

Flooding, homes and loss: insurance as a risk-transfer mechanism in Vietnam

Policy pointers

- Households should be given incentives to take action in preparation before floods occur. This is shown to reduce the overall impact and household-level losses.
- Governments need to participate in insurance programmes to ensure they are both affordable and accessible.
- Establishing an early-warning system to allow residents as much time as possible to prepare is essential to reducing the costs of flooding.
- Index-based household insurance is a new concept in Vietnam. Raising awareness about the mechanism is vital to ensuring that those who need insurance have access to it.

As climate change threatens low-income communities with intensified environmental risks, the need to provide mechanisms to help poor households cope with these risks grows. In Vietnam, deltaic low-income communities are at high risk of flooding, resulting in catastrophic damage and associated costs. Many households have to pay for materials and labour when preparing for and recovering from floods, which can represent a significant portion of their annual income. One mechanism to help communities cope with the costs of intensifying floods is index-based insurance. In a recent study, 66 per cent of respondents expressed an interest in such a scheme. Households in heavily flooded areas are especially interested in government-supplied insurance. This means that there is a clear role for government involvement in index-based insurance, ranging from promoting flood preparations to reduce vulnerability to providing the risk-transfer mechanism itself.

Flooding in Vietnam impacts the urban poor hardest

Climate change is exacerbating flooding events in Vietnam, intensifying the impacts, losses and damages experienced in urban areas, especially by the poorest and most vulnerable community members. Low-income households in urban communities in particular face increasing costs due to more intense flooding and inundation. As a result, the need for capacity-building mechanisms that will assist these households to better cope and recover after floods is quickly growing.

Two studies conducted in Vietnamese cities investigated flooding costs borne by households and explored index-based flood insurance for vulnerable communities as a possible risk-transfer mechanism against future flooding in Vietnam.

Rising water = rising costs

Vietnam is under extreme threat from flooding related to sea-level rise and climate change. Under the more severe projections for the region, the maximum inundation depth may reach up to 1.51 metres.¹ A recent study¹ examined the costs borne by households as a result of floods like these in Can Tho City, which experiences fierce flooding from several sources: the Mekong River, high tides, heavy rains and due to the infrastructural pressures of urbanisation. These floods can inundate up to 50 per cent of the city at one time.

In the study, a survey of 250 households showed that urban residents incur both direct and indirect costs as a result of this flooding (see Box 1). These costs are experienced at different stages: before, during, and after a flood event. And these costs are consuming a significant and increasing portion of household income.

Figure 1: A main street in Can Tho City flooded by rain



Photo: Vo Thanh Danh

In Can Tho City, residents know that flooding usually occurs between August and November: the most severe floods occur in October. During these times, 50 per cent of households surveyed are heavily inundated (with water coming inside the house), with 73 per cent of inundated homes experiencing 20–50cm of water. As a result, three quarters of all survey respondents agreed that flooding had become very serious in the last five years. Over half believed that urban flooding would continue to be a serious issue over the coming decade.

While some flood warnings are provided in Vietnam through the media (weather forecasts and news), most respondents were aware of impending floods based on their own past experiences and knowledge of heavy rains and

high tides. This awareness is frequently shared with family, friends and neighbours through word of mouth.

Flooding affects not only homes, but health as well. Rising waters can exacerbate existing issues such as polluted environments and poor hygiene, increasing the occurrences of illnesses like influenza and skin diseases. The resulting stress after flooding also negatively affects individuals' mental health.

Of the surveyed households, 65 per cent had coping strategies in place before a flood occurred. These strategies included raising the base of their homes, constructing walls around their homes made of concrete or sandbags, moving furniture to higher places, constructing concrete shelves to store valuables and food higher up, repairing or clearing drainage systems and installing pumping machines in homes.

The average annual direct costs for a household due to flooding was US\$64, comprised of US\$29 spent before, US\$19 during, and US\$16 after the flood. The majority of the before-flood costs were fixed (72 per cent), while costs of repairs and cleaning in the during- and after-flood period were all variable.

