

Popular scientific summary

Indicators for Flood Adaptation Assessment: The Case of New York City

In the absence of significant regional adaptation efforts, rising temperatures, sea-level rise, and changes in extreme weather related events are expected to disrupt societies and generate losses of life and damage to critical infrastructure. Measurement, reporting, and verification are vital steps in evaluating the efficiency and effectiveness of climate change adaptation efforts. Due to the lack of a framework that measures flood adaptation in New York City, this research adapted an existing framework that assesses general climate change adaptation with the aim to ascertain the current level of flood adaptation level of a city. In doing so, the research developed a generic framework to assess flood adaptation at the local level, which can be further adapted and used in other cities.

Although there are several guidelines, reports and approaches to measure flood adaptation, they present some gaps, such as how frequent these assessments happen. The final framework presented is an adaptation of earlier frameworks used by NYC and Local Governments for Sustainability (ICLEI). The framework developed in this research was further complemented and validated by inputs from field experts interviewed. When adapting this framework to cities, there are 4 different levels of adaptation that depend on the city's vulnerability level and the anticipation of its negative consequences. These 4 levels, from lowest to highest, are: lower, lower-middle, upper-middle, and upper. These are determined by a set of indicators related to society, economy, ecosystem services and governance.

The study developed a set of guidelines, later applied to NYC, designed to know if a city would be affected by a big flood event given its current characteristics – referred to here as flood adaptation. By just following 8 steps, a detailed analysis of what your city should improve is obtained.

Whereas some sources state that NYC is not ready for another superstorm like Sandy, others state just the opposite. Despite not being able to ascertain NYC's flood adaptation level, the assessment has some implications for the city. For instance, while NYC is investing a lot in protection of its infrastructure, making it less vulnerable to floods, it still has to improve when protecting that part of society that is more vulnerable, as well as its ecosystems.

This research is aimed at those who are interested in knowing more about how protected their city is against future floods. The application of the framework the research developed aims to guide decision-making in both public investment and policy, as well as to identify changes that can improve and, hence, increase the city's flood adaptation.