

amsterdam economic board

Circular Cities

The case of the Amsterdam Metropolitan Area

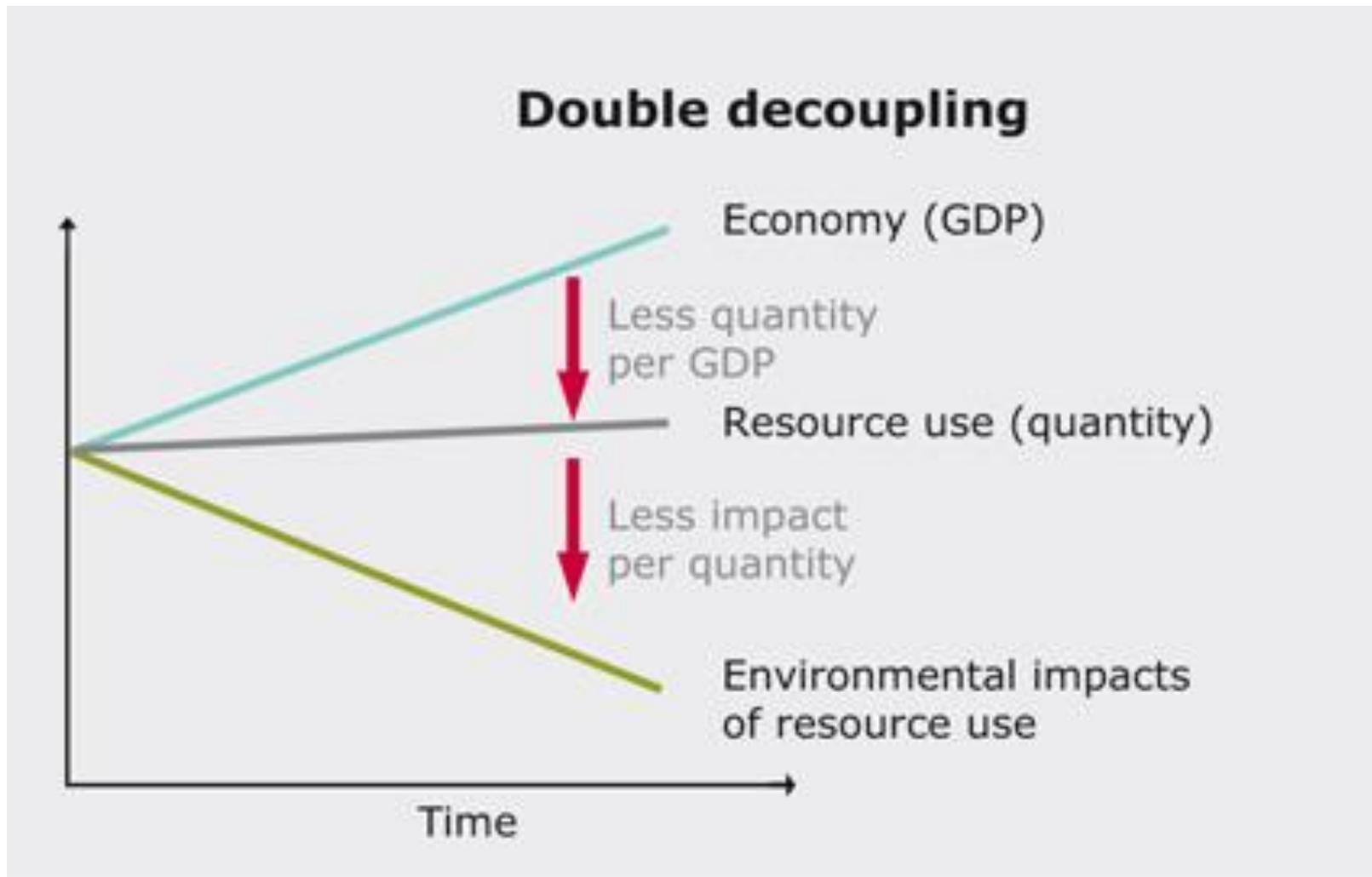
Jacqueline Cramer
Ambassador Circular Economy

I amsterdam.

