

# Circular Urban Development

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# blurb

Urban development aims to improve the socio-economic wellbeing of neighbourhoods, districts and cities. Since the 2000s the role of creatives in developing cities has been stressed. In recent years developing a circular economy has become more important. In this session we discuss circular urban development. What it is? Where it leads to? And how to assess it?. We specifically look at the case of Werkspoorkwartier: creative circular industrial area.

# CONTENT

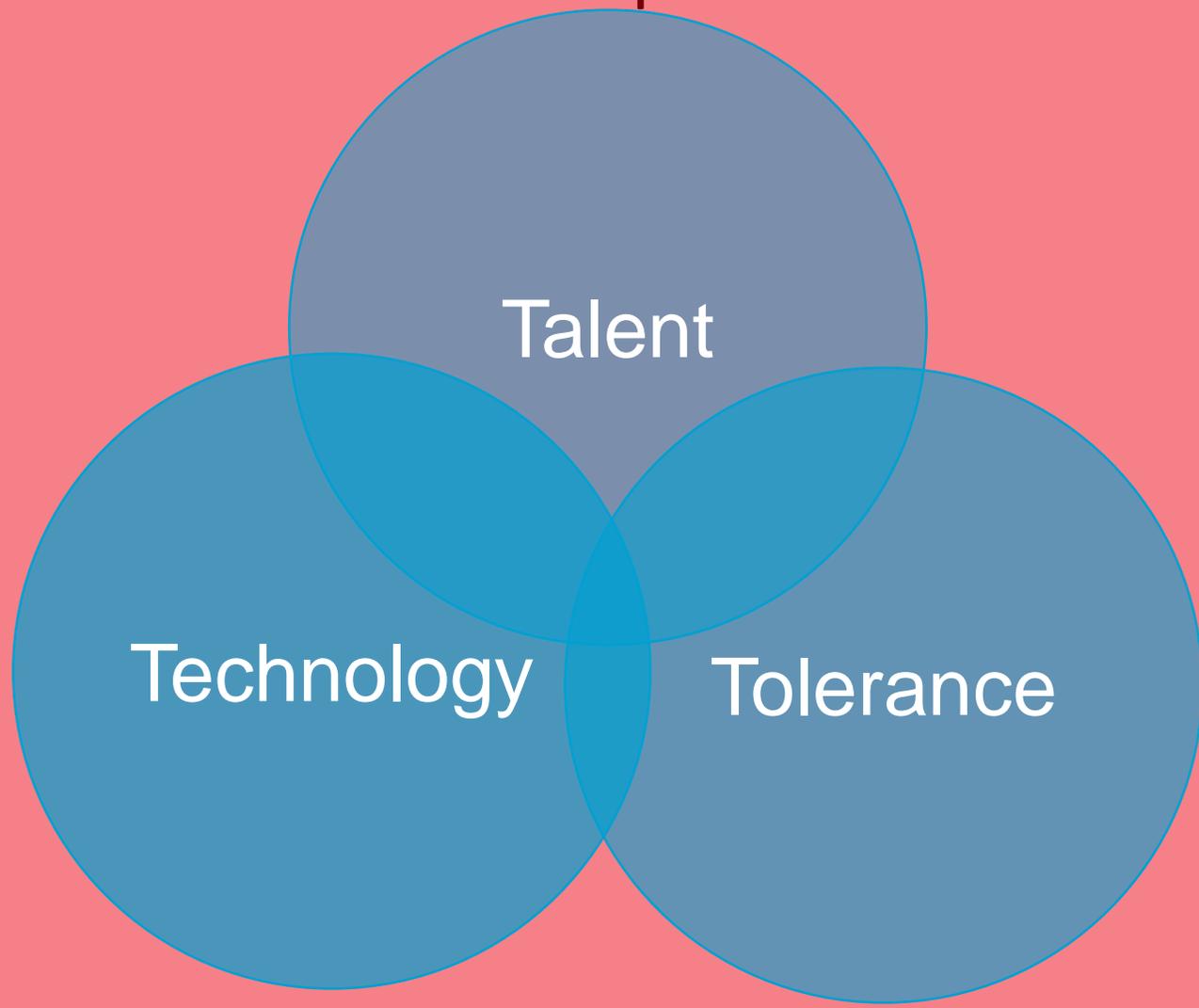
- What is Circular Urban Development?
- How to assess circular urban development
- Case Werkspoorkwartier, a creative circular industrial area
- Discussion

# CIRCULAR URBAN DEVELOPMENT

# Definitions – Urban development

- Urban development is the improvement of a city or district from a current state to a desired one.
- This can be done for:
  - Population
  - Economic activities
  - Cultural activities
  - Sustainability
  - ...

# How to urban develop?



***stimulate creativity and a creative context***

# And circular

"[A]n economic system that replaces the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes." (Kirchherr et al, 2017)

Ellen McArthur Foundation:

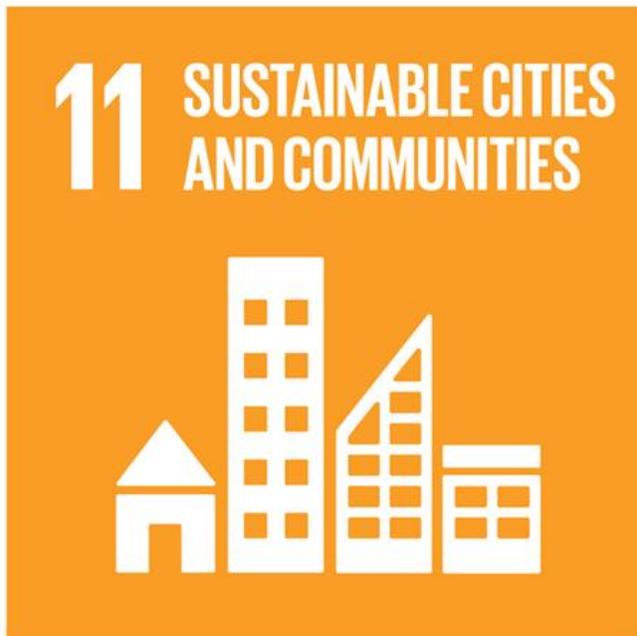
1. Design out waste and pollution
2. Keep products and materials in use
3. Regenerate (natural) systems

