**The role of non-governmental actors in the spatial development of flood risks in Flanders (Belgium): towards a co-evolutionary approach in flood risk management**

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## Problem

Recent challenges in flood risk management, call for the diversification of measures and the responsibilization of spatial planners and civil society in dealing with flood risks. Until recently it was the water managers' responsibility to provide protection, but it is becoming clear that increasing risks due to climate change and urbanization make sole governmental responsibility and protection financially and technically untenable. The broadening of flood risk management is aimed at emergency planning on the one hand and spatial planning on the other. This paper focuses on the spatial development of flood risks, both in terms of properties at risk, as in terms of urbanization causing increased run-off and therefore increasing flood frequencies and intensities. The actors involved in this field include residents, architects, contractors, insurers, real estate agents, etc. Therefore, it is expected that including these stakeholders can make managing flood risks more effective and increase overall resilience to flooding.

However, water managers in Flanders (Belgium), the case study in this paper, are often not familiar with relational approaches that include non-governmental actors in their processes, especially in the implementation of measures. Also flood risk management research has mainly focused on the isolated study of (mostly technical) systems. Therefore, knowledge on the role of non-governmental actors in the development of flood risks and on how they can be involved in policy-making is lacking. The question is thus how can these actors contribute to flood risk management in an effective way, so that they not only serve the individual, but also the public interest. And how does this relate to governmental actions in flood risk management?

## Objectives

This papers aims to understand the complex interactions between the different non-governmental actors, flood risks and governmental flood risk management, and how these interactions affect options for policy makers. Understanding these interactions can help the transition towards the inclusion and activation of non-governmental stakeholders in flood risk management.

## Methodology

In order to analyze these interactions, different types of non-governmental actors (residents, real estate agents, businesses, farmers, insurance brokers and environmental organizations) were interviewed and a survey was conducted amongst residents of flood-prone areas in Flanders. The main questions were how these stakeholders deal with flood risks themselves, to what extent they rely on governments and whether they are involved in policy processes. On the other hand, also policy documents on the role of non-governmental actors in flood risks management were analyzed to determine what kind of involvement of these actors they envision. The different attitudes and actions are then analyzed and weighed against each other. It is discussed how this affects flood risk management options and overall resilience, and what could be done to improve their role in flood risk management.

**Main results and contributions**

The analysis shows that each of these actors has their own flood risk management strategy, based on their framing of the problem and possible solutions, within the boundaries of their (perceived) competences and capabilities. This strategy is not always a conscious choice and co-evolves with the context, which is for each actor composed of what others (including governments) do on the one hand, and societal processes such as urbanization, financial crises, climate change, etc. on the other. Therefore, it is not one actor (such as a government in a hierarchical structure) that determines how flood risks are managed. Rather, the co-evolutionary process between all the actors involved defines how flood risks develop and are managed.

This co-evolutionary view on the development of flood risks calls for different processes in governmental flood risk management. Inherent uncertainties and complexities related to extreme weather events and spatial developments makes linear policymaking based on cause-effect relationships and a hierarchical operational structure untenable. Within this view, policy makers need to position themselves within the co-evolutionary processes, anticipate the feedback they can expect from their decisions and adapt to this feedback when necessary.

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