

# Training of the Trainers (ToTs) Programme on Understanding Mitigation Measures for Urban resilience- Role of Civil Defence

Date: 05- 09 April, 2022



## FOREWARD

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Delhi is vulnerable to many hazards like fire, earthquake, flood, chemical explosion, building collapse, air pollution, road accident and health hazards, epidemics/pandemic like COVID-19, dengue, chikungunya etc. These hazards are increasingly putting its people, infrastructure, and environment at risk. Urban areas, with insufficient emergency services, and traffic delays that delay the arrival of emergency services, increase the burden on emergency service providers. Community support as a backup can alleviate this problem. The trained community volunteers i.e., the Civil Defence Corps can enhance the capacity of the district level administration to deal with extreme situations.

Therefore, it is time to evolve Civil Defence as the largest trained volunteer-based community organization that can develop any measure, adopted by the local administration and population to protect the citizens, and property against any external aggression, internal disturbance and emergencies. A shift in the perceived role of Civil Defence as not a means of delivering services and development agendas but as agents of social change for community development and disaster response through leadership embedded within local knowledge should be encouraged. In this sense, while prioritised urban risk reduction through resilient infrastructure, the District Disaster Management Plan (Delhi), has always recognized the importance of trained response troops in the immediate handling of emergency impacts.

I hope the 5-days training of trainer (ToT) programme on Understanding Mitigation Measures for Urban Resilience - Role of Civil Defence provided insights on the urban resilience and urban risk mitigation measures in the context of Delhi.



Ms. Kriti Garg, IAS  
Deputy Magistrate & DC (West District)  
Government of NCT of Delhi

## ACKNOWLEDGEMENT

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Currently, in almost all communities there are multiple layers of planning with little consensus on disaster tasks, organizational responsibility and the scope of disaster planning. The Civil Defence personnel in India are the community disaster managers who have the power to build the resilience of individuals and communities. It is true that it government cannot reach the last mile without their support and coordination. The mission of this training program was to contribute to capacity building for community-based disaster preparedness. With regards to capacity building, DDMA and NIDM aim to strengthen the institutional and technical capacities of the Civil Defence personnel. Though the Civil Defence is always engaged in emergency response and has insight into the emergency and disasters, however, the urban resilience is quite inadequately covered in their regular training. Hence, the training programme on Understanding Mitigation Measures for Urban Resilience - Role of Civil Defence will help them to understand urban hazards, risks and vulnerabilities in the context of Delhi and the community-based preparedness.

I hope that the training would have unveiled the pathways for more advanced Civil Defence training to reinforce their capacities for urban preparedness along with the emergency response, I would like to express my sincere thanks to the honourable Chief guest Mr. Rajender Singh, NDMA, Ministry of Home Affairs, Govt. of India, Sh. Taj Hassan (IPS), Executive Director, NIDM & DG (FS, CD, HG), Ministry of Home Affairs, Govt. of India, Ms. Kriti Garg, IAS, Deputy Commissioner (West). I also thank imminent speaker Prof. Chandan Ghosh, Head, Resilient Infrastructure Division, NIDM, Shri. Surendra Thakur, Joint Director (officiating) & Consultant (Admin./Training)NIDM, Sh Nakul Kumar Tarun, Director, Zone4Solutions, Dr. Rajnish Ranjan, Senior Consultant, NIDM, Dr. Shailender Kumar, Centre for Environmental Studies & Disaster Management, Miranda House, Delhi University, Dr. Hari Kumar, Regional Coordinator, Geohazard International & Head, Geohazard Society, Mr. R.C. Sharma, Former Director, Delhi Fire Services, Mr. Umesh Sharma, ADG (CD), O/o DG (FS, CD & HG), Dr. Anamika Rohilla, Assistant Professor, DIET, and Ms. Shikha, Women Welfare Officer, District Magistrate Office, Raja Garden.

It gives me immense pleasure in acknowledging your cooperation and I extend my gratitude to Dr. Garima Aggarwal, Senior Consultant (Resilient Infrastructure), NIDM, Mr. Shreyash Dwivedi, Junior Consultant, NIDM, Mr. Nishant, Project Officer, DDMA (West), and Ms. Tanushree Verma, Head (Training and Research), Zone4Solutions who meticulously organized the training programme. I would also like to thank the participants and the supporting staff as without them it would not have been possible to organize the training programme.



Sh Dharmendra Kumar  
Addl. District Magistrate (West District)  
Government of NCT of Delhi

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# 1 INTRODUCTION

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The unique geo-climatic and socio-economic attributes of India have marked it as one of the highly vulnerable countries to different hazards in the world. Earthquakes, landslides, floods, droughts, tsunamis and cyclones are some of the major natural hazards that affect the country frequently. Human-induced disasters such as industrial accidents, fires and Nuclear-Biological-Chemical warfare are other events which have the potential to destroy humanity. Delhi NCR falls under Seismic Zone IV and is susceptible to high-intensity earthquakes. Apart from that, Delhi experiences urban flooding, terrorist threats, urban fires, structure collapse/ building collapse, transport accidents and pollution on regular basis.

Volunteerism is a fundamental source of community strength and resilience that is found in all communities. Civil Defence (CD) is a volunteer-based government organization which has been set up to deal with emergencies, protect the public and restore vital services and facilities that have been destroyed or damaged by emergent situations. The Civil Defence Act (No.27), 1968 & Civil Defence (Amendment) Act, 2009 have empowered the Civil Defence personnel with an additional role to promote Disaster Management (DM) activities i.e., before, during and after disasters whether natural and man-made. Additionally, the ten-point agenda for DRR (2016) outlined by the Hon'ble Prime Minister of India in 2016 and the National Disaster Management Plan (2019) also highlight the importance of Civil Defence personnel in risk reduction and increasing their abilities through sufficient training and capacity building.

Delhi being the urbanized state, Delhi Disaster Management Authority (DDMA) along with district DM authorities has been working towards developing trained personnel in the area of disaster mitigation & response, urban risk reduction and promoting disaster resilient infrastructure. DDMA (West) and Directorate General of Home Guards have been actively organizing a variety of training programmes on disaster management for Civil Defence personnel.

Considering the rapid urbanization in the State of Delhi, it is essential to build the capacities of the communities on important aspects of urban mitigation measures. A cadre of trained professionals would be developed by DDMA and district DM authorities who will be further engaged in promoting urban mitigation activities in Delhi.

In this context, NIDM along with District Disaster Management Authority (West) had organized a Training of the Trainers (ToT) Programme on “Understanding Mitigation Measures for Urban Resilience – Role of Civil Defence” from April 05 to 09, 2022 where Zone4Solutions provided technical support to DDMA (West). The programme was organized at the Directorate General of Home Guards, Raja Garden, Delhi.

## 1.1 OBJECTIVE OF THE TRAINING

Effective disaster risk planning and response need trained Civil Defence personnel. It is crucial since, in many circumstances, these individuals are the first responders and have the best opportunity of saving lives and providing assistance pre, during and post-disasters. In this sense, the 5-days training programme on “Understanding Mitigation Measures for Urban Resilience – Role of Civil Defence” has facilitated Civil Defence personnel in expanding their knowledge base and improving their skills in disaster risk reduction while also enhancing their understanding and abilities in light of planned activities with community participation and monitoring methodologies. They will be able to :



- Identify the urban risks and vulnerable communities,
- Create a pool of trained community volunteers through community training and awareness campaigns which allow diverse skills, resources, and expertise of members to be identified and most effectively utilized during emergencies,
- Assist the communities to identify their possible contributions and assess their unique resources,
- Assist the first line of emergency responders in the response and rebuilding process, and they will reinvest in their areas,
- Build certain qualities and will ensure that local voices are heard and acknowledged.

The quality and scope of this reaction might be crucial in limiting the adverse consequences, preserving order, boosting optimism, and optimising recovery efforts.

## 2 AGENDA



### Training of Trainers on

### Understanding Mitigation Measures for Urban Resilience - Role of Civil Defence

**Date:** 05.04.2022 to 09.04.2022  
(Tuesday to Saturday)

**Venue:** Directorate General of Home Guards,  
Parade Ground Hall, Raja Garden, Near Shivaji  
College, New Delhi-110027

#### PROGRAMME SCHEDULE

Time	Learning Session/Theme	Key Speakers
Registration and Inauguration		
09:30 am-10:30 am	Registration	To be managed by DDMA (West), NIDM and Zone4Solutions
10:30 am-10:40 am	Welcome Address	Ms. Kriti Garg, IAS, Deputy Magistrate & DC (West)
10:40 am-10:50 am	Context Setting and Overview of the programme	Sh. Dharmendra Kumar, Addl. District Magistrate (West) Dr. Garima Aggarwal, Senior Consultant, NIDM
10:50 am-11:00 am	Special Address	Sh. Sanjeev Khirwar (IAS), Secretary (Revenue)/ Director (CD)/ Divisional Commissioner (Revenue)
11:00 am-11:10 am	Keynote Address	Sh Taj Hassan (IPS), Executive Director, NIDM & DG (FS, CD, HG), Ministry of Home Affairs, Govt. of India
11:10 am-11:25 am	Inaugural Address	Mr. Rajender Singh, NDMA, Ministry of Home Affairs, Govt. of India
11:25 am-11:30 am	Vote of Thanks	Mr. Nakul Kumar Tarun, Director, Zone4Solutions
11:30 am- 12:00 am	Tea Break	

Day 1 (05.04.22): Introduction, Overview & Perspective		
12:00 noon-12:45 pm	Special Address on Identifying Urban Risks & Vulnerabilities and Role of Urban Risk Mitigation	Prof. Chandan Ghosh, Head, Resilient Infrastructure Division, NIDM
12:45 pm-01:15 pm	Institutional Mechanism for Disaster Risk Management	Shri Surendra Thakur, Joint Director (officiating) & Consultant (Admin./Training), NIDM
01:15 pm-02:00 pm Lunch Break		
02:00 pm-03:00 pm	Pre-training Assessment, Introduction, Structure of the course, Role of NIDM in capacity building.	Dr. Garima Aggarwal, Senior Consultant, NIDM
03:00 pm-03:30 pm Tea Break		
03:30 pm-04:45 pm	A Conceptual Approach on understanding of Hazard, Vulnerability and Risks.  Issues and challenges in conducting disaster management training in urban areas- a trainer's perspective.	Dr. Rajnish Ranjan, Senior Consultant, NIDM
04:45 pm: 05:30 pm	<b>Group Activity</b> on identifying Hazard, Vulnerability and Risks	Ms. Tanushree Verma, Zone4Solutions (Interactive Session)  Mr. Shaad Warsi, Young Professional, NIDM
Day 2 (06.04.22): Urban Risk Impacts: Issues, Concerns & Mitigation Measures		
10:00 am-10:30 am	Recapitulation of Day 1 and introduction of urban risks and DRR approaches.	Dr. Garima Aggarwal, Senior Consultant (Resilient Infrastructure), NIDM  Mr. Shreyash Dwivedi, Junior Consultant, NIDM
10:30 am-11:45 am	Urban Environment and Disaster Risks (pollution, water logging, transportation & Solid Waste Management) & Mitigation measures	Dr. Shailender Kumar, Centre for Environmental Studies & Disaster Management, Miranda House, Delhi University
11:45 am-12:00 pm Tea Break		

12:00 pm-01:30 pm	Earthquakes in Delhi, its impacts & mitigation measures	Dr. Hari Kumar, Regional Coordinator, Geohazard International & Head, GHS
01:30 pm-02:30 pm <b>Lunch</b>		
02:00 pm-03:30 pm	Fire & Industrial Disasters in Delhi, its Impacts and Safety measures	Mr. R.C. Sharma, Former Director, Delhi Fire Services
03:30 pm-04: 00 pm <b>Tea Break</b>		
04:00 pm- 05:30 pm	Role of Civil Defence in Disaster Risk Reduction	Mr. Umesh Sharma, ADG (CD), O/o DG (FS, CD & HG)
<b>Day 3 (07.04.2022): Mainstreaming Issues on Disaster Risk Reduction</b>		
10:00 am-10:30 am	Recapitulation of Day 2, Structure of Day 3, Icebreaking Exercises and Extended Knowledge	Dr. Garima Aggarwal, Senior Consultant, NIDM/ Mr. Shreyash Dwivedi, Junior Consultant, NIDM
10:30 am-11:45 pm	Women leadership in DRR- Issues and Policy	Dr. Manju Panwar, Director Women Studies, BPS, Women University Sonipat, Haryana
11:45 am-12:00 noon <b>Tea Break</b>		
12:00 noon-01:15 pm	Inclusive Policies for Disability induced DRR	Dr Seema Tuli, Principal, Amar Jyoti Children Foundation for inclusive education, Delhi
01:15 pm-02:00 pm	Non-Structural Mitigation Issues in the buildings & solutions	Dr. Garima Agarwal, NIDM/ Team
02:00 pm-03:00pm <b>Lunch</b>		
03:00 pm-04:15 pm	Community Based Urban Disaster Risk Management	Ms. Tanushree Verma, Zone4Solutions/ NIDM (Interactive Session)
04:15 pm-04:30 pm <b>Tea Break</b>		
04:30 pm-05:30 pm	Group Interaction	DDMA/NIDM/Zone4Solutions
<b>Day 4 (08.04.2022): Urban Risk Management Planning – Field Exercise</b>		
10:00 am-10:30 am	Recapitulation of Day 3, Structure of Day 4, Icebreaking Exercises and Extended Knowledge	Dr. Garima Aggarwal, Senior Consultant, NIDM/ Mr. Shreyash Dwivedi, Junior Consultant, NIDM
10:30 am-11:45 pm	Key elements of an effective training program	Dr. Anamika Rohilla Assistant Professor, DIET
11:45 am-12:00 noon <b>Tea Break</b>		

