



## Flood risk assessment in Australian urban areas

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### **Biography:**

*Roozbeh received his MSc in flood risk management from Politecnico di Milano University. The subject of his master thesis was about flood impacts assessment. He was a team member of three flood risk management projects from the civil protection of European Commission. He is also a trained, certified crisis management staff from the academy for crisis management, emergency planning and civil protection (AKNZ) of Germany. Roozbeh commenced his PhD at the department of infrastructure of the University of Melbourne in July 2014. His thesis was about flood risk assessment and contributes to a project from Bushfire and Natural Hazards CRC which aims to identify optimum economic policy options to recover or minimise the adverse effects of floods. He has published more than ten journal articles about flood risk management in Australia and currently, he is working as a flooding and water resources engineer at GHD.*

Rivers can positively impact livability. In promoting, preserving and protecting them, we need to be aware of the risk of locating developments near rivers, with flooding known to be the costliest natural disaster in Australia and the world. In recent decades, the extent of flood losses has increased due to climate change and urban consolidation, necessitating greater attention to flood risk management. While much effort has gone into emergency management and flood mapping, flood damage models are still crude, and understanding of the damage process is largely unknown. Flood damage estimation is an indispensable part of flood risk management, needed for vulnerability assessment, risk map preparation, top priority locations identification, and the optimal decision on mitigation options. Accordingly, flood impact assessment methods need to be more carefully considered to protect the population against the impacts of future flood scenarios, increase the resilience of communities and businesses, and decrease the probability of losses in a systematic way.

The flood loss function is an internationally accepted standard for the estimation of flood damages in urban areas. This study attempts to investigate the validity of the results of some flood loss functions from Australia and overseas. The performance of the flood loss assessment models for residential and commercial building structures is compared with the official loss records collected from recent extreme events in Queensland, Australia.

On the other hand, flood damage is a complicated process, and it might be dependent on a variety of parameters which are neglected earlier. Accordingly, this study has also attempted to investigate and explore the interaction and significance of more damage-influencing parameters such as flow velocity, water contamination, precautionary measures, emergency measures, flood experience, building floor area, building value, and building quality.

Results show that Australia's most prevalently used models are subject to very high uncertainty. Hence, there is an immediate need for a comprehensive project to build some new models for the Australian geographical conditions. Awareness of these issues is important for strategic decision-making in flood risk reduction and resilience, and it could amplify the cognition of decision-makers and insurance companies about flood risk assessment in Australia.