



LIFE PlasPLUS

LIFE18 ENV BE 000368



comettraitements

A Mine of Innovations

Plastics from Metallic Wastes : End of Life Vehicle (ELV), Waste Electrical and Electronic Equipments (WEEE)

Kick-Off Meeting Life PlasPlus

Meeting Venue: Comet Traitements – Obourg - Belgium

Date: 20th January 2020



CENTRO
RICERCH
FIAT



Bulk Steel Scraps

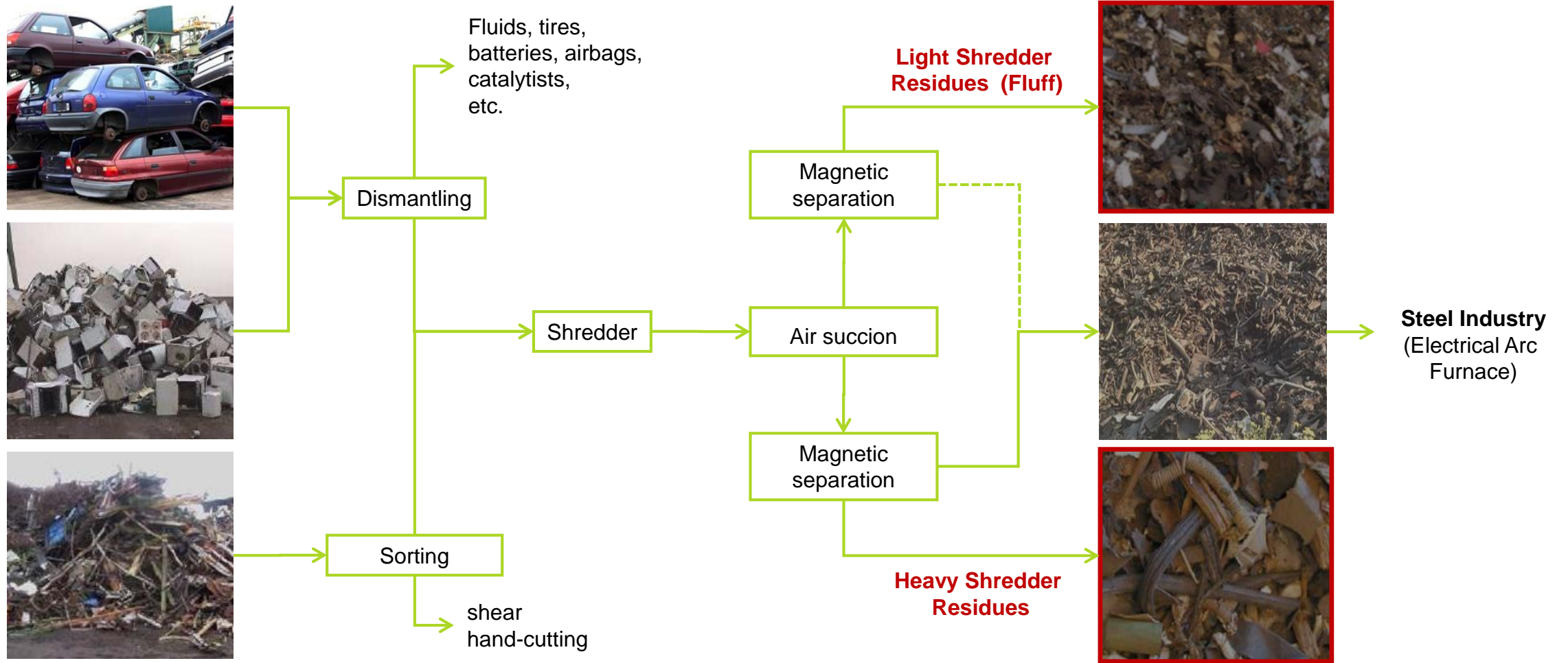


But also :



| | | ELV | WEEE (cat. 2) |
|---------------|---|-----------|---------------|
| Ferrous | % | 68,5 | 38 |
| Non ferrous | % | 8,5 | 28 |
| Plastics | % | 16,5 | 19 |
| Glass | % | 2,5 | 4 |
| Wood | % | - | 1 |
| Fluids | % | 2,0 | - |
| Other | % | 2,0 | 10 |
| EU objectives | % | 95 (2015) | 50 to 90 |

