

Third Party Evaluation of Other Disaster Management Schemes (ODMS), Ministry of Home Affairs

(MAY-JULY, 2020)

Sponsored by



**National Disaster Management Authority
Government of India**

Submitted by



**Indian Institute of Public Administration |
New Delhi**

FOREWORD



Indian Institute of Public Administration is playing crucial role in enhancing leadership and managerial qualities on one hand and developing a service-orientation on the other. In 2020, new and ongoing complex emergencies tested and confirmed our response mechanisms, we focused efforts on building the capacities for academia, policy makers, researchers, scholars and the like and explored the opportunities and challenges presented. Perhaps while still facing, one of its kind pandemic of the century that is COVID

19; myIIPA team successfully completed project “Third-party evaluation of Other Disaster Management Schemes (ODMS), Ministry of Home Affairs sponsored by NDMA”. I am happy to share the Evaluation Report conducted from May-July 2020 of centrally-sponsored schemes- ODMS that puts forward the recommendations.

Ministry of Home Affairs and National Disaster Management Authority has been our greatest asset, and I hope this bond shall continue to work together to strengthen our collective capacities by learning from and with each other. Across our network, we are continually striving to improve our accountability and transparency mechanisms. The clientele we serve are at the core of what we do, and our commitment to improve is driven by them. We understand that learning lessons is the key to improvement. This means engaging meaningfully with our beneficiaries and giving them a voice with a range of feedback mechanisms. Within our network, we foster a culture of sharing information and knowledge, which is underpinned by sound monitoring and evaluation. This allows us to identify trends, strengths and weaknesses at all levels. I would like to congratulate myIIPA team for their hard work and enthusiasm to complete this project. Around 33 schemes have been evaluated under the project and key recommendations are provided in this report. I wish the team many successes in all their future endeavors. In the post-COVID era I anticipate that new opportunities would open up for us. I am satisfied with the continuing growth of our organization and are looking forward enthusiastically to the year ahead.

S.N. Tripathi, IAS (Retd.)

ACKNOWLEDGEMENT

The project titled “Third-party Evaluation of Other Disaster Management Schemes (ODMS), Ministry of Home Affairs” sponsored by National Disaster Management Authority has been completed due to assistance received and time devoted by many prestigious personalities. We would like to express our deepest gratitude to Sh. B. K. Biswas, Under Secretary to Government of India, Ministry of Home Affairs and Sh. Ravinesh Kumar, Financial Advisor, NDMA for entrusted us with such a productive project of evaluation of important schemes.

We are thankful to officials of National Disaster Management Authority, National Disaster Response Force, National Institute of Disaster Management, Ministry of Home Affairs (Disaster Management Division) and United Nations Development Programme for providing useful information regarding the project progress and hand-holding of our team throughout the evaluation process. We are also thankful to all the implementing agencies for cooperating with us by taking out their valuable time for interviews despite of pandemic situation.

Special thanks to Shri S. N. Tripathi, Director, Indian Institute of Public Administration, New Delhi for his incomparable guidance which inspired the pace of the project. Our sincere thanks to Mr. Amitabh Ranjan, Registrar, IIPA for helping us in arranging all the related logistics.

We are extremely grateful to the Administration Department, Finance & Accounts Department and the Computer Centre of Indian Institute of Public Administration for uniting the necessary facilities and investing their time and efforts as and when required. Last but not the least, we are thankful to Mr. Ishupinder Kaur and Ms. Pooja Upadhaya, Research Officers, IIPA for their support and assistance in completing the evaluation project and compiling of report well within time.

(Prof. V. K. Sharma) (Dr. Shyamli Singh)

ABOUT IIPA

Indian Institute of Public Administration was established by Pandit Jawaharlal Nehru on March 29, 1954. As the Institute's first President for a decade, Prime Minister Nehru placed great emphasis on 'de-colonializing' the mind-set of administration, making it more people oriented. He placed a great responsibility on the IIPA to enhance the frontiers of knowledge in public policy and governance through applied research and education as well as training of



administrators to serve the people of India. Enhancing leadership and managerial qualities on one hand and developing a service-orientation on the other are the thrust areas of the Institute's education and training activities. Its faculty is involved with research work mainly to simplify procedures and suggest policy changes to ensure improved delivery of public services. The Institute nurtures close academic association with universities, research centers, training institutions and government departments.

IIPA houses a full-fledged center for Environment, Climate Change and Drought administration and has the expertise to conduct capacity-building programs related to Climate Change and other environmental phenomena. IIPA connects with a range of clientele of different ministries including MoWR, River Development & Ganga Rejuvenation, MHA, MoEF& CC, DST, and NDMA besides World Bank, UN, UNICEF and other international agencies. The institution has a fully active DST wing, which conducts training programmes sponsored by DST throughout the year.

IIPA TEAM

Prof. Vinod Sharma

Management Authority with the permission of IIPA management PAGE 4 and responsible for making State Policy and plans; District, Block and Village level plans for Disaster Management and their implementation in the different levels. He is assisting Sikkim state in making state disaster resilient. He is the expert member of the apex committee Climate Change Authority, Uttar Pradesh. Prof. Sharma was instrumental in setting up the National Centre for Disaster Management in the Indian Institute of Public Administration, New Delhi, the nodal agency for disaster management in India (which is now upgraded as National Institute of Disaster Management) and was founder coordinator of the. He was coordinator Foreign Training (Nepal, Afghanistan, Myanmar, Vietnam, Maldives, Sri Lanka, Bangladesh etc.) in the institute. He is the coordinator of DST cell.



Dr. Shyamli Singh



Dr. Shyamli Singh is working as a faculty & coordinator for the Centre for Environment and Climate Change. She has her Ph.D. in the ambit of Environmental management. A gold medalist from Indraprastha University and a topper from University of Delhi. She is the lead project director of various prestigious projects and studies viz. Collection and Computerization of Legacy Data of Ganga sponsored National Mission for Clean Ganga, Ministry of Water Resources and Ganga Rejuvenation.

She is the Project Investigator of Capacity-Building Strategies for Managing Complex Disasters in the face of Climate Change sponsored by National Mission on Himalayan Studies (NMHS), MoEF&CC. She is also the Principal investigator of human capacity-building programme under National Mission on Strategic Knowledge for Climate Change (NMSKCC) of Department of Science &Technology Strategic Programmes, Large Initiatives and Coordinated Action Enabler (SPLICE) Division Climate Change Programme (CCP).

Ms. Ishupinder Kaur

Ms. Ishupinder Kaur is having more than three years of experience in research, capacity building and knowledge management covering issues related to Environment, Natural Resource Management and Climate Change Adaptation. She is currently working as Research Officer at Indian Institute of Public Administration, New Delhi. She has earlier worked with GIZ, India and provided technical support in implementation of Indo-German Bilateral Project in the state of Punjab as State Project Officer, NAFCC Project “Towards Climate Resilient Livestock Production System in Punjab” and coordinated the revision of Punjab State Action Plan on Climate Change. Previously, she has also worked with IIPA in capacity building project “Climate Smart Governance” and facilitated multi-level training programmes. She has an experience in coordinating with various stakeholders varying from govt. officials, academic institutions and community groups. As an educational background, she has gained postgraduate degree in Environment Management and acquired working knowledge of basic Geographic Information System and Remote Sensing.



Ms. Pooja Upadhyay



Ms. Pooja Upadhyay is currently working as Research Officer at India Institute of Public Administration (IIPA) under the project “Climate Smart Governance” sponsored by DST. She has done her M.Sc. in Natural Resource Management from Indraprastha University, Delhi. She has also cleared UGC-NET JRF in environmental science in July, 2019. Previously, she worked as Manager Community & Stakeholder Engagement at Himalayan Action Research Centre (HARC), Dehradun under the project titled “Partners for Resilience: Strategic Partnership” in collaboration with Wetland International South Asia (WISA) , Delhi. In this project, she has worked on Integrated Risk Management, which is based on the principles of Climate Change Adaptation, Ecosystem Management & Restoration and Disaster Risk Reduction. While working with different organization in different roles, she has developed skills in capacity building of community, liasoning with government officials, Stakeholder Engagement, Participatory Rural Appraisal as well as acquired grassroots experience with rural mountain communities.

EXECUTIVE SUMMARY

The Central Sector Umbrella Schemes namely “Other Disaster Management Schemes (ODMS)” had been appraised by standing Finance Committee of Ministry of Home Affairs and approved by the competent authority during the period 2017-18 to 2019-20. It comprises of 49 Sub-schemes implemented by National Disaster Management Authority, 03 sub-schemes implemented by National Institute of Disaster Management & National Disaster Response Force and 02- sub schemes implemented by DM Division i.e. National Disaster Management Programme (NDMP) and UNDP for Disaster Risk Management.

IIPA has been entrusted to conduct third party evaluation of thirty-three selected schemes under ODMS. The study aims to provide roadmap for enhancing the effectiveness of the schemes and to meet its proposed mandate in an efficient manner. It would also facilitate in documenting the impact of the extension activities and programmes being conducted and the extent of coordination among stakeholders to assess the requirement and priorities for the schemes.

The schemes were evaluated as per the performance made on the basis of intended scope of work and objectives achieved so far. This report provided insight about project/scheme status, gaps/challenges faced during its execution and whether or not the proposed targets achieved.

The report briefly dwells upon the methodology of evaluation process undertaken and presents observation & findings from the process. The evaluation report concludes with summary of all selected schemes along with recommendations provided to have overview of all schemes at one glance.

All the schemes are of national importance and are very crucial in disaster risk reduction and strengthening the resilience of nation and its citizens. Out of total 33 schemes, 23 schemes are recommended with few suggestions. Whereas, remaining 10 schemes are either not yet commenced or in very initial stages.

ABBREVIATION

AAI:	Airport Authority of India
AEH:	Airport Emergency Handlers
AICTE:	All India Council for Technical Education
AWP:	Annual Work Plans
BSF:	Border Security Force
CAA&A:	Controller of Aids, Audit and Accounts
CAG:	Comptroller and Auditor General
CAP:	Common Alerting Protocol
CBRN:	Chemical, Biological, Radiological and Nuclear
CCA:	Climate Change Adaptation
CoE:	Centre of Excellence
CRPF:	Central Reserve Protection Force
CISF:	Central Industrial Security Force
CDMP:	City Disaster Management Plans
DDMAs:	District Disaster Management Authorities
DDMP:	District Disaster Management Plan
DEM:	Digital Elevation Model
DFPR:	Department of Financial and Professional Regulation
DM:	Disaster Management
DPR:	Detailed Project Report
DRDO:	Defence Research and Development Organisation
DRR:	Disaster Risk Reduction
EDRI:	Earthquake Disaster Risk Index
ERMV:	Emergency Response Mobile Vehicle
FY:	Financial Year
GFR:	General Financial Rules
GIS:	Geo-graphical Information System
GSI:	Geological Survey of India
IEC materials:	Information, Education and Communication materials
IIPA:	Indian Institute of Public Administration
IIRS:	Indian Institute of Remote Sensing
IISc:	Indian Institute of Science
IIT:	Indian Institute of Technology
ITBP:	Indo-Tibetan Border Police
INMAS:	Institute of Nuclear Medicine & Allied Science
LHZ:	Landslide Hazard Zonation
LMSs:	Landslide Monitoring Solutions
LPAI:	Land Ports Authority of India
ME:	Mock Exercise
MEMS:	Micro-Electro- Mechanical Systems
MHA:	Ministry of Home Affairs

MHRD:	Ministry of Human Resource Development
MHVR:	Multi-Hazard Risk Vulnerability Assessment
MIS:	Management Information System
MoU:	Memorandum of Understanding
MRDS:	Mobile Radiation Detection System
MTE:	Mid-term evaluation
NCT:	National Capital Territory
NCDC:	National Civil Defence College
NDMA:	National Disaster Management Authority
NDMP:	National Disaster Management Programme
NDRF:	National Disaster Response Force
NDRR:	National Disaster Response Reserve
NEC:	National Executive Committee
NESAC:	North Eastern Space Applications Centre
NFSC:	National Fire Service College
NHAI:	National Highway Authority of India
NIDM:	National Institute of Disaster Management
NIMHANS:	National Institute of Mental Health and Neuro-Sciences
NRSC:	National Remote Sensing Centre
OAI:	Office of Audit and Investigation
ODMS:	Other Disaster Management Schemes
PD:	Personal Deposit
PLA:	Public Ledger Account
PMG:	Project Monitoring Group
PWD:	Public Work Department
RS:	Remote Sensing
RSAC, U.P:	Remote Sensing Applications Centre, Uttar Pradesh
SDMAs:	State Disaster Management Authorities
SDRF:	State Disaster Response Fund
SOE:	Statement of Expenditure
SoI:	Survey of India
SOP:	Standard Operating Procedure
TDU:	Technology Demonstration Units
ToT:	Training of Trainers
UAV:	Unmanned Aerial Vehicle
UAV:	Unmanned Aerial Vehicle
UGC:	University Grants Commission
UNDP:	United Nations Development Programme
USAID:	United States Agency for International Development
USDMA:	Uttarakhand State Disaster Management Authority
EOC:	Emergency Operations Centre
IRS:	Incident Response System
DSS:	Decision Support System

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1. BACKGROUND

The Disaster Management (DM) Division is the nodal division in the Ministry of Home Affairs (MHA) for Disaster Management. Government of India enacted the Disaster Management Act 2005, which provided a legal and institutional framework at national, state and district levels for the creation of specialized disasters management institutions. In pursuance of the Act, the Ministry created national level institutions like National Institute of Disaster Management (NIDM), National Disaster Management Authority (NDMA), National Disaster Response Force (NDRF) and National Executive Committee (NEC) in 2006.

While the primary responsibility of disaster management rests with the States, the Central Government supports the efforts of State Governments by providing logistical and financial support.

On behalf of the Central Government, DM Division in the Ministry of Home Affairs co-ordinates with disaster affected State Government(s), concerned line ministries/departments, NDMA, NDRF, NIDM and the Directorate General of Fire Services, Home Guards and Civil Defence, and Armed Forces for effective disaster risk reduction. The Division is responsible for legislation, policy, capacity building, prevention, mitigation, response and long-term rehabilitation.

The Central Sector Umbrella Schemes namely “Other Disaster Management Schemes (ODMS)” had been appraised by standing Finance Committee of MHA and approved by the competent authority during the period 2017-18 to 2019-20. It has 49 Sub-schemes implemented by NDMA, 03 sub-schemes implemented by NIDM & NDRF and 02- sub schemes implemented by DM Division i.e. National Disaster Management Programme (NDMP) and UNDP for Disaster Risk Management.

Accordingly, Indian Institute of Public Administration has conducted Third Party Evaluation of selected 33 Other Disaster Management Schemes (ODMS).

1.1 Scope of Evaluation

The evaluation study aims to provide roadmap for enhancing the effectiveness of the schemes and to meet its proposed mandate in an efficient manner. It would also facilitate in documenting the impact of the extension activities and programmes being conducted and the extent of coordination among stakeholders to assess the requirement and priorities for the schemes.

The schemes were evaluated as per the performance made on the basis of intended scope of work and objectives achieved so far. The report provides insight about project/scheme status, gaps/challenges faced during its execution and whether or not the proposed targets are achieved

2. OBJECTIVES

The main objective of this assignment is to assess the strengths and weaknesses of implementation of selected schemes and impact of its deliverables. Also, to study the potential for sustaining or upscaling respective activities in the future.



To provide information on quantitative and qualitative performance of the activities under ODMS and to assess the functioning of various organisations involved



To assess the extent of success achieved in meeting the goals of the schemes and the degree to which the advantages of the program eventually accrued to the beneficiaries



To provide recommendations for informed decision making

Figure 1. Objectives

3. METHODOLOGY

3.1 Methods

The evaluation process was based on a mix of process and outcome evaluation methods¹:

1. The results or effects of a program as well as informed changes or improvement in the program's operations.
2. It will also involve documentation about the status update of the program and the consistency of the program with which it is implemented.
3. Includes qualitative and quantitative data collection and analysis

3.2 Data collection

The project team initiated the assignment with data collection and desk review. Data collection included both primary and secondary data. For primary data collection, scheme specific questionnaire (Annexure I) was prepared and inputs from key informants (nodal persons in implementing agencies, project investigator(s)/coordinator(s)) were taken via email and telephonically. The sample questionnaire is attached at Annexure I. The secondary source of information included project related documents like project proposal, progress reports, published reports and the like.

¹ Source: Corporation for National and Community Services

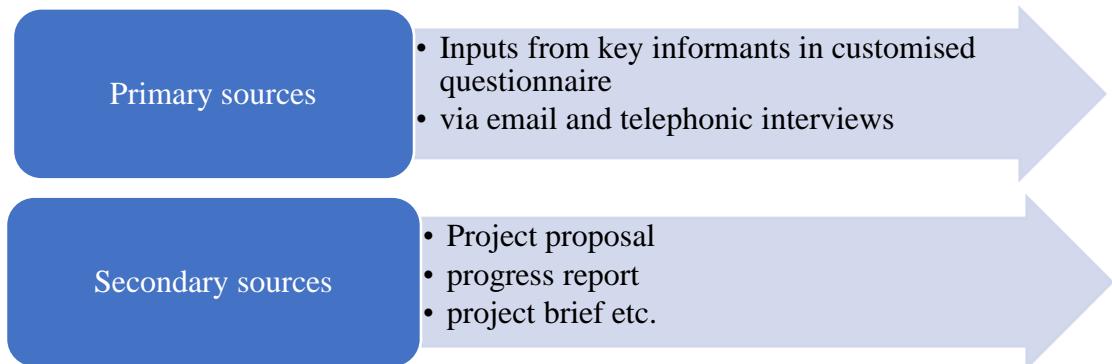


Figure 2. Types of data used

After the data collection, thorough understanding has been made regarding the scope of work and achievements made so far. The framework of methodology followed is as mentioned below:

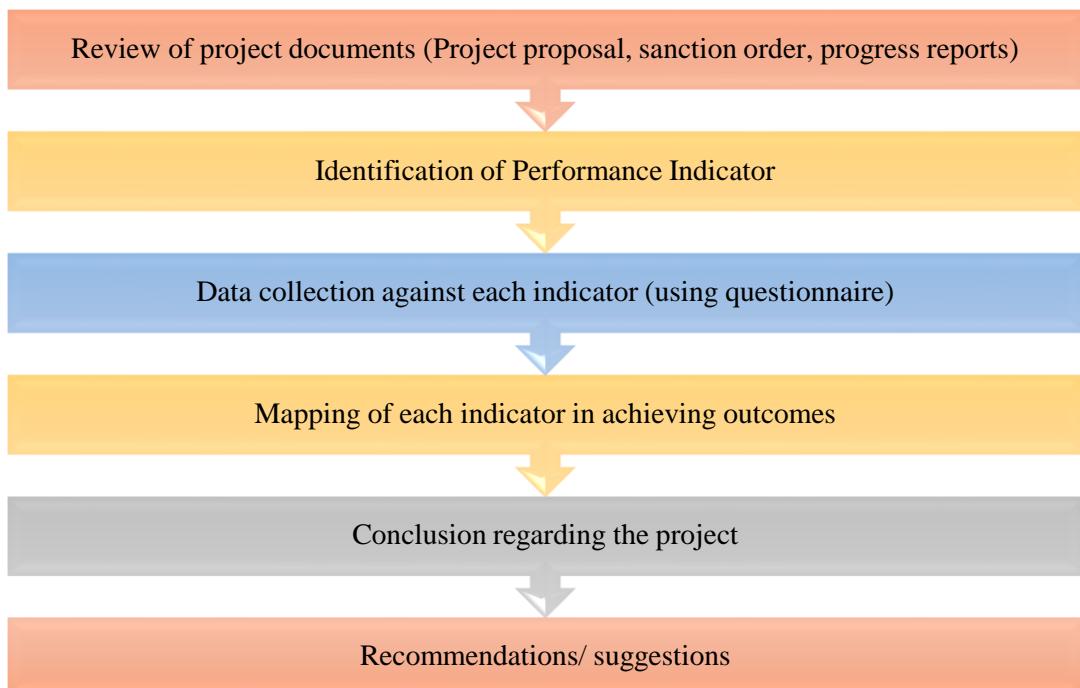


Figure 3. Flow chart representing methodology

3.3 Pedagogy

Due to COVID-19 pandemic, digitalisation was opted which adopted the modes such as video conferencing, emails, telephonic conversation exchanges were used instead of field visit and face 2 face interactions. Interviews of the key informant (both from nodal agency and

Implementing agencies) was conducted via video conferencing, emails and telephonic discussion. These digital tools are laced with the state of art features, which facilitated the smooth execution of entire process.

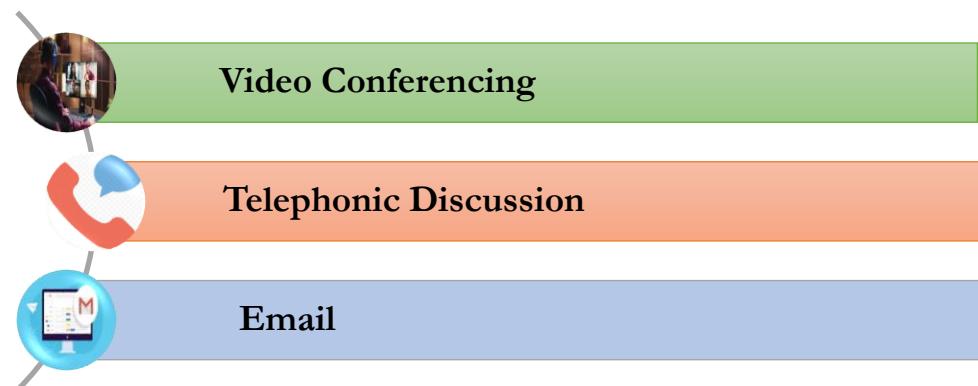


Figure 4. Tools and techniques for data collection

4. OBSERVATIONS & FINDINGS

The output of evaluation process for each evaluated schemes is as follows:

Schemes implemented by Ministry of Home Affairs, (Disaster Management Division)

Scheme 4.1: UNDP for Disaster Risk Management- Strengthen capacity of Government, communities and institutions in implementation of planning framework on DRR and Climate Change Adaptation

Ministry of Home Affairs in collaboration with the United Nations Development Programme (UNDP) has been empowering communities since 2002 to manage disaster risk in rural and urban areas. With UNDP's support, pilot interventions with communities across India have been successful in strengthening community-based preparedness to tackle disaster. Subsequently, number of projects have been implemented for enhancing institutional and community resilience to disasters and climate change.

This framework collaboration incorporated the MHA-USAID and UNDP partnership project on 'Climate Risk Management in Urban Areas through disaster preparedness and mitigation'. The first phase of the USAID funded component covered a four-year period of 2012-2016 and covered 8 urban areas viz. Bhubaneswar, Gangtok, Madurai, Navi Mumbai, Shimla, Trivandrum, Vijayawada and Visakhapatnam. The second or ongoing phase of the collaboration titled "Developing Resilience Cities through Risk Reduction to Disasters and Climate Change" initiated in 2016 and is being implemented in six cities viz. Navi Mumbai, Shimla, Vijayawada, Vishakhapatnam, Cuttack and Shillong. The project is steered and led by the Ministry of Home Affairs (MHA) with Joint Secretary (DM) as the National Project Director. UNDP is the implementing partner on the field.

4.1(a) PROJECT DETAILS

Project Title	GoI-UNDP Project on "Developing Resilient Cities through Risk Reduction to Disaster and Climate Change"
Project Duration	September 2016 – June 2020
Total Project cost	USD \$2,500,000
Name and Designation of Project PI/Nodal Person	Shri Sanjeev Kumar Jindal, Joint Secretary (DM)/National Project Director, MHA Mr. Manish Mohandas, Project Officer (Resilience), UNDP, India
Organization	MHA and UNDP
Project site	Six project cities: Navi Mumbai, Vishakhapatnam, Vijayawada, Shillong, Cuttack and Shimla



Figure 5. Map depicting Phase I and Phase II city locations

4.1(b) OBJECTIVES

- Reduce disaster risk in urban areas by enhancing institutional capacities to integrate climate risk reduction measures in development programs as well as to undertake mitigation activities based on scientific analyses.
- Enhance capacities of local governments and urban communities, including private sector stakeholders, to manage disaster and climate risks.



Figure 6. Workshop conducted for psycho-social care in Disaster Management

4.1(c) OUTPUT

Output 1: Enhanced Risk Sensitive City Development Planning through preparation of City Disaster Management Plans, undertaking Disaster Risk Assessments and Structural Safety Audits

Output 2: Action plan to strengthen Early Warning Systems

Output 3a: Enhancing capacity of the government to respond to disasters and mitigate risks

Output 3b: Local Level Trainings for preparedness, response and mitigation

Output 4: Knowledge Management

Output 5: Public Private Partnerships for Disaster Risk Reduction and Recovery Facilitated and Enhancing Private Sector Investment for Risk Reduction

4.1(d) OUTCOME: Institutions and communities are more resilient to climate change and disaster risks.

While all activities contribute to the overall resilience building of the cities, some of the following have been noteworthy:

- The City Disaster Management Plans (CDMP) developed have been put to use in real disasters. For example, during floods, cities like Cuttack and Vijayawada have utilized the CDMP to manage evacuations to shelters.
- The Ward Level Volunteers and Community volunteers trained have supported the city of Vishakhapatnam during the 2020 Styrene Gas Leak
- The training of Master trainers on Psycho-social Care by The National Institute of Mental Health and Neuro-Sciences (NIMHANS) has resulted in this component being widely used during the COVID pandemic. The trained staff have been actively involved in the visits to the quarantine centers and in calibrating the response to the community
- The Communication materials published with support from the project have been used for wide dissemination of safe practices through cinema halls, posters in public places, announcements etc

Total 66 trainings have been conducted so far and 5820 officers were trained, out of which 44.7% was women participation.

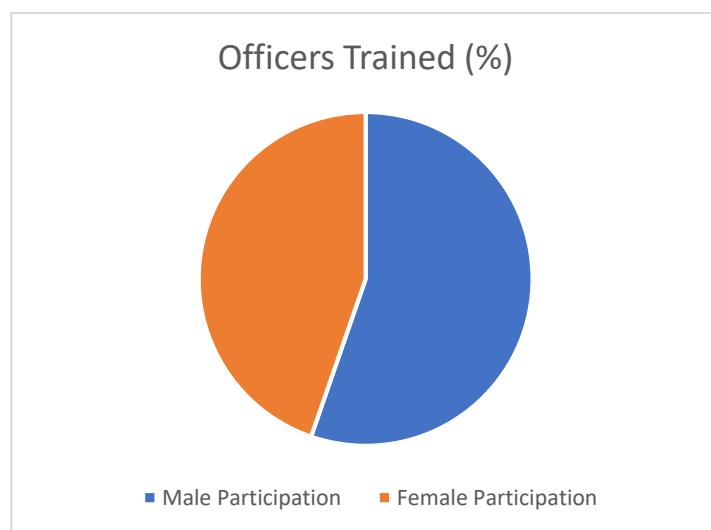


Figure 7. Pie chart depicting women participation in training programmes



Figure 8. Glimpses from capacity building and training programmes

4.1(e) RISK AND CHALLENGES

Delays in completion of the activities within the proposed timeframe has been a challenge. These were usually due to extraneous factors such as natural calamities, state/local government elections, festivals etc. However, close project monitoring by MHA and UNDP ensured that these risks were minimal.

The uncertainty of funding (last instalment) from the donor USAID has delayed the completion of the final set of planned activities. This, however, is being addressed through the Project Steering meetings. Overall, the project has consistently achieved all the deliverables as per the Annual Work Plans (AWPs) during the project duration. Moreover, not such deviation has been observed from the agreed course of action.

4.1(f) FINANCE

Funding Agency: United States Agency for International Development (USAID)

The earlier instalments were received on time and sufficient for smooth furtherance of project activities. Out of total budget of USD 2.5 million, the project has received \$2,150,000 so far through four instalments and full amount has been utilized as per the sanction order.

4.1(g) EXPENDITURE PROCEDURE

UNDP shares a draft National Annual Work Plan (AWP) for the period between January to December, every year for approval of the Ministry of Home Affairs (MHA). The AWP includes targets /activities and fund allocation for each activity as proposed under the project. The AWP is signed by both the parties viz. UNDP and MHA. Based on national AWP, project states are requested to prepare their state AWPs as per the budget allocated in National AWP. The state plans are assessed by UNDP and submitted to MHA for approval. MHA approves the state plans based on the scope of project and UNDP recommendations.

For state-level activities, project states share their deliverables / proposal for expenditure for the activities being planned in their states for approval of MHA. The Ministry conveys its ‘No Objection’ for release of funds to the states based on the deliverable submitted by the State Governments or UNDP on behalf of State Governments. The funds are transferred to the project state in instalments and next instalment is only released after collecting financial utilization certificate. Responsibility of release of funds to the states remain on UNDP. The states have a separate bank account to receive funds from UNDP under the project.

Certain activities which are implemented by UNDP directly, financial procedures of UNDP are generally followed. The concerned state agencies have nominated a focal point to deal with the project. A project staff is also appointed in the project state for supporting the concerned department for implementation of the project. UNDP submits their quarterly expenditure details to Controller of Aids, Audit and Accounts (CAA&A). CAA&A raises their demand to DM Division MHA, based on the expenditure details submitted by UNDP. This Ministry has a separate budget head for UNDP Project under which expenditure is borne every year and releases are made to CAA&A. However, there is no outgo of funds from Union Budget since the amount released to CAA&A is deposited by them on the revenue side which completes the cycle of routing the external aid through Union Budget.

Since, UNDP is the implementing partner for this programme, therefore, the procurement, accounting and audit norms of UNDP are followed. UNDP conducts spot checks of the financial transactions of the partner government entities through its empanelled auditors. UNDP is also subjected to financial audits by its Office of Audit and Investigations (OAI).

4.1(h) OBSERVATIONS

City Project Coordinators in each of the project cities were recruited by UNDP to provide implementation support to the concerned State Governments. The project activities have been centred on the partner cities. Actual implementation of the project was carried out by the respective Municipal Corporation/District administration. The respective state DM authorities/Department of Disaster Management reviewed the project outputs on regular basis. The progress made under the project was periodically reviewed during the Project Review meetings headed by Joint Secretary (DM), MHA and Project Steering Committee meetings headed by Additional Secretary, MHA. UNDP also made regular field visits to the cities to monitor progress on the ground. The important part of the project is also capacity building and the trainings have been structured as per the workplans received from the cities and approved by the MHA.