12:00 noon-01:00 pm	<b>Disaster Management Plan of an Institution/ Building/Community -</b> Presentation on Steps, Group Formation, assigning roles, and briefing on Group Exercise (Participants will be divided in the 4 groups to conduct field exercise on DM Planning at nearby 4 locations: <ul style="list-style-type: none"> <li>• Group 1: Office DM Plan of DG CD Hq. office</li> <li>• Group II: Shivaji College</li> <li>• Group III: DC, MCD Office (West)</li> <li>• Group IV: Office of Deputy Commissioner (West), GoNCTD</li> </ul>	To be coordinated by NIDM, DDMA(W) and Zone4Solutions
01:00 pm-02:00 pm	<b>Lunch Break</b>	
02:00 pm-05:00 pm	<b>Field Activity</b> <ul style="list-style-type: none"> <li>• Transect walk</li> <li>• Collection of data</li> <li>• Identification of local hazards, vulnerability and risks</li> <li>• Group Discussion with community persons</li> <li>• Role identification</li> <li>• Constitution of the teams</li> <li>• Suggestions for Disaster Mitigation Plan</li> </ul>	To be coordinated by NIDM, DDMA and Zone4Solutions
05:00 pm-05:30 pm	<b>Briefing and tea break</b>	
<b>Day 5 (09.05.2022): Demonstration and Valedictory Session</b>		
10:30 am-11:45 am	Recap and Group -wise Presentation by trained instructors	Chaired by NIDM/DDMA/Zone4Solutions
11:45 am-12:00 noon	<b>Tea Break</b>	
12:00 noon-01:15 pm	Disaster Management Planning and Introduction to Incident Command System	Mr. Nakul Kumar Tarun, Director, Zone4Solutions
01:15 pm-02:00 pm	<b>Lunch</b>	

02:00 pm-03:30 pm	Disaster Preparedness, Evacuation and Response (Simulation exercise)	Presentation and Demonstration byNDRF(HQ)
03:30 pm-04:30 pm	<b>Valedictory Session</b> <ul style="list-style-type: none"> <li>• Sharing of experience by the participants</li> <li>• Way forward</li> <li>• Distribution of certificates</li> <li>• Vote of thanks</li> </ul>	District Magistrate (DDMA-West), Addl. District Magistrate (DDMA West) Dr. Garima Aggarwal, NIDMSh Nakul Kumar Tarun, Zone4Solutions Ms. Tanushree Verma, Zone4Solutions

## 3 TRAINING SUMMARY

### 3.1 DAY 1 (05.04.22): INTRODUCTION, OVERVIEW & PERSPECTIVE

MODERATOR	Mr. Shreyash Dwivedi, Jr. Consultant, RI Division, NIDM
<b>Inaugral Sessions</b>	
Welcome Address	Ms. Kriti Garg, IAS, Deputy Commissioner (West)
Context Setting and Overview of the programme	Sh. Dharmendra Kumar, Addl. District Magistrate (West)
Key Note Address	Prof. Chandan Ghosh, Head, Resilient Infrastructure Division, NIDM
Inaugural Address	Mr. Rajender Singh, NDMA, Ministry of Home Affairs, Govt. of India
Vote of Thanks	Mr. Nakul Kumar Tarun, Director, Zone4Solutions
<b>Technical Sessions</b>	
Special Address on Identifying Urban Risks & Vulnerabilities and Role of Urban Risk Mitigation	Prof. Chandan Ghosh, Head, Resilient Infrastructure Division, NIDM
Institutional Mechanism for Disaster Risk Management	Shri Surendra Thakur, Joint Director (officiating) & Consultant (Admin./Training), NIDM
Pre-training Assessment, Introduction, Structure of the course, Role of NIDM in capacity building	Dr. Garima Aggarwal, Senior Consultant, RI Division, NIDM
Issues and challenges in conducting disaster management training in urban areas- a trainer's perspective	Dr. Rajnish Ranjan, Senior Consultant, NIDM

The event commenced with an introductory speech given by Dr. Garima Aggarwal, Senior Consultant, RI Division, NIDM by warmly welcoming the prominent speakers, honourable guests of the day, and the participants. Although India is prone to various natural and anthropogenic disasters, Delhi, as one of the world's most populous cities, faces emergencies such as urban fires and building collapses, transport issues, and pollution frequently. She



Figure 1: Dr. Aggarwal addressing the participants

appreciated the role of Civil Defence personnel played to tackle these emergencies.

While discussing the importance of Civil Defence personnel for disaster management, she highlighted the paradigm shift in the perception of disaster management. The role of Civil Defence personnel has also changed in pre, during and post-disaster situations. She emphasised the bottom-up approach to provide DM knowledge at each level of administration and key actors like DDMA, Civil Defence personnel, and related functionaries for overall community development. She also requested DDMA officials to involve the trained Civil Defence personnel in capacity building activities in Delhi. It was also suggested that an amplifier effect of the trained personnel should be built on the ground.

Structure of the Course			
<b>Day 1: 05.04.22 Introduction, Overview &amp; Perspective</b>			
1. Special Address on Identifying Urban Risks & Vulnerabilities and Role of Urban Risk Mitigation Class	2. Pre-training Assessment, Introduction, Structure of the course, Role of NIDM and DM to DRR approach	3. A Conceptual Approach of DRR Understanding Hazard, Vulnerability and Risks	
<b>Day 2(06.04.22) Urban Risk Impacts: Issues, Concerns &amp; Mitigation Measures</b>			
4. Urban Environment and Disaster Risks (pollution, water logging, transportation & Solid Waste Management) & Mitigation measures	5. Earthquakes in Delhi, its impacts & mitigation measures	6. Fire & Industrial Disasters in Delhi, its Impacts and Safety measures	7. Role of Civil Defence in Disaster Risk Reduction
<b>Day 3 (07.04.2022): Policies, Programs and Mainstreaming Issues on Disaster Risk Reduction</b>			
8. Women leadership in DRR- Issues and Policy	9. Inclusive Policies for Disability induced DRR	10. Non-Structural Mitigation measure (Interactive Session)	11. Community Based Urban Disaster Risk Management
<b>Day 4 (08.04.2022): Urban Risk Management Planning – Field Exercise</b>			
12. How to make an Effective Training Session for the communities	13. Disaster Management Plan of an Institution/ Building/Community -	14. Field Activity	
<b>Day 5: 09.05.2022 Demonstration and Valedictory Session</b>			
15. Disaster Management Planning and Introduction to Incident Command System	16. Disaster Preparedness, Evacuation and Response (Simulation exercise)	17. Valedictory Session <ul style="list-style-type: none"> <li>• Sharing of experience by the participants</li> <li>• Way forward</li> <li>• Distribution of certificates</li> <li>• Vote of thanks</li> </ul>	

Figure 2: Presentation Slide: Structure of the course

### Welcome Address: Ms. Kriti Garg, IAS, Deputy Commissioner (West)

Ms. Garg emphasised that, while it is the government's role to protect and support people, a resilient society is impossible to achieve without community engagement. She also highlighted the key elements of the Ten-Point Agenda enunciated by Shri Narendra Modi at the Asian Ministerial Conference on Disaster Risk Reduction (2016) emphasising community-inclusive knowledge and resource management, capacity building and leveraging national policies and programmes for resilience. It is on this principle that this training of trainers programme to understand the urban resilience in the context of Delhi, especially the role of Civil Defence personnel has been organized.



Figure 3: Ms. Garg addressing the participants

She encouraged that this training will provide a strong environment to understand, hazard risk management, preparedness and mitigation measures to create a new horizon and opportunities for community engagement.



### Context Setting and Overview of the programme: Sh. Dharmendra Kumar, Addl. District Magistrate (West)

- Mr. Kumar commenced the address by appreciating the efforts done by Civil Defence personnel during the COVID-19 pandemic response. He highlighted that the actions taken during the COVID-19 response were criticized as Civil Defence personnel were 'not trained' to tackle such issues.
- He stated that Delhi is vulnerable to a variety of risks, including fire, earthquakes, floods, chemical explosions, building collapses, air pollution, road accidents, and health threats like the COVID-19 pandemic, dengue fever, and chikungunya, among others. These risks are placing the public, infrastructure, and environment in jeopardy. The Civil Defence personnel may help the district level administration deal with extreme situations.
- In light of Delhi's vulnerability, Civil Defence personnel should be aware of the city's perceived risks, hazards, and vulnerabilities, as well as how to assess these hazards, vulnerabilities, and risks using structural and non-structural safety assessments and the role of the Civil Defence Corps in the disaster management cycle. It's not simply because they've been taught to respond to emergencies; it's also because they've built on existing societal institutions and practices. They are recognised members of the community, and as a result, they may help to enhance the community's resilience, allowing it to grow beyond disasters.
- He remarked that disaster and emergency management require preparedness and that in order to have successful response strategies and actions, the Civil Defence personnel's capability must be reinforced. Therefore, through participation in the training programme, he encouraged the participants to expand their knowledge and share it with the community.
- He urged that training should serve as a milestone in developing the capacity of civil defence officials to fight disasters at the proper time and place. It is designed as a comprehensive, proactive, multi-hazard, technology-driven training programme as an initiative to have a safer and disaster-resilient Delhi and foster a community-based culture of preparedness for the future.



Figure 4: Sh. Kumar addressing the participants

### Key Note Address: Prof. Chandan Ghosh, Head, Resilient Infrastructure Division, NIDM

Dr. Ghosh emphasised that disaster management and disaster risk reduction are not just about crafting soft skills and providing emergency relief services and constructing more resilient buildings post-disasters. It is an umbrella of a set of actions to build the physical, social, environmental and economic capacities of the community. It includes actions from the cleanliness of your surrounding to cleaning of Yamuna river.

In this order, he highlighted the reasons behind the weak disaster management at the community level such as low morale, absence of recognition, lack of regular capacity



Figure 5: Prof. Ghosh addressing the participants

development activities, lack of awareness, inadequate infrastructure, etc. However, he stressed the need for such training and awareness workshops to improve Civil Defence personnel's functional and territorial responsibilities so that, following the training, they may become important resource persons for raising public awareness and developing a cadre of volunteers.

### **Inaugural Address: Mr. Rajender Singh, NDMA, Ministry of Home Affairs, Govt. of India**

- Mr. Singh remarked that the Civil Defence started the journey in 1968 and has experienced the change in its role during wars to national emergencies to recent community frontline warriors in the COVID-19 Pandemic. This has broadened their work horizon from national security to the safety of citizens which are two different aspects.
- He stated that India is a land of many disasters, and that volunteerism is a critical source of community strength and resilience during such events.
- Mr Singh cited the DM Act, 2005 which underlines the constitutions and role of all national, state and district authorities for disaster preparedness and response. He also highlighted that 36 states have developed a disaster management plan and various districts have developed their district disaster management plan. Additionally, the NDMA has developed 32 guidelines on disaster management and disaster risk reduction, however, the main aim i.e., awareness, implementation and monitoring of such actions at the community level can only be processed through the help of community-based leaders i.e., Civil Defence personnel, NSS volunteers, NGOs, CSOs, NCC volunteers, etc.
- Mr. Singh remarked Civil Defence personnel as Disaster Managers who know their community the best, therefore, they need to understand the underline concerns, risks, and vulnerabilities of their community, identify the hazard, the vulnerable spots, and the safe spots to build resiliency in the community.
- In this context, Mr. Singh highlighted the Aapda Mitra, an initiative by NDMA aims to provide the community volunteers with the necessary skills that might be required to help the community during and after post-disaster. Mr. Singh mentioned that the Aapda Mitra scheme was implemented in only 30 districts earlier which has been increased to 350 districts and planning to add 100, 000 more volunteers under the initiative in upcoming years. NDMA, SDMA team will be able to provide approx. 1 lakh volunteers till next year (75 thousand Aapda Mitra and 25 thousand Aapda Sakhis).
- He further stressed that the actual meaning of Aatmanirbhar Bharat, Ek Bharat Shreshtha Bharat in DRR at the local level is when the information gained during the training is put to use on the ground with community engagement to strengthen community resilience.



*Figure 6: Mr. Singh addressing the participants*

### Vote of Thanks: Mr. Nakul Kumar Tarun, Director, Zone4Solutions

Mr. Tarun extended his gratitude to all the honourable guests, key speakers, and participants to organize such a training programme. He highlighted that training Civil Defence personnel are a never-ending process. He also emphasised that the training programmes of the community-based responders is the need of hours because due to urbanization and increased climate change concerns, the intensity and frequency of the disasters are increasing. Therefore, it is essential to prepare the community through Civil Defence personnel to embrace all the impacts and build back better.



Figure 7: Mr. Tarun submitting his vote of thanks

He also advocated for the organisation of advanced training workshops for trained Civil Defence personnel in order to improve their capabilities.

