

An architectural rendering of a modern urban district at dusk. The scene features several multi-story buildings with illuminated windows and balconies. Some buildings have green roofs with trees. The buildings are situated along a waterfront, with a body of water in the foreground reflecting the lights. The sky is a mix of blue and orange, suggesting sunset or sunrise. In the top left corner, the text 'DE NIEUWE DOKKEN' is written in large, white, bold letters. In the top right corner, there is a logo for 'DuCoop' consisting of a stylized circular graphic and the text 'DuCoop'. A large purple rectangular box is overlaid on the right side of the image, containing white text.

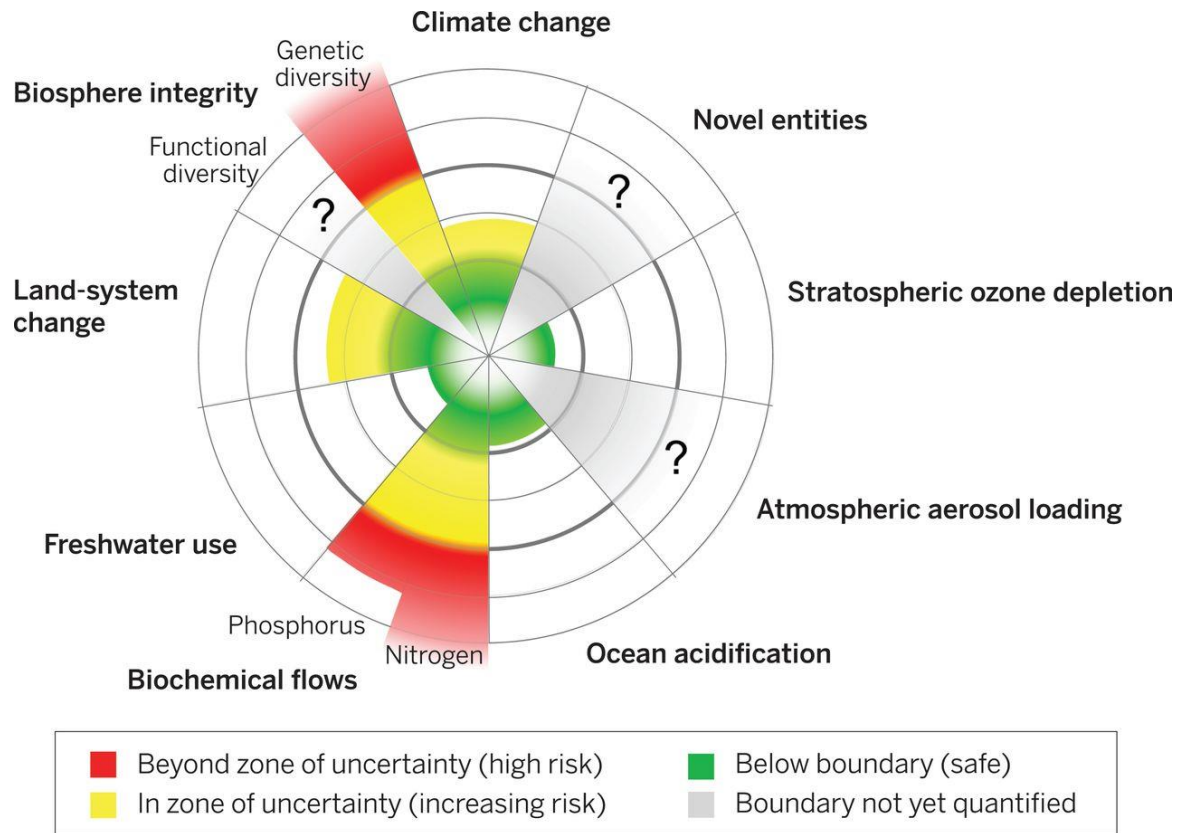
DE NIEUWE DOKKEN



CIRCULAR ECONOMY IN A NEW URBAN DISTRICT IN GHENT

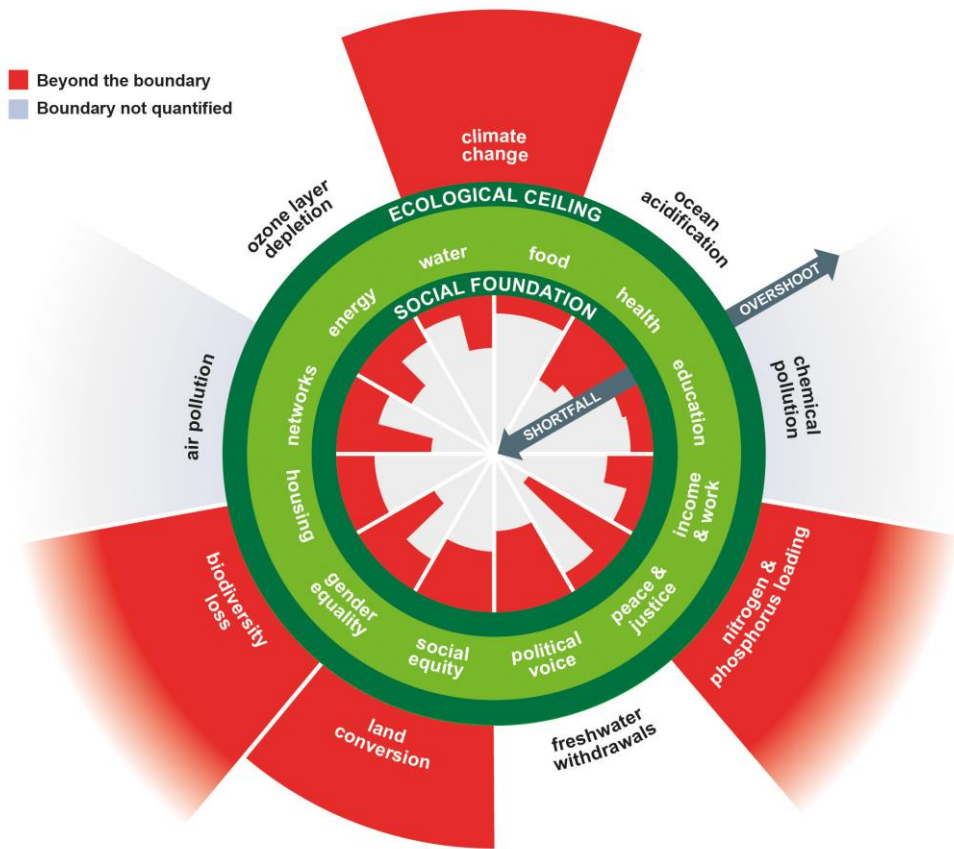
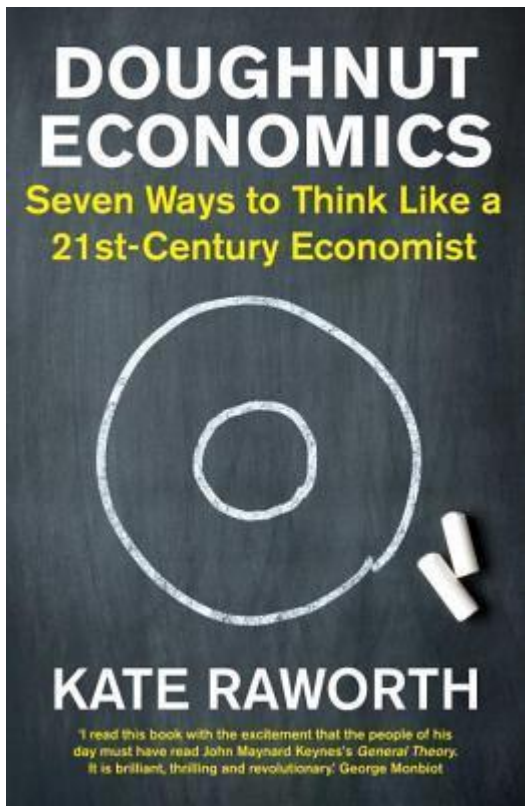
31 May 2018 – Saint Omèr - France
Dries Seuntjens

Planetary boundaries model – 9 boundaries to live within



Steffen et al.,
2015

The Donut Economy - From planetary boundaries to new economical models

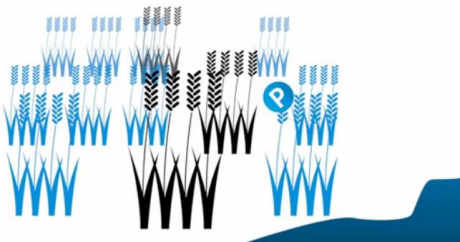


Climate change/globalisation is a *global* process that enacts *locally*

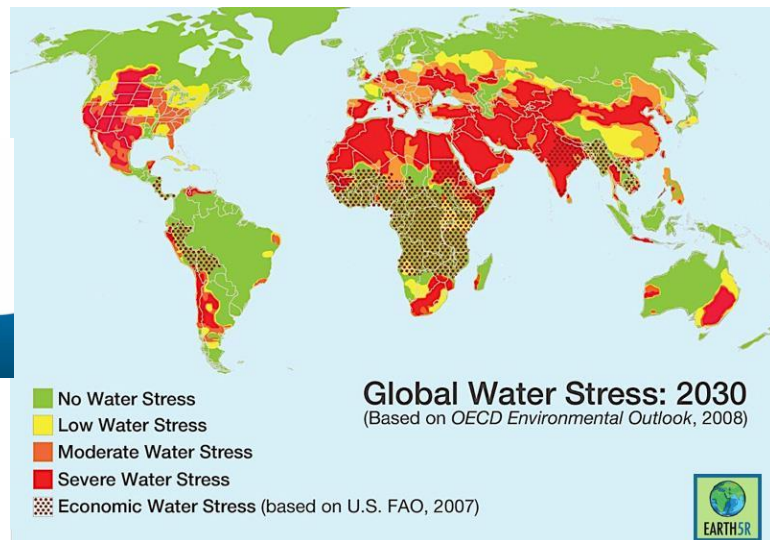
What are the challenges for Flanders?



