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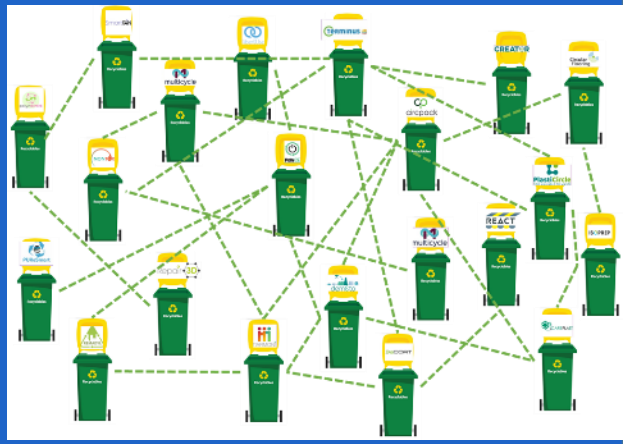

CONNECTING THE BINS:

PLASTICS CIRCULARITY REQUIRES US TO GET OFF OUR RESPECTIVE ISLANDS

Prof. Kim Ragaert

GHENT UNIVERSITY

CAPTURE PLASTICS TO RESOURCE

Plastics Circularity Multiplier
Online Conference
14, 15, 16 October 2020

SPEAKER BACKGROUND

PLASTICS RECYCLING AWARDS EUROPE 2020 FINALIST

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FACULTY OF ENGINEERING AND ARCHITECTURE

MATCH

DEPARTMENT OF MATERIALS, TEXTILES AND CHEMICAL ENGINEERING

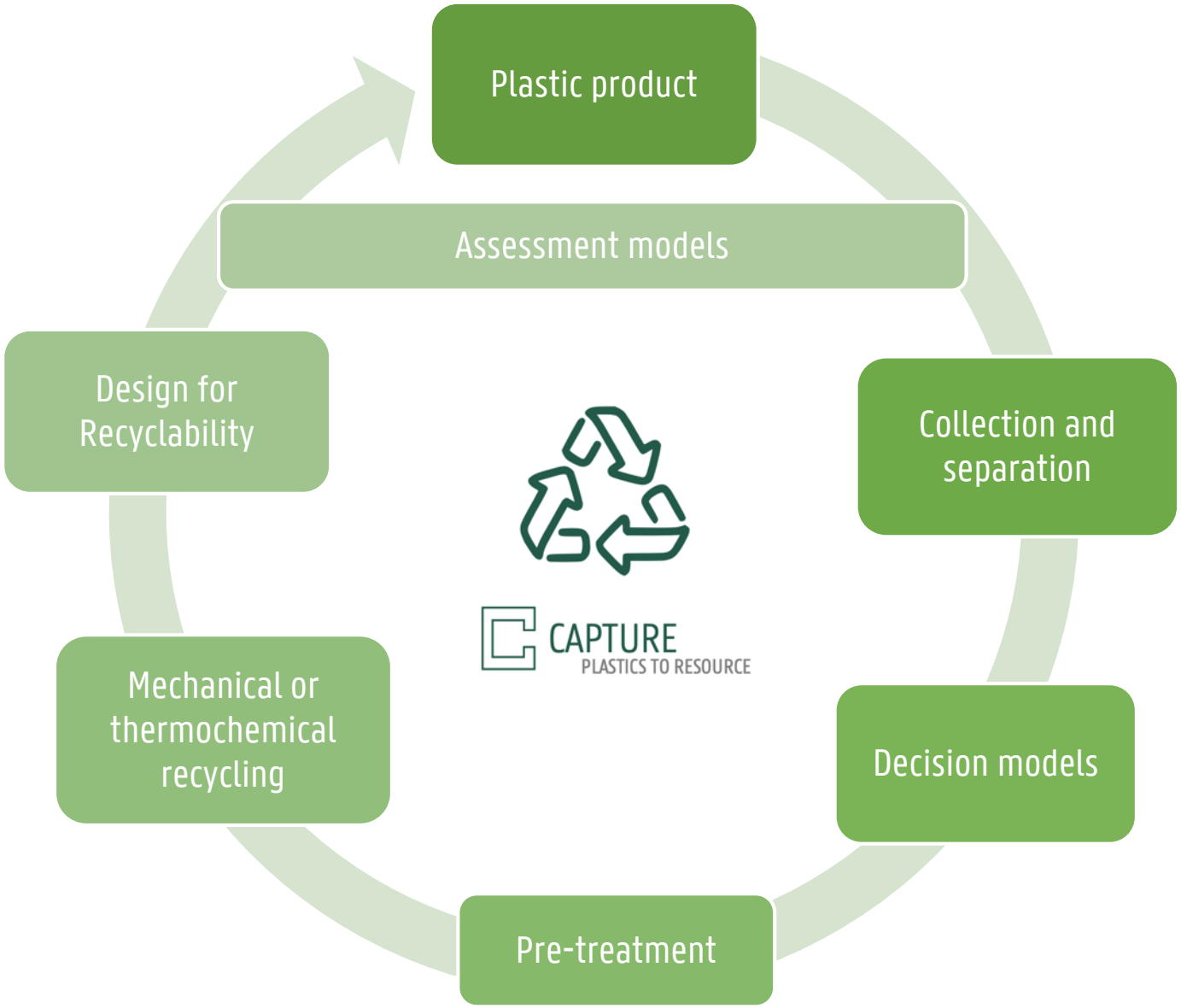
CMT Centre for Polymer and Material Technologies

