



Gemeente  
Amsterdam

# CIRCULAIRE INNOVATIES

Amsterdam & MRA aanpak 2017



# The City of Amsterdam

2

880,000 inhabitants

2,3 million in Metropolitan region

165 canals

950.000 bicycles

6,800 16th, 17th and 18th century buildings



# Amsterdammers





# Urbanisatie & groei van Amsterdam

Between now and 2050 the global population is expected to increase from 7.2 billion to more than 9 billion, with 98% of this growth happening in cities and in the developing and emerging world

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“70-80% will live in cities by 2050”

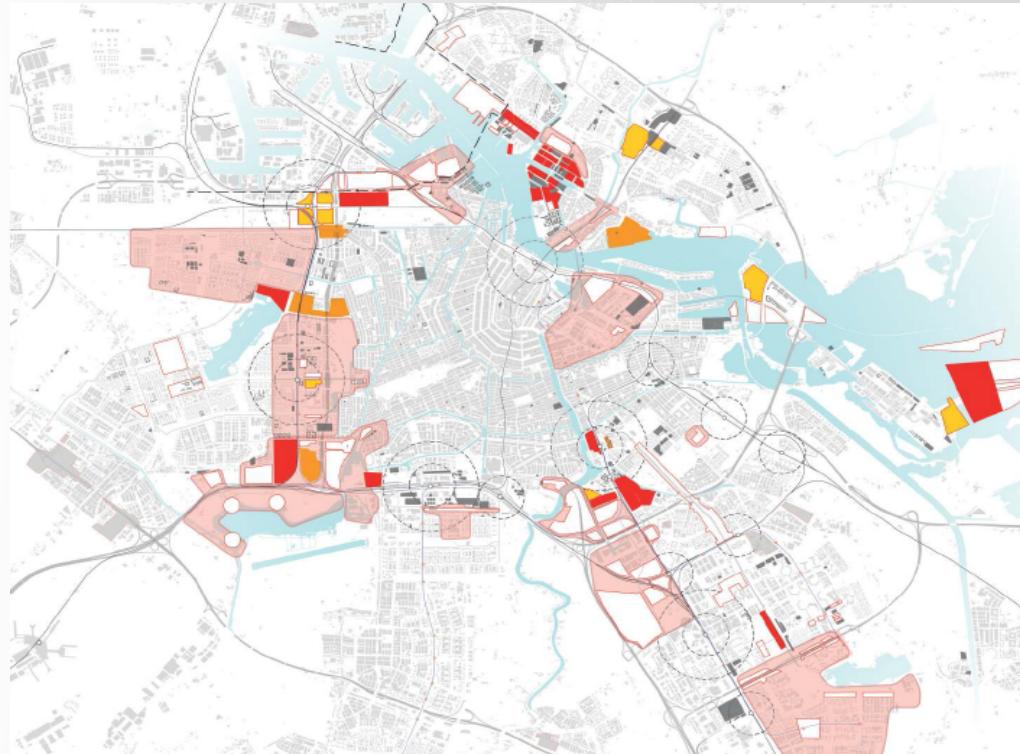
*World Economic Forum, 2015*





# Amsterdam \_Koers 2025

- ❖ Building 50.000 houses before 2025
- ❖ 12 locations in and around the city
- ❖ Expecting 900.000 citizens in 2025
- ❖ Working together with the metropolitan region