Energy

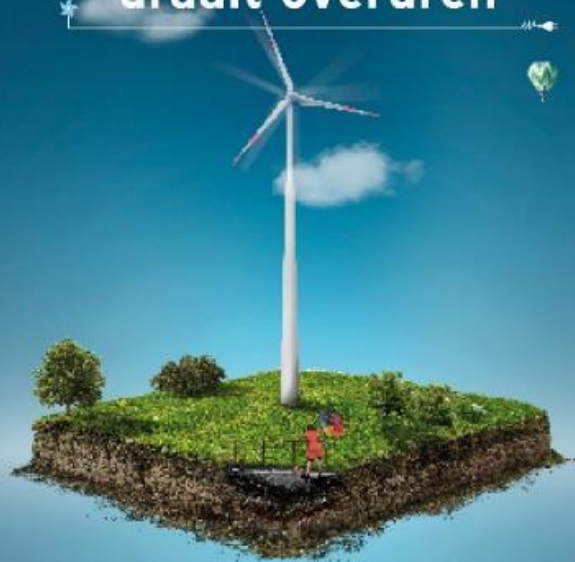


Nutrients

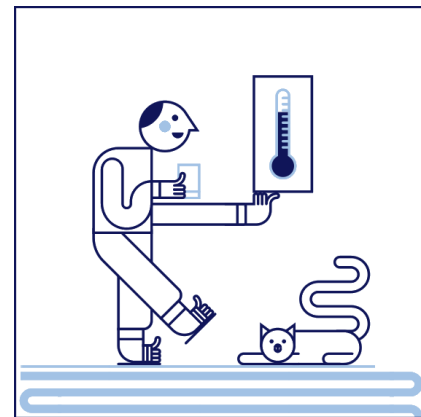
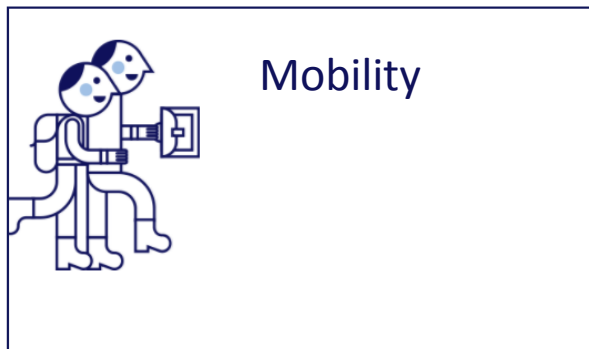
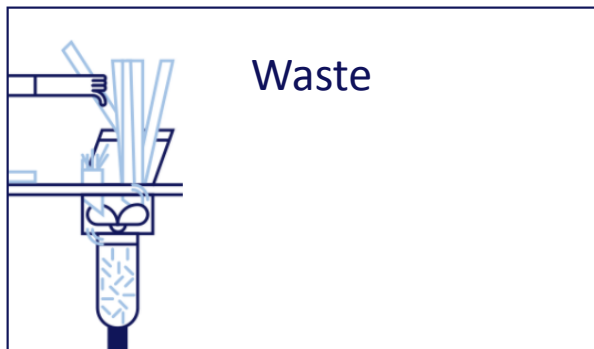
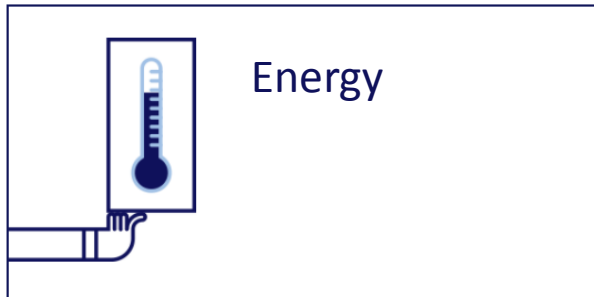