4.1(i) RECOMMENDATIONS

The project has sought to address the risks posed by disasters. It aimed to reduce mortality, reduce the impact of disasters and also developed local strategies for Disaster Risk Reduction. All the targets were aligned with the Sendai Framework for Disaster Risk Reduction. The project activities were very well designed to achieve desired results of reduced disaster risks in urban areas by enhancing institutional capacities to integrate climate risk reduction measures in development programs as well as undertake mitigation activities based on scientific analysis and urban communities better prepared with increased capacities to manage climate risks. The

project met the set objective which is given in the outcome provided by the implementing agency.

The project was due for completion in June 2020 but due to COVID-19 and financial issues some of the project activities got delayed, therefore UNDP has sought extension till December 2020. Accordingly, it is recommended that the scheme may be extended till December 2020 to achieve desired quality outcome from project intervention.

Scheme implemented by National Institute of Disaster Management (NIDM)

Non-Plan Scheme 4.2: National Institute of Disaster Management- Grant-in-aid given to NIDM for office expenses and training

National Institute of Disaster Management (NIDM) is an apex institution of Government of India, with its vision as: “To be a premier institute of excellence for training and research on disaster risk mitigation and management in India and to be recognized as one of the leading institutions at the international level in the field. To strive relentlessly towards making a disaster free India by developing and promoting a culture of prevention and preparedness at all levels”.

National Institute of Disaster Management (NIDM) constituted on 30.10.2006 under the Disaster Management Act 2005 has been entrusted with the responsibility for planning and promoting training and research in the area of disaster management, documentation and development of national level information based relating to disaster management policies, prevention mechanism and mitigation measures. Re-designated from the National Centre for Disaster Management of the Indian Institute of Public Administration on 16th October 2003, NIDM is steadily marching towards the mission of making a disaster resilient India by developing and promoting a culture of prevention and preparedness at all levels. 2006-07 (NIDM, as statutory body of Government of India, was enacted on 30-10-2006). Prior to this, it was a National Institute under the Ministry of Home Affairs since 2003-04. Grant – in – Aid is continuing since then to the National Institute of Disaster Management for office and training expenses.

NIDM provides capacity building support to various national and state agencies in the field of Disaster Management & Disaster Risk Reduction. The Institute's vision is to create a Disaster Resilient India by building the capacity at all levels for disaster prevention and preparedness.

4.2(a) PROJECT INFORMATION

Title	National Institute of Disaster Management- Grant-in-aid given to NIDM for office expenses and training
Duration	2014-2020
Funding agency	Ministry of Home Affairs, Government of India
Project PI/Nodal Person	Executive Director, National Institute of Disaster Management

NIDM performs following specific functions as per the DM Act, 2005 mandate under section 42(9):-

- Develop training modules, undertake research and documentation in disaster management and organize training programs;
- Formulate and implement a comprehensive human resource development plan covering all aspects of disaster management;
- Provide assistance in national level policy formulation;

- Provide required assistance to the training and research institutes for development of training and research programs for stakeholders including Government functionaries and undertake training of faculty members of the State level training institutes;
- Provide assistance to the State Governments and State training institutes in the formulation of State level policies, strategies, disaster management framework and any other assistance as may be required by the State Governments or State training institutes for capacity-building of stakeholders, Government including its functionaries, civil society members, corporate sector and people's elected representatives;
- Develop educational materials for disaster management including academic and professional courses;
- Promote awareness among stakeholders including college or school teachers and students, technical personnel and others associated with multi-hazard mitigation, preparedness and response measures;
- Undertake, organize and facilitate study courses, conferences, lectures, seminars within and outside the country to promote the aforesaid objects;
- Undertake and provide for publication of journals, research papers and books and establish and maintain libraries in furtherance of the aforesaid objects;
- Do all such other lawful things as are conducive or incidental to the attainment of the above objects; and
- Undertake any other function as may be assigned to it by the Central Government.

4.2(b) OUTPUT AND OUTCOMES

Training has been the core and only primary focus of the scheme implementation whereas the emphasis and coverage on research, publications and knowledge management has also been given. NIDM conducts various academic programmes through:

- Face-to-Face training program
- Satellite Based (SATCOM) training programs
- Web-based online programmes
- PDP, TDP, workshops/seminar, orientation, field study

It also does Research & Policy Advocacy, documentation & case-studies, publication and awareness (IEC materials). A total of 31 IEC material have been generated by NIDM with regarding to fulfilling its mandate given under the DM Act, 2005. It includes wide range of subjects like various awareness tools generated by NIDM, children safety, earthquake resistance buildings, *Do's and Dont's* with respect to various disasters, bulletins with respect to NPDRR, Disaster Reduction Day, World Environment Day etc.

Table 1. Details of activities conducted by NIDM (2014-2020)

Year	No. of Training Programmes	Participants Trained	Online courses	Participants in online courses	Events/ workshops/ conferences / seminars	Research activities	Publications
2014-15	77	2160	18	149	40	17	31
2015-16	55	1488	12	377	20	21	18
2016-17	44	1429	3	105	7	19	7
2017-18	46	1393	3	114	10	19	5
2018-19	52	1741	5	146	20	11	12
2019-20*	117	5942	5	168	30	13	22

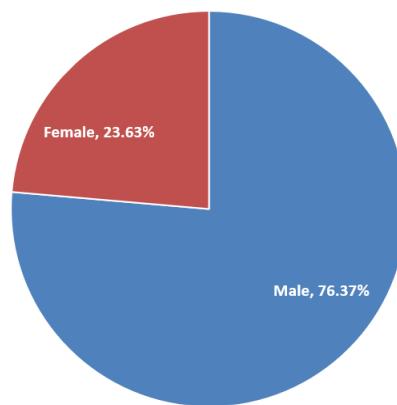


Figure 9. Pie chart depicting women participation in training programmes (2019-20)

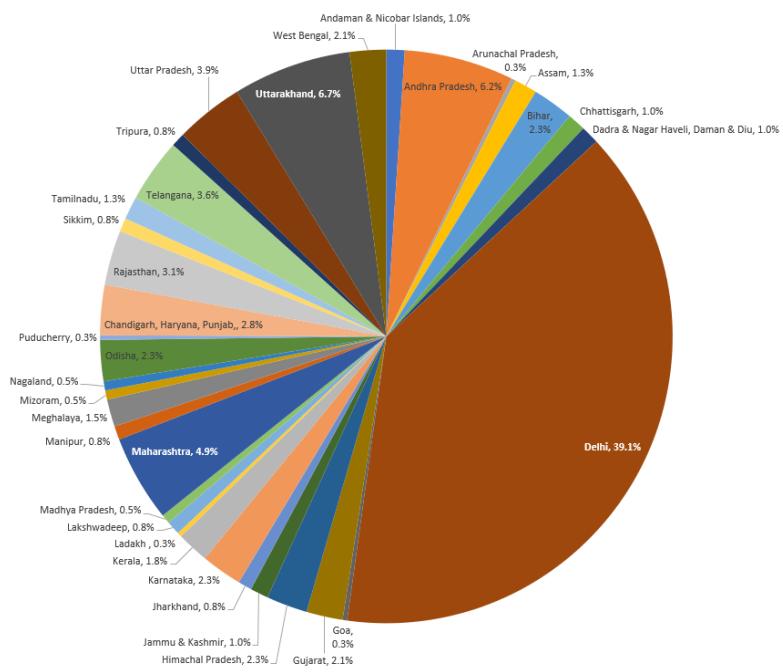


Figure 10. States/UTs covered under the scheme to conduct training programmes (2014-15 to 2019-20)



Figure 11. Delegates from various organizations during AiDRR workshop

4.2(c) RISK AND CHALLENGES

- To diversify training course curriculum and structure for more adaptability across pan-India;
- Maintaining databank of trainees and its regular updating is important (needed due to change of role of trainee participants over the year due to their transfers, promotions or retirement etc.)
- Need to strengthen coverage of all the key stakeholders including industry and private sectors, academic staff/ trainers/ faculty, researchers, scientists, NGOs, elected members, managers, independent professionals, students and community leaders etc.

4.2(d) FINANCE

The scheme is purely funded by Ministry of Home Affairs, GoI to carry out above mentioned activities. NIDM is 100% grantee institute under MHA and funds were received on time as per the approved budget. Full amount has been utilized as per the sanction order. Expenditure incurred by the institution is as per GFR rule. As per the approval of MHA, NIDM maintained a savings account Public Ledger Account (PLA) for all projects where all project grants have been received and incurring the expenditure thereon. The project finances have been audited regularly by CAG empanelled chartered accountant.

Table 2. Detail of Grant-in-Aid received by NIDM from MHA

Year	Amount in Crore		
	Budgeted Estimate	Revised Estimate	Expenditure
Expenditure under Revenue Head			
2014-15	12.00	10.00	9.58
2015-16	12.00	12.00	10.01
2016-17	12.00	9.00	7.67
2017-18	12.00	10.00	9.46
2018-19	12.00	10.00	10.39
2019-20	12.00	12.00	12.21
Capital Section (Rohini Campus)			
2013-14			
2014-15	7.99	1.50	0.00
2015-16	8.00	8.00	0.00
2016-17	12.00	2.00	0.91
2017-18	10.00	10.00	4.34
2018-19	21.79	15.79	19.61
2019-20	15.90	26.00	19.36
Capital Section Southern Campus			
2016-17	20.00	0.50	0.00
2017-18	10.00	5.00	0.00
2018-19	10.00	10.00	12.03
2019-2020	23.00	23.33	13.93

4.2(e) OBSERVATIONS & RECOMMENDATIONS

NIDM has performed a crucial role in bringing disaster risk reduction to the forefront of the national agenda. The Institute has promoted a “culture of prevention” involving all stakeholders. The Institute provides training in face-to-face, on line and self-learning mode as well as satellite-based training. In-house and off-campus face-to-face training to the officials of the state government is provided free of charge including modest boarding and lodging facilities. NIDM has necessary resources, expertise and appropriate management capacity to carry out varied training and research related activities. More target groups other than government officials, should be considered for conceptualizing future training programmes. A number of ToT programmes has been organized by NIDM but it is very crucial to check and provide hand-holding to trainers for conducting further trainings. Evaluation process should be taken into consideration, wherein, trained participant should be checked for conducting further trainings and share their experience with NIDM.

NIDM has necessary resources, expertise and appropriate management capacity to carry out varied training and research related activities. It is suggested that more target groups other than government officials, should be considered for conceptualizing future training programmes. It is also suggested to conduct more online training programmes. Moreover, emphasis should be given to science-policy-practice link, research should be done based on past experiences and facilitating informed decision making accordingly different training programmes should be planned at all level of governance and wide stakeholders including NGOs, youth, private entities, industries so on and so forth. With few suggestions from evaluation team, it is recommended that this scheme may be continued for next five years to strengthen the institute’s activities for expansion and mainstreaming of individual competencies and organisational objectives.

Schemes implemented by National Disaster Response Force (NDRF)

Scheme 4.3: National Disaster Response Reserve

The Disaster Management Act has statutory provisions for constitution of National Disaster Response Force (NDRF) for the purpose of specialized response to natural and man-made disasters. Accordingly, in 2006 NDRF was constituted with 8 battalions. At present, NDRF has a strength of 12 Battalions with each battalion consisting of 1149 personnel. The practice of “proactive availability” of this force to the states and that of “pre-positioning”, in a threatening disaster situation have immensely helped minimise damage, caused due to natural calamities in the country. NDRF is a distinguished, unique force across the country functioning under the Ministry of Home Affairs, Government of India, within the overall command, control and leadership of the Director General, NDRF.



Figure 12. NDRF Team at emergency response work

The 13th Finance Commission recommended for creation of a National inventory of relief material/equipment with a corpus of Rs. 250 Crore revolving fund. The recommendation was accepted by the Government of India. The inventory of relief material/equipment is called the National Disaster Response Reserve (NDRR) for relief material & equipment for prompt delivery of relief during disaster to the victims. Accordingly, the MHA has approved SOP & list of Inventories of NDRR and assigned responsibility to NDRF to maintain a ready inventory of 31 goods and 06 services to be utilized during disaster

4.3(a) PROJECT INFORMATION

Project Title	National Disaster Response Reserve
Year of Commencement of scheme	2017-18
Project Duration	Not fixed
Total Project cost	250 Crore
Name and Designation of Project PI/Nodal Person	Sh. V. V. N. Prasanna Kumar, Commandant

4.3(b) OBJECTIVE

The purpose of creating NDRR is to mitigate the miseries of the victims of the disasters and readily make available the items available commonly required for rendering relief in disasters which are beyond coping capacity of the states (L3 disasters). According to national disaster management plan, L3-level disaster is the most-severe, corresponds to a nearly catastrophic situation or a very large-scale disaster that overwhelms the state and district authorities. The NDRR inventory is procured and maintained by the NDRF and distributed on specific demand of the state/UT Government. The cost of distributed relief material is to be borne by the concerned state/UT Government so as to replenish the inventory.

4.3(c) OUTPUT AND OUTCOMES

Table 3. List of purchased items under head ‘NDRR’

S.No	Name of Item	Qty. Procured (Nos.)	Total amount of Qty. Procured
1	Portable Inflatable Emergency Lighting Tower	269	6,15,01,201/-
2	Plastic Sheets (50mx4m)	1200	1,36,57,680/-
3	CGI Sheets	12000	2,56,32,000/-
4	Hand Pump	1200	3,28,08,000/-
5	Synthetic Sleeping Mat	2,00,000	44,00,000/- 66,00,000/- 1,10,00,000/-
6	Tent Big size for making facilities (light weight emergency tent) with complete accessories	1200	4,43,52,000/-
7	Blanket	1,25,000	1,89,00,000/- 1,26,00,000/-
8	Fogging machine through GeM	120	37,58,227.2
9	Trolley Mounted Generator Set 30 KVA through GeM	48	4,05,21,600/-
10	25000 Nos. Dignity Kit Women	24973 Set	3,00,60,500/-
11	15000 Nos. Dignity Kit Men	14993 Set	2,22,13,500/-
12	HDPE Pipes with Coupling (length 5 meter per pipe) through GeM	5000 mtr.	8,20,000
13	500 Nos. Water storage Tank (500 ltr. Capacity)	500 Nos.	17,40,000
14	Solar Lamp	4800Nos.	42,50,400

Table 4. List of under pipeline item

S.No	Name of Item	Qty. (Nos.)
1	Sleeping Bags	37500 Nos.
2	Tarpaulin (HDPE) with Eyelets 4x6 Mtr.	24000 Nos.
3	PPE Combo Set	60000 Set
4	Fluid absorbent body bag	12000 Nos.

Table 5. List of items distributed to state governments

S.No	Name of Item	Qty. Provided
1	Portable Inflatable Emergency Lighting Tower (Provided to Kerala Government)	269
2	Synthetic Sleeping Mat (Provided to Maharashtra Government)	12500
3	Blanket (Provided to Maharashtra Government)	10000
4	Dignity Kit for Men (Provided to various state/UTs during Covid-19)	8012 Set
5	Dignity Kit for Women (Provided to various State/UTs during Covid-19)	7921 Set
6	Blanket (Provided to Lebanon)	1000 Nos
7	Sleeping Mat (Provided to Lebanon)	1000 Nos
8	Dignity kit for Men (Provided to Lebanon)	1000 Sets
9	Dignity Kit for women (Provided to Lebanon)	1000 sets
10	Tents (Provided to Nepal)	500 Nos
11	Plastic Sheet 50X4 Mtr (Provided to Nepal)	800 Nos





Figure 13. Distribution of kits

4.3(d) RISK AND CHALLENGES

- Recoupment of cost of distributed NDRR items from State/UTs within fixed timeline
- Proper maintenance of NDRR inventory within limited sources/manpower
- Re-initiating of procurement of NDRR inventory against distributed item till recoupment is done

4.3(e) FINANCE

The Scheme is funded by Ministry of Home Affairs, Government of India. As intimated by implementing agencies the funds were received on time and sufficient to support the proposed activities under the scheme. Total sanctioned amount of the scheme is Rs. 250 crs out of which Rs. 150 Crs. has been received so far in 03 instalments and the amount has been fully utilized. A separate “Personal Deposit” account has been maintained for NDRR fund by NDRF. For procurement of NDRR inventory, a Standard Operating Procedure (SOP) has been finalized by the Ministry of Home Affairs and circulated to the Relief Commissioner/ Secretary (Disaster Management) of all states/UTs. General operation, distribution/recovery of relief material and reimbursement of cost will be done as per the provisions contained in these Guidelines.

Government financial norms, provision of GFR, DFPR and other extant rules/guidelines are being followed norms for procurement, expenditure and keeping financial account of NDRR. In case of any procurement made in emergency, provisions of Rule 166 (ii) of GFR 2017 will be followed. Except for emergency items, which can be prerogative of the DG-NDRF, normal procurement is through delegation of financial powers/utilization of financial power with/or

without Financial Adviser System. Project finances yet to be audited. However, as per SOP, Internal Audit Group (IAG) to be audited the project finances.

4.3(f) OBSERVATIONS & RECOMMENDATIONS

NDRR scheme facilitated the NDRF to provide necessary relief/assistance to states during the crisis. The procurement for NDRR has been urgently made within timeline and no as such deviation has been observed from agreed course of action. Programme has been successful so far further the scope can be enlarged. For procurement of NDRR inventory, a Standard Operating Procedure (SOP) has been finalized by the Ministry of Home Affairs and circulated to the Relief Commissioner/ Secretary (Disaster Management) of all states/UTs. General operation, distribution/recovery of relief material and reimbursement of cost will be done as per the provisions contained in these Guidelines. During supply of store/equipment to state/UT, a proper handing over/taking over procedure has been followed to avoid any discrepancy in the quantity. As far as quality is concerned, while handing these stores over to state/UT and receiving back to NDRF, the condition of equipment/stores is assessed by a committee consisting of representatives from NDRF and concerned state/UT.

It is suggested that states/UTs where NDRR inventories are stationed, may provide source and manpower for proper maintenance of the inventories. As per guidelines of NDRR the cost of distributed NDRR inventories is required to be recouped by the concerned state/UT Government to NDRR within the same financial year and in case of such distribution being closed to the end of financial year, the same is required to be done in the first quarter of next financial year. But this guideline is not being followed by the states/UTs. For example 269 Nos portable lightning tower were provided to Government of Kerala during October, 2018 but cost of the lighting tower has been released by Govt. Of Kerala during February, 2020 after elapse of 16 months. Therefore, it is recommended that before the closing of the financial year the cost of distributed items may be deducted by Centre directly from SDRF (State Disaster Response Fund) after taking consent from states/UTs and deposited to NDRR account on receipt of NOC from concerned state/UT.

As the procurement process of each item takes minimum 3-4 months therefore, it is also recommended that the procurement of non-collectable items (or consumable) may be re-initiated immediately after distribution of the same to needy states/UTs and procurement of collectable (non-consumable) items may be re-initiated if not returned back within 45 days from the date of distribution and bills to be generated accordingly.

Scheme 4.4: National Disaster Response Force Academy

NDRF was set up in 2006 and its personnel were imparted training in transitory camps housed at training centres of BSF, CRF, CISF and ITBP which were strengthened by creating 36 post of instructors (9 each in BSF, CRPF, CISF and ITBP).

The decision to setup a separate Disaster Response Training Academy at Nagpur was taken by the then Home Minister in May 2007, considering Nagpur as a suitable location for the proposed institute due to co-existence of other disaster related training institutes in Nagpur.

A land measuring 153.21 acres for NDRF Academy was identified by NDMA in Nagpur. The then Home Minister accorded in-principle approval for setting up of the institute in June 2012 and land was purchased in September 2012. In June 2015, an in-principle decision was taken by MHA for merging National Fire Service College (NFSC) and National Civil Defence College (NCDC) into NDRF Academy. NDRF Academy started functioning in August 2015. Subsequently, in February 2016 due to administrative reasons, Ministry revisited the decision of merger and decided that NFSC to continue as an independent institution in its earlier form and NCDC to be merged into NDRF Academy.

Final approval for NDRF Academy was given in March 2018. Further formal approval for establishment of NDRF Academy by merging with NCDC, Nagpur was accorded in September 2018.

4.4(a) PROJECT INFORMATION

Project Title	National Disaster Response Force Academy
Project Duration	18 Months
Total Project cost	125.01 Crore
Name and Designation of Project PI/Nodal Person	Sh. K. K. Singh, DIG (works)

4.4(b) Vision

Academy is being established to serve as a lead institution in training of trainers and master trainers to the personnel of NDRF, SDRF, Civil Défense and other stakeholders. It will act as a Centre of Excellence (CoE) in this field, not only in India but will also act as a Regional Capacity Building Centre of Excellence catering to South Asia, South East Asia and in Asia Pacific region and various forums like SAARC, BIMSTEC, SCO, ASEAN etc.. Countries of the region can avail of the facilities for capacity building of their own Disaster Response agencies while sharing best practices.

4.4(c) OUTPUT AND OUTCOMES

The academy will be able to train almost 5000 personnel, annually, of NDRF, SDRF, stakeholder and countries of South Asia, South East Asia, and Asia Pacific Region. Following facilities are to be developed at the academy:

- Advance Search, Rescue, Collapsed structure search and rescue which includes: high rise rescue, surface and under rubble rescue, multi-story and confined space rescue.
- Medical first response and advance life support
- Aquatic Disaster Response Training to include Urban, Semi urban and rural flooding, storm water flooding, storm surge.
- CBRNE response training
- Tunnel and Bridge rescue, Highway Accidents, Train and Aircraft
- Canine training, Mountain, Landslide, Avalanche Rescue Training
- Conduct Management and International courses
- Joint staff courses in disaster response for senior & middle level officers of various ministries/ Railways/Airlines/State Revenue
- Mock Drills

4.4(d) FINANCE

Total project cost for this project is Rs. 125.01 Crore out of which Rs. 85.16 Crore has been sanctioned for development of infrastructure of NDRF Academy. Ircon Infrastructure & Service Limited (IRCON-ISL) is the agency which is executing the construction work of NDRF Academy project. Details as under:-

Sr. No.	Particulars	Amount (in Crore)
1	Development of infrastructure	85.16
2	Land Cost	18.61
3	Provision for specialised Equipment & IT, Vehicles, Clothing etc.	13.05
4	Recurring expenditure for 110 post	08.19
	Total	125.01

4.4(e) OBSERVATIONS & RECOMMENDATIONS

This academy is being established to serve as a lead institution in training of trainers. To make this a world-class institution; like FEMA (Federal Emergency Management Agency) USA, German Disaster Management Centre, Civil Defence College of Singapore; the facilities, technologies and pedagogy available in these institutions will be incorporated in NDRF Academy.

The project is in initial stages of development. The project stone laying ceremony took place on 02 January 2020 by the hands of Sh. Amit Shah, Hon'ble Home Minister, Government of India.

Since, the scheme is of national importance for establishing Centre of Excellence (CoE) in this field it is recommended that this may continue with suggestion to expedite the work.

Schemes implemented by National Disaster Management Authority

Scheme 4.5: Mobile Radiation Detection System (MRDS)

Early Detection of radiation is the most important step in the management of radiological emergency in the public domain. National Disaster Management Authority has initiated a pilot project on Mobile Radiation Detection System (MRDS) for detection of radiation for management of radiological emergency in the public domain in 56 select cities. NDMA has entered into MoU with all the participating states and union territories for execution of the project. It has also entered into MoU with Bhabha Atomic Research Centre for technical support, including ToT programme, finalisation of technical specifications and procurement of instruments. Training related logistics had been provided by NDRF.

4.5(a) PROJECT INFORMATION

Project Duration	Six years (started in September 2014)
Project cost	6.97 Crore
Nodal agency and contact person	National Disaster Management Authority, Sh. S. K. Mishra, Sr. Consultant
Technical Support	Bhabha Atomic Research Centre and NDRF BNS
Project Site	56 selected cities

4.5(b) OBJECTIVES

Early detection and Management of radiological emergency in the public domain

4.5(c) OUTPUT AND OUTCOME

- Under this pilot project, around 930 police patrol vehicles in 56 selected cities, spread across the country, were equipped with Go-NoGo type radiation detectors and 360 police stations have been provided with radiation instruments and safety items
- Training of Trainer's programme (two weeks) for police personnel from all the participating states/UTs - 10 batches of ToT have been conducted
- Standard Operating Procedure has been prepared by NDMA with the assistance of domain experts
- Master trainers were then expected to train further staff members down the line

4.5(d) MAJOR ACTIVITIES

Supply of equipment to police personnel and giving them Master Training with a well-defined operations protocol. The target groups have been selected from all selected cities in the calibrated manner. A two-tier programme is being followed for training. In the first-tier Training of Trainers (ToTs) with suitable aptitude were trained as future trainers. These trainers will then impart training to their other colleagues. The training programme (ToT) is conducted by the faculty members from Bhabha Atomic Research Centre with the logistics support of NDRF BNS.

4.5(e) RISK AND CHALLENGES

The major challenge was procurement as it involved some developmental work and testing of a large quantity of instruments. Dissemination & installation of instruments at some locations also got delayed. However, with constant follow-ups it was resolved. And, there was no as such deviation observed from agreed course of action.

4.5(f) FINANCE

The scheme was funded by Ministry of Home Affairs (DM Division). The funds were received on time by NDMA and were sufficient to carry out proposed activities. Payments were made to Department of Atomic Energy towards procurement of items and to NDRF for training related logistics. As of now, the funds are nearly utilised and for AMC purpose separate fund is kept under common head. Government norms are being followed for procurement, expenditure and keeping financial account.

4.5(g) OBSERVATIONS

Overall, project activities were very well executed. Trainings have been conducted and positive feedback was received. Using the SOP, the master trainers have also conducted trainings for other staff members at some locations.

Timely monitoring was conducted and feedbacks was also received. Mid-term evaluation committee (MTE working group) has been set up consisting of representatives from Bhabha Atomic Research Centre, NDRF, NDMA and Police personnel for evaluation of implementation part of the project. The evaluation work was initiated as a separate assignment to check state level involvements and status of installed equipment. Field visits were also scheduled but due to COVID-19, these got cancelled. Annual maintenance of project, will be taken up next for three years.

4.5(h) RECOMMENDATION

The project is a very challenging technical project one of its own kind. Overall, the project has been executed satisfactory. The installed equipment and trained manpower will greatly facilitate in Disaster Risk Reduction, in cases related to radiological emergency including contamination in the public areas, by early detection of radiation by the patrolling police personnel. The system will also be an effective deterrent for unauthorized movement and illicit trafficking of radioactive materials. The involvement of state authorities is very important for sustaining such activities for long run.

It is recommended to conduct the evaluation process after the COVID-19 situation normalizes to check whether Master trainers from respective cities are carrying forward the agenda and further conducting the second-tier of trainings. Also, it is important to ensure that equipment procured is in proper functioning condition. Therefore, the scheme is recommended and phase 2 of the project that is, warranty and annual maintenance contract should be initiated for maintenance of the equipment.

Scheme 4.6: Airport/Seaport CBRN Capacity Building Initiative- Basic training on CBRN Emergency Management for the Airport and Seaport Emergency Handlers (AEH & SpEH)

It is an ongoing initiative of capacity building on basic CBRN Emergency Management. In CBRN i.e Chemical, Biological, Radiological and Nuclear, when lead to emergency/disaster, it requires top-down conventional approach. Further, it requires instrumentation and technology for detection, also trained approach for mitigation. These may lead to long term repercussions accordingly special trainings are required. Therefore, vulnerable areas (for e.g airport, seaport etc.) have to be equipped and special training should be provided to the staff working there at supervisory level and sensitize them to deal with such situations. NDMA has signed MoU with Institute of Nuclear Medicine and Allied Sciences (INMAS) and Airport Authority of India (AAI) for conducting Basic Training Courses on CBRN Emergency Management 12 each for Airport and Seaport Emergency Handlers and completed these trainings.

Second phase has been taken up as a project. The project details are as follows:

Project Duration	Three years (started in October-2019)
Project cost	2.50 Crore
Nodal agency and contact person	National Disaster Management Authority, Sh. S. K. Mishra, Sr. Consultant

4.6(a) OBJECTIVES

To impart training on CBRN Emergency Management to the AEH and SpEH in various Airports and Seaports in batches.

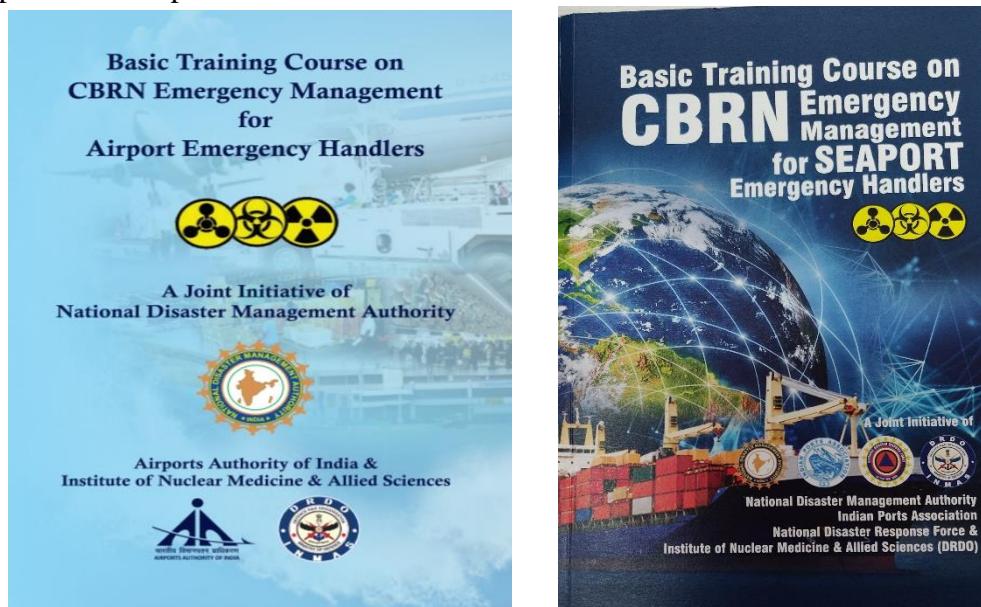


Figure 14. Training modules developed for CBRN for AEH & SpEH

4.6(b) OBSERVATION

NDMA has experience in conducting such trainings in the past. Based on the feedbacks and observations from first round of trainings, a project has been conceptualized to conduct targeting 40 airports/seaports. Also, it is proposed to conduct these trainings of Airport and Seaports in three levels:

- 1) Three days Basic training for supervisors
- 2) One day training for Executives
- 3) Five days programme for Training of Trainers

More importantly, these trainings follow a mixed pedagogy of classroom sessions, hands-on exercises, quizzes, seminars etc. which infuses the practical knowledge as well in the participants.

