Wind damage reduction of non-engineered houses under economic, societal and technical boundary conditions

Kazuyoshi Nishijima, Disaster Prevention Research Institute, Kyoto University <u>Nishijima.kazuyoshi.5x@kyoto-u.ac.jp</u> Hiroaki Nishimura, Disaster Prevention Research Institute, Kyoto University

Many disasters caused by tropical cyclones occur in developing countries. In those disasters most of damages occur at non-engineered buildings. In spite of this fact research efforts to investigate the structural performance of this type of buildings are relatively few, compared to engineered buildings and other facilities. The present paper presents findings and challenges in an ongoing project where the structural performance of non-engineered houses in Leyte Island, the Philippines, is analyzed in an engineering manner and thereby to develop effective measures for improving their wind-resistant performance. The analysis and modeling of the structural performance utilize standard methodologies such as wind tunnel experiment, material tests as well as structural analysis and reliability theory-based probabilistic modeling. For the identification of practical measures to enhance the performance of non-engineered houses special focus is given to economic, societal and technical conditions that bound measures available to local people.