Water

Klimaatstad Gent draait overuren

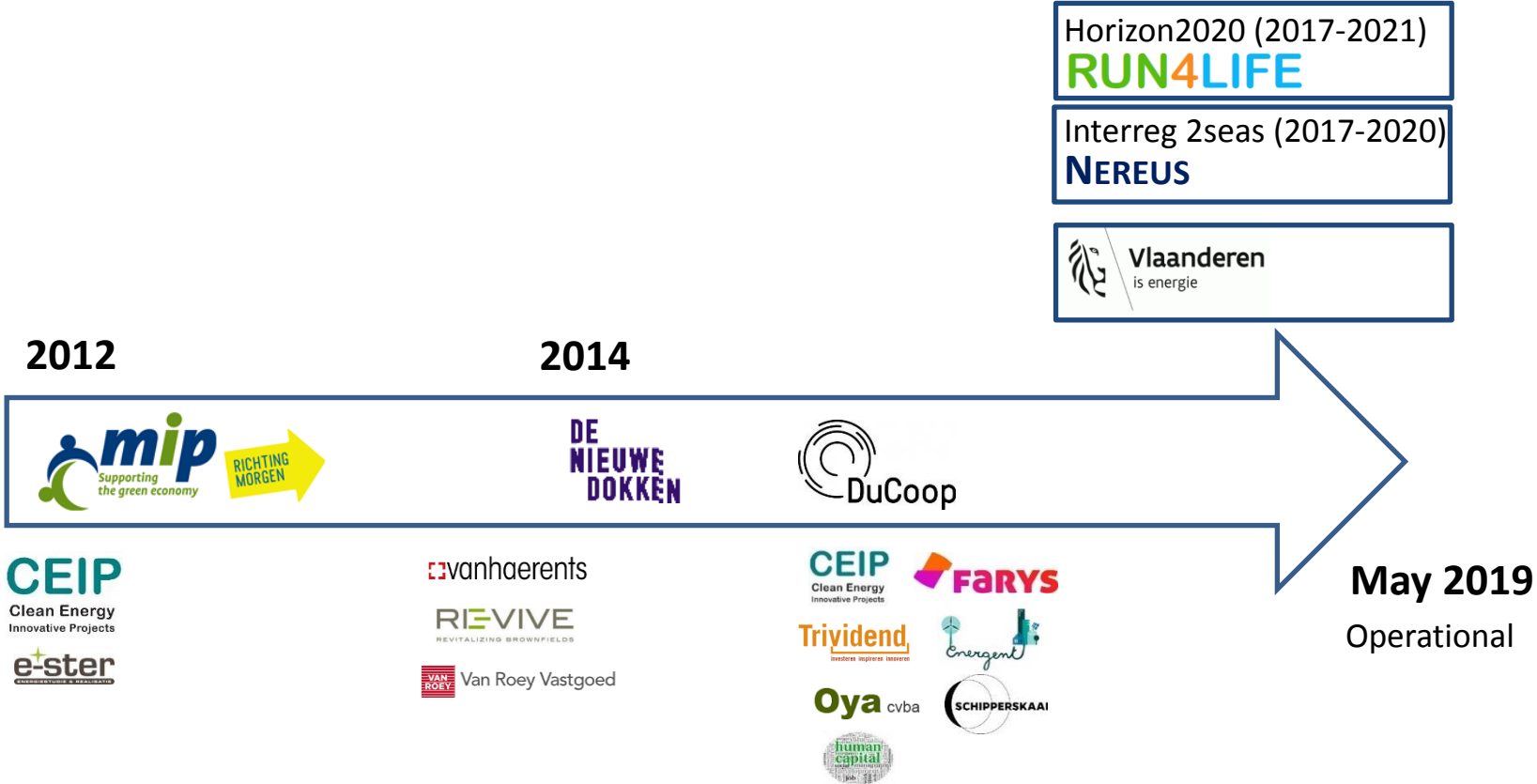


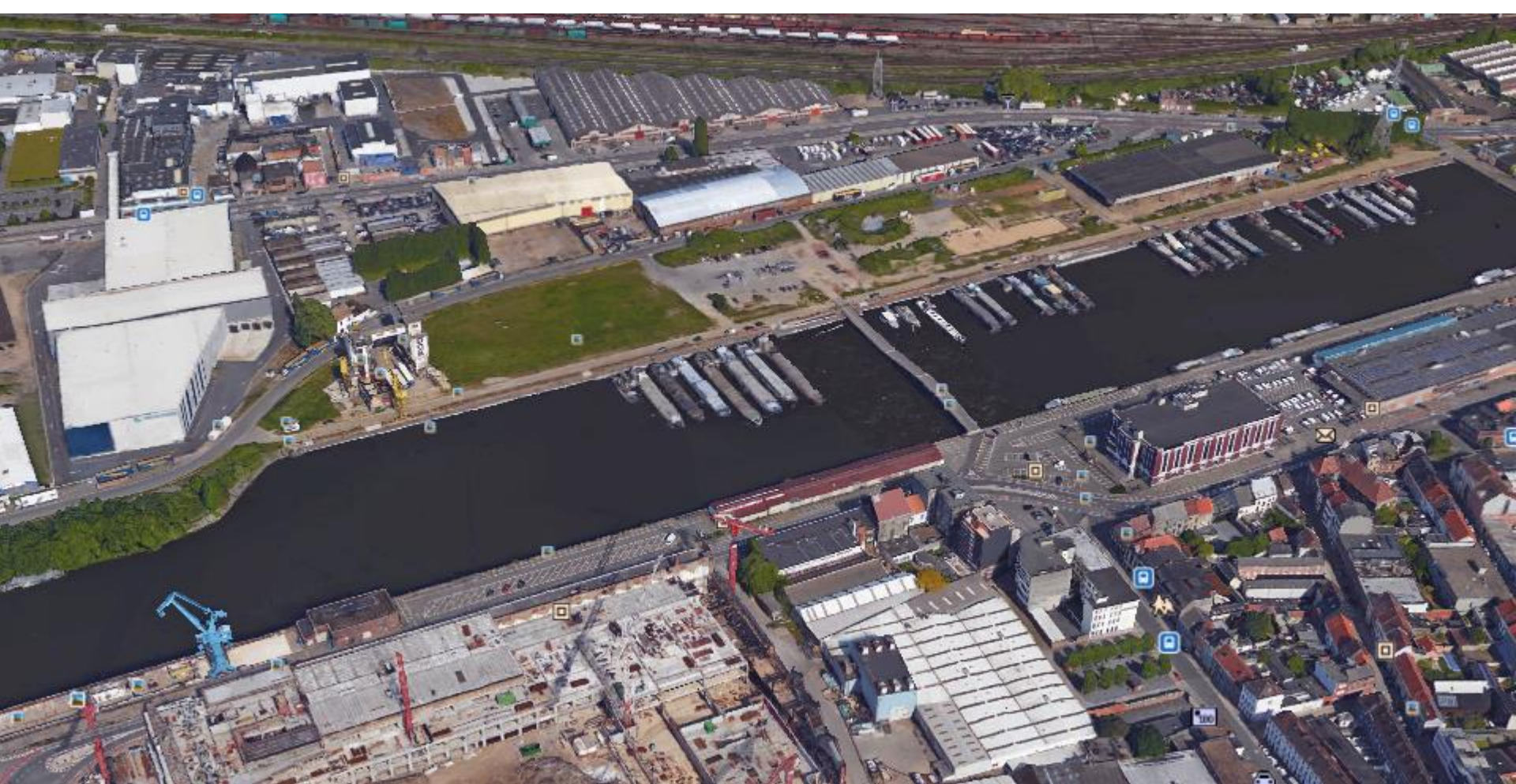
Sustainability cooperation DuCoop

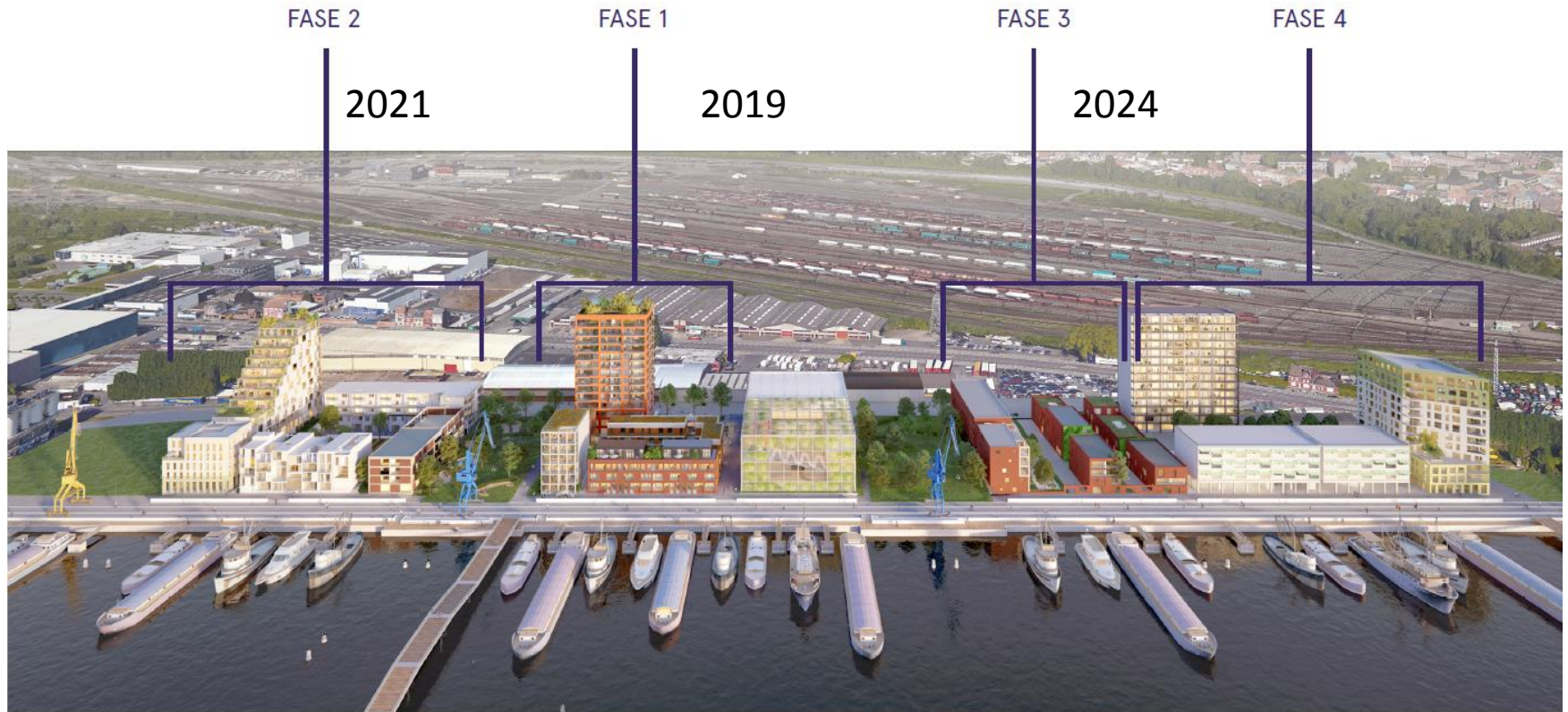


