

The relevance of in-between

repositioning the role of the urban and peri-urban of the Dutch Flanders region into the larger transition of the Scheldt Delta

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First mentor: dr. R.O.V. Cardoso

Second mentor: dr. A. Wandl

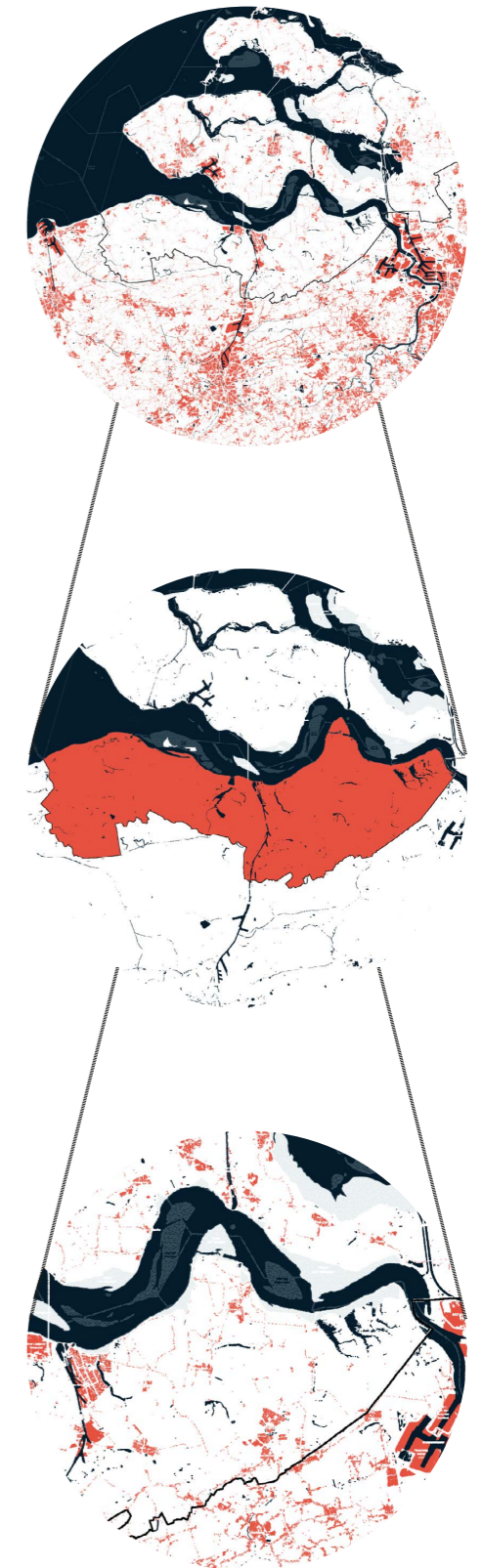
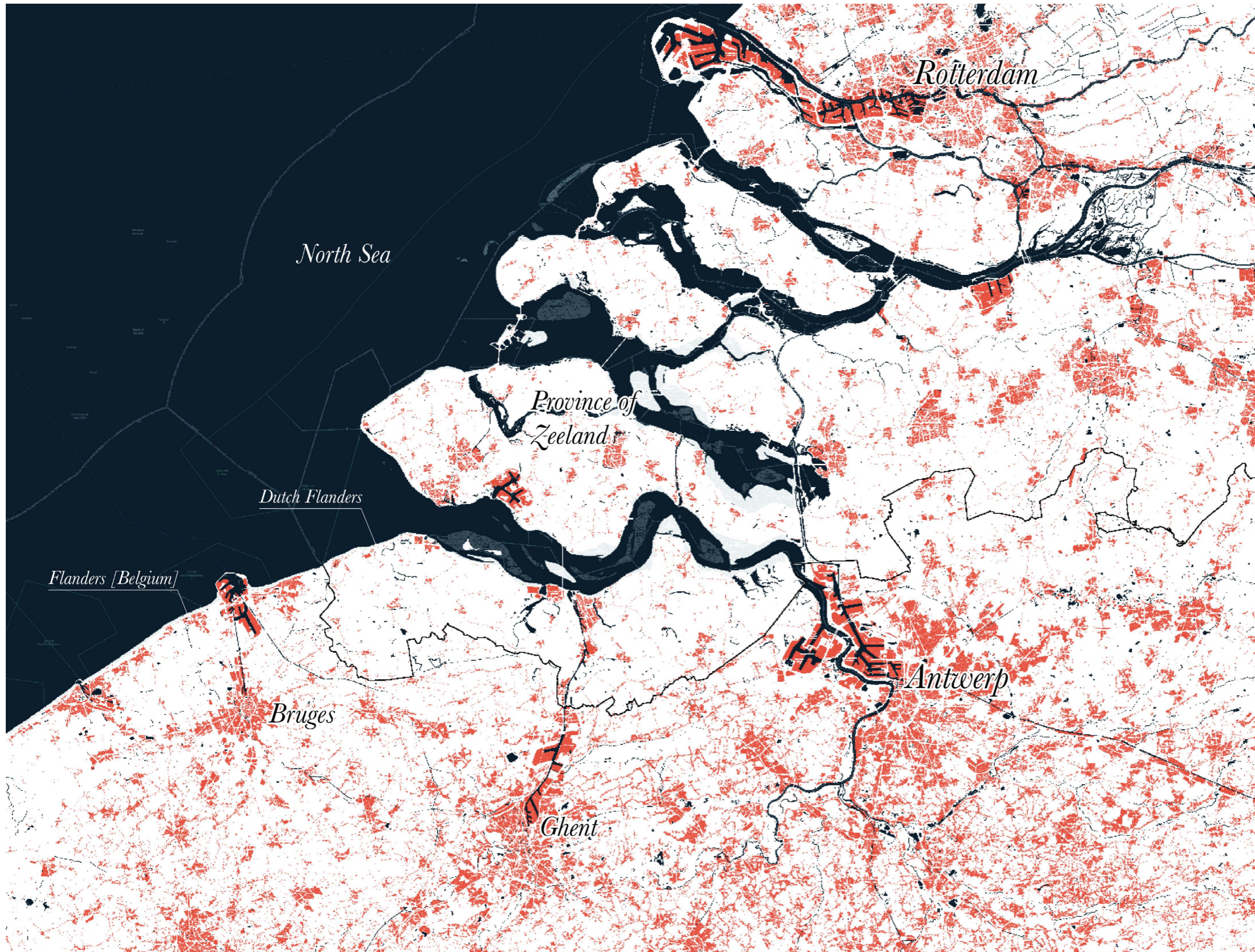
Delegate Board of Examiners: Dr. ir S. Kousoulas

Planning Complex Cities | Regions in Transition

Urbanism | Delft University of Technology

2 July 2021

Dutch Flanders



Content

- 1. Context**
- 2. Problematisation**
- 3. Research Design**
- 4. Regional decline**
- 5. Scheldt Delta transition**
- 6. Vision**
- 7. Strategy**
- 8. Conclusion**

Dutch Flanders



Dutch Flanders

[1] Regional decline



[2] Border region



[3] Regions in transition



Context

[1] Regional decline

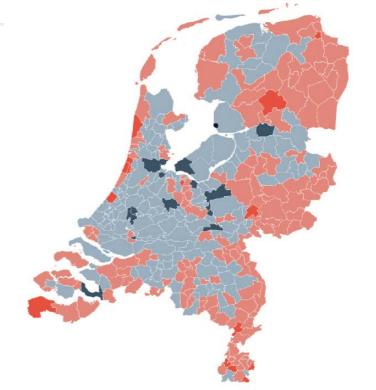
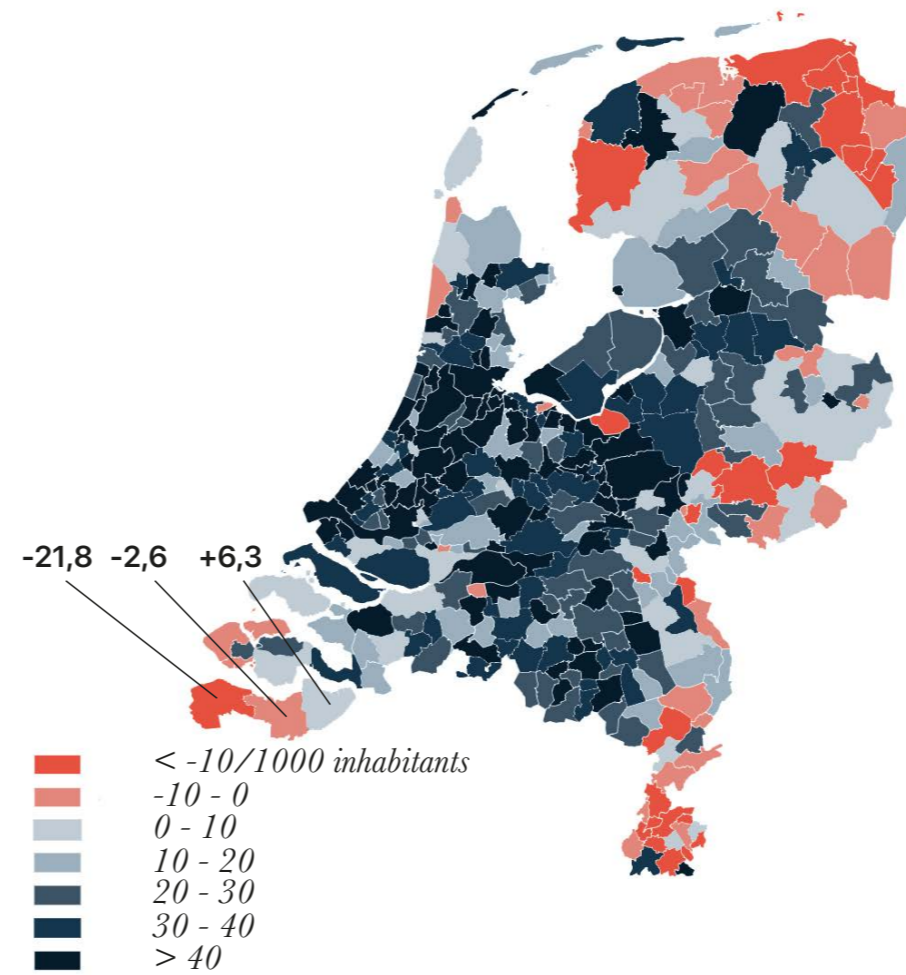
Perception and effects of population decline

Decline of amenities & jobs

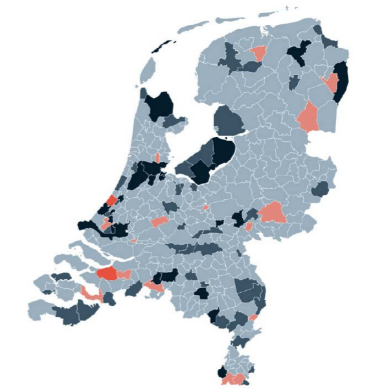
Remoteness: physical, economic, institutional, cultural

[2] Border region

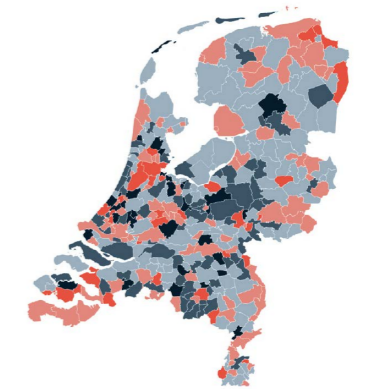
Physical, cultural, institutional



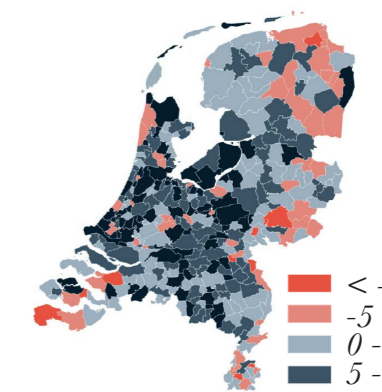
Natural development 2019 (CBS, 2020)



Migration 2019 (CBS, 2020)



Moving within NI 2019 (CBS, 2020)



Demographic change 2019 (CBS, 2020)

Context

[1] Regional decline

Perception and effects of population decline

Decline of amenities & jobs

Remoteness: physical, economic, institutional, cultural

[2] Border region

Physical, cultural, institutional

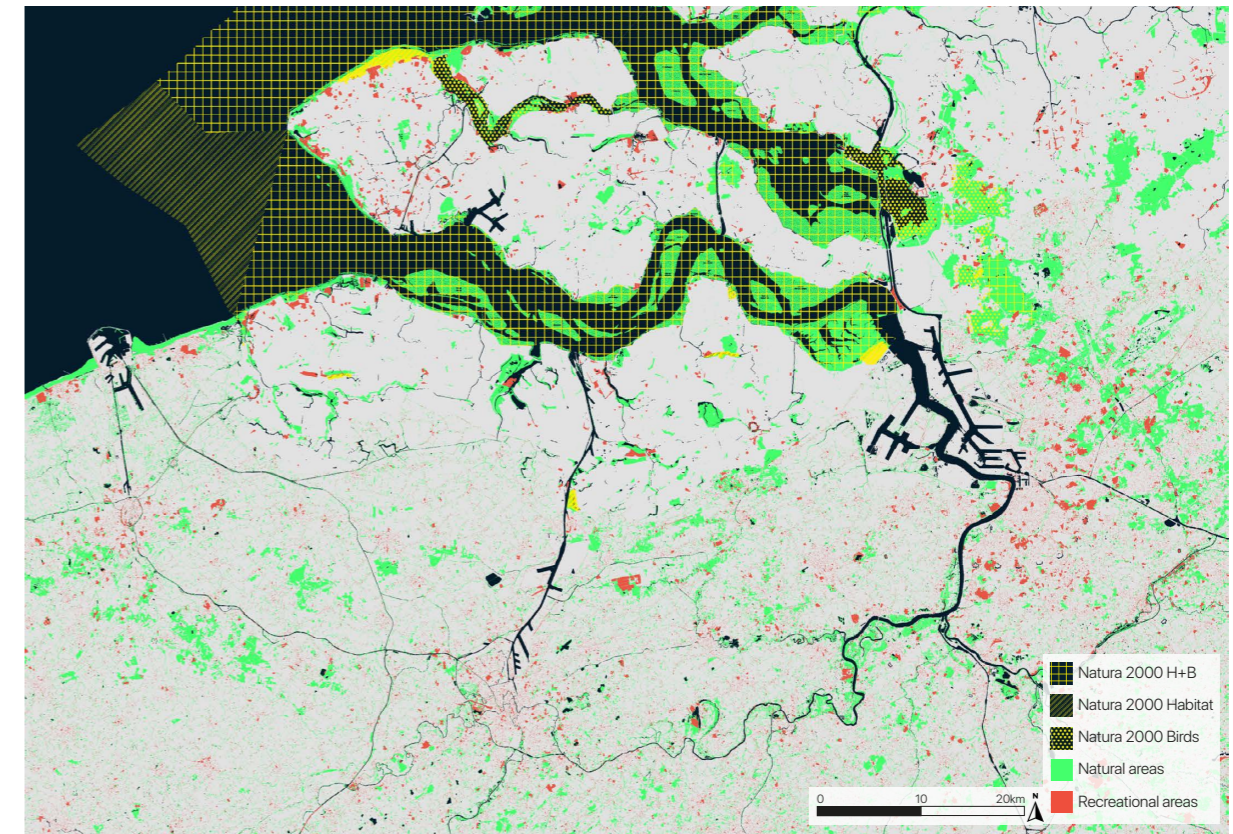
[3] Regions in transition

Risks of a Delta region

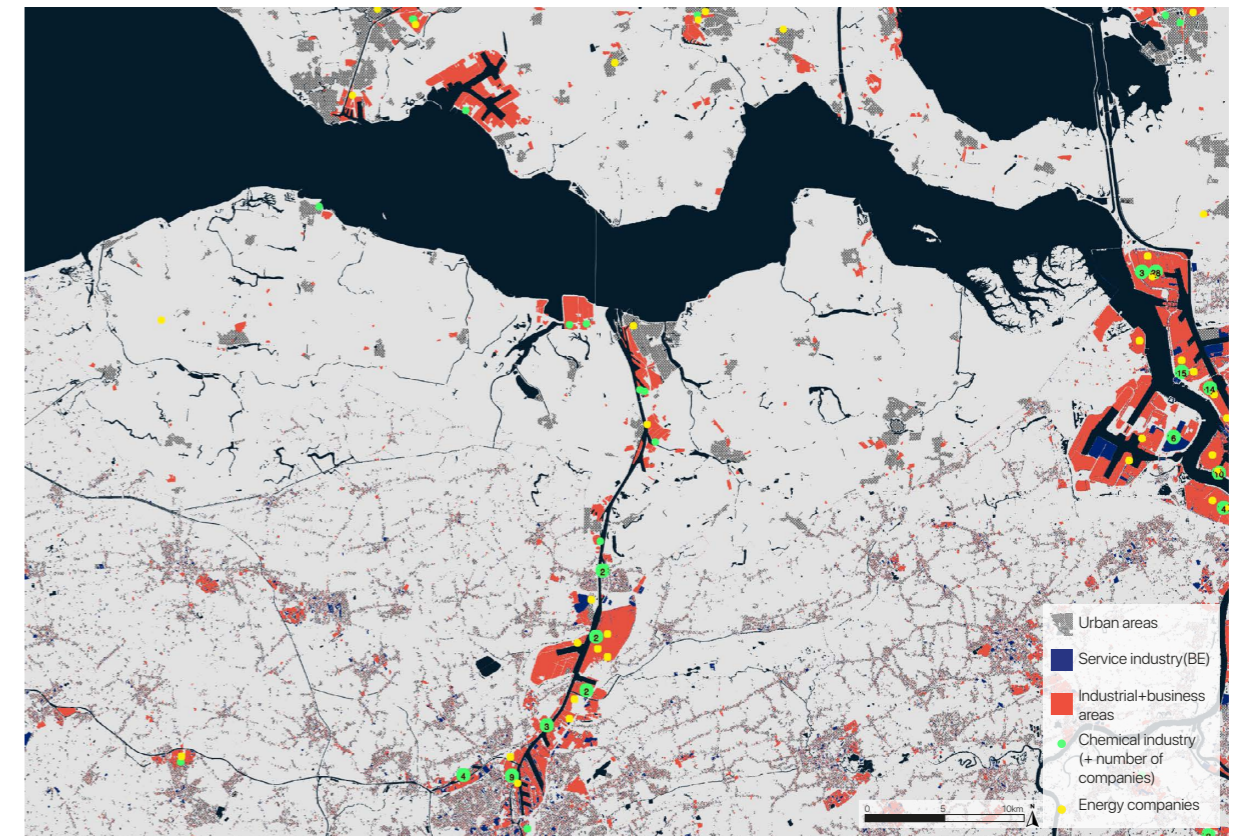
Environmental change

Societal transition

Economic activities: Ports, Industry, Logistics



Natural areas and recreation (edited by author). Map data: (Geopunt, 2016; Nationaal Georegister, 2015;2020; OpenStreetMap, n.d.)



Ports & Industries in Dutch Flanders (edited by author). Map data: (Geopunt, 2016,2018; Nationaal Georegister, 2015; OpenStreetMap, n.d.; Regiobedrijf, n.d.;)

Challenges & opportunities

[1] Regional decline

Perception and effects of population decline

Decline of amenities & jobs

Remoteness: physical, economic, institutional, cultural

[2] Border region

Physical, cultural, institutional

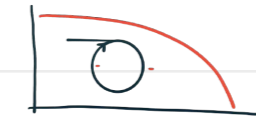
[3] Regions in transition

Risks of a Delta region

Environmental change

Societal transition

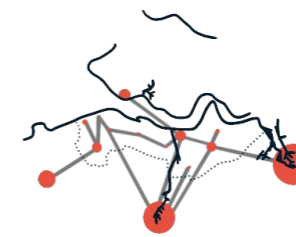
Economic activities: Ports, Industry, Logistics



Results of perception & reality of decline



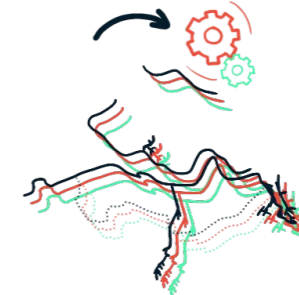
Physical, cultural & institutional borders



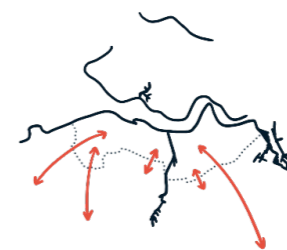
Relation in-between -Scheldt Delta



Transition of the Scheldt Delta



Sustainable economic, social & environmental transition



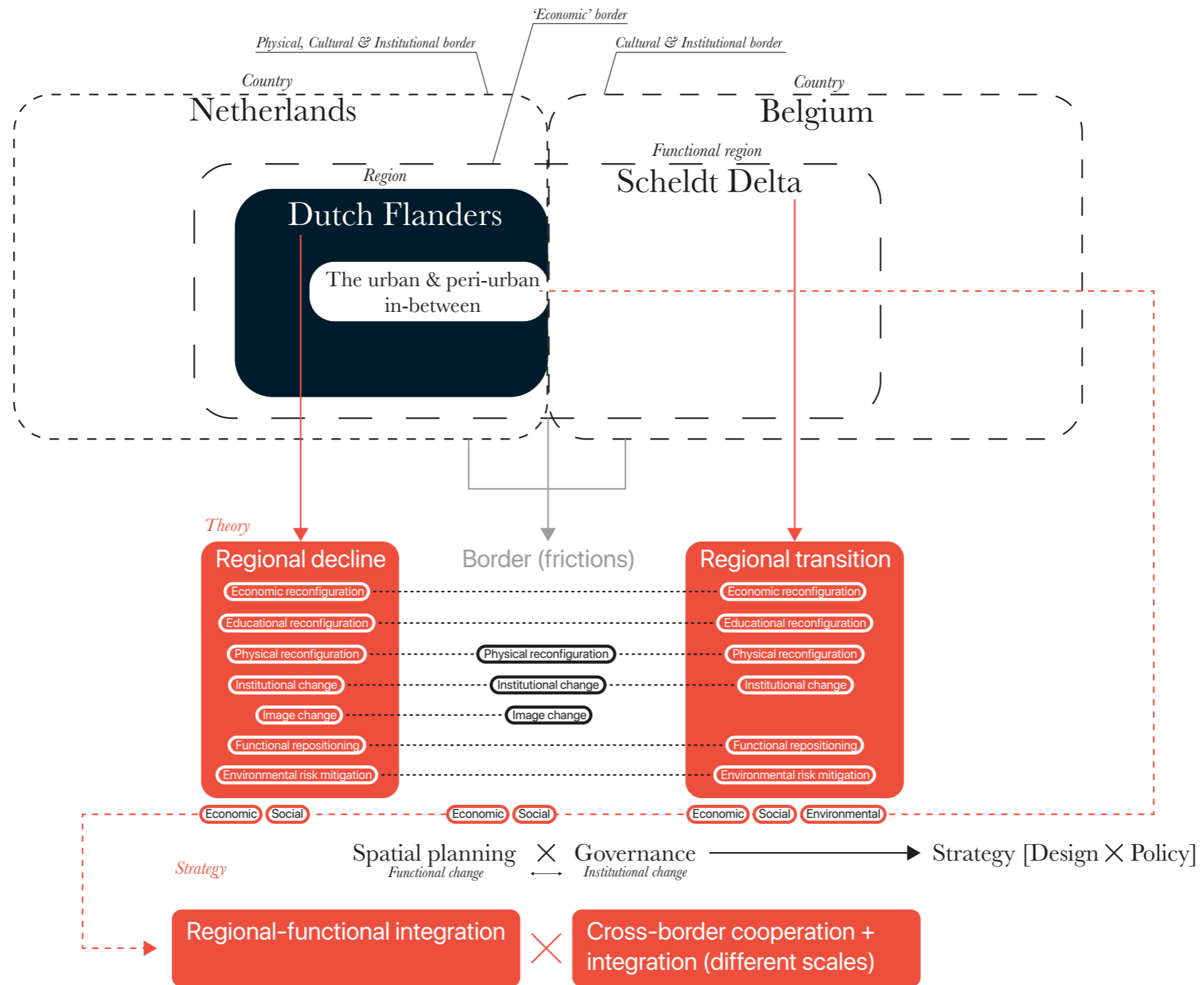
Cross-border cooperation & alignment



Employment connections & diversity

Research design.

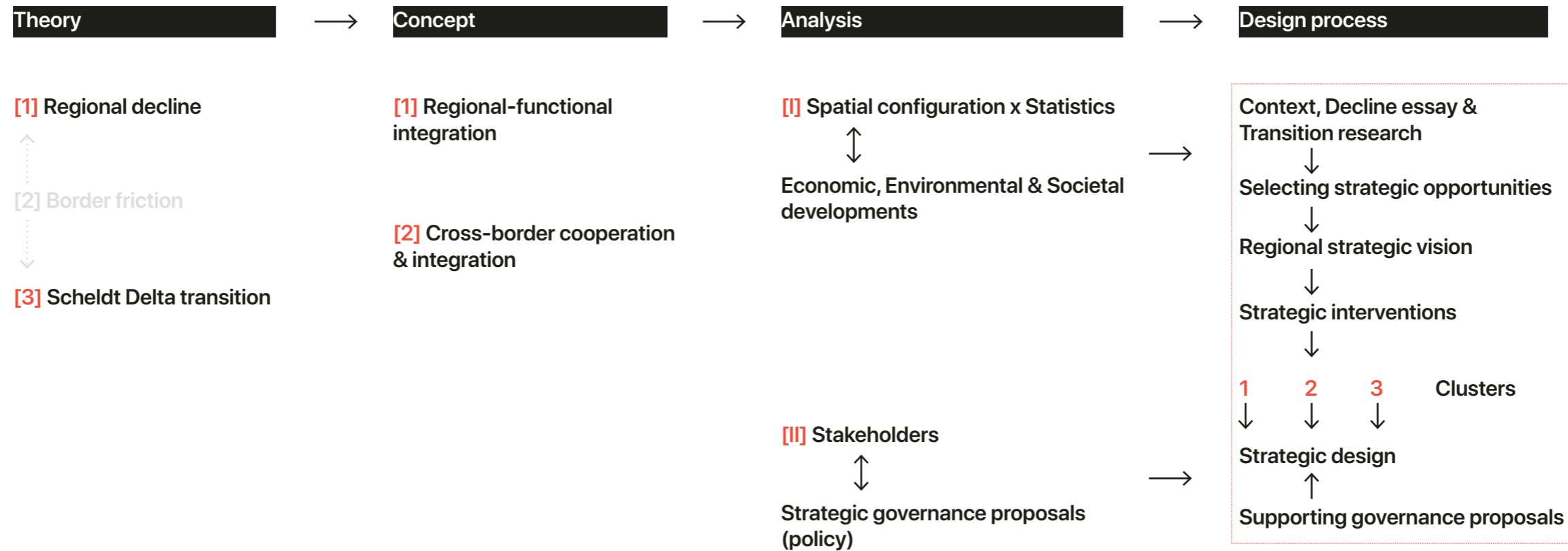
Conceptual framework



Structure



Methodological framework



Research.