CAPTURE PLASTICS TO RESOURCE

Our mission is to contribute to the circular economy by demonstrating the sustainable potential of plastics.

This is achieved by transferring fundamental materials science to improved industrial processing of recycled plastics.

SCIENCE ALONG THE WHOLE VALUE CHAIN



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KEY(NOTE) CONTENT OF TODAY

How much ocean do we still need to swim?

Where are we in achieving Plastics Circularity?

We need to get off our own little islands

We will never make it if we don't swim together

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WHERE ARE WE NOW - THE NUMBERS

(Plastics The Facts 2018, Plastics Europe)

- ~~31% of plastics are recycled~~
- 31% are *collected for recycling inside & outside EU*
- With the amendment to the Packaging and Packaging Waste directive (2018), this number will undergo a one-time drop

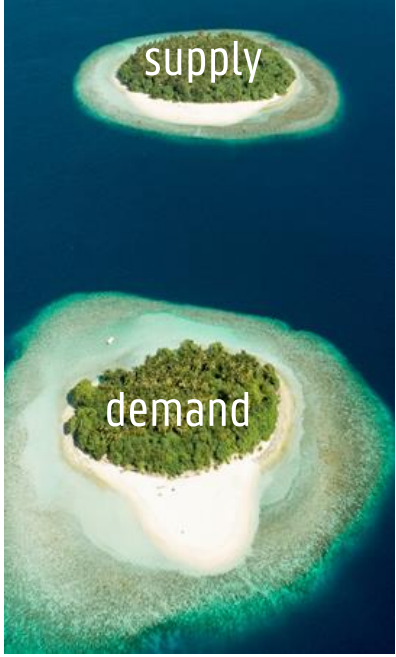
Calculated effective rates from studies:

- (NL) 26% of post consumer packaging waste is effectively recycled
  - Source: The impact of collection portfolio expansion on key performance indicators of the Dutch recycling system for Post-Consumer Plastic Packaging Waste, a comparison between 2014 and 2017. Brouwer, Picuno, van velzen, Kuchta, De Meester and Ragaert. Waste Management, 2019.

EU Goals:

- 2025: recycle 55% of plastics packaging
- 2030: all plastics packaging recyclable
- 2030: recycle 50% of all plastics

WHERE ARE WE NOW - THE NUMBERS



Graph by Anton Berwald, Fraunhofer IZM, PolyCE consortium.

Data Source: European Commission, Assessment report of the voluntary pledges under Annex III of the European Strategy for Plastics in a Circular Economy, 2019

Circular Plastics Alliance:

'We commit to increase the uptake of recycled plastics up to at least 10 million tonnes, in all plastic products, whilst ensuring product quality and safety'

EU Goals:

'The objective is to ensure that by 2025 ten million tonnes of recycled plastics find their way into new products on the EU market'

WHERE ARE WE NOW – THE RECYCLATE MARKETS

Food Contact

- PET bottle & tray
- Exceptionally:
  - PP crates
  - HDPE (milk bottle)

Non-food

- Existing markets:
  - Bulk extrusion
  - Furniture
  - Boxes, bins
  - Garbage bags
  - Automotive
- Emerging markets:
  - EEE→ 1%
  - Bottles care & hygiene
  - …