Urgency



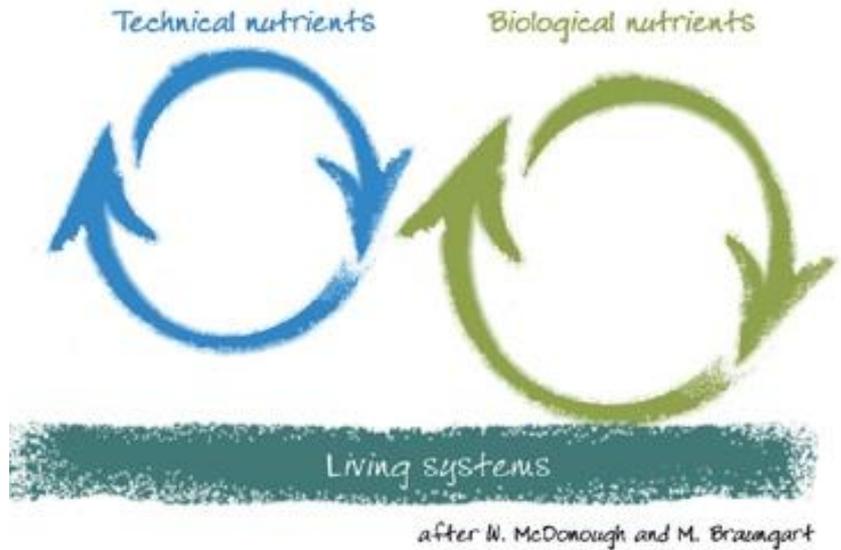
- *Growth of world population and increase of consumption and production lead to growing scarcity of some key resources, more volatile prices and severe environmental impacts*
- *Increasing concentration of world population lives in urban regions: 1950 30%, by 2050 66%*



Source: UNEP, 2011

We move from a linear economy...

... To a circular economy



1. Water as a resource

Three aims:

1. to safeguard security of water provision, water quality, safe/healthy drinking water and adaptation to climate change
2. Closing water cycles
3. Establishing relation between water use and use of energy, nutrients and waste streams



2. Energy as a resource



Aim:

To combat climate change and guarantee security of energy supply by:

- Energy-efficiency measures
- CO₂ reduction
- Renewable energy: solar- and windenergy, ATEs, geo-thermal, bio energy, surplus heat and other energy sources, combined with smart grids and other ICT infrastructure