Metallic Wastes Recycling

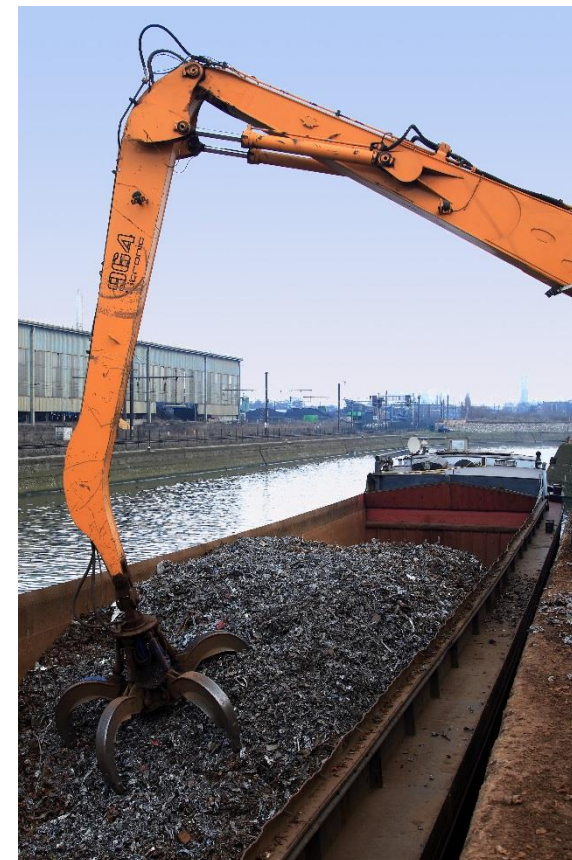


Metallic Wastes Recycling : Collection / Depollution / Dismantling



→ **Social economy**

Metallic Wastes Recycling : Shredding / Magnetic separation



→ **A mine of iron**

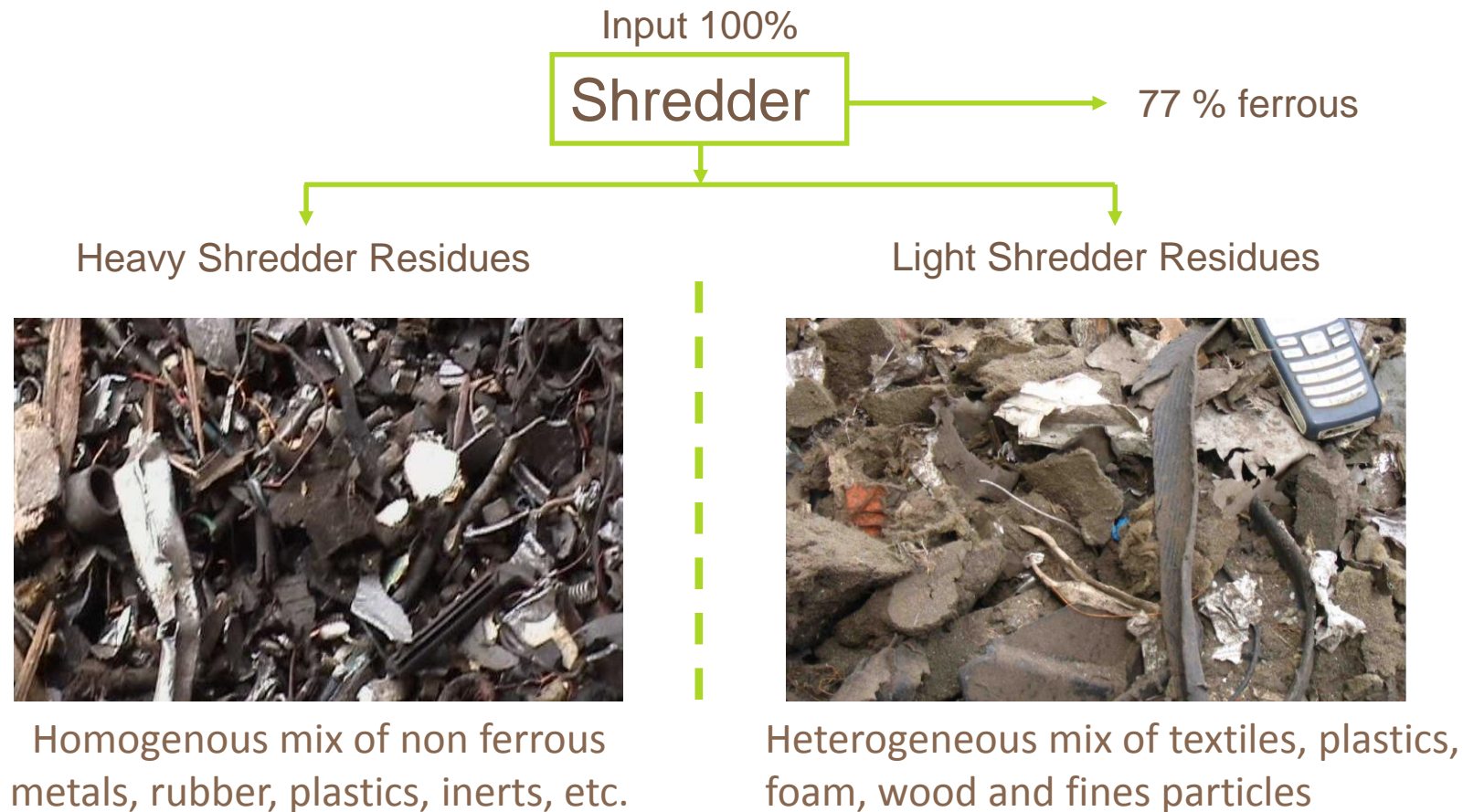
- » Family group mainly active in Belgium and France
- » **Comet Sambre** : 2 shredding sites located in Charleroi (3.000 CV) and Mons (7.000 CV)