### Session 1: Identifying Urban Risks & Vulnerabilities and Role of Urban Risk Mitigation

**Presenter:** Prof. Chandan Ghosh, Head, Resilient Infrastructure Division, NIDM

#### Key Takeaways

- Prof. Ghosh stated that Delhi is one of the world's most populous national capitals and has been combating pollution for decades. We've pushed for solutions like water sprinkling, odd-even transit plans, research and development, and so on, but there's still more to be done to enhance the city's air and water quality. He also highlighted the status of the river Yamuna which has been degrading for ages.
- He defined urban resiliency in the context of Delhi, where urbanization has improved the standard of living resulting in more purchasing of items like automobiles, air conditioners etc which are degrading our environment. He also highlighted that the increasing population is also pressurizing the environment, not providing it time to rejuvenate.
- Prof. Ghosh emphasised that there are modern and traditional mitigation ways. For instance, an electricity audit helps us to the analysis of the possibilities to reduce the energy consumed by electrical appliances and installations which operate in buildings. At the community level, Zone4Solutions is assisting the community to develop village disaster management plans and school disaster management plans which helps the community to identify the hazard, risks, vulnerabilities and develop community/school-owned strategical mitigation measures.
- He highlighted that the management of urban disasters is an important aspect of urban planning. We want a city that is both safe and livable. We require protection from both natural and manmade hazards. The institutionalisation of volunteerism is an important part of the



Figure 8: Prof. Ghosh interacting with the participants

urban resilience system as disaster management initiatives are more effective and sustainable when people are involved in them.

## Session 2: Institutional Mechanism for Disaster Risk Management

**Presenter:** *Shri Surendra Thakur, Joint Director (officiating) & Consultant (Admin./Training), NIDM*

### **Key Takeaways**

- Mr. Thakur initiated the session while highlighting the historical evidence of disaster management, where the kingdoms design strategic measures to prepare for famine, floods, and structural measures to address the impact of earthquakes. He also explained the evolution of disaster management pre and post-independence where disaster management was considered an emergency response and relief. However, with the declaration of the International Decade for Natural Disaster Reduction (1991-2000), the paradigm shift was encouraged where disaster preparedness and mitigation were highlighted.
- He also introduced the international forum such as the Yokohama Strategy and Plan of Action for a Safer World(1994), the Second World Conference on Disaster Reduction in Kobe (2005), etc based on which the Indian Disaster Management Act, 2005 was introduced.
- He emphasised that the DM Act, of 2005 laid the foundation of disaster management in India (after experiencing Bhuj Earthquake and Odisha Super Cyclone) and introduced the National Disaster Management Authority (NDMA), State Disaster Management Authority (SDMA), District Disaster Management Authority (DDMA), National Institute of Disaster Management (NIDM), National Disaster Response Force (NDRF), etc. to plan and execute the disaster preparedness, relief, rehabilitation, reconstruction initiatives.
- While discussing the National Policy on Disaster Management, Mr. Thakur highlighted that the goal of the National Policy on Disaster Management is to foster a culture of prevention, preparedness, and resilience at all levels via knowledge, innovation, and education. Furthermore, it stressed the necessity of community-based DM, which requires last-mile policy, plan, and execution integration, as well as all-around capacity building.
- Last but not the least, Mr. Thakur emphasised that Civil Defence personnel are the central element of emergency response, however, it is time that Civil Defence personnel not only assist the local administration in emergency response but prepare the community for the successful response, especially in metropolitan cities like Delhi.



*Figure 9: Mr. Thakur addressing the participants*

### Session 3: Pre-training Assessment, Introduction, Structure of the course, Role of NIDM in capacity building

**Presenter:** Dr. Garima Aggarwal, Senior Consultant, RI Division, NIDM

#### Key Takeaways

- Dr. Aggarwal interactively discussed the conceptual understanding of the hazards, risk & vulnerability where participants highlighted the difference between hazard, vulnerability and disaster in the context of Delhi.
- Participants emphasised that unauthorised construction, haphazard locality planning and increasing population are the social vulnerabilities that result in an economic, infrastructural and human loss in case of building fire and building collapse due to the absence of adequate escape routes. They also highlighted environmental pollution, waterlogging (urban flooding), and waste disposal as hazards in Delhi.
- During the session, the participants highlighted their role in identifying the vulnerable spots in the locality, identifying safety issues and working as a medium between the community and authority to design and deliver appropriate preparedness and responses actions.
- The participants also highlighted that they usually face issues :
  - Pre-emergency: Identifying resources and planning response
  - Post-emergency. While providing first aid to the victimOn which Dr. Aggarwal stated that the training will provide insights about the issues in brief.



Figure 10: Dr. Aggarwal interacting with the participants

### Session 4: Issues and challenges in conducting Disaster Management Training In Urban Areas- A Trainer's Perspective

**Presenter:** Dr. Rajnish Ranjan, Senior Consultant, NIDM

#### Key Takeaways

- Dr. Ranjan initiated with the quote that *the work of Civil Defence personnel is the reflection of the community*. Therefore, the Civil Defence personnel should transform into disaster Civil Defence personnel with apt capacities and attitudes.
- In this context, he highlighted that there is a need of training for disaster response, rehabilitation and recovery along providing emergency services such as basic life-saving skills, triage management, media communication and information management, casualty management
- While discussing the effective ways of training the community, Dr. Ranjan highlighted that:
  - The trainers should always have high morale and respect for the community
  - They should always have eye contact with the participants and have the confidence to be aware and mobilize the community



Figure 11: Dr. Ranjan addressing the participants

- The trainers should have adequate knowledge about the training programme, the concepts, the expected outcomes, the strengths and weaknesses of the training programme
- They should have keen eyes on the uniqueness of the trainees
- They should have appropriate communication skills
- He also discussed the design of the training programme. This includes:
  - Identifying the topics to cover during the morning or evening shift
  - Design the interactive session using role-play, games, quizzes, short videos/documentaries etc and discuss the outcomes in group activities
  - Highlight the key findings of the sessions and introduce the next schedule
- Lastly, he highlighted that while conducting the training programmes trainers should try to comprehend the training programme in a systematic and coordinated manner.

A film developed during NPDRR was also played for reinforcing the concepts and institutional mechanisms of DRM in India.

In the last Sh. Dharmendra Kumar, Addl. District Magistrate (West) interacted with the participants and Dr. Garima Aggarwal concluded Day 1 by summarizing the sessions and highlighting the PM 10-Point Agenda which supports the training program i.e. Point 1: All development sectors must imbibe the principles of disaster risk management and Point 8: Build on local capacity and initiative to enhance disaster risk reduction. She also introduced the concepts underlined in the training programme such as hazard, risk, vulnerability and capacity assessment (HRVC), structural and non-structural mitigation measures for the safe building, earthquake resiliency in Delhi, issues of environmental pollution, the status of women in disaster management, community-based preparedness, Incident Command System in DM, basic life-saving skills, etc. A total of 100 participants attended the training programme.



*Figure 12: Group Photo- Esteemed Guests*

## 3.2 DAY 2 (06.04.22): URBAN RISK IMPACTS: ISSUES, CONCERNS & MITIGATION MEASURES

MODERATOR	Mr. Shreyash Dwivedi, Jr. Consultant, RI Division, NIDM
<b>Technical Sessions</b>	
Recognition of Threats, Vulnerabilities, and Risks	Ms. Tanushree Verma, Head (Research & Training) Zone4 Solutions
Urban Environment and Disaster Risk (Pollution, Waterlogging, Transport and Solid Waste Management) and Mitigation Measures	Dr Shailendra Kumar, Asst. Prof. Miranda House, University of Delhi
Fire and Industrial Disasters in Delhi, its impact, and safety measures	Shri RC Sharma, Former Director, Delhi Fire Service
Earthquakes in Delhi, its impacts & mitigation measures	Dr. Hari Kumar, Regional Coordinator, GeoHazards, International & Head, GHS
Role of Civil Defence in Disaster Risk Reduction	Mr. Umesh Sharma, ADG (CD)

Dr. Garima Aggarwal, Sr. Consultant, RI Division, NIDM started the session by recapitulating the day 1. The participants also shared their experiences and what they learned from the training so far.

### Session 1: Recognition of Threats, Vulnerabilities, and Risks

**Presenter:** Ms. Tanushree Verma, Head (Research & Training) Zone4Solutions

#### Key Takeaways

- Ms. Verma initiated the discussion concerning DM Act 2005 and stated that it is important to identify risk and community vulnerabilities for effective disaster risk management and response plan.
- She interactively explains the hazard risk function while explaining the terms hazard, vulnerability, risk, and capacities concerning Delhi's vulnerability.
  - Disasters are catastrophic events with the potential to cause harm and are beyond the coping capacities of the people. They affect us at the international, national, regional and community levels.
  - A risk is the possibility that someone could be harmed by a hazard. It is calculated based on the likelihood and severity of the injury.
  - Vulnerability will be exposure to attack or harm and is determined by physical, social and economic conditions, and environmental situations.



Figure 13: Ms. Verma interacting with

- She explained capabilities as the ability to fight against the adverse impacts of the disaster/ emergency. For instance, in terms of the COVID-19 pandemic, the COVID-19 vaccination drives all over the world have increased communities' physiological coping capacities against the coronavirus.
- Therefore, to mitigate the hazard risks, we need to increase community coping capacities while reducing the vulnerabilities. This can be done:
  - At governance level: Increased risk communication governance, risk-reducing policies, capacity building training schemes, plans and programmes, need-based emergency response and preparedness planning.
  - At the regional level: Risk mitigating disaster management plans, capacity development policies and strategies, strengthening community dependency on natural resources with Eco-DRR.
  - At the individual level: Hazard risk, and vulnerability differs from person to person. Therefore, it is important to strengthen individual capacities through awareness campaigns and life skill education and training .
- While explaining the role of Civil Defence personnel in disaster management, she highlighted that Civil Defence personnel, the face of the community, can understand the community risks and vulnerabilities in a localized manner. In this context, she explained the Hazard Risk Vulnerability and Capacity assessment (HRVC) tools and techniques.
- She emphasised that due to increased population, inappropriate development and increased frequency of disasters, the intensity and magnitude of the disasters will increase. Increasing the resilience of communities in the face of disasters is only possible with effective capacity building and community ownership of disaster management initiatives.

### Question during Session

**Question:** Increase in the number of vehicles on road can transform into a catastrophic event. What can be done to prevent such events?

**Answer:** The increased number of vehicles on road or localities increased the risk of accident morbidities. To prevent this, carpooling, walking in assemble areas, etc can prevent such accidents while managing the crowd.



## Session 2: Urban Environment and Disaster Risk (Pollution, Waterlogging, Transport and Solid Waste Management) and Mitigation Measures

**Presenter:** Dr. Shailender Kumar, Assistant Professor, Centre for Environmental Studies & Disaster Management, Miranda House, Delhi University

### Key Takeaways

- Dr. Kumar commenced the session with an understanding of the urban environment.
- Delhi being a complex city, Dr. Kumar explained the concept of urban city development and emphasized that the demographic profile of a region is the determining factor for the city's growth and its changing environment. For instance, Urban Delhi has the largest urban



Figure 14: Dr. Kumar addressing the participants



population (97.50%), Census 2011. This has changed the land use and land cover pattern of the area resulting rapid urbanization.

- In the context of rapid urbanization, Dr Kumar explained the associated urban disaster risks such as environmental pollution, urban floods, urban fires, earthquakes, epidemic and pandemic breakouts, emission of hazardous gases, solid waste issues, etc.
- Dr. Kumar interactively defined environmental pollution as any undesirable change in physical, chemical, or biological characteristics of any component of the environment i.e., air, water, or soil which can cause harmful effects on various forms of life or property. Noise pollution is also an issue in metropolitan areas like Delhi.
- The source of pollution can be physical (addition of contaminated material), chemical (toxic metals), or biological (bacteria) elements can that can alter the characteristics of water, air, soil through natural or human activities (such as municipal wastewater, organic pollutants, inorganic materials, commercial waste, industrial waste, agricultural waste, thermal waste) and making it unsuitable for its designated use.
- Dr. Kumar concentrated on the urban issue of waterlogging, which is triggered by the addition of effluents to the river Yamuna, which changes the river's morphology and physicochemical characteristics. Waterlogging in cities has an impact on public mobility, changes the pH of the soil and soil nutrients, accumulates hazardous salts, and has an impact on cash crops. In addition, stagnant water in suburban areas can lead to vector-borne illnesses.
- Furthermore, he focused on another urban issue of noise pollution caused by transportation systems, industrial systems, onsite construction, loudspeakers, generators, etc affecting us physiologically and psychologically.
- He also described how high population density, traffic congestion, residential areas, commercial centres, and infrastructural facilities, among other factors, have contributed to increasing air pollution and heat, as well as preventing pollutants from escaping. Lung and heart illnesses are becoming more prevalent as a result of this. He also brought up the subject of global warming and climate change.

