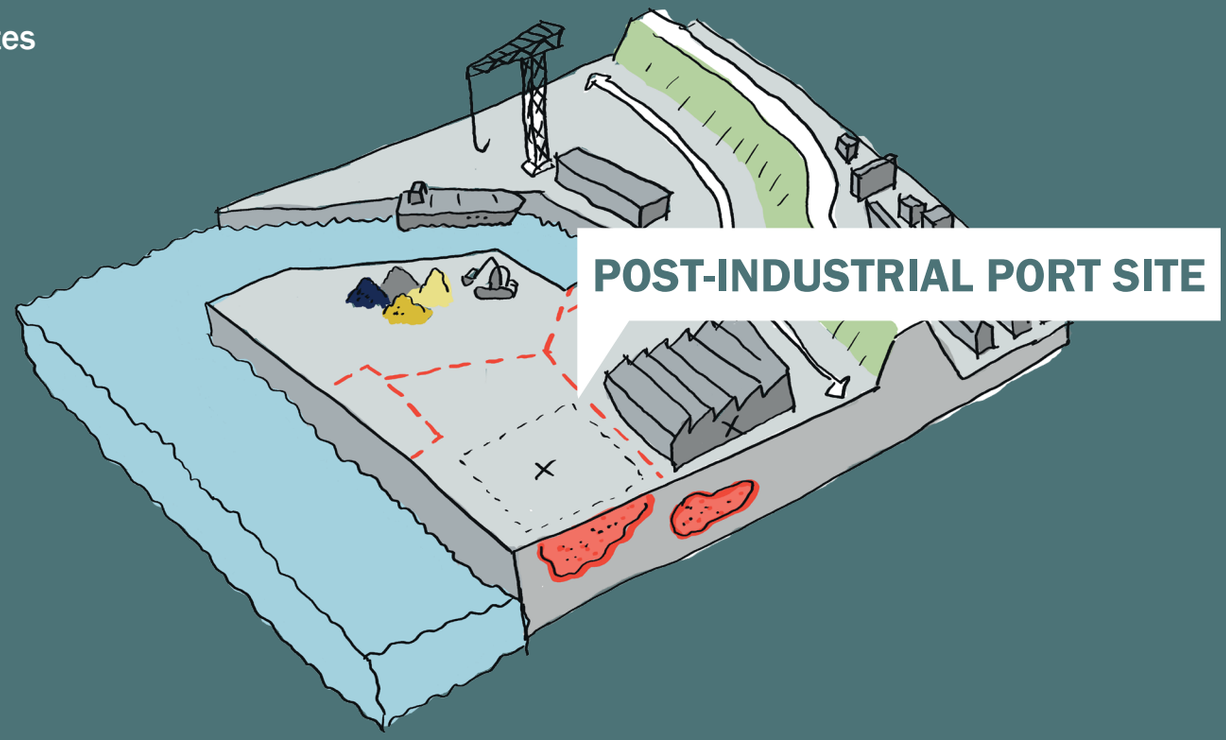
CLIMATE ADAPTIVE DELTA CITIES

A strategy for climate adaptive redevelopment of post-industrial port sites to establish the transition to a resilient Rhine-Meuse delta region facing the uncertain effects of the climate crisis.

The case of De Staart in Dordrecht



P5 Presentation
Jasmijn Ponssen
First Mentor: Arie Romein
Second Mentor: Claudiu Forgaci
Delegate Board of Examiners: Herman de Wolff
14 january 2022

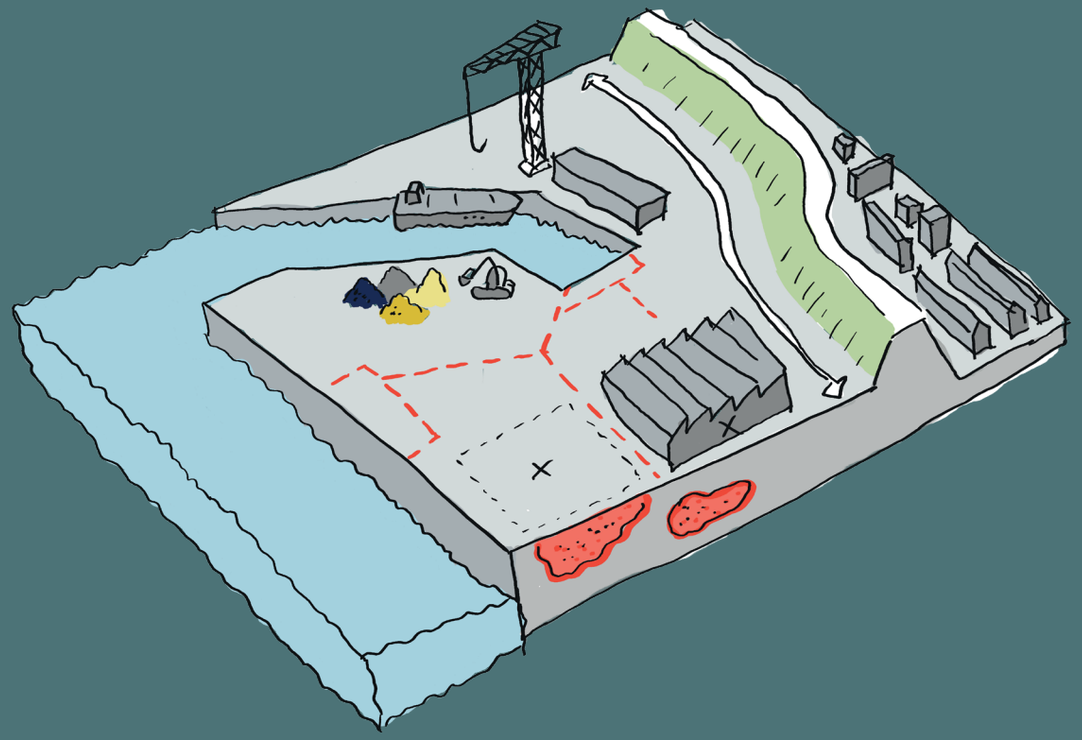
1. CONTEXT

2. PROBLEM

3. CHANGE PROCESSES

4. STRATEGY

5. DESIGN SIMULATION



A strategy for climate adaptive redevelopment of post-industrial port-sites

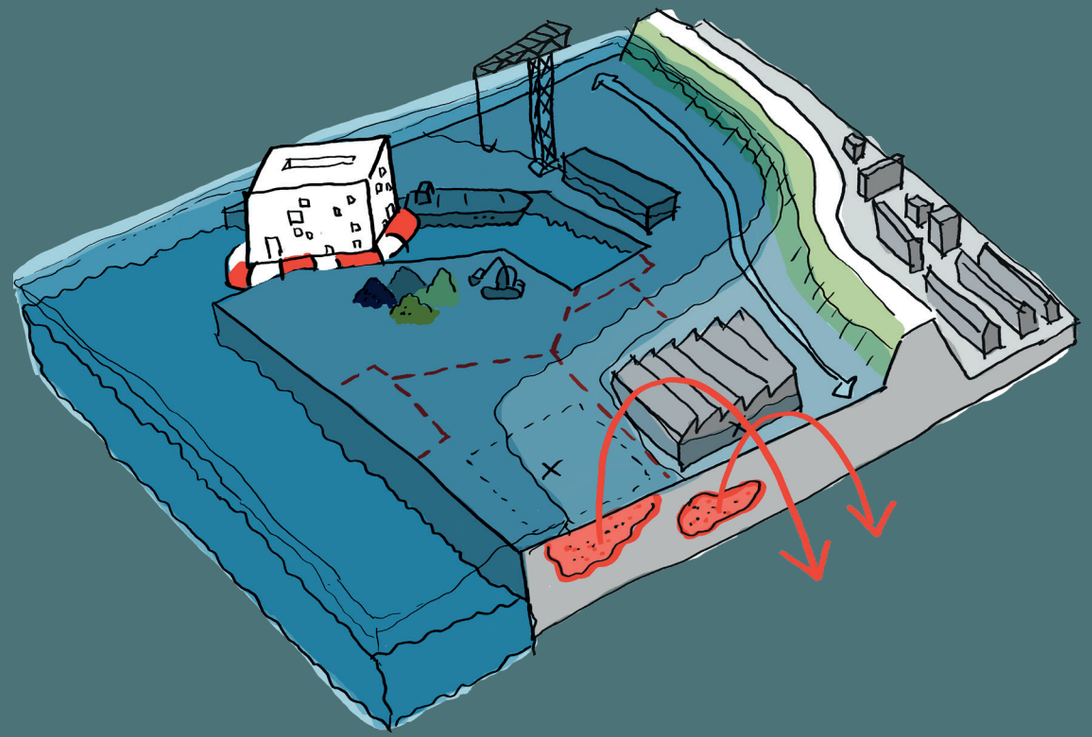
1. CONTEXT

2. PROBLEM

3. CHANGE PROCESSES

4. STRATEGY

5. DESIGN SIMULATION



A strategy for climate adaptive redevelopment of post-industrial port-sites

Drierivierenpunt. (Swart, 2021)

CITIES AND PORTS GROWING TOGETHER

Primitive city port
medieval - 19th century

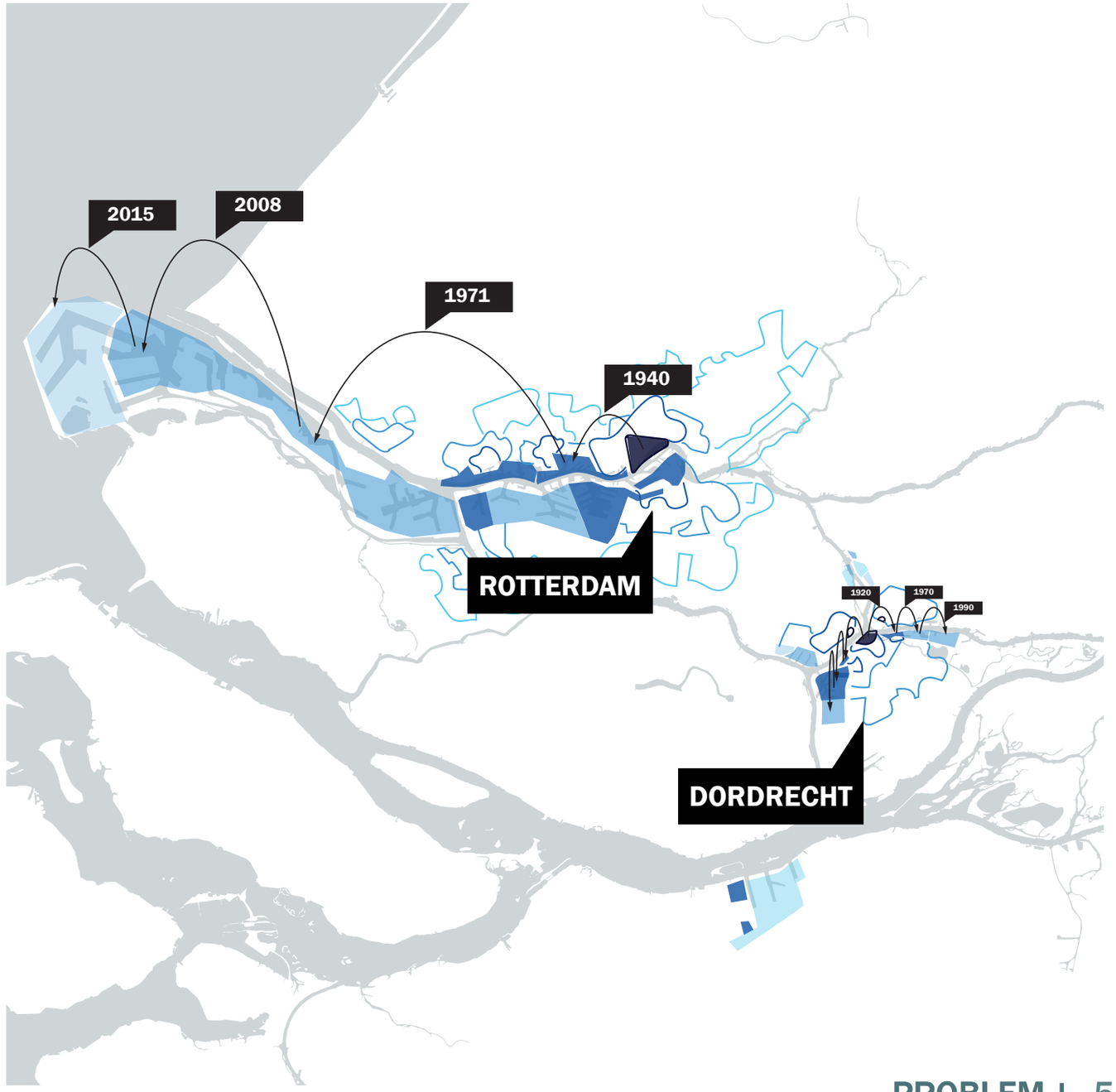
Expanding city port
19th - early 20th century

Modern industrial port
mid-20th century

Retreat from the waterfront
1960s - 1980s

Redevelopment of the waterfront
1970s - 1990s

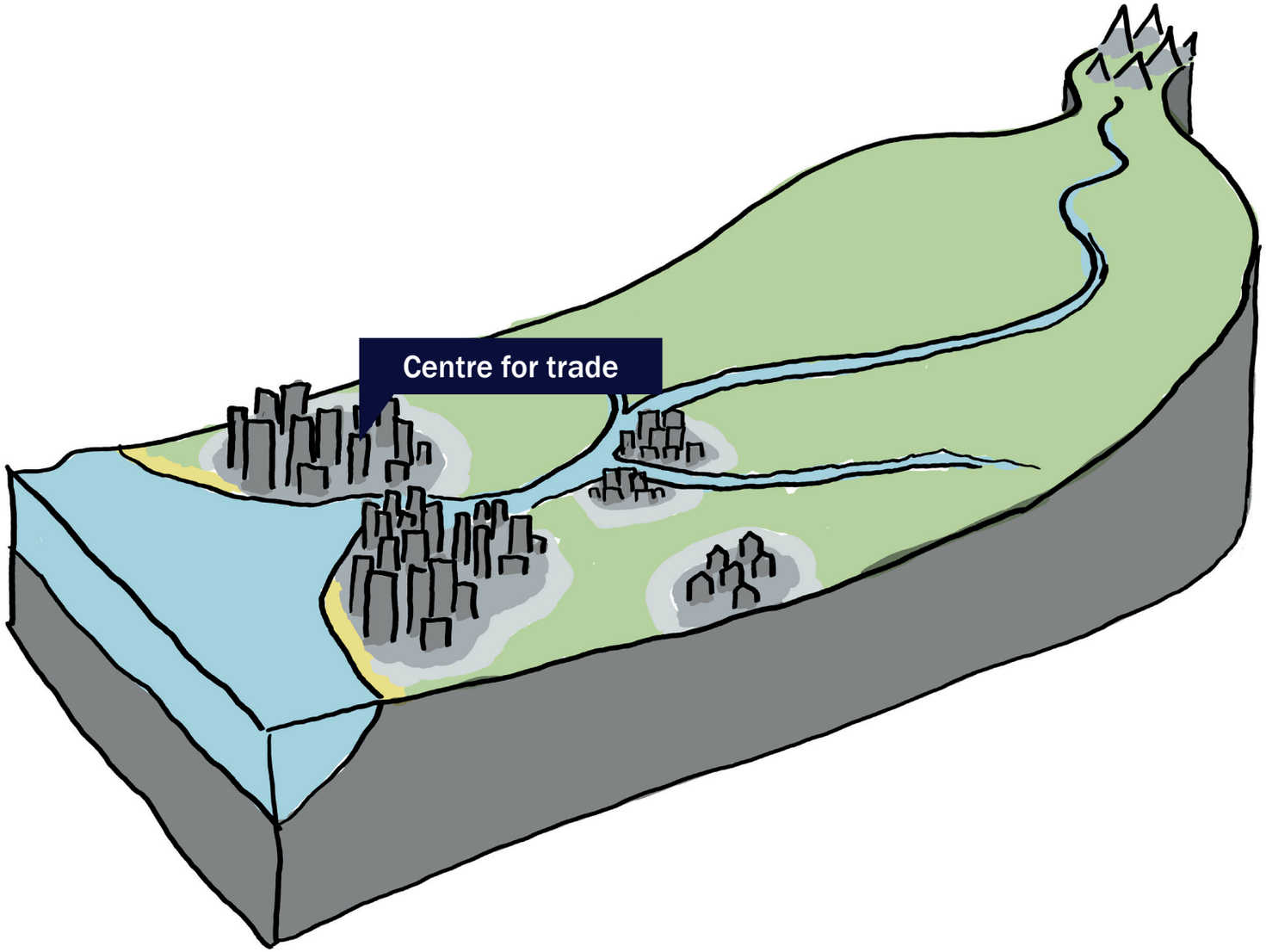
Renewal of port/city links
1990s / 2000+