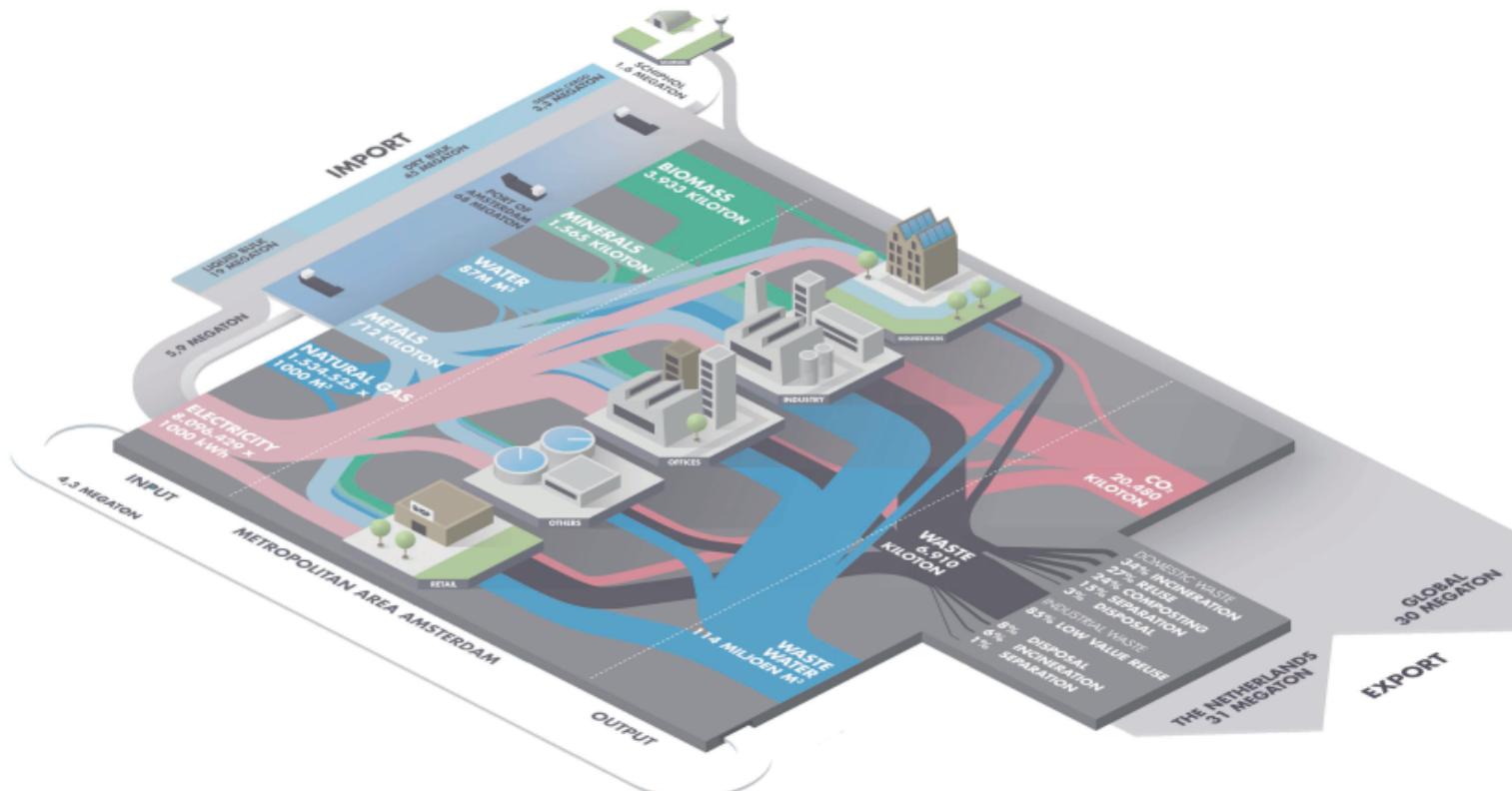
# Metabolisme scan



# AMSTERDAM'S METABOLISM

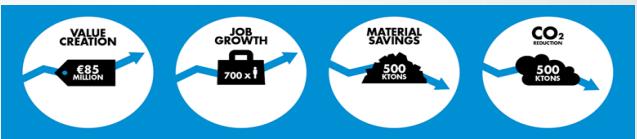
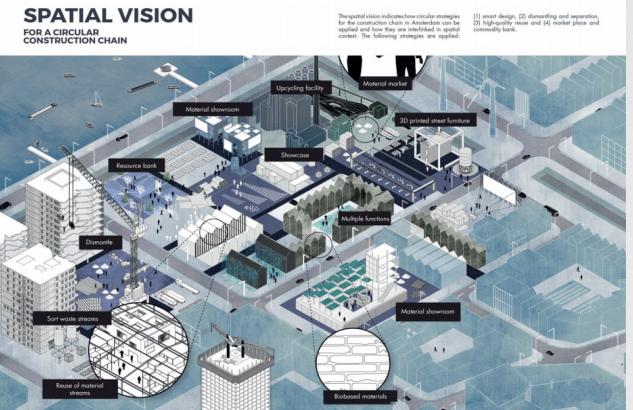
INDUSTRY/OFFICES/HOUSEHOLDS/RETAIL