1.200.000 to/y of Metallic Wastes

=====

- » **Comet Traitements : Shredder Residue processing and recovery**
 - SME created in 2002
 - 7 production units : Post Shredder Technology
 - Treatment capacity : 350 000 T/y
 - Châtelet (near Charleroi): 80.000 T/y of Light SR
 - Obourg (near Mons): 270.000 t/y of Heavy SR of which 85.000 T/y of plastics
 - Workers: 130
 - R&D team: 15 + 11 external researchers work on Comet projects

Shredder residues : a mine of secondary ores



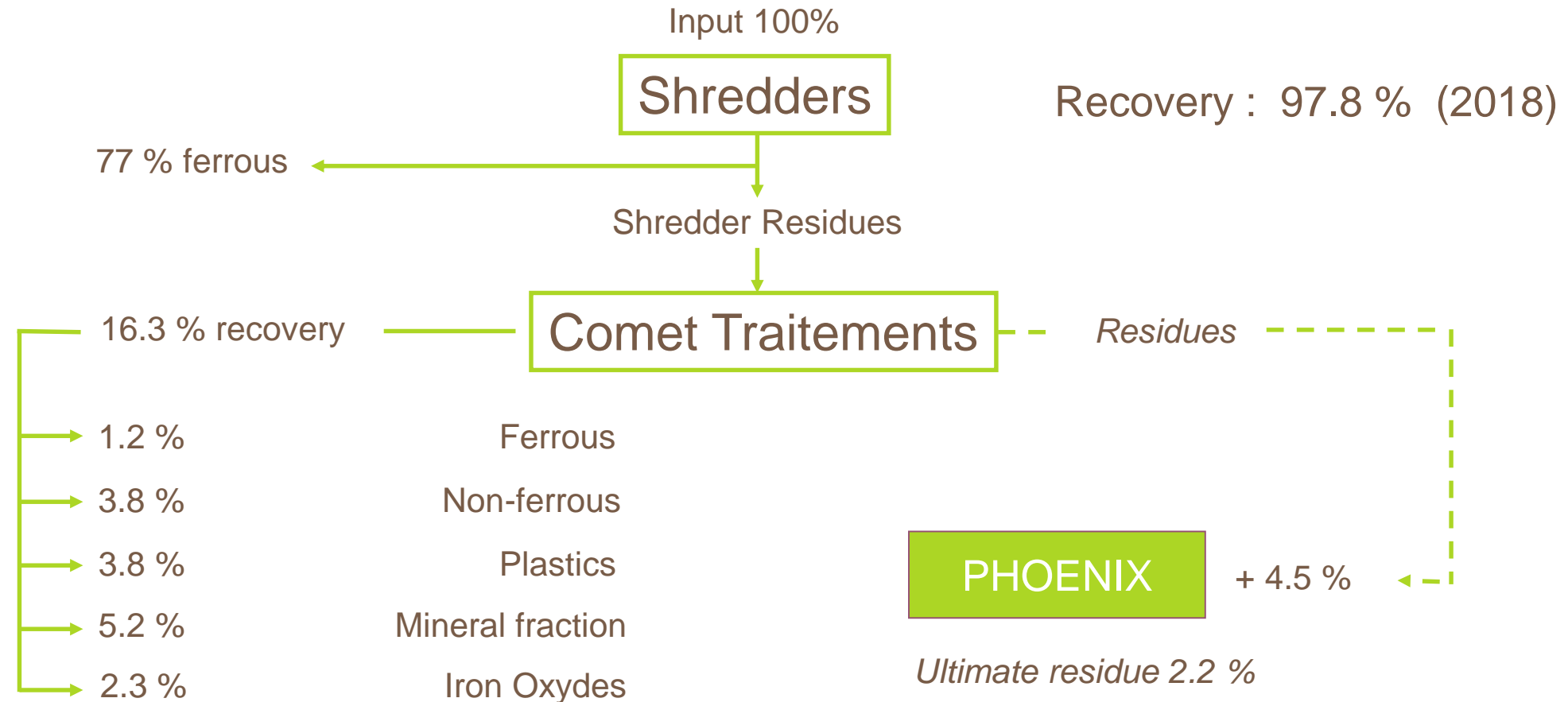
Mainly landfilled
until the 90's

R & D efforts
since the end
of 80's

Recovery rate :
> 95 %

Europe : 10 Mt per year of renewable ores

Metallic Wastes Recycling : Recovery rate



Only for EOL Vehicles : 94.8% (recycling) + 3.5% (energy) = 98.3% (Febelauto)

Recovery of non-ferrous metals

» HSR 150,000 t/y (since 2009)



» LSR 80,000 t/y (since 2002)



from 200 mm...



...down to 50 μ m

Recovery of the Mineral Fraction (ceramic, glass, concrete, stones,...)

Fines Post Shredder Technologies : input : 15,000 t/y (since 2010)

Production of a clean technical sand...



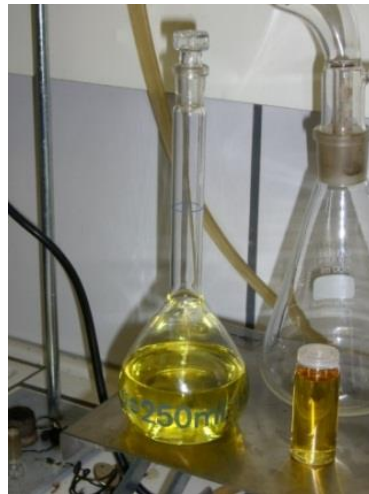
... recycled as **improved** building material in civil works

Catalytic conversion of ultimate organic shredder residues into liquid fuels & carbon



Chemical Recycling

Pilot plant capacity :
250-500 kg/h of **Fluff**
(since 2013)



Plastic PST plant : capacity 85,000 t/y of Mixes SR Plastic Stream - since 2012



From heterogeneous mixes...