DuCoop cvba

Our innovation trajectory



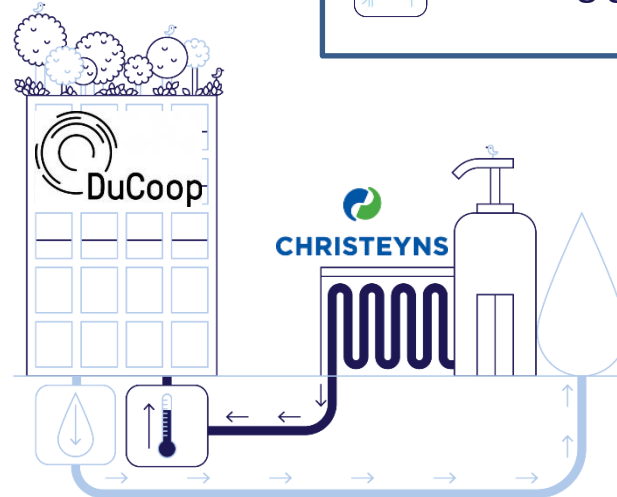
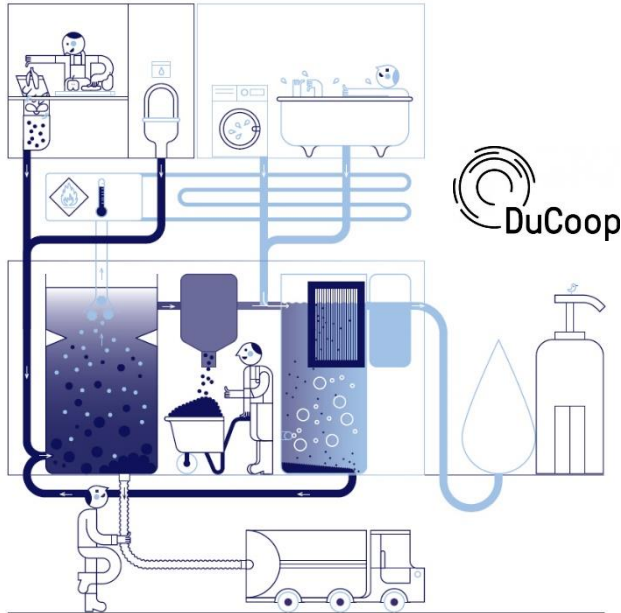




>400 living units + City complex (schools, sportinfrastructure etc.)