4.6(c) RECOMMENDATIONS

Considering the current situation of COVID-19 pandemic, it very crucial to sensitize and prepare Airport and Seaport Emergency Handlers for such emergency and minimise the potential risk. The project is in initial stages of module development and planning.

Scheme 4.7: Development and Evaluation of Low Cost Landslide Monitoring Solutions in Collaboration with IIT-Mandi

Due to landslides, average losses in Himalayas cost more than INR 550 crores and more than 200 deaths per year. Thus, there is an urgent need to develop Landslide Monitoring Solutions to monitor landslide activity and alerting people when landslide risks exceed predefined thresholds. However, the deployment of Landslide Monitoring Solutions (LMSs) currently required investment in costly sensor technology, which inhibits its largescale deployment. Therefore, this project is being implemented in collaboration with IIT Mandi to develop and evaluate low-cost sensors and other instruments for landslide monitoring through Micro-Electro- Mechanical Systems (MEMS) based sensors technology.

4.7(a) PROJECT INFORMATION

Project Duration	Three years (started in Dec 2017)
Project cost	27,85,080/- (INR)
Nodal agency and contact person	National Disaster Management Authority, Dr. Ravinder Singh, Sr. Consultant
Project Site (R&D Site)	Landslide-prone site along major district road between Mandi and Kullu town in Himachal Pradesh
Implementing Agency and contact person	IIT Mandi, Dr. Varun Dutt, Associate Professor
Technical support	Defence Terrain Research Laboratory (DTRL), Defence Research and Development Organisation (DRDO)

4.7(b) OBJECTIVES

- Development of a prototypical low-cost MEMS-based LMS
- Performing lab-scale simulations on the LMS
- Testing the LMS on a prototypical hill
- Site selection and deployment of LMS on an actual hill
- Development of machine-learning algorithms for monitoring landslides and predicting the probability of landslide occurrence
- Evaluation of developed algorithms on LMS and dissemination of information among different stakeholders via alerts.

4.7(c) OUTPUT & OUTCOMES

The major output will be the low-cost sensors, code and materials for low cost monitoring of landslides. This will facilitate in dissemination of landslide warnings and information via alerts and SMS among stakeholders. After successful deployment, this would be made available to wider community in landslide prone areas. Apart from this, knowledge dissemination has been carried out through publishing research papers in reputed journals.

- A low-cost sub-surface landslide monitoring system
- A set of machine learning algorithms for predicting soil movements ahead of time

- A cloud-based application that enables sending messages to users in case of significant soil movements
- A demonstration of the system working in a real-world (field) setting, which can be replicated at other landslide location in India.



Figure 16. System deployed at Gharpa downhill



Figure 15. System deployed at Gharpa uphill

4.7(d) RISK AND CHALLENGES

The primary challenge was the failure of the system to perform its operation in the field setting. Other challenges faced included protection of the system electronics from water seepage as well as finding the appropriate location for drilling on a landslide site. One system deployed downhill of Gharpa got damaged due to vehicle. Subsequent lockdown caused delay in its repair. This will resume when lockdown will be uplifted. The matter has been discussed within concerned authorities.

4.7(e) FINANCE

The scheme is implemented by NDMA in collaboration with IIT-Mandi. The funds were sanctioned to IIT-Mandi for on ground implementation. The funds were received on time and sufficient to carry out proposed activities. Out of total budget, 90% funds were received by IIT-Mandi in three instalments. Expenditure incurred in the project is claimed as reimbursement at IIT Mandi using an expense claim form. It has also been informed that organisation has been able to utilize the sanctioned budget fully as per sanction order only the institutional overhead amount is remaining which will be disbursed after the completion of project. For procurement, expenditure and keeping financial account, government financial norms were followed and

institute keep one account for all the projects. The Comptroller and Auditor General of India is an authority that audits the project finances.

4.7(f) OBSERVATIONS

The approach followed for project execution is two-fold: 1. Development of novel low-cost MEMS-based sensor systems for soil movement monitoring. 2. Development of novel machine learning methods for predictions of soil movements ahead of time. The project remains aligned to proposed timeline and currently is in final stage, the first five objectives has been achieved successfully. Instruments has been installed on site and monitoring is under process. The system design, development and testing before deployment has been considered the most effective.

No as such deviation has been observed from proposed activities and timelines. Implementing agencies developed the sensors in given time frame and project is in advance stages. The project will be completed as per sanctioned time period. Timely review meetings were conducted physical as well as through skype and progress reports are being submitted by implementing agency on quarterly basis.

IIT Mandi develops low-cost landslide monitoring system that can save lives ahead of time

"The system can generate warnings both locally (via blinkers and hooter) and globally (via SMSes) if there are soil movements of different magnitudes in the vicinity of the deployed system," said Professor K V Uday, School of Engineering, IIT Mandi.

Figure 17. News clippings showcasing project outcomes

4.7(g) RECOMMENDATIONS

The project addresses the issue of soil movement monitoring and early warning of real-world landslide sites which is a grave matter of concern for hilly areas. Currently, the options which are available are very costly and therefore have restricted usage. This project addresses novel low-cost monitoring and early-warning methods for investigation of causal factors for soil movement, which will be really helpful for disaster risk reduction in long run. It is suggested that reparation work should be expedited well in time so that timely monitoring can be done. Such low cost measures should also be deployed to other vulnerable area of the country and the experience and expertise of IIT-Mandi should be utilised to its full potential. Therefore, this scheme is recommended to continue.

Scheme 4.8: Generation of Meso Level 1:10,000 Scale User Friendly LHZ Maps and Landslide Inventory for Rishikesh-Rudraprayag Route Corridor, Uttarakhand (including part project on Geotechnical Investigation of samples)

Till date the available LHZ maps have not presented the precise landslide scenario, mainly due to their small scale of mapping (1:50,000 and 1:25,000 scale). Therefore, the creation of user-friendly 1:10,000 scale meso level Landslide Hazard Zonation (LHZ maps) through integration of various layer of geo-environmental parameters viz., drainage, slope lithology and landuse etc. will be of great relevance for planning mitigation measures. The project was earlier proposed for Rishikesh-Rudraprayag Route Corridor but developing Meso level LHZ maps for such a large area was not cost effective and may encounter technical issues in execution (for e.g., procurement of base maps). Therefore, the proposal was downscaled for smaller area i.e., **Tapovan-Vyasi Corridor of Haridwar**, as suggested by core committee task force of experts.

4.8(a) PROJECT INFORMATION

Project Duration	Two years (started in May 2018)
Project cost	35,13,000/- (INR)
Nodal agency and contact person	National Disaster Management Authority, Dr. Ravinder Singh, Sr. Consultant
Project Site	Tapovan- Vyasi Corridor of Haridwar- Badrinath National Highway, Uttarakhand
Implementing Agency (IA) and contact person	Remote Sensing Applications Centre (RSAC), Dr. Aniruddha Uniyal, Scientist SE & Head, Earth Resource Division,
Technical Support	Survey of India (SoI), Geological Survey of India (GSI), IIT-Roorkee and Uttarakhand Government

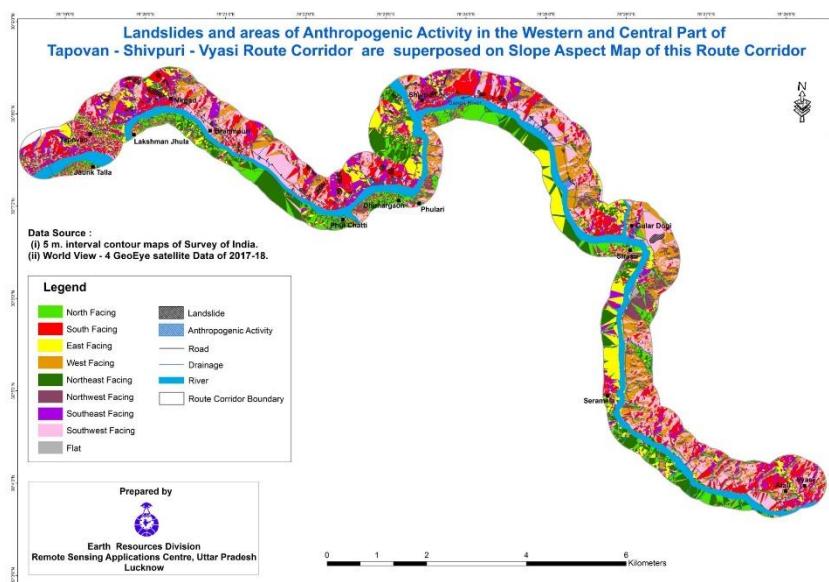


Figure 18. Map showing project site

4.8(b) OBJECTIVES

- To create/compile thematic maps of geo-environmental and terrain parameters on 1:10,000 scale
- To create high resolution satellite data and GNSS based Meso Level Landslide Hazard Zonation (LHZ) maps on 1:10,000 scales through integration of thematic maps of geo-environmental and terrain parameters
- To enlist natural and anthropogenic factors causing landslide hazard

4.8(c) OUTPUT & OUTCOME

Meso-level Landslide Hazard Zonation Map 1:10,000 scale along with Landslide inventory to be created during this study will be useful for following purposes:

- For providing crucial inputs for structural mitigation measuring to be taken up by BRO
- Will help NDMA and respective SDMA (of Uttarakhand) to prioritize the awareness and building initiative in the towns and villages falling in severe, very high and high hazard zones within the approximate 27.3 km route corridor of *Tapovan-Vyasi* stretch of Haridwar-Badrinath National Highway.
- Will help PWD and Irrigation Department of State Government (of Uttarakhand) to plan new infrastructure in low to moderate hazard zones instead of sever, very high and high hazard zones

Hard and soft copies of following thematic maps:

- Drainage & Water body Map
- Landslide Map
- Geomorphological Map (Based on GSI Map)
- Lineament Map
- Slope Map
- Slope Aspect Map
- Land use/Land cover Map
- Anthropogenic activity Map
- Landslide Hazard Zonation (LHZ)Map
- Landslide Inventory

Small part project was also sanctioned by NDMA in line with this project to facilitate the utilization of such high resolution maps by state government for planning of mitigation measures. This includes geo technical analysis of samples of rock and soil. The aim was to strengthen the state government to plan mitigation measures through the outcomes of the project.

4.8(d) Approach followed to achieve desired outcome

- Collection of available information from various sources viz. books, research papers.
- Procurement of high-resolution World View/Geoeye satellite data from NRSC, Hyderabad and georeferencing of satellite data from the Survey of India Base Maps.
- Creation of high-resolution satellite data based thematic maps/GIS layers of geo-environmental and terrain parameters viz. drainage & water body, landslide, land use/land

cover, geomorphology, lineament and anthropogenic activity themes and transferring of this information on base maps to be provided by Survey of India. Creation of slope & slope aspects maps using 5-meter contour interval maps to be provided by Survey of India.

- Field verification of thematic maps of geo-environmental parameters and for assessing the causative factors for landslides.
- Post field corrections in the thematic maps of geo-environmental and terrain parameters.
- Assigning weightages to different thematic layers of terrain and geo-environmental parameters and to each category of each of the thematic layers on the basis of its influence in triggering landslide
- Creation of Landslide Hazard Zonation (LHZ) maps using ArcGIS software through analysis and integration of thematic layers of terrain and geo-environmental parameters based upon their weightage.

4.8(e) RISK AND CHALLENGES

Some of the activities were not initiated on time due to delay in supply of base maps by survey of India and Geological Survey of India. Earlier the executing agency was not able to get the base data from Survey of India because it is difficult to get the DEM at 0.5 contour interval. Accordingly, creation of final thematic maps was not completed as per the proposed timeline due to delay in supply of base maps. Also, field work was also hampered due to nation-wide lockdown. Further ease in the lockdown will ensure optimal utilization of the project manpower so as to timely accomplish the project work.

4.8(f) FINANCE

The scheme is supported by NDMA and on ground implementation is carried out by RSAC-U.P, Lucknow. The funds received by RSAC-U.P were timely and sufficient to carry out proposed project activities. Two instalments have been received and one is still pending with NDMA. Government norms has been followed for procurement, expenditure, audit and keeping financial account. One bank has been kept for different project.

4.8(g) OBSERVATION AND RECOMMENDATION

The approach followed to execute the project is very well conceived which would eventually act as an enabler to plan in sync with DRR. Some delay is observed from the proposed timeline which is apprehend due to delay in supply of requisite information from Survey of India. It is thus suggested to extend the term of the project for processing the base maps received from Survey of India and to conduct the field visits. As informed RSAC-Uttar Pradesh has been working on their part as per proposed timeline but was not able to achieve the target due to delay in requested data from other organisations. NDMA being the nodal agency may work upon the inter-departmental synergies to get the desired results. As requested by implementing agencies, timely supply of the relevant maps from Geological Survey of India (GSI) is required at an earliest for furthering the project work, since the GIS based integration work for creation of LHZ maps can be taken up only when all the thematic maps of geo-environmental parameters are available. Such interventions using Geographical Information Platform would be very beneficial to facilitate practitioners and decision makers to come up with informed

developmental plans. Since the development plan formulation is associated thus it is very crucial to ensure that the quality of the final product is up to the mark.

This study of generation of large scale Meso level LHZ mapping on 1:10,000 scale and creation of landslide inventory can be replicated to strategic route of other landslide prone states of the country and thus can be minted for value addition. Therefore, it is recommended that the scheme may be continued.

Scheme 4.9: Five days Training of Professionals on Landslide Mitigation & DPR Preparation

The project is designed to facilitate strengthening capacities of government officials in preparing the DPR on landslide mitigation and stabilization. At present, no Institute / Centre / Department of the Government of India has designed any dedicated specialized training program for professionals with field study and group work on landslide mitigation and management for officials of landslide affected State Government / UT's for reducing landslide risk in the country.

In the financial year 2016-17, only two training courses on landslide were proposed by GSI i.e., i) Refresher course in landslide studies and earthquake geology (1 week); & ii) Training on landslide susceptibility zonation and site specific landslide studies for geologists of GSI and DGMs of NER-ER (6 days). Apart from it several other training courses on landslide risk management are organized by different Institutes such as CRRI, NIDM, IIT, IIRS etc. But, it is found that these training courses are for short duration and without any field study/group work. Therefore, it is perceived that not a single training course conducted so far is holistically delivered all the aspects of landslide mitigation and management for professionals training courses required for treatment of problematic landslide sites.

In order to fill this gap, NDMA proposed a specialized training program on “Capacity Building of Professionals on Landslide Mitigation and Management” with field study and group work on landslide site to take holistic approach for mainstreaming and strengthening of the States machinery which aims at providing all necessary support to the concerned States and UT's for addressing landslide mitigation problem in sustainable manner.

4.9(a) PROJECT INFORMATION

Project Duration	Two years (started in July 2018)
Project cost	61,00,000/-
Nodal agency and contact person	National Disaster Management Authority, Dr. Ravinder Singh, Sr. Consultant
Implementing Agencies	IIT (Mandi), IISC (Bengaluru), NIT (Mizoram), IIT (Roorkee), NEHU (Shillong)

4.9(b) OBJECTIVES

To conduct five-days intensive capacity building programme for the officials from the line Departments of States/UTs affected by landslides and concerned government departments etc. regarding Landslide mitigation and DPR Preparation. Target participants include (but not limited to) geologist, engineers, designers, representatives from water resources, NHAI, state manager so and so forth.

Training objectives:

- Understand the processes involved in various landslide types
- Expertise in the assessment and prediction of landslide hazards
- Expert knowledge about the landslide mitigation and risk assessment strategies

- Capacity building of engineers, practitioners, local authorities and the community

4.9(c) OUTPUT & OUTCOME

Four five-days training programmes were conducted at IIT-Mandi, IISC-Bangalore and NEHU Shillong. Till date 119 officials have been trained and more will be capacitated in remaining time period. These trainings are helping in homing the technical capacities of states and act as enabler to submit quality DPR for site specific landslide risk mitigation. Nagaland happens to be one of the beneficiary of such Capacity Building programme and has already submitted the DPR which got sanctioned and currently in execution stage.



Figure 19. Expert, Prof. Vikas Thakur, NTNU, Norway, delivering the keynote on “Landslide classification and triggering factors”



Figure 20. Participants attending technical sessions



Figure 21. Field visit at Landslide monitoring site, Kotropi, Padhar, Mandi

4.9(d) RISK AND CHALLENGES

The major challenge in the training is to identify potential target audience. It was emphasized and managed to shortlist the participant based on their working experience and basic degree qualification to decrease the heterogeneity of the participants. Later, concerned authorities from NDMA have taken personal interest in arranging for relevant members and permissions required for their participation. And with cooperation with NDMA and SDMA the participants have been reached timely. Due to COVID pandemic situation and nation-wide lockdown, some of the training programmes were not held as per schedule. Concerned agencies are working to execute it through online platform.

4.9(e) FINANCE

The scheme is supported by NDMA and collaborated with IIT (Mandi), IISC (Bengaluru), NIT (Mizoram), IIT (Roorkee) and NESAC (Shillong) for conducting trainings. Some percentage of funds were disbursed to implementing agencies as an advance to carry out preliminary work related to organisation of trainings. Full and final payment were made to implementing agencies after completion of programme.

4.9(f) OBSERVATIONS AND RECOMMENDATIONS

Trainings were based on lecture and demonstration with hands-on training on basic, computations and software programmes useful for designing by experts of relevant fields. This

course provided opportunity to strengthen and mainstreaming of professionals in the states/UTs. Feedback and discussions by each participant have been taken timely to assess the usefulness and required changes in the format or outcome of these training to them. As intimated by one of the implementing agencies, the group activity, *hands-on* training and site visits have been well appreciated by participants apart from the training schedule and the experts being arranged.

Due to nation-wide lockdown and pandemic situation, the remaining trainings will be conducted online. Budget is available with the NDMA so more such trainings can be planned off as the online trainings are much cost effective. Moreover, it has been observed to limit the no. of participants to 15-20 rather than 30 to maximise the effectiveness of the training. The training duration should also be customised based on the availability of participants. With these few suggestions, it is recommended that the scheme may be continued to build capacities of officials in DPR preparation.

Scheme 4.10: Capacity Building of Stakeholders on Geo-graphical Information System in Disaster Risk Reduction

The project “Capacity Building of Stakeholders on GIS in Disaster risk Reduction” is proposed to continue till 2021-2022. In this project institutes and organizations are identified for conducting the training on Application of GIS in DRR to create the awareness and knowledge among the SDMAs and other stockholders regarding the use of GIS technology in the field of Disaster management. It is ongoing project will run beyond the 2020 also. The management of disastrous events is a state subject in which, capacity building to States professionals, SDMAs and other stakeholders for proper utilization of GIS technology in disaster management is continues process.

4.10(a) PROJECT INFORMATION

Project Duration	Three years (started in June, 2019)
Project cost	Rs. 2.5 Crores
Nodal agency and contact person	National Disaster Management Authority, Mr. Brijendra Kumar Mishra, Mitigation Division Consultant
Project Site	At various institute like IIRS (Dehradun), IISM (Hyderabad), NESAC Meghalaya
Implementing Agency (IA) and contact person	Indian Institute of Remote Sensing, Dehradun; Indian Institute of Surveying and Mapping, Hyderabad; North East Space Application Centre, Meghalaya

4.10(b) OBJECTIVES

Strengthening and trainings for professional of all SDMAs and other stakeholders in the field of GIS for Disaster Management. It is proposed to conduct 11 training programmes and 1 National Workshop on GIS for Disaster Risk Reduction

4.10(c) OUTPUT AND OUTCOME

Total 9 trainings have been conducted so far and around 270 professionals have been trained from all SDMAs and other stakeholders. Depending on the level of participation courses are divided into two types i.e Two-day and Five-day. Draft agenda of the trainings are as follows:

Title of course: GIS in Disaster Risk Management

Target Group: Senior Officers from Central Government/State Government/SDMAs etc

Duration: 2 Days

Day	Topics	Hours
1	Inaugural Session Introduction to RS technology and applications Introduction to GIS, GPS, mobile services Role of space technology towards Natural Hazards and Disaster Management Flood forecasting, Flood hazard zonation	8

2	GIS in Landslide, Earthquake, Forest fire studies Thunderstorm, Lightening, Cyclone hazard - forecasting UAV Technology in disaster management Demonstration of Dashboard/webportals for disaster management in near real time basis Concluding session	8
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Title of course: GIS in Disaster Risk Management

Target Group: Executives who are working on GIS or conversant with similar work

Duration: 5 Days

Day	Topics	Hours
1	Inaugural session (0.5 hr) Introduction to RS technology (theory+practical) (3 hrs) Introduction to GIS (theory+practical) (3 hrs) Role of space technology towards Natural Hazards and Disaster Management (1.5 hrs)	8
2	Image Interpretation and Analysis for Natural Hazards (theory + practical) (3 hrs) GPS technology (Theory) (1hr) Flood modelling, Flood forecasting, Flood hazard zonation (Theory + Practical) (theory + practical) (4 hrs)	8
3	Landslide studies, Earthquake studies, Forest fire studies (Theory+Practical) (4 hrs) Field visit (Ground truthing/Data collection/GPS handling etc) (4 hrs)	8
4	Thunderstorm, Lightening, Cyclone hazard (4 hrs) Hazard, risk and vulnerability assessment (Theory + Practical) (4 hrs)	8
5	UAV Technology in disaster management (1.5 hrs) UAV RS - components, Imagery acquisition, Flight planning, data processing. (theory & demonstration) (4.5 hrs) Presentation and discussion (1.5 hrs) Valedictory session (0.5 hrs)	8

4.10(d) OBSERVATIONS AND RECOMMENDATIONS

It has been widely accepted that tools such as GIS is very crucial in minimising disaster risk. Therefore, capacity building of relevant stakeholders in this context is important. Such trainings should be conducted more frequently while using online platform to reach wider audience. As this field is evolving, yearly refresher course could also be planned. Moreover, half a day should be dedicated to experiential sharing wherein, participants from other states/region can share their experiences with other regarding on ground implementation of minimising disaster risks using GIS and making informed decisions for developing community resilience. Some of trainings are postponed due to COVID-19 and will be conducted online.

Scheme 4.11: Training for the land border crossing personnel at 12 locations

National Disaster Management Authority (NDMA) is a nodal agency for this scheme. The project is addressing the response mechanism of first responders at land borders in case of any Chemical, Biological, Radiological & Nuclear (CBRN) emergency.

4.11(a) PROJECT INFORMATION

Project Title	Training for the land border crossing personnel at 12 locations
Project Duration	2 Years (Yet to start)
Total Project cost	37 Lakhs
Name and Designation of Project PI/Nodal Person/Interviewer	Mr. Jayant Raushan, Consultant (Chemical),NDMA
Organization	National Disaster Management Authority
Project site	All India

4.11(b) OBJECTIVES

- To enhance the capacity of first responders at land borders by providing training on basic Chemical, Biological, Radiological & Nuclear (CBRN) emergency management for the Land Ports Emergency Handlers.

4.11(c) OUTPUT & OUTCOMES

- Two trainings were scheduled to be held in the month of January & February 2020 in collaboration with NCDC but could not start due to COVID 19 pandemic.

4.11(d) RISK & CHALLENGES

- Trainings were scheduled much earlier, however it could not start due to lack of interest of Land Ports Authority of India (LPAI). Finally after various communication at Joint Secretary Level and Member Secretary Level, the Land Ports Authority of India has agreed for trainings, which was scheduled in January and February 2020 but could not start due to COVID-19 pandemic.

4.11(e) FINANCE

Funding Agency: National Disaster Management Authority, New Delhi and Land Port Authority of India (LPAI), New Delhi

In this scheme the nodal agency (NDMA) is itself a funding agency and allocated fund for this project. As the trainings have not started, the funds are yet to be utilised. When trainings will start, based on different components of the project the fund expenditure process will be expended. NDMA follow government financial norms for procurement, expenditure and keeping a financial account. Project finances audited regularly as per the Government of India (GOI) norms.

4.11(f) OBSERVATION & RECOMMENDATION

This scheme is complying with the objectives of NDMA as NDMA is a nodal agency for disaster management in the country and capacity building is an integral part of it. The target of a six trainings which are scheduled to be completed in financial year 2020-21as per the draft MoU has not yet achieved. Earlier, it was delayed due to lack of interest of Land Port Authority of India (LPAI) and now the prevalent situation of global pandemic COVID 19. Hence, the project is yet to be started.

Scheme 4.12: Improving Disaster Risk Governance at SDMAs, DDMAs level

Sub-scheme 4.12.1. Implementation of the Sendai Framework for DRR

The project is steered and led by National Disaster Management Authority (NDMA) and implemented in all states/UTs except UT of Ladakh. The main objective of the proposed project is to monitor and coordinate the implementation of Sendai Framework at State level and below and to develop a culture of prevention, mitigation and preparedness in the country.

4.12.1(a) PROJECT INFORMATION

Project Title	Implementation of the Sendai Framework for DRR
Project Duration	3 years (2019 to 2022)
Total Project cost	20.11 Crore
Name and Designation of Project Person/Interviewer	Mr. Pankaj Kumar, Undersecretary, Policy Plan Division, NDMA Dr. Piyoosh Rautela, Executive Director Mr. Vivek Sharma, Senior Consultant (DM),HPSDMA, Shimla Ms. I. Mawlong , MCS, Executive Director, Meghalaya State Disaster Management Authority
Organization	NDMA
Email	policyplan@ndma.gov.in pankajk@ndma.gov.in rautelapiyoosh@gmail.com sfdr.h.p@gmail.com sdmadeptt007@gmail.com
Project site	36 (All States / UTs except UT of Ladakh)

4.12.1(b) OBJECTIVES

The project is implemented to hire Senior Consultant at SDMA level to support the State Administration for implementation of the Sendai Framework for Disaster Risk Reduction, with the specific objectives:

- To develop coordination mechanism with the aim of implementing Sendai Framework at State and District levels.
- To ensure implementation of programmes and schemes of NDMA by States/ UTs.
- To help in capacity building and training activities carried out by NDMA.
- To facilitate emergency management exercises and mock drills.
- To collect information and send to NDMA on periodic basis.

4.12.1(c) EXPECTED DELIVERABLES

- Technical assistance in preparation of the Hazard Risk Vulnerability Atlas for the State.
- Alignment of State plans and District plans in accordance with the Sendai Framework.

- Facilitating assistance to Govt. departments (State/UT) in preparation of their Departmental Disaster Management Plan (DDMP).
- Coordinating mock drills, compiling reports & data on disasters, facilitating joint workshops with States.
- Compiling and timely furnishing of data to NDMA on disaster aspects, implementation of NDMA Schemes, and Sendai Framework monitoring indicators.
- Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.
- Collection of reports about the lessons learnt and best practices from the State and exchange/ sharing of these among the States and NDMA.
- Providing assistance to the SDMA in identifying opportunities for mainstreaming Disaster Risk Reduction (DRR) in development programmes.
- Any other tasks assigned by SDMA/NDMA.

4.12.1(d) PROGRESS MADE SO FAR

- 29 out of 36 States / UTs have signed the Memorandum of Understanding (MoU) with NDMA.
- Five States; Himachal Pradesh, Uttarakhand, Meghalaya, Mizoram, and Bihar have hired a Senior Consultants and started implementation of the project.

Table 6. Current Status of the project

Status of (i) Signing of MoU between State Govt., implementing agency and NDMA and (ii) Hiring of Sr. Consultants for Implementation of the Sendai Framework for DRR				
Sl. No.	State	Signing of MoU	Hiring of Sr. Consultant	Physical and Financial Progress reports received from States / UTs
1	Andhra Pradesh	Signed	Information not available	Not received
2	Arunachal Pradesh	Signed	Information not available	Not received
3	Assam	Signed	Information not available	Not received
4	Bihar	Signed	Hired	Not received
5	Chhattisgarh	Signed	Information not available	Not received
6	Goa	Signed	Information not available	Not received
7	Gujarat	Under process in State	MoU yet to be signed	Not received

8	Haryana	Signed	Information not available	Not received
9	Himachal Pradesh	Signed	Hired	Attached
10	Jammu & Kashmir	Signed	Information not available	Not received
11	Jharkhand	Signed	Information not available	Not received
12	Karnataka	Signed	Information not available	Not received
13	Kerala	Under process in State	MoU yet to be signed	Not received
14	Madhya Pradesh	Signed	Information not available	Not received
15	Maharashtra	Signed	Information not available	Not received
16	Manipur	Under process in State	MoU yet to be signed	Not received
17	Meghalaya	Signed	Hired	Not received
18	Mizoram	Signed	Hired	Attached
19	Nagaland	Signed	Information not available	Not received
20	Odisha	Signed	Information not available	Not received
21	Punjab	Under process in State/ State was asked to return funds	MoU yet to be signed	Not received
22	Rajasthan	Signed	Information not available	Not received
23	Sikkim	Signed	Information not available	Not received
24	Tamil Nadu	Signed	Information not available	Not received
25	Telangana	Under process in State	MoU yet to be signed	Not received
26	Tripura	Signed	Information not available	Not received
27	Uttar Pradesh	Signed	Information not available	Not received
28	Uttarakhand	Signed	Hired	Attached
29	West Bengal	Under process in State	MoU yet to be signed	Not received
30	Andaman & Nicobar Islands	Signed	Information not available	Not received
31	Chandigarh	Signed	Information not available	Not received

32	Dadra & Nagar Haveli	Under process in UT	MoU yet to be signed	Not received
33	Daman & Diu	Signed	Information not available	Not received
34	Delhi	Signed	Information not available	Not received
35	Lakshadweep	Signed	Information not available	Not received
36	Puducherry	Signed	Information not available	Not received
	Total signed	29 signed/ 36	5 Hired/ 29 Signed	3 reports/5 hired

4.12.1(e) RISK & CHALLENGES

Following are the challenges faced by implementing states:

- One of the major challenges faced was very limited understanding about Sendai Framework on DRR and its priorities/targets among the stakeholders.
- Cross cutting issues like extreme monsoon/weather events in the State, COVID 19 pandemic etc. hampers the progress of the scheme for a while.
- Planning & coordination of financial resources were initially identified as major challenge in implementation of the scheme at district level. The situation may however improve after creation of State Disaster Mitigation Fund with 20% share of SDRMF.

4.12.1(f) FINANCE

Funding Agency: National Disaster Management Authority (NDMA), Govt. of India

The Scheme provides financial support for hiring of one Disaster Management (DM) professional at SDMA in all States/ UTs. The DM professional will support the State administration for the implementation of Sendai Framework for Disaster Risk Reduction. The funds were received on time as this is a midterm evaluation of the project so till now first instalment of Rs. 19.64 Lakh have been released to all the implementing agencies (below attached table).

