Department	School of Engineering and the Built Environment
Supervisors	Dr. Lina Khaddour, Dr. Nirodha Fernando, Dr.Temidayo Osunsanmi
Project Title	Build back better housing reconstruction: A framework for post-disaster sustainable recovery assessment

PROJECT DESCRIPTION

"Build Back Better" (BBB) re-construction approach to post-disaster recovery research trends have escalated globally since 2016. Recent post-disaster reconstruction strategies have generally focused on enhancing resilience, against future disasters, especially during the reconstruction phase. In this paper, resilience is defined as the system's capacity to absorb disturbance and re-organize into a fully functioning system. To operationalize this definition in the context of disaster recovery, the concepts of (1) build-back-better and (2) sustainable development have to be integrated into the resilience framework. This is intended to speed up the planning process, enabling appropriate development to come forward quicker. Furthermore, global emergencies such as wars, environmental crises, climate change and biodiversity loss could cause damages far larger than those caused by COVID-19.

Re-construction recovery programes should be designed to "Build Back Better". The key variables for assessing whether re-construction recovery packages can "Build Back Better" include alignment with long-term sustainability; emission reduction goals, factoring in resilience to climate impacts, slowing biodiversity loss and increasing circularity of supply chains. Serious questions are now raised over the legislative framework and financial regime for securing such investment.

In practice, well-designed re-construction recovery framework can cover several of these dimensions at once, such as catalysing the shift towards sustainability-based regional planning and investing in sustainable building design and technology. Boosting resilience in post-disaster re-construction depends on both the shift to sustainable practices and on the integration of an innovative risk approach to be based on Multi-Criteria Decision Making (MCDM) models, whereby Analytical Hierarchy Processing (AHP) can be drawn upon for policy makers, regional planners and construction managers to simulate the post-disaster recovery process.

Academic qualifications

A first degree (at least a 2.1) ideally in Construction management, Built environment, Quantity surveying, computer science or any realeated field with a good fundamental knowledge of AHP evaluation, RM simulation techniques, statistical analysis.

English language requirement

IELTS score must be at least 6.5 (with not less than 6.0 in each of the four components). Other, equivalent qualifications will be accepted. Full details of the University's policy are available online.

Essential attributes:

- Experience of fundamental AHP analysis and risk management simulations.
- Competent in Decision Making Criteria.
- Knowledge of construction management, regional planning, policies and legislations.
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Desirable attributes:

Selefmotivation, time management and high commitment to research.

Indicative Bibliography	rS. H., Chang-Richards, A., & Yiu, T. W. (2022). Providing a framework for post-disaster resilience factors uildings and infrastructure from end-users' perspectives: case study in Caribbean island states. *International rnal of Disaster Resilience in the Built Environment*. dis, N., Siriwardhana, S., & Kulatunga, U. (2022). Implementation of Build Back Better Concept for Post-saster Reconstruction in Sri Lanka. In *A System Engineering Approach to Disaster Resilience* (pp. 33-48). nger, Singapore. (2020), *Coronavirus Recovery | Build Back Better*, https://www.wri.org/coronavirus-recovery
Enquiries	For informal enquiries about this PhD project, please contact Dr. Lina Khaddour, L.Khaddour@napier.ac.uk
Web page	https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process