Our Backbone: ZAWENT System

ZERO WASTEWATER WITH RECOVERY OF ENERGY & NUTRIENTS



2500 MWh Wasteheat

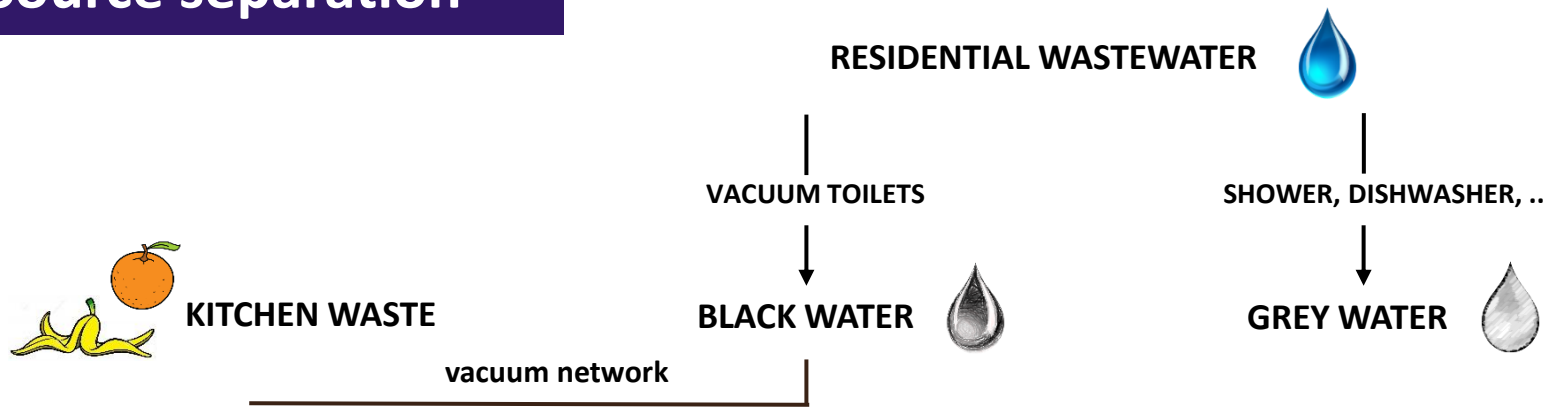


30.000 m³ water



1.500kg green fertilizer

Source separation



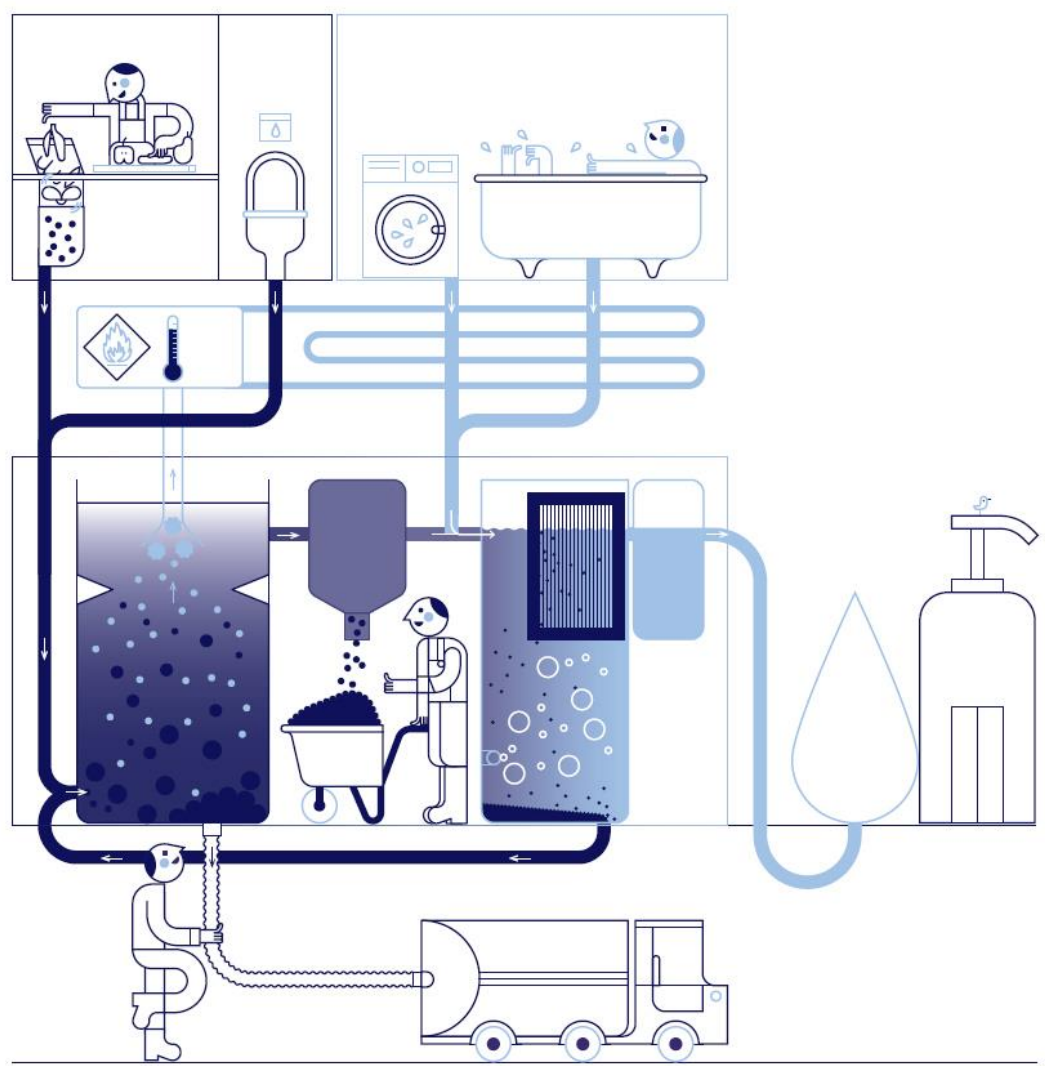
Composition

T (°C)	20
Q (m³/h)	~0.5
CODt (mg/l)	12422
Nt (mg N /l)	1378
Pt (mg P/l)	156
K (mg K/l)	422