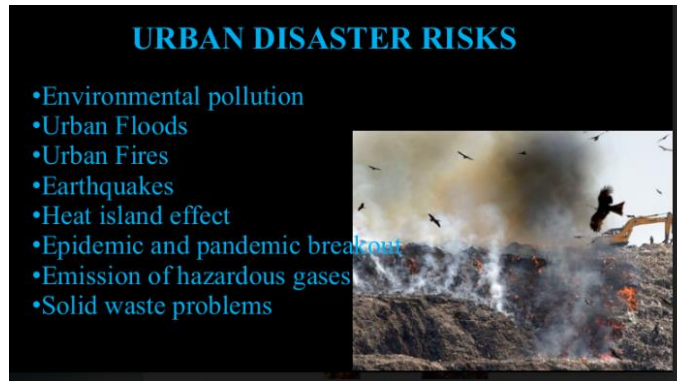


Figure 15: Presentation Slide: Understadning Urban hazard risks

- Dr. Kumar emphasised solid waste management, stressing that it becomes a difficulty post a disaster, mentioning the COVID-19 pandemic as an example, in which medical and sanitary waste management were major concerns. Dr Kumar presented the community and organisational level initiatives to recycle and produce new goods to decrease garbage disposal at landfills using a case study of Delhi (<https://youtu.be/iE7UGKmUcxo>).
- He elaborated that preventing the waste and pollutants discharged into the source is an important step for pollution prevention. For this, it is essential to have operational, technical and administrative capacity development at all levels. As for the community-based solutions, Dr. Kumar suggested a few as shown in figure 16.
- He concluded by stating that several governmental authorities need to start developing an action plan for pollution-disaster risk reduction to reduce the risk of environmental pollution effects and regional pollution data Inventory preparation is needed for all the spheres. In this Civil Defence personnel can play a central role as frontline fighters and awareness campaigners.

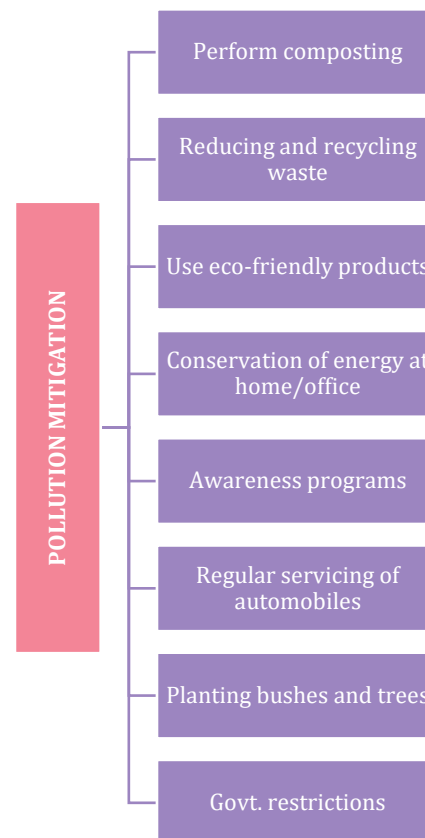


Figure 16: Community based remedies for pollution

### Session 3: Fire & Industrial Disasters in Delhi, its Impacts and Safety measures

**Presenter:** Mr. R.C. Sharma, Former Director, Delhi Fire Services

#### Key Takeaways

- Mr. Sharma commenced the lecture by elaborating on minor electrical fire incidents emphasizing the need of being aware of our surroundings (entry-exit points, number of rooms, approx. footfall), including our home layout, office, mall, hospitals, and so on, and being prepared for emergencies such as fire.
- He emphasised that because fires occur suddenly and swiftly, one must constantly remain vigilant and respond immediately. To do so, one must always be aware of potential fire hazards in the local vicinity. Switching off the main switch, for example, is the basic step in an electrical fire (the source of current). During LPG leakage, one should not provide any spark and should switch off the LPG Gas valve immediately.
- While discussing the industrial fire hazard risk, Mr. Sharma discussed the rules of W.R.T. fire safety in industries in Delhi. He also mentioned the categorization of industrial Buildings as per National Building Codes based on the area covered:



Figure 17: Mr. Sharma addressing the participants

- Subdivision G-1 Buildings (low hazard industries),
- Subdivision G-2 Buildings (moderate hazard industries) and
- Subdivision G-3 Buildings (high hazard Industries)
- There are around 29 industrial areas in Delhi, however, there are countless small size industries throughout the region with weak infrastructure, according to the discussion. Mr Sharma also highlighted the lack of industrial law regulation and administrative capacity to troubleshoot violations of by-laws with examples like the Okhla fire, transport godown fire in the Mahipalpur area, etc.
- Mr. Sharma illustrated how unauthorised clustered dwellings pose a fire risk due to unplanned building construction .
- Mr. Sharma mentioned, Data from Delhi Fire Service (DFS) showed that in 2020 about 14,785 fire incidents were reported, while firefighters attended to 15,687 calls last year.

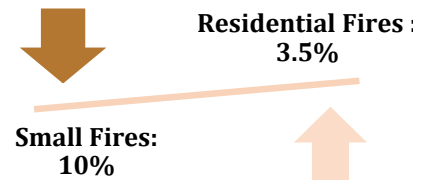


Figure 18: Status of Fire incident in 2021

- In Delhi, the majority of industrial accidents are fires caused by combustible material and injuries caused by power press equipment.
- In addition, according to Indian Labour Statistics, the number of fatal injuries from industrial accidents increased every year from 2017 to 2022 across the country. According to government data, there were a total of 27343 fire accidents in 2020-21, resulting in 591 deaths and 1421 injuries.



Figure 19: Presentation Slide: Fire incidents sites

- Mr. Sharma advised :
  - **Training and Capacity Development:** City-level fire assessments, training, and frequent exercises in small-scale household enterprises in congested locations of Delhi, such as Gandhi Nagar, should be implemented to strengthen fire safety arrangements on-premises.
  - **Governance:** Strong policies and good execution at the governance level are the keys to eliminating the probability of frequent fire accidents. Inter-departmental awareness programs and capacity building are critical in this context.
  - **Emergency Preparedness:** Several factory-level measures such as automated fire suppression system sprinklers, potable extinguishers (together with instructions on how to use them), and Hose Reel as effective remedies to any fire concerns.
- As concluding remarks, Mr. Sharma urged that we cannot depend on external agency for saving the Life in Industries. Bare minimum facilities need to be provided & maintained. However, our alertness and quick response is what can save us. Therefore, such a session of Civil Defence personnel is essential for community preparedness.

## Session 4: Earthquakes in Delhi, its impacts & mitigation measures

**Presenter:** Dr. Hari Kumar, Regional Coordinator, Geohazard International & Head, GHS

### Key Takeaways

- Dr. Kumar emphasised that awareness about building by-laws, National Building codes, earthquakes, and the importance of earthquake-resilient structures are very important, especially in highly prone areas like Delhi, northeast and north India.
- He also emphasised the need for earthquake-resistant critical structures, like hospitals, DDMA offices, and the Delhi Secretariat, which must remain safe and operational for emergency relief and response in post-disaster scenarios. This underlined the importance of the buildings' structural and non-structural safety.
- The session also covered the fundamentals of earthquakes and tectonic movement, with Dr. Kumar explaining that the earth's crust is split into a few minor and major plates, and earthquakes are caused by the movement of these tectonic plates.
- He also went into great detail on the development of these plates and the Indian subcontinents, as well as the formation of the Himalayas, to show why earthquakes happen and why Delhi is so vulnerable to them. The session also focused on the Indian earthquake zones divided based on Modified Mercalli (MM) intensity, which measures the impact of earthquakes: Zone V (very severe intensity), ZONE IV (severe intensity), Zone III (moderate intensity), and Zone II (low intensity).
- While discussing the susceptibility of Delhi, Dr. Kumar explained the topography of Delhi as an influential factor in the vulnerability of the people. Regions with hard rock will feel less seismic tremors than the soft soil regions (nearby river the Yamuna).
- The session emphasised the necessity of earthquake-resistant buildings in earthquake-prone areas with high population density. The type of building architect and size of the building (such as tall buildings, L-shaped buildings, and buildings with unplanned basement parking areas, congested buildings) affects the building's safety.
- While discussing how some non-structural aspects might endanger persons and property, it was brought out that some non-structural elements can be dangerous (non-structural risk). As a result, it's critical to comprehend non-structural earthquake mitigation, which entails what individuals may do on a personal level in their households and workplaces to minimise damage. He also suggested the do's and don'ts during earthquakes.



Figure 20: Dr. Kumar addressing the participants



Figure 21: Presentation Slide: Non-structural mitigation for earthquake

- When it comes to the duty of Civil Defence personnel, Dr. Kumar stressed that they must help the community during times of disaster, but they must also be safe and prepared. He also emphasised the family's preparedness for hazard risks, as well as the cascading effects like short-circuits, minor injuries, and other incidents.

## Session 5: Role of Civil Defence in Disaster Risk Reduction

**Presenter:** Mr. Umesh Sharma, ADG (CD), O/o DG (FS, CD & HG)

### Key Takeaways

- Mr. Sharma initiated the session with an understanding of role of Civil Defence with the example of the COVID-19 Pandemic where the Civil Defence personnel worked on the behalf of civil administration at ground level to reach the last mile of the community. He also emphasised that the role of civil administration has evolved from World War II. He added that war and disaster scenarios are similar as it affects life property, environment, economy, and internal security and is not confined to geographical borders.
- He also introduced the Provisions of Civil Defence Act (1968) and states that as community first responder, Civil Defence personnel should be ready to assist anyone in need.
- In this context, he appreciated Civil Defence personnel ' efforts during COVID-19 where they provided support in prevention, management, spreading awareness and mass vaccination at community level,
- He emphasised effective DM plan would support in quickly recovering from any disaster impact. Civil Defence personnel being interface between community and government can help in development of effective DM plan at community level quickly.
- DRR involves taking action now, before the next tragedy strikes, which necessitates a comprehensive review of the community's hazards, risks, vulnerabilities, and capacities.
- While highlighting the role of Civil Defence personnel in DRR, Mr. Sharma emphasised that the aim of Civil Defence is to save life and property; minimize damage and effect of hostile attacks and disasters; maintain continuity in production, raise public morale and assist the community in times of national emergency/ disaster.
- He added that the Civil Defence personnel can play a major role in DRR at the community and administrative levels as assets.



Figure 22: Mr. Sharma interacting with the



Figure 23: Presentation Slide: Civil Defence personnel during COVID-19 response



- Therefore, it is important for the Civil Defence personnel to understand the hazards and potential risks of locality, know the mitigation mechanism well, respond with local resources and equipment, and understand the requirement for additional resources.
- Lastly, Mr. Sharma urged that to strengthen the community's first responders, it is essential to have Regular Civil Defence personnel Training, Equipping and Joint Exercises, Build Training Capacity and prepare Master Trainers. At the administrative level, it is essential to activate 12 Services at each district and train Civil Defence personnel services-wise and have effective Union State Coordination & Synergy.
- He concluded that we can't do everything but we can do something, therefore, we should intend to do them right.



Figure 24: Presentation Slide: 12 Services of CD

In the last Dr. Garima Aggarwal, Senior Consultant RI, NIDM concluded Day 2 by summarizing the events that happened. Participant interaction with the presenters also took place to highlight the important learnings such as fundamental of earthquake, how do we manage fire safety in homes and prepare for a management-related issue, how are the people of Delhi affected by pollution and polluted water, mitigation measures for pollution at community level and the importance of Civil Defence personnel in DRR. They are highlighted the HRVC assessment procedures and the need of urban resilience in Delhi.



*Figure 25: Glimpse of interactive session*

### 3.3 DAY 3 (07.04.22): MAINSTREAMING ISSUES ON DISASTER RISK REDUCTION

<b>COORDIANTOR</b>	Mr. Shreyash Dwivedi, Jr. Consultant, RI Division, NIDM Mr. Shaad Warsi, YP, RI Division, NIDM
<b>Technical Sessions</b>	
<b>Community Based Urban Disaster Risk Management</b>	Ms. Tanushree Verma, Head (Research & Training) Zone4Solutions
<b>Inclusive Disaster Management</b>	Mr. Nakul Kumar Tarun, Director, Zone4Solutions
<b>Women leadership in DRR- Issues and Policy</b>	Ms. Shikha, Women Welfare Officer, District Magistrate Office, Raja Garden
<b>Non-Structural Mitigation measure</b>	Dr. Garima Aggarwal, Senior Consultant, RI Divison, NIDM

Dr. Garima Aggarwal, Senior Consultant, RI Divison, NIDM & Mr. Shreyash Jr. Consultant, RI Division, NIDM started the session by recapitulating Day 2. Dr Aggarwal, discussed how to interact with the audience and create effective communication. The participants also shared their experiences. The participants also discussed:

- The HRVC assessment and gave examples of what to look for, such as non-structural risk in the building, hazardous areas, and vulnerable population sites, among other things.
- The importance of emergency response training and simulated exercises in identifying gaps and collaborating on a successful response and mentioned that items like a torch, perishable food packages, batteries, first aid kits, cash, shoes, and shocks that can be included in a personal emergency kit.
- The necessity of family knowledge in responding to any emergency. Participants recaptured the discussion on earthquake non-structural mitigation held the previous day.



