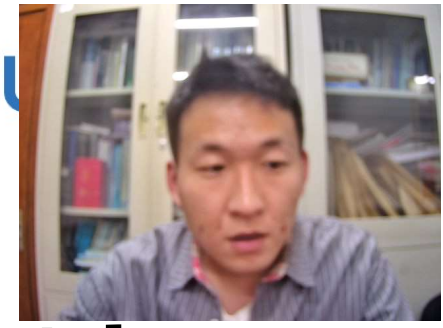

How megacities respond to urban pluvial floods in China: Policy recommendations

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Introduction

- Extreme precipitation across China, Europe, and the United States led to unprecedented flood disasters in 2021.

- This devastation demonstrates that when **a 100- or 1,000-year storm event occurs in cities**, especially megacities in the inland region, the rainfall cannot be withstood.

A Drowning World from Gideon Mendel

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Introduction

- Climate Change
- Heavy rainstorms
- Urbanization
- Economic and human losses
- …….

There is an urgent need to build a flood-proof framework more holistically and thoughtfully as an option for adapting to climate change and as a tactic that can provide affirmative results.

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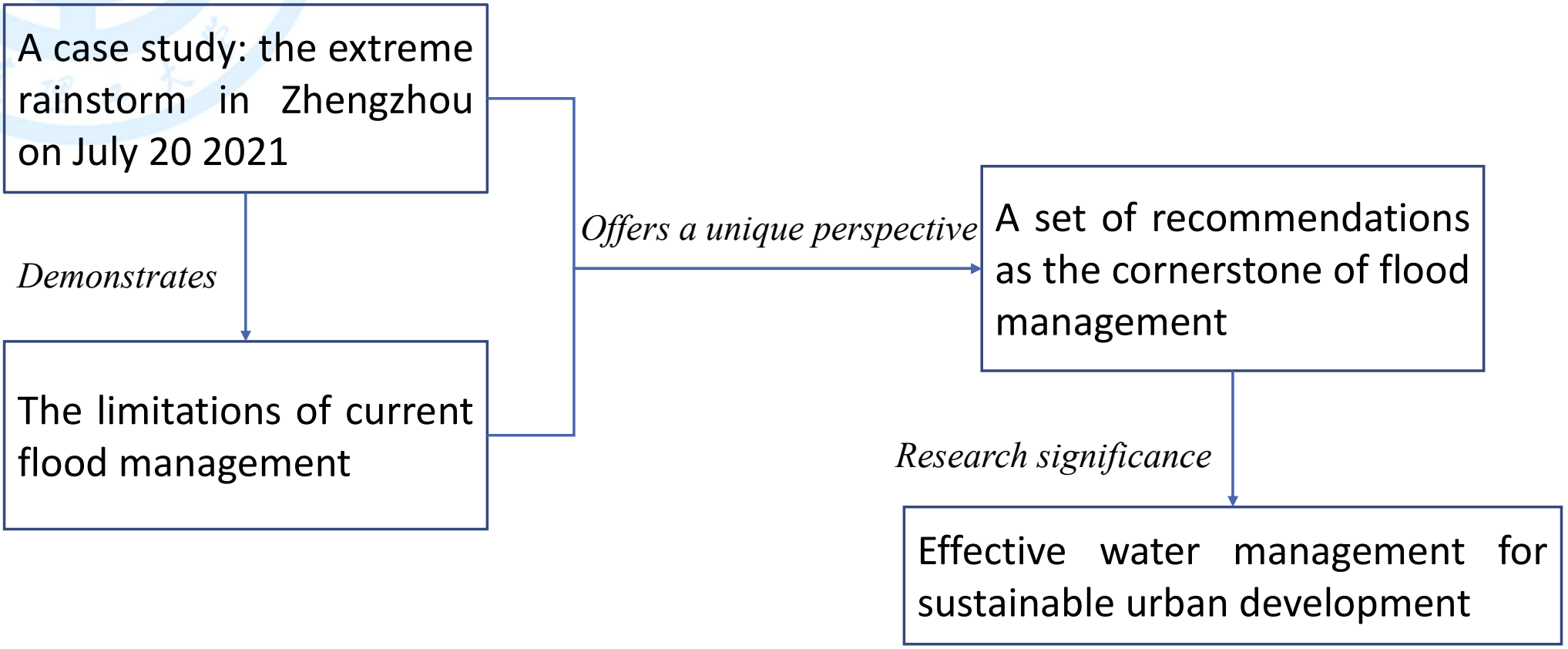
The ideas



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Policy needs “rethinking”

The Zhengzhou rainstorm last summer

Zhengzhou is the capital city of Henan Province, a critical megacity and central city in the central region.