The material flows for Amsterdam are analyzed and visualized in the following diagram. This figure provides insight into how resources move through the metropolitan region and city, where they will be processed to add value to the local economy and where raw materials are wasted, or, ideally, cascaded back into the system and be reused.



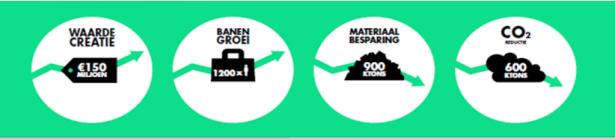
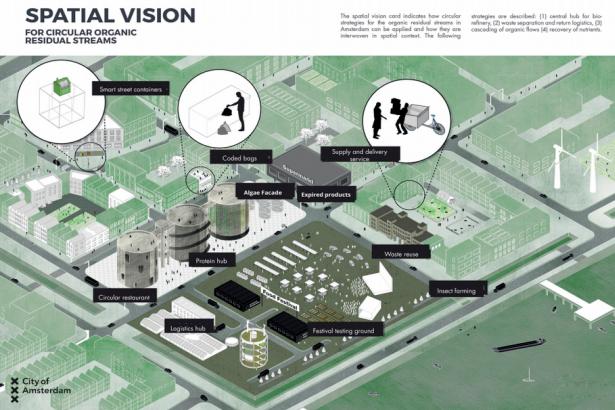


# IMPACT/year



STRATEGY	VALUE
SMART DESIGN	15%
DISMANTLING AND SEPARATION	29%
HIGH-VALUE REUSE	27%
MARKETPLACE AND RESOURCE BANK	29%
TOTAL VALUE	100% = €85 million

\*Economic and environmental benefits if e.g. 70,000 new build houses are being developed using circular strategies.



STRATEGIE	WAARDE
CENTRALE HUB VOOR BIORAFFINAGE	11%
SCHEIDING EN RETOURLOGISTIEK	37%
CASCADERING VAN ORGANISCHE STROMEN	24%
TERUGWINNEN VAN NUTRIENTEN	28%
TOTALE WAARDE	100% = €150 miljoen

\* Economic and environmental benefits if e.g. all compostable waste from households is being collected separately.

**Innovation program\_**

**partners accelerate transition**



Circular Cities is all about *collaboration*



[www.amsterdamsmartcity.com/circularamsterdam](http://www.amsterdamsmartcity.com/circularamsterdam)