Figure 26: Glimpse of interactive session



## Session 1: Community Based Urban Disaster Risk Management

**Presenter:** Ms. Tanushree Verma, Head (Research & Training) Zone4Solutions

### Key Takeaways

- Ms. Verma interactively discussed the community's perception of hazards and how we can assess hazard risk vulnerability and capacities to understand the risks we are exposed to. She added that the HRVC assessment is the initial step to creating a community-based disaster management plan. This step requires identifying the issues so that the DM plan can provide solutions to them. This includes hazard identification and response plan as two-component of it as shown in figure 28.
- While explaining the process of HRVC assessment, she explained that it is an essential step to gather information through informal discussions for need assessment, planning, implementation, monitoring of programme, design disaster management plan or any emergency strategy as it reflects the existing risks, vulnerabilities and capacities of the community.
- She explained about various tools of data collection as part of need assessment and planning.
- Ms. Verma discussed the diagrammatic techniques to represent the hazard analysis such as Seasonal and Historical Diagrams, seasonal calendars to estimate the occurrence seasonality of the hazards, and historical diagrams to understand the frequency of the hazard and risk ranking and scoring. This is a part of the step of Rapid Visual Screening (RVS) in which the team should interact with the locals to understand the community profile such as past hazards, the damage and loss, existing demographic units, etc.
- The second step is hazard hunting or hazard identification, in which the experts look for the potential hazards, the structural and non-structural risks, identify hazards within the vicinity and outside the vicinity and the history of previous emergencies with the intensity and area, identify the vulnerable spots and community. This helps the team to understand the hazard risks which will be useful in planning mitigation measures. After



Figure 28: Ms. Verma interacting with the participants

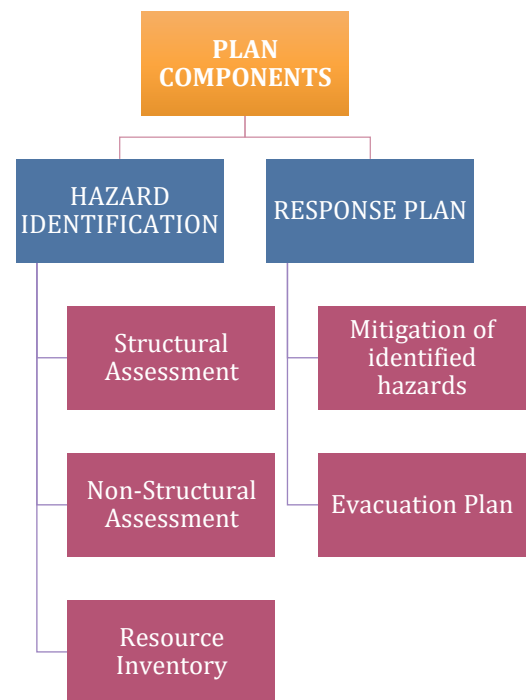


Figure 27: Steps on HRVC Assessment

understanding the potential hazards within the community, it is important to prioritize the hazard risks. The multi-hazard community survey will require an understanding of each identified hazard along with Frequency, Magnitude, Severity, and Risk Priority (Hazard Assessment Matrix, Venn Diagrams). She added that a Transact walk of the area is an essential part of the step.

### Hazard Assessment Matrix

Likewise the frequency of hazards can be plotted against their intensity at a place below. Based on frequency and intensity of hazards, it may be assessed on the basis of low frequency – high intensity or high frequency- low intensity hazards. The purpose of creating these matrices is to identify the most critical hazards to be planned for.

Frequency of Occurrence	Hazard Assessment Matrix			
	Hazard Categories			
	Catastrophic	Critical	Serious	Minor
Frequent	Unacceptable	Unacceptable	Unacceptable	High
Probable	Unacceptable	Unacceptable	Medium	High
Occasional	Medium	Medium	Medium	Low
Remote	Medium	Low	Low	Low
Improbable	Low	Low	Low	Low

Unacceptable
High
Medium
Low

Figure 29: Presentation Slide: Hazard Assessment Matrix

- She explained that a hazard cannot do damage without vulnerability, and hence it is critical to assess vulnerability. Vulnerability represents the weakness of the community which can be attributed to its exposure by being located at a certain place to its various demographic, social and economic characteristics that enhance its likelihood to experience damage.
- In the community vulnerability assessment, the team needs to look at vulnerability through a physical, socio-economic and environmental lens. For instance, the vulnerability of different age groups will be different, PwD, women, elderly and children will be more vulnerable in some contexts, poor people will be more socio-economically vulnerable than others.
- Additionally, it is important to map the available resources of the community including human, technical, cooperative and financial resources as capacity assessment. This will help in estimating the hazard risk, vulnerability of the community to acceptable, tolerable, undesirable and intolerable risks.
- She explained the formation of the DM teams (in accordance with the risks, impact and area to be affected) such as search and rescue, etc determining the roles and responsibilities, and the number of members required in each team. The next step she explained was the capacity building of these teams.
- She also highlighted that the testing process (stimulation-redrafting SOP-stimulation) is one of the essential elements to increase the capacity of the community to a satisfactory level through regular mock drills.
- Lastly, Ms. Verma highlighted the Disaster Management cycle and its phases. She emphasized that Civil Defence personnel have significant role in all the phases of disaster management.

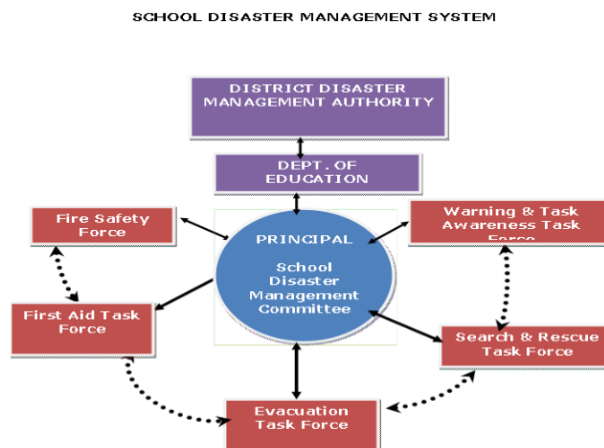


Figure 30: Presentation Slide: Instance of School Disaster Management System

## Session 2: Inclusive Disaster Management

**Presenter:** Mr. Nakul Kumar Tarun, Director, Zone4Solutions

### Key Takeaways

- Mr. Tarun initiated the session with the concept of inclusiveness in DRR which includes disaster planning. In this context, Mr. Tarun discussed the importance of children with disability inclusiveness in school disaster management plan as these children are one the most vulnerable section of the community due to their age and disability.
- Mr. Tarun mentioned that Zone4Solutions has designed approx. 4500 school disaster management plan and two model village disaster management plans together in collaboration with SRMIST University, Chennai for two villages of Chengalpattu district, Tamilnadu viz; Pattaravakkam and Thenmelpakkam. Using the example of Amar Jyoti School for Inclusive Education, Delhi was the organization that designed a disabled children's inclusive disaster management plan.
- He explained about various techniques being adopted by Amar jyoti school to make it disable friendly like installing flashlights to alert the students about the emergency, and alarms with strobe lights and ramps for all facilities. Similarly, to address the issues with children with multiple disabilities, the classes of those have been shifted to the ground floor of the school to make the evacuation process easier. Additionally, the developed evacuation routes have been displaced all around the school and for visually impaired students it has been developed in Braille, the school has also installed tectiles.
- He highlighted the fact that it is essential to train the students, staff, and the stakeholders to make them resilient through organizing regular mock drills and training for teachers, staff, and students on the school campus. And thus, an initiative was launched in school, opting for Indian sign language as a third language, and the training in sign language has been provided regularly to teachers and students in school.
- Mr. Tarun also discussed the procedure of the school disaster management plan as shown in figure 33.



Figure 31: Mr. Tarun interacting with the participants



Figure 32: Presentation Slide: Self-glow floor evacuation plan for school designed by Zone4Solutions

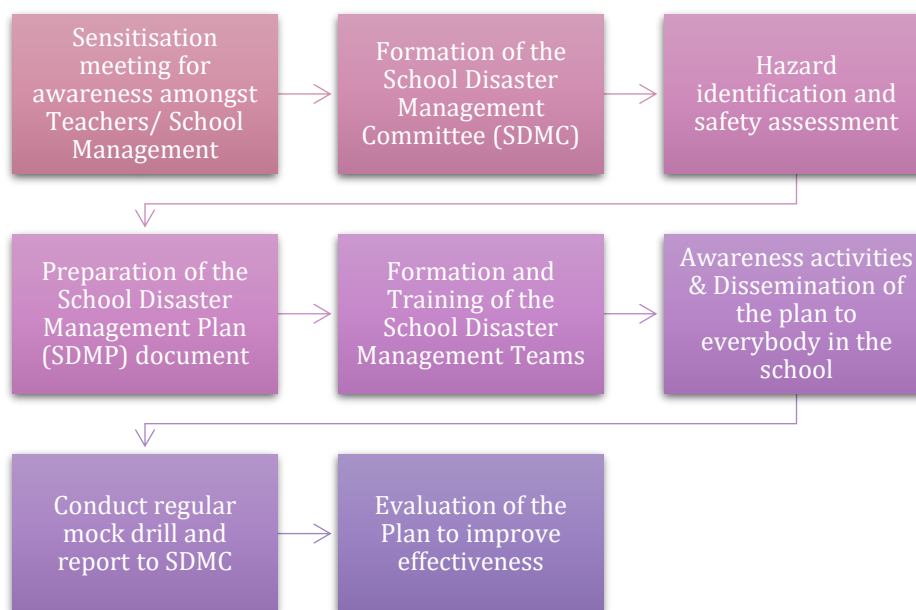


Figure 33: Steps of School Disaster Management Plan

- This all is documented in the School Disaster Management Plan (SDMP) which is now tested to understand its effectiveness and limitations such as its operationalization of different task forces, through hazard stimulation.
- He highlighted that the regular mock drills is one of the essential elements of the SDMP to test the plan and SOPs.

### Session 3: Status of role of Women in Disaster Based Community Management

**Presenter:** Ms. Shikha, Women Welfare Officer, District Magistrate Office, Raja Garden

#### Key Takeaways

- Ms. Shikha pointed out that the overall population of India in 2021 had a sex ratio of 108.18 men per 100 females. Due to gendered vulnerabilities and socio-cultural taboos, women are stereotyped, preventing them from accessing resources, opportunities, and information.
- She mentioned challenges faced by women during and after the impact of disaster that increased their vulnerability like such as :
  - Lack of decision-making capacities at the household level,
  - Less knowledge and skills to respond to any emergency,
  - Less exposure to capacity building training,
  - Lack of knowledge about policies and services for women empowerment,
  - Inability to recognise leadership quality of women.
- She emphasized that while women's vulnerability to disasters is often highlighted, their actual and potential roles in disaster risk reduction (DRR) have often been overlooked.



Figure 34: Ms. Shikha discussing gender disparities

Therefore, there is a need for a shift in society's perspective. Women should be the first catalysts for change in the home and that policies affecting women should be channeled via civil society.

- Ms. Shikha also discussed the status (limitation) of women in the disaster management cycle:
  - **Pre-Disaster/Normal scenario:** Unequal representation of women in planning and decision making
  - **During disaster:** Minimal access to early warning systems; as a caregiver, it becomes a responsibility to look after the dependent, due to cultural and social taboos restrictions of movement.
  - **Post-disaster:** Limited access to privacy, space and increased family responsibility
- Furthermore, she emphasised that both males and females should get equal opportunities to learn, especially at the grass-root level. She discusses the need for capacity-building programmes for women with a focus on sustainable practices, as well as measures to improve women's leadership at the local level. This procedure should also incorporate Mahila Mandalas, CBOs, and SHGs. Women's engagement at all levels must also be assured by a constructive attitude to preparedness and development activities that do not demotivate or blame women. She showed a short film called 'Devi' on women empowerment.
- Last but not least, Ms. Shikha emphasised the importance of mainstreaming programs for women's equality, such as gender budgeting, gender-centric policies (in areas like as education, health, sanitation, and security) in order to achieve long-term sustainability.

#### Session 4: Non-Structural Mitigation measure

*Presenter: Dr. Garima Aggarwal, Senior Consultant, RI Divison, NIDM*

##### **Key Takeaways**

- Dr. Aggarwal with an instance of a mountainous region explained the concept of risk mitigation and prevention where communities' location and land use planning determined the possibilities of risk mitigation from landslides.
- She discussed the many categories of disasters, and introduced the disaster management cycle and elaborated on the phases of disaster management i.e., prevention and mitigation are to reduce the risk (through HRVC assessment, planning and strategic measures, capacity building), whereas response, rehabilitation and reconstruction are the phases aftermath of the disaster to provide relief and recovery from the impact of disasters.
- A clip of 10 top earthquakes and their effects was played to demonstrate how structural and non-structural destruction takes place. Various structural and non-structural mitigation measures were discussed in the session, especially for earthquakes such as do's and don'ts during earthquakes when one is outside of the building, inside of the building. Few participants demonstrated it. She also emphasised the need for family preparedness, which includes children.



*Figure 35: Dr. Aggarwal addressing the participants*

- While discussing structural measures, it was discussed that the structure of the building is very important to protect ourselves. The force of the seismic waves and the magnitude of the earthquake that will occur is extremely difficult to predict. The actual forces that may be created in a building during an earthquake are enormous, and it is extremely expensive to construct buildings that are resistant to all of these forces. The goal of earthquake-resistant construction is to keep the building from collapsing during vibrations, and ductility is a key attribute to look for in such a structure.



