planning Action learning and knowledge management to feed into policy making and planning processes Evaluate need for exclusive secretariat with professional support for SDMA to enable it to take up functions assigned to it under section and ensure integration of DRR concerns in these plans
7	**Key line departments (related to education, health, rural development, PRIs/ULBs) at the state level**	Sectoral disaster management strategies and plans	Integrating DRR concerns into sectoral/departmental plans.

The study highlights disconnect between policy and practice and underlines the crucial significance of role of management at the state and district levels. This is the missing middle piece that needs to be strengthened the most in order to enable the effective translation of policy into practice.

Table: Key Capacity Needs at the District/Sub-district Level

S.N.	Institution/ Organisation	Desired Roles and Functions (in the context of DRR)	Capacity Gap/Need (in relation to desired roles and functions)
1	**DM/ADM**	Implementation of DM Act and Policy at the local level; DM and DRR on the ground; mainstreaming DRR into development planning at the district level. Creating linkages and synergies across DM, DRR and	Informed understanding of the legislative and policy framework for disaster management at the national and state levels. Mainstreaming DRR into development planning: approaches and opportunities at the district level

		development initiatives at the local level.	Best practices related to mainstreaming DRR into development planning: global and national Need for secretariat and professional support for DDMA
2	**CDO/CEO/DDO**	Addressing DM and DRR primarily as a long term development agenda Creating linkages and synergies across different DM, DRR and development initiatives at the local level	Informed understanding of the critical linkages across climate change, disasters and development How to mainstreaming DRR into development planning, particularly within national flagship programmes such as SSA, NRHM, JNNURM, MNREGS, IAY etc DRR and CCA responsive development planning and administration
3	**BDOs/TDOs**	Participatory disaster risk and capacity assessment at the local level	Participatory hazard, risk, vulnerability and capacity (HRVC) assessment

The biggest capacity gap in terms of DM and DRR issues has emerged at the community level. This includes the PRIs as well.

Table: Key Capacity Needs at the Community/PRI Level

S.N.	Institution/Organisation	Desired Roles and Functions (in the context of DRR)	Capacity Gap/Need (in relation to desired roles and functions)
1	**Zilla Parishad**	Mainstreaming DRR into development planning at the district level Creating linkages and synergies across DM, DRR and development initiatives	Informed understanding of the legislative and policy framework for disaster management at the national and state levels. Mainstreaming DRR into development planning: approaches and opportunities at the district level Best practices related to mainstreaming DRR into development planning: global and national
2	**Block Development Committee/ Nyaya Panchayat**	Undertaking DM primarily as a long term development agenda to promote safe and sustainable development	Informed understanding of the critical linkages across climate change, disasters and development

		Creating linkages and synergies across DM, DRR and development initiatives	How to mainstream DRR into development planning, particularly within national flagship programmes such as SSA, NRHM, JNNURM, MNREGS, IAY etc DRR and CCA responsive development planning and administration
3	**GPs/Community Members**	Participatory hazard, risk, vulnerability and capacity (HRVC) assessment at the micro/local level	Participatory hazard, risk, vulnerability and capacity (HRVC) assessment

2.4 Communication needs assessment

Communication processes involving tools and media have evolved in recent years due to a proliferation of cable and dish television, mobile telephones and data connectivity. This penetration has begun even in some of the remote rural communities studied; though print media and especially radio continue to play an important role. At the same time the behavioural aspect of the softer dimension of communication is still anchored in person to person contact, thereby underlining the utility of personality based communications and basic tools of communicating such as street theatre besides the more up market television outreach. Communication needs vary very widely across communities, locations, age groups and income groups. From social media on mobile devices to person-to-person contact, the entire range of tools will eventually need to be optimally utilised to ensure the widest coverage of audiences. Similarly communication content will need to be designed keeping in mind the diverse groups to be addressed and their specific needs. One size will not fit all. A matrix approach of communication strategy design will need to be evolved, providing a menu of options suited to specific contexts.

"Are you on facebook?! I manage to check because of this mobile phone and a solar charger I have at home."

- *A beaming village headman in a remote Himalayan village in Uttarkashi, a couple of kilometres trek from the nearest road head*

The purpose of the communication needs assessment is to find out the differential information and knowledge needs of different stakeholders at the national, state, district/sub-district and community levels. The focus of this assessment has to be particularly on the most vulnerable and those with special needs, for effective preparedness and response to a disaster/emergency situation at the community level. Different groups in the community have different ways of interpreting and understanding.

They also have different levels of accessibility e.g. households who have access to televisions and radios have greater accessibility to the early warnings. Thus the issues related to the understanding of and access to the knowledge and information available and shared are very critical to assessing the communication needs. This provides us a deeper insight into the psyche

of the target audience and their specific communication needs and will help in designing appropriate communication messages and strategies as a part of the public awareness and media campaign at the national level.

The key findings of the assessment are in two broad categories: communication process related findings and audience communication behaviour related findings. It is attempt to look at members of each audience segment, attempting to understand their socio-economic and cultural profile; their perceptions, practices and priorities; their risk handling behaviour and coping mechanisms; and their constraints and capacities as distinct groups of communities at risk. People's preferred communication channels and the purpose and patterns of their use will help in designing the deployment vehicles of the public awareness campaign strategy.

Communication is essentially about messages, meaning and response. These take place at various levels and in various ways depending on the nature and levels of stakeholders involved: in the case of disaster management, this has to be primarily between people from communities at risk and outside actors including government and non-government organisations; but communication across various layers, groups and sub-groups within them are equally vital and critical.

Effective communication is the one that leads to desired outcomes. For example effective communication of early warning is the one that results in people working on that warning as expected. In order to help various institutions and individuals work towards reducing the risk of disasters, the concerned actors need to first know the risks and vulnerabilities involved. These include both macro and micro risks. The communication needs therefore vary considerably across state, district and block level. An informed understanding of these differential needs is essential for designing a robust communication strategy.

Stakeholders Needs

Across states, the communication needs were found to vary widely across stakeholders and levels. This includes the Government at state, district and sub-district level, NGOs and the community. For example, in the context of disaster risk reduction communication, the most critical level is the community, as they are the ones to respond first in the initial hours. Maximum damage and loss, particularly of lives, occurs in these initial hours. However, the complexity of social contexts across all states means that an informed understanding of differential needs at a micro level is essential to design a robust communication strategy.

Current dissemination patterns by key stakeholders

Stakeholders were also analysed in terms of their ability and current practice of disseminating vital communication. For example, despite the constitution of GSDMA in 2001 and the enactment of Gujarat DM Act in 2003, the state is still functioning in reactive mode and disaster risk reduction has been relegated to a back seat.

At the government level in Bihar, the basic disaster management information flow is managed in the traditional communication mode. It serves its purpose only in a response and preparedness mode rather than a developmental disaster risk mitigation one. In order to cater to long term risk mitigation requirements, this has to be upgraded and expanded. The same was found in West Bengal. In line with the overall orientation of the existing disaster management regime in the state, most disaster management activities are reported to be taking place in a reactive mode. This is aimed primarily at post-disaster response; relating to search, rescue first aid, relief distribution and related work. In view of the increasing frequency, severity, and complexity of natural disasters in recent years, there is an urgent need to make a shift from a reactive to a pro-active mode of sharing and communication. Different actors

involved need to engage in a communicative pattern and relationship that is geared towards preventing and mitigating risks much before the disaster strikes rather than responding to it in a fire fighting mode after it has already hit people.

In Odisha, there is a huge gap in terms of effective communication at the community level. Across the state, it was also found that first responders are usually not identified which normally leads to a situation of chaos. Community mechanisms among non-government organisations were found to be widely varying. Unfortunately, this inconsistency was not only across organisations, but also across programmes and locations under a single organisation. These groups often take up community based communication programmes dependent on the nature, scale and requirements of funding agencies.

Looking at different vital stakeholders

Besides the elected representatives at the GP level including the Gram Pradhan, other village level key functionaries such as school teachers, children, ASHA workers and Anganwadi workers can play a major role in establishing a proactive, people friendly regime of communication. In fact, in all villages, the institutions of Asha and Anganwadi have been found to be the most active change agents. They regularly interact with women and adolescent girls on the issues of health, hygiene and sanitation. They can be taken on board as the brand ambassadors of long term DRR communication and action on the ground.

Students are another vital stakeholder. For example, in West Bengal alone, there are 2, 50,000 primary school students. Across India, they can be a huge vehicle for taking DRR messages home. .

Messages

The core message

Overall, the communication strategy at the national, state, district and sub-district levels has to be to empower people so that they are better prepared and equipped to deal with emergencies with minimal damage and losses. However, the key emerging message across states was that an informed understanding of differential needs and micro-realties was essential for designing a robust communication strategy.

In Odisha, for instance, looking at the different geographies of the state, the communication needs vary from region to region. In terms of the geo-climactic and social point of view; core messaging for coastal communities of Balasore and that entire belt at risk of floods and cyclones will vary widely from the drought prone and dry land area of KBK (Kalahandi – Bolangir – Koraput) region. Special focus is required just to understand their day-to-day needs that are more developmental in nature, but are the means for achieving an in built resilience that will help in long term disaster risk mitigation.

In West Bengal, early warning was felt to be the single most important communication need among at-risk communities, particularly women and children. A functional early warning system is yet to be put in place; especially in cyclone and flood prone areas like Jalpaiguri and Sundarbans. Here, early warnings can make a huge difference in terms of improved response and minimising losses to life, property and livelihoods.

Core messaging; however, should not include only early warnings, but also sensitisation on the need for preparedness.

In Gujarat, the government continues to concentrate solely on earthquakes, for which a warning cannot be given before occurrence. Yet, a core problem in many villages is when water is released upstream without any prior warning and it results in floods, sometimes in flash floods. The existing practice is that villages upstream inform the villages likely to be inundated

since they have either relatives or friends in these villages. Identifying and concentrating on such core focuses can help make change at the micro-level.

Framing the tone

"Simple". That was the main word that came up during interactions across the states. Media advertisements have to be brief, simple and user-friendly. In Gujarat, for instance, the Pulse Polio Campaign has been very successful for this reason. In the same way, the reverse red triangle immediately flashes the message of family planning among viewers. Mass media communication for early warnings or DRR messages has to be developed to be equally effective.

Messages that are interesting and compelling at the same time carry a greater potential of inducing required action by the intended target audience. This can effectively be evolved by combining traditional media, new media and creative content translation. One could draw ideas and insights from commercial advertisement industry as well where different brands compete (like Pepsi and Cola) with each other for a greater market share. Most of these advertisements are designed to be enticing to people by tapping into their sub-conscious desires and aspirations. Disasters which affect people deeply also offer an opportunity to engage with people creatively and effectively much in advance. This can help them to be well prepared and work towards reducing their vulnerabilities and enhancing their capacities.

Media

Revising and updating information flows – especially for last mile connectivity

Though communication needs vary widely across districts and stakeholders, the information flow is still being managed in traditional manner.

For example, communications systems designed after the 1977 cyclone helped Andhra Pradesh get a head start on disaster management systems (though with a greater focus on preparedness than risk mitigation). However, though disaster management has been around for a long time in Andhra Pradesh, perhaps longer than any other state, the dissemination of early warnings continues to be undertaken through conventional channels. This channel is normally effective from state to district level and also to GP level. However, Gram Panchayat then has to resort to traditional mechanisms through bullhorns or dholls. In other words, real time communication is still far from reality. Despite the fact that phones are now available with more than 60 -70% of households and the community is quite comfortable accessing messages; SMS messaging has not been applied as a resort.

In Gujarat, communities depend on local TV channels for information. However, the warnings given are generally not user-friendly. IMD warnings, which get repeated through local TV channels, are generally macro level warnings. What the community needs is micro level warning. In other words, specific information whether their village or adjacent villages are likely to be affected. At present, there is no such system in place.

In case of cyclones or flash floods, such normal channels may also fail. Since SATPHONES are not available below district level, the communication channel may break down. In some cases, even DEOCs have either no Satellite phones or are not adequately trained to use such phones. There is a felt need to put in place communication channels for last mile connectivity. What is needed is a judicious mix of technically advanced communication methods and the traditional communication mechanism.

In Odisha, the fishing communities are aware of the different modes of communication used in general but they have no idea about what to do and how to be safe in times of natural calamities. This is particularly in the context of deep sea fishermen who are out at sea when the warnings are received. These coastal communities require a robust early warning

mechanism in place. In today's scenario of advance weather forecasting and effective networking at the local level, this is possible with prior support from the administration.

Overall, for NGOs, efficient communication systems are not a priority. They invariably depend on conventional government systems or mobile phones. In case of an emergency, they may have problems to communicate even within their organisation. Considering the cost and effort involved, NGOs cannot reasonably be expected to put in place captive communication arrangements on their own; it is for the government to put in place alternate channel of communication and strengthen the existing channels of communication.

Traditional vs. new media

Traditional mechanisms such as posters, flyers and advertisements are extensively used across states. The scope for tapping into new media and also linking traditional media with technological ones is yet to be tapped effectively. The Communication needs therefore need to be addressed with a multi-pronged approach to meet the differential needs of the community. This would be possible if technically advanced communication systems were blended together with traditional systems to develop a cohesive communication strategy. Generally, it was observed that TV and mobile phones are the most popular means of communication at the individual level. However, if we look at the broader picture targeting the community as a whole, then person to person contact based tools such as street plays and music, especially during festival time, are very popular. Some local organisations have communicated social messages and components of national development programmes in a very effective manner using these tools. The Pulse Polio campaign is one such campaign that has deployed such measures with great success, and can be treated as a good practice to learn from.

In Bihar, there is a very wide range of products and media used. Yet, there is little coordination resulting in overlaps and gaps; and there is almost no continuity or consistency over time. Looking at the diversity of the state in Bihar, the blending of technically advanced communication methods with the traditional communication mechanism is very desirable and can prove to be very effective.

In Gujarat, although traditional mechanisms such as posters, flyers and advertisements are used, it was observed that this does not make a real dent so far as community is concerned; primarily due to lack of adequate awareness and training. The socio-economic inequities further complicate the matter. Where men folk are out of the village, women find it even more difficult to communicate with each other, particularly at odd hours. TV channels and mobile phones are popular here. Person to person contact through mock drills, street plays, school teachers, health workers are actually better received, but these methods are infrequent at present. Communication would be effective if it is organised during festivals, religious and social occasions, when there is large congregation of people. Folk songs for conveying the messages would be a good medium.

Looking at language

Other medium barriers which need to be considered are language, distance or the remote location, or perhaps too many channels working at cross purposes.

It was observed in Puri, Odisha, that Telugu was the local language used by a large section of the most vulnerable community (as they were migrants from Andhra Pradesh). Therefore all efforts to reach out using Oriya awareness material have been very ineffective in these sections. It has been felt that there is huge potential for effective communication mediums that that still needs to be nurtured at the local level.

Language is also a major bottleneck in Gujarat. Local languages prevalent in the area are Gujarati, Kutchhi and Hindi. Though most of the inhabitants, who are not Gujaratis, also have rudimentary knowledge of the language and can understand it, not all of them can read it. IEC materials therefore have to translated and disseminated in three languages, varying from area to area.

Two-way communication on small-scale, climate-induced disasters

With the rising impacts of climate change, the incidences of so-called 'small-scale' disasters have increased along with unprecedented catastrophic events . These are often confined to a limited area. The scale of impact in terms of human life loss may be small, but the economic impacts and the long-term effects on lives can be catastrophic. This includes repeated instances of flooding, extreme cold and heat. These issues are rarely brought out or seen as a disaster by either the government or local media. In turn, there is hardly any aid or information on dealing with these disasters that reaches the struggling local populations .

In early 2013, for example, Changthang (Eastern Ladakh) was hit by record cold and snowfall. The area is mainly inhabited by Changpas (a nomadic tribe) whose primary income comes from farming of wool and pashmina. The extreme snowfall limited access to all the usual winter pastures and by the time the government was able to arrange for fodder, it was too late. Thousands of sheep and goats had perished. Unfortunately, these types of stories rarely get the attention they require in the face of growing climactic impacts.

3. ANALYSING INSTITUTIONAL CAPACITIES

There is a well established institutional system in the country for training and capacity development for disaster management. Over the years, the institutional capacities have been developed to strengthen the base structure for disaster risk mitigation as also prompt and efficient response.

National Level

At the national level, a beginning was made in 1995 when the National Centre of Disaster Management (NCDM) was set up at the Indian Institute of Public Administration (IIPA). The NCDM was subsequently upgraded as the National Institute of Disaster Management with effect from 16th October, 2003, based on the recommendation of the High Powered Committee on Disaster Management. The HPC recommended the following functions for NIDM:

Roles and functions on NIDM

- Human resource development covering multiple aspects of disaster management, and to play a lead role in national level policy formulation;
- Coordinate the actions of various role players within the field of disaster management: government, non-governmental organisations, public and private sector and international organisations;
- Establish an exhaustive national-level information base on disaster policies, prevention mechanisms, mitigation measures, and region-wise preparedness and response plans, as well as resources spent on mitigation and response for various types of disasters;
- Forge, promote & sustain international & regional partnerships for launching joint, synergistic projects & programmes;
- Assist various states in strengthening their disaster management systems and capacities, and in the preparation of their plans and strategies for hazard mitigation and disaster response;
- Set up linkages with other international institutions in the region for mutual benefits and sharing of experiences;

When the process for the enactment of the Disaster Management Act, 2005 commenced, it was considered that NIDM may be made a statutory body under the proposed legislation. Accordingly, NIDM was re-constituted with a Governing Body. It functions within the broad policies and guidelines laid down by NDMA and is responsible for planning and promoting training and research in the area of disaster management, documentation and development of national-level information base relating to disaster management policies, prevention mechanisms and mitigation measures. In accordance with the above tasks, NIDM, as prescribed by the law, may:

- Develop training modules, and conduct training where it is needed such as State training institutes;
- Develop educational materials and promote awareness among stakeholders;
- Develop research programmes and undertake research on DM;
- Formulate and implement a human resources development plan;
- Provide assistance in national level policy formulation;
- Provide assistance to State Governments and state training institutes in the formulation of state level policies, strategies, disaster management framework and assist these institutions for the capacity building of stakeholders, governments including its functionaries, civil society members, corporate sector and people's elected representatives;

- Promote awareness among stakeholders; and
- Undertake documentation in disaster management.

In order to give NIDM requisite autonomy, it has been empowered to make regulations with the approval of the Central Government.

Though NIDM is the apex level institution for training and capacity building at national level, it has faced several handicaps, which have come in the way of it comprehensively discharging the functions assigned to it under the DM Act. Initially, when it was upgraded as NIDM, the vision was to develop it as a deemed university with several departments and adequate faculty and support staff so as to develop it as a regional institute of excellence. The main problems faced by NIDM are:

- Lack of adequate infrastructure by way of a separate campus including hostel facilities and training equipments
- Lack of adequate faculty with support staff to enable it to take up research and documentation and extend support to central state governments for formulation of state level policies, strategies, disaster management framework and assist these institutions for the capacity building of stakeholders, governments including its functionaries, civil society organisations, corporate sector, media and elected representatives
- Lack of requisite autonomy at par with IITs, AIIMS etc
- De-motivation of existing faculty members and administrative staff since their service conditions have not been finalised and they continue to work either as contract staff or temporary employees without promotion prospects.

Despite these handicaps, NIDM has been engaged in training disaster management functionaries from across sectors at various levels. Though the main focus of capacity development has been at the policy and top management level, NIDM has also engaged in training people at the middle management level across states. NIDM conducts institutional, outreach, online and satellite training programmes for a wide range of stakeholders, particularly government functionaries from different sectors. Over the period of seven years, NIDM has conducted about 471 institutional training programmes, both on and off campus, for over 13,000 participants, 17 online programmes for over 2,000 participants and 2 satellite based programmes for about 7000 participants. However, its main focus has been on conducting training programmes with the result that several other functions outlined above have not received adequate attention.

There are several other institutes at national level in different sectors which are working in their respective sectors. While some of these institutes have included DM capsules in their training programmes, there has been no significant convergence with NIDM to ensure that disaster risk mitigation is paid adequate attention in all sectors and an integrated approach is adopted to optimise outcomes.

A detailed analysis of NIDM will be undertaken under component ‘D’ of the Study.

State Level

There is by and large good institutional system in place at states level. Where the SDMAs have few full time members and an exclusive secretariat, their performance has been very good. For instance, SDMAs in Bihar, Gujarat, Maharashtra, Odisha and Sikkim are functional and have taken several proactive measures. However, in the SDMAs in many states, the members are holding positions on an *ex officio* basis and they also do not have exclusive secretariat. They

have *de facto* become 'virtual' Authorities since they meet rarely, say once in six months or so and that too mainly in the wake of a major disaster. In the process, the functions assigned to these authorities related to disaster risk mitigation hardly receive adequate attention. The main functions assigned to SDMAs, as indicated below, mostly relate to disaster risk mitigation and are not primarily response oriented since states have a separate mechanism for this purpose in place.

- Lay down policies and plans for disaster management in the state;
- Lay down the State Disaster Management Policy;
- Approve the State Plan in accordance with the guidelines laid down by the National Authority;
- Approve the disaster management plans prepared by the departments of the state;
- Lay down guidelines to be followed by the departments of the state government for integration of measures for prevention of disasters and mitigation of their effects, in their development plans and projects and provide necessary technical assistance for this purpose;
- Coordinate the implementation of the state plan;
- Recommend provision of funds for mitigation and preparedness measures;
- Review the development plans of different departments to ensure that prevention and mitigation measures are integrated therein;
- Review the measures being taken for mitigation, capacity building and preparedness by the state departments and issue such guidelines as may be necessary;
- Lay down detailed guidelines for minimum standards of relief to persons affected by disasters in the state provided that such standards shall not be less than the minimum standards laid down in the guidelines of National Authority.

Very few SDMAs have undertaken these functions in right earnest.

Another weak link at the state level is proper Training Institutes. The DM Cells at these Institutes, mostly ATIs, are under-staffed and need to be strengthened. At one point of time about 7-8 years back, the Ministry of Home Affairs had proposed that there should be at least four faculty members in DM Cells, one each in geological disasters, hydro-meteorological disasters, incident command system and all other common aspects of disaster management including plans, policies, finance and administration. MHA had also agreed to reimburse the cost of the faculty for initial five years. However, state governments were reluctant to have permanent faculty since eventually the entire cost will have to be picked up by them. Besides, even in cases where they agreed in principle, the recruitment procedure has taken considerable time. At present, there is hardly a DM unit which has adequate faculty.

Another aspect is that the focus of DM Departments, SDMAs and DM Cells is primarily on response related training. Very little effort has gone into measures required to be taken for disaster risk mitigation. Mostly, it does not have adequate faculty, professionally qualified and trained. There is also lack of coordination among different training institutes. At present, very little effort is being made for documentation of disasters, development of case studies and good practices and sharing the same with other stakeholders and sister academic and training institutes, particularly those working in the field of disaster management.

Globally, Disaster Risk Management is defined as the systematic process of using administrative directions, organisations, and operational skills and capacities to implement policies, strategies and improved coping capacities in order to lessen the adverse impacts of

hazards and the possibility of disasters (UNISDR, 2009). According to UNISDR (2009), DRM activities may be categorised into the following essential elements:

- Risk Assessment and Analysis
- Disaster Preparedness
- Mitigation
- Risk Transfer
- Response, Rescue & Relief
- Recovery, Rehabilitation & Reconstruction

Study suggests that the kind of trainings being currently imparted by the DM cells in state ATIs mostly relate to response, rescue and relief. While programmes are being undertaken, they are not comprehensively covering the entire range of elements identified above.

Another handicap is that training is normally based on a common (one-size-fits-all) training module and is not need based. However, NDRF has developed a good model. It not only trains different stakeholders, but simultaneously develops Master Trainers among them so that future training programmes including refresher training programmes may be organised in-house by such organisations obviating the need to depute trainees again and again to NDRF. This model of imparting training is, however, by and large not being followed by the State Governments and State Training Institutes.

The training programmes are primarily organised for government officers and employees. The capacity building needs of other stakeholders are not taken into consideration. In other words, it is supply-led where trainers train in accordance with their expertise and assumptions about training needs of those receiving training. In a few cases, nominees from NGOs are trained but they are imparted training in the same training module in which the government stakeholders are given training which is invariably not relevant to NGOs since their role is quite different from that of the government stakeholders.

Besides, trainees are nominated for a specific course by different departments at state and district level without going into the training needs of different officers and employees based on their respective work assignments. The training institutes have no role in selection of trainees.

There is also no system to assess the utilisation of training imparted to trainees in their respective areas of work. The content of training is not tailored to the specific contexts and varied roles of officials. The training institutes do not carry out any impact evaluation of training programmes organised by them to assess whether the training has really been useful to the trainees in the performance of their duties. Very few refresher training programmes are organised. Even when such refresher training programmes are organised, the training institutes have no role in the selection of trainees.

The key sectoral departments concerned with disaster risk reduction are following their own policies and programmes and conducting the specific trainings as per their respective training calendars. However these trainings need to be properly aligned with an integrated and agreed state disaster risk mitigation approach, and need to be interlinked with sectoral efforts in the same direction.

Training of engineers, architects, town planners, masons, doctors and paramedics has been initiated in some states but by and large it is still in infancy. The training being imparted to school children and teachers is neither sustained nor inclusive, since it mainly focuses on theoretical training and practical training component is being provided through mock drills which again are not regular. Even among the few trained from state to local level, the share proportion of women trained is very poor, which is a major area of concern since they

represent half the population in communities living with disaster risk and are perceived as highly vulnerable.

Private bodies, including corporations and associations have done very little towards disaster management at the state level. This is an untapped potential, which can be a source of support to the sector in coming times as the states progress rapidly on an industrial and economic fast track. However, it is for the state governments to proactively involve private sector, impart training to their personnel in specially designed training modules, and develop master trainers from amongst them so that they can take it forward not only among their employees but also to the community in nearby areas. The corporate sector can be motivated to adopt few villages for generating awareness and imparting training to community, provided they receive encouragement, recognition and professional support to achieve this objective.

A major institutional drawback is that the state governments have still not fully accepted the ownership of DM Cells, which were being supported till recently by the Central Government. Although funds have been provided to state governments directly for mitigation activities, there is no clarity about financing the DM Cells by the state governments. The Directors of ATIs consider DM Cells as a separate entity and not an integral part of ATI.

District Level

In terms of the provisions of the DM Act, 2005, all members of DDMA hold their respective positions on ex officio basis. This provision does not prevent the state governments to change the constitution of DDMAs to bring in a few full time members. Section 41(2) of the Act provides that the constitution of the DDMAs may be prescribed by the state governments by making rules and, till state governments prescribe it, the constitution will be as indicated in the Act. Secondly, the DDMAs do not have any dedicated secretariat and have therefore become virtual bodies. Normally, District Magistrates do not hold the meetings of DDMAs separately since disaster management is generally included as one of the items for discussion in their regular fortnightly or monthly meetings. On the other hand, the fact is that such discussions in normal meetings are invariably preparedness and response oriented whereas the functions of DDMAs primarily focus on disaster risk mitigation. Very little, if any, attention is paid to disaster risk reduction and prevention/ mitigation measures. Further, Section 29 of the Act states that the State Government shall provide the District Authority with such officers, consultants and other employees as it considers necessary for carrying out the functions of District Authority. However, state governments have apparently not provided exclusive staff for DDMAs with the result that these Authorities have virtually become defunct.

Almost all District Magistrates were of the view that a small but compact secretariat, with adequate and exclusive professional staff is needed to ensure that they are able to discharge the responsibilities assigned to them as chairpersons of DDMAs. At present, only the response related functions are being addressed.

The second handicap is the lack of a Mitigation Fund at the district level. It was mentioned by most of the District Magistrates that it is not practicable to prepare schemes for taking minor mitigation measures; more so when there is no other discretionary fund at their disposal. There is also hesitation in involving good NGOs due to lack of an institutional base and apprehension that there might be complaints of favouritism from other NGOs and their supporters. There should be clear instructions from the state governments about involvement of NGOs and the extent of providing financial support as also specific activities to be assigned to them.

Therefore, although the institutional mechanism at district level is in place as a legal mandate, it is defunct for all practical purposes.

As for training and capacity building, there are no dedicated institutes for disaster management at district level. District level officers are deputed for training at state level institutes, primarily DM Cells at ATIs. In view of limited capacities, the district level officers are trained in standard training modules, which again are primarily response oriented. Besides, there are no institutional systems for training of civil society members, Self Help Groups etc. It is necessary that specific training modules are developed for different stakeholders based on their training needs assessment and there are well qualified trainers to impart training to them. There are good state level NGOs in almost all states and they can be associated to impart training to district and below district level NGOs

Local Level

At sub-district level, there is no institutional system in place. It is true that DM is given as an additional charge to Tahsildars/ Malmatdars. In West Bengal, there are BDMOs in place. However, all these officers become active only in response related situations and in normal times they are assigned other duties.

At village level, it was observed that there are no VDMCs and Task Forces in place. The system was in existence during the implementation of DRM Programme but after its conclusion, it has gone into disuse. The Panchayat plays a most crucial role as the primary governance mechanism in the rural context. It has a role in receiving and relaying information on risk reduction as well as emergency response actions. PRI training programmes include a component on disaster management which is not sufficient to enable them to work effectively in this sector in the state. Schools and primary health centres potentially have a role to play in local capacity building, but there is little evidence of this happening effectively on the ground. It is necessary to strengthen the institutional base for training of local self government representatives, provide them adequate training as also dedicated staff of one or two persons at GP level for disaster management to facilitate the role to be played by these bodies as envisaged under section 41 of the DM Act.

Therefore the institutional mechanism, though quite good at national and state level, becomes considerably diluted at district level and is almost non-existent at grass roots level. Even when training is provided, the training modules normally revolve around response related functions. In the process, disaster risk mitigation has become a major casualty.

The school teachers do not perceive disaster risk reduction as a common activity which is seen as the function entrusted to one or two teachers whose subject‘s syllabus includes disaster management. A training module needs to be developed for school teachers and training imparted through master trainers covering basic school safety precautions, generation of awareness among students, do’s and don’ts for disasters relevant to the area where school is located, conduct of mock drills and outreach to parents/elders through students.

In relation to the youth and education department, there are achievements and potential areas of quick returns on investment such as NYKS, NSS, NCC, Rovers and Rangers. The young, motivated and partially trained volunteers are available through these platforms. They need to be properly trained in specific training modules and guided in order to become valuable assets for disaster risk mitigation actions at the community level and for linking community actions with states’ approaches.

In order to strengthen the training and capacity building capacities, the measures required to be taken on top priority basis may be summed up as follows:

- At national level, NIDM may be adequately strengthened based on the vision document developed about a decade back. Adequate faculty and staff may be provided keeping in view the functions assigned to NIDM under the Disaster Management Act, 2005 to

encompass training, both on and off campus as well as online and satellite training programmes; research and documentation; development of case studies and good practices and sharing of same with other stakeholders; extend assistance to the national and state governments for development of national and state level policy formulation, strategies and disaster management framework; development of education materials for disaster management including academic and professional courses; and extend professional support to MHA and NDMA in the discharge of their respective functions. Besides, NIDM is also required to organise and facilitate organisation of workshops, conferences within and outside the country. With the establishment of SAARC Disaster Management Centre, NIDM may also be required to provide necessary professional support to SDMC and impart training, through SDMC, to the participants from the SAARC countries.