4.12.1(g) FUNDING EXPENDITURE PROCEDURE

The details of financial support for the components of the Scheme are as under:

- Hiring of one Senior Consultant at the rate of Rs. One Lakh per month.
- Hiring of one Data Entry Operator at the rate of Rs.22, 000/- per month.
- Hiring of vehicle with ceiling of Rs.25, 000/- per month for first year, Rs.27, 500/- per month for second year and Rs.30, 250/- for third year.
- Financial support of Rs.2.0 Lakh (one time) for setting up of office.

Table 7. Expenditure Procedure

S. No.	Head of the Expenditure	Procedure
1	Consultancy fee for the Senior Consultant (DM)	The Senior Consultant has been hired by the SDMA through the UNDP India on individual consultant contract. For this UNDP has been charging 8% overhead charges as GMS.
2	Consultancy fee for the Data Entry Operator (DEO)	The DEO has been hired from the local outsource agency NIELIT.
3	Setting up of the Office (one time in first year)	The purchase of the systems with the printers for the Senior Consultant and DEO has been done as per State Government Purchase Norms.
4	Hiring of Vehicles	Only the Outstation travel of Senior Consultant is being covered under this scheme which is being done as per State Government Travel Claim norms. No specific guidelines have been issued by NDMA in this regard which has left this expenditure being less utilized as it may have been.

Table 8. Financial Support/Fund Released for the Scheme

Financial support provided for the Scheme - Implementation of Sendai Framework for DRR						
Sl. No.	Name of the State / UT	Funds released (Rs. in Lakh)	Date	Funds released (Rs. in Lakh)	Date	Total Released (Rs. In Lakhs)
1	Andhra Pradesh	19.64	25.02.2019			19.64
2	Arunachal Pradesh	19.64	25.02.2019			19.64
3	Assam	19.64	25.02.2019			19.64
4	Bihar	19.64	25.02.2019			19.64
5	Chhattisgarh	19.64	25.02.2019			19.64
6	Goa	19.64	25.02.2019			19.64
7	Gujarat	19.64	25.02.2019			19.64
8	Haryana	19.64	25.02.2019			19.64
9	Himachal Pradesh	19.64	25.02.2019			19.64
10	Jammu & Kashmir	19.64	25.02.2019			19.64
11	Jharkhand	19.64	25.02.2019			19.64
12	Karnataka	19.64	25.02.2019			19.64
13	Kerala	19.64	25.02.2019			19.64
14	Madhya Pradesh	19.64	25.02.2019			19.64

15	Maharashtra	19.64	25.02.2019			19.64
16	Manipur	19.64	25.02.2019			19.64
17	Meghalaya	19.64	25.02.2019			19.64
18	Mizoram	19.64	25.02.2019			19.64
19	Nagaland	19.64	25.02.2019			19.64
20	Odisha	19.64	25.02.2019			19.64
21	Punjab	19.64	22.03.2019			19.64
22	Rajasthan	19.64	25.02.2019			19.64
23	Sikkim	19.64	25.02.2019			19.64
24	Tamil Nadu	19.64	25.02.2019			19.64
25	Telangana	19.64	25.02.2019			19.64
26	Tripura	19.64	25.02.2019			19.64
27	Uttar Pradesh	19.64	25.02.2019			19.64
28	Uttarakhand	19.64	25.02.2019			19.64
29	West Bengal	19.64	25.02.2019			19.64
30	Delhi	12.5	25.02.2019	7.14	25.09.2019	19.64
31	Puducherry	12.5	25.02.2019	7.14	25.09.2019	19.64
32	Andaman and Nicobar Islands	7.88	08.08.2019			7.88
	Total	602.44		14.28		616.72

4.12.1(h) OBSERVATION

The project has commenced in February 2019 and it is being implemented in various states of India. MoU with 29 States have been signed and 5 states have hired senior consultants for disaster management and started implementation of the project. The project is in its planning stage however some implementing states have successfully initiated project activities and are under progress for example they have initiated preparation or developed GIS based Hazard Risk Vulnerability Atlas, generated the village level database, conducted training programmes or mock exercises etc. The states are in the process of achieving desired outcomes by ensuring coordination between states and districts, upholding multi-stakeholder engagements (including civil society, private sector, and academia), partnerships, accountability, transparency and establishment of a robust monitoring system and districts have been instructed to prepare their disaster management plan by incorporating components of Sendai Framework. However, no major deviation have been occurred from agreed course of action till now but due to COVID 19 the maximum attention is given to combat this pandemic. Though, response to COVID 19 pandemic is somehow helping the state in achieving scheme based targets in one way or another.



Figure 22. Training on Incidence Response System at Meghalaya



Figure 23. One day consultation on implementation of the Sendai Framework, Uttarakhand

4.12.1(i) RECOMMENDATIONS

Based on the key finding or observation of the evaluation team, a number of targeted recommendations have been developed with the specific aim to improve programme effectiveness and enhance learning. Following recommendations have been made:

- Establish clear roles among stakeholders, this should include a set of agreed guidelines. This is a time bound scheme, therefore to achieve targets on time, a multi stakeholder's workshop should be conducted before implementation of the scheme by NDMA to understand roles and responsibilities of the respective departments/organization in a particular scheme.
- Consider creating programmes with a commitment to at least a 5-6 years timeline, since building systems and capacity takes times.
- Financial support for travel allowance for attending the training and conference and various activities viz; consultation/ training workshops at State and district level may incorporate into the scheme. Also the guidelines for vehicle hiring should be clearly define, so that funds can be used efficiently.
- A national workshop to create a common platform for SDMA of all the states should be conducted for knowledge management, exchange of ideas and sharing of best practices.
- Timely monitoring the progress of the project is recommended: The scheme must have annual consultations under the aegis of NDMA to fix the issues faced by the states during the implementation.
- It is recommended to continue by adopting above mentioned recommendations to achieve its targets efficiently.

Sub-scheme 4.12.2: Strengthening of DDMA^s of hazard prone districts out of the 115 identified backward districts

The project is driven and led by National Disaster Management Authority and implemented in all States except Goa, where backward areas are not identified. The proposed project is to provide technical assistance to DDMA^s in the hazard prone backward districts identified by NITI Aayog based on the selected indicators, where district administration does not have enough capacity to focus on this area due to other pressing developmental needs. The Scheme shall help to build capacity, develop a culture of prevention, mitigation and preparedness.

4.12.2(a) PROJECT INFORMATION

Project Title	Strengthening of DDMA ^s of hazard prone districts out of the 115 identified backward districts
Project Duration	3 years (2019 to 2022)
Total Project cost	29 Crore
Name and Designation of Project Person/Interviewer	Mr. Pankaj Kumar, Undersecretary, Policy Plan Division, NDMA Narender Kumar, Individual Consultant- Disaster Management, District Disaster Management Authority (DDMA)- Chamba (H.P.) Dr. Hari Ballabh, Consultant, District Disaster Management Authority (DDMA)- Chamba (H.P.)
Organization	NDMA
Email	policyplan@ndma.gov.in pankajk@ndma.gov.in gis.narender@gmail.com ballabh2228@gmail.com
Project site	All states except Goa

4.12.2(b) OBJECTIVES

- To support the DDMA^s in the identified backward districts in taking measures for Disaster Risk Reduction (DRR) as per the provisions of the Disaster Management Act, 2005 and Sendai Framework for Disaster Risk Reduction.
- To provide help in preparation/ alignment of District Disaster Management Plan (DDMP) as per provisions of the Disaster Management Act and Sendai Framework and State Disaster Management Plan.
- To facilitate mock drills, capacity building and training activities at District, Taluka and Panchayat level for effective preparedness and response measures.
- To help in co-ordination of District Administration with Taluka and Panchayat level for effective preparedness, response and mitigation measures.
- To create awareness about disaster risk management at District, Taluka and Panchayat level.

4.12.2(c) EXPECTED DELIVERABLES / OUTCOMES

- Alignment of District plans in accordance with the provisions of the Disaster Management Act, Sendai Framework and State plan.
- Coordination of Mock Exercises at various locations in these districts.
- Training of officials for capacity building for better preparedness and effective response measures.
- Creation of awareness about Disaster Risk Management.
- Compiling and timely furnishing of data and information to SDMA on disaster aspects and Sendai Framework monitoring indicators.
- Improved coordination of the District Administration with Taluka and Panchayat level for effective preparedness, response and mitigation measures.
- Help in setting up of the Disaster Data Base at the District level.
- Assist the DDMA in identifying opportunities for mainstreaming Disaster Risk Reduction (DRR) in development programmes.
- Any other task assigned by SDMA/DDMA.

4.12.2(d) PROGRESS MADE SO FAR

- 21 out of 28 States / UTs have signed the Memorandum of Understanding (MoU).
- Four States; Himachal Pradesh, Uttarakhand, Meghalaya and Mizoram have hired a Senior Consultants and started implementation of the project.

Table 9. Current status of the project

Status of (i) Signing of MoU between State Govt., Implementing agency and NDMA and (ii) and (ii) Hiring of Consultants for Scheme - Strengthening of DDMAAs of Hazard Prone Districts out of the 115 identified backward districts.				
Sl. No.	State	Signing of MoU	Hiring of Consultant	Physical and Financial Progress reports received from States / UTs
1	Andhra Pradesh	Signed	Information not available	Not received
2	Arunachal Pradesh	Signed	Information not available	Not received
3	Assam	Signed	Information not available	Not received
4	Bihar	Requested to send original MoU with some corrections	MoU yet to be signed	Not received
5	Chhattisgarh	Signed	Information not available	Not received
6	Gujarat	Under process in State	MoU yet to be signed	Not received
7	Haryana	Signed	Information not available	Not received

8	Himachal Pradesh	Signed	Hired	Attached
9	Jammu & Kashmir	Signed	Information not available	Not received
10	Jharkhand	Signed	Information not available	Not received
11	Karnataka	Signed	Information not available	Not received
12	Kerala	Signed	Information not available	Not received
13	Madhya Pradesh	Signed	Information not available	Not received
14	Maharashtra	Signed	Information not available	Not received
15	Manipur	Under process in State	MoU yet to be signed	Not received
16	Meghalaya	Signed	Hired	Not received
17	Mizoram	Signed	Hired	Attached
18	Nagaland	Signed	Information not available	Not received
19	Odisha	Signed	Information not available	Not received
20	Punjab	State was requested to return funds	MoU yet to be signed	Not received
21	Rajasthan	Signed	Information not available	Not received
22	Sikkim	Signed	Information not available	Not received
23	Tamil Nadu	Signed	Information not available	Not received
24	Telangana	Districts' Hazard proneness confirmation not received /funds not released to state	MoU yet to be signed	Not received
25	Tripura	Signed	Information not available	Not received
26	Uttar Pradesh	Signed	Information not available	Not received
27	Uttarakhand	Signed	Hired	Attached
28	West Bengal	Under process in State	MoU yet to be signed	Not received
	Total signed	21 signed /28	4 Hired / 22 signed	3 reports / 4 Hired

4.12.2(e) RISK & CHALLENGES

- While conducting the capacity development programme at village level people tend to seek reward or some benefit just for attending the programme.
- The political influence at local level is high.
- Lack of data on different aspects of the district and sometimes the process is too much time taking to get the secondary information from other department.
- Mind-sets and paradigms of communities towards disasters.
- Linguistic barrier: generally the guidelines related to Disaster Management has delivered in English medium, thus requiring a translator. Under these circumstances, the meaning and sense of the message may not be fully understood.

4.12.2(f) FINANCE

Funding Agency: National Disaster Management Authority (NDMA), Govt. of India

The funds were received on time and implementing agencies are getting good support from NDMA. Since, NDMA is the nodal agency for this scheme, therefore, the procurement, accounting and audit norms of government are followed. SSDMA/DDMA of implementing states submit their quarterly expenditure details and status of the project activities to NDMA. The states have the same bank account for receive funds from NDMA as per norms of state government. The funds are transferred to the states in instalments. This scheme provides only salary for consultants other arrangements for various activities have been done by the concerned states.

Table 10. Fund release for the scheme

Fund Released for the Scheme - Strengthening of District Disaster Management Authorities (DDMAs) of Hazard Prone Districts out of the 115 identified backward districts						
Sl. No	Name of the State	1st instalment - part payment (Rs. in Lakh)	Date	1st instalment - payment released after signing of MoU (Rs. in Lakh)	Date	Total release to States (Rs. in Lakh)
1	Andhra Pradesh	12.60	22.02.2019	12.60	26.06.2019	25.20
2	Arunachal Pradesh	4.20	22.02.2019	4.20	16.02.2020	8.40
3	Assam	29.40	22.02.2019	29.40	16.09.2019	58.80
4	Bihar	54.60	22.02.2019			54.60
5	Chhattisgarh	42.00	22.02.2019	42.00	27.03.2019	84.00
6	Gujarat	8.40	22.02.2019			8.40
7	Haryana	4.20	22.02.2019	4.20	16.09.2019	8.40
8	Himachal Pradesh	4.20	22.02.2019	4.20	27.03.2019	8.40
9	Jammu & Kashmir	8.40	22.02.2019	8.40	16.09.2019	16.80
10	Jharkhand	79.80	22.02.2019	79.80	16.02.2020	159.60
11	Karnataka	8.40	22.02.2019	8.40	27.03.2019	16.80
12	Kerala	4.20	22.02.2019			4.20
13	Madhya Pradesh	33.60	22.02.2019	33.60	26.06.2019	67.20
14	Maharashtra	16.80	28.03.2019	16.80	26.06.2019	33.60
15	Manipur	4.20	22.02.2019			4.20
16	Meghalaya	4.20	22.02.2019	4.20	16.09.2019	8.40
17	Mizoram	4.20	22.02.2019	4.20	16.09.2019	8.40
18	Nagaland	4.20	22.02.2019	4.20	16.09.2019	8.40
19	Odisha	33.60	22.02.2019	33.60	26.06.2019	67.20
20	Punjab	7.70	28.03.2019			7.70

21	Rajasthan	21.00	22.02.2019	21.00	26.06.2019	42.00
22	Sikkim	4.20	22.02.2019	4.20	16.09.2019	8.40
23	Tamil Nadu	8.40	22.02.2019	8.40	27.09.2019	16.80
24	Tripura	4.20	22.02.2019	4.20	26.06.2019	8.40
25	Uttar Pradesh	33.60	22.02.2019	33.60	26.06.2019	67.20
26	Uttarakhand	8.40	22.02.2019	8.40	26.06.2019	16.80
27	West Bengal	21.00	22.03.2019			21.00
	Total	469.70		369.60		839.30

*The expenditure process followed as per government norms

4.12.2(g) OBSERVATION

As the project is in the planning phase and scope of project is vast. The arrangement of project is line with multiple departments and multiple activities are being done. Considering that in India the disaster management education is in its inception stage the entire project is going well and the project is definitely well- oriented with the collaboration of SDMA and DDMA. Due to COVID-19 chaos the maximum attention is being given to combat with corona virus pandemic, which is a part of the scheme, therefore no other major deviation noted till now. The project activities are successfully initiated and are under process for example: Training imparted to Police, Fire and Home Guard Personals in First-Aid, and Search & Rescue, creation of awareness about Disaster Risk Management through street plays at Sub-Division level, NGO'S were identified and master trainers were provided to them for training programmes, the identification of vulnerable sites, construction of retaining walls, check dams, drainage cleaning with coordination with irrigation department is being done, workshop-cum-Meeting on incident Response System (IRS) and many other activities are going on in different implementing states.





Figure 24. Glimpse of the field activities conducted by DDMA, Chamba (Himachal Pradesh)

4.12.2(h) RECOMMENDATIONS

Based on the key finding or observation of the evaluation team, a number of targeted recommendations have been developed with the specific aim to improve programme effectiveness and enhance learning. Some recommendations have been made by considering the views of implementing agencies to improve the process:

- This scheme should be implemented to strengthen the people living in tribal areas such as in districts of Himachal Pradesh.
- Experience sharing: A workshop to create a common platform for consultants of various states should be conducted for exchange of ideas and sharing of best practices between the states.
- To motivate or encourage task force formed at village level a compensation system should be develop.
- A tracking system for recording and tracing of training programmes that have been given to communities. For example sometimes a single village has trained through training/workshop conducted by many organizations like NGOs, Government organization, private organization or any trust. At the same time the other village has left untouched form such training programmes.
- Timely monitoring the progress of the project is recommended: The scheme must have annual consultations under the aegis of NDMA to fix the issues faced by the states during the implementation.
- A team of experts should be formed to develop a common School Disaster Management plan, this plan will be modified as per the suitability of individual school.
- The inter-departmental collaboration should be strengthen to achieve the targets on time.
- Establishment of a well-equipped GIS lab and a library with a complete database on the work done at district level.
- Overall the entire scheme is going well and it is recommended to continue further to achieve the set targets.

Sub-scheme 4.12.3: Financial Assistance to States /UTs/Districts for conducting Mock Exercise

The scheme “Financial Assistance to States /UTs/Districts for conducting Mock Exercise” is executed as a subpart of the scheme for improving Disaster Risk Governance at SDMAs, DDMA level.

4.12.3(a) PROJECT INFORMATION

Project Title	Financial Assistance to States /UTs/Districts for conducting Mock Exercise
Project Duration	April 2018-April 2020
Total Project cost	6.0 Crore
Name and Designation of Project PI/Nodal Person/Interviewer	Mr. Susheel Atri, Duty Officer, NDMA Mr. Sarat Kumar, State Project Officer, Tripura Relief Commissioners of concerned States/UTs (Nodal Officers from States/UTs)
Organization	NDMA
Email	do-ops@ndma.gov.in controlroom@ndma.gov.in sarat.kumar.das@gmail.com
Project site	Assam, Arunachal Pradesh, Chhattisgarh, Haryana, Himachal Pradesh, J&K, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tripura and Uttar Pradesh

4.12.3(b) AIM & OBJECTIVE OF THE MOCK EXERCISE

- To assist the States/UTs/Districts in building inclusive capacity to competently prevent, or mitigate, or prepare, or handle the aftermath of any hazard/disaster utilizing standardized, pre-prepared mechanisms and formats, with pre-trained, pre-designated officials and nominated resources.
- To review and test the adequacy and efficacy of the disaster management plans of the State and its Districts, as well as similar plans of each Department under them by conducting Mock Exercises.
- To highlight the roles and responsibilities of concerned stakeholders in the State and District Administrations in managing disasters as per the Incident Response System (IRS).
- Enhance coordination among emergency support functions at all levels.
- Generate Public Awareness on disaster management by involving the media, Local Governing Bodies, NGOs, Community, etc.
- Identify gaps if any, in the resources, manpower, communications, response capabilities, etc, through a Mock Exercise.

4.12.3(c) OUTPUT

The Project output is manifested through Mock Exercise (ME) Programme. This is evolved and conducted in close collaboration by the NDMA with the States/UTs. Each ME is conducted on the basis of hazard risk vulnerability of the respective State/UT, and in certain cases, it is also conducted for individual districts.

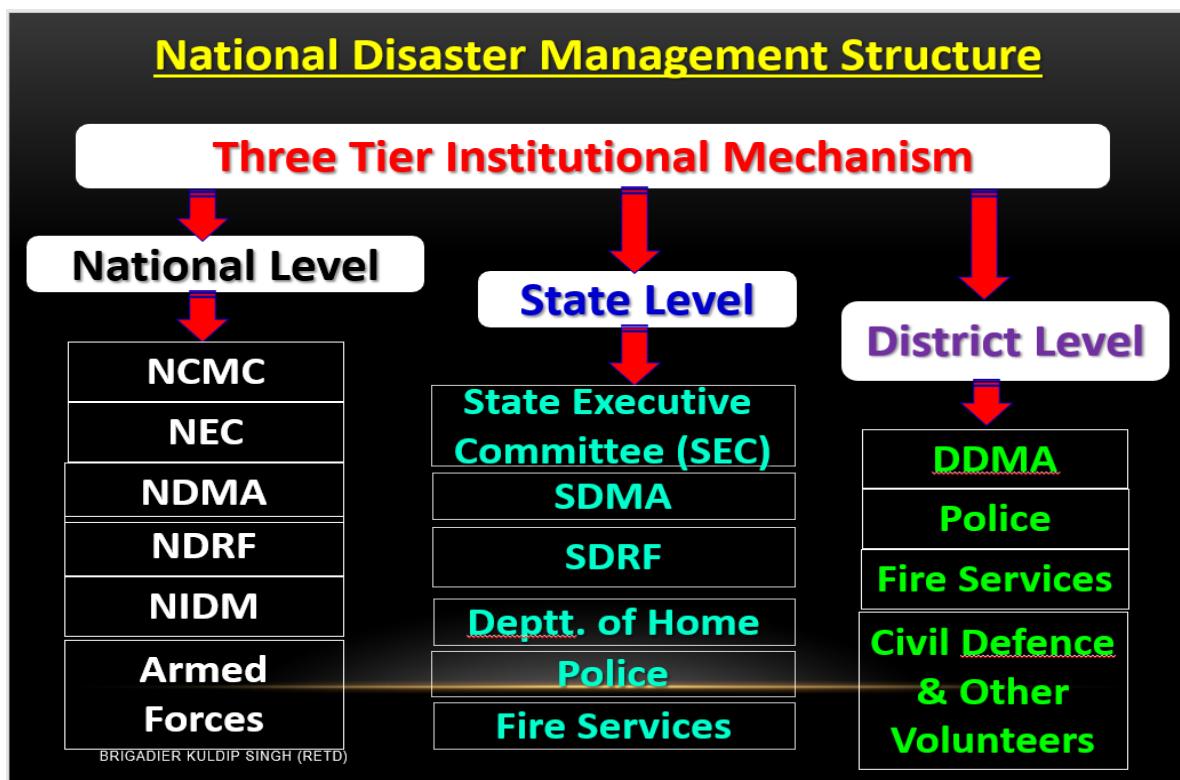
Table 11. The MEs are conducted in the following steps

Step	Event	Participation
Step-I	<ul style="list-style-type: none"> • Part-I: Reiteration of the importance of DM and its linkage to sustainable development; measures for preventing disasters; India's Three-Tier Disaster Response Mechanism; leveraging the NEWS in order to prepare for/undertake prophylactic actions in case of disasters for which a forecast is possible; capacity building (Fire & Emergency Services, Medical, SDRF, Civil Defence, Home Guards, Local Governing Bodies, NGOs, etc). • Part-II: Training on the Incident Response System. • Part-III: How to leverage technology to support DM, including in maintaining communications, building of Situational Awareness, Resource Mapping, etc. • Part-IV: Orientation& Coordination Conference: in this, the detailed modalities and preparations required for the ME are discussed and finalized. 	<ul style="list-style-type: none"> • State-level Officials and other stakeholders located at the State capital: physical presence at the Video Conferencing venue. • Officials and other stakeholders in the Districts: through Video Conferencing.
Step-II	<ul style="list-style-type: none"> • Table Top Exercise: This is conducted prior to the ME and is based on the scenario of the ME. The aim of the Table Top Exercise is to exercise disaster managers at all levels in the State/UT in their roles and responsibilities on various simulated emergency situations, particularly on the scenarios expected in the impending ME, discern gaps prior to the ME and evolve viable action plans. 	<ul style="list-style-type: none"> • State-level Officials and other stakeholders located at the State capital: physical presence at the Video Conferencing venue. • Officials and other stakeholders in the Districts: through Video Conferencing.
Step-III	<ul style="list-style-type: none"> • Mock Exercise: The aim of the ME is: <ul style="list-style-type: none"> ○ To review the DM plans and associated SOPs of the State and its Districts, as well as individual DM plans of each Department in each District. ○ Confirm that the State is using the IRS as the response mechanism. 	<ul style="list-style-type: none"> • Disasters Managers: from respective SEOCs and DEOCs. • IRTs: All IRS facilities and IRTs are activated, and various disaster response simulations are carried out on ground with

	<ul style="list-style-type: none"> ○ Highlight the roles and responsibilities of various stakeholders involved in managing disasters as per the IRS. ○ Enhance coordination among emergency support functions at the District level. ○ Generate Public Awareness by involving the media, LGBs (Local Governing Bodies), ULBs, NGOs, Community, etc. ○ Identify gaps, if any, in the resources, manpower, communications, response capabilities, etc. 	nominated manpower and equipment.
Step-IV	<ul style="list-style-type: none"> ● Submission of Report by the State/UT 	<ul style="list-style-type: none"> ● State/UT HQ

Following are the outputs of the project

- Implementation of the Disaster Management Plans at State & District levels
- Identification of voids, if any, in the plans through the Mock Exercises conducted as per Incident Response System (IRS) and its Incident Response Teams (IRTs).
- Ensured participation of all line departments at the State and District levels , the SDRF and other emergency response organizations, Central Organizations, Armed Forces, NDR, CAPFs, Red Cross, Civil Defence, Home Guards, NGOs and Community Volunteers.
- Enhanced response capacity of stakeholders from different department/organizations.
- Identified gaps and challenges for conducting trainings/workshops.



4.12.3(d) OUTCOMES

- Identified gaps in the resources, manpower, equipment, communication and systems and protocols and provided suggestions.
- Enhanced inter-agency coordination amongst various responders like the Fire and Emergency Services, Police, Civil Defence, Home Guards, SDRF, NDRF, Armed Forces, CAPF, NGOs etc.
- Verified that appropriate Disaster Management Plan has been implemented at State & District levels.
- Helped the State / UT / District authorities in identify their strengths and gaps in the alerting mechanism, inter-organizational communications, coordination of response, optimal utilization of resources, Emergency Medical Response, etc., so that they can take necessary measures to overcome the identified voids prior to any disaster/ conduct of next ME.
- The Operations Division of NDMA has conducted approximately 900 MEs across India to date at multi-State, State, and in special cases, at the District-level too. In each case, the exercise has been carried to its logical conclusion, with lessons being drawn collectively by the NDMA and the State/UT.

4.12.3(e) RISK & CHALLENGES

- The Guidelines for the IRS were issued in July 2010. However, nearly ten years down the line, less than a third of the 36 States/UTs have notified the IRS / formed comprehensive IRTs. This is one reason why the NDMA:
 - i. Has been also conducting standalone training on the Incident Response System (IRS), with the aim of spreading awareness, and motivating States/UTs and Districts to adopt and notify the IRS, as well as form appropriate IRTs.
 - ii. Been conducting Mock Exercises on every type of natural disaster (e.g. earthquake; floods; cloud bursts; cyclone; Extreme Weather Events; Tsunami). In each of these, secondary disasters/events (e.g. structure collapse; canal rupture; fire; excess outflows from dams / dam overflow / dam burst; etc) are also depicted as sub-scenarios and response to them is practiced.
 - iii. Been emphasizing the linkages of Disaster Risk Reduction, with sustainable development goals.

Some of the challenges are:

- i. Given their state of finances, the aspiration of the populace and competing demands on the exchequer, some States and/or Districts administrations are unable to invest in, or see the long-term benefits of investing in Disaster Risk Reduction and Disaster Management projects/programmes.
- ii. Less than desirable participation of officials at the State and District at appropriate levels.
- iii. Deficiencies in interdepartmental coordination.
- iv. None or improper implementation of the Disaster Management Plans at the State and/or District and/or departmental levels.

4.12.3(f) FINANCE

Funding Agency: National Disaster Management Authority (NDMA)

The funds were received on time and were sufficient except in some cases, for example, in Tripura 5 % of SDRF fund was mobilized for capacity building by the State government. They mobilized helicopters for rescue operations; organized more exercises at multiple locations by involving communities.

4.12.3(g) EXPENDITURE PROCEDURE

Under the scheme, NDMA allots Rs. One Lakh for one ME annually each at every State/UT and District level. States are informed at the time of the release of funds so that they can adhere to the expenditure norms as per Table given below. To cater for local exigencies and conditions, some variation in the expenditure under various sub-heads mentioned in the table below is also allowed to the States/UTs. The variation, if any requires the approval of chairperson, DDMA provided the sum total does not exceed Rs. One Lakh per ME.

Table 12. Expenditure procedure

S.No.	Activities to Conduct ME	Amount
1	Pre-Conference expenditure involving printing, Communication, Signage, Inaugural expenses etc.	Not exceeding Rs. 30,000/-
2	Conference venue arrangements	Not exceeding Rs. 20,000/-
3	Conference Kit & Hospitality	Not exceeding Rs. 10,000/-
4	Local Transport	Not exceeding Rs. 10,000/-
5	Photography/Videography	Not exceeding Rs. 20,000/-
6	Misc. expenditure	Not exceeding Rs. 10,000/-
	Total	Rs. 10,0000/-

The funds received from NDMA allocated to the districts, and are utilized by the State HQ and Districts as per project. The fund utilized by the state and districts as per deliverables. Since, NDMA is the implementing partner for this programme, therefore, the procurement, accounting and audit norms of the Government of India are followed. The scheme is demand driven and completely depends on the requirement received from the States/UTs. Prior to release of funds for the running FY, it is ensured that state furnishes the Utilization Certificate (UC) along with expenditure statement against previous FYS fund release.





Figure 25. Field activities

The proposed scheme was intended to support the authorities in charge of disaster response in Districts / States / UTs so that they may organize ME themselves in their jurisdictions with professional support being provided by a Nodal Officer from the NDMA for: Testing of their disaster preparedness and its efficacy on the ground; Enhancing capacity building and multi-agency coordination; Organizing and optimising utilization of resources; Enhancing resource sharing capabilities; Testing of the communication plan; Testing of the capabilities of Incident Response Teams at State, District, Sub-Division and Tehsil level; Testing of Emergency Medical Response Plan; Involvement of Civil Defence, Youth Volunteers, NGOs etc. The financial assistance provided by NDMA to the States/UTs is allocated to districts and with the support of NDMA, Multi State level and State Level mock exercises had been planned. The mock exercises, which strictly included Incident Response System, were followed by a debriefing session, during which all gaps and challenges were discussed and suggestions to overcome these challenges were provided regularly. The total cost of the project was Rs. 6 crore, with Rs. 2.55 crores disbursed in FY 2018-19 and Rs. 1.59 crores in FY 2019-2020.

In the previous years, the NDMA has shifted attention to multi-State or State level exercises with all Districts participating. This shift allows the entire State and its Districts to practice disaster management as a cohesive whole down to Tehsil/Block and Village levels. Prior to the start of a FY, the NDMA makes a training calendar in conjunction and interaction with the States / UTs. This calendar, for conducting training on the Incident Response System and Mock Exercises, is based on the disaster risk vulnerability of the States and its Districts.

