

# How citizens perceived the German flooding in 2021 and which actions they took

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# The Survey

# Online survey

## Objective:

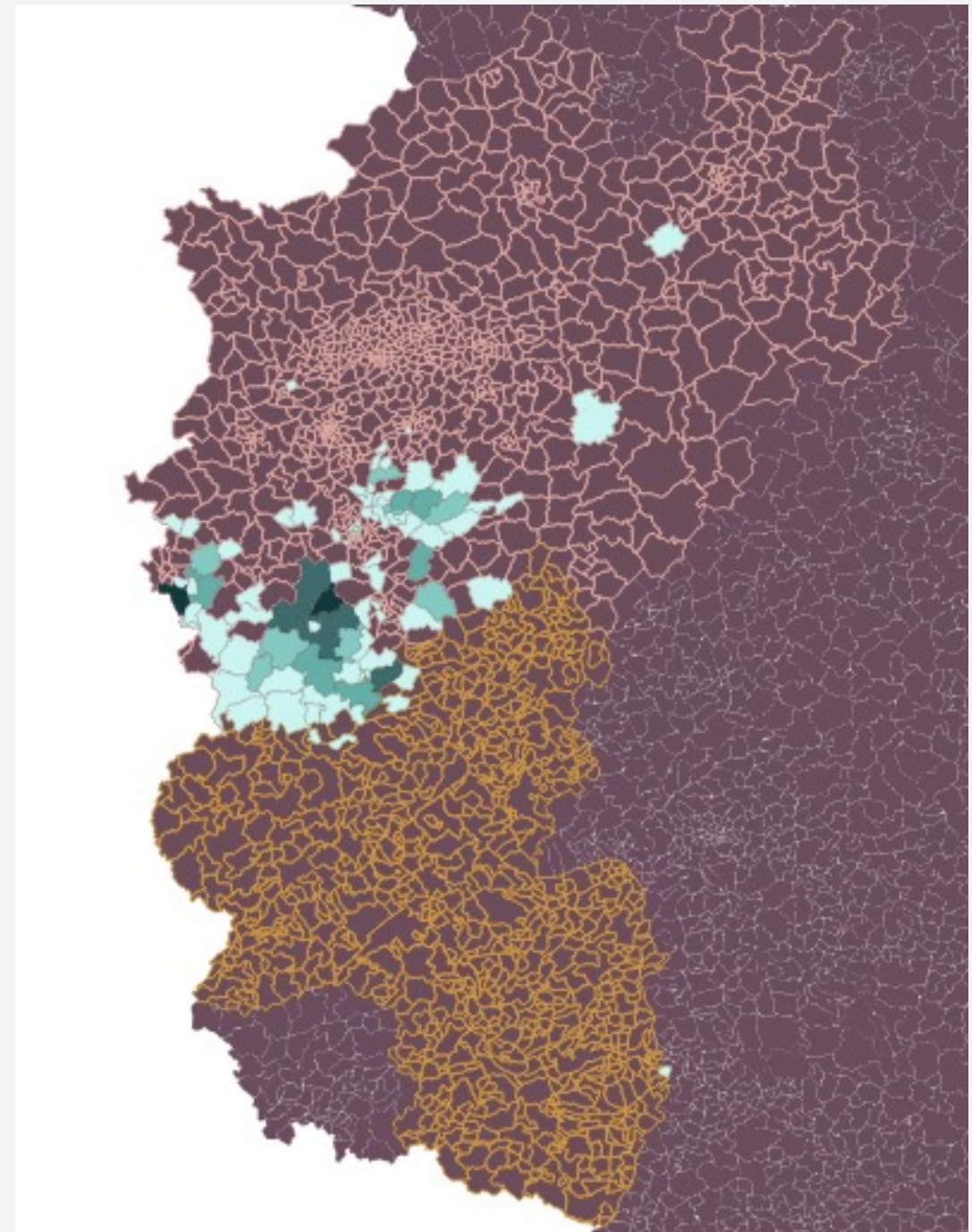
- Gain an understanding of the citizens' perspective on the flood event in the context of early warning, preparedness, and response