# Circular Urban Development

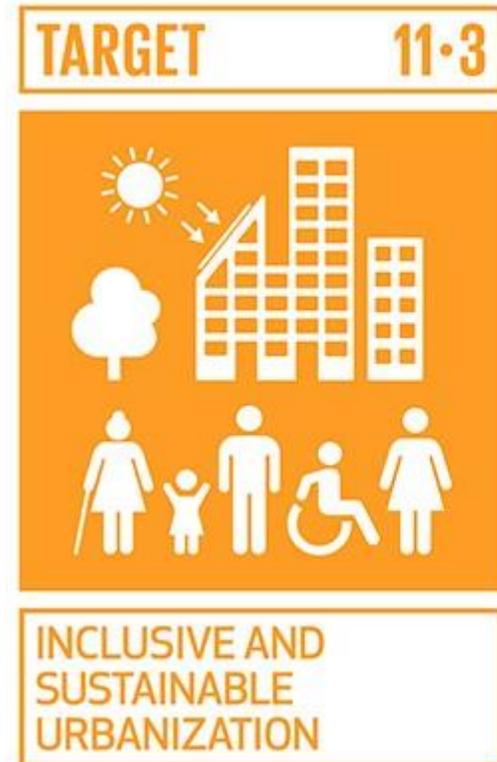
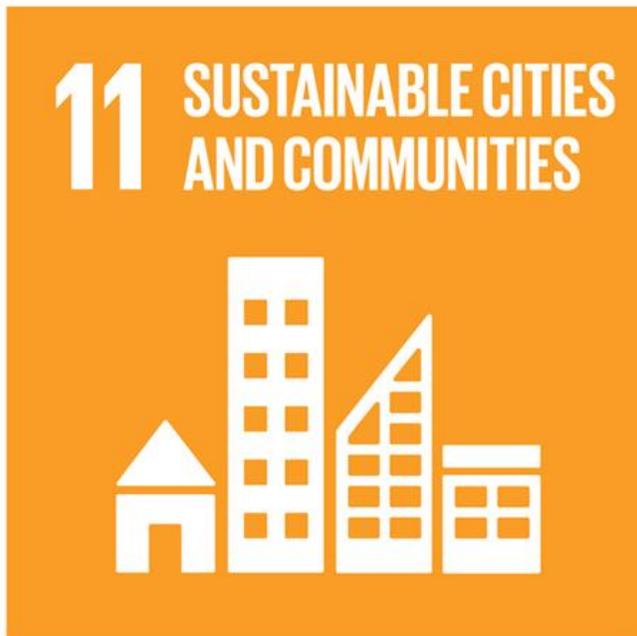
The improvement of a traditionally organized city or district to a city or district that eliminates waste and where materials are kept in use, functioning in a regenerative system.

# HOW TO MEASURE A CITY'S CIRCULARITY?

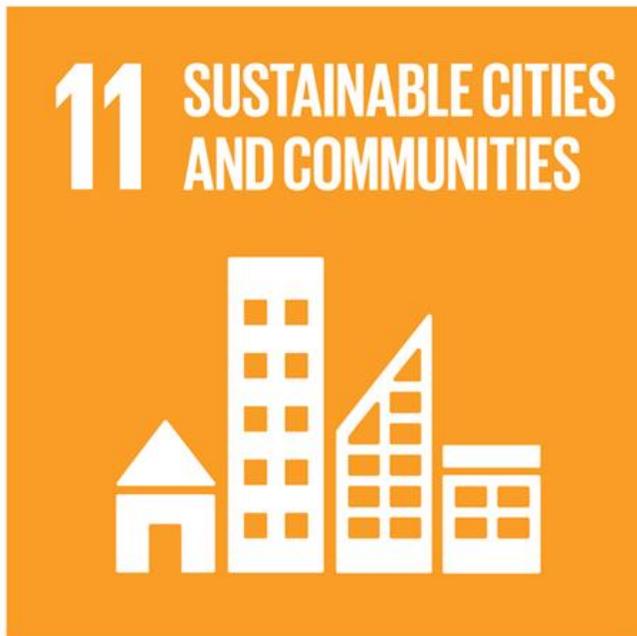
# How to assess a circular city?



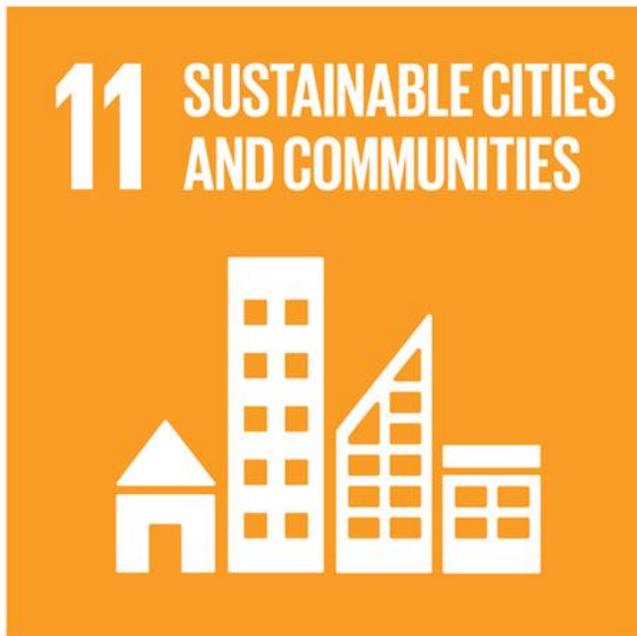
# How to assess a circular city?



# How to assess a circular city?



# How to assess a circular city?



TARGET 11-7



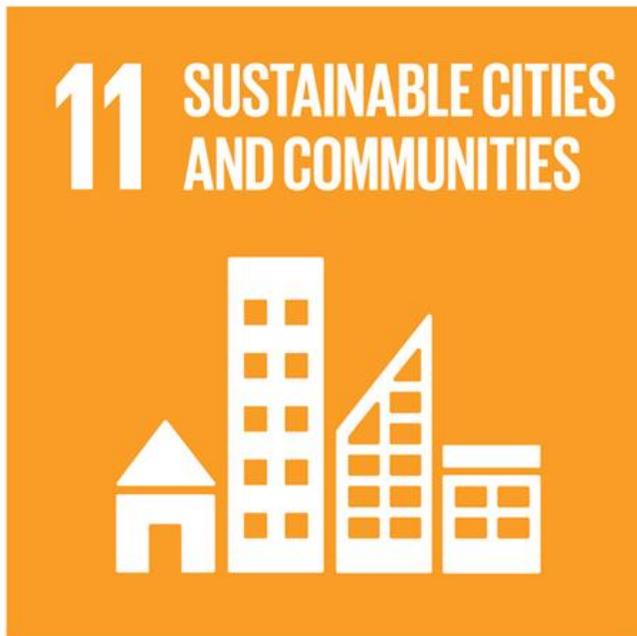
PROVIDE ACCESS TO SAFE AND INCLUSIVE GREEN AND PUBLIC SPACES

TARGET 11-A



STRONG NATIONAL AND REGIONAL DEVELOPMENT PLANNING

# How to assess a circular city?



# How to assess a circular city?

- SDG's do give a common framework
- But, the SDG's lack suitable circular indicators
- Therefore, necessary to look in more detail at different parts of a city