- Besides adequate faculty and staff, NIDM needs to be provided necessary infrastructure as befitting a deemed university with adequate hostel facilities for trainees and also keeping in view that NIDM may in future be required to organise academic courses and also undertake accreditation of academic courses being organised by different public and private institutes in the country. It is also necessary that NIDM is given requisite autonomy to ensure flexibility in the discharge of the functions assigned to it.
- State Governments need to strengthen the existing DM Institutes so as to take care of training requirements within the state. To begin with, the minimum faculty may be put in place as advised by MHA few years ago and thereafter developed further, based on identified needs and micro level vulnerability in each state. The state training institute should have adequate faculty and facilities to take up documentation of disasters, development of case studies and good practices and modalities to share them within and outside the state with regions having similar vulnerabilities. The training requirements may be assessed based on a HR & CD Plan and may inter alia include development of specific training modules and training materials for different stakeholders.
- At district level, institutional arrangements need to be put in place for imparting training to all stakeholders in specially designed training modules. For this purpose, District Training Centres may be established in a district level training institute and training programmes may be organised with the support of in-house faculty, trainers from State level training institute, NDRF and guest faculty.
- At local level, DRM Programme needs to be revived for generating awareness and providing minimum basic training to VDMCs and Task Forces. State level institutes may develop innovative training modules for disaster risk mitigation, climate change adaptation and mainstreaming of DRR in development process, if necessary, with the support of NIDM.
- The training institutes imparting training to PRI/ ULB members may be strengthened to include comprehensive course material in simple local language and add the modified training capsule in the training programmes for elected representatives. The training capsule may be holistic so as to cover all relevant aspects of disaster response, relief and preliminary damage assessment, disaster risk mitigation, climate change and mainstreaming of DM in development process at village/ ULB level. It should also look at the empowerment of women, the socially and economically disadvantaged, as well as the specific needs of children and the elderly during emergencies.
- Arrangements for financial support for the above measures may be streamlined so as to be available on regular basis as against one time allocation. The proposal to put in place mitigation fund at district level, already legally mandated, may be re-considered for micro interventions for disaster risk mitigation.

4. ANALYSING THE TECHNO-LEGAL FRAMEWORK

Traditional construction methods that were time tested and disaster-resilient have given way to modern cement concrete buildings driven by rising wealth and aspirations. At the same time, the precise knowledge required for handling these materials has not reached the implementation level of masons and construction workers. Since a majority of the rural and urban poor buildings do not have any engineering inputs and depend on local masons for their construction, there is a very rapid trend of embedding risk in the national building stock. While building codes talk about resilient construction, the enforceable byelaws are largely silent on the structural dimensions of safety. Engineers who are responsible for implementation and enforcement of these provisions themselves lack the knowledge required. There is a need to widen the net of the legal provisions, enhance the capacity and accessibility of design and engineering services, and upgrade awareness and skill sets at the local level for ensuring safe built environs.

"More than 95% of the buildings in the country are un-engineered, meaning they have not had any architect or engineer involved in their design and construction. Of how much use are building codes, regulations and bye laws? Besides improving our codes, we need to create a demand for safe buildings by making home owners aware, and we need to create a supply of service providers by training masons."

\- *Seismic engineering expert*

The primary focus of this aspect of Techno legal frameworks is:

(a) to ensure that all new buildings are designed and constructed with proper engineering intervention taking due care for safety against natural hazards in urban as well as in rural areas so that no unsafe buildings are added to the huge existing stock of unsafe buildings; and

(b) to ensure upgrading the safety of buildings in the public sector by retrofitting techniques and encourage similar action regarding buildings in the private sector.

It is necessary to ensure that structural safety measures are in place and are meticulously implemented for safety of buildings. There are various laws, codes, by-laws in place, yet buildings continue to be constructed or extended without diligently following these laws, codes and by-laws, making the buildings vulnerable in disaster situations. It is therefore important to consider all aspects of this complex issue and modalities of a vibrant Techno-Legal Framework, which will further guide and enable long term capacity building in the domain.

The techno-legal framework at national, state and district levels is guided at the top level by provisions in the National Building Code, 2005, building bye-laws enacted by municipal corporations/ municipalities or in place for such municipal corporations/ municipalities for regulating constructions in ULBs and other instruments for capacity building of architects, engineers and masons. Relief codes, environmental/ coastal zone regulations and development regulations also influence the parameters determining building safety enforcement.

4.1 Framework in Rural and Urban Contexts

The techno-legal framework has to be seen in very different ways in the rural and urban contexts. Though primary concerns and causal factors for risk remain similar, the context changes the constraints and thus requires a differentiated approach for addressing the issues therein. A brief summary of the rural and urban contexts is as given below:

Rural	Urban
There are no building bye laws or regulatory provisions, and not even basic safety features are enforced through any instrument whatsoever.	The urban poor are at greatest risk in the rapidly growing cities. This is not only in megacities but very widely in small and medium cities. The hotspots of risk are the slums, squatter settlements, urban villages, peri-urban villages, unauthorised colonies, and regularised unauthorised colonies.
Aspirations and wealth are driving people to un-engineered cement concrete buildings. While traditional buildings were often safe due to time-tested local technologies, the new buildings are bringing in a very high level of risk. This is having a wide impact as traditional wisdom based practices are fast eroding and modern practices without adequate knowledge and skills is replacing it.	In modern constructions the high rise buildings, commercial centres, industrial areas and other large scale construction sites are prone to risk due to inadequate geo-technical studies, inadequate structural design, improper site level supervision and enforcement, and corruption. One of the biggest concerns is that India's construction work force is almost entirely in the informal sector and is untrained. Construction workers therefore are unable to read and properly execute construction drawings no matter how well engineered they are.
Future earthquakes will cause far greater devastation due to poor quality construction of cement concrete buildings. Future cyclones, floods and landslides will also cause greater devastation due to poor siting, and changing hazard trends due to climate change.	Very high density, overlapping and hap-hazard physical infrastructure, lack of coordination between multiple agencies involved in the physical development and maintenance, and a largely ignorant public are root causes for the high level of urban disaster risk, which is growing exponentially as India urbanises rapidly.

Building Regulations/Bye-laws provide the mandatory techno-legal framework for regulating building activity from planning, design to completion of construction. Mainly such laws are State Legislations as the State is competent to legislate and make laws on such subjects. However, where the Central Government is to legislate on such subjects and where Parliament is to make law in this behalf, such legislations are applicable in the Union Territories and in the State such as Delhi, where land use are reserved subjects with Central Government. One such Central legislation is Delhi Development Act, 1957. For other States, such Central laws are advisory and recommendatory in nature. Taking this legislation as Model, other State Governments formulate the rules and regulations with the help of local bodies, under the various legislations. After the approval, the concerned local bodies enforce these rules and regulations pertaining to development and building standards as building regulations/building bye-laws in their respective areas.

To regulate the growth of urban areas, the State Governments notify areas for planned growth under certain laws. These are notified under relevant Planning and Development Act. State Governments formulate the rules and regulations with the help of the local bodies, under the various legislations. After the approval, the concerned local bodies enforce these rules and regulations pertaining to development and building standards as building regulation/building bye-laws in their respective areas.

In light of the above, it may be said that the following stakeholder groups need to be addressed urgently under the long term capacity building initiative for disaster risk management in the techno legal domain:

- Policy decision makers
- Town planners
- Engineers
- Architects
- Masons and other construction workers
- General public

It may also be noted that these stakeholder groups will need to be addressed with a differentiated approach involving:

- Advocacy
- Sensitisation
- Orientation
- Short term training
- Curriculum based education, and
- Public awareness

4.2 National Level

National standards/codes on disaster resistant structures including the National Building Code of the country are very robust in terms of technical contents. However they are not compulsory. In order to make their use mandatory, however, proper enabling provisions are required in the legal framework of the country. Laws pertaining to planning, development and building construction are very important to achieve planned and safe development in urban and rural areas. Building standards/regulations are derived from various laws pertaining to planning and development of different states. They provide the mandatory techno-legal framework for regulating building activity from planning, design to completion of construction.

In order to make the techno-legal regime in the country sound enough to ensure safe construction, a road map has already been drawn up by the Government. This includes modification in the existing laws, development control rules, bye-laws. The first step in this road map is preparation of Model Town and Country Planning Legislation, Zoning Regulations, Development Control, Building Regulations/Bye-laws. This will, however, need to be very substantially backed with training and capacity building, education and public awareness for ensuring that the provisions on paper in fact lead to improved implementation on the ground.

Model Town and Country Planning Act and its Revisions

The Town and Country Planning Organisation (TCPO), which is an organisation of Central government to deal with the subject of planning (regional, urban and rural) and developmental policies, formulated a Model Town and Country Planning Act in the year 1960. The Model Act provides as follows:

1. Provisions for preparation of comprehensive Master Plan for urban areas of various states. The states may adopt the Model legislation with suitable modifications for this purpose.

2. Constitution of a Board to advise and to coordinate in the matter of planning and plan formulation by the Local Planning Authorities in the State.
3. Provisions for implementation and enforcement of the Master Plans and the miscellaneous provisions to achieve planned urban growth of various urban areas in the state.

The above model was revised in 1985. The revised Model Regional and Town Planning and Development Law has largely been the basis for the enactment of comprehensive urban and regional planning legislation in the States and UTs. This model is in the nature of a guideline and is the outcome of several reviews and revisions undertaken on the recommendations of the State Ministers Conference held from time to time. The legality of this model has been confirmed by the Ministry of Law.

With a view to ensuring better overseeing and coordination of planning with plan implementation, the Model Law which dealt with the planning aspect only has been reviewed and revised and now a combined planning and development law has been formulated in consultation with the concerned Central Government Ministries. Under this law, planning and plan implementation have been combined together so that a single agency could undertake both these functions. In order to do this, the planning and development authority to be constituted under the Law has been equipped with full planning and development powers to discharge this task.

A revised model for Urban & Regional Planning and Development law was brought out, and guidelines on Urban Development Plan Formulation and Implementation (UDPFI) have been formulated in 1991.

Vulnerability Atlas of India, 1997

Under the initiative of the Ministry of Urban Development, a Vulnerability Atlas of India was prepared during the period 1994-1997 in which the earthquake, cyclone and flood hazard maps for every State and Union Territory of India have been prepared to a scale of 1:2.5 million. In these maps the boundaries of the districts are clearly shown so that the areas of the districts prone to the various intensities of the hazards are clearly visible. Also the vulnerability of the buildings, as per the Census of Housing 1991, has been brought out in tabular form in one sheet for each District. This information clearly highlights the risk to the buildings of various types in every District when subjected to the different intensities of the three hazards. As an extension, State- wise Vulnerability Atlases also have been prepared including an Action Plan that the State may adopt for achieving disaster reduction.

An updated version of the atlas was produced in 2006. This included total digitisation of maps and tables; flood maps showing unprotected and protected flood prone zones; the incorporation of earthquake and cyclone occurrences up to 2004; landslide hazard zoning map of India; all new states and districts and their housing data. However, there has been no significant work on the map since then.

There is also a need to improve the resolution of the data and its analysis, and move towards a micro-zonation approach that will enable site level decision making.

National Building Code

The National Building Code was prepared by the Bureau of Indian Standards in 1970 and subsequent revisions are advisory in nature and not mandatory. The various provisions in the Code are framed by a panel of experts keeping other standards in view. It lays down a set of basic provisions designed to protect the safety of the public with regard to structural sufficiency, fire hazards and health aspects in buildings. So long these basic requirements are made, the choice of materials, method of design and construction is left to the ingenuity of the

architect and the engineers and other experts engaged in such projects. The code also covers aspects of administrative requirements and bye-laws including building services.

It again needs to be highlighted that though revisions have been brought about in the code, often informed through the performance of buildings in the aftermath of disasters, the core problem lies not in the robustness of the code but in the level and quality of enforcement. Capacity is one of the key factors in the poor enforcement since officers at the enforcement level do not have requisite knowledge and skills and need to be trained extensively.

4.3 State and Local Level

The planning and development are mainly the State subjects and therefore, the development in the States is based on the legislative support as applicable in that State.

The legislative support in the state is applicable to formulate Master Plans, Zonal Plans, Development Plans and Development Schemes and for their implementation and enforcement.

At the local level, the Municipal Authorities and Panchayats regulate the development/ construction of buildings through the building regulation/building bye-laws as followed in their respective areas.

The State Government from time to time issues directions/guidelines for safety against natural hazards, which are followed by local bodies while granting permission for construction of buildings/structures.

4.4 Regulations for Land Use Zoning for Natural Hazard Prone Areas

The regulations for land use zoning for natural hazard prone areas are notified under Town and Country Planning Act as applicable in the respective States as and when Master Plan/ Development Plan of different cities/towns/areas are formulated. These zoning regulations are implemented through the provisions of Development Control Regulation/Building Bye- laws, wherever the Master Plan are not in existence or not formulated.

Classification of urban land use is based on the sequences of various plans:

Perspective Plan	Policy document
Development Plan	Comprehensive plan indicating use of each parcel of land
Layout of Projects	For detailed layout of projects/ schemes

A detailed guideline for land use zoning has been prepared with an objective to regulate land use in hazard prone areas to minimise the damage caused to the habitat, as a result of natural hazards viz. earthquakes, cyclonic storms, landslides and floods which recur from time to time. This includes:

- Definition of natural hazard, natural hazard prone areas, natural disaster, mitigation
- Identification of natural hazard prone areas with respect to earthquakes, cyclones, floods and landslides
- Specific recommendations for land use zoning for earthquake, landslide, cyclone and flood prone areas
  Protection measures of buildings of essential services and installations from natural hazards in hazard prone areas
  Prioritisation of types of buildings for land use zoning:
    - Priority 1: Defence installation, industries, public utilities, life line structures like hospitals, electricity installations, water supply, telephone exchange,

aerodromes and railway stations; commercial centres, libraries, other buildings or installations with contents of high economic value.

- Priority 2: Public and Semi Public institutions, Government offices, and residential areas.
- Priority 3: Parks, play grounds, wood lands, gardens, green belts, and recreational areas.

State Governments have been advised to suitably incorporate the modification in their respective Planning Legislation (s), so that regulation for land use zoning for natural hazard prone areas may be notified by the Competent Authority under the above legal provision. Such modification has not so far taken place in many of the states.

4.5 Standards/Codes on Structural Safety from Natural Hazards

For General Structural Safety

- IS: 456:2000 “Code of Practice for Plain and Reinforced Concrete (Fourth Revision)
- IS: 800-1984 “Code of Practice for General Construction in Steel (Second Revision)
- IS: 801-1975 “Code of Practice for Use of Cold Formal Light Gauge Steel Structural Members in General Building Construction (Second Revision)
- IS 875 (Part 2):1987 Design loads (other than earthquake) for buildings and structures Part 2 Imposed Loads (Second Revision)
- IS 875 (Part 3):1987 Design loads (other than earthquake) for buildings and structures Part 3 Wind Loads (Second Revision)
- IS 875 (Part 4):1987 Design loads (other than earthquake) for buildings and structures Part 4 Snow Loads (Second Revision)
- IS 875 (Part 5):1987 Design loads (other than earthquake) for buildings and structures Part 5 special loads and load combination (Second Revision)
- IS: 883:1966 “Code of Practice for Design of Structural Timber in Building (Fourth Revision)
- IS: 1904:1987 “Code of Practice for Structural Safety of Buildings: Foundation” (Third Revision)
- IS1905: 1987 “Code of Practice for Structural Safety of Buildings: Masonry Walls (Third Revision)
- IS 2911 (Part 1): Section 1: 1979 “Code of Practice for Design and Construction of Pile Foundation (First Revision)
    - Part 1: Section 2 Based Cast-in-situ Piles
    - Part 1: Section 3 Driven Precast Concrete Piles
    - Part 1: Section 4 Based precast Concrete Piles
    - Part 2: Timber Piles
    - Part 3: Under Reamed Piles
    - Part 4: Load Test on Piles

For Cyclone/Wind Storm Protection

- IS 875 (3)-1987 “Code of Practice for Design Loads (other than Earthquake) for Buildings and Structures, Part 3, Wind Loads” (Second Revision)
- IS 15498 Guidelines for improving the Cyclonic Resistance of Low rise houses and other buildings (Under Print)

For Earthquake Protection

- IS: 1893-2002 “Criteria for Earthquake Resistant Design of Structures (Fifth Revision)”
- IS:4326-1993 “Earthquake Resistant Design and Construction of Buildings - Code of Practice (Second Revision)”

- IS:13828-1993 “Improving Earthquake Resistance of Low Strength Masonry Buildings - Guidelines”
- IS:13827-1993 “Improving Earthquake Resistance of Earthen Buildings - Guidelines”,
- IS:13920-1993 “Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces - Code of Practice”
- IS:13935-1993 “Repair and Seismic Strengthening of Buildings - Guidelines”

For Protection of Landslide Hazard

- IS 14458 (Part 1): 1998 Guidelines for retaining wall for hill area: Part 1 Selection of type of wall.
- IS 14458 (Part 2): 1997 Guidelines for retaining wall for hill area: Part 2 Design of retaining/breast walls
- IS 14458 (Part 3): 1998 Guidelines for retaining wall for hill area: Part 3 Construction of dry stone walls
- IS 14496 (Part 2): 1998 Guidelines for preparation of landslide – Hazard zonation maps in mountainous terrains: Part 2 Macro-zonation

4.6 Retrofitting of Existing Building Stock

Besides addressing the instruments for ensuring safety in new buildings, steps are required to ensure the introduction of safety features in existing building stock through the process of retrofitting. Prior to strengthening/ retrofitting of any existing structure, evaluation of the existing structure as regards structural vulnerability in the specified wind/ seismic hazard zone needs to be carried out by a Registered Structural Engineer (RSE) / Registered Structural Design Agency (RSDA). Retrofitting action plan first needs to be built on priority for Public and Life-line Building, including hospitals, schools, emergency response infrastructure, administration buildings etc. In addition, concerns have been raised around the retrofitting of heritage buildings as a step to conserve national and local cultural heritage. A few select buildings have been taken up as landmark projects such as the initiative of retrofitting five lifeline buildings in the national capital city of Delhi. This included the Delhi Police Headquarters, Office of the Divisional Commissioner cum Relief Commissioner, Delhi Secretariat, Ludlow Castle School and Guru Teg Bahadur Hospital. While assessment and designs were carried out for these building, the implementation could only be done in part as a demonstration exercise. A few other buildings including schools and community buildings have been retrofitted across a few states like Gujarat, Uttarakhand, Kashmir and Assam, but these efforts are too few and far in between. A far more concerted initiative will be required to make a dent in the high risk built landscape of India. A more concerted initiative will be required to ensure that safety standards in construction are put in place and enforced.

4.7 Ways Forward to Bridge the Gaps

The study highlights areas that need attention towards addressing the current gaps in the techno-legal regime, and shows areas where long term capacity building efforts are needed. The primary ones are discussed below.

1. Addressing comprehensive urban-rural contexts

The current situation leaves a huge gap in the informal sector or where unengineered buildings are the norm. The influence of modern materials such as cement and steel, and technologies such as reinforced cement concrete has changed practices but in the absence of appropriate skills. To address this gap the first step needed is to establish norms for the informal sector urban settlements and buildings, and also the rural buildings. These cannot be implemented in

the same manner as urban building bye-laws and appropriate systems need to be devised to follow norms where there are no architects and engineers.

2. Vulnerability assessments

The Vulnerability Atlas of India, 2006, is a landmark document for the country, but needs further updating and detailing. There is an urgent need to take up micro-zonation and local level assessments that can help drive customised solutions for prevalent risks and vulnerabilities.

3. Special zoning for hazard prone areas

Areas known to be prone to specific hazards, such as the Himalayan region, need to be treated as special zones with specific guidelines established and implemented. The case of the Uttarakhand Floods of 2012, as highlighted in the documentation carried out by NIDM, is an example of such a context where rapid unplanned construction activities along known hazard prone river banks and slopes is the primary reason for the magnitude of the disaster.

4. Last mile solutions

While there is available science to address the known hazards, there is a huge gap in the last mile for implementation of construction, maintenance and management of buildings and infrastructure. There is thus a need to establish systems for ensuring safety in new buildings, additions/modifications, and retrofitting. These systems have to cut across legislation, research and development, capacity building, enforcement.

5. Implications for capacity building efforts

The implications of these findings cut across Architects, Engineers, Town Planners and those assisting in these fields at a professional level. Though there is basic education of the professions, the specifics of disaster risk reduction are largely missing, and need to be filled in through short term training programmes at the national level. Secondly, the huge gap identified in the implementation stage needs to be addressed through training and capacity building programmes for construction workers and owners. Construction workers need to be imparted the skills, and it needs to be ensured that the practices stay aligned to the norms till the last point of implementation. Owners of houses and other buildings also need to be sensitised to create the demand for safety features in buildings and infrastructure, so that there is pressure in the construction industry to meet the demand. This step involves extensive and targeted public awareness programmes.

5. IDENTIFICATION OF TRAINING GAPS AND NEEDS OF DIFFERENT SECTORS

'It is essential to match individuals' competencies with the jobs they have to do and bridge competency gaps for current and future roles through training.'

'In the era of globalisation and competition, training cannot remain an act of faith. It needs to demonstrate the returns on investment.'

National Training Policy, 2012

Training is essentially an exercise in organised learning with a purpose, mostly in the context of a job to be done. The recent emphasis on a competency framework presupposes that the competencies have to be construed in view of the roles that different actors and stakeholders are envisaged to play in a given context. In the specific context of DM and DRR, these stakeholders are large in number and spread across sectors and levels with not always very well defined roles and responsibilities.

A systematic approach to training (SAT) demands that the training interventions are designed and delivered on the basis of clearly identified training needs. A training need is basically a learning need that can be addressed through a training intervention. These learning needs are best identified by the people themselves, particularly the functionaries who are supposed to be carrying out the related functions. The following diagram of a training cycle summarises the systematic approach to training:

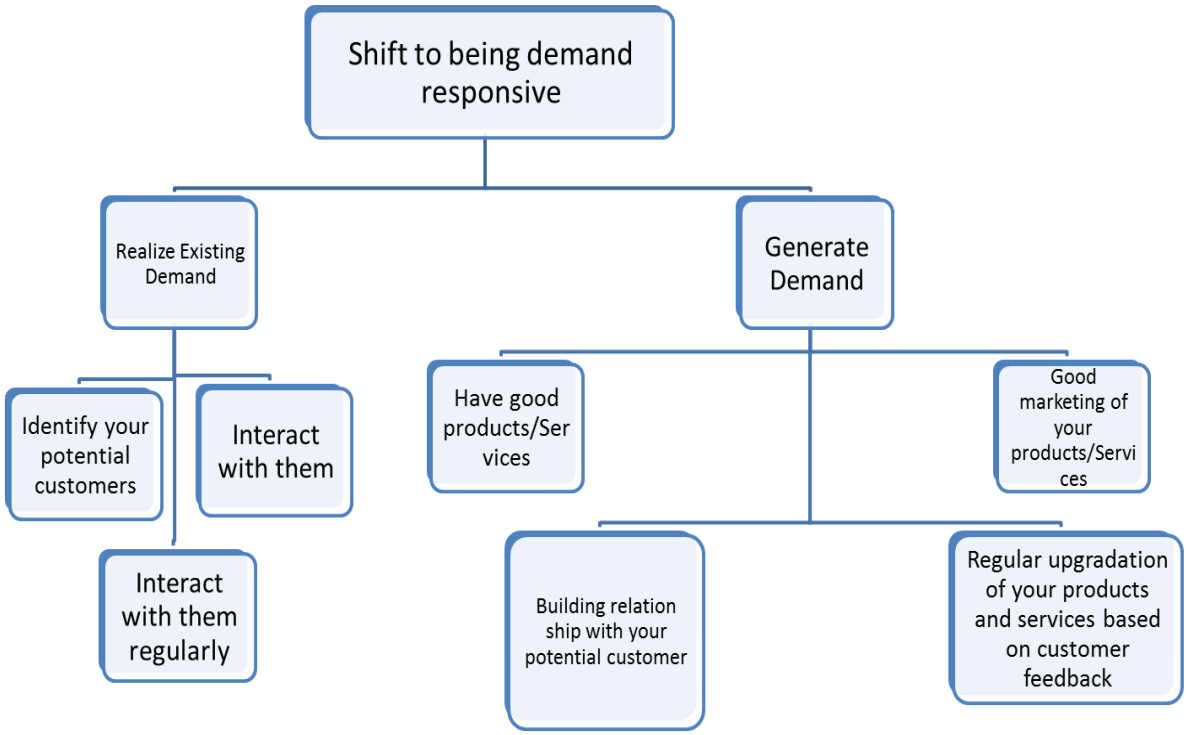
Training Cycle

This chapter presents an overview of the training needs of different stakeholders across sectors and levels that have been identified on the basis of the data generated in the course of the study. These needs are largely of a generic nature with some specific dimensions, but they

need to be reviewed and re-articulated before designing related training programmes in specific local contexts.

But before presenting the identified training needs, some observations that are common about training practices across states are as follows:

- The current training practices in disaster management are largely ad-hoc. There is no strategic vision or framework that informs these practices. They tend to cover a vast range of issues from specific disasters like earthquake, landslides, cyclone, floods, drought etc. to issues like risk insurance and risk transfer and damage and loss assessment. Since 2005-6, NIDM has organised training programmes on more than 90 different themes related to disaster management. Most of these training programmes are not based on clearly identified training needs. This is apparently based on a global recognition of the importance of these themes from a disaster management perspective.
- Training programmes are supply driven instead of being demand responsive. This primarily means that the training programmes are designed by the training institutes based on their own mandate and capacity, and not on the basis of clearly identified training needs of the target audience. The following diagram draws on possible solution to shift the supply driven approach to a demand responsive one:



- As most of the training programmes are not based on clearly identified training needs of the intended target audience, this practically means that more often than not many participants of different training programmes lose interest in learning, as they do not find the training to be really relevant or useful in their immediate work situation and context.
- Mainstreaming DRR into development programmes has yet to take place in any substantive sense: most of the Chief Development Officers/Chief Executive Officers in charge of implementing government development programmes at the district level

interviewed in study districts frankly admitted a total lack of efforts on mainstreaming DRR concerns into development planning and administration at that level.

- There is hardly any attempt at evaluating the impact of training programmes imparted. Most of the training evaluation is limited to end-of-the-programme evaluation where participants rate the training programme on parameters like content and quality of the training inputs, competence and quality of trainers, quality of training material including background literature and last but not the least, quality of stay and food arrangements. There is no method or practice of finding out whether training resulted in any improvement in performance of the trained personnel as intended.
- There are no capacity benchmarks currently in use: capacity benchmarks could be politically volatile in certain cases, as they obtain and operate in a dynamic context. Like for example, it may not be politically convenient or feasible to fix a capacity benchmark for rehabilitating people affected by disasters within a specific time period. This is mainly because different disasters may have a different time frame based on the nature and intensity of disasters with varying degrees of coping capacities across different communities.

5.1 Training Needs

The specific training needs in the context of identified capacity gaps and needs at the policy level are as follows:

S.N.	Institution/Organisation	Capacity Gap/Need	Training Need
1	Ministry of Home Affairs, Government of India	Knowledge about instruments and incentives that facilitate mainstreaming DRR into development planning What, why and how of advocacy skills at the policy level Global best practices related to mainstreaming DRR into development planning	Unpacking mainstreaming in terms of actionable steps and their rationale: what is mainstreaming DRR; why mainstream; and how to carry out mainstreaming? How to design and undertake internal policy advocacy for mainstreaming DRR An introduction to the global best practices and their implications in terms of their replicability/ adaptability in the Indian context
2	National Disaster Management Authority (NDMA)	Knowledge about instruments and incentives that facilitate mainstreaming DRR into development planning	Unpacking mainstreaming in terms of actionable steps and their rationale: what is mainstreaming DRR; why mainstream; and how to carry out mainstreaming?

		What, why and how of advocacy skills at the policy level Global best practices related to mainstreaming DRR into development planning Project management	How to design and undertake internal policy advocacy for mainstreaming DRR An introduction to the global best practices and their implications in terms of their replicability/ adaptability in the Indian context
3	National Institute for Disaster Management (NIDM)	Research design, planning and management Research methodologies for formative and applied research	What and how of applied, formative and action research in the field of DM in general and DRR in particular
4	State Governments	Policy making processes and protocols Strategic planning	How to engage in policy learning in the context of emerging policy challenges for DM and DRR How to engage in strategic planning as per an agreed set of goals and objectives
5	State Disaster Management Authority (SDMA)	Policy making processes and protocols Strategic planning Action learning and knowledge management to feed into policy making and planning processes	Policy making processes and protocols across various related line departments within the government
6	Key line departments (related to education, health, rural development, PRIs/ULBs) at the state level	Integrating DRR concerns into sectoral plans.	How to integrate DRR into sectoral departmental plans

India has made good strides in the realm of policy making and institution building for disaster management in the country. The major change has taken place in terms of a shift from a reactive response orientation to a proactive approach to disaster management with focus on mitigation, disaster risk reduction and preparedness aspects.

Training Needs at the District and Sub-District Levels

Despite impressive progress in policy and institutional development, the real challenge lies in translation of the policy in practice at the middle management and operational level, mainly in districts and sub-districts where real communities are located and most of the disaster management functions take place. The training needs of different stakeholders at this level are as follows:

Training Needs of Stakeholders at the District Level

Sl. No.	Stakeholders	Training Gaps	Training Needs
1.	DM/ADM	1. Role as per the Disaster Management Act 2. Hazard profile of the district and their impact 3. Types of mass media for awareness generation 4. Mainstreaming DRR into development 5. Gender inclusion in Development	6. Orientation to disaster management and disaster risk reduction: principles and practices 7. Supportive supervision 8. Team building 9. Personnel management 10. Reporting 11. Incident Response System and Emergency Support Function System 12. Mass awareness generation on disaster management 13. Coordination and emergency communication 14. Control room operations 15. Early warning mechanisms 16. Preparation of district disaster management plan 17. GIS and its applications in disaster management 18. Principles and practices in search, rescue and evacuation during emergencies
3.	CDO/DDO	1. Role and responsibilities as per the DM act 2. Building by laws	1. Orientation to disaster management 2. Incident Response System Relief inventory management & distribution 3. District control room operations 4. Preparation of DDMPs 5. Coordination and emergency communication 6. Hazard profile of the district & the impacts 7. Reporting skills 8. Shelter/relief camp management
2.	BDOs/BDMOs	1. Role as per the DM Act	1. Orientation to disaster

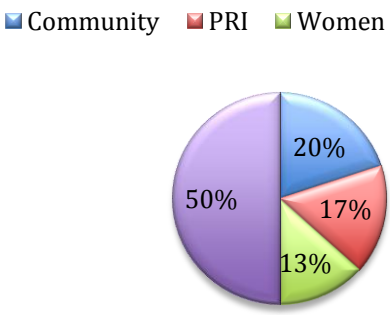
		2. Mainstreaming DRR into development 3. Participatory approaches of engaging with community	management 2. Hazard profile of the Block 3. School safety preparedness 4. Formation & training of disaster management teams 5. Principles and practices in search, rescue and evacuation during emergencies 6. Relief inventory management & distribution 7. Coordination and emergency communication 8. Trainers' training 9. Emergency Health and Hygiene management and first aid 10. Trauma counselling and psycho-social care 11. Community based DM planning 12. Crowd and panic management 13. Participatory Rural Appraisal (PRA) 14. Community mobilisation 15. Hazard Risk Vulnerability Assessment 16. Shelter management 17. GIS and its applications in disaster management 18. Preparation of school emergency preparedness and response plan

Training Needs at the Community and PRI Levels

Interviews and consultations with community members in 36 GPs in 24 districts across 6 multi-hazard prone states suggests that around 50% of the communities had not received any training or capacity development input related to disaster management or/and disaster risk reduction.