## Method:

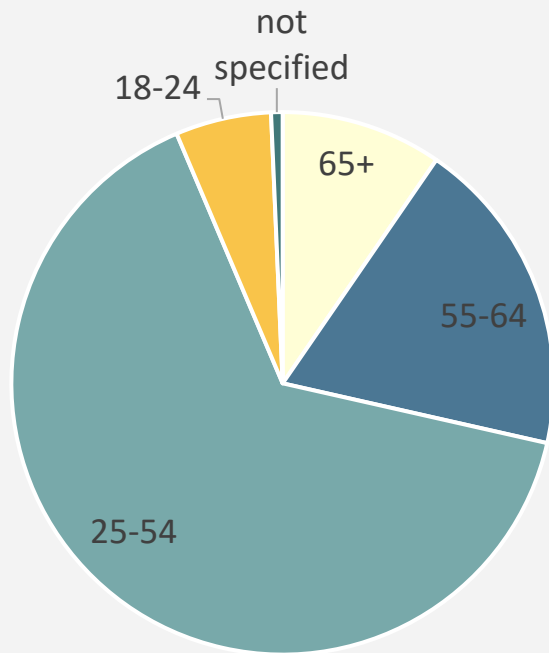
- Online survey with open and closed questions
- Data collection: March to July 2022 in North-Rhine Westphalia & Rhineland-Palatinate
- Dissemination channels: WhatsApp, Facebook, LinkedIn, Twitter

## Responses:

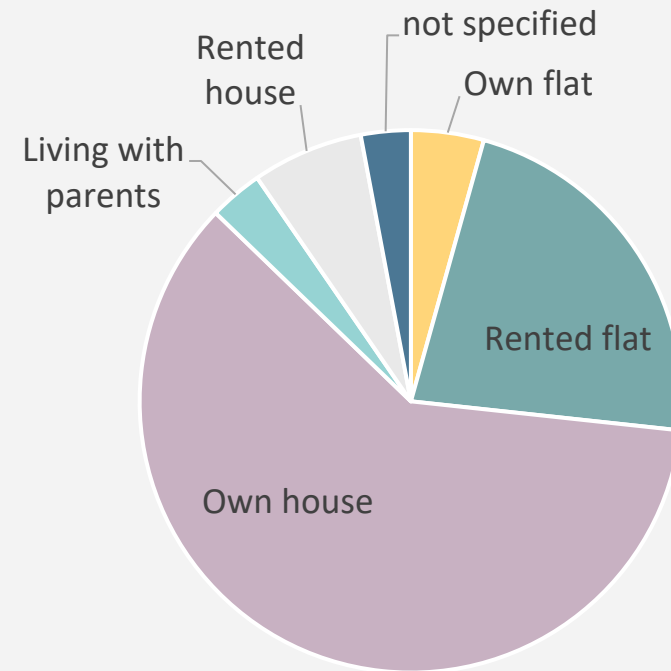
- 438 responses (434 in German & 4 in English)