4.12.3(i) RECOMMENDATIONS

Despite the many challenges the project has successfully achieved excellent results in overall capacity building related to disaster management and enhancing general awareness among all responders as well as the community, and has thus met the set objectives. The project activities were very well designed / structured to achieve the targeted goals. It has also mentioned that there are some evidences that suggest that Disaster Management is a financial burden on the States/UTs given their financial resources. This could be the one reason why States/UTs appear unable to invest more in DM-related capacity building or in risk reduction measures. Investments in risk reduction do not pay off immediately and hence, their mid- to long-term

benefits are invariably undervalued as the benefits are discernible only once a disaster has occurred. The NDMA has been trying to address this dynamic issue through a number of capacity building and financial support schemes. For further strengthening of the scheme there is need to overcome funding problem and additional funds may provide to implementing agencies. Therefore, the scheme is now capable of extending its mandate and may continue further for four more years to strengthen and capacity building of the States/UTs/ Districts in different parts of India in order to reduce the risks of disasters and achieve sustainable development.

Sub-scheme 4.12.4: Landslide Risk Mitigation Scheme (LRMS)

The scheme aimed at improving Disaster Risk Governance of SDMA's/DDMA's, providing financial and technical support to landslide prone states for site specific landslide mitigation. NDMA has conceptualized and formulated “Landslide Risk Mitigation Scheme (LRMS)” under Improving Disaster Risk Governance of SDMA's / DDMA's. This scheme has been launched to provide financial and technical support to landslide prone States for site specific landslide mitigation. It is a pilot scheme to demonstrate benefits of landslide mitigation measures along with landslide monitoring, awareness generation, capacity building / training etc. Accordingly, MoU were signed with State Disaster Management Authorities (SDMA's) of Sikkim, Mizoram, Nagaland and Uttarakhand for implementation of scheme.

4.12.4(a) PROJECT INFORMATION

Project Duration	Sikkim (36 months), Mizoram (24 months), Nagaland (12 months) and Uttarakhand (13 months)
Project cost	Rs. 43.92 Crores
Nodal agency and contact person	National Disaster Management Authority, Dr. Ravinder Singh, Sr. Consultant
Implementing Agency	SDMA's of Sikkim, Mizoram, Nagaland and Uttarakhand

4.12.4(b) OBJECTIVES

- Landslide Mitigation including Monitoring
- Awareness Generation & Capacity Building
- HR Support
- Skill Development, review/revision of existing codes/standards/guidelines and preparation of framework for new regulations

4.12.4(c) OUTPUT AND OUTCOMES

Sikkim project “Mitigation of Mangan Landslide at North District Headquarters-Mangan, North Sikkim” implemented by Sikkim State Disaster Management Authority. Objectives

- To demonstrate the benefits of mitigation by addressing the key areas of landslide managements. The Scheme will ultimately benefit the people of Mangan by reducing losses of lives and provide protection of business, regional economy, buildings, houses, schools, hospitals, border roads etc. It will also create greater public awareness about landslide hazards mitigation and management with making Sikkim resilient towards landslide risk reduction.
- To reduce economic losses and human lives, greater public awareness and capacity building about landslide hazards and methodologies for mitigating losses, improved technology for landslide mitigation and remediation and evolution of policies to encourage landslide hazard mitigation through government agencies with the involvement of communities.

- To improve the technical and scientific approach for landslide mitigation in the landslide affected areas of Mangan and capacity building to deal with the problematic landside sites in future. To make the stakeholders and community aware about the technical/scientific ways of mitigation of landslide.



Figure 26. Landslide affected area at SNT Colony, Mangan with affected buildings along left flank of the landslide

Output/outcomes

- Minimizing losses of life and property with reducing recurring cost in landslide mitigation is an important outcome other than capacity building of line Departments/Institutions of States involved in DPR preparation and execution.
- The landslide mitigation, instrumentation/monitoring, awareness programmes, capacity building and training. Also, there is a development of skill to deal proactively with landslide risk before its occurrence, review/revision of existing codes/standards/guidelines and preparation of framework for new regulations to deal with landslide risk and strengthening of governance at SDMA and DDMAs level.
- The activities in the project are related to mitigation, prevention and preparedness measures enumerated for States in the DM Act 2005. There are numbers of Capacity Building, Awareness and Sensitization activities along with experience gained during Landslide Mitigation which will make the States ready to take further Landslide Mitigation project of their own.

- This scheme will be a landmark project from which baseline data and best practices will be generated in formulation and implementation of future project on landslide risk mitigation after its completion.
- The lessons learnt from the implementation of this scheme will be shared with the landslide affected States SDMAs for capacity building and better execution of future projects.



Figure 27. Foundation being laid out for installation of protective wall to protect the upslope structure

Approach followed

Detailed Geological, Geophysical & Geo-Technical study of Mangan landslide area was taken up based on the data findings. Detailed Project Report (DPR) was submitted to the National Disaster Management Authority (NDMA) and later was vetted by the technical committee of NDMA and later approved and 1st instalment of fund was released and the state started the mitigation work, initially with the state fund and now the programme is being continued.

Nagaland Project “Landslide Risk Mitigation Scheme (LRMS) at Kohima-Thizama Road below Nagaland Legislative Assembly, Kohima, Nagaland”

Objectives

Slope stabilisation of the affected landslide area and road

Output

Reduce economic losses and human lives, greater public awareness and capacity building about landslide hazards.

Outcomes

- Outcome of the project is the landslide mitigation, prevention and preparedness measures enumerated for States in the DM Act 2005.
- This scheme will be a landmark project from which baseline data and best practices will be generated in formulation and implementation of future project on landslide risk mitigation after its completion.

Approach followed

As per the approved DPR, the work was executed with the technical and scientific approach for landslide mitigation. The quality of the material and workmanship are strictly adhered to as per DPR to achieve the desired outcome.



Figure 28. Glimpses of project site

Uttarakhand Project “Landslide Risk Mitigation Scheme (LRMS)”

The project addressing the issue of landslide risk mitigation along with its monitoring, awareness generation and capacity building in concerned stakeholders, strengthening and mainstreaming of landslide mitigation

Objectives

The objective of the project is to improve the technical and scientific approach for landslide mitigation and making them efficient by providing techno-financial support for taking up measures for mitigation to deal with the problematic landslide in future.

Outcomes

The outcome of the project is landslide mitigation, monitoring, awareness programme, capacity building and training. Additionally, reducing loss of life and property with minimizing recurring cost in landslide mitigation.

Approach followed

First of all, DPR has been prepared by Public Work Department (PWD) and finally evaluated by NDMA for two selected chronic landslide zones in the state. For achieving desired outcome, Uttarakhand State Disaster Management Authority (USDMA) has signed MoU and PWD

4.12.4(d) RISK AND CHALLENGES

In the initial stages, tendering work consumed much of the time due to government mechanism. But, NDMA did not restrict any agency to any method, accordingly states have followed their protocol. Also, the selected sites are in mountainous regions and due to monsoon season, there is limited time period available to execute the project, this causes small delays. Overall projects are implemented as per the proposal. In case of Nagaland, due to the recurrence of landslide since the submission of DPR to NDMA for approval, a slight modification at the origin point of the landslide was done due to the changing morphology/landscape during the past monsoon. The deviation stands corrected with inputs and recommendation provide by the site inspection team of NDMA in the month of February 2020.

In every state most of the project activities were impacted due to coronavirus pandemic. However, concerned agencies are putting their best to minimise its impacts.

4.12.4(e) FINANCE

The total cost of the scheme is Rs. 43.92 Crores. Out of which Rs. 13.17 Crores released as first instalments to Sikkim, Mizoram, Nagaland and Uttarakhand. The NDMA was having limited budget to be sanctioned to states. Therefore, some portion of the proposed activities has been supported by NDMA some of the states are mobilising funds from other sources of state budget. Funds are being released to respective agencies upon assessing the progress made and amount utilized. States are following their respective state government rules for project related procurement, expenditure and record keeping. Accounts are being audited regularly.

4.12.4(f) OBSERVATIONS AND RECOMMENDATIONS

Technical evaluation committee has been set up to review the project progress. Also, the timely progress reports are being submitted by implementing agencies. For release of next instalment site inspection was carried out and based on site observation report of technical experts, the instalments were released. Nagaland is in advance stage of project implementation and NDMA team visited the site and submitted report for release of 2nd instalment to Government of Nagaland and same was released on 18th May, 2020. Other States of Sikkim, Mizoram and Uttarakhand will again start the mitigation at site when COVID-19 lockdown situation is conducive in concerned States. As intimated by implementing agencies, sufficient support was provided by NDMA for project execution.

Scheme 4.13: Development of Cloud Based Application Information System for integration of database and dissemination of the same

The project “Development of Cloud Based application information system” is proposed to continue till 2022-2023. Because GIS Server database is needed to host seamlessly on NIC Cloud so that; GIS database can be used by stakeholders for disaster risk management especially during emergency situation/ disaster. As we know existing NDMA GIS server we are using as a test server research & development purpose. So, the hosting GIS server into NIC cloud is a very essential for utilization of GIS database in to 24 X 7, for more effective and efficient for serving overall performance and meet the future requirement of web storage data space.

4.13(a) PROJECT INFORMATION

Project Duration	Five years (started in December, 2019)
Project cost	Rs. 1.0 Crores
Nodal agency and contact person	National Disaster Management Authority, Mr. Brijendra Kumar Mishra, Mitigation Division Consultant

4.13(b) OBJECTIVES

Development of cloud-based application information system.

4.13(c) OUTPUT AND OUTCOMES

NDMA GIS Server migration geo data into NIC cloud for 24*7 available accessible with web security.

NDMA GIS Server database will be available into GI cloud. Accessibility of disaster database to public and stakeholders on 24*7 (all time)

4.13(d) OBSERVATIONS AND RECOMMENDATIONS

GIS server has been migrated to NIC cloud and maintenance will be done by NDMA.

Scheme 4.14: Compendium of Traditional practices and Earthquake Resilient construction practices for knowledge sharing and disaster risk reduction: Promotion of Traditional; Construction Practice

The Indian Himalayan region has rich heritage in construction of buildings using naturally available construction materials e.g. bamboo, wood, stone, mud etc. A number of building typologies have evolved over time in various regions of India. Some of these typologies are well known for their earthquake resistance, whereas others are seismically vulnerable. This project addresses to identify all these building typologies, and suggest the possible ways to improve load transfer mechanism of their structural system using known techniques to enhance their seismic performance. The project addresses the national needs related to building up disaster resilient and sustainable housing in India, with a special focus on hilly regions.

Project Title	Compendium of Traditional Earthquake Resilient Construction for Knowledge Sharing and Disaster Risk Reduction: Promotion of Traditional Construction Practice
Project Duration	2 Years (Started in January 2020)
Total Project Cost	25.00 Lakhs
Nodal Agency	National Disaster Management Authority
Name and Designation of Project PI and Co-PI(s)/Interviewer	<p>1. Mr. Mahendra Meena, Senior Consultant 2. Dr. Mitesh Surana Assistant Professor, Department of Civil Engineering 3. Dr. Putul Halder Assistant Professor, Department of Civil Engineering 4. Prof. Yogendra Singh Railway Bridge Chair Professor, Department of Earthquake Engineering 5. Prof. Jayanta Pathak Professor, Department of Civil Engineering</p>
Organization(s)	Indian Institute of Technology Ropar, Rupnagar, Punjab, India Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India Assam Engineering College, Guwahati, Assam, India
Email	mahend.iitb@gmail.com msurana@iitrpr.ac.in
Project Site	Himachal Pradesh, Jammu and Kashmir, Uttarakhand, Assam, Nagaland, Sikkim, Meghalaya, Arunachal Pradesh, Manipur, Tripura

4.14(a) OBJECTIVES

- To identify and document the traditional earthquake resistant typologies in the Indian Himalayan region
- To identify and document the contemporary building typologies in the Indian Himalayan region
- To assess seismic vulnerability of the identified traditional and contemporary buildings prevalent in the Indian Himalayan region
- To suggest common seismic safety measures for the different identified building

4.14(b) OUTPUT

- Data collection on traditional building typologies across Himalayan region
- Development of a generalized building typology classification scheme for the Indian Himalayan regions
- Seismic vulnerability of identified traditional and contemporary buildings in the Indian Himalayan region,
- Detailed project report, summarizing seismic vulnerabilities and safety measures

4.14(c) OUTCOMES

- Documentation of the different traditional and contemporary building typologies in the Indian Himalayan region
- Development of a generalized building typology classification scheme for the Indian Himalayan regions
- Seismic vulnerability of identified traditional and contemporary buildings in the Indian Himalayan region
- Common seismic safety measures for these buildings
- Detailed project report, summarizing seismic vulnerabilities and safety measures

4.14(d) RISK & CHALLENGES

The project work completed so far is based on the literature survey. As all the institutes are well equipped in terms of resources/repositories (e.g. library facility, subscription to journals etc.) to collect the available information. Therefore, the project team has not encountered any challenge related to completion of this specific task. The project team is yet to start the field surveys and facing delays in execution of field surveys mainly because of the unavailability of the manpower due to prevailing COVID- 19 outbreak world-wide. Further, based on the previous experience of the project team, it is anticipated that the project team may face some challenges while conducting the field surveys. Those challenges will be communicated, once the field survey exercise is completed.

4.14(e) FINANCE

Funding Agency: National Disaster Management Authority, New Delhi

The funds were received on time and sufficient. The funds provided are sufficient to implementing institute under various heads as per the requirements/nature of work involved in the project. No funds are anticipated to be mobilized from other sources. Being a central government institute, the implementing agency follows the norms laid down by the Government of India, from time to time all the expenditure made. As per the signed MoU between NDMA New Delhi and IIT Ropar, the complete sanctioned amount will be provided in the four installments to the implementing institute. As this project was started in January 2020, the funding agency has released the first installment till date. In this project, a significant proportion of the total budget is to be used for field work including the wages for manpower, travel and procurement of minor equipment. The project team is yet to start the field work, however, it is anticipated that the project team will be able to utilize the budget fully as per the sanction orders. The institute (IIT Ropar) follows Government of India norms for procurement of equipment, expenditure, accounting, and audit. The project account is also audited by the government auditors, along with other accounts of the Institute.



Figure 30. Thathara housing (WHE Report, Rahul et al. 2013)



Figure 31. Mud wall housing



Figure 29.Dhajji-Dewari housing (WHE Report, Hicyilmaz et al. 2011)



Figure 32. Dry stone housing (WHE Report, Sood et al. 2013a)

4.14(f) OBSERVATION & RECOMMENDATIONS

To start this project, the first instalment of the funding was received in the implementing institute (IIT Ropar) on 5th January 2020. The project team presented their work plan on execution of project work on 7th January 2020 at NDMA office, New Delhi. Thereafter, the project team has started and completed the literature survey work at the end of February 2020 and submitted the first report based on the literature survey work in the mid of March 2020. After that they were supposed to start the field surveys/work in the Indian Himalayan region, however, due to COVID-19 outbreak, a nation-wide lockdown was implemented by Government of India, and thereafter the project team could not start the field work. Further, they are also facing challenges related to availability of the manpower (trained research scholars having requisite background for execution of work). NDMA organizes periodic Project Monitoring Group (PMG) meetings to fix the issues that have been encountered during the implementation of the project, having members from various leading institutions of the country. In these meetings, the work done by implementing institutes is presented and comments/suggestions from different experts are received. The project is well oriented towards all the organization involved in the project as earthquake risk reduction in the Indian subcontinent is one of the major thrust areas aligning with the priority of all the technical institute. The extensive field surveys are to be conducted in the Indian Himalayan region to collect and compile the information related to the traditional construction practices in the states of Himachal Pradesh, Jammu and Kashmir, Uttarakhand, Assam, Nagaland, Sikkim, Meghalaya, Arunachal Pradesh, Manipur, and Tripura. Once the situation is eased and manpower is available with the implementing institutes, the project team plans to expedite the field work to complete the project well within the prescribed time limits. Therefore, project should be continued to achieve the all set targets.

Scheme 4.15: Development of Mobile application for Disaster Risk Reduction

The project “Development of Mobile Application for DRR” is proposed to continue till 2020-2021. The use of mobile application is an essential instrument for communication and decision making during the complete disaster cycle for disaster managers. The application under above scheme is as under: Incident Reporting system, Volunteer Registration system, integrated mobile application for DRR. But it may also be used for real time safest and shortage path to rich rescue camp may be incorporated with mobile apps, so that it makes convenient during emergency evacuation. It may be used as an effective communication tool/device for meeting the further requirement /challenge when catastrophe event of disaster might occur in future. Mobile apps development analytics is a future demand for effective decision support in disaster management.

4.15(a) Project Information

Project Duration	Two years (started in September, 2019)
Project cost	Rs. 0.25 Crores
Nodal agency and contact person	National Disaster Management Authority, Mr. Brijendra Kumar Mishra, Mitigation Division Consultant

4.15(b) OBJECTIVES

Development of Mobile Application for Disaster Risk Reduction (DRR)

4.15(c) OUTPUT & OUTCOMES

- Development of mobile application for first responder and citizen for disaster reporting and risk reduction
- Use of mobile application for event reporting and building a communication between first responder, citizen and decision makers

4.15(d) OBSERVATIONS AND RECOMMENDATIONS

Project is yet to be started

Scheme 4.16: Bihar, Uttar Pradesh and Uttarakhand Earthquake Scenario Development for Awareness Campaign

This project is implemented to develop an earthquake scenario based on which unified action plan be made, which will help the various stakeholder in planning and coordinating emergency response, utilities and additionally it will provide an understanding of the consequences of a large earthquake.

4.16(a) PROJECT INFORMATION

Project Title	Bihar, Uttar Pradesh and Uttarakhand Earthquake Scenario Development for Awareness Campaign
Project Duration	2 years (2019 to 2021)
Total Project cost	4.10 crore i. Earthquake =2.88 Cr ii. Medical =0.64 Cr iii. Psychosocial = 0.58Cr
Name and Designation of Project Person/Interviewer	Mr. Mahendra Meena, Senior Consultant
Nodal Agency	National Disaster Management Authority (NDMA), New Delhi
Project site	National Level R & D Project (Bihar, Uttarakhand, Uttar Pradesh)

4.16(b) OBJECTIVE

- To generate awareness amongst the stakeholders of damaging earthquake affecting a large number of states
- To understand the direct and indirect consequences of the earthquake in the affected areas
- To facilitate preparation of mitigation and response plans at various levels
- To facilitate understanding of impact of the earthquake on the functioning and responsibilities of various stakeholders
- To facilitate inter-departmental and inter-state coordination
- To organize the workshops to facilitate the outcome and sensitize the concerned district officials and other stakeholders

4.16(c) EXPECTED OUTPUT

- Development of two scientific earthquake Scenarios by revisiting 1934 Bihar Nepal earthquake and 1991 Uttarkashi earthquake: based color coded risk maps including population exposure, expected damage and losses

- Facilitation of the outcome to the study to the policymakers of the states for better earthquake risk mitigation strategies
- State level workshop to facilitate the outcome of the study (3 states)
- District level workshops in concerned states to sensitize the district officials (20 in Numbers)

4.16(d) EXPECTED OUTCOMES

- Development of scenario of repeat of Assessment of direct and indirect consequences of a big earthquake for the region.
- Facilitation of earthquake scenario information to Bihar, Uttar Pradesh and Uttarakhand States for planning of disaster response.
- Recommendations to States to update their disaster management plans and action plans.
- Gaps identification and subsequent integration of gaps into scenario assessment report.

4.16(e) RISK & CHALLENGES

Project is recently awarded to IIT Roorkee and the work will be commenced soon by the institute, so presently no risk and challenges are there.

4.16(f) OBSERVATION & RECOMMENDATION

Indian Institute of Technology, Roorkee is the implementing agency for this project as IIT Roorkee has technical expertise in earthquake scenarios also it is a renowned technical institute in the country. The project is recently awarded to IIT Roorkee and the project activities will be commenced soon by the Institute.

Scheme 4.17: Resource Mapping of Earthquake Engineering Facilities in Engineering/ Architect colleges

The project was undertaken to map out earthquake professional and institution and an online platform will be developed where data will be assembled at one place. This data is expected to be helpful for various stakeholders which may be utilized further to undertake various mitigation measures in addition to post earthquake rapid damage assessment to assess immediate occupancy of the houses through the expertise available for which the information on experts may be gathered efficiently from the envisaged MIS platform.

4.17(a) PROJECT INFORMATION

Project Title	Resource Mapping of Earthquake engineering facilities in engineering/ architect colleges
Project Duration	One Year (sanctioned on 5-11-2019)
Total Project cost	Rs. 23.50 Lakh
Nodal Agency	National Disaster Management Authority
Name and Designation of Project PI/Nodal Person/Interviewer	Mr. Mahendra Meena, Senior Consultant Dr. Mahesh Kumar Jat Professor
Organization	Department of Civil Engineering, Malaviya National Institute of Technology Jaipur JLN Marg, Jaipur - 302017
Email	mahend.iitb@gmail.com mkjat.ce@mnit.ac.in
Project Site	National Level R & D project

4.17(b) OBJECTIVES

- Collection of data regarding Institutes/colleges having capability related to the earthquake engineering, technical courses and programs offered by them, research/laboratory facilities,
- Collection of data of earthquake experts, their contact details, qualifications, field of expertise and experience along with major work carried out by them,
- Collection of data regarding providers of major equipment for earthquake response, including contact details and type of equipment,
- Peer-review of collected data to identify, verify and authenticate the credentials of experts, institutes and vendors /providers,
- Development of an online platform (MIS) to upload the database of authenticated Earthquake experts, responders and equipment providers and dissemination of information to various users/agencies

4.17(c) OUTCOMES

- Verified database of institutions/ colleges having expertise and running courses/programs related to earthquake engineering,
- Detailed database of human resource (experts) working on various aspects of earthquake engineering throughout the country
- Database of research/laboratory facilities available in different organizations/institutions working in the field of earthquake engineering,
- Database related to different vendors supply different type of equipment useful for the earthquake engineering,
- An online platform to facilitate retrieval/ dissemination of information about institutions/ colleges having expertise and resources related to earthquake engineering, courses running by these organizations, human resources working in the various fields of earthquake engineering, research/laboratory facilities available in the country and vendors supplying equipment related to various aspects of earthquake engineering.

4.17(d) Approach followed to achieve the desired project objectives is mentioned below

- Identification of the sources of earthquake engineering related information like academic and research institutions, agencies and organizations,
- Collection of information about earthquake engineering resources related information from different sources through oral communication, from online resources and regulatory authorities like AICTE, CSIR etc.,
- Classification of information and database creation
- Analysis of the information and checking its consistency,
- Peer review of the data/ information collected
- Consultation with domain experts and NDMA
- Design of schema and architecture of the online platform (MIS)
- Development of MIS code and database
- Verification of developed online platform hosting earthquake engineering resources
- Integration of earthquake engineering resources online platform with NDMA online resources. Detailed methodology has been presented in Figure below.

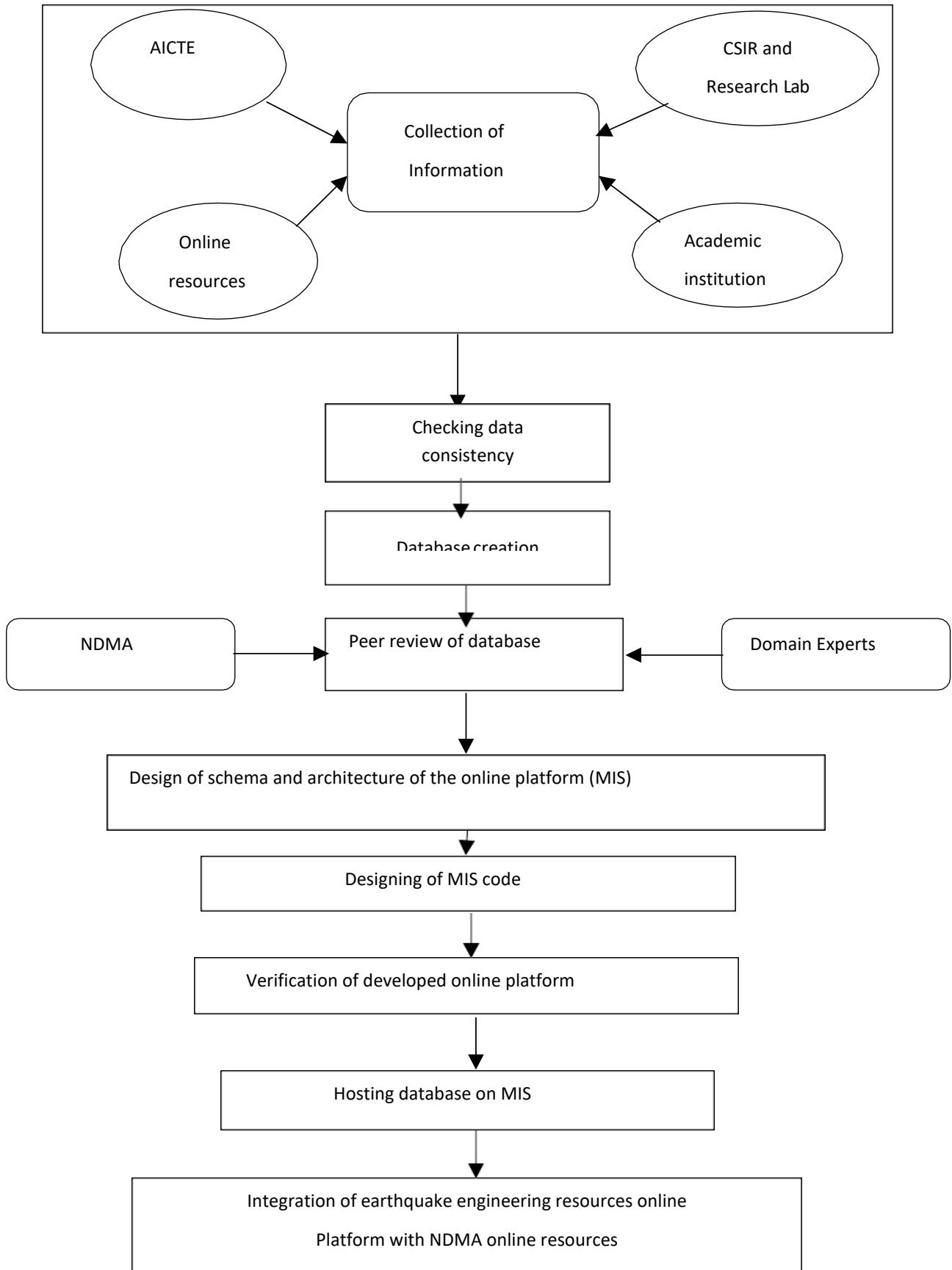


Figure 33. Schematic of the proposed approach

14.7(e) RISK & CHALLENGES

- Collection of data about experts and obtaining consent from them to share their information is quite difficult task. Information has been collected and verified from multiple sources. Information was verified using different tools like voice calls, mails, WhatsApp messages etc.,
- COVID 19 pandemic is prevailing in country so, hired research staff were in lockdown and project lab was not accessible.

14.7(f) FINANCE

Funding Agency: National Disaster Management Authority (NDMA), New Delhi

The funds were received on time and are sufficient so far; additional funding may be required to meet out the salary of research staff employed for the duration of lockdown. The funds will be received in two instalments, first instalment of the funds have been received by funding agency. Research and Consultancy section of the institute maintains separate account of each project. For all the procurement and financial dealing norms of Govt. of India have followed. The project finances are regularly audited internally through internal auditors as well as from CAG.

