



A Globally Consistent Methodology for an Exposure Model for Natural Catastrophe Risk Assessment

Rashmin Gunasekera (1), Oscar Ishizawa (1), Bishwa Pandey (1), and Keiko Saito (2)

(1) Latin America and Caribbean Regional Disaster Risk Management and Urban Unit (LCSDU), The World Bank Group, (2) Global Facility for Disaster Reduction and Recovery (GFDRR), The World Bank Group

There is a high demand for the development of a globally consistent and robust exposure data model employing a top down approach, to be used in national level catastrophic risk profiling for the public sector liability. To this effect, there are currently several initiatives such as UN-ISDR Global Assessment Report (GAR) and Global Exposure Database for Global Earthquake Model (GED4GEM). However, the consistency and granularity differs from region to region, a problem that is overcome in this proposed approach using national datasets for example in Latin America and the Caribbean Region (LCR).

The methodology proposed in this paper aims to produce a global open exposure dataset based upon population, country specific building type distribution and other global/economic indicators such as World Bank indices that are suitable for natural catastrophe risk modelling purposes. The output would be a GIS raster grid at approximately 1 km spatial resolution which would highlight *urbaness* (building typology distribution, occupancy and use) for each cell at sub national level and compatible with other global initiatives and datasets. It would make use of datasets on population, census, demographic, building data and land use/land cover which are largely available in the public domain. The resultant exposure dataset could be used in conjunction with hazard and vulnerability components to create views of risk for multiple hazards that include earthquake, flood and windstorms. The model we hope would also assist in steps towards future initiatives for open, interchangeable and compatible databases for catastrophe risk modelling.

The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.