

## Assessment of risk management capabilities Tool: main results from the application to the Milan case study

The assessment of risk management capability Tool was used to carry out a targeted review of risk assessment capabilities in a climate perspective of the Municipality of Milan. A specific section of this framework concerning *risk assessment* was adapted to shift from a traditional to a more climate-centred approach, which considers the evaluation of future risk scenarios defined on the basis of recent climate projections. The framework was also tailored on the needs of the local scale. The scope is to investigate the local cross-sectoral processes of identifying, analysing and evaluating the risk of the most relevant climate-related hazards insisting on the municipal territory, as well as to identify if and how this process is mainstreamed in existing disaster risk reduction and climate adaptation strategies and plans. The analysis was conducted across six key aspects of risk assessment: *legislative and procedural framework, risk identification, risk analysis, risk evaluation, communication of risk and risk assessment capacities*.

In addition, inspired by the UNDRR *Making Cities Resilient*<sup>1</sup> approach, and specifically by the *Disaster resilience scorecard for cities* tool, a specific scoring methodology was developed and applied (see Figure 1). This common metric ensures comparability of reviews across cities and allows to easily identify trends of improvements over time within the same urban context.

The results of this exercise showed that the Municipality of Milan presents a strong legislative framework governing risk assessment (see score 6 in Figure 1). The Municipality of Milan has been committed to the theme of urban resilience since 2009, participating in several international initiatives such as the Covenant of Mayors and the Covenant of Mayors for Climate and Energy (2018), and the international network C40 Cities Climate Leadership Group. In 2015, it also started a virtuous path of urban risk assessment, joining the international network 100 Resilient Cities promoted by the Rockefeller Foundation. Locally, the Resilient Cities Directorate was established in 2017 within the municipality's administration, with responsibility for coordination of the Air and Climate Plan and the Climate Risk Assessment (included as annex to the Plan). The Municipality of Milan undertook a public participation process, through which citizens' contributions on the Air and Climate Plan, climate projections and risk assessment, were collected.

The municipality of Milan also presents good capabilities in the aspects of risk identification and risk analysis. The analysis of shocks and stresses was updated in 2018 using the 100 Resilient Cities methodology and involved various departments of the Municipality of Milan and local stakeholders.

The main shocks identified are the risk of river flooding and urban flooding, and among the stresses are heat waves and extreme heat. As the basis for the risk analysis, a climate hazard analysis was carried out for these key hazards using data from the Local Climate Profile, commissioned in 2018 by the Municipality to ARPA Emilia-Romagna and ARPA Lombardia. The document presents an analysis of climate historical data and future projection to 2050, based on the RCP4 emission scenario.

Heatwave risk was assessed quantitatively at a census scale, combining the variable of increased frequency of the hazard with the analysis of physical and social vulnerability and socio-economic exposure using ISTAT data and project CARIPO 2017 findings. The risk map, which summarises the results obtained, identifies priority clusters for interventions.

Fluvial and urban flooding risk are assessed separately. The city of Milan is included in the Areas of Potential Significant Risk (APSEFR) updated in 2020 at district level, as defined by the District Basin Authority of the Po River according to the EU Floods Directive and the Italian law. The analysis estimated areas at flood risk for different probabilities based on hydrological-hydraulic analyses referring to historical data. The results identify flood hazard maps considering the return periods of 10, 100 and 200 years. The analysis of urban flood risk due to heavy rainfall is based on two pilot studies (EIT Climate-KIC Safer Places Project and a study from IUAV university) that used a hydrological modelling approach, to combine extreme rainfall data to orographic and lithological characteristics.

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<sup>1</sup> <https://www.unisdr.org/campaign/resilientcities/>

The risk evaluation has been carried out partially: although there is no well-defined acceptable risk threshold value (as reflected in the average score of risk evaluation capabilities in Figure 1), the result of the climate risk analysis was evaluated with the scope of defining priority action zones/clusters for the identification of mitigation and adaptation measures. Finally, the city of Milan has developed a communication and public information strategy concerning climate risk assessment. For the most part, the documents and data in raster format are public and easily accessible via the Municipality's website and Geoportal. The Air and Climate Plan presents actions aimed at communicating risks and emergencies related to extreme weather events and training activities.

To sum up, as shown in Figure 1, the city demonstrates high technical, administrative and financial capacities dedicated to climate risk assessment activities. In particular, the process of citizen engagement and collaboration with regional bodies such as ARPA Lombardia and Emilia-Romagna during the development of the risk assessment is highlighted as good practice. Finally, the establishment of a Resilient Cities Directorate underlines the administration's commitment to dedicate the necessary resources to lay a solid foundation to support adaptation and resilience strategies and plans.

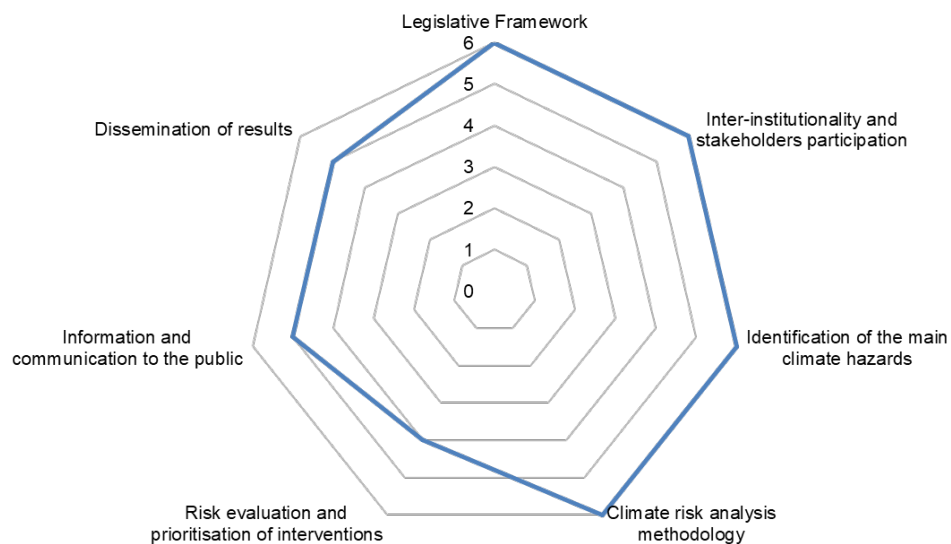


Figure 1 - Municipality of Milan risk assessment capabilities scores

Source: Spano D., Mereu V., Bacciu V., Barbato G., Buonocore M., Casartelli V., Ellena M., Lamesso E., Ledda A., Marras S., Mercogliano P., Monteleone L., Mysiak J., Padulano R., Raffa M., Ruiu M.G.G., Serra V., Villani V., 2021. "Analisi del rischio. I cambiamenti climatici in sei città italiane". DOI: 10.25424/cmcc/analisi\_del\_rischio\_2021