Flood-resilient cities start at home

KEY POLICY MESSAGES

• Learning to ‘live with the flood’ instead of ‘fighting the flood’ starts at home – on private land.
• The law has a strong influence on how homeowners respond to floods.
• Risk communication is not just about informing citizens, but also clarifying public and private responsibilities.
• Fair distribution of benefits and burdens requires coordinated private action and public regulation.
Flooding is an expensive climate-related disaster and a threat to urban life. Climate change will increase flood frequency and scale. Continuing developments in flood-prone zones compound the risks. Protecting all properties to the same standards is ever more challenging.

Research has focused on improved planning and adapting publicly owned infrastructure such as streets, evacuation routes, and retention ponds. Damages often happen on private land. To realize a flood-resilient city, owners of privately owned residential houses also need to act.

Measures such as mobile barriers and backwater valves or avoiding vulnerable uses in basements can make homes more flood-resilient. But private owners may be unaware of flooding risks or lack the means and knowledge to act. Incentives may be insufficient, while fragmented and responsibilities entrench inertia. The challenge is motivating homeowners to take steps.

Political and societal systems influence the action citizens are prepared to take and what they expect their governments to do. The responsibility for implementing measures is shared between the public and the private domain in different degrees in different countries. This special issue explores and discusses the division and balance of responsibilities between the public and the private.

LEVEES CREATE DILEMMAS

Levees are meant to offer protection against flooding. At the same time, levees create a paradox. Building a levee may induce more property investment, increasing the damage should the levee breach. Building stronger levees to reduce that risk in turn potentially increases the risk by encouraging more development. The result is a spiral of ever-increasing dependence on levees and increasing expenditure.

Ferdous et al. show the paradox holds true both in high-income countries like the Netherlands and low-income countries such as Bangladesh. Levees allow the Netherlands to be inhabited, while in Bangladesh, levees on Brahmaputra/Jamuna River floodplain shape socioeconomic advantage and migration.

Spiralling costs have led to ‘soft’ policy recommendations, prevention, preparedness, emergency response and recovery after flooding. ‘Soft’ measures prioritise natural capital, community control, simplicity and appropriateness, while ‘hard’ engineering is capital-intensive, large, inflexible and complex (hence out of community control).

Flood risk management requires both hard and soft measures. Trade-offs between the advantages and disadvantages should be considered carefully. Resilience requires risk management to be integrated with other policies, in particular land-use planning.
COMMUNICATION ONLY GOES SO FAR

Communication is essential to motivating homeowners but limited in its effectiveness. No one approach fits all, given how different households perceive risk.

In a pilot project in Flanders, Belgium, Flanders Environmental Agency experts gave free, tailor-made advice on floodproofing to homeowners in a high-risk area. Davids et al. found a few decided to adapt their house based on the advice. Most felt better informed, but still held government responsible.

Some blamed government for allowing increased urban development, or their homes to be built in a flood-prone area in the first place. Others pointed to the lack of government support in this shift of responsibilities and how difficult it was to achieve what was advised. They were willing to act only if the local government acted also.

The study showed tailored advice did not overcome the deadlock, partly because the experts decided what homeowners needed to know in terms of probabilities. Residents were left with a very limited sense of what they should or could do. It raised anxiety about risks beyond their control rather than triggering adaptation.

Residents preferred to know the likely impact and consequences of floods on their well-being and property.

The mismatch between residents’ risk perception flood experts’ water management illustrates how people ‘hear’ and understand the same information in different ways. Snel et al. highlight the need for diverse communications styles and messages to cut through to all participants.

RESPONSIBILITY TREADS A FINE LEGAL LINE

As floods become more frequent, intense and damaging, technical preventative solutions are less effective. Policies to improve cities’ flood resilience must address private property issues, either because private properties are affected or because they can be part of the solution.

URBAN RENEWAL CALLS FOR ‘SPONGE’ CITIES

After a century of a moderate flood activity, Central Europe experienced several extreme floods at the turn of the millennium. Yet, Raška et al. found that flood risk management rarely figures in redevelopment plans to address population and economic decline in some cities since the fall of Communism.

Clearing abandoned industrial sites and homes in flood-prone zones can free up land to act as a ‘sponge’, making the rest of the city safer and more attractive for investment. Case studies in three Czech cities, Ústí nad Labem, Ostrava and Olomouc, show this is easier said than done, however.

Post-Socialist urban planning relies on a steady-growth paradigm. City authorities and private companies treat urban decline as a problem of restoration rather than an opportunity to change land use. Neither can agree on the best way forward. Weak institutional design and insufficient finance compound the inertia.

The EU Floods Directive (EC 2007/60/EC), calls for a multilevel, decentralised approach involving land and homeowners. In Central Europe, fragmented and disputed land ownership weakens central governments’ capacity to coordinate flood risk management, even though the public continues to see it as a state responsibility.

The dilemma intensifies the tension between urban economic renewal goals and redesigning Central European cities to live with floods rather than trying to stop them.
Flood resilience rests on the definition and balance of homeowners’ and public authorities’ responsibilities. Rauter et al. and Jacobson describe how the legal context, whether common law, civil law or another system, influences flood resilience measures. But these measures face limits in addressing the fraught relationship between government responsibility and individual property rights. While it is the state’s responsibility to communicate flood risk, in most countries it is the property owner’s responsibility to implement protection measures on private land. Conflict arises when owners are denied certain land uses or additional conditions on use are imposed. Information on measures to protect private property from natural hazards is often limited, and hence the legal responsibility of the affected people is low.

Authorities have a responsibility to communicate accurate information to property owners. If respective legal responsibilities are unclear and poorly communicated, homeowners will not play their part in improving flood resilience.

NEXT STEPS

Whether cities can live with floods instead of fighting them depends on providing space to mitigate their scale and impact. Private property owners have an important role to play in creating urban floodplains that are more resilient to inundation.

Planning and policy makers need to realign their efforts in ways that motivate homeowners to engage despite institutional and regulatory fragmentation. How to do this is still an open question, but finding an answer is imperative.