MMAtwo

Second Generation MethylMethAcrylate

How innovation is needed to boost the circularity of plastics

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MMAtwo workshop

15/09/2020

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement N° 820687.
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Content

1. Intro essenscia PolyMatters
2. Recycling of plastics so far
3. Challenges for the circularity of plastics
4. Innovation is key
5. Conclusions

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Product groups within essenscia

Detic

essenscia PolyMatters

IVP

Industriële gassen

LAB

Belfertil

Phytofar

Bio.be

Key areas of activity

- Packaging
- Building & Construction
- Plastics in a circular economy
- Marine litter and microplastics
- Placing on the market
- Positive communication on plastics

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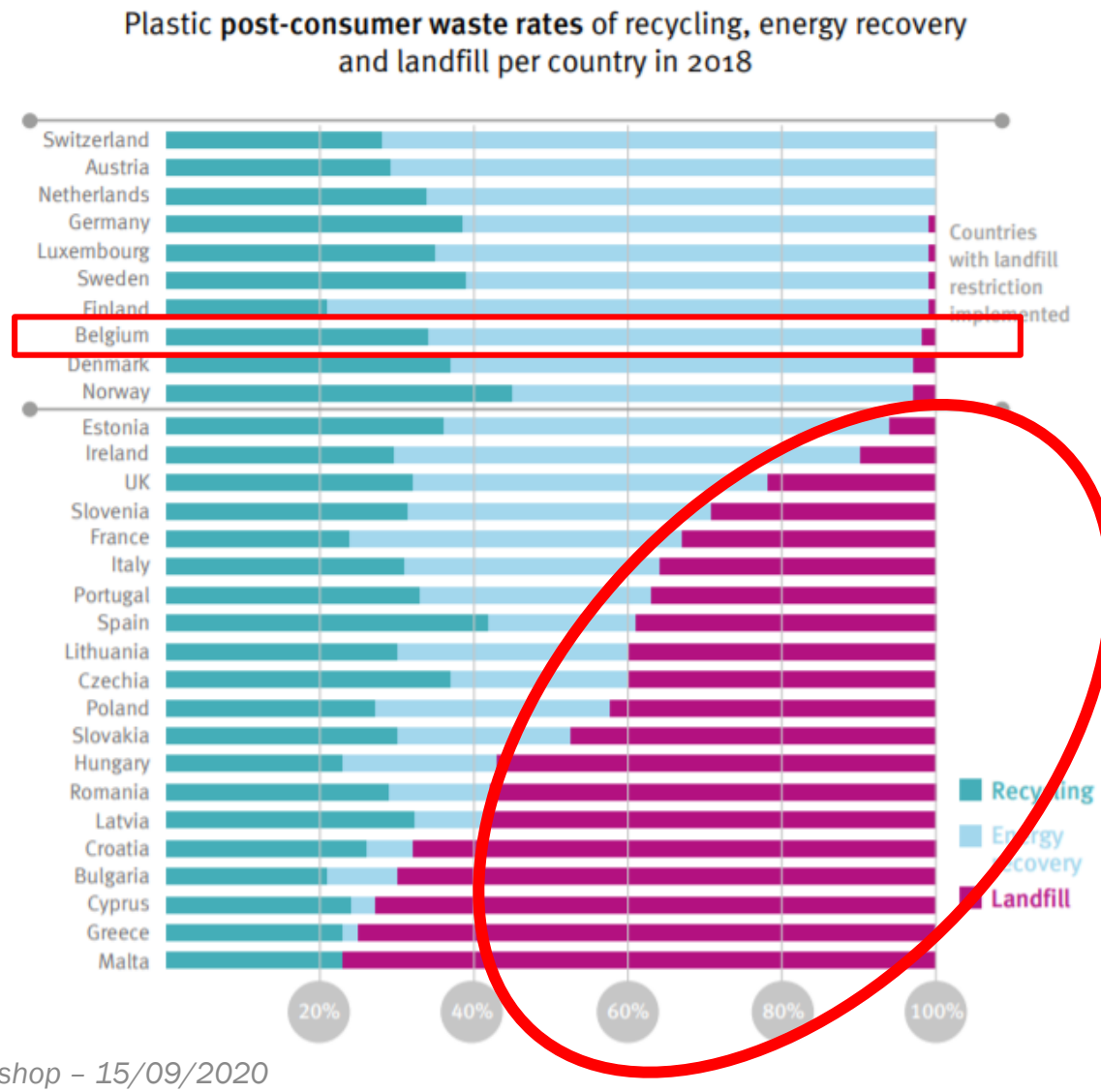
Plastic waste treatment across EU



