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Flood Mitigation in Coastal Areas - Lesson from Tsunami 2004

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Coastal areas gifted with unique natural landscape attract people for leisure, recreation, tourism, various economic activities and settlement. This demand for tourism and economic growth necessitates construction of buildings and infrastructure sometimes closer to the sea. Local people economically depending on fishing, aquaculture, ecosystem research, and tourism industry construct their homes on or vicinity to the sea shore. Coastal area is subjected to natural disaster from flood by high tides and tsunami, cyclonic storm, etc.

On 26th December 2004, a massive earthquake of magnitude 8.9 Richter struck off the Indonesian island of Sumatra being caused by the phenomenon of India plate (geotectonic) slipped beneath the Burma plate and displaced part of the ocean floor, eventually forcing the water upwards to create tsunami in the Indian Ocean affecting the coastlines of Indonesia, Thailand, Malaysia, Myanmar, India, Sri Lanka, Maldives and Somalia. The disaster has killed 285,933 people in total (as up to report of 13.02.2005) and wrecked economic damage of billions of Euros. Various intergovernmental, government and private organizations and people from all over the world are working together and contributing for providing relief and rebuild. However, psychological impact on people who survived but lost their families in the ill event is far more devastating than material and economic loss.

This tsunami has proved how dangerous it is, not to care for disaster preparedness by all sectors of the community and administration. Various environment research organizations are producing magnitude of loss of coastal ecosystem, environment and ecology. Salt water intrusion in the agricultural fields has devastated rice and other crop cultivation. A scientific research on the geographical locations of potential oceanic earthquakes capable of generating tsunamis, and of their recurrence intervals is to be produced basing on the modern theory of Plate Tectonics. The recent tsunami is to be modeled.

Disaster preparedness has to be the most important issue in mitigating natural hazards in coastal areas. From installation of early warning system to architectural and coastal planning methodology, zoning, restriction, control and physical application, structural integrity of buildings, structural and non-structural measures, all are to be explored in a new effort based on the experience of results of this tsunami. Findings are indicating that perhaps only one form of nature can fight against the fury of another form of nature. New measures are to be explored for disaster mitigation in coastal areas in the context of changing global environments.

Key Words: Coastal areas, flood, tsunami 2004, lessons, mitigation measures.