The screenshot shows a database interface with two main panes. The left pane displays the 'SCHEMAS' tree, specifically the 'django_project' schema, which contains various tables like auth_group, auth_permission, auth_user, auth_user_groups, auth_user_user_permissions, city, contents, courses, department, django_admin_log, django_content_type, django_migrations, django_session, expert, facilities, fields, institutes, state, and technology. The right pane shows a 'Result Grid' for a query involving the 'state' table. The query is partially visible at the top right, starting with 'SELECT * FROM state'. The result grid has columns 'id' and 'state', with data rows from 1 to 11. The data is as follows:

	id	state
▶	1	Uttarakand
	2	West Bengal
	3	Arunachal Pradesh
	4	Assam
	5	Meghalaya
	6	Odisha
	7	Uttar Pradesh
	8	Karnataka
	9	Tripura
	10	Jharkhand
	11	

1 • | SELECT * FROM django_project.expert|

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Fetch rows: |

Organization2	Types_of_Institute	City	State	Designation	Qualification	Telephone_no	Mobile_no
Ministry of Defence Govt. of India New Delhi	Research Institute	New Delhi	Chief Engineer	B.E.	2225411771		
North Eastern Railway	Research Institute	Itanagar	Arunachal Pradesh	Senior Divisional Officer	B.E.	5222433481	9415245828
Indian Institute of Technology Roorkee	Engineering and Technology	Roorkee	Uttarakhand	Former Professor & Head	Ph.D.	01853272757	9878902118
Sohat Engineering College	Engineering and Technology	Jorhat	Assam	Ex-Professor	B.E. M.E.		9864059671
T. P. C. National Thermal Power Corporation ...	Engineering and Technology	Nagpur	Maharashtra	Executive Engineer	B.E.	8257262356	
India Gandhi Institute of Technology Sarang O...	Engineering and Technology	Sarang	Odisha	Professor	B.E. M.E.		
College of Engineering R Nagar Salhanare	Engineering and Technology	Sangli	Maharashtra	Prof & Head	Ph.D.	234222329	
Elanace Infrastructure Ltd. A-31 Sector-64 India	Engineering and Technology	Noida	Uttar Pradesh	Sr. Vice President	Ph.D.	1203958401	9350813985
Central College Bangalore University	Engineering and Technology	Bengaluru	Karnataka	Professor	M.E. B.E.	26660789	
Delhi College of Engineering Kashmin Gate	Engineering and Technology	Delhi	Delhi	Professor	Ph.D. M.E. B.E.	1147400500	9818225427
Indian Institute of Technology Roorkee	Research Institute	Roorkee	Uttarakhand	Retired Eemritus Fellow	B.E. M.E. Ph.D.		9412071216
ISB-Central Building Research Institute Roorke...	Engineering and Technology	Roorkee	Uttarakhand	Scientist	Ph.D.	4712367866	9447167866
ational Institutes of Technology Jalandher Pun...	Engineering and Technology	Jalandhar	Punjab	Ex- Professor	B.E. M.E.		
ndian Institute of Technology Roorkee	Engineering and Technology	Roorkee	Uttarakhand	Retired Professor	B.E. M.E.		
ndian Institute of Technology Kanpur Uttar Pra...	Engineering and Technology	Kanpur	Uttar Pradesh	Professor	PHD M.E. B.E.	5122597118	
govt. of Uttar Pradesh		Aligarh	Uttar Pradesh	Chief Engineer (Retd.)	B.E.		9450491044
he IITAI University Raspur Amrapali Platinum F...		Raipur	Chhattisgadh	Former Vice Chancellor	B.E. M.E.		7389904771
Iaru Nanak Dev Engg. College Ludhiana Punjab	Engineering and Technology	Ludhiana	Punjab	Professor	Ph.D.	01642280985	
J. P. W. D. Central Public Works Department H...	Engineering and Technology	Jaipur	Rajasthan	Superintending Engineer	Ph.D.		9417480817
ndian Institute of Technology Roorkee	Engineering and Technology	Roorkee	Uttarakhand	Professor	Ph.D. M.E. B.E.	01332285336	
	Engineering and Technology	Roorkee	Uttarakhand	Professor	B.E. M.E.		

expert | x

Output |

Action Output |

Apply |

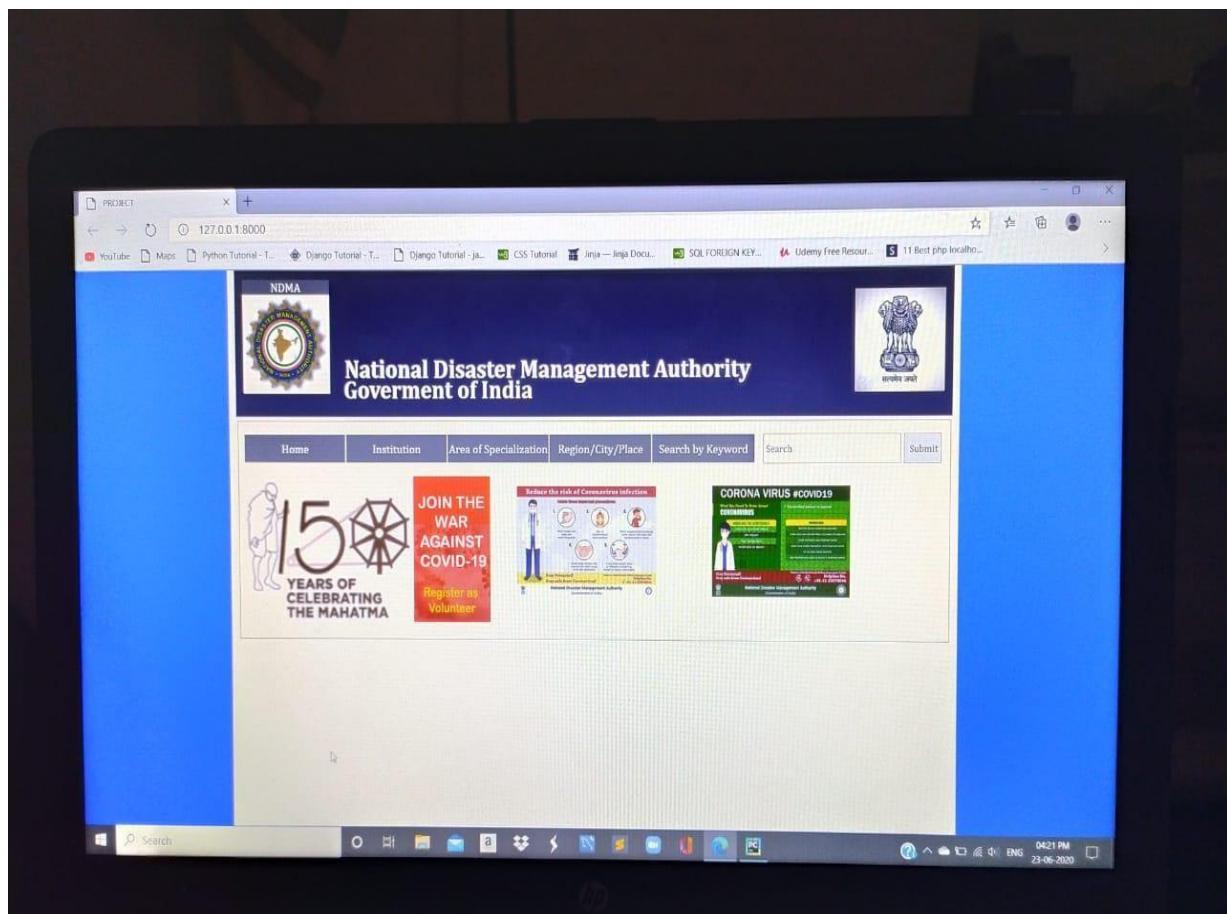


Figure 34. Some photographs of development of MIS

14.7(g) OBSERVATION & RECOMMENDATION

The project “Resource Mapping of Earthquake Engineering Facilities in Engineering/ Architect colleges” is being implemented in collaboration with MNIT, Jaipur and going as per desired timeline and project progress is satisfactory. Stage two of the project has almost completed. Though, some problem has been faced by implementing agency due to lockdown such as closing of institute, which has affected the project work. The project is supplementing institute’s objective as institute is running one PG program in Disaster assessment and mitigation and also research is going on various aspects of natural and man made disasters. So far, the funds were sufficient and additional funding may require to meet out the salary of research staff employed for the duration of lockdown. Although, there is some delay in project activities due to pandemic. Therefore, as the project is of national interest, it is recommended that two months extension may provide to achieve desired quality outcome from project interventions.

Scheme 4.18: Development of Earthquake Disaster Risk Index (EDRI) for earthquake-prone cities (approx. 100 cities) Phase –II

The project aims to evaluate the Earthquake Disaster Risk Index (EDRI) for 60 cities. It is an assessment tool for assessing the possible risk of earthquake, which can help decision makers and authorities to plan and develop suitable adaptation measures. This forecast of risk within a city will project the overall damage or loss that city may experience in expected earthquakes in future and the necessary precautions to be taken.

4.18(a) PROJECT INFORMATION

Project Title	Development of Earthquake Disaster Risk Index (EDRI) for earthquake-prone cities (approx. 100 cities) Phase –II.
Project Duration	2 years (2019 to 2021)
Total Project cost	1 Crore
Name and Designation of Project Person/Interviewer	Mr. Mahendra Meena, Senior Consultant
Nodal Agency	National Disaster Management Authority (NDMA), New Delhi
Project site	National Level R&D Project

4.18(b) OBJECTIVE

- To assess the vulnerability to various building typologies within a city
- To identify the possible typologies as well as areas within the cities, which are on higher risk
- To prioritize the mitigation measures to improve overall risk across cities
- To facilitate the intra-city and inter-city and nudge the will among decision makers to work towards earthquake risk reduction

4.18(c) EXPECTED OUTPUT

- Identification of Cities for EDRI Phase-II
- Data collection through the field visit of the projected cities
- Evaluation of EDRI in terms of a) vulnerability of buildings b) expected level of damage to the buildings c) corresponding expected loss of life and property
- Consolidated Report of EDRI for 60 cities with detailed analysis of outcome and methodology adopted
- Individual city report with list of major contributing factor to the overall risk, along with specific mitigation measures to reduce the earthquake risk
- Comparison of cities with similar risk indices

4.18(d) EXPECTED OUTCOMES

- EDRI in terms of
 - a) Vulnerability of buildings
 - b) Expected level of damage to the buildings
 - c) Corresponding expected loss of life and property,
- Consolidated Report of EDRI for 60 cities with detailed analysis of outcome and methodology adopted
- Individual city report with list of major contributing factor to the overall risk, along with specific mitigation measures to reduce the earthquake risk
- Comparison of cities with similar risk indices

4.18(e) RISK & CHALLENGES

Since the project is not yet awarded to the Institute and is under examination, so presently there are no risk and challenges.

4.18(f) RECOMMENDATIONS

Project is not yet awarded.

Scheme 4.19: 5 days Training on Applications of Unmanned Aerial Vehicle (UAV) in Disaster Management

The project “Five days Training on Application of UAV/Drone Technology in Disaster management for States” is proposed to continue till 2020-2021. Because to build UAV based skill manpower with the help of highly qualified UAV academician across India for up to more than 100 professionals and also will cover other organization/ agencies which are involved in disaster management. As well as project is aimed to provide training/ capacity to states/SDMAs professionals and other stakeholder in use of UAV/Drone for future preparedness in disaster.

4.19(a) Project Information

Project Duration	Two years (Started in Dec, 2019)
Project cost	40 Lakhs
Nodal agency and contact person	National Disaster Management Authority, Mr. Brijendra Kumar Mishra, Mitigation Division Consultant

4.19(b) OBJECTIVES

Strengthening and trainings for professional of all SDMAs and other stakeholders in the field of the use of UAV/Drone Imagery for disaster mapping with high resolution along the inaccessible terrain like Himalayas

In this project 5 trainings on Application of UAV/Drone for Disaster Risk Reduction has been proposed at various institutes like Indian Institute of Remote Sensing, Dehradun; North East Space Application Centre, Meghalaya etc.

4.19(c) OUTPUT & OUTCOMES

One training has been successfully conducted from 10th-14th February, 2020 and around 15 professionals have been trained. The outline of the course was designed in such a way that it covered all 6 stages of disaster management starting from prevention, preparedness, relief and reconstruction. Legal aspects were also touched upon. The details of the topics covered are as follows:

Table 13. Details of the topics covered

Days	Topic
Day 1	<ul style="list-style-type: none"> • Overview of UAV Remote Sensing and their applications in Disaster Management • UAV Platform-types, sensors & DGCA guidelines for Drones/UAV • Application of UAV in Hazard and Vulnerability Assessment • Mission and Flight planning for autonomous drones (demonstration)
Day 2	<ul style="list-style-type: none"> • UAV application in mitigation and planning and real-time monitoring during disaster • UAV's for forest fire hazard assessment, monitoring & mitigation • UAV & GPS data acquisition (Demonstration)

Day 3	<ul style="list-style-type: none"> • UAV's for Landslide hazard assessment, monitoring & mitigation • UAV's for flood hazard assessment, monitoring & mitigation • UAVs for Glacier monitoring & GLOF hazard assessment • Demonstration of case study on flood hazard assessment
Day 4	<ul style="list-style-type: none"> • UAVs for disaster relief and rescue • UAV data processing-DEM extraction (Demonstration) • Use of UAV's/drones in communications and networking during disaster
Day 5	<ul style="list-style-type: none"> • UAVs for disaster recovery & rehabilitation • UAV data processing-DEM extraction (demonstration) • UAV data processing- feature extraction <ul style="list-style-type: none"> i. Application to disaster landslide (demonstration) ii. Urban damage assessment (demonstration) • Discussion/feedback session

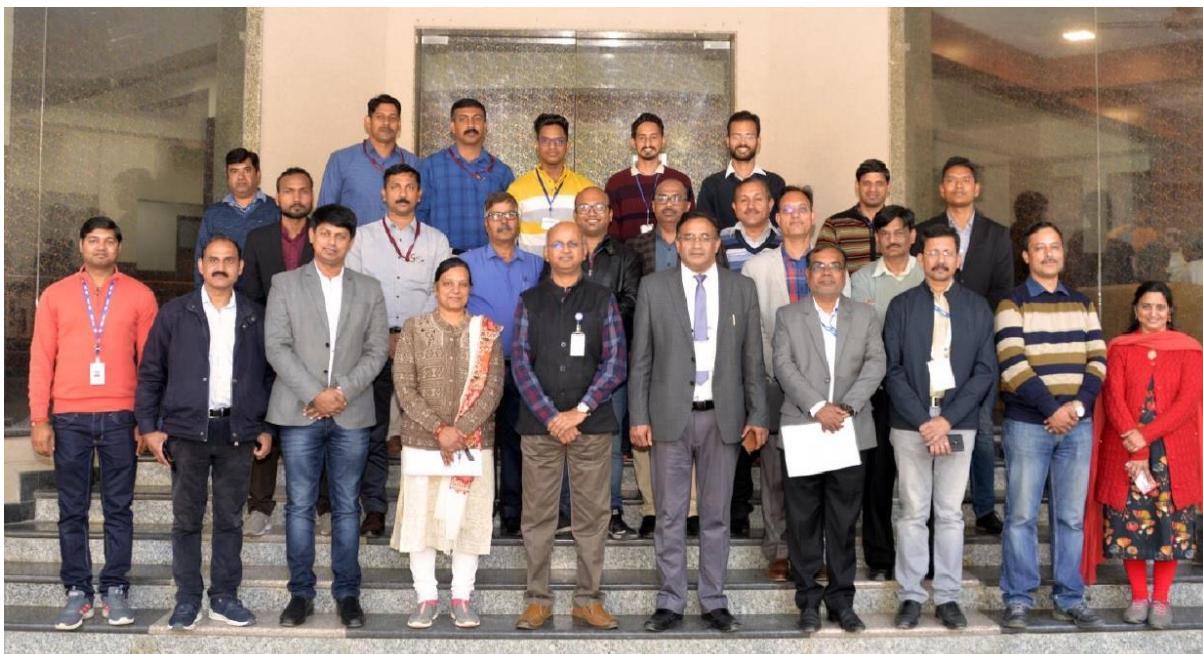


Figure 35. Group photo during the training programme

4.19(d) OBSERVATIONS AND RECOMMENDATIONS

Unmanned Aerial Vehicles can be used in disaster management and can provide high-resolution, real-time images of even the inaccessible locations. These images can then be used to produce accurate hazard maps so that prevention and mitigation measures for reducing disaster risks are planned accordingly. Underlining the importance of UAV technology for disaster management, all stakeholders should strive to leverage existing technologies for quick and efficient disaster response. Accordingly, such trainings should be conducted in-large to cater especially vulnerable areas/region. Remaining four trainings will be conducted through online platform.

Scheme 4.20: Extension of GIS scheme for operational manpower

4.20(a) Project Information

Project Duration	5 years (August, 2019)
Project cost	Rs. 1 crore
Nodal agency and contact person	National Disaster Management Authority, Mr. Brijendra Kumar Mishra, Mitigation Division Consultant

4.20(b) OBJECTIVES

Hiring of manpower for maintaining the NDMA GIS server and database

4.20(c) OBSERVATIONS AND RECOMMENDATIONS

Recruitment of manpower is under progress

Scheme 4.21: Pilot project to Improve Earthquake Resilience of Masonry lifeline Buildings and Upcoming Constructions

This objective of the project is to enhance the resistance of the lifeline structure in state of Delhi, Tripura and Uttarakhand. As these state/UT lies in zone IV & V which are the most vulnerable region and in case of earthquake lifeline structure are most approached destination by the people.

4.21(a) PROJECT INFORMATION

Project Title	Pilot project to Improve Earthquake resilience of Masonry lifeline buildings and upcoming constructions in selected locations of Tripura, Uttarakhand and NCT Delhi.
Project Duration	2 year (from November,2019)
Total Project cost	9.50 crore
Nodal Agency	National Disaster Management Authority(NDMA),New Delhi
Name and Designation of Project PI/Nodal Person/Interviewer	Mr. Mahendra Meena, Senior Consultant Mrs. Ridhim Aggarwal, Additional Chief Executive officer, USDMA
Organization	Uttarakhand state disaster management authority
Project Site	Uttarakhand, Tripura, NCT of Delhi

4.21(b) OBJECTIVE

- Structural safety audit of selected masonry lifeline buildings.
- Preparation of DPR to carry out retrofitting and to Construct Technology Demonstration Units (TDU)
- Construction of Technology Demonstration units
- Capacity building training of engineers, masons and bar benders

4.21(c) OUTPUT

- Structural safety audit of selected masonry lifeline buildings; Hospital and health facilities, school buildings, important buildings of government that ensure governance continuity in the aftermath of earthquakes such as Collectorate, emergency operation centre, community building, etc.
- Preparation of DPR to carry out retrofitting and to construct 3 Technology Demonstration Units (TDU)
- Construction of TDU at 3 district headquarters covering the states of Tripura, Uttarakhand and NCT of Delhi (One of the Municipal Corporations in Delhi)
- Retrofitting of selected masonry lifeline buildings (approximately 30 units at six/seven different locations covering states of Tripura, Uttarakhand and NCT of Delhi)

4.21(d) RISK & CHALLENGES

Since, it is an ongoing project, as such no risk and challenge faced till now.

4.21(e) FINANCE

Funding Agency: National Disaster Management Authority (NDMA), New Delhi.

The funds were received on time from NDMA and are sufficient. The funds will be released in instalments and first instalment of the project has been released to implementing agency. The implementing agencies are able to fully utilize sanctioned budget. Govt. financial norms are being followed for expenditure procedure, procurement and keeping financial account by implementing agencies. The project finance are regularly audited as per government rules & regulation.

4.21(f) OBSERVATION

The project is in process and going as per the desired timeline and remained well-oriented towards organization priority because it will enhance the capacity building of engineers, masons etc.

4.21(g) RECOMMENDATION

The project “Pilot project to Improve Earthquake Resilience of Masonry lifeline Buildings and Upcoming Constructions” is being implemented in collaboration of NDMC Delhi, SDMA/DDMA of Uttarakhand & Tripura. Although, due to COVID-19 pandemic project activities have been affected, but project will be completed within its duration. Timely monitoring the progress of the project is recommended: The scheme must have annual consultations under the aegis of NDMA to fix the issues faced by the states during the implementation. Therefore, it is recommended that the scheme should continue to achieve its target efficiently.

Scheme 4.22: Development of probabilistic seismic hazard map of India

Success of earthquake disaster mitigation strategy depends on how well the stakeholders are sensitised to the necessity of reducing the vulnerability of built up structures. The spate of earthquake in the recent past, causing extensive damage has heightened the sensitivity of administrators, engineers and general public to the looming hazard due to future earthquakes occurring near densely populated Indian cities. Therefore, the project aimed at developing probabilistic map of India which can be utilized as a resource material by the various stakeholders, researchers, students and the like.

4.22(a) PROJECT INFORMATION

Project Duration	1 year (started in July 2019)
Project cost	0.15 crores
Nodal agency and contact person	National Disaster Management Authority, Sh. Mahendra Meena, Sr. Consultant
Implementing agency	IIT Madras

4.22(b) OBJECTIVES

Development of Grid-wise probabilistic seismic hazard map

4.22(c) OUTPUT AND OUTCOME

Probabilistic map of India will be developed that will consist of all known earthquake of magnitude 4 and above recorded in and around India in the last 500 years.

4.22(d) RISK AND CHALLENGES

No risk and challenges were faced

4.22(e) FINANCE

The funds were sanctioned from NDMA to IIT Madras to carry out this R&D project in form of instalments as per following pattern:

- 1) 40% at the time of signing of MoU
- 2) 30% at the end of stage 2 & submission of UC/ Statement of Expenditure (SOE) for earlier release fund
- 3) 20% at the end of stage 3 & submission of UC/SOE for earlier release fund
- 4) 10% at the end of stage 4 and submission of utilization certificate

The funds were released based on deliverables, once the deliverables are achieved and the criteria is fulfilled based on the funding pattern as per the timeline, subsequent funds are released. Implementing agency maintain separate account for project.

4.22(f) OBSERVATIONS & RECOMMENDATION

The output of the product will facilitate in informed decision-making for minimising risk and also for site selection, design and retrofitting strategies.

The project is going as per the desired timeline and has achieved its objectives. Hazard map already developed. Smoothening of the map and ground motion prediction equations and respective weight-age thereon is under process. It is recommended to extend the project to prepare final desired outcome as this is in favour of building national resilience.

Scheme 4.23: Creation, periodic review/ updating of building codes on earthquake and landslide resistant features

4.23(a) PROJECT INFORMATION

Project Duration	1 year (started in September, 2019)
Project cost	Rs. 1 crore
Nodal agency and contact person	National Disaster Management Authority Sh. Mahendra Meena, Sr. Consultant
Implementing agency	Sub-scheme 1: IIT Bhubneshwar Sub-scheme 2: IIT Roorkee Sub-scheme 3: IIT Madras
Project site	National level R&D project

4.23(b) OBJECTIVES

Sub-Scheme 1: Seismic Design of Pipelines-Code Practice

To develop seismic design of pipelines- Code Practice code

Sub-Scheme 2: Performance Based Design code

To develop performance-based design code

Sub-Scheme 3: Steel Building code

To develop steel buildings code

4.23(c) RISK AND CHALLENGES

No risk and challenges were faced

4.23(d) FINANCE

The funds are sanctioned through NDMA to institute of national importance like IIT Bhubaneswar, IIT Roorkee and IIT Madras in instalments as per following pattern:

- 1) 40% at the time of signing of MoU
- 2) 30% at the end of stage 2 & submission of UC/ Statement of Expenditure (SOE) for earlier release fund
- 3) 20% at the end of stage 3 & submission of UC/SOE for earlier release fund
- 4) 10% at the end of stage 4 and submission of utilization certificate

The funds were released based on deliverables, once the deliverables are achieved and the criteria is fulfilled based on the funding pattern as per the timeline, subsequent funds are released. Implementing agency maintain separate account for project.

4.23(e) OBSERVATIONS & RECOMMENDATION

The project is ongoing as per desired timeline. Literature review for seismic design and international practices for performance-based designs is in process. The draft outline for seismic design of moment resisting steel frame has been prepared. Detailed content of draft code is in progress. The project will be completed as per proposed timeline

Scheme 4.24: Development of Teaching Resource Material for Earthquake Engineering Curriculum in Engineering Colleges for

The project aims to impart the basic knowledge of earthquake engineering subject to undergraduate students of Civil Engineering and Architecture students.

4.24(a) PROJECT INFORMATION

Project Title	Development of Teaching Resource Material for Earthquake Engineering Curriculum in Engineering Colleges for Technical Education
Project Duration	2 years (2019 to 2021)
Total Project cost	3 Crore
Name and Designation of Project PI/Nodal Person/Interviewer	Mr. Mahendra Meena (mahend.iitb@gmail.com), Senior Consultant Prof. Ravi Sinha (rsinha@civil.iitb.ac.in), IIT Bombay
Nodal Agency	National Disaster Management Authority (NDMA), New Delhi
Project site	National Level R&D Project

4.24(b) OBJECTIVE

To develop earthquake resource material for undergraduate level courses in Civil engineering/Architectural colleges.

4.24(c) OUTPUT

- Appointment of Lead Experts by identified leading agency
- Resource Material Development by Lead Experts (including workshop of Lead Experts and other Experts for curriculum detailing, if required)
- Workshop with AICTE (Curriculum Committee of AICTE and other stakeholders, workshop facilitated by NDMA)
- Identification of Colleges for Pilot Offering, Agreement with College by NDMA with assistance from core group, identification of faculty member by core group, etc.
- Interactions between faculty member at pilot colleges and lead experts
- Peer Review Workshops
- Updating of Resource Material by Lead Expert
- Pilot Offering of Courses
- Training-of-Trainers (TOT) workshop on Each Subject
- Finalization of Resource Materials and Approval by Core Group

4.24(d) OUTCOMES

- Resource material on 5 identified subjects i.e. Structural Dynamics and Earthquake Engineering (Core Subject); Earthquake Geotechnical Engineering (Elective Subject); Earthquake Resistant Design of RC Structures (Elective Subject); Earthquake Resistant Design of Steel Structures (Elective Subject); and Design Studio – Earthquake-Resistant Structural Configuration (Core Subject)
- Pilot testing of identified resource material through one full semester course in one of the identified college preferably lying in earthquake zones V & IV
- Teachers' training to teach the relevant subjects in the colleges
- Workshop with AICTE

4.24(e) RISK & CHALLENGES

Since, it is an ongoing project and mainly involve the development of teaching material for students as such no risk and challenges were faced till now.

4.24(f) FINANCE

Funding Agency: National Disaster Management Authority (NDMA), New Delhi.

NDMA is a funding agency and funds were received on time and sufficient. The total cost of the project is three crore out of which 77 lakhs have been released to implementing agency as first instalment. These project is mainly R&D in nature, which being is carried out through institute of national importance. Institute received fund from the NDMA in the form of instalment mostly in the following pattern:

- 40% at the time of signing of MoU
- 30% at the end of stage 2 & submission of UC/ Statement of Expenditure for earlier release fund
- 20% at the end of stage 3 & submission of UC/ Statement of Expenditure for earlier release fund
- 10% at the end of stage 4 and submission of utilization certificate

4.24(g) OBSERVATION

The project is going as per the desired timeline and remained well-oriented towards organization priority as it mainly involved the development of teaching material for students.

4.24(h) RECOMMENDATION

The project “Development of Teaching Resource Material for Earthquake Engineering Curriculum in Engineering Colleges” is being implemented in collaboration with Indian Institute of Technology, Bombay. It is expected that the project will be completed within its timeline and overall the entire scheme is going well and may continue further to achieve the set targets.

Scheme 4.25: Common Alerting Protocol (Pilot) Project

The project will facilitate dissemination of alerts/ warnings through SMS to stakeholders and geographically referenced public in vernacular language for Tamil Nadu State. A Proof of Concept for Cell Broadcast would also be done.

4.25(a) PROJECT INFORMATION

Project Title	Common Alerting Protocol (Pilot) Project
Project Duration	3 Months (From Feb,2020)
Total Project cost	15 Crore
Name and Designation of Project PI/Nodal Person/Interviewer	Shri Anurag Rana, Joint Advisor (Comm & IT), NDMA (jaitcomm@ndma.gov.in)
Nodal Agency	National Disaster Management Authority
Project site	Tamil Nadu

4.25(b) OBJECTIVE

- Extending services of CAP Compliant Early Warning Platform with limited capacity for Disaster early warning SMS Dissemination in Tamil Nadu.
- Integration with all operational Telecom Service Providers (TSP) with CAP Compliant Early Warning Platform in Tamil Nadu for geo-targeted SMS dissemination.
- Proof of Concept (PoC) demonstration of geo-targeted cell broadcast with one selected Telecom Service Provider (TSP) in Tamil Nadu.
- Integrate IMD (regional centre /state unit) with the platform and provide secure interface (over public internet) for weather forecasting/early warning in Tamil Nadu.
- Integrate CWC (regional centre /state unit) with the platform and provide secure interface (over public internet) for flood forecasting in the Tamil Nadu state.
- Provide secured access of the platform over public internet to State Disaster Management Authority (SDMA) of the Tamil Nadu state for SMS dissemination to subscribers of the TSPs operational in Tamil Nadu.
- Procure and establishment of cloud hosting environment for the platform.
- CERT-IN certification of the extended platform will be done to ensure security and authenticity along with in built multilevel authorization mechanism.
- Hosting of CAP compliant Disaster Early Warning Platform and provide access of the platform to the concerned organizations (IMD, CWC, and SDMA) over public internet.

4.25(c) OUTPUT

- Development of a Geo-intelligent SMS based early warning Common Alerting Protocol (CAP) with integration of IMD, CWC & all TSPs in Tamilnadu state.
- Develop a Proof of Concept (PoC) of Cell Broadcast.

4.25(d) OUTCOME

- Advance warning/alert to public as well as stake holders about ensuing disaster. Advance warning about imminent disaster would result, into saving of precious lives and property.

4.25(e) RISK & CHALLENGES

- Coordination among various agencies.
- Adaption of international protocol as per the local conditions.

4.25(f) FINANCE

Funding Agency: Ministry of Home Affairs, Govt. of India

The funds were received on time and are sufficient to implement the project. Funds are released according to the criteria of releasing payment installment after achievement of the milestone. One common account is being maintained for all schemes through which payment are made. For procurement, expenditure and keeping financial account govt. norms are followed. Project finance are audited regularly by internal or external auditing party as per rules & regulations of Govt. of India.

4.25(g) OBSERVATION & RECOMMENDATION

The timeline to implement the project was of three months i.e. from 15 Jan- 15 April, 2020, however due to COVID 19 pandemic the project is still in progress and expected to be completed by October, 2020

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Scheme 4.26: Emergency Response Mobile Vehicle (ERMV)

The project aims to develop a self-sustained vehicle having all facilities to move into a disaster affected site and establish a communication hub for smooth exchange of information between disaster sites and other stake holder, so that the response and relief programme can be executed in a smoother manner.

4.26(a) PROJECT INFORMATION

Project Title	Emergency Response Mobile Vehicle (ERMV)
Project Duration	In progress MoU was signed on 24 th December,2019
Total Project cost	5 Crore
Name and Designation of Project Person/Interviewer	Shri Anurag Rana, Joint Advisor (Comm & IT), NDMA
Nodal Agency	National Disaster Management Authority
Email	jaitcomm@ndma.gov.in.
Project site	NDRF Delhi

4.26(b) OBJECTIVE

- To develop an Emergency Response Mobile Vehicle (ERMV), which will provide a self-sustained tele-communication support for first responders during the disaster in the event of disruption of terrestrial network. The vehicle can be easily moved to the disaster site either by road or airlifting. The procurement of ERMs is being done through National Disaster Response Force (NDRF).

4.26(c) OUTPUTS

- Procurement, Design and Development of self-sustained Emergency Response Mobile Vehicle (ERMV) for communication from disaster site.

4.26(d) OUTCOME

- Quick deployment and sharing of information through voice/data using wireless link fitted in ERMV at disaster sites.
- To provide communication in inaccessible and difficult areas where no other means of communication is available.

4.26(e) RISK & CHALLENGES

The main challenge has faced due to non-availability of BS-VI vehicle on GeM, due to the COVID-19 lock down. Vehicle is the first requirement in which the other equipment can be mounted and integrated.

4.26(f) FINANCE

Funding Agency: Ministry of Home Affairs, Govt. of India

Complete sanctioned amount has been received by implementing agency. The funds were received on time and are sufficient to implement the project. One common account is being maintained for all schemes through which payment are made. For procurement, expenditure and keeping financial account govt. norms are followed. Project finance are audited regularly by internal or external auditing party as per rules & regulations of Govt. of India.

4.26(g) OBSERVATION & RECOMMENDATIONS

Communication is the most important requirement to coordinate disaster management. In emergencies, initial few hours are golden hours. The terrestrial communication links get disrupted during most of the disasters. This project will play an important role in establishing a quick communication link with the disaster site. It will lead to faster response and relief work, which would result into saving lives and property. Although COVID 19 pandemic delaying the project activities, it is still in process. It is recommended that scheme should be continue.

Scheme 4.27: Priority Call Routing (PCR)

To project aims to prioritize the calls of decision makers, disaster managers and the first responders over other call of less importance, through a nationwide PCR system/portal, where concerned DM authorities list down the PCR number along with their graded priority which can then be forwarded to TSPs in advance as well as near real time, during traffic congestion in emergency situation.

4.27(a) PROJECT INFORMATION

Project Title	Priority Call Routing (PCR)
Project Duration	Not yet commenced
Total Project cost	Tentative cost 13 Cr
Name and Designation of Project Person/Interviewer	Shri Anurag Rana, Joint Advisor (Comm & IT), NDMA
Nodal Agency	National Disaster Management Authority
Email	jaitcomm@ndma.gov.in.
Project site	All 36 States & UTs.

4.27(b) OBJECTIVE

- At the time of disaster, the decision makers, disaster managers and first responders do not have access to telecom network due to heavy congestion on telecom networks. The Priority Call Routing (PCR) system accords priority to these officials during network congestion during disasters. The project will be implemented through C-DOT.