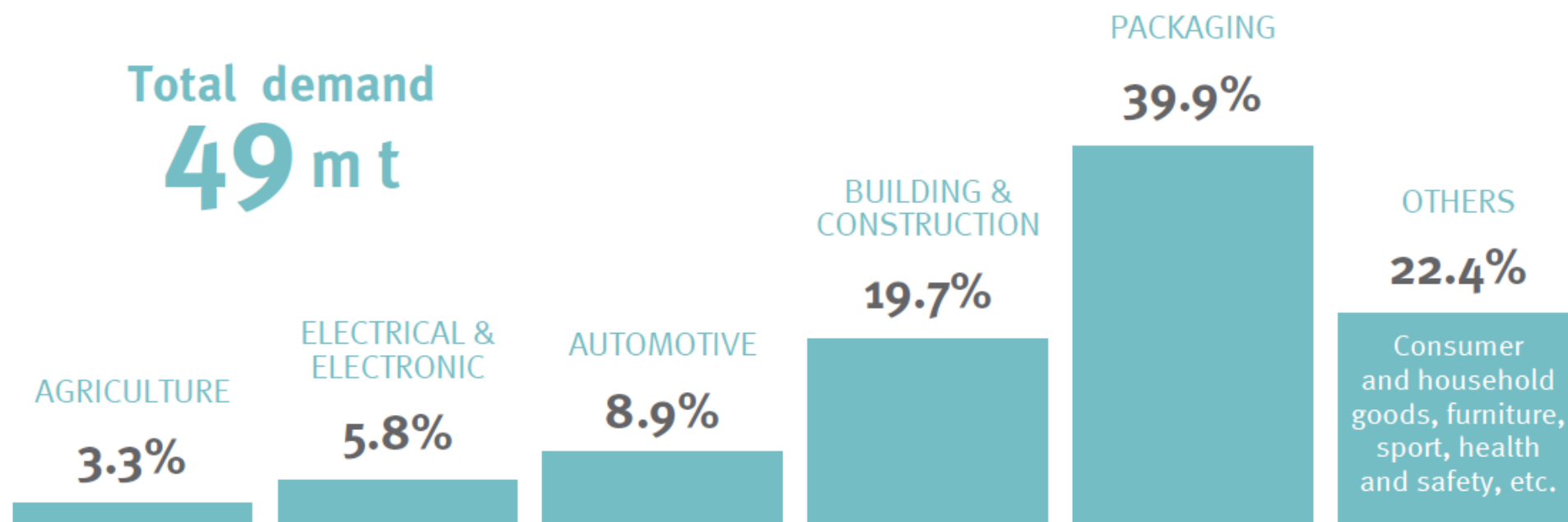


...to purified PP/PE/ABS/PS fractions

R&D goal : closing the loop with Circular Plastics

= => Ongoing R&D projects to use these plastics in its their own manufacturing process