In the study sample, out of 36 GPs 25 GPs had faced a recent disaster, but in 50% of the cases no disaster related training had been organised at the community level.

Disaster Related Training at Community Level



Source: IDIs/FGDs across rural communities in 36 study GPs, 2013

As is evident from the above figure, only in 13% and 17% of the cases, women and PRIs had received some kind of disaster related training.

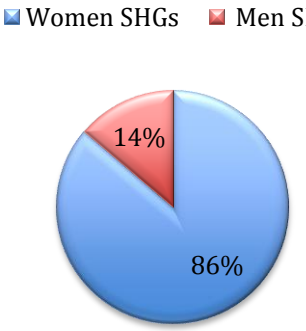
Women

It is a well-known and documented fact that disasters affect women and men differentially due to their distinct and differential vulnerabilities and capacities. These are also intimately tied up with the roles and responsibilities of women and men at the household and community level. This is being increasingly recognised that women invariably function as change agents both in their capacities as community leaders and disaster managers and as provider of different kinds of services including food, water, health care etc at the household and community levels.

But these capacities are generally overlooked in the course of actual development and disaster management planning at the grassroots. This shows through in their severely limited exposure to training and other capacity development initiatives. Out of 36 study GPs only in 4 GPs women have attended some kind of training on disaster management: also in the entire sample no GP or ULB had any task force of women. Women's general exclusion from training and capacity development processes emerges as a major capacity gap at the local level, which has both training and non-training implications. Their exclusion is obviously rooted in decision making processes through which it is decided who from within the community will be attending the training programmes. There are indications that women's restricted and limited mobility also affects their capacity to access and benefit from training.

This needs to be recognised that women are getting organised in the form of self-help groups on scale across the country under a range of government and non-government initiatives. These groups are also diversifying their roles and are venturing into newer area such as microfinance through their organised self-help groups. Out of the entire sample of GPs there are more women SHGs than men. Using micro-finance as an entry point women's groups have ventured into many new areas linked to long term development including – water, sanitation, preserving the environment, energy efficient development, health, etc – hence they can be a tremendous resource for DRR at local level, who have the potential to integrate DRR in development.

Percentage of women SHGs as compared to men SHGs



Source: IDIs/FGDs across rural communities in 36 study GPs, 2013

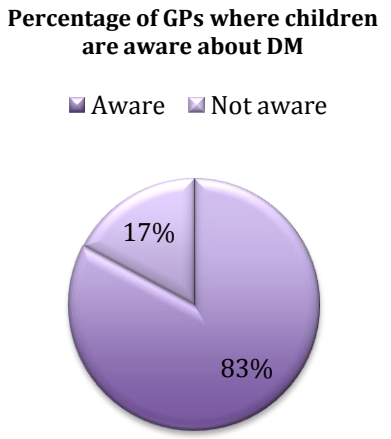
From a long term disaster risk reduction and sustainable development perspective aimed at community resilience building, the growing movement of women SHGs offers a huge opportunity to engage in large scale women empowerment as the major approach to capacity development at the community level.

Children

Children are particularly vulnerable to disasters because of their distinct physical and psychological vulnerabilities. They get deeply affected by disasters not only in terms of greater loss of their lives, but also in terms of post-disaster trauma and disruption in their school education. The fact that the likelihood of disaster experiences can have a significant impact on the young minds of children is amply borne by the study in Ukhimath region of Rudraprayag, where children's performance in schools following a cloud burst induced disaster in September, 2012 was reported to be adversely affected, which was indicated by their consistently low grades in schools. FGDs with children in Ukhimath villages revealed that children found it difficult to concentrate on studies due to their recent experience of disasters where their families lost their members, houses and fields and were forced to live in make shift shelters.

Lack of training and awareness among children was reported from other study locations as well. Despite a massive school safety programmes running in Bhuj, Jamnagar, Rudraprayag and Darjeeling school children did not remember attending any mock drill, training etc. Even in all the 29 GPs where the interactions with children have happened only in 2 GPs children have been given some kind of training in DM, only in 3 GPs children have attended some kind of mock drill. At the school level, disaster management is taught only as a chapter in either environmental science or social science. Implication is that specific programmes that address children's vulnerabilities need to be designed.

In all the GPs children expressed an interest and willingness to participate in practical trainings



PRIs

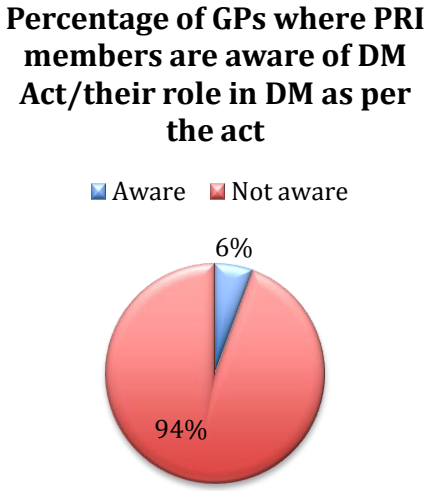
Panchayati Raj Institutions (PRIs) are institutions of local self-governance, where elected representatives of people get represented in Gram Panchayats (GPs) at the village level and in Urban Local Bodies (ULBs) in the urban areas. The PRI is a statutory body elected by the local people through a well-defined democratic process with specific responsibilities and duties. The elected members are accountable to the people of the ward, rural community, and block and the district.[14]

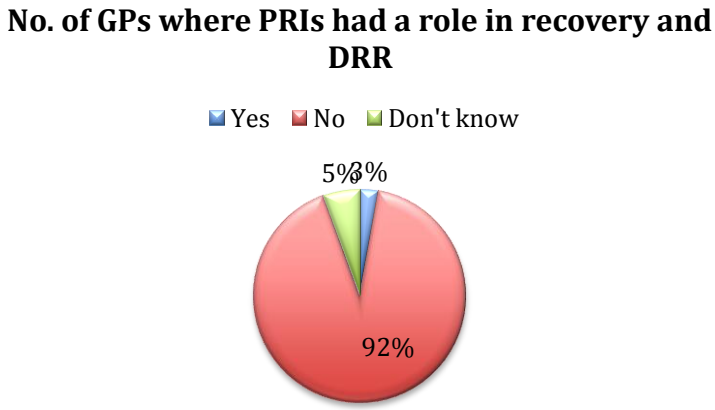
In view of the general policy focus on democratic decentralisation including decentralised provision of basic services to people, PRIs have to be the key institution in disaster risk reduction as well, as they can effectively engage with people in preparedness and mitigation

[14] GOI-UNDP Disaster risk management programme 2001

activities. However, this has not happened in practice on the ground despite almost 20 years of the 73rd and the 74th constitutional amendments mandating PRIs as the vehicle for effective provision of basic services to people in a decentralised fashion. Of the sample GPs only in 6% of the GPs PRI members identified their role in disaster management. This underlines an obvious training and capacity development gap that needs to be addressed in order to create the desired awareness and role clarity regarding disaster management among the PRI members.

Even in places where there has been some kind of training intervention for PRI members, they have largely failed to recognise their role as disaster managers at the community level. Out of the 14% GPs where PRI members have been trained either they did not find it useful or the sarpanch never shared the information with the people. This raises the issue of quality of training being imparted and the need for appropriate forward and backward linkages to make the training truly effective in terms of eventual results achieved. The fact that GPs/PRIs are not functioning mainly because of lack of information, knowledge, power and resources highlights them as major capacity gaps at that level some of which also have significant training interventions.





The above figures tell us that:

1. Only in 14% of the GPs from among the study sample, there has been some disaster related training for the PRI members.

2. In 94% of the GPs, PRI members are not aware of the DM Act or/and their role in disaster management

3. In 92% of the GPs, PRI members stated that they had no role in recovery and DRR initiatives.

These figures underline the need to radically re-think and re-design the training and capacity building interventions for the PRI members both at the GP and ULB levels.

The training needs based on the above gap analysis are as follows

Table: Training Needs of Stakeholders at the Sub-district Level

Sl. No.	Institution/Organisation	Training gap	Training Needs
1.	PRI	Strategies to engage with the community to develop disaster management plans for managing emergency/crisis situation effectively	Participatory methodologies (PM) such as PRA, PLA, PEAL: strategies and skills for people's participation for emergency/crisis management in an organised manner Process and methods of community based disaster preparedness and management plans
2.	Women	Lack of awareness about their own roles and functions as disaster managers	Awareness on their role as disaster managers Risk mapping using community led hazard, risk vulnerability and capacity (HRVC) assessment Methods and tools for preparation of community based disaster management plans including: use of practical insights as inputs for design and implementation of

			disaster management plans Strategic decision making for mainstreaming DRR into implementation of development schemes aimed at disaster reduction
4.	Men	Lack of requisite knowledge and skills for effective disaster response at the community level	Training on evacuation, search and rescue, shelter management, damage and loss assessment
5.	Children	Lack of awareness about do's and don'ts in case of earthquake, landslides, cyclones, floods and droughts	Mock drills to reinforce do's and don'ts in a practical setting.
6.	CBOs	Lack of partnerships with PRIs and other local organisations in DM and DRR related work at the community level	Develop network of all agencies working at the community level and have a shared understanding Develop community based monitoring system to ensure effective operationalisation of disaster mitigation strategies at local level.

Sectoral Training Needs

The table below details out the training needs in health, education, rural development and ULBs/PRIs. These training needs will form the basis of quantification and prioritisation section of the report.

Sector/ Levels	National/State Policy Level	State/District Management Level	District/Sub-district Operational Level
Health	Integration of DRR into sectoral plans and strategies	1. Hospital preparedness 2. Healthcare in shelters 3. Management of Mass Casualties 4. Environmental Health and Safety Including Vector Control 5. Control of Communicable Diseases 6. Epidemiological Surveillance 7. Food and Nutrition in disasters 8. Public Health Information/Education 9. Supply Management 10. Management of Communication and Transportation Systems 11. Damage and Need assessment 12. Preparation of health emergency management plan 13. Safe water sanitation and hygiene in emergencies	1. Healthcare in shelters 2. Management of Mass Casualty 3. Emotional/Psychological Counselling MO 4. Environmental Health and Safety Including Vector Control MO 5. Control of Communicable Diseases 6. Epidemiological Surveillance 7. Public Health Information/Education 8. Management of Communication and Transportation Systems 9. Damage and Need Assessment 10. Safe water sanitation and hygiene in emergencies
Education	Integration of DRR into sectoral plans and strategies	1. Sensitisation for awareness on disaster management amongst Teachers/ School Management 2. Preparation of the School Disaster Management Plan (SDMP) 3. Disaster resilient school infrastructure and related training needs	1. Sensitisation for awareness on disaster management amongst Teachers/ School Management 2. Formation and Training of the School Disaster Management Teams 3. Basic do's and don'ts in disasters 4. Disaster resilient school infrastructure and related knowledge and skills
PRIs/ULBs	Integration of DRR into sectoral		1. Role of PRIs in DM act. 2. Disaster risk mitigation

	plans and strategies		measures for the disasters specific to their area. 3. HRVC analysis 4. Community based DM planning 5. Search, rescue and relief management 6. Coordination and emergency communication 7. Damage and loss assessment 8. Preparation of village disaster management plan with active involvement of community members and village disaster management committee
Rural Development	Integration of DRR into sectoral plans and strategies	1. Integrate DRR into sectoral departmental plans 2. Formulation of disaster management plans. 3. Relief inventory management & distribution 4. Coordination and emergency communication 5. Damage and Impact evaluation 6. HRV analysis 7. Strategies for mass awareness generation 8. Community mobilisation 9. Participatory methodologies (PM)	1. Integrate DRR into sectoral departmental plans 2. Formulation of disaster management plans. 3. Search, rescue and evacuation during emergencies 4. Relief inventory management & distribution 5. Coordination and emergency communication 6. Damage and loss assessment 7. HRVC analysis 8. Community mobilisation 9. Use of participatory methodologies including PRA/PLA/PEAL

Note: Please see Annexure 2 for the consolidated sector and level wise training needs

6. QUANTIFICATION AND PRIORITISATION OF TRAINING NEEDS

India is home to more than 1.2 billion people, who live in 127 different agro-climatic zones. Almost 60 % of these people are vulnerable to some disaster or the other and a large number of them to more than one disaster. Communities at risk vary considerably in terms of the nature of their vulnerabilities and coping capacities across regions, states, districts and sub-districts: there are rural and urban communities; there are inland and coastal communities; there are communities living in fragile mountain eco-systems in the Himalayan states and on the islands in the largest inhabited delta in the world as in Sunderbans in West Bengal.

In view of the sheer number of people involved and their diverse physical, environmental, and socio-economic conditions, the universe to be addressed through long term training and capacity building efforts is truly vast and varied. It is hard to have an accurate sense of the numbers involved (in terms of people to be reached) because of the lack of comprehensive data on communities at risk and on various aspects of DM and DRR across hazards, sectors and levels. Vulnerability Atlas of India maps out vulnerable regions mainly on the basis of their physical vulnerabilities. Context specific local vulnerabilities related to ecology and socio-economic conditions are missed out in this macro zonation exercise. This gap can be filled up only with community based micro risk assessment and local disaster management planning at that level.

The stakeholder analyses and the related capacity gap analysis undertaken as a part of this study underline multiple gaps in knowledge, skills and attitude of the disaster managers across levels in different states and districts in India. The study suggests that policies and programmes tend to increasingly fade out as they reach the communities at risk. The biggest capacity gap is at the community level where it matters the most. And this obviously is the top priority as the community capacity gap is the single most important factor contributing to increased disaster risk at the local level.

Capacity-risk ratio is reported to be remarkably low across most of the communities at risk studied. Failure to recognise and build on the existing capacities as available with organised groups of grassroots women and youth groups is a case in point to explain this low capacity-risk ratio.

Training requirements related to DM and DRR in the country cover a very wide canvas across a complex matrix of hazards, sectors, and levels. Even in terms of very rough and approximate estimates, the total number of personnel to be trained in disaster management would easily be above 31 million**,** as broadly estimated in the table below:

Table: Universe to be addressed through DM Training and Capacity Building

Sl. No.	Sectors	Universe (in lakhs)	Part of the universe to be addressed in 5 years (in lakhs)
1.	Health a)doctors, nurses, ANMs and health workers b) Anganwadi workers and Helpers	6.50 26.16	6.50 5.00 (excluding vacancies)

2.	Education	18.0	6.00
3.	RD	63.74	15.94
4.	PRI	28.18	28.18
5.	ULB	0.69	0.69
6.	Government Employees*	171.86	20.00
7.	NGOs/CBOs (at state and district level)	0.19	0.10
		315.32	82.32

Source: http://nrhm.gov.in/nrhm-in-state; www.saiindia.gov.in/english/home/Our_Products/.../Chap_5.pdf; www.ficci.com/SPdocument/20073/IMaCS.pdf15; www.data.gov.in (Data Portal India); Census of Central Government Employees, 2009 (Accessed in August, 2013)

*Total no. of central and state officials is 196.36 lakh. The no. of central and state government officials already covered in health and education sector is 24.50 lakh. Therefore the remaining universe of central and state government officials is 171.86 lakh.

Although this may appear to be too ambitious a figure, it works out to only about 2.5% of India's population. These figures also relate to only few sectors mentioned above. If other sectors are also taken in to consideration such as defence, civil defence and home guards, fire services, youth organisations and the numbers in the above sectors are also appropriately enhanced, a gradual increase to about 5% may probably be a good target from the point of view of long term training and capacity building strategy. However, even these percentages are kind of arbitrary, as there is no agreed benchmark, which could be considered to be a critical threshold in capacity building for effective disaster risk mitigation from a larger development perspective across the country.

Study proposal and the related Contract (page 60) mention that training requirement embraces a very wide canvas: even in terms of very rough and approximate estimates, the total number of personnel to be trained in disaster management would easily be about 13 million. The study proposal went on to state further that although the figure of 13 million stakeholders to be trained may appear to be too ambitious, despite the fact that it has been worked out at a very conservative estimate, it only works out to about 1% of India's population, which needs to be gradually increased to about 2% of country's population, particularly enhancing the coverage at village level and in health, construction and education sector, or say about 2.6 million.

These initial figures were based on very rough and approximate estimates. The draft national HR & CD Plan 2013 developed by NIDM, which has been brought out after 10 years since the exercise was initiated, also steers clear of making any estimate of number of personnel to be trained, and very rightly so, since this exercise should appropriately be undertaken at micro level from community to national level with a bottom up approach. However, till this exercise is undertaken by respective state governments based on micro level hazard, risk and vulnerability analysis, it was considered that some exercise needs to be undertaken in the sectors covered under the Study so that, pending detailed exercise by state governments, action could be initiated to develop Master Resource Persons and Trainers and commence training programmes in the sectors identified for the Study. The figure of 31.46 million has been

[15] The source does not include benchmarks proposed for each category of schools/ colleges/Universities, which is proposed under the Study.

worked out after collecting available data as also the assumptions made which have been brought out in the detailed exercise undertaken in this chapter.

The difference in the initial estimates and the figures now worked out are primarily due to following reasons:

- The initial figures were based on a very rough and approximate estimate for the sake of giving an illustration to show the enormous task ahead in order to put a robust DRR regime in place.
- The analysis based on which the figures have now been worked out in specified sectors takes into consideration the available data, to the extent possible and well-reasoned assumptions
- Despite this, these estimates may be considered tentative and are given for the limited purpose of initiating training programmes in specified sectors for the initial period of five years.
- During this period, state governments are expected to undertake a detailed micro level exercise and work out numbers to be trained in all sectors and plan their future training plans accordingly.
- At community level, a uniform number to be trained across all villages may not be a correct approach keeping in view that multiple vulnerabilities (physical, social, economic and environmental) vary from village to village; more so when, of 5.93 lakh villages, about 2.36 lakh villages have a population of less than 500 whereas some villages even have population of more than 10,000. Considering the wide variations in the population of villages, a uniform number to be trained in each village would be akin to a cookie cutter approach, which should be avoided. At the same time, in order to ensure that a beginning is made, pending detailed micro level exercise, this approach could be accepted as an interim measure for next 5 years.

Particular capacity enhancements and investments are required at the village level and in health, livelihoods and education sectors. Large scale capacity development calls for smart strategies based on creating a critical mass of trainers through training of trainer (TOT) programmes. This also needs to be underlined that training is not a onetime activity. There has to be a well-orchestrated range of training events beginning with general orientation to basic foundational training followed by refresher and follow up training programmes as per the identified training needs of different stakeholder groups.

Moreover, in order to be truly effective, training has to flow from a strategic vision and framework that looks at capacity development as a systemic function that is internalised and institutionalised within various line departments that have a role to play in DM and DRR. Different stakeholders from within the government and non-government organisations and communities would have different learning requirements and hence differential training needs as well.

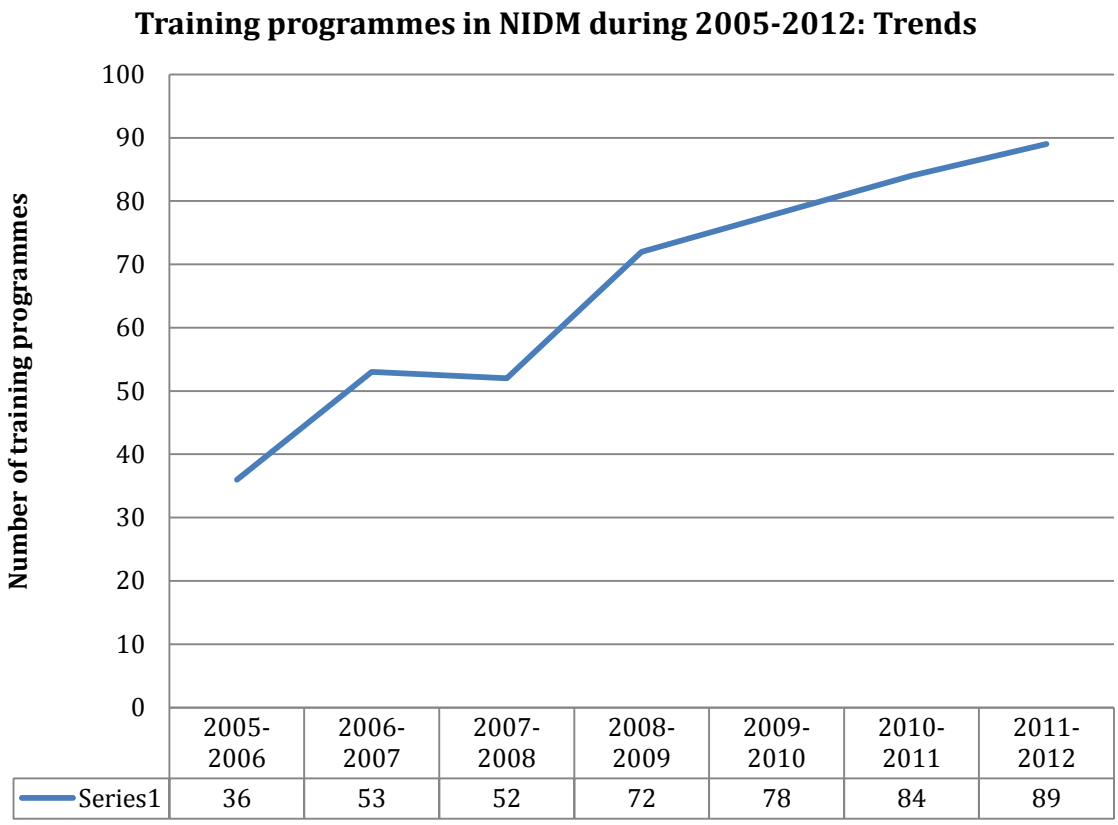
One way to embark on this daunting but crucial project is to have human resource and capacity development (HR & CD) plans both at the national and state levels. NIDM has recently come up with a national HR & CD Plan, which is now available in the public domain, but is still a draft, as it has yet to be formally approved and owned by Government of India. However, this document does not deal with numbers specifically, and keeps itself confined to broader principles, issues, and directions in human resource and capacity development planning. This long overdue and welcome initiative has to be further translated into more concrete, tangible and actionable steps in terms of specific training interventions for specific target groups.

There are major data constraints as regards country wide data on the various types of trainings related to DM and DRR in terms of: cost per training per trainee per day; number of people to be trained in each sector across various levels; and a realistic time frame within which this can be achieved.

The two sets of data analysed in this chapter are drawn from NIDM (2005-12) and GOI-UNDP DRM programme (2002-09). As both these provide a national perspective on disaster management related training and capacity building efforts, the data analysed from these sources can be safely extrapolated to arrive at fairly reliable estimates of the following: efforts involved in terms of number of personnel to be trained; the types and number of programmes to be organised; rate and cost of trainings etc.

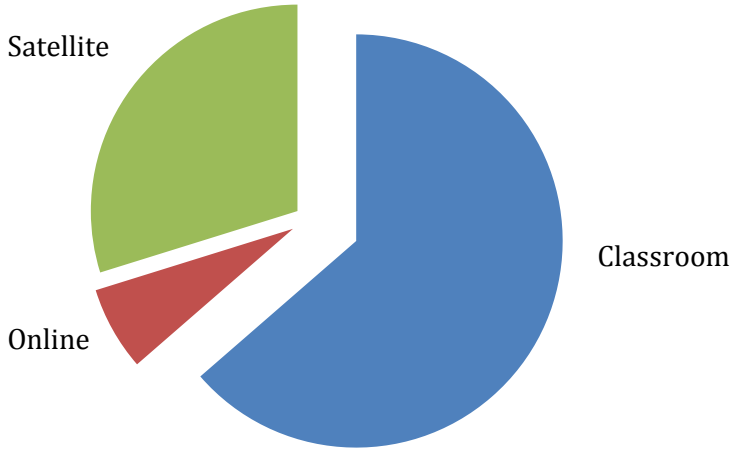
Training Programmes of NIDM: an overview

This overview is for the training programmes conducted by NIDM during 2005 to 2012. NIDM has conducted around 464 classroom training programmes, 17 online training programmes and 2 satellites based training programmes during this period. A total of around 14,940 people have been trained in these 485 programmes. On an average NIDM has trained around 2000 people each year.



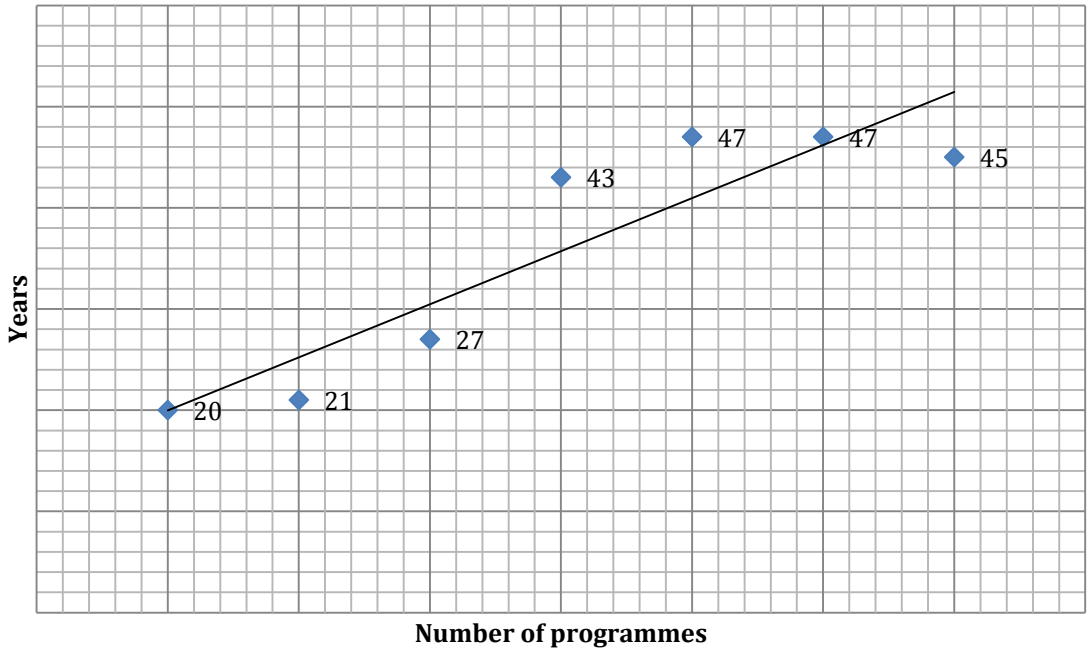
Source: nidm.gov.in

Ratio of people trained in classroom, online and satellite training programmes



Out of the total 464 classroom training programmes around 230 have been conducted in-house and rest in other institutions like ATIs, SIRDs of various states, research institutes etc. There has been a steady rise in the number of in-house training programmes over the years: 2005 to 2012.

Rising trend in the number of in-house training programmes



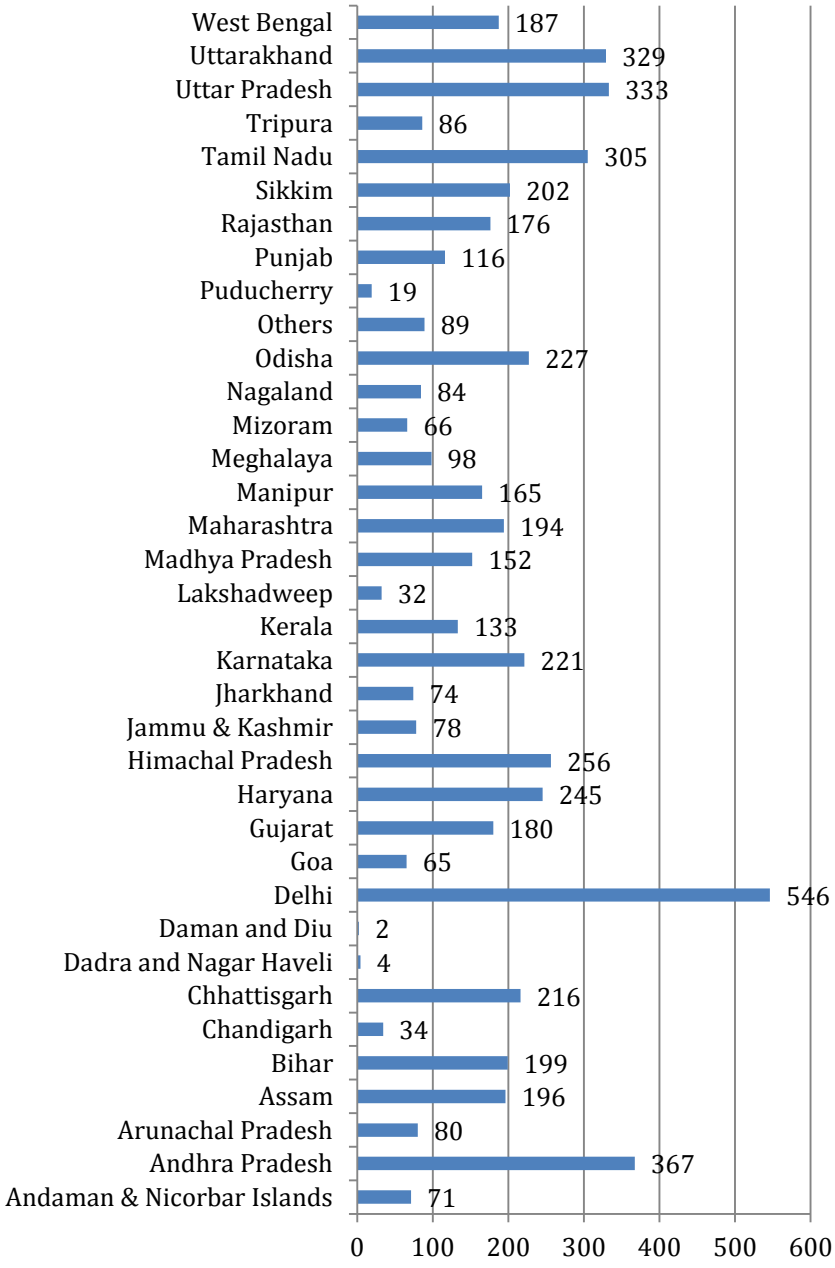
Source: nidm.gov.in

NIDM has trained a range of participants with a wide variety of profile. Following are the broad categories of participants:

- Officials from coastal states and UTs
- Police and CPO Officers
- All sections of the society
- Officers from state banking and finance sectors
- NSS Volunteers
- Officials from state from women and child development department
- Senior and middle level officials from State & UTs, Central Ministries
- District Nodal Officers
- Media People
- Faculty from Fisheries Institute of state and DM expert
- NGO representatives
- NIC, IGNOU, NCERT, IT professionals etc.
- Head ATI/Faculty DMCs & Training Institutes
- Deputy Commissioners, Addl. Dy. Commissioners, Sub Divisional Magistrates, Asst Commissioners etc
- NYKS

From the year 2005-2007 these participants came from 36 states and UTs; state wise distribution of the number of participants, who attended these training programmes are as follows:

State wise distribution of participants



Source: nidm.nic.in

In view of the above, the current capacity of NIDM, as the apex training and capacity building agency in disaster management, is to train around 2000 people per year. This is obviously not enough to handle the number of people that need to be trained in several hundred thousands.

This underlines the urgent need to undertake an informed analysis of the training needs of the NIDM itself to begin with in order to prepare the ground for capacity building for disaster management on scale at the national level, which is the given mandate of NIDM as an organisation.

GOI-UNDP Disaster Risk Management (DRM) Programme (2002-09): an overview

The Government of India and UNDP's DRM 1 and DRM 2 programmes have been the largest disaster risk management initiative in India. A large number of disaster task forces have been formed at the community level across programme districts over the years. There have been extensive training and capacity building efforts under the programme, where hundreds of thousands of different kinds of stakeholders (close to 3.5 million people) have been trained in 176 districts across 17 states.