top: Adapted from Hoyle, 1989
right: Own illustration

DELTA REGION

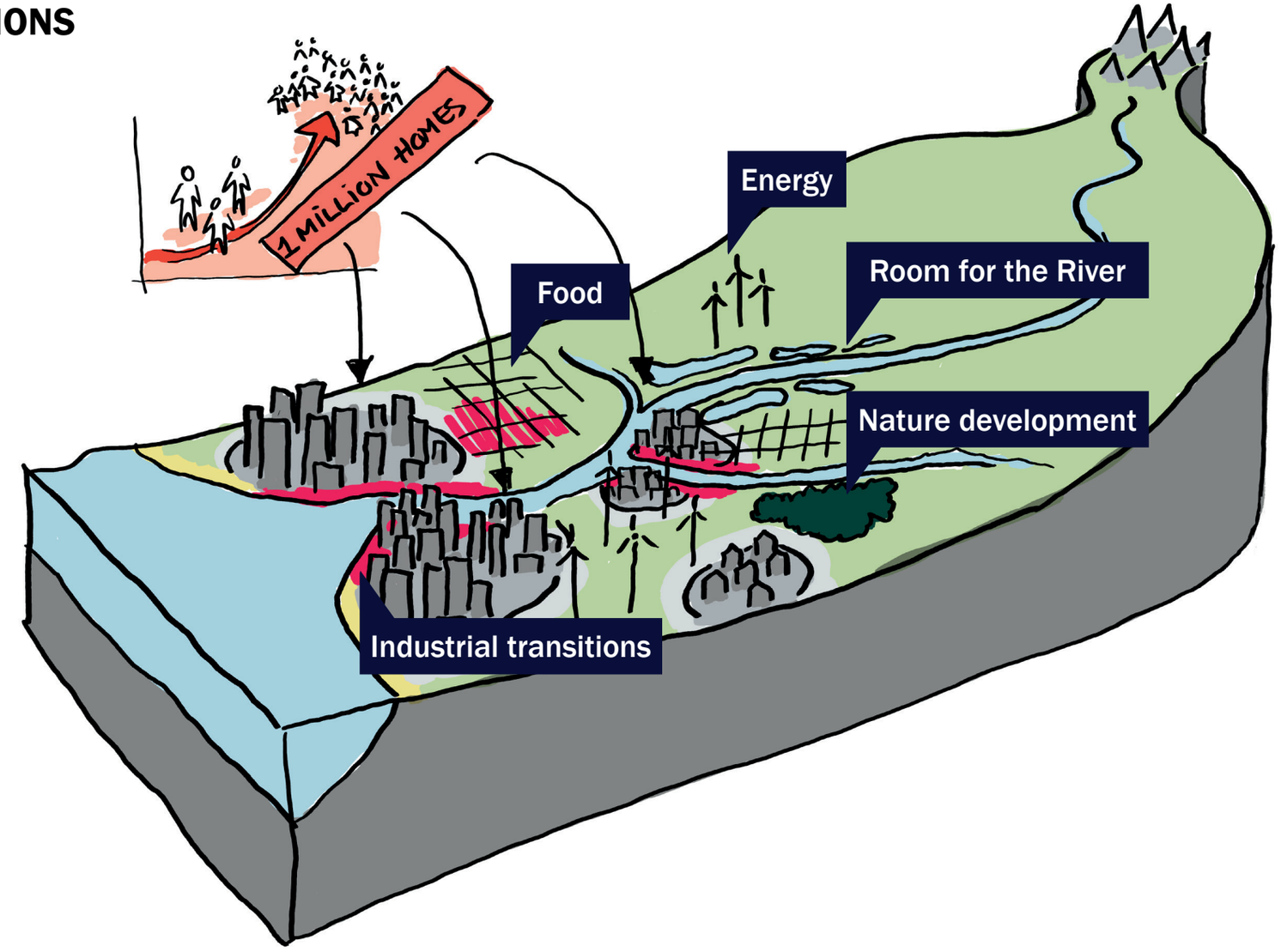
Rhine-Meuse delta region



Own illustration

DELTA REGION AMBITIONS

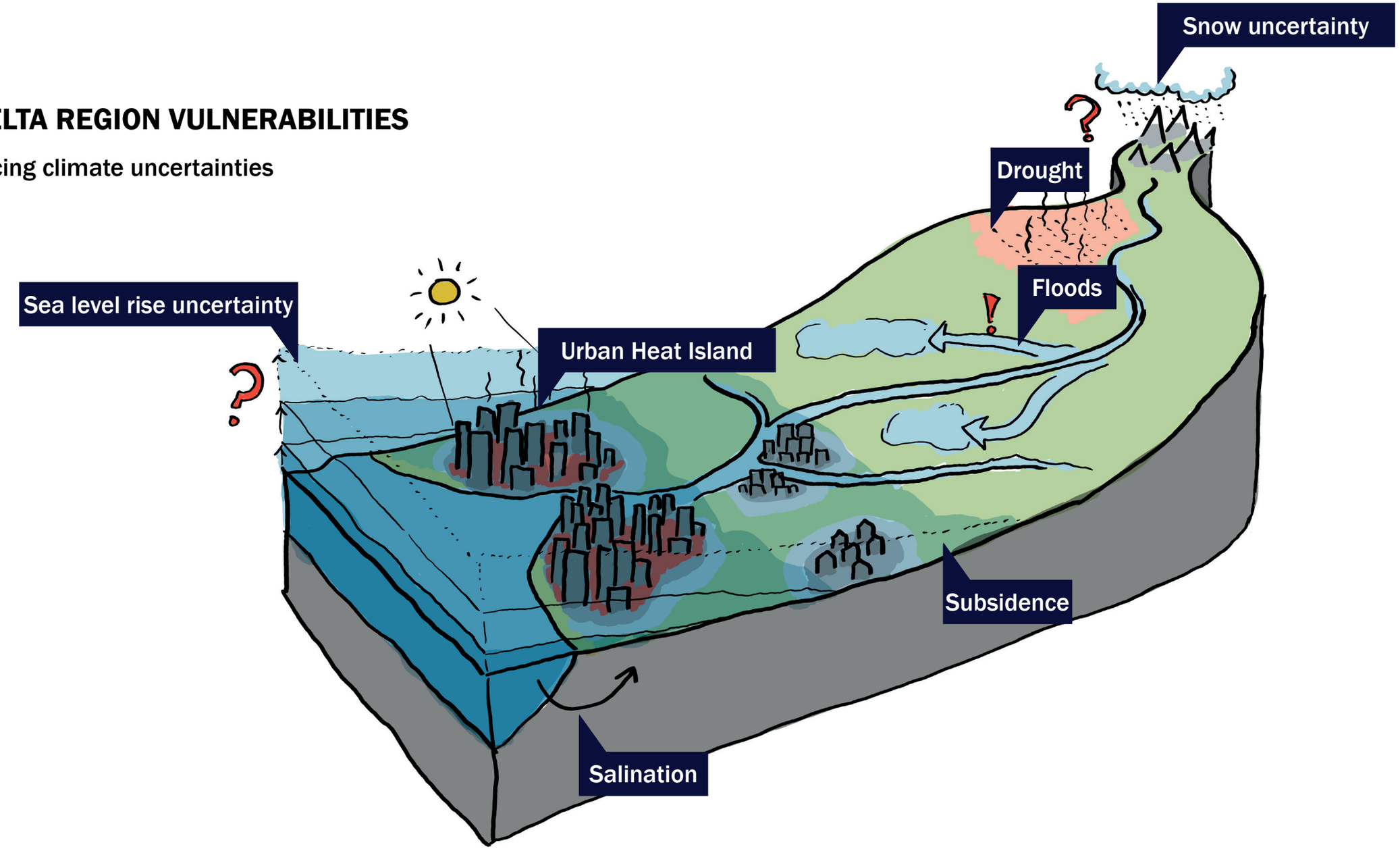
A full delta



Own illustration

DELTA REGION VULNERABILITIES

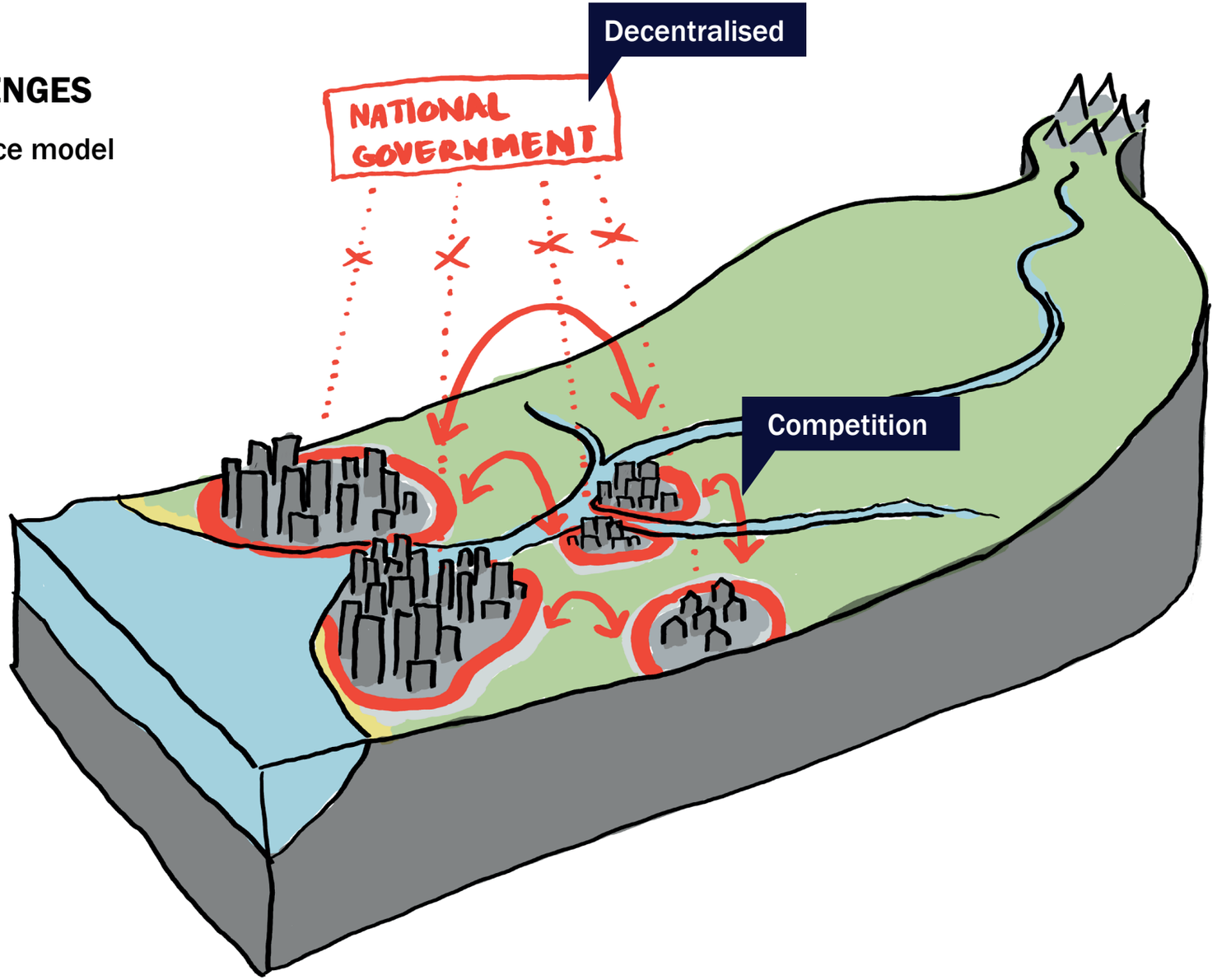
Facing climate uncertainties



Own illustration

DELTA REGION CHALLENGES

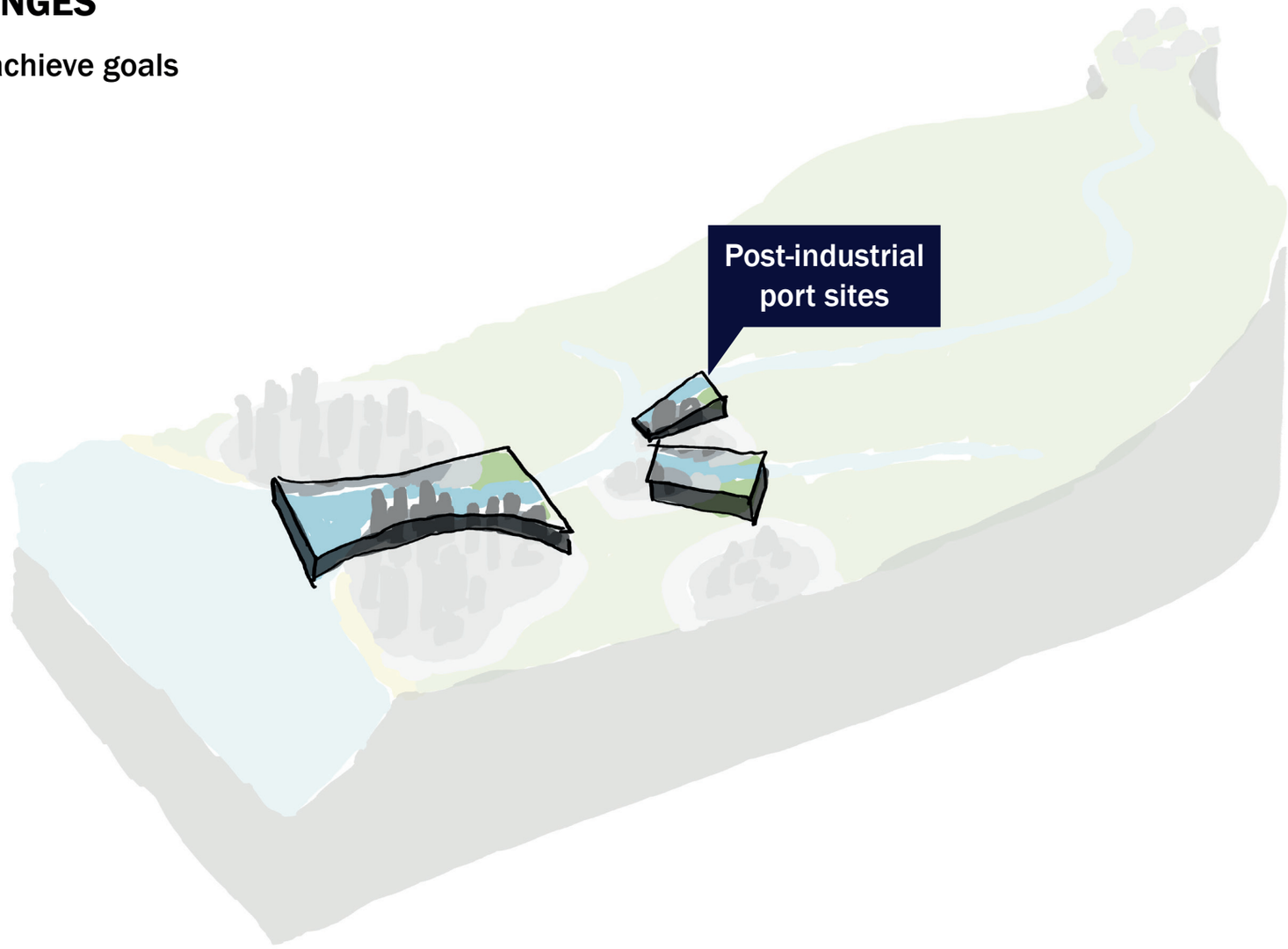
In a decentralised governance model



Own illustration

DELTA REGION CHALLENGES

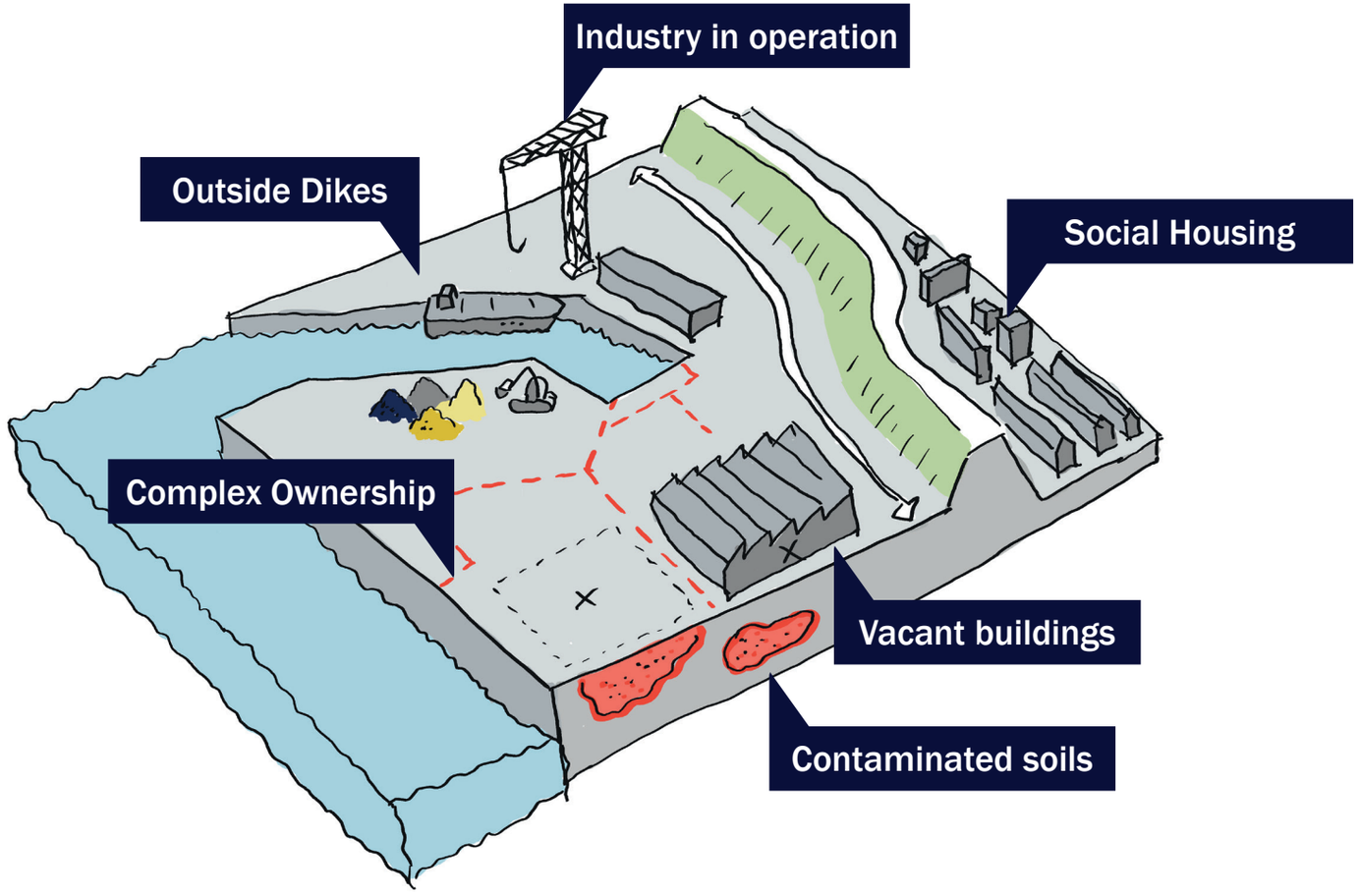
Redevelopment projects to achieve goals



Own illustration

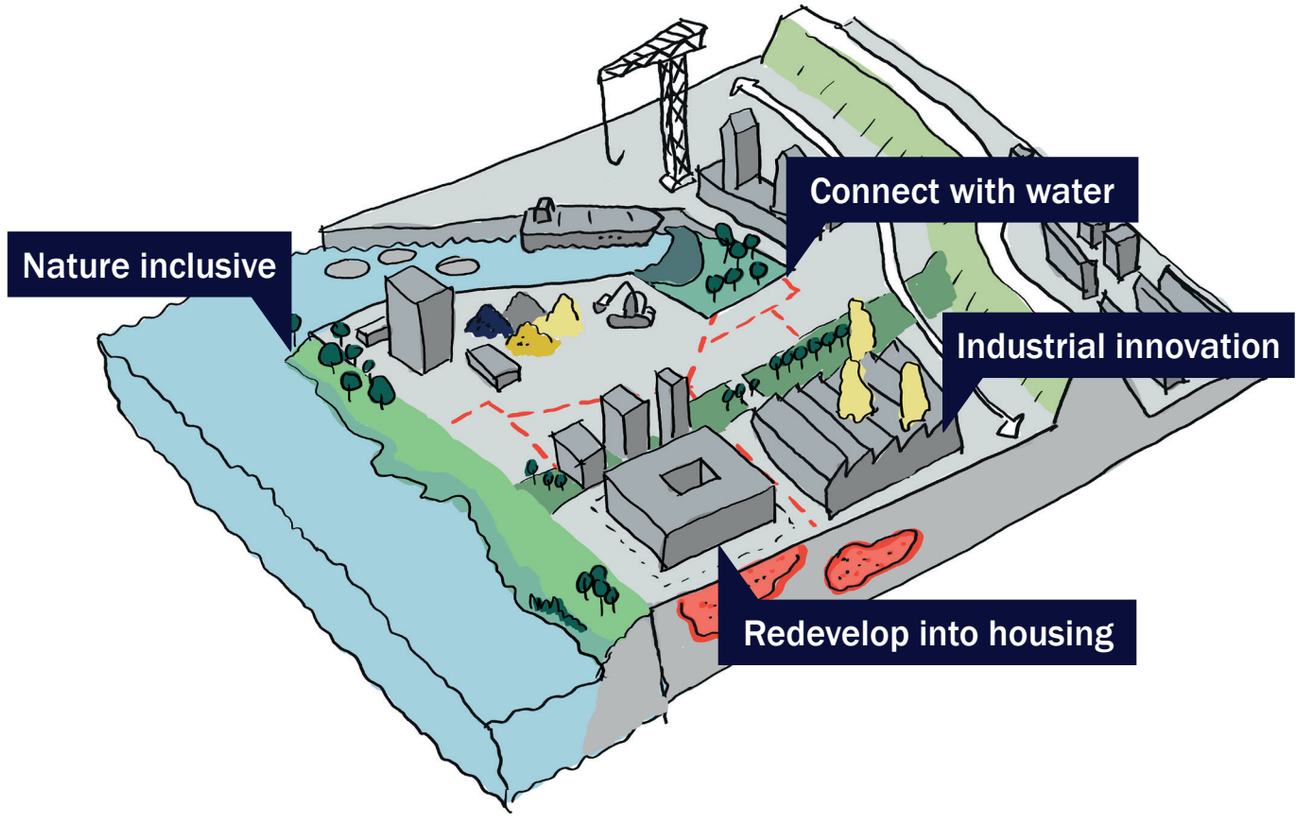
POST-INDUSTRIAL PORT SITES

As can be found at de Staart and Merwe-Vierhavens



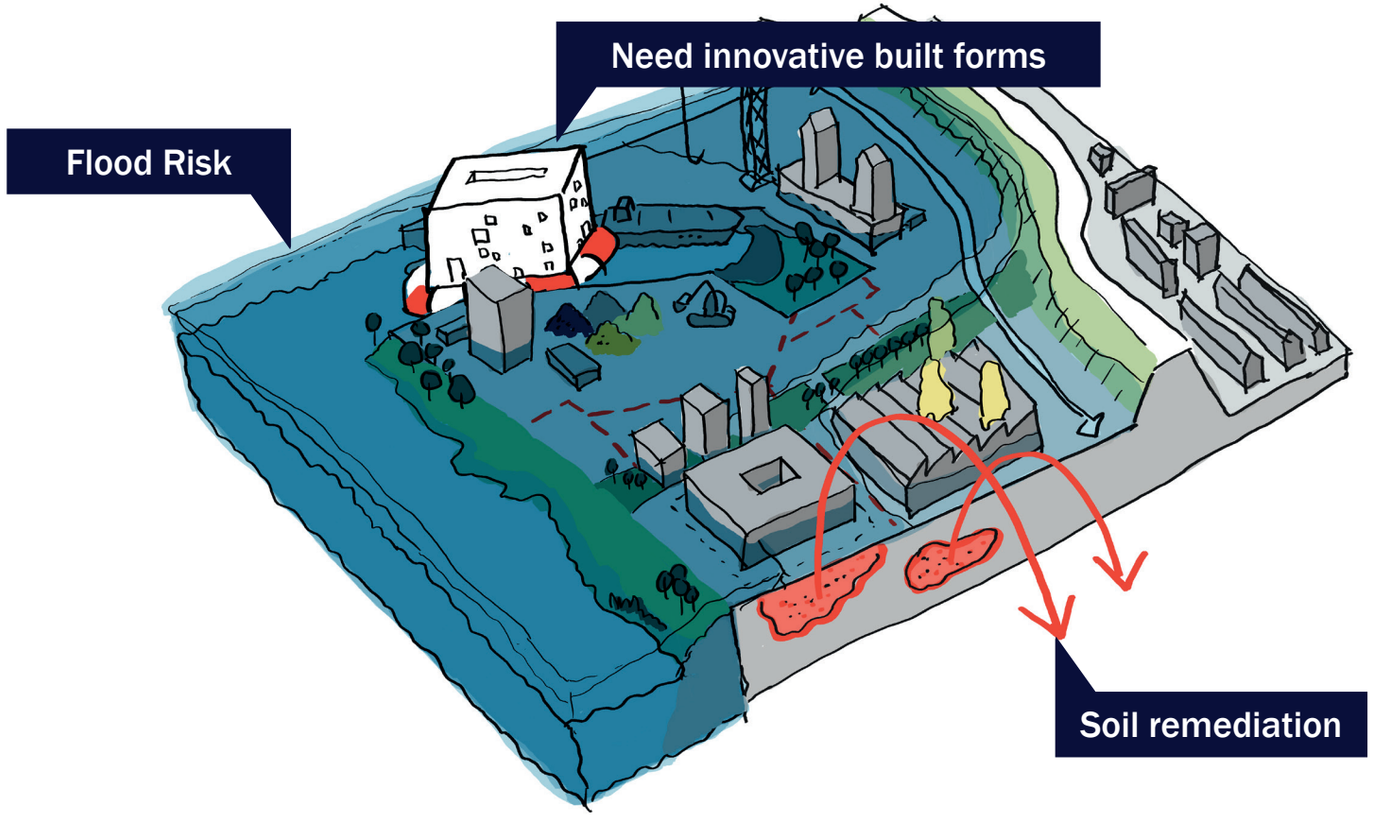
Own illustration

AMBITIONS FOR POST-INDUSTRIAL PORT SITES



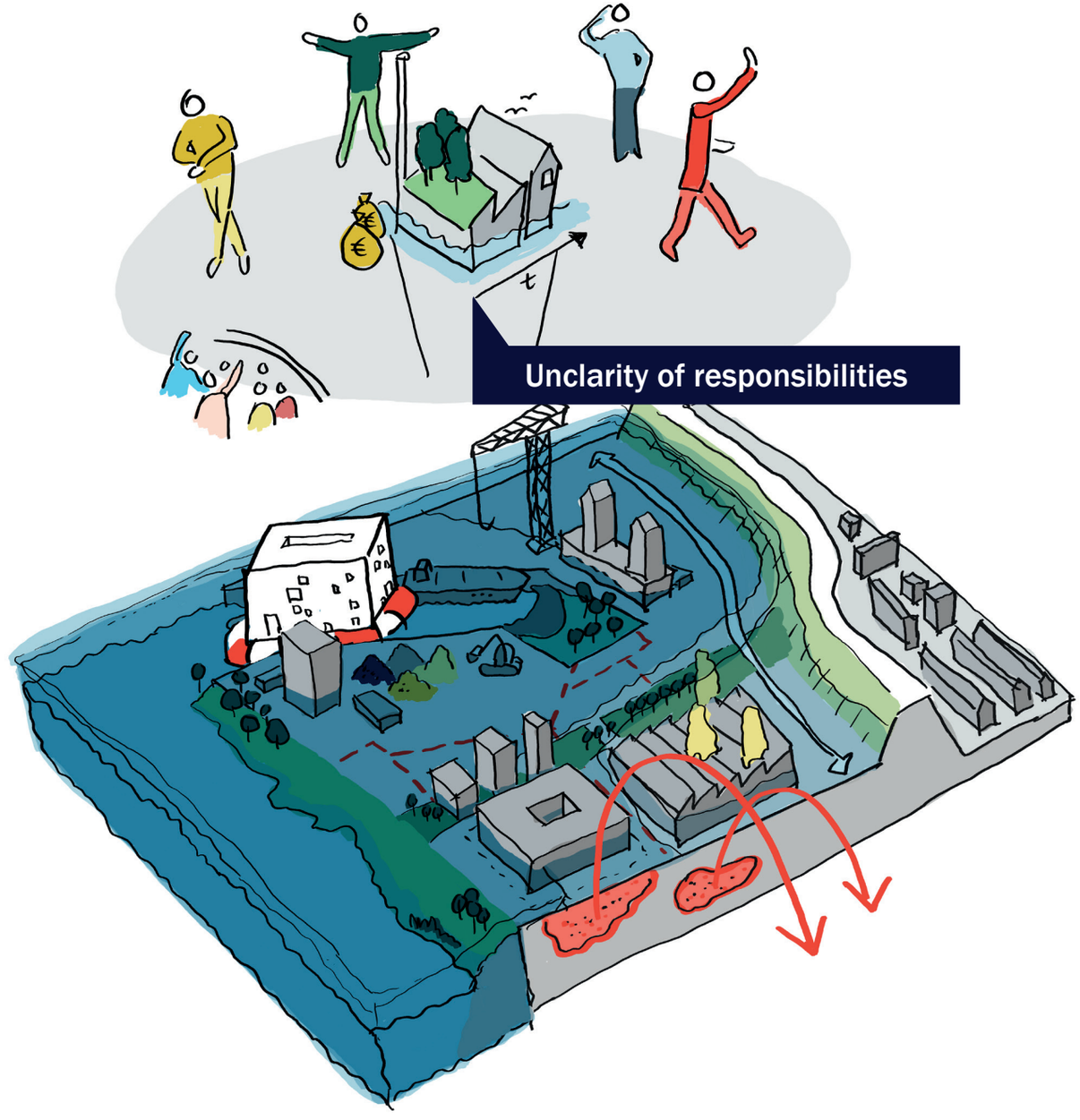
Own illustration

CHALLENGES FOR POST-INDUSTRIAL PORT SITES



Own illustration

REDEVELOPMENT PROCESS CHALLENGES

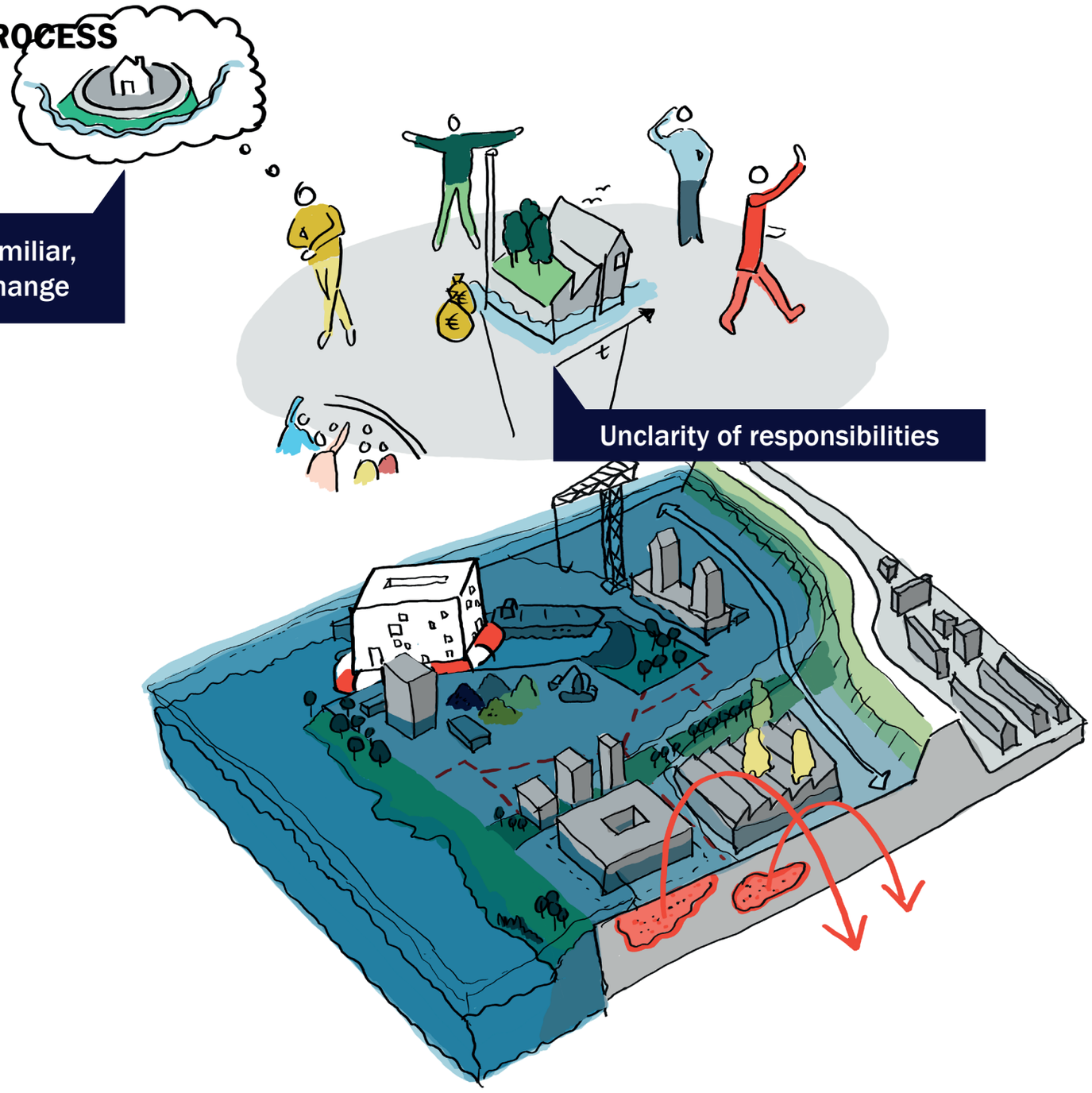


Own illustration

REDEVELOPMENT PROCESS CHALLENGES

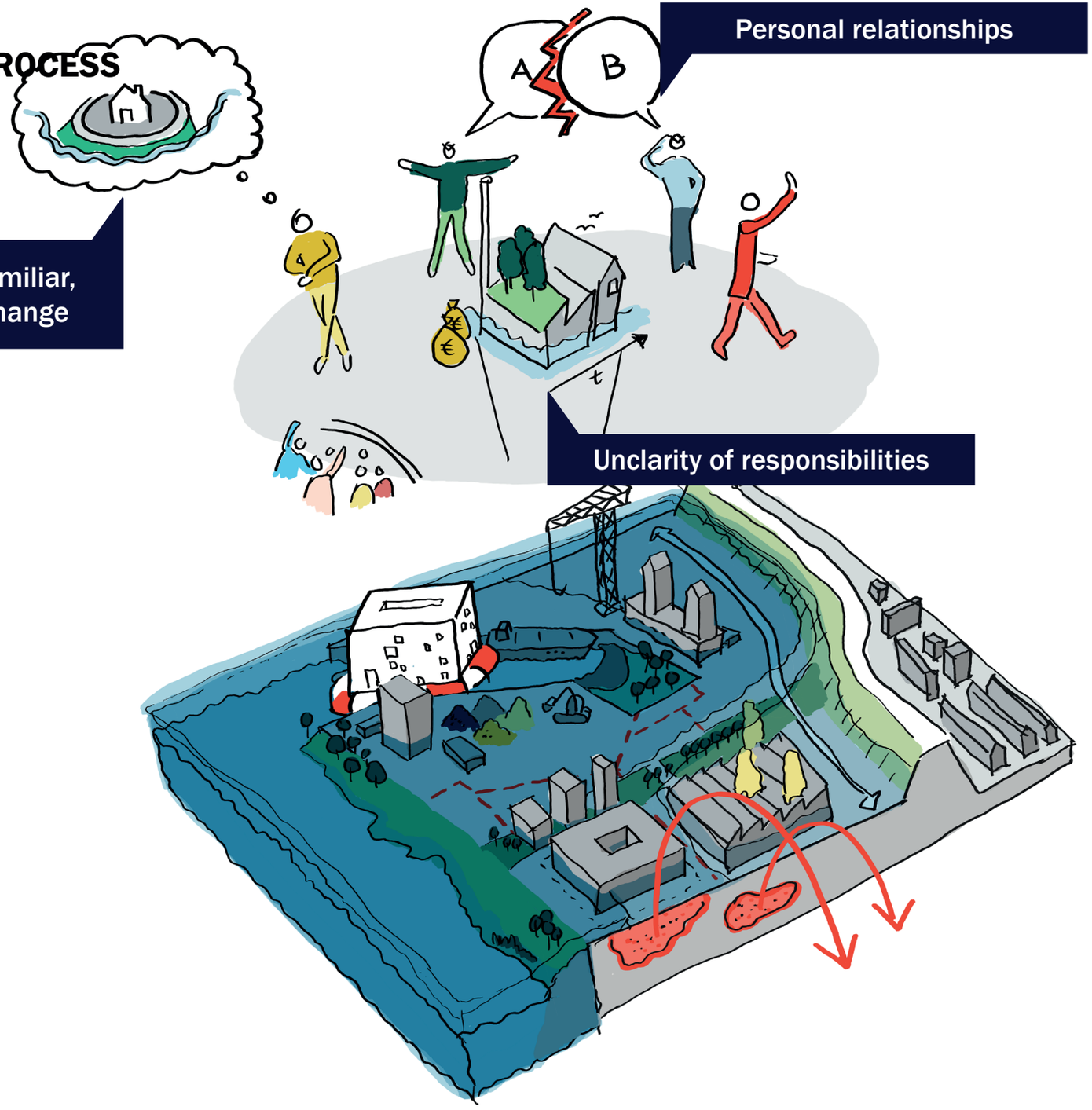
Trust in the familiar, aversion to change

