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The operationalization of resilience, from a theoretical concept to urban re-appropriation: what progress has been made?

Charlotte Heinzlef and Damien Serre
Avignon University, UMR Espace, Geography, Avignon, France (cheinzlef@gmail.com)

Over-urbanization and the increase in flood risk in urban areas have considerably weakened territories and populations. Extremely costly in economic terms, reaching 100 billion euros per year at the end of the century in Europe, floods severely affect populations, causing the death of 475,000 people since 2010. One reason for this is the increasing concentration of goods and people in urban areas. Since 2007 and for the first time, more than half of the world's population has been living in urban areas, and it is projected that by 2050 69.6% of the population will be urban. In 2006, there were already about 3 million dwellings located in flood-risk areas, and one in four individuals at risk of flooding by overflow. This material and human damage leads to social, economic, political, political and environmental impacts that can weaken the urban scale but also the national or even international scale. Faced with this, the responses provided by scientists and managers are also in transition. Management previously oriented towards vulnerability, it now tends to integrate the concept of resilience, taking more into account the systemic aspect of a territory. This concept is defined as the capacity of a (eco)system to "absorb disturbances and maintain its own characteristics" after a shock (Holling, 1973) and to relaunch activities after this one. However, this concept is still very abstract and therefore sometimes inadequate to address the uncertainties of managers and populations. If the resilience concept is perfectly adapted to socio-economic interactions and therefore to analyse urban systems, resilience is still a concept that is not very operational. The objective of this research is therefore to propose an approach to address this lack of operationality. This research therefore aims to operationalize the concept of resilience at the communal level through the creation of a decision-making tool, addressing resilience in the most holistic way possible, using measurement indicators around the urban, social and technical characteristics of resilience. The idea behind this approach is that urban resilience embodies the abilities and capacities of a city and its population to develop before, during and after a disruptive event in order to limit its negative impacts. This scientific positioning therefore makes it possible to analyse urban resilience as a continuum, highlighting proactive capacities that the urban system must develop in order to (re)act in the face of flooding. The originality of the methodology is justified by a collaborative approach, characterized by a socio-economic partnership with the City of Avignon and its urban services. Co-designed, the decision support tool is being tested in the Avignon area in order to respond to the growing situation of urban risks. However, the attention paid to the generic aspect of the tool, using mainly open data, allows it to be tested on a larger scale, nationally or even internationally.