# Who responded?



Age Structure

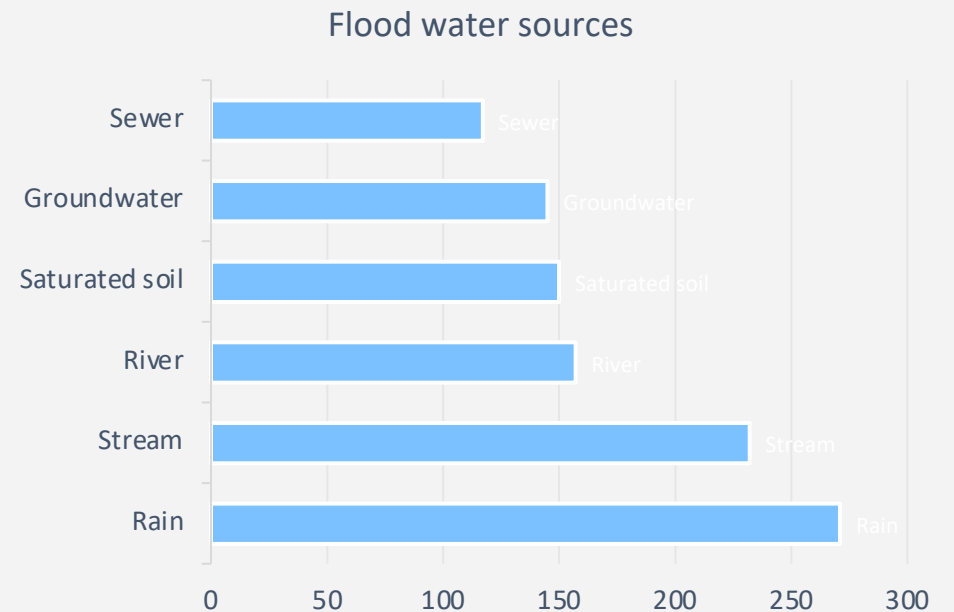


Living Situation

# Findings

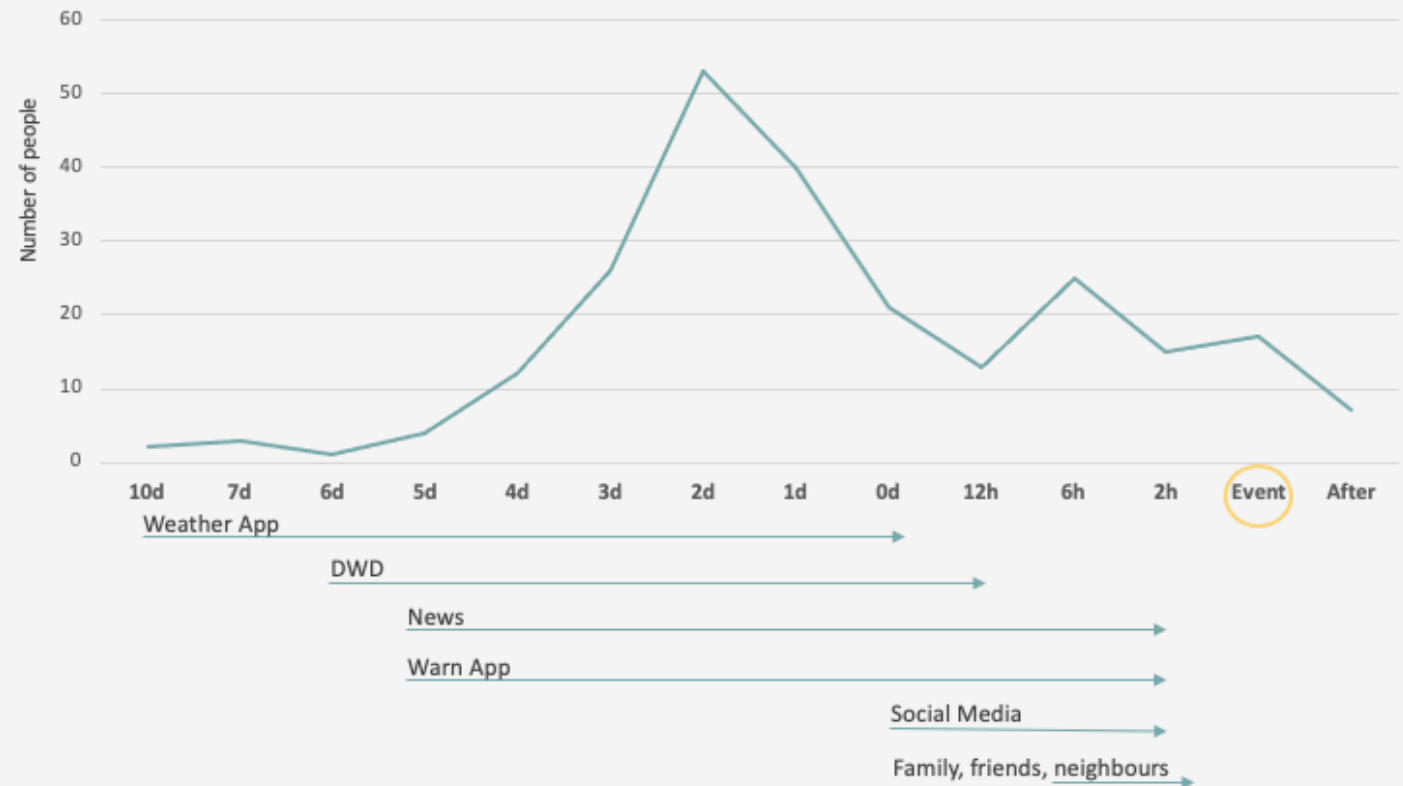
# Need for local focus

- One of the main source of flooding were streams
- Dams, bridges,(woody) debris, sealed surfaces were perceived as main factors that increased flooding
- Local differences of these factors were obvious between municipalities
- Overall high awareness of natural solutions for reducing future flood risks