Unclarity of responsibilities



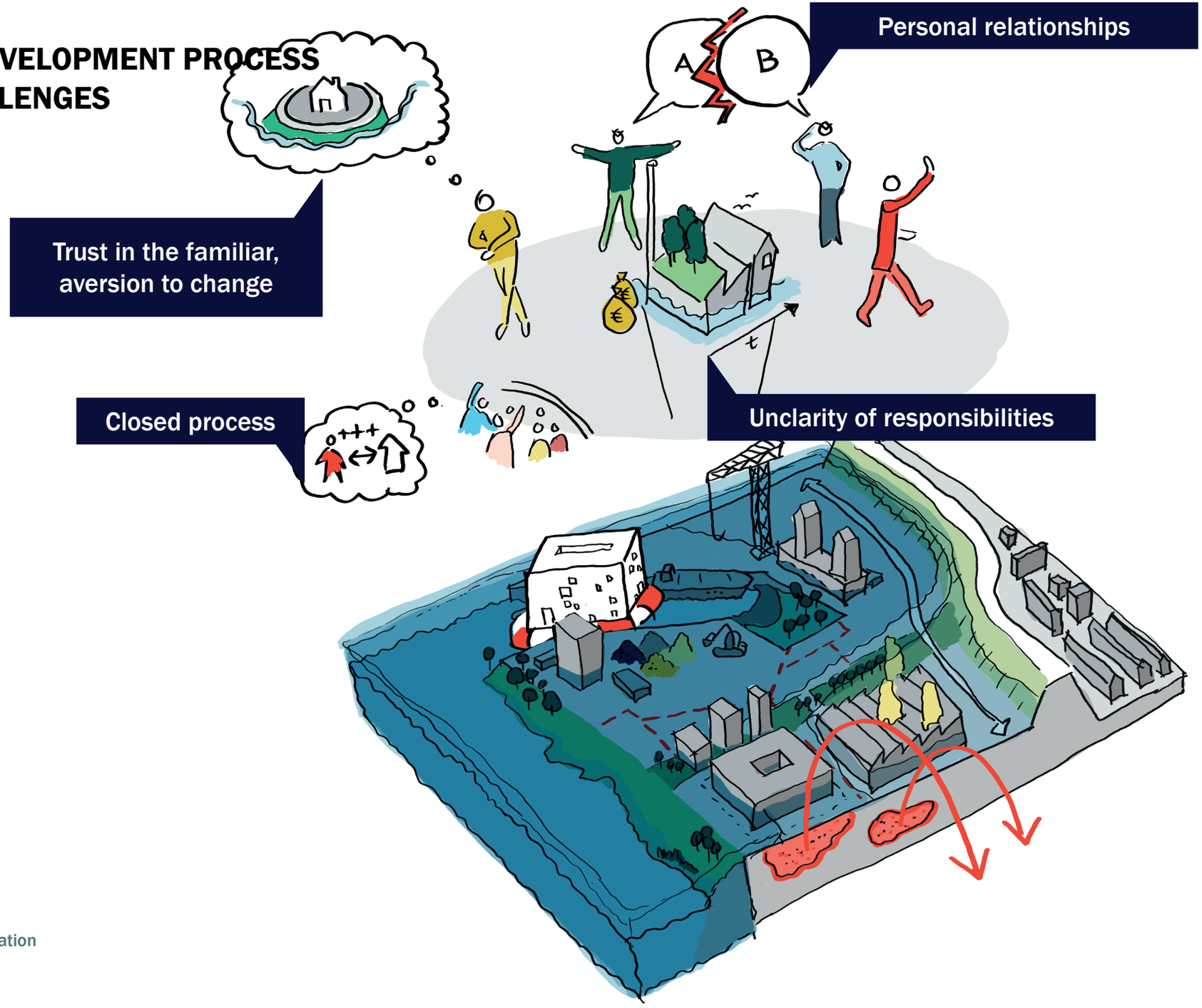
Own illustration

REDEVELOPMENT PROCESS CHALLENGES



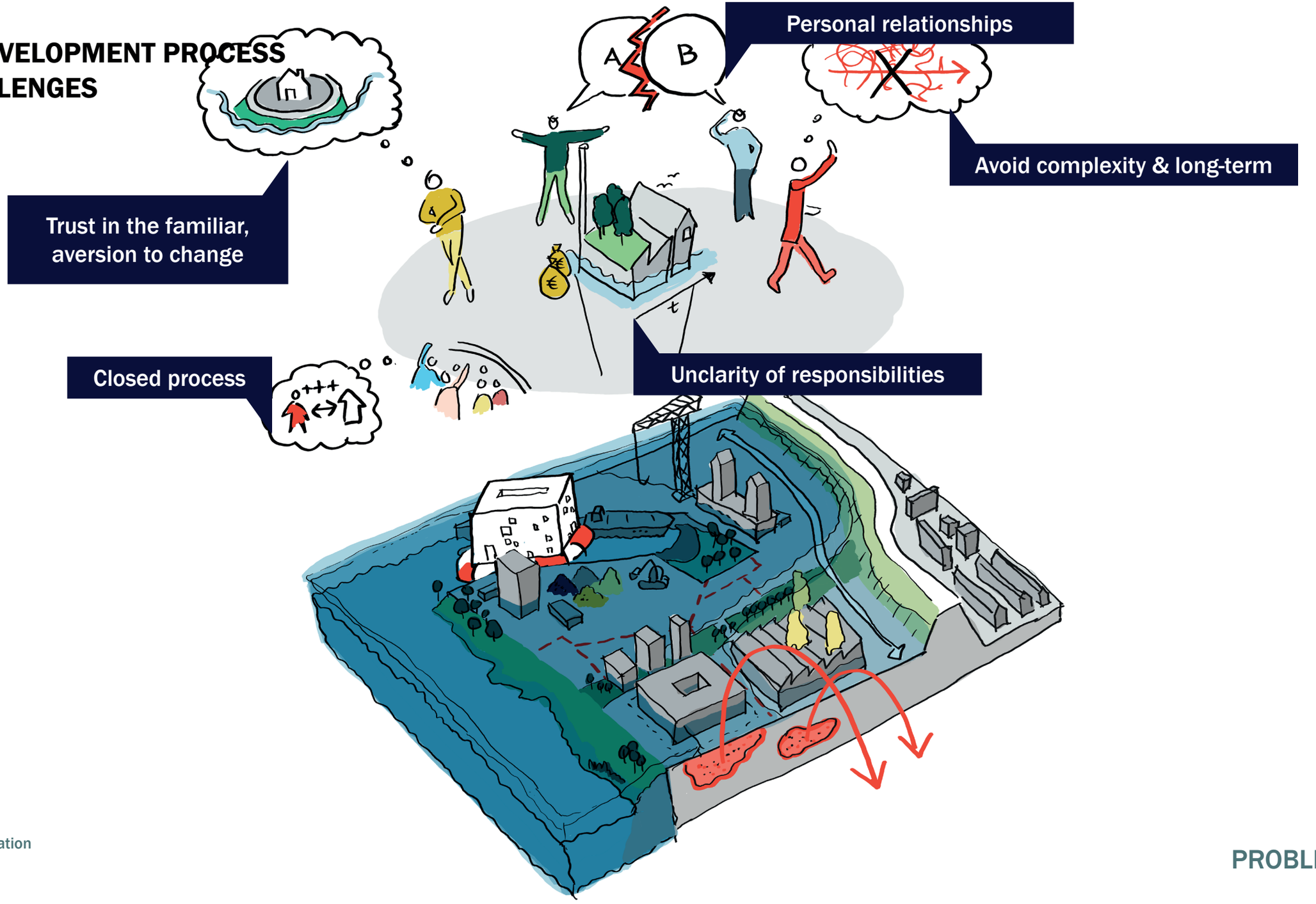
Own illustration

REDEVELOPMENT PROCESS CHALLENGES



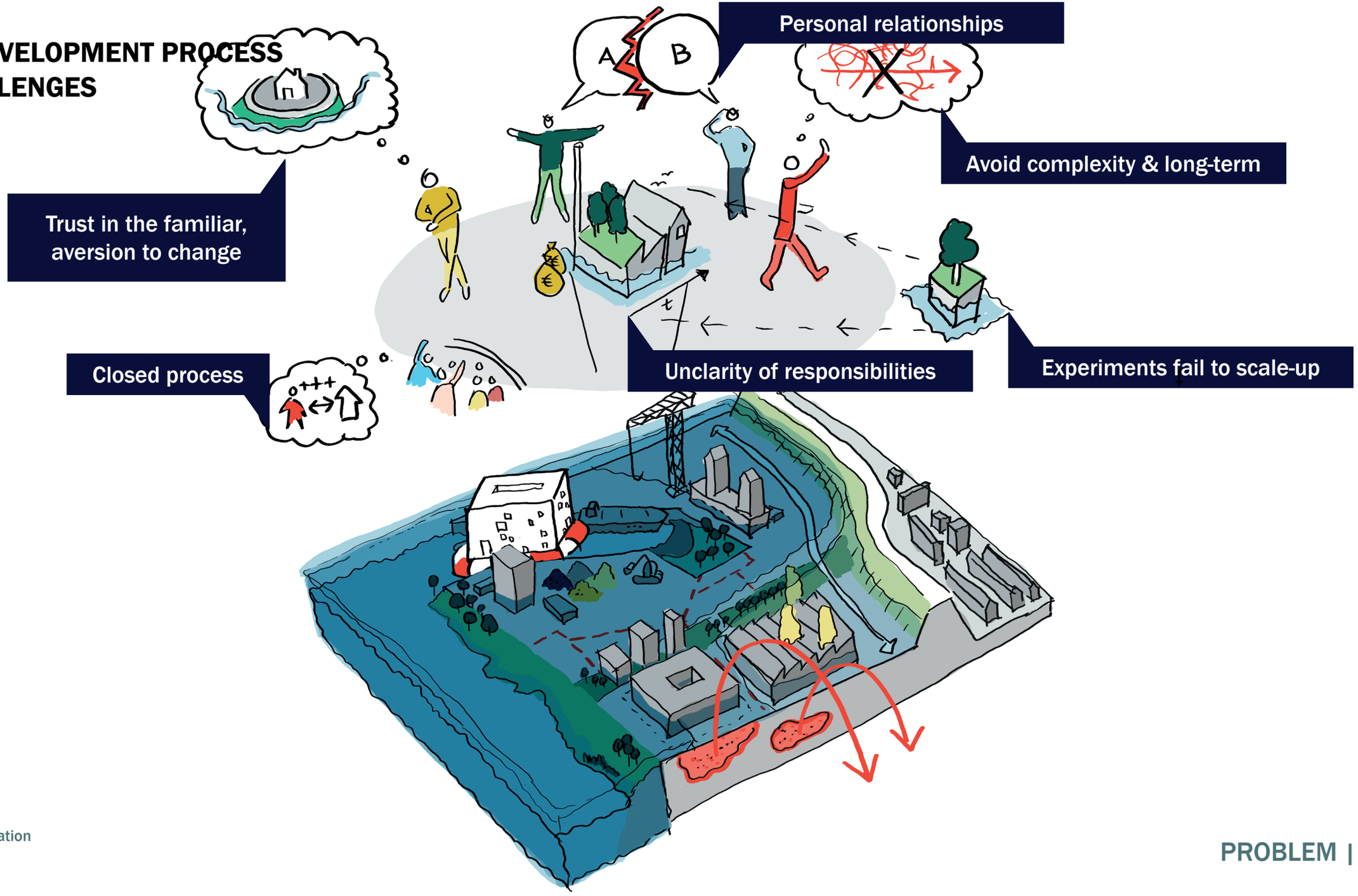
Own illustration

REDEVELOPMENT PROCESS CHALLENGES



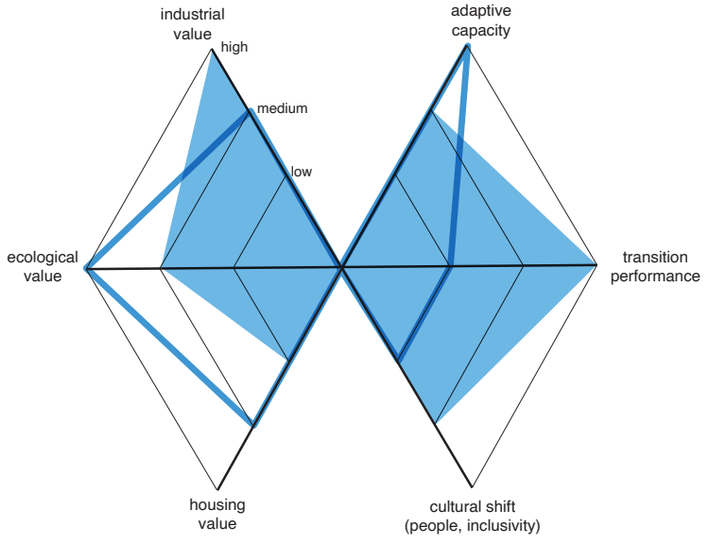
Own illustration

REDEVELOPMENT PROCESS CHALLENGES



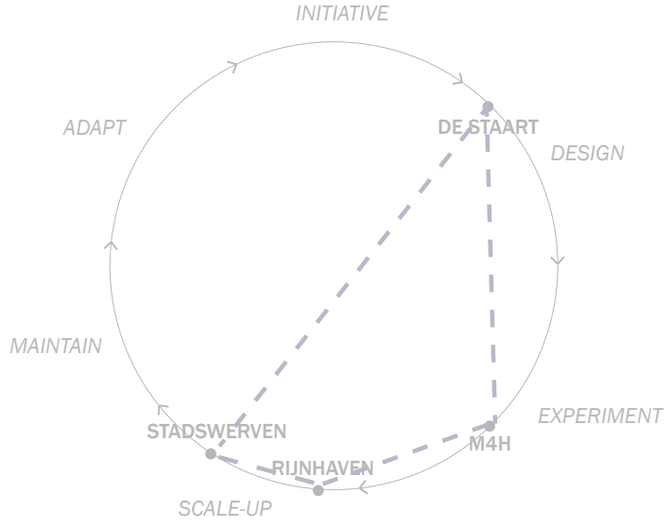
Own illustration

LESSONS COMPARATIVE CASE STUDY RESEARCH



AMBITIONS INCREASING

...But they were often reduced in long--term redevelopment processes



LEARNING BETWEEN PROJECTS

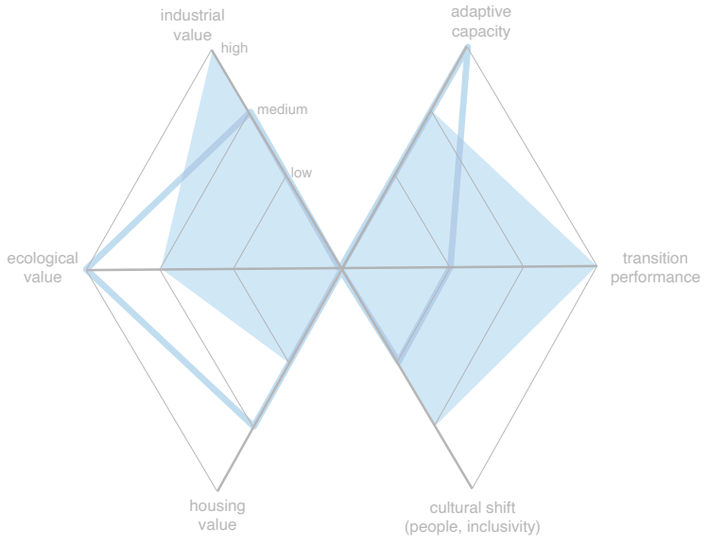
Influence regional transition & other projects

ADAPTABILITY

To future contexts, new knowledge and policies should improve

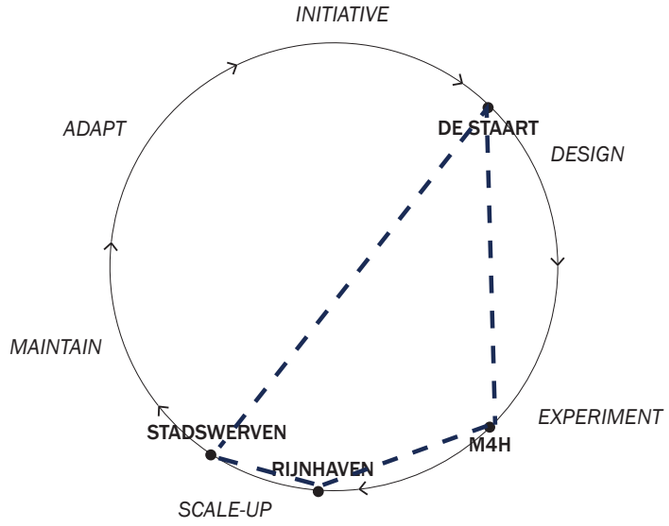
Own illustration

LESSONS COMPARATIVE CASE STUDY RESEARCH



AMBITIONS INCREASING

...But they were often reduced in long--term redevelopment processes



LEARNING BETWEEN PROJECTS

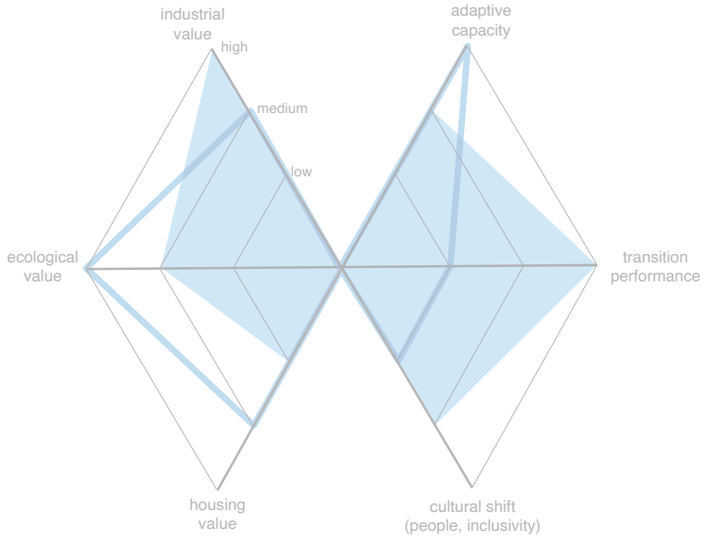
Influence regional transition & other projects

ADAPTABILITY

To future contexts, new knowledge and policies should improve

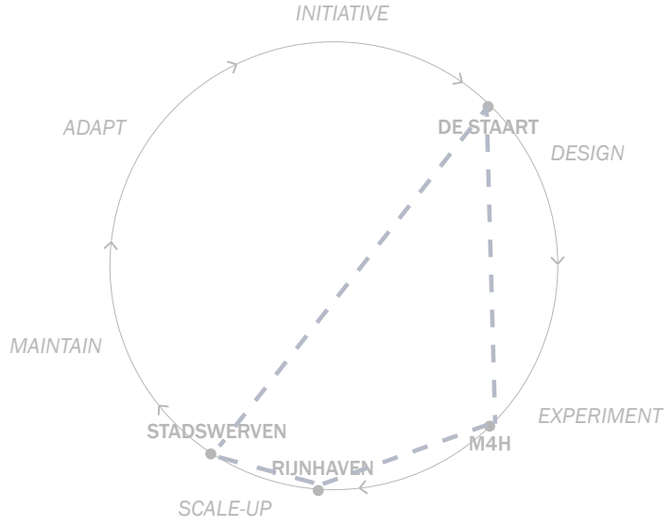
Own illustration

LESSONS COMPARATIVE CASE STUDY RESEARCH



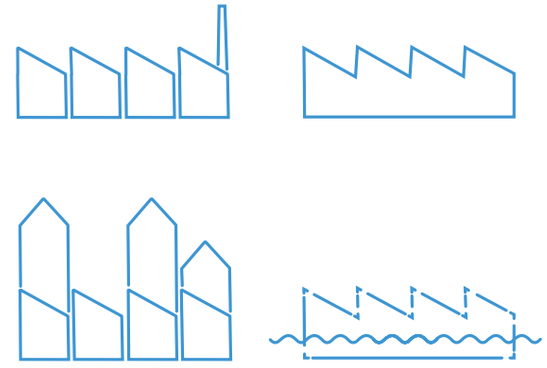
AMBITIONS INCREASING

...But they were often reduced in long--term redevelopment processes



LEARNING BETWEEN PROJECTS

Influence regional transition & other projects



ADAPTABILITY

To future contexts, new knowledge and policies should improve

Own illustration

PROBLEM

Lack of operalisation & regional integration of climate adaptation ambitions in post-industrial port redevelopment projects

AIM OF THE PROJECT

Transition towards climate adaptive delta cities to establish an evolutionarily resilient region, facing the uncertain future effects of climate change

How can post-industrial port redevelopments contribute to the transition towards climate adaptive delta cities?