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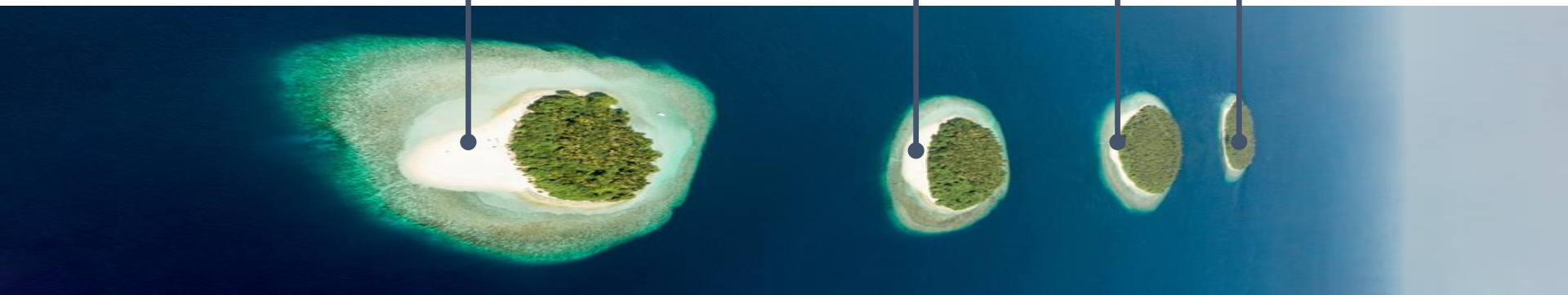
SOME INITIATIVES TO CLOSE THE GAP

Pledge-based initiatives

Sector organizations

Objective-based initatives

Companies



‘SOME’ PROJECTS TO CLOSE THE GAP

Circular economy for plastics in FP7

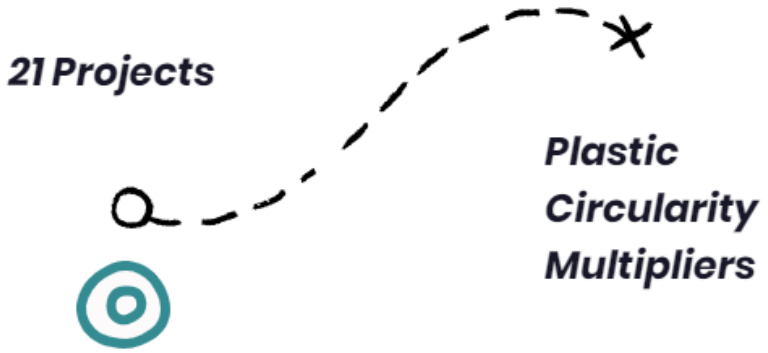
7 Projects - Recycling

103 Projects - Other (design, collection, sorting, safety, etc.)

Circular economy for plastics in H2020

45 Projects - Recycling

193 Projects - Other (design, collection, sorting, safety, etc.)



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Source: Plastics Circularity Multiplier

SOME PROJECTS TO CLOSE THE GAP

Source: Plastics Circularity Multiplier

H2020 SPIRE

multicycle
iCAREPLAST
ISOPREP
polynSPIRE
HARMONI

H2020 - SC5

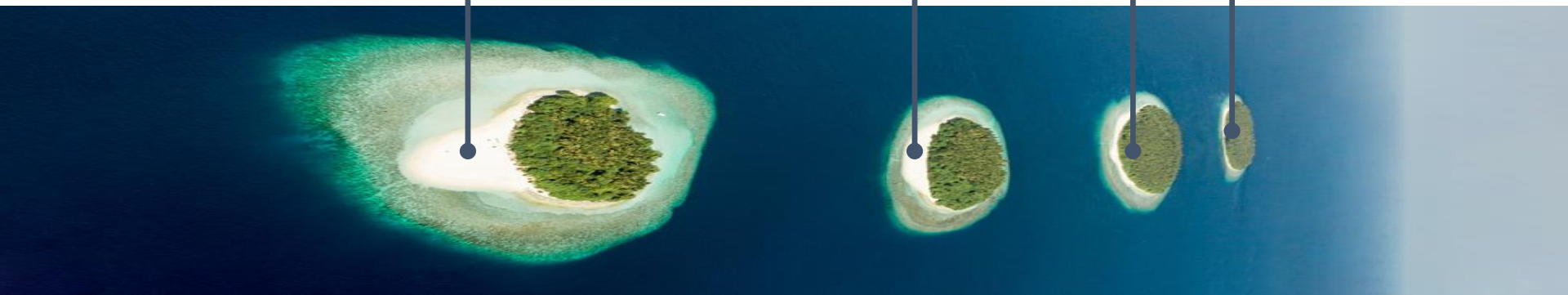
Circular Flooring
CREATOR
demeto
NONTOX
PUReSmart
REACT
REMADYL

