

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

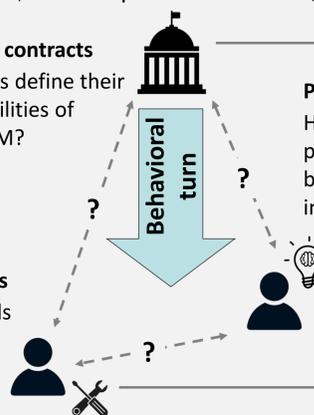
How do institutions define their role and responsibilities of households for FRM?

Perceived contracts

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

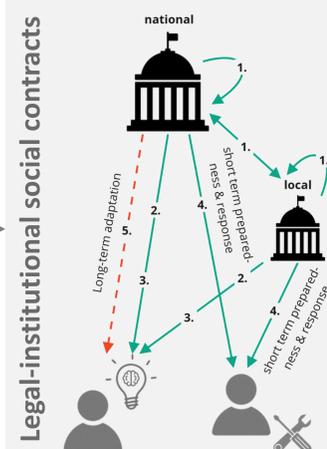
Practiced contracts

How do households contribute to FRM in practice?

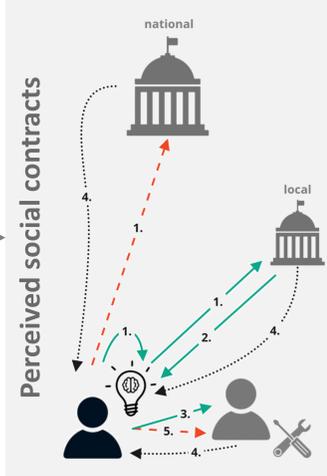


Mixed method approach

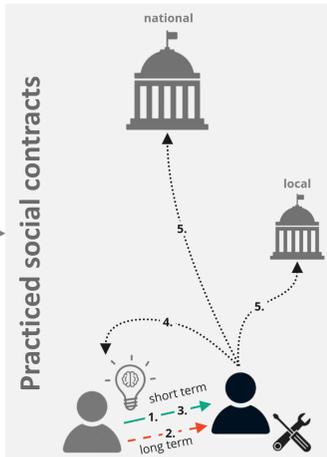
- Qualitative content analysis of disaster risk governance legislation
- Statistical analyses of household survey (n=550) results
 - Correlation - r_s : Spearman, r_{pb} : point-biserial; significance: ** : $p < 0.01$, * $p < 0.05$; R^2 : effect size
- Qualitative content analysis of expert interviews (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** [...]”

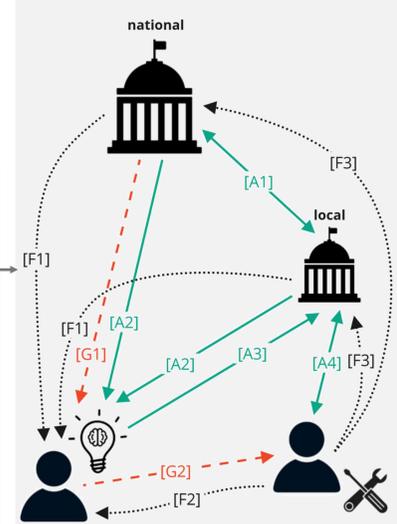


- Households perceive themselves as **most responsible actor**
 - Households: 60%; local government: 32%; national government: 7%
- High perceived **own responsibility** and **accountability to local institutions**
 - 70% rated own responsibility 4 or 5 on a scale from 0 (low) to 5 (high)
- High perceived 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 ≤ 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.