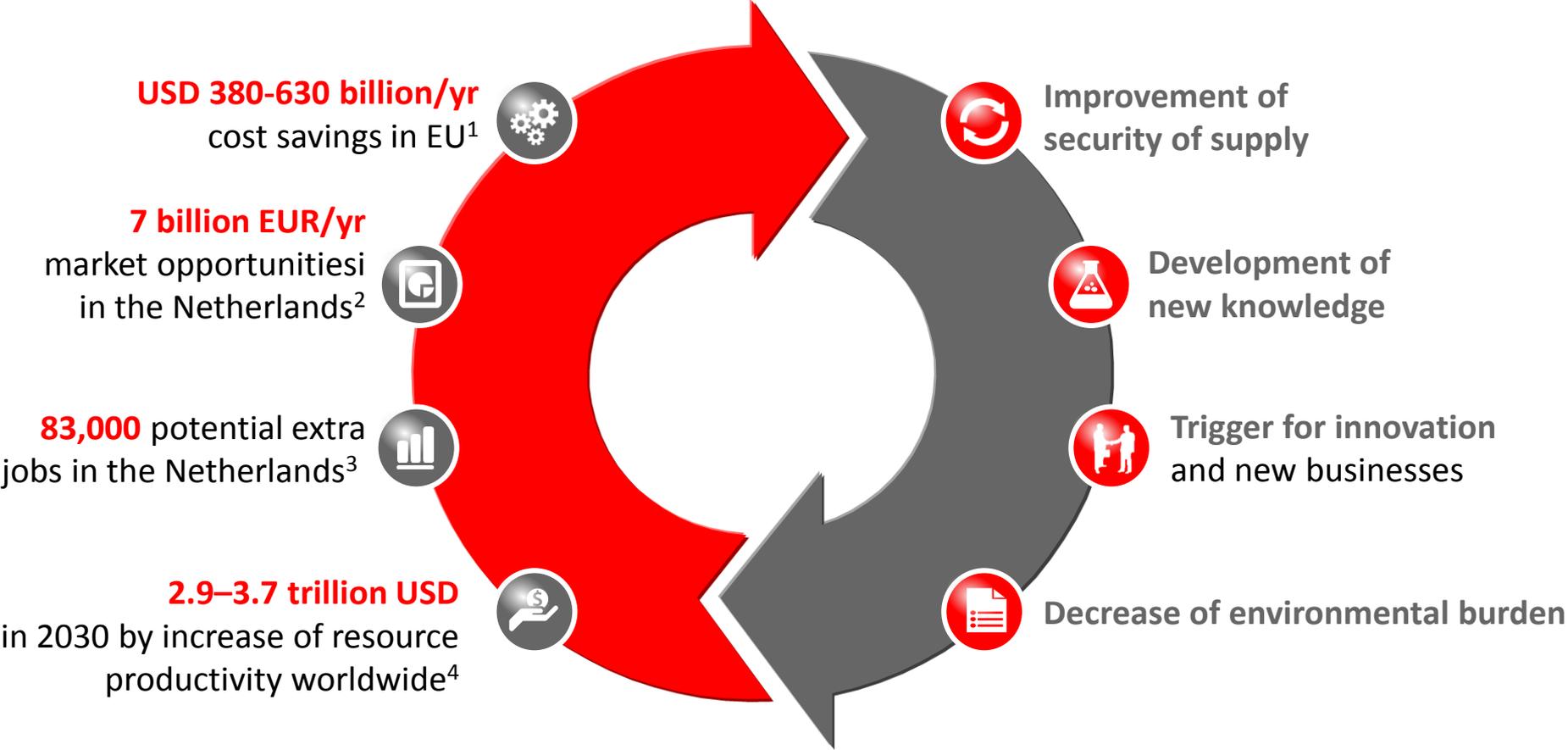
3. Raw materials as a resource



Aim: to reduce scarcity and environmental Impact and increase security of supply

This generates direct financial benefits...

... But also indirect benefits



1. E. MacArthur Foundation
2. TNO
3. Rabobank
4. McKinsey

The ambition of the Metropole Region Amsterdam (MRA) is to be worldwide frontrunner in finding smart solutions for the limited availability of resources by redesigning and closing of product and resource cycles and developing renewable energy. At the same time we realize innovation and new businesses within the Metropole region.

Criteria for selection of initiatives

Scale: action required at the scale of the Metropole region Amsterdam

1

Synergy: action relevant for companies, regional governments, knowledge institutes and citizens

2

Densely populated area (2.3 million people)