People trained at the District level under Disaster Management Training

Sl. No.	Category of People	Number
1	Disaster Management committee Member	12,757
2	Teachers	90,533
3	Disaster Management Training in First Aid	14,258
4	Disaster Management Training in Search and Rescue	12,682
5	PRI Members	15,078
6	Women PRI	4,729
	Total	**150,037**

People trained at the Block level under Disaster Management Training

Sl. No.	Category of People	Number
1	Disaster Management committee Member	50,175
2	PRI Members	87,366
3	Women PRI	16,848
4	Volunteers	1,17,125
5	Women Volunteers	27,596
6	Mesons	36,730
7	Disaster Management Plans Prepared	1,273
8	Mock Drills	15,551
	Total	**352,664**

People trained at the GP level under Disaster Management Training

Sl. No.	Category of People	Number
1	Disaster Management committee Member	2,97,717
2	Women Disaster Management committee Member	80,065

3	Village Disaster Management Plans Prepared	25,522
4	Disaster Management Training in First Aid	1,08,824
5	Disaster Management Training in Search and Rescue	1,08,531
6	Mock Drills	10,053
	Total	**6,30,712**

People trained at the Village level under Disaster Management Training

Sl. No.	Category of People	Number
1	Disaster Management committee Member	12,09,280
2	Disaster Management Training in First Aid	5,08,324
3	Disaster Management Training in Search and Rescue	4,85,344
4	Disaster Management Plans Prepared	1,32,065
5	Mock Drills	10,053
	Total	**23,45,066**

People trained at the ULB level under Disaster Management Training

Sl. No.	Category of People	Number
1	Disaster Management committee Member	15,706
2	Disaster Management Plans Prepared	506
3	Mock Drills	668
	Total	**16,880**

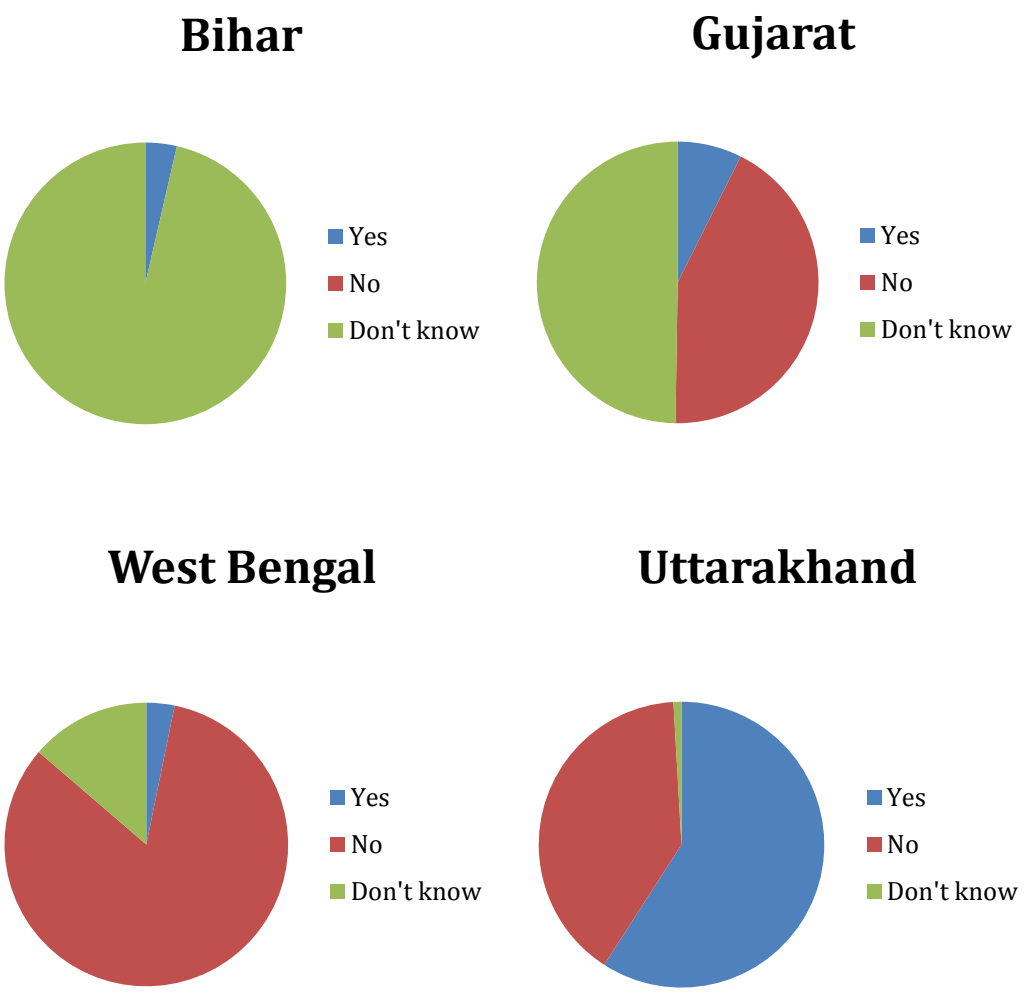
Source: GOI-UNDP DRMP 2002-09 Evaluation and Review of Lessons Learnt Report, 2009

Despite wide outreach of UNDP GOI DRM programme, including four of the six sample study states (Bihar, Gujarat, Orissa, and Uttarakhand), people did not recall going disaster management related training in any of the study villages.

As the data suggests, except for Uttarakhand, the majority of households did not know about any kind of assessment exercise in their village. Even in Uttarakhand most of the assessment exercises were of the nature of geological studies and community members were unaware of their outcomes.

DRM programme was on during 2002-2009: considerable time lapse since then, lack of continuity over time and out migration by people in search of jobs seem to be some of the probable reasons for this total lack of awareness about the programme in the study villages.

Response of People from Study Villages about their awareness of the UNDP-GOI DRM Programme



As is evident from the figures above, but for Uttarakhand, level of awareness of people from study villages in the remaining DRM states has been negligible. It is quite likely that the sample blocks and villages did not form part of DRM interventions in these states.

In view of the above two experiences of large scale training and capacity building efforts for disaster management in the country, it can be concluded that because of the large numbers to be addressed, the quantification of training needs has to be undertaken at the level of different states, sectors, and line departments.

The detailed sector wise quantification is in the following section:

6.1 Quantification of number of personnel to be trained, number of Trainers and Master Trainers needed and number of Training Programmes required to be organised

A realistic National Human Resource and Capacity Development Programme needs to be designed to ensure effective disaster risk reduction at the country level from a multi-hazard, multi-sector and multi-level perspective. This has to be commensurate with the nature and extent of hazards in India and need to be evolved and implemented in view of the existing capacities and resources.

This programme of capacity and resource enhancement has to encompass all institutions, organisations and individuals that have a role to play in any part of the disaster management cycle. To mitigate the impact of disasters, there is a need to work collectively through multi-dimensional channels combining the efforts, resources and expertise of the government, non-governmental organisations and civil societies. Managing disasters holistically from a larger sustainable development perspective is a highly complex and specialised task which cannot be approached in an ad hoc manner. Disaster management brings multiple sectors into action and therefore calls for all the concerned sectors to develop their respective human resource capacities to deal with disaster related emergencies and exigencies.

The study suggests that there exists a wide gap in the knowledge, skill, and attitude of the disaster managers across sectors. Capacity risk ratio is the key: if capacity is not equal to the risk, the probability of damage and loss due to disasters are likely to be higher in proportion to the gap between the two. In order to efficiently manage emergency situations particularly at local and state level, capacity gaps and needs have to be identified and addressed. According to a study by NIDM, capacity-risk ratio in case of India is remarkably low. To bridge this gap, it is important to have specific capacity development plans and strategies[16].

NIDM, an apex level training and capacity building institute, has been legally entrusted with the responsibility to formulate and implement a comprehensive human resource development plan covering all aspects of disaster management. In this context, it is considered that the community based DRM Programme is one of the major components of the Disaster Risk Reduction (DRR) initiatives. The strategy to be adopted is one of holistic integration of DRR initiatives in the development process.

The Hyogo Framework for Action 2005-2015 for Building the Resilience of Nations and Communities to Disasters has also identified as strategic goals "the need for more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction; development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards; and the systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of the affected communities."

The NIDM has recently brought out the Human Resource and Capacity Development Plan for Disaster Management and Risk Reduction in India, 2013. The Plan puts disaster risk mitigation at centre-stage with inter-linkages with different approaches such as community based disaster risk reduction, engineering based disaster risk mitigation, environmental approach to risk mitigation and incident command system approach which have to be adapted together to ensure an inclusive disaster risk mitigation strategy.

[16] Disaster Management in India, 2011, Ministry of Home Affairs (Accessed in August, 2013)

The HR & CD Plan 2013 assesses the present status, sector-wise and stakeholder-wise, status of training institutes and analyses institutional network. It discusses capacity gaps and advocates creation of a cadre of DM professionals. The plan also identifies disaster-specific issues being faced during pre-disaster, during-disaster and post-disaster stages. Further it discusses training and education network with possible areas of intervention, broadly on the lines of National Disaster Management Framework. The Plan culminates with implementation strategy, time frame and budget and also identifies activities/ sub-activities which may be undertaken for training, education, public awareness and organisation and institutional development, the main components of the current study.

The quantification of number of stakeholders to be trained is a complex exercise. The National HR & CD does not quantify the number of functionaries to be trained. During interaction with the six State Governments, it was brought out that none of the State Governments have undertaken this exercise as yet. The national HR & CD Plan in a way lays down guidelines for national, state and district governments. It does not attempt to set capacity benchmarks or go into the logic of quantification and its underlying facts and assumptions.

This is based on the understanding that specific training and infrastructure needs can appropriately be identified at micro level based on a number of key factors that include: micro level vulnerabilities; characteristics of the population affected, particularly socially and economically disadvantaged segments; gender dimensions of vulnerability and capacity; women empowerment issues; and special needs of children and elderly. All this is supposed to be done following a participatory, consultative and bottom up approach. Quantification of personnel to be trained at national or state level is therefore generally not desirable since it would necessarily be based on certain broad assumptions and not on ground realities across different multi-hazard prone regions of the country.

As for identification of capacity gaps on the ground, this exercise has to be undertaken at micro level, from village to block/Taluka to District to State level using a bottom-up approach. Even at village level, there can be no pre-determined standards to quantify gaps since it would depend on analysis of micro level vulnerabilities including: geo-physical, social, economic and environmental vulnerabilities; population of each village; dispersal of population within a village and other related factors. For instance, in hilly terrain, population of a village is distributed across different hamlets spread over a large area, often over 2-3 kilometers; yet the total village population may be even less than 1000 as against some other villages in plain areas where the population may be even more than 5000 to 7000 in a relatively very small geographical area. Besides, training needs would also differ on the basis of specific vulnerabilities, constitution of population in terms of men and women, children, elderly and disabled. Similarly, urban poor have different vulnerabilities like settlements in low lying areas, health, hygiene and sanitation needs, power needs, drainage systems, fire incidents etc.

Another limitation, as brought out during state level interactions, is that numbers to be trained over a period of 5 or 10 years would not be politically acceptable unless states have generated their own numbers which are both politically and financially convenient, though not necessarily need based. However, the strategic framework for implementation of training (SFIT) suggests the development of a perspective plan for 10 years divided into the following three phases: short term phase of 2 years; medium term phase of 3 years; and long term phase of 5 years.

The proposed 10 year perspective plan is envisaged to be developed at the national level and anchored by NIDM. Similar plans are proposed to be developed at the state level on the basis of a detailed exercise to be conducted by respective state governments using a bottom up approach. As it may not be prudent to engage in a quantification exercise for 10 years without active consultation with the concerned state governments, an exercise for quantification of number of personnel to be trained, Master Resource Persons and trainers to be developed, number of training programmes required to be organised at various levels has been

undertaken only for next five years. This would cover the short term and medium phases of the proposed perspective plan at the national level.

It is envisaged that the state governments would be able to develop their own respective HR & CD Plans with a bottom up approach and suitably enhance the capacities of their training institutes. Without such an exercise, even on macro basis, the training would continue to be undertaken in a largely supply driven mode using standard training modules, as at present, which are neither demand-driven nor need-based. Since the state governments are likely to take at least a few years to develop the training modules based on micro level vulnerability and risk analysis from village to state level to build up the capacities of their training institutes, the quantification exercise carried out here could be used by the state governments as well till they undertake their own exercise.

The quantification exercise that follows has been undertaken for health, education, PRIs/ULBs and rural development sectors.

Health Sector

The total number of health workers at PHCs, CHCs and sub centers in India is 475,753, which include doctors at PHCs (30,198), nursing staff at PHCs/ CHCs (69,439) and ANMs at PHCs/ Sub-Centers (232,177). These do not include doctors and other health workers in government hospitals at district, state and national level and doctors and paramedics in private sector including private hospitals.

As per the Medical Council of India, the total number of registered doctors in the country as on 31.07.2011 was 8, 56,055 and total nursing staff was 3.72 lakhs. Although figures of paramedics in the country are not readily available, it would easily run into millions. The target of one Auxiliary Nurse Midwife (ANM-female) and one male Health worker for each village is far from being achieved. The above figures show the skewed distribution of doctors and nurses in urban and rural areas.

The total number of government hospitals in the country is 11,614. To begin with, it is considered that 5 doctors and 10 nurses from each hospital may be trained in addition to all the government health workers in rural areas. The total number of personnel to be trained during the first five years would work out to be as follows:

Category	Numbers to be trained
Government hospitals' Doctors @ 5 from each hospital	58,070
Doctors attached to PHCs	30,198
Total Doctors	**88,268**
Government hospitals' Nurses @ 10 from each hospital	1,16,140
Nursing Staff at PHCs/ CHCs	69,439
Total Nurses	**1, 85, 579**
ANMs at PHCs/ Sub Centers	2,32,177
Other Health Workers at PHCs/ CHCs/ Sub Centers	1, 43, 939
Grand Total	**6, 49, 963 or say 6, 50, 000**

Source: http://nrhm.gov.in/

The training programmes and modules will be different for different categories with focus on health, hygiene, water and sanitation in general and medical first response in particular. There

may be 4 training modules, one each for doctors, nurses, ANMs and other health workers, to be developed at state level by each state/UT.

Taking an average intake in each training programme at 25 participants, the number of training programmes required to be organised over a period of five years would work out to 26, 000 or 5,200 annually.

If 4 trainers are needed for planning, developing training materials and organising training programme and assuming each group of trainers may organise 12 training programmes per year, each group may train 300 trainees. The number of trainers' groups needed would be about 434 (5200 divided by 12) or 1736 trainers. These 1736 trainers may be trained in 72 batches of 24 each by groups of 4 Master Resource Persons. Assuming that each group of 4 Master Resource Persons may organise 12 training programmes annually, 6 groups of 4 Master Resource Persons would be needed making up a total of 24 Master Resource Persons. In order to allow for flexibility to take care of different groups of trainees (doctors, nurses, ANMs, other health workers), as also the possibility that all trainers/ Master Resource persons may not always be available, the number of Trainers/ Master Resource Persons may be more, say about 2,170 Trainers (allowing for 25% increase) and 36 Master Resource Persons (allowing for 50% increase).

The number of Master Resource Persons and Trainers may have to be increased further by 25% from third year onwards so that these additional Master Resource Persons and Trainers can undertake shorter duration Refresher Programmes for trainees. It would be appropriate if refresher training programmes are organised after every two years.

The duration of the initial training programmes may be 5 working days and Refresher Training Programmes 3 working days.

The trainees at grass root level would generate awareness among the communities and also impart training in the basics of health, hygiene, safe drinking water and sanitation including first aid in normal times as also during and in the aftermath of a disaster.

A major constraint is that, at community level, the health workers, particularly ANMs, would be responsible for generating awareness and imparting training as also extending initial medical assistance during disasters. However, the number of ANMs is at present not adequate. At present, an ANM has to cover 2 or 3 villages. The situation becomes more difficult if the village has more population or it is located in hilly terrain with scattered hamlets. A support system is therefore needed to supplement the efforts of health workers discussed above.

The ICDS infrastructure is presently available in almost all villages in the country. There are at present 13, 66,776 sanctioned posts of Aaganwadi Workers and 12, 49,098 sanctioned posts of Aaganwadi Helpers[17]. They are already engaged in child care including facilitating inoculation/ vaccination, personal hygiene and related health issues. They also educate women and adolescent girls in personal hygiene. Given some incentive, this Force can be gainfully utilised to generate awareness among women and children in personal hygiene, water and sanitation and basic do's and don'ts on health related issues in normal as also disaster situations. The advantage is that Aaganwadi Workers and Helpers mostly belong to the same village and are already well known to women and children in the village. However, their total strength of 26, 15, 874 cannot be imparted training over five years. To begin with, even if 20% of them are imparted training over five years, it would gradually create a focused village based force for creating awareness and imparting basic training on health related issues. There may be one training module for Aaganwadi workers and helpers, to be developed under ICDS project with the support of national level health and DM institutes.

[17] www.saiindia.gov.in/english/home/Our_Products/.n../Chap_5.pdf.

20% of the total sanctioned strength of Anganwadi workers/ helpers would work out to 5, 23,175. Keeping in view that, at any time, there are about 10% vacancies, we can take 5 lakh Anganwadi workers/ helpers as a reasonable figure to be trained over five years, or say, one lakh annually. The training may be organised at their respective training centres or through ANMs for a cluster of villages. A short term two days' duration training programme through practical training may be sufficient. If the training is organised through trained ANMs, it may not be necessary to have separate trainers/ master resource persons. If the training is organised at ICDS Training Centres, the trainers at these centres would need to be given a brief exposure to related health, hygiene, water and sanitation issues in two days training programme. If a batch of two trainers is engaged exclusively for this purpose, they can organise 40 training programmes with 25 trainees in each training programme in a year, or say 1,000 trainees in a year with the assistance of two trainers. Therefore the number of trainers exclusively needed for this purpose would work out to 200. Four Master Resource Persons, working in two batches of two each can train these trainers in 8 to 10 training programmes of two days duration each, say 4 to 5 training programmes for each batch of two Master Resource Persons. After the training of trainers, which can be completed over a period of 3 to 6 months, these master resource persons can act as observers for training programmes being organised by trainers, to ensure maintenance of quality of training being imparted.

While the training for the development of Master Resource Persons and trainers may be organised at State level, the training of doctors may also be organised at state level. The training of nurses may be dispersed at district level and the training of ANMs and other Health Workers may be organised at block level. The venue of training programmes could be the Conference Halls in hospitals or any other government institute which has the requisite facilities at block level. The number of training programmes required to be organised every year for different categories of medical persons may be worked out by respective state governments, based on the number of doctors/ nurses/ ANMs/ health workers in each state and the manner of calculation of number of training programmes indicated above.

As for ICDS workers, the training programmes may preferably be organised at ICDS Training Centers or any other institute which has the requisite facilities at district or block level. Since the number of training programmes to be organised are high at 40 for each group of trainers although each training programme would be of two days duration each, it would be better to have regular arrangements for venue. If necessary, the option of organising such training programmes over week-ends could also be considered.

The following table summarises the quantification for the health sector along with Anganwadi workers.

Table: Quantification of Training in Health

Health	
Total no. of people to be trained*	**6,50,000**
No. of trainers required:	2,170
Master resource persons:	36
No. of training programmes for trainers	72
No. of Training Modules	4**
No. of trainings required in five years:	26,000
No. of trainings annually:	5,200
No. of refresher trainings in five years:	10,400

*This includes the number of doctors and nursing staff at the government hospital and PHCs/CHCs, ANMs at CHCs/ Sub Centres and other Health Workers at PHCs/ CHCs/ Sub Centres

** One each for doctors, nurses, ANMs and other health workers

No. of Aaganwadi workers	**5,00,000**
No. of trainings required in five years	20,000
No. of trainings in a year	4,000
No. of trainers required	200
No. of Master Resource Persons required	4
No. of TOT Modules (2 days duration)*	35

*This includes one TOT for each state/ UT

Education Sector

Education sector is envisaged to be the key to creating awareness about disaster risks and sensitising the students in schools and colleges about their possible role in disaster risk reduction. An early awareness in this is likely to result in reduction of damage and losses due to disasters and help young girls and boys to respond effectively as disaster managers and volunteers. They need to know about the do's and don'ts during disaster related emergencies caused by hazards such as earthquake, landslides, cyclones, floods and drought. Young adults in college can also be trained to be members of search and rescue and other disaster task teams. The numbers involved are large and can be used as a massive resource for effective DM and DRR. The position of number of schools/ colleges and enrollment in the country is as follows:

Category[18]	Sub-category	No. of institutions	Enrollment	No. of teachers to be trained for each institution	No. of teachers to be trained
School Education	Pre-Primary School (Nur/ KG)	67,157	5,264,053	Nil	Nil
	Primary School (1-5)	7,72,568	132,048,727	1 (Average school strength=171)	772,568

[18] The technical and professional institutes have not been taken into consideration since the students therein are required to be trained in respective areas of specialization such as engineers, architects, doctors, paramedics etc

	Middle School (6-8)	2,88,493	52,195,171	2 (Average school strength=181)	576,986
	High (9-10) and Higher Secondary (11-12)	1,59,708	24,971,520 + 13,414,499=38,386,019	2 (Average school strength=240)	319,416
Sub Total		**1,287,926**	**227,893,970**		**1,668,970**
Vocational Training	Government ITI/ Private ITC	7,065	1,062,524	1 (Average Institute's strength=150	7,065
College Education	Central University	20	Total Strength of Colleges/ Universities etc= 7,631,021	20	400
	State University	216	Included above	20	4,320
	Deemed University	101	Included above	20	2,020
	Institutions of National Importance	13	Included above	20	260
	Research Institutions	140	Included above	10	1,400
	Arts, Science and Commerce Colleges	11,698	Included above	10	116,980
Sub total		**19,253**	**8,693,545**		**125,380**
Total		**1,307,179**	**236,587,515**		**1,794,350**

*Source: www.ficci.com/SPdocument/20073/**IMaCS**.pdf[19] (Accessed in August, 2013)*

In calculating the above strength, the strength of BE/ Arch/ Medicine/ Dentistry/ Nursing/ B. Ed./ Polytechnics and enrollment in Open Universities has not been taken into account, on the assumption that in technical institutes, related DRR components would be part of syllabus. Besides, students in Open Universities would be difficult to cover since they are not regular students.

Therefore, in education sector, 1,794,350 teachers or say 1.8 million teachers are required to be trained even when benchmarks determined are minimal. Even if the existing capacities and infrastructure are significantly improved, it may not be possible to undertake such an ambitious programme over the next five years, pending state governments working out detailed HR & CD Plans for their respective states based on bottom up micro level exercise. Therefore, to begin with, it may be appropriate to plan for training of one third of the teachers worked out above during the next five years, or say, 600,000 teachers.

Taking an average intake in each training programme of five days duration at 25 participants, the number of training programmes required to be organised over a period of five years would work out to 24, 000 or 4,800 annually. If a group of 4 trainers organise 12 training programmes annually, we would need 400 groups of 4 trainers each, who are exclusively available for

[19] The source does not include benchmarks proposed for each category of schools/ colleges/Universities, which is proposed under the Study.

imparting training to teachers on DM related issues or 1,600 trainers. In order to train these trainers, in batches of 24 each, it would be necessary to organise 67 training programmes for trainers every year. If a group of four Master Resource Persons are entrusted to organise 10 training of trainers' programmes annually, we would need 7 groups of Master Resource Persons or say 28 Master Resource Persons. Further, in order to allow for flexibility to take care of different groups of trainees (teachers to impart training at university, college, higher secondary, secondary and primary level with different training modules for each category), as also the possibility that all trainers/ Master Resource persons may not always be available, the number of Trainers/ Master Resource Persons may be more, say about 2,000 Trainers (allowing for 25% increase) and 42 Master Resource Persons (allowing for 50% increase).

There may be five training modules, one each for primary, secondary, high school, higher secondary schools and university/college teachers.

Refresher training programme are considered essential to ensure that knowledge and skills are sustained. A refresher training programme of three days' duration may be organised two years after the initial training was imparted. In other words, teachers trained during the first year may be imparted refresher training during the third year and so on. It would therefore be desirable to increase the number of trainers and master resource persons by 25% from third year onwards to take care of refresher training programmes exclusively.

A summary of the quantification exercise for the education sector is as in the following table:

Education	
No. of teachers to be trained	**6,00,000**
No. of training programmes in five years	24,000
No. of training programmes annually	4,800
No. of training of trainers programmes	67
No. of training modules	5*
Master resource persons	42
No. of trainers	2,000
No. of refresher trainings in five years	9,600

* One each for primary, secondary, high school, higher secondary schools and university/college teachers

While the training for the development of Master Resource Persons and trainers may be organised at State level, the training of teachers for university/ colleges etc may be organised at district level and the training of teachers for schools from primary to higher secondary schools may be organised at block level. The venue of training programmes could be the Assembly or Conference Halls in colleges and Higher Secondary schools. The number of training programmes required to be organised every year for different categories of teachers may be worked out by respective state governments, based on the number of teachers in different categories in each state and the manner of calculation of number of training programmes indicated above.

PRI/ ULB Sector

In view of the larger policy commitment of democratic decentralisation in delivery of development programmes, PRIs and ULBs have the most significant role to play in implementing a wide variety of these programmes on the ground. This offers a huge opportunity to try and mainstream DRR into development planning and administration closer to the people, where it matters the most.

There are around 2.8 million elected representatives at the village, intermediate and district levels of Panchayati Raj Institutions (PRIs) out of which more than 2.6 million are in Gram Panchayats at the village level itself.

The number of PRIs at village, intermediate and district level together with number of elected representatives at each level are as in the following table:

Panchayat level	No. of Panchayats	No. of elected members
Village Panchayats	232,855	2,645,880
Intermediate Panchayats	6,094	156,557
District Panchayats	633	15,581
Total	**239,582**	**2,818,018**

Source: www.data.gov.in (Data Portal India)

The functions assigned to Local Authorities (PRIs/ ULBs), subject to the directions of District Authority, are to:

- Ensure that its officers and employees are trained for disaster management;
- Ensure that resources relating to disaster management are so managed as to be readily available for use in the event of any threatening disaster situation or disaster;
- Ensure all construction projects under it or within its jurisdiction conform to the standards and specifications laid down for prevention, of disasters and mitigation by the National Authority, State Authority and the District Authority;
- Carry out relief, rehabilitation and reconstruction activities in the affected area in accordance with the State Plan and the District Plan;
- Take such other measures as may be necessary for disaster management.

During interactions with village level elected representatives, it was brought out that very rudimentary training has been imparted to them during their induction training. The DM Capsule in five day training programme ranged from one lecture of one to one and half hours duration to half a day with theoretical training without any practical component. Considering the level of education of majority of elected representatives at village level, they could neither comprehend the purpose of training nor the actions required to be taken by them. Besides, the training was primarily response oriented without any component of risk reduction or climate change adaptation or mainstreaming of DRR in rural flagship programmes. They had no information about their legal responsibilities under the Disaster Management Act, 2005. There was a general sense of despondency that the revenue officials tend to ignore them in case of any calamity and elected representatives are not taken into confidence in response and relief as also damage and loss assessment related activities. GP employees had never been exposed to any training related to disaster management.

It would be desirable to give them exposure through a training programme of five days duration, which should have mostly practical component using a range of methods including video clips on various aspects of disasters. The training modules may be developed based on micro level vulnerabilities and ground situations. It would be necessary to train all elected representatives, keeping in view their statutory responsibilities.

Taking a batch of 25 participants, the number of training programmes to be organised, spread over a period of five years, would work out to 1,12,720 or 22,544 programmes every year. If 12 training programmes are organised by a group of four trainers annually, the number of such group of trainers would work out to 1879, or say, 1880 groups or 7520 trainers. If the Master Resource Persons, in a group of 4 each, organise 10 training programmes annually, with 24 participants each, there would be need for 32 groups of Master Resource Persons, or say, 128

Master Resource Persons. In order to allow for flexibility to take care of different groups of trainees (elected members of Zila Parishad, intermediate level and village level PRIs) as also the fact that the elected members would have to be trained in different training modules, keeping in view micro level needs, as also the possibility that all trainers/ Master Resource persons may not always be available, the number of Trainers/ Master Resource Persons may be more, say about 9,400 Trainers (allowing for 25% increase) and 192 Master Resource Persons (allowing for 50% increase). Although these figures look too ambitious, the number of training programmes could be manageable, keeping in view that trainings would be dispersed in different states and also that, in view of their statutory responsibilities, it may not be advisable to cover only a percentage of elected representatives over five years. There may be one training module for elected members of PRIs, to be developed by each state government.

The summary of the quantification exercise for the PRIs/ULBs is as in the following table:

PRI sector	
No. of elected members to be trained	**2,818,018**
Training programme to be organised in five years	1,12,720
No. of annual training programmes	22,544
No. of trainers	9,400
Total no. of TOT's	313
No. of training modules (one for each state)	35
No. of master resource persons	192
No. of refresher trainings	45,088

As in other cases, refresher training programmes of three days' duration would be necessary for elected representatives also. Therefore, the number of trainers and Master Resource Persons may be increased by 25% from third year to enable these additional trainers and Master Resource Persons to exclusively take care of refresher training programmes.

It has also to be kept in view that attrition level in case of elected representatives may be as high as 50% to 60% since elections are held after every five years, compared to other stakeholders where it may be between 10% -- 20% over a period of five years.

While the template for training of Master Resource Persons may be developed by NIDM, the training modules may be developed by DM Cells at state level with professional support from NIDM. The training for development of Master Resource Persons and trainers may be organised at state level. While the training of members of Zila Parishad and intermediate level may be organised at district level, the training of village gram panchayat members may be organised at block level. Since the training programmes may continue to be held regularly throughout the year, considering the vast numbers, it would be appropriate to make institutional arrangements with necessary infrastructure at block level.

The number of training programmes required to be organised every year for different categories of elected representatives may be worked out by respective state governments, based on the number of elected representatives in different categories in each state and the manner of calculation of number of training programmes indicated above.

There are about 8000 towns/ cities with municipalities. The total number of elected representatives in the urban local bodies as on date is 68723[20]. Therefore, on an average, there are about 9 elected representatives in each municipality. One training programme for elected members of two municipalities could therefore be organised at state level. The total number of

[20]State of Women in urban local government-India Report, UNESCAP

training programmes to be organised for 8,000 municipalities would therefore work out to 4,000, spread over 35 states/ UTs or say about 115 training programmes, on an average, for each state/ UT over a period of five years or say about 23 programmes every year. The training programmes may be organised on the lines of training programmes for PRIs with duration of five days each. A batch of 4 trainers in state/ UT may be needed for this purpose. Allowing for 25% increase, as in other cases, the number of trainers needed would be 5 for each state/ UT or 175 for 35 states/ UTs.

The trainers may be trained by State Urban Development Department or its state level institute, if necessary with the support of Guest Faculty and Sector Specialists. The contents of the course would however cover urban risk mitigation measures based on hazard and vulnerability assessment in normal as also in disaster situations including the following sectors: power, water and sanitation, storm water drainage, solid waste management, education through municipal schools, health care through municipal hospitals, development plan for city/ town, estate and land management, garden management, road development, fire services if under the control of municipal body etc. Besides, there may be one training module for each state/ UT, keeping in view the specific urban vulnerabilities of each state. It has also to take up DM related actions in accordance with the provisions contained in section 41 of the DM Act. Sector specific training programmes may be developed with the support of specialists for the employees of municipality in each town and employees imparted training through DM Cell in the municipality, if there is adequate strength; otherwise may be organised with the assistance of guest faculty. The summary is given in the Table below:

ULB sector	
No. of elected members to be trained	**68,723**
Training programme to be organised in five years	4,000
No. of annual training programmes	800 (23 for each state/ UT on an average)
No. of trainers	175*
No. of training modules (one for each state)	35**
No. of master resource persons	NIL***
No. of refresher trainings	1600

*175 trainers are dispersed over 35 states/ UTs @ 5 trainers for each state/ UT.