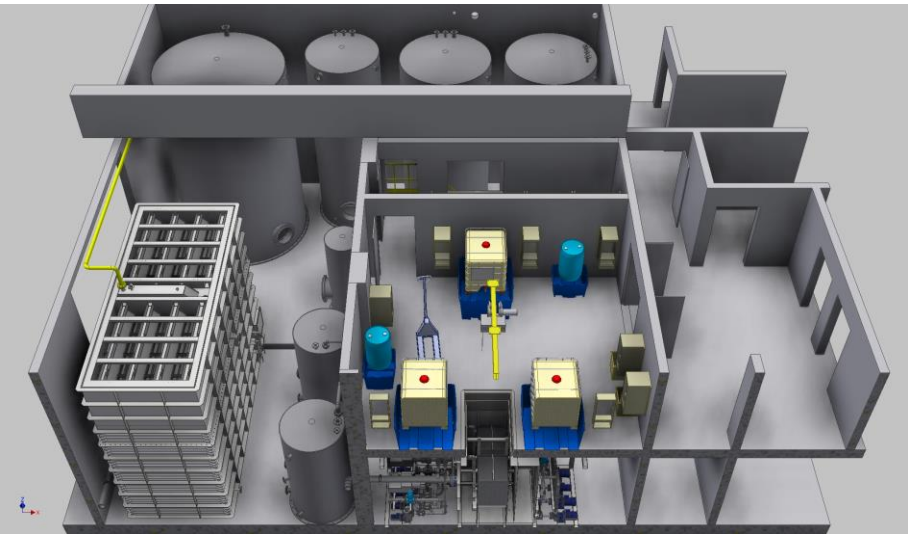
Composition

T (°C)	25
Q (m³/h)	~3
CODt (mg/l)	675
Nt (mg N /l)	12
Pt (mg P/l)	6,7
K (mg K/l)	4

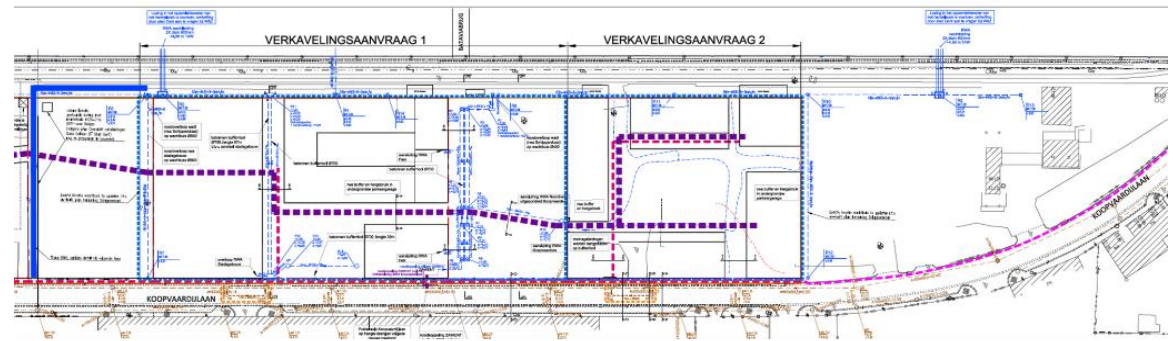
Resource recovery



Where are we now?



Where are we now?



2023 ?	1-15/03/2018	Q1 2019	THV ND Q4 18 - Q1 19	Met Farys	Koopvaardijlaan: Coördineren met Farys Q3/4 2018 of Q1 2019 Inpandig Noordveld: THV ND 2021?	Koopvaardijlaan: Coördineren met DEME Q4 18 of Q1 19 Inpandig Christeys + stookplaats: Q3/4 2018
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Smart Multi-energy District



