

## An assessment of flood hazard and risk zoning in the lower nam phong river basin, Thailand

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### Abstrak

Rapid socio-economic development along with exceptional rainfall can potentially exacerbate risk of flood damage to life and property in the lower Nam Phong River Basin. In relation to this, the non-structural measures including risk-based zoning could be considered as an effective solution in mitigating the flood threat in the future. Thus, a coupling of the hydrological model HEC–HMS and hydrodynamic model HEC–RAS, which increases the robustness and predictability to the overall findings, was applied to assess flood hazard in this study. The outcomes highlighted that the applications of the HEC–HMS and HEC–RAS models are suitable for the study area with the Nash-Sutcliffe Efficiency (ENS) varied between 0.75 to 0.87 and the coefficient of determination ( $R^2$ ) ranged between 0.81 to 0.92. Moreover, the flood zone mapping was also carried out based on the Flood Hazard Rating (FHR) analysis. As a result, the flood hazard areas were determined which covers about 16.5% of the total river basin areas, and it was classified into four zones, i.e. extreme (18.79% of inundated area), high (46.33% of inundated area), moderate (18.24% of inundated area), and low (16.64% of inundated area), respectively. The obtained findings can be useful as the adaptation guideline for water resources planning and flood management in the lower Nam Phong River Basin and other parts of Thailand.