



National  
Resilience  
Programme



# Making Cities Earthquake Resilient in Bangladesh

*A Good Enough Approach!*

July 2021

**National Resilience Programme (NRP)**  
Department of Disaster Management  
Ministry of Disaster Management and Relief



# Making Cities Earthquake Resilient in Bangladesh A Good Enough Approach!

## CONTEXTS

A major earthquake can devastate any populated area. Imagine that earthquake in an enormous, densely populated city where most structures are poorly built on soft soil. A city already threatened by floods, sea level rise, pollution, and shifting river channels. These are the very real dangers facing many cities of Bangladesh including the capital Dhaka. Large earthquakes are part of the region's history but are much less frequent than floods. Most people in Bangladesh have not experienced a major earthquake and the cities are unprepared for such a disaster.



*Figure 1: Mushrooming growth making city vulnerable to earthquake (file photo)*

What if there is an earthquake now or today or any time day after? Are we prepared?

Are you, your community, your business ready to tackle the consequences what may be?

Probably the answer would be a 'BIG NO'. Why?

It's because Bangladesh is highly vulnerable to earthquakes due to its location on top of the junction of three tectonic plates and low level of preparedness. Other hindrances that exacerbate the vulnerabilities or limit the progression towards earthquake resilience include:





- insufficient technical capacity and resources;
- improper construction ignoring the soil condition and facts of high earthquake risk;
- lack of fully integrated-nexus disaster risk management and emergency response system;
- changing climate change;
- lack of integrated hazard, vulnerability, risk and resilience model; and
- low public awareness.

Though there have been many good initiatives to keep the impact of the ‘unseen disaster’ minimum, but they are ad-hoc and sporadic. The govt. of Bangladesh has taken it as an issue of concern, but problem is there is no replicable model available as of now which one can follow.

### OUR SOLUTION

Accepting the fact above, Department of Disaster Management sub-project under National Resilience Programme is implementing a piloting in 4 secondary cities (3 wards/city) - Rangpur City Corporation and Tangail, Rangamati & Sunamganj Municipality - in view to strengthen the system as whole which involves earthquake science, policy and practice. Building on existing work the piloting intends to offer a scalable and cost-efficient model for all actors including government.

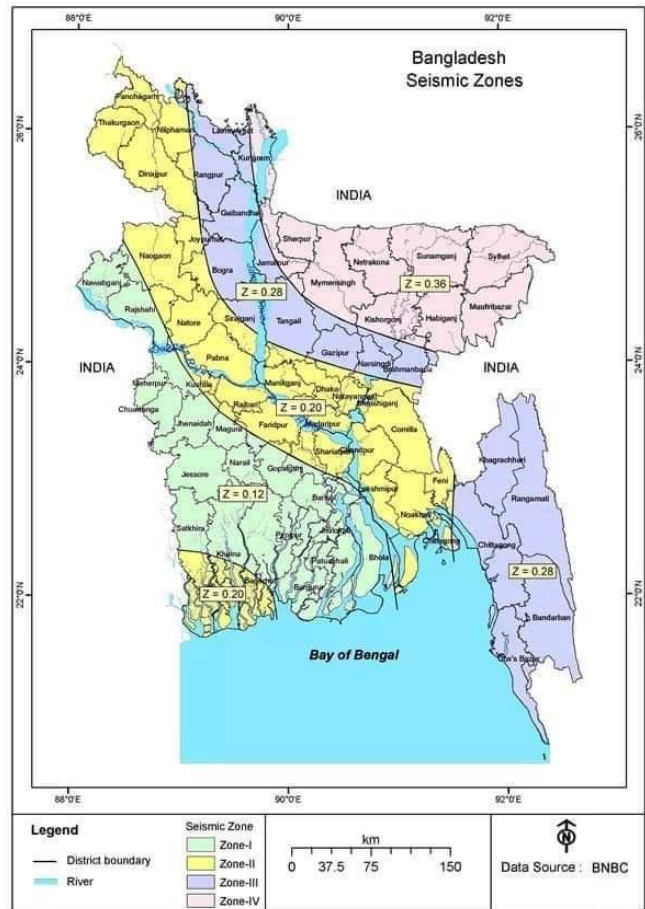


Figure 2: Bangladesh seismic zones



Figure 3: MoU signing ceremony between NRP and Cities



The approach (Figure 4) is completely integrated and complementary, with full interdependency, follows two main undeniable strategies:

1. Integrated-effective nexus risk governance.
2. Avoiding, reducing, and transferring physical vulnerability and risk.

The model is co-created by scientists, city authorities and communities. This locally driven approach 'puts the power back to the local institutions and communities' of impact. It offers an opportunity to them to become fully ready to carry forward earthquake preparedness programmes on their own.

