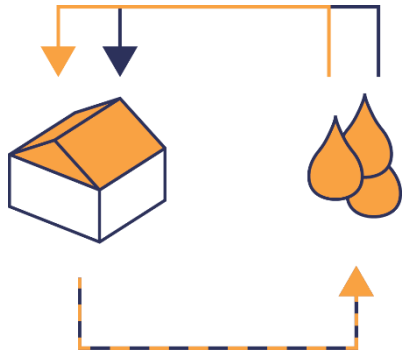
The market potential of the wastewater recovery case study COMPRO
-
and how to raise the acceptance of COMPRO in HavenStad



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bauhaus ifex IUDD Integrated Urban Development and Design

AMS AMSTERDAM INSTITUTE FOR ADVANCED METROPOLITAN SOLUTIONS

Content

1. Introduction
2. Theoretical framework and context
3. Methods
4. Findings and evaluation
5. Conclusion

1. INTRODUCTION

Problem

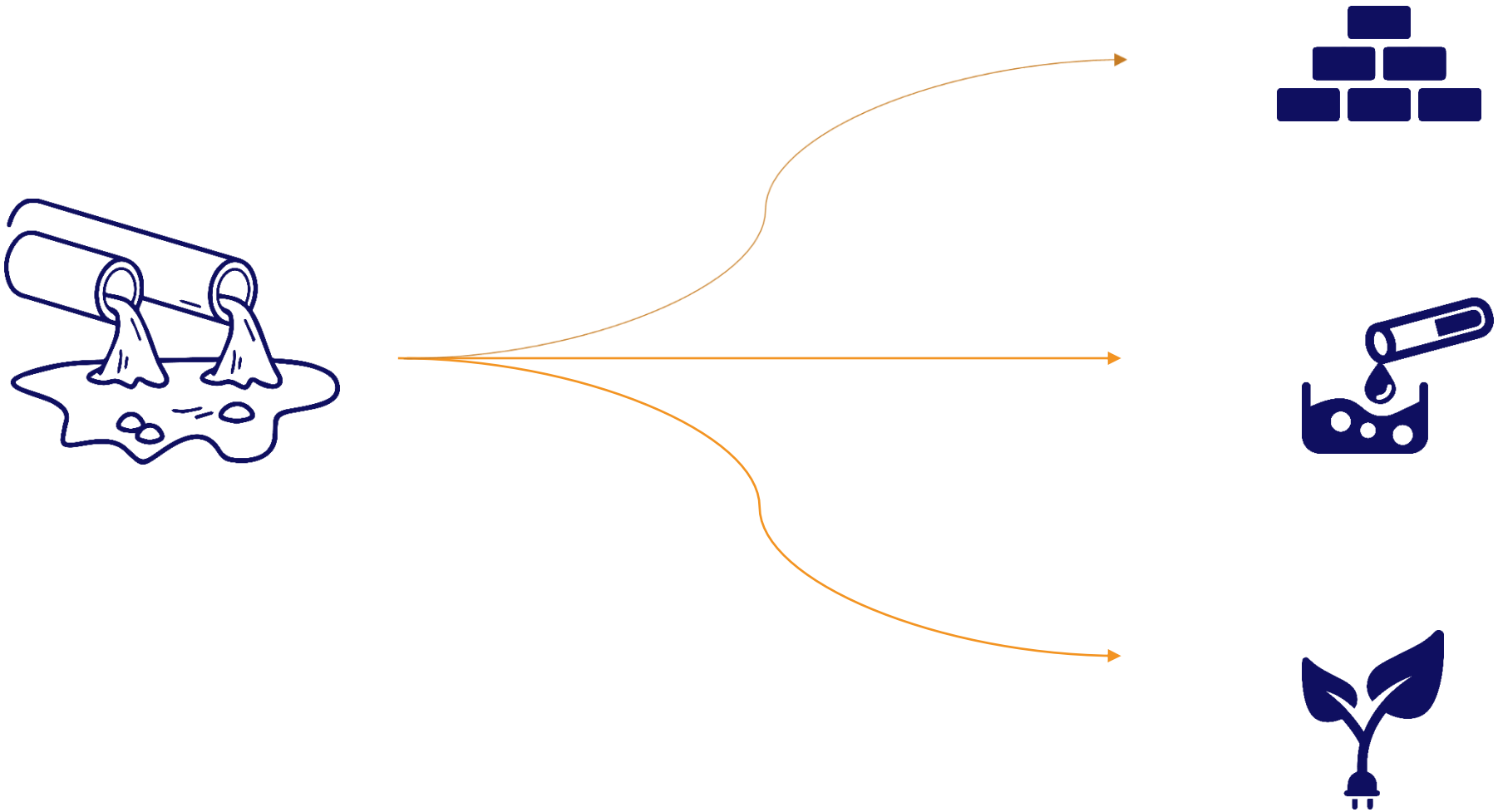
Depletion of resources

Refurbishment and waste generation

Population growth

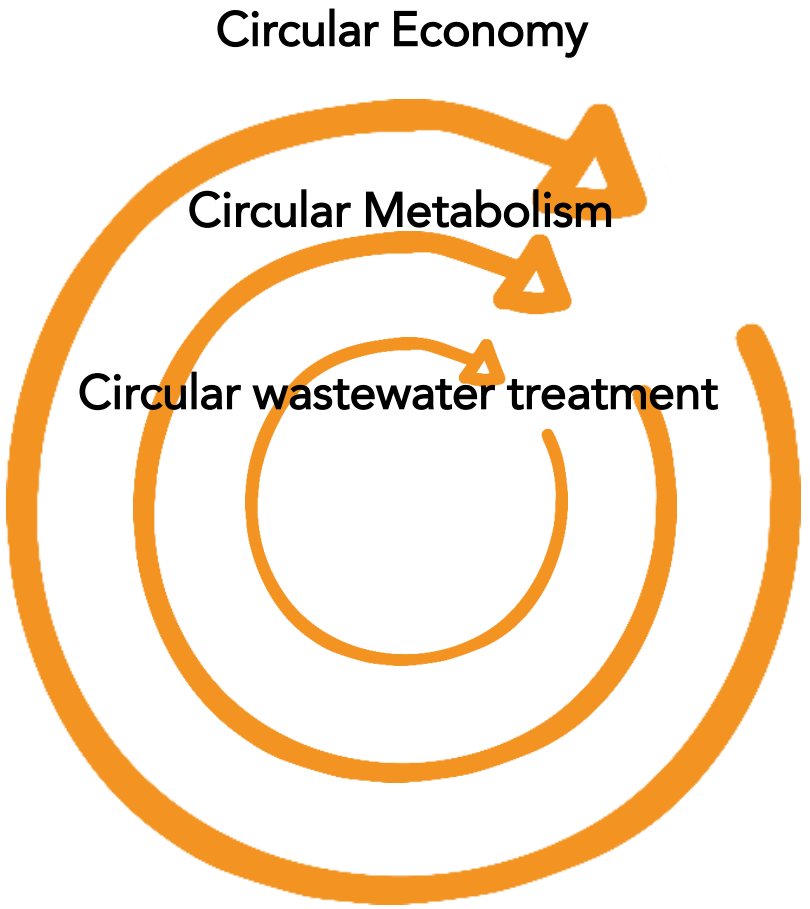
Growing cities

Wastewater

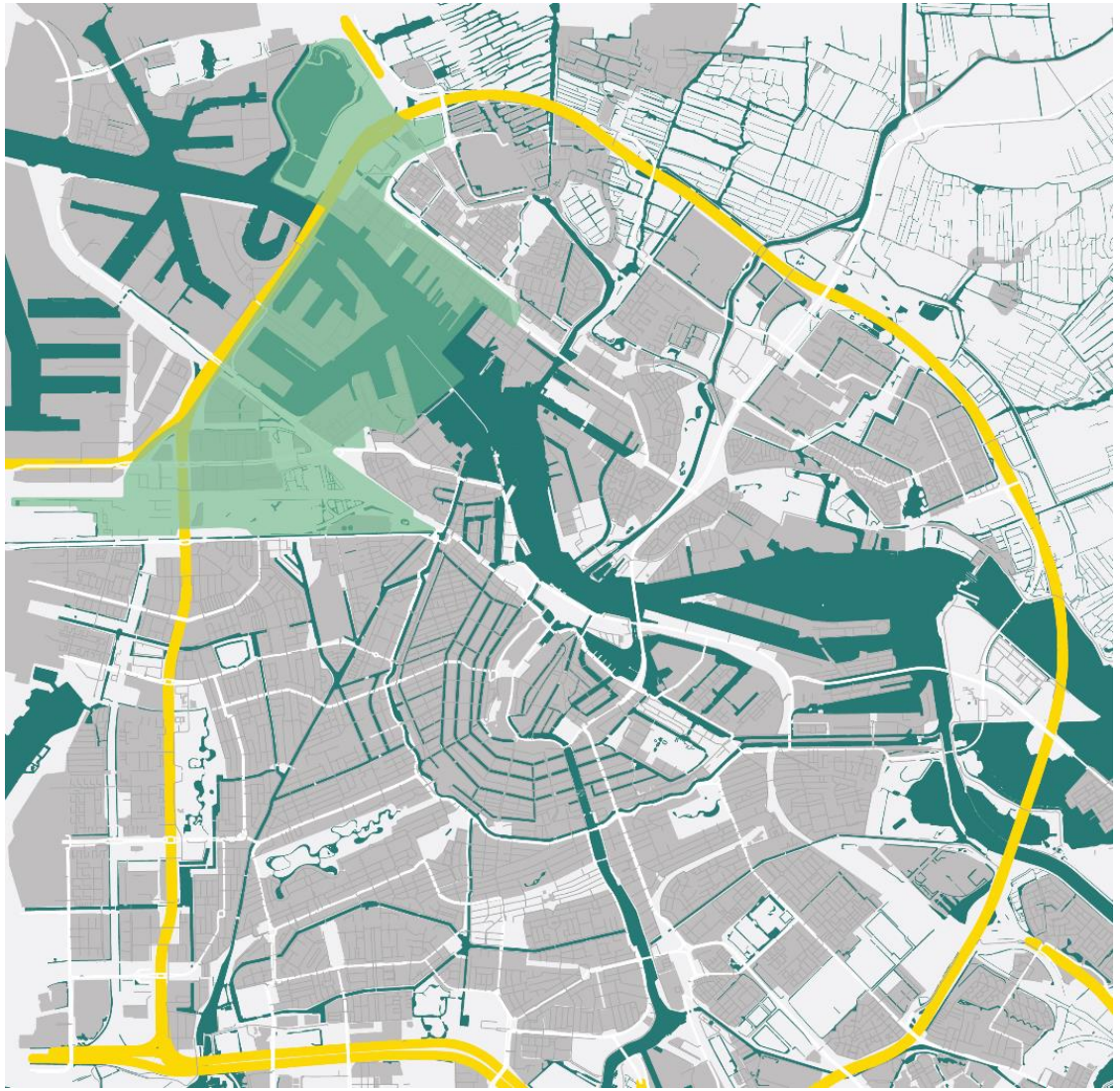


2. THEORY & CONTEXT

Circular concepts



HavenStad

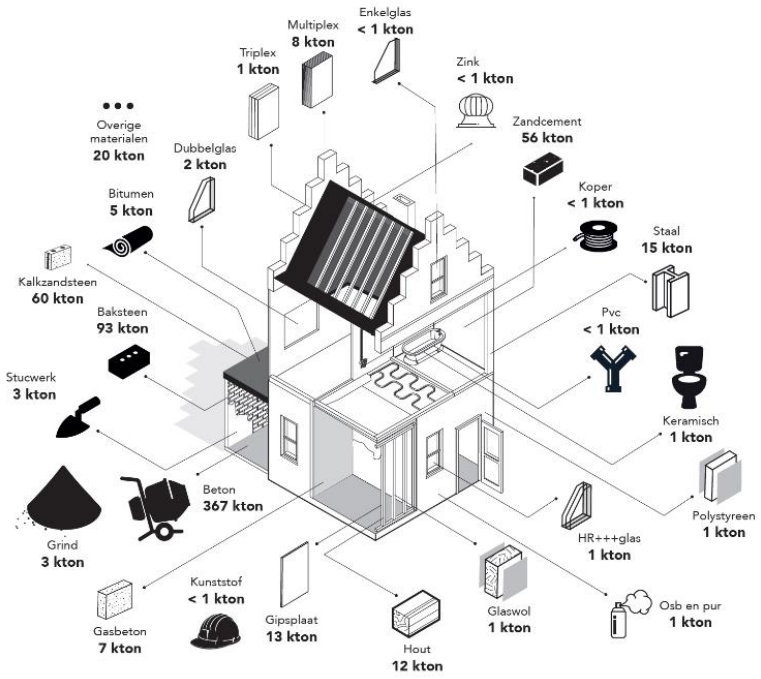


Amsterdam base-map (own illustration 2019)

