Improving Flood and Disaster Management Strategies in Cities

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Abstract

Cities are becoming increasingly populated due to economic migration. With a growing population, the risks faced by these cities have also increased. In order to combat this, governments and international organisations have been focusing on developing robust adaptation and mitigation strategies. In an ongoing global effort to make cities more resilient to disasters, especially floods, we provide key policy recommendations that will help cities adapt and mitigate flood disasters. The Flood risk management mechanisms adopted in Srinagar can be replicated in other cities prone to floods. There is also a need for the use of advanced technology for Intelligible Disaster Mitigation. Streamlining City-Level Administrative Preparedness for Disaster Response and Improving Institutional Mechanisms must be prioritised in the administration sector. Authorities must revamp and improve the Infrastructure and Financial Relief Mechanisms available for disaster events like floods.

Keywords: Flood Risk Management, Disaster Response, Resilient Cities, Financial Relief Mechanisms, Administrative Preparedness

Flood disasters are becoming increasingly common due to increased urbanisation and climate change. Between 1998 and 2017, India faced 162 flood events causing economic losses of 45.7 billion dollars and 27567 deaths. (EM-DET database 1998-2017). The Srinagar Flood of 2014 caused an economic loss of Sixteen billion USD and affected 3.6 million people. The Chennai Flood in 2015 caused an economic loss of around Three billion USD, and the Kerala Flood of 2018 caused an economic loss of Four billion USD. The years of economic progress in the cities are wiped out due to the floods. It is essential for the cities to enhance their preparedness for disasters and have flood management strategies. At the global scale, the United Nations (UN) has enlisted the Sustainable Development Goal (SDG) 11 to make cities and settlements inclusive, safe, resilient and sustainable, and the UN Conference Habitat III has adopted a New Urban Agenda to address the challenges of urbanisation and endeavour to achieve SDG 11. However, the existing disaster management strategies have been unable to facilitate a dependable action and a successful response strategy. There is a need for holistic and long-term urban planning in India, in line with the SDGs and the New Urban Agenda. The following policy recommendations are aimed to address this void and help cities become resilient.

Adopting Mechanisms that Worked: Flood Risk Management in Srinagar

Best Case studies and Best Practices for Flood management should be used as an Adaptation model framework for management solutions. Post-flood garbage deposition is a major problem during flood response by the local authorities. Debris and animal Carcasses may lead to water-borne diseases and other epidemics. During the floods of 2014, the Srinagar Municipal Corporation (SMC) did a commendable job in the post-flood sanitation drive. More than 20000 metric tonnes of garbage was extracted from the city after the floods. The SMC deployed tippers, robotic arms, trucks, excavators, and staff members around the clock to clear the city, including the drainage and sewer systems. SMC also disposed of 1664 animal carcasses and used phenyl drums to stop the spread of epidemics after the floods. All the workers were given vaccinations to prevent any diseases. The mitigation approaches taken by SMC during the floods of 2014 act as an ideal blueprint for post-flood cleanliness and sanitation drive that can be contextualised and replicated in other cities within the country and South Asia.

Use of Advanced Technology for Intelligible Disaster Mitigation

The role of remote sensing and GIS tools can prove beneficial for flood monitoring and implement mitigation methods like desiltation, water detention, reservoirs and other methods. Remote sensing is an essential tool in all three stages: preparedness, response and mitigation for floods. The flood-prone areas can be identified at an earlier stage. The affected area that needs immediate action can be detected through satellite imagery, and the identification of changes before and after the flood will help in the mitigation efforts. They will aid in the mapping of vulnerable hotspots, populations and infrastructure assets for risk reduction, preparedness and community resilience building. MIT's urban risk lab is an excellent example of such an initiative. Other on-ground technologies that can aid in flood risk management include special high capacity pumps, trucks, tippers, robotic arms, excavators and other machinery.

Streamlining City-Level Administrative Preparedness for Disaster Response and Improving Institutional Mechanisms

The Capacity building of the Urban Local Bodies is very Important. Directive/ guidelines for city-level functionaries will help mainstream flood resilience measures in urban planning and governance processes. This includes SOPs, evacuation plans, and inter-departmental task forces with a clear chain of command and coordination channels, preferably headed by apex level authorities at the state level. It is also helpful in providing a legal /administrative framework for rebuilding the collapsed infrastructure, commercial properties, and homes. The Srinagar model of Monitoring, Coordination, supervision and direction (rescues, relief and restoration) proved efficient and may be followed during Urban flood situations.

