

# Resilient Delta Cities – Adaptation Analysis, Planning, and Implementation

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*FUTURE PROOFING WATER AND CLIMATE  
ADAPTATION  
webinar 20 June*



IHE  
DELFT

Water and Development  
Partnership Programme

# Dhaka, Bangladesh (2022)



**BANGLADESH**  
A DEVELOPED COUNTRY BY 2041



**INVEST IN GROWTH, INVEST IN BANGLADESH**

One of the fastest growing economies of the world.  
One of the best emerging markets of the world.  
A center of regional and global connectivity.  
Massive improvement in infrastructure and energy supply.  
55 million youth population.



Bangladesh Securities and Exchange Commission  
বাংলাদেশ সিকিউরিটিজ অ্যান্ড এক্সচেঞ্জ কমিশন

Scan for more details



# Tana Delta, 2022





**Rijnmond-Drechtsteden,  
The Netherlands (2017)**

# Urbanizing Deltas: Today's challenges\*

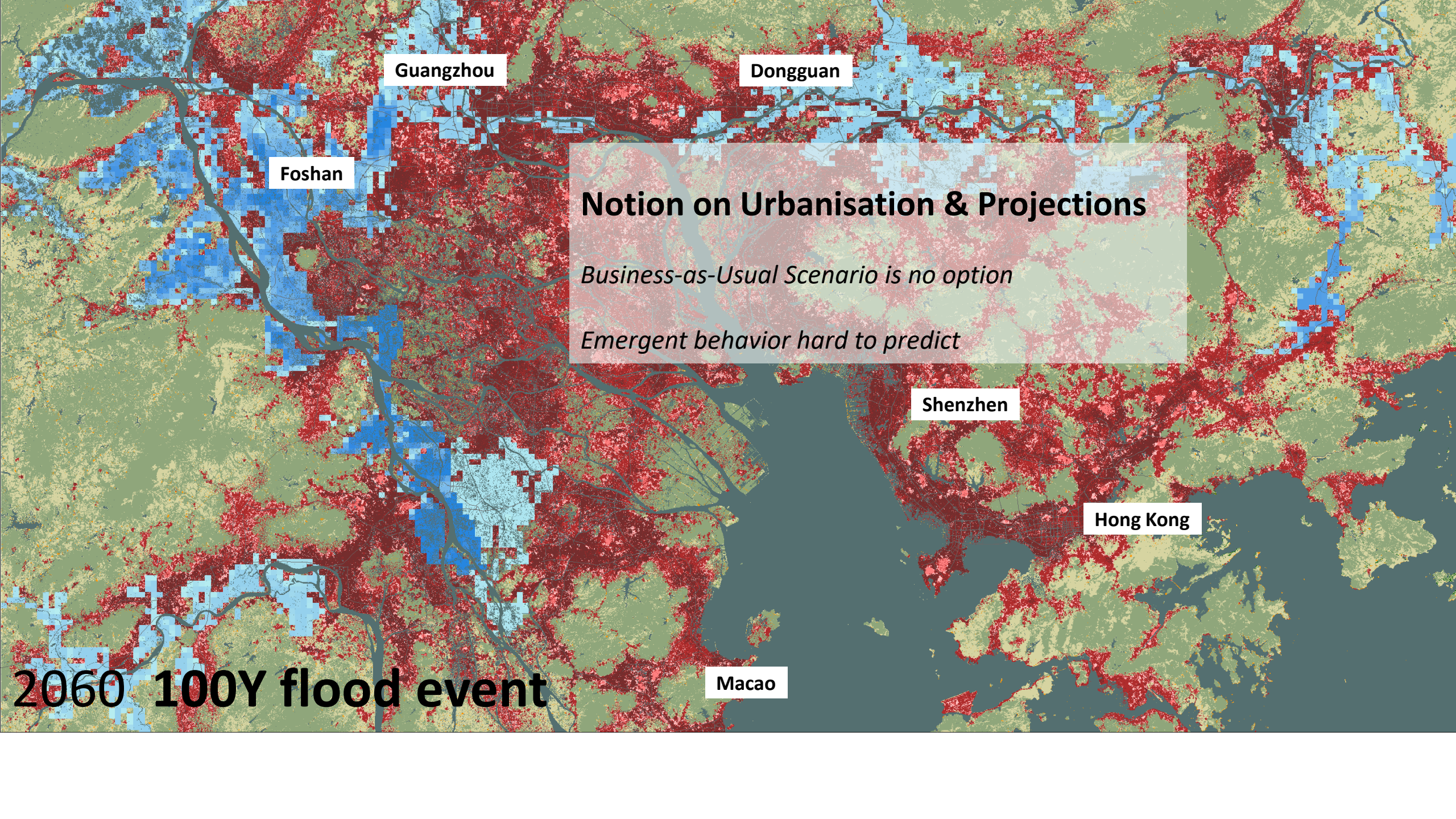
Current emphasis on short-term solutions

Urbanization, transition in energy & food production will likely be the dominant drivers shaping the future of our delta cities

Rapidly narrowing window of opportunity to enable climate resilient development (there is an opportunity for a 'reset' ?)