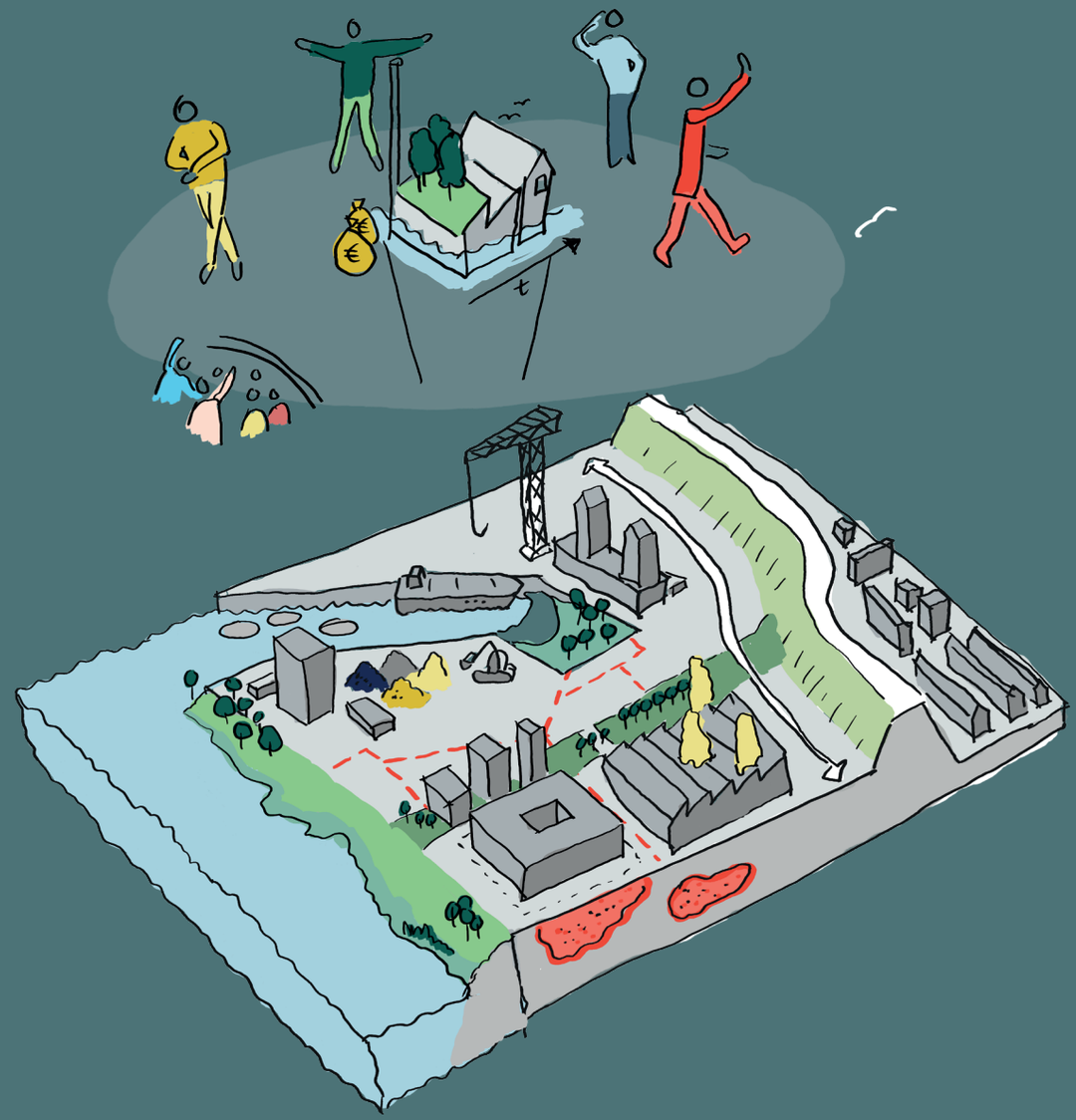
1. CONTEXT

2. PROBLEM

3. CHANGE PROCESSES

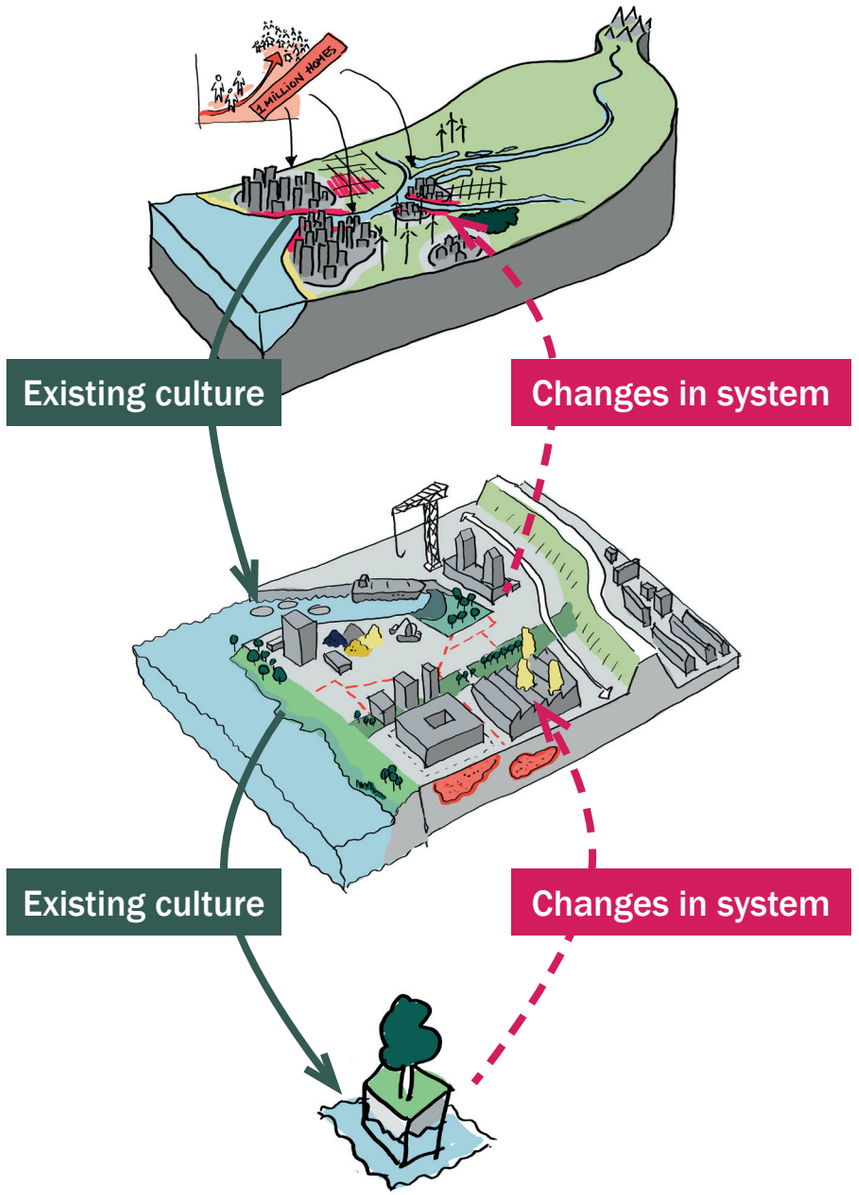
4. STRATEGY

5. DESIGN SIMULATION



A strategy for climate adaptive redevelopment of post-industrial port-sites

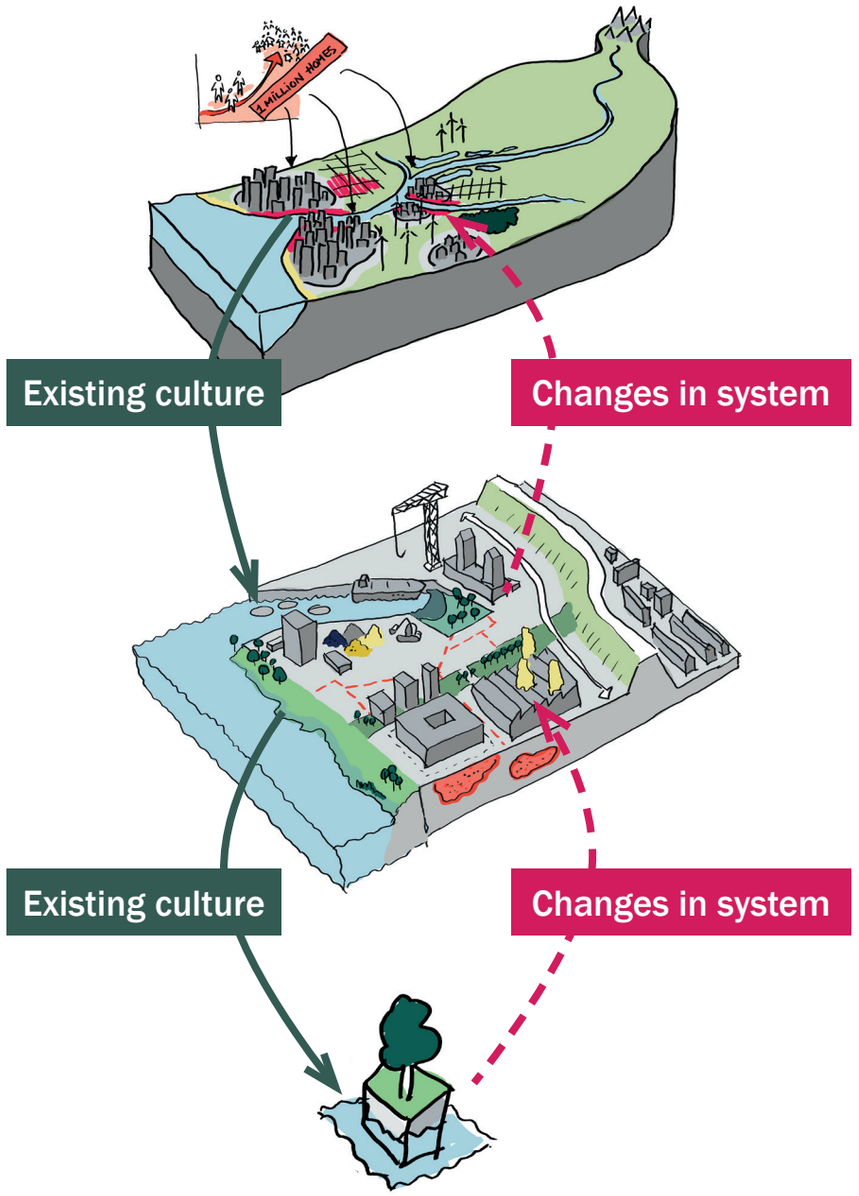
THE NEED FOR A BOTTOM-UP TRANSITION IN A DECENTRALISED SOCIETY



Own illustration, based on Gunderson & Holling, 2002

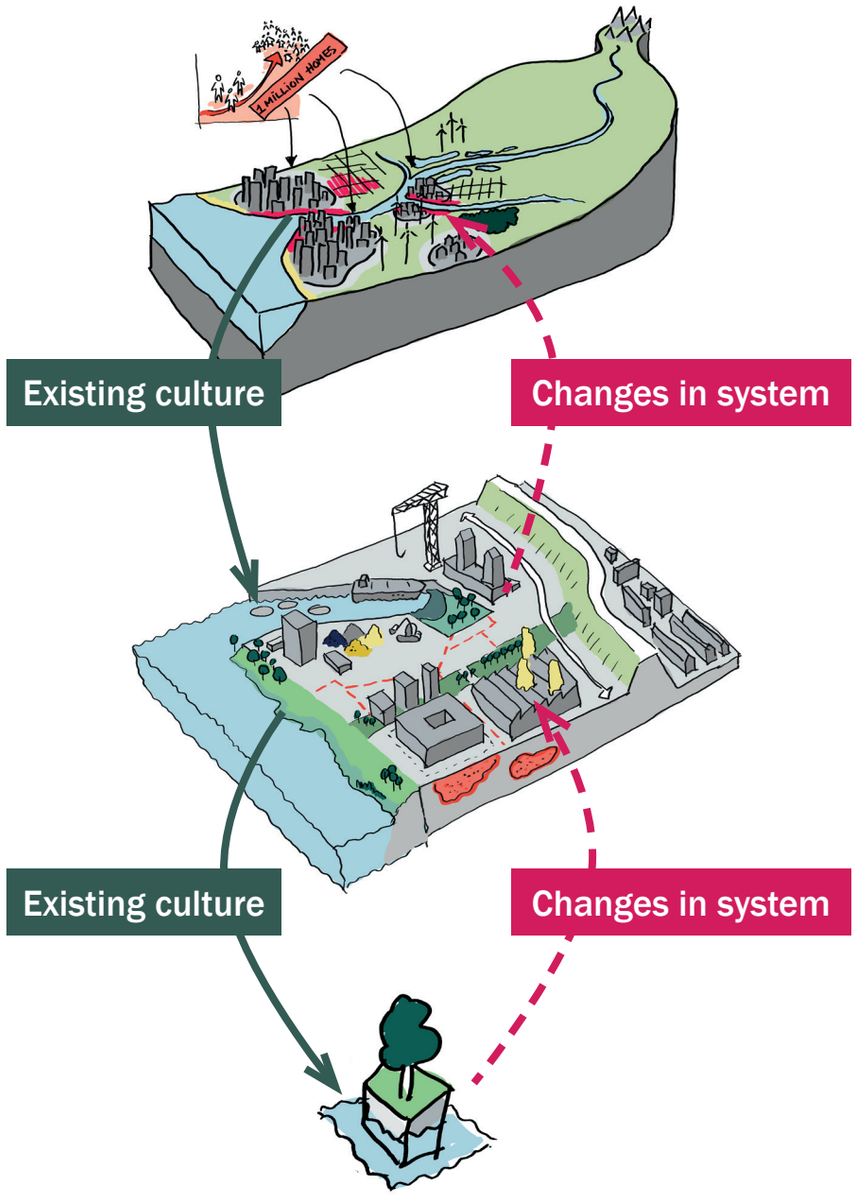
THE NEED FOR A BOTTOM-UP TRANSITION IN A DECENTRALISED SOCIETY

Dynamic Adaptive Policy Pathways are promising redevelopment strategy



Own illustration, based on Gunderson & Holling, 2002

THE NEED FOR A BOTTOM-UP TRANSITION IN A DECENTRALISED SOCIETY

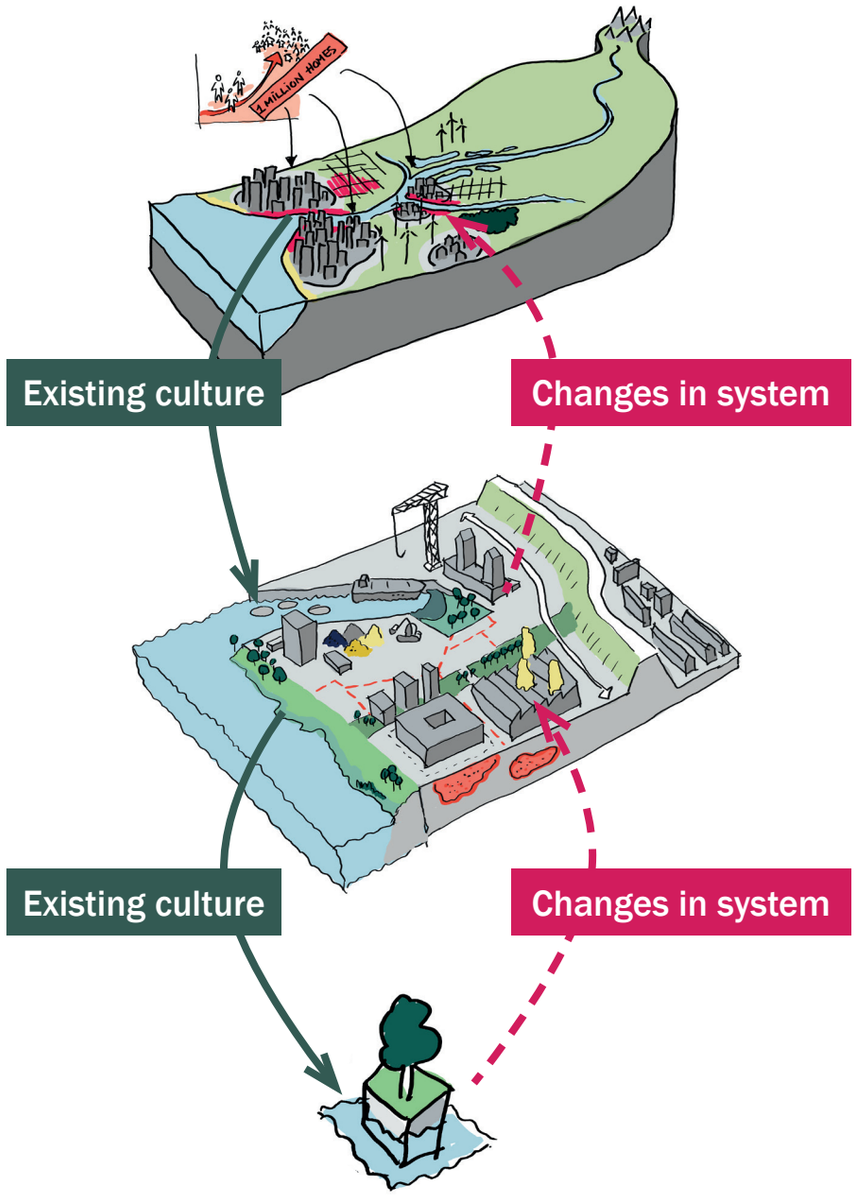


Dynamic Adaptive Policy Pathways are promising redevelopment strategy

Collaborative Design: change = positive

Own illustration, based on Gunderson & Holling, 2002

THE NEED FOR A BOTTOM-UP TRANSITION IN A DECENTRALISED SOCIETY



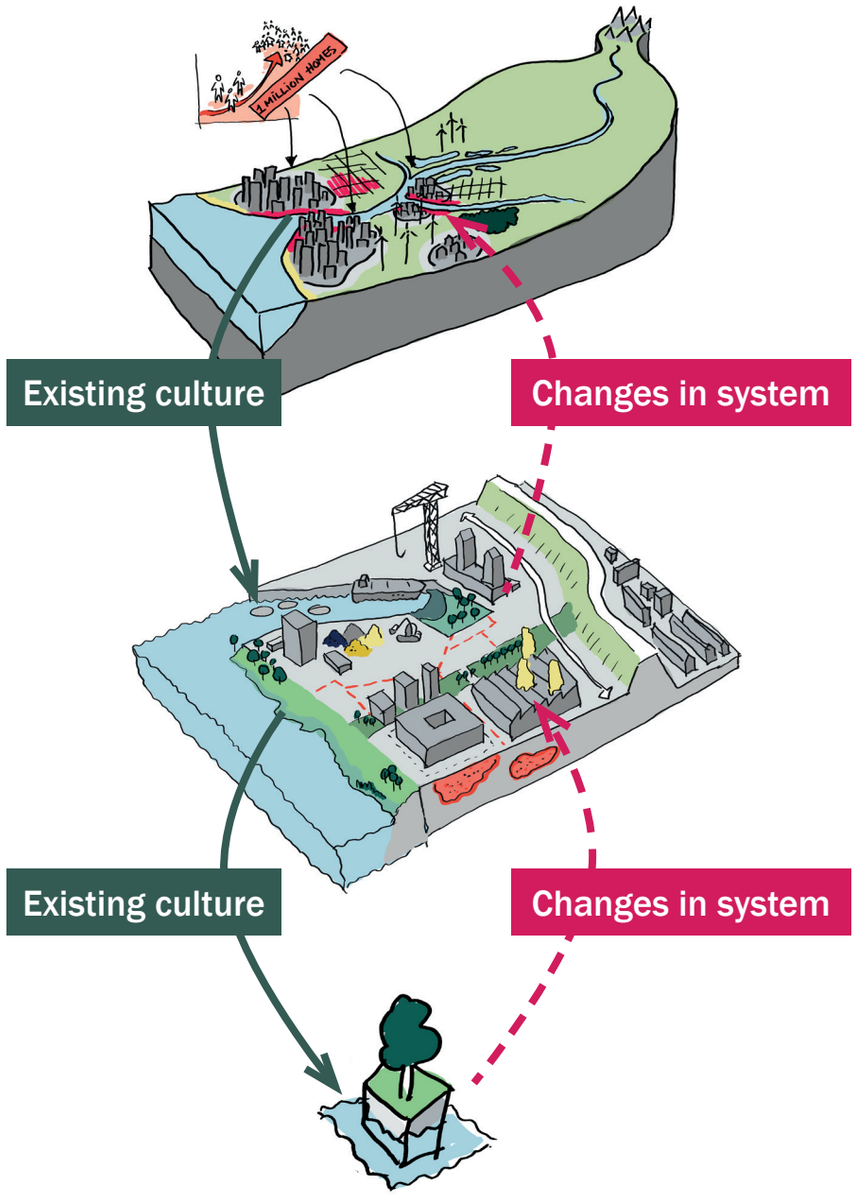
Dynamic Adaptive Policy Pathways are promising redevelopment strategy