Regional decline

Elements of decline

Demographic decline



Economic decline



Decline of (access to) amenities & education



Perception of declining region



Negative investments of resources

Regional decline

Lacking physical conditions

Connections
Agglomeration benefits

Lacking institutional conditions

Connections Scheldt Delta economy
Political alignment

Elements of decline

Demographic decline



Economic decline



Decline of (access to)
amenities & education



Perception of declining
region

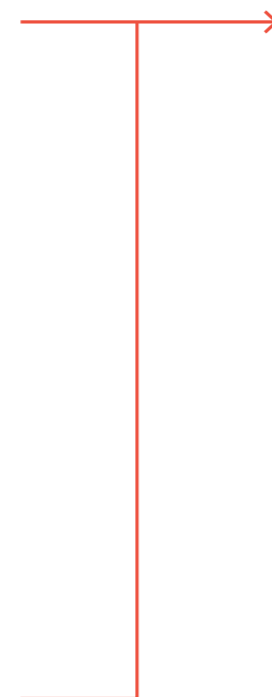


Negative investments of
resources

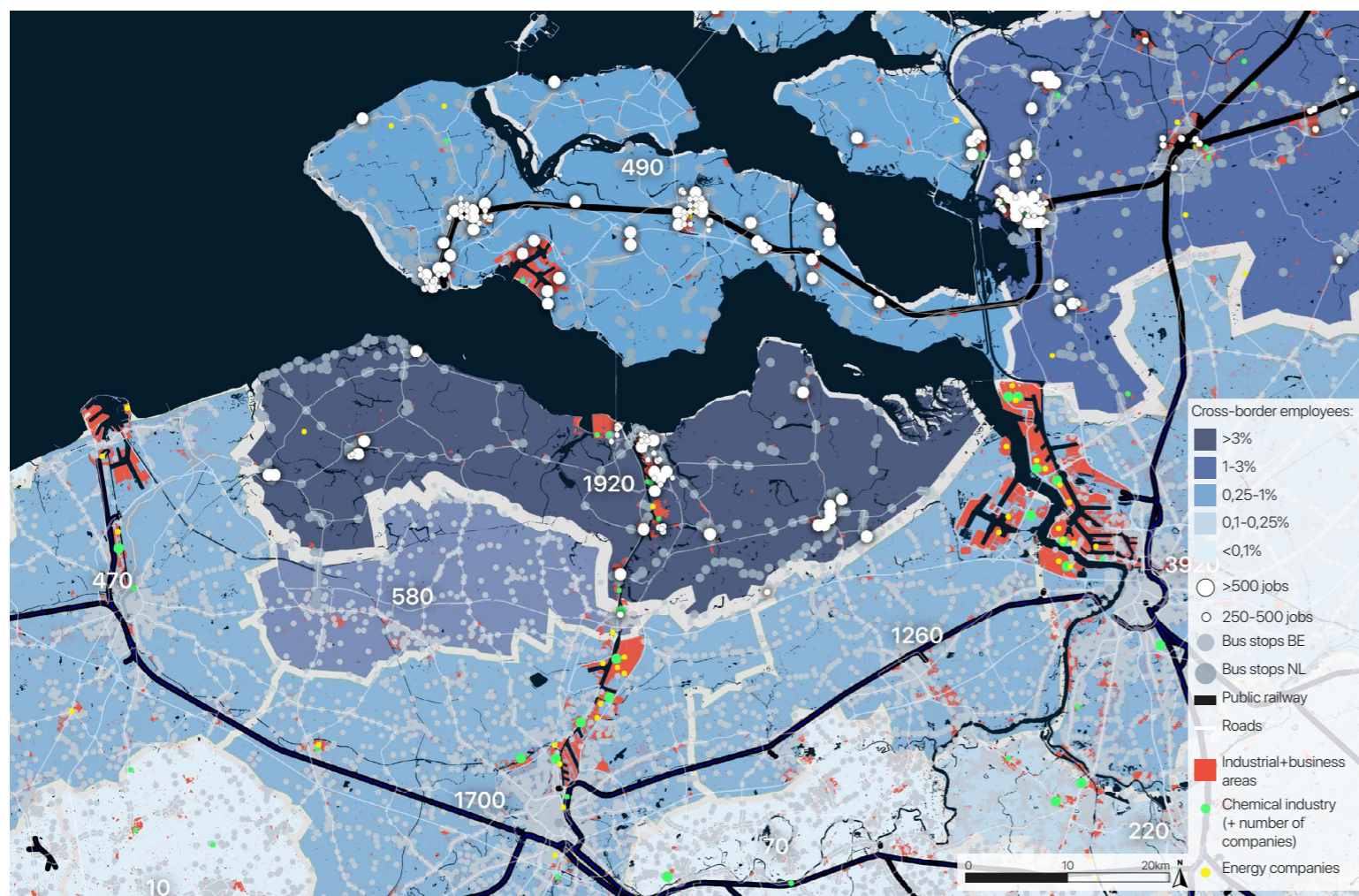
External conditions

Out-migration
Natural decrease
Deindustrialisation

Limited employment &
educational connections
/opportunities



Regional decline: employment & educational access

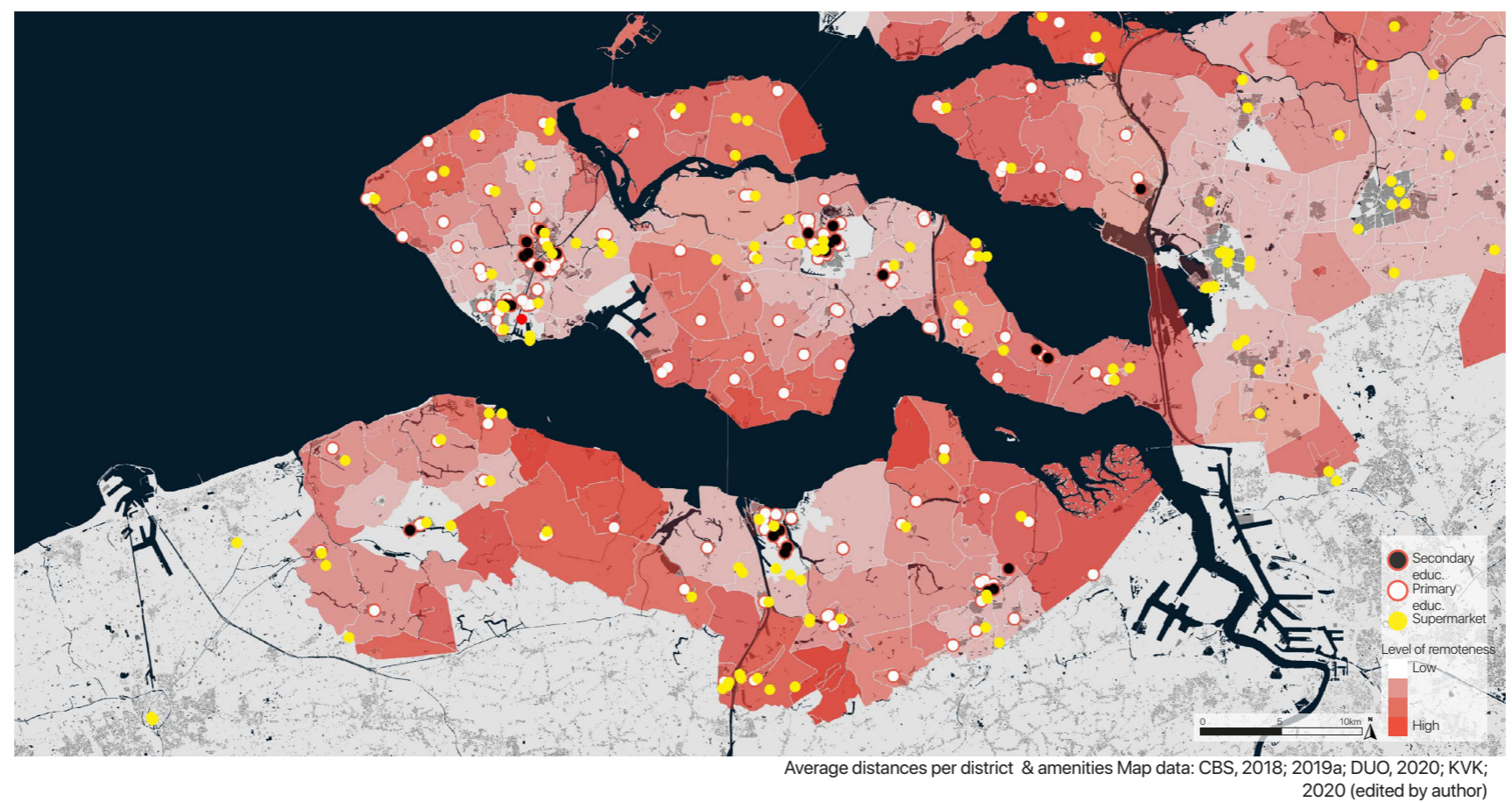
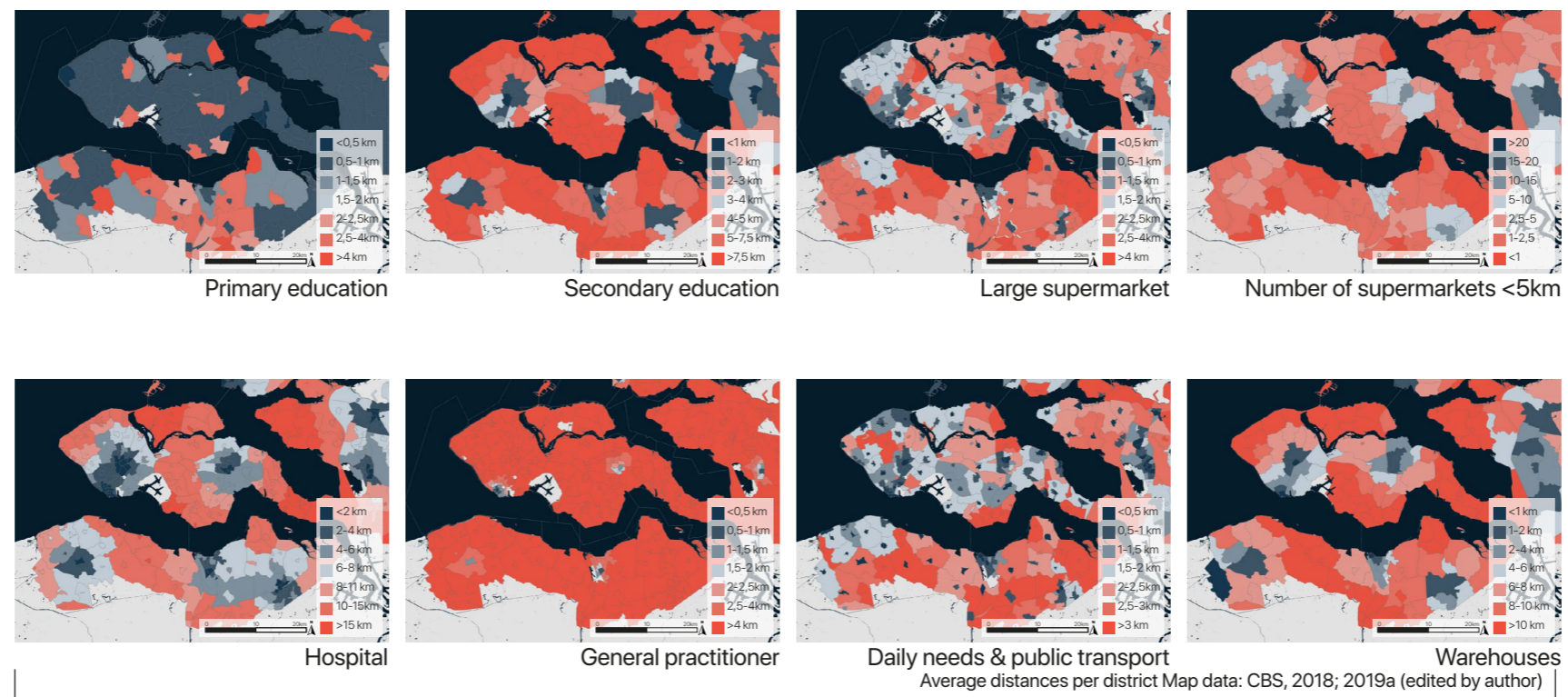


Cross-border employment (edited by author). Map data:(CBS, 2014; Geopunt, 2016,2018,2020; Nationaal Georegister, 2015; OpenStreetMap, n.d.; PBL, 2020; Regio-bedrijf, n.d.; Rijksuniversiteit Groningen, 2017)

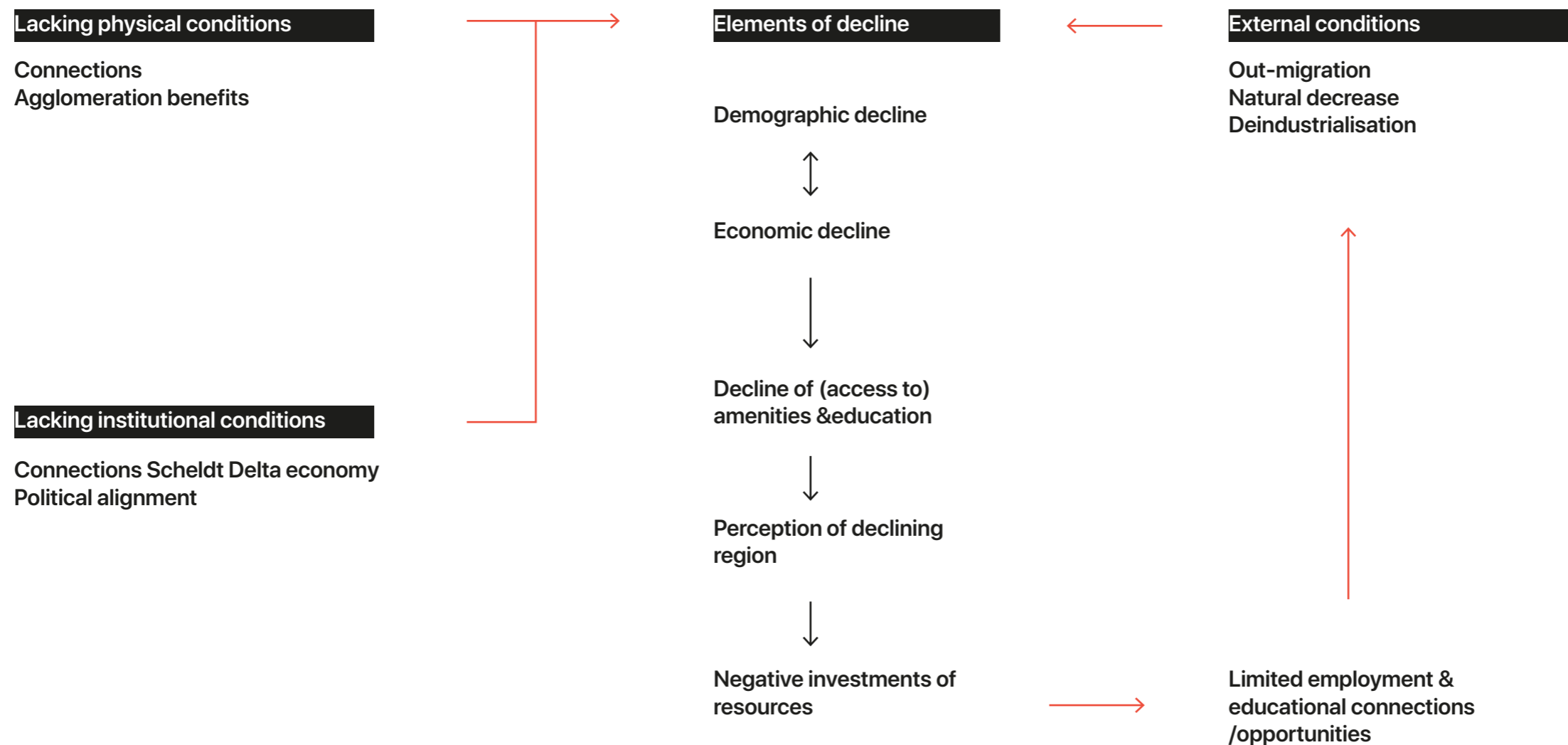


Education and connectivity (edited by author). Map data:(OpenStreetMap, n.d.)

Regional decline: access to amenities



Regional decline



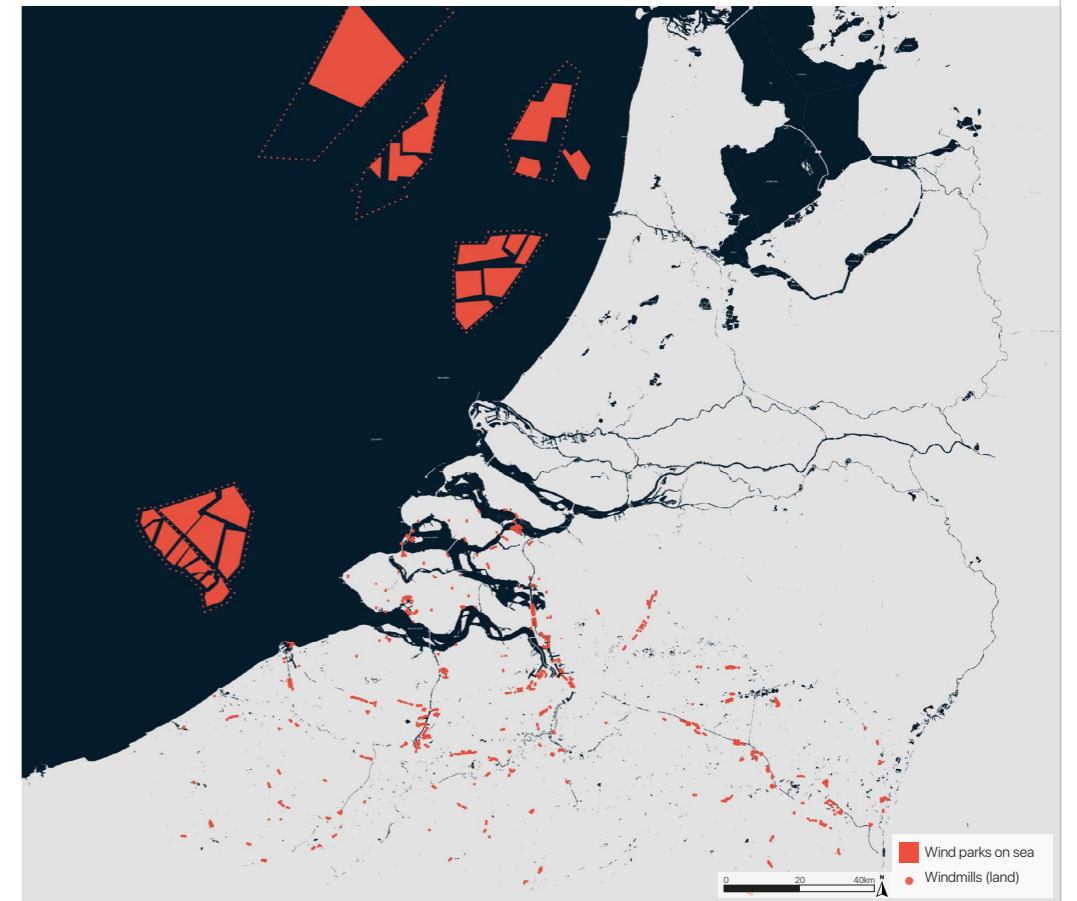
Scheldt Delta transition

[I] Sustainable energy transition

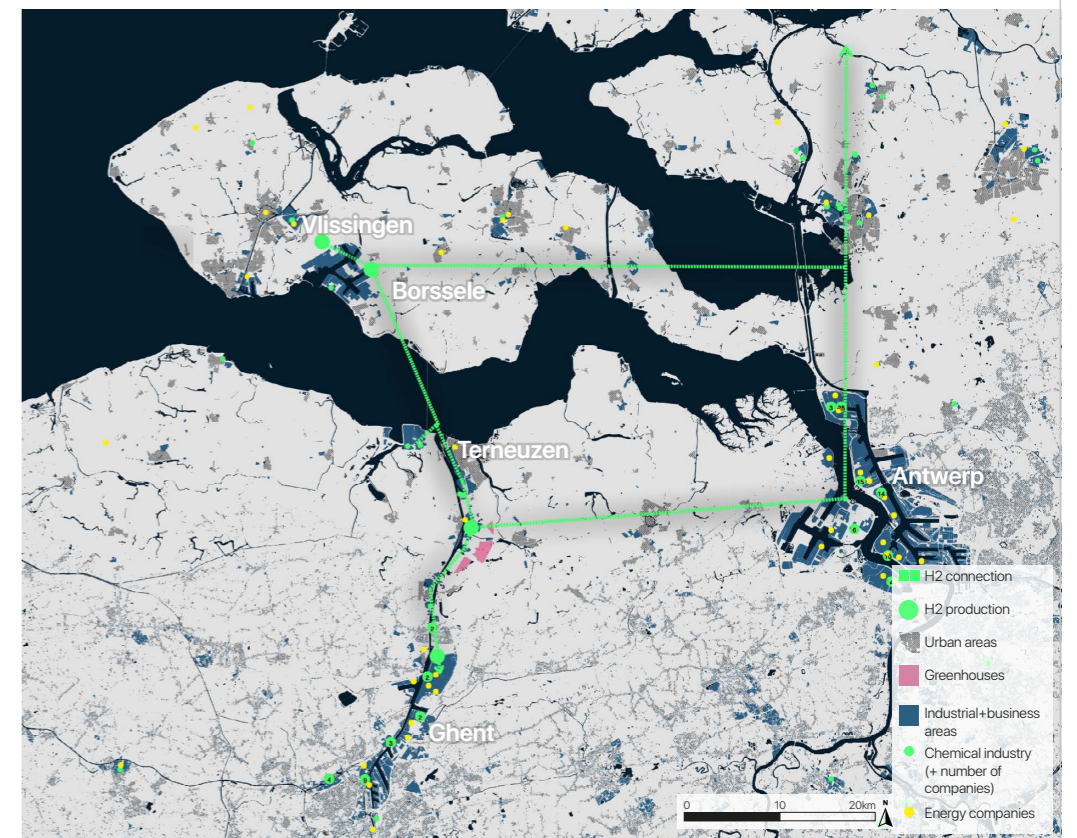
- Important node for sustainable energy
- Wind, hydrogen
- Current fossil industries & infrastructure
-

[II] Circular economy

- Proximity of industries and urban areas for exchange of (energy) resources in network (transport)
- By-products & storage of peaks



Energy from the wind in Flanders and the Province of Zeeland (edited by author). Map data: (Rijksoverheid, 2018; Ruimte Vlaanderen, 2013; OpenStreetMap, n.d.)