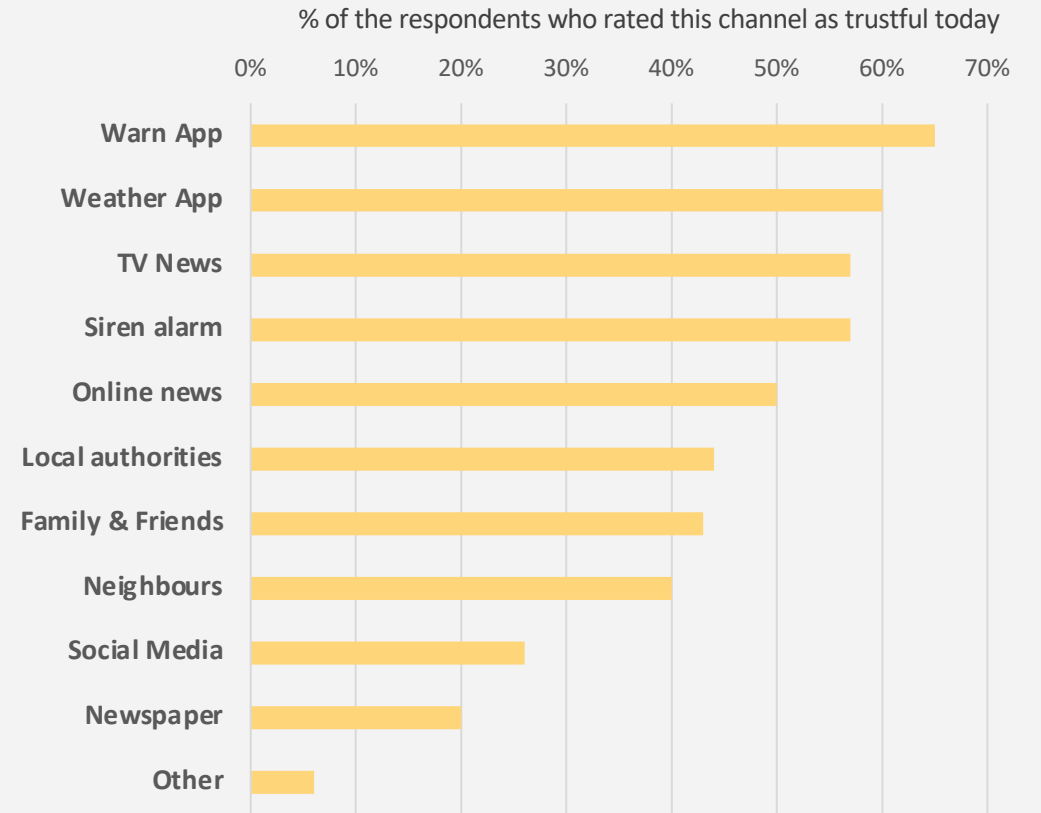
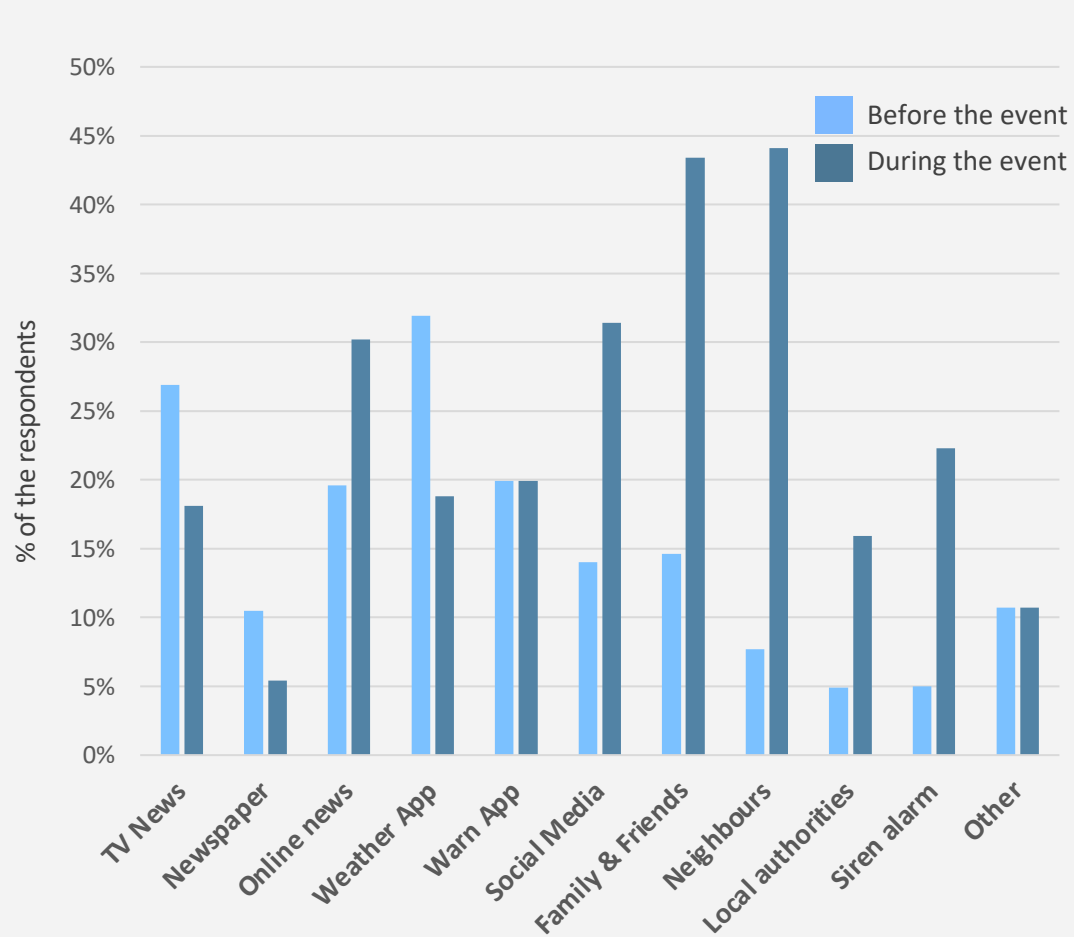