H2020 CIRC

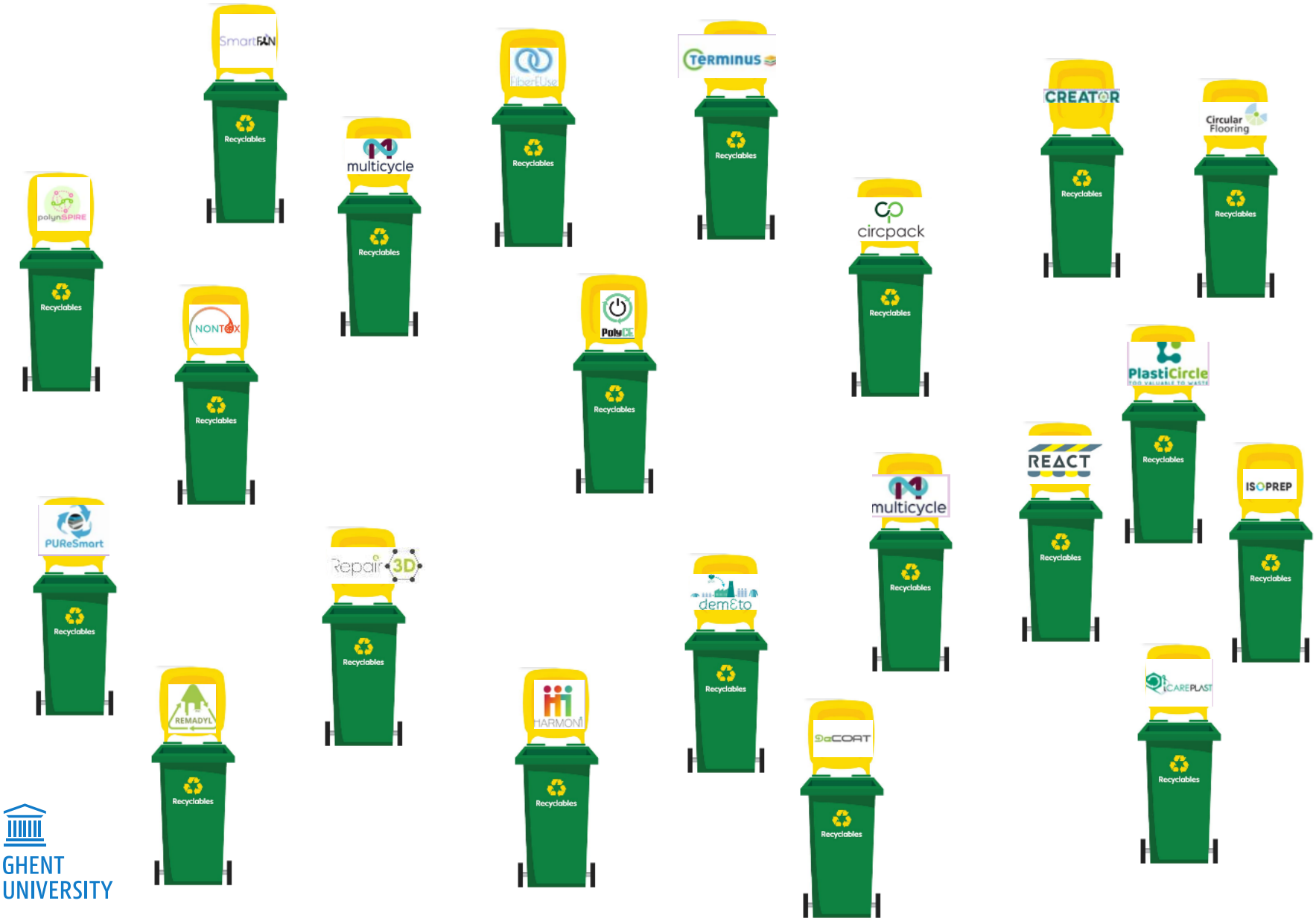
circpack
PlastiCircle
FiberEUse
PolyCE

H2020 NMBP

DaCOAT
SmartFAN
Terminus
Repair 3D



MUCH LIKE ISLANDS, THESE ARE SEPARATE BINS



