

# RISERS

## IDENTIFYING IS OPPORTUNITIES

## MAPPING THE POTENTIAL OF INDUSTRIAL SYMBIOSIS AND PRIORITY RESOURCES

WP6 WEBINAR 'INDUSTRIAL SYMBIOSIS STANDARDISATION DIALOGUES' 9 Sep 2024

UGENT-FEA-EMSME-ECM

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# UGENT-ECM: ENERGY & CLUSTER MANAGEMENT

## ~INDUSTRIAL SYMBIOSIS (since 1998)

- energy & resource management in
  - industrials parks & sites
  - urban-industrial & cross-sectoral clusters
  - regions, ports, hubs & districts
- interdisciplinary research
  - engineering models
  - legal, economic, spatial, technical and social aspects
- projects eg
  - industrial clustering/management
  - climate/energy symbiosis and circular economy
  - hubs for circularity

### MATERIALS

resources, waste, emissions, critical materials, by/side-products, ...

### ENERGIES

heat/steam, electricity, nuclear, hydrogen, renewable, ...

### SERVICES

facilitation, infrastructure, logistics, transport, engineering, platforms, ...

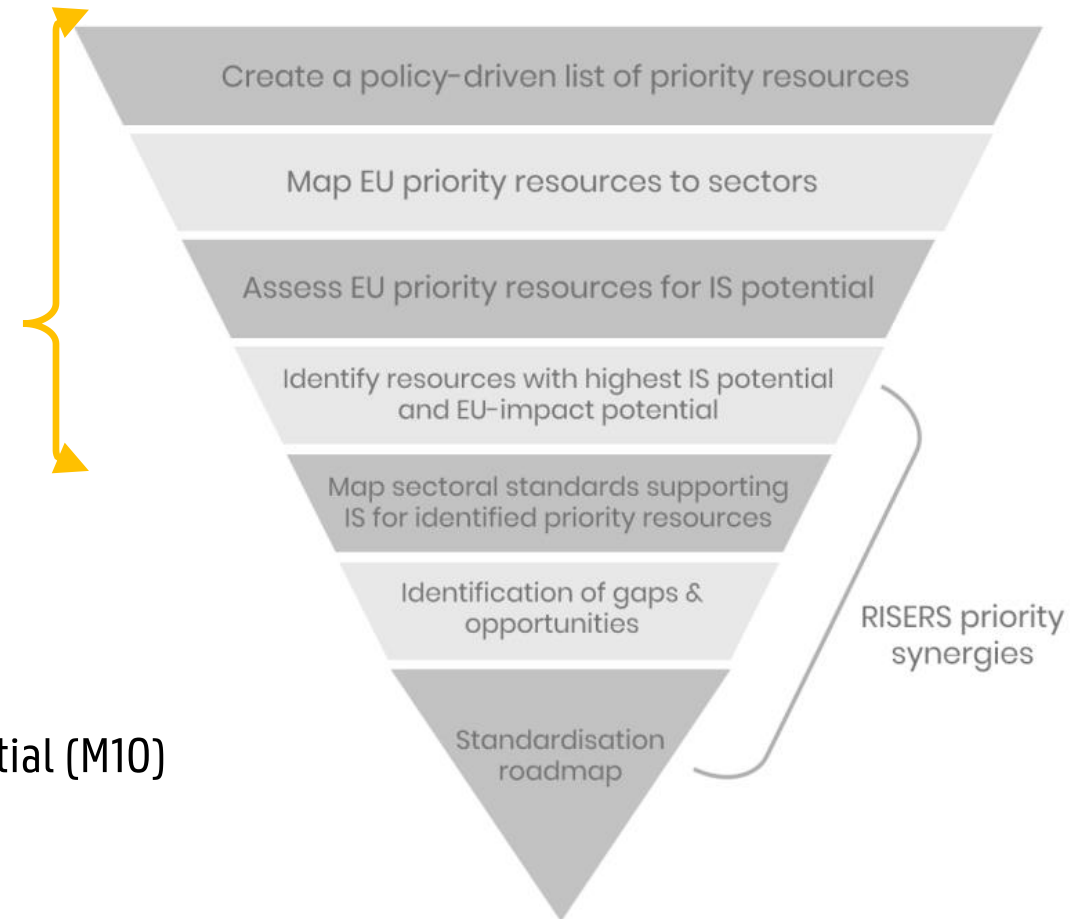
# RISERS WP3

## OBJECTIVE

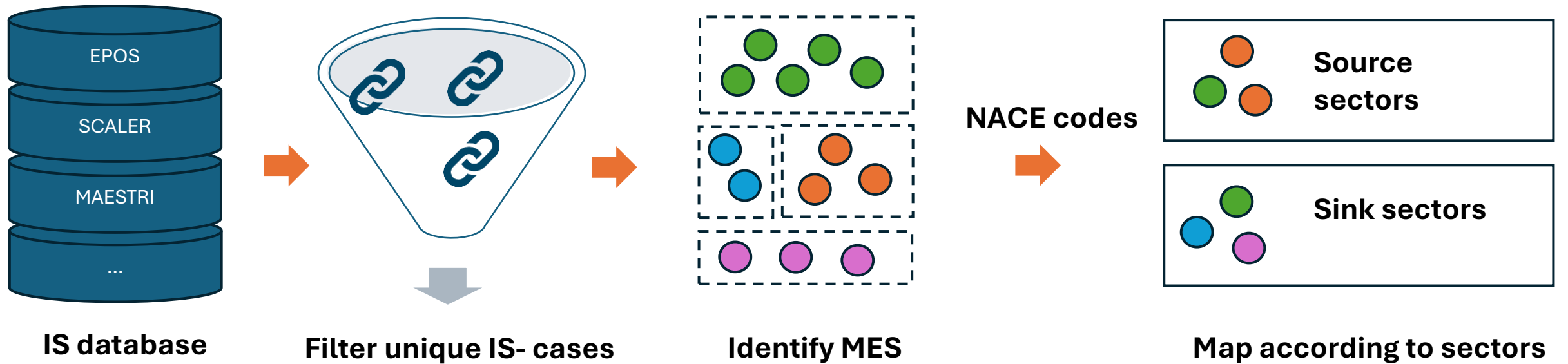
- understand IS areas, list priority areas and key sectors (~repository)
- create list of priority synergies based on available EU-policy documents, EU project results, IS literature and industrial research

## Deliverables

- Comprehensive description of the methodology (M4)
- Cross-sectoral IS priority synergies with highest impact and IS potential (M10)
- Gaps and impact analysis results for industrial symbiosis (M18)