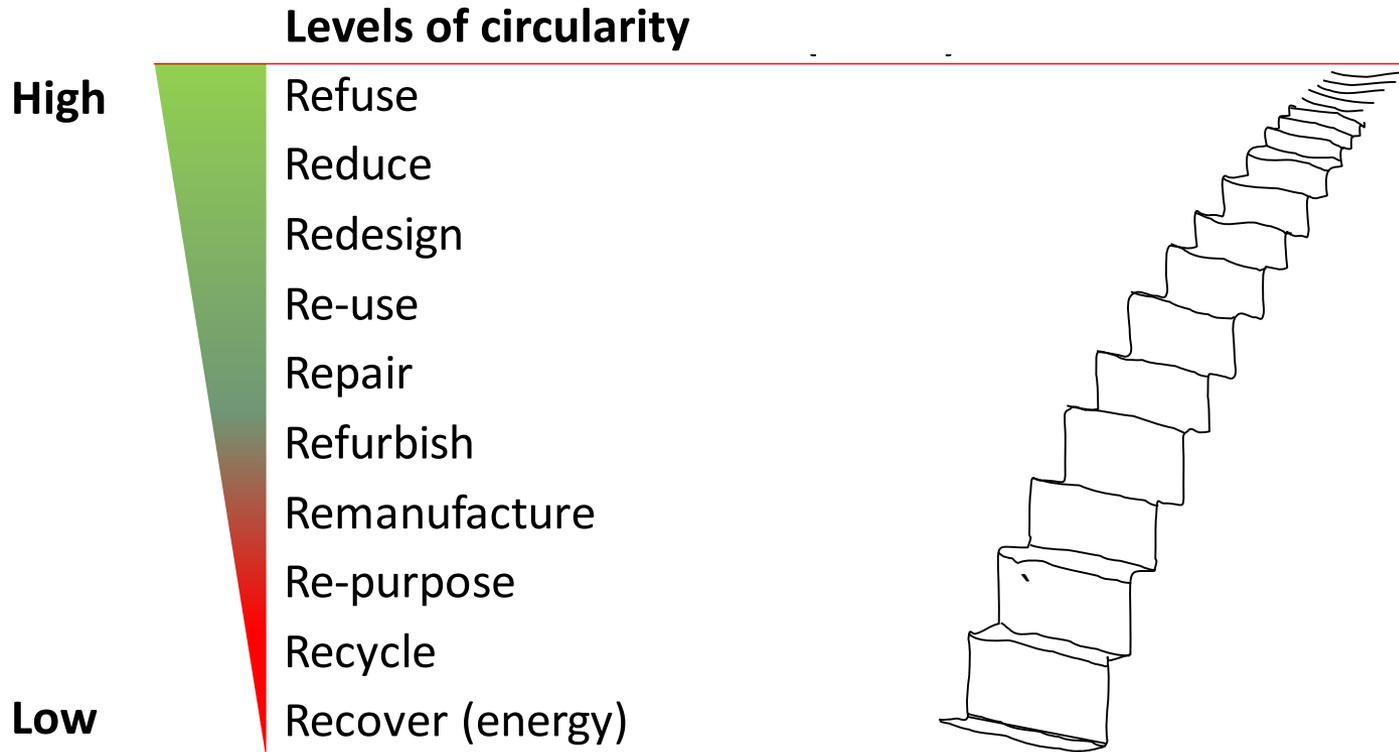
Focus of Amsterdam Metropolitan Area

Theme 1:
Towards a
renewable
energy-system

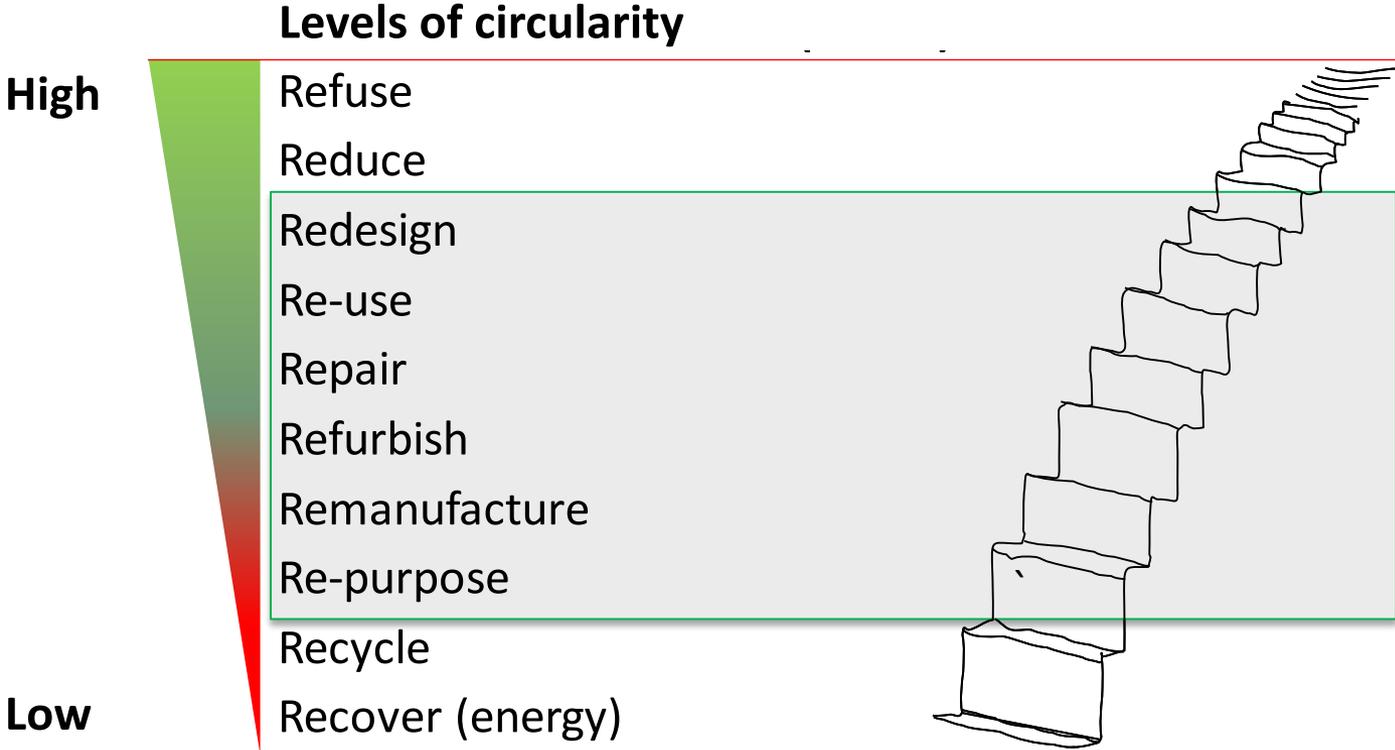
Theme 2:
High value reuse
of products and
materials