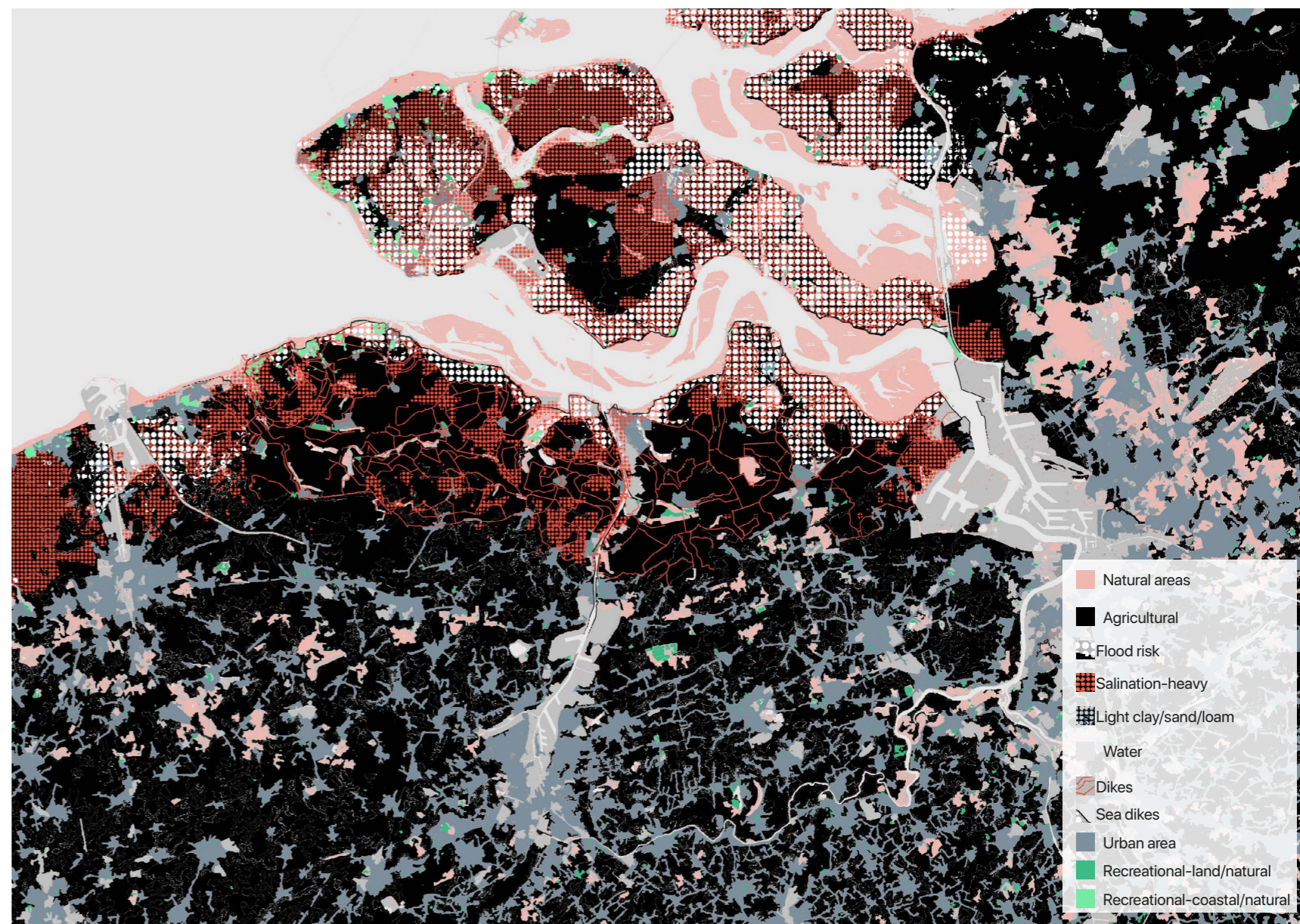


Hydrogen plans & industries in Scheldt Delta (edited by author). Map data: (Geopunt, 2016, 2018; Smart Delta Resources, 2020; Nationaal Georegister, 2015; OpenStreetMap, n.d.; Regiobedrijf, n.d.;)

Scheldt Delta transition

[III] Environmental change

- Impact of transport on natural areas
- Impact of water on agriculture, industries & urban areas
- Natural-agricultural potential of most vulnerable areas
- Integrate energy solutions in transition landscapes



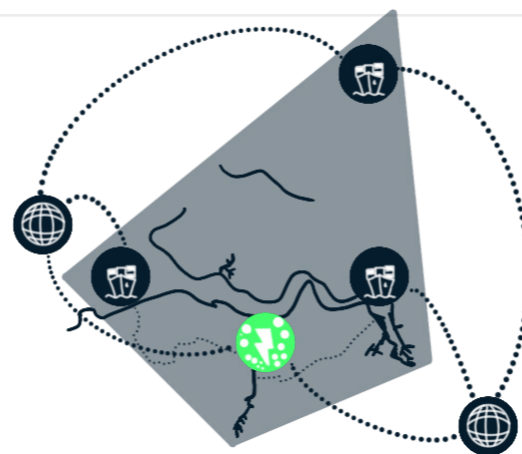
Soil and types of urbanisation (edited by author). Map data: (Geopunt, 2016; 2017a,b; EEA, 2018; Klimaffectatlas, n.d.; Nationaal Georegister, 2014; 2015; 2020; Wageningen University, 2006)

Scheldt Delta transition

[IV] Implications

One port

Global complex
Renewable energy focus Dutch Flanders



Connection knowledge-education

Physical & institutional networks & platform
R&D, innovation & knowledge industries



Complementary function

Ports & industries
Regions



Infrastructure

Regional
Interregional (large scale)

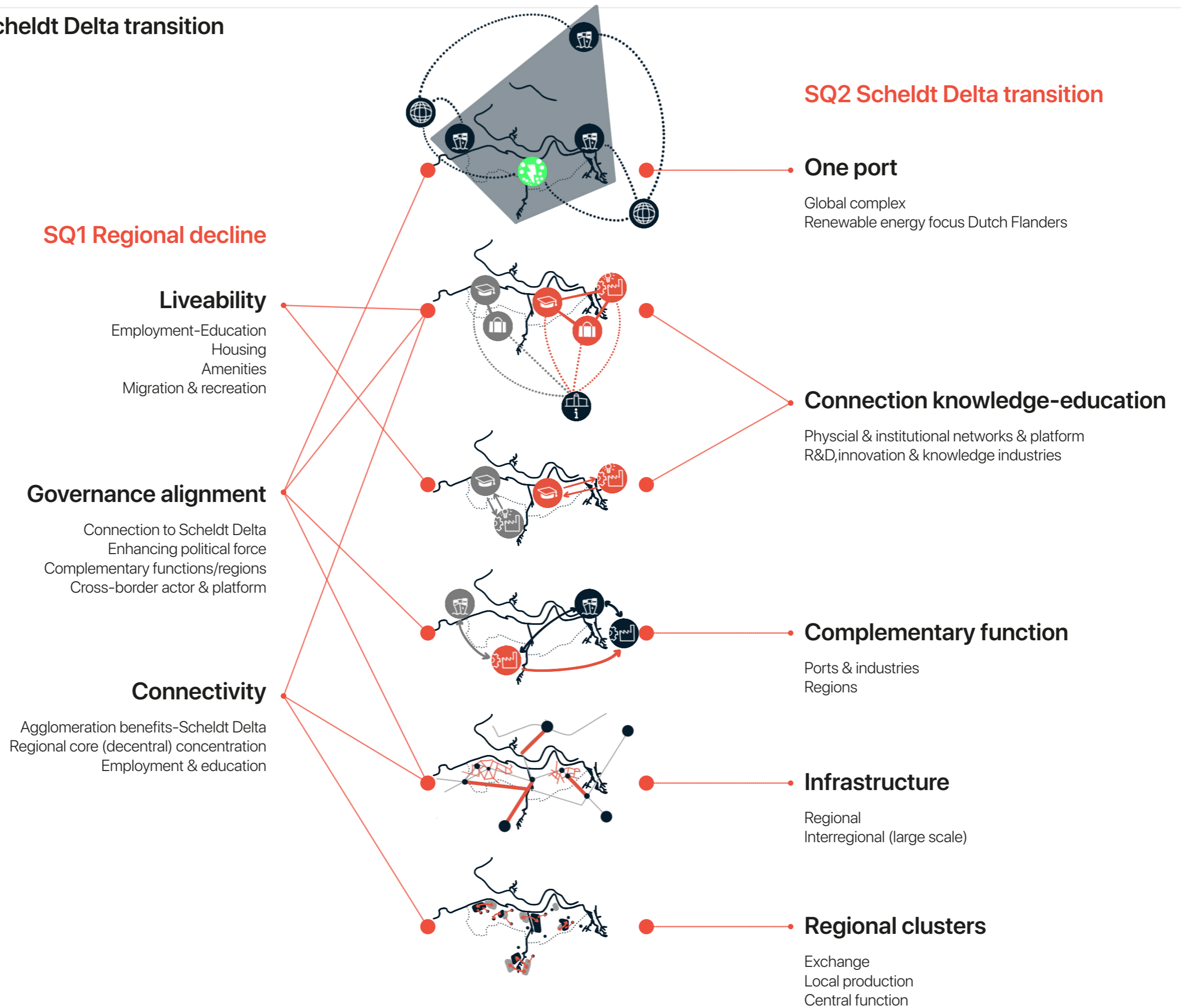


Regional clusters

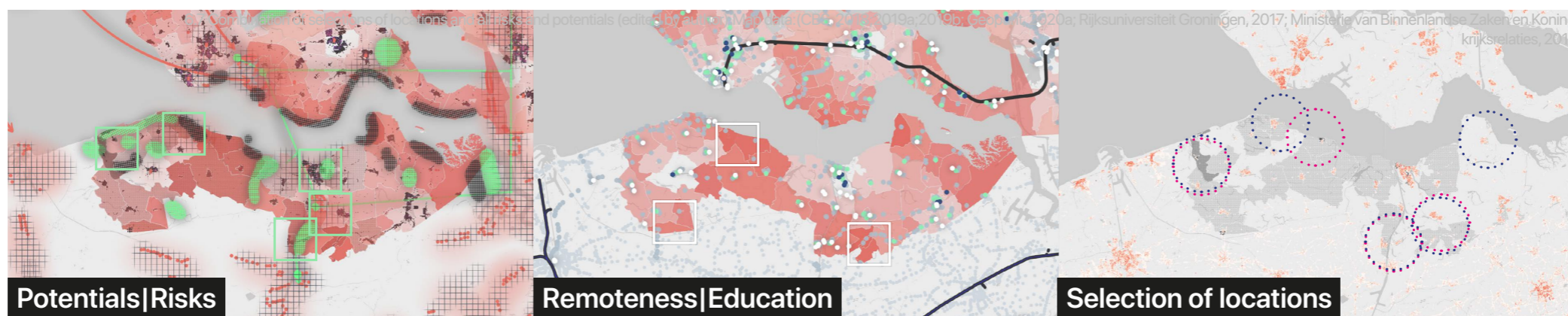
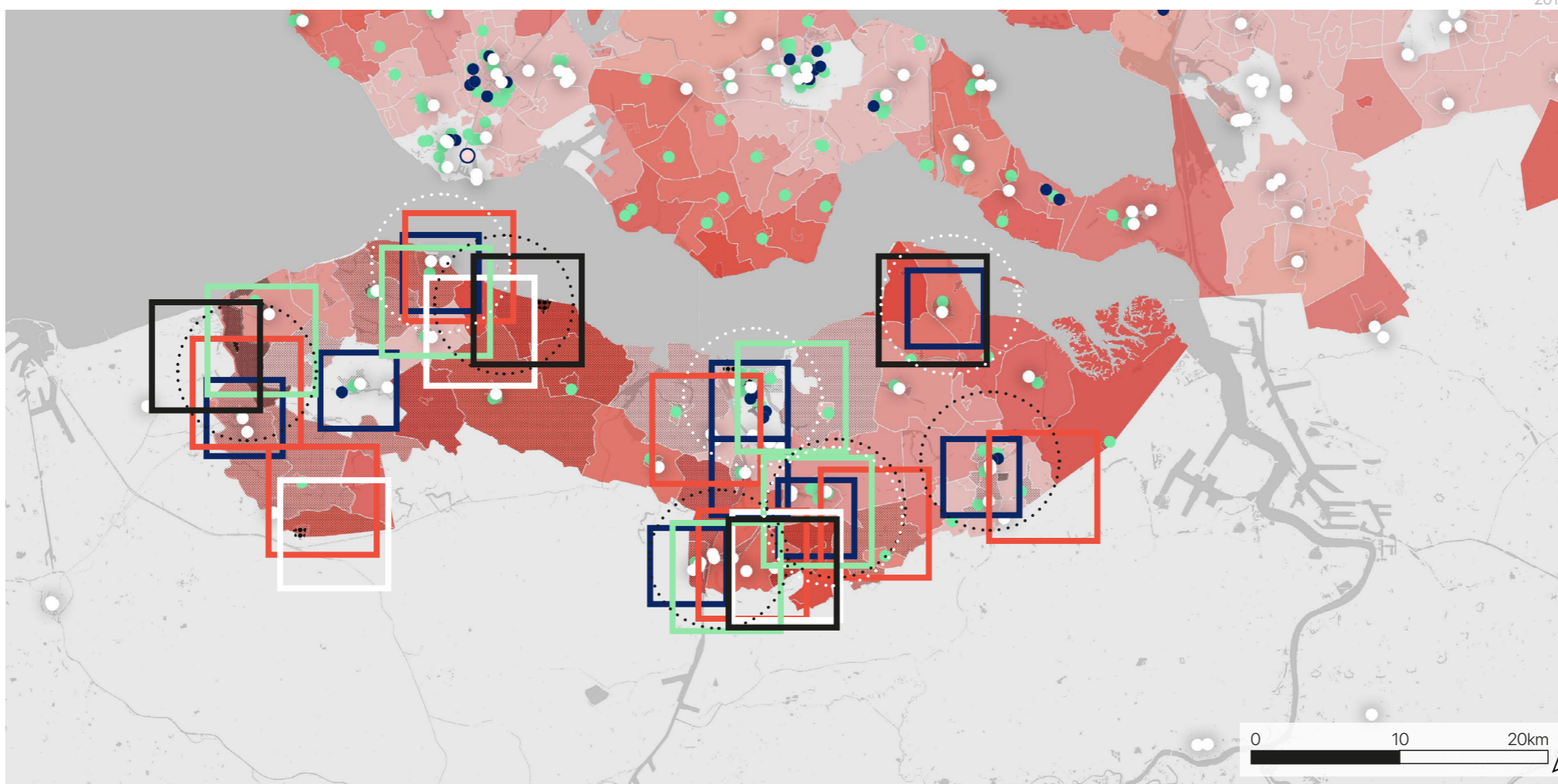
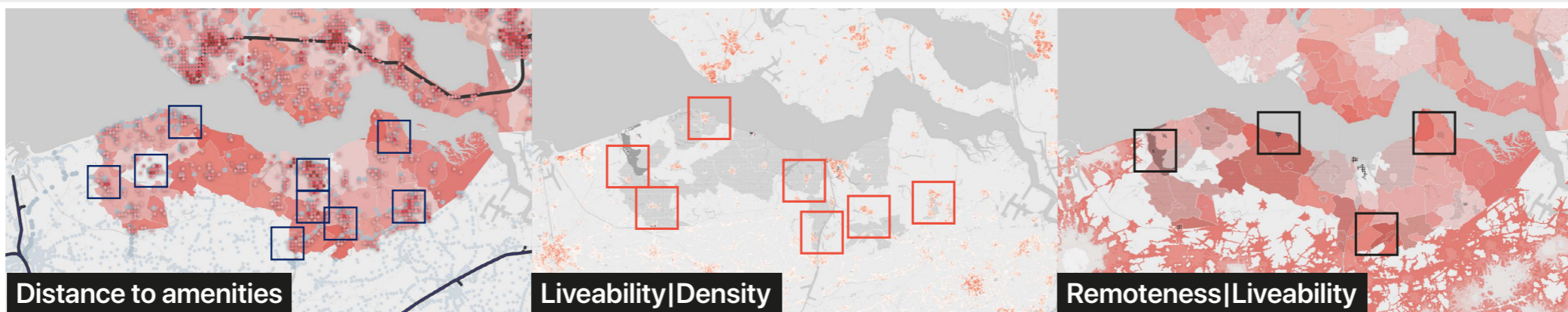
Exchange
Local production
Central function



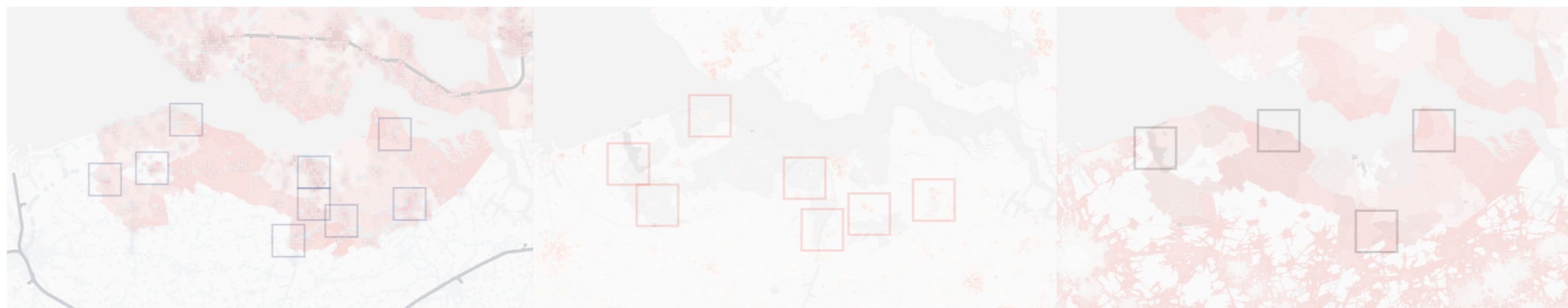
Regional decline & Scheldt Delta transition



Selection of clusters



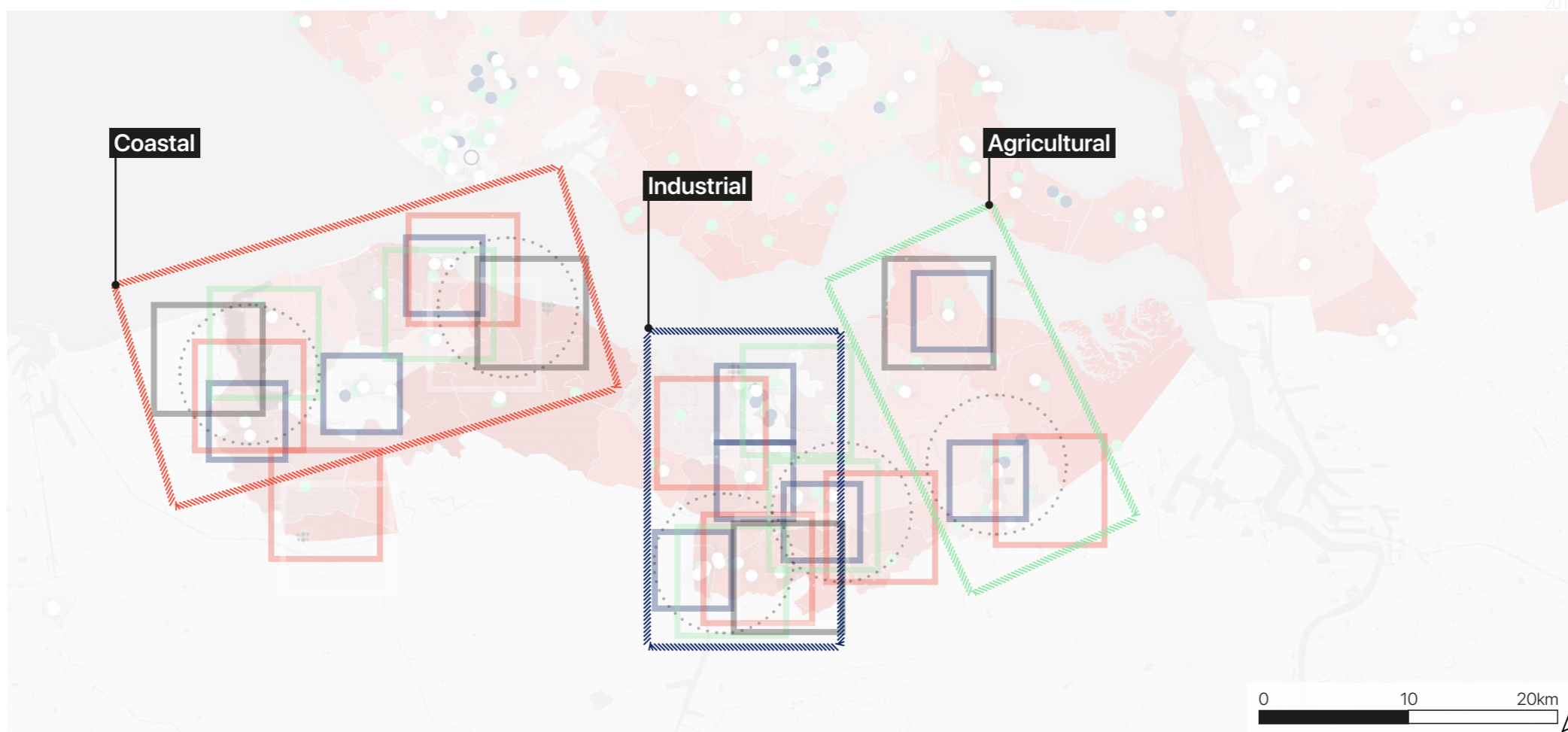
Selection of clusters



6.1 Remoteness and provision of employment (edited by author). Map data: (CBS, 2018;2019a;2019b; PBL, 2020)

6.2 Density and liveability (edited by author). Map data: (CBS, 2019; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019)

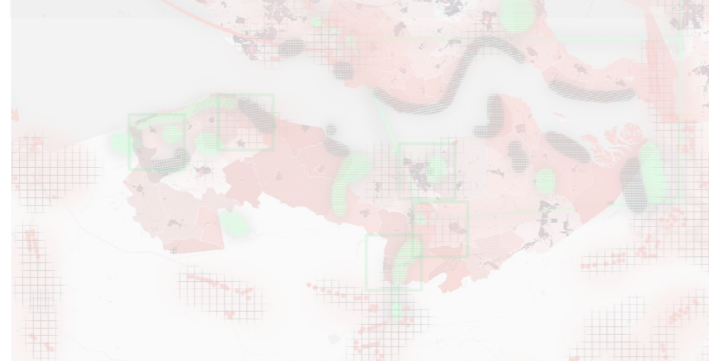
6.3 Remoteness and liveability (edited by author). Map data: (CBS, 2018;2019a;2019b; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019)



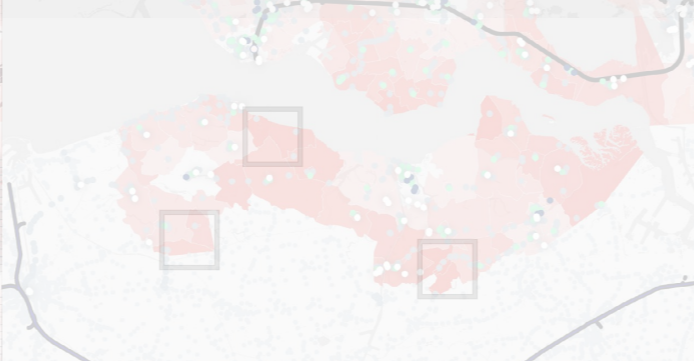
6.4 Potential, (natural) risks, remoteness and liveability (edited by author). Map data: (CBS, 2018;2019a;2019b; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019)

6.5 Level of remoteness and education (edited by author). Map data: (CBS, 2018;2019a;2019b; Geopunt, 2020a; OpenStreetMap, n.d.; Rijksuniversiteit Groningen, 2017)

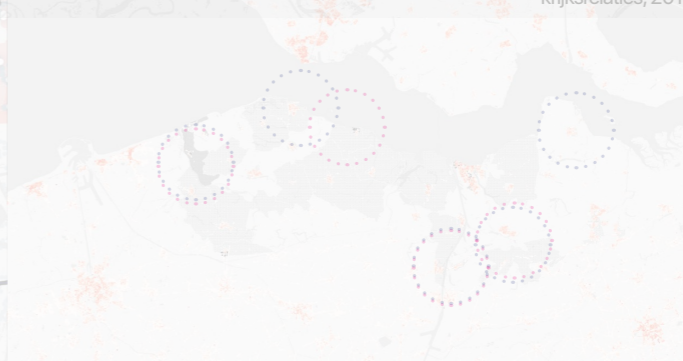
6.6 Selection of locations with most risk/most potential (edited by author). Map data: (CBS, 2019; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019)



6.4 Potential, (natural) risks, remoteness and liveability (edited by author). Map data: (CBS, 2018;2019a;2019b; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019)

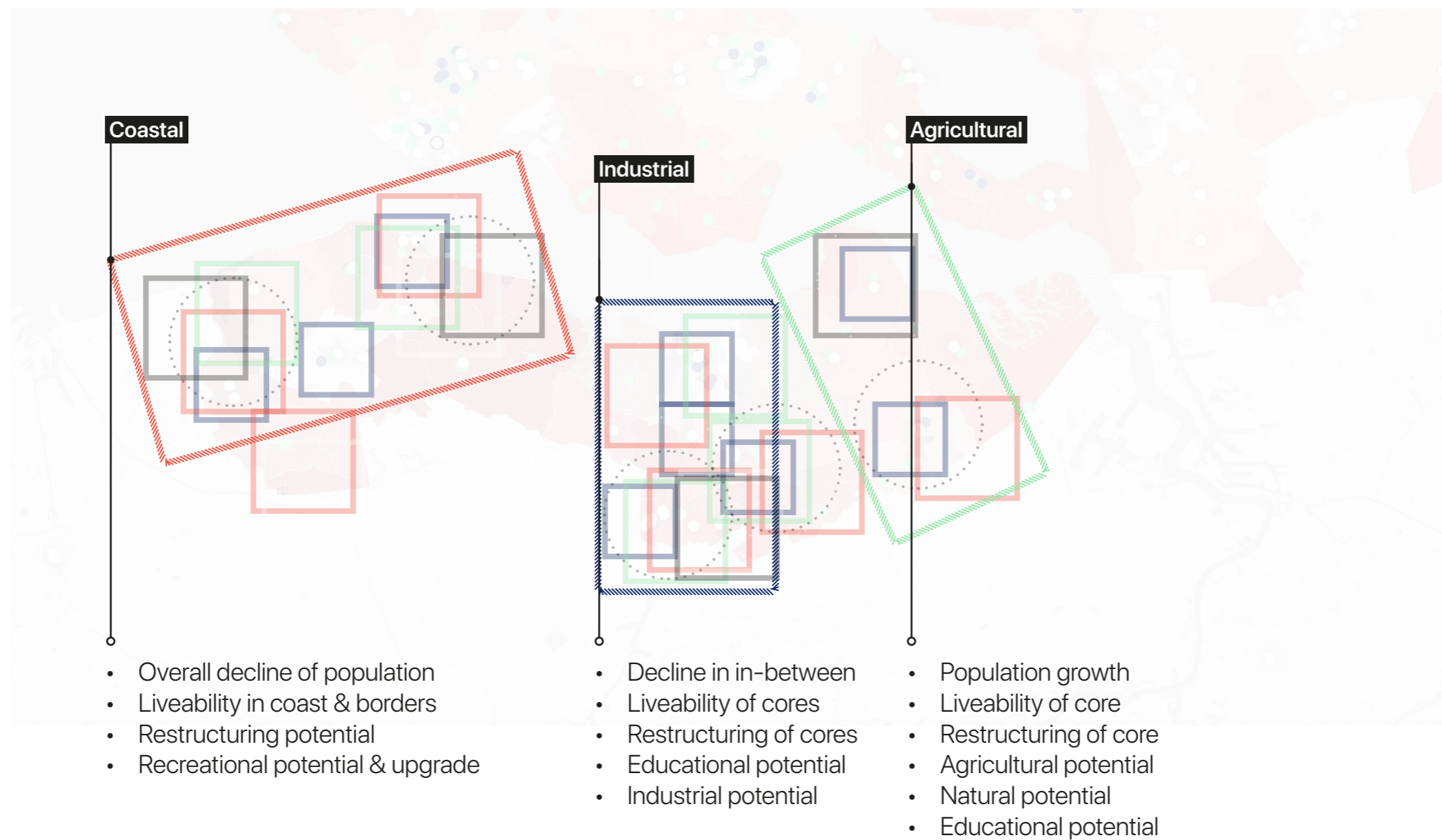


6.5 Level of remoteness and education (edited by author). Map data: (CBS, 2018;2019a;2019b; Geopunt, 2020a; OpenStreetMap, n.d.; Rijksuniversiteit Groningen, 2017)



6.6 Selection of locations with most risk/most potential (edited by author). Map data: (CBS, 2019; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019)

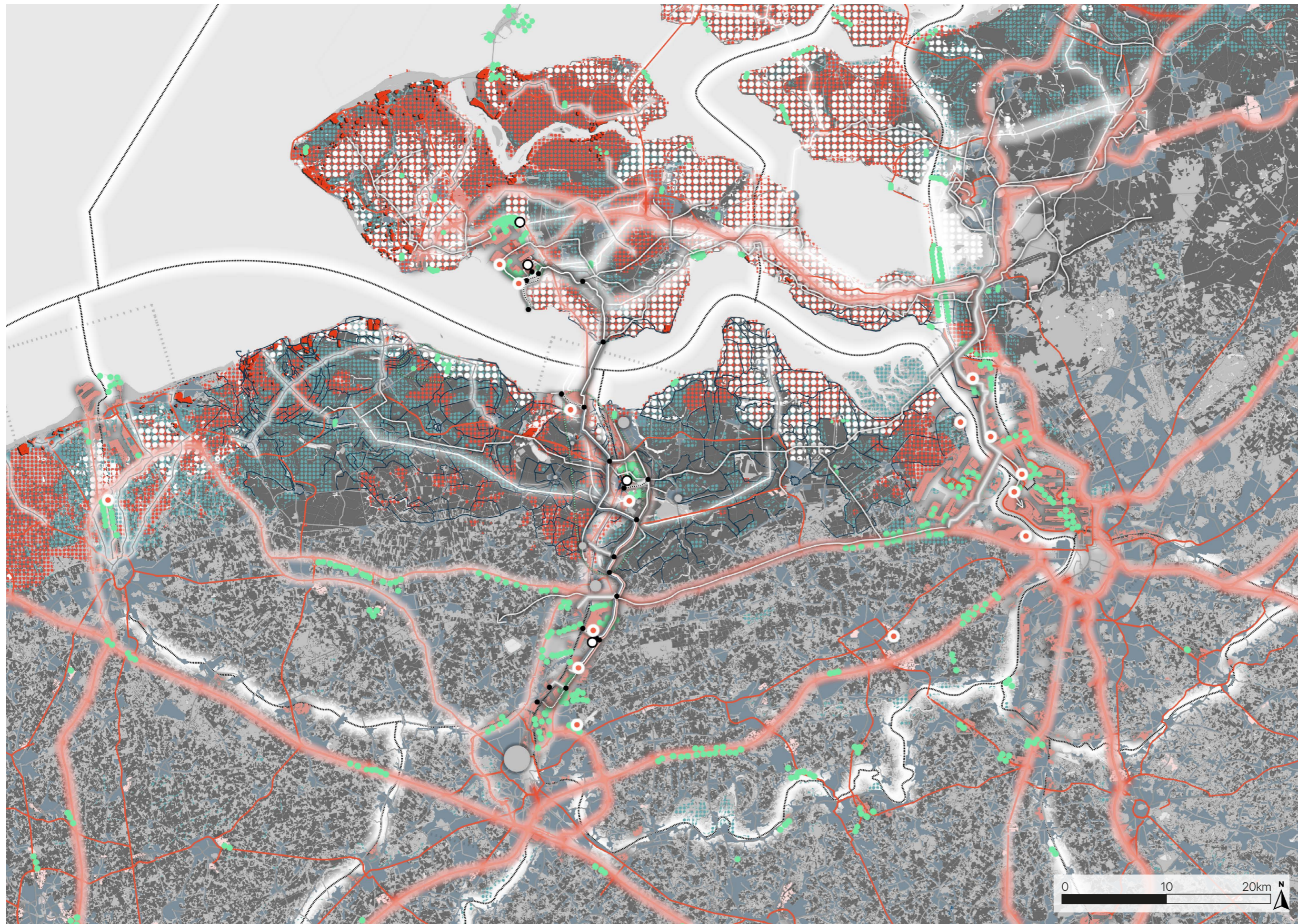
Definition of clusters



Vision.