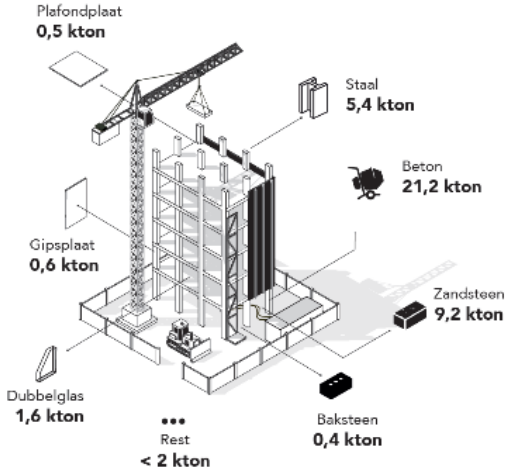
Construction industry

8536
New dwelling developments in 2018

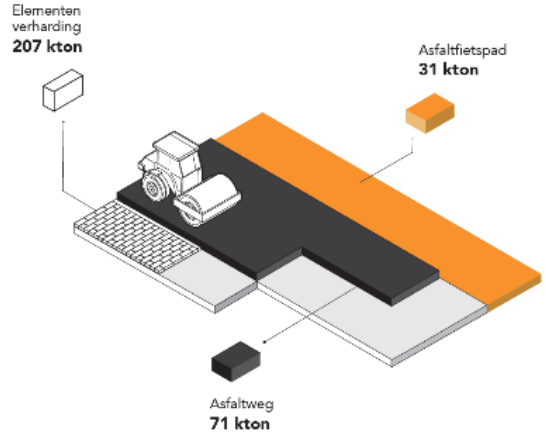
670 kton
Of material per year in Amsterdam



40 kton
Total material weight office buildings

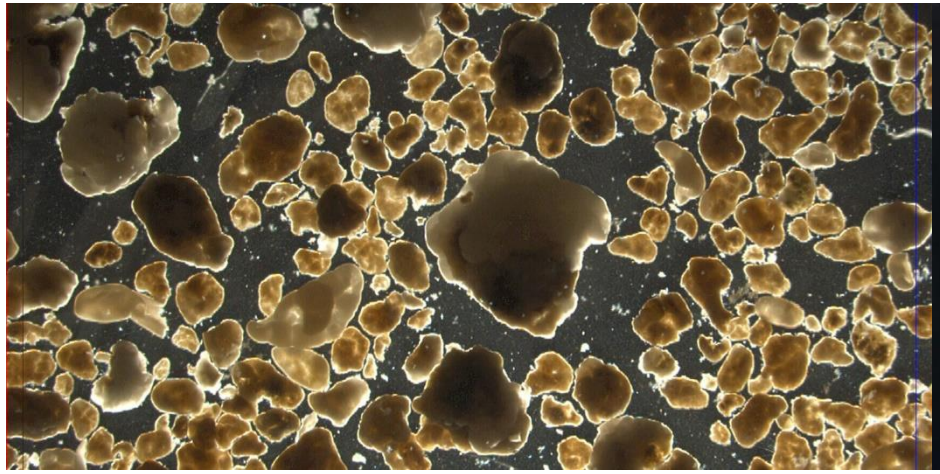


309 kton
Total material weight of infrastructure

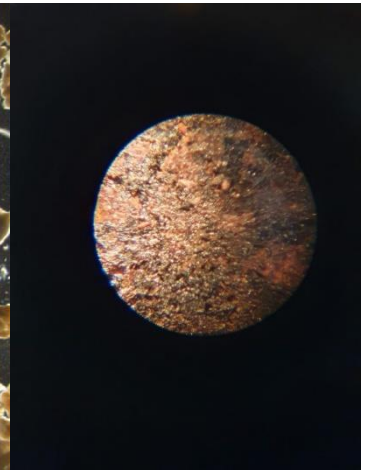


Construction materials used in Amsterdam in 2018 (Amsterdam 2020)