*Cross cutting initiative:
circular entrepreneurship*

Ladder of circularity: Give priority to the options that are as high as possible on the ladder (10 R's)



Ladder of circularity: the MRA gives priority to the options that are as high as possible on the ladder



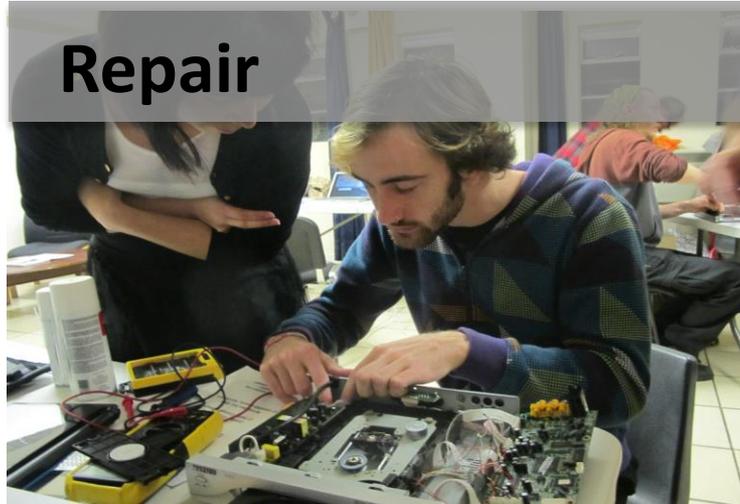
Redesign: through redesign products can be brought back into the cycle with high value creation



Redesign: redesign can also be based on renewable resources (e.g. bamboo, flax, hemp, public greenery and waterplants)



