



Resilis: a research project to improve urban resilience

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Society and in particular urban society is more and more complex, with new sets of social relations, high degrees of connectivity and competitiveness objectives. If urbanity is made of resources accumulation, power concentration, territorial attractiveness and cultural life; it is also a new vector of risk, particularly due to issue concentration. Beyond external hazards that become more significant when occurring in an urban environment, it can be assumed that the city itself creates new risks. The common consequence is that cities are vulnerable and face hazards magnified by urbanity. In the same time, risks and damages are less and less accepted by populations and economic activities. When cities are supposed to embody security and development, the latest events (Katrina, Xynthia, terrorism) have highlighted their weaknesses and questioned the way risks are anticipated and managed.

Indeed, current policies in risk management and assessment usually focus on a single risk, though the urban context induces domino effects and can spread damages. They are mainly focused on crisis management whereas prevention measures are needed prior to the crisis and recovery plans have to be considered before the event occurs. Regulations and plans are also dedicated to one sector, or one organisation, and yet, interdependencies between organisations, infrastructures and activities are strong in an urban environment. Thus, risk management cannot be tackled without a global approach and an appropriate management of articulations between systems. Last but not least, risk management favours short term measures and struggle to imply populations at every step of the resilience process (prevention, i.e. public awareness, behaviour during the event, and then reconstruction).

These facts have lead researchers and local authorities to the expression of new needs to improve the city resilience. Defined as “the ability of a city to absorb disturbance and recover its functions after a disturbance” (Lhomme et al. 2010), urban resilience has become a new paradigm in risk management methods enabling to tackle the challenges identified above. The Resilis Project aims precisely at the development of those innovative solutions dedicated to improving urban resilience.

The main outcome of the project is the development of methods and tools addressed to local authorities, networks operators, populations and all stakeholders. On the long term, the objective is to develop tools to prepare, adapt, and conceive technical and social systems so that they are able to cope with, absorb and recover from disturbances. Considering these issues, an analysis of the urban system as system of sub-systems will foster an integrated approach with a better understanding of interdependencies and interoperability between actors. Then, a method based on disturbance scenarios and in particular dominos effects will identify the ways urban systems can be impacted and how these impacts can be assessed. Result analysis will identify the characteristics of the resilient city and the correspondent indicators. The outcomes will then be validated by an experimental phase with the contribution of two French cities.

In a first part, we will discuss the relevance of a new project concerning resilience. As far as the concept is broadly used but still not operational, the multirisks and multiscale approach developed in the Resilis project, based on a systemic analysis, is to produce innovative solutions that will be validated by experiments on French cities. In a second part, we will describe the project’s organisation and objectives. Indeed, the methods stemming from the study will be addressed to local authorities to help them improving their resilience, and technical guides will also be provided for technical operators in order to recommend design methods improving the lifelines’ resilience. It has also been highlighted that public awareness and training is required to have them implied in the resilience process. In a third part, we will present the latest results and the perspectives at the end of the first year of the project.

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Resilis gathers researchers from the private sector (Egis, Iosis, Sogreah) involved in urban development or risk prevention, research laboratories (EIVP – Paris School of Engineering, LEESU – University of Marne-la-Vallée department of research in urban engineering, REEDS – University of Versailles-Saint Quentin department of research in economy, ecology and sustainable development), public research (Cemagref – risk assessment, Fondaterra – foundation for sustainable territories). This complementariness in skills and knowledge will ensure the more holistic approach possible with the analysis of both technico-fonctionnal and socio-organizational resilience.