Waste legislation in EU

- Waste Framework directive
  - Ladder of Lansink : +25 yrs focus on prevention
    ➔ re-usable packaging + thinner packaging ➔ development of multilayer packaging

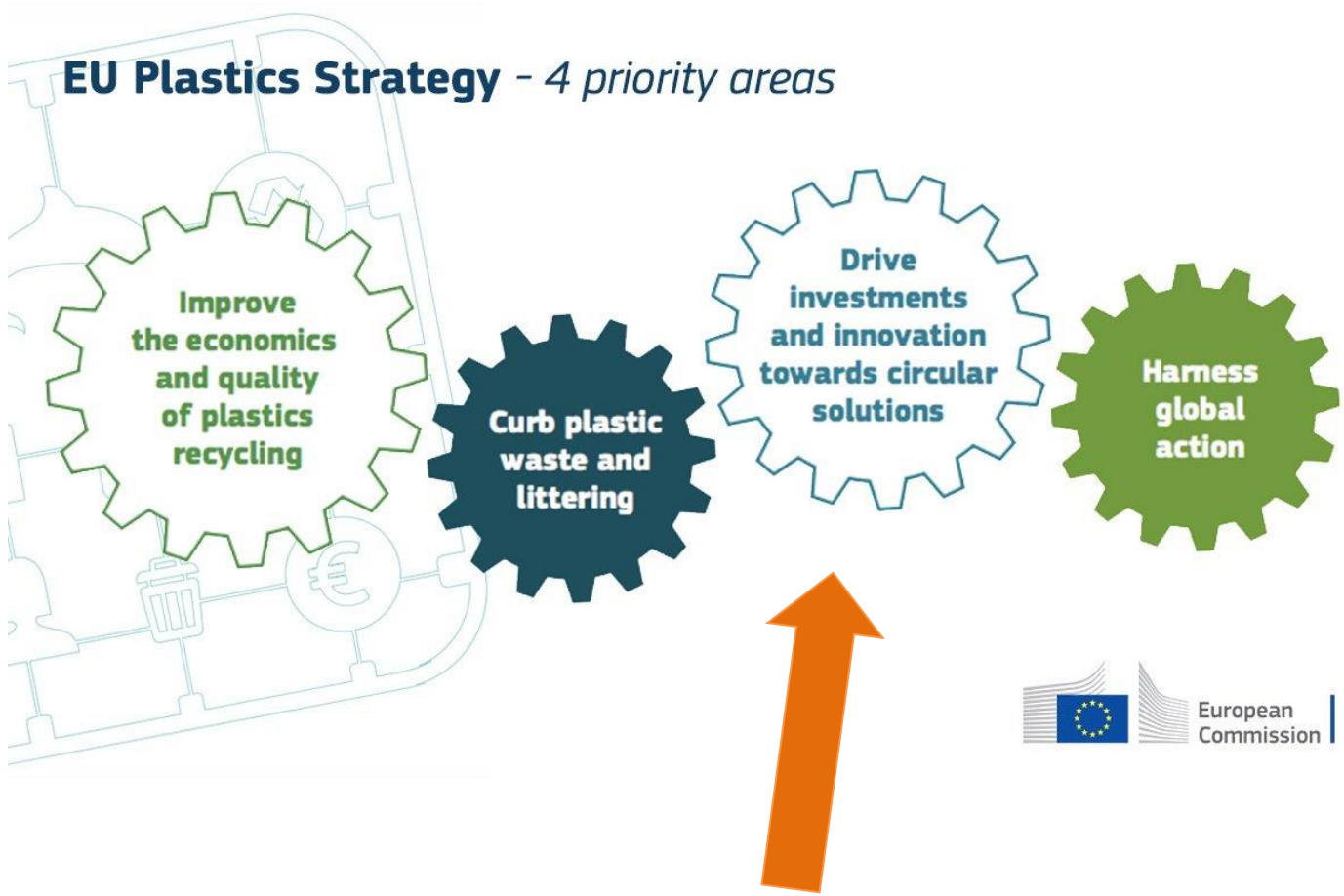
- Packaging and packaging waste directive
  - Recycling targets for packaging
  - Extended Producer Responsibility (EPR)
- WEEE directive (waste from electrical and electronical equipment)
- ELV directive (end of live vehicle directive)