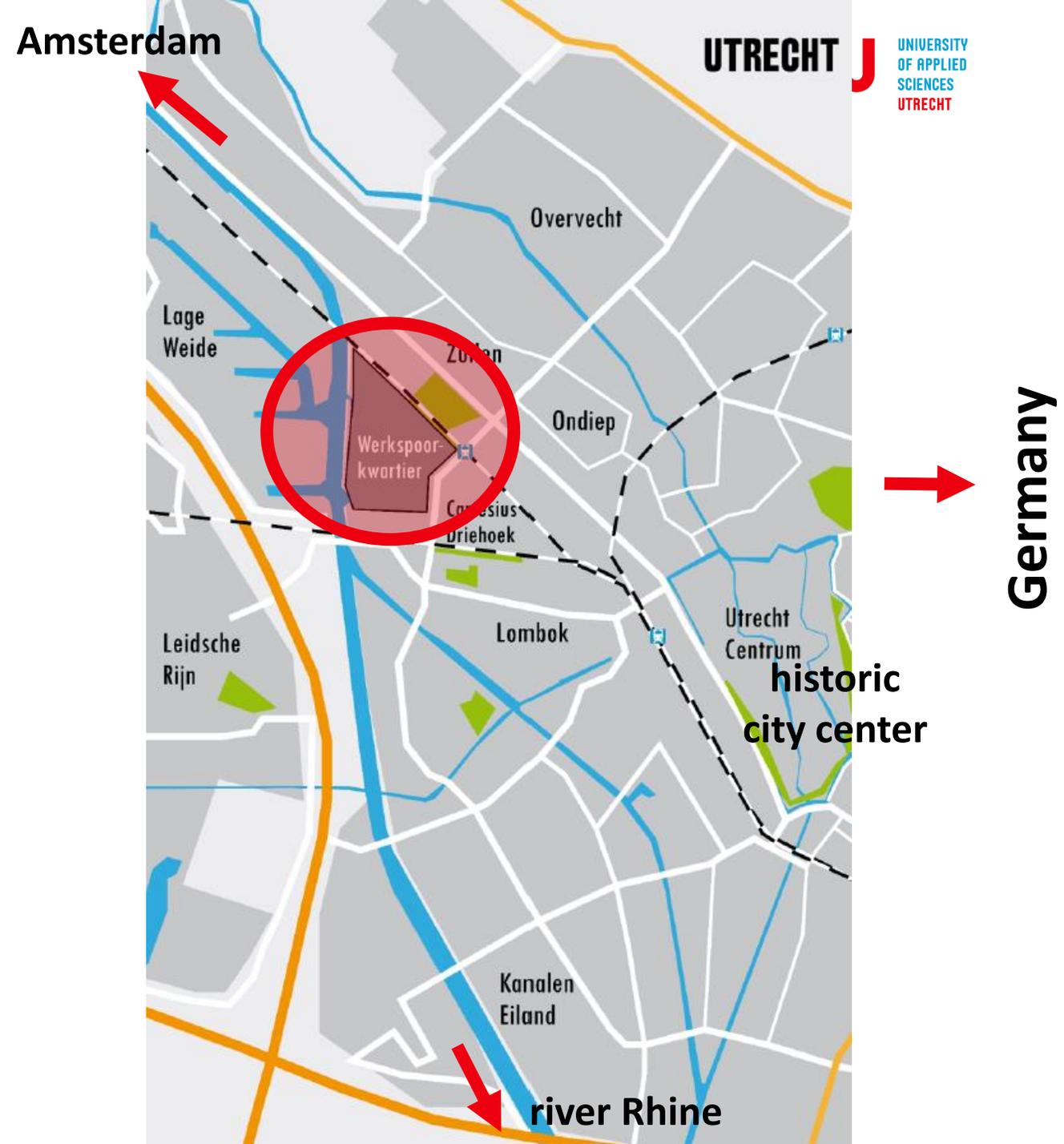
# CIRCULAR URBAN DEVELOPMENT IN UTRECHT

# Utrecht

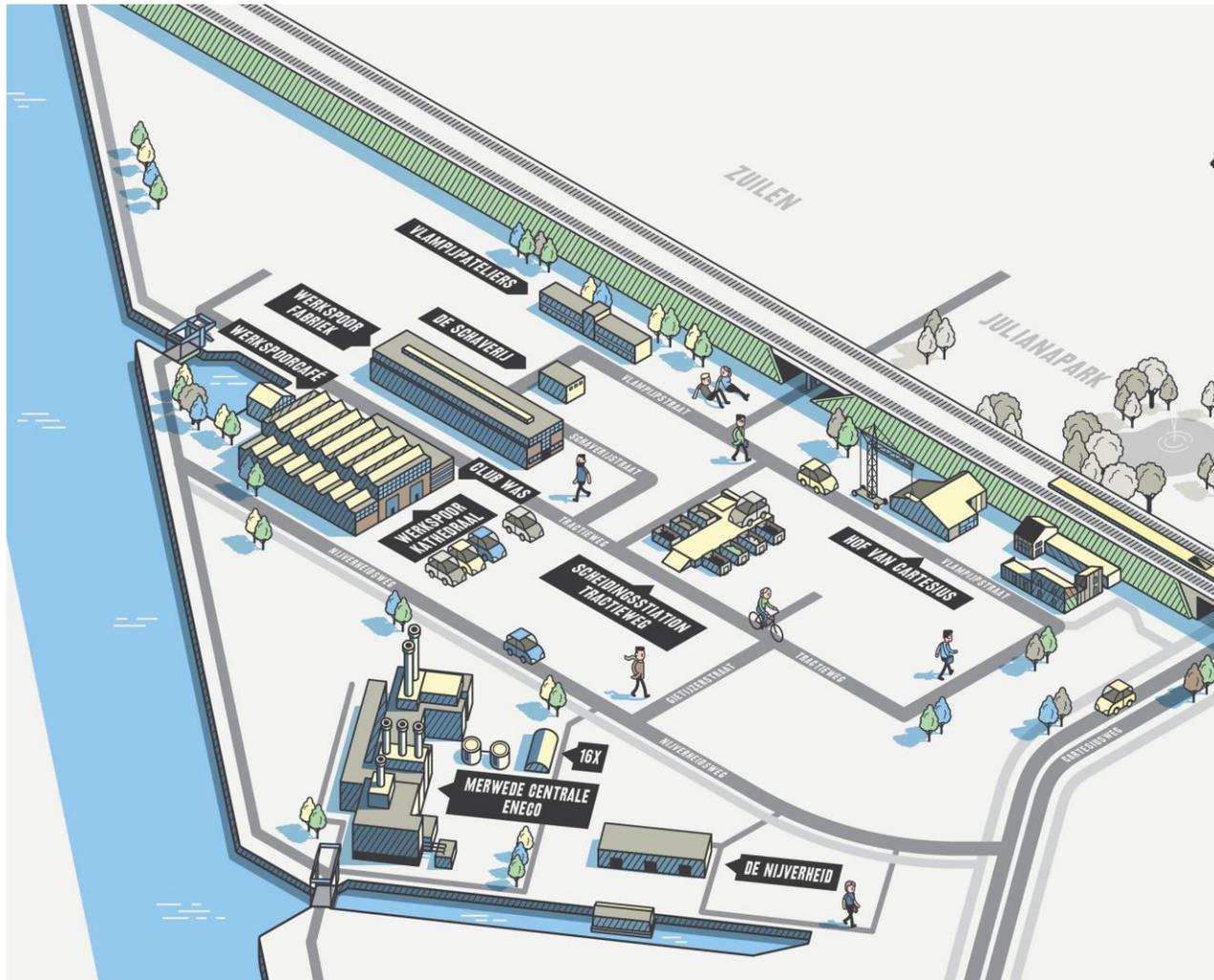


# Werkspoorkwartier

- Inner industrial area
- Urban (re)development project (ERDF)
- Creative and circular business development since 2012



# Werkspoorkwartier



Map from [efro-wsk.nl](http://efro-wsk.nl)

## GOALS:

- minimize waste
- re-use materials
- create closed-looped products and services
- increase social cohesion in the neighborhood
- create jobs, especially for otherwise socially excluded individuals
- increase green spaces
- stimulate local production
- attract creative and sustainable start-ups to the area
- increase the amount of circular office buildings

# HOW TO MEASURE CIRCULARITY IN WERKSPPOORKWARTIER

# How to assess circularity in Werkspoorkwartier?

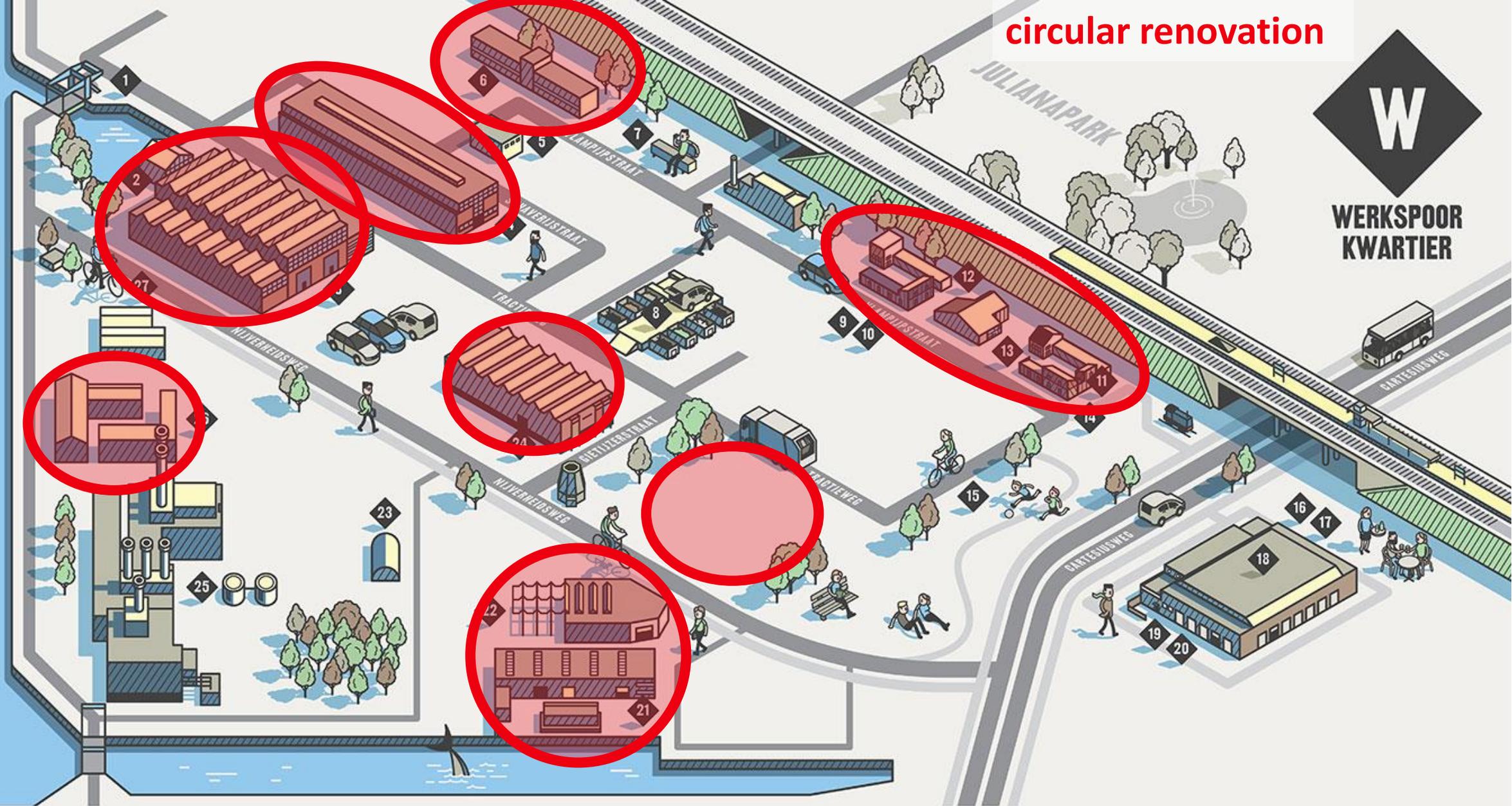
Measurement of:

1. Circular renovation
2. Circular infrastructure
3. Circular flow of materials
4. Circular ecosystem
5. Circular business models

# circular renovation



**WERKSPoor  
KWARTIER**



