



## Resilience Indicators for Mainstreaming Disaster Risk Reduction in the City of Mumbai

Bijan Khazai (1,2), Fouad Bendimerad (2), Friedemann Wenzel (1,2)

(1) Center for Disaster Management and Risk Reduction Technology CEDIM / Geophysical Institute, Karlsruhe Institute of Technology KIT, Karlsruhe, Germany. (2) Earthquakes and Megacities Initiative EMI, Quezon City, Philippines

A set of ten resilience indicators have been developed for the city of Mumbai as a risk communication and planning tool for benchmarking and measuring progress (or lack of progress) on the mainstreaming of risk reduction approaches in the city's development policies and processes. The aim of these indicators is to capture the potential for achieving risk resiliency in five key areas analyzed in the Disaster Risk Management Master Plan (DRMMP) of Mumbai, which is being developed collaboratively by EMI (the Earthquakes and Megacities Initiative) and the Municipal Corporation of Greater Mumbai (MCGM). The five areas crucial to the DRMMP process of mainstreaming include: (1) Legal and Institutional Processes and Policies; (2) Public Awareness and Capacity Building; (3) Critical Services and Infrastructure Resiliency; (4) Emergency Preparedness, Response and Recovery Planning; and (5) Development Planning, Regulation and Risk Mitigation. Each one of these areas is assigned two performance indicators that are directly linked to the strategy and policy recommendations of each of the DRMMP sectors. They are designed to be easily understood by policy makers, managers, planners, and disaster management professionals at the MCGM. The performance indicators have also been adapted to reflect the context and processes of Disaster Risk Management in Mumbai, and in particular to the national laws, guidelines and policies in DRR, including the National Disaster Management Act of 2005. They are also linked to the strategic goals and priorities of the Hyogo Framework for Action 2015-2015 (HFA).

The performance indicators are developed as a self assessment tool with a ranking ranging from -5 to +5, which correspond to five pre-defined benchmarks and target levels of attainment (little or no awareness, awareness of needs, engagement and commitment, policy engagement and solution development and full integration). The transition of an institution from a negative to positive ranking indicates movement from a stage where some commitments have been made, which may not yet be sustainable, to a stage where risk reduction is fully absorbed into planning and development processes as well as the institution's core services. A handbook has been developed to describe the organization of the resilience indicators and the rationale for their selection and to provide guidelines for their implementation and scoring. Working closely with a focus group representing a large set of stakeholders assembled by the MCGM, the structure of the indicators will be validated and target levels evaluated. The overall measure of success is for the indicators to be used by the City in establishing an initial benchmark and monitoring the effectiveness of specific risk reduction options over time.