Circular Economy (CE) in EU

- 2015 : launch of the 1st CE action plan
- Circular economy: an economic model based inter alia on sharing, leasing, reuse, repair, refurbishment and recycling, in an (almost) closed loop, which aims to retain the highest utility and value of products, components and materials at all times

Circular Economy (CE) in EU

- 2018 : launch of 'Strategy for plastics in a circular economy'



Paradigm shift of CE

Waste driven

- Avoid producing waste
- Re-use to avoid waste
- Recycle the waste
- Incineration with energy recovery
- Landfill if no other solution
- Focus on recycling rates of waste

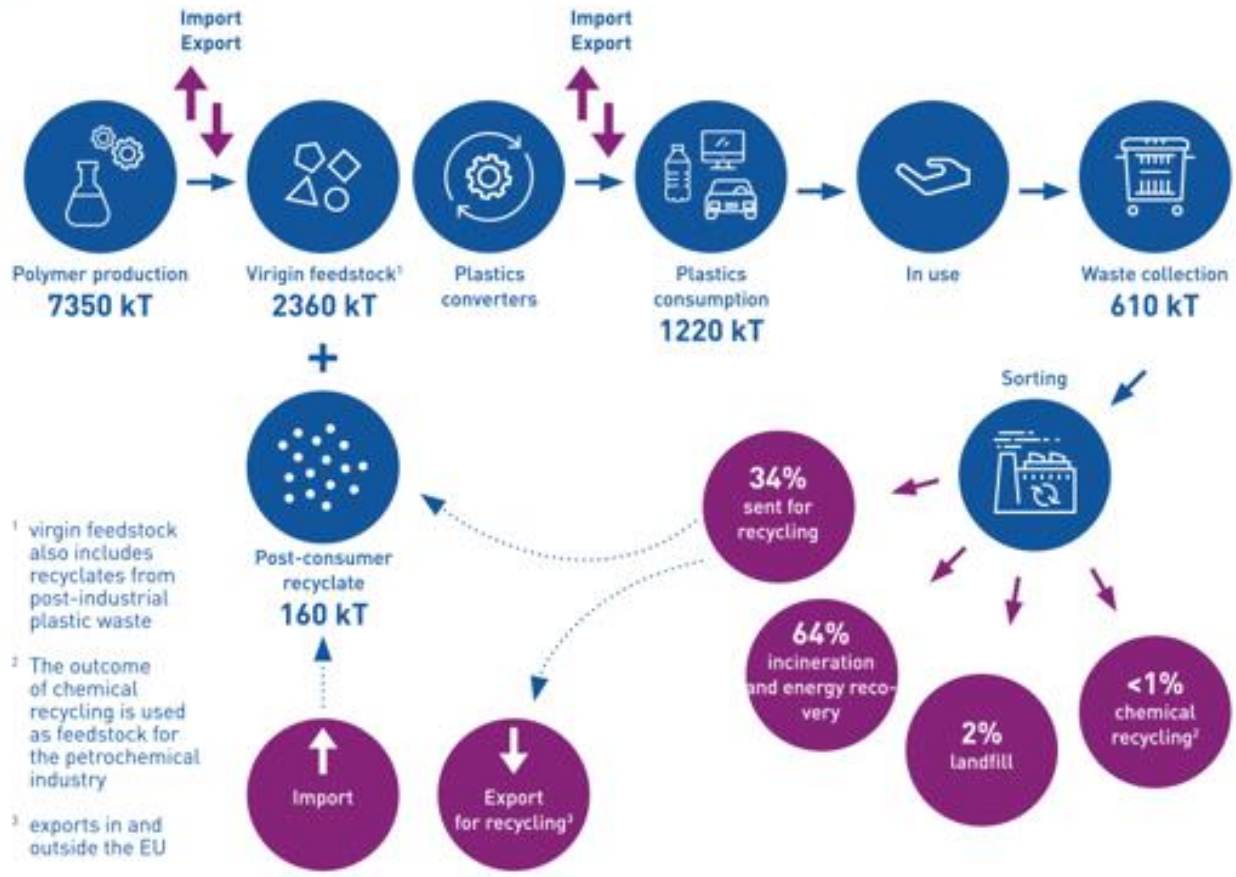
Circular economy driven

- Avoid loss of value
- Avoid loss of resources
- Avoid use of virgin resources
- Re-use to maintain value
- Recycle the material to avoid loss of resources
- Product-as-a-service
- Repair
- Refurbish
- Focus on recycled content in finished articles

