



Improve urban resilience by a shared diagnostic integrating technical evaluation and governance

Marie Toubin (1), Damien Serre (2), Youssef Diab (4), and Richard Laganier (3)

(1) Université Paris 7 - Ecole des Ingénieurs de la Ville de Paris, EIVP, France (marie.toubin@eivp-paris.fr), (2) Université Paris Est, Ecole des Ingénieurs de la Ville de Paris, EIVP, France (damien.serre@eivp-paris.fr), (3) Université Paris 7, PRODIG, Paris, France, (4) Université Paris Est - département Génie urbain, LEESU, EIVP, France

When considering the improvement of resilience, at an urban scale, the first obstacle identified is the lack of communication and collaboration between all stakeholders involved. Indeed, scientists are currently developing methods to assess resilience and proposing indicators to measure the level of resilience of systems but they struggle to have them implemented by operational actors. The issue lies in the fact that urban services, local authorities, economic activities and even city technical departments are not used to share their knowledge and even less, their means. This sector-based fragmentation hampers the resilience of the global system that needs mutual understanding, coordination and mutualisation. The second difficulty is that the tools currently available are usually dedicated to tackle a single risk and don't take into account any domino effects and complexity of urban risks. Then the implementation of methods to improve resilience for only one risk can lead to non-consistent solutions when facing another risk. A holistic approach including the analysis of interdependencies and chain failures is needed to ensure the global resilience of the system.

Considering these two issues, our research will try to improve urban resilience with a method of shared diagnostic between actors from urban services and risk management. Given the importance of networked services in urban contexts (urban development, support of activity and vector of development) and in case of disruption (propagator of the disturbance, role in reconstruction process), this research will focus on urban services and their managers. The main goal of the research is to identify the failings in organisation (information, human resources, and financial means) using the technical evaluation enabled by expertise and experience feedbacks. The interest is to confront field experience and expertise to identify the critical points and above all, have them acknowledged by all the stakeholders. This mutual diagnostic based on scientific methods and completed by experience feedbacks shared by all actors ensure the identification and then the management of failures in order to improve urban resilience.

The issue is to have local authorities, urban services managers and risk managers to work together identifying their own flaws and dependencies. This analysis will be enabled by the study of the technical networks (analysis of its redundancy, its capacity, its topology) (Lhomme et al., 2010) and confirmed by field knowledge and analysis of past events. The main difficulty will then be in the difficulty/willingness of some authorities to communicate and share information but it is precisely a first step in the acceptance of a failure in the global organisation. Potential failures, in terms of information, communication or critical infrastructures can be identified, mapped and shared by all stakeholders in order to have a better understanding of the global resilience.

The solutions stemming from the diagnostic can be technical, organizational or both in the same time. We can assume that technical solutions are already known by the urban services managers and that their main difficulty concerns identification and prioritization; both issues tackled here with the shared diagnostic. The second set of solutions is organisational and requires coordination and a way to share knowledge, which is precisely the point of the shared diagnostic.

The shared diagnostic can be seen as a tool of dialogue and debate between experts but it can also be used to raise public awareness and to involve policy makers. Indeed, beyond its role of resilience assessor, the diagnostic is a tool fostering communication between stakeholders. Then its part in public awareness and decision making is worth considering.

In a first part, we will discuss the relevance of the shared diagnostic in the urban context of sector-based

approaches, being in organisation or risk assessment. The second part will describe the principles of the diagnostic and the way it is implemented with local managers. The last part will consider the interest of the shared diagnostic for future development in public information and decision-making.