**LEGENDA**

- CIRCULAIR
- CULTUUR
- ETEN &
- HISTORIE
- KINDEREN
- CREATIEF

- 1 WERKSPoorHAVEN
- 2 WERKSPoor CAFÉ DE LECKERE
- 3 DE WERKSPoorKATHEDRAAL
- 4 DE WERKSPoorFABRIEK

- 6 VLAMPJIPATELIERS
- 7 WERKSPoorPAD
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- 19 DB'S
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- 23 16X
- 24 CENTRALSTUDIOS
- 25 PEGUS GEBOUW
- 26 CAMPUS WERKSPoor



# Circular Renovation

- No definition or standard for circular buildings
- Model circularity: CIMFA

- Current situation

- Materialization

Building section	Material	Source
Floor	Concrete	Document X
Brick walls (outer facing)	Bricks	Visual inspection
Brick walls (cavity wall)	Air cavity wall	Assumption
Brick walls (inner facing)	Limestone	Assumption
Structural beams	Steel	Visual inspection & Document X
Windows	Steel & Glass	Knowledge administrator
Façade panels	Asbestos	Knowledge administrator
Roof	Wood	Knowledge administrator
Roof	Bitumen	Knowledge administrator

- Measurement

- Volumes for floor, walls, glass, steel, etc.