- Landfill as temporary storage for enhanced landfill mining

Why this paradigm shift is needed

What proportion of Belgian plastic waste is recycled ?



https://www.essenscia.be/wp-content/uploads/2019/11/Plast_BROCH_A5_HR.pdf

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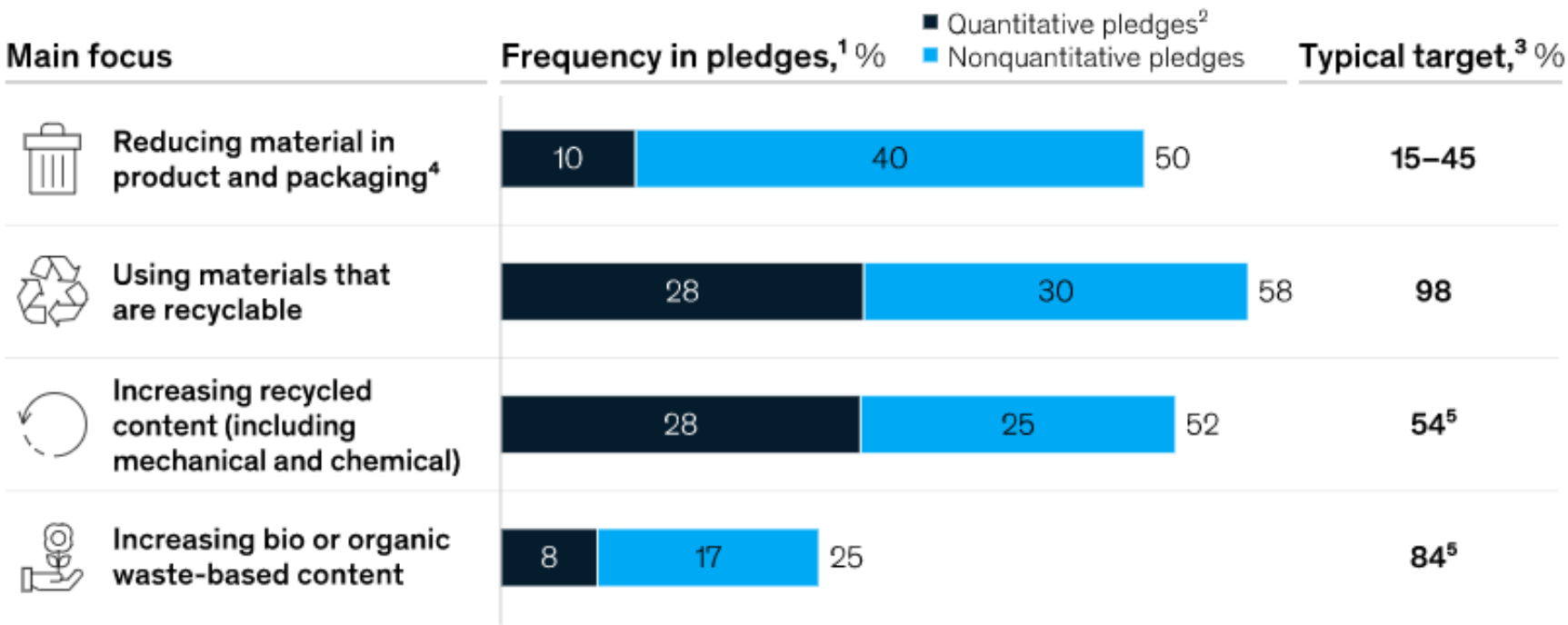
Challenges for the circularity of plastics