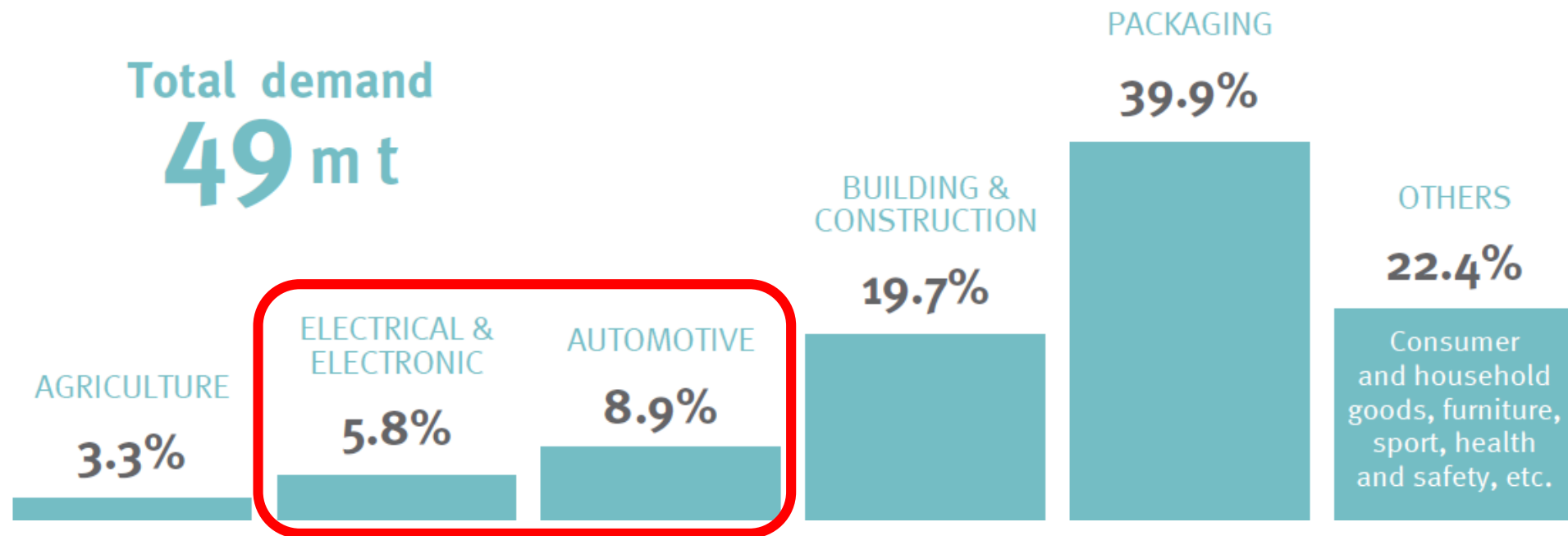
Context



Distribution of European (EU-28+NO/CH) plastics demand by segment in 2015

Source: Plastics Europe (2016). Plastics - the Facts 2016