Collaborative Design: change = positive

Adaptable: Open to change in deep uncertainty

Own illustration, based on Gunderson & Holling, 2002

THE NEED FOR A BOTTOM-UP TRANSITION IN A DECENTRALISED SOCIETY



Dynamic Adaptive Policy Pathways are promising redevelopment strategy

Collaborative Design: change = positive

Adaptable: Open to change in deep uncertainty

Grounded Experiments: to make an impact

Own illustration, based on Gunderson & Holling, 2002

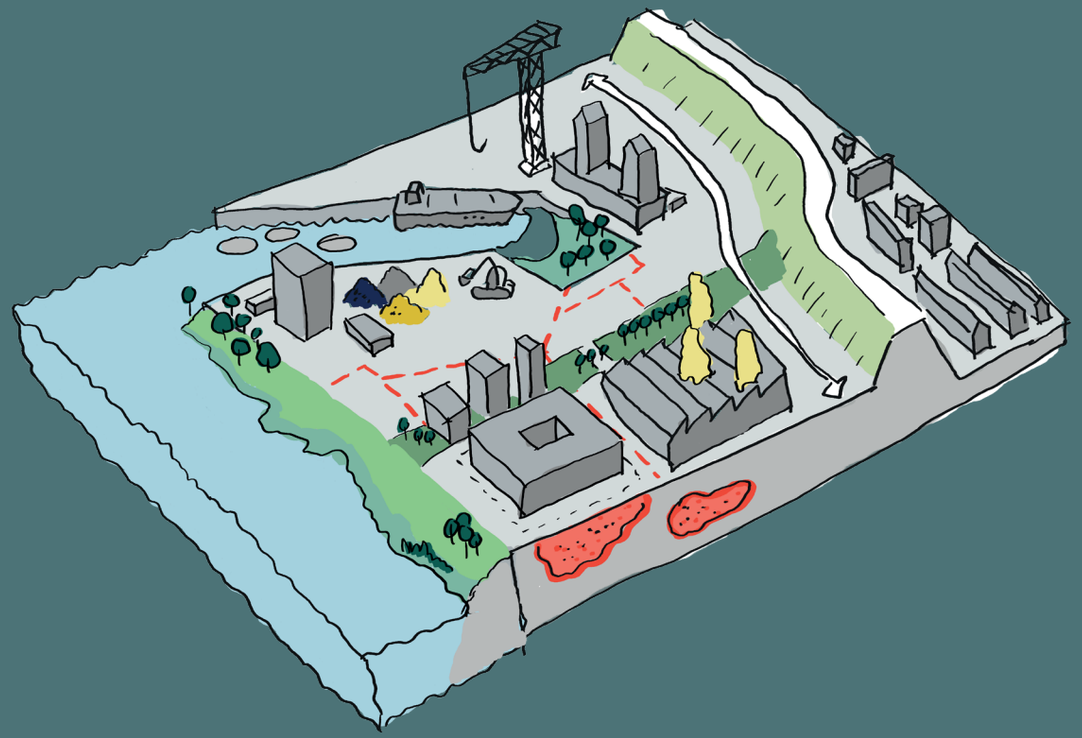
1. CONTEXT

2. PROBLEM

3. CHANGE PROCESSES

4. STRATEGY

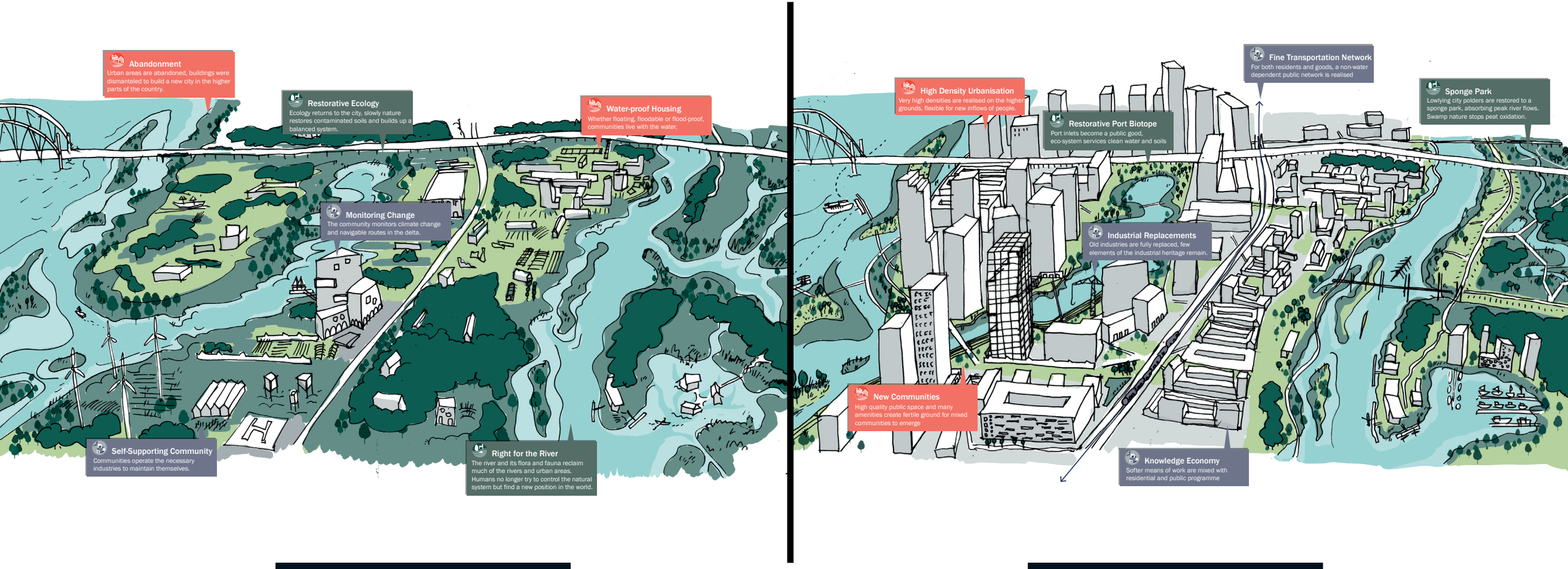
5. DESIGN SIMULATION



A strategy for climate adaptive redevelopment of post-industrial port-sites

Dynamic Adaptive Policy Pathways

DYNAMIC ADAPTIVE POLICY PATHWAYS | EMBED UNCERTAINTY

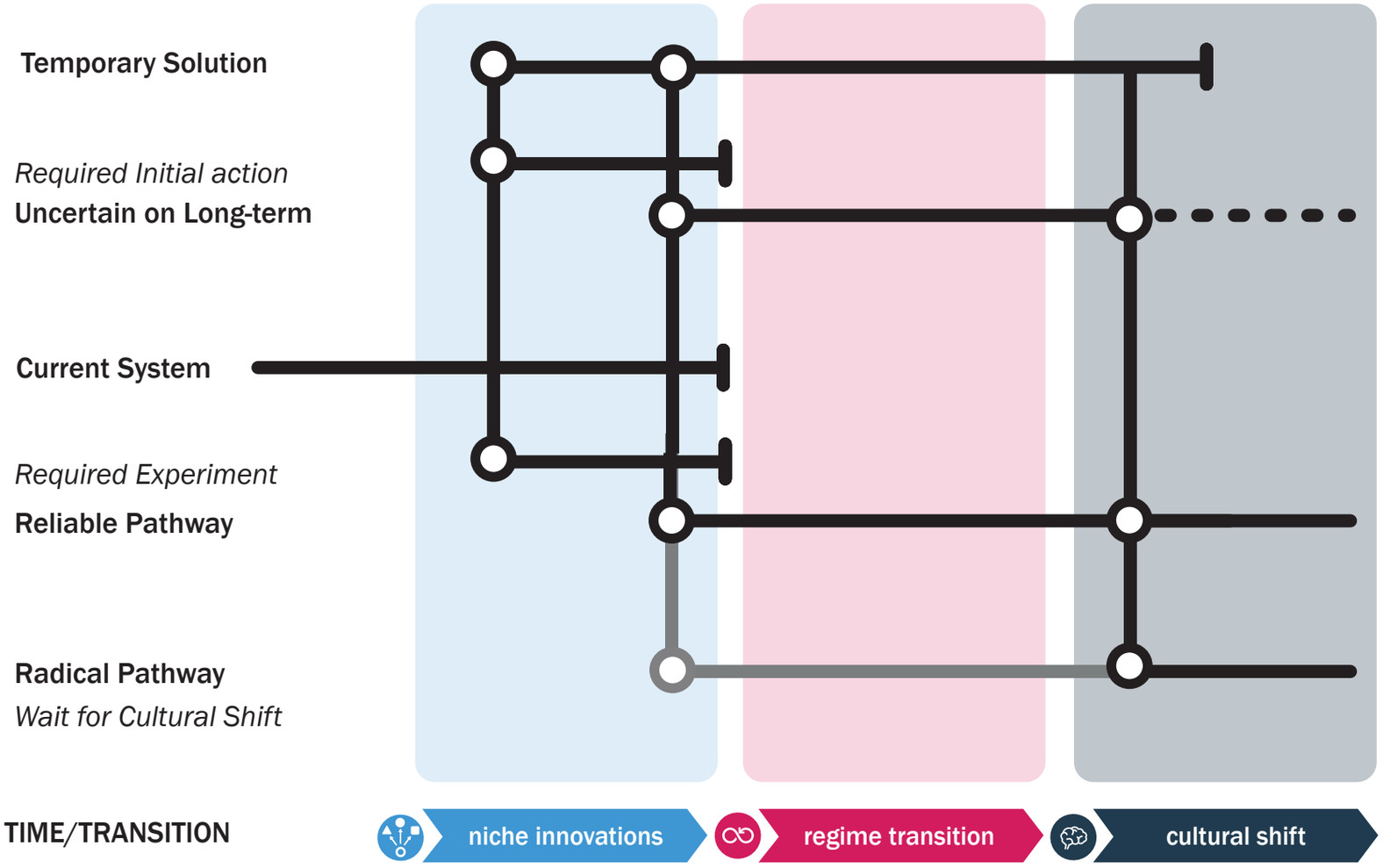


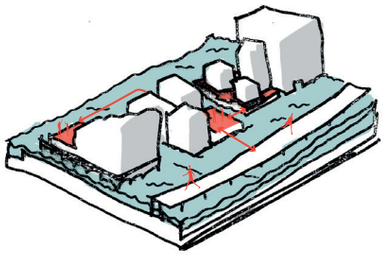
BIESBOSCH XXL

EDGE OF THE RANDSTAD

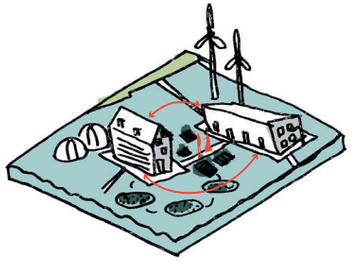
Own illustrations

DYNAMIC ADAPTIVE POLICY PATHWAYS | MULTIPLE OPTIONS OPEN

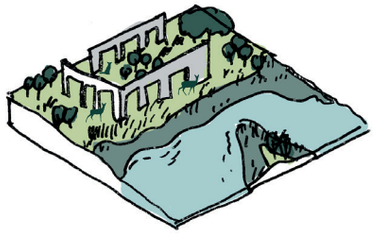




A BUILD WATER RESILIENT BUILDING



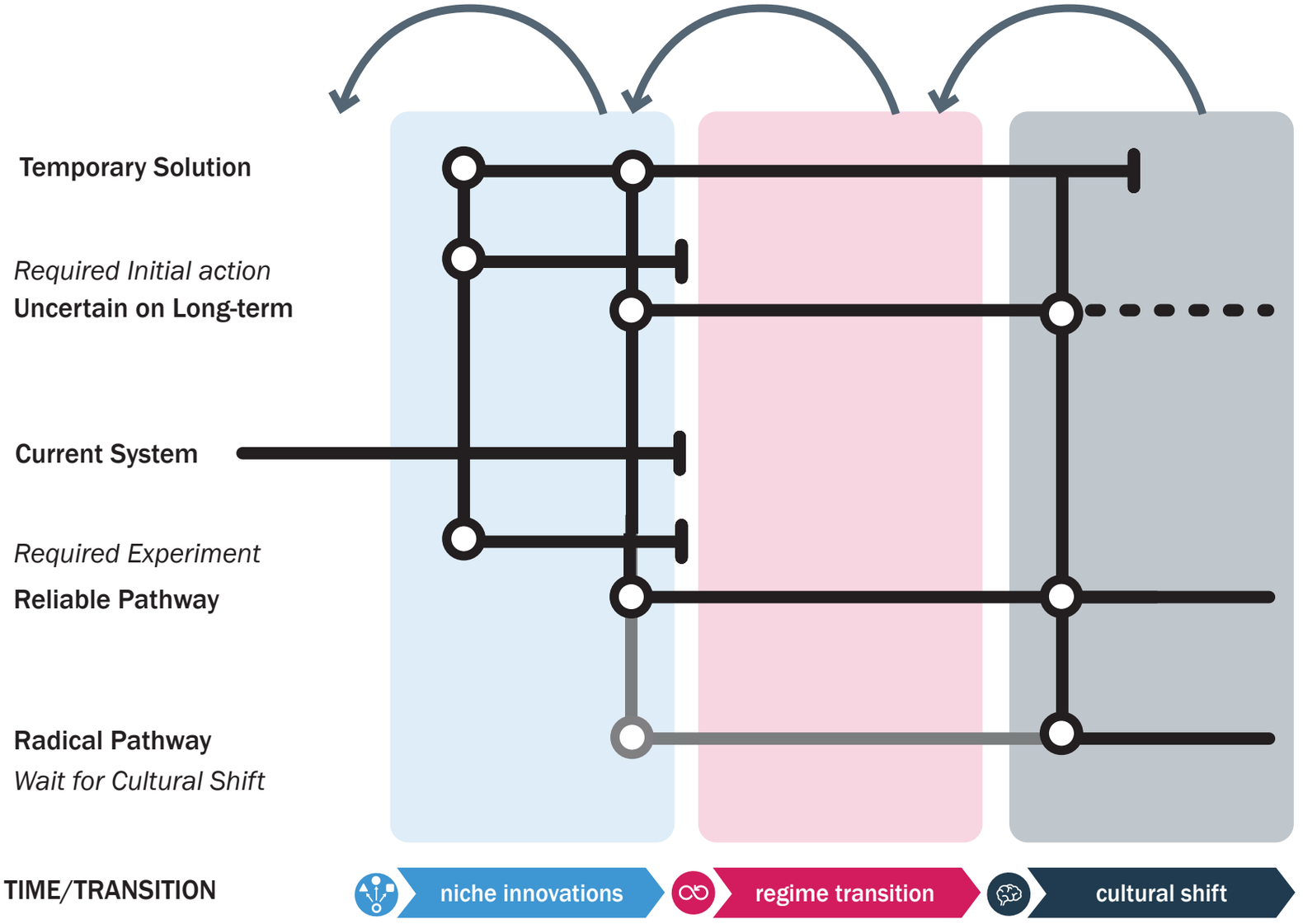
B FLOATING, SELF-SUPPORTING COMMUNITIES



C MOVE ALL OCCUPATION, ECOLOGICAL RECLAMATION

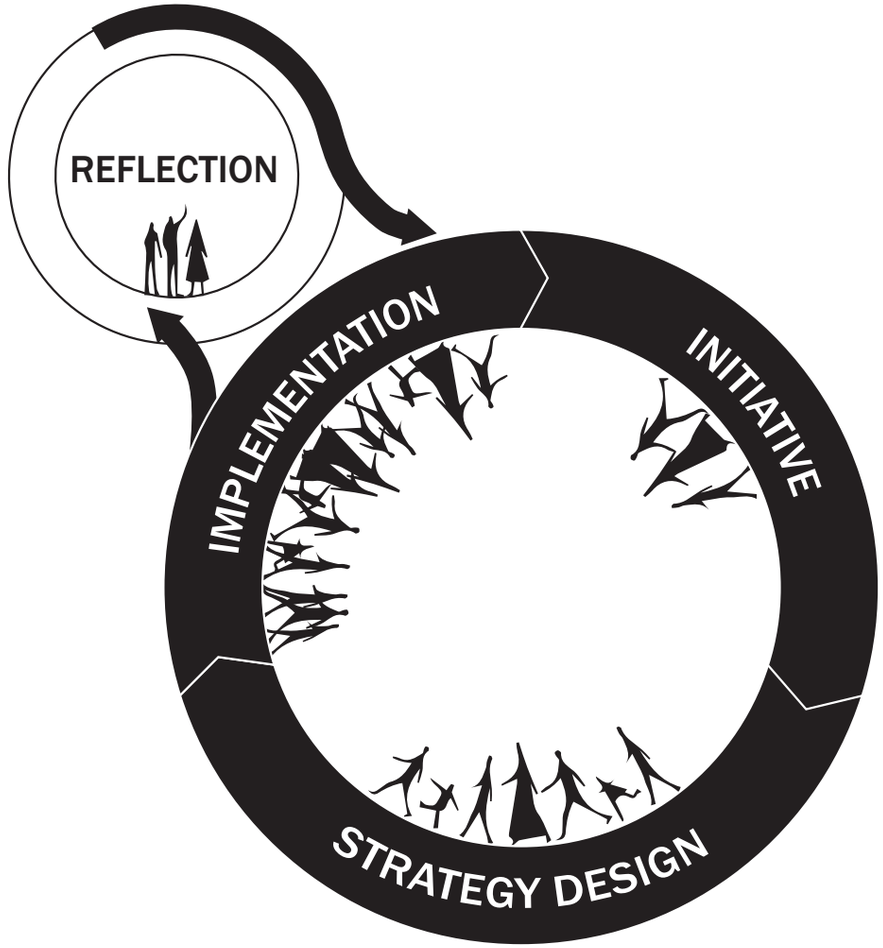
Own illustration, based on Haasnoot et al. (2013)

DYNAMIC ADAPTIVE POLICY PATHWAYS | CONNECT SHORT- AND LONG-TERM



Own illustration, based on Haasnoot et al. (2013)

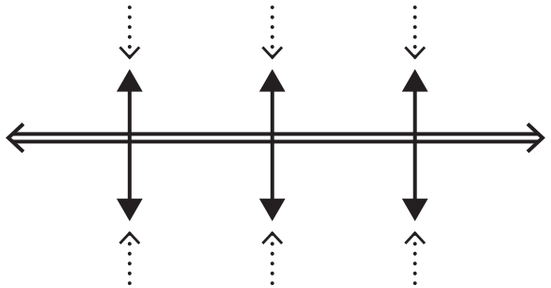
DYNAMIC ADAPTIVE POLICY PATHWAYS | INCLUSIVE



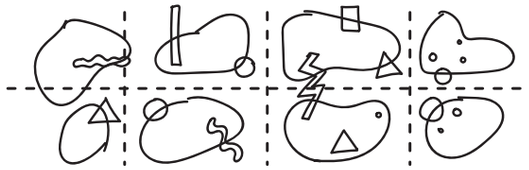
Own illustration, based on Roorda et al., 2014

DYNAMIC ADAPTIVE POLICY PATHWAYS | STRUCTURE REDEVELOPMENT

1. SPATIAL FRAMEWORK



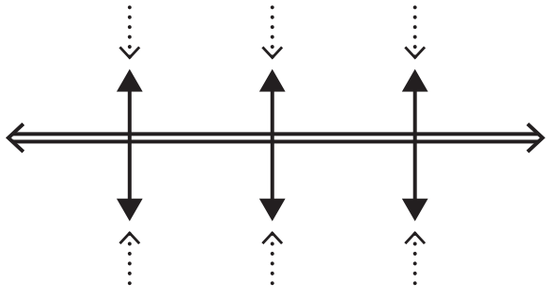
2. DYNAMIC RULES



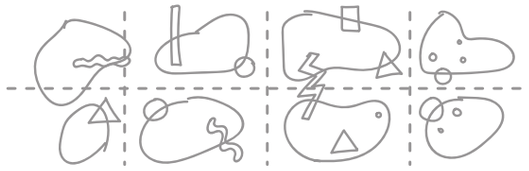
Own illustration

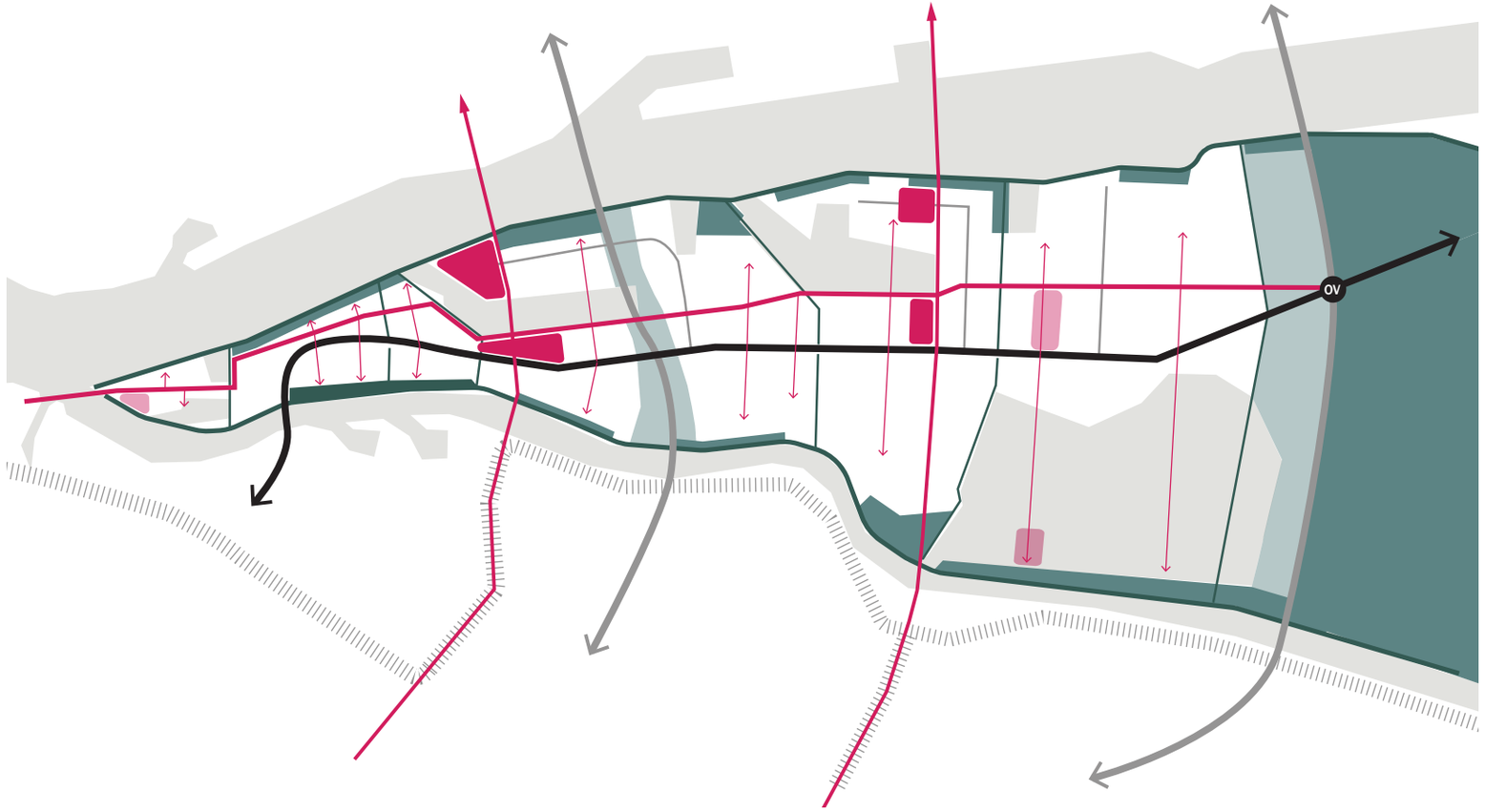
DYNAMIC ADAPTIVE POLICY PATHWAYS | STRUCTURE REDEVELOPMENT

1. SPATIAL FRAMEWORK



2. DYNAMIC RULES

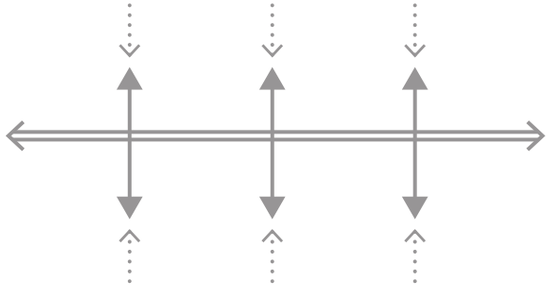




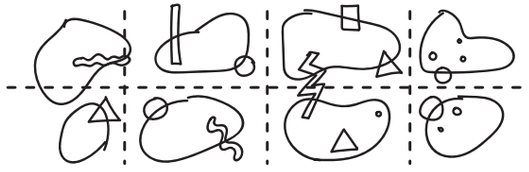
Own illustration, based on DELVA and SITE, 2019

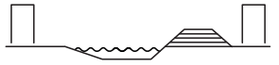
DYNAMIC ADAPTIVE POLICY PATHWAYS | STRUCTURE REDEVELOPMENT

1. SPATIAL FRAMEWORK



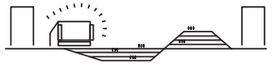
2. DYNAMIC RULES



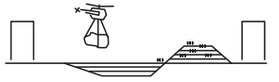


PUBLIC SQUARES AND PARKS

1 INCLUDE WATER RESORPTION, FOR EXAMPLE A WATER SQUARE

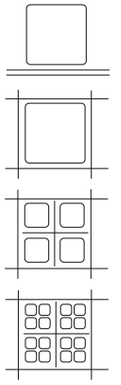


2 INVITING CONDITIONS FOR PUBLIC USAGE, FOR EXAMPLE PLACEMAKING EVENTS.



3 UNDERLYING INFRASTRUCTURE FOR EMERGENCY EMBEDDED IN DESIGN

4 MAINTAIN OPTIONS TO ADAPT, FOR EXAMPLE MORE INTENSE GREENING SHOULD REMAIN POSSIBLE



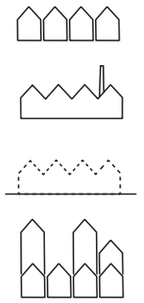
PARCELLATION: HUMAN SCALE & ACCESSIBILITY

0 EXISTING, CLOSED LOTS.

1 MAINTAIN THE LARGE SCALE OF CURRENT PLOT, BUT MAKE WATERFRONT ACCESSIBLE TO PEDESTRIANS & CYCLISTS

2 PREFERABLY, MAKE THE NETWORK FINER ON THE GROUND FLOOR LEVEL

3 WHEN POSSIBLE, INTRODUCE A SMALL GRAIN ON THE +3M LEVEL



BUILDING RULES

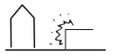
0 EXISTING PROGRAMME

1 REDEFINABLE

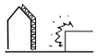
2 DISMOUNTABLE

3 EXTENDABLE

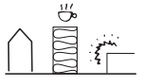
MIXING RULES: MULTIPLE OPTIONS



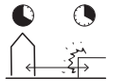
1 ACCEPT



2 INSULATE BUILDINGS



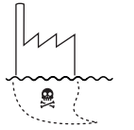
3 PUBLIC BUILDINGS/SOFT INDUSTRIES AS INSULATION



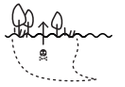
4 CO-EXISTENCE, DIFFERENT TIME SCHEDULES

5 INSULATING PLANNING OF PLOTS/ AREA

SOIL POLLUTION, REMEDIATION



1 EXISTING INDUSTRIES SEIZE SOIL, WATER AND AIR POLLUTION IMMEDIATELY



2 VACANT LOTS WITH CONTAMINATED SOILS SHOULD BE REMEDIATED EARLY ON

3 NEW DEVELOPMENT IS ECO-REMEDIATION INCLUSIVE. THE FOUNDATION FOR A HEALTHY REDEVELOPED URBAN AREA

Own illustration

1. CONTEXT

2. PROBLEM

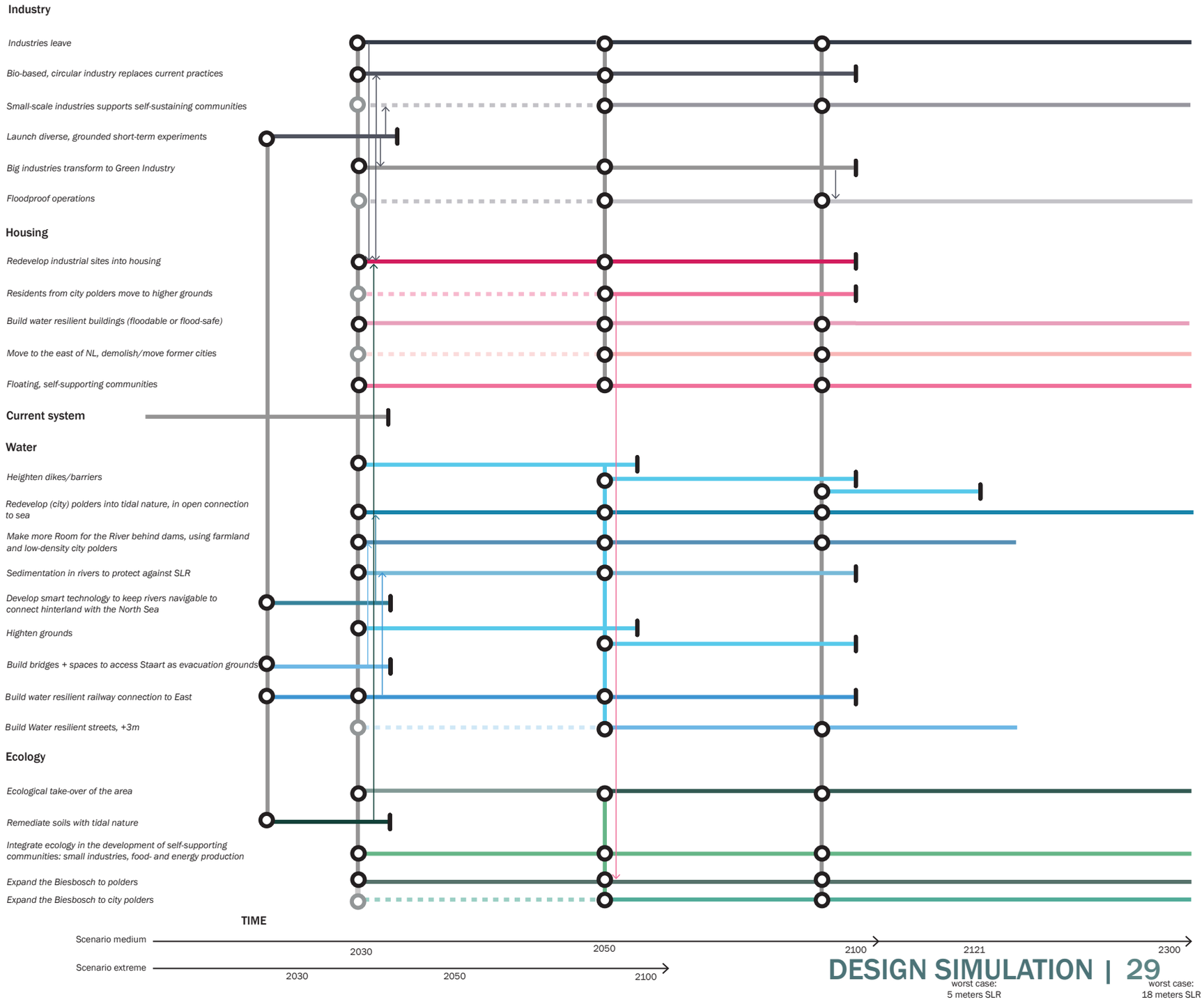
3. CHANGE PROCESSES

4. STRATEGY

5. DESIGN SIMULATION

A strategy for climate adaptive redevelopment of post-industrial port-sites

CO-DESIGN A DAPP MAP

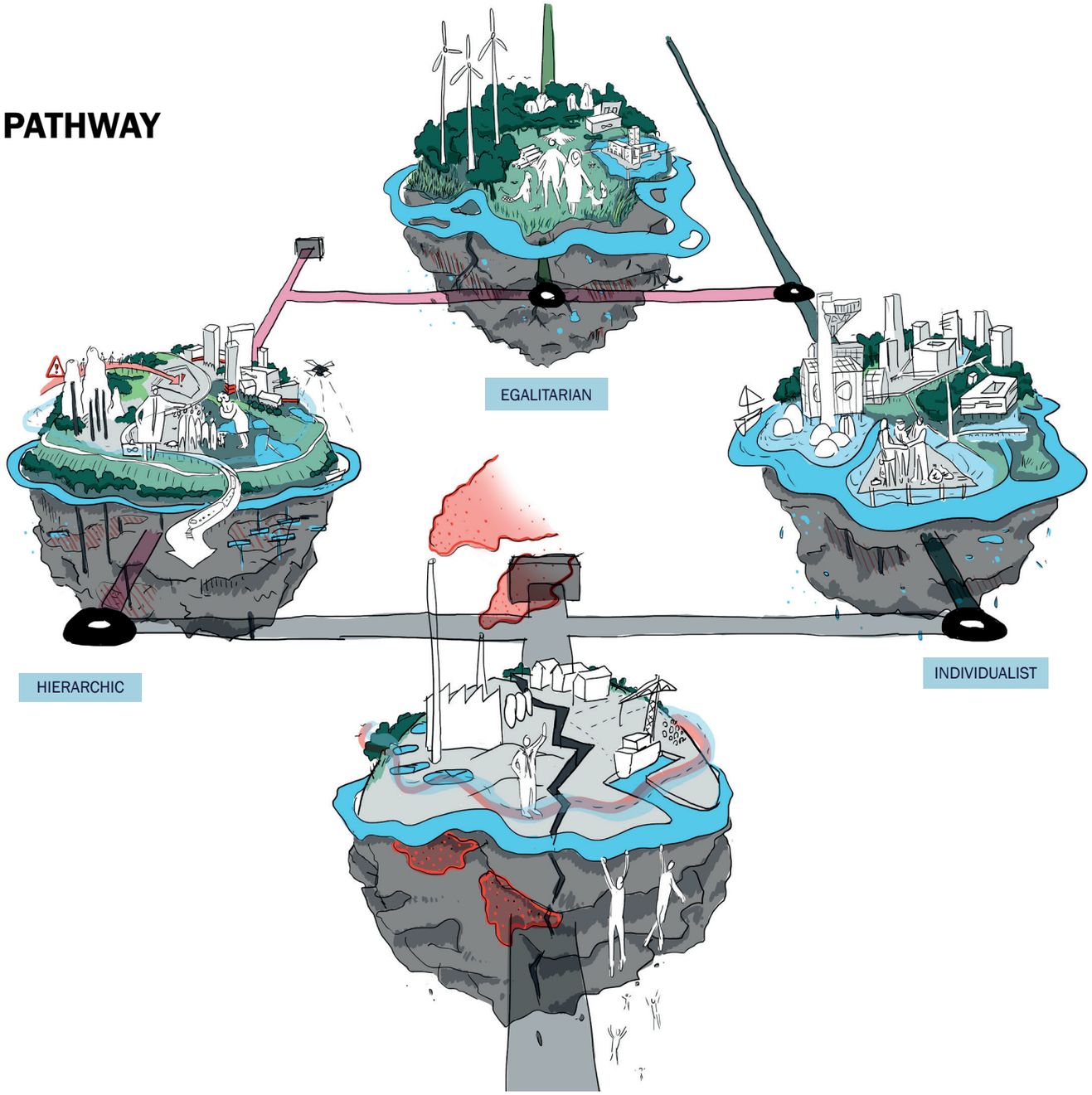


LEGEND

- Action effective in all scenarios
- Action not effective in some scenarios
- Tipping point
- Transfer station to new action

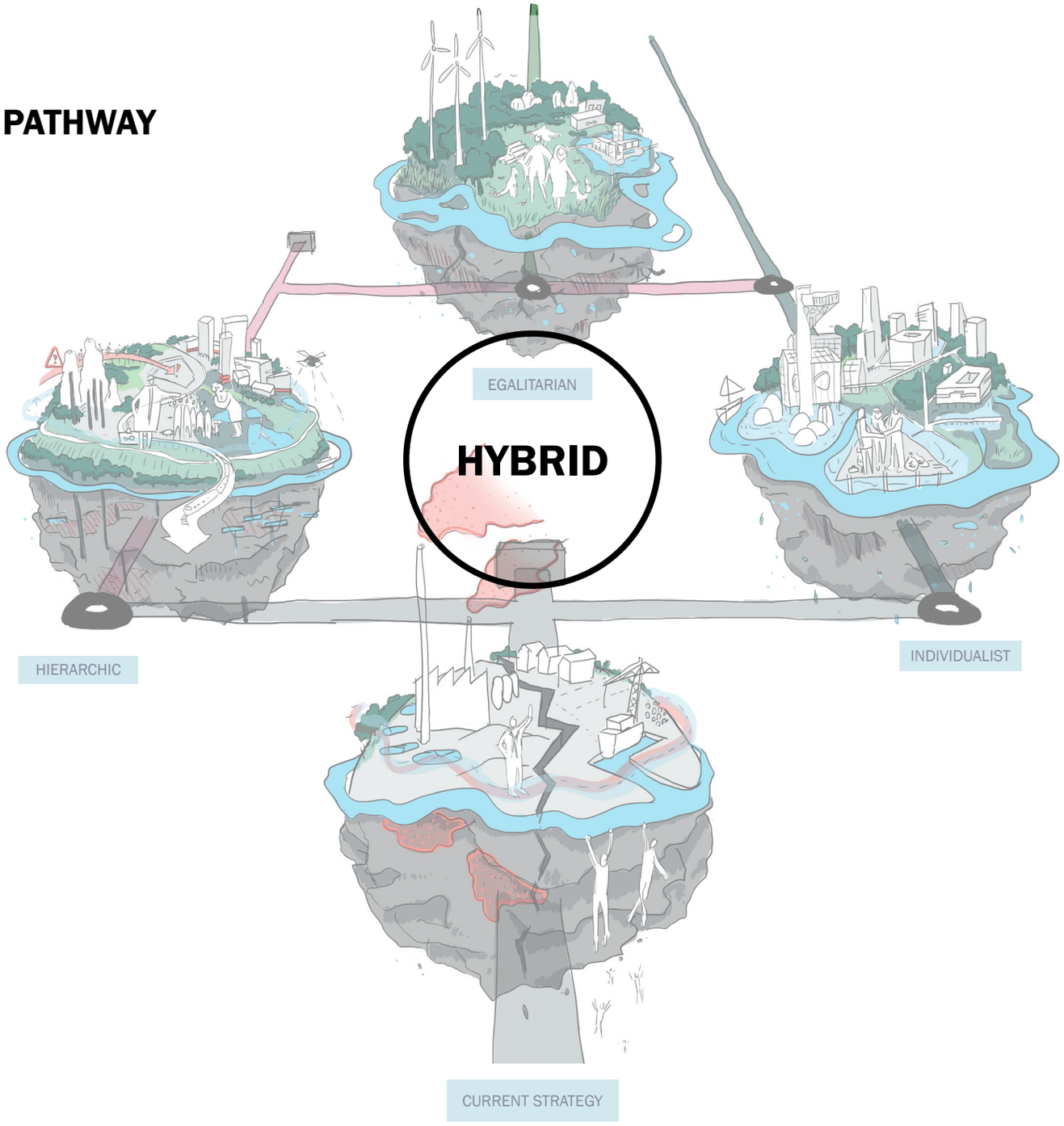
Own illustration, based on Haasnoot et al. (2013)