# Aanpak Amsterdam Circulair

## 1. LEREN DOOR TE DOEN!

2. Zelf het goede voorbeeld geven

3. Stad als proeftuin

4.(keten)-samenwerkingen aanjagen

5. Visie & beleid optimaliseren

ECONOMISCHE, ECOLOGISCHE EN SOCIALE IMPACT



# Circular transition innovation & learning by doing

IoE en Data

From product to service

Metabolic engineering

Circular Energy

Design technology

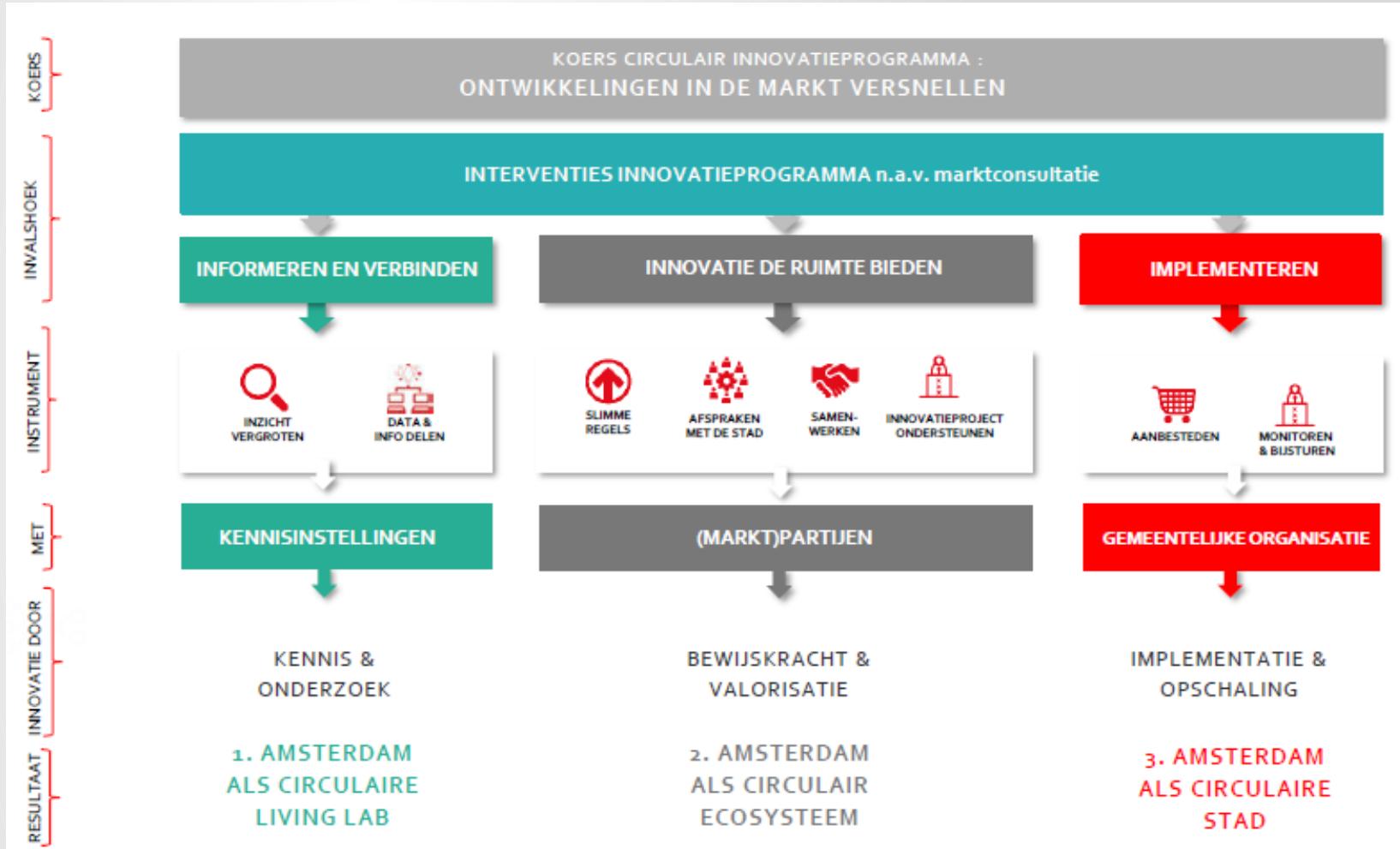
Onderzoek

Valorisatie & bewijskracht

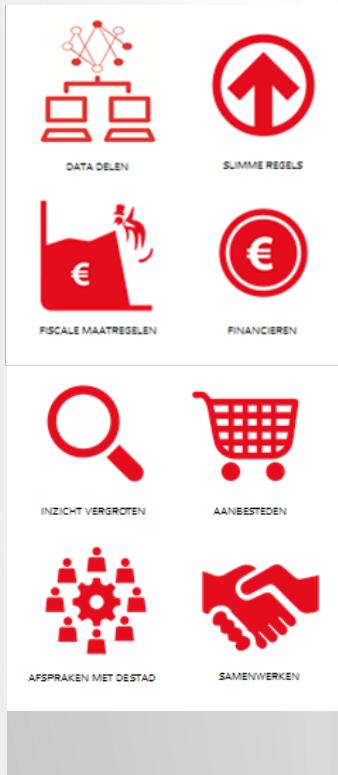


Implementatie en opschaling





X  
X  
X



# Reducing the digital gap



## Circular City

PUMA: Prospecting the Urban Mines of Amsterdam

In the AMS project PUMA, researchers find out under what conditions Amsterdam as urban mine is viable.