# Circular Renovation

- Model circularity: CIMFA
  - Scenario's

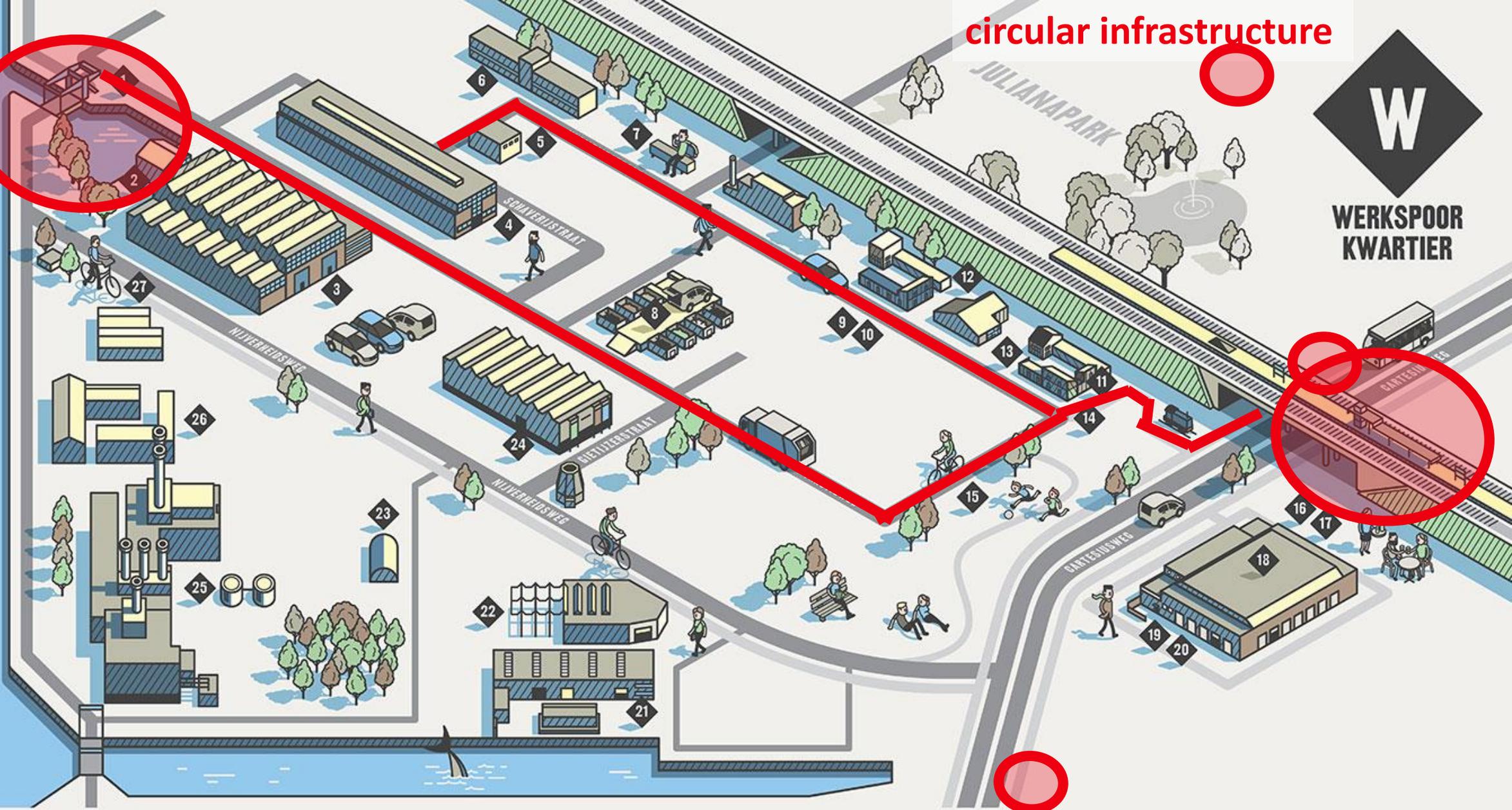
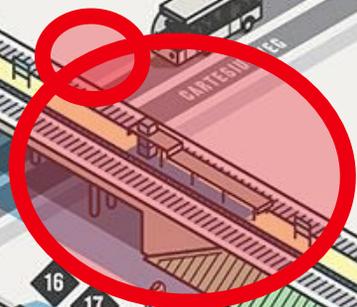
	Sc. 1	Sc. 2
<b>Glass Façade (frame)</b>	Virgin aluminum	Recycled aluminum
<b>Doors</b>	Hardwood	Hardwood
<b>Bricks side walls</b>	Bricks (virgin)	Bricks (re-used on site) / virgin
<b>Insulation side walls</b>	EPS insulation	Recycled clothes
<b>Floor insulation</b>	EPS insulation	Cellulose
<b>Roof insulation</b>	EPS insulation	Recycled clothes

- Measurement
  - Mass used
  - Embodied energy
  - Operational energy

# circular infrastructure



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- |                         |                          |   |                 |                              |
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- Side walk created
- Green area added: 5,000m<sup>2</sup>
- Harbor in progress
- Public transport outside of district