*Figure 36: Participant demonstrating the do's during earthquake when sitting.*

- The necessary remedial measures that aid in reducing the losses that occurred by the earthquake are planning of the building, the band's provision, the joints of beam-column, the foundation, the domes, the staircases, the masonry building, the arches. For example, in mountainous areas, the cone-shaped roof is relatively common, since it avoids the build-up of high loads of snow or heavy rainfall and glides it down, keeping the roof from collapsing under the weight.
- Reinforced concrete constructions are fairly widespread in India nowadays. An RC structure is made up of horizontal elements such as beams and slabs, as well as vertical elements such as columns and walls. The session also shed light on the malfunctioning metros and the adverse impact of the structural destruction during an event of an earthquake.

At the end of the day Dr. Garima Aggarwal, Senior Consultant, RI Divison, NIDM concluded Day 3 by summarizing the events that happened. Participant interaction with the presenters also took place to highlight the important learnings such as fundamental of earthquake, the non-structural measures for earthquake. They also highlighted the need to women leadership in DRR and how children should be also be aware of the hazards and hazard response. Lastly, Dr. Aggarwal illustrated the purpose of the group activity that will help on the next day. She explained the procedure and what are the expected outcome.



*Figure 37: Glimpse of interactive session at the end*

### 3.4 DAY 4 (08.04.2022): URBAN RISK MANAGEMENT PLANNING – FIELD EXERCISE

COORDIANTOR	Mr. Shreyash Dwivedi, Jr. Consultant, RI Division, NIDM Mr. Shaad Warsi, YP, RI Division, NIDM
Key Note Address/ Interaction with the Civil Defence Trainers	Sh. Taj Hassan (IPS), Executive Director, NIDM & DG (FS, CD, HG), Ministry of Home Affairs, Govt. of India
Technical Session	
Key elements of the effective training program	Dr. Anamika Rohilla, Ph.D (Education) Asst. Prof., DIET
Field Exercise	
Disaster Management Plan of an Institution/ Building/Community - Presentation on Steps, Group Formation, assigning roles, and briefing on Group Exercise (Participants will be divided in the 4 groups to conduct field exercise on DM Planning at nearby 4 locations: <ul style="list-style-type: none"> <li>• Group 1: Office DMPlan of DG CD Hq. office</li> <li>• Group II: Shivaji College</li> <li>• Group III: DC, MCD Office (West)</li> <li>• Group IV: Office of Deputy Commissioner (West), GoNCTD</li> </ul>	Coordinated by NIDM, DDMA(W) and Zone4Solutions

Dr. Garima Aggarwal, Senior Consultant, RI Division, NIDM, and Mr. Shreyash Jr. Consultant, NIDM's RI Division, commenced the session by summarizing day 3 and inviting the participants to share their experiences. The following topics were also covered by the participants:

- **Women Empowerment:** The participants criticised women's gender roles and cultural taboos, which impede their privacy, access to information, right to speak, and opportunity to educate. Women, particularly at the family level, were emphasised as playing a significant role in disaster response and recovery. Their impact on organisational decision-making, however, is negligible. The participants also criticized gender-based violence, girl trafficking, sexual assault and rape that women face during the COVID-19 pandemic and highlighted that Civil Defence personnel should not solemnly work during emergencies. It is their responsibility to provide safety to the needy whenever, wherever.
- **Understanding hazard, risk, vulnerability and capacities:** In the context of Delhi, the participant related the hazard, vulnerability, and associated risks. They also highlighted how non-structural mitigation may save lives, and how Civil Defence personnel, as responsible citizens, should enlighten communities about the risk that surrounds them and how to reduce their effects.
- **Disability inclusive disaster management:** Although different groups may confront the same hazards, their capacities dictate their safety. However, common experience shows that people with disabilities are more likely to be left behind when resources are few. The participants were encouraged to make it their exclusive responsibility to guarantee that



everyone is included before, during, and after an emergency. A disaster management plan must be inclusive in nature and developed under the guidance of qualified disaster manager.

- **Structural and non-structural mitigation:** Participants emphasised that structural measures are physical structures and engineering approaches that minimise building risk and make structures more hazard-resistant whereas non-structural measures are any actions taken to reduce risks inside the building (policy, public awareness, training, and practise).



*Figure 38: Glimpse of interactive session*

**Key Note Address: Sh. Taj Hassan (IPS), Executive Director, NIDM & DG (FS, CD, HG), Ministry of Home Affairs, Govt. of India**

### **Key Takeaways**

- Sh. Taj Hassan (IPS), ED NIDM, interacted with the participants and highlighted that the training is for the trainers, not volunteers. Therefore, it is important that each one of us should learn as much as we can through the session and apply the learnings on the ground for effective emergency response.
- He appreciated the efforts done by Civil Defence personnel during the COVID-19 Pandemic response as the largest force deployed in district magistrate offices irrespective of the challenges they faced.
- While interacting with the participants, Sh. Hassan suggested that creating weekly training modules by the trainers present in the training program can play a significant role at the community level to create a multiplier effect.



*Figure 39: Shri Hassan addressing the participants*

- Sh. Hassan highlighted the organizational hierarchy of training and what scope of work of NIDM and DDMA's.
- The primary goal of NIDM is to generate a pool of skilled resource individuals (at the national, regional, state, and local institutional levels) and increase their capacity to disseminate information down to the final community level through training like this.
- Lastly, he stated that such training is required to improve the capabilities of community frontline responders. The goal is to establish a dynamic community that balances authority, brings the group together in decision-making, addresses disputes, resolves difficulties, and manages individual and communal tasks by responding to and recovering from hazardous events.

### Session 1: Key Elements of the Effective Training Program

**Presenter:** Dr. Anamika Rohilla, Ph.D (Education) Asst. Prof., DIET

#### Key Takeaways

- Dr. Rohilla provided a brief about the District Institute of Education and Training's (DIET) goal and admissions criteria. She stated that DIET was founded to give academic and resource assistance at the grassroots level to ensure the success of diverse education policies and programmes.
- While discussing the function of DIET, she highlighted that rather than training, we are here to have professional development. DIET providing :
  - Pre Service training- training after high school (D.EL.ED);
  - In-Service training – teacher from school (DOE, NDMC, MCD, PRT TGT, PGT)
  - Additionally, the DIET provides development material for Yuva, Happiness, and Desh Bhakti, assist the authorities in the research (related to pedagogy, issues related to teachers teaching methods) and organize faculty development program (exchange program, training workshops to upgrade the teaching).
- She also highlighted that the DIET works and supports the district administration in curriculum and pedagogy, work experience and vocational, school leadership and management, Life skill and civic education (EVGC), Educational Research & Training, Information technology, and special education needs, program implementation unit.
- Furthermore, she explained the constitution of the State Council of Educational Research & Training (SCERT):



Figure 40: Dr. Rohilla addressing the participants



- She also highlighted the programmes and innovative programs that DIET and DDMA's have jointly working on :

- Cluster leadership development program
  - Mentor teacher program
  - Teacher development coordinator program
  - Entrepreneurship mindset curriculum
  - Happiness curriculum
  - Desh bhakti curriculum
- Dr. Rohilla introduced the seven important steps for an effective training program. Creating an effective training program requires knowing and understanding the goals of the training, as well as the possible problems you could encounter. This includes:
    - The most significant component of the programme is **defining the training objectives** and subsequent targets.
    - It's also vital to explain the **training process**, the expected outcome, and the evaluation mechanism (if any). It is critical to have a transparent interactive programme
    - Currently, cognitive methods are more prevalent, with a greater emphasis on theoretical teaching in order to stimulate learning through workshops, **demonstrations**, and debates.
    - Dr. Rohilla stated that there is always a need to encourage more hands-on practical training focused on improving behavioural skills connected to the functionaries' and personnel's given tasks and responsibilities. **Observation** and **study trips** (OSTs), games and simulation exercises, mock drills, Field Assignments, Case studies, and roleplays are all examples of methods connected to this.
    - She also stressed on the need of providing meaningful **feedback** to keep participants motivated and interested.
    - Finally, Dr. Rohila stated that **confidence** comes from our experiences and how we've learnt to react to various situations. As a result, as community leaders, Civil Defence personnel should constantly be confident in their abilities to instruct the community and execute their duties.
  - Dr. Rohila further underlined the need for **follow-up** in all training contexts since it gives participants with additional assistance and opportunities for skill improvement. In addition, follow-up enhances both current and future training programmes. She concluded his presentation by thanking everyone for their positive comments and encouragement.



Figure 41: Presentation Slide: 7 Steps for Effective Training Program

### Field Exercise

After the technical session, the participants formed 4 groups for a field visit. All 4 groups were assigned tasks to do with help or questionnaires. Each group visited the allotted space for the survey. Group wise field visits:

**Group 1** - TDI Mall & Wave Cinema.  
**Group 2** - DM Office

**Group 3** - Directorate General of Home Guards.  
**Group 4** - Shivaji College

Trainees were given Google forms to identify basic structural and non-structural issues in the public buildings such as cinema hall, mall, DM office and DG office (Annexure 4.4). Dr. Aggarwal, Sr. Consultant, RI Division, NIDM briefed about the procedure to perform the activity, 'Disaster Management Plan of an Institution/ Building/Community'. She highlighted that it is important to

look at the past emergencies the buildings have faced along with the structural and non-structural risks. She also emphasised observation rather than just survey fills up. The survey includes identifying the building premises, Age of Building, Normal occupancy of the building, Hazards/Emergency the building faced in the past 5 years, Construction Type, Roof Type, No. of Rooms and floors, and Fire Suppression System, etc. In the end, the participants shared their experience on field, and presented maps prepared by each group as shown below:



Figure 42: Glimpse of the Field Exercise

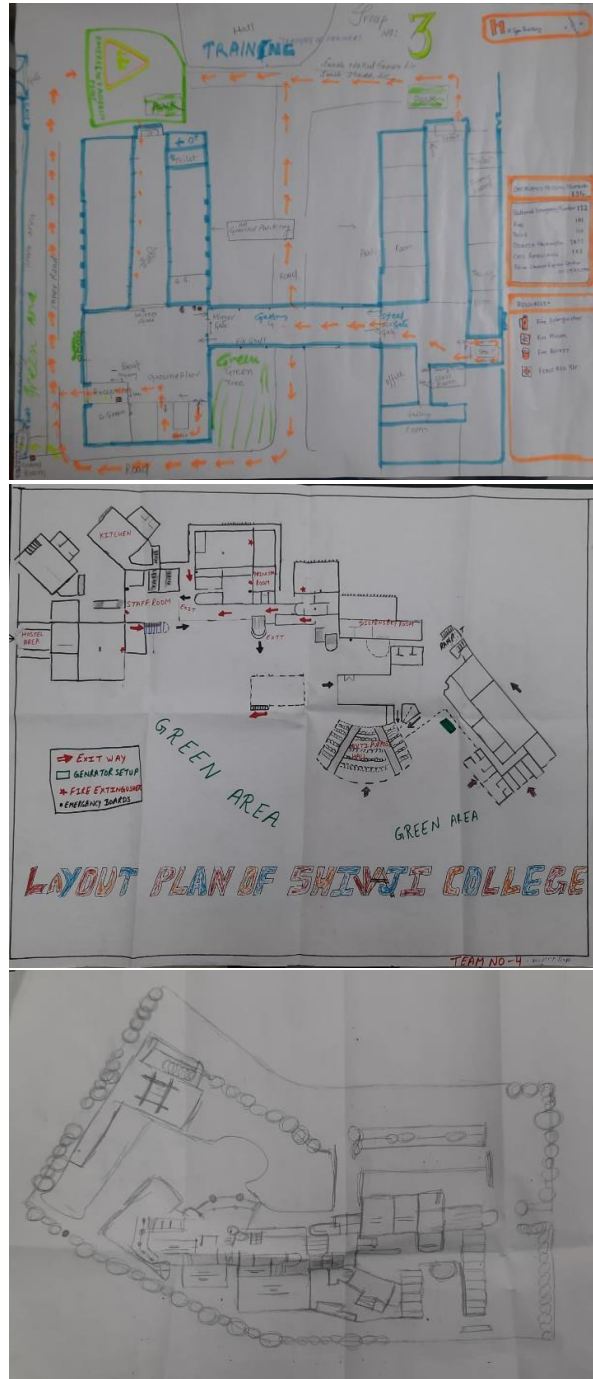


Figure 43: Layout maps of the visited building developed by the groups

## 3.5 DAY 5 (09.05.2022): DEMONSTRATION AND VALEDICTORY SESSION

COORDIANTOR	M.r Shreyash Dwivedi, Jr. Consultant, RI Division, NIDM
<b>Technical Sessions</b>	
Community Based Urban Disaster Risk Management	Ms. Tanushree Verma, Head (Research & Training) Zone4Solutions
Disaster Management Planning and Introduction to ICS	Mr. Nakul Kumar Tarun, Director, Zone4Solutions
<b>Field Exercise</b>	
Disaster Preparedness, Evacuation and Response (Simulation exercise)	Presentation and Demonstration by NDRF(HQ)
Group Presentations	Experience Sharing about the learnings by the participants
<b>Valedictory Session</b> <ul style="list-style-type: none"> <li>• Sharing of experience by the participants</li> <li>• Way forward</li> <li>• Distribution of certificates</li> <li>• Vote of thanks</li> </ul>	Sh. Dharmendra Kumar, District Magistrate (DDMA West) Dr. Garima Aggarwal, NIDMSh Nakul Kumar Tarun, Zone4Solutions Ms. Tanushree Verma, Zone4Solutions

Dr. Garima Aggarwal, Sr. Consultant, RI Division, NIDM & Mr. Shreyash started the session by recapitulating day 4.

