

# How are households contributing to flood risk management? Empirical evidence from a highly flood-prone urban region in Central Vietnam

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## Case study: Huế, Central Vietnam

- Fast-growing mid-sized city; 2022 pop.: 430.000
- Located along the Perfume River, bordering Tam Giang Lagoon and South Chinese Sea
- Severe flood impacts in 2020 and 2022
- Regional climate change scenarios project increasing rainfall intensity



## Background & Frameworks

- Behavioral turn** in flood risk management [FRM] (Kuhlicke et al. 2020)
- Research aim: understand how FRM contributions are divided between households and institutions in Huế - on paper vs. in practice
- Own framework developed based on **social contract theory** (Blackburn & Pelling 2018) and its operationalization (Doshi & Garschagen 2023)

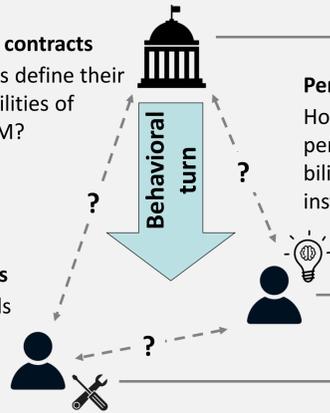
### Legal-institutional contracts

How do institutions define their role and responsibilities of households for FRM?

### Perceived contracts

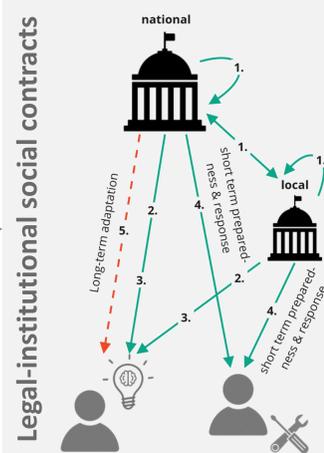
How do households perceive their responsibilities and the role of institutions for FRM?

**Practiced contracts**  
How do households contribute to FRM in practice?

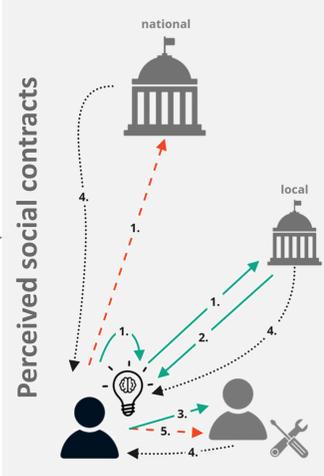


## Mixed method approach

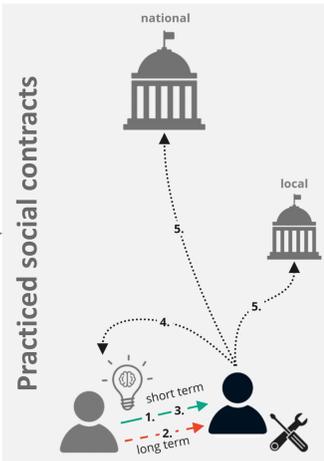
- Qualitative content analysis of disaster risk governance legislation
- Statistical analyses of household survey (n=550) results
  - Correlation -  $r_s$ : Spearman,  $r_{pb}$ : point-biserial; significance: \*\* $p < 0.01$ , \* $p < 0.05$ ;  $R^2$ : effect size
- Qualitative content analysis of expert interviews (n= 14, ongoing) with national & local authorities, local civil society, and international & local academia
- Qualitative follow-up household interviews (n=30, ongoing)



- Policy documents emphasize **central role** of Vietnamese institutions, with **divided responsibilities** between different levels depending on the **severity** of flood events
- National & provincial level legislation clearly outlines **high responsibility of individuals** ("4-on-the-spot" guideline)
- Strong focus on individual **short-term preparedness** (follow warnings, stockpile food, protect houses) and **disaster response** (cleaning, provide shelter to affected)
- Practiced **preparedness** and **response** by individuals **highly valued** by authorities
- Individual self-attributed **responsibilities for long-term flood risk adaptation** stated as **low** in Vietnam's National Adaptation Plan (2023)
  - "The awareness and participation of the whole society in the Climate Change response is not high, as they **assume that this is the task of the State** [...]."