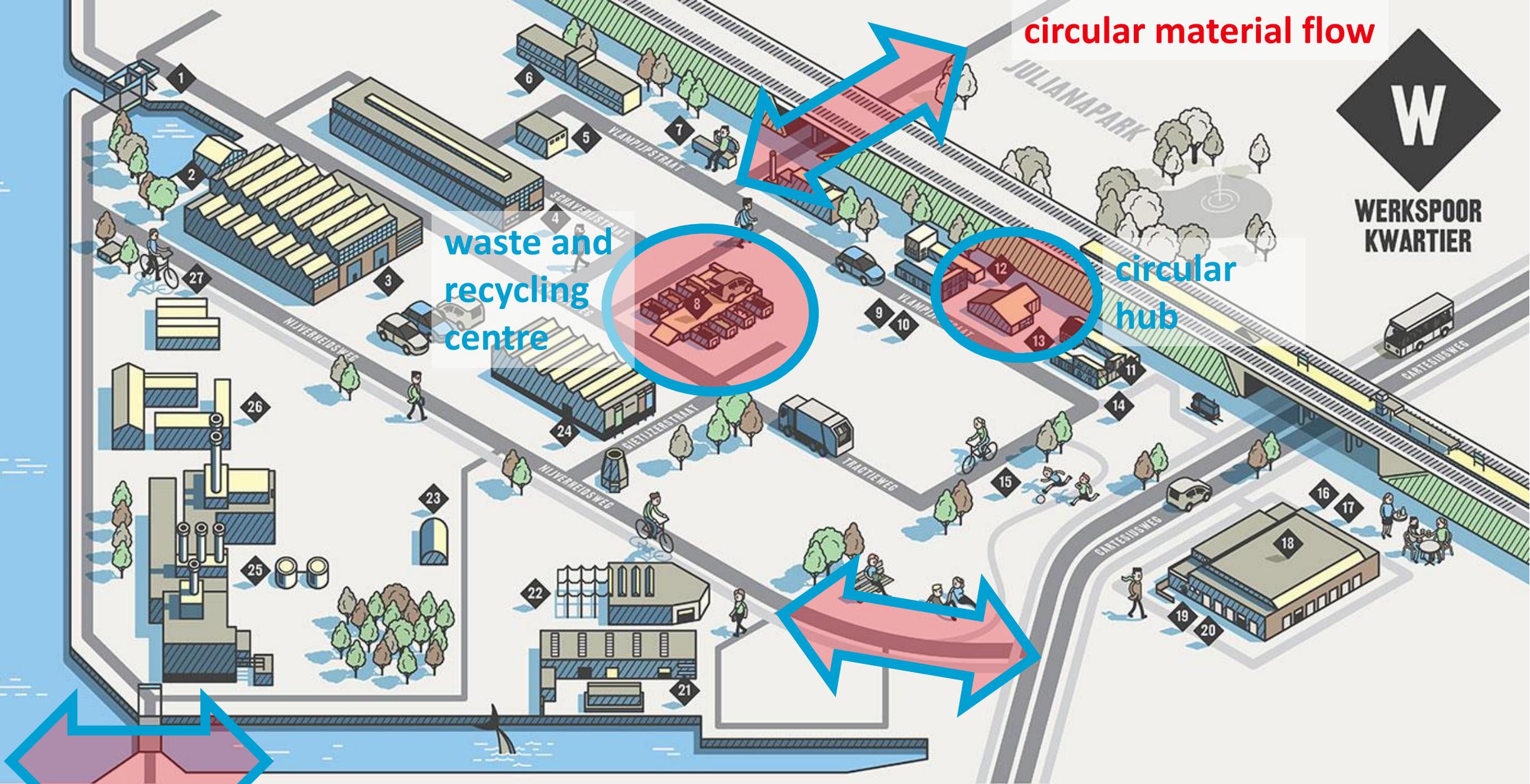
circular material flow



WERKSPOR  
KWARTIER

waste and  
recycling  
centre

circular  
hub



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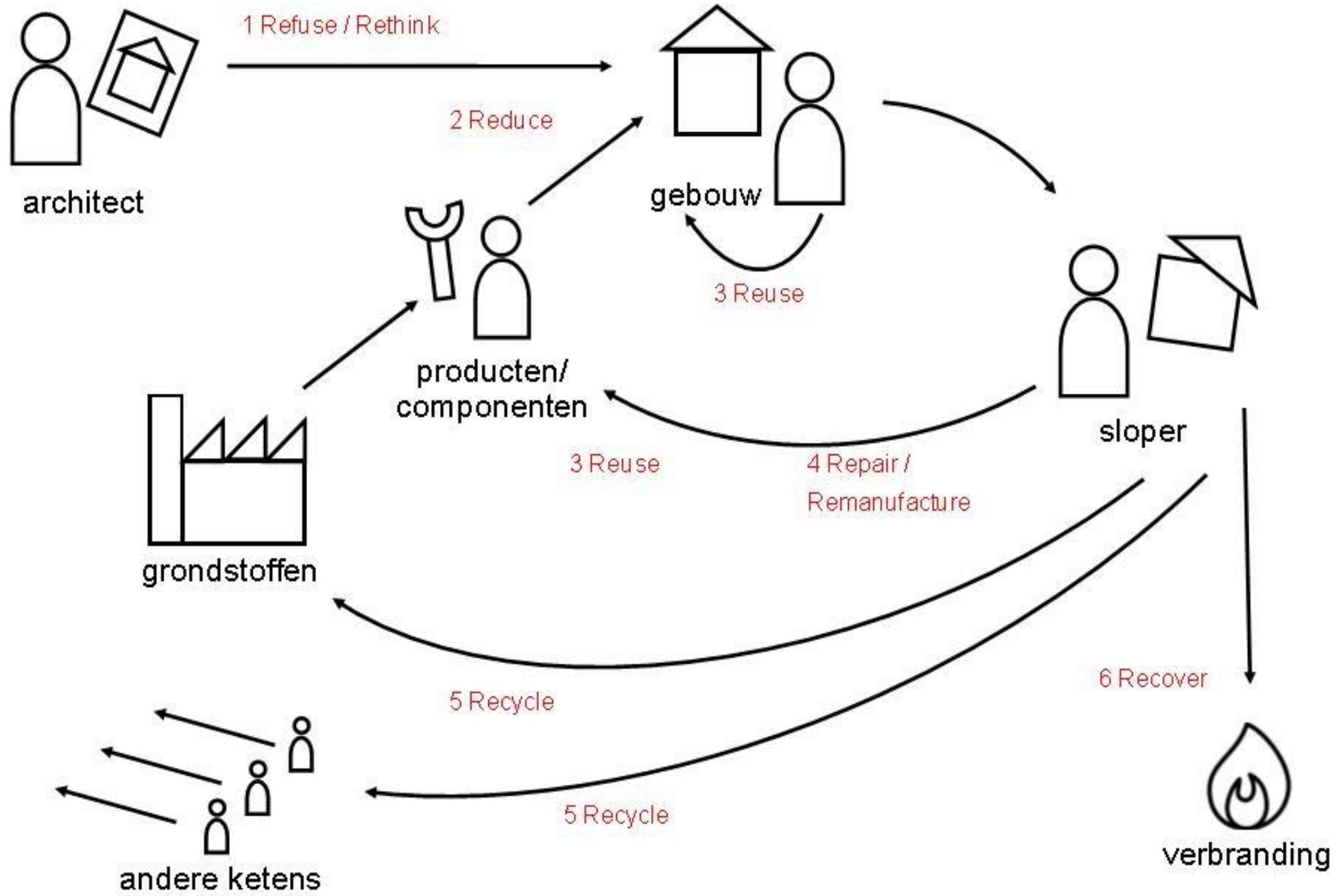