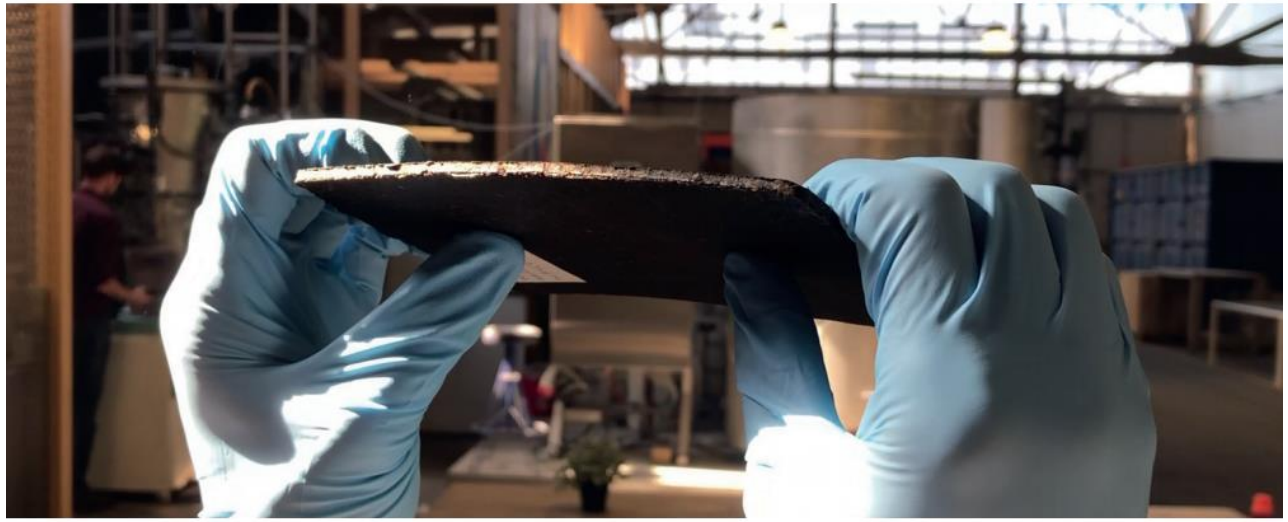
COMPRO



Granular bio-polymers (Kaumera) (AMS Peter Mooij 2019)



Surface of RE-PLEX after pressing (Zoya Zarafshani 2020)



RE-PLEX. (Nono Leermakers, Moja Reus, Mike Schroten, Sya Hoeke & Laurens van der Wal 2019)

*'What is the **market potential** of innovations dedicated to recovered resources from wastewater such as the **COMPRO** project and what measures can be taken to raise the acceptance for an integration of COMPRO into urban development projects such as HavenStad?'*

3. METHODS

Market stakeholders

Internal stakeholders

External stakeholders

Research institutes

Companies: end-users / manufacturers

(BAM Infra, NPSP, Chaincraft)

COMPRO

Governmental stakeholders

Further market parties
(in HavenStad)

