

Lecture Notes in Civil Engineering

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Mapping the Resilience Potential of the Portuguese Construction Ecosystem Through a Digital Platform

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Abstract. In an era of increasing natural disasters and hazards, strengthening resilience, particularly in urban contexts, is paramount. This study presents a digital platform developed to map the resilience potential of the Portuguese construction ecosystem. This platform empowers practitioners to input wide-ranging data encompassing their current assets, infrastructure, anticipated hazard probability, and prospective impacts of these events. The platform's use cultivates a comprehensive understanding of risk distribution and impacts, forming the bedrock of evidence-based decisions on resilience enhancement. The study further deepens this exploration through a case study on Portuguese districts, employing the number of IMPIC-certified companies per 1000 population as a measure of urban reconstruction capability—an intrinsic resilience component. Findings reveal significant disparities in reconstruction potential across districts, emphasizing the requirement for targeted resilience strategies. These results underline the innovative potential of the digital platform to map and enhance urban resilience, projecting its broad utility for practitioners, stakeholders, and guiding future resilience-focused interventions.

Keywords: Urban resilience · Decision-making · Asset management · Digital platform · Construction ecosystem

1 Introduction

Urban resilience, the capacity of cities to withstand, adapt to, and recover from a myriad of stresses and shocks, has emerged as a critical area of focus in today's increasingly urbanized world. As the frequency and intensity of threats, both man-made and natural, continue to rise, so does the importance of building resilient urban environments. From the looming threat of climate change to socio-economic vulnerabilities and public health crises, cities worldwide are tasked with managing a complex and interconnected web of risks [1].

Cities, being the hubs of human activity, play a significant role in the global economy and house most of the world's population. They are also hotspots for a range of hazards,