**One training module for each state/ UT

***Since only 5 trainers are to be trained for each state/ UT, the State Urban Development Department/State Urban Development Institute can take care of it easily, if necessary by involving sector/ subject specialists.

Rural Development (RD) Sector

Under RD Sector, an attempt has been made to work out modalities for creating awareness through constitution of Village Disaster Management Committees (VDMCs) and Task Forces, imparting training to community through training of seven Task Forces in villages in India.

The seven Task Forces may be on First Aid; Search and Rescue; Early Warnings; Water and Sanitation; Evacuation, Shelter Management and Relief Distribution; Trauma Counseling and Damage and Loss Assessment. These task forces had been initially determined for training at grass root level under the DRM Programme. These task forces had been initially determined for training at grass root level under the DRM Programme. The numbers in each task force has to be decided based on vulnerability and risk profile of each village, experience of past disasters,

population, whether the village is located at one or two places as a dense unit or is dispersed in different hamlets over a large area and other related considerations. This would be possible only when a micro level vulnerability and risk assessment is carried out for each village in participation with the community. The hazard, risk, vulnerability and capacity assessment (HRVCA) may be inclusive to cover geo-physical, social, economic and environment vulnerability.

Pending this exercise by the respective state governments to make the training needs assessment to work out the village level HR & CD Plan, a macro level exercise has been undertaken so that, based on it, community level training and capacity development programme can be initiated over the next five years during which period state governments may develop village level HR & CD Plans in participation with community, Gram Panchayat, government and non-government stakeholders in the village.

The following data extracted from Census 2011 has been relied on to work out the macro level training plan:

Number of districts in India	640
Number of Community Development Blocks	6,374
Number of villages (inhabited)	5,93,732
Number of villages (uninhabited)	44,856
Total Population	121,01,93,422 (say 1210 million)
Rural Population	83, 30, 87,662 (say 833 million) (68.84%)
Urban Population	37, 71, 05,760 (say 377 million) (31.16%)

Of the 5.94 lakh villages, the population of 2.36 lakh villages is less than 500 and the population of 3,976 villages is more than 10,000. The population of the remaining 3.54 lakh villages is in the range of 500-10,000. However, the approximate average population of each village will work out to 1403 or say about 1400.

The VDMC may consist of 10 members including Gram Pradhan, two members of Gram Panchayat, Village Development Officer and six other members to be decided in consultation with villagers subject to the following conditions:

- At least 50% of total members are women;
- SCs/STs/OBCs are represented in proportion to their population in the village
- Religious minorities are represented in proportion to their population in the village
- Gram Pradhan may be the Chairperson of the VDMC and Village Development Officer its Vice Chairperson

The functions of VDMC may include:

- Responsibilities assigned to it under Section 41 of the DM Act
- Preparation of Village Disaster Management Plan through a participatory exercise with the community;
- Action Plan for DRR and CCA interventions
- Ensure training of seven Task Forces through the assistance of Village Development Officer

- Oversee maintenance of identified village shelter(s) including shelter for livestock in case of a calamity
- Supervise the working of Task Forces in case of a disaster or threatening disaster situation
- Facilitating organisation of mock drills
- Any other function related to disaster management, as may be assigned by the District Administration/District Authority/ Block Development Officer

It would be necessary to give an orientation training to VDMC members and training in the specific functions assigned to each Task Force. Each Task Force may have a minimum of 4 members, making up a total of 28 members in seven Task Forces. In addition, 5 members of NGO/ CBO/SHG active in the area may also be imparted training, which number may increase depending on the population of the village. Therefore, the total minimum number of personnel to be imparted training in a village may be 43 (10 VDMC members plus 28 Task Force members plus 5 NGO/SHG members). This would work out to about 3% of the average population of the village. If the population of the village is significantly more, the number of personnel to be trained may also be correspondingly more on need-based basis. However, in such cases, the overall percentage of people to be trained is likely to be correspondingly less than 3% of the population of the village.

Although the number of villages in each block would vary, on an average, there may be around 93 villages in each block. It may not be feasible to cover all villages simultaneously during the first five years. Therefore, about 25% of the most multi-hazard prone villages may be selected for putting in place the above mentioned systems, which works out to 23.25 villages or say 23 villages in each block. The number of personnel to be trained in each village would therefore work out to approximately 989 (23x43) or say about 1000 persons over 5 years or say about 200 persons every year. The training will have to organised separately for different Task Forces which may be undertaken by taking members of each Task Force for five villages. The number of training programmes , each of five days' duration every year, would work out to 7 for seven Task Forces for a group of 20 each and 3 training programmes for VDMC Members plus representatives of NGO/CBO/ SHG in five villages (10+5=15x5=75). In other words, it will include 10 VDMC members plus 5 NGO/SHG members for each village, for 5 villages.

The total number of training programmes to be organised in each block would therefore be 10 every year. The Block Disaster Management Officer (BDMO) or the officer entrusted with DM work at block level with three support staff may undergo intensive training for 10 working days at DM Cell at ATI or SIRD, to be trained as trainers. There may be 8 training modules, one each for seven task forces and one for VDMCs/ NGOs/CBOs to be developed at state level by each state/UT government.

On all-India basis, the number of trainers to be trained would work out to 1594 or say 1600 multiplied by 4 trainers each or say 6,400 over a period of 5 years (25% of total 6374 blocks=1594 rounded off to 1600 blocks x 4 trainers for each block=6,400). However, since same trainers will impart training every year over the period of five years, the actual no. of trainers needed would be 1280 only (6400 divided by 5). If a group of 4 Master Resource Persons undertake 6 training programmes every year for a batch of 25 trainers each, the number of groups of 4 Master Resource Persons would work out to 9 or 36 Master Resource Persons. Allowing for flexibility and availability of Master Resource Persons, as in other sectors, the total requirement of Master Resource Persons may be around 54. However, in effect, it will work out to one batch of 4 Master Resource Persons for each state. If these targets can be achieved during the first two years, the state governments may consider coverage of additional villages in the coming years. Besides, this group will also be able to undertake refresher programmes of 5 days duration for trainers from third year onwards.

Practically, since Master Resource Persons will be engaged by DM Cells at state level, it might be necessary to provide one batch of 4 Master Resource Persons to each state/ UT. The total number of Master Resource Persons may therefore work out to 35 states/ UTs x4=140.

Rural Development

At the community level

Total number of people to be covered over 5 years (25% of villages in each block)	**15.94 lakh**
Number of blocks	6,374
Total no. of villages to be covered in each block	23
No. of people to be trained in each block in 5 years	1,000
No. of people to be trained in each block annually	200
Total no. of training programmes to be organised in each block	10
No of training modules (7 for 7 Task Forces +1 for VDMC/NGOs Members	8
No. of trainers to be trained on all India basis in five years	6,400
No. of trainers to be trained on all India basis annually	1,280
No. of master resource person in 35 states	140

The training of village level personnel may be organised at block level mostly with practical demonstration and video clips. The training material would therefore have to be developed quite imaginatively assuming that most of the villagers may not have been educated beyond primary level.

Government Officers and Employees

Assessment of government officers and employees to be trained has been made separately.

Table: Regular central government employees classified by group of posts held

Group of post	As on 31st March, 2009	
	No. of employees	% age to total
A	94504	3.05
B	257486	8.31
C	1943384	62.72
D	803133	25.92
Total	3098507	100.00

Source: Census of Central Government Employees, 2009

While quantifying number of personnel to be trained for different sectors discussed above, the number of government officials to be trained, both at central and state level had not been taken into consideration as it was considered that since sector-wise figures are not readily available, we may take the entire government sector as one integrated unit for working out the number of personnel to be sensitised/oriented or trained. It may be clarified that figures of state government employees include officials at state, district, sub-district and local level.

There is a general impression that there are too many bureaucrats in India from national to local level. However, data compiled from multiple sources, including a 2008 official survey, Right to Information applications, media reports and the Census, 2011 reveals that India has 1,622.8 government servants for every 100,000 residents. In stark contrast, the U.S. has 7,681. The Central government, with 3.1 million employees, thus has 257 government personnel serving every 100,000 population, against the U.S. federal government's 840.

Based on above data, the number of central and state government employees is 1.6228% of population or 1, 96, 35,880, of which 30,95,507 are civilian central government employees. The break-down of these officials in different groups is as follows:

The total number of state government employees would therefore work out to be 1,65,40,373. It is an approximate figure but more or less correct since variations in absolute numbers would be very insignificant. The break-down of these employees in different groups is not readily available. However, based on broad distribution percentages of central government employees, the group-wise break-down would work out as follows:

Table: Gazetted and non-gazetted state government employees as on 31st march, 2009

Group of post	% age to total number of employees	No. of employees
A	3.05	5,04,481
B	8.31	13,74,505
C	62.72	1,03,74,122
D	25.92	42,87,265
Total	100.00	1,65,40,373 (16.5 million)

The following assumptions have been made:

1) About 10% of Group A Officers are primarily engaged in policy making
2) About 20% of Group A Officers are engaged in management such as Project Managers etc
3) About 20% of Group A Officers and 40% of Group B, C and D Officers are implementers

While it would be desirable to sensitise/ train all officers and employees to ensure that DRR is mainstreamed in all facets of government functioning, it would be a tall order to train about 20 million officials. The above assumptions would therefore give a realistic estimate of number of officials to be sensitised or trained. The number of officials to be trained would therefore work out as follows:

Group	Central Government Officials	State Government Officials	Total
A (50%)	47,252	2,52,240	2,99,492 or say 3 lakh
B (40%)	1,02,952	5,49,802	6,52,754 or say 7 lakh
C (40%)	7,77,354	41,49,649	49,27,003 or say 50 lakh
D (40%)	3,21,253	17,14,906	20,36,159 or say 20 lakh
Total	12,48,811	66,66,597	79,15,408 or say 80 lakh

Considering the total numbers to be trained, it may be appropriate to take up training of 25% of officials over the period of next five years by taking up priority sectors in the first instance including health, education, panchayati raj, rural and urban development, which will reduce the numbers to be trained, both at central and state level to about 20 lakh, over the period of next five years.

So far as policy makers both at central and state level are concerned, it would be 10% of 25% of 3 lakh officers or say 7,500 over five years or 1,500 annually. This would be only sensitisation of officers over a period of two days. It would be advisable to organise sensitisation programmes for them at a national institute with the support of guest faculty. The officers may be invited from specific sector for each programme. This would require 60 sensitisation programmes to be organised every year with the intake of 25 each. The programmes may be distributed among three national level institutes such as NIDM, IIPA and LBS Academy at Mussoorie. Each institute will be required to organise 20 programmes of two days each. The faculty may consist of two DM specialists from the institutes and two sector specific guest speakers from premier institute in that particular sector.

At the second level of Management, the numbers would be 20% of 25% 3 lakh officers or say 15,000 over five years or 3,000 every year, which will include about 2,350 officers from central government and 12,650 from state governments. In terms of annual numbers, it would work out to 470 central government and 2530 from state governments. They may be trained in five days' training programmes. The Central Government officers may be trained at national institutes in 19 batches of 25 each with the support of DM and sector specialists, as proposed above. Similarly, there will be 102 batches of 25 each for state officers. However, since these training programmes will be organised in different states, the number of training programmes will be in the range of 3 to 5 for each state government which are manageable at state level training institutes including ATIs and SIRDs (particularly for RD sector).

For Group B, C, D officers (77 lakh), 25% to be trained over next five years, the coverage would be 19.25 lakh or 3.85 lakh annually. The training of 5 days' duration will be spread over all state governments to be undertaken at state/ district level through Master Resource Persons and

Trainers. 15,400 batches of 25 each may be organised every year. If a group of four trainers exclusively taken for this purpose, organise 12 training programmes every year with the intake of 25 trainees in each batch, there would be need for 52 groups of trainers or 208 trainers. These trainers may be trained by 4 Master Resource Persons in 9 batches. However, this would not be a feasible solution. It would be better to have a team of 4 Master Resource Persons in each state. They need not be recruited but may be taken from state level institutes or guest faculty, who can be trained as Master Resource Persons at national institutes. Sector specific Master Resource Persons can also be developed at national level who could travel to different states for training of trainers. In that case, number of Master Resource Persons may be 20 in 10 key sectors. It may be left to state governments to consider the option more suitable to them.

The no. of training modules to be developed would be 30, ten at national level, one each for ten key sectors to be developed by NIDM and ten each at state and district level, one each for ten key sectors, which may be developed at state level by each state government.

Government Officers and Employees

The following table presents the number of officers to be trained at policy, management and operational levels.

Government Officers and Employees

	Policy	Management	Operational
Officers to be trained over 5 years	7,500	15,000*	1,925,000
Officers to be trained annually	1500	3000**	3,85,000
No. of training programmes annually	60	121	15,400
No. of Training Modules (1 each for 10 key sectors at each level)	10	10	10
No. of refresher training programmes in five years	120	242	30,800

*2,350 central govt. employees+ 12,650 state govt. employees

**470 central govt. employees+ 2,530 state govt. employees

It would be necessary to organise refresher training programmes of three days' duration from third year onward. The trainers in each state may be utilised for this purpose. The methodology may be same as for regular training programmes.

Non-Governmental Organisations (NGOs)

The NGOs at community level have been covered for training along with VDMC members. In addition, NGOs at state and district level dealing with disaster management or in any sector such as education, health, rural development and PRIs/ ULBs may be trained in five days' programme. In particular, they may be associated with development of projects based on village level Action Plans. Besides, NGOs personnel at state and district level may be trained as trainers in different sectors discussed above. If necessary, limited financial support could be provided to them for specific activities to be undertaken by them. If there are large numbers of NGOs at State level, 20 NGOs in different sectors may be picked up. If five personnel are picked up from each NGO, the total of 100 trainees may be trained in four batches of 25 each at the DM Cell at ATI. At district level if 5 NGOs are picked up, 25 personnel may be trained either at district level in a training capsule of 5 days. The training programme may inter alia include

1. Development of village and block level Disaster Management Plans

2. Development of Action Plans at village/ block level
3. Conversion of Action Plans in one or more projects
4. Role and functions of VDMCs/ Task Forces
5. Organisation of mock drills
6. Facilitate documentation of disasters by district administration
7. Facilitate mainstreaming of DRR and CCA in development programmes being implemented in the district
8. Dissemination of early warnings through village level NGOs/ SHGs
9. Awareness Generation among community members
10. Assist District Administration in relief distribution and coordination between donor agencies and District Administration in case of a calamity.; and
11. Such other functions as district administration may like to entrust them.

There may be two training modules, one each for state level and district level NGOs/CBOs, to be developed by each state government at state level. They may be imparted training at ATIs (DM Cells). As for village level NGOs/CBOs, these are already covered in rural development sector.

The summary of the quantification for training of NGO functionaries as follows:

Non-Governmental Organisations

No. of people to be covered (100 in each state at state level and 25 in each of 640 districts)	**19,500**
No. of NGOs to be trained at the state level	20
No. of people trained @5 from each NGO	100
No. of trainings	4
No. of NGOs to be trained at the district level	5
No. of people trained @5 from each NGO in each district	25
No. of trainings	1
No. of training module (one each for State and district level NGOs)	2

The above exercise on quantifications of number of stakeholders to be trained over five years has been undertaken as an interim measure pending a detailed village/ block/ district/ state-wise exercise which may be undertaken by the respective state governments. The purpose is to ensure that training at all levels may kick-start immediately pending detailed exercise by respective state governments. Based on the quantification and training need analysis the following training themes have emerged:

Table: Training Themes

Sector/Level	Number of trainings	Themes
Health Sector		
Total number of training modules	**5**	
Doctors	1	Management of Mass Casualties and Hospital preparedness for Doctors
Nurses	1	Management of Mass Casualties and Hospital preparedness for Nurses
ANMs	1	Healthcare for Women and Children at Community Level
Other health workers	1	Healthcare at Community Level
Aaganwadi	1	Public Health & Food and Nutrition
Education		
Total no. of training modules	**5**	
Primary	1	Creating a culture of safety and resilience through knowledge, innovation and education
Secondary	1	
High school	1	
Higher secondary schools	1	
University/college teachers	1	
PRI/ULB		
Total no. of training modules	**2**	
PRI	1	Strengthening PRIs for mainstreaming DRR/CCA into development on the ground
ULB	1	Mainstreaming DRR/CCA into City Development Plans (CDPs) and their implementation strategies
Rural Development		
Total no. of training modules	**8**	
Total no. of modules at the community level	**8**	
Task Force 1	1	Training module on First Aid
Task Force 2	1	Training module on Search & Rescue
Task Force 3	1	Training module on Early warnings
Task Force 4	1	Training module on Water and sanitation
Task Force 5	1	Training module on Evacuation, Shelter Management & Relief Distribution
Task Force 6	1	Training module on Damage and Loss assessment
Task Force 7	1	Training module on Trauma Counselling

VDMC/NGO	1	Role and Functions of VDMCs in Disaster Management
Total training modules for government officers and employees	10+10+10=**30**	
Policy	10 (1 module each 10 key sector[21])	Mainstreaming DRR in Sectoral Plans and Policies
Management	10 (1 module each 10 key sector)	Training module on management of sector specific DRR plans and policies
Operation	10 (1 module each 10 key sector)	Training module on implementation of sector specific DRR plans and policies
Total training modules for non-governmental organisations	**2**	
State	1	Training module on strengthening the capacities of NGOs to support and sustain community-based disaster risk management initiatives
District	1	Training module on strengthening the capacities of NGOs to support and sustain community-based disaster risk management initiatives

The summary of sector-wise number of training programmes to be organised over 5 years, training modules, Master Resource Persons and Trainers is given below

Sector	No. of Training Modules	No. of Training Programmes in 5 years	No. of Master Resource Persons	No. of Trainers
Health	4	26,000	36	2,170
Anganwadi Workers/ Helpers	35 (1 for each state/ UT)	20,000	4	200
Education	5	24,000	42	2,000
PRIs	35 (one for each state/UT)	1,12,720	192	9,400
ULBs	35 (one for each state/UT)	4,000	---	175
Rural Development	8	63,740 (10 for each of 6,374 blocks)	140 (4 for each state/ UT)	6,400
Government Officers			NIDM +	--

[21] The list of 10 key sectors is given as annexure 3

A. Policy **B. Management** **C. Operational**	10 10 10	60 120 77,000	Sector Specialists State DM+ Sector Specialists 20	-- 208
NGOs	2	140* +640** =780	State DM Institute	--
Total	154***	3,28,420#	434	20,533

*4 training programmes in each state/ UT for state level NGOs

** One training programme in each of 640 districts for district level NGOs

***These 154 training modules include 105 to be developed by each state/ UT @3 per state;at national level, only 10 training modules are to be developed by NIDM for policy level officers in 10 different sectors. Rest of the modules will be developed by respective states/ UTs. If state governments so desire, NIDM can share template for other modules, which would be 42 only. (154-105+3-10=42)

#these are total number of training programmes to be undertaken from national to block level throughout the country over five years. On annual basis, these work out 65,684 or, on an average, 1876 per state. Its further dispersal at district/ block level will show that these programmes are manageable.

Satellite Based Training for PRIs

Keeping in view a very large number of PRI Members to be trained, the option of organizing training for them through Satellite based training programme was considered. However it is considered that it may not be very successful for the following reasons:

- An intensive awareness campaign would be needed in the first instance to motivate them to participate in such training.
- They are not likely to take initiative to assemble on their own at one place at the appointed time to participate in training, since it is not a priority task for them.
- Considering their level of education and comprehension, this type of training may not have the desired impact which face to face training will have.
- They are likely to be shy to ask questions in such mode of training
- Since such training will have a much wider canvas, all issues taken up for discussion may not be of direct concern to all of them, depending on the vulnerability and other issues related to their respective village.
- On the other hand, a training programme for PRI members of a cluster of 4-5 villages, through trainers with whom they have become familiar, is likely to be more effective; more so since local issues will be discussed andit would be more conducive to mutual interaction.

On the other hand, it is true that satellite based training would be more cost effective and technology driven wherein it may be more feasible to disseminate imaginative case studies. However, the Team still feels that face to face training may be more useful in view of the factors mentioned above. At best, satellite based training module may be tried in one state on experimental basis and evaluated before adopting it for training of PRIs for all states/ UTs.

Incentives

In cases where DM and particularly DRR related functions are an add on to their respective job description, some incentive needs to be given to motivate them to carry forward the agenda for disaster risk reduction and facilitating prompt and effective response. In Health Sector, an appropriate financial incentive may be considered for ANMs, Health Workers, Anganwadi Workers and Helpers. In Education Sector, teachers may be given nominal special pay for undertaking this additional task as also recognition as DM Advisor for the school. Both factors taken together may motivate them to take up this assignment seriously.

In PRI/ ULB Sector, the incentive has to be generated through awareness and motivation since it is a service to the community which has elected them. As for volunteers to be covered under RD Sector, awareness, motivation and an identity card as 'first aid volunteer, xxxx village' 'search & rescue volunteer, xxxx village' 'damage and loss assessment volunteer, xxxx village' etc may provide enough incentive since there is a sense of pride and ownership attached to it. They can be given modest reward, if they have actually done excellent work in a disaster situation or dissemination of early warnings etc. In case of government employees, a special mention of having put in practice the training skills in their ACRs and recognition by way of a commendation certificate may be adequate incentive. As for NGOs, recognition of organisations by issue of certificates by Secretary, Disaster management at state level and District Magistrate at district level is likely to generate commitment.

The incentives, to the extent possible, may be of non-monetary nature, except in such cases where it adds to their regular work, in which cases, financial compensation, even if partial, may indeed contribute to their motivation.

6.2 Prioritisation

As identified training needs and the resultant training requirements are large in number and vast in their scope, the prioritisation of training needs has been articulated in the form of 12 major training themes that must be taken up as a matter of priority as a part of the proposed perspective plan for training and capacity building for DRR in India.

However, it is highly recommended that design, pilot testing and scaling up of the proposed TOT modules is undertaken in active consultation with the stakeholders involved with specific reference to hazards, sectors and levels both as a part of a perspective plan of 3-5 years and annual plans on a regular basis.

Table: Prioritising Training Themes

S.N.	Training Theme	Intended Level
1	Mainstreaming DRR into development planning	Policy makers, planners and programme/project designers at the central and state levels
2	Mainstreaming DRR into rural development policies and programmes*	Policy makers and programme/project designers at the central and state levels
3	Mainstreaming DRR/CCA into City Development Plans (CDPs) and their implementation strategies*	Policy makers and programme/project designers at the central, state and city levels
4	Strengthening PRIs for mainstreaming DRR/CCA into development on the ground*	Programme/project managers at the district and sub-district levels

5	Preparing the health functionaries for emergency health services*	Programme/project managers at the state and district levels
6	Creating a culture of safety and resilience through knowledge, innovation and education*	Trainers and teachers at the state and district levels
7	Strengthening emergency communication including early warning and last mile connectivity	Programme/project managers at the district and sub-district levels
8	Community Led Hazard Risk Vulnerability and Capacity (CLHRVC) assessment	Civil society functionaries; CBO members; programme/project managers at the district and sub-district levels
9	Participatory training and capacity needs assessment (PTCNA)	Trainers and training planners and managers at NIDM, GIDM and other similar institutes, DMC, SIRDs and other sector level training institutions
10	Participatory evaluation and action learning (PEAL)	Programme/project managers at the national and state levels
11	Integrating gender approaches in disaster management plans	Programme/project designers and managers at the district and sub-district levels
12	Use of media in generating mass awareness on disaster management	Media people and information officers from within government

The above mentioned 12 themes would encompass all the functions undertaken in different phases of disaster management and have to be integrated across all training modules be it at national, state, district or community level. When these themes are effectively integrated in all training modules these would, in effect mainstream DRR and CCA in all phases of disaster management including activities being undertaken/to be undertaken in government sector, non-government sector, corporate sector and private sector as also at community level.

It must be underlined here that climate change adaptation (CCA) issues are intimately linked with disaster risk reduction (DRR) concerns and cannot be separated. Hence, in developing the training programmes on these themes, CCA would need to be integrated as a cross cutting concern. This will constitute an essential element of the perspective that would form the basis of the design and delivery of related training programmes.

7. PRESENT STATUS OF DM RELATED EDUCATION AND RESEARCH

Most responses to questions on research and education on disaster management are related to school education, which has made some progress in the disaster management field. There are isolated degree courses on disaster management in the country, and most have struggled to sustain. There is no system of accreditation in the disaster management field. Accreditation of existing degree programmes that include disaster management as an elective or optional subject do not address the quality assessment and assurance needs of these courses. The challenge lies partly in the fact that as a multi sectoral subject disaster management cannot be anchored with one single body for accreditation due to want of capacity of the accreditation agency itself to assess cross sectorally. Multiple options will need to be evolved and studied, based on the approaches of a single accreditation agency with an invited panel of expert organisations, or a disaggregated accreditation system with a coordination mechanism anchored by a disaster management institute such as NIDM. Disaster management research has remained at very nascent stages in the country, and concerted efforts will be needed to push it as a primary agenda for disaster management knowledge generation.

"There is no accreditation system. In fact we don't give certificates in our training programmes. Certificates can create a lot of problems and demands. Our aim is to train, not to certify."

: Nodal person in a State Panchayati Raj Department conducting training on various subjects including disaster management

"We worked very hard and the innovative approaches in camp management after the Kosi floods helped manage the situation with millions of displaced persons very smoothly. Unfortunately most people outside Bihar are not aware of what we did, and we never got down to documenting and disseminating it though I had started writing a note on it..."

: Senior official of Bihar State Government

A SWOT analysis of the existing DM-related research and education has been carried out under this component. The analysis looks at the impact of current research and education interventions in DM on the capacity development process of concerned professionals; and the specific areas for strengthening within the system.

Recommendations on training and accreditation will be made on the basis of national and international best practices. This includes the Trainer Development Programme developed in 1983 by the Department of Personnel and Training, Government of India; The Centre for Disaster Management at Lal Bahadur Shastri National Academy of Administration (LBSNAA) which provides training for DM with a particular focus on ICS since August 2003; the Training and Learning circle (a network of DRR practitioners) by AIDMI; the Federal Emergency

Management Agency in the US; and International Association of Emergency Managers Certification, among others.

Recommendations on the use of certification and accreditation tools to incentivise training and capacity building and to use for the career progression of government officials is envisaged. Certification, accreditation and quality management will be looked into, and a series of consultations will be carried out to come out with recommendations for short-term training programmes, research programmes, and formal educational programmes at graduate and post graduate levels in the report on Quality and Accreditation that will be based on this SWOT analysis.

Model for scope and range of accreditation

The extent of quality assurance and accreditation intervention required to address the complete outreach of disaster management capacity building efforts will be mapped through a 5x5 matrix (as part of Deliverable 7). The matrix looks at the two primary dimensions of addressing accreditation in outreach:

- Scope of the structure and programming, including accreditation of institutes/organisations; faculty/trainers (including accreditation of trainers/resource---persons and master trainers); programmes/courses; process; and the individuals.
- Range of accreditation, from awareness/sensitisation; short term trainings; role-based/sector---based courses; education certificates, diplomas, degree courses; and research.

Strengths of Research and Education- Good lessons learnt and replicable models

The study has covered representative institutions at the state level, and the identification of best practices, lessons and models is continuing as a part of the terms of reference of subsequent reports on research and education including quality, accreditation and certification of short term disaster management trainings, research, education and graduate and post graduate courses on disaster management.

The state studies covered primarily the administrative training institutions and the centres of disaster management within them, the training institutions of government departments such as Panchayati Raj, Rural Development, Health, Education and Urban Development.

The primary good practices learnt were in the area of the multi-sectoral nature of the research and training programmes being carried out across the board. Disaster management and related subjects are being covered in training programmes of ATIs, PRI training institutions, and educational institutes as well as civil society organisations. This is more evident in states that have had experiences with large scale disasters in recent years, including Odisha, Bihar and Gujarat. The cross sectoral nature of research and education being practiced in India is a strength and needs to be replicated and scaled. While doing so, additional efforts will need to be made for bringing closer the various programmes in different sectors. This is being taken up in the respective reports of the research and education section of the study.

Need for a multi-sectoral and collaborative approach to research

Disaster management and risk reduction is a very wide field. The success of these programmes will be dependant, to a large extent, on mainstreaming these concepts. In order to do this, collaborative research is of critical importance. The ecosystem of areas to be addressed includes water, shelter, urban development, employment and communications, among others.

Another core area that needs to be covered is the impact of climate change – particularly its impact on livelihoods and disaster risk reduction. Institutes such as NIDM, TERI and IIT are working on this at a basic level, but there is a need to further integrate research on climate change and disaster management and risk reduction.

Currently, the overlaps and connections between these areas exist mostly in theory. Actual research, education and documentation is done mainly in silos. Given the very wide range of institutions involved in such various direct and indirect sectoral dimensions of the overall domain, this is a major gap. It critically affects the following levels of integration:

a) **Vertical integration:** the action learning at the field level, strategic agenda at district and state levels and policy agenda at national level need to be linked through collaborative research that can feed the capacity building efforts at all levels. This has to be through differentiated packages but with common principles and requires collaborated research.
b) **Horizontal integration:** the nuanced disaster risk mitigation and response actions within various sectors related directly or indirectly to disaster management needs to come together to make a holistic disaster management capacity at the national level. This will be best achieved through cross-sectoral and multi-stakeholder based collaborated research.
c) **Regional and global dimensions of disaster management:** There are many aspects of disaster risk management that have cross boundary implications. The need for regional and global collaborative research and capacity building is particularly crucial in such themes as climate change, sea level impacts, trans-national river basins and disaster induced movement of populations. Collaborated research and policy is the way forward to address these concerns.

Research and documentation on disaster management

The mandate of NIDM and the ATIs includes research and documentation, which are a fundamental basis for informing training and capacity building efforts. Documentation and research are fundamentally different exercises, but both contribute to overall understanding of disaster management. More specifically, the documentation of contexts and practices can reveal core issues, gaps and needs; creating a foundation for more detailed research on these subjects that ultimately lead to solutions. However, the internal capacity of these institutions has so far allowed only limited space for carrying out in-depth and meaningful research.

It therefore emerges as an option to explore the possibility of collaborative research through partnerships with other institutions that can bring value addition as a combined capacity. Institutions that can be considered for this includes universities, private research institutions and civil society organisations carrying out research activities. This includes CSIR, DMI Bhopal, the Indian Institutes of Technology and the National Institutes of Technology.

Apart from the individual academic research, some universities have also set up disaster centres, which are exclusively looking into research relating to different aspects of disasters. The first disaster management centre to be set up after the approval of the National Disaster Management Act in 2005 was the Centre for Disaster Mitigation and Management at the VIT University, Vellore. In the same year, another centre named, Jamsetji Tata Centre for Disaster Management [JTCDM] was established at TISS with an agenda to reinvent disaster management in the country. There are many M.Phil and PhD students pursuing research on disaster risk reduction and related fields at the centre.

Of course, cross-sectoral and integrated research with various ministries and sectoral experts as highlighted in the section above should also be considered.

