Floods in Italy: research on best practices of risk learning.

Claudio Marciano – University of Genova
Andrea Pirni – University of Genova
Gabriella Tocchi – University of Naples
Annamaria Zaccaria – University of Naples

The city of Genoa in Italy has been flooded at least 11 times since 1970. Messina and Turin have been affected 5 times. Severe episodes of extreme rainfall followed by flooding by rivers and torrents affect other major national metropolitan areas almost every year. In terms of victims and economic losses, the damage caused by these events is dramatic.
Global warming has increased the severity and frequency of these events, but the cause of these tragedies is not only the increase in cumulative rainfall, but also the legacy of urbanisation processes close to the banks of watercourses, poor maintenance of canals, lack of risk awareness among the population and other socio-economic and infrastructural factors.
Although important progress has been made in terms of preparedness, particularly with regard to weather forecasting, the socio-technical systems responsible for risk prevention and management have not always proved capable of learning from past mistakes. There is therefore an urgent need to reflect on what contextual factors and patterns of action enable such systems to be resilient or, on the contrary, to fail.
The purpose of this paper is to present the results of a comparative analysis of flood risk management in three Italian cities that have been affected by at least two severe floods in the last twenty years: Genoa, Messina and Turin. The research, carried out by an interdisciplinary team, produced two main results.
The first concerns a method for identifying cases particularly exposed to flood risk, based on a composite index of environmental, meteorological and socio-economic data.
The procedure was applied to the Italian urban context at the municipality scale, the basic administrative units in Italy. For each municipality in Italy, the proportion of urban area expected to be inundated according to the medium-probability scenario has been evaluated using GIS software. Cumulative precipitation related to each municipality was also assessed, considering precipitation that occurred during the last two decades (from 1990 to today). The composite index assumes values between 0 and 1, where 0 is associated with the municipality (or municipalities) characterized by the lowest exposure to flooding in Italy, while 1 is associated with the municipality (or municipalities) characterized by the highest value. Through this index, a ranking of all Italian municipalities concerning riverine flooding events was conducted, identifying the municipalities most prone to hazards of higher intensity.
Having identified the most relevant cases for study due to their exposure and vulnerability to risk, semi-structured interviews were conducted with experts, administrators, and civil society representatives involved in the recent flooding events, in the three metropolitan contexts of Genoa, Messina and Turin.
Although the final results of the analysis are not yet available, the learning and consequent preparedness in these contexts seems to be connected to the dramatic nature of the most recent event, to the level of conflict put into play by local civil society in order for the administrations to 'keep their pacts' on the promised interventions, and finally to the level of social capital in the territory, in particular through the presence of intermediate bodies (associations, committees, grassroots) that build identification processes starting from the

care of watercourses.The research was carried out in the framework of the RETURN Extended Partners, funded by the Italian Government and the European Commission, and aimed at improving the management of natural, environmental and climate risks.