Qualitative research approach

8 guided expert interviews according to Gläser and Laudel

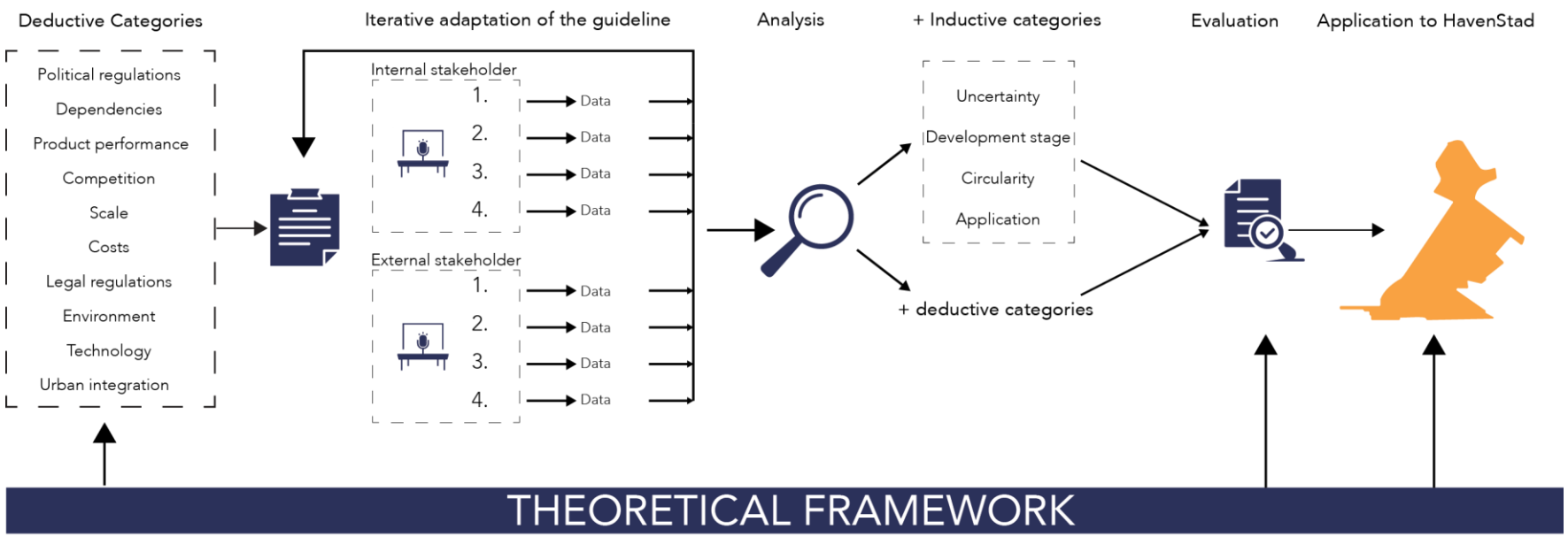
- theoretical background
- Openness

Technical, process and interpretative knowledge

Evaluation of interviews according to Mayring

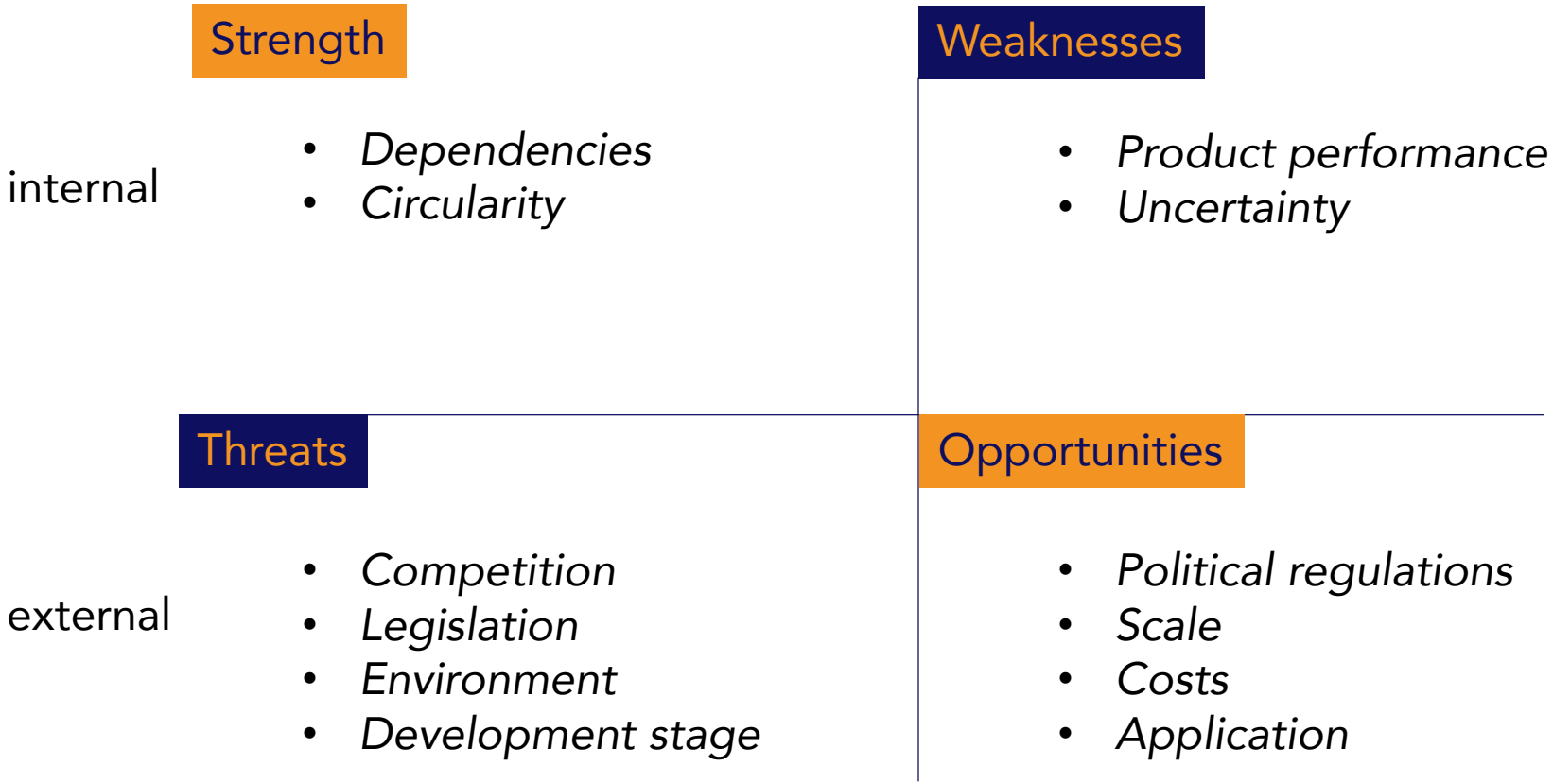
- Structuring and summarizing qualitative content analysis
- Deductive/inductive category system

Methodological approach



4. FINDINGS & EVALUATION

SWOT

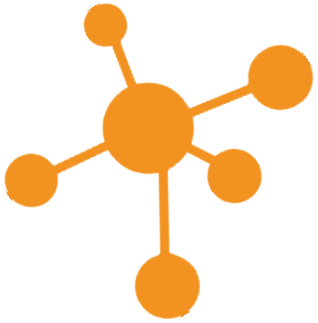

Strength
Weaknesses
internal
Dependencies
Circularity
Product performance
Uncertainty
Threats
Opportunities
external
Competition
Legislation
Environment
Development stage
Political regulations
Scale
Costs
Application

Policy and Stakeholder Level

*What type of **organizational difficulties** and **interdependencies** might arise between the stakeholders in projects such as COMPRO?*

*To what extent does the **exterior framework** of political and legal regulations **influence the market acceptance** of the project?*