Vision on the future (and long-term strategy) is lacking

*\*based on interviews 50 (national & international) experts 2021*



Guangzhou

Dongguan

Foshan

## Notion on Urbanisation & Projections

*Business-as-Usual Scenario is no option*

*Emergent behavior hard to predict*

Shenzhen

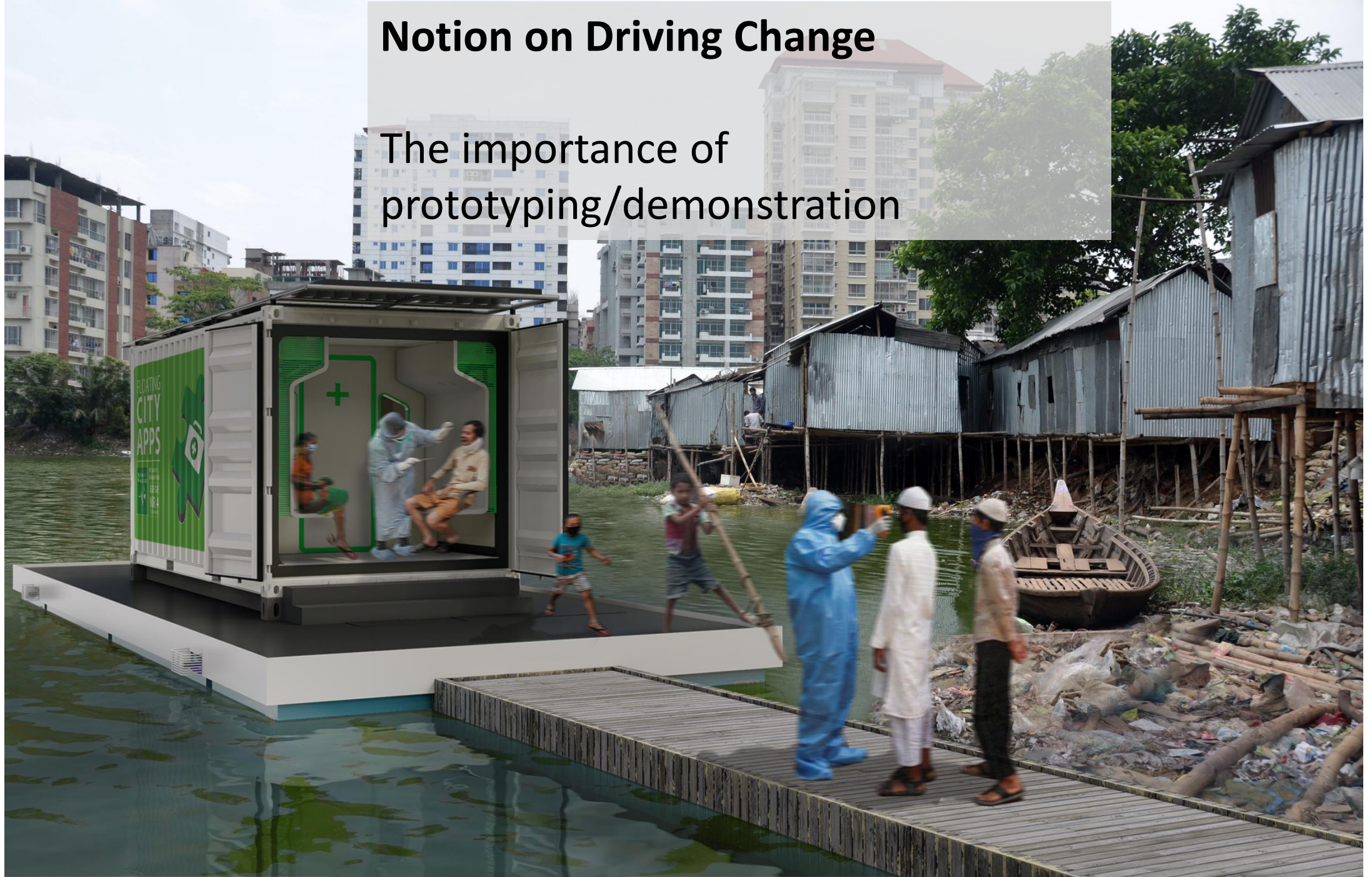
Hong Kong

Macao

**2060 100Y flood event**

# Notion on Driving Change

The importance of  
prototyping/demonstration



# Notion on Looking for Opportunities

The importance of design to connect the spatial & temporal scales

Understanding the urban dynamics to steer change





A man wearing a black cap, a blue surgical mask, and a dark jacket is pointing his right hand towards a city skyline across a body of water. The skyline features several tall, modern buildings. In the foreground, a child with long black hair and a pink bow is partially visible. The background shows a sandy beach and a few other people near the water's edge.