(Strategy)

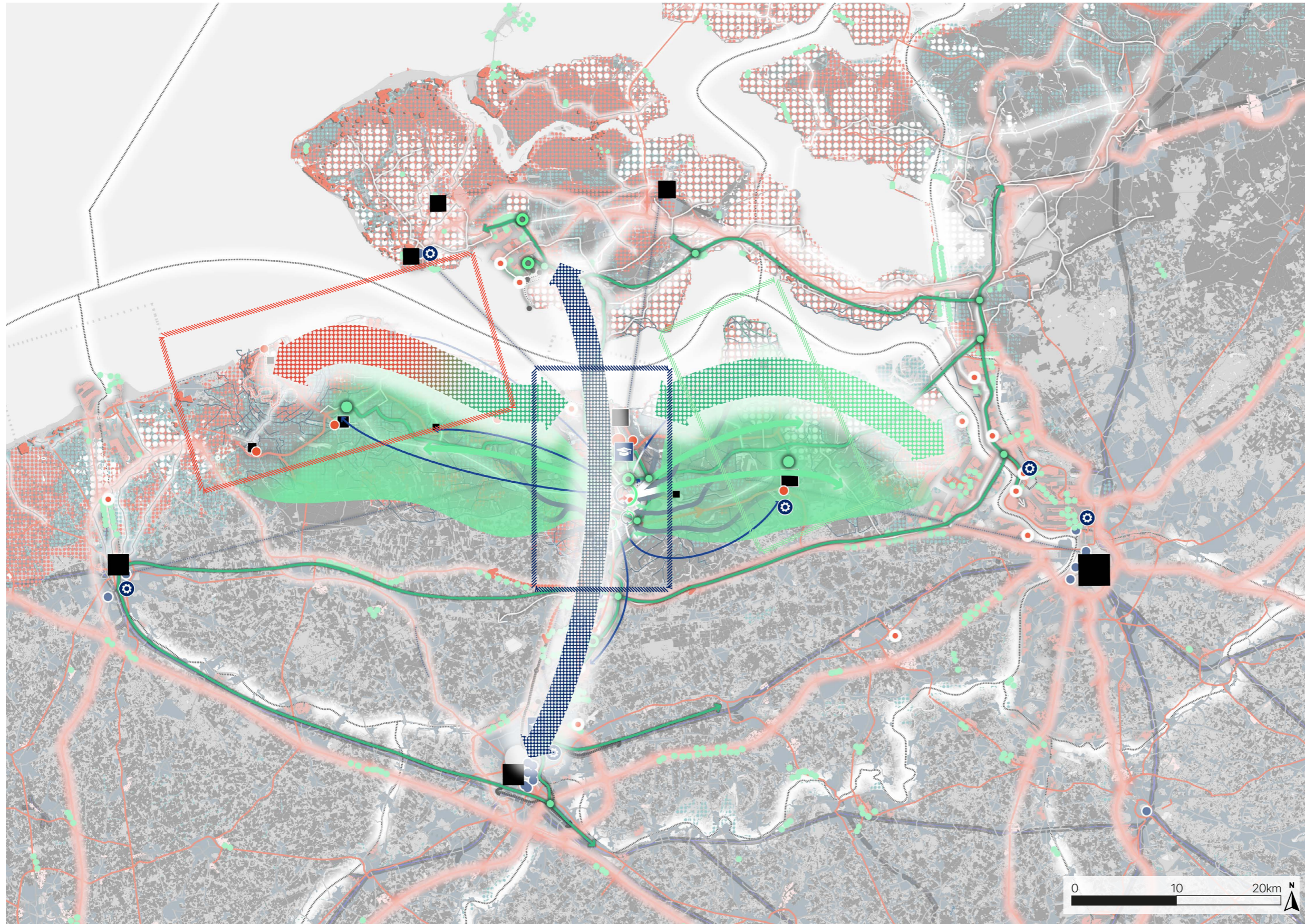
Combination of analysis



- Electricity network-high-low
- Gas/hydrogen network
- Proposed location of network: (Naphtha)-Co2/H2-Heat
- Node in network/exchange
- Electricity production
- Hydrogen production
- Wind energy (current)
- Potential direct connections
- Agricultural-other
- (Heavy) Clay soil
- Sandy soil
- Light clay/sand/loam
- Industrial railways
- Main logistic routes
- (Motorway + distribution)
- Primary roads (regional)
- Secondary roads
- Tertiary roads
- Main waterway logistics
- Industrial areas -water connected
- Industrial areas- road connected
- Recreational-coastal/natural

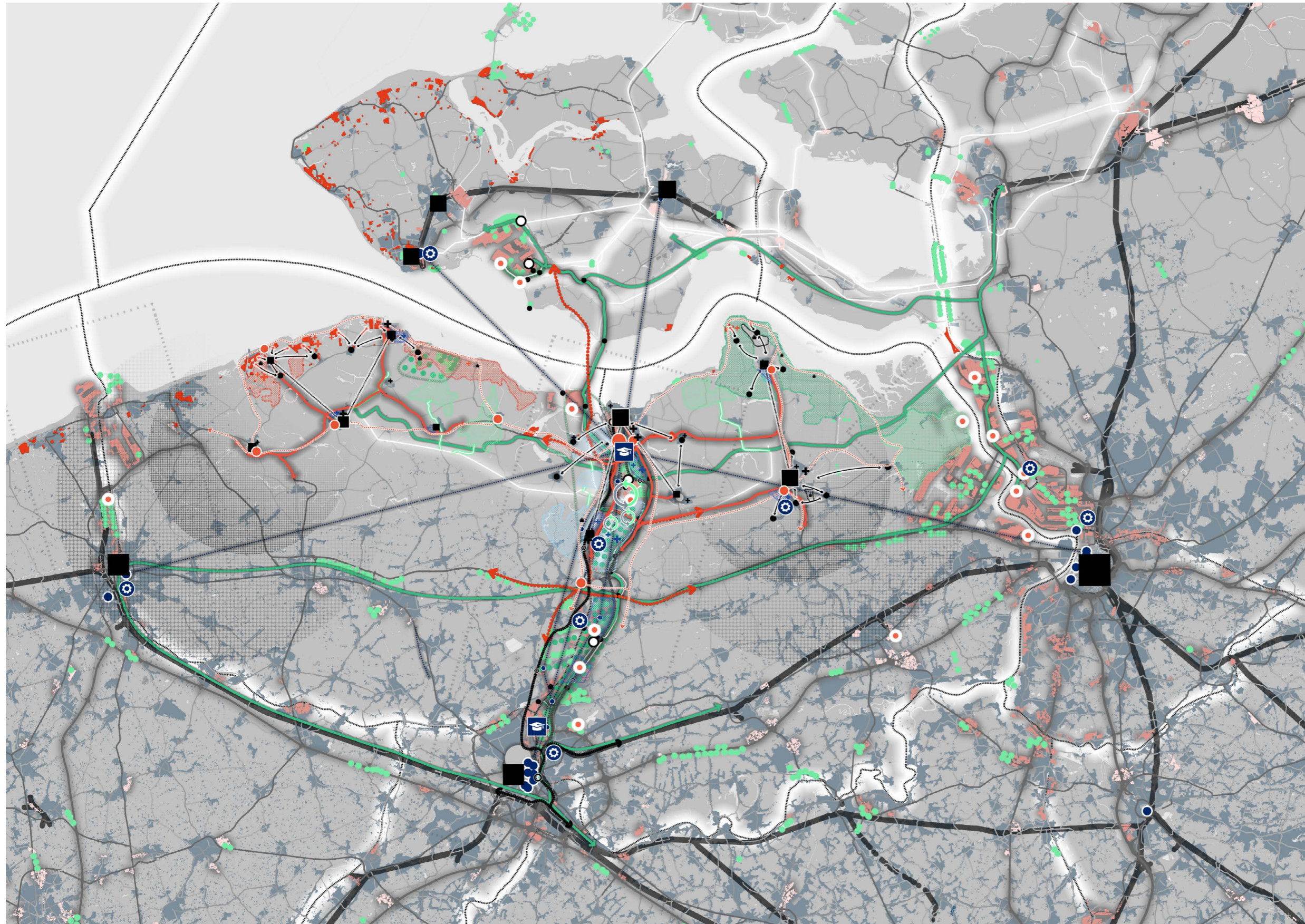
Combination of the maps from figures (edited by author).*

Vision-concept



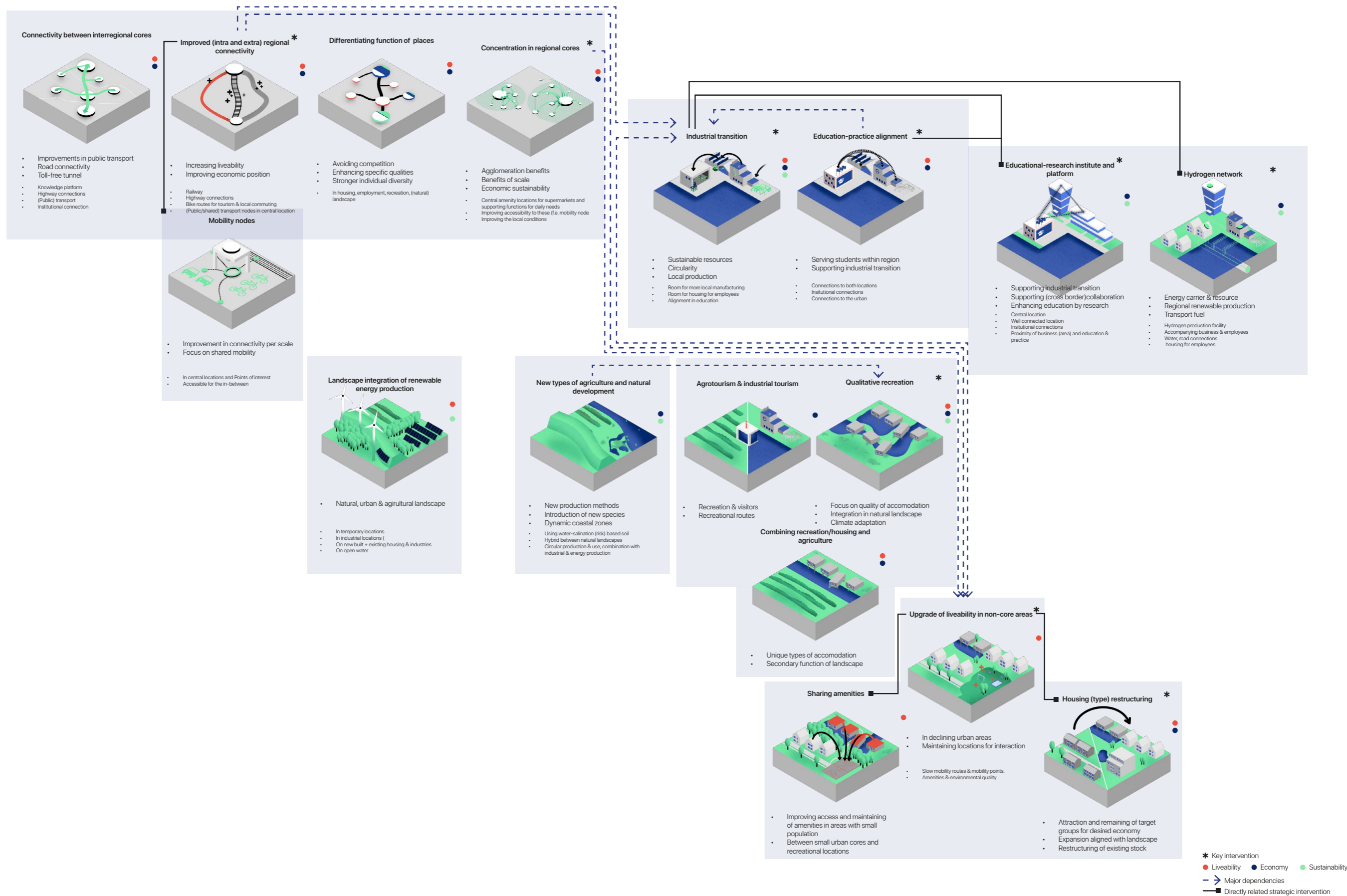
Concept of the three clusters within the vision (Author, 2021)

Vision



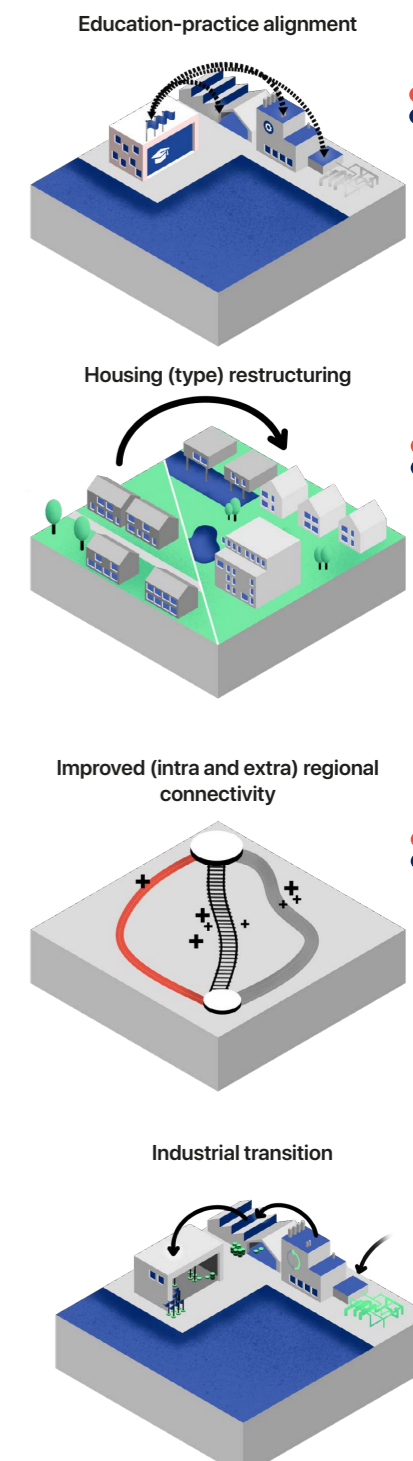
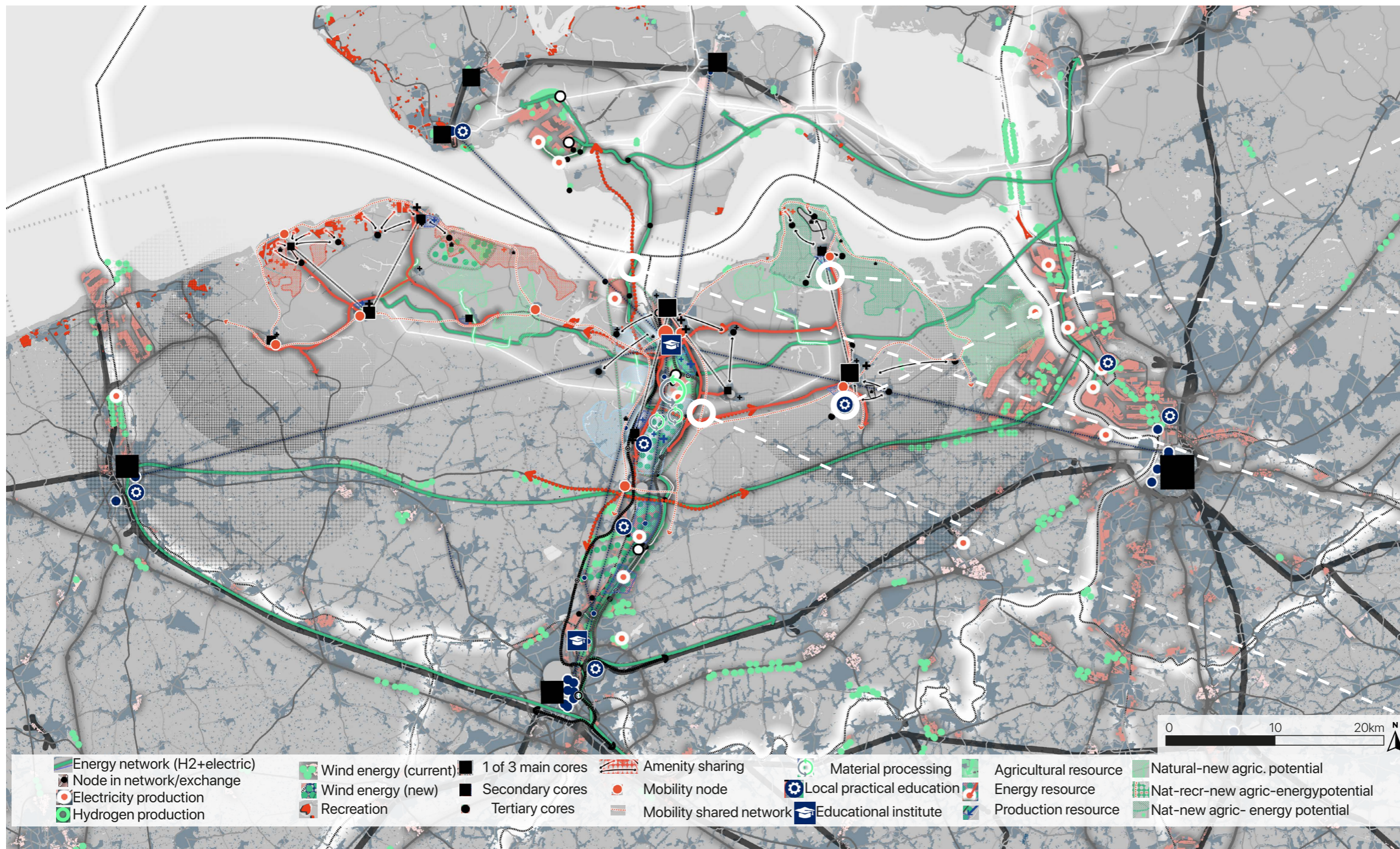
- Local practical education
- Educational institute
- Energy network distribution point
- Energy network node
- Energy network (H2+electric)
- Node in network/exchange
- Electricity production
- Hydrogen production
- Wind energy (current)
- Wind energy (new)
- Recreation
- 1 of 3 main cores
- Secondary cores
- Tertiary cores
- Amenity sharing
- Mobility node
- Mobility shared network
- Material processing
- Urban material
- Agricultural material
- Agricultural resource
- Energy resource
- Production resource
- Natural-new agric. potential
- Nat-recr-new agric-energy potential
- Nat-new agric- energy potential

Strategic interventions

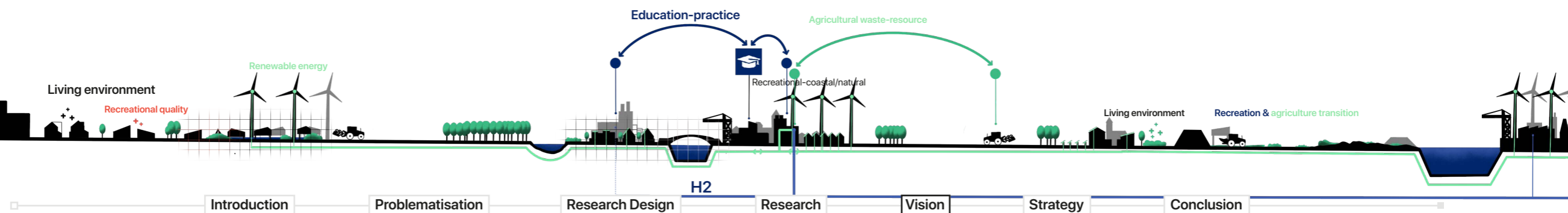


71.3 Major dependencies and directly related interventions (Author, 2021)

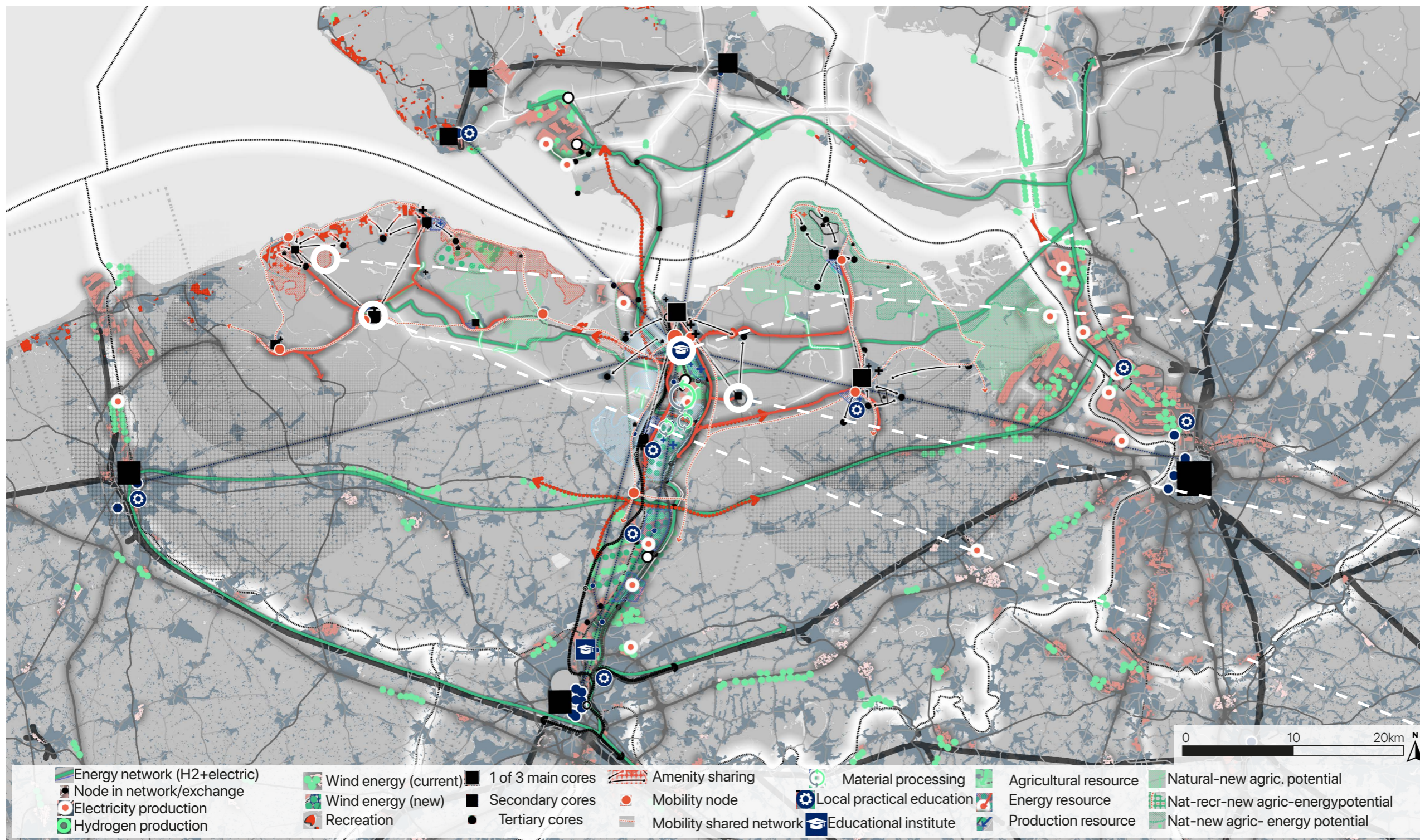
Vision-key interventions I



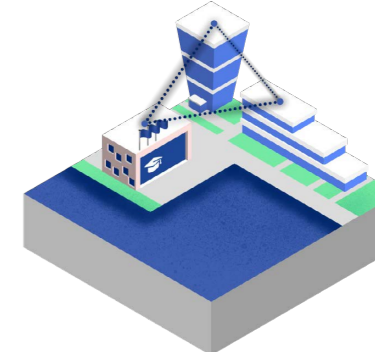
Vision map and section of first steps (Author, 2021)



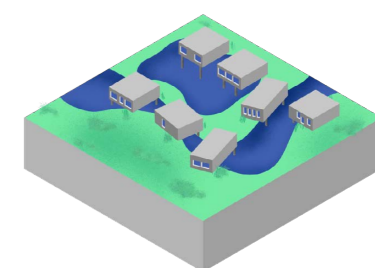
Vision-key interventions II



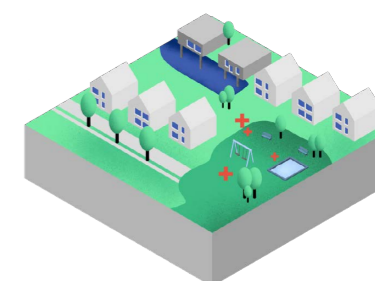
Educational-research institute and platform