Energy Harbors



Microgrids



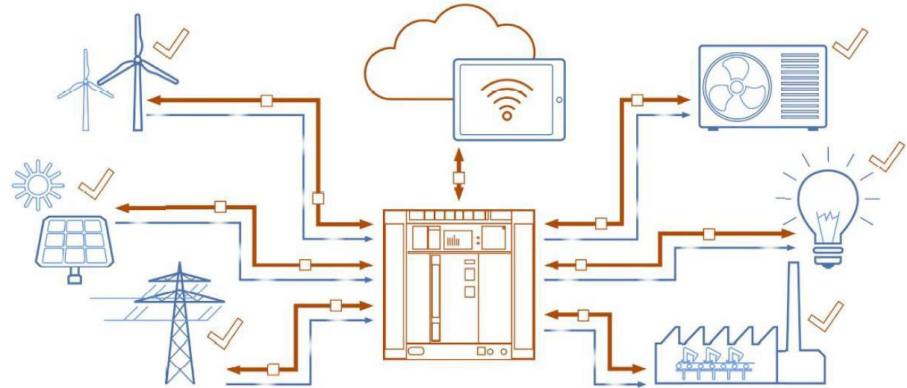
Multi-energy Solutions



Energy Cloud platforms



Intelligent Renovation



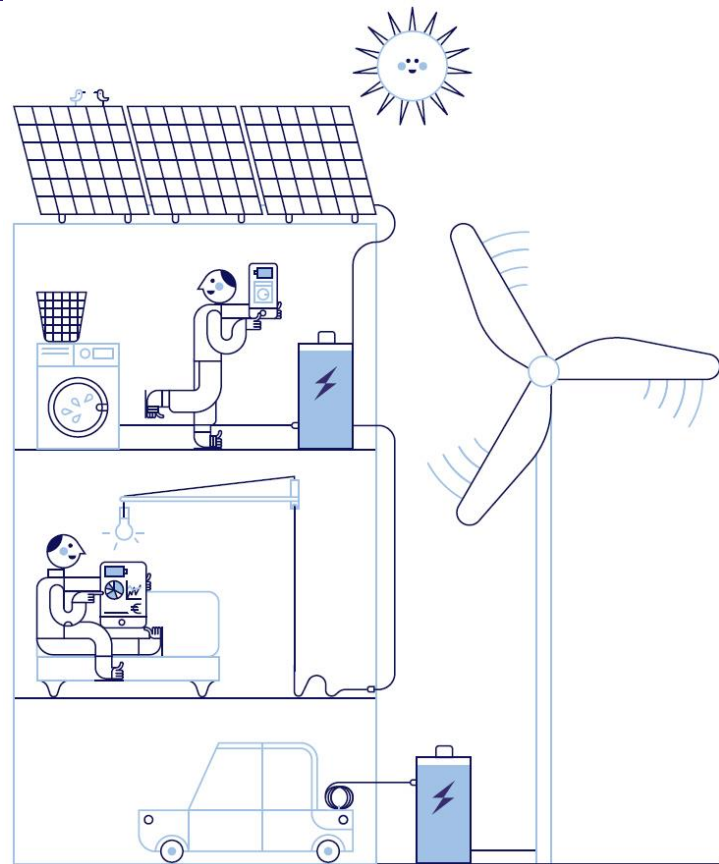
Smart Multi-energy District: Objectives

HEAT

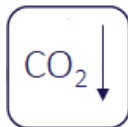
- Balancing of DuCoop portfolio (production, storage, demand)
- Optimal deployment of heat pump and CHP
- valorization of renewable energy production

ELECTRICITY

- Balancing of DuCoop portfolio (production, storage, demand)
- Limiting congestion of local grid
- Grid services (flexibility)



LIVING TOMORROW



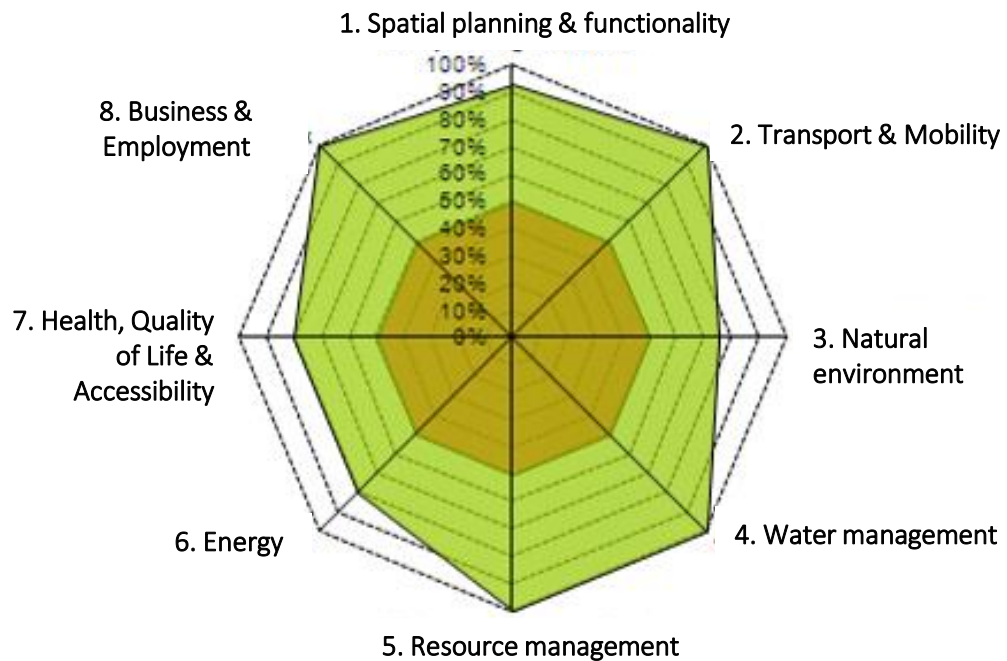
- 70%



13%



47 kWh/m²



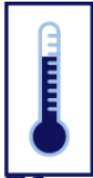
BUSINESS MODEL INNOVATION

Sustainability cooperation DuCoop cvba

- Implementation of new technologies requires new business models
 - Integrated sustainability
- DuCoop = ESCO (Energy Service Company) with broader scope
 - Broader public support: 7 impact capital investors
 - Financial participation of residents



Sustainability cooperation DuCoop




Energy

- 4de gen. Heat network (waste heat Christeysn)
- Rooftop PV
- Smart Grid appliances




Water

- Local sanitation
- Reuse as process water (Christeysn)



Waste

- Source separation e.g. vacuum systems
- Waste collection
- Water treatment
- Nutrient recovery



Mobility

- Electric bike
- Electric car (sharing)
- Charging stations



DuCoop cvba





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 **DuCoop**