Characteristic:

- Rainfall-runoff within a short duration
- The combined effect of flooding and waterlogging
- Spillovers reactions
- Large economic and human losses

The lack of preparation for a severe flood disaster in a megacity **is urgently required for a change**.

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Policy needs “rethinking”

(i) A warming climate is expected to enhance the intensity and frequency of heavy precipitation.

- **Extreme rainstorms that far exceed the existing d**
  becoming increasingly frequent.

- Although by 2020 the urban drainage syste
  803,000 km, the drainage facilities were des
  unplanned urban extensions were **costly**.

- The maximum hourly rainfall reached **202 mm** in Zhengzhou City last summer.
- Many drainage divisions had only **a drainage capacity for a 5-year storm event**.

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Policy needs "rethinking"

(ii) Policymakers lack sufficient awareness for more integrated flood management.

- Cities, instead of being isolated Noah's Arks, **are constantly interacting with other areas** through the flows of water, food and people.
- Flooding may lead to incalculable damages over a large area, including direct damage inside the flooded area and **intangible damage outside the flooded area**.

Zhengzhou is a critical megacity and central city in the central region.

Zhengzhou is one of the five major hub node cities for the Sino-Euro Cargo Railway in China。

- More than 200 trains passed through Zhengzhou station were shut down.
- **The traffic delays would have a ripple effect of a supplier disruption in European for weeks or even months.**

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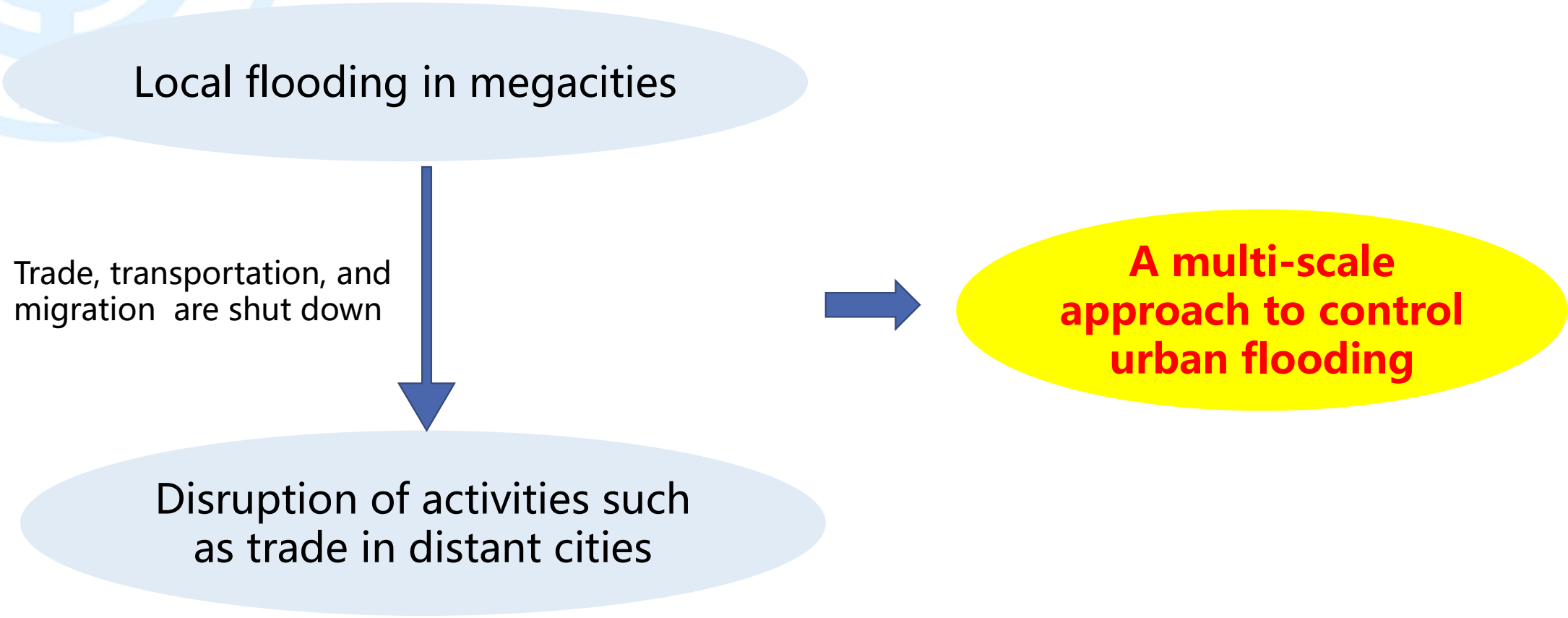
Linking the local to the global