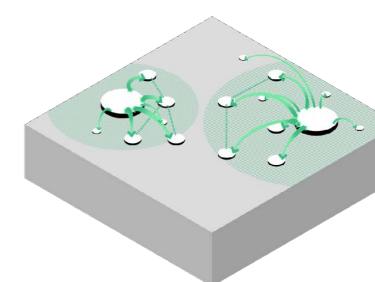
Qualitative recreation



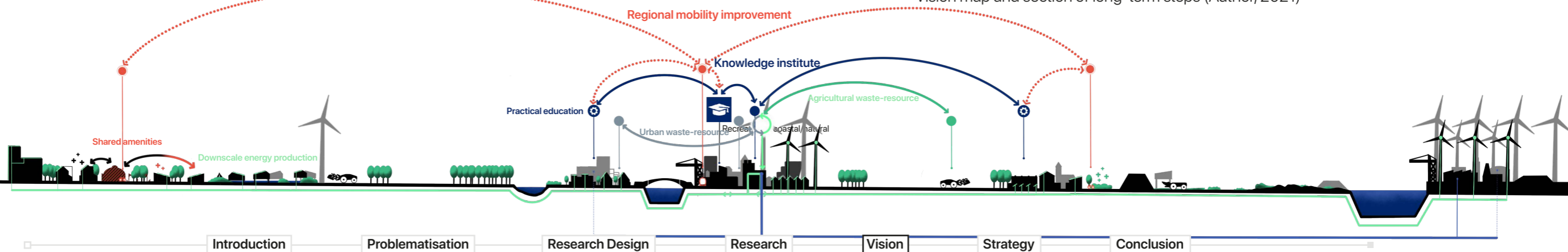
Upgrade of liveability in non-core areas



Concentration in regional cores



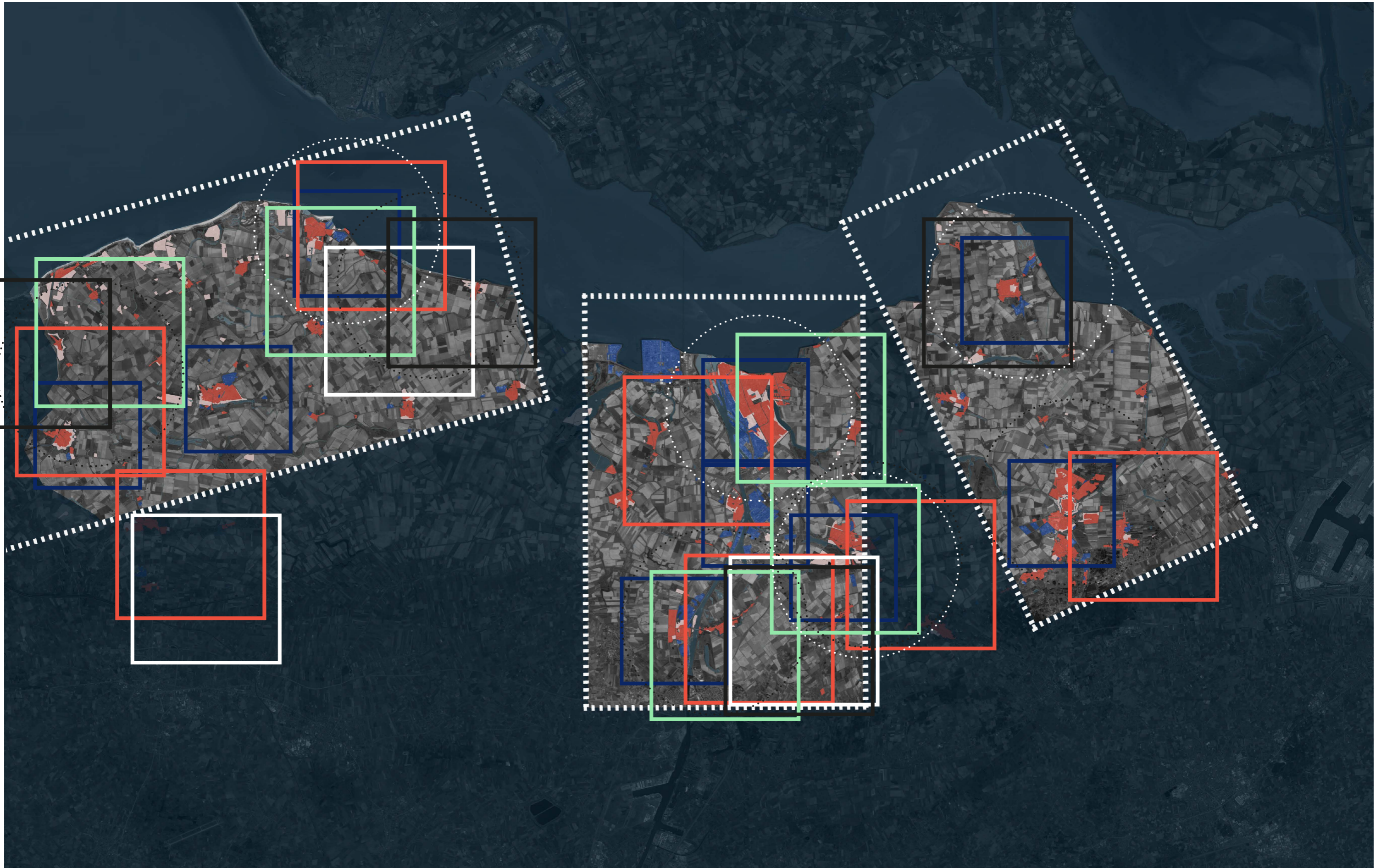
Vision map and section of long-term steps (Author, 2021)



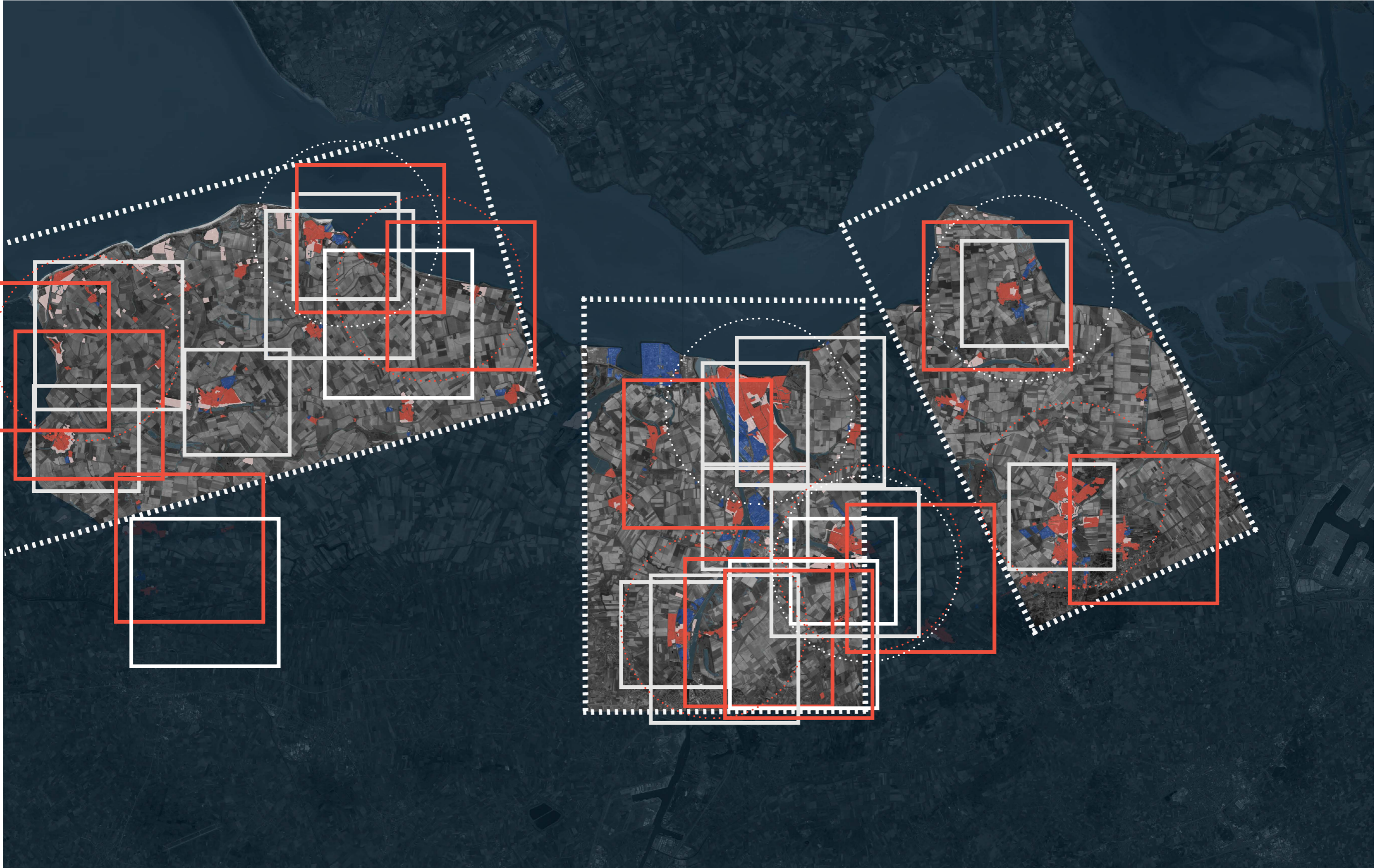
Design.

(Strategy)

Clusters



Design | Clusters



Design | Cluster locations

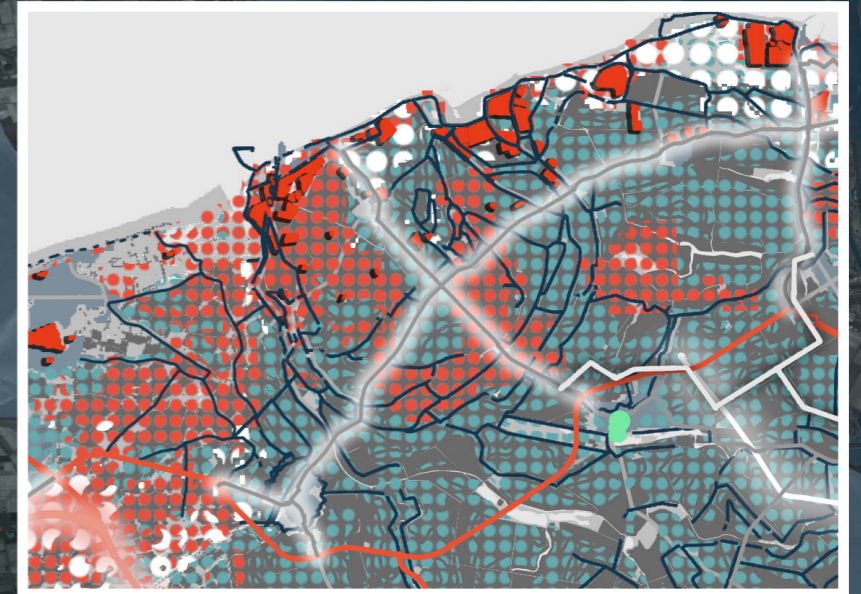


Cluster I Coastal | Cadzand & Cadzand-Bad

Cadzand



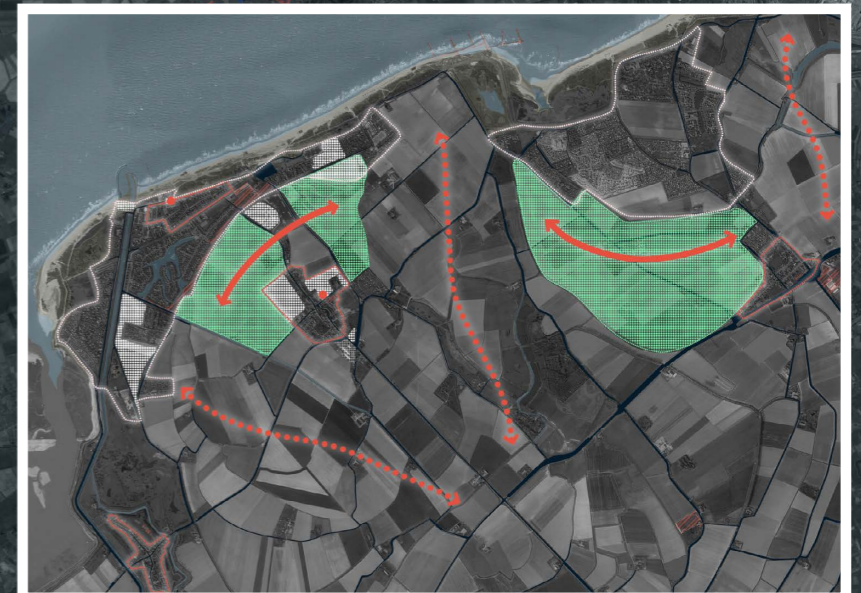
Design locations (Author, 2021)



Risks defined in analysis (Author, 2021)



Current urban situation (Author, 2021)

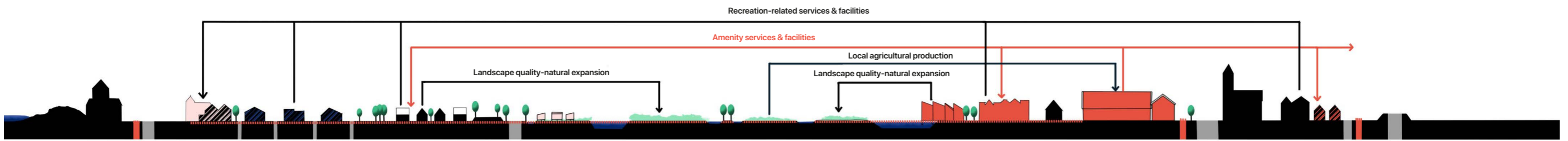


Design principles (Author, 2021)

Design I

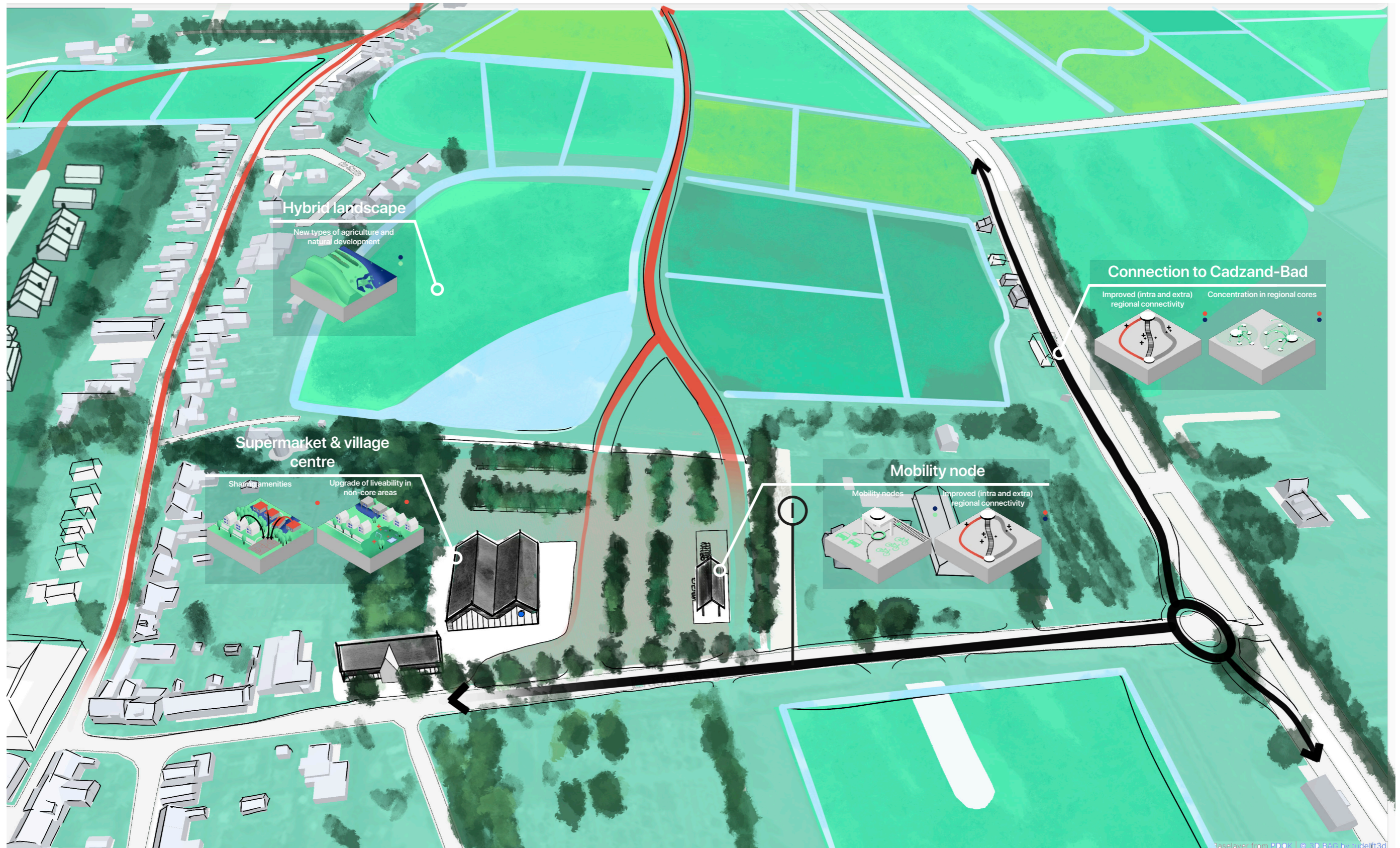


First step of development: amenity centre & connections to Cadzand-Bad & surroundings (Author, 2021)



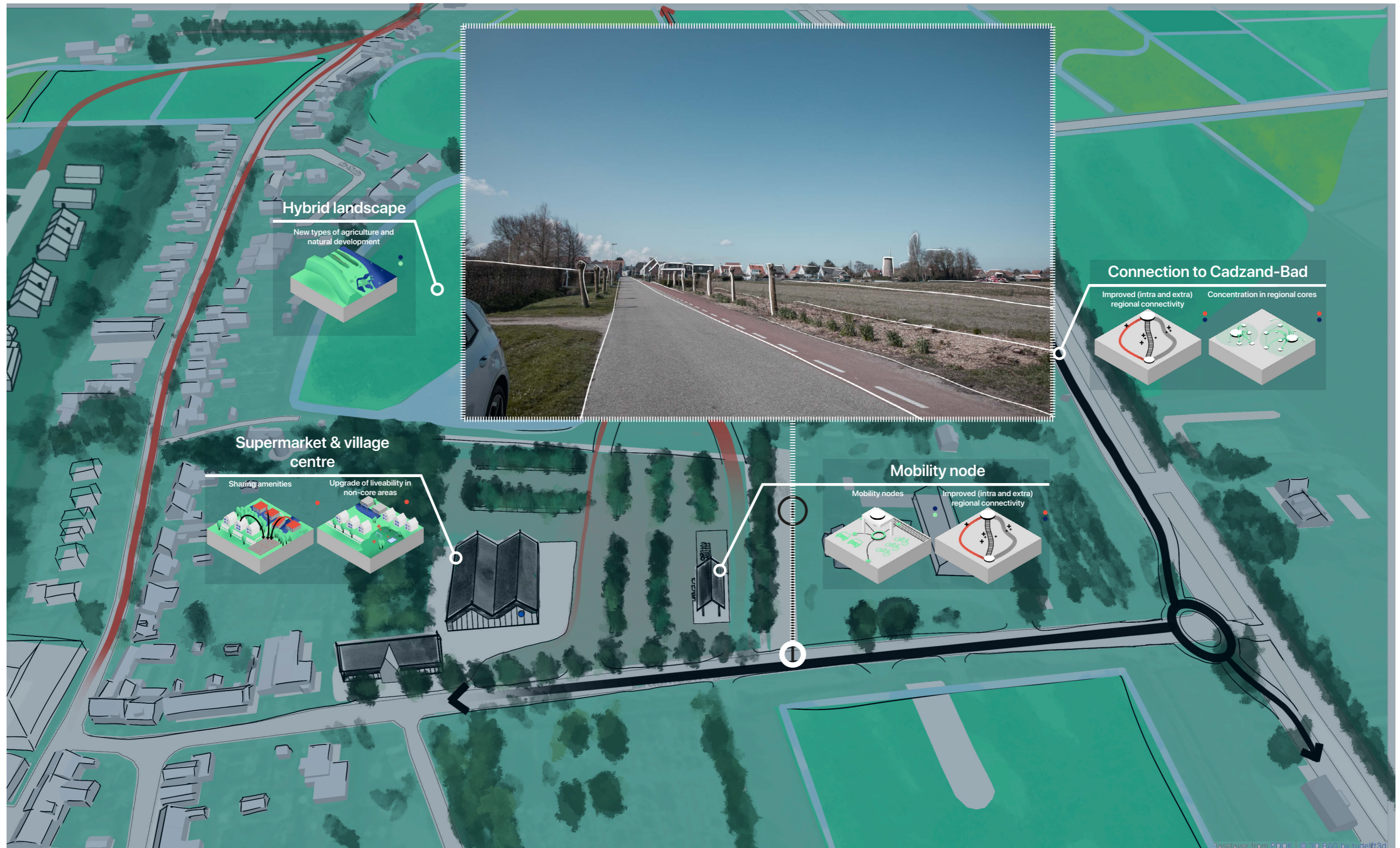
Section including different flows and urban, recreational and agricultural landscape & functions (Author, 2021)

Design | Amenity centre



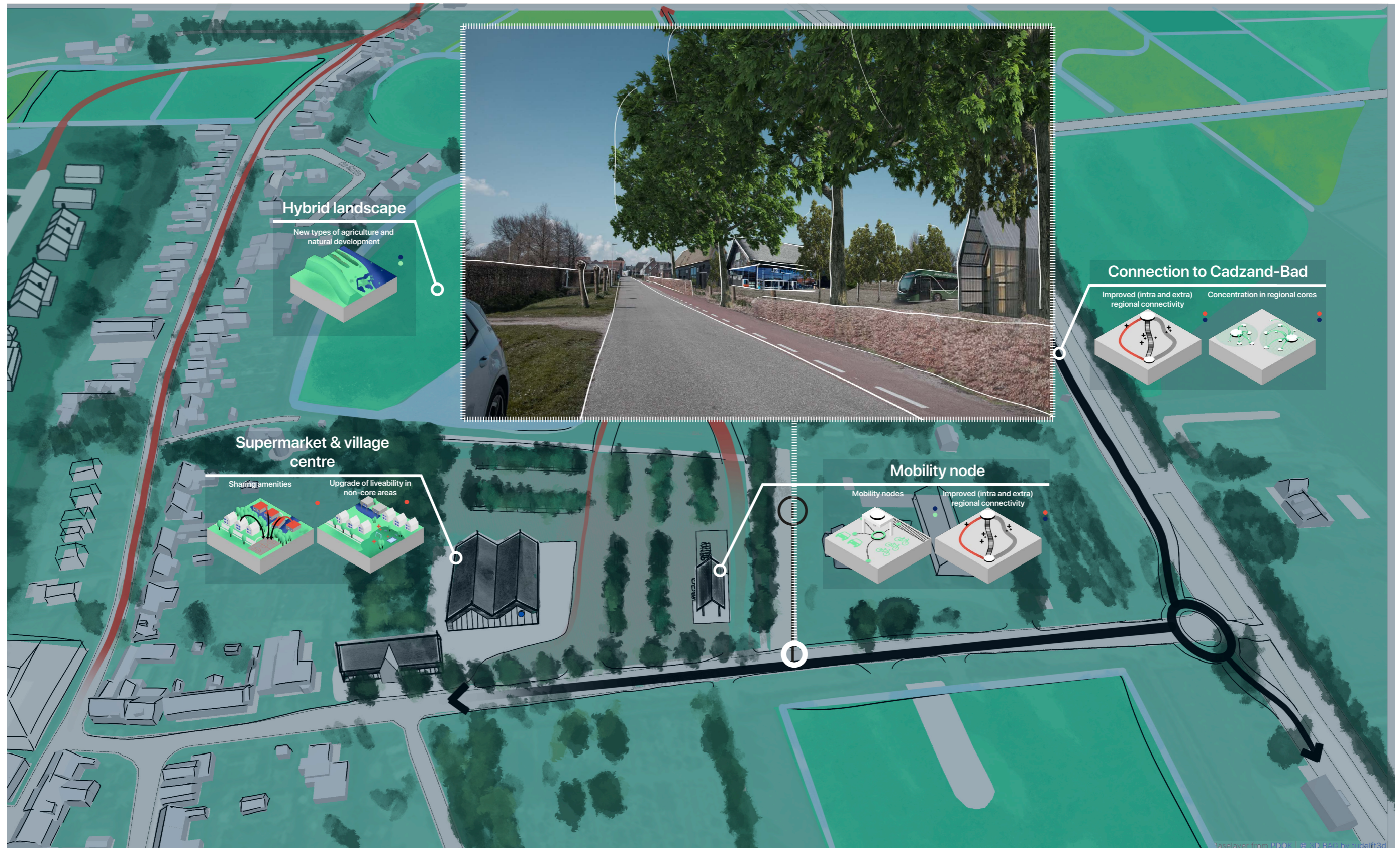
Design of Cadzand entrance, amenity centre and surroundings (Author, 2021)

Design | Amenity centre



Design of Cadzand entrance, amenity centre and surroundings (Author, 2021)

Design | Amenity centre

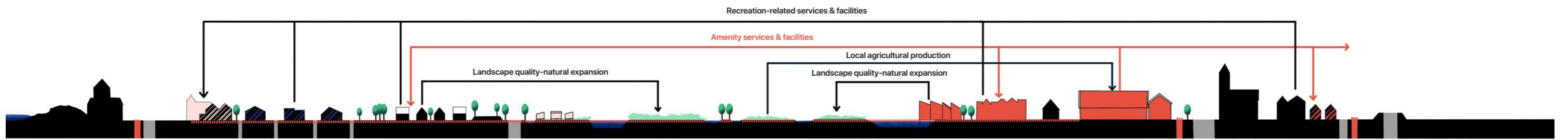


Design of Cadzand entrance, amenity centre and surroundings (Author, 2021)

Design II



Development of in-between hybrid landscape and urban expansion (Author, 2021)



Section including different flows and urban, recreational and agricultural landscape & functions (Author, 2021)