# (Early) warning timing

- More than 35 % received warning less than 24h before the water arrived
- No spatial clustering for late warnings was identified
- The share of receiving late warnings was slightly higher for younger people and/or living at their parents home
- Social media and informal channels became more important the closer to the flooding event but rated as less trustful (today)



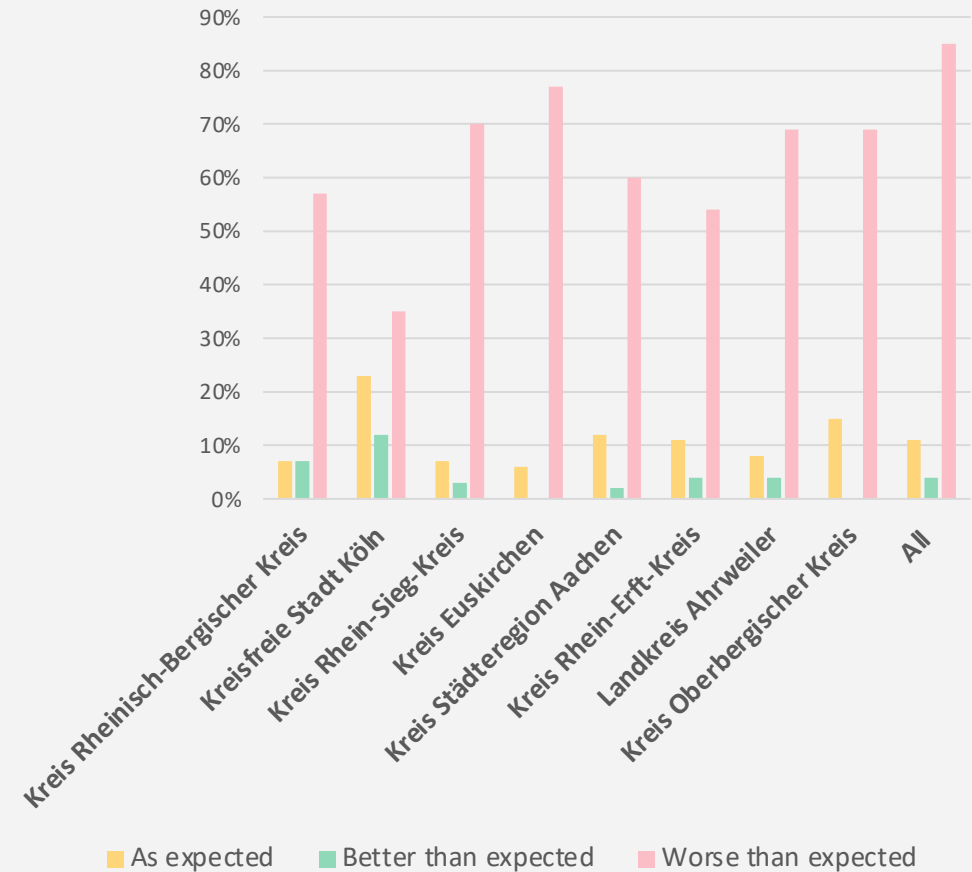
# Communication Channels





# Warning interpretation

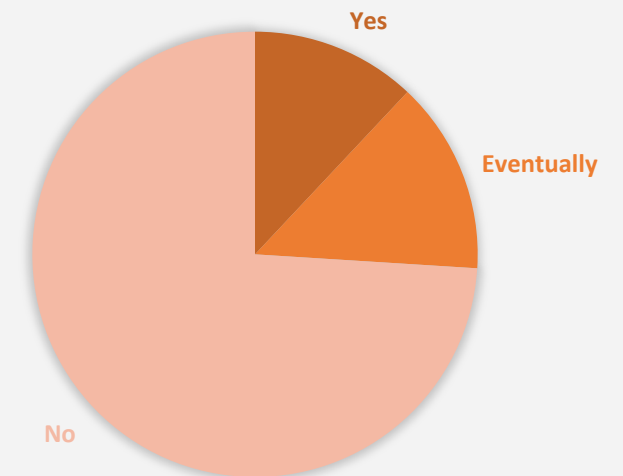
- 85.2% underestimated the flooding event
- 1/3 expected a minor flooding but extreme flooding occurred
- 306 participants did not expect to be flooded themselves because of
  - the spatial situation of their home (e.g., far away from stream/river, living on a slope or higher elevation)
  - no previous experience of flooding (e.g., when flooding occurred in the village or city)
  - no knowledge of what a specific amount of precipitation means or can cause
  - Lack of experience, knowledge, or imagination of flash floods



# Actions before and during the flood

- People who expected to be (eventually) affected by flooding
  - tried to reach, warn, and help others (family, neighbours, etc.)
  - started preparing themselves (moving things, installing pumps, etc.)