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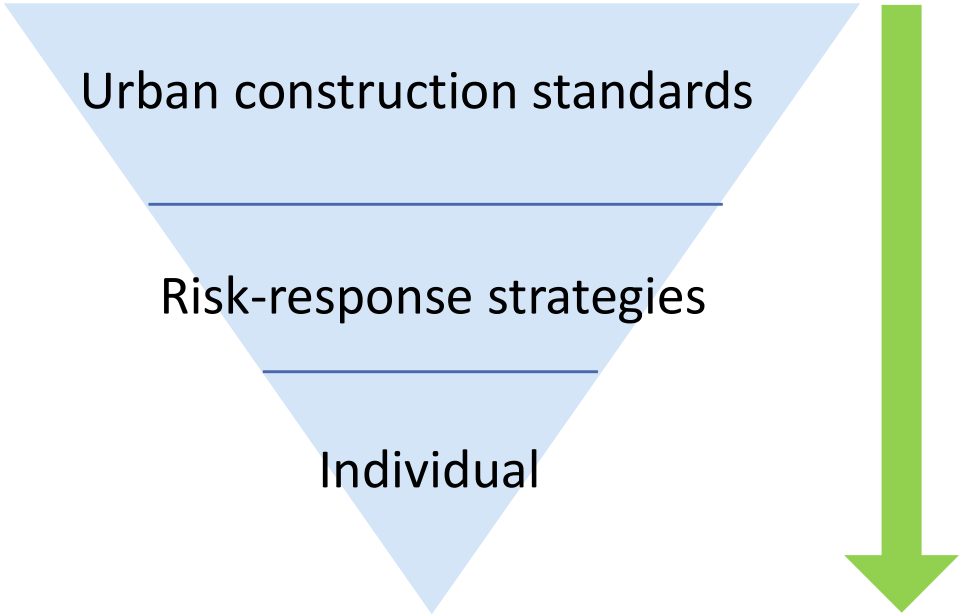
Linking the local to the global

(i) Top-down policies are the most critical to counteract rainstorms that have far exceeded the design capacity of local flood control.

- China will enhance the capacity of its drainage system to prevent flooding, according to local conditions.
- Risk-response strategies should depend on a much greater focus on the **people, places, and livelihoods**.



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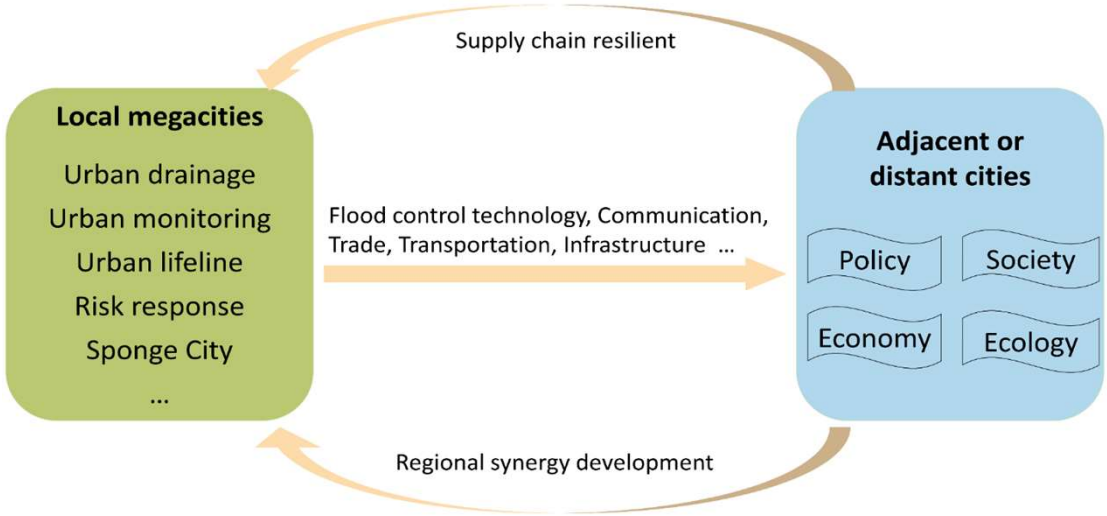
Linking the local to the global

(ii) Applying such principles and creating a flood-proof framework from local cities to more distant ones will enhance regional synergies.

- Future work may focus on appropriate **investment and replenishment of weak infrastructure** among cities, including roads, railways, and bridges.

- Policymakers can attempt to provide a clearer insight into the challenges and chances for **transboundary governance**.



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Concluding remarks

Urban inundation due to extreme weather is creating more challenges in the urbanization process promoting economies and developing countries.

- Urban flood-proofing remains neglected and vulnerable due to complex cause-effect relationships and politics.

- We focus on a set of recommendations as the cornerstone of flood management, including top-down policies, public data collecting, nature-based solutions, and across-region synergies.

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Thank you for your attention!

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