



Business Case Study

Plastic Recycling Technology Scouting and Market
Foresighting

Case study: Plastic recycling technology scouting and market foresighting (1 / 2)

Client	Leading industrial gas and EPC company
Industry	Plastic
Product / technology	PP, LDPE / LLDPE, HDPE, PVC, PUR, PET, EPS, PS, etc.

Context

• New roadmaps and regulations post COP21 will cut down on landfilling and push higher-value recycling pathways creating opportunities and threats to secondary and primary building block producers / technology companies respectively. The Client is interested in evaluating the full extent of opportunities and threats.

Key business questions

- What are current and future plastic recycling regulations? How do they vary at major region / country level?
- How do plastic recycling value chain and ecosystem look like? Which are all participants and their role?
- How plastic recycling market is expected to develop till 2030?
- Which are most promising plastic recycling technology clusters and technologies within technology clusters?
- Is chemical recycling in any case preferred over incineration and gasification (based on cost, LCA, etc.)?
- Do CO₂ regulations drive deployment of chemical plastic recycling? If yes, how?

Engagement scope

1	Regulatory framework assessment	2	Value chain, ecosystem, and market analysis	3	Technology benchmarking	4	Key findings and conclusions
• How plastic recycling legislative environment vary at major region / country level globally? • How do these legislation / regulation enable / inhibit plastic recycling? • What existing / known future incentives (tax schemes, penalties, etc.) will drive plastic recycling till 2030?		• Which are key nodes, major players and value addition at each key node, etc. in plastic recycling value chain? • What is the role of start-ups, industrial players, NGOs, etc. in the ecosystem? • What are strategies / initiatives of key industrial players like BASF, Dow, SABIC, etc. in terms of meeting plastic recycling targets? • How plastic recycling market is expected to develop till 2030?		• What are various plastic recycling technology clusters? • Is there any preference of plastic recycling technology cluster for specific plastic (based on energy demand, CO₂ footprint, etc.)? • What is typical raw product composition including mass and energy balance? • Which plastic recycling technologies are more likely to be adopted going forward?		• How regulations are driving plastic recycling in major regions / countries? • What is addressable market for plastic recycling in 2030? • Which are plastic recycling technologies (focus on chemical plastic recycling) that would of interest to the Client?	

Case study: Plastic recycling technology scouting and market foresighting (2 / 2)

Research methodology

Secondary research

- Paid commercial, IP, and technical databases
- Company, analyst, trade journal, association, etc. publications

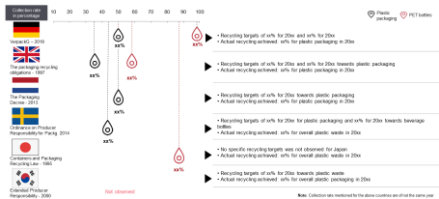
Primary research

- 25+ telephonic interviews / surveys with major plastic manufacturers, plastic recyclers, technology start-ups, thought leaders, independent consultants and analysts
- 3–5 hours of consultations with industry experts (20+ years of industry experience)

Sample analysis

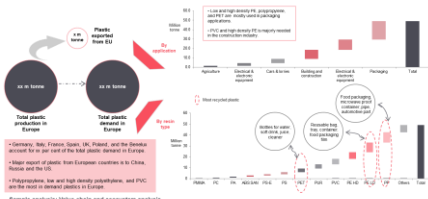
1 Regulatory framework assessment

Sample analysis: Regulatory framework assessment



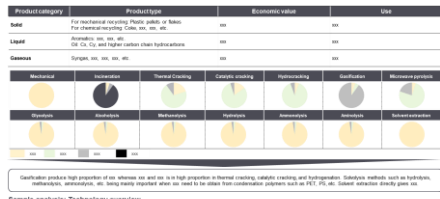
2 Value chain, ecosystem, and market analysis

