



FOSTERING INDUSTRIAL SYMBIOSIS FOR A
SUSTAINABLE RESOURCE INTENSIVE INDUSTRY ACROSS
THE EXTENDED CONSTRUCTION VALUE CHAIN

Industrial symbiosis: going beyond technical cooperation

Lessons learned

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Lessons learned

- 2006: Plan C

from waste to materials and resources

- 2012: Flanders Materials program

towards circular economy

- 2017: Circular Flanders

Circular materials, water, food, energy and land

www.vlaanderen-circulair.be



Neither the government nor businesses, civil society, centres of expertise or consumers have the knowledge or the instruments to independently achieve the transition to a circular economy. Therefore partnerships and co-ownership are crucial.

Industrial symbiosis as part of circular economy

1+1>2

Multi-actor approach

- **Partnership** Knowledge institutes, Business partners, Government, Civil society
- **Co-ownership** Different partners adopt a coordinating role
- **Cross-sectoral** Economic, Legal, building and construction, chemistry...

Challenge:

- Civil society representation
- Mutual supportive research, policy and action
- High level but pragmatic

Job opportunities

- **Positive balance:** creation, substitution, transformation
- High skilled, low skilled
- Geographical match



Job opportunities

Activity	Low-skilled	Medium-skilled	High-skilled
Upcycling	****	****	*
Downcycling	****	**	*
Servitization	***	***	***
Remanufacturing	**	*****	**
Reuse	****	**	*
Biorefining	*	****	****

Scale from 1* = low to 5* = high

Source: Morgan and Mitchell, 2015a



Job opportunities

- **Positive balance:** creation, substitution, transformation
- High skilled, low skilled
- Geographical match

Challenge:

- Quality of new/future jobs
- Employment market

Business culture: between companies

- Open and transparent
- Broad network
- Continued effort
- Co-responsibility
- Multi-disciplinary

Challenge:

- Innovation
- Up-scaling
- Deepen cooperation over specific sectors and clusters

Business culture: in companies

- Open and transparent
- Complex management
- Cooperation and co-creation
- Multi-disciplinary

Challenge:

- Different skills and profiles
- Different working methods

To realize Industrial Symbiosis and Circular Economy

We need to look beyond
the technical cooperation





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