W

E

Design | Housing development & hybrid landscape



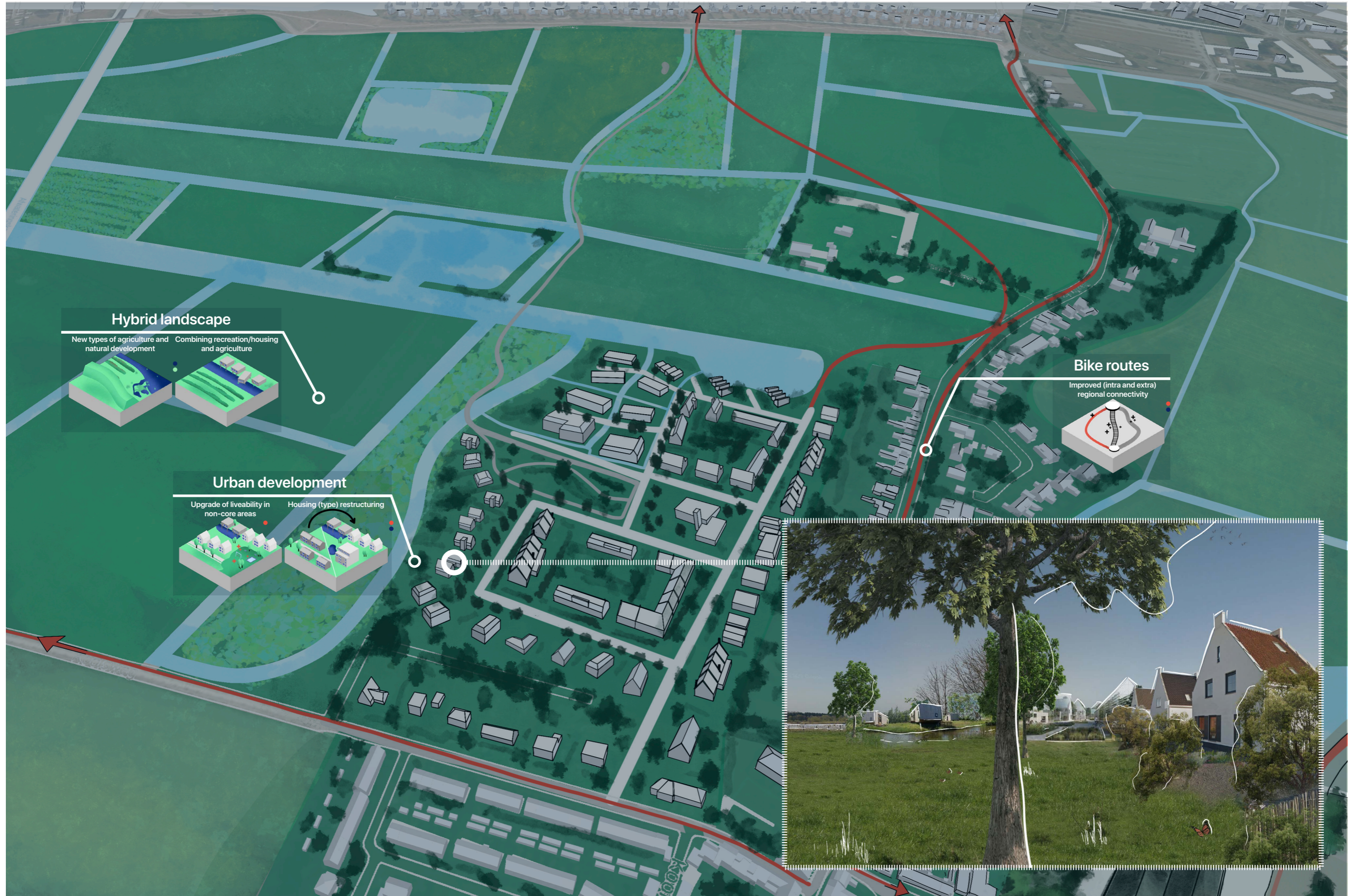
Bird view of hybrid landscape and urban developments (Author, 2021)

Design | Housing development & hybrid landscape



Bird view of hybrid landscape and urban developments(Author, 2021)

Design | Housing development & hybrid landscape

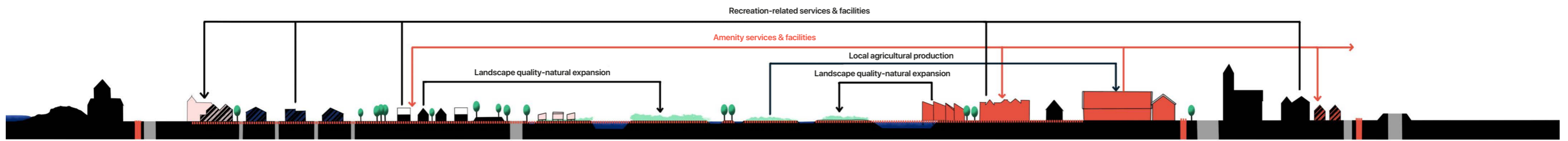


Bird view of hybrid landscape and urban developments (Author, 2021)

Design III



Extension of Cadzand-Bad boulevard and recreational upgrade & expansion (Author, 2021)



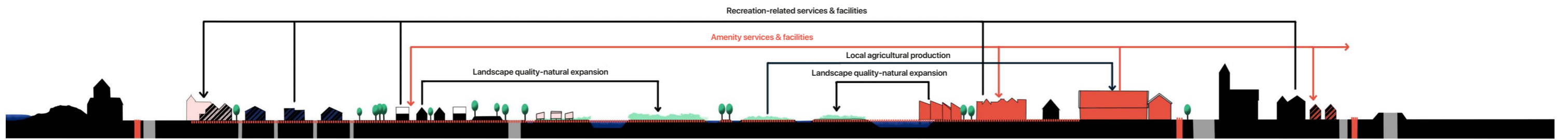
Section including different flows and urban, recreational and agricultural landscape & functions (Author, 2021)



Design III



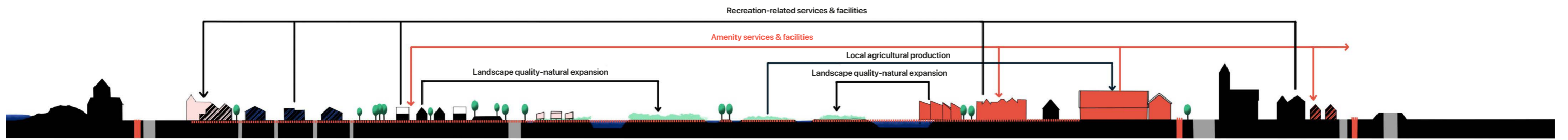
Extension of Cadzand-Bad boulevard and recreational upgrade & expansion (Author, 2021)



Design III



Extension of Cadzand-Bad boulevard and recreational upgrade & expansion (Author, 2021)



Section including different flows and urban, recreational and agricultural landscape & functions (Author, 2021)

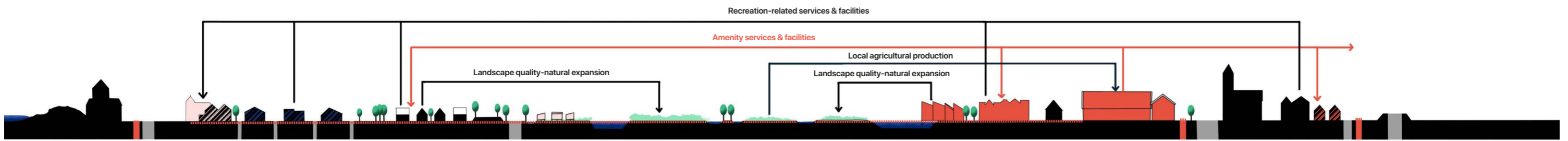
W

E

Design III



Extension of Cadzand-Bad boulevard and recreational upgrade & expansion (Author, 2021)



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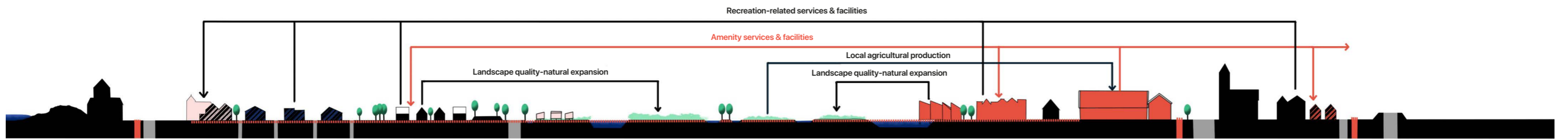
Section including different flows and urban, recreational and agricultural landscape & functions (Author, 2021)



Design III



Extension of Cadzand-Bad boulevard and recreational upgrade & expansion (Author, 2021)



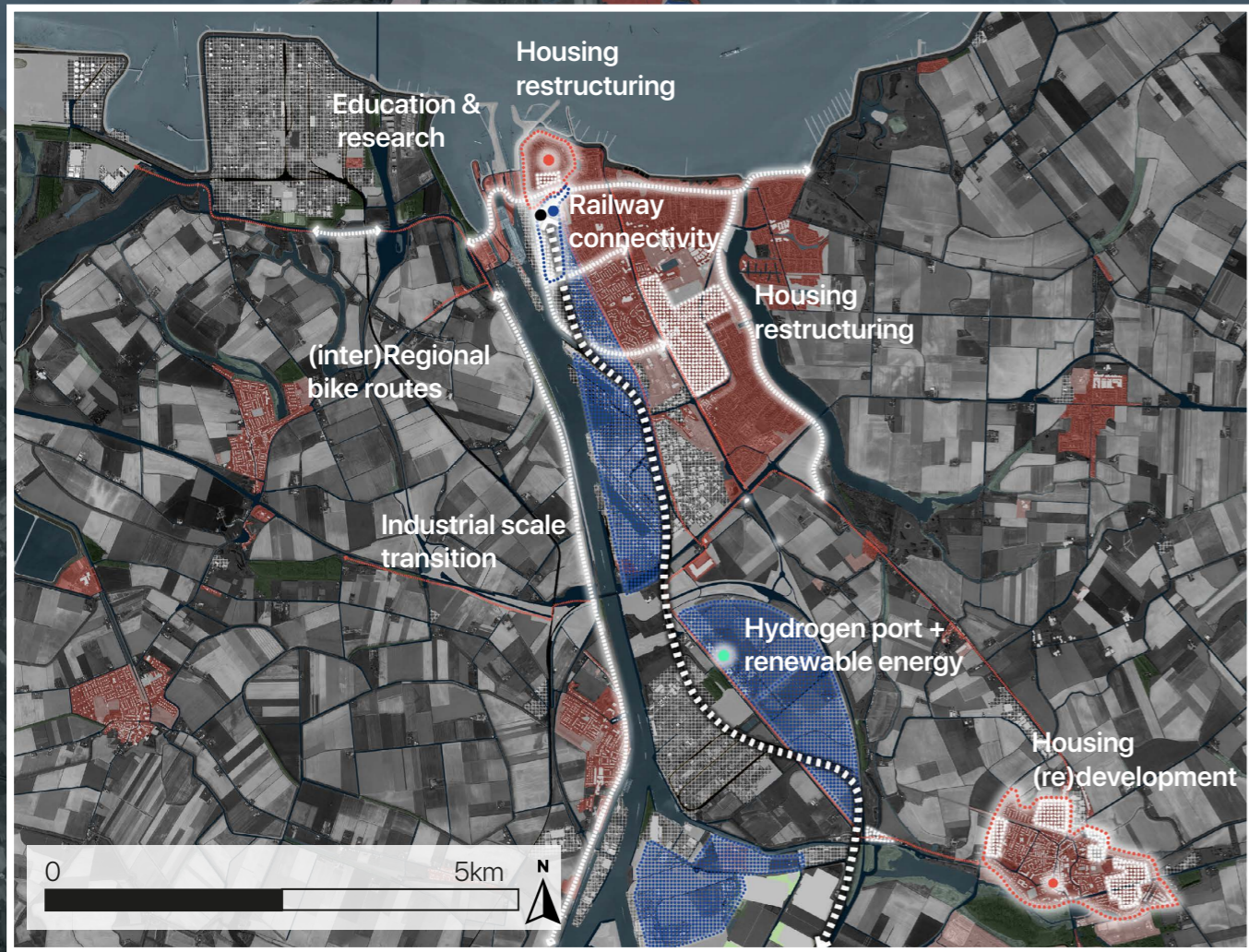
W

E

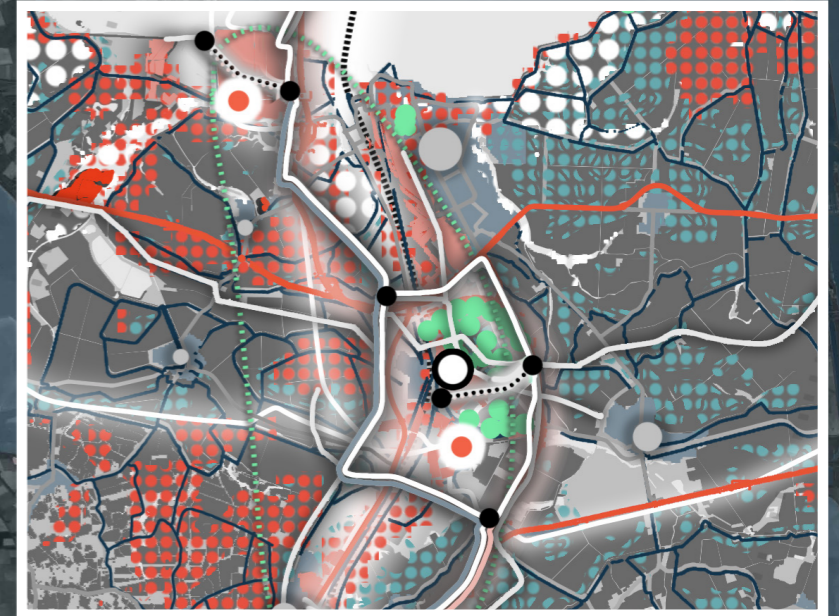
Section including different flows and urban, recreational and agricultural landscape & functions (Author, 2021)



Cluster II Industrial | Canal Zone-Terneuzen



Design locations (Author, 2021)



Risks defined in analysis (Author, 2021)

Canal Zone

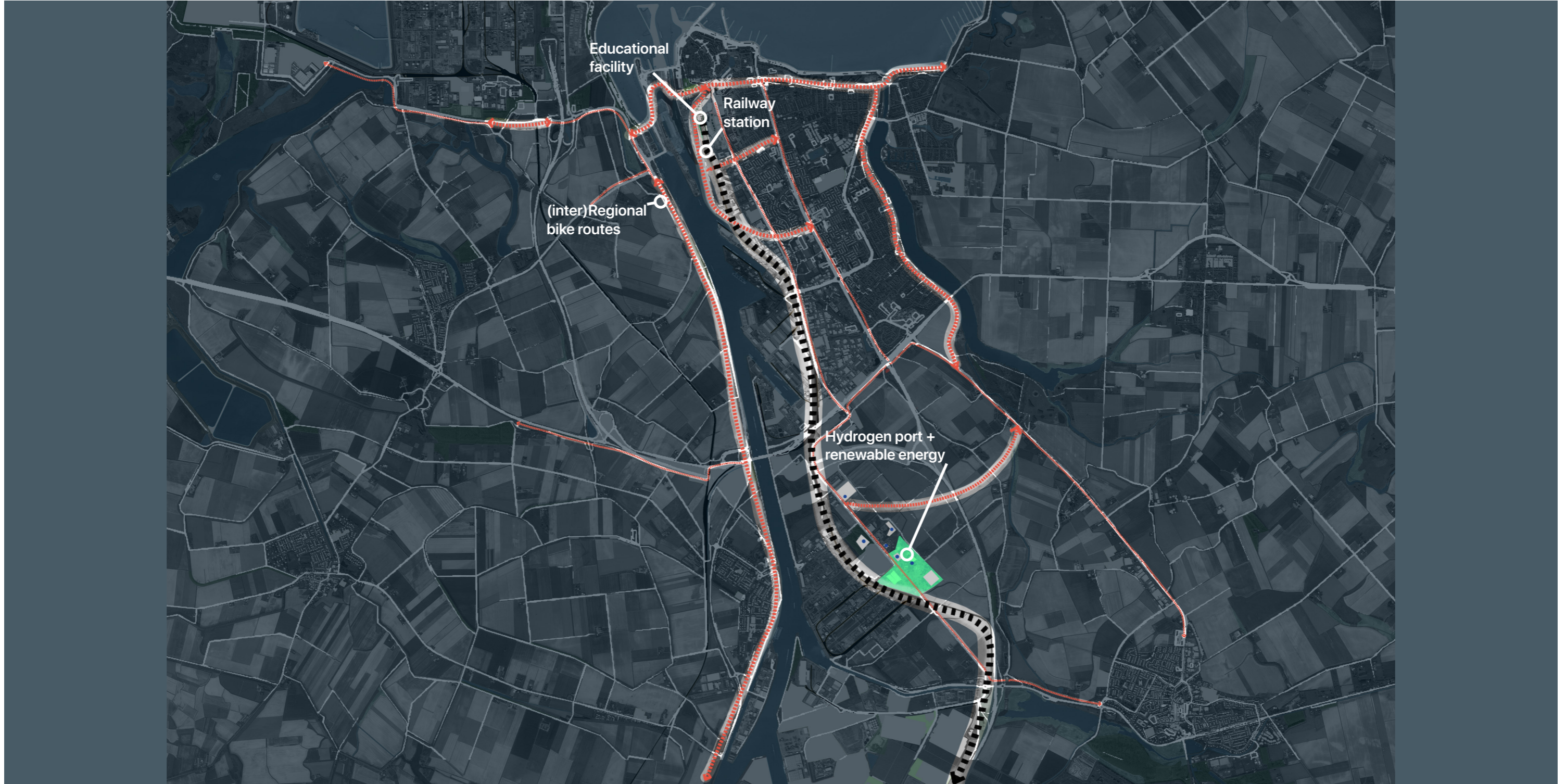


Current urban situation (Author, 2021)

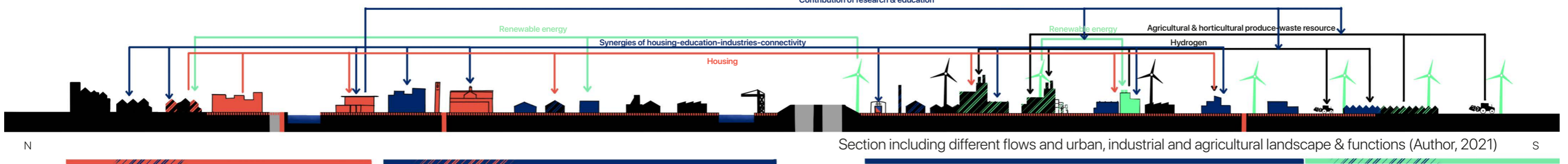


Design principles (Author, 2021)

Design I

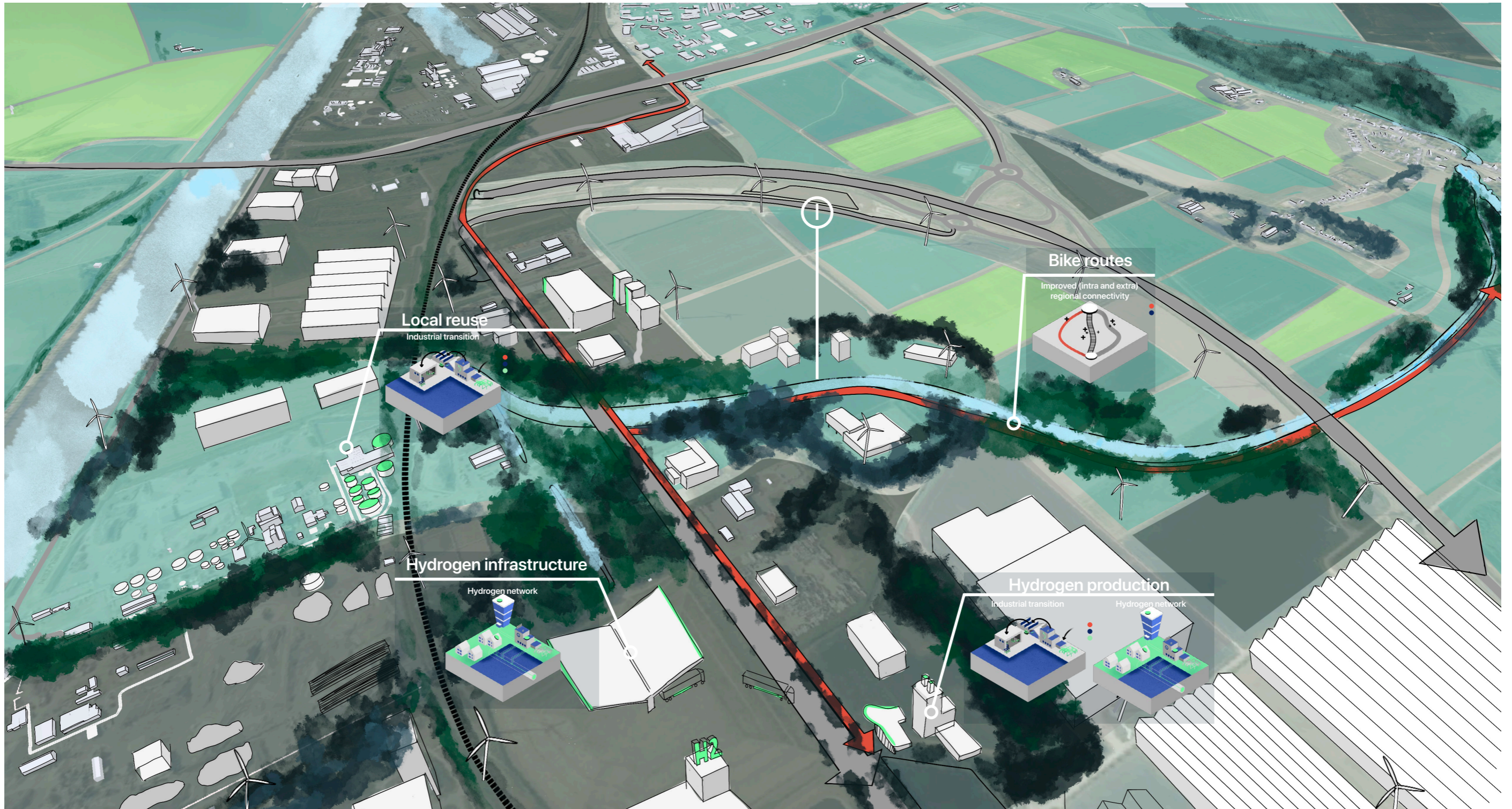


Improving connectivity by train & bike and hydrogen production facilities (Author, 2021)



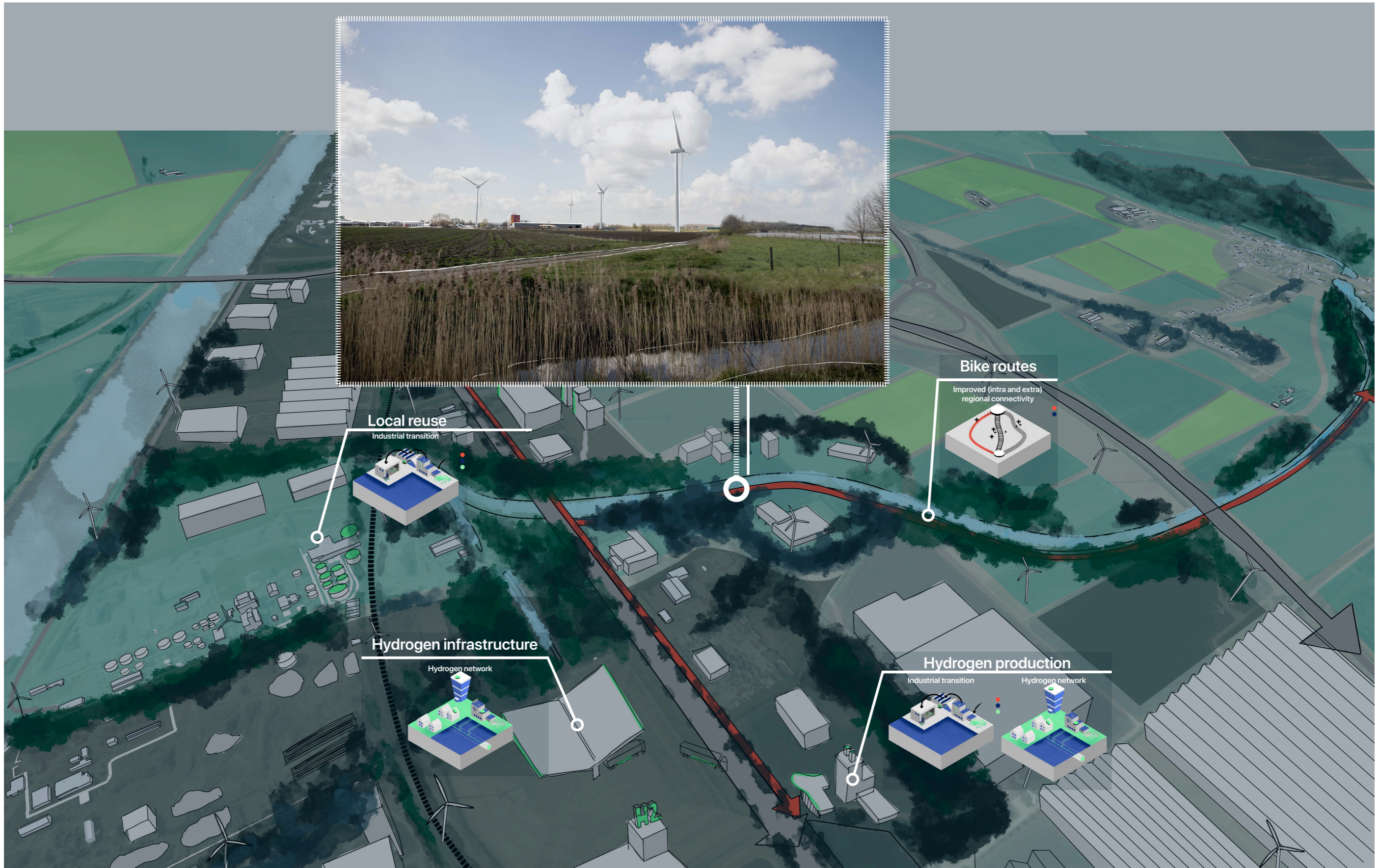
Section including different flows and urban, industrial and agricultural landscape & functions (Author, 2021)