**Notion on Local governments as actors**

**Setting framework conditions for investments in urban infrastructure**

**Driving local innovation**

**-> huge demand for capacity building: learning by doing**

## Example initiative: Urban Demonstrators



BDP 2100  
INTERNATIONAL  
CONFERENCE

- Start small, focus on implementation
- Green infrastructure & public space
- Short lead times (<1 yr), locally, demand driven
- Showcase innovations/change (incl financing)
- Build capacity by **learning by doing** (planning, financing, engineering, water/waste management) & **peer learning**



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end

# Lessons learned RBD

- Captured public's imagination & support
- Generated results that government wouldn't have produces on its own
- A better process led to a better understanding of a diversity of needs. Responses were customized to each geography and community needs
- Multiple outcomes:
  - Flood mitigation
  - Improved recreational space
  - Employment opportunities
  - Educational engagement

Rainwater harvesting (roof)

Green roof treatment

Rainwater Reuse

Green wall treatment

Biofiltration system

Stormwater tank

Overflow deviated to drainage network

Green gardens to decrease the runoff coefficient

Collection by impermeable surfaces

Green wall treatment

Slow sand filtration



**B2**  
EXTREME

# Shifting paradigms

*Start Deltaprogramme (2010):*

Broadly shared convictions:

1. Climate change is slow, and might accelerate after 2050
2. We know how the water-system works; we can predict how it will react on different pressures in the future, so we can plan ahead and will gradually strengthen the present system.
3. By anticipating long term future-conditions we will prevent disastrous events

(Source: Pieter Bloemen)

# Shifting paradigms

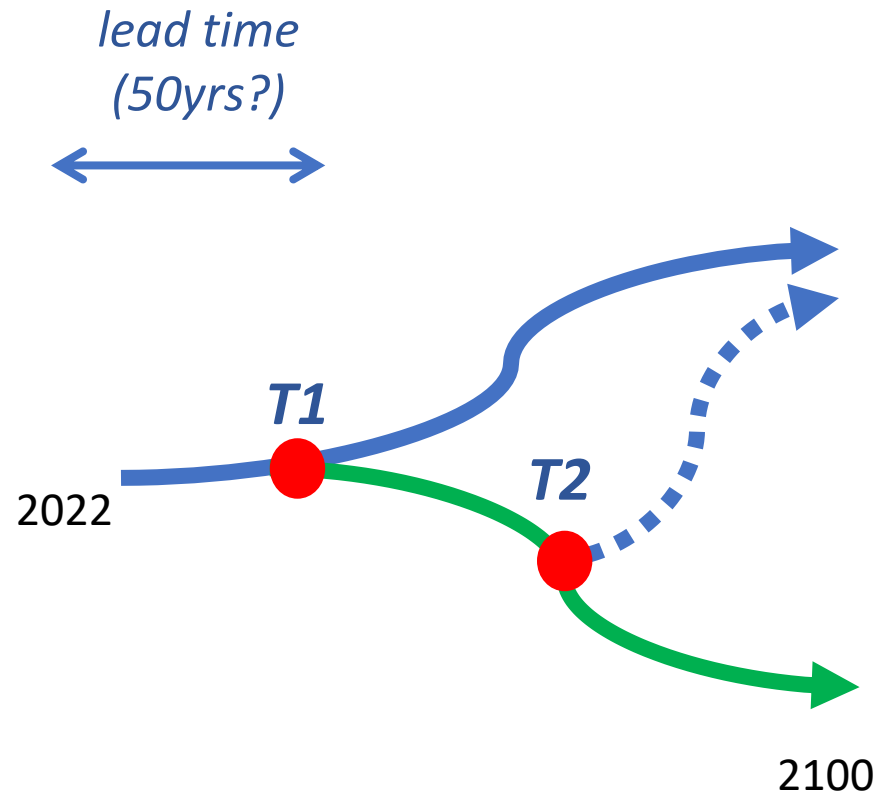
*Deltaprogramme anno 2022:*

But now, 12 years later, these convictions are subject to erosion

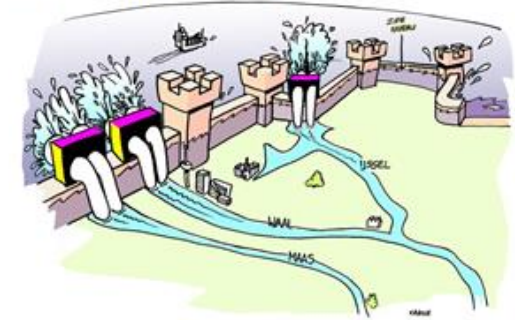
1. Climate change is happening now; and is not gradual
1. The water-system that we thought we knew so well reacts in a way we did not expect
2. We cannot guarantee that there will be no climate-change-induced disaster, certainly not when we limit our efforts to gradually strengthening the present system.

(Source: Pieter Bloemen)

# Deltaprogramme: bifurcation point ?



A) Beschermen gesloten



“Protect”

D) Meebewegen



“Living with Water”