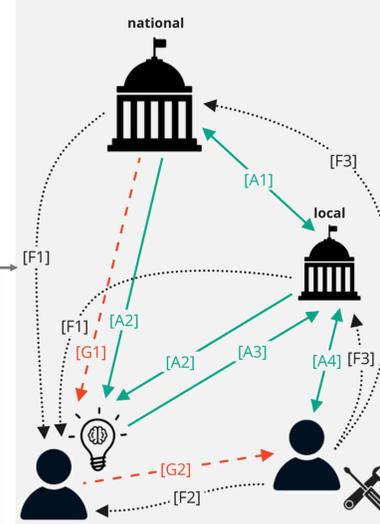


- Households perceive themselves as **most responsible actor**
  - Households: 60%; local government: 32%; national government: 7%
- High perceived **own responsibility** and **accountability** to local institutions
  - 70% rated own responsibility 4 or 5 on a scale from 0 (low) to 5 (high)
- High perceived responsibility and accountability drive **intention to act**
  - Perceived responsibility - intention of future action:  $r_s = .464^{**}$  ( $R^2 = 22\%$ )
- Intention also driven by **experiences of past flood risk management**
  - Intention - perceived effectiveness of own measures:  $r_s = .476^{**}$  ( $R^2 = 23\%$ )
  - Intention - perceived effectiveness of government actions:  $r_s = .420^{**}$  ( $R^2 = 18\%$ )
- Bimodal distribution of intention** to undertake future flood risk management
  - 43% rated intention 4 or 5 on a scale from 0 (unlikely) to 5 (likely); 24% rated intention  $\leq 2$



- 90%** of households engaged in **short-term preparedness**
  - Securing valuables (84%), pile stocking food (69%), shutting down electricity (39%)
- 16%** engaged in **long-term prevention** - 12% responsive, 5% anticipatory
  - House elevation (13%), safe storage of valuables (5%), electricity proofing (4%)
- Perceived **responsibility** only **minor driver** of action
  - Perceived responsibility - past short-term action:  $r_{pb} = .202^{**}$  ( $R^2 = 4\%$ )
- Positive/negative **feedback** of own past **action/inaction** on future **intention**
  - Intention - past inaction:  $r_{pb} = -.373^{**}$  ( $R^2 = 14\%$ )
  - Intention - past coping:  $r_{pb} = .384^{**}$  ( $R^2 = 15\%$ )
- Effective household action led to **institutional anchoring** of individual contributions

## Discussion of key findings



## Alignment

- [A1] Shared but differentiated institutional responsibilities with clear outlined roles across levels
- [A2] Clearly stated responsibilities of individuals in legislation, matching households' high levels of perceived responsibility
- [A3] Households expect local institutions to guide flood risk management, matching the institutionalized coordination role of local authorities
- [A4] Close collaboration of local authorities and households

## Gaps & Mismatches

- [G1] High perceived responsibilities and intention to act do not always translate into practiced contributions; particularly for long-term adaptation
- [G2] National institutions perceive households' responsibility and intention for long-term adaptation low, mismatching actual high perceived responsibility and underestimating barriers for individual action

## Feedbacks

- [F1] Perceived government action effectiveness increases own perceived responsibility and intention to act
- [F2] Own action effectiveness beliefs and practiced action increase own perceived responsibility, while past inaction reduces self-attributed responsibility
- [F3] Active contribution of households led to institutionally anchored strong role of individuals

## Conclusion & policy outlook

- Government should provide support to households to overcome action barriers and allow them to fulfill their institutionally anchored responsibilities
  - e.g. adaptation capacity building through skills training or financial support
- Need to better understand drivers of action and barriers of inaction to provide entry points for support
- Households and institutions should shift focus from short-term preparedness and response to long-term adaptation
  - E.g. through co-developed, institutionally anchored strategies (similar to "4-on-the-spot")

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## References

- Blackburn & Pelling 2018: The political impacts of adaptation actions: Social contracts, a research agenda.
- Doshi & Garschagen 2023: Assessing social contracts for urban adaptation through social listening on Twitter.
- Kuhlicke et al. 2020: The behavioural turn in flood risk management, its assumptions and potential implications.

