

PERIPHERALIZATION RISK IN URBAN AND METROPOLITAN AREAS. A METHODOLOGICAL PROPOSAL FOR THE ANALYSIS AND MITIGATION

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Engineer, she graduated with honors in Building Engineering and Architecture at the University of Salerno. Her Master's Degree Thesis "La mitigazione del rischio da radon nella pianificazione urbanistica" (The mitigation of radon risk in urban planning) received a special mention of merit at the Italian competition "Urbanistica in Rosa". After graduating, she worked at the GTpu Lab - Urban Planning Techniques Research Group - of the same University, participating in various research projects, also in the context of institutional agreements with local Municipalities for the technical-scientific support to the drafting of urban planning tools. Her research interests concern the analysis and mitigation of territorial risks not canonically considered in urban and regional planning.

ABSTRACT

As cities and poverty continue to grow worldwide, both 'spatial' and 'a-spatial' peripheralization processes expose entire urban and metropolitan areas at risk of degradation, not just traditional peripheries. The spatial sense refers to peri-urban areas, in particular to the phenomena of sprawl and, in general, to land take; the non-spatial sense goes beyond the localization with respect to a center and it is associated with the multidimensional concept of urban poverty or deprivation.

These processes, which go beyond municipal limits, are associated with a widespread unsustainability, against which urban planning can play a key role, as stated in the New Urban Agenda.

Furthermore, according to the European Commission, the fight against degradation in the most deprived areas, through urban regeneration programs, can discourage the increasing land consumption.

Some European countries make use of composite indices to identify areas of intervention, as proposed in the scientific international literature about urban poverty/deprivation, even if a general agreement on the most suitable indicators set is not recognizable, as well as on the threshold values for their classification.

In Italy, where national legislation for urban regeneration is still lacking, there are generally no scientific criteria for the identification of areas in need of intervention, which is usually left to the municipal authorities, on the occasion of sporadic calls for public funding. As a result, interventions translate into operations mainly driven by convenience in real estate transformations, regardless of city planning, while less and less importance is given to territorial strategic planning, which is crucial considering the inter-municipal nature of such processes.

The main aim of this work is to propose a methodology for peripheralization risk assessment, according to the theory of territorial risk, in order to spatially identify and map priority areas, those most at risk, where mitigation actions should be envisaged through urban and territorial planning, starting from a large scale. In this framework, a further objective is to provide a decision support model for the evaluation of the effectiveness of urban regeneration interventions in such areas, in terms of risk mitigation at urban scale.

Such an approach constitutes the novelty of the work. So, peripheralization risk is defined for the first time, as the product of Overall Vulnerability and Exposure. In order to construct the composite index of Overall Vulnerability in the Italian geographical context, a set of Vulnerability Indicators is defined on the basis of a literature review, and structured in four dimensions: Social, Building, Urban and Environmental Vulnerability.

However, the estimation of the composite indices of Social, Building and Urban Vulnerability is more subjective than the Environmental Vulnerability evaluation, due to the lack of aggregation techniques and well-established threshold values in the relevant literature, therefore it requires a different modelling: an aggregation method based on fuzzy logic is used, in order to overcome the greater uncertainty of this process. In this way, two different risk scenarios are delineated: the first considers the three social, building and urban domains; the second all the four peripheralization dimensions identified.

Finally, the work defines a set of mitigation indicators, with reference to vulnerability indicators selected for the identification of priority areas, and a model for the assessment of the most effective urban regeneration alternative, on the basis of analytic hierarchy process (AHP) algorithms.

The methodology for large-scale risk assessment is applied to a conurbation of sixteen municipalities in the Campania region (Italy), known as Caserta conurbation. The obtained results showed that, in all scenarios, areas most at risk can be both peripheral and central neighborhoods, but also entire municipalities, demonstrating how mitigation actions are needed at different planning levels.

Then, the proposed model for urban-scale risk mitigation is tested with reference to an area within the conurbation, belonging to Marcianise Municipality (CE) and found as a priority from the previous risk mapping. This application demonstrates that design alternatives apparently similar in number and type of interventions may have different effectiveness in relation to the reduction of pre-existing vulnerability levels. Since the necessary input data are ordinarily available in planning processes, the entire proposed methodology can be transferred to other geographical contexts.