# Extreme Weather Conditions – Stormwater Quality and Quantity

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# Introduction to extreme weather

- Impact of climate change on weather patterns
- Types of extreme events affecting stormwater: heavy rainfall, floods, and storm surges

# Compound event and multi-hazard terminology

Brett et al. 2024 (submitted)

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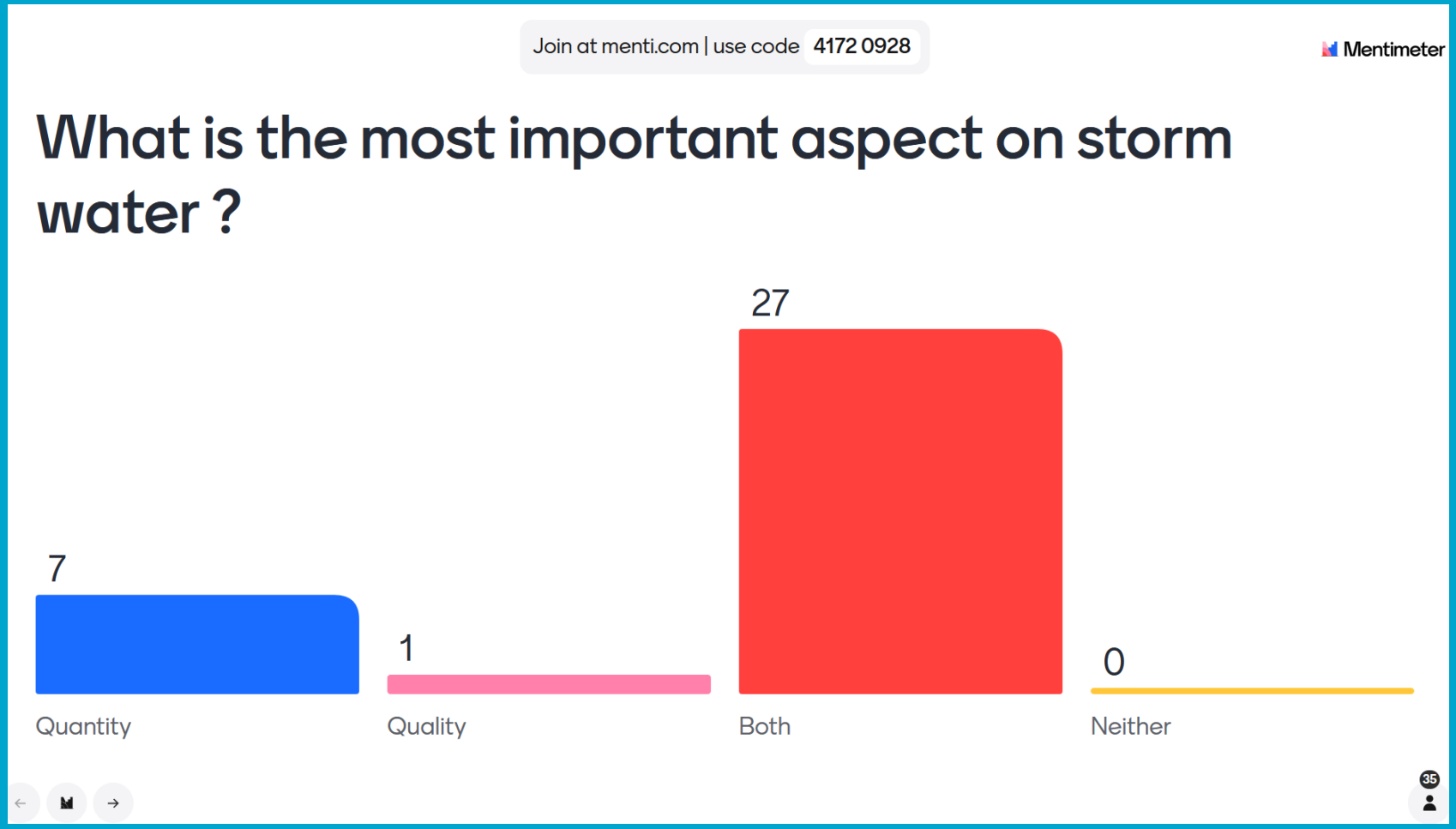

# Stormwater quality: Key challenges

- Contaminant transport during heavy rainfall
- Increased runoff pollution: nutrients, heavy metals, microplastics…

# Stormwater quantity: managing surges

- **Storm Surges**: Rapid rises in sea level during storms due to high winds and low atmospheric pressure.
- **Flood Surges**: Sudden increases in river or coastal water levels due to heavy rain or upstream flow.
- **Tidal Surges**: Large water movements during extreme tides, often exacerbated by weather conditions.

-> Flood risk from increased runoff volumes
-> Overloading of drainage systems and infrastructure

# Effects on urban and coastal areas

- Vulnerabilities in urbanized watersheds
- Impact on coastal and marine environments
- https://www.dw.com/en/torrential-rain-floods-wreak-havoc-in-central-europe/g-70230432
- Impact databases

http://damocles.compoundevents.org/upload/DAMOCLES%20WG3.pdf

# Innovative solutions for stormwater management

- Nature-based solutions: green infrastructure and wetlands
- Engineering solutions: smart drainage systems and flood barriers

- Monitoring and predicting stormwater impacts: Use of technology: Remote Sensing, IoT, and data analytics
Early warning systems and decision support tools

# Pori pilot sites


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## How to control stormwater (quality & quantity)

# Future outlook: Adaptation and resilience

- Building climate resilience in urban planning
- Policies and strategies for sustainable stormwater management
- Awareness raising and communication

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