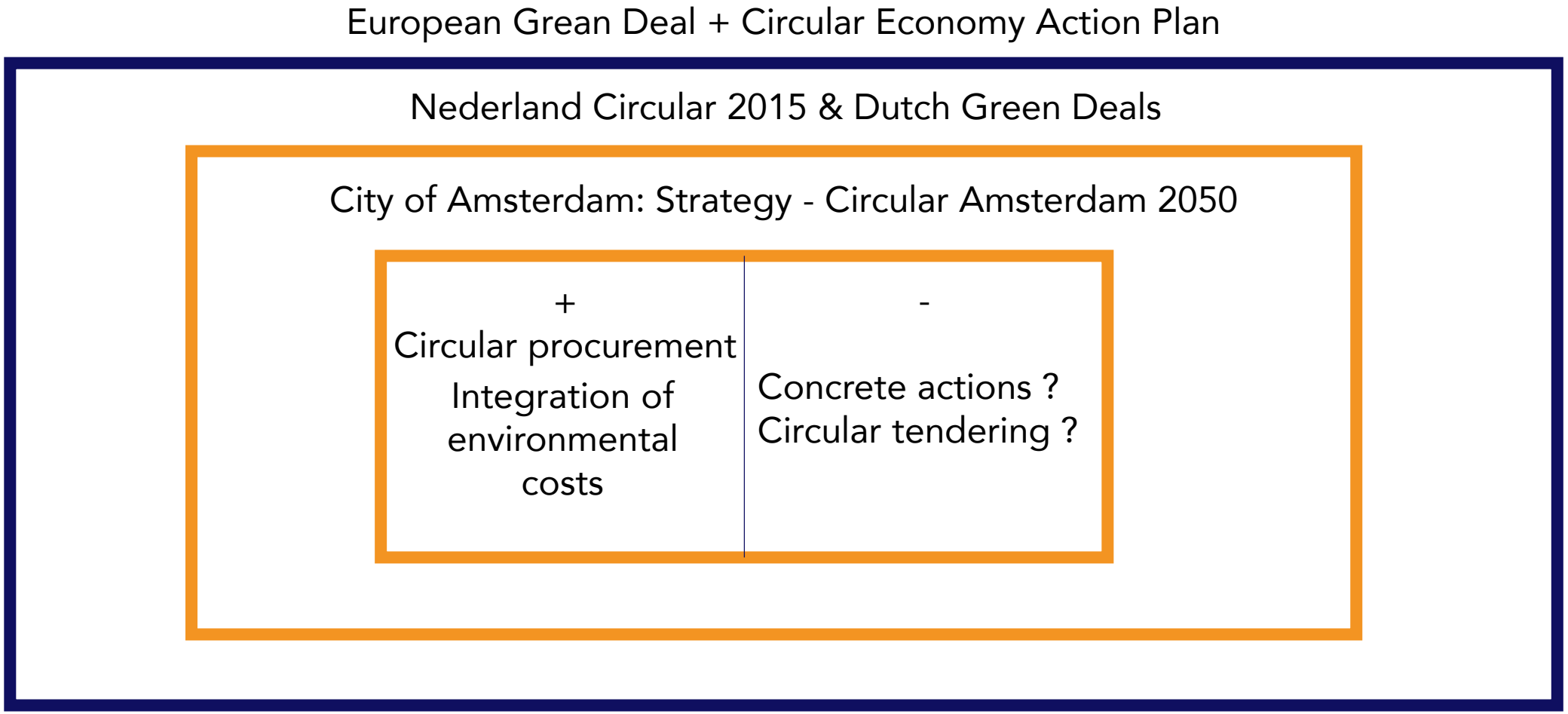
Strength: *Dependencies*



End-user:

*'I think **the team is working well** I think it's also interesting […] of **being together with a bigger cooperate** besides ourselves together with regional facilities'*

Opportunity: *Policies*



Product level

*What **technological aspects** does the product need, in order to be accepted as a waste-based application?*

*What **market** **volume** and **costs** of applications made from RE-PLEX could lead to a higher potential of the material on the market?*

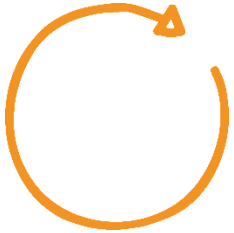
*What **product solutions** could the RE-PLEX have and which **competition** does the RE-PLEX need to confront on the market?*

*To what extent could **legal barriers** prevent the potential of the RE-PLEX?*

Strength: *Circularity*

Retailer

*'Considering our circular assortment we attach great value to the story behind the product. This **story is strong and attractive and therefore interesting to consider in our company**.'*



Municipality of Amsterdam

*'But it's **even better if it just proves itself** by being just as stable just as safe like for fire regulations, but **even more comfortable and […] with a better indoor climate**. So you would want it **not only because it's circular, but it's just better.'***

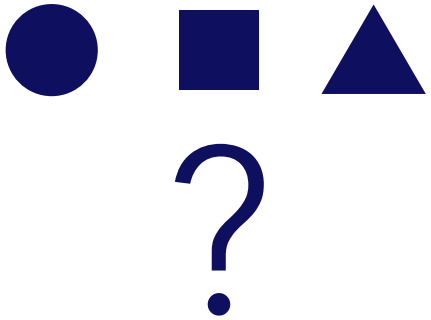
Weaknesses: *Uncertainty / Product performance*

End-user

*'So are you using it as an **isolation or as a flame-retardant** material or are you using it as a **building-material** […]. But I am not sure if its used for housing or if its used for other stuff. Could be both or not at all. […] maybe its something that is not so much for the **construction-industry** but might be possible that you apply it in the **automotive industry**.'*

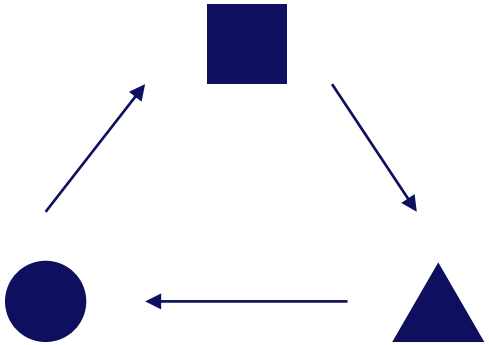
End-user

*'I don't know. I am **not sure about RE-PLEX in pretty much detail** and I am also **not sure about the requirements for the applications** and things like that.'*



Threat: *Competition*

- Conventional construction materials
- Other Bio-based composites
- Competition of other recoverable products



