



## Training Programme on Urban Flood Mitigation

**Organized by**  
**National Institute of Disaster Management**  
Ministry of Home Affairs, Govt. of India  
**In collaboration with**  
**Puducherry SDMA**  
17 – 19 September, 2025 (Wednesday - Friday)

### Background

Rapid urbanisation means more people, houses and roads are packed into towns and cities. In many developing countries, cities grow faster than planners can manage. Many cities are growing faster, which ultimately hindering the natural spaces that used to absorb rain like ponds, wetlands and open soils. It is affecting the porosity of the soil and increasing the sudden run-off during heavy rains and raises the chance of flooding. At the same time, extreme weather events are becoming more frequent. Drainage systems-built decades ago were sized for gentler rains and smaller towns. When intense storms hit, these old drains and sewer systems quickly get overwhelmed. Roads, markets and homes get waterlogged; electricity and transport services stop; businesses shut down; and people's lives are disrupted.



This combination of fast urban growth and stronger storms is causing more urban floods across India. Cities such as Mumbai, Chennai and Bengaluru have seen repeated, severe inundation in recent years. India's rapid urbanization, coupled with climate change, has intensified urban flooding, creating a complex interplay of challenges across its cities.

NDMA's Guidelines on Management of Urban Flooding and sectoral manuals such as the Ministry of Housing and Urban Affairs' Storm Water Drainage Manual set out an integrated mix of prevention, preparedness and structural/non-structural interventions from conserving and restoring urban water bodies and adopting nature-based solutions, to upgrading drainage design standards, enforcing land-use controls and establishing early warning and operations protocols.

But to transform these guidelines into resilient infrastructure requires targeted training for municipal engineers, planners and emergency managers so they can translate into practicable drainage designs, integrate nature-based measures into urban masterplans, prepare bankable DPRs, and operate real-time monitoring and early-warning systems.

In short, rising urbanisation and intensifying extreme weather are jointly stressing infrastructure in developing countries — turning shortcomings in drainage, planning and governance into repeated crises — and the pathway to resilience is necessarily hybrid: stronger regulations and financing windows at the national level, coupled with hands-on capacity building, cross-sector coordination and locally tailored implementation that anticipates rather than reacts to the next flood.

### **Puducherry's Unique Challenges**

Puducherry face high vulnerabilities due to their unique geographical and climatic conditions. It has roughly 45 km of coastline and many low-lying urban pockets close to sea level, which makes it vulnerable to coastal flooding, storm surge and combined pluvial–tidal inundation. Late-2024 cyclonic activity and heavy rains caused serious flooding in parts of Puducherry, damaging homes, cutting power and disrupting services in both urban and rural pockets.

Rapid and unplanned urban expansion, degradation of natural drainage (ponds, wetlands and channels), solid-waste blocking of drains, informal encroachment of floodplains and limited capacity of older infrastructure to cope with higher intensity rain are key drivers of urban flooding. Climate Risk Assessment Tool for Puducherry developed by Puducherry government provide useful visuals and risk layers. The territory needs systematic, GIS-enabled mapping of drains, water bodies, low-lying corridors and critical assets to design effective drainage upgrades and nature-based solutions.

### **About the Training**

National Institute of Disaster Management (NIDM) and Puducherry SDMA are organizing this training program to equip stakeholders -policymakers, municipal officers and engineers - with frameworks and methodologies for flood risk assessment, risk-informed planning, technological innovations like spatial early warning systems and urban flood mitigation strategies to build a resilient and flood-ready Puducherry.

### **Target Group**

Senior government Officials from State and District Disaster Management Authorities, Municipal Corporations, Urban Development Departments, Public Works Departments (PWD), Water, Electricity and other line departments.

### **Registration, Feedback and Certificate**

Offline registration will be done on 17<sup>th</sup> September, 2025, 09:00 am onwards at the venue. Certificate will be awarded to the participants after successfully completion of the training and submission of session-wise feedback.

### **About the organizations**

- **National Institute of Disaster Management (NIDM)** was constituted with a vision to play the role of a premier institute for capacity development in India. The efforts in this direction that began with the formation of National Centre for Disaster Management (NCDM). Later, under the Disaster Management Act 2005, NIDM has been assigned nodal responsibilities for human resource development, capacity building, training, research, documentation and policy advocacy. The Institute believes that disaster risk reduction is possible only through the promotion of a "Culture

of Prevention" involving all stakeholders. The Institute works through strategic partnerships with various ministries and departments of the central, state and local governments, academic, research and technical organizations in India and abroad and other bi-lateral and multi-lateral international agencies. The Institute's vision is to create a Disaster Resilient India by building the capacity for disaster prevention and preparedness at all levels.

- **Puducherry State Disaster Management Authority** was set up as per the provisions of DM Act, 2005 under the Chairmanship of Hon'ble Chief Minister vide Notifications dated 01.08.2007 and 19.06.2008. It is to build the Puducherry Union territory as a safer and disaster resilient Union territory by developing a holistic, proactive, multi-disaster and technology driven strategy for disaster management. This will be achieved through a culture of prevention, mitigation and preparedness to reduce the impact of disasters on people.