There are many ways to reintroduce a product in the economy



Repair

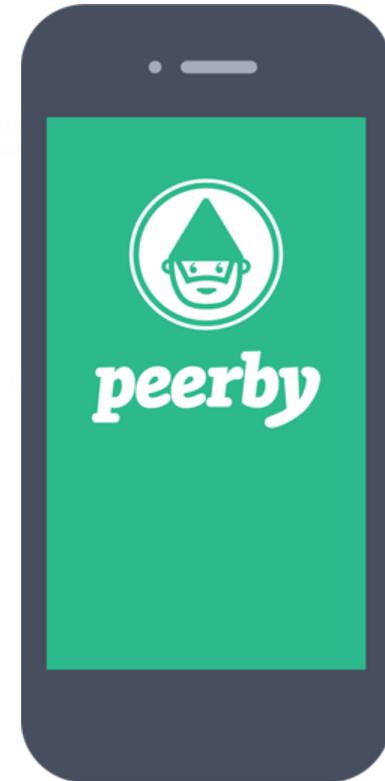


Redesign/reuse

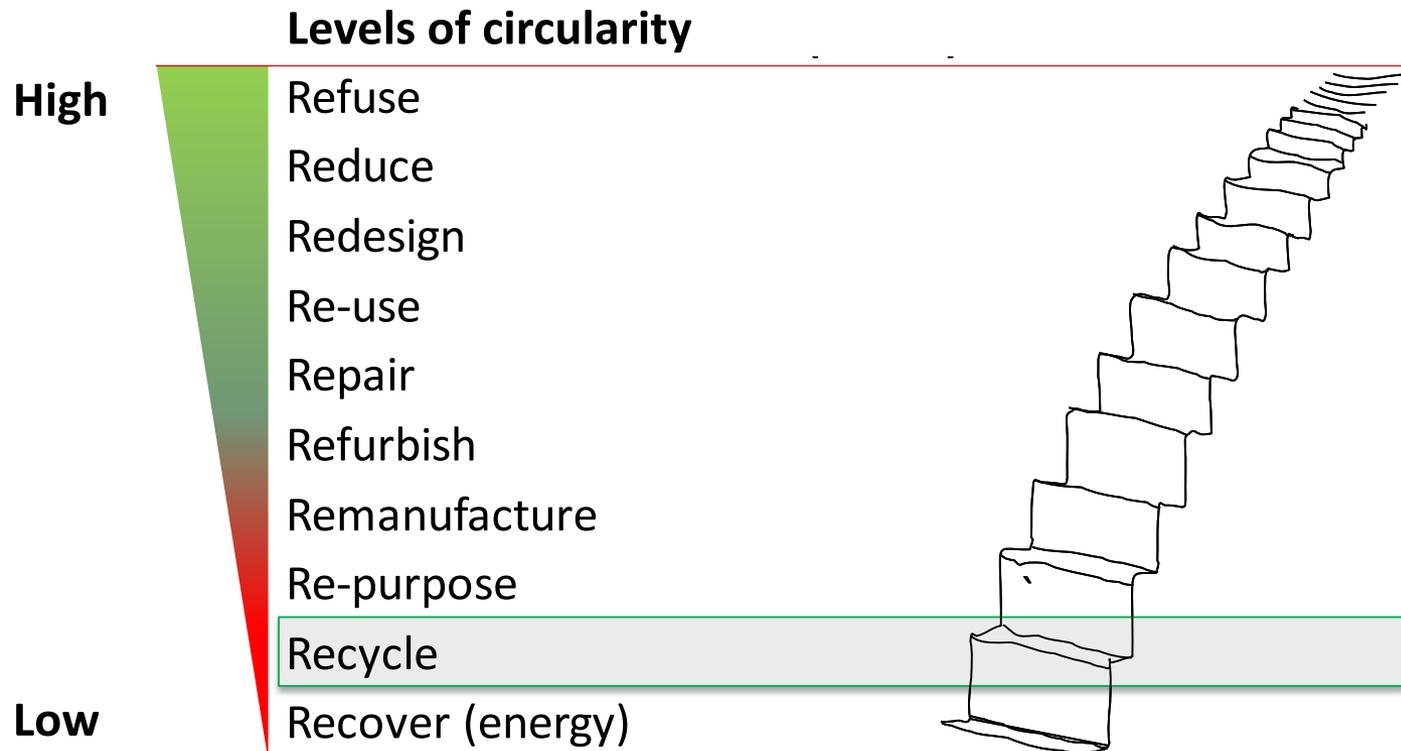


Repurpose

New business models are also being developed:
sharing and leasing redefine product ownership



Ladder of circularity: the MRA gives priority to the options that are as high as possible on the ladder