Disaster management is a practice oriented subject with much to be learnt from the implementation and actions on the ground. Action research and its accreditation therefore need to be an integral agenda item for the capacity building programme. Action research can be carried out only by researchers on the ground who can conduct participatory action programmes. The other requirement for action research is its linkage with ongoing developmental or disaster risk reduction programmes so that it can take advantage of live and dynamic situations and study their impact on local variables. It is therefore required to take a three pronged strategy of (a) partnering with local institutions and research/training/education organisations that can lead such research, (b) partnering with local implementation organisations within whose programmes external research teams can be embedded to carry out action research, and (c) to evolve a strategy of fielding research teams that can initiate small scale actions funded through research resources themselves to carry out limited scale actions and study their impacts. This can be made an integral agenda within NIDM's research and that of its partner organisations.

Resources for research have been a limitation in many cases, while the capacity of the institutions themselves has been a constraint in others. To address the issue of resources it may be considered to establish a research pool grant that can be centrally administered by NIDM and deployed through a national network of research institutions. In order to keep the research independent of interests it is most appropriate if the source of funding of such a grant mechanism is through the National Disaster Management Authority and NIDM. This will also align the research to the activities of NDMA such as development of guidelines, and of NIDM such as development of training modules and conduct of training programmes. There are various research pool grant schemes in Government of India including those managed by the Department of Science and Technology, and similar models can be adopted for a research pool grant on disaster risk management.

The assessment also indicates the need to take up documentation of local context based experiences. As highlighted a number of times by key informants, many lessons are learnt through good practices as well as the local challenges faced in disasters faced locally. This kind of documentation serves as a foundation for more in-depth research; highlighting core issues and themes. While NIDM has made inroads in documenting disasters such as the Odisha Super Cyclone, the Kosi floods and the Bhuj Earthquake, there is a need for more in-depth and sustained documentation of every major disaster. As seen in the cases above, the documentation can be taken up by NIDM in partnership with state level institutions including ATIs, Universities and NGOs to capture the processes of response of major past events. Besides this, mapping of local vulnerabilities in terms of physical, social and economic conditions will help in having a database for informed decision making. Thirdly, capacities need to be mapped and documentation of local institutions and their work along with its impacts and future potential will help create a database that will be useful in capacity building as well as future response activities.

Status of DM related research and education in the states

There has been little, if any, research, education and documentation effort for DM in the six states. The few initiatives that do exist suffer from quality issues and have minimal impact on the development of capacities. Dedicated institutions set up in the states for the purpose of research and education were also found to be lacking in terms of significant initiatives and in terms of generation of adequate educational resources for DM. In the absence of such initiatives, focused modules that are needed for the education of various stakeholders were also found to be lacking.

Lack of coordination among different departments at state and district level has negated convergence and DM is still perceived as primarily the responsibility of DM Departments.

Proper educational resources, addressing the needs of various disciplines, can help to dispel this notion and bring about the much needed convergence. Findings from research initiatives can help to develop and enrich such educational resources. However, in addition to lack of research, initiatives in the states were also found to have been hampered by a lack of adequate documentation of past disasters. Lessons derived from the documentation could have been used for the education of stakeholders at various levels and also as a resource for training. The lack of such documentation can be partly attributed to the lack of adequate professional support to departments required to carry out the documentation. The SDMAs and state level training institutes were found to be lacking a documentation unit with professional support and hence it has not been possible to either develop proper case studies or share the lessons learnt from the disasters.

At the school level, all states were found to have included DM in the course curriculum but the content was found to be highly theoretical with little emphasis on practical aspects. Issues were also noticed in the communication of the course content since the content recall was found to be low and the subject itself figured quite low on the priority of school children. Considering the large number of child victims in disasters (one of the most vulnerable groups), the content development and communication both need a re-look. In addition, considering the fact that the recall of disasters seen on TV was high amongst children, the course content could be re-designed to include audio-visual content and converted into multi-media format. Present day digital technology could be leveraged to develop such content for children of various age groups. DM education in schools could also be started at an earlier stage which would help to develop a deeper appreciation of the subject.

Institutions imparting technical education have started showing interest in including DM in the course curriculum. However, the subject has been included only as an elective in these courses, resulting in low priority being accorded to the subject by the students. Importance of technical personnel in the DM process needs no elaboration and hence it is essential to ensure that the essential aspects of the DM process and their role in these are picked up by students while obtaining technical education. Technical qualifications should ideally be considered as incomplete without adequate knowledge of DM aspects. Since DM aspects are now being included in the techno-legal regime of the country, it is essential that the technically qualified stakeholders are aware of the situation. An example that can be cited is that of the building codes which are required to be used extensively by civil engineers for design of structures. All these codes have been revised to include features to make existing and new structures disaster resilient. The engineering students need to be familiarised and tested on these aspects and to carry out further research into improving or simplifying them. However, the current educational curriculum prevents adoption of such measures and needs to be revised to include these aspects.

Inadequacies in the course content of certificate courses were also noticed. Interaction with faculty from institutes offering such courses revealed a severe shortage of educational material and resource persons to deliver the content. The institutes were often unable to upgrade the course content due to lack of support. Good research studies and resource persons in the state could have helped to fulfil the need for material and resource persons and would have made such courses more meaningful. In the absence of updated content, the courses have little relevance to the current context and fail to help in imparting necessary theoretical or practical knowledge. The demand and utility of such courses also suffers due to inadequacies of the course content.

The issues with education and research in DM can perhaps be addressed through the process of accreditation of DM courses. No attention has been paid to the need for accreditation which is still perceived as ‘controversial’. It is imperative to put proper systems of accreditation in place to ensure uniformity and quality of DM education and research across the country.

Andhra Pradesh

Research on Disaster Management is still a grey area in Andhra Pradesh. CMED is entrusted with the Research work but there has been little progress. Neither have APARD and MCRHRD IAP conducted any significant research to feed the training, education or policy domains. There are no clear evidences of successful analytical research / studies in this domain, though the need is being felt at various levels. There is a need of contextualising training modules according to the geographical settings and enhance the quality of trainings being imparted at different levels. Disaster management modules for different sectors have not been prepared in any institution. Disaster management educational needs of different stakeholders and allied entities across different sectors need to be met, at least up to a certain basic level. The intake for academic field, private sector, development assistance agencies, and government departments such as PRI, RD and Revenue departments needs to comprise individuals with appropriate educational inputs in the relevant fields rather than continuing to depend on people learning on the job. Unfortunately no educational institution is imparting higher education at graduate or post graduate level in disaster management related fields. There are some institutions that have introduced disaster management as an elective subject in engineering and humanities related courses, but this is grossly inadequate. In the education sector, disaster management has not reached even to the local schools in the form of the chapters or sub chapters. Though it is integrated but only in bits and pieces and is not serving the purpose.

At the higher education level there is a need for development of appropriate syllabus integrating DM. It has not gone into school education or into higher education in a significant way. If things go into school education as a robust foundation, it will be easier to address and develop them upwards. There is no quality management or accreditation system related to disaster management education at any level in any institution.

NGOs are doing substantial work on DM in AP. CARE, Oxfam and Plan are visible. IAG is still in evolution stage. More NGOs need to come forward at the district level and state level and engage with the government. Fire department has suggested subject content for classes 6 to 10 to education department for inclusion in syllabus. In the health sector Social and Preventive Medicine (SPM) in medical education has a DM implication. Now there is also some curriculum on mass casualty, but people in the field are not educated on such subjects.

Whatever evidences were found were in the work done with school children and communities. In the schools though the children are educated about the emergency contacts through elementary education but introduction of child led disaster reduction initiatives is required. Disaster Management finds no place in the syllabus of primary and upper primary classes. The schools authorities and children surveyed expressed the need of including Disaster Management within the text books and also supplement the same through regular practical trainings to make the children and the school communities informative and aware on the subject. Audio- visual aids could also help in imparting this education.

There is a need to develop certification and accreditation systems, both at training and at education levels. Though a number of courses conducted by state training institutions, district institutions and NGOs were found, there is no way to compare them or benchmark their quality in terms of course content, delivery processes, and rigour of evaluation. At the district or sub district level, certification of trained volunteers is also required. In Peddapatanam, the anganwadi teacher shared that reproductive health care information is provided to pregnant women in their centre. Apart from this information on health and hygiene is also provided to adolescent girls. This medium could also be used to inform the women and the vulnerable section on the Disaster related issues. In the given scenario and nascent stages of disaster management education at higher levels, linkages will need to be developed from training and school education, and built up as a holistic DM educational domain.

Bihar

The state of Bihar is rich in terms of a large number of academic institutions, and the nodal agencies are also quite active and well established. There has been very limited research and documentation on the subject of disaster management. Even major events such as the Kosi flood have not been documented in any significant way for learning purposes. Though there were many good practices and unique management tools deployed, such as the concept of Mega Camps, which was conceived and successfully undertaken for the first time in the country, their knowledge is only available in anecdotal form from the officials involved, or in ad-hoc notes touching some aspects. No official documentation of the event is available for using in training and education programmes.

The education department has come up with specific guiding tools, which primarily cover school safety aspects. Disaster Management is present in the course curriculum in schools, but apparently with limited impact. In the school curriculum of class VII there is small note on disaster and in VIII there are chapters on disasters but children are not able to recall what they were taught in those chapters. It was felt that the standard of disaster management education is not up to the mark. In the urban areas of Patna, the children shared that they had disaster management in their school syllabus in Classes 8, 9 and 10, but no hands-on training has ever been provided to them. The theory they said was not enough and useful for practical times. Even teachers are not trained on the subject.

Some of the colleges in the state are now taking interest in disaster management as a subject and including it as a component in the elective streams. There have been instances of tie-up between educational institutions and humanitarian agencies for training programmes, but these have been ad-hoc measures without any sustainable plans or certification and accreditation elements. NGO and UN agencies keep conducting trainings as part of their programmes, but these are neither inter-linked, nor linked with government initiatives in a concrete way, and do not also have a long term perspective. They are usually initiatives that are part of short term projects. There is agency branding and certification in these programmes, without quality assurance and accreditation measures.

A few advanced centres of thematic interest are coming up in Bihar, like Advanced IMD Centre, AIIMS Trauma Centre etc. According to the government officials, for extensive research, technical experts will be needed and they will need to spend time with the grass root level community. CDM needs to be strengthened significantly, and aligned with the DM Department and the BSDMA. External agencies need to be hired for conducting training on DM.

The certification, accreditation and quality management aspects in training as well as higher education are almost entirely overlooked. Many of the programmes, including those conducted by the PRI Department, do not include certification. It was reported that certification could lead to a number of local complications arising from special demands and expectations that get generated from certification. Many agencies thus avoid certification, maintaining that their main focus is to build capacity and not create status around it. Agencies such as BIPARD issue certificates of their own on the completion of training programmes, and these are neither accredited from any higher or external agencies, nor is there a system of monitoring quality across programmes over time.

Gujarat

Gujarat has several academic and research institutes, including a Seismic Research Institute in the State. However, there has been little work done, if any, by or through GSDMA on research and education for disaster management in general and disaster risk reduction in particular. Officers as also community including people's representatives are not aware of any such effort. There are no focused training modules for different stakeholders and no efforts have been

made to contextualise these modules and other standardised templates and IEC materials to local conditions.

There are standard training modules and some changes are also made, based on local needs, at the level of DPO but there are no focused training modules for different stakeholders, especially on aspects of DRR (prevention and mitigation) and its mainstreaming into development. Though there have been a lot of studies and documentation on Bhuj but a comprehensive, holistic study on all aspects of the DM cycle is still lacking. No effort has been made to document the good practices, success stories and lessons learnt despite a rich experience at all levels across all stakeholders. The current status of DRM and DRR in the district post Bhuj Earthquake and existing capacity gaps are yet to be analysed and documented. The Districts do not have adequate trained human resources for undertaking of any kind of research and documentation.

The Additional CEO, GSDMA conceded that there is need to diversify training modules to include social equity and gender equity as an essential component. He felt that training in disaster management should be made compulsory for all government officers and employees. Further, the implementation of techno-legal regime is still tardy, despite Bhuj experience despite the fact that Building Bye Laws have been amended. No strategic planning has been undertaken to mainstream disaster risk reduction in development process. Another area of concern is that with affluence due to economic development, pucca and multi-storied houses are being built in villages whereas there is no regulatory mechanism for rural housing. Unless this aspect is considered and remedial measures undertaken in right earnest on priority basis, the future housing stock in rural areas will considerably add to vulnerability.

Odisha

Odisha has a number of technical and academic institutions, and the nodal agencies are also quite active and well in place. Disaster Management is also in the course curriculum from the education point of view, both in school education and higher education. However it was felt that the standard of disaster management education and research is not at the desirable level. Despite having been through a very major disaster, the Super Cyclone of 1999, there is very limited documentation and research that has been carried out which can be used in an effective manner to inform future training and education programmes. There are anecdotal instances of challenges and good practices, and very fragmented agency wise documents that exist in some institutions on some themes, but a comprehensive usable documentation is missing. Though Odisha can be the testing ground for a number of concepts with its rich experience and stakeholder presence in the disaster management field, it has not been capitalised.

The certification, accreditation and quality management aspects are grossly lacking at all levels. Certification is carried out on an ad-hoc basis with agencies conducting the training issuing their own certificates without any higher-level accreditation. There are no mechanisms for quality benchmarking and comparison of various programmes for the purpose of standardisation of training and educational content, methodologies and outputs.

Odisha Education Board has recognised the importance of disaster management and introduced the same in course curriculum. The DM component should be inherent in all higher level professional courses. The team of disaster management professionals in various departments needs to be trained to deal with unforeseen situations. Teachers and students should be trained on disaster management issues according to their learning needs. It was stated that minimum knowledge on disaster management issues should be made a part of every course, while specialised knowledge such as rehabilitation and reconstruction issues can

be part of specialised professional courses dealing with disaster management and not all courses.

Although there is a chapter on Disaster Management in the Social Science book of 8th Standard but no efforts are made to have an understanding on the issue. The teachers as well as students remember coming across it but do not have any deeper understanding on the subject. No IEC material has been given to educational institutions as teaching aids to enhance the impact of the training. There was a consensus that besides the theoretical knowledge which is still vague to the readers and the teachers, practical training is a must and should be ensured to reduce the risk of disasters.

West Bengal

Even for officers at state and district levels who are being imparted training, there are general training modules and sector wise specific training modules have not been developed. No strategic planning for development of training facilities, training modules and training materials has been undertaken in a visible manner. For instance there are common training modules for the govt officers at the block level and the NGOs working at the state/district level. The DM unit at ATI Kolkata which is the apex level training institute in the state has state civil service officers working as associate professors though these officers have been certified as master trainers. This unit is organising foundation, basic and in-service training programmes primarily of 3-5 days duration. There are no predetermined modalities for selection of trainees or their deployment on positions where the training imparted may be helpful to them. There is also no clarity about the number of different stakeholders to be trained since no exercise has been undertaken to develop a human resource development plan with minimum benchmarks, hazard-wise, sector-wise or level-wise, to be trained among different stakeholders. While few engineers/architects have been trained under two different national programmes (NPCBEERM/NPCBAERM) the number is insignificant and the level of training imparted has not been assessed whether it is adequate.

Uttarakhand

In Uttarakhand despite a series of landslides over the years and earthquakes, practical knowledge of even ‘dos’ and ‘don’ts’ has yet to be imparted at the school level. Children have some awareness about the possible disasters that do and can hit the region. These include earthquake, landslide, flood and forest fire and the difficulties people face during these disasters. Cloud bursts and flash floods have emerged as major disaster risks in recent years in Uttarakhand that need to be addressed as a part of safe and sustainable development agenda.

State level Disaster Mitigation and Management Centre (DMMC), based in Dehradun, is currently engaged in training and publication of DM and DRR related documents. Another Disaster Management Centre (DMC) supported by Government of India is located at Uttarakhand Academy of Administration in Nainital. Both these Centres have very little communication with each other and function in relative isolation of each other.

8. PUBLIC AWARENESS & MEDIA

Public awareness on disaster risk mitigation has mostly been seen as an ad-hoc activity to pass on basic knowledge to the communities at risk. It is seen, however, that often community members already have this knowledge and/or ignore the messages given to them through advertisements, posters, wall paintings etc. There is a need to apply behaviour change communication strategies that take into account existing knowledge, local wisdom, motivational factors, social references and local beliefs. There is a wide range of options available nowadays in terms of vehicles for communication, and a multi-pronged approach will be most appropriate for reaching out to the diverse groups that need to be targeted. The role of the media in disaster risk mitigation also needs to seen in the light of behaviour change objectives rather than mere news delivery.

"No, there has never been any awareness campaign here that gave us any specific information through any flyers, posters or anything like that. We only see some warnings on television."

: Resident of Village Ramakrishna Puram, Andhra Pradesh, standing in a cyclone shelter right next to a wall painting on village disaster management planning

"Media has unrealistic expectations; it will therefore help to get speakers from Media/ Journalism since in that case media is likely to be more receptive"

: Senior State Government official in charge of disaster management and information

The United Nations International Secretariat for Disaster Reduction (UNISDR) defines public awareness as 'the extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards'. In the context of the NCRMP campaign, we look at public awareness in the same light; both through a knowledge and action perspective.

The SWOT analysis for public awareness and media will provide direction to the development of a strategy for improving public awareness on issues related to disaster risk and disaster management and the training and guidance tools for the media, which will be developed under this component. The current methods and media used for the sector will be studied and accordingly specific products for improving awareness and communication to the public through different mediums will be developed. Recommendations for a national media campaign, design of TOT module for journalists including Public Information Officers/ Public Relations Officers, and creation of tools for journalists that will include a handbook and guidelines will be taken up under this component. TOT modules will be taken up for in-practice professionals as well as fresh journalists joining the profession.

Public awareness has been generated to a limited extent primarily due to the GOI-UNDP DRM Programme and also due to past disasters which the community has faced. However, it is not uniform across thesis states. The level of awareness is much more in Bihar due to efforts of government and its agencies as well as NGOs. In Odisha, awareness has been generated to some extent through the efforts of OSDMA running a number of programmes on flood, cyclone, earthquake, fire and other associated hazards. In West Bengal, it was observed that awareness generation is minimal. For instance, before AILA cyclone, there was hardly any significant awareness about disasters. In Darjeeling, government effort was stated to be

lukewarm due to political issues whereas in Jalpaiguri, there was considerable awareness about landslides due to their frequent recurrence.

It was observed in all the states (except West Bengal) that while IEC materials have helped in generating awareness, person to person contacts have been more effective. Awareness among children about disasters is there, but it does not get translated into action. The state governments have not evolved proactive awareness strategy to reach across all communities, followed by training to take it forward. Mass media awareness campaign is generally known to community (NDMA Advertisements through TV) but it is not comprehended fully, as in the case of Pulse Polio Programme.

Media has not paid a significant role in disseminating awareness through local newspapers except dissemination of warnings. The media is willing to undertake this responsibility in partnership with government provided there is an imaginative strategy for the same and not as a mouthpiece of government.

NGOs, where active, have been doing this work considerably and in a more effective way. However, most of the NGOs are response oriented; therefore they come into picture after a major disaster. Still, in inaccessible villages, NGOs have done quite an appreciable job, particularly due to their bonding with the community.

Communication has been facilitated through TV channels and mobile phones. However, mobile service providers need to be engaged as part of corporate social responsibility to generate awareness and disseminate warnings through SMS. There is no uniform view about brand ambassadors. However, popular cricketers and film stars are perceived as role models, particularly by younger generation. Local leaders/ social activists were stated to be closer to people across all age groups such as Gram Pradhan, former Gram Pradhan but this would vary from village to village based on their respective reputation.

While basic awareness is by and large there, it needs to be more intensified and linked to action to be taken in case of disasters for which there is at least some awareness. At the same time, the emerging threat of unprecedented, catastrophic events precipitated by the growing threat of climate change needs to be addressed – flash floods, extreme cold and heat, growing instances of drought. These are events for which there is virtually no awareness among the general public. Documenting and raising awareness of these kinds of events will be critical in preparing for future disasters.

Andhra Pradesh

The level of awareness on Disaster Management is lower than desirable levels in the state despite their having been decades of work done around cyclone preparedness. Government officials are not adequately involved in Disaster Management awareness and allied activities. There is lack of awareness amongst field staff about long term risk mitigation, climate change impacts, camp management, and emergency needs. No organised and sustained IEC material has been developed to generate mass awareness on this crucial issue, and initiatives have been ad-hoc and dispersed. Strategies will need to be very flexible. As there is no such language as Telugu in AP, hence it is difficult to design a state campaign – the dialect, practices, risks and appropriate solutions change every few hundred kilometres. Planning will need to be central, but plans and strategies for public awareness will need to be very local.

APARD is to develop some IEC material, but long term strategy has not evolved. At the institutional level, awareness prevails but operational environment is not there. At the Community level – awareness is there but empowerment is not there. People don't know whom to call for taking up risk reduction efforts, or when there is a disaster. In time of bomb

blast recently, people didn't know whether to call fire or police or whom. Public awareness is needed on all aspects of DM.

Sharing of awareness material across organisations is also needed. APARD has created IEC material for doctors, police, education sector and local stakeholders. SDMA can look at the central function of standardising public awareness or at least making it consistent and compatible across various organisations and their campaigns.

In Vijayawada, the district fire office used local rural folk songs in evening 6-8 timing and doing skits, plays and musical functions on the theme Kala Jatra. This turned out to be very successful and drew huge crowds. Now people know whom to contact in an emergency. People respond better to warnings after such awareness programmes. Awareness to people in most vulnerable areas can be a targeted activity with focused budget allocation in relation to level of vulnerability.

APARD uses sapnet – one way video and two ways audio through which up to 40,000 persons per day can be reached. Fire service week – April 14-20 is celebrated every year. Fire equipments are demonstrated during these times on vehicles. Rest of the days it is not allowed to take vehicles outside the stations. During such time the department conducts awareness classes through NGOs, red cross etc. Documentary films are very useful. In training programmes, APARD shows films for awareness generation for lower level functionaries at district level, and no lectures are there. Media need is there but the institutions are having less capacity and interest in taking up extensive programmes. Media persons need training on giving proper information rather than giving breaking news.

There is a need to design proper material, carry out propaganda, distribute pamphlets, organise group meetings, and carry out health education throughout the year, to change mindsets. There is some awareness at the community level in some districts because of the training provided to PRIs and committees. Youth are quite active, and can be groomed through DM awareness and regular sensitisation. However, awareness of women on Disaster Management is very poor. Although the Self Help Groups are systematically running at the grassroots but no effort has been made to tap this platform for generating awareness on Disaster Management. However, some selected groups of women trained by NGOs are aware and sensitised about DM in general though they do not have any exposure and practical experience as such. Specific campaign mode can lead to effective awareness in the region, by involving women. In Village Ramakrishna Puram, Kodur Mandal, Krishna District, three NGOs have worked here in the past, mostly after the 2004 tsunami. NIRD also doing some awareness work. Much of the work done does not have a deep or long lasting impact though. There are paintings on the cyclone shelter wall about village mapping, but nobody could say anything about it. No early warning system is in place in this coastal region and the community is not sensitised about cyclones, tsunamis and other hazards common to the area. People have applied their traditional approaches for self defence during flood time such as making of floating aids such as thermocol covered under bags, round shape vessels etc. Apart from disaster management issues, people are also not even aware of the basic hygiene issues; which in turn leads to cases of endemic epidemics. The most cited source for information on disaster warnings is television, mainly through local news channels.

In Adarsh Nagar, Machilipatnam Urban, children of 5-15 years at a tuition centre in the slum knew about cyclones. They mainly know from the huge cyclone radar right besides their colony. The radar station also releases a red and white balloon each day with equipment to take readings on atmospheric features. In schools, no intervention for awareness generation has been carried out so far. Teachers also need to be sensitised on the DM aspects, then and only then the children will be serious about DM. They need to be sensitised about DM through Do's and Don'ts. IEC material is need of the hour, from awareness point of view at children's

level. In some areas children are sensitised about DM through the Do's and Don'ts through some local NGOs but still there is no relevant IEC material available for them.

Television is the main source of information. Communities watch Siti TV, Gemini Channel, MAA TV, etc. The news appears as breaking news. TV Nine and Shree channel are also popular. Phone could be used to provide crucial information. Otherwise the municipality and the ward counsellor make use of announcement system carried out through mikes in the rickshaw. Films are the best medium for information dissemination. Pawan Kalyan, NTR etc are the famous actors. Communities are illiterate here hence audio visuals are best medium. Prabhas and Kajal are their popular actors. Maaza, Thumbs up and Limca are some of the liked advertisements.

Mikes are used to pass on information in the villages. Public address systems and wireless systems are available in the Panchayat Bhawan. Warnings are issued directly by the District Magistrate on not venturing into the sea and also to inquire about the current status. Here, NGOS come to the aid of the communities much before the government after a disaster. Information is usually imparted on a house-to-house basis. Awareness could also be generated through one-to-one interpersonal interaction. Under the Pulse Polio campaign, awareness spread because the anganwadi teacher informed the parents of the children. People vividly recalled the Santoor soap advertisement due to its musical content and their most recalled personality is NT Rama Rao – actor. Vinayak Chaturthi and Ugadi are the popular festivals where people assemble at home and can be targeted for awareness generation.

Bihar

Currently there are a number of programmes being implemented to generate public awareness on disaster management. Significant amounts of work have been done in this regard since the GoI-UNDP DRM Programme in Bihar. Bihar DM Department, BIPARD, NGOs, INGOs, Bihar IAG and BSDMA have taken up various activities on public awareness. The periodic programmes of BSDMA include production of IEC material, printing of advertisements in newspapers and organisation of community events in partnership with other agencies. It was observed that significant amounts of IEC material have been developed, especially on the subjects of floods and earthquakes. However, these materials from various agencies lack consistency and a larger coordinated approach. As a result, there is a high chance of gaps as well as overlaps in their thematic content as well as community outreach. There is no organised centralised approach under which all the different agencies operate and produce and disseminate awareness material.

The communities shared that most of the information is gained through television but still it does not have any positive impact on the behaviour of the people. The people still have a laid back attitude. In many cases awareness is there but does not lead to the desired action. One stream of thought is on the lines of the messages being repeated again and again to drill down the thought and impact behaviour. A more advanced approach is of looking beyond awareness and using behavioural change communication to address the issue through aspects of motivation and social references besides addressing the knowledge element through awareness. Children shared that nukkadnataks (street theatre) could help serve the purpose of information dissemination better than print medium, as person-to-person contact has a deeper impact. Local groups conducting activities such as theatre repeatedly and on incrementally evolving themes will generate more interest from the people. Such measures can also be made responsive to local needs as they emerge. Different creative activities like talks, debates, art, forming eco-clubs can help entrench the good practices amongst the citizens to such an extent that they themselves could act as custodians in the community. These are the occasions where films and audio-visual content can also be deployed, as technology is now available to screen content in remote rural areas. The infrastructure being built by the PRI Department can be effectively used for this purpose.

Women's groups were of the view that apart from addressing issues of disaster preparedness, the public awareness programmes could also help to focus on crucial linked issues like women's empowerment, domestic violence, alcoholism etc. in a linked manner instead of treating disaster management in isolation. Even in the urban area of Patna, women are unaware of the emergency numbers of the Fire Station and Ambulance. They are totally dependent on private vehicles to carry them to the hospitals. The women also shared that they watch serials on the television and sometimes read local newspapers. This could be useful in providing information. Through radio and TV, people are accessing information from Mausam Vibhag about rainfall and weather forecasts.

The urban community including schools shared that in case of giving out warning for the oncoming disaster or any other crucial information, the public address system of the local mosque should be used. The 'voice of Azaan' reaches each and every household across the community; hence it can serve as a life saving mechanism. There was general interest in religious places and festive occasions to be utilised for disaster related awareness programmes. In Patna, the Red Cross has conducted disaster orientation in the community and also at the Madarsa through its volunteers. In the rural areas, while talking to the communities it was realised that mukhiyas and ward members conduct sabhas or meetings for providing information. Use of Dhol (drum) is common to draw attention to some important information. Mobile phones are also used nowadays. There is no early warning dissemination system at the village level. Person to person contact is the normal way to transfer the information. The communities keep track of water level in local rivers through bamboo posts installed by them as local mechanisms, and once the water level exceeds what they perceive as a danger mark, they start moving their household and other assets to higher ground. They leave their houses once water enters the house level. In case of floods they get information about the warnings through radio based on forecasts of the meteorological department. They also have traditional local ways of predicting weather by observing local winds and clouds, and animal behaviour. The information is then spread by word of mouth. According to the villagers, the most successful campaign so far is the Pulse Polio campaign. Because of its sustained nature, timing and intensity and the fact that the campaigners go to door to door, everyone is aware of it and there is follow up action by the local families with children.

Both in urban and rural area of the state, people shared that religious leaders can be their role models and they emerged as a strong social reference point for designing awareness campaigns. The communities respect them and listen to what they say. In schools, the teachers and students laid stress on practical trainings and demonstrations, which are completely missing presently. They extinguish fire by water only as they do not receive any formal training on any other ways of beating fires or using extinguishers. In Supaul, the villagers shared that earlier in the school there was no terrace. Had it been there during the 2008 flood, lives would have been saved. According to villagers there should be high raised platforms available to people to save themselves and their belongings. People recalled watching television programmes such as Satyamev Jayate, sports, news and Hindi serials. APJ Abdul Kalam, Gandhiji, and film stars like Akshay Kumar and Salmaan Khan were found to be popular amongst the local population, besides local singers and actors. The media journalists, one of the key stakeholders, are not sensitised to the nuances of the subject, and operate based on their own knowledge and personal sensitivities. A clear gap was observed between the Government officials and media representatives. Considering the fact that media has very high potential, and can reach to the community at large, this unutilised potential has to be tapped in an appropriate manner. Statistics or data of the previous disasters if shared with media and portrayed convincingly can help to bring about awareness amongst the masses. In case of the events like trainings and workshops, media representation is essential to help information on the topic. Local news of positive efforts and change, or good practices, should also find place in media. Similarly, while reporting on emergency situations, media needs to have prior understanding on areas of concern and meaning of various scales used for disaster event

grading. They need to be sensitive to the larger impact of any positive or negative reporting that they do.

As regards the early warning, it was felt that the traditional communication mechanism may also be revived, especially in the rural areas. In addition, the SMS based communication and warning also needs to be used in parallel for prompt and effective dissemination of information. It needs to be however borne in mind that ICT may not be reliable in disaster times and is more useful as a tool for pre disaster public awareness. In the rural areas, children in the schools are unaware of the disasters and are completely oblivious of the Do's and Don'ts during disasters, however, they are aware of 102, emergency number for ambulance that they came to know from ASHA. Such instances point to the fact that appropriate outreach and effective new tools can have a quick uptake provided they deliver results and generate an environment of trust in their reliability.

In the urban area of Patna, the women were found to be illiterate but they were part of Self Help Groups and had a high level of general awareness and confidence. They shared that arrangement for education of the illiterate women of the ward could also be done through their groups, and that too will help the cause of disaster preparedness.

Gujarat

The level of public awareness among government officers and employees is very good at all levels, from state to sub-district level. This is primarily due to Bhuj earthquake and also recurrent floods and droughts. Besides, the DRM Programme (2002-2009) has also played a key role in generating awareness among all stakeholders and particularly community. Another reason for enhanced public awareness is print and visual media, which, over last two decades has spread it widely; more so since TV has become a common household item. There was some awareness about NDMA's awareness campaign; inclusion of disaster management in school curricula and the efforts of civil society. On the other hand, there is no sustained campaign on the part of state government to create awareness. The main limitation is that, though some awareness has been generated, it has not geared the community to translate it into action.

The state government has not taken proactive action through distribution of IEC materials, at least not on a large scale at community level. The community is still not aware of underlying factors and possible preventive measures needed to be taken by them.