  - self-evacuated or went home when they received information
  - prepared for volunteering
- People selected *Eventually* often reported that they started *observing the situation*

Did you believe that you would be affected?



# Inaction - What did you do? 'Nichts'

## Reasons mentioned by citizens that did not prepare or respond:

- **Warning** either not received or misinterpreted
  - Severeness
  - Location
  - Not (full) trust in warnings – de-sensibilisation due to too many warnings (NINA)
- Lack of **scientific knowledge** (e.g., on geophysical aspects)
- Lack of **imagination**
  - No previous experiences (not that extreme at least)
  - Warnings misunderstood/underestimated
  - Simply did not believe that it would be happening or in this extent (naïve attitude)
- **No time** to prepare if no warning was received
- Feeling of being '**left alone**'
- **Not at home**
- Legal aspect of **ownership**
- Simply '**machtlos**'



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nichts

# Signs of regrets

## Regrets about decisions & actions:

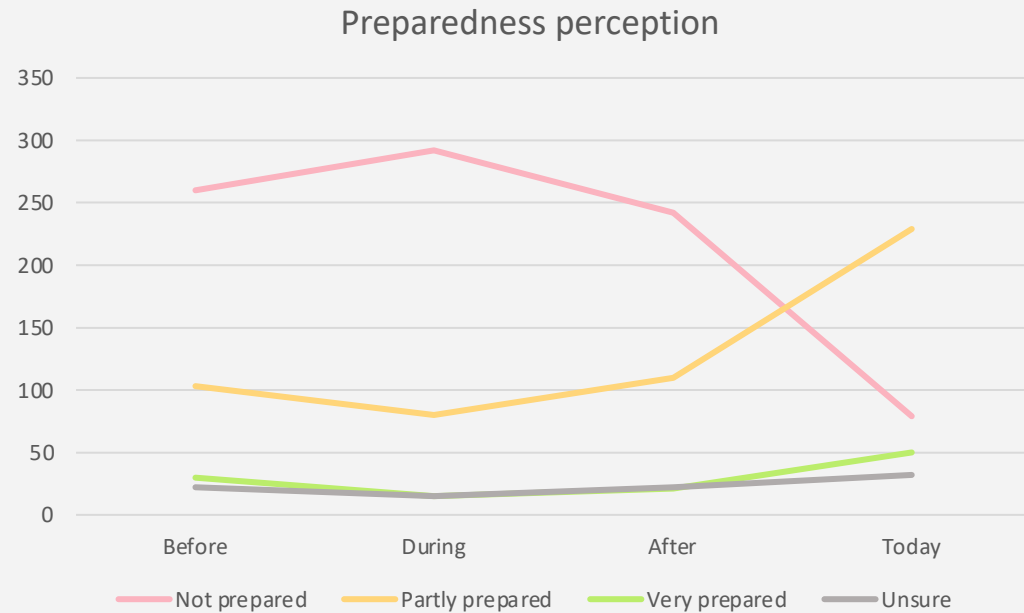
- Not taking warning serious
- Not having saved livestock earlier
- Sleeping (with earplugs)
- Filling sandbags instead of evacuating people
- Risky actions (e.g., wading in water)
- Not staying calm and acting irrational

