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From models to reality: participatory sense-making of future flood risk in rapidly urbanizing cities

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Urban flood risk is shaped by the interaction between future urban development patterns, spatial exposure to flood hazards, and the performance of critical urban systems. Scenario-based modelling approaches are widely used to explore these dynamics, yet their relevance for planning and flood risk management is often limited by the gap between technical assessments and how risk is understood and acted upon by decision-makers.

This contribution presents a participatory framework for sense-making of future flood risk that builds on existing scenario-based information. The framework structures stakeholder engagement around three sequential components: examination of future urban development pathways and their spatial intersection with flood-prone areas, consideration of system vulnerability information for key urban sectors, and synthesis of these elements into integrated flood-risk narratives. Rather than producing new model outputs, the approach focuses on how existing scenario results can be interpreted, questioned, and contextualised through stakeholder interaction.

Participatory stress-testing is used to facilitate discussion of potential failure points, risk hotspots, and critical uncertainties associated with different futures, as well as to reflect on the plausibility and acceptability of scenario-based flood-risk representations. The emphasis is on the process of interpretation and learning, highlighting how stakeholder knowledge and experience can complement technical assessments.

By foregrounding sense-making rather than prediction, this contribution illustrates how participatory approaches can help bridge the gap between model-based flood-risk assessments and real-world planning and disaster risk governance in rapidly urbanising contexts.