Other roles include augmenting skilled workforce for the response, relief and recovery measures, building capacities of local communities (first responders and mock-drills), leadership building to manage flood situations. Missing and Found registers for rescue and rehabilitation measures should be maintained. Disaster Resilient communication platform should be prioritised. Kerala's rescue portal is a good case study of this measure. Identification of disaster wardens/ first responders in communities, promoting social entrepreneurship and role of the private sector in flood resilience. For instance, a joint initiative by Fortis Hospitals and Uber in Delhi-NCR was launched in 2017 for providing reliable rides in case of medical emergencies. Similar initiatives can be beneficial for risk reduction in flood situations.

Importance of Infrastructure and Financial Relief Mechanisms

Developing effective communication systems are also very crucial in disaster management processes and building resilient cities. Along with communication, safety is another crucial parameter for livability. To enhance the city's livability, it is also important to have an orientation and focus on policies towards the vulnerable section of the cities. Livable cities should be developed for all sections of society and leave no one behind as per the goals of the SDGs. Setting up a recovery fund and prioritising critical areas and marginalised populations for rehabilitation and recovery is important. Allocating and distributing compensation is critical for addressing the most vulnerable first. A flood insurance measure for home and property can be extremely useful in rehabilitating and recovering the affected communities.

Urban Local Bodies and People-Centric Disaster Management Approach

Disaster management strategies require strong partnerships in cities. In order to have active and flourishing partnerships, strong advocacy for knowledge sharing and capacity building, citizen engagement in the planning process, and evidence-based decision making is required. Prioritisation of partnership should be taken up by the Urban Local Bodies (ULBs), and it is important to involve and engage them in such decision-making processes. ULBs should be the core bodies for setting up the priorities of the cities, and the state and central governments and communities should contribute to this process. In order to address needs and concerns from affected areas, capacity building of the ULBs is necessary to understand the types of partnerships required and how to sustain them. Thus, the prerequisites for developing effective partnerships are empowering the ULBs and

correspondingly having evidence-based decision-making processes for implementation. There is also a need for a National level Framework that would provide an integrated and long-term approach to urban planning that would go beyond the infrastructure-driven approach and focus on a more 'people-centric approach', empowering urban local bodies and strengthening urban governance for disaster response and adaptation.

Strengthening Existing Mechanisms Through Forging Partnerships

All international agreements and the urban agenda collectively focus on partnerships and knowledge-sharing. The United Nations SDG 17 discusses the relevance of partnership and states the necessity of strengthening global partnerships for sustainable development, especially in cities with high disaster risk. India has commissioned the Smart Cities Mission that aims to recast the urban landscape of the country to make urban areas liveable, sustainable, smart and inclusive while driving the country's economic growth. This mission could be further strengthened through international collaboration. For example, India has been receiving help from the European Union in its efforts to make the cities more sustainable and resilient. EU-Mumbai partnership of 2013 on the governance of Megacities, Eco-cities programme for low carbon growth and strategies for urban development, and the India Air Quality Initiative to develop air quality management action plans are some of the key collaborative initiatives taken between Indian authorities and European partners. The urban water management collaboration between Udaipur, India, and Aarhus, Denmark, is another example.

Conclusion

Cities are no longer invincible to flood risk. Increased urbanisation and Climate change are causing flood anomalies to occur more frequently in flood-prone cities. Flood risk management in cities, especially those in India, lack mechanisms that could enable cities to be resilient and effectively mitigate disaster impact. The United Nations' SDG and Smart Cities Mission in India call for sustainable cities that are resilient to sudden flood events. Hence, there is an urgency to equip city and state administrations with a wide spectrum of flood disaster adaptation and mitigation measures. Flood disaster adaptation measures employed by Srinagar Municipal Corporation should be adopted in other cities after contextualisation to address regional differences. Administrative readiness is an important area that needs immediate improvement, and it could be achieved through capacity building and strengthening of response relief measures such as prioritisation of relief areas and efficient allocation of resources. A people-centric approach and encouragement of Urban Local Bodies to increase their partnerships is also recommended. There is also a need to invest in advanced technologies and tools to help researchers and disaster specialists to provide comprehensive flood forecasts, risk evaluation and hotspot areas to be prioritised.

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