## Regret about inactions:

- Not informing others, not staying in close contact, not helping others
- Not moving valuable things or emptying the basement
- Not evacuating early enough, not being prepared to leave
- Not re-parking the car
- Not having emergency energy sources, sandbags, pumps
- Not having water-proven the home or installed a one-way valve
- Not having saved the gas-fired boiler
- Not being attentive to changes in the environment
- Not having an emergency kit (incl. candles, batteries, drinking water, food)

# Perception of self-preparedness

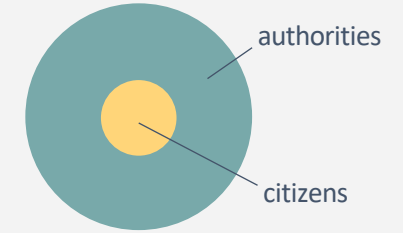
- Feeling of being prepared decreased slightly during the event
- About 30% more people who experienced extreme flooding are feeling partly prepared now (compared to before the event)
- 18% are still not feeling prepared nowadays (primarily who experienced extreme flooding & worse flooding than usual)



# What to do differently?

- 'It's a **force of nature**, you can **only react**.'
- 'I couldn't do anything differently. My important documents are upstairs. I'm 70 and **can't move very well anymore**. What should I do differently? Water doesn't no limits.'
- 'I've been **scared** since last night.'
- ',Being in **despair**.'
- 'I would **take warnings more seriously** and no longer think "Oh, that won't happen here anyway".'
- '**Inform people** about my WhatsApp status and on social media.'
- '**Having a plan**.'
- 'I would decide based on the expected amount of rain. With the quantities of last year, I would pack my bags in advance to be on the safe side and warn those around me. **With the usual amounts (approx. 40l/m<sup>2</sup>) I remain relaxed**.'
- 'Help with **prophylactic measures** for flood protection.'
- '**Look for maps** that show what this means specifically for our living area.'