### **Suggested Readings**

- **NDMA Guidelines on Urban Flooding (2010)** – National Disaster Management Authority, Government of India.
- **Manual on Stormwater Drainage Systems (CPHEEO, MoHUA)** – Central Public Health and Environmental Engineering Organisation.
- **Solid Waste Management in Post Disaster Situation** - National Institute of Disaster Management (NIDM)
- **State Action Plans on Climate Change (SAPCCs)** – Various state governments.
- **Smart Cities Mission Guidelines** – Ministry of Housing and Urban Affairs (MoHUA).
- **Urban Flood Risk Management in India** (World Bank, 2021) – Case studies on flood resilience.
- **Puducherry District Disaster Management Action Plan, 2023**
- **Visualising Climate Change Risks: The Climate Risk Assessment Tool (CRAT) for Puducherry UT**

**Draft Schedule (V.02)**

Time	Topic	Methodology	Resource Persons/Facilitators
09:30 - 10:00 am	Registration and Welcome		Puducherry SDMA
10:00 – 10:30 am	Inaugural Session	-	Puducherry SDMA
<b>Day – 1: Understanding Urban Flooding</b>			
10:30 – 11:00 am	<b>Session 1:</b> Introduction and Pre-Training Assessment	Icebreaking activity	<b>Dr. Garima Aggarwal</b> Sr. Consultant, NIDM & Course Coordinator
11:00-11:15	<b>Tea Break and Group Picture</b>		
11:15 – 12.15 am	<b>Session 2:</b> Basics of Disaster Management – terminologies and DM cycle	Interactive / Quiz mode/Video playing	<b>Mr. Shreyash Dwivedi</b> Consultant, NIDM
12: 15 am – 1.30 pm	<b>Session 3:</b> Overview of urban flooding: - Concepts, causes & impacts - Global/national perspective - Urban Flooding in Puducherry: Current Scenario	Presentation- 50 mins Discussion/Q/A - 15 mins Q/A- 10 mins  Case Study- 20 mins	Dr. Garima Aggarwal, NIDM  <b>To be nominated by Puducherry SDMA</b>
01:30 – 02:15 pm	<b>Lunch Break</b>		
02:15 – 03:15 pm	<b>Session 4:</b> Flood Risk Assessment (Tools & techniques)	Presentation	Dr. Garima Aggarwal Mr. Shreyash Dwivedi
03:15 – 03:30 pm	<b>Tea Break</b>		
03:30 – 05:00 pm	<b>Session 5:</b> Flood Risk Assessment for urban areas- <i>Identifying flood prone areas in Puducherry</i> (Map Analysis and local knowledge sharing)	Presentation – 30 mins Group activity- 40 mins Discussion- 20 mins	Dr. Garima Aggarwal Mr. Shreyash Dwivedi
<b>Day – 2 Mitigation Measures and Action Plan</b>			
9.30 – 10:00 am	<b>Recapitulation</b>		NIDM Team
10.00-11.00 am.	Flood forecasting and early warning system of Puducherry	Presentation- 50 mins Q/A- 10 mins	<b>Dr. B. Githa</b> Scientist D, RMC, Chennai, IMD (to be confirmed by Puducherry SDMA)
11:00 – 11:15 pm	<b>Tea Break</b>		
11.15 am - 12:30 p.m.	<b>Session 6:</b> Structural and Non-structural Mitigation Measures	Presentation – 40 mins	Dr. Garima Aggarwal Mr. Shreyash Dwivedi

	<ul style="list-style-type: none"> <li>- Drainage Systems and Urban Planning</li> <li>- NBS and Green Infrastructure</li> <li>- Technology</li> <li>- SWM Activity</li> </ul>	Case study- 20 mins  Waste Segregation activity-	
12:15- 1.30 pm	<b>Session 7: Policy and Governance Framework</b> <ul style="list-style-type: none"> <li>- DM policies</li> <li>- Urban planning Regulations</li> <li>- Urban Flooding Guidelines</li> <li>- 15FC guidelines</li> </ul>	Presentation	Dr. Garima Aggarwal Mr. Shreyash Dwivedi
01:30 - 02:00 pm	<b>Lunch Break</b>		
02:00 – 03:30 pm	<b>Session 9:</b> Developing a local Action plan  <i>(Make a Mitigation Plan/ matrix on challenges, solutions and corrective measures that shall be taken for reducing the flood risk)</i>	Presentation (15 mins) Group Exercise (60 Mins)	<b>NIDM and PSDMA</b>
03:30 – 03:45 pm	<b>Tea Break</b>		
03:45 – 04.30 pm	<b>Session 10:</b> Local Action plan for Urban Flood Mitigation	Presentations by Groups	NIDM and PSDMA
04:30- 5.00 p.m.	Summaries key takeaways and Discussion	Interactive Session	PSDMA/NIDM
<b>Day 3 (19.09.2025)</b>			
10:00 – 10:15 am	<b>Recapitulation</b>		NIDM Team
10:00 – 11:30 am	<b>Session 11:</b> Overview of IRS	Presentation	Dr. Balu I
11:30 – 11:45 pm	<b>Tea Break</b>		
11:45 – 01:00 pm	<b>Session 12:</b> Disaster Response Management	Presentation	Dr. Balu I
01:00 - 02:00 pm	<b>Lunch Break</b>		
02:00 – 03:30 pm	<b>Session 13:</b> Roles and Responsibilities of Departments/Sections	Presentation	Dr. Balu I
03:30 – 03:45 pm	<b>Tea Break</b>		
03:45 – 04:30	Valedictory Session Feedback from participants and Certificate Distribution		<b>NIDM and PSDMA</b>