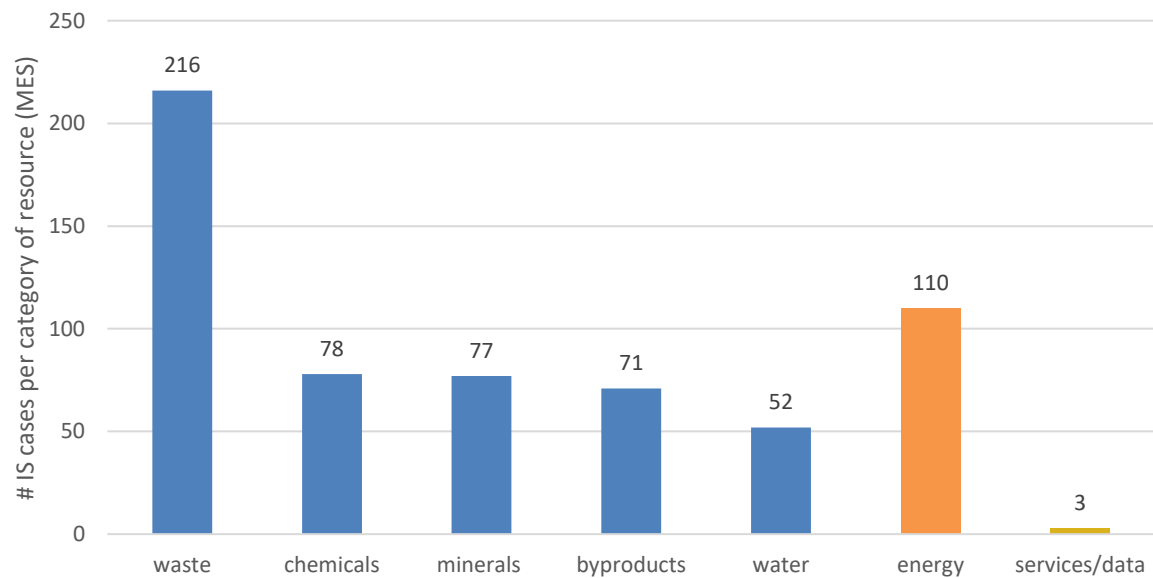


# UNDERSTAND IS AREAS

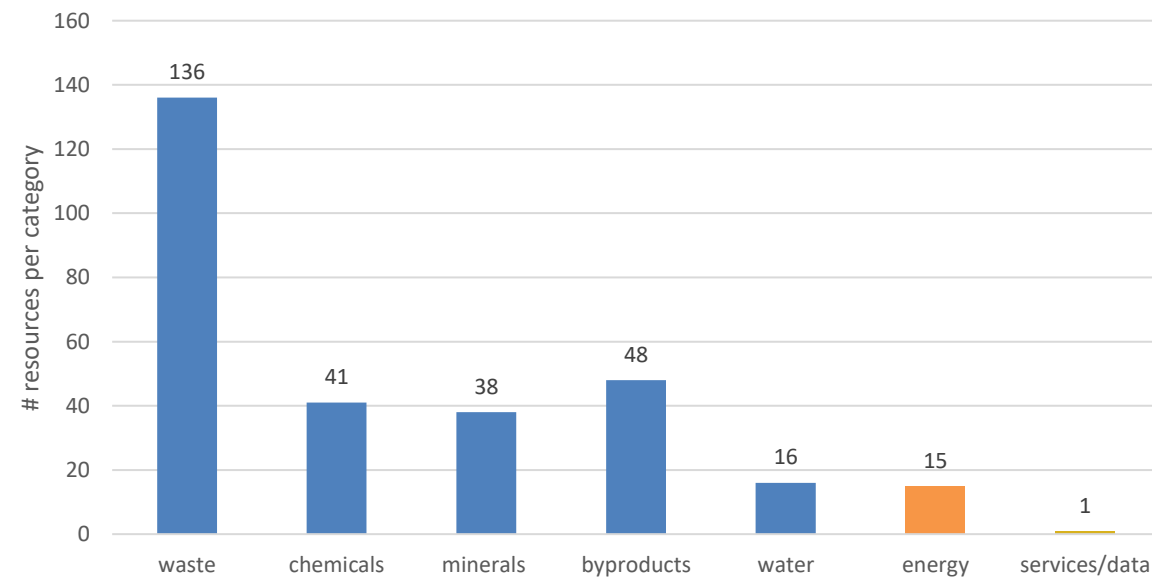


# RISERS LIST OF MES STREAMS

RISERS list ~600 cases ~300 resources categorisation per MES stream (Materials - Energies - Services)



IS longlist cases categorised per MES stream



IS resources categorised per MES stream

# MAPPING OF RESOURCES AND SECTORS

Heat map of MES resources - sorted by category and mapped by sink and source sector

Source sector	waste	chemicals	minerals	byproducts	water	energy	services
Cement	2	5	11			15	
Ceramics				1			
Chemicals	10	29	27	23	1	20	14
Energy	3		19			9	6
Food	27	4	2	6		36	2
Glass			5			2	1
Manufacturing		1				7	
Minerals		1				7	
Pulp and paper	4	3	3	4		17	6
Refineries	1	5	13	4		7	4
Services						2	
Steel	14	15	14	22	1	43	7
Textiles	1					3	
Waste	2	2	4	10		6	
Water		3		3		7	6

Sink sector	waste	chemicals	minerals	byproducts	water	energy	services
Cement	9	15	12	17		49	4
Ceramics				4		4	
Chemicals	9	18	22	15		32	10
Construction						9	
Energy	9	6	14	2		15	7
Food	16	4	8	1		21	4
Glass	1	2	6	4		9	
Manufacturing	2	2		2		3	
Minerals	1	1		1		4	
Pulp and paper	2	4	4	2		6	3
Refineries	4	2	8			3	3
Services		1	1		3	2	1
Steel	3	3	8	21		19	5
Textiles	2					1	
Waste	3	5	5	1		21	3
Water		1		1		1	6

# IDENTIFY IS POTENTIAL AND IMPACT

## T3.2 Identify impact of IS in priority synergies key sectors (Lead: UGent, contributors: FhG, ISQ; M4-M10)

- gather information on IS cases with high potential in industry clusters, in order to identify priority synergies and sectors for RISERS, building on existing (e.g. EPOS, SCALER, MAESTRI, AIDRES, literature) and emerging cases.
- analyse data, identify methods and set criteria to assess and compare economic, environmental, and social impact of high-potential synergies in selected sink and source sectors.