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Potential of 7,2 Mt/year

Context

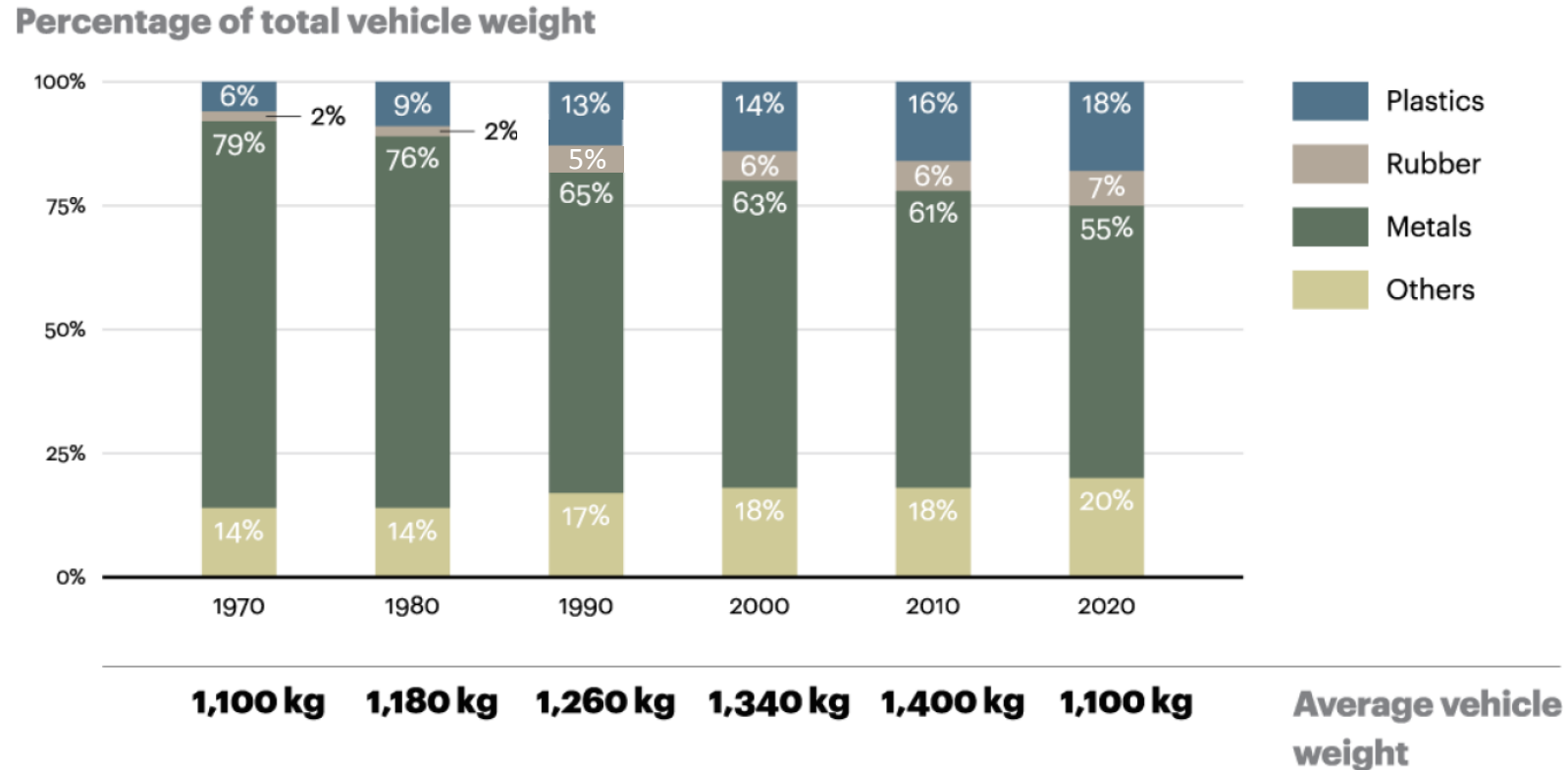
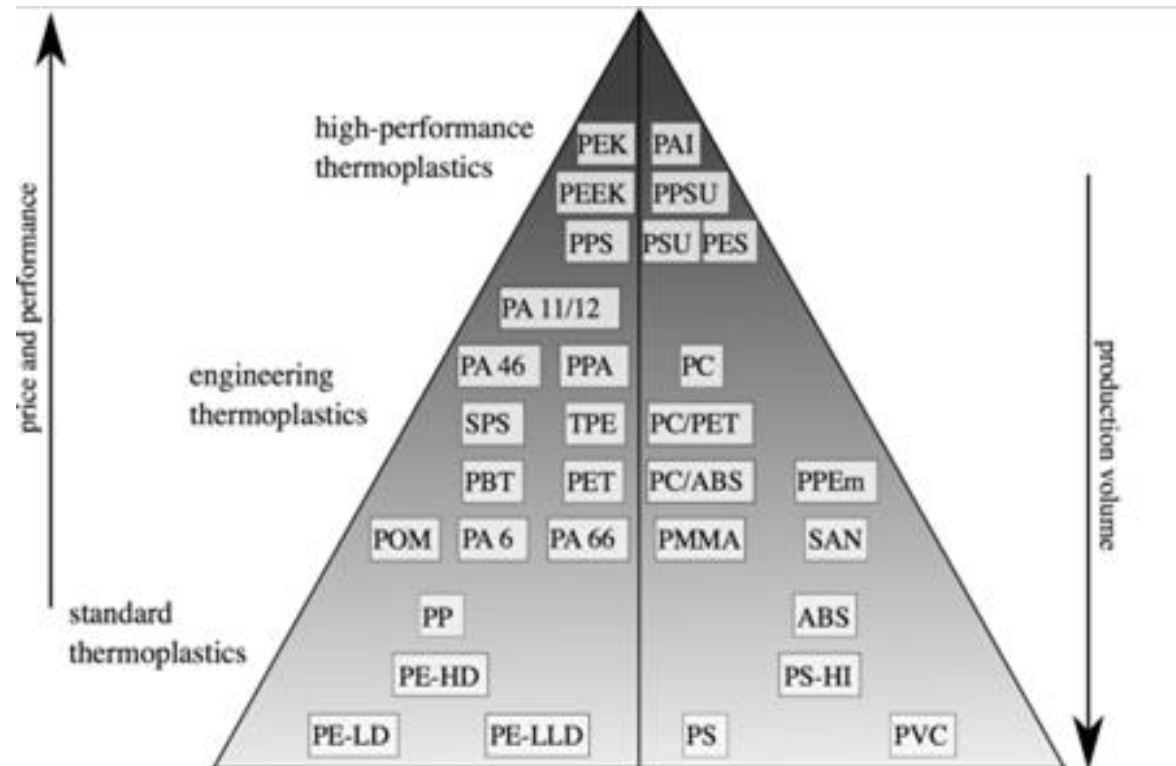