Design | Industrial landscape



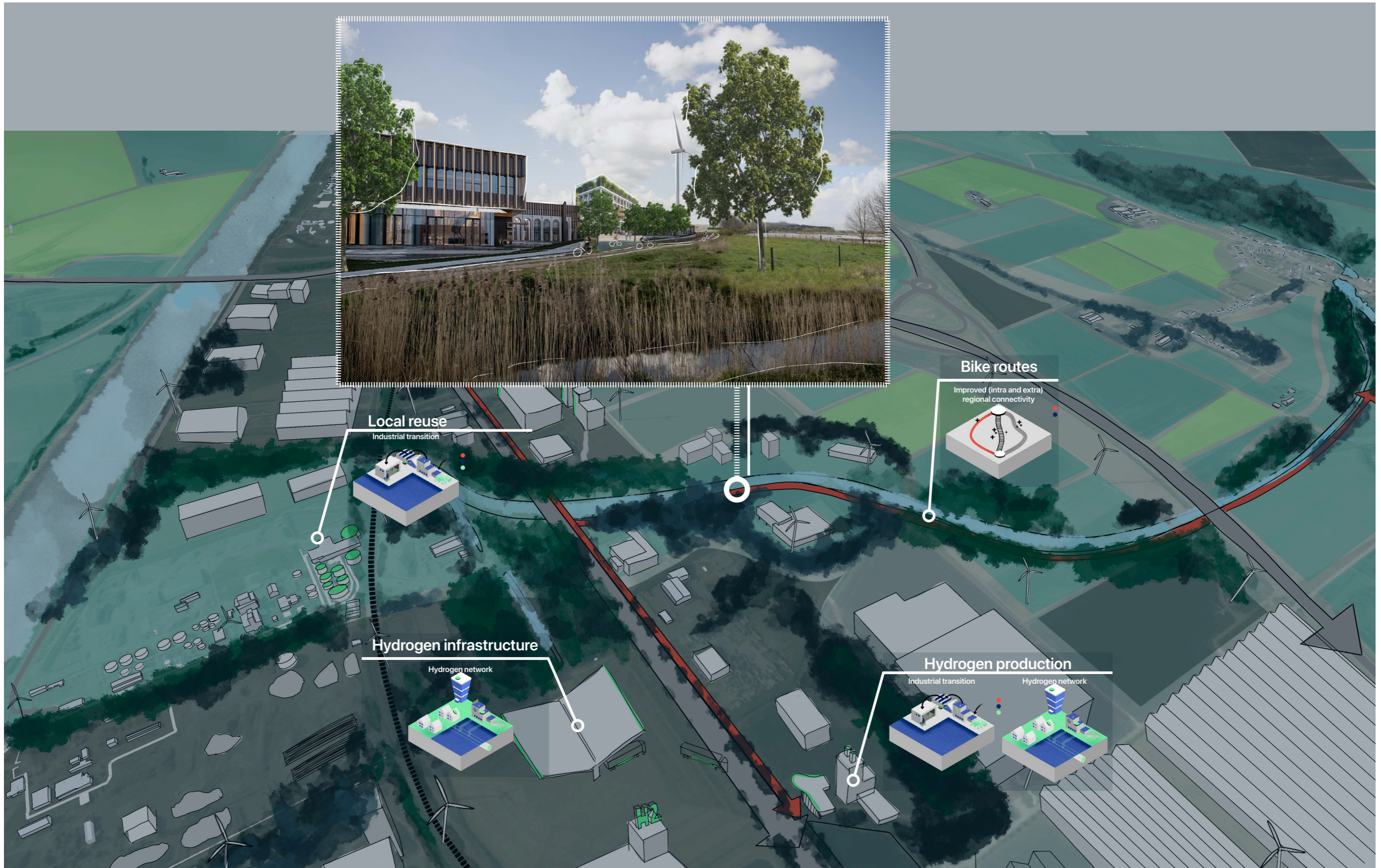
Bird view of industrial developments (Author, 2021)

Design | Industrial landscape



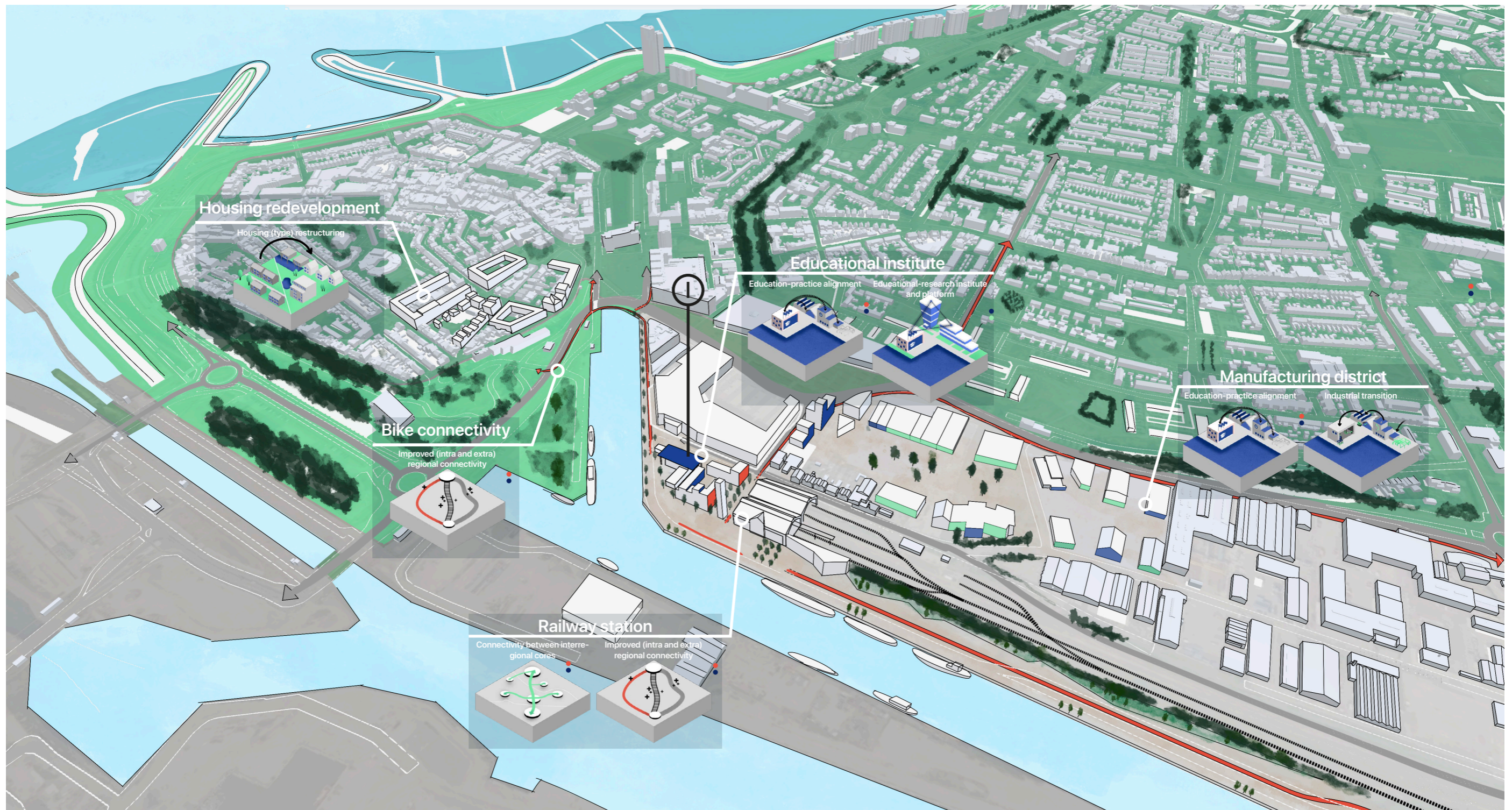
Bird view of industrial developments (Author, 2021)

Design | Industrial landscape



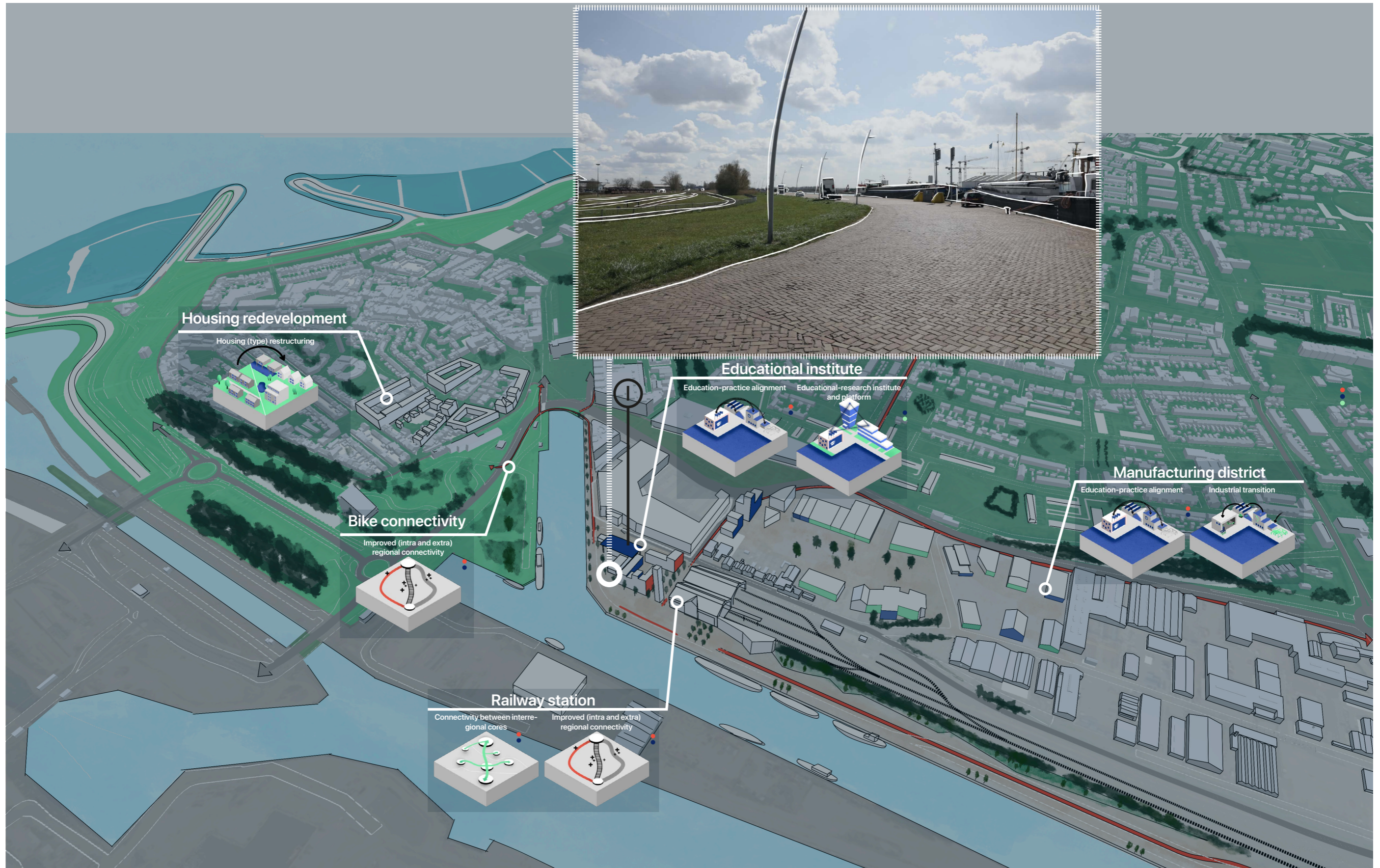
Bird view of industrial developments (Author, 2021)

Design | Station area



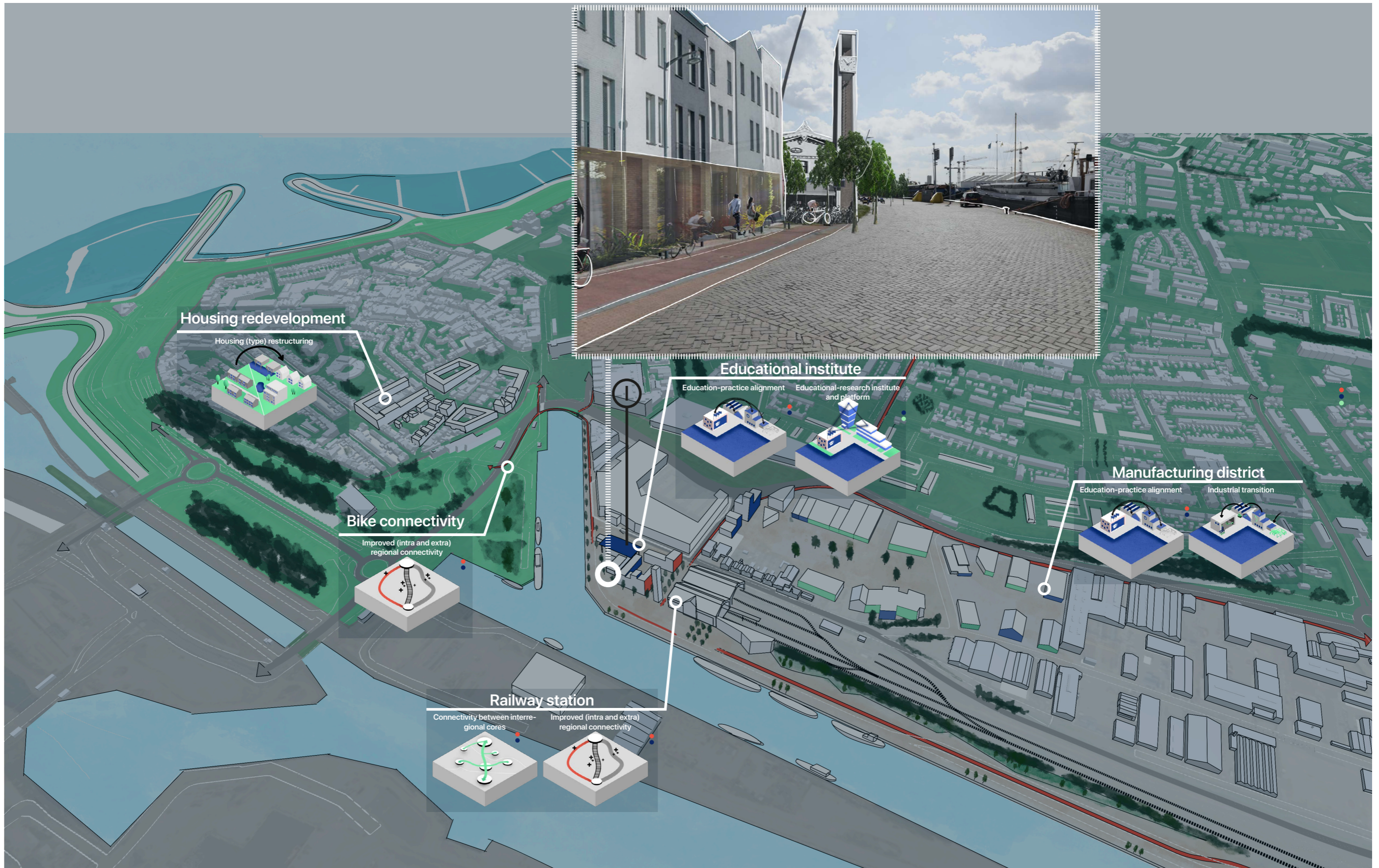
Bird view of station area with education & research facilities and urban and industrial redevelopments (Author, 2021)

Design | Station area



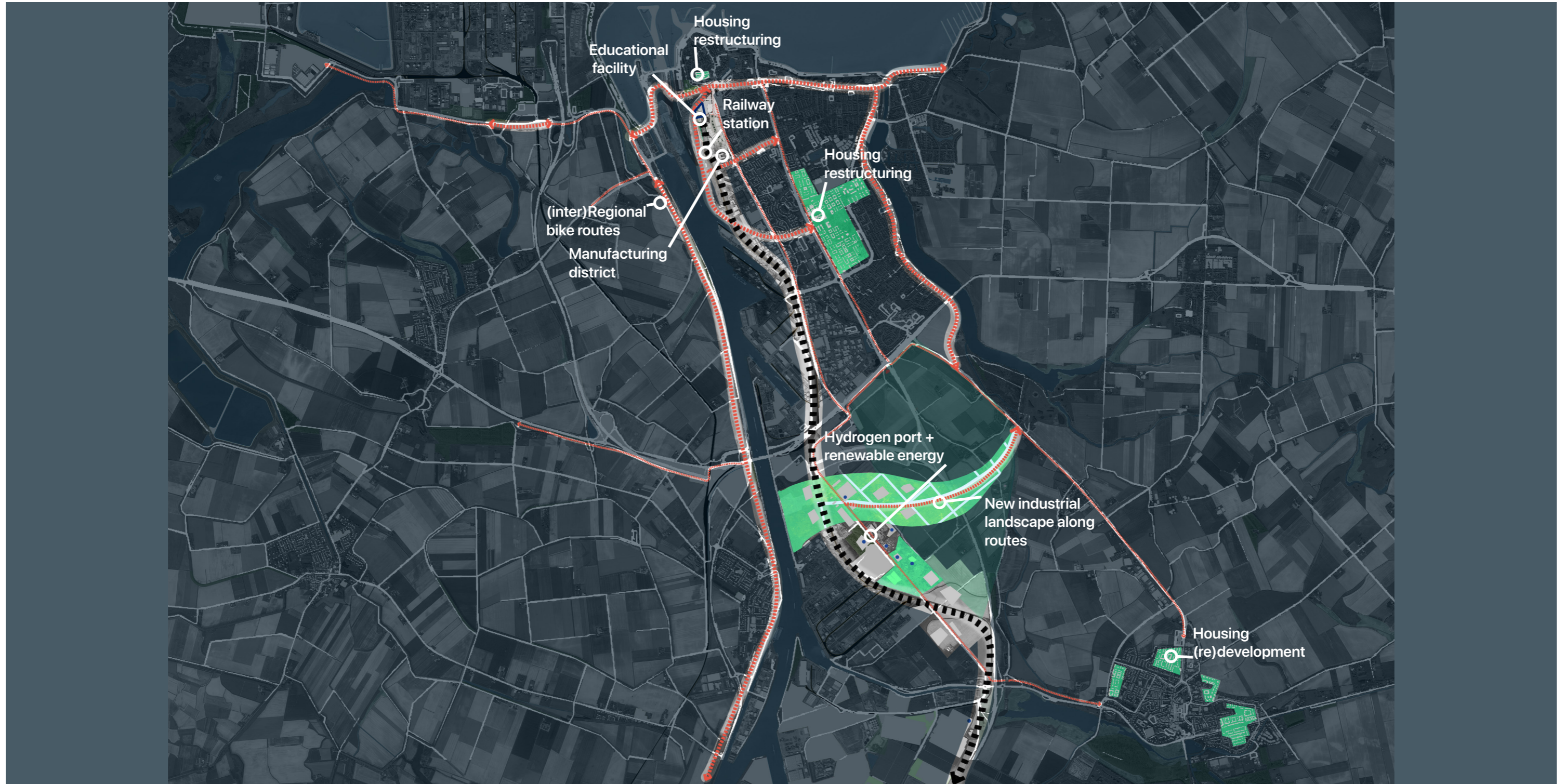
Bird view of station area with education & research facilities and urban and industrial redevelopments (Author, 2021)

Design | Station area

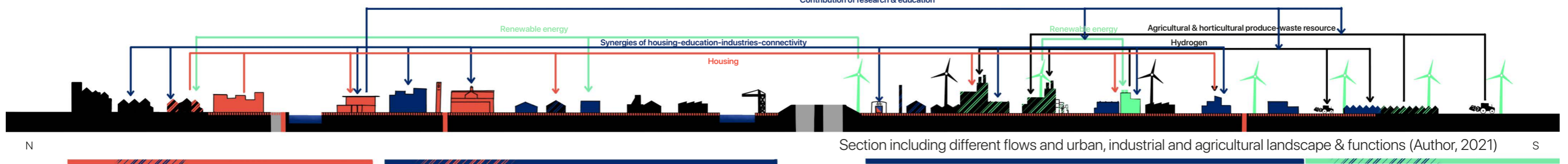


Bird view of station area with education & research facilities and urban and industrial redevelopments (Author, 2021)

Design II



Development of the industrial landscape, station area and housing locations in Axel village & Terneuzen city (Author, 2021)

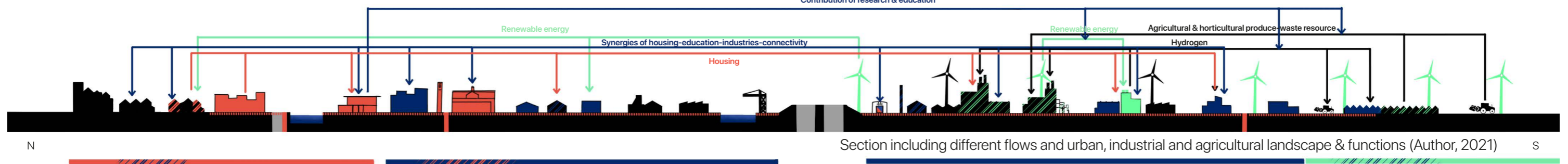


Section including different flows and urban, industrial and agricultural landscape & functions (Author, 2021)

Design II



Development of the industrial landscape, station area and housing locations in Axeltoren village & Terneuzen city (Author, 2021)

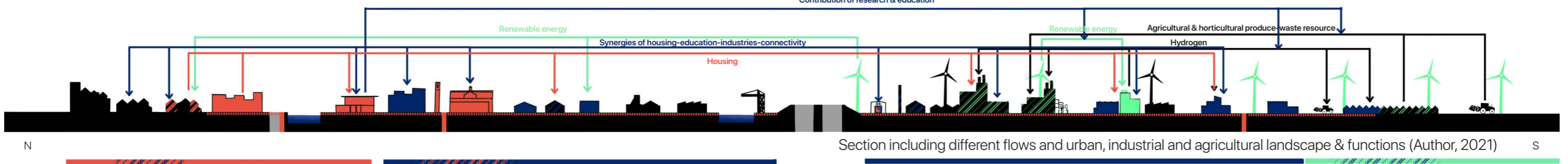


Design II



7.28.4 Impression of proposed manufacturing district (Author, 2021; Based on: Google, 2021)

Development of the industrial landscape, station area and housing locations in Axel village & Terneuzen city (Author, 2021)

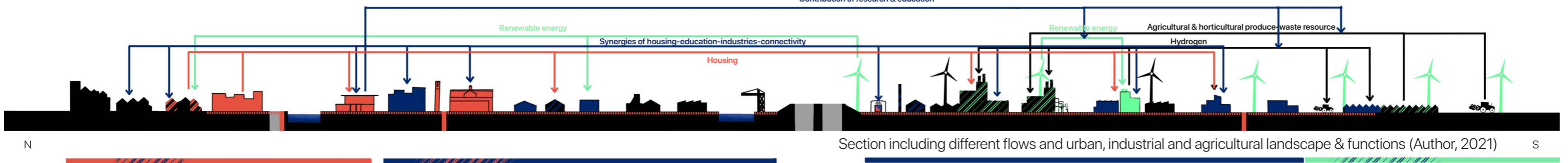


Design II



7.28.5 Impression of housing type in need of restructuring to fit the needs of new and current inhabitants (Author, 2021). Based on: Google, 2021)

Development of the industrial landscape, station area and housing locations in Axel village & Terneuzen city (Author, 2021)

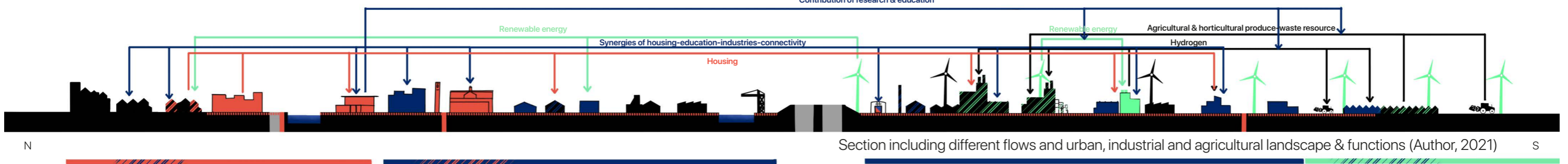


Section including different flows and urban, industrial and agricultural landscape & functions (Author, 2021)

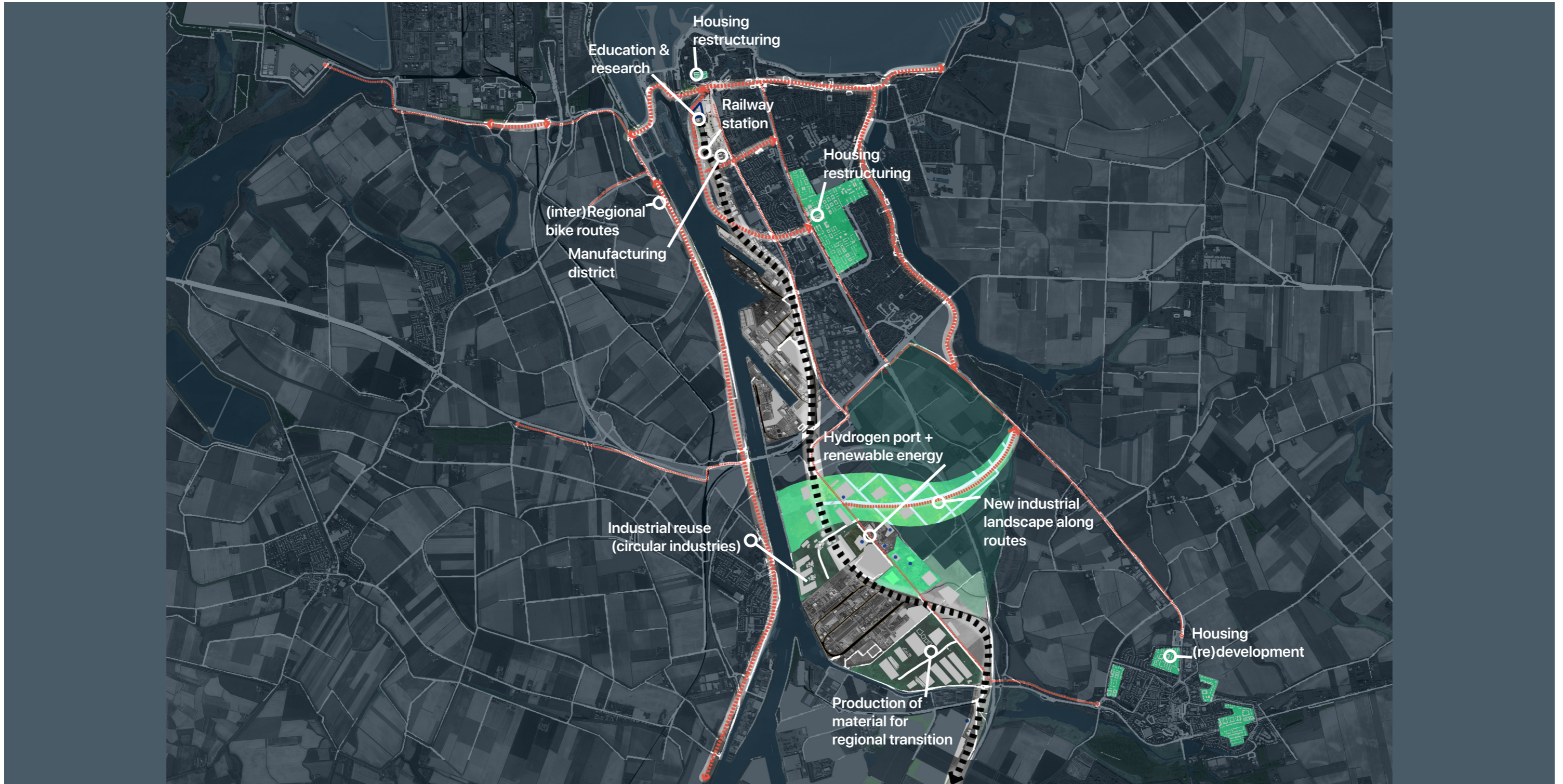
Design II



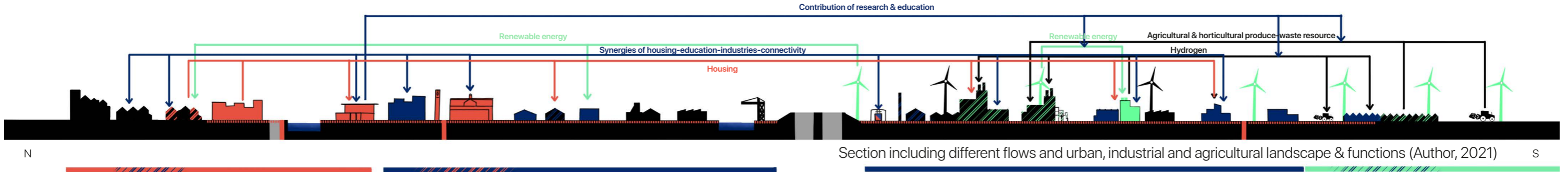
Development of the industrial landscape, station area and housing locations in Axel village & Terneuzen city (Author, 2021)



