

Property rights in flood protection: Experimental design of upstream/downstream negotiations

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Climate change is contributing to increasing occurrence and severity of flooding. Affected municipalities deal with the issue by constructing local flood-protection systems in a form of barriers and lately also in a form of nature-based solutions. These measures are typically built in downstream cities, which are the ones most affected by flooding. However, the current setting is usually not the most efficient in terms of cost and spatial planning. Lower effort is required to retain water (at least partly) in municipalities located upstream in the catchment. Ideal flood-protection system consists of a combination of upstream and downstream measures. The reason upstream cities rarely build water retention measures is an imperfect division of property rights. To upstream cities, damage caused by flooding in the downstream areas are only external costs that they are currently not responsible for. This opens room for negotiation. In current setting, downstream cities may offer payment to municipalities located upstream in an exchange for a construction of retention measures. If the prevented damage costs outweigh the payment and negotiation costs the outcome may be profitable for both sides.

This contribution presents an experimental design that allows to test ability of relevant stakeholders to find a suitable flooding protection mechanism under various circumstances. Upstream/downstream representatives (river basin managers and mayors) are repeatedly asked to negotiate about the most efficient flood-protection system while property rights differ in each situation. The scenarios follow the Cultural Theory and cover the whole spectrum of possible institutional settings starting with “everyone pays own costs” over “shared costs” to the “polluter pays principle” and also implement an option of insurance. After the experiment, in-depth interviews provide a feedback from the involved stakeholders. Experience gained should help the stakeholders in planning an optimum institutional setting for flood protection in an upstream/downstream context.