The total annual indirect costs to a household totalled US\$578, of which US\$19 were incurred before, US\$440 during and US\$118 after the flood. Lost income, both as wages and revenue in the case of small business owners, is the greatest contributor to these significant costs (42 per cent), followed by health costs (23 per cent). There is a significant difference between investments in before-flood costs for flood preparation (totalling US\$48) and the costs during floods and for post-flood recovery (\$593). This highlights the importance of investing in protective measures before a flood to prevent a costly recovery.

The results of the study demonstrate that overall public awareness and levels of concern about flooding, the respondents' education level, and their household's location were all statistically significant factors relating to economic losses incurred due to floods.

Box 1. Defining costs

Direct costs are flood losses that have a real 'dollar' value attached to them. These can be expenses associated with preparing for or coping with floods such as labour and material costs such as preparing and repairing homes before and after floods.

Indirect costs are flooding losses which are not financial, but which are related to opportunity costs. For example, a resident's commute to work may have to change and take longer, vendors may see reduced traffic and revenue, or people may miss work all together as a consequence of the flood.

Fixed costs are costs that are constant no matter what happens in a flooding event. They may also be considered 'sunk' costs in that they are not recoverable. For example, the cost of building a concrete flood-protection wall will be the same, even if there is no flood.

Variable costs will depend on the scale of the flood, for example the height of the flood waters.

The urgent need for risk-transfer mechanisms

The Can Tho study demonstrated that households may incur significant costs due to flooding, which, for households with irregular or low incomes, can tip them into further precariousness. Due to the limited financial support available for low-income households, families rely on their savings, mortgage their land and assets, or take out emergency loans to spend on recovery. These strategies often leave families more vulnerable and run a risk of insurer insolvency and defaults on claims. As a result, interest is rising in developing financial support mechanisms for those most at risk and affected by disaster.

Insurance schemes are increasingly considered as a source of economic security for low-income, high-risk households. These schemes pool economic risk against weather-related disasters, and can develop relationships between government and the public in disaster risk reduction and climate change adaptation realms.²

What is index-based insurance?

Traditionally, household insurance schemes transfer risk from an individual to an insurance company, where a payout is awarded after appraisal of the damages. By contrast, insurance for catastrophic disasters for low-income groups can be offered through an **index-based insurance scheme**, which works by providing a payout to groups of insurance holders (i.e. farmers or communities) when an agreed upon indicator variable is met.³ An indicator variable, also termed a ‘weather proxy’ or ‘index’ can be a certain number of days without rain, a minimum crop output, or a flood of a specific height.^{2,3} These schemes do not require indemnification (verification of losses), unlike conventional household insurance.

The insurance market in Vietnam

The Vietnamese government specifically has shown great interest in insurance mechanisms for disasters and agriculture and encourages the development of a private disaster insurance market. This market will reduce government liability after disasters by transferring disaster risk from households to the private sector. Of the 39 registered insurance companies in Vietnam in 2012, 28 offered non-life insurance, covering a range of occurrences such as fire, explosions and natural disasters. But under the existing schemes high-risk, low-income communities are uninsurable.

A recent working paper⁴ demonstrated a definitive interest in index-based flood insurance, through the use of a choice experiment. Using rainfall, river heights, wind levels and storm classifications as their simulated weather indices, researchers surveyed 387 households in Da Nang City in Vietnam to assess their levels of interest in participating in various insurance schemes.

The majority (66 per cent) were interested and willing to pay for flood insurance claiming to be influenced by flood return periods (33 per cent), insurance premiums (27 per cent), providers (18 per cent) and fatality risk (13 per cent). The research also revealed that households

in heavily flooded areas have a 69 per cent probability of demanding flood insurance, specifically government-supplied insurance.

The 34 per cent uninterested in flood insurance either claimed they were happy with the current situation, were unable to afford flood insurance schemes, or were not interested.

