World Academy of Science, Engineering and Technology
International Journal of Civil and Environmental Engineering
Vol:16, No:05, 2022

Knowledge Transfer to Builders in Improving Housing Resilience

Authors : Saima Shaikh, Andre Brown, Wallace Enegbuma

Abstract : Earthquakes strike both developed and developing countries, causing tremendous damage and the loss of lives of millions of people, mainly due to the collapsing of buildings, particularly in poorer countries. Despite the socio-economic and technological restrictions, the poorer countries have adopted proven and established housing-strengthening techniques from affluent countries. Rural communities are aware of the earthquake-strengthening mechanisms for improving housing resilience, but owing to socio-economic and technological constraints, the seismic guidelines are rarely implemented, resulting in informal construction practice. Unregistered skilled laborers make substantial contributions to the informal construction sector, particularly in rural areas where knowledge is scarce. Laborers employ their local expertise in house construction; however, owing to a lack of seismic expertise in safe building procedures, the authorities' regulated seismic norms are not applied. From the perspective of seismic knowledge transformation in safe buildings practices, the study focuses on the feasibility of seismic guidelines implementation. The study firstly employs a literature review of massive-scale reconstruction after the 2005 earthquake in rural Pakistan. The 2005-earthquake damaged over 400,000 homes, killed 70,000 people and displaced 2.8 million people. The research subsequently corroborated the pragmatic approach using questionnaire field survey among the rural people in 2005-earthquake affected areas. Using the literature and the questionnaire survey, the research analyzing people's perspectives on technical acceptability, financial restrictions, and socioeconomic viability and examines the effectiveness of seismic knowledge transfer in safe buildings practices. The findings support the creation of a knowledge transfer framework in disaster mitigation and recovery planning, assisting rural communities and builders in minimising losses and improving response and recovery, as well as improving housing resilience and lowering vulnerabilities. Finally, certain conclusions are obtained in order to continue the resilience research. The research can be further applied in rural areas of developing countries having similar construction practices.

Keywords : earthquakes, knowledge transfer, resilience, informal construction practices
Conference Title : ICUDRPRR 2022 : International Conference on Urban Disaster Recovery Planning and Risk Reduction
Conference Location : Berlin, Germany
Conference Dates : May 23-24, 2022