Evaluation

[Website](#)





## LEARNING & EXPERIMENTING

# 3D printing met plastic Afval



# Energy Innovation LAB\_ prosumers

**Strategy.** Visualising systems

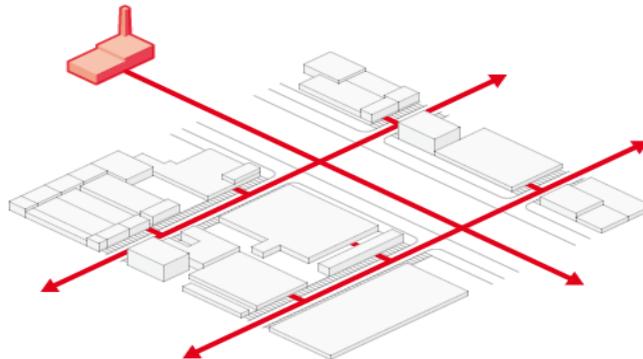
## Example: BAU versus networked.

**A**

### **Business as usual**

A large combined heat and power plant provides effective, reliable district heating, cooling and power. It is a well-understood solution. Yet it tends to be expensive. It is not easily scalable. It does not integrate particularly well

with other systems. Nor is it particularly adaptable to change, with little incentive to take advantage of demand reduction via behaviour change strategies.



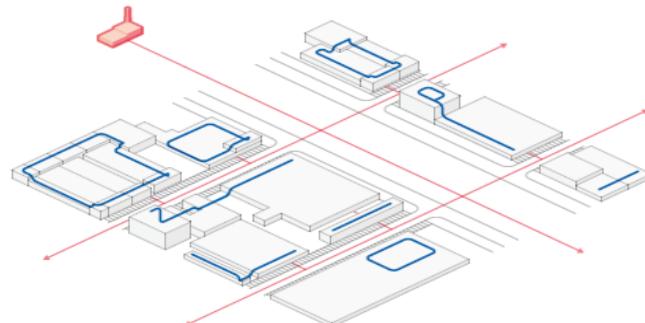
**B**

### **Networked**

A decentralised network of community-owned energy microgrids, based on distributed renewable energy generation (solar, biowaste and others), battery storage (including in vehicles as well as fixed batteries), machine learning (to provide load

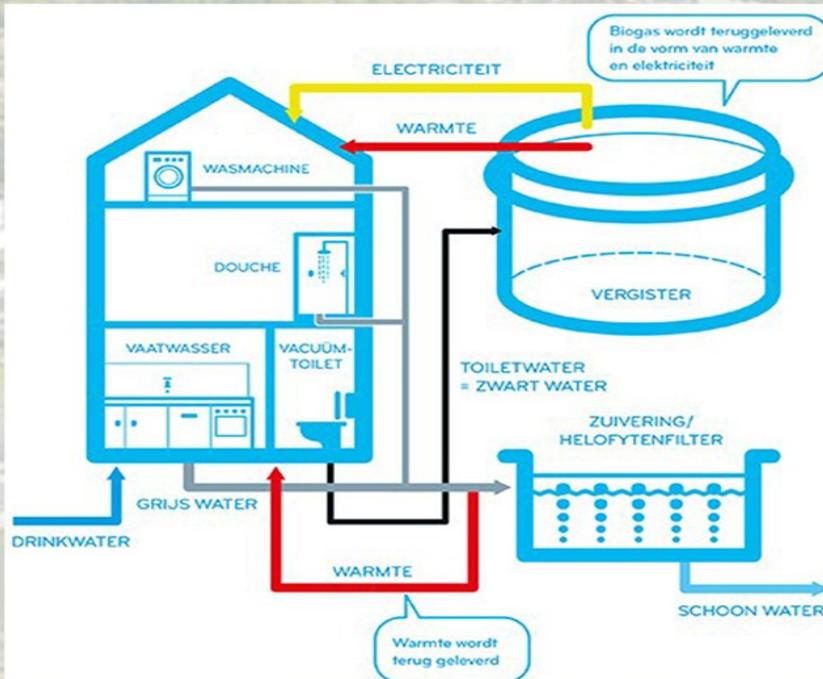
balancing between systems), social sharing possibilities (between buildings and communities, including greater possibility of demand reduction via behaviour change). The grid provides backup, in the form of a smaller district combined

heat and power plant. This means significant cost savings, as well as the ability to adapt to future scenarios, via iterative addition of microgrids. Cost, carbon and waste is all reduced.