Sample analysis: Market analysis



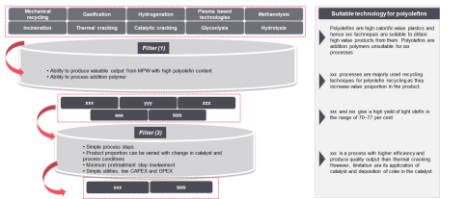
3 Technology benchmarking

Sample analysis: Technology benchmarking

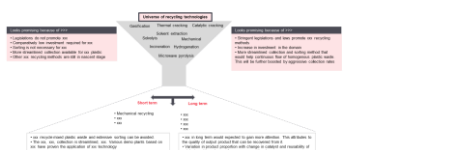


4 Key findings and conclusions

Sample analysis: Most attractive plastic recycling technology clusters (1 / 2)



Sample analysis: Most attractive plastic recycling technology clusters (2 / 2)

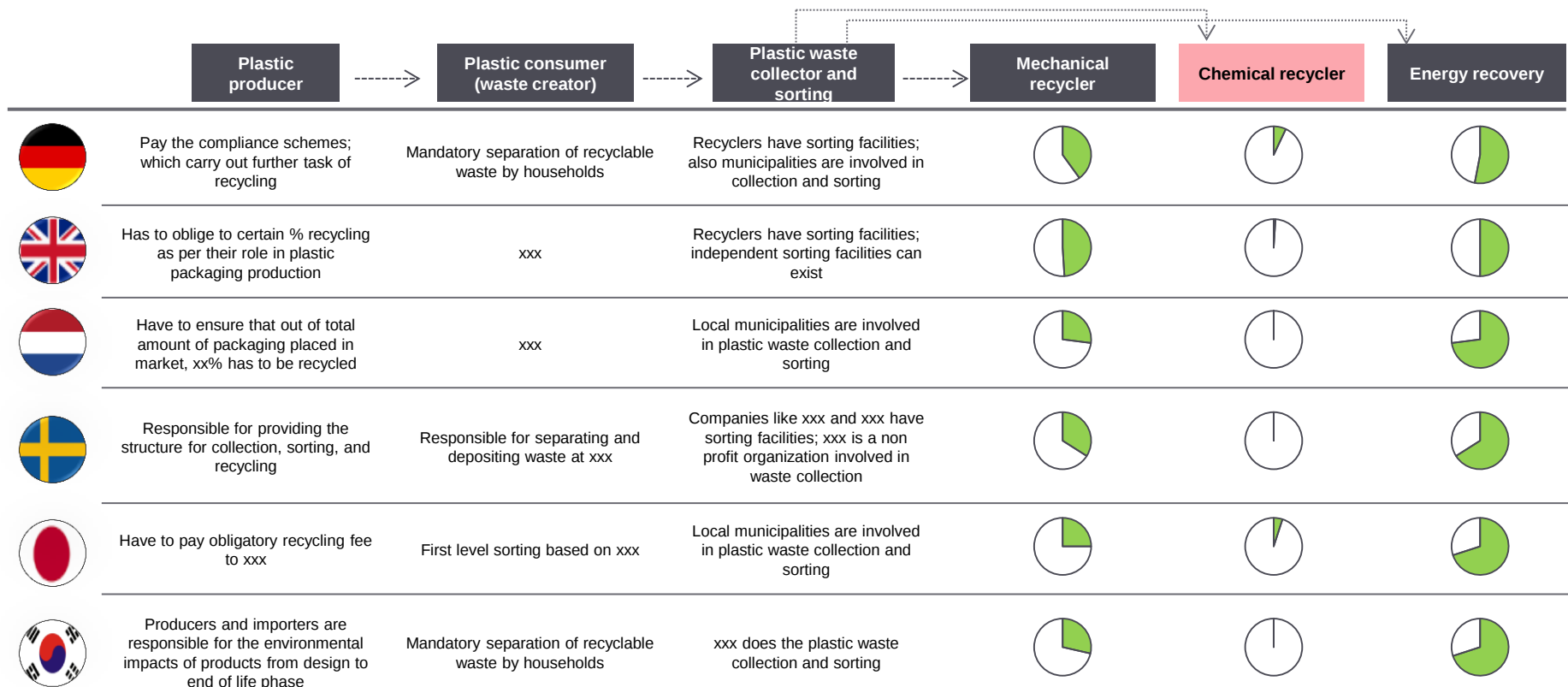


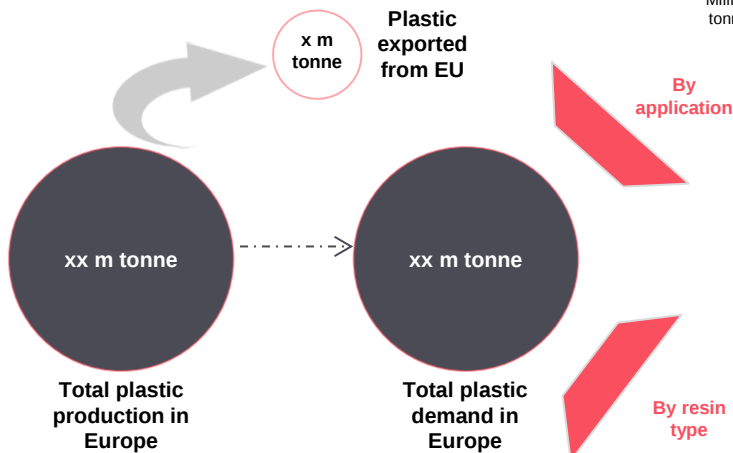
Country	Policy	Actual Recycling Rate (%)	Recycling Targets (%)
Germany	VerpackG – 2019	xx%	xx% for 20xx and xx% for 20xx
United Kingdom	The packaging recycling obligations - 1997	xx%	xx% for 20xx and xx% for 20xx towards plastic packaging
