



## Developing an Adaptive Exposure Model to Support the Generation of Country Disaster Risk Profiles

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Probabilistic disaster risk profiles provide estimates of potential damage to property and life caused by adverse natural hazards. A Country Disaster Risk Profile (CDRP), which is a coarse level analysis, presents an estimate of risk at the national level. We define the exposure model in that context as a geo-referenced database of assets at risk at a 1-km grid level, capturing important attributes such as geographical location, urban/rural classification, type of occupancy (e.g. residential and non-residential), building typology (e.g. wood, steel, masonry), and aggregated asset value.

We present here a sensitivity analysis of key parameters of the exposure model developed in relation to CDRPs. Specifically, we analyse the sensitivity in characterisation of built up areas, and associated disaggregation of assets. We evaluate this by comparing datasets such as Modis 500m (2010), Landsat (2012), BuREF (2012), and GUF (2013). We also present a method to integrate exterior wall and roof type typologies to assess vulnerability of buildings to both earthquakes and hurricanes. Finally, developments in determining replacement value of buildings from national and sub national datasets are presented. Integration of all these developments together produces an exposure model. The sensitivity of such a model output is even more crucial in risk analysis of Small Island States (SIS), and we highlight this with case studies from the Caribbean region.

This resultant gridded exposure database could be convolved with hazard and vulnerability components to create CDRPs for multiple hazards that include earthquake, flood and windstorms.

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