4.27(c) OUTPUT

- To facilitate communication among the stakeholders, when the communication network gets jammed due to sudden surge in the traffic.

4.27(d) OUTCOME

- To provide smooth communication among the stakeholders ensuring better disaster response, ultimately leading to loss of precious lives and property.

4.27(e) RISK & CHALLENGES

Coordination with the TSPs is a challenge.

4.27(f) FINANCE

Funding Agency: Ministry of Home Affairs, Govt. of India.

Techno-Commercial proposal of the project is under process, so no demand has been raised yet.

4.27(g) RECOMMENDATION

Techno-commercial proposal is under process and project has not yet commenced.

Scheme 4.28: Use of Information & Communication Technology (CDR Analysis) in Disaster Risk Management

Creation of database and decision support system to identify locations of persons through mobile phones trapped debris during disaster and launch targeted rescue operations to save a possible human life through ICT (CDR Analysis) in Disaster risk Management Project.

4.28(a) PROJECT INFORMATION

Project Title	Use of ICT (CDR Analysis) in Disaster Risk Management
Project Duration	Not yet commenced
Total Project cost	15 crore
Name and Designation of Project Person/Interviewer	Shri Anurag Rana, Joint Advisor (Comn & IT), NDMA
Nodal Agency	National Disaster Management Authority
Email	jaitcomn@ndma.gov.in.
Project site	All 36 States & UTs.

4.28(b) OBJECTIVE

- Whenever a disaster strikes in a given locality, there is a possibility of somebody buried under the debris. The system will be helpful in identifying the locations of mobile phones trapped in debris during disaster. This would help to launch targeted rescue operations to save a possible human being there. The project would be implemented through C-DOT.

4.28(c) OUTPUT

- To create a decision support system to identify locations of mobile phones trapped in debris etc. during disaster and launch targeted rescue operations.

4.28(d) EXPECTED OUTCOME

- A person trapped under debris can be located and saved by launching targeted rescue operations during golden hours. This would be instrumental in saving life.

4.28(e) RISK & CHALLENGES

- Legal issues associated with the CDR data.
- The interface with TSPs.
- While tracing the exact location of mobile, a switched off or battery drained mobile can pose a problem.

4.28(f) FINANCE

Funding Agency: Ministry of Home Affairs, Govt. of India.

Techno-Commercial project is under process so demand for fund has not been raised.

4.28(g) RECOMMENDATION

Techno-commercial proposal is under process and project is yet to be finalised.

Scheme 4.29: Web Based Training

To build the capacity of stakeholders as well as common mass through online learning on various aspects of disaster resilience, risk mitigation related law etc., while the trainees need not to move from their respective locations.

4.29(a) PROJECT INFORMATION

Project Title	Web Based Training
Project Duration	Six months (From 6 th January,2020)
Total Project cost	0.98 crore
Name and Designation of Project PI/Nodal Person/Interviewer	Shri Anurag Rana, Joint Advisor (Comm & IT), NDMA
Nodal Agency	National Disaster Management Authority
Email	jaitcomm@ndma.gov.in.
Project site	Odisha and Delhi

4.29(b) OBJECTIVE

- To spread the Disaster Management education to a larger mass for their capacity building with the help of e-learning methods. Web Based Training/e-learning will be used for training the general public as a substitute. So, that they can get this education without depending upon geographical distances.

4.29(c) OUTPUT

- Capacity Building of stakeholders as well as common mass through e-learning/distance learning in Disaster Management.

4.29(d) OUTCOME

- Capacity building of persons in disaster management.
- Creation of pool of trained people to help in managing disaster or any emergency situation.

4.29(e) RISK & CHALLENGE

- The content development and staffing got delayed due to COVID-19.

4.29(f) FINANCE

Funding Agency: Ministry of Home Affairs, Govt. of India

The funds were received on time and are sufficient to implement the project. Funds are released according to the stage of releasing payment installment after achievement of the milestone. One common account is being maintained for all schemes through which payment are made. For procurement, expenditure and keeping financial account govt. norms are followed. Project finance are audited regularly by internal or external auditing party as per rules & regulations of Govt. of India.

4.29(g) OBSERVATION & RECOMMENDATION

The project has started from January, 2020 for six months duration. However, syllabus for the project has been prepared further process is getting delayed due to COVID 19 pandemic and expected to be completed by December,2020. Therefore, it is recommended that the six months extension may provide to achieve the project targets efficiently.

Scheme 4.30: Scoping Study on Climate Change and its Impact in the Context of Disaster

This scoping study aims to compile and present the impacts of climate change on India with a special focus on climate system, hazards, and policy framework in the context of extreme events. The study also seeks to explore various options for mainstreaming best policy and practice, informed by empirical and scientific assessments, to build strategies to respond to the impact of climate change in the future.

4.30(a) PROJECT INFORMATION

Project Title	Scoping Study on climate change and its impact in the context of disaster
Project Duration	2 years (not yet commenced)
Total Project cost	1.19 crore
Name and Designation of Project Person/Interviewer	Shri Pankaj Kumar, Under Secretary,NDMA
Nodal Agency	National Disaster Management Authority
Email	pankajk@ndma.gov.in policyplan@ndma.gov.in
Project site	All states

4.30(b) OBJECTIVE

The study will address the relationship between changing extremity of hazards and change in global average temperature under different climate change scenarios suggested by IPCC namely, Representative Concentration Pathways (RCP): RCP1.9, RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5 for next 50 years with a special focus on mechanisms, drivers and feedbacks leading to the extreme event.

More specifically, the study will focus on:

- Hazard risk and vulnerability profile of India with reference to different climate change projections
- Variability of average surface temperature across India and its impact on natural hazards.
- Identify hotspots for GHG concentration with special reference to urban centers in India and its implication on urban heat islands, heat wave and urban floods.
- Change in precipitation pattern and distribution in accordance with the global climate models.
- Advance our understanding on regional interactions between land and sea, ocean warming and ocean circulation systems on Indian climate with special reference to monsoon
- Simulate sea level rise across islands and coastal areas of India
- Impact of climate change on surface and groundwater across major river basins in India
- Impact of climate change on cyclones and storm surge
- Impact of climate change on Himalayan glaciers

- Changes in incidence of communicable and vector-borne diseases
- Understand the impact of these changes on various primary and secondary sectors and suggest future policy options to integrate these findings of the study into guidelines, action plans and long term policy focusing on understanding limits and enabling conditions to adapt.

4.30(c) METHODOLOGY

Scope

The scope of the study is to understand the influence of climate change on natural hazards and its sector-specific impact.

Study approach and Data:

The approach of the study will be by raising questions through indicator attributes and their relationship with natural and anthropogenic causes. An in-depth review of literature and data needs to be carried out on climate change and natural hazards in special reference to India. The review needs to be done with the state, national and world outlook. Secondary data from various databases, reports, departments, maps, etc. as required may be collected and incorporated into the report.

Experts will be identified in each of these attributes and series of consultation will be organized with approval from NDMA. The first round of consultation will be with the experts from the given field of science. The next round will be with both primary and secondary sectors where climate change will have a profound effect. Finally, all the information will be collated into a synthesis report providing policy prescription for preventive action and remediation with a scope of short, medium and long-term interventions. The report will also outline sector-specific suggestions for CCA and DRR mainstreaming strategies into policy and programs. The data collected and interview (transcript) with stakeholders must be shared with NDMA.

4.30(d) EXPECTED OUPUT

- Final report of the study on impacts of climate change on different natural hazards and its trend over the next 50 years
- A working framework to address the impacts of climate change in specific sectors.
- Develop policy briefs to summarize the policy options and put forth recommendations on the best practices to address climate change in India.
- Roadmap on major landmarks in implementation of the working framework with a focus on long, medium and short term planning.
- Suggest PAN India projects to address climate change.

4.30(e) EXPECTED OUTCOMES

The findings of the report will inform NDMA to design policies, programs and draft guidelines addressing the gaps in reducing the impact of climate change.

- The findings of the report will inform NDMA to design policies, programs and draft guidelines addressing the gaps and overlaps.

- Since SFDRR has a time horizon upto (2030 and beyond) the findings of the study will provide a substrate for disaster management planning with short, medium and long-term planning.
- The findings can also aid and inform the process of the National Disaster Management Plan which is revised periodically.
- Find gaps or overlaps, which will facilitate key partnerships, which help, avoid duplication, maximize gains, and reinforce joint working across agreements. Creating a platform for data sharing and research on cross-cutting issues across the agreements.
- The study will provide directions to address gaps in science–policy–practice for India.
- Raising awareness with national and sub-national governments of different frameworks is critical and affects collaboration and coherence between all the three international agreements.

4.30(f) PROGRESS MADE SO FAR

The study titled ‘Scoping Study on Climate Change’ will be done by a consulting firm, which will be selected through calling expression of interests from interested consultants and two bid system of GFR, 2017. So far the expression of interests are being finalized for publication.

4.30(g) RECOMMENDATION

Based on key findings and observation it is recommended to loop in IIPA in project “Scoping study on climate change and its impact in the context of disaster” as the study is yet to start. IIPA has the scope and capacity to take such schemes / studies to its logical conclusion.

Scheme 4.31: Multi-Hazard Risk Vulnerability Assessment

4.31(a) PROJECT INFORMATION

Project Title	Multi-Hazard Risk Vulnerability Assessment
Project Duration	2 years (not yet commenced)
Total Project cost	1 crore
Name and Designation of Project Person/Interviewer	Shri Pankaj Kumar, Under Secretary, NDMA
Nodal Agency	National Disaster Management Authority
Email	pankajk@ndma.gov.in policyplan@ndma.gov.in
Project site	Kerala & Mizoram

4.31(b) OBJECTIVE

- To create Multi Hazard Risk Vulnerability (MHRV) profiles for the selected states as basis for risk reduction/mitigation and transfer them to a uniform grid in lines with topographic sheets
- To develop a detailed methodology and manual for replicating this work for other states
- To create a risk indexing methodology using these hazard-vulnerability-risk profiles
- To convert the risk information into risk reduction applications and a policy document.

4.31(c) SCOPE OF THE STUDY

- Evaluate the feasibility of a regular grid of $1\text{km} \times 1\text{km}$ as a basic mapping unit for each State, and transfer spatial data to this grid for use. Methods may be developed to upgrade and use the data.
- Development of input datasets for probabilistic and deterministic hazard assessment at State, district, tehsil, taluka, block and village levels for:
 - a. Geophysical hazards (earthquake and material flow- landslides, tsunami),
 - b. Hydro-meteorological hazards (cyclone, flood, drought, storm surge and urban flood, Lightning, Thunderstorms, Hailstorms, Cloud burst, Gale, Squall, Tornado, Heavy snowfall, Avalanche, Fog, Heat/Cold waves),
 - c. Industrial hazards (industrial fire, toxic release and industrial explosion),
 - d. Heat wave/cold wave, and
 - e. Fires (forest and urban).

Apart from the above mentioned hazards, freak events – like floods in Rajasthan, Banaskantha (Gujarat) may also be considered, where no historic evidence is available. Hazards to be considered as per the MHA 1999. The hazards to be considered in this assignment will be finalized in consultation with the agency selected and state specific nature of hazards. There is

a need to develop the climate variability of the above hazards to be considered and documented. Change in climate variability of these hazards in terms of the RCPs – 4.5, 6.0 and 8.5 need to be considered as different scenarios apart from the return period scenarios.

- Development of probabilistic dynamic 1D, 2D and combined models for hydro meteorological hazard forecasting and inundation due to flood, cyclone and storm surge with inputs from automated weather stations (AWS) or IMD data/predictions and buoy data from Indian National Centre for Ocean Information Services (INCOIS).
- Development of exposure datasets and vulnerability at State, district, tehsil / taluka and village level.
- Simulation of exposure of the elements at risk for the hazards mentioned at points 2 and 3 above.
- Derive a magnitude-frequency relationship for each hazard for various feasible scenarios
- Development of a digital ‘Risk Information Management System’ for (RIMS) which comprises hazard and risk information for the different hazards.
- Develop catastrophe models to project the financial consequences of potential disasters to quantify the financial impacts - Event Loss Table (ELT); Loss Exceedance Curve (LEC) and Annual Average Loss (AAL).
- Capacity building and training modules for hand-holding/guiding other states to carry out the process of preparing similar atlas/risk profiles. This training modules may focus on increasing the capacity of the stakeholders to conduct a similar assignment for their own states.

4.31(d) PROGRESS MADE SO FAR

The study for ‘Multi – Hazard vulnerability and Risk (MH-VRA) Profiles for 2 States – Kerala and Mizoram’ will be done by a consulting firm which will be selected through calling Expression of interests from interested consultants and two bid system of GFR, 2017.

- NDMA constituted an expert committee for vetting of ToRs of EOIs/ Request for Proposal (RfP) for the project and after taking their inputs, the Expression of Interests (EoI) was issued on on 5th February, 2020.
- EOIs have been received from 8 consulting firms and a screening committee to evaluate and shortlist the expression of interest received from consulting firms and a committee to re-check the shortlist was constituted on 13th March, 2020. However, Due to COVID-19 issues, Committee has been unable to meet to shortlist the consulting firms. Now, Short listing of consulting firm for bidding stage and finalization for RfP is underway.

4.31(e) RECOMMENDATION

Project activities are delaying due to prevailing condition of corona outbreak. However, project is not yet started.

Scheme 4.32: Capacity Building on Disaster Management "for Indian Administrative Service (IAS)/Central Services officers (CSOs)" at CDM, LBSNAA, Mussoorie

The project aims to train 950 IAS/Central Services Officers per year in Disaster Management to sensitize existing system of disaster management at various level executive (field administration) and policy making levels of the district, State & Central Govt. and carry out research activities on the theme of disaster management.

4.32(a) PROJECT INFORMATION

Project Title	Capacity Building on Disaster Management for IAS/ Central Civil Services Officers
Project Duration	3 Years 3 Months (April 2017 - June 2020)
Total Project cost	Rs. 194.74 (in lakh)
Nodal Agency & Contact	National Disaster Management Authority (NDMA), New Delhi. Shri Nawal Prakash, Joint Advisor (CBT),NDMA
Name and Designation of Project PI/Nodal Person	Smt. P. Amudha IAS, Director, Centre For Disaster Management (CDM), Lal Bahadur Shastri National Academy of Administration, Mussoorie, Uttarakhand -248179 Cdm.lbsnna@nic.in ; p.amudhaias@gmail.com
Organization	Centre For Disaster Management (CDM), Lal Bahadur Shastri National Academy of Administration, Mussoorie, Uttarakhand -248179
Project Site	Lal Bahadur Shastri National Academy of Administration, Mussoorie -248179

4.32(b) OBJECTIVES

- Sensitization to the existing systems of Disaster Management at the various levels of the government.
- Mainstreaming Disaster Risk Reduction (DRR) into the existing development programmes by training the policy makers and the executives at the district/state/national level.
- Developing case studies/ reading/ documentation on recent disasters in India and abroad.
- Development of knowledge repository (Reports, Documents, Audio, Video, Brochure, posters etc.) on Indian Disasters/ Emergency Management.
- Execution of Research Projects on Disaster Management, Risk, Vulnerability, Environmental issues etc.
- Training in the concepts of Emergency Operations Centre (EOC) and IRS (Incident Response System), which are the backbone of response and which need to be well established at the field levels.

- Training at the District Collector and SDM levels shall enable IRS to take roots at the field level enabling a more systematic and organized response mechanism.
- Developing skill set for IAS officers for Leveraging Science and Technology in Disaster Management, especially with regard to data monitoring and acquisition. Decision support system (DSS), alert and warning system of situations with suitable decision as they arise.
- Incorporating departmental SOPs into the District Disaster Management Plan (DDMP), especially for the various known hazards.

4.32(c) OUTPUT AND OUTCOMES

Centre for Disaster Management, LBSNAA, Mussoorie is able to create a strong institutional edifice of 950 new recruits of IAS officers per year adequately sensitized on Disaster Management concepts, institutional framework, roles and responsibilities in planning, implementing and managing all cycles of disaster management for next three years (2017-18 to 2019-20). Apart from the new recruits, the LBSNAA shall also sensitize middle and senior level IAS officers, who will go on to occupy the posts of RO (Responsible Officer i.e. Collector and DM), Secretaries of key departments in the State Governments, Joint Secretaries at the Central Government level, Heads and Members of the SDMAs and on to NDMA. Thus at the various executive and policy making levels there would be officers who would have been adequately sensitized to the concept of Disaster Management as envisaged in the NDMA Act.

1. **Sensitization:** Sensitization to the existing systems of Disaster Management at the various levels of All India and Central Services Officers including District Collectors/ Commissioners in the next 3 years' time as a follow up of the extended Project on "Capacity Building on Disaster Management for IAS/ Central Civil Services Officers" implemented during 2013-14 to 2016-17.
2. **Capacity Building:** Faculty members from CDM, LBSNAA, field practitioners, experts from Government agencies, scientific experts from premier institutes prepare course contents to be delivered in the course. The faculty members of CDM, LBSNAA, Filed Practitioners and Scientific experts worked closely with NDMA and other government agencies for development of case studies, scenario, table top exercises, simulation exercises, reference and reading materials etc.

The specific deliverables of project include the following:

1. Course specific session based modules on disaster management.
2. Development of Model District Disaster Management Plan (DDMP) through group exercise
3. Development of case studies on Disaster Management / Emergency Management in India and abroad.
4. Development of scenario / simulation exercise based on real life situation with the assistance from district / state organizations.
5. To conduct mock drill / exercises in close coordination with NDMA and NDRF.
6. Development and execution of the Research Project on Disaster / Emergency / CCA issues.

4.32(d) Approach followed to achieve the desired outcomes

Following methodologies have been adopted for the deliberation of the course contents

- Flipped Class room sessions (in-house and online)
- Case studies, EOC Visits
- Short Film / Documentary on Emergency Management & Disaster management
- Experience Sharing Presentation
- Panel Discussion , Group Exercises
- Mock Drills
- Visual and Animation based scenario exercise and Quiz

CDM / LBSNAA faculty and academic staff of the centre would modify the course contents under the guidance of NDMA and other agencies/ expert group formed on the subject. Curriculum and contents developed in the first phase of the project would be modified accordingly through meetings, brain storming, field visit to the disaster affected regions, and regions where mitigation measures have been implemented to cope up with the disasters / crisis situations, and in collaboration with the premier institutes working on disaster mitigation and management.

4.32(e) RISK & CHALLENGES

There were no challenges and risks faced by CDM so far to implement the capacity building project.

4.32(f) FINANCE

Funding Agency: National Disaster Management Authority (NDMA), Government of India, New Delhi

The funds were received on are sufficient to meet project objectives & CDM is not mobilized funds from other sources. The total amount of the project has been received by the implementing agency in two instalments after submission of the annual report. The agency maintains a separate account for its project. CDM follows Govt. Financial norms for procurement, expenditure and keeping financial account. The project finances are regularly audited by A.K Kashyap & Company, Chartered Accountant, Dehradun.



Figure 36. Photos during training programme at LBSNAA



Figure 37. Training sessions at LBSNAA

4.32(g) OBSERVATION & RECOMMENDATION

The project has achieved all the deliverables as per timelines and remained well oriented towards core priority of the LBSNAA to strengthen the capacities of IAS/ Civil services officers at various levels. No deviation has been occurred during the project and implementing organization has received sufficient support from NDMA in technical & financial matters. Therefore, based on the key findings of the evaluation team it is recommended that the project may be further extended for four years to sensitize the existing system of disaster management in India.

Scheme 4.33: Scheme for "Training of Community Volunteers in Disaster Response in selected 30 most flood prone districts of 25 States of India (AapdaMitra)

The project aims to train community volunteers in disaster response in the selected most flood prone districts in India.

4.33(a) PROJECT INFORMATION

Project Title	Scheme for "Training of Community Volunteers in Disaster Response in selected 30 most flood prone districts of 25 States of India (AapdaMitra)"
Project Duration	2016-2018 (extended upto 31 st December 2020)
Total Project cost	15.47 crore
Name and Designation of Project Person/Interviewer	Shri Nawal Prakash, Joint Advisor (CBT).
Nodal Agency	National Disaster Management Authority
Email	prakashnawal@gmail.com
Project site	SDMAs of States Assam, Andhra Pradesh, ACP, Bihar, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttrakhand and West Bengal of India)

4.33(b) OBJECTIVE

- To train able-bodied community volunteers in disaster response (flood relief and rescue) at the taluka/block level in each of the project districts. These trained volunteers will be called as *Aapda Mitra*
- To develop standardized training modules for the set of trainings under the scheme
- To train the volunteers in life saving skills of disaster response, coordination and assistance, and provide personal protective equipment and emergency responder kit
- To create a Community Emergency Stockpile/Reserve at the District/Block level containing essential light search and rescue equipment, medical first aid kits etc.
- To disseminate training and education tools developed under the number of flood prone districts in subsequent phases of the scheme.

4.33(c) OUTPUT

- Training of 200 community volunteers in each of the selected most vulnerable flood prone districts in 25 states/UT of India
- Empanelment of training institution to impart trainings to volunteers
- Purchase of emergency responder kits for distribution among volunteers

- Purchase of emergency stockpiles for reserving at Block/District level
- A full-fledged information and knowledge management system which will be dynamic in nature and will be reservoir of all training materials, inventory of resources etc. will be integrated with NDMA website.

4.33(d) OUTCOMES

- Development of standard training modules for volunteers
- **Empanelment of Training Institutions** (Training/Academic/Non-Governmental Organizations States/UT wise which will be training hubs for selected volunteers)
- Trained and certified volunteers who will have the necessary and personal protective equipment kit to address the following(focused on flood relief and rescue skills)
 - i. Would be able to know the types of hazards that are most likely to affect their region, homes, workplaces and neighborhoods.
 - ii. Would be able to take steps to prepare themselves; their families; their neighborhood with respect to flood relief & rescue.
 - iii. Will be able to undertake rescue operations from emergency situations such as flood, flash floods urban flooding.
 - iv. Will be able to provide basic first aid to the affected disaster victims.
- **Reserve of emergency stockpiles** at district/block level
- Formation of a full-fledged Information & Knowledge Management systems.

4.33(e) RISK & CHALLENGES

- Delay in the flow of funds from state treasury to implementing Dept/Authority in States/UTs and then to implementing districts institutions. Abiding by rules, the same were in operation, which resulted delay in implementation of scheme.
- Funds allocated for Emergency Responder Kit and Emergency Stockpiles under this project were not found sufficient by states/UTs for procuring all approved equipments.
- As the training programmes were residential mode for a period of 12 days. The interested persons from daily earning group could not participate in the training programme for the sake of their livelihoods, even after registration. They could participate if they would have been provided honorarium and the programme would be for short period.
- Volunteers are less interested in flood rescue operations as there is a risk of life and also no insurance coverage for their lives.

All the challenges have been sorted by the coordination of implementing agency and the NDMA.

4.33(f) FINANCE

Implementing Agency: National Disaster Management Authority, Govt. of India, New Delhi.

4.33(g) OBSERVATION & RECOMMENDATION

The scheme was launched in May, 2016 for two years, however due to some reasons such as delay in flow of funds from state treasury to implementing department in state/UTs and then to concerned district and selection of desired volunteers the scheme has been extended upto March 31st, 2020. Now due to corona virus outbreak the schemes has further extended till December, 2020. So far out of 6000 volunteers 5116 have been trained and project remained well oriented towards organizations priority. NDMA has received positive response from implementing agency and also demanded upscaling of the scheme covering more volunteers and multi hazard prone districts. The trained volunteers have played important role during recently occurred disasters such as Cyclone Fani, Kolhapur flood and Kerala flood,2018 and Mega Sagar Mela in West Bengal (for crowd management) and also deployed in various activities for COVID 19 pandemic response(wherever possible). As the project is performing well towards its objectives, the nodal agency i.e. NMDA is also planning to upscale it with necessary improvements suggested by states to create a pool of 100000 trained and certified volunteers in 350 highly vulnerable districts, which are prone to flood, cyclone, landslide and earthquake. The scheme is expected to be launched in FY 2020-21. It has been recommended that the project may continue to strengthen the local community in the time of disasters as well as to minimise the risk for the same.

5. CONCLUSION

Based on evaluation and observation, key recommendations for each scheme is as follows:

Scheme 4.1: UNDP for Disaster Risk Management- Strengthen capacity of Government, communities and institutions in implementation of planning framework on DRR and Climate Change Adaptation

The GoI-UNDP project on “Developing Resilient Cities through Risk Reduction to Disaster and Climate Change” aimed at reducing disaster risk in urban areas and enhancing capacities of local government and urban communities, including private sector stakeholders, to manage disaster and climate risks.

The project, initiated in 2016 and project activities contribute to the overall resilience building of the cities. The City Disaster Management Plans (CDMP) have been developed and put to use in real disasters. The ward Level volunteers, community volunteers and Master trainers trained have been deployed during emergency response and COVID pandemic. 66 trainings have been conducted so far and 5820 officers were trained.

UNDP is having wide experience and coverage in concerned field and have been providing sufficient hand-holding to states for executing project activities. The project is being monitored and reviewed periodically at different levels. The project met the set objective as outlined in the outcome provided by the implementing agency.

The project was due for completion in June 2020 but due to COVID-19 and financial issues some of the project activities got delayed, therefore UNDP has sought extension till December 2020. Accordingly, it is recommended that the scheme may be extended till December 2020 to achieve desired quality outcome from project intervention.

Scheme 4.2: National Institute of Disaster Management-Grant-in-aid given to NIDM for officer expenses and trainings

National Institute of Disaster Management was a National Institute under the Ministry of Home Affairs since 2003-2004 and it was enacted as statutory body of Government of India on 30-10-2006. Grant-in-Aid is continuing since then to the NIDM for office and Training expenses.

NIDM provides capacity building support at all levels to various national and state agencies in the field of Disaster Management & Disaster Risk Reduction. During 2014-2020, around 391 training programmes were conducted and approximately 14000 participants were trained. Several *online* courses, workshops, conferences and seminars were conducted to reach wider audience. Moreover, number of research activities and various publications have also been published.

NIDM has necessary resources, expertise and appropriate management capacity to carry out varied training and research related activities. It is suggested that more target groups other than government officials, should be considered for conceptualizing future training programmes. A number of ToT programmes has been organized by NIDM but it is very crucial to check and provide hand-holding to trainers for conducting further trainings. It is also suggested to conduct more online training programmes. Moreover, emphasis should be given to science-policy

practice link, research should be done based on past experiences and facilitating informed decision making accordingly different training programmes should be planned at all level of governance and wide stakeholders including NGOs, youth, private entities, industries so on and so forth. With few suggestions from evaluation team, it is recommended that this scheme may be continued for next five years.

Scheme 4.3: National Disaster Response Reserve

The 13th Finance Commission recommended for creation of a National inventory of relief material/equipment with a corpus of Rs. 250 Crore revolving fund. The recommendation was accepted by the Government of India. The inventory of relief material/equipment is called the National Disaster Response Reserve (NDRR) for relief material & equipment for prompt delivery of relief during disaster to the victims. Accordingly, the MHA has approved SOP & list of Inventories of NDRR and assigned responsibility to NDRF to maintain a ready inventory of 28 goods and 06 services to be utilized during disaster

The purpose of creating NDRR is to mitigate the miseries of the victims of the disasters and readily make available the items available commonly required for rendering relief in disasters which are beyond coping capacity of the states (L3 disasters). The NDRR inventory is procured and maintained by the NDRF and distributed on specific demand of the state/UT Government. The cost of distributed relief material is to be borne by the concerned state/UT Government so as to replenish the inventory.

Programme has been successful so far further the scope can be enlarged. It is suggested that states/UTs where NDRR inventories are stationed, may provide resource and manpower for proper maintenance of the inventories. As per guidelines of NDRR, the cost of distributed NDRR inventories is required to be recouped by the concerned state/UT Government to NDRR within the same financial year and in case if such distribution has occurred close to the end of financial year the same is required to be done in the first quarter of next financial year. Therefore, it is recommended that before the closing of the financial year the cost of distributed items may be deducted by Centre directly from SDRF (State Disaster Response Fund) after taking consent from states/UTs and deposited to NDRR account on receipt of NOC from concerned state/UT.

As the Procurement process of each item takes minimum 3-4 months. therefore, it is also recommended that the procurement of non-collectable items (consumable items) may be re-initiated immediately after distribution of the same to needy states/UTs and procurement of collectable items (non-consumable items) may be re-initiated if not returned back within 45 days from the date of distribution and bills to be generated accordingly.

Scheme4.4: National Disaster Response Force Academy

This academy is being established to serve as a lead institution in training of trainers. To make this a world-class institution; like FEMA (Federal Emergency Management Agency) USA, German Disaster Management Centre, Civil Defence College of Singapore; the facilities, technologies and pedagogy available in these institutions will be incorporated in NDRF Academy.

The project is in initial stages of development. The project stone laying ceremony took place on 02 January 2020 by the hands of Sh. Amit Shah, Hon'able Home Minister, Government of India.

Since, the scheme is of national importance for establishing Centre of Excellence (COE) in this field it is recommended that this may continue with suggestion to expedite the work.

Scheme 4.5: Mobile Radiation System (MRDS)

National Disaster Management Authority has initiated a pilot project on Mobile Radiation Detection System (MRDS) for detection of radiation for management of radiological emergency in the public domain in 56 select cities. With the aim for early detection and management of radiological emergency in the public domain.

Under this pilot project, around 930 police patrol vehicles in 56 select cities, spread across the country, were equipped with Go-NoGo type radiation detectors. Training of Trainer's programme (Two weeks) for police personnel from all the participating states/UTs - 10 batches of ToT have been conducted.

Overall, project activities were very well executed. The evaluation is in process as a separate assignment to check state level involvement and status of installed equipment. Field visits were also scheduled but due to COVID-19, these got cancelled. The formal proposal of project closure is under consideration. Phase 2, warranty and annual maintenance project, will be taken up next for three years.

It is recommended to conduct the evaluation process after the COVID-19 situation normalizes to check whether Master trainers from respective cities are carrying forward the agenda and further conducting the second-tier of trainings. Also, it is important to ensure that equipment procured is in proper functioning condition. Therefore, the scheme is recommended and Phase 2 of the project that is, Warranty and annual maintenance contract may be initiated for maintenance of the equipment.