### T32 approach

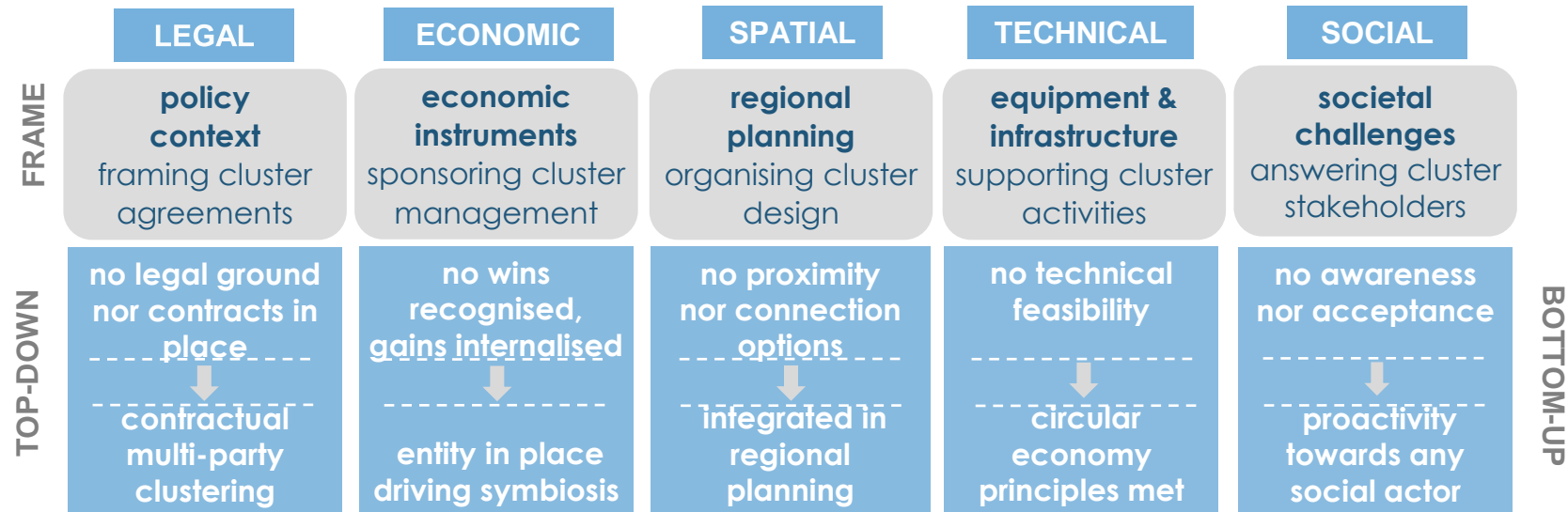
### expected results

6-10 priority synergies will be identified, based on:

- |  |            |
|--|------------|
| (1) <b>IS potential</b> : using LESTS principles, the filtered long-list of 600 IS cases will be assessed for implementation potential   | ~50 cases  |
| (2) <b>IS impact</b> : via PPP analysis, the high potential IS cases will be evaluated for contribution to the EU climate/circular goals | 6-10 cases |

# IDENTIFY IS POTENTIAL

> LESTS methodology (Maqbool et al., 2016)