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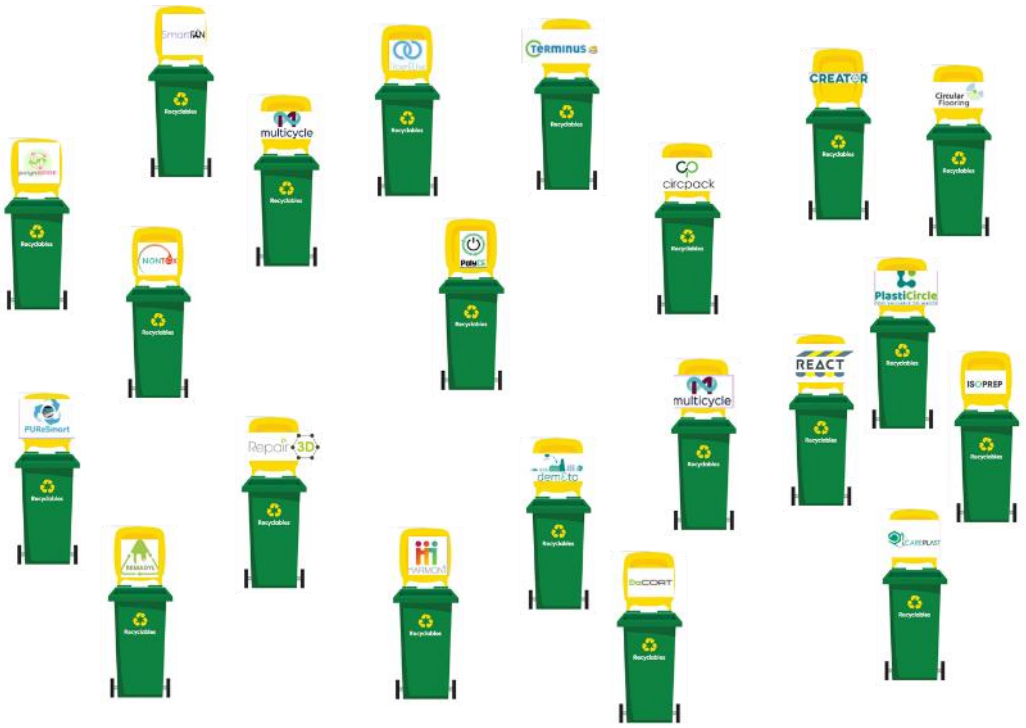
WHAT WE ALL INTEND TO DO

- Design for Recycling guidelines
- Input for standardisation
- Recommendations for policy makers