France	The Packaging Decree - 2013	xx%	xx% for 20xx towards plastic packaging
Sweden	Ordinance on Producer Responsibility for Packg. 2014	xx%	xx% for 20xx for plastic packaging and xx% for 20xx towards beverage bottles
Japan	Containers and Packaging Recycling Law - 1995	xx%	No specific recycling targets was not observed for Japan
South Korea	Extended Producer Responsibility - 2000	xx%	xx% for 20xx towards plastic waste

Note: Collection rate mentioned for the above countries are of not the same year.

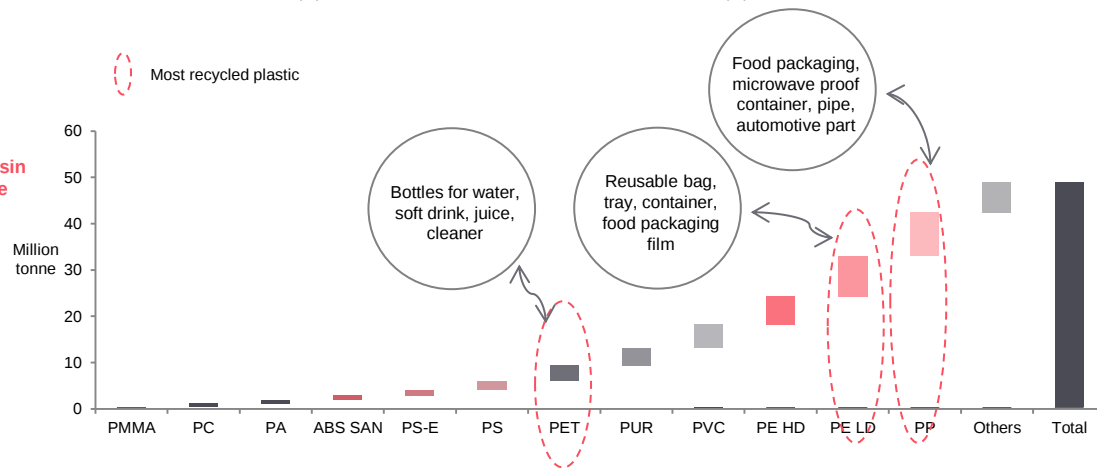
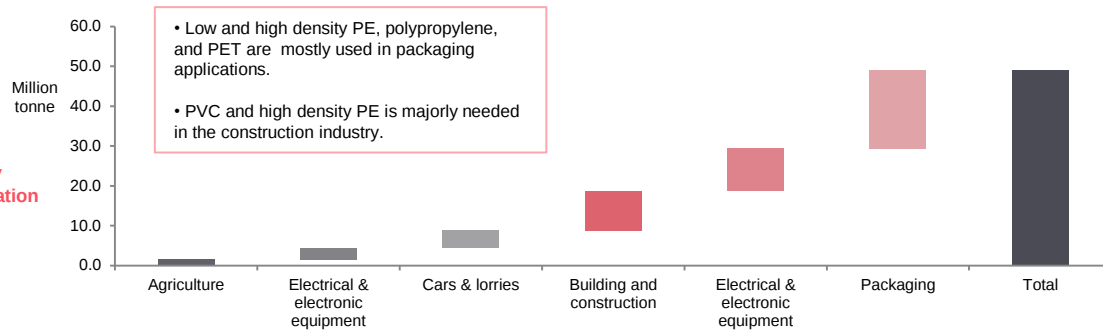
CASE STUDY
V1.2/190912