Scheme 4.6: Airport/Seaport CBRN Capacity Building Initiative- Basic training on CBRN Emergency Management for the Airport & Seaport Emergency Handlers (AEH & SpEH)

Capacity building on basic CBRN Emergency Management is an ongoing initiative of NDMA. It has been conceptualized to be taken up as a project. NDMA already has experience of conducting 12 Basic Training Courses on CBRN Emergency Management for Airport Emergency Handlers. Based on the feedbacks and observations from first round of trainings, a project has been conceptualized to conduct targeting 40 airports/seaports including land-ports. Also, it is proposed to conduct these trainings in three levels:

- 1) Basic training for supervisors
- 2) Executive training for one day
- 3) Training of Trainers Programme

More importantly, these trainings follow a mixed pedagogy of classroom sessions, hand-on exercises, quizzes, seminars and the like which inculcates practical knowledge as well in the participants

Considering the current situation of COVID-19 pandemic, it is very crucial to sensitize and prepare first responders for such emergency and minimise the potential risk. The project is in initial stages of module development and planning.

Scheme 4.7: Development and Evaluation of Low-cost Landslide Monitoring Solutions in collaboration with IIT-Mandi

A project is being implemented in collaboration with IIT Mandi to develop and evaluate low-cost sensors and other instruments for landslide monitoring through Micro-Electro- Mechanical Systems (MEMS) based sensors technology. It aims to develop a prototype of low-cost MEMS-based Landslide Monitoring Solutions.

The project remains aligned to proposed timeline and currently is in final stage. Instruments have been installed on the site and monitoring is under process.

The project addresses the issue of soil movement monitoring and early warning of real-world landslide sites which is a grave matter of concern for hilly areas. Currently, the options which are available are very costly and therefore have restricted usage. This project addresses novel low-cost monitoring and early-warning methods for investigation of causal factors for soil movement, which will be really helpful for disaster risk reduction in long run. It is suggested that reparation work should be expedited well in time so that timely monitoring can be done. Such low-cost measures should also be deployed to other vulnerable area of the country and the experience and expertise of IIT-Mandi should be utilised to its full potential. Therefore, this scheme is recommended to continue.

Scheme 4.8: Generation of Meso Level 1:10,000 Scale User Friendly LHZ Maps and Landslide inventory for Tapovan-Vyasi Corridor of Haridwar (including part project on Geotechnical Investigation of samples)

The project aimed at creation of user-friendly 1:10,000 scale meso level Landslide Hazard Zonation (LHZ) maps through integration of various layer of geo-environmental parameters viz., drainage, slope lithology and land-use etc. Small part of the project was also sanctioned by NDMA in line with this project to facilitate the utilization of such high-resolution maps by state government for planning mitigation measures. This includes geo -technical analysis of samples of rocks and soil. The aim was to strengthen the state government to plan mitigation measures through the outcomes of the project.

The approach followed to execute the project is very well conceived which would eventually act as an enabler to plan in sync with DRR. Some delay is observed from the proposed timeline which is apprehended due to delay in supply of requisite information from Survey of India. It is thus suggested to extend the term of the project for processing the base maps received from Survey of India and to conduct the field visits. NDMA being the nodal agency may work upon the inter-departmental synergies to get the desired results. Such interventions using Geographical Information Platform would be very beneficial to facilitate practitioners and decision makers to come up with informed developmental plans. Since the developmental plan formulation is associated thus it is very crucial to ensure that the quality of the final product is up to the mark.

This study of generation of large scale Meso level LHZ mapping on 1:10,000 scale and creation of landslide inventory can be replicated to strategic route of other landslide prone states of the country and thus can be minted for value addition. Therefore, it is recommended that the scheme maybe continued.

Scheme 4.9: Five days Training of Professionals on Landslide Mitigation & DPR Preparation

The project is designed to facilitate strengthening capacities of government officials in preparing the DPR on landslide mitigation and stabilization. The aim is to conduct five-days intensive capacity building programme for the officials from the line Departments of States/UTs affected by landslides and concerned government departments etc. regarding Landslide mitigation and DPR Preparation. Target participant include (but not limited to) geologist, engineers, designers, representatives from water resources, NHAI, state manager so on and so forth.

Four five-days training programmes were conducted at IIT-Mandi, IISC-Bangalore and NEHU Shillong. Till date 119 officials have been trained and more will be capacitated in remaining time period. These trainings are helping in homing the technical capacities of states and act as enabler to submit quality DPR for site specific landslide risk mitigation. Nagaland happens to be one of the beneficiary of such Capacity Building programme and has already submitted the DPR which got sanctioned and currently is under execution stage.

As intimated by one of the implementing agencies, the group activity, *hands-on* training and site visits have been well appreciated by participants apart from the training schedule and the experts being arranged.

Due to nation-wide lockdown and pandemic situation, the remaining trainings will be conducted online. Budget is available with the NDMA so more such trainings can be planned as the online trainings are much cost effective. Moreover, in case of a physical training it has been observed to limit the number of participants to 15-20 rather than 30 to maximise the effectiveness of the training. The training duration should also be customised based on the availability of participants. With these few suggestions, it is recommended that the scheme may be continued to build capacities of officials in DPR preparation.

Scheme 4.10: Capacity Building of Stakeholders on Geo-graphical Information System in Disaster Risk Reduction

The project aims at strengthening and trainings for professional of all SDMAs and other stakeholders in the field of GIS and Disaster Management. It is proposed to conduct 11 training programme and 1 National Workshop on GIS for Disaster Risk Reduction.

Total 9 trainings have been conducted so far and around 270 professionals have been trained from various SDMAs and other stakeholders. Depending on the level of participation courses are divided into two types *i.e* Two-day (for senior officers) and Five-day (for executives who are working on GIS or conversant with similar work).

It has been widely accepted that tool such as GIS is very crucial in minimising disaster risk. Therefore, capacity building of relevant stakeholders in this context is important. Such

trainings should be conducted more frequently while using online platform to reach wider audience. As this field is evolving, yearly refresher course could also be planned. Moreover, half a day should be dedicated to experiential sharing wherein, participants from other states/region can share their experiences with others regarding on the ground implementation of minimising disaster risks using GIS and making informed decisions for developing community resilience. Some of trainings are postponed due to COVID-19 and will be conducted online. It is therefore recommended that this scheme should continue.

Scheme 4.11: Training for the land border crossing personnel at 12 locations

The project “Training for the Land Border Crossing personnel at 12 locations” is implementing at all India level for capacity enhancement of first responders at land borders by providing training on basic Chemical, Biological, Radiological & Nuclear (CBRN) emergency management for the Land Ports Emergency Handlers.

The target of six trainings which are scheduled to be completed in financial year 2020-21 as per the draft MoU has not yet achieved. Earlier, it got delayed due to lack of interest of Land Port Authority of India (LPAI) but after communication at various level, the trainings were scheduled to be held in January and February 2020 however due to prevailing situation of global pandemic COVID 19 it could not start again.

NDMA is a nodal agency for disaster management in the country and capacity building is an integral part of it, hence this project is in line with NDMA’s mandate. Although there is a delay in project activities and were not met on time due to COVID 19 pandemic the project is of national interest and will help to manage emergencies at land borders, therefore, it is recommended that the project should be continued.

Scheme 4.12.1. Implementation of the Sendai Framework for DRR

The project "Implementation of the Sendai Framework for DRR" is steered by National Disaster Management Authority (NDMA) to hire Senior Consultant at State level to facilitate/support the state administration in the implementation of Sendai Framework for Disaster Risk Reduction as well as to develop a culture of prevention, mitigation and preparedness in the country. So far 29 out of 36 States / UTs have signed the Memorandum of Understanding (MoU) with NDMA and five States; Himachal Pradesh, Uttarakhand, Meghalaya, Mizoram and Bihar have already recruited a Senior Consultant and have initiated the implementation of the Scheme.

The project commenced in February and some of the implementing states have successfully initiated project activities. The states are in the process of achieving their desired outcomes by ensuring coordination between states and districts, upholding multi-stakeholder engagements (including civil society, private sector, and academia), partnerships, accountability, transparency and establishment of a robust monitoring system and districts have been instructed to prepare their disaster management plan by incorporating components of Sendai Framework. This scheme is complying with the mandate of NDMA and it is recommended to

continue to minimise the impacts of disasters on the lives and livelihoods of vulnerable communities.

Sub-scheme 4.12.2: Strengthening of DDMAs of hazard-prone districts out of the 115 identified backward districts

The project "Strengthening of DDMAs of hazard-prone districts out of the 115 identified backwards districts" is being implemented by NDMA in all states of India except Goa as no backward district has been identified there. The mentioned scheme is implemented to provide technical assistance to DDMAs in the hazard-prone backward districts for the implementation of the Sendai Framework for Disaster Risk Reduction.

The scheme has started from February 2019 and so far, 21 States have signed the Memorandum of Understanding (MoU) with NDMA and four States; Himachal Pradesh, Uttarakhand, Meghalaya and Mizoram have hired a Senior Consultants and started the implementation of the Scheme.

The project is in its planning stage and well oriented towards the mandate of NDMA. Although due to COVID-19 chaos the maximum attention is being given to combat the corona virus pandemic, which is a part of the project, therefore no other major deviation is noted till now and overall the project is going on well. Based on the key findings and observations by the evaluation team some suggestions have been provided for effective implementation of the project and it is recommended that this scheme should be continued.

Sub-scheme 4.12.3: Financial Assistance to States /UTs/Districts for conducting Mock Exercise

The project "Financial Assistance to States /UTs/Districts for conducting Mock Exercise" was successfully implemented by NDMA for two years i.e. from April 2018- April 2020. The target to conduct 600 Mock Exercises (MEs) was set in the initial stage of the project out of which 414 MEs have been successfully conducted in the selected states/UTs. Despite the many challenges the project has effectively achieved excellent results in overall capacity building related to disaster management and enhancing general awareness among all responders and achieved the set objectives. The project activities were very well designed and structured to achieve targeted goals. However, to further strengthen the scheme additional funds may be provided to implementing agencies.

The National Disaster Management Authority (NDMA) is trying to address the risk of disasters through several capacity building and financial support schemes. Therefore, the scheme is now capable of extending its mandate and should be continued for four years to further strengthen and capacity building of the States/UTs/ Districts in different parts of India in order to reduce the risks of disaster and achieve sustainable development.

Sub-Scheme 4.12.4: Landslide Risk Mitigation Scheme (LRMS)

The scheme aimed at improving Disaster Risk Governance of SDMA's/DDMA's, providing financial and technical support to landslide prone states for site specific landslide mitigation. It is a pilot scheme to demonstrate benefits of landslide mitigation measures along with landslide monitoring, awareness generation, capacity building / training etc. Accordingly

MoUs were signed with State Disaster Management Authorities (SDMA's) of Sikkim, Mizoram, Nagaland and Uttarakhand for implementation of scheme.

Technical evaluation committee has been set up to review the project progress. Also, timely progress reports are being submitted by implementing agencies. For release of next instalment site inspection was carried out and based on site observation report by the technical experts, the instalments were released. Nagaland is in advance stage of project implementation and NDMA team visited the site and submitted report for release of 2nd instalment to Government of Nagaland and same was released on 18th May, 2020.

In every state most of the project activities were impacted due to corona virus pandemic. However, concerned agencies are putting their best to minimise its impacts. It is recommended that the scheme may continue to for completing mitigation measures at state level.

Scheme 4.13: Development of Cloud Based Application Information System for integration of database and dissemination of the same.

The project aims at development of cloud-based application information system. As the hosting GIS server into NIC cloud is very essential for utilization of GIS database into 24X7, for more effective and efficient overall performance and to meet the future requirement of web storage data space.

GIS server has been migrated to NIC cloud and maintenance is being done by NDMA. Accessibility of disaster database to public and stakeholders on 24*7 with web security is very crucial for planning purpose and decision making for building resilience of society. Therefore, it is recommended that the scheme may continue.

Scheme 4.14: Compendium of Traditional practices and Earthquake Resilient construction practices for knowledge sharing and disaster risk reduction: Promotion of Traditional; Construction Practice

National Disaster Management Authority (NDMA) is a nodal agency for the project "Compendium of Traditional practices and Earthquake Resilient construction practices for knowledge sharing and disaster risk reduction: Promotion of Traditional; Construction Practice". The project is being implemented by the Indian Institute of Technology, Ropar to collect data on traditional building typologies across Himalayan region and preparation of the compendium. The project also addresses the national needs related to building up disaster-resilient and sustainable housing in India, with a special focus on hilly regions.

The project has started in December 2019 and submitted the first report on the literature survey in the mid of March. After that field surveys/work was to commence, however, due to COVID-19 outbreak, a nationwide lockdown was implemented by the Government of India, and thereafter the project team could not start the fieldwork. Further, they are also facing challenges related to the availability of the manpower.

However, the project is well oriented towards the mandate of NDMA as well as the implementing agency as earthquake risk reduction in the Indian subcontinent is one of the major thrust areas aligning with the priority of all the technical institute and IIT Ropar has such

expertise and experience. Upon improvement of the situation and with the deployment of the manpower it is expected that the implementing institutes would expedite the fieldwork to complete the project well within the prescribed time limits. Therefore, the project should be continued to achieve all set targets.

Scheme 4.15: Development of Mobile application for Disaster Risk Reduction

The scheme aims at development of Mobile Application for Disaster Risk Reduction (DRR). The expected deliverable is the development of mobile application for the first responder and citizen for disaster reporting and risk reduction and use of same for event reporting and building a communication between first responder, citizen and decision makers.

Having such mobile application will definitely facilitate in strengthening the community resilience. However, the scheme is not yet started.

Scheme 4.16: Bihar, Uttar Pradesh and Uttarakhand Earthquake Scenario Development for Awareness Campaign

Indian Institute of Technology, Roorkee is the implementing agency for the project “Bihar, Uttar Pradesh and Uttarakhand Earthquake Scenario Development for Awareness Campaign”. This project is implemented with the aim to develop an earthquake scenario based on which unified action plan will be made to help the various stakeholders in planning and coordinating emergency response, utilities and additionally it will provide an understanding of the consequences of a big earthquake.

As IIT Roorkee has technical expertise in earthquake scenarios also it is a renowned technical institute in the country. The project is recently awarded to IIT Roorkee and the project activities will be commenced soon by the Institute so it is recommended to continue the project as it is having larger societal benefits

Scheme 4.17: Resource Mapping of Earthquake Engineering Facilities in Engineering/ Architect colleges

The project “Resource Mapping of Earthquake Engineering Facilities in Engineering/ Architect colleges” is being implemented in collaboration with MNIT, Jaipur to map earthquake professionals and institutions an online platform will be developed where data will be assembled at one place. This data is expected to be helpful for various stakeholders which may be utilized further to undertake various mitigation measures, also, to post-earthquake rapid damage assessment to assess immediate occupancy of the houses through the expertise available for which the information on experts may be collated efficiently from the envisaged MIS platform.

Although, there is a delay in some of the activities due to pandemic the project is going as per the desired timeline and project progress is satisfactory. Stage two of the project is almost complete. So far, the funds are sufficient, additional funding may be required to meet the salary

expenditure of the research staff employed for the duration of lockdown. The project is complying MNIT Jaipur's objective, as the institute is running one PG program in Disaster Assessment and Mitigation. Research on various aspects of natural and manmade disasters is also pursued

As the project is of national interest therefore, it is recommended that two months extension may be provided to achieve desired quality outcome from project interventions.

Scheme 4.18: Development of Earthquake Disaster Risk Index (EDRI) for earthquake-prone cities (approx. 100 cities) Phase –II

The project “Development of Earthquake Disaster Risk Index (EDRI) for earthquake-prone cities (approximately 100 cities) Phase –II” aims to evaluate the Earthquake Disaster Risk Index (EDRI) for 60 cities. It is an assessment tool for assessing the possible risk of earthquake, which can help decision-makers and authorities to plan and develop suitable adaptation measures. This forecast of risk within a city will project the overall damage or loss that the city may experience in expected earthquakes in future and the necessary precautions to be taken. The project is of national interest, however not yet awarded to any implementing agency. It is thus recommended to award the same as early as possible

Scheme 4.19: 5 days training on application of Unmanned Aerial Vehicle (UAV) in Disaster Management

The project aims at strengthening and training the professionals of SDMAs and other stakeholders in the field of the use of UAV/Drone Imagery for Disaster mapping with high resolution along the inaccessible terrain like Himalayas. In this project 5 trainings on application of UAV/Drone for Disaster Risk Reduction has been proposed to various institutes like Indian Institute of Remote Sensing, Dehradun; North Eastern Space Applications Centre, Umiam, Shillong, Meghalaya etc.

One training has been successfully conducted from 10th-14th February, 2020 and around 15 professionals have been trained. The outline of the course was designed in such a way that it covered all 6 stages of disaster management starting from prevention, preparedness, relief and reconstruction.

Underlining the importance of UAV technology for disaster management, all stakeholders should strive to leverage existing technologies for quick and efficient disaster response. Accordingly, such trainings should be conducted in-large to cater especially vulnerable areas/region. Remaining four trainings can be conducted through online platform as well. Therefore, it is recommended to extend the scheme.

Scheme 4.20: Extension of GIS scheme for operational Manpower

The scheme caters to hiring of manpower for maintaining the NDMA GIS Server and database. However, recruitment of manpower is under progress. The Scheme is recommended

Scheme 4.21: Pilot project to Improve Earthquake Resilience of Masonry lifeline Buildings and Upcoming Constructions

The project “Pilot project to Improve Earthquake Resilience of Masonry lifeline Buildings and Upcoming Constructions” is being implemented in collaboration of NDMC Delhi, SDMA/DDMA of Uttarakhand & Tripura. The main objective of the project is to enhance the resistance of the lifeline structure of Delhi, Tripura and Uttarakhand as these states lie in seismic zone IV & V, which are the most vulnerable. The lifeline structures are most frequente by masses during earthquakes so this needs immediate attention. The project activities such as structural safety audit of selected masonry lifeline buildings, preparation of DPR to carry out retrofitting and others is under process and commencing as per the desired timeline.

Although, due to COVID-19 pandemic project activities have been affected but the project remained well-oriented towards organization’s priority as it will enhance the capacity building of engineers, masons etc. With few suggestions such as timely monitoring the progress of the project and annual consultations under the aegis of NDMA to fix the issues faced by the states during the implementation, it is recommended that the scheme should continue to achieve its target efficiently.

Scheme 4.22: Development of probabilistic seismic hazard map of India

The scheme aimed at development of Grid-wise probabilistic seismic hazard map. The expected deliverable is the probabilistic map of India that will consist of all known earthquake of magnitude 4 and above recorded in and around India in the last 500 years.

The output of the product will facilitate in informed decision-making for minimising risk and also for site selection, design and retrofitting strategies.

The project is going as per the desired timeline and has achieved its objectives. Hazard map is already developed. Smoothening of the map and ground motion prediction equations and respective weight-age thereon is under process. It is recommended that the scheme may be continued to prepare final desired outcome as this is in favour of building national resilience.

Scheme 4.23: Creation, periodic review/ updating of building codes on earthquake and landslide resistant features

The objectives of the scheme are: to develop seismic design of pipelines-practice code; to develop performance-based design code and to develop steel buildings code. Based on the objectives, the scheme is divided into sub-schemes and awarded to institute of national importance like IIT Bhubaneshwar, IIT Roorkee and IIT Madras.

The project is ongoing as per desired timeline. Literature review for seismic design and international practices for performance-based designs is in process. The draft outline for seismic design of moment resisting steel frame has been prepared. Detailed content of draft code is in progress. It is recommended that scheme may be continue.

Scheme 4.24: Development of Teaching Resource Material for Earthquake Engineering Curriculum in Engineering Colleges

The project “Development of Teaching Resource Material for Earthquake Engineering Curriculum in Engineering Colleges” is being implemented in collaboration with the Indian Institute of Technology Bombay (IIT-B). The project aims to impart the basic knowledge of earthquake engineering to Undergraduate students of Civil Engineering and Architecture students. Since it is an ongoing project and mainly involves the development of teaching material for students as such no risk and challenges are faced till now.

The project is complying the mandate of the institute as they have excellent technical expertise and experience in earthquake engineering.

The scheme is successfully implementing and is well on track on the anticipated timeline. As the project is of national interest and the progress is satisfactory therefore based on key findings and observations by the evaluation team, it is recommended that the project may be continued further to achieve the set targets.

Scheme 4.25: Common Alerting Protocol (Pilot) Project

The project aims to facilitate dissemination of alerts/ warnings through SMS to stakeholders and geographically referenced public in vernacular language for Tamil Nadu State in collaboration with Centre for Development of Telematics (C-DOT).

The project had started from January 2020 and timeline to implement the project was of three months i.e. from 15 Jan- 15 April 2020, however, due to COVID 19 pandemic the project became slow and expected to be completed by October 2020. Therefore, extension till October may provide to complete the project.

Scheme 4.26: Emergency Response Mobile Vehicle (ERMV)

The project “Emergency Response Mobile Vehicle (ERMV)” is being implemented to develop a self-sustained vehicle having all facilities to move into a disaster-affected site and establish a communication hub for smooth exchange of information between disaster sites and other stakeholders, so that the response and relief programs can be executed smoothly. The procurement of ERMs is being done through the National Disaster Response Force (NDRF). MoU had been signed in December 2019 but the project is not yet started. Communication is the most important requirement to coordinate disaster management especially during emergencies, initial few hours are the golden hours. The terrestrial communication links get disrupted during most of the disasters, so this project will play an important role in establishing a quick communication link with the disaster site. It will lead to faster response and relief work, which would result in saving lives and property. Therefore, it is recommended that the project should be continued.

Scheme 4.27: Priority Call Routing (PCR)

The project aims to prioritize the calls of decision-makers, disaster managers and the first responders over other calls of less importance, through a nationwide PCR system/portal, where concerned Disaster Management authorities list down the PCR number along with their graded priority, which can be then forwarded to TSPs in advance as well as near real-time, during traffic congestion in an emergency. The techno-commercial proposal is under

process and project has not yet commenced.

Scheme 4.28: Use of Information & Communication Technology (CDR Analysis) in Disaster Risk Management

The project is being implemented to create database and decision support system to identify locations of persons through mobile phones trapped in debris during disaster and launch targeted rescue operations to save a possible human life through ICT (CDR Analysis) in Disaster Risk Management Project.

The techno-commercial proposal is under process and project is not yet started.

Scheme 4.29: Web-Based Training

The project "Web-Based Training" aims to build the capacity of stakeholders as well as a common mass through online learning on various aspects of disaster resilience, risk mitigation related law and others on their respective locations. The project is being implemented in collaboration with Odisha State Open University (OSOU), Sambhalpur and Jawaharlal Nehru University (JNU) New Delhi.

The project has started in January 2020 and was for six months duration. However, syllabus for the project has been prepared further process got delayed due to COVID 19 pandemic and is expected to be completed by December 2020. Therefore, it is recommended that a six months extension may provide to achieve the project targets efficiently.

Scheme 4.30: Scoping Study on Climate Change and its Impact in the Context of Disaster

This scoping study aims to compile and present the impacts of climate change on India with a special focus on the climate system, hazards, and policy framework in the context of extreme events. This study will be done by a consulting firm, which will be selected by calling Expression of Interests from interested consultants through a two-bid system of GFR, 2017. So far the Expression of Interests are being finalized for publication and implementing agency is yet to be decided.

Based on key findings and observation it is recommended to loop in IIPA in the project "Scoping study on climate change and its impact in the context of disaster" as the study is yet to start. IIPA has the scope and capacity to take such schemes/studies to its logical conclusion.

Scheme 4.31: Multi-Hazard Risk Vulnerability Assessment

The project "Multi-Hazard Risk Vulnerability Assessment" is being implemented to prepare a Multi-Hazard Atlas, Vulnerability Atlas, Risk Atlas, Composite Risk Index and a Multi-Hazard Risk Profiles, Capacity Building and Training modules for other States/ Stakeholders.

So far, the Expression of Interests (EoI) for this project was issued on 5th February 2020 and has received EoI from eight consulting firms. After that, a screening committee to evaluate and shortlist the Expression of Interest and a committee to re-check the shortlisted firms was constituted on 13th March 2020. However, due to COVID-19, the committee has been unable to meet the shortlisted the consulting firms. Therefore, shortlisting of a consulting firm for bidding stage and finalization for Request for Proposal (RFP) is underway.

The project is not yet started as project activities are delayed due to the prevailing condition of corona outbreak.

Scheme 4.32: Capacity Building on Disaster Management "for Indian Administrative Service (IAS)/Central Services officers (CSOs)" at CDM, LBSNAA, Mussoorie

This project is implemented in collaboration with LBSNAA, Mussoorie. The project aims to train 950 IAS/Central Services Officers per year in Disaster Management to sensitize existing system of disaster management at various executive levels (field administration) and policy-making levels of the district, State & Central Govt. and carry out research activities on the theme of disaster management. The project has completed three years i.e. from 2017-2020 and has achieved all the deliverables as per timelines and remained well oriented towards core priority of the LBSNAA to strengthen the capacities of IAS/ Civil cervices officers at various levels. So far, no deviation has occurred during the project implementation and organization has received sufficient support from NDMA in technical & financial matters. Therefore, based on the key findings of the evaluation team it is recommended that the project may further extend with the same objectives for four years to sensitize the existing system of disaster management in India.

Scheme 4.33: Scheme for "Training of Community Volunteers in Disaster Response in selected 30 most flood-prone districts of 25 States of India (*AapdaMitra*)

This project aims to train community volunteers in disaster response in the most flood-prone districts in India.

The scheme was launched in May 2016 for two years, however, due to some reasons, it was extended up to March 31st, 2020. Now due to corona virus outbreak, the scheme has been further extended till December 2020. So far, out of 6000 volunteers, 5116 have been trained and the project remained well oriented towards organizations priority. NDMA has received a positive response from implementing agencies and they demanded to upscale of the scheme covering more volunteers and multi-hazard prone districts. The trained volunteers have played an important role during recently occurred disasters such as Cyclone Fani, Kolhapur flood and Kerala flood,2018 and Mega Sagar Mela in West Bengal and also deployed in various activities for COVID 19 pandemic response(wherever possible). As the project is performing well towards its objectives, the nodal agency i.e. NMDA is also planning to upscale it with necessary improvements suggested by states to create a pool of 100000 trained and certified volunteers in 350 highly vulnerable districts, which are prone to flood, cyclone, landslide and earthquake. The project is expected to be launched in FY 2020-21. Therefore, it is recommended that the project may continue to strengthen the local community in the time of disasters as well as to reduce the risk for the same.

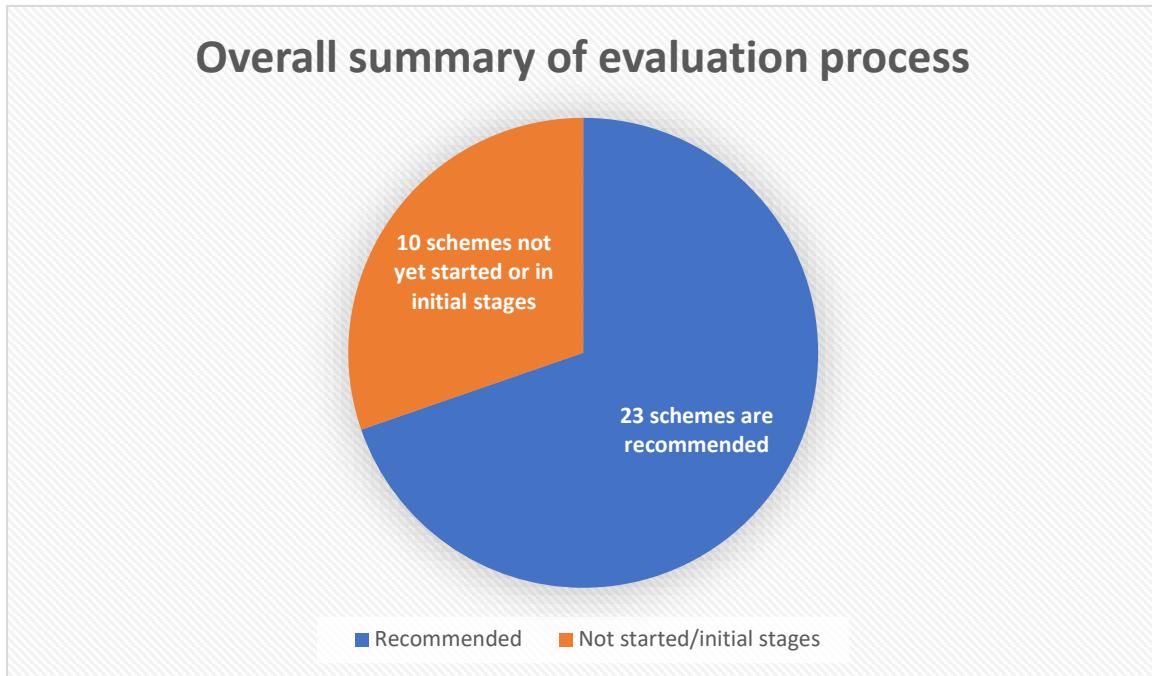


Figure 38. Summary of evaluation

All the schemes sponsored by Ministry of Home Affairs (DM Division) were very well conceptualized and provided required technical expertise and funds to other agencies like NDMA, NIDM and NDRF. These further provide hand holdings to various departments, agencies and academic institutions for on ground implementation and to achieve desired objectives. Schemes are of national importance and crucial for disaster risk reduction to build resilient communities. The performance of some of the schemes is commendable and it is recommended to upscale them to other areas as well. Out of total 33 schemes, 23 schemes are recommended with few suggestions as provided above. It is also recommended to loop in IIPA in studies such as “Scoping study on climate change and its impact in the context of disaster” as the study is yet to start. IIPA has the scope and capacity to take such schemes / studies to its logical conclusion. Whereas, remaining 10 schemes are either not yet commenced or in very initial stages thus those too are recommended to be continued as they seem to be very promising.

Annexure

Annexure I

Sample Questionnaire²

Questionnaire for Other Disaster Management Schemes (ODMS)

Implementing Agencies

1. Project Information

Project Title	
Project Duration	
Total Project cost	
Name and Designation of Project PI/Nodal Person	
Organization	
Mobile NO.	
Email	

2. What are the project objectives, output and outcomes?
3. What specific issue does the project address?
4. What was the approach followed to achieve desired outcome (in brief)?
5. What were the risk and challenges faced? And how that were encountered?
6. Did you achieve the set deliverables as per timeline?
7. Did you feel the project remained well-oriented towards your organisation's priority?
8. Any deviation occurred from the agreed course of action?

9. Are participants being reached as intended?
10. Which activity was most effective?
11. Did you get sufficient cooperation from nodal agency/funding agency in terms technical support and availability of fund?
12. Project outcome
 - No. of trainings conducted
 - No. of officers/participants trained
 - Percentage of women participation
13. How well did the programme work?
Average Satisfactory Good Excellent
14. Remarks (if any)
.....
.....

² This questionnaire has been customised based on specific schemes