DEALING WITH UNCERTAINTY IN WATER MANAGEMENT

POLICY ARENA UNCERTAINTY
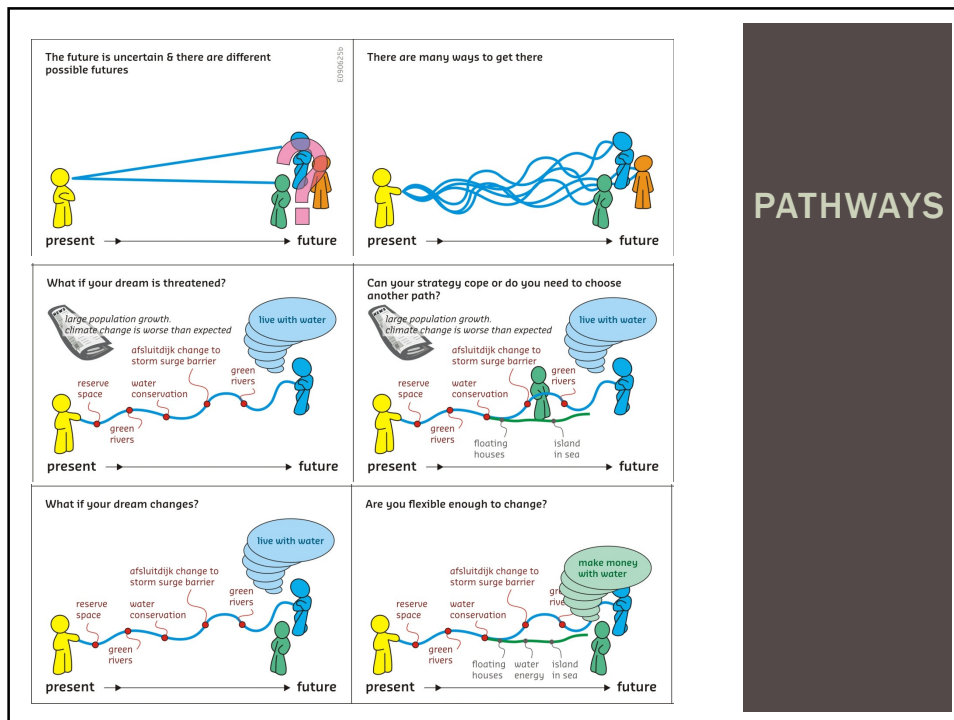

OVERALL PROJECT

Key question:

Given the uncertainties about the future, what is the most sustainable water management strategy?

Approach:
- Including physical and social uncertainties
- Generate and assess pathways to the future

OUR FOCUS

- Social uncertainty
  - Understanding
  - Include in future studies

- Policy arena:
  - Policy makers is part of the scenario
    - Perspective, structure, policy action
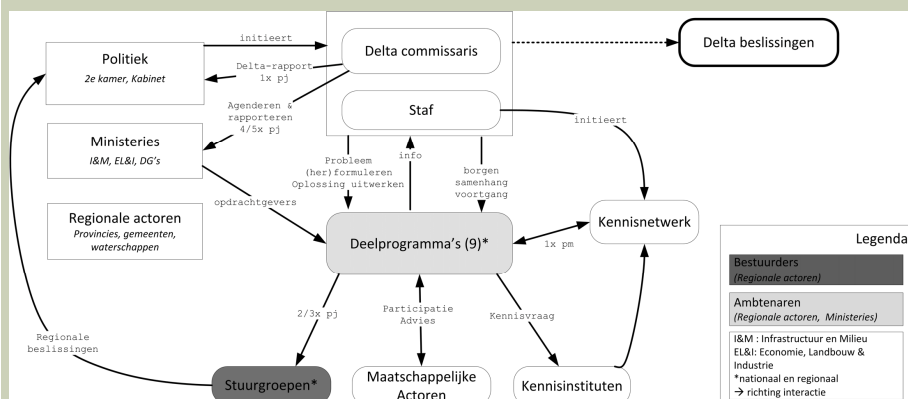 - Need to include policy response