Figure 1 Evolution of the proportion of plastics in a car (ATKearney, 2012)

Increasing demand in the automotive sector

Context : typology



All types of
plastics are present
in the Shredder
Residues

+ rubber, elastomers, silicones, wood, etc,

History of a plastic recycling development

2002 : Faisability Study (with ULiège) : identification of first target plastics

2004 : Laboratory Pilot Unit (500 kg/h)

2006 : Demonstration Unit at industrial scale (3 t/h)

→ validation of the downstream market (2010 - RIT)

2012 : starting of the industrial unit (20 t/h)

But, due to the market instability in a circular economy context and a market strongly dictated by China, R & D efforts had to be maintained continuously **to keep market parts** :

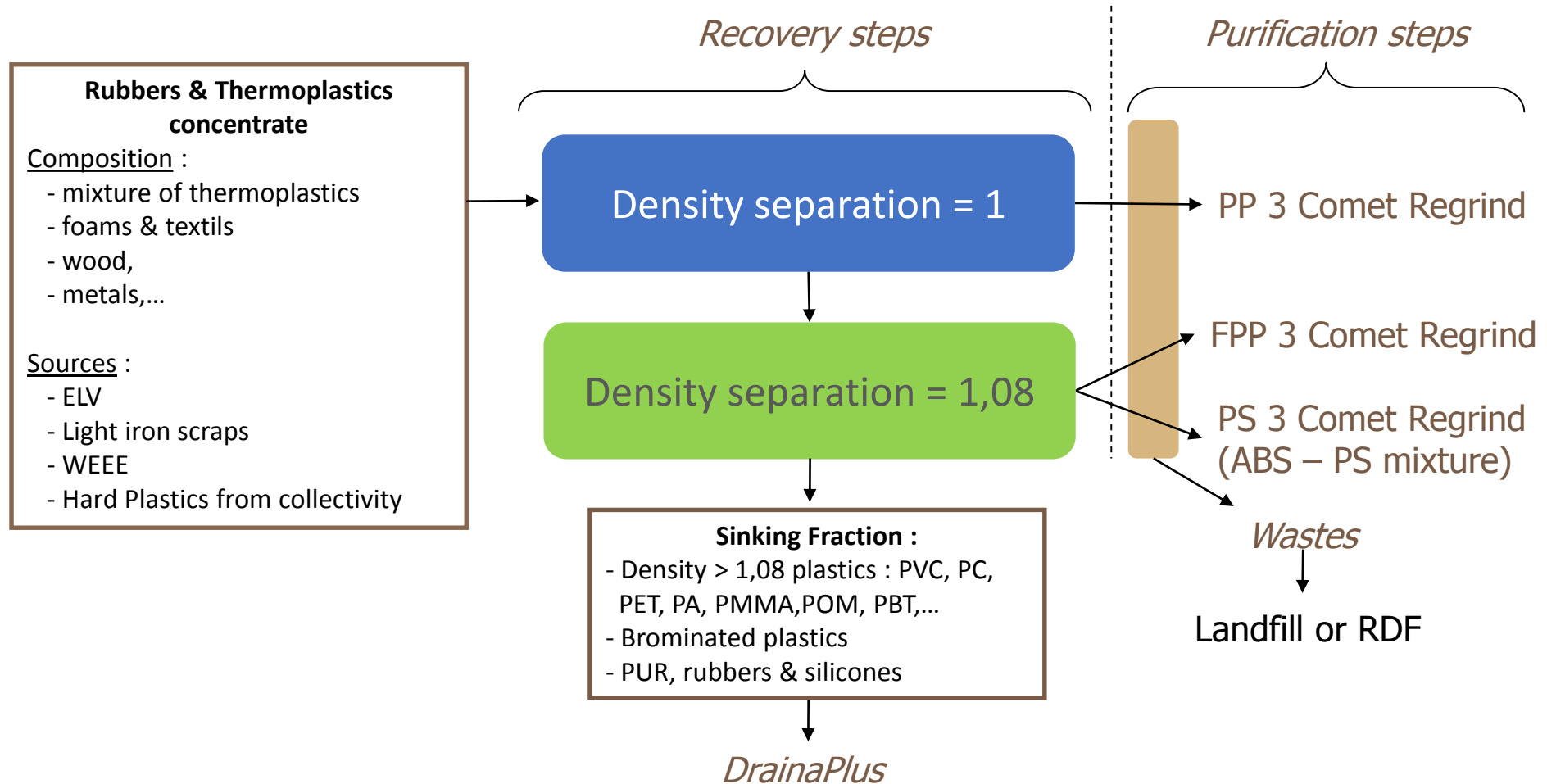
2014 : Purification Unit 1