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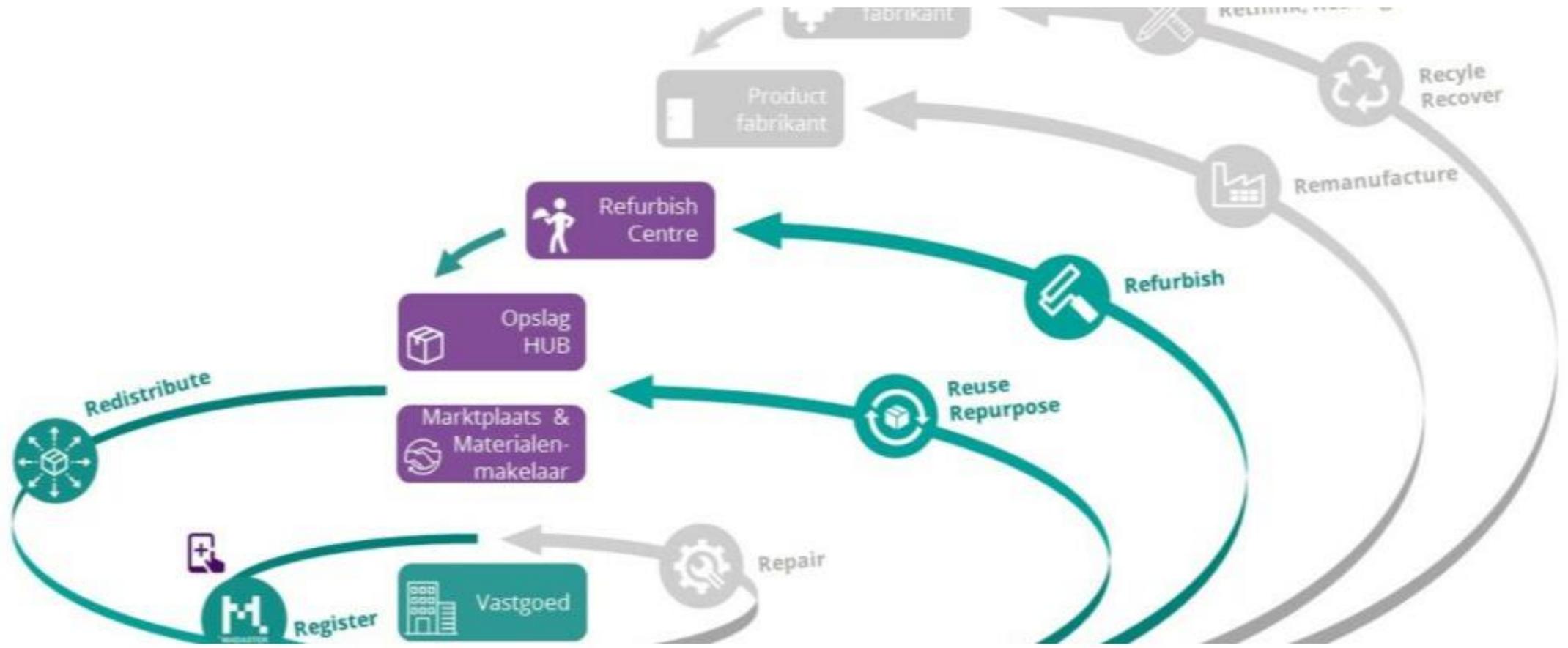
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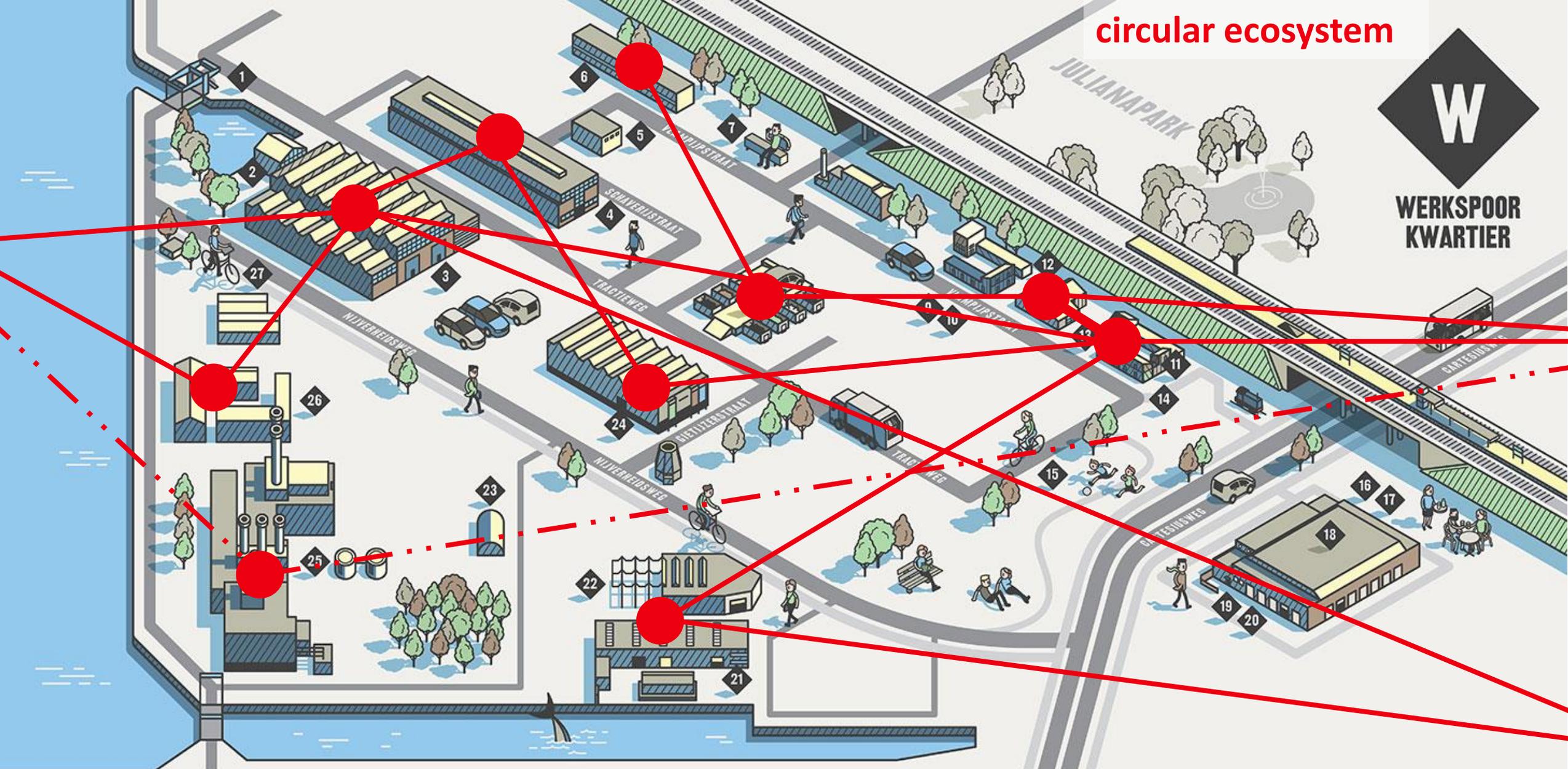
- Wood
- Water taps
- Ceiling plates
- Bricks
- Frames