OUR APPROACH

1. **Understanding Policy arena**
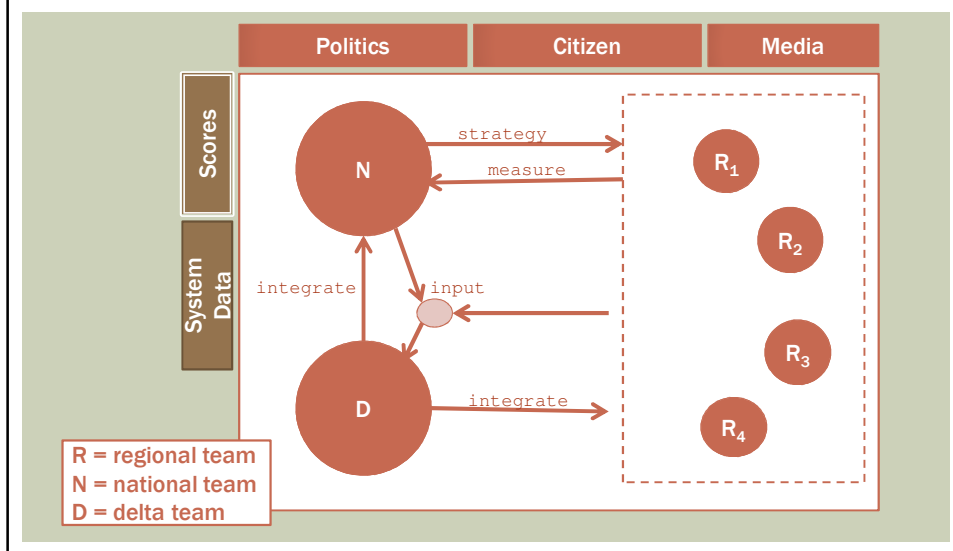   - Case study – Arena Delta Program (interviews)
2. **Generate pathways**
   - Serious gaming
     - Design for Rhine Game:
       - Policy arena & socio-economic scenarios
   - Computational
     - Coupled Water-Policy model (perspective-based)
     - Generate large numbers of pathways

Examples of output – Delta programme

Examples of output – Game design

Politics	Citizen	Media

Scores

System Data

N

strategy

measure

integrate

input

D

integrate

R_1

R_2

R_3

R_4

R = regional team
N = national team
D = delta team

OUTPUT - SIMULATION

Climate

Events & scores

Physical system
Meta-model

Social system
Policy Model
Perspectives-based

Policy actions
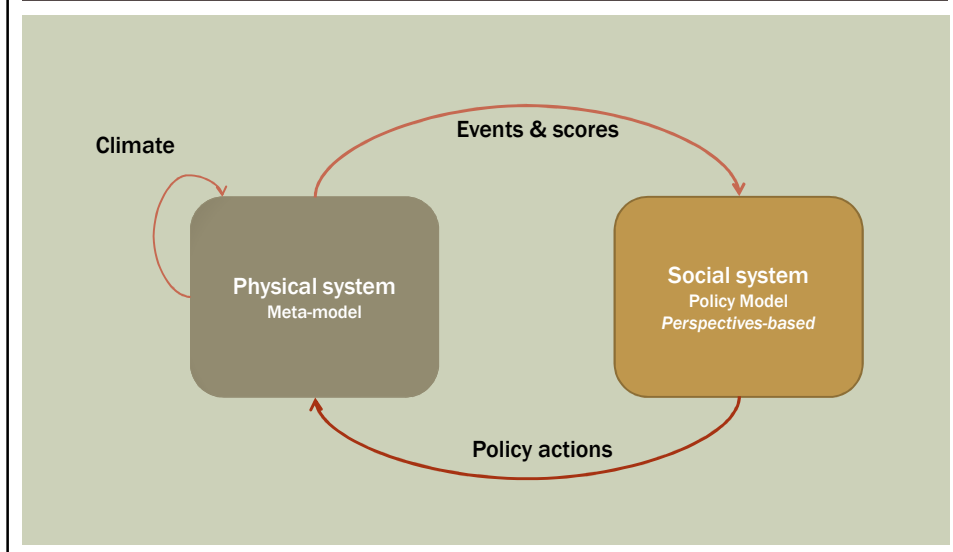
IMPLICATIONS

- More realistic scenarios
  - By understanding and embedding social uncertainty
  - Applied in both gaming and computational pathways

- Practical
  - Games played raised awareness for social uncertainties
  - Interviews were remarked as
    - Insightful and reflective
    - Better overview of the Delta programme

OUTPUT

COMMUNICATION

- Papers (forthcoming)
  - Policy analysis
    - DP arena & role in policy-making
    - LT policy making: challenges and uncertainties
  - Policy modelling

- Endbook (forthcoming)
  - Embedding in project

- Conferences
  - IEMss, ESSA,WDS, NCR, SF

PRODUCTS

- Simulation
- Game design
- Socio-eco scenarios
- Serious game sessions
 (data & learning environment)
- Misc:
   Movie Sustainable delta
   Games:
    - WaasOnline (serious game)
    - Waas HKU (playful learning)

Social dynamics (2) – first results

WAASPOLICY

INPUT

OUTPUT

Events:
- Flooding (XL, L, S)
- Drought (L,S)

Policy Model

Agent(s) with a perspective

Score:
-Damage (€)
-Casualties
-Shipping
-Nature

Policy action:
-   None
-   Dike *(strength, height)*
-   Room for the river
-   Upstream cooperation
-   Boat size
-   Dredging
-   Evacuation (*alarm*)
-   Damage control (*mounds, poles city dikes)*
-   Land use