Sample analysis: Value chain and ecosystem analysis

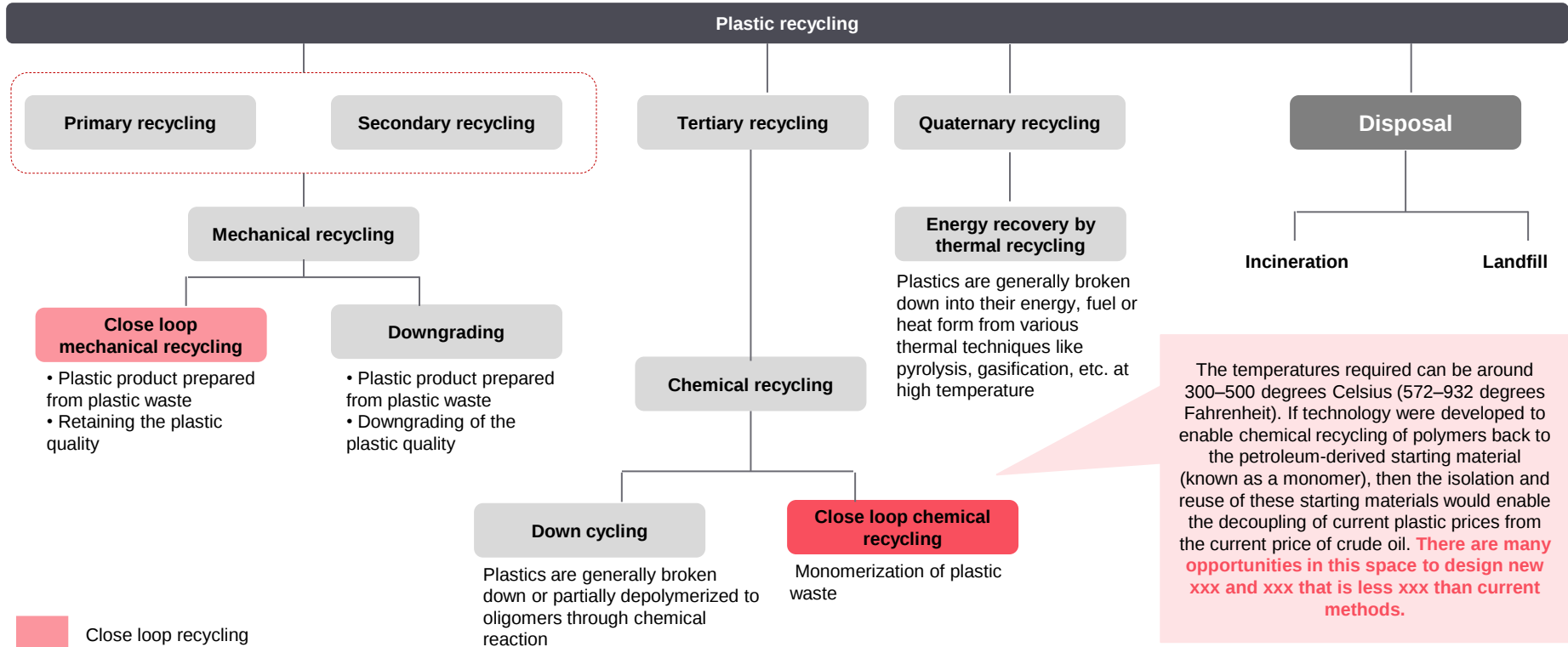




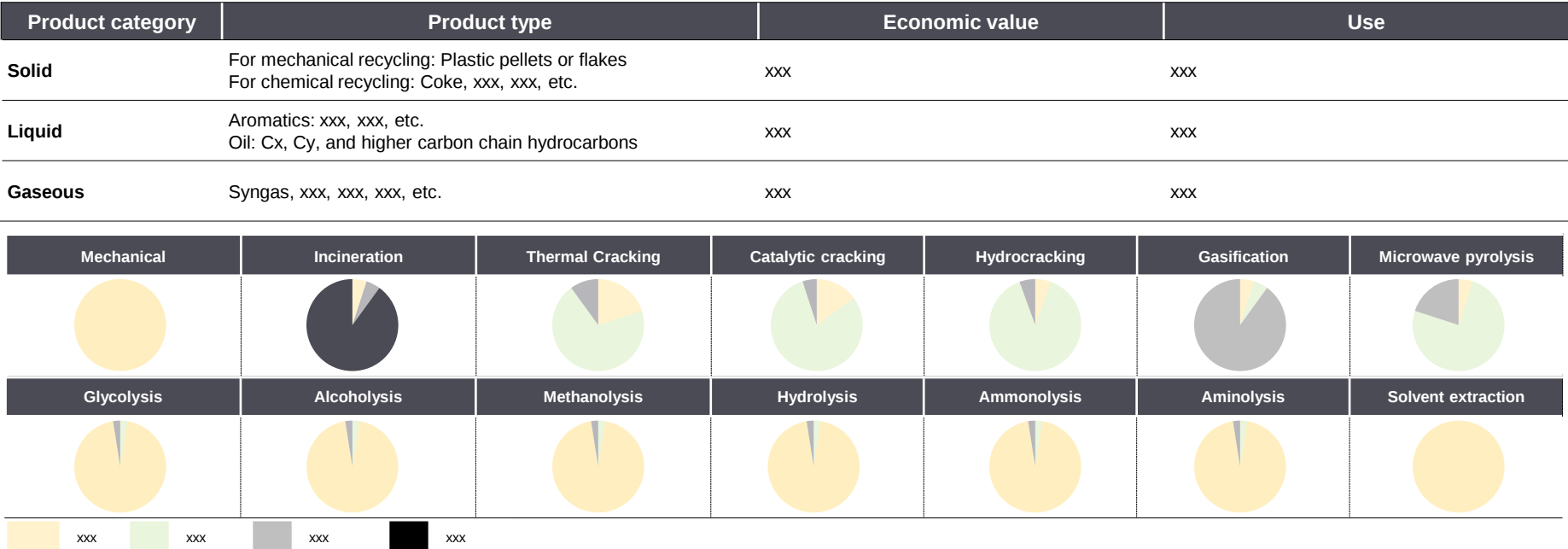
- Germany, Italy, France, Spain, UK, Poland, and the Benelux account for xx per cent of the total plastic demand in Europe.
- Major export of plastic from European countries is to China, Russia and the US.
- Polypropylene, low and high density polyethylene, and PVC are the most in demand plastics in Europe.