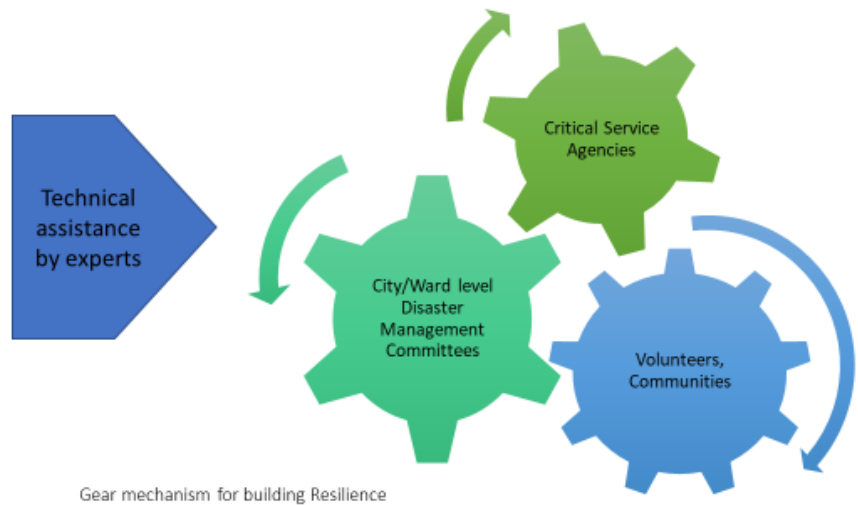


Figure 4: Integrated mechanism for building resilience

### HOW DO WE DO IT?

We facilitated the cities to form their own bodies with relevant actors as per Standing Orders and National Building Codes on earthquake and act to help themselves. Apart from forming disaster management committees at City/Municipality and ward levels, a cadre of youth volunteers, of which 40% are women, is being developed through different capacity building activities to act as 'first line defense' at the community. Collectively, with technical support from a professional agency BUET-JIDPUS, they analyze their risks considering exposure to hazards, socio-economic vulnerabilities and capacities to prepare risk reduction and contingency plan at city, ward and household levels. Efforts are taken to implement those plans locally. Considering it as a very critical area, Building Construction Committee' is being activated to ensure the safe and resilient construction through systematic approval of plan proper construction monitoring.

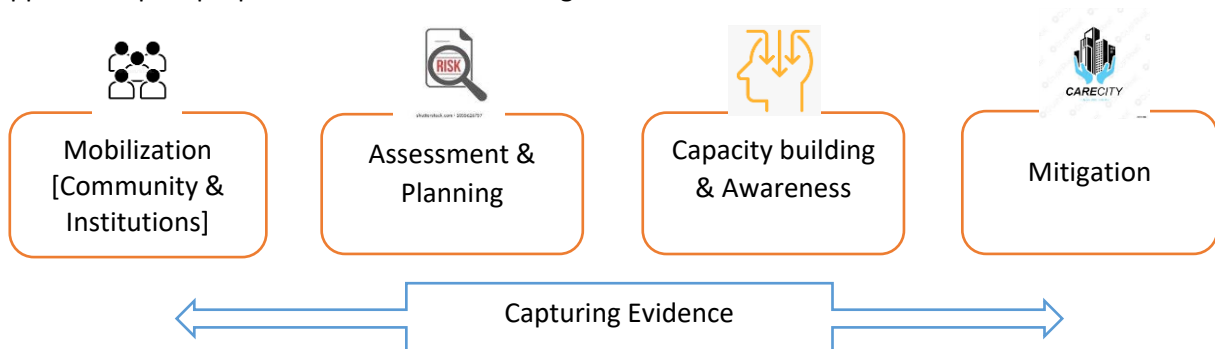


Figure 5: The steps of making cities resilient

NRP brings together nationally and internationally accredited experts to mobilize institutions and facilitate to chalk out the Risk Reduction and Response plans through scientific risk assessments in participatory way. Knowledge and skills are also being transferred to the local technical institutions and communities through different capacity building initiatives.



As result of the piloting activities, a good number of visible changes have been made which include: mobilized targeted communities and institutions, earthquake contingency plans in place in 10 wards, city and ward disaster management committees meet regularly, 1040 trained community volunteers helping at risk people in times of need, safe construction approval and monitoring bodies in force with required technical training. Urban community volunteers are of great help to the people in danger situations. In the recent months they, as the ‘extended force of the city authorities’, got engaged in extinguishing fires, rescuing wounded for treatment, providing foods among the low-income people, alerting people about upcoming hazards and disseminating Covid-19 awareness messages.