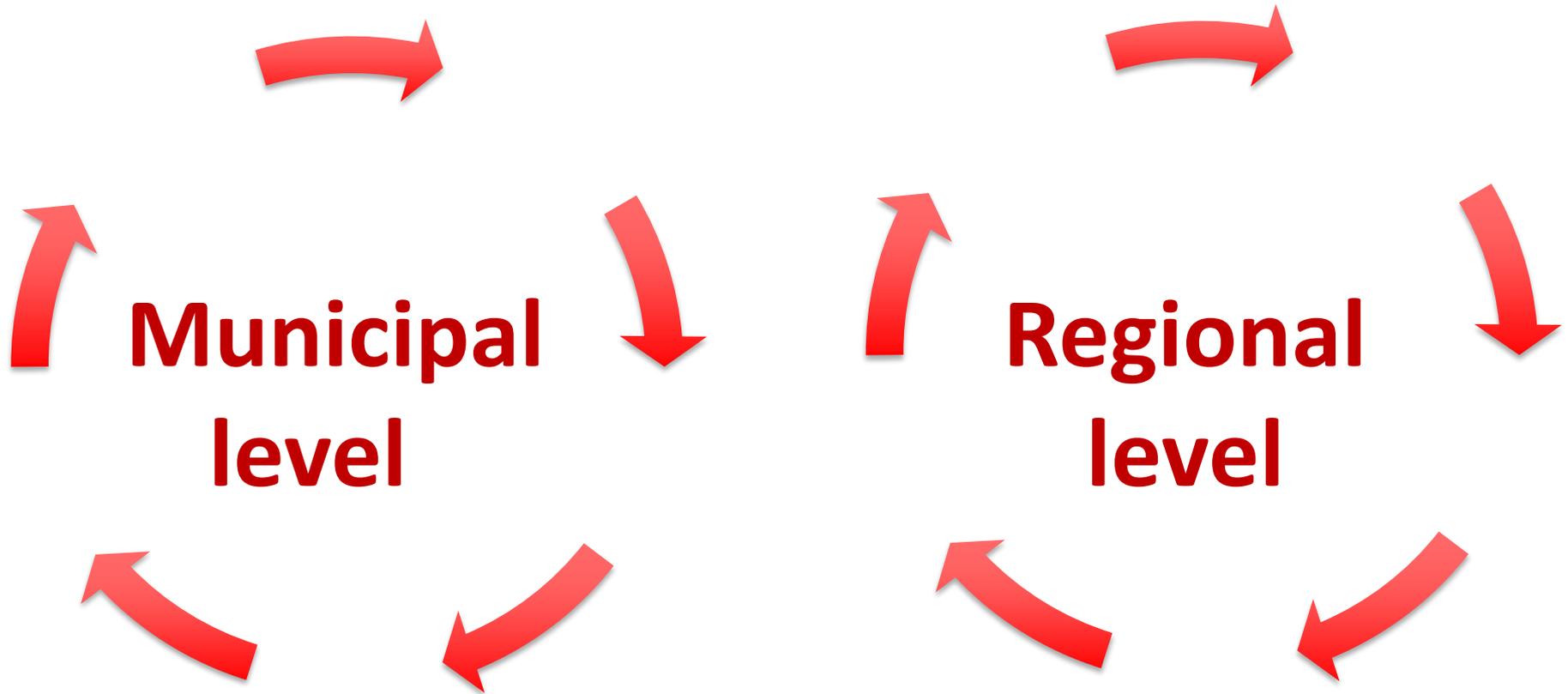


The MRA has started with high value recycling of 9 priority resource streams



...

High value recycling needs the appropriate scale



Case 1: Circular demolition and construction in Amsterdam West of 470 houses

95% resource reuse; climate neutral, green



Case 2: high value recycling of biomass stream
Biodegradable household waste, sewage-sludge,
agro-food, public greenery and waterplants



amsterdam economic board

Example: Reclamation of resources from sewage sludge, e.g. water, energy, phosphates, cellulose, nitrate, proteins, calcite and humic acids



Example: High value recycling of waste streams from the food industry (multipurpose biorefinery)



Example: High value recycling of public greenery



Production of resources for the paper- and chemical industry



Case 3: Textile recycling (second hand /non wearable)