Sample analysis: Technology overview

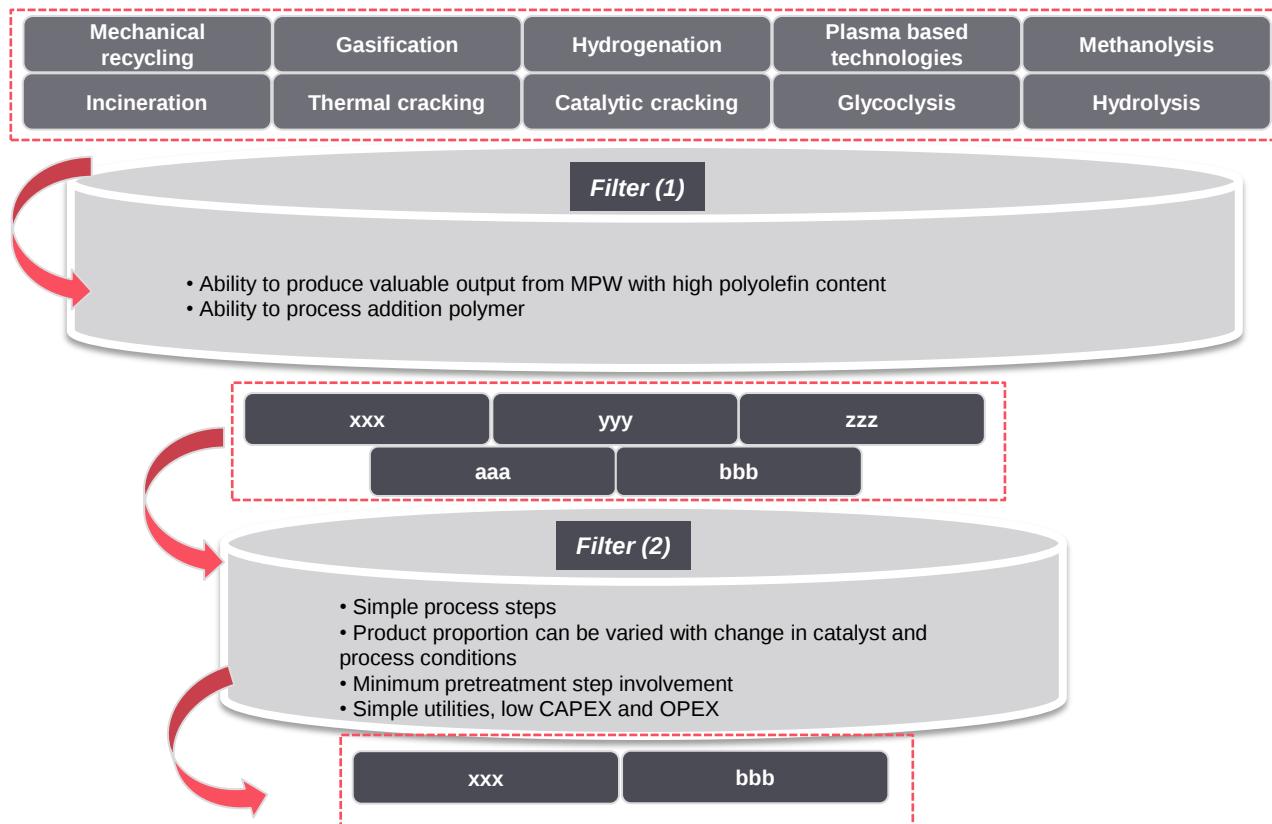


Sample analysis: Technology benchmarking



Gasification produce high proportion of xxx whereas xxx and xxx is in high proportion in thermal cracking, catalytic cracking, and hydrogenation. Solvolysis methods such as hydrolysis, methanolysis, ammonolysis, etc. being mainly important when xxx need to be obtain from condensation polymers such as PET, PS, etc. Solvent extraction directly gives xxx.

Sample analysis: Most attractive plastic recycling technology clusters (1 / 2)