# BUILDING ECOSYSTEMS

## Nieuw sanitatie





# Circulaire Bouwketen



"Verbonden door de ambitie om te bouwen aan een duurzame toekomst voor de stad"



DURVEN HET AAN EN SPREKEN ZICH UIT IN EEN  
MANIFEST VOOR DE CIRCULaire ONTWIKKELING  
VAN BUIKSLOTERHAM

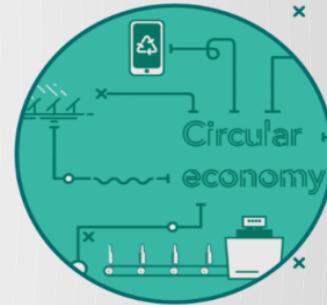
Circulaire Stad  
Circulaire gebiedsontwikkeling



## IMPLEMENTING & SCALING UP

# Innovative procurement

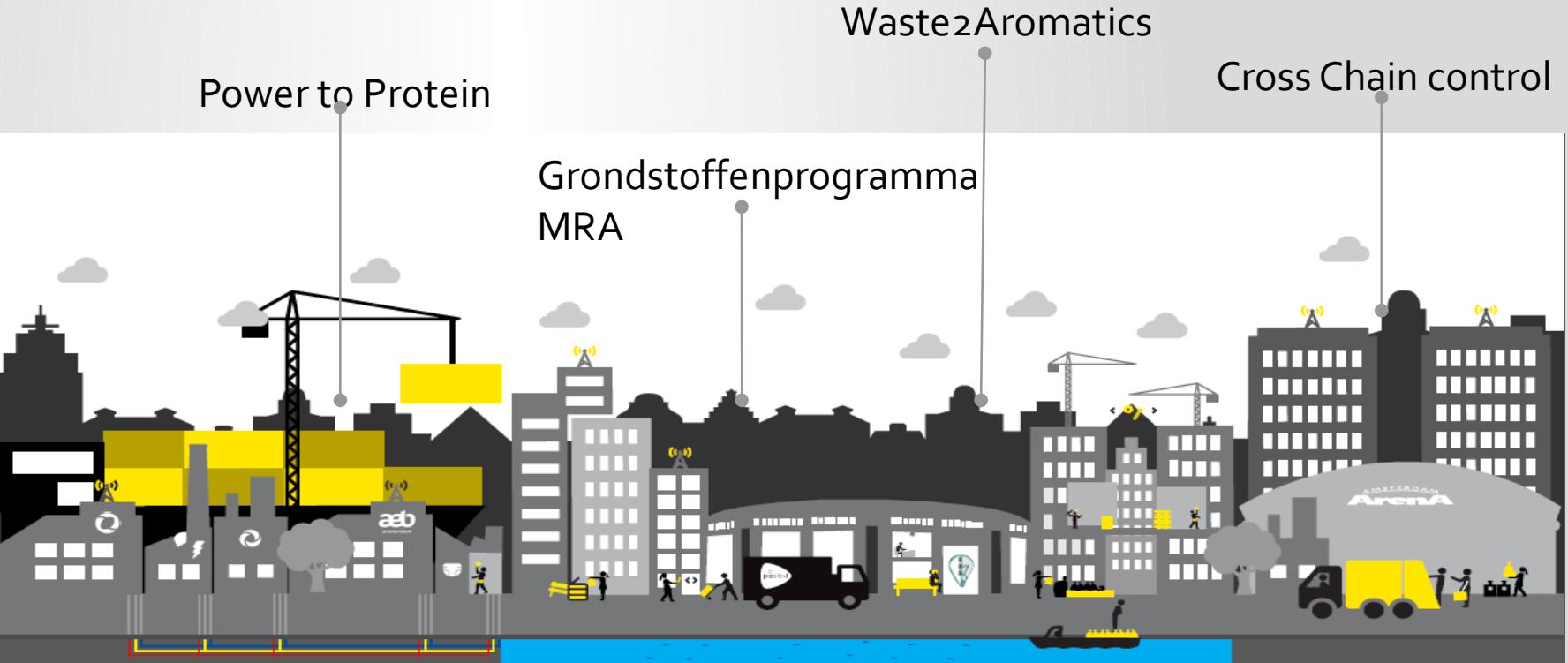
- Startup in Residence Program



- 10 key issues
- Startups can work in-house for 4 months
- City as a potential launching customer
- <https://vimeo.com/136089204>



# Industriële symbiose





# And many more projects...& approaches

## Circular Construction Chain

**Road as materials depot**  
Using recycled substrate (98%) in an asphalt cycle path

1 like 0 comments 0 shares + Add CIRCULAR CITY

**Amsterdam Reloaded - AMS S...**  
Framework for innovative business-, governance-, financing-, and partnership-models to mobilise new investments for...

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**AUAS (HvA): Urban Technolog...**  
Urban Technology contributes, with applied and demand-oriented research, to the use of technology to create a liveable, circular and...

1 like 0 comments 0 shares + Add CIRCULAR CITY

## Circular Energy

**Urban Energy Innovation lab**  
Public private partnership for innovation in sustainable energy in Amsterdam South East

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**AUAS (HvA): Urban Technolog...**  
Urban Technology contributes, with applied and demand-oriented research, to the use of technology to create a liveable, circular and...

1 like 0 comments 0 shares + Add ENERGY, WATER & WASTE

**City-zen: Comfort Cooling resi...**  
Sustainable District Heating and Comfort Cooling for newly built apartments in the Amsterdam Houthaven district

7 likes 0 comments 0 shares + Add ENERGY, WATER & WASTE

**Zonnegrondwater**  
Onwasser

**Renewable energy**  
Onwasser

**Renewable energy**  
Onwasser