### Session 1: Community Based Urban Disaster Risk Management

**Presenter:** Ms. Tanushree Verma, Head (Research & Training) Zone4Solutions

#### Key Takeaways

- Ms. Verma initiated the session with the insight that as we are the first responders and witnesses to every emergency, Ms. Verma suggested we prepare ourselves before looking to the government.
- She also highlighted the Policy Framework for community capacity building in India. She emphasised that community-based disaster preparedness is essential to reduce the community's susceptibility to disasters and increase its current disaster-resilience capabilities collectively. In doing so, community based disaster risk reduction (CBDRR) incorporates components of disaster prevention and mitigation into a community's resilience and capacity development.
- She also highlighted that the CBDRR approach aims to actively engage communities in the identification, analysis, assessment, monitoring, implementation and evaluation of disaster risks as well as reducing their vulnerabilities and enhancing capacities.



Figure 44: Ms. Verma interacting with the participants

- Ms. Verma stressed the importance of community ownership and transparency in community preparation when outlining the CBDRR principles since the community is the ultimate beneficiary of the activities. Furthermore, the community's innate qualities of social inclusion, sustainability, and cooperation, among others, assist us in mainstreaming DRR strategies in our setting and culture. Not only that but our activities are strengthened by local knowledge and wisdom.
- She highlighted that disaster planning aims to ensure the safety of the community during an emergency. The disaster management plan is a means by which this can be achieved and to build community capacity to mitigate the impact of the same and must be developed under the guidance of qualified Disaster Manager.
- Ms. Verma emphasised that without coordination, emergency response measures will be out of order. As a result, disaster management strategies, particularly at the community level, are critical for successfully diverting resources during an emergency. It leads to a community that is self-sufficient and disaster-proof.
- In this context, she mentioned different stakeholders for the preparation of plans such as Community, RWA Members, Government, Political groups, Community based organizations/ NGOs, Corporate sectors, Formal/informal common interest groups including the Agricultural Products Market Committee (APMC)/Women's Self Help Groups (SHGs), Community leaders/ local authority/ Education Institution/ Financial Institution., Response agencies – Fire, Police, MCD, Medical etc.
- She explained the Steps undertaken in designing the Community Disaster Management Plan as shown in figure 46.

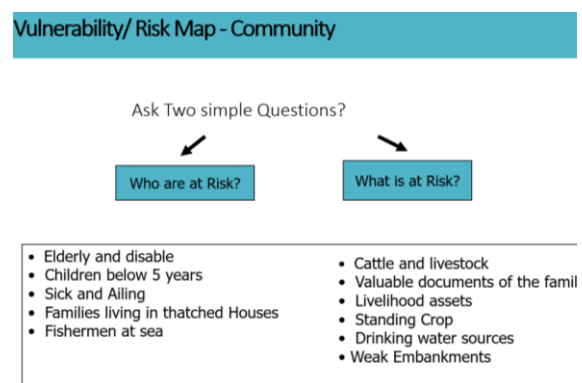


Figure 45: Presentation Slide: Vulnerability mapping fo community

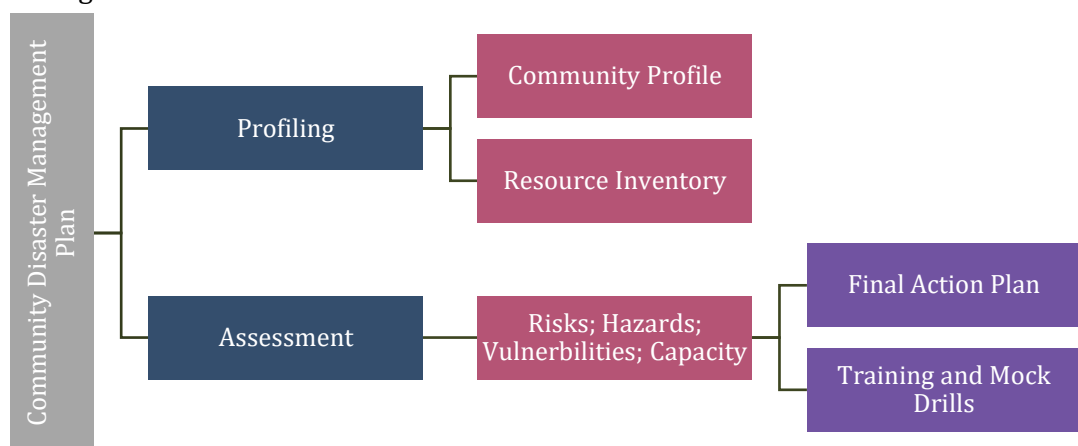


Figure 46: Steps for constructing CBDMP

- Ms. Verma stated that disaster risk reduction (DRR) is a shared responsibility. State and community need to work collectively to create successful models and programs that can achieve disaster resilience.

## Session 2: Disaster Management Planning and Introduction to ICS

**Presenter:** Mr. Nakul Kumar Tarun, Director, Zone4Solutions

### Key Takeaways

- Mr. Tarun highlighted that disasters or emergencies are a state of chaos where everyone needs to ensure safety. However, the chaos can turn into opportunity only when we are prepared and have the right directives, roles and responsibilities to work upon.
- He also stressed the reasons for the delay in response as:
  - No operationalized DM plan,
  - Designated authorities not backed up by professional response teams for various functional assignments (operational, logistics, planning, administrative/finance)
  - The team constituted on an Adhoc basis
  - Delay in operational actions
- He also highlighted steps to design an operational disaster management plan. In this context, Mr. Tarun stated that an incident command system is an all-hazards approach to an operational single command, control, and organisation that is standardized, objective, and adaptable.
- He also explained the functions of the ICS as follows:
  - A system providing a single management system for multi-jurisdiction incidents.
  - Modular- allows expansion and contraction depending on the size and complexity of the incident
  - Used on any type or size of emergency.
  - Structured to integrate any type of resource including policies, military, technical experts and NGOs.
  - It can be used to manage sudden-onset disasters, long term relief efforts or non-emergency events.
- On this basis, Mr. Tarun highlighted the ICS benefits such as:
  - Meets the needs of the incidents of any kind or size,
  - Allows personnel from a variety of agencies to mould rapidly into a common management structure,
  - Provide logistical and administrative support to operational staff, and
  - Is cost-effective by avoiding duplication of efforts.
- Lastly, Mr. Tarun advised the development of an operational departmental Incident Action Plan to avoid any waste of time in understanding the situation and facilitating a quick and effective response in a standardized manner.



Figure 47: Mr. Tarun addressing the participants

### Session 3: Disaster Preparedness, Evacuation and Response

**Presenter:** NDRF

#### Key Takeaways

- The session commenced with the insight that every emergency is not a disaster, however, every disaster is an emergency. To identify a disaster, the participants were asked to remember 5 elements (ABCDE):
  - A. Arose Sudden
  - B. Beyond the coping capacity of the affected population and administration
  - C. Catastrophe or Chaos
  - D. Disruption of normal life
  - E. Environment, infrastructural and life loss

It was highlighted that during the event, the victim may suffer casualties, and panic resulting chaos and if provided with appropriate first aid and morale support, many lives can be save.

- The session first demonstrates how to stop **bleeding**:

#### WHAT TO DO

- Civil Defence personnel may help if they feels comfortable. Firstly, they should provide morale to the victim;
- Ask the person to sit or lay down on the floor and try to stop the bleeding by applying pressure on the wound/injury;
- Stop the bleeding by pressing with both hands on the wound. If possible, ask the person to press himself on the site of injury.
- If the bleeding has stopped, cover the wound with a clean cotton cloth and wrap a bandage around the wound.
- Seek medical advice at the earliest.
- Do not leave the casualty alone and continue to observe the breathing

- Secondly, **the procedure of CPR** was demonstrated:

#### Compressions for an Adult/Child

- Interlock your fingers and place one hand over the other.
- Place your joined hands palm down on the lower half of the patient's breastbone, with the heel of your hand on the lower half of the patient's breastbone.



Figure 48: NDRF Representative interaction with participants



Figure 49: Demonstration: Stop the Bleeding

#### Remember ICE

I – Immobilize the bleeding area  
C – Compress  
E – Elevate the area above heart level



Figure 50: Demonstration: Compressions for an Adult/Child



- Place yourself so that your arms are completely extended and you can compress straight down at a 90° angle to the patient's chest.
- Compress at a pace of 100-120 compressions per minute to the correct depth, allowing for full chest recoil after each compression.
- For an adult, each compression should be at least 2 inches (5 cm) but no more than 2.4 inches (6 cm). For a kid, each compression should be at least 1/3 of the chest's anterior-posterior diameter. Do not go deeper than 2.4 inches (6 cm).
- Follow the right compression-to-ventilation ratio procedure. This is usually 30:2 for adults and children with a single rescuer. When two rescuers do CPR on a kid, the compression to ventilation ratio is 15:2.

### Compressions for an Infant

- The essential criteria for compressing a newborn are the same as for adults and children, however, the hand location and compression depth are different.
- One rescuer: Position yourself by the patient's side to cut down on time spent providing ventilation. Place two fingers slightly below the nipple line in the centre of the patient's chest.
- Two rescuer: Position yourselves at the patient's feet. With the rescuer's hands around the patient, place both thumbs in the centre of the patient's chest, right below the nipple line. The patient's head will be the focus of the second rescuer.
- Allow for complete recoil of the chest between compressions by compressing at a pace of 100 to 120 compressions per minute (120 for neonates).
- Compress to a depth of at least 1/3 the anterior-posterior diameter of the patient's chest (approximately 1.5 inches). Follow proper protocol for the rate of compressions to ventilations. For single-rescuer CPR this is 30:2, two-rescuer CPR changes to 15:2.



Figure 51: Demonstration: Compressions for an Infant

### Emergency Transportation techniques

#### 1. Firemen's Lift

When the person who is being rescued is unconscious and just one rescuer is available, this procedure is employed. In this procedure, the rescuer makes the person lie on his or her stomach first. Then he lifts the injured individual by the armpits with both hands. With his left hand, he holds the injured person's right hand, while his free hand supports the affected person's right leg. Now the rescuer raises the affected person with both hands and places him or her such that the waist of the rescuer is slightly above the waist of the affected person.



Figure 52: Demonstration: Firemen's Lift

## 2. Four Hand Seat Method

This strategy is employed for a weighty individual who can hold herself or himself with her or his hand. In this example, each of the two rescuers uses his right hand to grip his left wrist while using his left hand to grasp the other rescuer's right wrist.



Figure 53: Demonstration: Four Hand Seat Method

### Session 4: Group Presentations

The four groups discussed the risk they identified during their field visit on 08.04.2022.

Identified Risks	Group 1: TDI Mall & Wave Cinema	Group 2: DM Office	Group 3: Directorate General of Home Guards	Group 4 : Shivaji College
<b>Non-Structural</b>	<ul style="list-style-type: none"> <li>Collapsible Roof</li> <li>Haphazard Wires</li> <li>Expired Fire Extinguishers</li> </ul>	Not much structural or non structural hazards as the building was newly constructed	<ul style="list-style-type: none"> <li>Open wiring</li> <li>Damaged staircases</li> <li>Wooden doors</li> <li>Unlabeled Fire Extinguishers</li> <li>Unclipped aluminium alimars</li> <li>Unavailable smoke detectors and water sprinklers</li> </ul>	<ul style="list-style-type: none"> <li>DM plan is not under the display</li> <li>No direct communication system with emergency services</li> <li>open wiring</li> <li>The library shelf was not installed</li> <li>No secured switches</li> <li>Narrow staircases, blocked classroom, floors are blocked with almiras</li> <li>Expired Fire Extinguishers</li> </ul>
<b>Observations</b>	Non-disability inclusive building	<ul style="list-style-type: none"> <li>Disability inclusive building construction</li> <li>Recommended: Design DM plan and conduct regular mock drill</li> </ul>	<ul style="list-style-type: none"> <li>Non-disability inclusive building</li> <li>Improper fire Alarms</li> </ul>	<ul style="list-style-type: none"> <li>An inclusive DM plan, trained students, a response team, and a task force for evacuation.</li> <li>System installed for alarm</li> <li>An emergency kit and a doctor are present in the premises.</li> <li>Tech Tile Flooring</li> <li>Shelf was clipped in the chemistry lab</li> <li>Regualr mock drills</li> <li>New academic building is disaster proof and (handicapped) disability inclusive</li> </ul>

### Valedictory Session

Valedictory ceremony was presided by Sh Dharmendra Kumar, ADM (West), Prof. Chandan Ghosh, NIDM. Dr. Garima Aggarwal, Senior Consultant, RI Divison, NIDM, NIDM & Mr. Shreyash Jr. Consultant, RI Division, NIDM presented the outcomes of the pre-training assessment (<https://docs.google.com/forms/d/1TrrUEC4r3k0VwsZwjfci9sm5rTPK3eDSVA16CZ3Cl3g/edit?chromeless=1>) and the outcomes /responses of the individuals of the group activity and key takeaways.

