



Earthquakes and Megacities Initiative
www.emi-megacities.org

Code Enforcement and Implementation EMI proposal

Fouad Bendimerad, Ph.D., P.E.,
Chairman

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Empowering local governments and local communities in implementing disaster risk reduction

Framing the issue



The problem is systemic, and thus require systemic approach

Some examples of programs

- Between 2001 and 2002, an alliance of 6 universities in Ecuador collaborated in developing an updated building code specific to the seismic conditions and construction practices of Ecuador. The research concluded that the incremental cost of the additional concrete and steel was only about only about 1.2% of the construction cost of a typical building.
- Studies show that all new construction in Mumbai can be made earthquake resistant with a recurring additional investment of under US\$10 million per year. This model additional construction cost will ensure that newly constructed buildings do not collapse in the event of an earthquake, and represents an increase of about 5% of the construction cost of these buildings

EMI proposal

PREMISE

1. Governments will never have the adequate resources to enforce building code provisions on their own
2. Solution must come from implementing sound practices for construction coming from a primary role by professionals themselves in coalition with government and other key stakeholders

EMI proposal

- Systemic training of construction professionals from planners, designers, engineers, contractors, and field workers
- Raising awareness and providing incentives to home builders, and informal sector builders, as well as general population
- Create coalitions for a model for enforcement incorporating
 - Government
 - Industry
 - Insurance

Basic provisions can save life and property

Tied spacing of concrete reinforcing and proper sizing of columns and beams prevent the beam-column joint from breaking saving the building from collapse (2003 Boumerdes Eq., Algeria)



A few basic provisions can prevent a building from collapse even in the most severe earthquake

Photo: F. Bendimerad

Example of training

- Each year, American Concrete Institute (ACI) trains and certifies approximately 20,000 concrete engineers and technicians. However, of those certified, very few come from developing countries. Starting in 2005, ACI partners with professional organizations to extend training in Latin America; since then 250 technicians and engineers have been certified in QA/QC training and certification have been developed in the countries of Ecuador, Panama, and most recently, Guatemala.

Example of implementation

The code enforcement process for the small city of Lalitpur in the Kathmandu Valley of Nepal is based on a 10 prone strategy.

1. Awareness raising
2. Partnership
3. Assistance and Supervision
4. Orientation programs
5. Training modules: for professionals and especially masons who are the primary source in the actual building construction.
6. Preparing building construction guidelines: residents and construction workers.
7. Public demonstration programs: to show people the benefits of a sound construction.
8. Set up an approval process:
9. Differentiate categories of construction:
10. Provide incentives: all this process has been implemented with "0" cost to the end user to promote the application of the guidelines while people understand the benefits for life and property protection.

What is the level of investment

EMI estimates that an investment of the order of \$5million per year for 20 years will reduce the human losses by half

We are looking for partners

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