

Abstract

# Role of Negotiation in Upstream-Downstream Flood Protection: Demonstration in Role-Played Flooding Game <sup>†</sup>

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**Abstract:** Large river floods threaten intensively used urban areas across the world. Projections of IPCC expect such risks to increase in the future. To deal with flood risk along rivers water can be retained upstream at places where less damage is caused and more vulnerable land (downstream) can be adapted to the flood risk (resilient cities). This catchment-oriented approach to flood risk management implies that upstream and downstream parties need to agree on where to store and where to adapt to floods. However, this approach implies that many diverse stakeholders (such as mayors, spatial planners, homeowners, etc.) enter the decision-making process, which influences efficiency of the measure selection. Measures in a catchment of a river are often related and influence each other—what happens upstream can have substantial effects downstream. In particular, when rivers cross administrative or national boundaries, these upstream-downstream effects become an issue of hydro-diplomacy. Upstream is usually not motivated to implement measures from which mostly only downstream profits. Therefore, negotiation is necessary to find agreement between upstream and downstream and to implement the most effective and efficient measure. The negotiation becomes more complicated if multiple upstream and downstream parties are involved. In this contribution, a role-played game that tries to better understand the dynamics of negotiations in multiple upstream-downstream relationships is introduced. The game will be played with real stakeholders (mayors and river basin managers) and the dynamics of negotiation will be explored in different scenarios based on the Cultural Theory of Risk. This way, the game allows to compare effectiveness of negotiation in different scenarios. Beside the different institutional settings, the players' level of flood risk aversion will be tested. The aim is to demonstrate (play) the game during the session focused on games and experiments. The attendees take on roles of mayors and will play one scenario of the game. The game shows how negotiations may (and indeed should from an economic point of view) lead to a Pareto-improving situation, making some players better off without worsening a situation of any other player. The demonstration presents the setup of the game and leads to discussion about results of the negotiations.

**Keywords:** negotiation; flood protection



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