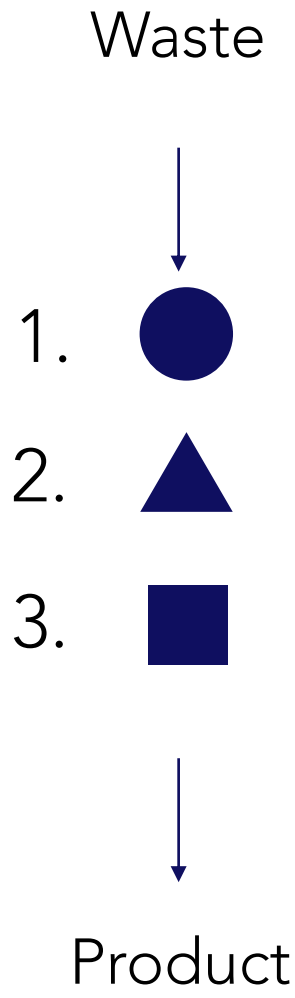
But:

RE-PLEX has a strong USP! → ***waste-based + bio-based***

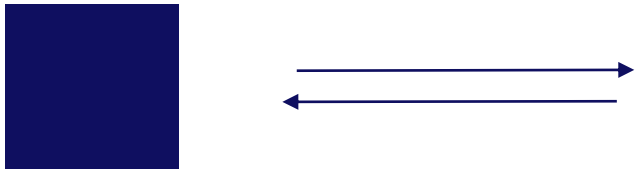
Other recoverable products → P *and Biogas are* ***combinable*** *with the recovery of Kaumera + Cellulose*

Threat: *Legislation*

End of waste ✖ ➡ standardized end-of-waste framework!



Opportunity: *Application*



Product performance
Competition
Scale
Costs
Legislation
Environment

`we need to find out what the application is and then all these questions come easily.'

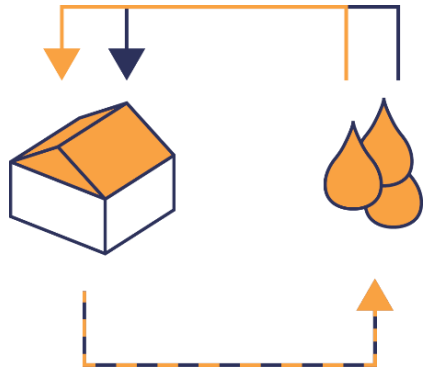
Urban integration – COMPRO and HavenStad

How COMPRO could find its application in an urban development such as HavenStad?

COMPRO and HavenStad

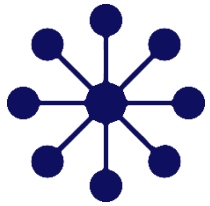
Scale

Transformation



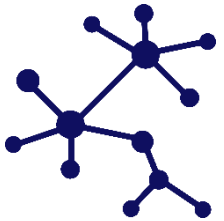
Strategic location for companies

WWT integration



existing and preferred option

more effective in terms of costs and scale



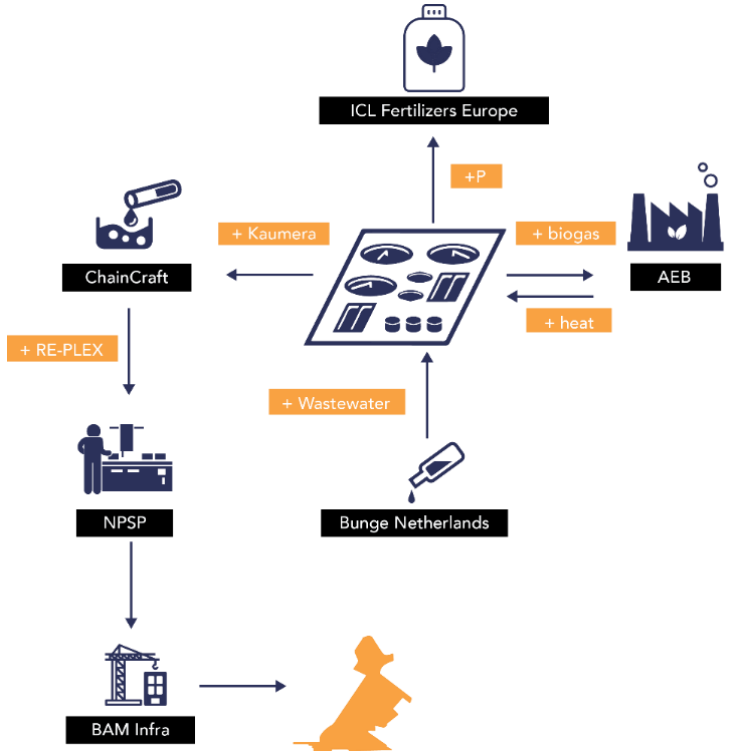
complementation of the centralized treatment

more flexible

Industrial Symbiosis

Manufacturer:

'the WWTP could become a bio-refinery'



Spatial integration

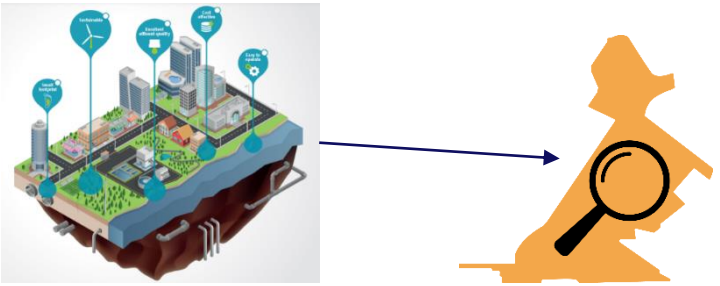
1. Scenario

Industrial decentralized (relocation)