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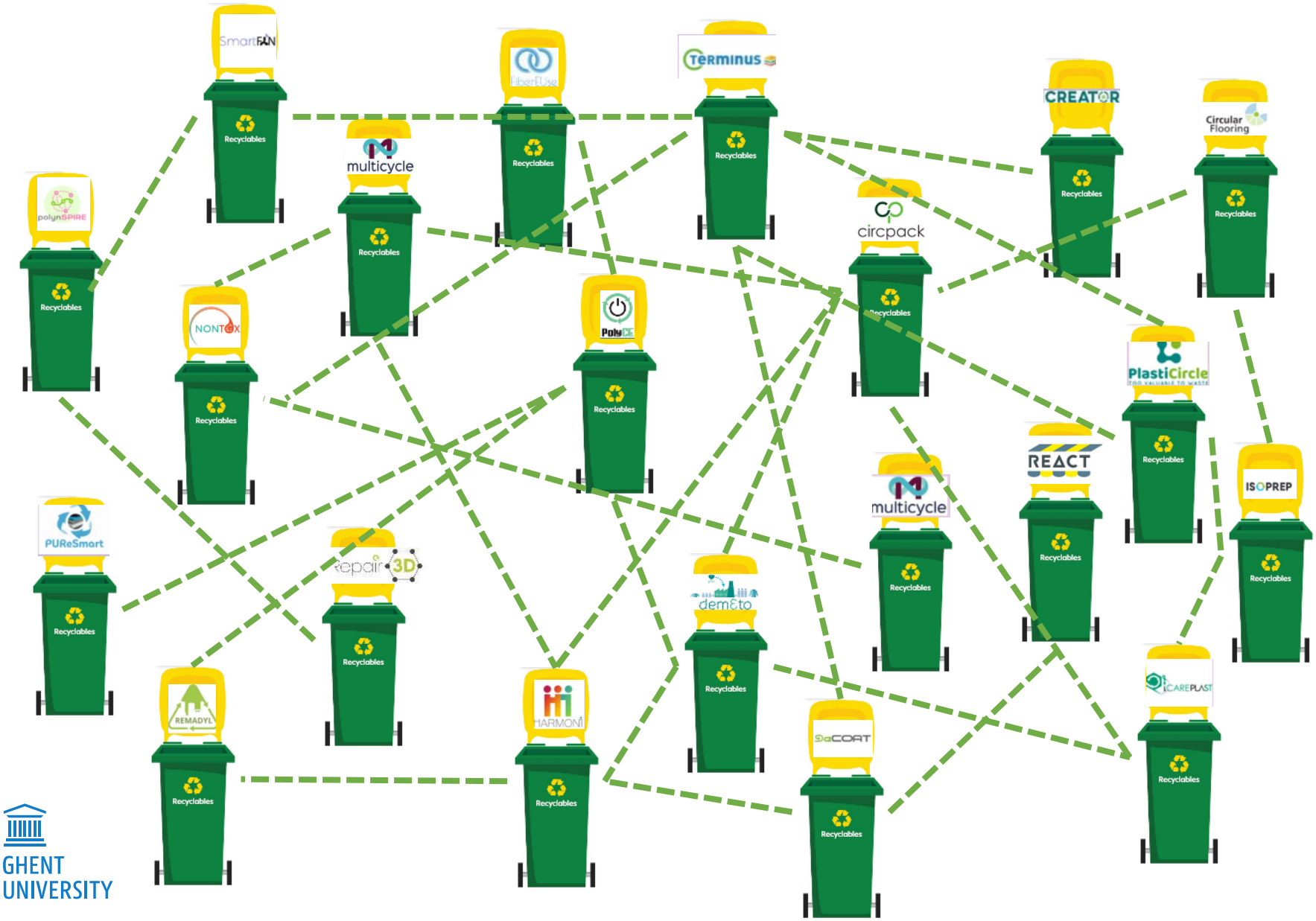
IF WE ALL GIVE OUR WELL-INTENDED ADVICE ON OUR OWN...

BUT IF WE JOIN FORCES....



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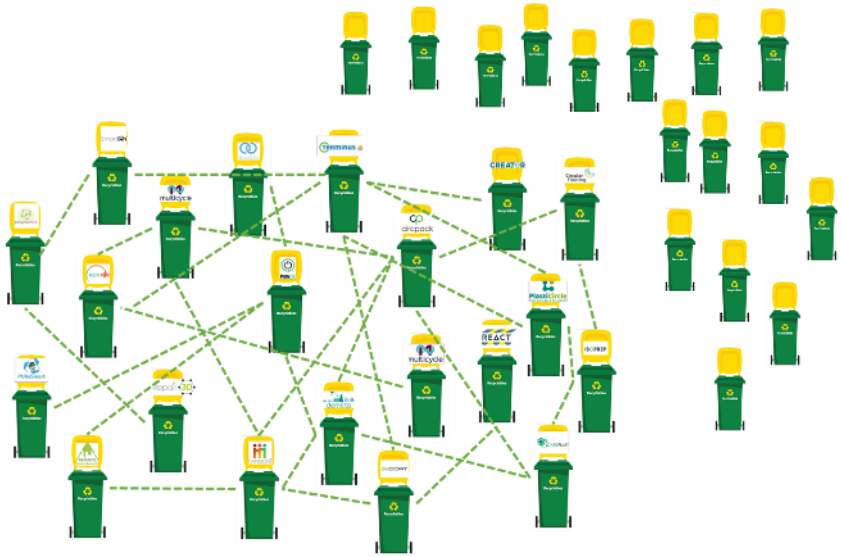
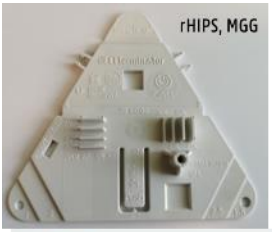
WHEN MULTIPLIER BECOMES INTENSIFIER