DECIDE ON A PREFERRED PATHWAY

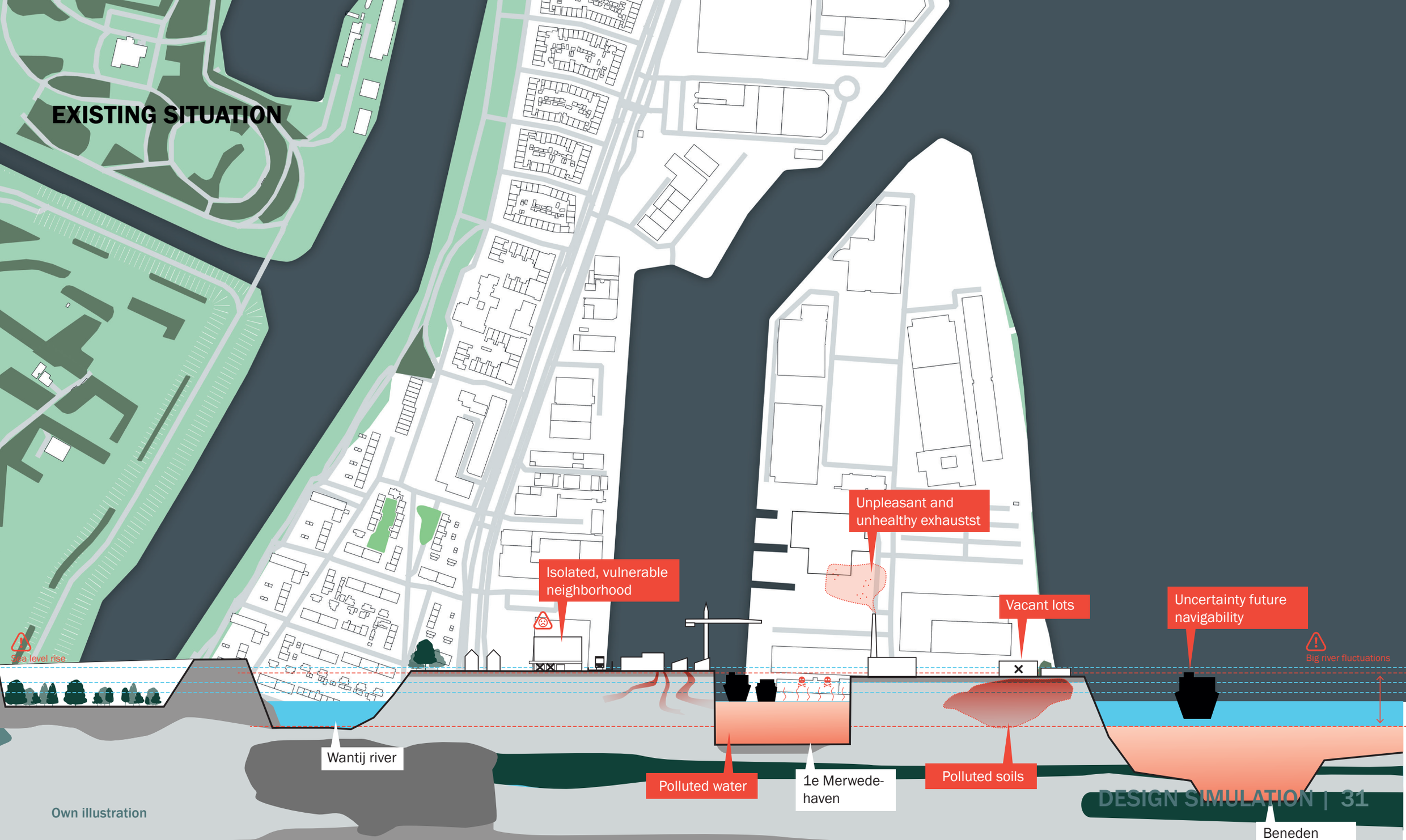


Own illustration

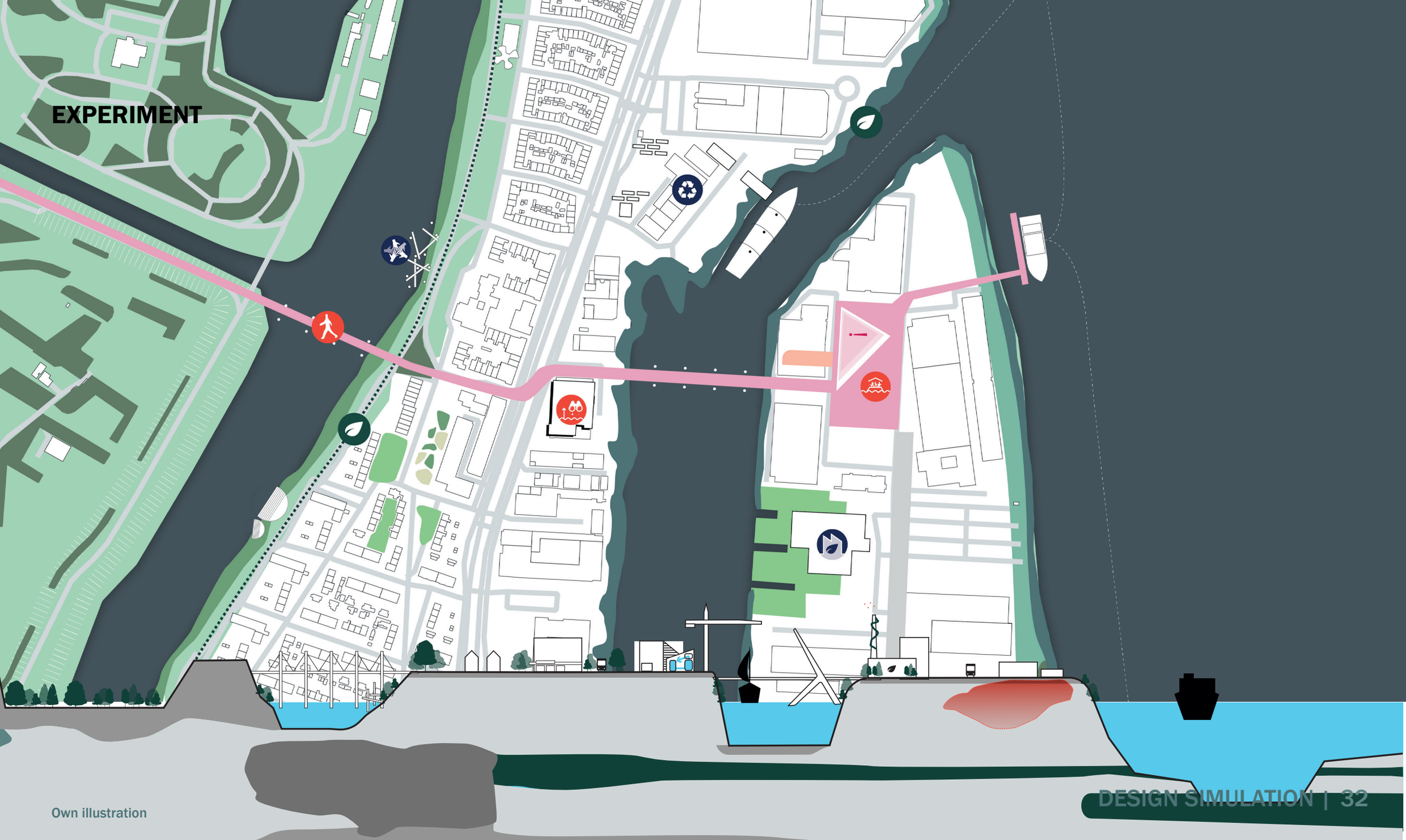
DECIDE ON A PREFERRED PATHWAY



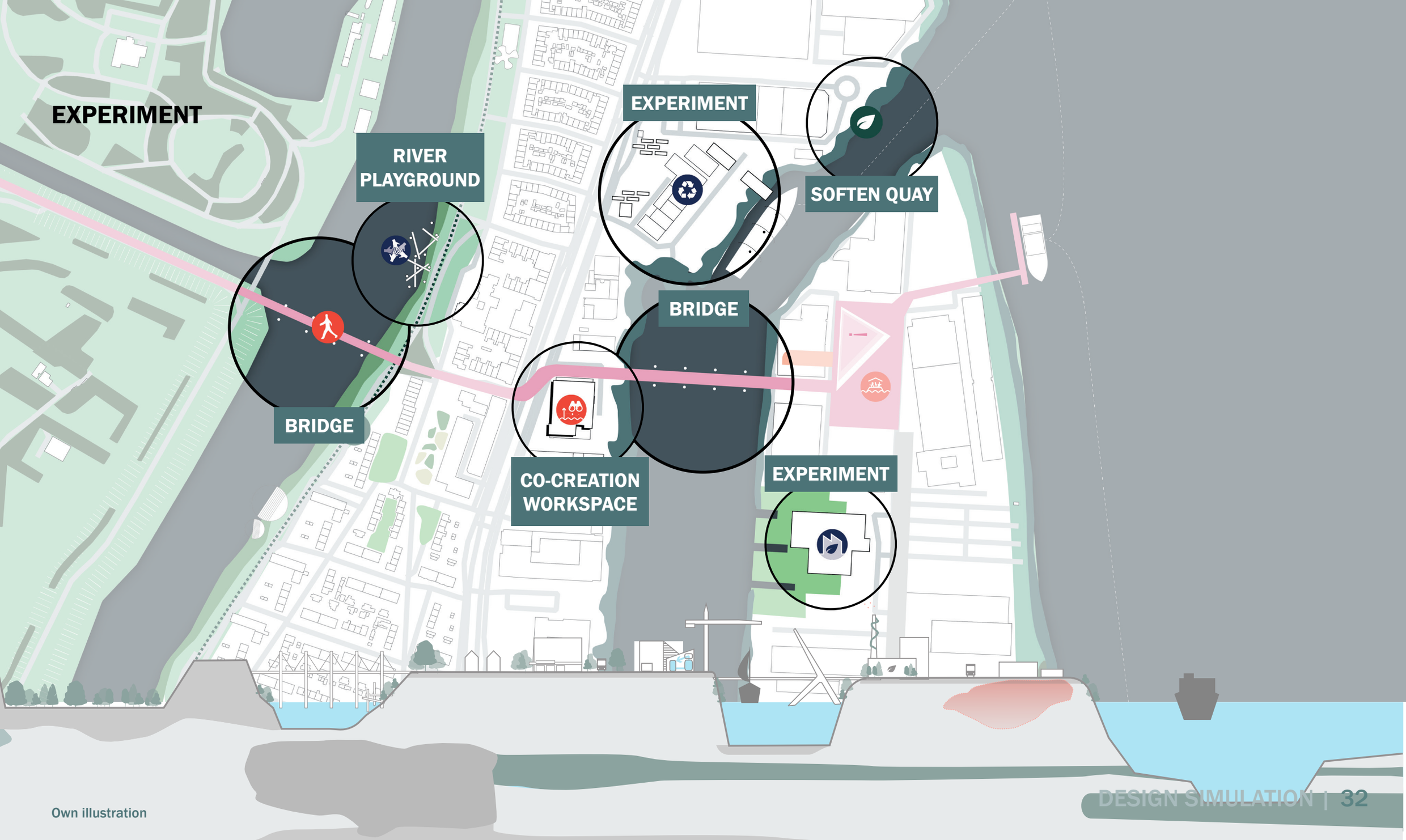
Own illustration



Own illustration

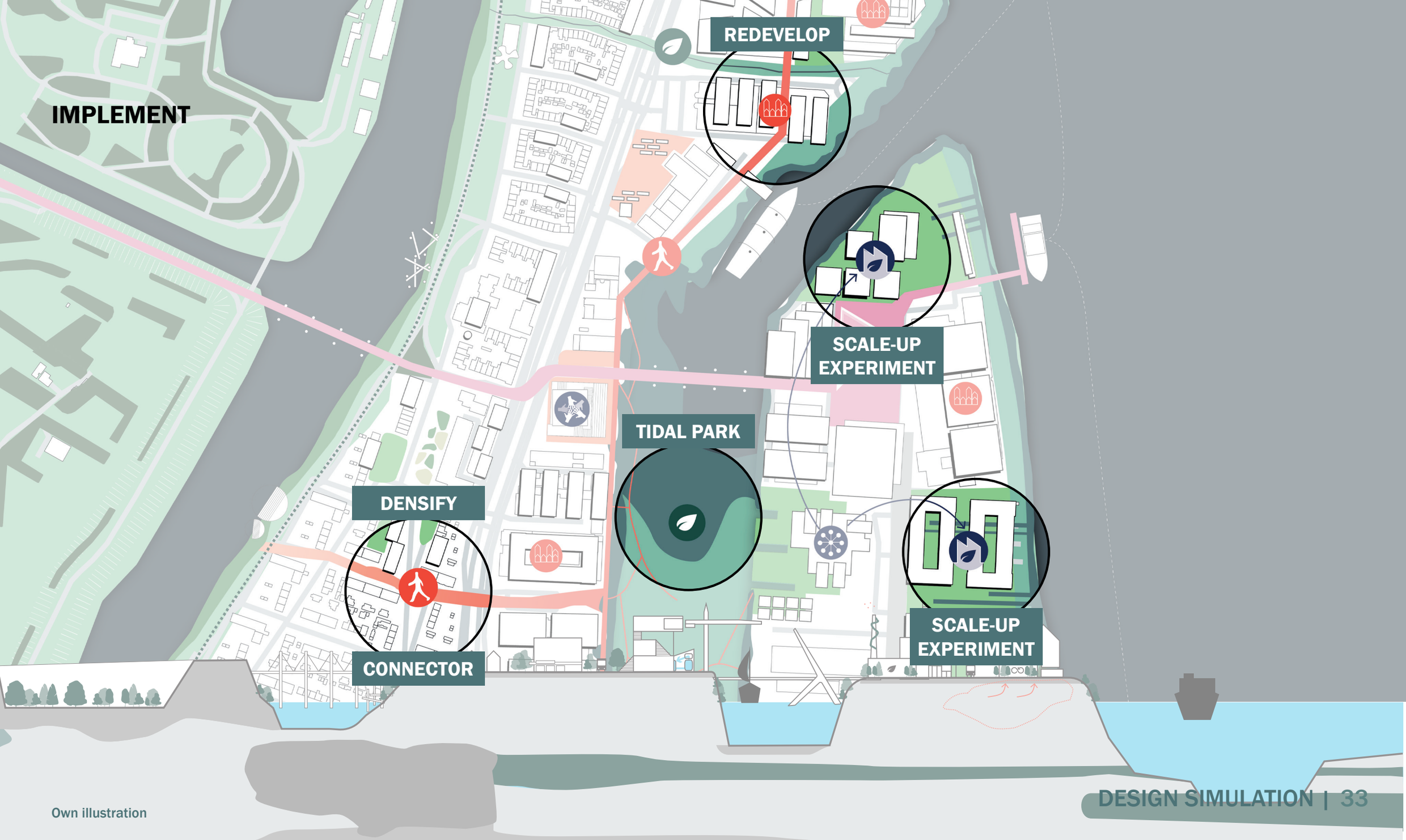


Own illustration



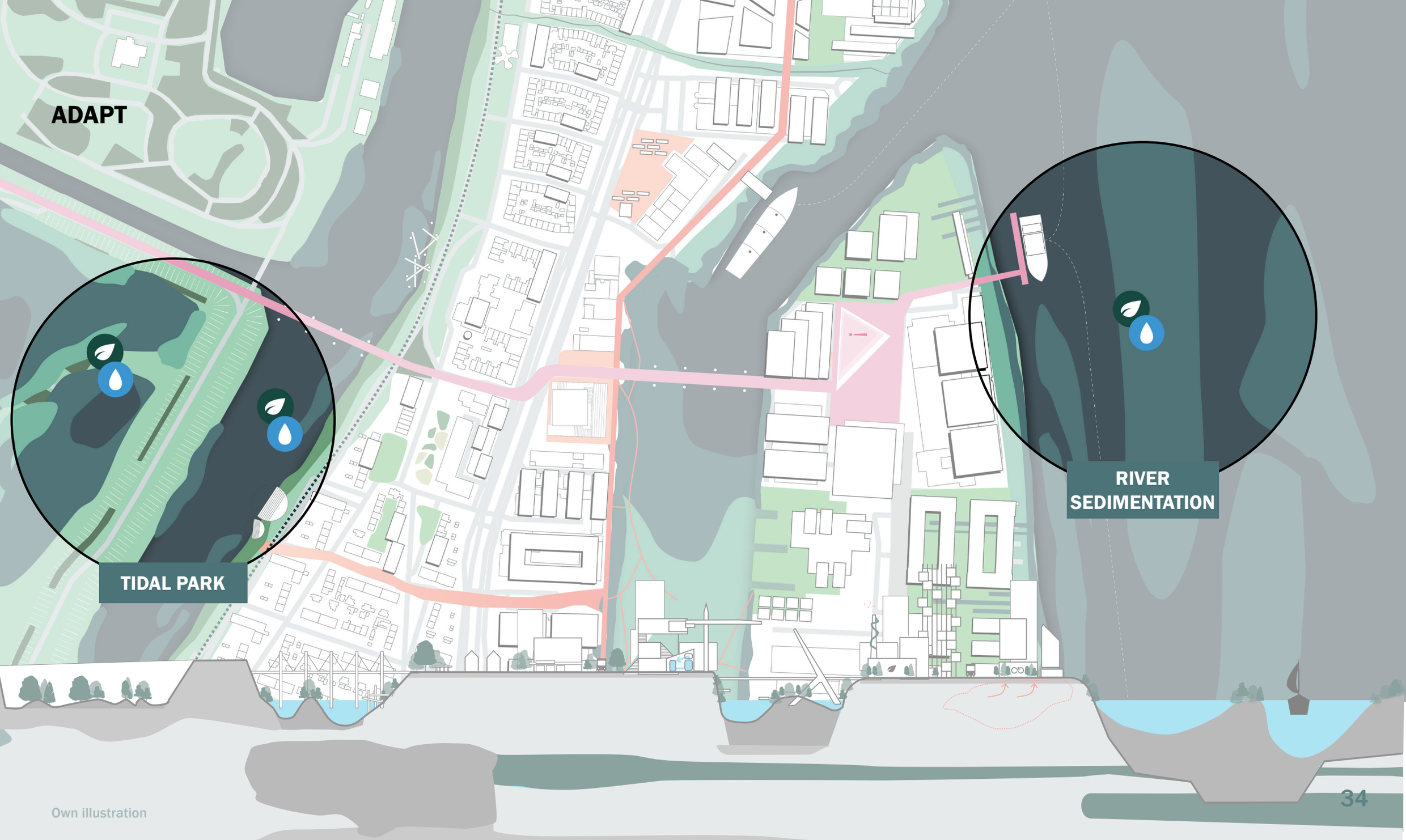
Own illustration

Own illustration



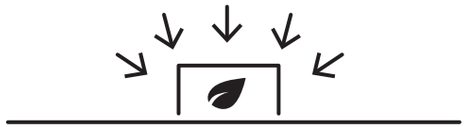
Own illustration

Own illustration

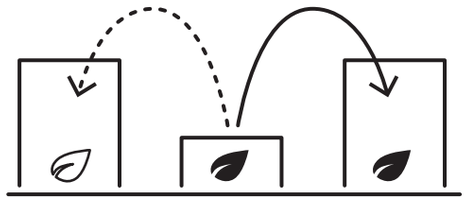


Own illustration

EXPERIMENT



Icon for the transition

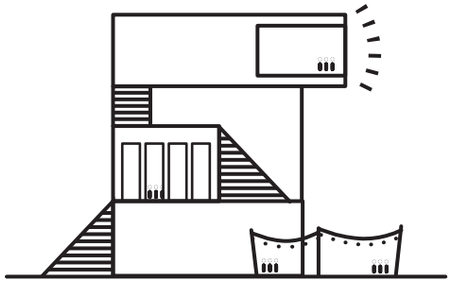


Adopt, adapt, spin-off

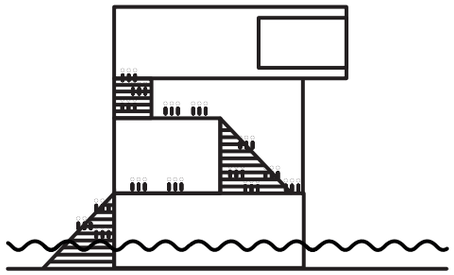
Own illustration

Own illustration

TRANSITION CENTRE

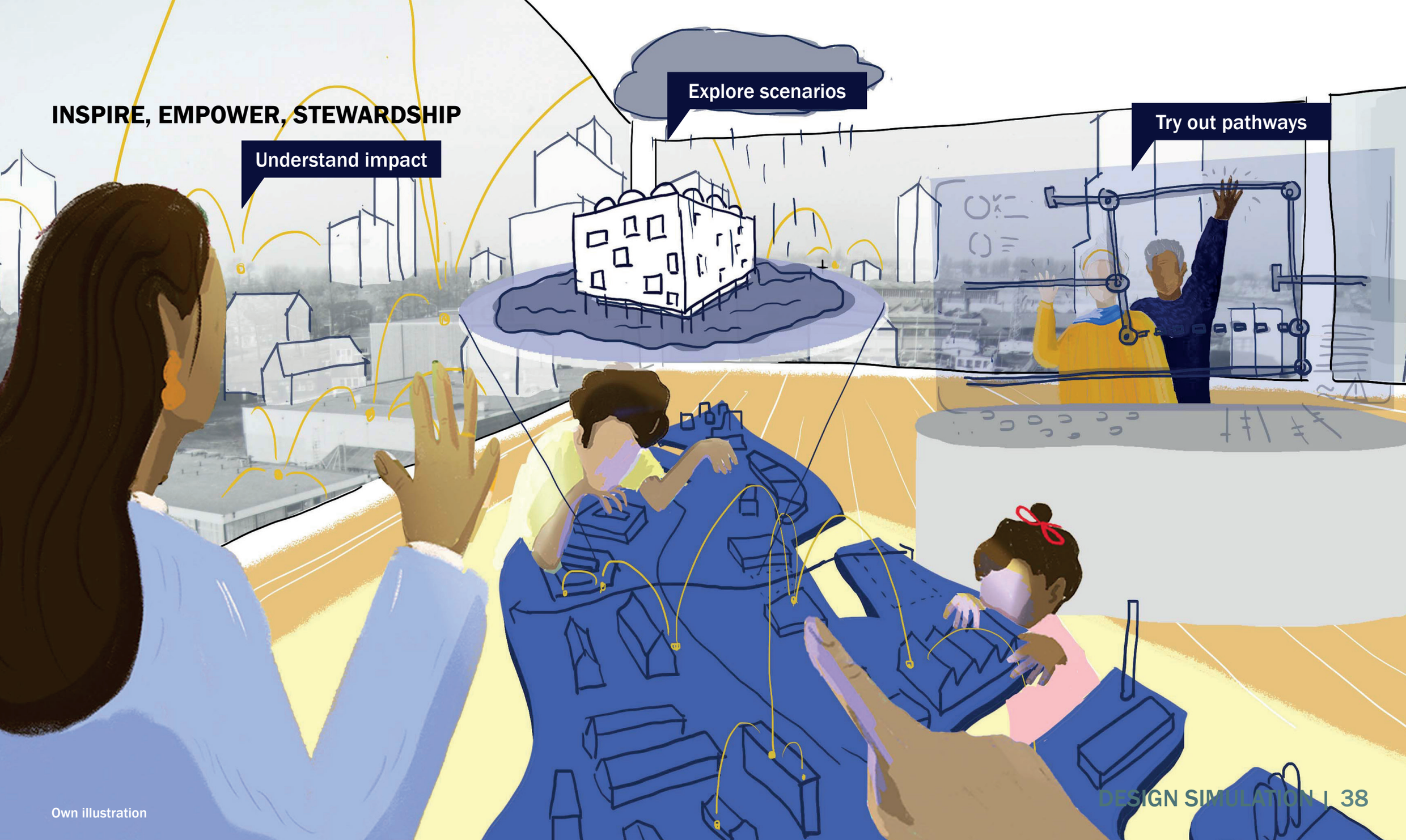


Monitor, inspire, co-create



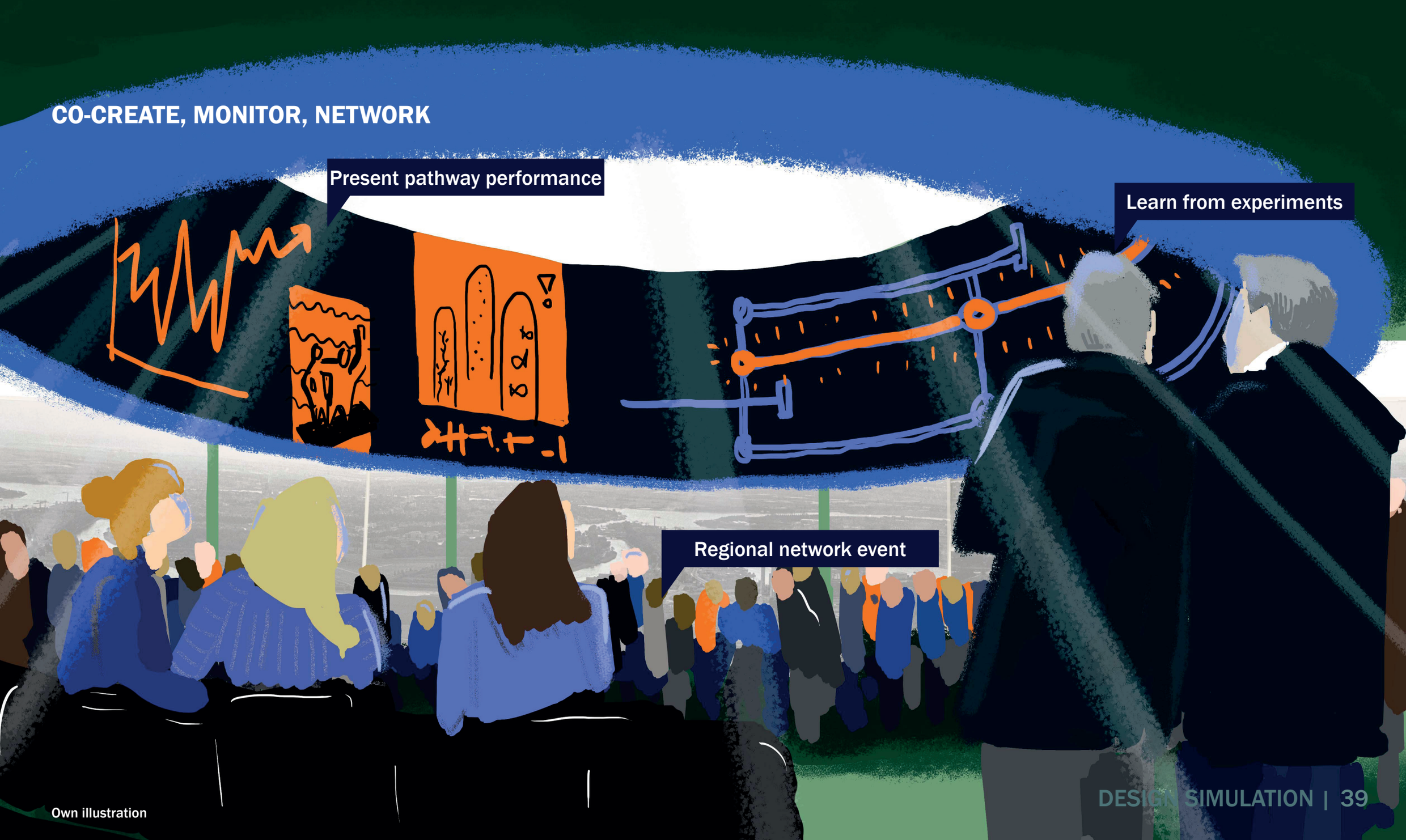
Awareness, safety

Own illustration



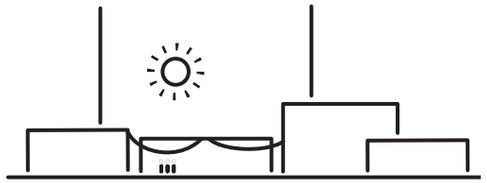
Own illustration

CO-CREATE, MONITOR, NETWORK

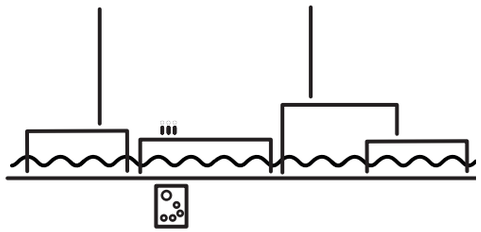


Own illustration

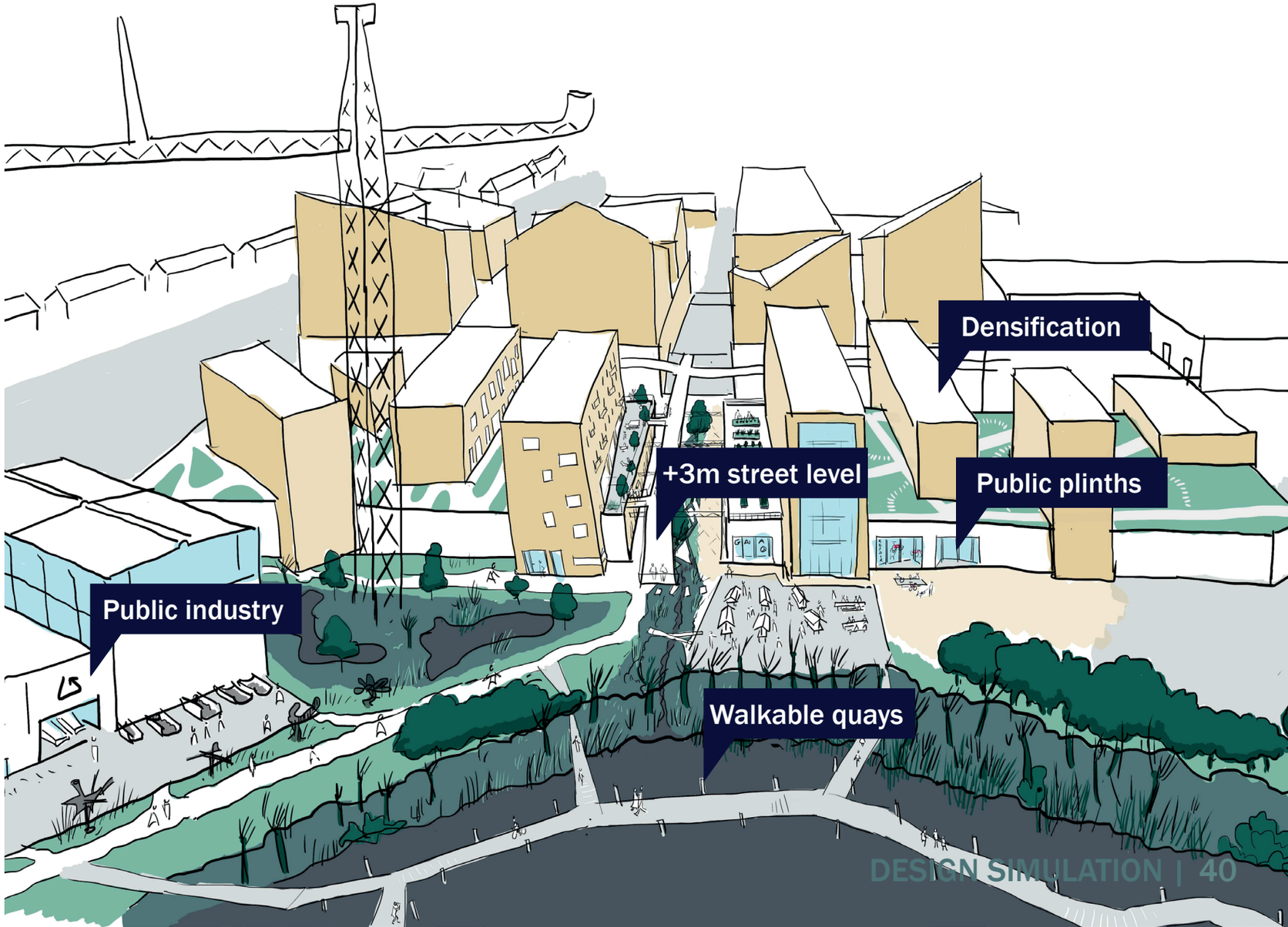
REDEVELOPED INDUSTRY



Shading in hot scenario



Floodable in wet scenario

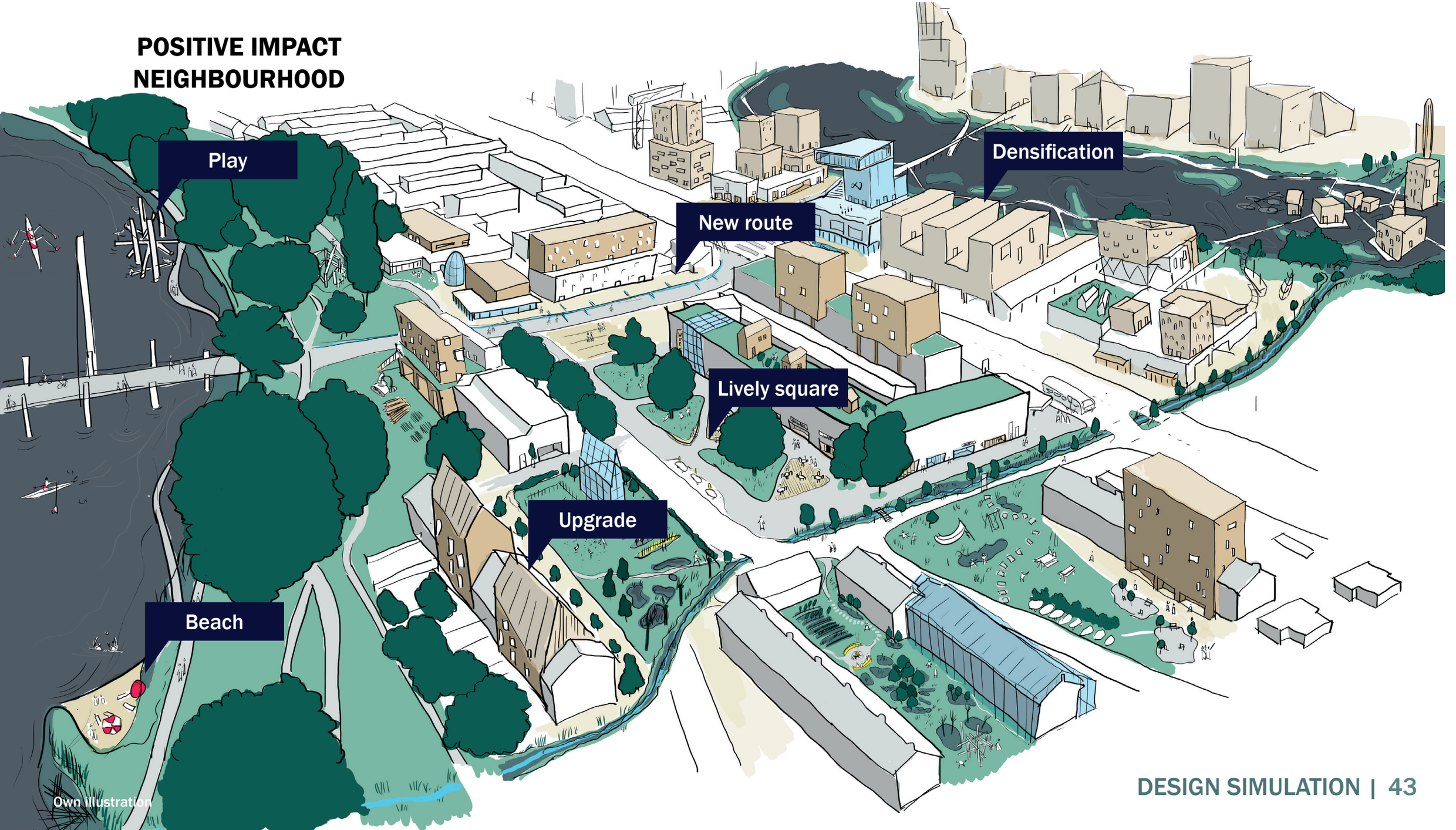


Own illustration

Own illustration

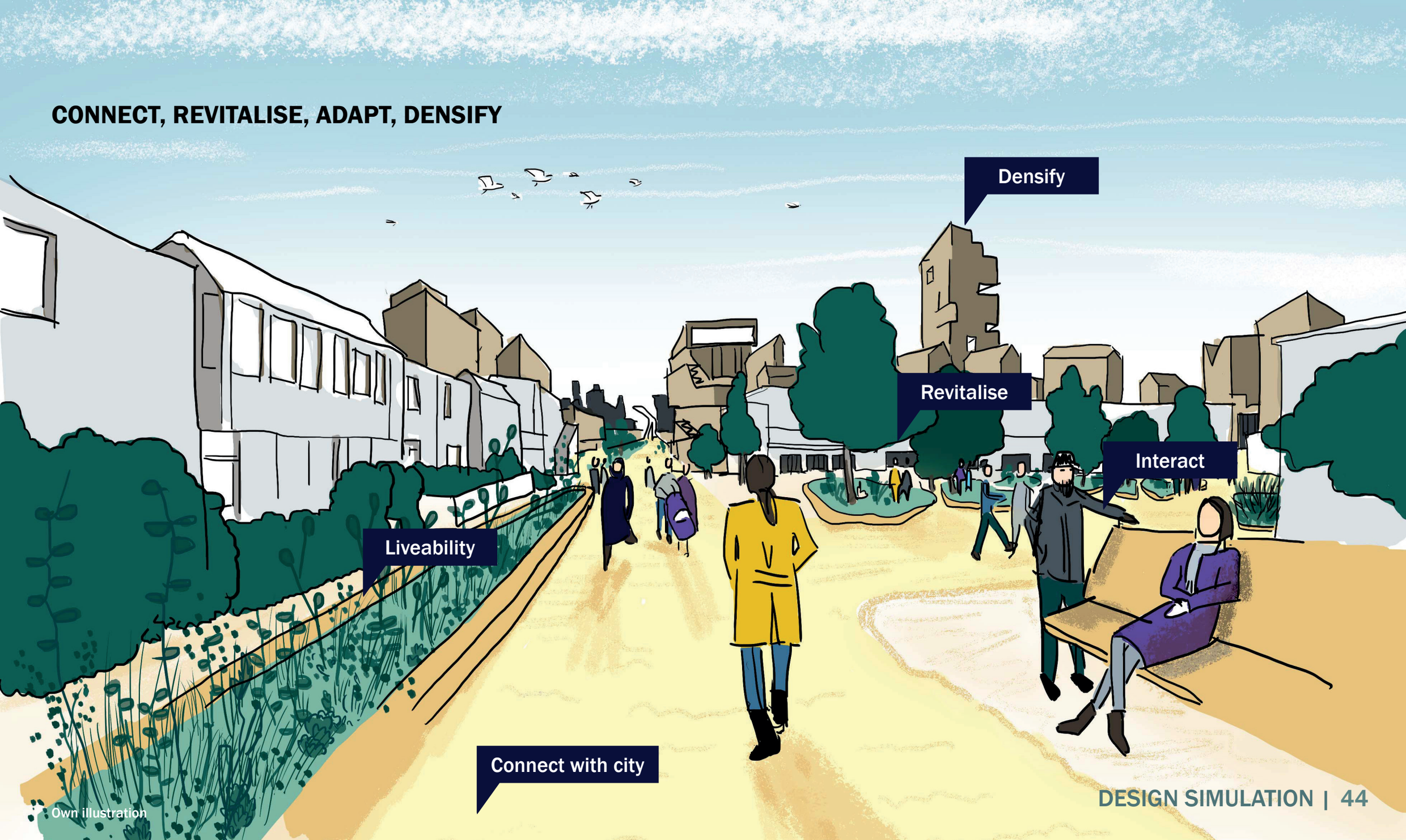
Own illustration

POSITIVE IMPACT NEIGHBOURHOOD



Own illustration