There is a common perception that the role of media starts with the occurrence of a disaster. According to GSDMA/ GIDM, training them helps in better appreciation of the issues involved. The main reason is that there is at present trust deficit between Media and Government, which needs to be bridged through transparency and sensitisation. GSDMA have started few programmes for sensitisation of media personnel. The training for media people includes both senior reporters and students of journalism, who will be the future journalists. The training programme is of one day's duration and includes all phases of disaster management.

The DM and Information Departments at district level need to work together closely for sensitisation of media, preferably as a mixed group (of government officers, media and NGOs). On the other hand, Media representatives in Jam Nagar conceded that training of media personnel is desirable to ensure there is no panic in case of a disaster through media reporting. Media in Gujarat and particularly Jamnagar is not hostile to Government; they try to report correct position; at the same time they have to do their duty. A constraint is that government officers dealing with media are not transparent; they give as little information as possible; release of uniform information to media through Control Room on regular basis may be helpful. Media has its own sources; when they get feedback, they need confirmation from district administration; if it is not forthcoming, media would publish information based on their own sources and government need not grumble about it.

Media has noted that most of the attention paid is response oriented; there is very little attention paid to DRR in normal times. In Jamnagar, District Magistrate, '108' and Fire Service get maximum coverage since they are in touch with media. Further, Media Personnel felt that Government should share actual information on real time basis with media; if media collects information on their own, they have a right to publish it although in all such cases, government is approached first to get their side of the story. Besides, information imparted by government is not user friendly; its dissemination leaves much to be desired; for instance, the normal wind speed in Jamnagar is about 30 to 40 kms per hour; if the forecast is that it would increase to 60 kms per hour without mentioning the normal wind speed, it is likely to generate panic since it does not give relative or comparable information to people who do not remember that normal wind speed itself is 30-40 kms per hour. Training is necessary not only for media personnel but for government officials too. It would be desirable to hold training for media personnel, PROs/ PIOs of government and NGOs together to reduce 'trust deficit'. Media also felt that community awareness is a weak link in government; it needs to be strengthened.

Odisha

The aftermath of the 1999 Super-cyclone and later the GoI-UNDP DRM Programme interventions have laid down the basis for disaster risk management in Odisha. In relation to public awareness, currently OSDMA is running a number of programmes on flood, cyclone, earthquake, fire and other associated hazards. The programmes of OSDMA are clearly visible and people remember these events. Apart from it, a large amount of IEC material has been developed by OSDMA, especially on floods and now also on earthquakes.

The media fraternity is not adequately involved or informed about the various ongoing disaster management interventions. Despite the problems faced during the Super-cyclone around media reporting of the event and its aftermath including the response efforts, there have been no significant interventions to build the capacity of the media sector and journalists working therein on better reporting of disasters and disaster risk related issues. In Odisha local TV, mobile and internet are becoming very popular day by day. It was felt that in addition to conventional media, mobile based communication, HAM radio and community radio and television can also be focussed upon for prompt and effective communication in the domain of disaster management.

The journalists shared that government only makes use of the media for visibility purpose. Although the journalists are quite aware about what to do during cyclones, earthquakes and floods, they are unable to contribute fully due to lack of proper support. Inclusive campaigning making use of local / traditional tools like street plays could help generate awareness at the local level. Apart from this the district administration should also place their trust in media and use it extensively to disseminate information on the issue.

At the community level, people have basic awareness about the natural calamities that can hit their area and life. However they are not aware of any of the government agencies working on disaster risk reduction, safety and empowerment of the community to face disasters. The awareness level of the community people on the practical aspects of disaster preparedness is very low.

In schools, children shared that they get information about the oncoming disasters through TV news and radio announcements. On the TV it is presented to them in the form of breaking news. However still they and their families do not vacate their houses and seek shelter elsewhere. Cartoons, Star Plus, News, Little star, Music Channel and National Geographic are some of the popular TV channels and programmes watched by children and their family members. Teachers shared that information could be provided through newspaper, television and radio, and that the text books are not enough in themselves.

The preferred brand ambassadors were not uniform across the state. Film stars (Rajnikanth, Chiranjeevi, Nagma, Karina Kapoor etc) and cricketers like (Dhoni, Yuvraj) are general favourites. In schools and communities that were covered in the survey children shared that advertisements were liked and many took interest in seeing them for their entertainment value. Various advertisements like Jab Padhega India Tabhi to Badhega India, HarEk friend Jaruri Hota hai and Bournvita were named as favourites.

West Bengal

There are no focussed programmes being implemented or initiative undertaken to generate awareness among community. Whatever little bit awareness is there among community, it is due to TV channels and DRM programme. There has been no distribution of IEC materials or conduct of mock drills at community level during last five years. Except in areas which have been visited by major disasters during the last one decade, the community is also somewhat indifferent to the need for such awareness since the other issues such poverty and livelihood options primarily engages their attention as the community perceives these as their "day to day disasters" rather than the disasters which have not affected them seriously. In areas where people have been affected by disasters like cyclones and landslides, awareness has been created unfortunately due to occurrence of such disasters. The NDMA messages through mass media have either not reached the community or if these have reached it has not been comprehended fully.

The media is also not playing a significant role to generate awareness on risk reduction among the community during non-disaster periods. The focus is primarily on response related functions in post- disaster situations. There is apparently trust deficit among government officers and the media personnel due to lack of transparency as well as inadequate comprehension of their respective responsibilities. As for brand ambassador there was no uniformity across the state and among different age groups. While the teenagers named few popular film stars/cricketers (Sachin Tendulkar, Dhoni, Salmaan, Katrina), surprisingly no Bengali actor or cricketer, the middle aged people normally showed a preference for a matured person who has significant knowledge of the subject or has worked in social field or otherwise in disaster situations. One fact however emerged clearly that any suggestion for a political figure as a brand ambassador did not find favour with the community.

Uttarakhand

In both the GPs the people had high risk perception. It was by the virtue of the fact that disasters like landslides are a recurrent phenomenon people had some traditional wisdom on do's and don'ts. Like women start procuring and storing food materials, dry wood, medicines for emergencies. According to the DM faculty at the ATI they have developed IEC materials from time to time for dissemination to public such as pamphlets on "How to prepare for disasters", "Six pillars of Earthquake Management", "Prakartik Apdayein: ghabrayeinnahin, tayyarikarein".

The ATI has also brought out publicity materials on "Do's and Don'ts during earthquakes" with the support of 6th Battalion of ITBP. However, there has hardly been an attempt on the part of government or media to increase the awareness of people about disasters at the community level. People did not even know about the DM plan of their village.

An early warning system does not exist in most of the villages. Disaster Information sent by the State Government is received only when the SMS service is activated. In both the GPs almost 80% people had TV and almost 100% had mobile phones. Women suggested that the most effective way of spreading awareness is through street plays and rallies by kids.

At the district administration level, the best means to reach out to the community was through the pradhans as they are approachable by both the community and the district administration.

Learning from SWOT analysis of media strategy

Public awareness campaigns need to be planned on the basis of certain criteria. In order to develop and introduce such campaigns both national and international campaigns will be studied to derive basic principles, good practices and challenges that need to be kept in mind while formulating the media strategy. These will vary between disaster based campaigns and other social causes - such as health, addiction and domestic violence. Though each analysis will differ depending on the information available and the nature of the campaign, primary prisms will include: their objective (why they were derived); their target audiences; the messaging; the tools (mediums) used to disseminate the message; their reach; and their strengths and weaknesses.

The campaigns will be targeted exclusively at the local level. This strategic decision was taken looking at various elements. The other components of the NCRMP project address training needs of government officials – essentially covering their knowledge gap and defining what actions they need to take. However, broad-based local level knowledge is a core area that needs to be addressed. It is here that 'public awareness' campaigns can make the greatest impact; covering a broad spectrum of the public and promoting individual and collective action that will help reduce risk. The key stakeholders will include local leadership, local champions and specific target groups such as children and women who are not always considered in strategy; but can actually play a key role.

The media strategy will incorporate findings from the SWOT analysis as one basis for evolving a more sectoral strategy that keeps in mind situational factors going beyond the pure communications domain. The media campaign will analyse strengths and weaknesses in their totality. Core points will be clubbed and possible action points triangulated. This will inform the target audiences and messaging as a whole.

Shifts in public awareness messaging

The level of knowledge that exists within communities varies widely from place to place. This knowledge, where available, is rudimentary and rarely translates into actionable risk reduction. The paradigm shift that is required in media campaigns includes: a) to create action-based messaging, moving from just telling people that there is a problem to encouraging them to do something about it; b) to ensure that various tools and forms are adopted to disseminate the information at the local levels and that this carried out on a sustained basis; and c) to integrate it with ongoing schemes and ensure that training and advocacy with government is being done in parallel to heighten sustainability and help deliver concrete results.

Areas requiring special focus and attention:

Special focus and attention needs to be given to certain target groups that will play a key role in strengthening local resilience. Seven such possible groups have been identified. At the same time, it must be ensured that the most socially and economically marginalised from across these target groups are addressed.

i. **Local panchayat members / leaders:** As the last level of elected representatives, this target group serves as a key link to the government and has the legal power to enforce decisions in the community. They can influence policy decisions, representing the

problems and views of the community to a wider forum. Through budget allocations and running of schemes, they can effectively form links between government policies and local risk reduction.

ii. **Local champions:** A community's teachers, doctors, self-help groups and other educated professionals serve as the unspoken, unelected advisors to the community. They are looked up to and trusted; and are often emulated even more than elected leaders. These local champions serve as the link between general people and the panchayat. Through their various vocations, they are a primary point to embed 'seeds' of awareness.

iii. **Children:** Whether enrolled in school or not, children are often more receptive and open to information. Internationally, the campaign on 'children at the heart of DRR' puts them in the driving seat. As the next generation, they will be the ones to carry on sustainable risk reduction practices. Children are also among the best channels to widely disseminate information as they tend to 'take information home'; spreading it to their peers and among their families. At the same time, schools play a major role as a community asset during disasters and children will play a core role in strengthening the resilience of these institutions.

iv. **Women:** The heart of their families, women generally spend the greatest amount of time at home and are one of the most vulnerable groups. In many villages, migration by the men to the cities for work means that the women are left alone; making it even more critical to build their awareness and action. Not only are self-help groups run mainly by women, but empowering them has often had a highly visible impact. They can influence family spending to improve preparedness at the household level.

v. **Persons with Disabilities:** Unless particular attention is given to PWDs, they are always left out by default. There is an urgent need to empower and include them in any disaster risk reduction action.

vi. **Elderly:** Though they are respected, the elderly are another group who are often left out. At the same time, the elderly are repositories of traditional knowledge and local innovations on disaster risk reduction. They are often more receptive to using and improving these techniques; which can be vital in small villages with limited facilities.

vii. **Livelihood-based groups:** Livelihood compulsions can often restrict 'safer' behaviour. This includes fishermen going out to sea despite cyclone warnings or farmers refusing to evacuate during a flood. Targeting groups such as farmers, shepherds, fishermen, labourers and masons is therefore critical. Some of their inherent activities play a major role in DRR. For example, water resource management practiced by farmers has a role in droughts; masons practicing safer building techniques means a safer community; and sustainability fishing and livestock grazing patterns help keep maintain ecosystem balance. Since these are some of the core occupations, any disruption can have resounding economic impacts and can compromise resilience and recovery. On the other hand, any major breakthrough in getting these groups to incorporate risk reduction and preparedness measures as part of their daily routine will go a long way towards mainstreaming DRR!

Linkages between SWOT Analysis

Media has a wide reach, but disaster reporting is low and has insufficient knowledge: There is a vast, multi-faceted and multi-lingual media network across the country. This free and vibrant print and electronic media taken together reach out to every part of the country all the way to village level. This offers a huge opportunity to use media to mount effective DRR campaigns.

However, media reporting on disaster risk management is very low. Reporting on disaster events is often over-hyped and focused on damage and inefficiencies of relief efforts. Reporters and media personnel do not have sufficient technical knowledge about basic dimensions of disasters and disaster risk to be able to report correctly.

National awareness programmes exist, but are done in isolation: Campaigns by the national government include large-scale mock drills and national-level awareness campaigns. Yet, these programmes are often done in isolation and the value of well-coordinated campaigning hasn't been tapped across various departments, NGOs, educational institutions and the media.

Communication hubs and early warning systems set up at the national, state and district levels have yet to result in effective last mile connectivity: The hubs set up by the Indian Space Research Organisation, respective State governments, SEOCs and DEOC are commendable, but have yet to establish effective last mile connectivity in early warning and other areas.

9. FRAMEWORKS AND QUESTIONNAIRES

ANALYTICAL FRAMEWORK

The analytical framework for carrying out the study consists of the following: conceptual framework; hypothesis and assumptions; key questions; capacity-dimensions and benchmarks; and major capacity gaps, issues and challenges.

The **conceptual framework** for the study is based on the following ideas:

- Disasters, both natural and manmade, destroy the gains of development.
- Boundaries of natural and manmade disasters are overlapping and blurring.
- Communities of people living both in rural and urban areas are invariably the first responders and the most primary stakeholders in a disaster situation: and hence their capacity to deal with disaster induced emergencies is the biggest resource both for disaster risk mitigation and effective response and recovery following disasters.
- Resilient communities are the key to effective disaster risk mitigation (DRM)/disaster risk reduction (DRR)
- Women and children are not only relatively more vulnerable to disasters, but are also more capable of carrying out many disaster management functions at the household and community level.
- Institutional spaces such as schools, hospitals, and offices are also veritable communities in the context of a disaster situation and emergency.
- Investing in disaster risk mitigation (DRM)/disaster risk reduction (DRR) considerably reduces loss of life and damage to livelihoods, property, assets and resources by reducing the intensity and severity of disasters.

The analytical framework (AF) seeks to capture the entire scope of study entailing 5 hazards (earthquake, landslides, cyclone, floods and drought), 4 sectors (education, health, rural development, PRIs/ULBs), 3 levels (policy, managerial and operational) and 6 states (Andhra Pradesh, Bihar, Gujarat, Odisha, Uttarakhand, and West Bengal), as described in the terms of reference. AF delineates the key questions that need to be answered in the course of analysing the secondary and primary data under the study.

The **hypothesis** underlying this analytical framework is that capacity is the key to effective disaster risk mitigation and that a fair assessment of the capacity gaps will help design and implement appropriate capacity building interventions.

Some of the related **assumptions** are as follows:

- Capacity has multiple dimensions related to human resource, organisations/institutions, infrastructure, finance, knowledge and learning etc.
- Though training is a powerful instrument of capacity development, there are many non-training aspects related to policy, planning, strategy, and enabling environment that have a major bearing on eventual capacities to perform and produce results.
- A sound capacity building strategy has to address all the dimensions of the capacity including both training and non-training factors.

The **key questions** to be answered under the study are as follows:

- What are the constitutive elements of both macro and micro disaster risks of rural and urban communities?
- What are the specific sources of vulnerabilities of communities at risk?
- What are the specific capacities particularly in terms of resources and skills available with communities at risk?
- What are the triggers of behaviour change towards a risk reduction orientation at the community level?
- What are the major capacity gaps at national, state, district and sub-district levels in undertaking disaster risk mitigation, response, rehabilitation and recovery efforts?
- What kinds of training and capacity building activities are required at different levels within government, non-government, and community organisations?
- What are the specific capacity gaps in terms of institutional and organisational development for disaster risk mitigation?
- What kinds of accreditation and certification systems and processes need to be put in place to ensure the quality of training and capacity building processes and results?
- What kinds of media support and capacities are required for fair representation of DRR concerns into the mainstream media and public sharing of available information for creating awareness about the existing disaster risks and the need for preparedness?

As there are **multiple dimensions of capacity**, one needs to have some commonly agreed capacity benchmarks that capture all these dimensions.

Capacity benchmarks are required to carry out the required capacity assessment on the one hand and develop a sound capacity building strategy and action plan on the other.

Some macro capacity benchmarks could be as follows:

- A national training and capacity development policy for disaster risk mitigation (DRM)/disaster risk reduction (DRR) in place and operational
- National and state level training and capacity development strategy and action plans for disaster risk mitigation (DRM)/disaster risk reduction (DRR) in place and operational.
- National and state level Human Resource (HR) Plans prepared and implemented
- DRM/DRR mainstreamed into national flagship development programmes including: Sarva Shiksha Abhiyan (SSA); National Rural Health Mission (NRHM); Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS); Jawahar Lal Nehru National Urban Renewal Mission (JNNURM)
- All the key stakeholders identified and their training and capacity needs identified and addressed through appropriate training, technical assistance, and organisational/institutional development interventions.

In view of these macro capacity benchmarks and other related micro benchmarks, the major **capacity gaps, issues and challenges** are mapped out and considered in the process of recommending and designing training and capacity building interventions.

ANNEXURES

Annexure 1: QUESTIONNAIRES

Household Survey Format – Rural Areas

Date of Survey	Date	Month	Year
Name of the Surveyor			

A. BASIC INFORMATION

1. State	
2. District	
3. Development Block	
4. Gram Panchayat	
5. Revenue Village / Habitation name	

B. RESPONDENT'S INFORMATION

1. Name of the respondent	
2. Father's / Husband's Name	
3. Contact number, if any	☐ 1: Yes _____ ☐ 2: No
4. Age of the respondent (completed yrs.)	
5. Sex	☐ 1: Male ☐ 2: Female
6. Caste-category of household	☐ 1: ST ☐ 2: SC ☐ 3: OBC ☐ 4: General
7. Religion	☐ 1: Hindu ☐ 2: Muslim ☐ 3: Sikh ☐ 4: Christian ☐ 5: Buddhist ☐ 6: Jains ☐ 7: Any other, specify _____

<table>
<tr><td>8. Economic Category of the household (as per the Govt. records)</td><td colspan="5">☐ 1: BPL Card ☐ 2: Antyodaya Card
☐ 3: APL card
☐ 4: Any other _____</td></tr>
<tr><td>9. Primary occupation of the household (main source of income for family)</td><td colspan="5">☐ 1: Agriculture
☐ 2: Wage Earner/ Labourer
☐ 3: Govt. Service
☐ 4: Local Shop
☐ 5: Small Business
☐ 6: Any other _____</td></tr>
<tr><td>10. List other sources of income for family, if any (other than the main source)</td><td colspan="5">☐ 1: Agriculture
☐ 2: Wage Earner/ Labourer
☐ 3: Govt. Service
☐ 4: Local Shop
☐ 5: Small Business
☐ 6: Any other _____</td></tr>
<tr><td>11. Status of respondent in family</td><td colspan="5">☐ 1: Head of household
☐ 2: Wife/husband of head of HH
☐ 3: Son/ Daughter of head of HH
☐ 4: Others</td></tr>
<tr><td rowspan="4">12. Number of Family members</td><td colspan="2">Adult (above 18 yrs.)</td><td colspan="3">Children</td></tr>
<tr><td rowspan="2">Male</td><td rowspan="2">Female</td><td colspan="2">5-18 yrs.</td><td colspan="2">Below 5 yrs.</td></tr>
<tr><td>Boy</td><td>Girl</td><td>Boy</td><td>Girl</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Total Family members
(add all members and record)</td><td></td></tr>
<tr><td>13. Total number of members above 5 years</td><td colspan="5"></td></tr>
</table>

C. ASSET WITH HOUSEHOLD

1.	Do you own any agriculture land?	☐ 1: Yes ☐ 2: No Go to ⇨ Q.3
2.	If, YES how much? (Please convert the area into ha. If respondent tells in local land measure unit)	☐ 1: less than 0.5 ha ☐ 2: 0.5-1.0 ha ☐ 3: 1.0-2.0 ha ☐ 4: 2.0-5.0 ha ☐ 5: above 5.0 ha
3.	Do you own any house?	☐ 1: Yes ☐ 2: No

4.	Type of house	☐ 1: Pucca ☐ 2: Semi-pucca ☐ 3: Kutcha
5.	Do you have a toilet?	☐ 1: Yes ☐ 2: No
6.	What is drinking water source for HH?	☐ 1: In-house piped connection ☐ 2: Stand post ☐ 3: Hand-pump (private) ☐ 4: Handpump (public) ☐ 5: Tube-well (private) ☐ 6: Tube-well (public) ☐ 7: Open well ☐ 8: River/ Spring/ Streams ☐ 9: Others
7.	Do you own any vehicle? If yes, please tick them	☐ 1: Car ☐ 2: Motorcycle ☐ 3: Tractor ☐ 4: Boat (Mechanised) ☐ 5: Boat (Manual) ☐ 6: Bicycle ☐ 7: Auto Rickshaw ☐ 8: Rickshaw ☐ 9: Any others _____
8.	Do you have an electric connection?	☐ 1: Yes ☐ 2: No
9.	Do you own livestock?	☐ 1: Yes ☐ 2: No …….Go to ⇨ Q.11
10.	If YES, what are they	**Livestock** / **Nos.** Cow and calves Buffalo Sheep Goats Pigs Chicken/ Hen Any other
11.	Does any member or asset of your house is insured?	☐ 1: Yes ☐ 2: No Go to ⇨ next Section ☐ 3: Don't know

12.	If YES,	**Type of Insurance**

D. INFRASTRUCTURE AND SERVICES

1.	Does your GP has a PHC	☐ 1: Yes ☐ 2: No
2.	How far is the PHC located (KMs)	
3.	Are there Doctors/ Nurses available in PHC	☐ 1: Regular ☐ 2: Not regular ☐ 3: Not available
4.	Is there any ANM/ASHA worker in the GP	☐ 1: Yes ☐ 2: No
5.	How far you have to go far in health emergency? (in KMs)	
6.	How far is the child birth facility? (in KMs)	
7.	Does your GP have a Primary School? If yes, how far is the Primary School located from your house?	☐ 1: Yes (How far _____ km) ☐ 2: No
8.	Does your GP have a High School / Secondary (upto class 10^{th})? If yes, how far is the School located from your house?	☐ 1: Yes (How far _____ km) ☐ 2: No
9.	Does your GP have a Intermediate/ Higher Secondary School (upto class 12^{th})? If yes, how far is the School located from your house?	☐ 1: Yes (How far _____ km) ☐ 2: No
10.	Has the school taught about basic precautions (do's and don'ts) to be taken in case of disaster?	☐ 1: Yes ☐ 2: No ☐ 3: Don't know
11.	If yes, are you satisfied with it?	☐ 1: Yes ☐ 2: No ☐ 3: No, it should be more frequent ☐ 4: NO, it should be more elaborate ☐ 5: No, _____

E. DISASTERS

Household Experience	Content		
1. Do you understand disaster?	☐ 1: Yes ☐ 2: No ☐ 3: Can't say/ Don't know		
2. Do you feel that you are vulnerable to disasters?	☐ 1: Yes ☐ 2: No ☐ 3: Can't say/ Don't know		
3. Have you been impacted by any disaster (within the village)?	☐ 1: Yes ☐ 2: No		
4. If yes, please name the disaster	**Type**	**No. of times**	**Year**
	☐ 1: Flood/ flash-flood		
	☐ 2: Drought		
	☐ 3: Cyclone/ High speed winds		
	☐ 4: Earthquake		
	☐ 5: Landslides		
	☐ 6: Any other, please specify ……		

5a. Indicate your views (refer Q.4)	**Type of disaster 1:**		
Sl. No.	**Kind of damage**	**Effect/ Impact**	**How you have dealt with it?**

5b. Indicate your views (refer Q.4)	**Type of disaster 2:**		
Sl. No.	**Kind of damage**	**Effect/ Impact**	**How you have dealt with it?**

6. Government support provided after the disaster?	☐ 1: Yes ☐ 2: No……Go to ⇨ next section
7. What kind of support provided by the government after the disaster?	☐ 1: Medical First Aid ☐ 2: Search and Rescue ☐ 3: Damage and Loss assessment ☐ 4: Evacuation

	☐ 5: Communication ☐ 6: Law and Order Maintenance ☐ 7: Drought Resistance crops ☐ 8: Compensation Rs._____ ☐ 9: Any other

F. RISK REDUCTION

1. Have you heard about any government agency/ organisations on disaster?	☐ 1: Yes ☐ 2: No……Go to ⇨ Q.5 ☐ 3: Don't Know	
2. If YES, narrate the support given	**List**	**By Whom**
	1.	
	2.	
	3.	
	4.	
	5.	
3. Do you feel that above listed actions are	☐ 1: Adequate ☐ 2: Useful to some extent ☐ 3: Will have no impact ☐ 4: Not addressing the issue at all	
4. If response is 3 or 4 (in the above question) then please explain		
5. Do you know about any ASSESSMENT exercise done on disaster in your village	☐ 1: Yes ☐ 2: No…….. Go to ⇨ Q.7 ☐ 3: Don't Know	
6. Did you or any of the your members participated in THE ASSESSMENT exercise	☐ 1: Yes ☐ 2: No ☐ 3: Don't Know	
7. Was there any PLANNING done for disaster reduction in the village?	☐ 1: Yes ☐ 2: No…… Go to ⇨ next section ☐ 3: Don't Know	
8. Did you or any of the your members participated in THE PLANNING exercise	☐ 1: Yes ☐ 2: No ☐ 3: Don't Know	

G. COMMUNITY GROUPS AND SHGs

1. Do you know about any CBOs/ SHG in your village?		☐ 1: Yes ☐ 2: No Go to ⇨ Q.4 ☐ 3: Don't Know
2. If yes, please list	**List**	**Are these groups Functional**
	1.	
	2.	
	3.	
3. If you or any of your family members is member of any of the institutions listed above?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
4. Is there any Disaster Task Force in the village?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
5. If YES, is the Disaster Task Force active in your village?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
6. Are you or any of your family member is member of Disaster Task Force?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
7. If YES (refer question 5), what kind of work/ tasks they have done	**List**	

H. TRAINING/ EXPOSURE VISIT

1. Have you or any of your family members received any training/ Exposure visits for disaster management?	☐ 1: Yes ☐ 2: No ……..Go to ⇨ ……Q.8
2. If yes, please list	**Name**
	1.
	2.
	3.
	4.
	5.

3. Have you or any of your family members followed the learning of training for disaster management?	☐ 1: Yes ☐ 2: No ☐ 3: Not applicable
4. Do you or any of your family members have received any accreditation card or certificate after training for disaster management?	☐ 1: Yes ☐ 2: No ☐ 3: Not applicable
5. If YES, issued by whom?	
6. If NO, would you like to have one issued to you?	☐ 1: Yes ☐ 2: No ☐ 3: Not applicable
7. If YES (refer 4.), what purpose the accreditation card or certificate will serve?	
8. Do you think you need to attend some training/ learning? If YES, then mention the type of training required from the list given. If NO, then go to the next section.	☐ 1: Medical First Aid ☐ 2: Search and Rescue ☐ 3: Damage and Loss assessment ☐ 4: Evacuation ☐ 5: Communication ☐ 6: Law and Order Maintenance ☐ 7: Drought Resistance crops ☐ 8: Any other _____ ☐ 9: Can't say

I. COMMUNICATION NEEDS AND PRACTICES

1. Have you received any information on disaster management?	☐ 1: Yes ☐ 2: No
2. Through which mode of communication?	1.
	2.
	3.
	4.
3. What you remember about the advertisement? (refer Q.2)	
4. Please let us know the occasions when the maximum people of your area gather at one place, and where? (Including religious, cultural etc.)	
5. Do you know whom to contact in emergency situations?	☐ 1: Yes ☐ 2: No

6. If YES, whom do you contact first?	**Health Emergencies**	**Disaster**
7. What is your favourite advertisement, and why? *(if respondent recall ask about the product they could tell)*		
8. Do you use any product after being influenced by advertisement?	☐ 1: Yes ☐ 2: No	
9. Who is the most popular celebrity?	**Male**	**Female**

10. How much time you spent on TV/ Radio? Generally, what are those timing? Which are the channels? If the household don't have TV then go to next section.	**Time spent (hours)**	**Timing**	**Channels**

J. Any suggestions for better communication strategy and building the capacity of the community

1	
2	
3	
4	
5	

K. Any other observation or question as felt important or necessary by the field researcher

Household Survey Format – Urban Areas

Date of Survey	Date	Month	Year
Name of the Surveyor			

A. BASIC INFORMATION

6. State	
7. District	
8. Municipality	
9. Area	
10. H.No/Address	

B. RESPONDENT'S INFORMATION

14. Name of the respondent	
15. Father's / Husband's Name	
16. Contact number, if any	☐ 1: Yes _____ ☐ 2: No
17. Age of respondent (completed yrs.)	
18. Sex	☐ 1: Male ☐ 2: Female
19. Caste-category of household	☐ 1: ST ☐ 2: SC ☐ 3: OBC ☐ 4: General
20. Religion	☐ 1: Hindu☐ 2: Muslim ☐ 3: Sikh ☐ 4: Christian ☐ 5: Buddhist☐ 6: Jains

	☐ 7: Any other, specify _____
21. Economic Category of household (as per the Govt. records)	☐ 1: BPL Card ☐ 2: Antyodaya Card ☐ 3: APL card ☐ 4: Any other _____
22. Number of working people in the household	
23. Primary occupation of the household (main source of income for family)	☐ 1: Salaried ☐ 2: Daily Wage Labourer ☐ 3: Self Employed ☐ 4: Piece rate workers ☐ 5: Apprentice ☐ 6: Any other _____
24. List other sources of income for family, if any (other than the main source)	☐ 1: Salaried ☐ 2: Daily Wage Labourer ☐ 3: Self Employed ☐ 4: Piece rate workers ☐ 5: Apprentice ☐ 6: Any other _____
25. Status of respondent in family	☐ 1: Head of household ☐ 2: Wife/husband of head of HH ☐ 3: Son/ Daughter of head of HH ☐ 4: Others
26. Number of Family members	**Adult** (above 18 yrs.) / **Children** **Male** / **Female** / **5-18 yrs.** (**Boy**, **Girl**) / **Below 5 yrs.** (**Boy**, **Girl**) (empty) **Total Family members** (add all members and record)
27. Total number of family members above 5 years	

C. ASSET WITH HOUSEHOLD

13.	From when you/your family is living in this house?	
14.	Do you own the house?	☐ 1: Yes ☐ 2: No Go to ⇨ Q.5

15.	If YES, do you have legal papers of the house?	
16.	Is your house	☐ 1: Pucca ☐ 2: Semi-pucca ☐ 3: Kutcha
17.	Is there an in-house toilet?	☐ 1: Yes ☐ 2: No
18.	What is drinking water source for HH?	☐ 1: In-house piped connection ☐ 2: Stand post (public tap) ☐ 3: Hand-pump ☐ 4: Tube-well ☐ 5: Open well ☐ 6: River/ Spring/ Streams ☐ 7: Others
19.	Does the household own any vehicle? If yes, please tick them	☐ 1: Car ☐ 2: Motorcycle/Two-wheeler ☐ 3: Bicycle ☐ 4: Hand-cart ☐ 5: Auto Rickshaw ☐ 6: Rickshaw ☐ 7: Any others _____
20.	Do you have an electric connection?	☐ 1: Yes ☐ 2: No …….
21.	Do you own any livestock?	☐ 1: Yes ☐ 2: No …….Go to ⇨ Q.11
22.	If YES, what are they?	**Livestock** / **Nos.** Cow Buffalo Sheep Goats Pigs Chicken/ Hen Any other
23.	Does any member or asset of your house is insured?	☐ 1: Yes ☐ 2: No Go to ⇨ next Section ☐ 3: Don't know
24.	If YES,	**Type of Insurance**

D. INFRASTRUCTURE AND SERVICES

12.	Is there any health centre in your area	☐ 1: Yes ☐ 2: No
13.	Are there Doctors/ Nurses available in health centre	☐ 1: Regular ☐ 2: Not regular ☐ 3: Not available
14.	How far is the health centre/hospital where you usually refer (KMs)	
15.	Is there any ANM/ASHA worker in the area	☐ 1: Yes ☐ 2: No
16.	How far you have to go far in health emergency? (in KMs)	
17.	How far is the child birth facility? (in KMs)	
18.	Where do you send your children for studies?	☐ 1: Government school ☐ 2: Private School ☐ 3: Trust ☐ 4: Any other……
19.	Has the school taught about basic precautions (do's and don'ts) to be taken in case of disaster?	☐ 1: Yes ☐ 2: No ☐ 3: Don't know
20.	If yes, are you satisfied with it?	☐ 1: Yes ☐ 2: No ☐ 3: No, it should be more frequent ☐ 4: NO, it should be more elaborate ☐ 5: No, _____

E. DISASTERS

Household Experience	**Content**		
1. Do you feel that you are vulnerable to disasters?		☐ 1: Yes ☐ 2: No ☐ 3: Can't say/ Don't know	
2. Have you been impacted by any disaster (within the area)?		☐ 1: Yes ☐ 2: No	
3. If yes, please name the disaster	**Type**	**No. of times**	**Year**
	☐ 1: Flood/ flash-flood		
	☐ 2: Drought		

	☐ 3: Cyclone/ High speed winds		
	☐ 4: Earthquake		
	☐ 5: Landslides		
	☐ 6: Any other, please specify ……		

4a. Indicate your views (refer Q.3)	**Type of disaster 1:**		
Sl. No.	**Kind of damage**	**Effect/ Impact**	**How you have dealt with it?**

4b. Indicate your views (refer Q.3)	**Type of disaster 2:**		
Sl. No.	**Kind of damage**	**Effect/ Impact**	**How you have dealt with it?**

5. Had the government provide any support after the disaster?	☐ 1: Yes ☐ 2: No……Go to ⇨ next section
6. What kind of support government had / have given after the disaster?	☐ 1: Medical First Aid ☐ 2: Search and Rescue ☐ 3: Damage and Loss assessment ☐ 4: Evacuation ☐ 5: Communication ☐ 6: Law and Order Maintenance ☐ 7: Drought Resistance crops ☐ 8: Compensation Rs._____ ☐ 9: Any other

F. RISK REDUCTION

1. Have you heard about any government agency/ organisations on disaster?	☐ 1: Yes ☐ 2: No……Go to ⇨ Q.5 ☐ 3: Don't Know	
2. If YES, narrate the support given	**List**	**By Whom**
	1.	
	2.	
	3.	
	4.	
	5.	
3. Do you feel that above listed actions are	☐ 1: Adequate ☐ 2: Useful to some extent ☐ 3: Will have no impact ☐ 4: Not addressing the issue at all	
4. If response is 3 or 4 (refer Q.3) please explain		
5. Do you know about any ASSESSMENT exercise done on disaster in your area	☐ 1: Yes ☐ 2: No……. Go to ⇨ Q.7 ☐ 3: Don't Know	
6. Did you or any of the your members participated in THE ASSESSMENT exercise	☐ 1: Yes ☐ 2: No ☐ 3: Don't Know	
7. Was there any PLANNING done for disaster reduction in the area?	☐ 1: Yes ☐ 2: No…… Go to ⇨ next section ☐ 3: Don't Know	
8. Did you or any of the your members participated in THE PLANNING exercise	☐ 1: Yes ☐ 2: No ☐ 3: Don't Know	

G. COMMUNITY GROUPS AND SHGs

1. Do you know about any CBOs/ SHG in your area?	☐ 1: Yes ☐ 2: No Go to ⇨ Q.3 ☐ 3: Don't Know	
2. If yes, please list	List	Are these groups functional?
	1.	