Networks =

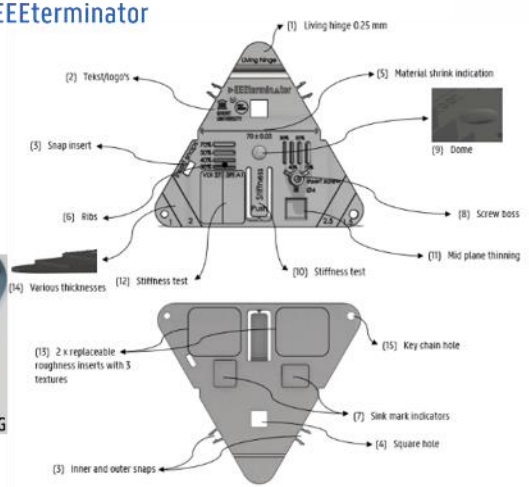
- A great opportunity to learn
- Stronger
- More credible
- Easier to deal with
- Harder to ignore
- A great source of ‘FOMO’



MAPPING AN EXAMPLE



The dEEEterminator



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730308

MAPPING AN EXAMPLE

You cannot overestimate the importance of individual companies & contact persons in this

NONTOX

Design for recycling guidelines

MATTER
Mechanical and Thermochemical Recycling of mixed plastic waste

Recycling models

High quality rPS

Styrenics Circular Solutions

CEFLEX
A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

Repair 3D

Cross-sectoral symbiosis

3D printing w/ recyclates

PolyCE

High quality rPS

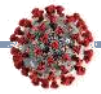
Sourcing of rPC

Interreg
2 Seas Mers Zeeën
PlastiCity

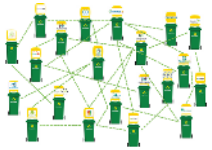
van werven

C-PlaNeT
CIRCULAR PLASTICS NETWORK FOR TRAINING

Product design w/ recycled



Open network trainings



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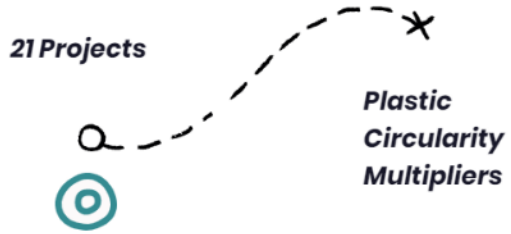
PlasticsEurope
Association of Plastics Manufacturers

ELLEN MACARTHUR FOUNDATION

MULTIPLY THIS



- Define the complimentarity between different types of recycling: mechanical / dissolution / depolymerization / thermochemical
- Getting design for recycling right in a coherent fashion
- Help close the definitions on ‘recyclable’ and ‘recycled’
- Support evolving food contact legislation for recycled
- National-level implementations of new EU tax on ‘unrecycled’

TAKE -AWAY

Spend the time to familiarize, connect and cooperate with the other projects.

Connect those bins.

Build that network.

Matter.

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PLASTICS RECYCLING AWARDS EUROPE 2020 FINALIST

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Key publications:

- Roosen, Martijn… Ragaert, Kim; De Meester, Steven. A detailed analysis of the composition of selected plastic packaging waste products and its implications for mechanical and thermochemical recycling. Environmental Science & Technology (2020)
- Kim Ragaert, Sophie Huysveld, Gianni Vyncke, Sara Hubo, Lore Veelaert, Jo Dewulf and Els Du Bois. Design from recycling: A complex mixed plastic waste case study. (2019) Resources, Conservation and Recycling. 155.
- Sophie Huysveld,Sara Hubo; Kim Ragaert; Jo Dewulf. Advancing circular economy benefit indicators and application on open-loop recycling of mixed and contaminated plastic waste fractions, Journal of Cleaner Production 211 (2019) .
- Thoden van Velzen U., Brouwer M., Augustinus A., Soethoudt I., De Meester S. and Ragaert K. Predictive model for the Dutch post-consumer plastic packaging recycling system. Waste Management 71 (2018), 62–854.
- Ragaert K.,Delva L. And Van Geem K. (2017). Mechanical and Chemical Recycling of Solid Plastic Waste. Waste Management 69 (2017) 24–58.
- Kim Ragaert. Plastics Rehab. TEDx Vlerick, Ghent, April 2019.

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