CONNECT, REVITALISE, ADAPT, DENSIFY

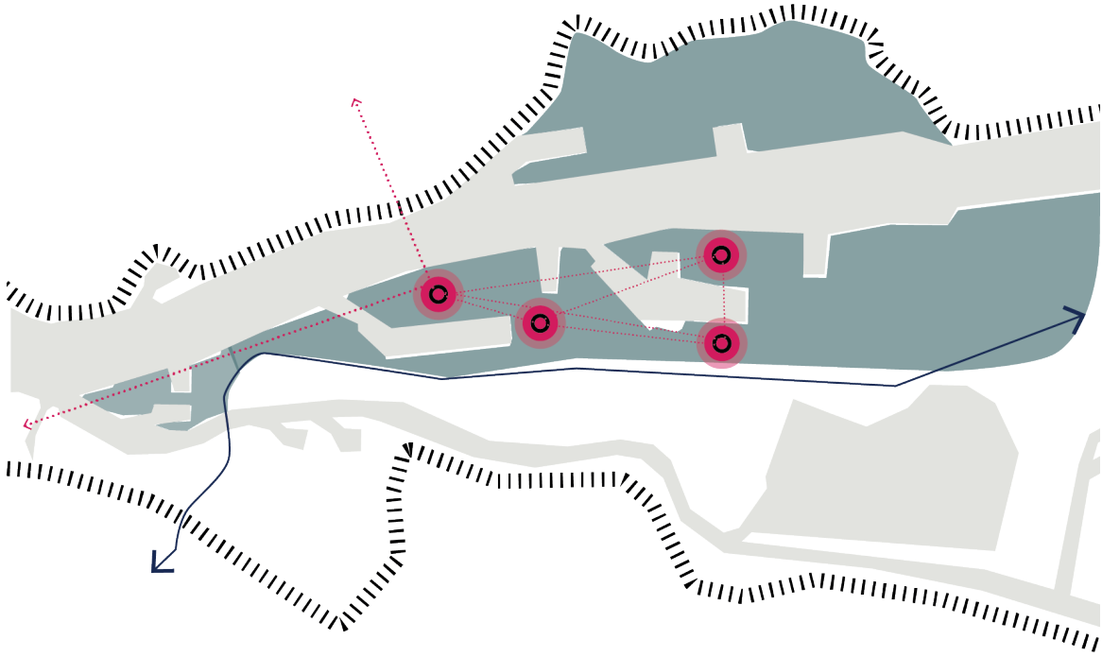


Own illustration

CONNECT: CITY-STAART; PEOPLE-WATER; INVESTMENTS

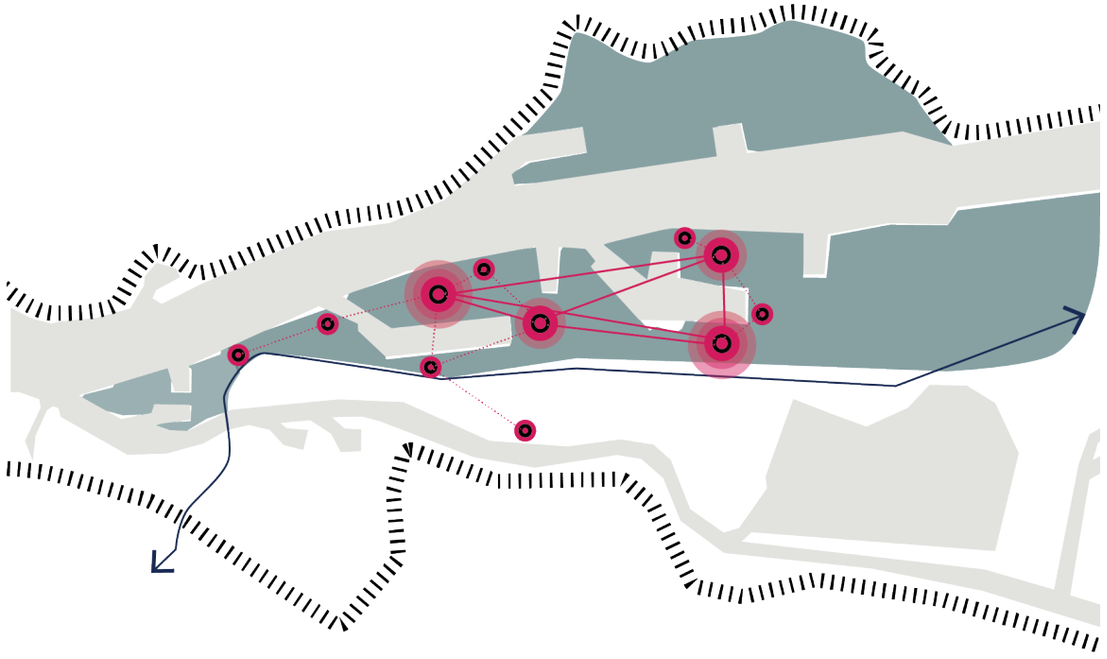
Own illustration

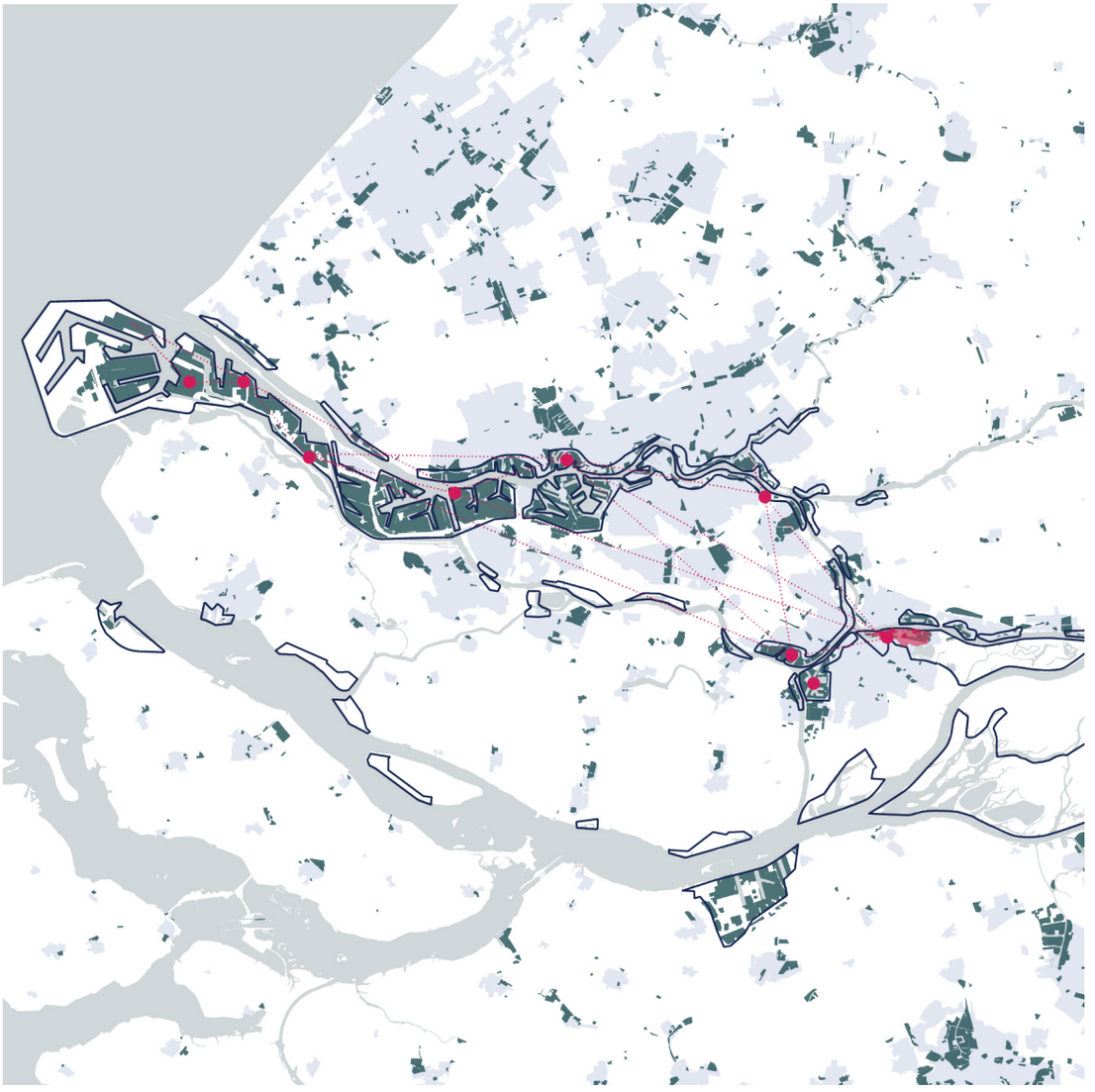
TRANSITION EFFECT | INITIATIVE



Own illustration

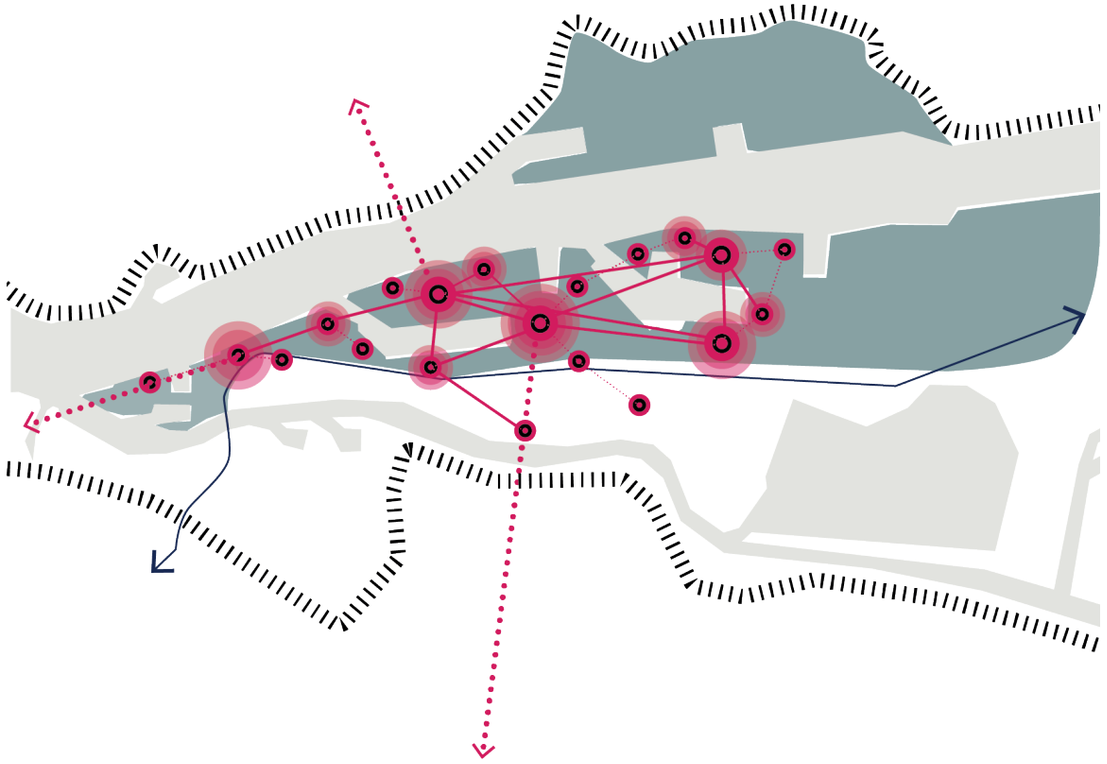
TRANSITION EFFECT | ANCHORING

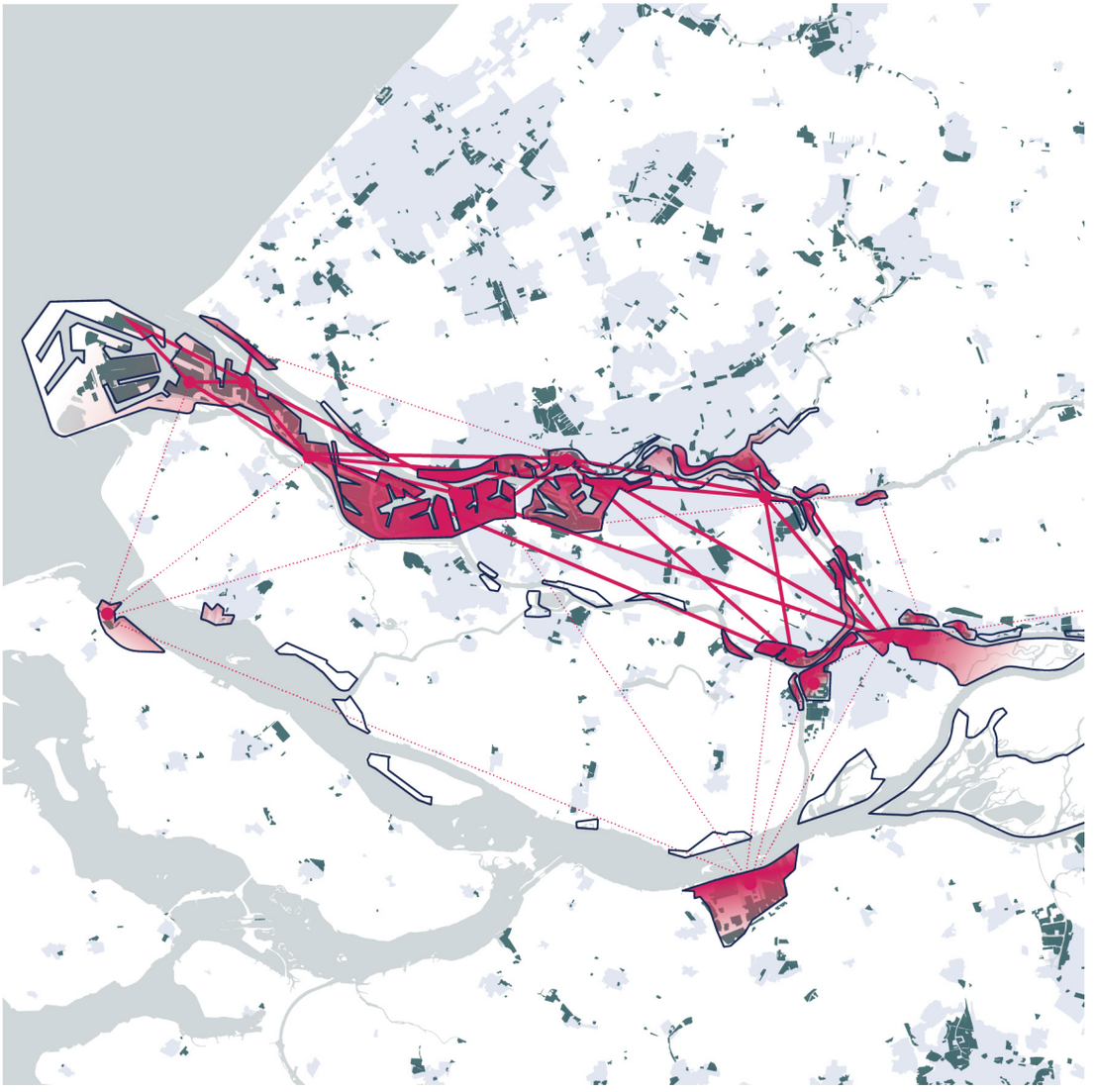




Own illustration

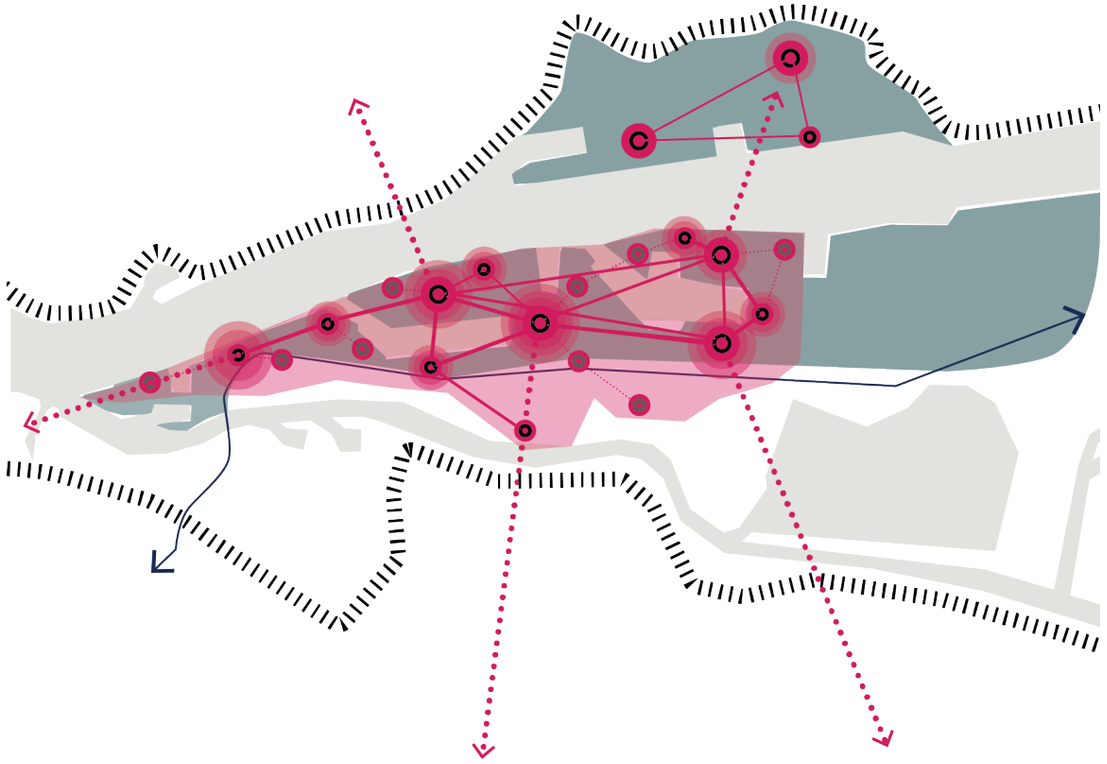
TRANSITION EFFECT | EXCHANGE

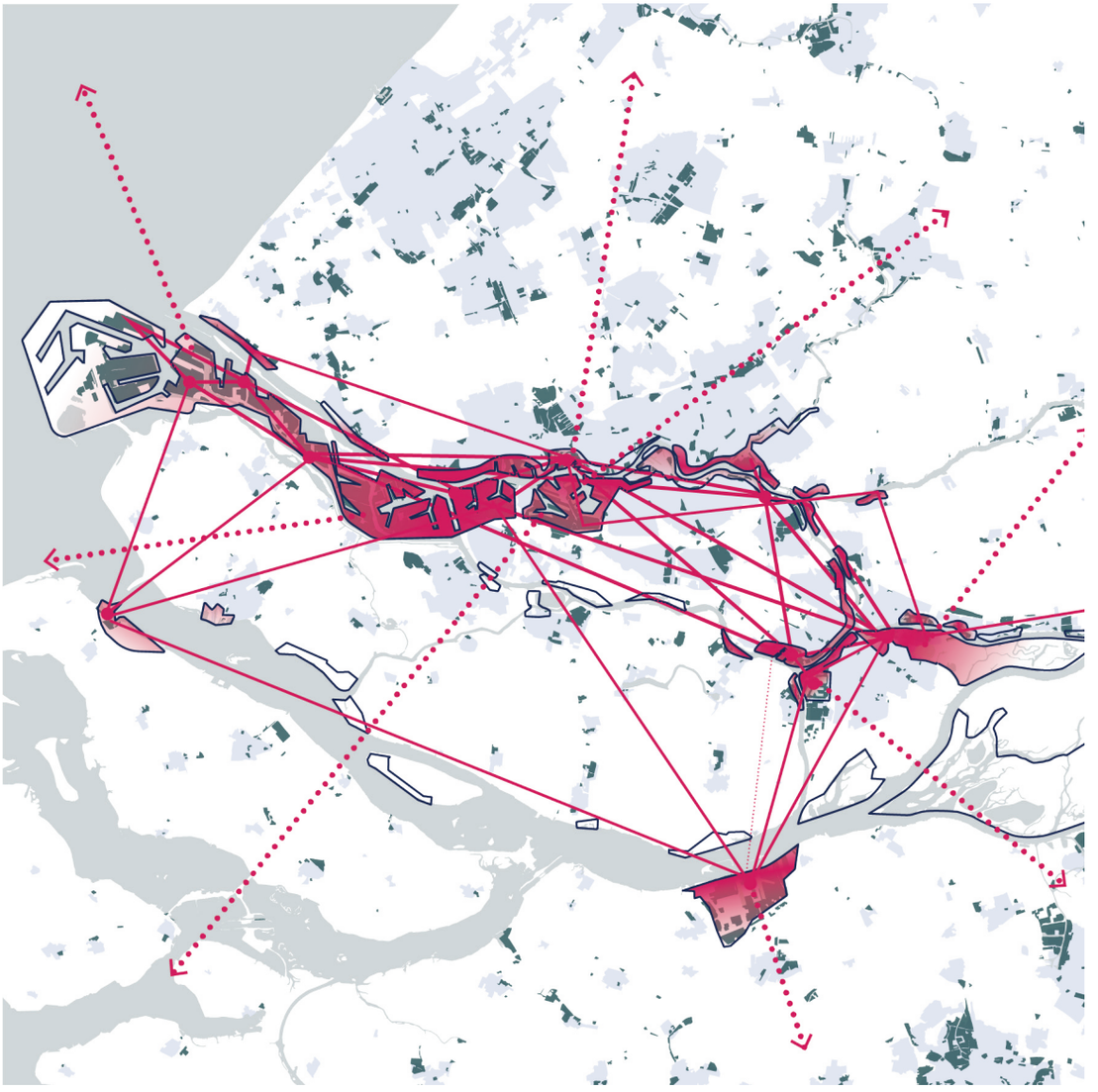




Own illustration

TRANSITION EFFECT | CLIMATE ADAPTIVE DELTA CITY





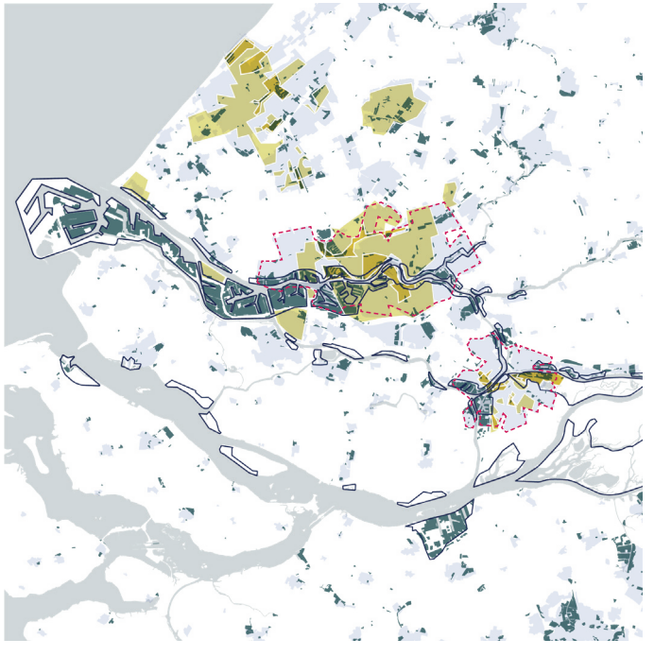
Own illustration

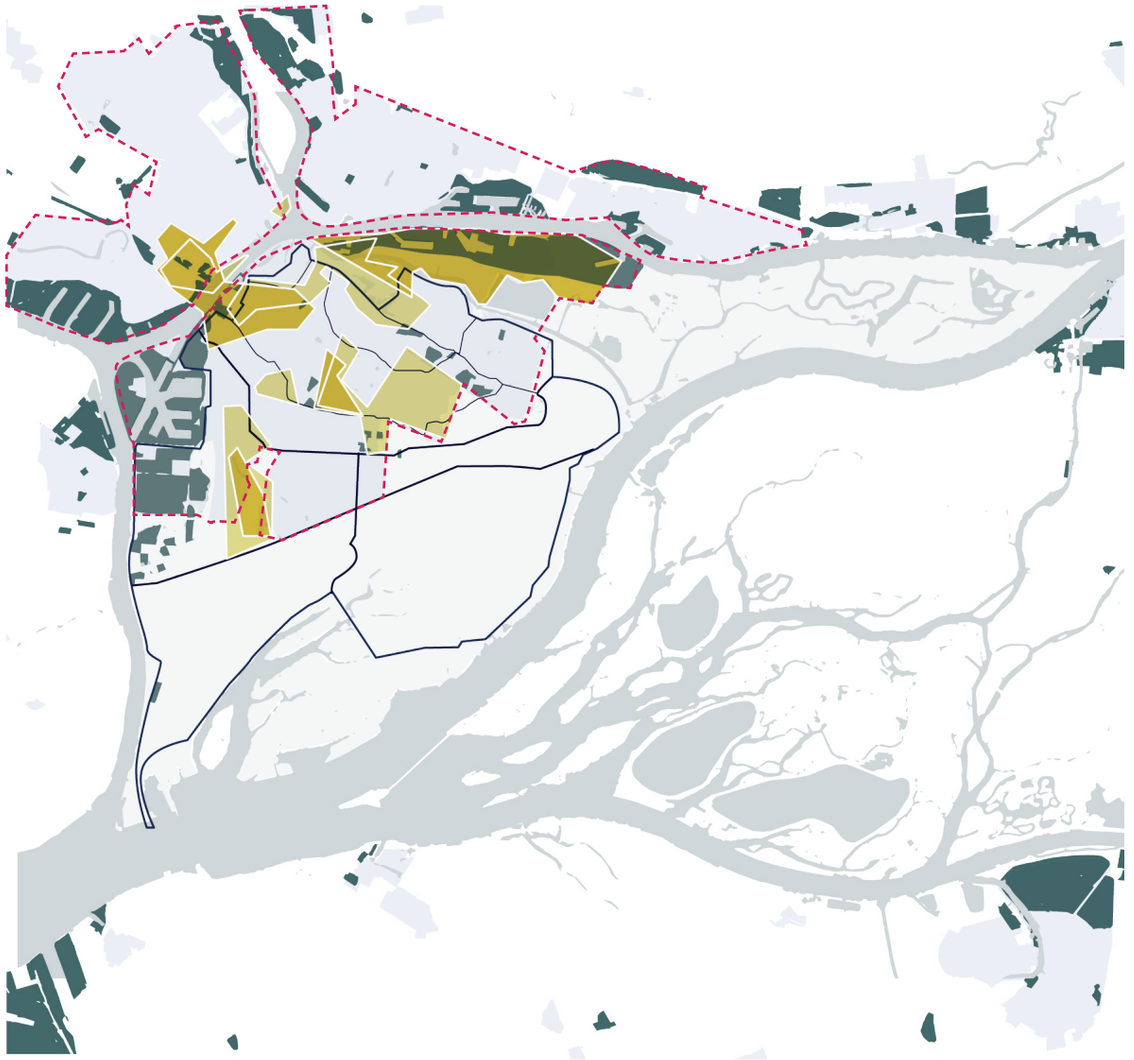
CONCLUSION

1. CONNECT SHORT- AND LONG-TERM
2. EMBRACE COMPLEXITY
3. INNOVATE IN PROCESS AND SPACE
4. SMALL PROJECTS ARE VERY IMPORTANT FOR THE TRANSITION

THANK YOU FOR LISTENING!

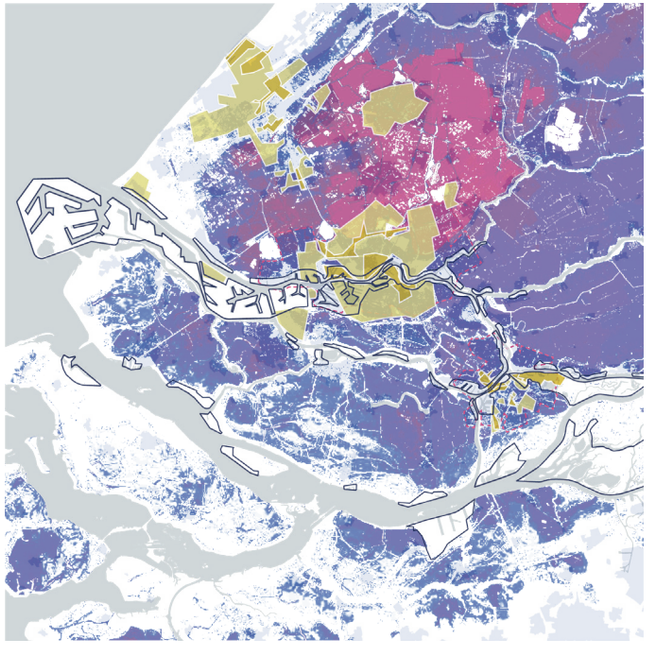
THE HOUSING MARKET KEEPS ON GROWING... FOR THE FIRST TIME: EXPANDING WITHIN CITY BOUNDARIES

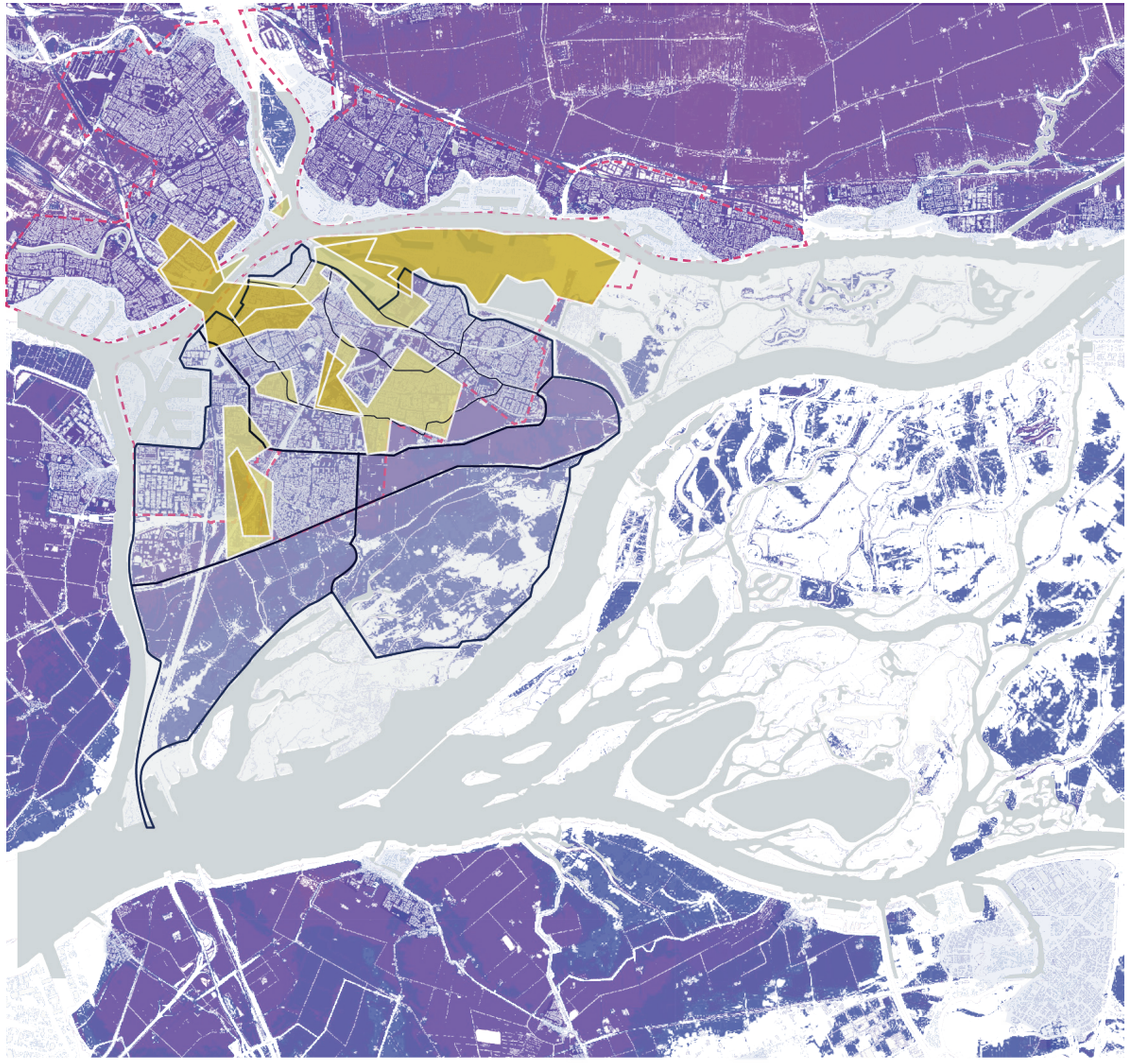




industry
dikes
unembanked
big urbanisation ambition
small urbanisation ambition

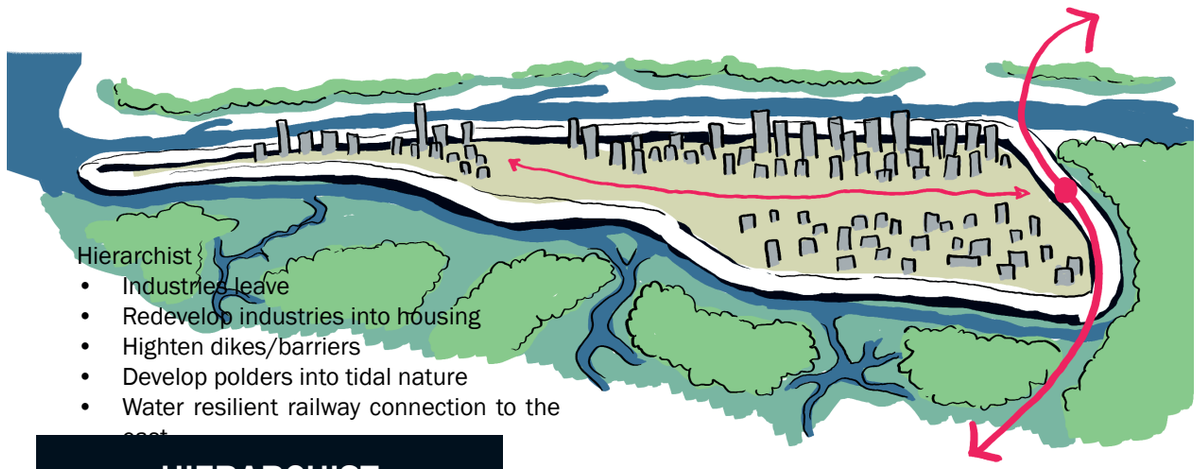
NEVERTHELESS, WE ARE URBANISING VULNERABLE PLACES..





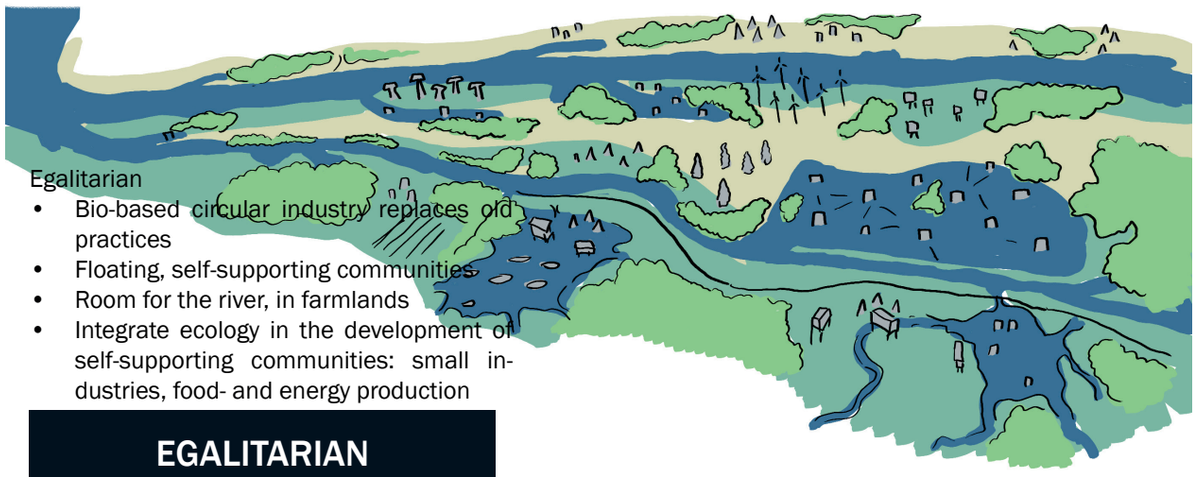
very low-lying
low-lying
very low-lying
dike structure/
