

Thesis Title	Climate Change and Potential Flood Risk in Downstream Sai Gon-Dong Nai River Basin in Vietnam
Author	Nguyen Thu Phuong
Degree	Master of Science (Natural Resources and Environmental Management)
Advisor	Dr. Apisom Intralawan
Co-Advisor	Assoc. Prof. Dr. Nitin Kumar Tripathi

ABSTRACT

Ho Chi Minh City (HCMC), located in the downstream of Sai Gon-Dong Nai river basin in Southern Vietnam, is identified as one of the top Asian coastal megacities most vulnerable to climate change. The city has been adversely affected by flooding annually. The unexpectedly big flooding in Bangkok, Thailand in 2011, mainly due to the extreme widespread rainfall of some 40% above normal condition in the whole watershed, can provide a good lesson for HCMC because of the similarities of both natural and socio-economic conditions. Previous assessments of flood risks, generally and for HCMC particularly, are mainly conducted for damage and economic losses, rather than for social vulnerability implications. This study aims at social vulnerability assessment for HCMC to flooding under the high rainfall scenario similar to the 2011 flood in Bangkok. Flood flows in the Sai Gon-Dong Nai watershed are simulated by applying the rainfall-runoff model (MIKE NAM) and hydrodynamic model (MIKE 11). These outputs are then overlaid with the digital elevation map (DEM) to create the inundation maps, followed by the flood hazard

assessment with the effects of flood depth and duration, and finally by social vulnerability assessment with various social factors at the district level such as numbers of females, children and elderly and poor households. The flood risk maps are determined for each district in HCMC to specify the districts that are likely to be most socially vulnerable to potential flooding although some of which are not necessarily to be of high hazards. This paper will serve a starting point for proper actions to reduce these risks. Further research studies on other flooding scenarios and at more refined geological scales are needed for more effective reduction of flood risks.

Keywords: Extreme rainfall/Inundation map/Flood hazard/Social vulnerability/
Flood risk