Presentations were made by various group members where they expressed their views on the building hazard identification exercise and development of DM plan, emphasising that while the structure may be physically disaster-resistant, non-structural concerns remain. The training also strengthened the participants' perspective of disaster/emergency management by defining the underpinning causes of risks, and vulnerabilities, and how disability and gender make particular segments of the community more vulnerable. They were encouraged to recognise and emphasise such concerns for a safe and sustainable community.



Figure 54: Group Presentations

Lastly, Sh. Dharmendra Kumar, Addl. District Magistrate (West) extended his gratitude to the organizers (NIDM), Zone4Solutions and participants for their valuable contribution highlighting that urban resilience is not just about being trained, it is about how we can make others resilient with our knowledge. Delhi being a national capital is always in danger and therefore, Civil Defence personnel should always be on alert to provide appropriate service. He appreciated the enthusiasms' and encouraged more of such activities.

Certificate Distribution Ceremony was held and the certificates were handover to the participants.



Figure 55: Mr. Kumar addressing the participants





Figure 56: Certificate Distribution Ceremony

## 4 RECOMMENDATIONS AND WAY FORWARD

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Weekly training modules for the community are designed by trainers.

Design advance training courses and programmes for the trainers to enhance their capacities.

Conducting state-level training of trainers on

1. Urban resilience,
2. Disability-inclusive disaster management,
3. Structural and non-structural mitigation measures for critical infrastructures,
4. Gender centric emergency measures,
5. Community-based disaster preparedness



Establishing a mechanism for facilitating interactions between volunteer organizations from different states, for the exchange of ideas and increased participation.

Conduct multi-stakeholders (community, CSOs, emergency functionaries) training with Civil Defence personnel to strengthen the institutional capacities.



## 5 ANNEXURE

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### 5.1 TRAINING CONCEPT NOTE



#### Concept Note on

#### Training of the Trainers (ToTs) Programme on “Understanding Mitigation Measures for Urban resilience- Role of Civil Defence”

Date: 05– 09 April, 2022

#### Introduction

The unique geo-climatic and socio-economic attributes of India have marked it as one of the highly vulnerable countries to different hazards in the world. Earthquakes, landslides, floods, droughts, tsunamis and cyclones are some of the major natural hazards that affect the country frequently. Human-induced disasters such as industrial accidents, fires and Nuclear-Biological-Chemical warfare are other events that have the potential to destroy humanity.

Delhi NCR falls under Seismic Zone IV and is susceptible to high-intensity earthquakes. Apart from that, Delhi experiences urban flooding, storms, terrorist threats, urban fires, structure collapse/ building collapse, transport accidents and pollution on a regular basis. In the next decades, the major driver of the increasing damages and losses from disasters will be the growth of people and assets in harm's way, especially in urban areas (IPCC 2012). Cities are the quintessential complex adaptive systems (Montenegro 2010). By 2050, the United Nations expects 80 per cent of the world's population to live in urban areas. In East Asia, the urban population is expected to double between 1994 and 2025 (Jha and Brecht 2011). Often located along the coastline, in flood plains, or along seismic rifts, cities with their concentration of assets and people are vulnerable to disasters. Delhi is one such kind of city, located in Seismic zone 4, at the bank of river Yamuna and also the most polluted city of the world. The major challenges for Delhi are rapid population growth, high air, water and sound pollution and extreme weather events such as long and hot summers and heavy rainfall of short duration. The rapid growth of the population is leading to the rapid urbanization and spread of the city. This is also the major cause of pollution and makes the population more vulnerable to disasters due to inadequate planning and infrastructural development for all.

Considering the rapid urbanization in the State of Delhi, it is essential to build the capacities of the communities on important aspects of urban mitigation measures. A cadre of trained professionals would be developed by DDMA and district DM authorities who will be further be

engaged in promoting urban mitigation activities in Delhi.

Volunteerism is a fundamental source of community strength and resilience that exists in all societies throughout the world. Various global, and regional frameworks also acknowledged the roles of volunteers in disaster risk reduction including SFDRR, and GFDRR. The increased recognition of volunteerism in DRR was marked by UN General Assembly Resolution 57/106 'Follow up to the International Year of Volunteers' in 2003.

In the Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) 2016, which was held in New Delhi, the Hon'ble Prime Minister of India enlisted a 10-point agenda 2016 and emphasized building local capacity. National Disaster Management Plan, 2019 also strongly emphasizes the role of volunteers in risk reduction and strengthening their skills with adequate training and capacity building. State and District Disaster Management Plan also emphasizes on urban risk reduction through resilient infrastructure in Delhi as it is highly vulnerable to earthquakes in addition to fire and urban flooding.

Delhi being the urbanized state, Delhi Disaster Management Authority (DDMA) along with district DM authorities has been working towards developing trained personnel in the area of disaster mitigation & response, urban risk reduction and promoting disaster resilient infrastructure. DDMA (West) and Directorate General of Home Guards have been actively organizing a variety of training programs on disaster management for CD personnel.

### **Civil Defence and Disaster Management**

Civil Defence (CD) organization has been designed to deal with immediate emergency situations, protect the public and restore vital services and facilities that have been destroyed or damaged by disaster, either natural or man-made. After the Chinese aggression in 1962 and the Indo- Pak conflict in 1965, the CD Act, 1968 (Act 27 of 1968) was passed by Parliament in May 1968, which is applicable to the whole country.

The concept of Civil Defence over the years has shifted from management of damage against conventional weapons to also include threat perceptions against nuclear weapons, biological & chemical warfare and natural and man-made disasters.

In the year 2008, a National Policy Approach paper regarding Revamping of Civil Defence setup in the country was prepared by Shri K.M. Singh Former Member, NDMA. The policy paper highlights a greater role of Civil Defence is required in all the facets of disaster management in the country. The Civil Defence being a community-based voluntary organization can play a stellar role in the field of community level capacity building and public awareness to face any disaster situation, as is being done by Civil Defence set-ups in many other countries. The report recommended that the Civil Defence set-up should take up the implementation of the proposed new role in community capacity building and public awareness in close coordination with the Panchayati Raj Institution (PRI) and urban local bodies. **The CD Act, 1968 has been suitably amended by the CD (Amendment) Act, 2009 by Notification No. 3 of 2010, so as to include the disaster management as an additional role for the CD Corps, while retaining its primary role.** The amendment has enacted the additional role of CD personnel in disaster



management i.e., in all the phase- before, during and after emergencies arising out of calamities/ disasters, whether natural or man-made.

### **CD Structure in the State**

The District Magistrates are notified as Controller Civil Defence within their jurisdiction and are assisted by Additional District Magistrates and sub-Divisional Magistrates. The organization consisting of volunteers was originally established under the then Emergency Relief Organization (ERO) Scheme which was modified given the Civil Defence (Amendment) Act, 2009 to include disaster management as an additional role for the Corps. Setup of civil defence in a district is under:

- Senior Warden
- Chief Warden
- Addl. Chief Warden
- Deputy Chief Warden
- Divisional Warden (for the population of 1 lakh)
- Dy. Divisional Warden
- Post Warden
- Dy Post Warden
- Sector Warden
- Messenger
- Member of House Fire Party (Community level volunteers)

### **About the ToT Programme**

Capacity building is an important aspect of the disaster management process and Civil Defence Corps have essential role in the same as envisaged in CD Act, 2009 (Amendment) and Disaster management Act (2005). In Delhi, Civil Defence trainers/instructors take training in various areas of disaster management at the Central Training Institute of the Directorate General of Home Guards, West District, Delhi. They are responsible to further train community volunteers on the same. However, some of the areas of building urban resilience are yet to be explored.

National Institute of Disaster Management, Ministry of Home Affairs, GoI (premier institute for Disaster Management in India under DM Act, 2005) with District Disaster Management Authority (West) is organizing a five days Training of the Trainers (ToT) Programme for CD Instructors on **“Mitigation Measures for Urban resilience –Role of Civil Defence”** from **5<sup>th</sup>-9<sup>th</sup> April 2022** at **Directorate General Of Home Guards, Nishkam Sewa Bhawan, CTI Complex, Raja Garden, Near Shivaji College, New Delhi** with technical support of Zone4solution- an organization working for disaster resilience in India. Subject experts from NIDM, DDMA and other important organizations will also be involved in the training program. In future, this training programme may be replicated in another district as well. The trained personnel will be actively involved in conducting awareness and training programmes in the community. They will also be utilized to train more trainers on the subject.

## **Structure of the ToT Programme.**

The structure of the implementation of the training programme will be as follows:

### **A. Preparatory Stage:**

- Conducting Training Needs Analysis
- Comprehensive formulation of objectives

### **B. Topics to be covered in technical sessions -Disaster Management Concept**

- Understanding Hazard, Vulnerability and Risks, phases of DRM
- Vulnerability Profile of the Country
- Institutional arrangement for Disaster Management in India
- Role of Civil Defence Corp in Disaster Management Cycle

### **C. Hazard Risk Assessment**

- Understanding the prevalent hazards in urban areas
- Understanding hazard profile of Delhi – earthquake, fire, flooding etc.
- Undertaking periodic structural & non-structural safety assessments of infrastructures
- Prioritizing the vulnerable structures to undertake phased retrofitting

### **D. Mitigation Measures**

- Requirement of mitigation measures
- Cost-benefit of mitigation efforts vis-à-vis disaster response
- Sector-wise mitigation measures
- Incorporation of DRR activities into Sectoral development programmes

### **E. Mitigation and Capacity Building**

- Community-based DM planning – Field exercise
- Role of regular awareness program training of manpower – building Urban resilience.
- Capacity Building through Mock Exercises -Incident Response System
- Delivery of training mechanism
- Practical demonstration under the supervision of NDRF

### **At the end of the training, the participants shall be able to:**

- Develop a basic understanding of the disaster risk management concepts;
- Develop an understanding of Hazard Risk Vulnerability Assessment;
- Learn about the basics of mitigation measures for urban resilience.
- Provide training to the community volunteers on how to develop a disaster mitigation plan for a building/community.

### **Approach and Methodology:**

- Capacity Building/Training will have technical presentations, discussions and group exercises on Disaster Management for building Urban resilience.
- Exposure and Skill-building of Civil Defence Corps related to Disaster Risk Reduction and Resilience Building with hands-on demonstration.
- The discussion will also be held on scope, advantages and limitations as well as issues, challenges and opportunities in managing disaster events.

### **Outcome**

It is expected that the program would serve as a milestone for further actions in enhancing the capacities of civil defence officials as future disaster managers to reduce the impact of disasters as a national goal to make the country disaster resilient through proactive prior planning on disaster risk reduction and resilience at proper place and time. Some of the expected outcomes of the Capacity Building training programme:

- Developing a confident and trained cadre of trained pool in Urban Risk Reduction.
- Cascaded and enhanced capacities of Civil Defence Corps to think creatively and develop a sense of responsibility amongst the trained people towards society.
- Build on existing strengths and resources in the field of Disaster Risk Reduction.
- Open a new vista of opportunities for trained personnel in the field of disaster management at the State level.
- They would work as a liaison between the community level and DDMA to disseminate early warning and response processes.

### **ToT Model (Training of the Trainers)**

The Training of the Trainers (ToT) approach enlists expert trainers to mentor newer trainers who are less skilled with a specific topic or talent, or with training in general. A ToT workshop can help to develop a pool of qualified teachers who can subsequently pass on the knowledge to others. In the ToT model, instead of having only one trainer who teaches a course for a lengthy period, numerous trainers teach the same course at the same time. This often entails a new participant watching an experienced trainer instruct, completing the exercises, and then practising teaching parts to other participants.

### **About NIDM**

National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India is a premium institute and a Statutory Body (under Disaster Management Act 2005) for training, research, documentation, awareness and human resources and capacity development in the field of disaster mitigation and management. The institute lays emphasis on a multi-stakeholder interdisciplinary cross-sectoral approach for an efficient proactive continuum of disaster risk management based on participatory, integrated and multi-risk management concepts. The Institute's vision is to create a Disaster Resilient India at all levels.

### **About DDMA**

Delhi Disaster Management Authority (DDMA) was constituted on 19.03.2008 under the Chairpersonship of Hon'ble Lt. Governor of Delhi for an effective and practicable framework for disaster management in Delhi. The key elements of Disaster Management which are being undertaken by this office is awareness Generation, Development of Preparedness & Response Plans at the community and administrative level, development of linkages between the Government and Civil Society response and capacity building of Government institution in disaster mitigation, preparedness and recovery.

### **About DDMA (West)**

The DDMA (West) is an authority that plans, coordinates, and monitors Disaster Management in the west district in accordance with the guidelines set by the DDMA and the NDMA. Moreover, they coordinate and provide technical assistance to the local authorities during periods of emergency, disaster, or threat, such as the COVID-19 outbreak. The DDMA (West) strongly encourages the involvement of various stakeholders viz. line departments, institutions, private sector, volunteers, NGOs and non-profit organizations for promoting disaster risk management in the district.

## 5.2 GALLERY





### 5.3 LIST OF PARTICIPANTS

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