Using insurance to transfer risks and recover costs

It is clear that insurance can play an important role in reducing risks and recovering from costs such as those experienced by households in the Can Tho study. Insurance helps affected households to recover from catastrophes through the financial recovery of losses. Additionally, insurance can be used to provide people with an incentive to reduce their exposure to risks and minimise damages. Examples of this behaviour include avoiding building in areas identified as high-risk, planting vegetation to ease inundation during storm surges and high tides and making more preparations for their homes and valuables before a flood.

Risk-averse households are known to spend less on preparations when there is little guarantee of return for these investments – that is, if they lack confidence that the investments will survive a flood or that they will be compensated if their homes are damaged.³ Insurance for damages after flood events transfers risk to the insurance providers. This should increase homeowners’ confidence to invest in flood preparations and lower their overall household costs associated with floods.²

Index-based insurance is not without flaws. Challenges with the scheme include affordability, weak institutions, financially illiterate actors and the unreliable nature of climate-related hazard parameters. These can pose challenges to the design and implementation of insurance schemes. Additionally, they are relatively untested in urban contexts.

However, the opportunities that insurance can provide to transfer risk – acting as an incentive to take preparatory action and reduce flood-related costs – makes index-based insurance schemes an efficient and reliable risk-management and resilience-building tool in urban contexts.

Facilitating access to flood insurance

Based on these two Vietnamese studies, we can make several recommendations related to reducing flooding costs and facilitating the implementation of index-based insurance in Vietnam.

Firstly, households need to be encouraged to take appropriate action to prepare for floods as early as possible. Household investments in preventative and adaptive action before floods – such as moving possessions to a safer place, installing sandbags around the home or clearing drainage systems – reduce the after-flood costs and losses experienced by households.

Secondly, as insurance encourages households to take action to prepare for floods, the government should

participate in index-based insurance programmes to ensure that households have access to them. Governments often already shoulder the financial burden in supporting local communities to recover from floods damage through compensation payments.

One way for governments to participate is to subsidise insurance premiums for households purchasing insurance. In a private market, these premiums are considered to exceed 'fair' values. The scale of the subsidies must be balanced, to ensure that as many people as possible can take out the insurance without removing the incentive for taking preventative measures.

In the case of Vietnam, the state-owned insurance company Bao Viet could step into the important role of developing flood index-based insurance schemes, with the government providing financial support. From the research on insurance preferences, all of the respondents stated a preference for a state-owned insurance company rather than a private one, further stressing the key role of governments in index-based insurance schemes.

To further assist with early preparation, an early-warning system for impending floods would offer households more time to take action to cope with flooding. The more aware people are, the more measures they can take. Flood warning information could be paired with recommendations for appropriate preparation measures.

There are several existing early warning system projects in Vietnam that could be scaled up to more cities. The Centre for International Studies and Cooperation (CISC) in Vietnam focuses on community-based warning systems that are appropriate for low-income areas.

They are currently using river and rain gauges, sign boards explaining risk indicators and their associated safety actions, and hazard mapping to measure physical risks. These risks are then communicated to residents through alarm bells, drums, SMS texting, loudspeakers and the Internet.⁵

Early warning systems include visual diagrams to ensure community members of all ages and education levels can benefit from the warning. Furthering this accessibility, communities are encouraged to 'learn by doing', using drills and interactive training to practice preparatory actions.⁵

Finally, if insurance is a largely new mechanism in a country or region, as it is in Vietnam, raising awareness about the scheme, how it functions and its potential benefits is important. Insurance providers and governments should use community meetings and local media to educate communities about the insurance schemes. Research recommends targeting campaigns towards older heads of households and areas at the highest risk of flooding.

Aim of Series:

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Collaborators:

This briefing was prepared with Anne Tadjell, University of Waterloo, Ontario and visiting fellow at the International Institute for Environment and Development (IIED).

Notes

1. Danh, V.T. (2014) *Household economic losses of urban flooding: case study of Can Tho City, Vietnam*. Asian Cities Climate Resilience Working Paper Series 12, IIED, London. <http://pubs.iied.org/10715IIED.html>
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