# circular ecosystem



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# Different stakeholders, different values

Stakeholders	Value created
StartUp collective	reputation, visibility, higher demand
EventOrganization	reputation, more (high end) customers
Circular Start ups	affordable workspace, connection, knowledge exchange
Circularity consultancy	knowledge generated for circular hub creation
Companies in the area	better work environment, better reputation
Customers of the circular producers	availability of circular products
Municipality	less waste, lower costs, job creation
Residents	better living climate, less criminality
Knowledge institutes	Research project, knowledge creation

# Value capture and distribution:

## Pro:

- Different benefits created for different stakeholder groups
- System-resources created

## Con:

- Assymmetric distribution of costs and benefits:

(Source: Planko & Velzing, 2019, Building 'solution ecosystems' for circular economy endeavours)

# Ecosystem orchestration

## Pro:

- Solution ecosystems need to be managed and coordinated to accelerate co-creation of the innovative solution

## Con:

- Three organizations trying to steer the ecosystem development:
- Have shared vision: “to develop a creative circular urban area”
- No clearly defined goals

(Source: Planko & Velzing, 2019, Building ‘solution ecosystems’ for circular economy endeavours)

# Goal alignment

Pro:

- Individual goals of ecosystem actors need to be aligned with common goals

Con:

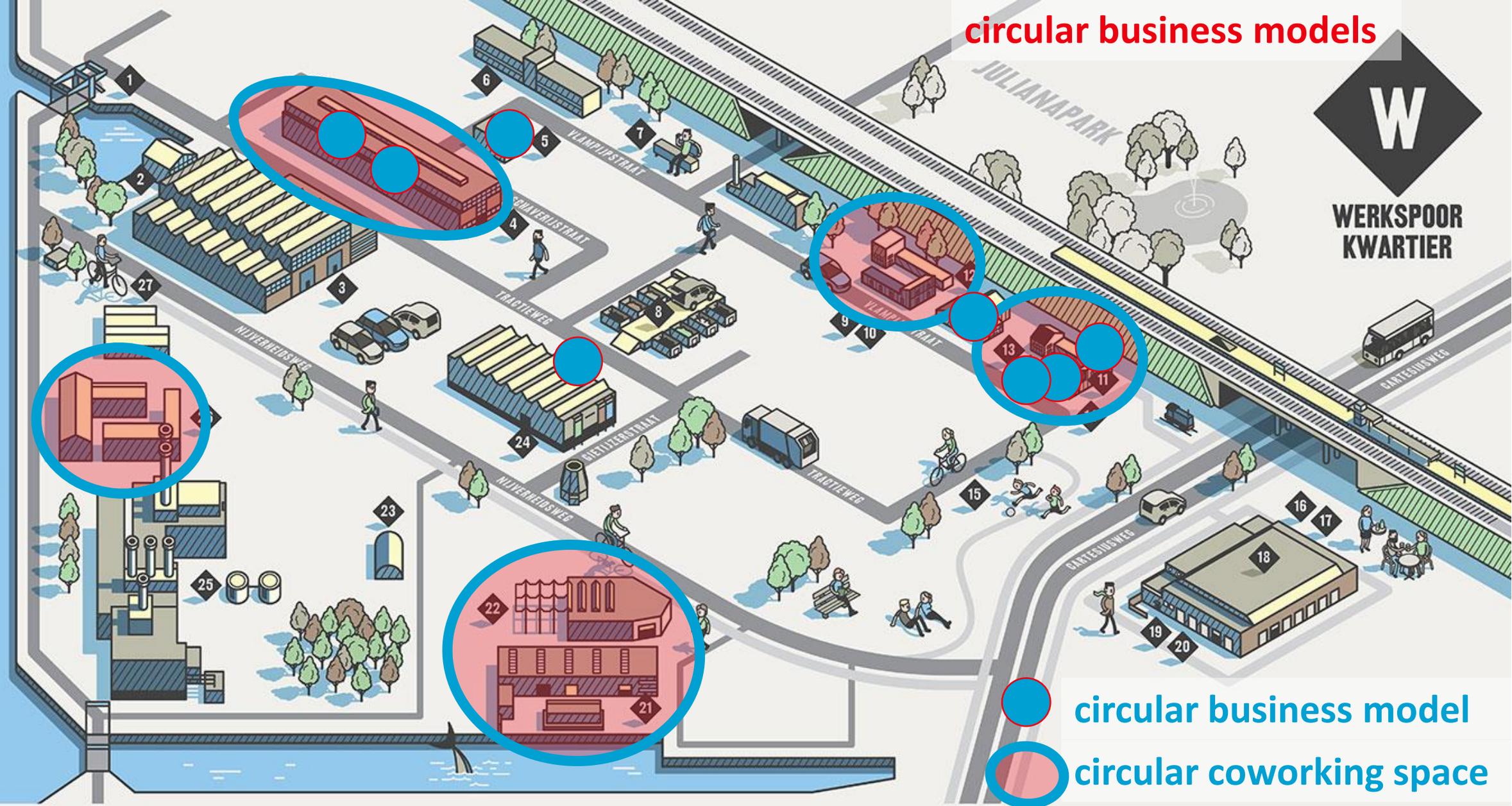
- Actors have different goals
- Actors have different time horizons
- Different in relative importance

(Source: Planko & Velzing, 2019, Building 'solution ecosystems' for circular economy endeavours)

# circular business models



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- circular business model
- circular coworking space

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# DISCUSSION

# How circular is this area?

The improvement of a traditionally organized city or district to a city or district that eliminates waste and where materials are kept in use, functioning in a regenerative system.

How can we better measure/assess the circularity of an urban district or city?

When would you be satisfied?

# How to cope with cooperation?

# How to spread? Amsterdam



**Germany**

**river Rhine**

# Thank you!

Evert-Jan Velzing, Kitty Vreeswijk

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