2. Scenario

Municipal and industrial centralized

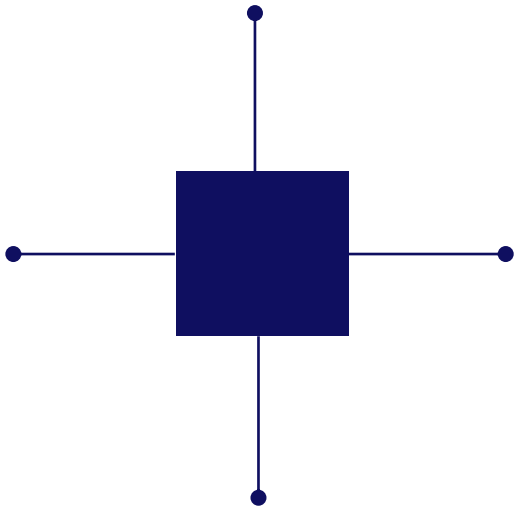
3. Scenario



Municipal decentralized

RE-PLEX and HavenStad

public space exhibitions/ art-projects



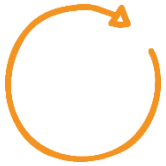
Construction-sites

Buildings

Integration of the neighbourhood – semi-public spaces

5. CONCLUSION

COMPRO-project



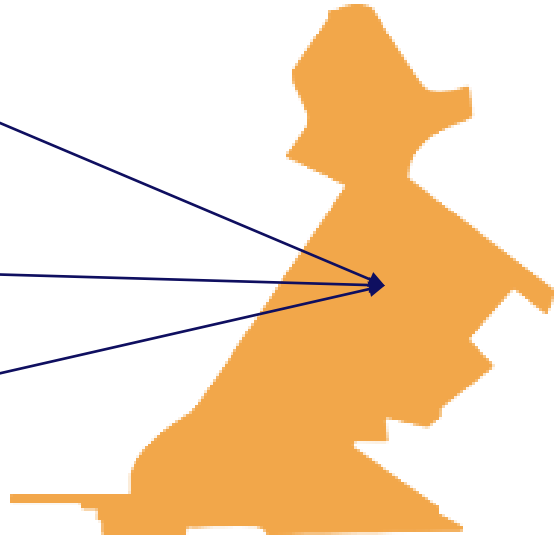
political regulations ≠ concrete actions?

municipality → high product performance standards
threats / opportunities
limitation → prototype?

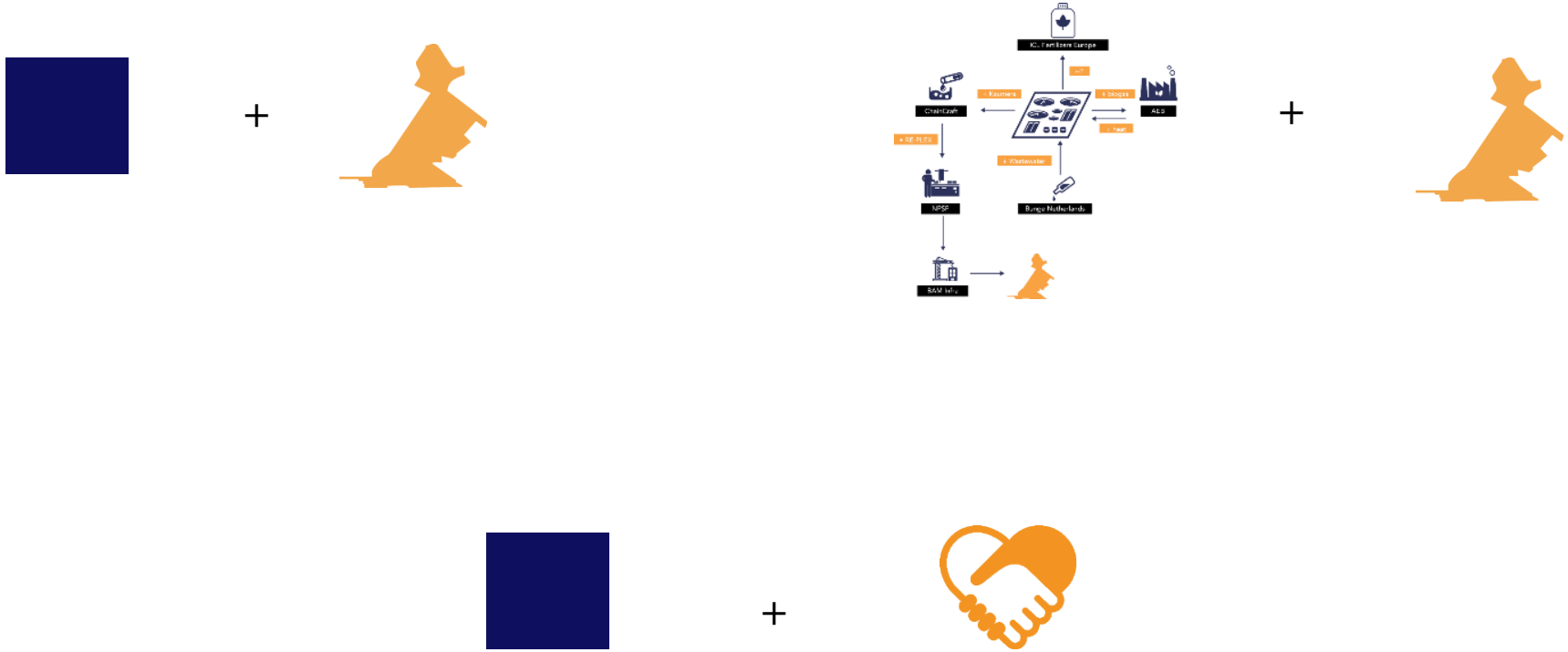
integrated approach

Acceptance of COMPRO in HavenStad

- creative approaches to integrate the product
- Industrial Symbiosis
- longer-term context-conditions



Outlook



Thanks for your attention!