Design III



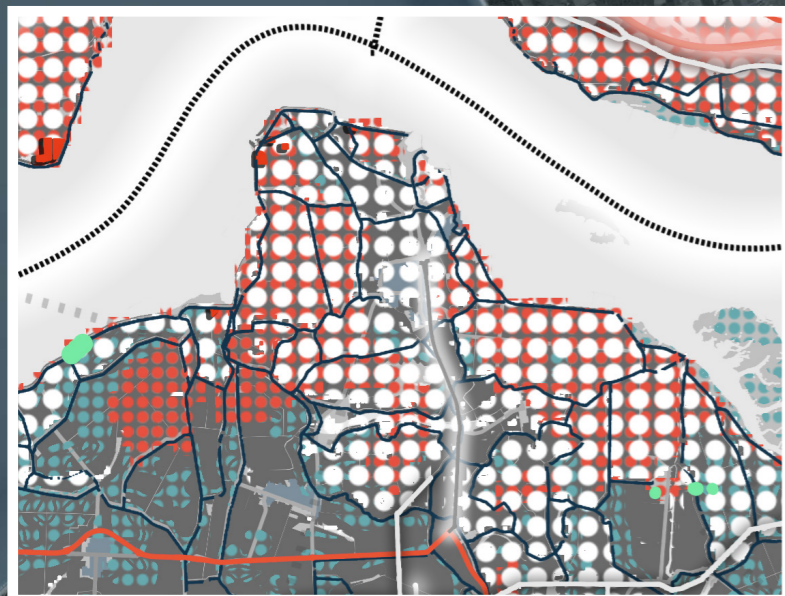
Expanding the industrial landscape with local reuse, recycling & production of construction materials (in alignment with agricultural cluster) (Author, 2021)



Section including different flows and urban, industrial and agricultural landscape & functions (Author, 2021)

Design strategy

Cluster III Agricultural | Kloosterzande-Perkpolder



Risks defined in analysis (Author, 2021)

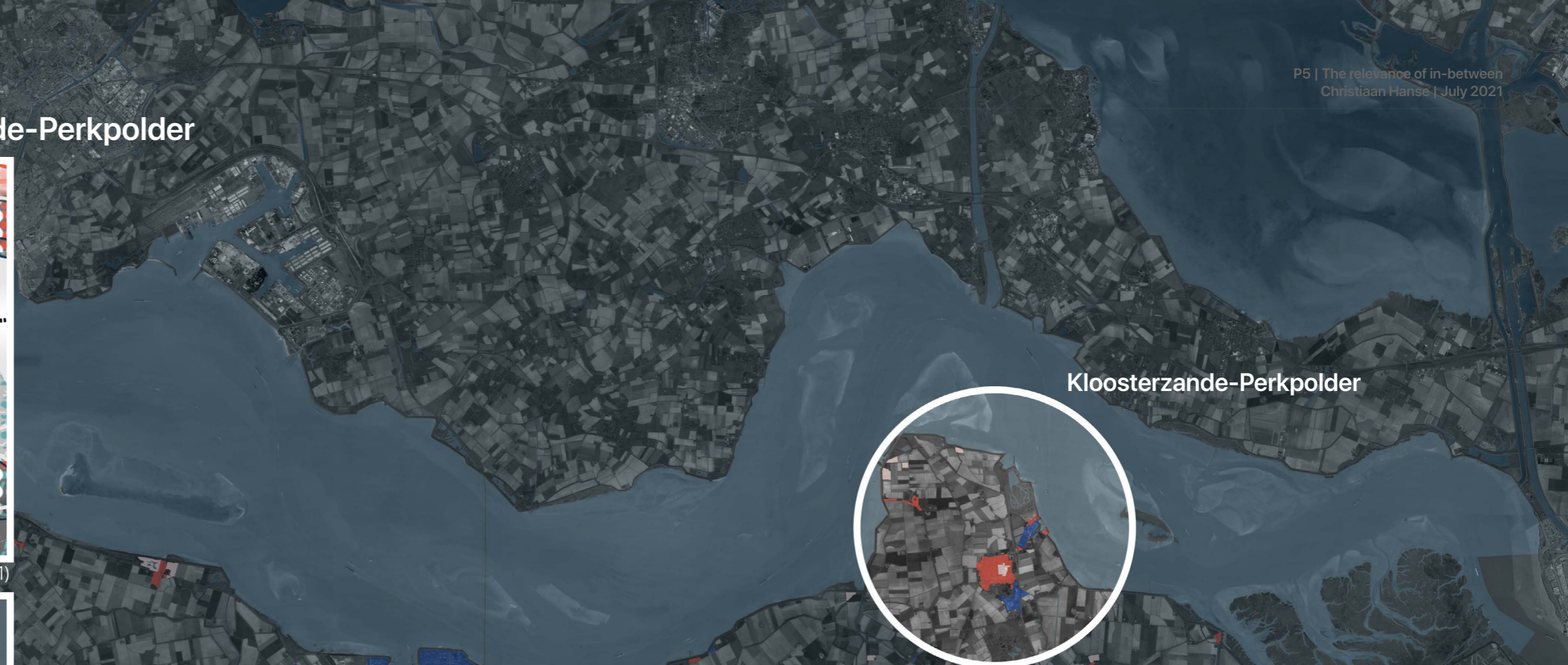


Current urban situation (Author, 2021)



Design principles (Author, 2021)

66/78



Kloosterzande-Perkpolder

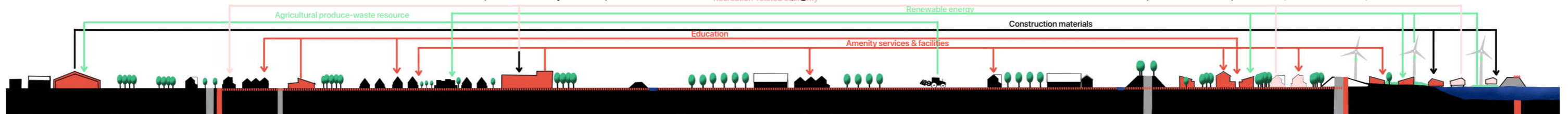


Design locations (Author, 2021)

Design I



First phases of dynamic polder: water & natural area. Upgrade of Kloosterzande centres and connections to Perkpolder developments (Author, 2021)



Section of agricultural cluster including different flows and industrial, urban, agricultural and recreational landscape & functions (Author, 2021)

S

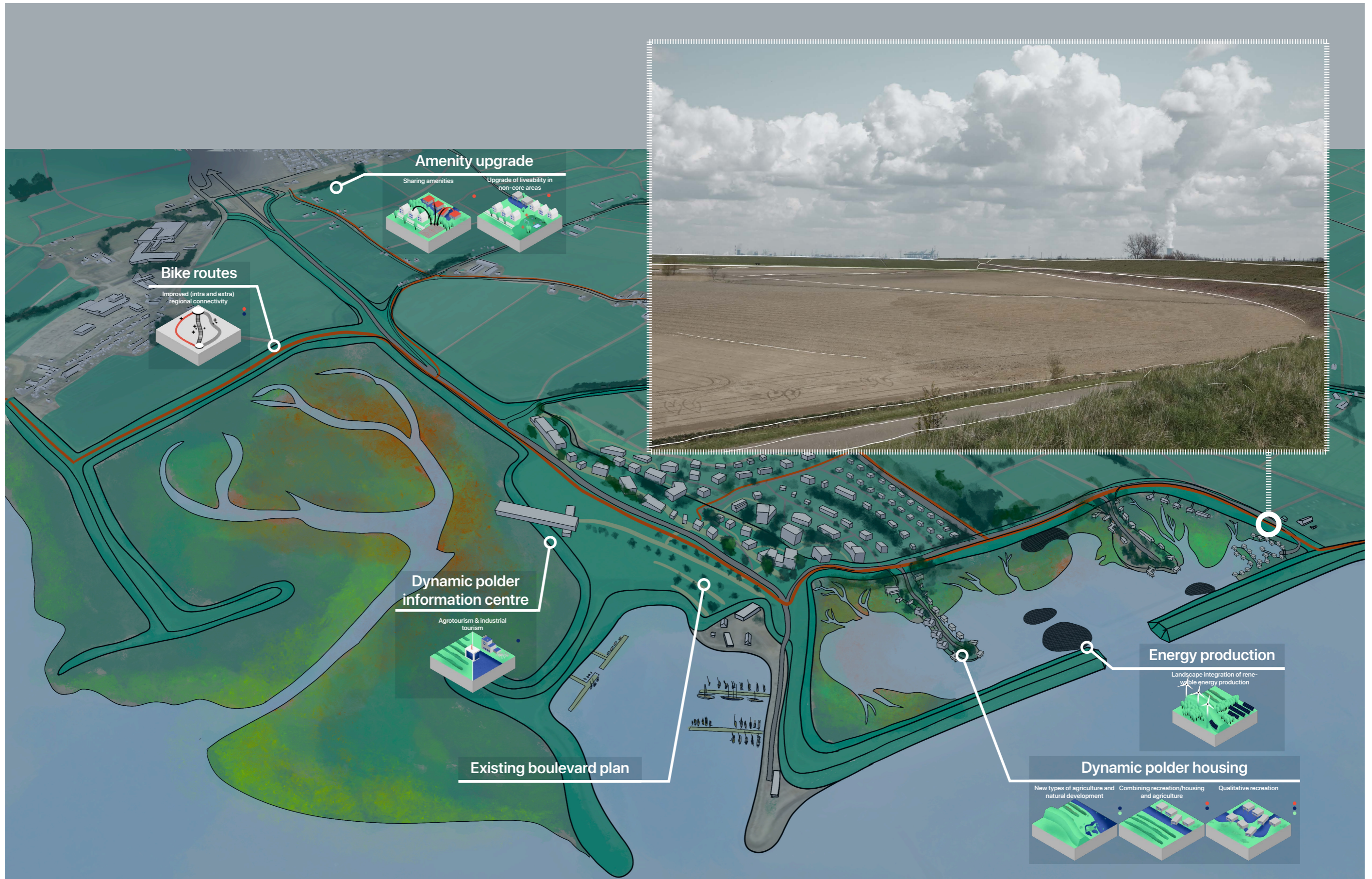
N

Design | Dynamic polders



Bird view of Kloosterzande developments and dynamic polders (Author, 2021)

Design | Dynamic polders



Bird view of Kloosterzande developments and dynamic polders (Author, 2021)

Design | Dynamic polders



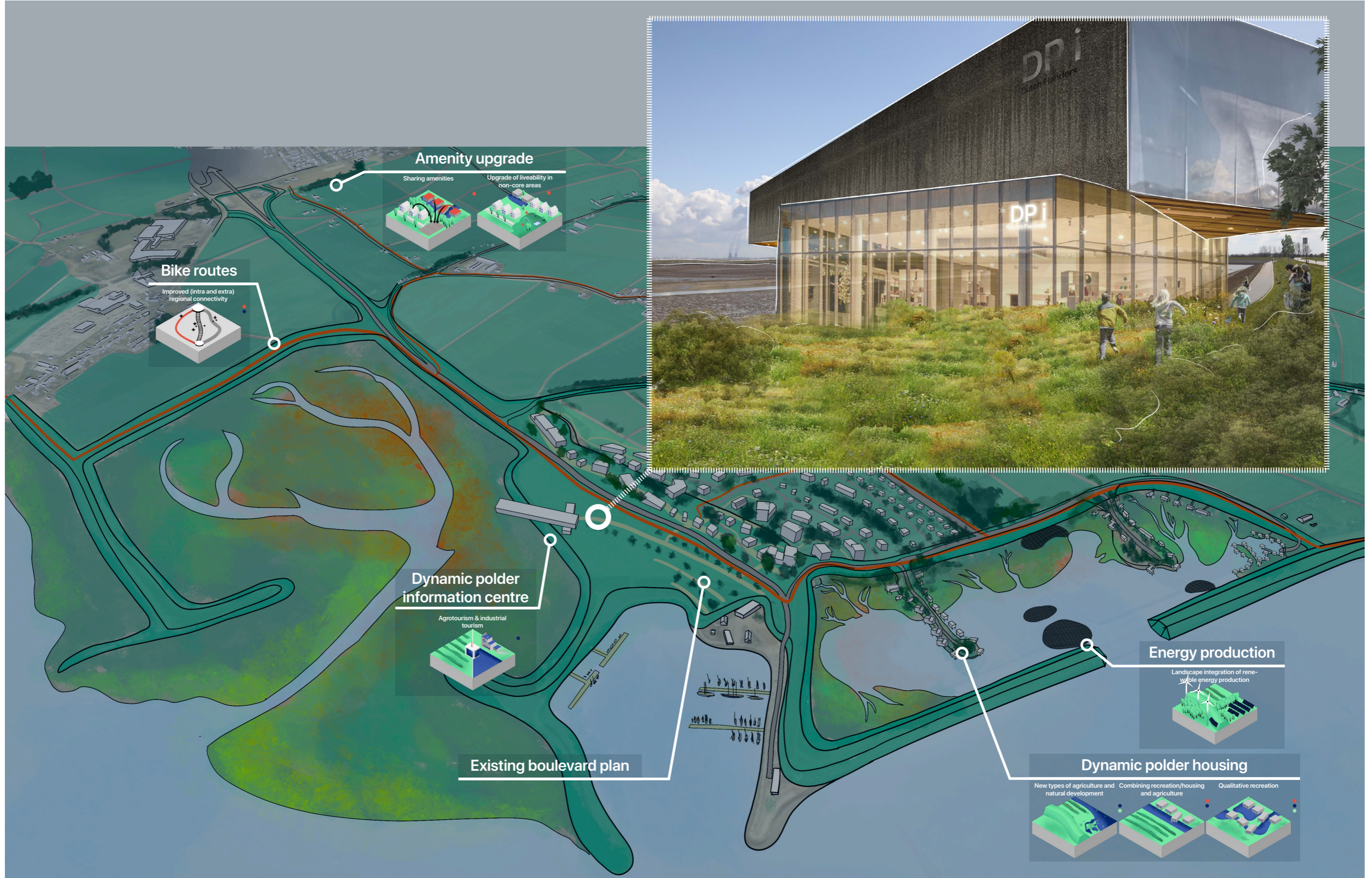
Bird view of Kloosterzande developments and dynamic polders (Author, 2021)

Design | Dynamic polders



Bird view of Kloosterzande developments and dynamic polders (Author, 2021)

Design | Dynamic polders

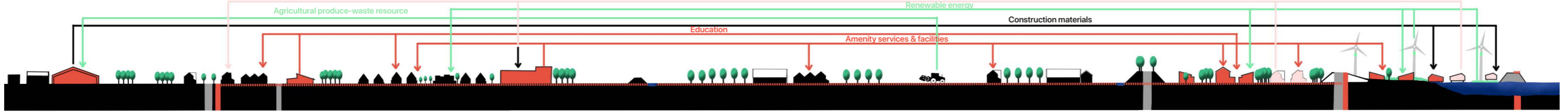


Bird view of Kloosterzande developments and dynamic polders (Author, 2021)

Design II



Second and third steps in dynamic polder phasing: natural area & cultivated land (Author, 2021)



Section of agricultural cluster including different flows and industrial, urban, agricultural and recreational landscape & functions (Author, 2021)

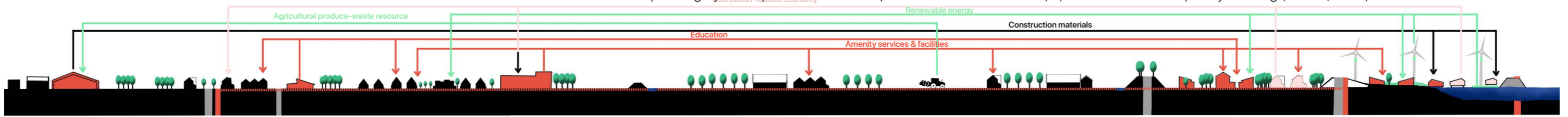
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Design III



Expanding dynamic polders and development of facilities for local (re)construction of temporary housing (Author, 2021)



Section of agricultural cluster including different flows and industrial, urban, agricultural and recreational landscape & functions (Author, 2021)

S

N

Dynamic polder-phases



7.41.1 Impression of current polder landscape and final stage (Author, 2021)



7.41.2 Impression dynamic polder landscape in water phase (Author, 2021)

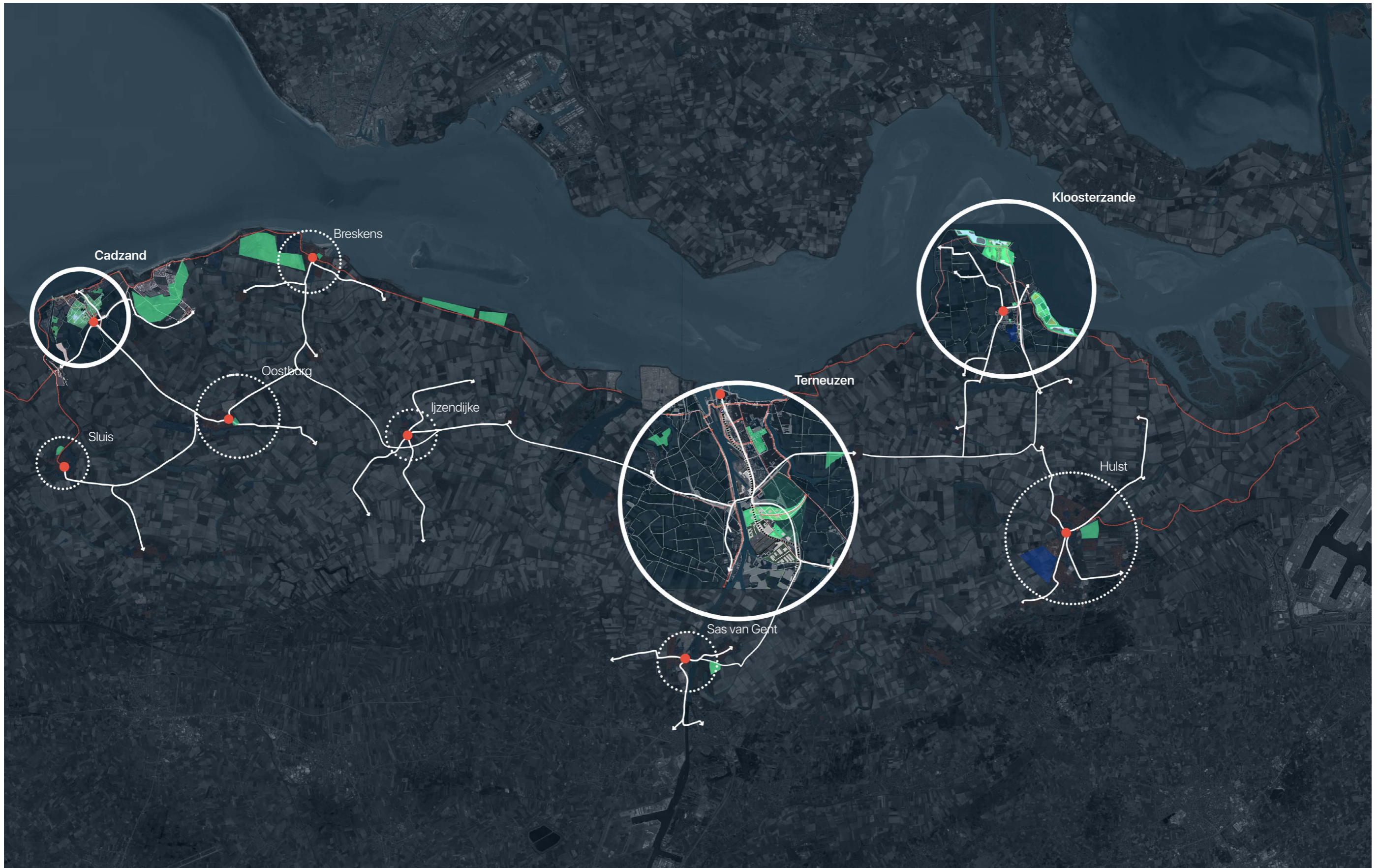


7.41.3 Impression dynamic polder landscape in natural phase (Author, 2021)



7.41.4 Impression dynamic polder landscape in cultivated phase (Author, 2021)

Application on regional scale



Application potentials of the strategy in similar locations in Dutch Flanders (Author, 2021)

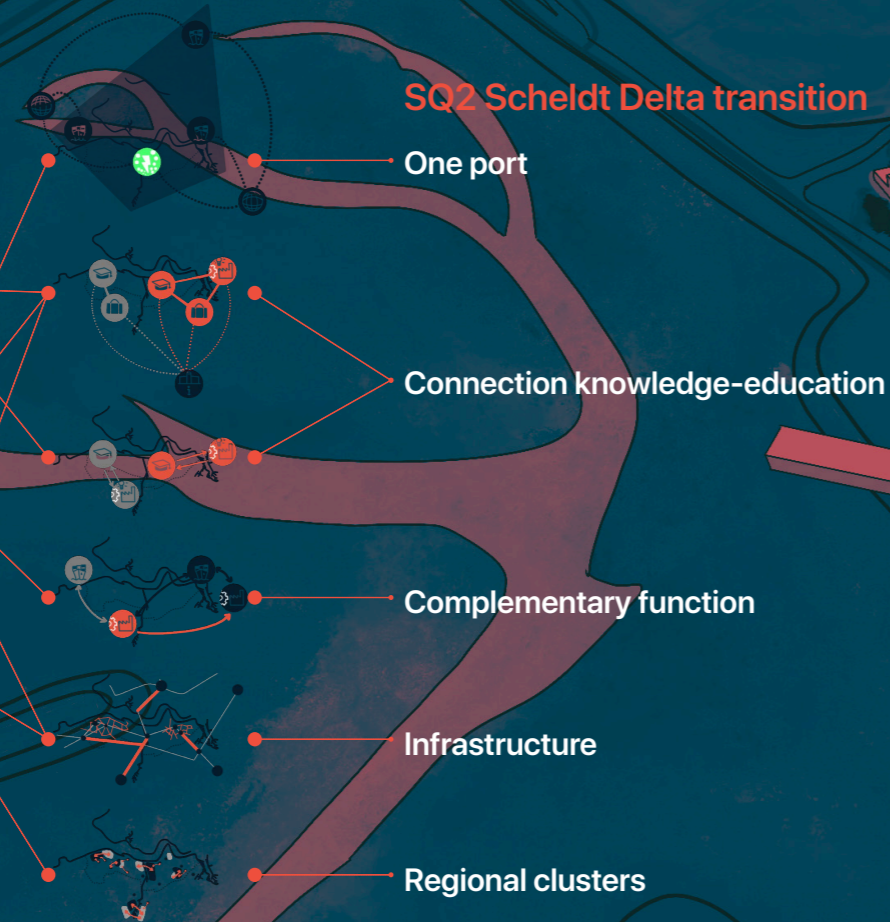
Conclusion & Discussion

Research question

'How can the Dutch Flanders region reposition the economic, social and environmental role of its urban and peri-urban areas as part of the larger functional transition of the Scheldt Delta?'

SQ1 Regional decline

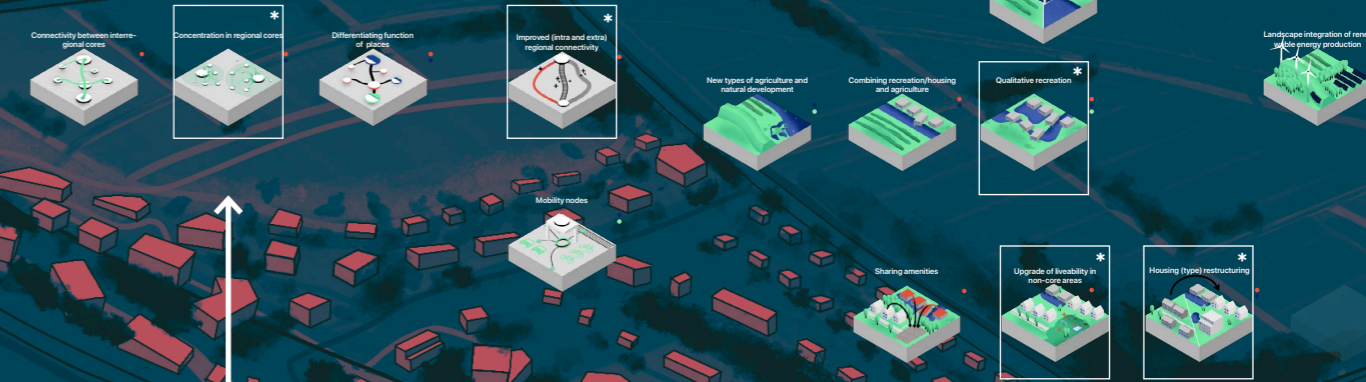
Liveability
Governance alignment
Connectivity



SQ2 Scheldt Delta transition

One port
Connection knowledge-education
Complementary function
Infrastructure
Regional clusters

SQ3 Strategic interventions



SQ4 Planning strategy

- Focus through [Coastal, Industrial & Agricultural] cluster based on context
- Using synergies of Cluster-based, Regional & Local intervention, aligning [Education-Employment-Liveability-Connectivity] to counter decline

Future research

- Cultural & institutional differences at implementation
- Legal & economic implementation strategies
- Specific industrial synergies and functions in Scheldt Delta region
- Local demand for design—expanding to other locations

Relation between research elements based on research questions (Author, 2021)



The relevance of in-between

repositioning the role of the urban and peri-urban of the Dutch Flanders region into the larger transition of the Scheldt Delta

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July 2021