Figure 6: Volunteers are in action: Installation of Billboards at landslide hotspots in Rangamati (L), dissemination of Covid-19 awareness message in Tangail (R)

### EARTHQUAKE RISK ASSESSMENT PROCESS

Risk assessment has been the central of this piloting. A range of scientific and participatory tools were used in the assessment to understand seismic risk (along with associated hazards), structural integrity and socio-economic vulnerability. Based on the findings of those assessment the impact communities along with their institutions have prepared their own plan of actions (risk reduction and contingency plans). Below flow-diagram summarizes the assessment process and tools used.

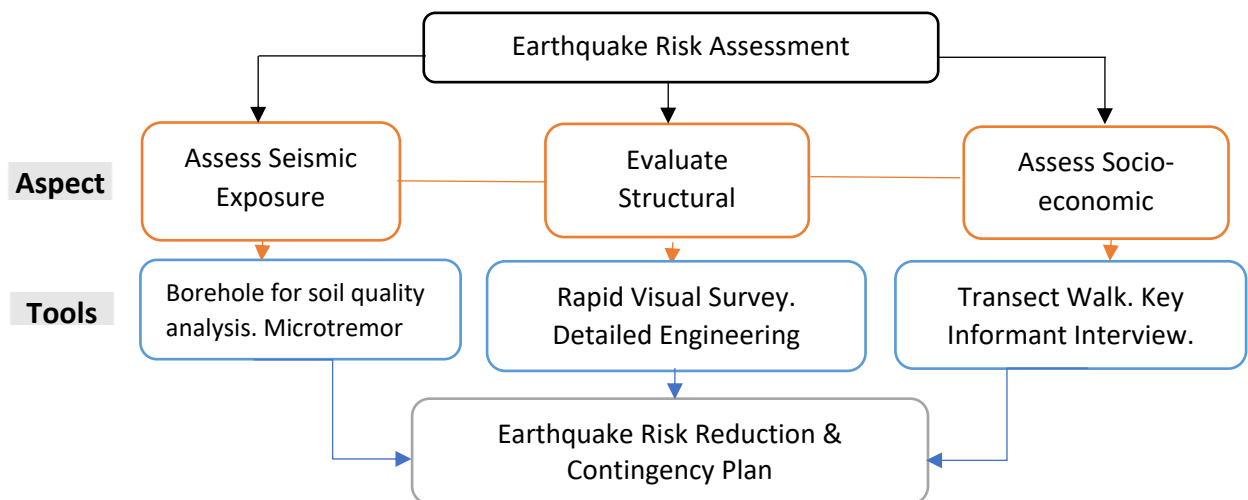


Figure 7: Earthquake risk assessment process and tools

### COMPARATIVE ADVANTAGE AND VALUE PROPOSITION

Main beauty of the approach is, it is being implemented by the concerned city authorities together with relevant agencies including Fire Service, District Administration, Schools etc., and with technical assistance from NRP through BUET-JIDPUS, they make their plan to execute by themselves. The other





characteristics that made the model unique are: It is being implemented with the active engagement of a wide variety of experts and in diverse geographical locations considering their seismic risks, landscape, development pattern and other socio-economic factors. It employed scientific and socio-economic participatory tools for risk assessment and planning. To reduce dependency on outside expertise, local technical institutes and youths were trained so that they can be of help in times of review. Building Construction committee is being activated as 'watch-dog' for all construction which is critical for physical resilience. Women volunteers are being involved as 'a force for resilience', they constitute more than 40% of total volunteers and they are mainly to help most vulnerable segment of the society i.e., women, children and persons with disabilities. The project is using lessons learned (both success and failure) from the countries with similar contexts. And, by the end of the piloting a package of several assessment tools/guidelines and teaching materials will be produced based on evidence and for the use of wider actors and audiences.



*Figure 8: Group photo of 40 volunteers after a 3-day long hands-on training on urban search and rescue*

### **SUSTAINABILITY AND SCALABILITY OF THE MODEL**

The model is scalable by design as this is locally grown and nurtured by local institutions with communities. As the key implementer of the Programme by default Department of Disaster Management would take the model to other city authorities for up-taking when piloting ends. It will also be shared with other non-state actors for replication.

We see a wide range of scalars i.e., city authorities, private sectors, universities, training institutes and NGOs as there is increasing demand for safety among them. For instance, private sector manufacturer/ input sellers who wants to increase their market would find the system as an opportunity to sell out construction materials and accessories. NRP hopes that the successful implementation of the piloting will end up with an implementable model, which ensures safety, security of lives and resources, and thus development gains of Bangladesh will be protected.