unembanked areas
big urbanisation ambition
small urbanisation ambition

DECIDE ON A PREFERRED PATHWAY



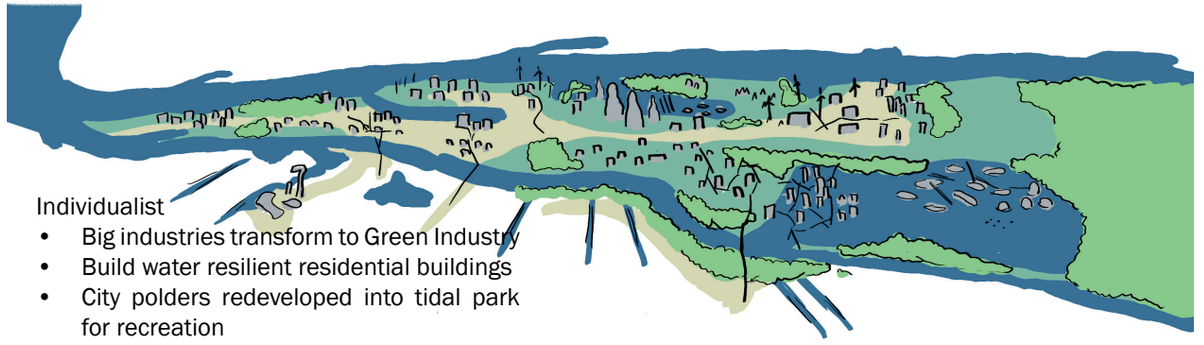
Hierarchist
- Industries leave
- Redevelop industries into housing
- Highten dikes/barriers
- Develop polders into tidal nature
- Water resilient railway connection to the coast

HIERARCHIST



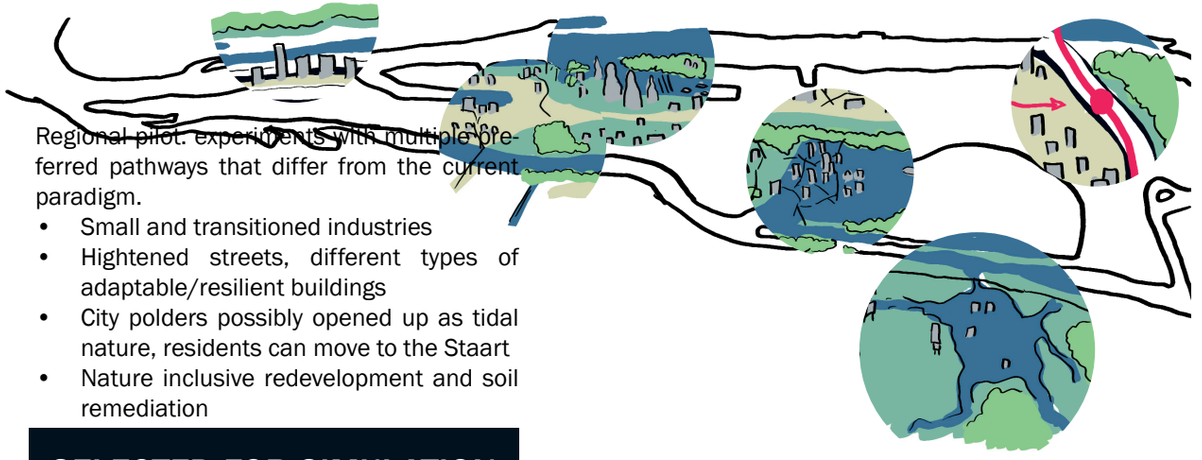
Egalitarian
- Bio-based circular industry replaces old practices
- Floating, self-supporting communities
- Room for the river, in farmlands
- Integrate ecology in the development of self-supporting communities: small industries, food- and energy production

EGALITARIAN



Individualist
- Big industries transform to Green Industry
- Build water resilient residential buildings
- City polders redeveloped into tidal park for recreation
- Water resilient street
- Integrate ecology in the redevelopment for branding

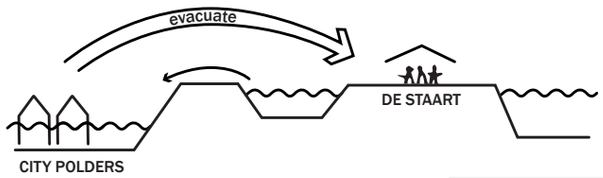
INDIVIDUALIST



Regional pilot: experiments with multiple preferred pathways that differ from the current paradigm.
- Small and transitioned industries
- Hightened streets, different types of adaptable/resilient buildings
- City polders possibly opened up as tidal nature, residents can move to the Staart
- Nature inclusive redevelopment and soil remediation

SELECTED FOR SIMULATION

CONNECT



Daily use & evacuation