## Circular Business

**Cross Chain Control for waste ...**  
Circular South East Amsterdam through smart logistical cooperation

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**Amsterdam Metropolitan Area...**  
Prioritising flows of raw materials in the Amsterdam Metropolitan Area

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**SEEV4City (Smart, clean Energ...**  
Storage of solar energy in electric cars

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**Amsterdam Circular Challenge**  
The Amsterdam competition for high potentials with a passion for circular economy

1 like 0 comments 0 shares + Add CIRCULAR CITY

**Urban Factory - AUAS (HvA)**  
From Urban Waste to Circular Products

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**3D printing with local residual...**  
The HvA and the Amsterdam ArenA are studying how old stadium seats can be used as raw materials for new products which...

0 likes 0 comments 0 shares + Add CIRCULAR CITY

**Metabolism of the city**  
Circular Data Platform

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Circular Data Platform

**Metabolism of the city**  
Circular Data Platform



# Join our community platform!



The screenshot shows the homepage of the amsmarterdam city website. At the top, there is a red header bar with the website's name "amsmarterdam city" in white. To the right of the name are two buttons: "Sign in" and "Join the Community". Below the header, there is a navigation menu with links to "Home", "Posts", "Projects", "Products", "Requests", "Visit", "Events", "Network", and "Map". The main content area features a large image of a city street at night with neon signs, overlaid with text: "Connect with Amsterdam's Smart City Innovators" and "Social • Open • Sustainable". To the right of this text, there is another section with the heading "Over 1865 innovators: startups, corporates and more" and a row of small profile pictures. Below this are two buttons: a red one labeled "Take the tour!" and a white one labeled "Sign in". At the bottom of this section is a link labeled "About Amsterdam Smart City".