Case 4: Closing the loop of mattresses



Case 5: Closing the loop of plastic waste

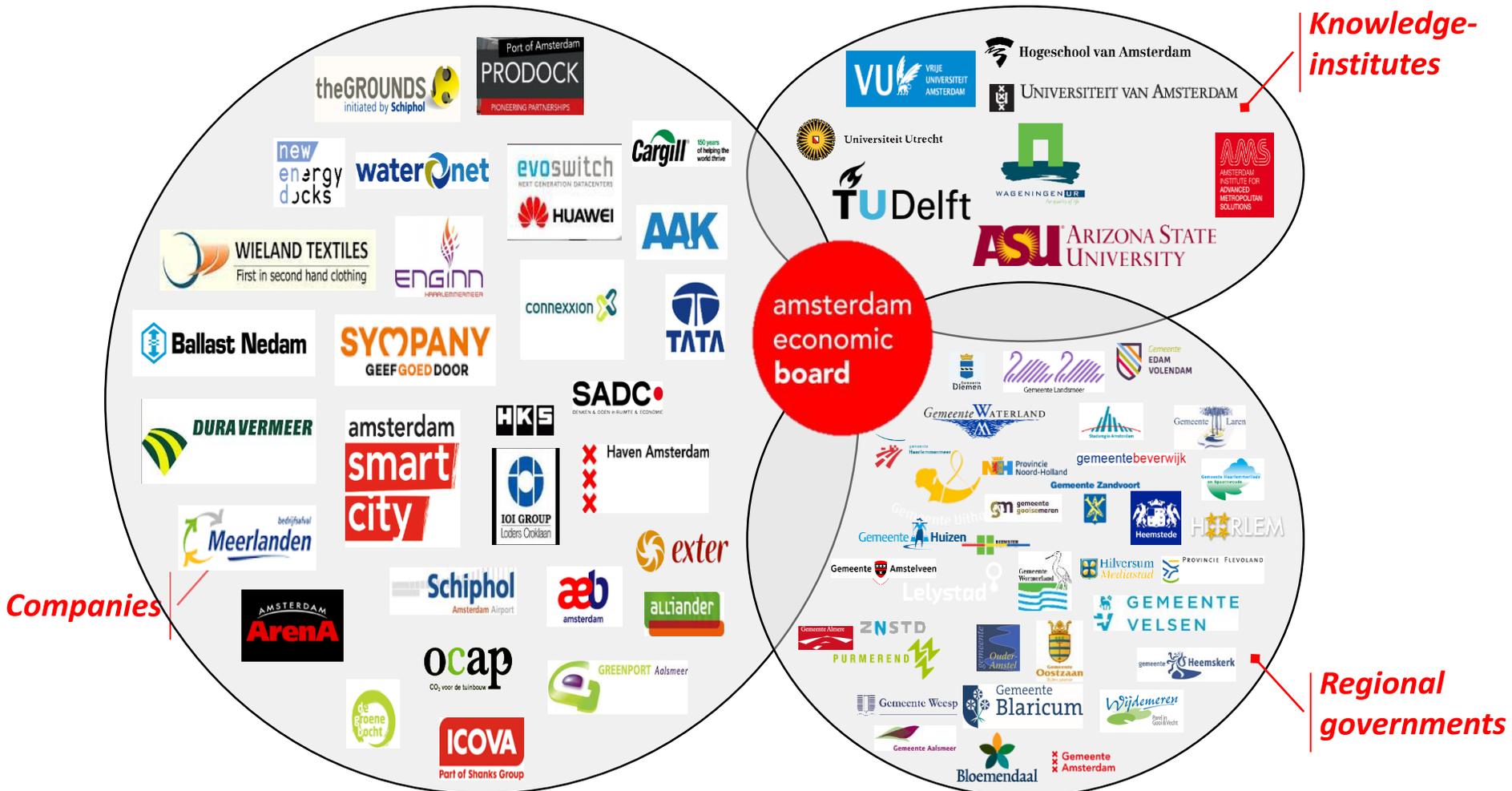


The approach of closing material streams is tailor-made, but there are 7 generic preconditions for change

| Item | Description |
|---|---|
| ▪ Proper balance | ▪ Finding a proper balance between closing loops at local or higher level |
| ▪ Decrease of incineration | ▪ Attuning decrease of incineration and development of circular activities |
| ▪ Sufficient supply and clear demand | ▪ Taking care of sufficient supply of waste streams to be recycled and clear demand for recycled material |
| ▪ Quality of product | ▪ Securing the quality of product use and recycling |
| ▪ Legal and technical | ▪ Taking away legal and technical barriers |
| ▪ Transition process | ▪ Orchestrating and communicating the transition process towards circular economy |
| ▪ Financial and organisational | ▪ Developing and applying new financial and organisational arrangements |

The Amsterdam Economic Board is a cooperation between regional governments, companies and knowledge institutes

amsterdam economic board



More information?



Jacqueline Cramer

Marjolein Brasz

 003120 524 1120

 j.m.cramer@uu.nl
m.brasz@amecboard.com