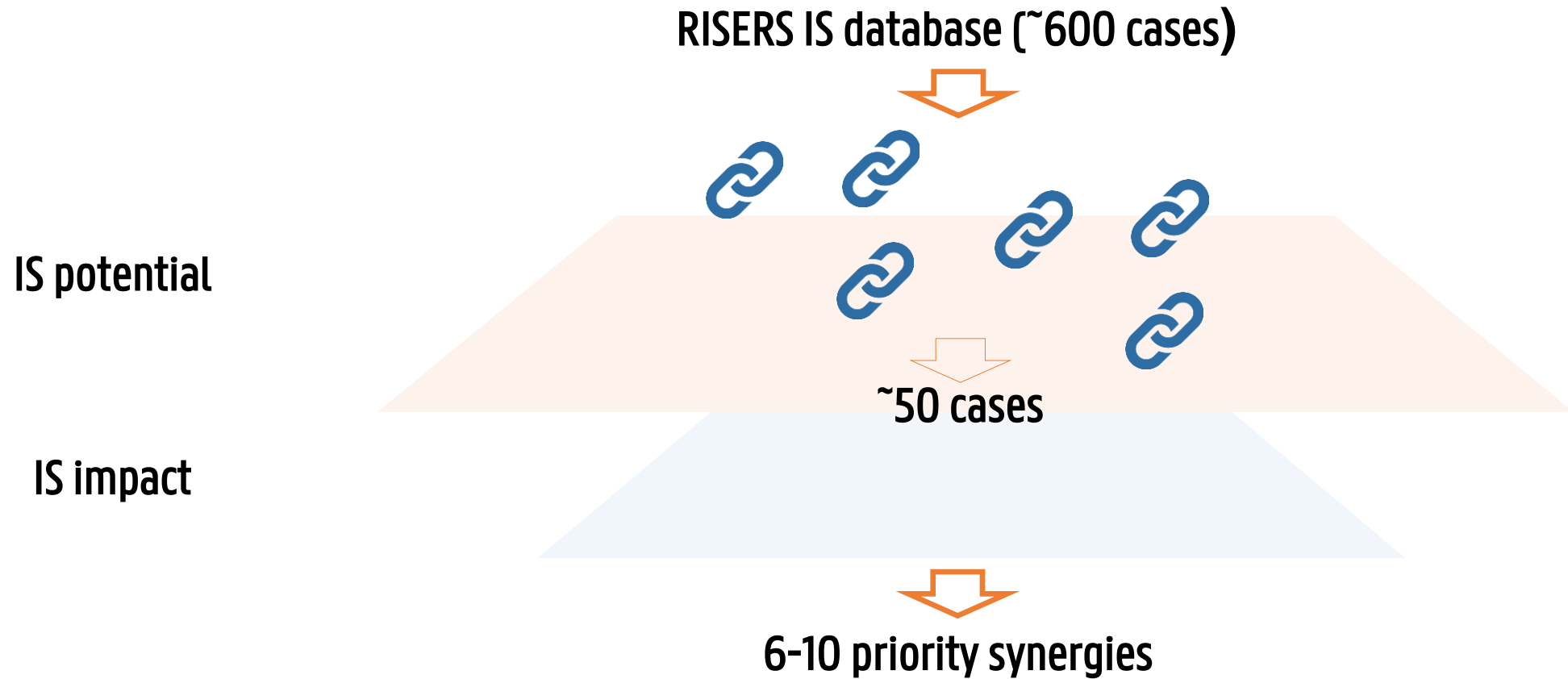


> Engineering suitability  
(eg need for infrastructure)

> Organisational suitability  
(eg in line with company goals and strategies)



# IDENTIFY IS IMPACT



# REFERENCES

CEN (2021). Update on SABE circular economy topic group (CE-TG). WS SUSTAINABILITY IN PPE, 18 MARCH 2021

CEN WORKSHOP AGREEMENT (2018). CWA 17354:2018 - Industrial Symbiosis: Core Elements and Implementation Approaches, [https://www.cencenelec.eu/media/CEN-CENELEC/CWAs/RI/cwa17354\\_2018.pdf](https://www.cencenelec.eu/media/CEN-CENELEC/CWAs/RI/cwa17354_2018.pdf)

Francisco Mendez-Alva, Hélène Cervo, Gorazd Krese and Greet Van Eetvelde, Industrial symbiosis profiles in energy-intensive industries: Sectoral insights from open databases, Journal of Cleaner Production, Volume 314, 2021, 128031, ISSN 0959-6526, <https://doi.org/10.1016/j.jclepro.2021.128031>.

Maqbool , A. S., Piccolo G. E., Zwaenepoel G. E., and G. Van Eetvelde, Cultivating Industrial Symbiosis between Process Industries, Sustainability Conference, Utrecht, the Netherlands, 2016. <http://hdl.handle.net/1854/LU-8198557>

UGent biblio: <https://biblio.ugent.be/>

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