# Perceived roles & responsibilities



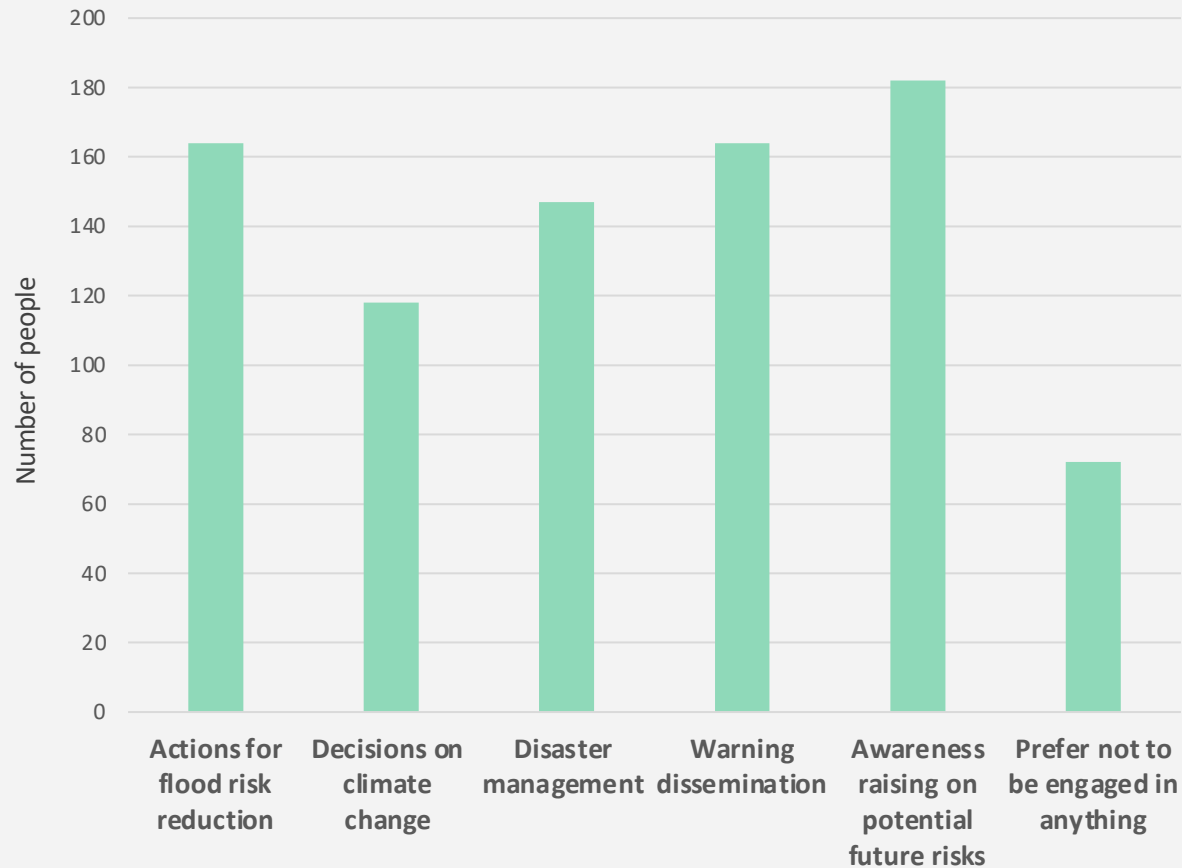
## Citizens

- **Prepare their home** (e.g., flood protection construction, saving possessions, moving to low risk areas, taking out insurances, etc.)
- **Always prepared** for potential hazards, evacuation, and helping others as well as being prepared for responding to intruding water
- **Observe the nature around them** to detect changes that can turn into hazards; to be alert to warnings; to be proactive in seeking information; and to take warnings seriously
- **Raise awareness; learn about potential risks and risk areas;** help and educate others on these topics but also being active in recovery times

## Authorities

- **Mitigation & preparedness:** raising awareness on potential risks (e.g., in schools), coordination and enhancement of self-preparedness motivation of the population, preparing disaster plans and practicing these; strengthening collaborations between different institutions; designing and deploying risk reduction and climate change adaptation measures; maintaining existing water infrastructures; introducing stricter building regulations in retention areas
- **Early warning & emergency preparedness:** adequately warn the population on potential risks and hazards, especially, at local scale while also considering potential power outages and the elderly; clear and transparent communication; evacuation support; coordination of volunteers
- **Emergency response:** having an overview of the situation and conducting assessments for better disaster management; organizing rescue operations, shelters with adequate care/supplies, and volunteers; being reachable for questions, guidance, and any kind of support
- **Recovery:** provide fast and unbureaucratic financial support in the aftermath of the event and financial benefits for moving away to safer places; taking care of calls for donations; offering psychological support for affected people; occupational safety; and showing empathy to affected citizens

# Citizens Engagement Willingness

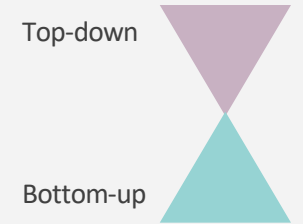


- 'We founded a flood protection initiative with our and neighbouring villages'
- 'I am volunteering already in too many places'
- 'Citizens are the last people who could have made a change during the last flood'
- 'Psychological assistance, just being there for others'
- 'I prefer to volunteer spontaneously'
- 'I am not healthy and neither have the energy to volunteer'



# Conclusions

# Needs & Way forward



- Need for a citizen-centric/bottom-up approach to strengthen local disaster risk management
  - Enhancing dialogues and collaboration between levels and sectors
  - Co-defining roles and responsibilities as well as enhancing multi-level collaboration
  - Identifying opportunities for shared responsibilities
  - Fostering community initiatives & volunteers to build a bridge between different levels
- Need to enhance individual and community resilience
  - Working with no-regrets solutions
  - Co-creation of Nature-based Solutions
  - Raising awareness with citizen science tools
- Need for local flood risk management focus
- Need for further raising awareness, transferring knowledge, and practicing disaster response

# Thank you!

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