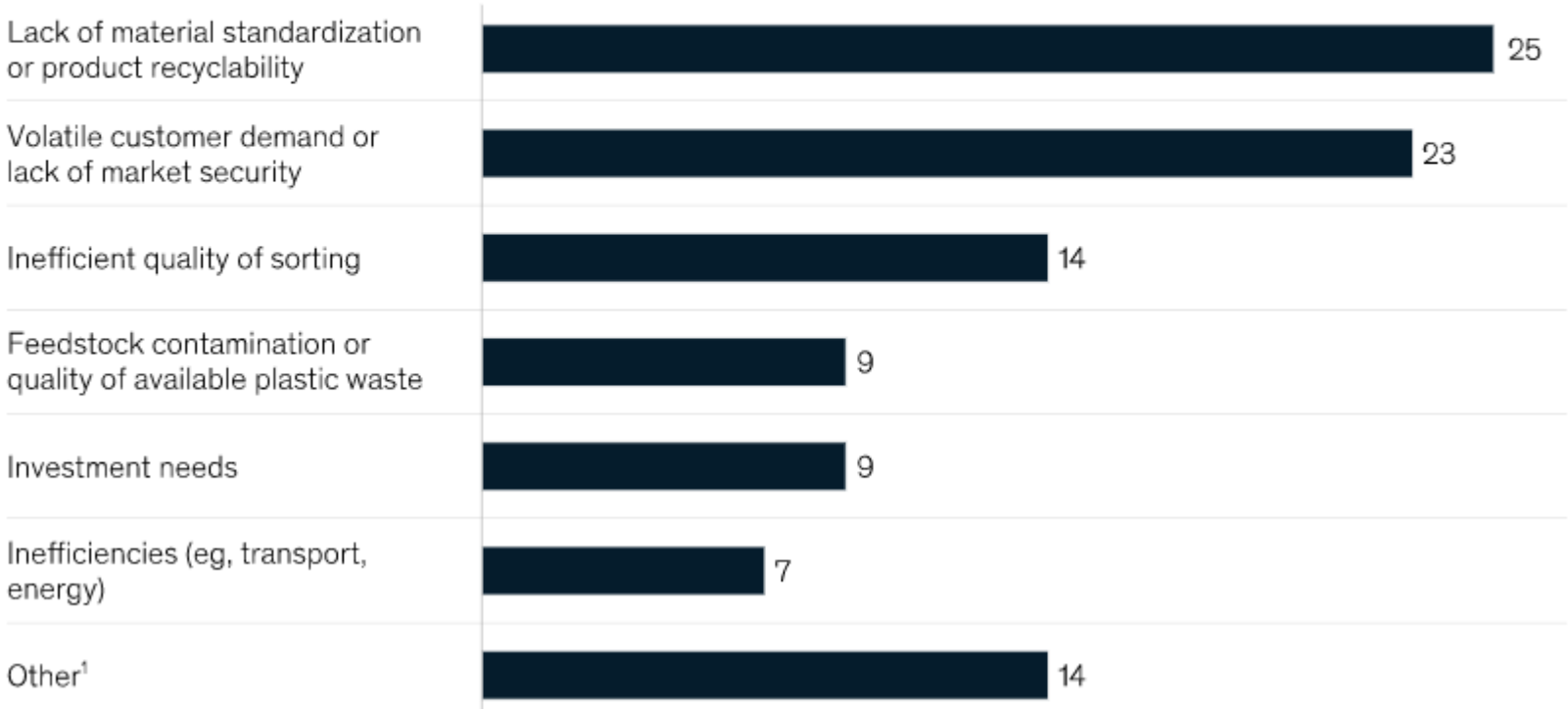
Most brand owners have announced plans to increase plastics recycling, while only a few have committed to quantitative targets by 2025–30.



Challenges for the circularity of plastics

Respondents see significant challenges to improving plastics recycling.