[www.amsterdamsmartcity.com](http://www.amsterdamsmartcity.com)



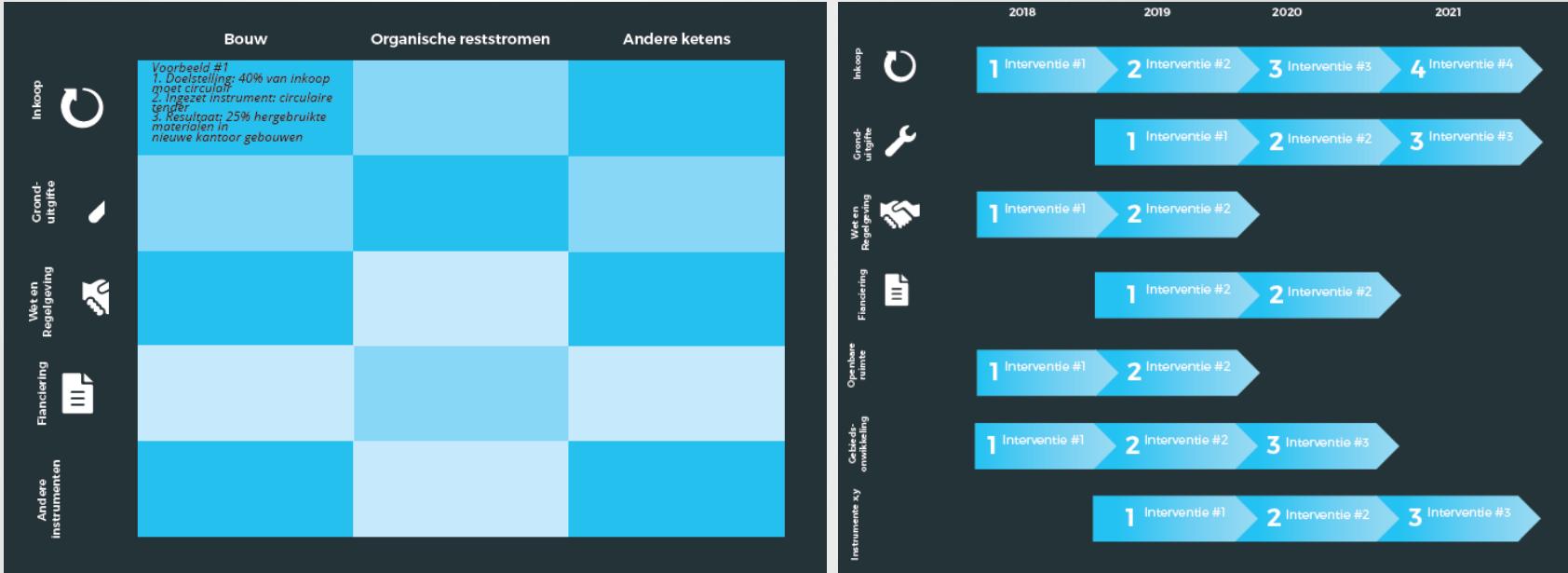
# HACK jouw STAD!



# HOW?

1. Research & communicate *(serious gaming)*
2. Prototype & test *(living labs)*
3. Explore new partnerships *(coalition of the willing)*
4. Implement new instruments *(launching customer)*
5. Have long term vision & ambitions *(goals)*

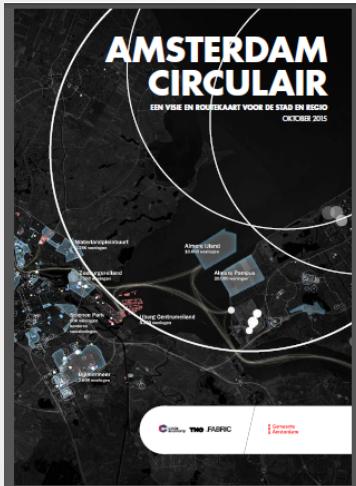
# XXX Communicatie, evaluatie en iteratie





# Circulaire aanpak Amsterdam

download de rapporten



[https://www.amsterdam.nl/publish/pages/802010/amsterdam\\_circulair-visie\\_en\\_route\\_kaat.pdf](https://www.amsterdam.nl/publish/pages/802010/amsterdam_circulair-visie_en_route_kaat.pdf)



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We cannot solve  
our problems with  
the same thinking  
we used when we  
created them.

ALBERT EINSTEIN