	2.	
	3.	
3. If you or any of your family members is member of any of the institutions listed above?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
4. Is there any Disaster Task Force in the area?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
5. If YES, is the Disaster Task Force active in your area?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
6. Are you or any of your family members is member of Disaster Task Force?		☐ 1: Yes ☐ 2: No ☐ 3: Don't Know
7. If YES (refer question 5), what kind of work/ tasks they have done	**List**	

H. TRAINING/ EXPOSURE VISIT/ OST

1. Have you or any of your family members received any training/ OST/ Exposure visits for disaster management?	☐ 1: Yes ☐ 2: No ……Go to ⇨ ……Q.8

2. If yes, please list	**Name**
	1.
	2.
	3.
	4.
	5.

3. Have you or any of your family members followed the learning of training for disaster management?	☐ 1: Yes ☐ 2: No ☐ 3: Not applicable
4. Do you or any of your family members have received any accreditation card or certificate after training for disaster management?	☐ 1: Yes ☐ 2: No ☐ 3: Not applicable

5. If YES, issued by whom?	
6. If NO, would you like to have one issued to you?	☐ 1: Yes ☐ 2: No ☐ 3: Not applicable
7. If YES (refer 6.), what purpose it would serve?	
8. Do you think you need to attend some training/ learning? If YES, then mention the type of training required from the list given. If NO, then go to the next section.	☐ 1: Medical First Aid ☐ 2: Search and Rescue ☐ 3: Damage and Loss assessment ☐ 4: Evacuation ☐ 5: Communication ☐ 6: Law and Order Maintenance ☐ 7: Drought Resistance crops ☐ 8: Any other _____ ☐ 9: Can't say

I. COMMUNICATION NEEDS AND PRACTICES

1. Have you received any information on disaster management?		☐ 1: Yes ☐ 2: No
2. Through which mode of communication?	1.	
	2.	
	3.	
	4.	
3. What you remember about the advertisement? (refer Q.2)		
4. Please let us know the occasions when the maximum people of your area gather at one place, and where? (including religious, cultural etc.)		
5. Do you know whom to contact in emergency situations?		☐ 1: Yes ☐ 2: No
6. If YES, whom do you contact first?	**Health Emergencies**	**Disaster**
7. What is your favourite advertisement, and why? *(if respondent recall ask about the product they could tell)*		

8. Do you use any product after being influenced by advertisement?			☐ 1: Yes ☐ 2: No
9. Who is the most popular celebrity?	**Male**	**Female**	
10. How much time you spent on TV/ Radio? Generally, what are those timing? Which are the channels? If the household don't have TV then go to next section.	**Time spent (hours)**	**Timing**	**Channels**

J. Any suggestions for better communication strategy and building the capacity of the community

1	
2	
3	
4	
5	

K. Any other observation felt important or necessary by the field researcher

Focus Group Discussion with Members of the Gram Panchayat

Broad Areas to be Covered	Specific information Areas to be Covered ***Facilitators should try to get concrete numbers to the extent possible.***
1. Disaster risk perception and awareness	• Previous disasters • Description of major damage and losses in terms of: lives, livelihoods infrastructure, food stocks, natural resources, access to markets, etc. • Whether community risk mapping has occurred, if so who led it, who participated, what were the outcomes. • Sections of the community that are most worst affected in disaster • Where schools, hospitals, water, roads, etc. are located and if they are safe during disasters? Are they accessible and functioning under normal circumstances?
2. Climate Change	• Any observations on changes in climate. • Specific description of changes in summer, winter, rainy season • Impact of these changes on livelihoods, environment, health, etc.
2. Role of Gram Panchayats	• Action taken to address disaster impact: immediate response, short term relieve, recovery • Action taken to reduce long term vulnerabliities • Access to disaster management programmes • Access to development programmes or funds or budgets • Actions that the Gram Panchayat can take on its own to reduce disaster risk • What are areas for which external support is required. • Awareness of formal role of panchayats in Disaster Management Act.
3. Training or Learning on Disaster Management	• Experiences have been instructive? What did they learn • What training have they received, from whom, was it useful? • Are trained groups accredited • Suggestions for the kinds of skills, information, training needed by Gram Panchayats to manage disasters more effectively
4. Community based and local institutions who have a role in reducing impact of disasters	• How many organised community based groups are active? These include self help groups, youth clubs, farmers groups, etc. • What are their activities? How are they relevant in the context of disaster? • Is there a disaster management task force? Is it active? When did it last conduct a mock drill or any other type of activity
5. Public Awareness and Early Warning Systems	• Is there a system for alerting or warning communities to take action before a disaster occurs? • What is the best way of communicating early warnings? • What kinds of public awareness campaigns have been effective in creating community awareness? Why are these effective? What is the medium of communication?

Annexure 2: Consolidated Training Needs Analysis

Table: Sector Wise Assessment of Capacity and Training Needs

Multi level/ Multi Sector	Capacity Gap	Training Needs Analysis: Content- Knowledge(K) and Skills (S)
DEPARTMENT OF HEALTH : Training Needs Analysis		
Level 1: National and State Level [(a)**Stakeholders related to Policy Formulation and Strategic Planning** and **(b) those related to Management and Coordination** like Secretaries ,Additional, Joint, Special Secretaries, Directors and Heads of Concerned Departments and Flagship Programmes including the concerned representatives and leadership of the Private Sector e.g. Apollo, Medanta, Forrtis, Escorts etc.]	Lack of awareness on DM Act Policy and Other relevant legislations and guidelines	Basic orientation and sensitisation on DM and DRR including: the DM act; policy; relevant legislations; GO's; Court rulings and judgements; and related / relevant guidelines and the roles of health sector with its horizontal and vertical linkages
	Lack of awareness, knowledge and skills for critical and trauma care during disaster related emergencies; sensitisation on national, state and district and departmental DMP's and Hospital Disaster Management Action Plans (HDMAPs) and SOP's; their utility and horizontal and vertical linkages Lack of orientation on Incident Response System, Emergency Support Functions and Emergency Communications	General Orientation on National, State, District DMPs, Departmental DMPs, ESFs and Emergency Hospital Preparedness Plans EOC and Disaster Control Room Operations and Management, Emergency Communications and mock drills for inter departmental and intradepartmental coordination at various levels Introduction to Rapid Visual Assessment and screening of buildings and Infrastructure for their disaster resilience and Hospital Safety
	Lack of familiarity with state of the art ideas in health care such as Advanced Trauma and Life Support Systems (ATLS) and Basic Trauma and Life Support Systems(BTLS), Mass Causality Management (MCM), Medical First Responder System (MFR); psychosocial care and rehabilitation; mental and social health, public Health issues etc.	Orientation on the fundamentals of handling CBRN emergency, BTLS, ATLS, MCM and MFR, Psychosocial care and Rehabilitation, Mental and Social Health, Public Health issues etc.
	Lack of appreciation of the need for mainstreaming DRR in the health sector: as also of the related tools, techniques and global best practices.	Tools, techniques and global best practices on mainstreaming DRR in the health sector and minimum standards and recent advances in medical response to emergencies and disasters.
	Lack of appreciation towards latest technological applications like Remote Sensing, GPS and GIS and latest learning related to	Orientation on the Integration of health services – institutional integration and networking with other health service providers.

	humanitarian logistics	Humanitarian logistics and Emergency Procurement of Goods and services including Resource and material management, inventory management
		Rapid health needs assessment in different disasters and role of Health Department in PDNA
		Management of relief camps and camps for volunteers arriving for disaster relief, relief and rehabilitation
		Arrangement for financing relief and reconstruction activities;
		Sensitisation on Conducting mock drills in co-ordination with different functionaries including Govt. Depts. & NGOs.
		Media Management and crowd management
Level 2: **State and District Levels :** [(a)**Stakeholders related to Policy Formulation and Strategic Planning <u>and</u>** **(b) those related to Management and Coordination** Heads of Concerned Departments and Flagship Programmes related to the Health Sector, Principals of Medical Colleges and Institutes, CMO, and CMS of District and other Hospitals including the Private Sector **<u>and</u>** Senior Specialists (Super specialists / Experts)]	Same as level 1 and Inadequate in-service training on recent advances in Advanced Trauma and Life Support Systems (ATLS) and Basic Trauma and Life Support Systems(BTLS), Mass Causality Management (MCM), Medical First Responder System (MFR), Psychosocial care and Rehabilitation, Mental and Social Health, Public Health issues etc	General orientation on areas included in level 1 and Training on recent advances Mass Causality Management (MCM), ATLS and Basic Trauma and Life Support Systems (BTLS), Medical First Responder System (MFR), Psychosocial care and Rehabilitation, Mental and Social Health, Public Health issues etc --- Emergency communications, coordination and related protocols. Manning the EOCs/control rooms; running and management of health desk in relief camps and inventory management Running of mobile and temporary hospitals
Senior Specialists (Super specialists / experts)	Inadequate in-service training in Advanced Trauma and Life Support Systems (ATLS) and recent advances in ATLS, CBRN Emergencies, BTLS, MFR, MCM etc.	Regular Advanced Refresher Courses on recent advances in Advanced Trauma and Life Support Systems based on the respective specialisation of the concerned individual (ATLS) and advanced courses on handling of CBRN emergencies.

Level 3 : **Sub Divisional / Operational Level - Management and Implementation:** BMOs, MOs in charge of key departments of health sector and hospitals including CHCs, PHCs especially associated with administrative work.	Same as level 1 **and** Inadequate in-service training on recent advances in Advanced Trauma and Life Support Systems (ATLS) and Basic Trauma and Life Support Systems(BTLS) , Mass Casualty Management (MCM), Medical First Responder System (MFR), Psychosocial care and Rehabilitation, Mental and Social Health, Public Health issues etc	Same as level 1 **and** Orientation on ATLS and handling of CBRN emergencies Regular Refresher Courses on recent advances in Basic Trauma and Life Support Systems (BTLS), Mass Causality Management (MCM), Medical First Responder System (MFR), Psychosocial care and Rehabilitation, Mental and Social Health, Public Health issues etc and Manning the EOCs/Control Rooms, Media and Crowd Management, Stress Management and Leadership. Running of Mobile and Temporary Hospitals
Level 4 : Paramedics and Pharmacists	Lack of orientation on DM and various laws, rules and regulations related to role of health sector in disaster management. **Note**: 108 ambulances are led by paramedics and pharmacists who are responsible for patient stabilisation; but more often than not due to acute shortage of doctors especially in rural areas and small towns, the role of paramedics becomes even more critical and therefore they must be trained to advanced level of BTLS.	General orientation on DM and various laws, rules and regulations related to role of Health Sector in Disaster Management. Regular Refresher Courses and Hands on Training on recent advances in Basic Trauma and Life Support Systems (BTLS), Mass Causality Management (MCM), Medical First Responder System (MFR) and Triage. Basic S&R, evacuation and Mock Drills Emergency Communications, Coordination and related Protocols. Manning the EOCs/Control Rooms, Running and management of health desk in relief camps and inventory management and Running of Mobile and Temporary Hospitals
	Work in high stress and public pressure (usually first to reach on the spot with 108 Ambulance) and are in direct contact with people in distress but generally lack skills related to leadership, motivation and handling stress. Need to be sensitised towards the need of women, children and people with disabilities and the socio cultural aspects of the region.	Leadership in Disaster Situations ,Stress and Time Management, Motivation and Psychosocial Care and Crowd Management Gender, people with disabilities and special needs and orientation related to the socio cultural aspects of the region.

Level 5: Operational Community level staff who can and should be the flag bearers of DM and DRR at the community level ASHA, ANM's, MPWs, FHWs etc	Lack of awareness and orientation on various aspects of disaster management and long term vulnerability reduction through interventions in the field of public health, social and mental health, psychosocial care etc.	General orientation on DM, DRR and long term vulnerability reduction through interventions in the field of Public Health, Social and Mental Health, Psychosocial care etc. First aid, S&R and introduction to BTLS
ULB and PRI's: Training Needs Analysis		
Level 1: National and State Levels **(Policy, Strategic Planning and Top Management Level :** All MP's, MLA's and elected / nominated representatives of the people at National and State levels All Concerned Departmental Heads and Officers of Central and State Govt.)	Lack of role clarity and awareness about rights, duties and obligations of self and various stakeholders and the issues and challenges faced by different stakeholders. Lack of awareness both on PRI and DM Acts and Policies and related rules and regulations	Basic Orientation about DM, DRR , DM Act and Policies, institutional set-up, Techno legal framework with special focus on Rights, Roles and responsibilities of PRI's and community in DRR their statutory and legal status
	Lack of sensitisation on the need for mainstreaming DRR and its benefits in terms of effective disaster management.	Knowledge about instruments and incentives that facilitate mainstreaming DRR into development planning and the need for mainstreaming DRR through a powerful highly contextualised cost benefit analysis, Good Practices and lessons learnt on DRR etc. Disaster-Development Link.
Level 2A: District and Sub district Levels **Implementation and Operations level :** All PRI representatives at District, Block, Taluka, GP and Village level and related officials.	Lack of Awareness and sensitisation on DM, DRR and CCA. Lack of Role Clarity Lack of appreciation of Participatory planning and development. Lack of sensitisation on Gender issues, inclusive development and special needs of socially, economically and physically vulnerable and marginalised sections of the community.	Basics of DM and DRR with focus on Rights, Roles and responsibilities of PRI's and community in DRR their statutory and legal status. Preparation and implementation of DDMAP, TDMAP, BDMAP and VDMAP with special focus on integrating DRR and CCA concerns into developmental plans and initiatives on ground.
		Climate Change with special focus on CCA related to Agriculture, Livelihoods, WATSAN and Public Health.
		Constitution and Training of village /GP level task forces.
		Participatory Planning and Action and Community Managed DRR/CBDM/CMDRR.
		Gender issues and social inclusion
		Early warning interpretation and dissemination
		Basic First Aid, S&R and MFR.
		Disaster Resilient Construction and Mason training

Level 2B: **Implementation and Operations level :** All elected ULB members and related officials at District and Sub district levels	Lack of orientation of DRR amongst Public representatives and lack of role clarity and the need and benefits of mainstreaming DRR into various sectors.	Basic orientation and sensitisation on DM and DRR including the DM act, policy , relevant legislations, norms , traditions, building by laws, GO's and Related / relevant Guidelines and the roles of concerned stakeholders with its horizontal and vertical linkages
	Inability to conceptualise and frame and implement the development plans, land use regulations, development control regulations etc. in different parts of the City/ULB for safe and sustainable growth	Preparation and Implementation of Town and Country planning , City / Urban DM action plans and integration with various Departmental DMPs and DDMAP, SOPs and EOC Knowledge about instruments and incentives that facilitate mainstreaming DRR into development planning
	Hardly any control over the construction practices… Haphazard and illegal construction and poor maintenance of buildings and infrastructure	Participatory Learning and Action...Participatory Planning and Management Monitoring and Evaluation Orientation to PDNA tools and techniques, Modern concepts on Relief, reconstruction and recovery, the benefits of Build back Better and Mainstreaming DRR into Development
Department of Rural Development : Training Needs Analysis		
Level 1: **National and State Levels** **Policy and Strategic Planning :** [(a)**Stakeholders related to Policy Formulation and Strategic Planning** and **(b) those related to Management and Coordination** like Secretaries ,Additional, Joint, Special Secretaries, Directors and Heads of Concerned Departments and Flagship Programmes including the concerned representatives and leadership of the Private	Lack of Awareness on DM Act, Policy and Other relevant legislations and guidelines, norms, procedures and protocols. Lack of sensitisation on Disaster Management Action Plans, SOPs and mainstreaming of DRR into various stages of sectoral plans and SOPs of different levels. Complete lack of role clarity with respect to DM and DRR. No / minimal knowledge, training and appreciation of the need, tools, techniques and global best practices on Mainstreaming DRR into development and various flagship programmes. Lack of appreciation towards latest technological applications like Remote Sensing and GIS, EIA	Basic orientation and sensitisation on DM and DRR including the DM act, policy , relevant legislations, norms , traditions, GOs and related / relevant guidelines and the roles of concerned stakeholders with its horizontal and vertical linkages Sensitisation on the Preparation and Implementation of DM action plans and SOPs at various levels including HRVC at micro level, its graphical / pictorial representation / interpretation, Remote Sensing and GIS and integrating / mainstreaming DRR concerns into these at all levels of planning and implementation. Knowledge about tools instruments and incentives that facilitate mainstreaming DRR into development planning and Global best practices related to mainstreaming DRR into development planning and vulnerability reduction. The link between MDGs, DRR and CCA , Models of Vulnerability Reduction and the

Sector]	and SIA and audits, Project management Participatory planning and action, Lack of Gender Perspective and special needs of people with disabilities	Importance of Vulnerability Reduction as 'the Key' to Disaster Risk Reduction Information systems and decision making tools for disaster management (IDRN, IDKN etc.); Project Management, Participatory Planning and Action Gender, people with disabilities and special needs
Level 2: Management and Coordination **Divisional and Subdivisional levels** [Chief Development Officer (CDO), Project Director(PD), District Development Officer (DDO), Project Directors/ Coordinators/ Incharge and Departmental Heads of all National and State Flagship Programmes like MNREGS, JNNURM, NRHM, Swarna Jayanti Shahari Rojgar Yojana (SJSRY), PMGSY, National Social Assistance Programme (Indira Gandhi National Old Age Pension Scheme, Indira Gandhi National Widow Pension Scheme, Indira Gandhi National Disability Pension Scheme, National Family Benefit Scheme), Indira, Rajeev, Atal and Sardar Awas Yojanas (IAY, RAY, AAY and SAY), Sarva Shiksha Abhiyan (SSA), DASP, Tribal Sub plan, BRGF, PMEYSE, MKSP, BSUP, UIDSSMT, IHSDP BDOs and Project / Programme Managers/ Coordinators **at District and sub district levels]**	Same as above **AND** Lack of Ability and skills related to Project Management, Coordination and Teamwork cutting across sectoral and hierarchical boundaries with a diverse universe of stakeholders. Lack of appreciation of the role of Participatory Learning and Action in Attitude Behaviour Change (ABC) and mainstreaming DRR.	Same as above **AND** Project Management – incorporation of DRR concerns and strategies of sustainable development through mainstreaming DRR at every stage of the Project Cycle in a participatory manner. Coordination, inter agency coordination esp. Coordination and management of NGO, CBOs and other's activities during emergencies and assigning roles to various stakeholders in different stages of the DM cycle for mainstreaming DRR into all programmes, projects and initiatives Participatory Learning and Action with special focus on training on Attitude Behaviour Change (ABC) for DRR. Arrangement for financing the additional cost of mainstreaming DRR into all developmental work , relief and reconstruction activities and conducting studies and cost benefit analysis, financial and viability analysis of incorporating DRR into projects and programmes Documentation of disaster/disaster events and PDNA- post disaster damage and needs assessment esp. related to the sociocultural, psychological and other indirect costs and impact.

Level 3 : Operational level : **Block/ Taluka and Lower levels:** ABDOs/ ADOs, VDOs, Gram Sevaks, Gram Praharis and Officials at Gram Panchayat and Village levels	Complete Lack of knowhow on DM Act, Policy and various laws, rules and regulations, guidelines and GOs related to Mainstreaming DRR and the ways and means to do so.	General orientation on DM and various laws, rules and regulations related to Disaster Management – tools and techniques of their monitoring and enforcement / implementation. Mainstreaming DRR and Climate Change Adaptations into various schemes, projects and programmes
	Lack of appreciation of the importance of Participatory Learning and Action and Behaviour Change. Lack both knowledge and skills related to creating Public awareness and capacity building of Communities	Training on soft skills, communication skills and Participatory Learning and Action and ABC through Community Managed Disaster Risk Reduction and Planning. CBDP/ CBDRR/CMDRR and VDMAPs PDNA – Post Disaster Needs and Damage Assessment and documentation
	Not sensitised towards the need of women, children and people with disabilities.	Gender, people with disabilities and special needs
Department of Education: Training Needs Analysis		
Level 1: **National and State Levels:** [(a)**Stakeholders related to Policy Formulation and Strategic Planning** and **(b) those related to Management and Coordination** like Secretaries ,Additional, Joint, Special Secretaries, Directors and Heads of Concerned Departments and Flagship Programmes including the concerned representatives and leadership of the Private Sector]	Lack of Awareness on DM Act , Policy and Other relevant legislations and guidelines	Basic orientation and sensitisation on DM and DRR including the DM act, policy , NSSP, relevant legislations, norms , traditions, GOs and Related / relevant Guidelines and the roles of concerned stakeholders with its horizontal and vertical linkages
	Lack of Sensitisation on National, State, District DMPs and Departmental and Institutional / School Disaster Management Action Plans and SOPs, their utility and horizontal and vertical linkages Inadequate sensitisation on Incident Command System, Emergency Support Functions and Emergency Communications	Orientation on National, State, District DMPs, Departmental DMPs, ESFs and School / institutional Safety Plans and Audits ,EOC and Disaster Control Room Operations and Management, emergency Communications and mock drills for inter departmental and intradepartmental coordination at various levels
	No / minimal knowledge and appreciation of the need, tools, techniques and Global Best practices on Mainstreaming DRR through the Education sector though they themselves should be responsible for documenting and disseminating the same for all other sectors as well. Low levels of appreciation towards latest technological applications like Remote Sensing and GIS	Role of Education Sector in DM and DRR esp. with respect to Research, Documentation and Dissemination of Knowledge and information with special focus on the role of Education in mainstreaming Disaster Risk Reduction and Behaviour Change. Sensitisation on RS and GIS, latest technological options / applications in DRM.

Level 2: **State and District Levels :** [(a)**Stakeholders related to Policy Formulation and Strategic Planning** **AND** **(b) those related to Management and Coordination** Heads of Concerned Departments and Flagship Programmes related to the Education Sector, Heads of Educational Institutions– Vice Chancellors, Registrars, Deans, Principals and Directors of Universities, Technical and Professional Colleges & relevant Departments , School Principals and Headmasters ,District and Sub divisional level Educational Officers **AND** NGOs, CBOs, Parent and Student Bodies including the Private Sector	Same as level 1	Same as level 1
Level 3: **District and Sub district Levels:** **[Operational / Implementation level staff** who can and should be the flag bearers of Public Awareness, Training and Capacity Building related to DM and DRR at the grassroots level **School Lectures and Teachers]**	Same as level 1 and Inadequate (No) training / orientation on various Theoretical and Practical Aspects of Disaster Management and DRR, School and Student Safety Planning and School Safety audits.	Same as level 1 and Preparation and Implementation of School DM action plans and SOPs, HRVC at micro level and its graphical / pictorial representation / interpretation. Rapid Visual Assessment of Buildings and Infrastructure for Disaster Resilience. Conducting Safety Audits and Mock Drills Theoretical and Practical aspects of the Course content to be taught in class including Do's and Don'ts for relevant disasters Training on Research and Documentation on various aspects related to vulnerability reduction, development / preparation and delivery of contextualised training modules IEC materials, books and manuals…knowledge creation and dissemination Training on Public Awareness and Communication, design and delivery of trainings and other capacity building activities at grassroots levels in their areas of influence/ outreach. Basic S&R and First Aid

		PDNA Psychosocial Care and Management with special focus on Children Leadership in Disaster Situations, Stress and Time Management and Motivation Gender, people with disabilities and special needs
Level 4: **District and Subdistrict Levels:** **Administrative, Management, Operational and Support Staff:** Class II, III and IV Office staff, Lab technicians and assistants, MDM mothers, Care takers, Security Guards, Drivers and Vehicle Attendant	Lack of role clarity and proper training and orientation on various aspects of Disaster Management, School Safety and Audits, use of fire extinguishers, emergency communications, Do's and Don'ts of all major and minor perceived disasters Lack of orientation on the special needs of children, women and disabled in emergencies and natural disasters.	Implementation of School DM action plans and SOPs including emergency communications, Do's and Don'ts of all major and minor perceived disasters. Assisting in Safety Audits and Mock Drills. First aid, S&R , Use of fire extinguishers and handling of Chemical Emergencies, Fire and Accidents. Extensive orientation on the special needs of children, women and disabled in emergencies and natural disasters. Psychosocial Care and Management with special focus on Children

Department of Revenue and Disaster Management: Training Needs Analysis		
Level 2: **State and District Levels :** **[(a)Stakeholders related to Policy Formulation and Strategic Planning AND** **(b) those related to Management and Coordination like** Secretaries ,Additional, Joint, Special Secretaries, Directors and Heads of Concerned Departments and Flagship Programmes including the concerned representatives and leadership of the Private Sector DM, ADMs, SDMs and Departmental, All Revenue and Disaster Management Officials and staff at State, District and Sub divisional level besides the Private Sector and Corporate Sector, NGOs, CBOs, etc.	Same as level 1	Same as level 1

Department of Revenue and Disaster Management: **Level 3: Management and Coordination** All Officers of the Collectorate, District Project Officer and staff Disaster Management & SDMs	Lack of Awareness on DM Act , Policy and Other relevant legislations and guidelines Lack of Sensitisation on Disaster Management Action Plans and SOPs , their utility and horizontal and vertical linkages No / minimal knowledge and appreciation of the need, tools, techniques and Global Best practices on Mainstreaming DRR into development. Inadequate training on Incident Command System, Emergency Support Functions and Emergency Communications. Lack of appreciation towards latest technological applications like Remote Sensing and GIS and modern concepts related to Humanitarian Logistics Lack of Gender Perspective and special needs of people with disabilities	All trainings of level 1 ; all trainings related to DDMA, DDMAP, DEOC Project Management and Humanitarian Logistics **AND** Coordination, inter agency coordination esp. Coordination and management of NGO, CBOs and other's activities during emergencies and assigning roles to various stakeholders in different stages of the DM cycle. Documentation of disaster/disaster events and PDNA- post disaster damage and needs assessment; Modalities for requisitioning of resources including deployment of army and NDRF during extreme emergencies and working with armed forces during disasters. Humanitarian Logistics: Resource and material management Management of relief camps, relief and rehabilitation and crowd management Arrangement for financing relief and reconstruction activities; Conducting mock drills in co-ordination with different functionaries including Govt. Depts. & NGOs; Management of relief camps and camps for volunteers arriving for disaster relief.
Department of Revenue and Disaster Management: **Level 4 : Sub Divisional Level- Management and Implementation:** SDMs, Tehsildars and Naib Tehsildars	Same as level 1 **and** Lack of appreciation of the importance of Participatory Learning and Action and Behaviour Change. Work in high stress and public pressure – direct contact with people.	Same as level 1 **and** Participatory Learning and Action Community Managed Disaster Risk Reduction and Planning Leadership in Disaster Situations, Stress and Time Management, Motivation and Psychosocial Care and Management

Department of Revenue and Disaster Management: **Level 5: Operational level :** Kanungos, Patwaris and Official of District, Sub-Division and Tehsil	Same as level 1 **and** Lack of orientation on DM and various laws, rules and regulations related to Disaster Management. Lack of appreciation of the importance of Participatory Learning and Action and Behaviour Change. Work in high stress and public pressure – direct contact with people. Not sensitised towards the need of women, children and people with disabilities.	Same as level 1 **and** General orientation on DM and various laws, rules and regulations related to Disaster Management – tools and techniques of their monitoring and enforcement / implementation Manning the EOCs/Control Rooms PDNA – Post Disaster Needs and Damage Assessment and documentation EWS and dissemination of early warning Mock Drills, Basic S&R and First Aid Participatory Learning and Action Community Managed Disaster Risk Reduction and Planning. Leadership in Disaster Situations, Stress and Time Management, Motivation and Psychosocial Care and Management Gender, people with disabilities and special needs Running and management of relief camps

Annexure 3: List of 10 Key Sectors

Sl. No.	Sectors
1.	Education
2.	Health(including ICDS)
3.	Infrastructure
4.	Local Self Governance (ULB/PRI)
5.	Police
6.	Revenue
7.	Rural Development
8.	Telecommunications
9.	Urban Development
10.	Water and Sanitation