Suitable technology for polyolefins

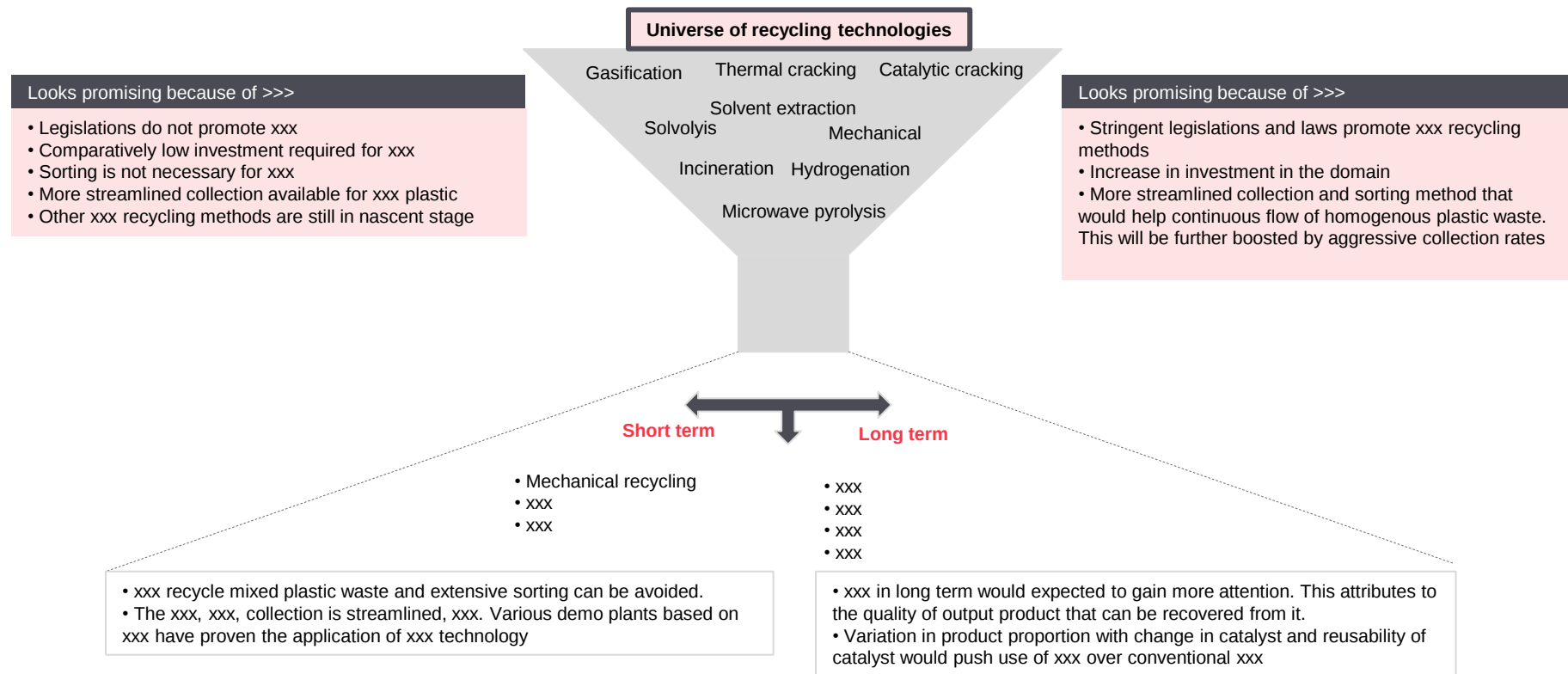
Polyolefins are high calorific value plastics and hence xxx techniques are suitable to obtain high value products from them. Polyolefins are addition polymers unsuitable for xxx processes

xxx processes are majorly used recycling techniques for polyolefin recycling as they increase value proportion in the product.

xxx and xxx give a high yield of light olefin in the range of 70–77 per cent

xxx is a process with higher efficiency and produce quality output than thermal cracking. However, limitations are its application of catalyst and deposition of coke in the catalyst.

Sample analysis: Most attractive plastic recycling technology clusters (2 / 2)



Thank you

North America

55 Madison Ave, Suite 400
Morristown, NJ 07960
USA
T: +1 212 835 1590

Europe

328-334 Graadt van Roggenweg
4th Floor, Utrecht, 3531 AH
Netherlands
T: +31 30 298 2108

United Kingdom

5 Chancery Lane
London EC4A 1BL
United Kingdom
T: +44 207 406 7548

Asia Pacific

Millennium Business Park
Sector 3, Building # 4, Mahape
Navi Mumbai 400 710
India
T: +91 22 6772 5700