Current hurdles to the recycling business, % answers provided



Source Mc Kinsey study

Increasing the circularity of plastics

https://www.essenscia.be/wp-content/uploads/2019/11/Plast_BROCH_A5_HR.pdf

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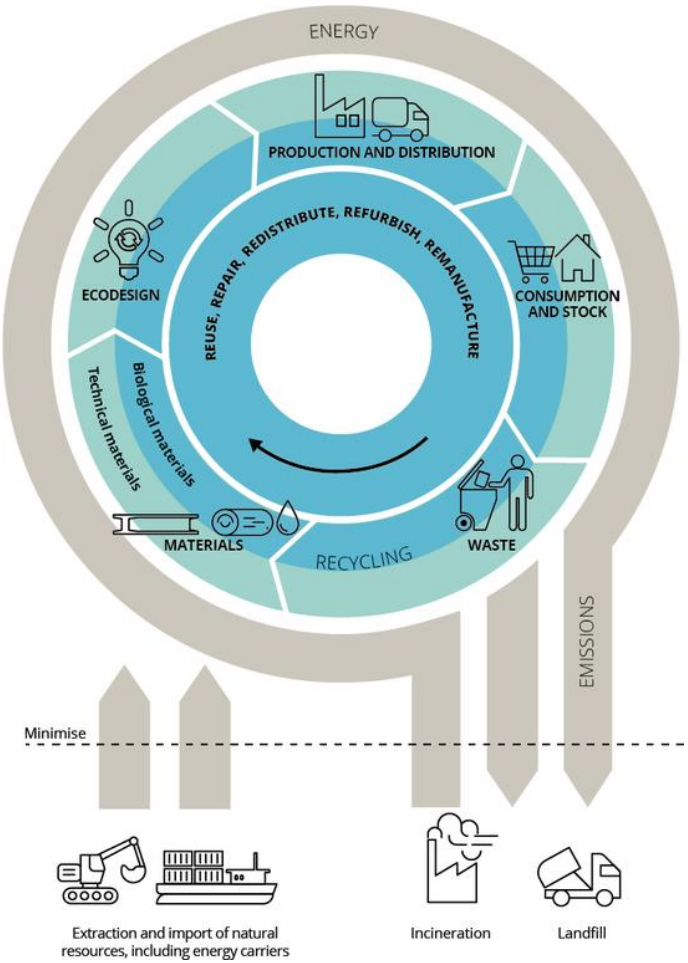
Intelligent and innovative design

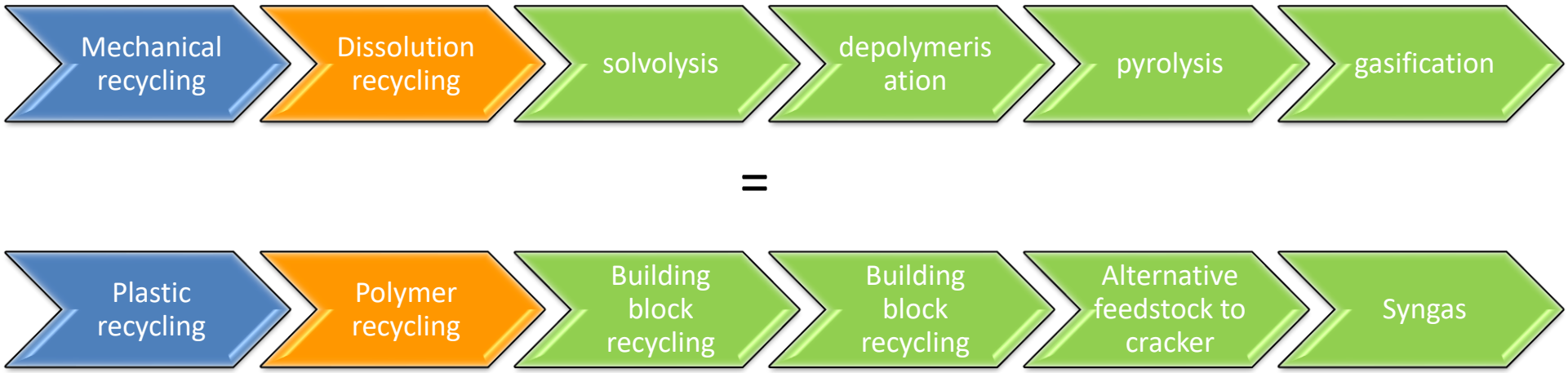
- Design for circularity
  - Consider End of Life already at the development phase of a product
  - Easy to dismantle
  - Good combination of materials
  - Not only considering recyclability but also
    - reparability
    - re-use
    - Life time
    - consumption
    - origin



Innovation in sorting and recycling!

- Deep sorting to improve quality of sorting and recycling
- E.g. watermark project HolyGrail

Consider other recycling technologies



➔Complementary routes towards a circular economy

➔Innovate beyond mechanical recycling

Alternatives for mechanical recycling

Recycling the ‘unrecyclable’ and ‘uncontrollable’

Removing impurities, meeting virgin resource quality

Integration in chemical industry

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Conclusions

- Recycling rates and recycled content need to increase
  - Remove barriers in legislation, public procurement and standards
  - Collaboration in the value chain is crucial
  - Innovations for circularity in full development
  - Select most suitable technology taking into account environmental and economic impact

➔ Innovate to make plastics future proof

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