2016 : Purification Unit 2

R&D investment : 2,3 M€

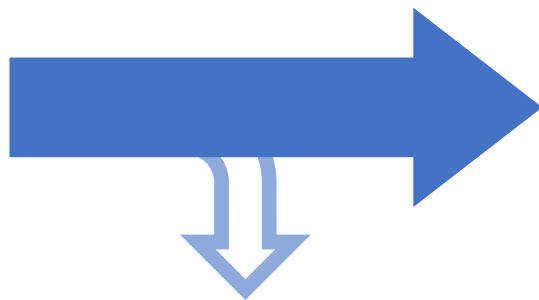
Industrial investment : 10,5 M€

General Flowsheet



Plastics from Shredder Residues : primary process unit

First challenge : impurities extraction: wood & rubbers



Second challenge : polymers separation

Current End Products

Unfilled Polyolefines :
"PP 3 Comet regrind"



Mixes of ABS/PS/FPP
regrinds



Near Future End Products

Upgraded plastics :
High purity regrinds

*Available in 2020 : starting of a new Industrial
Demonstration « **LIFE PlasPLUS** » Unit*

- Filled PP > 98 %
- PS > 95%
- ABS > 98 %



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Ongoing R & D :

- PE(HD) > 95 %
- PP > 95 %

Second challenge : polymers separation

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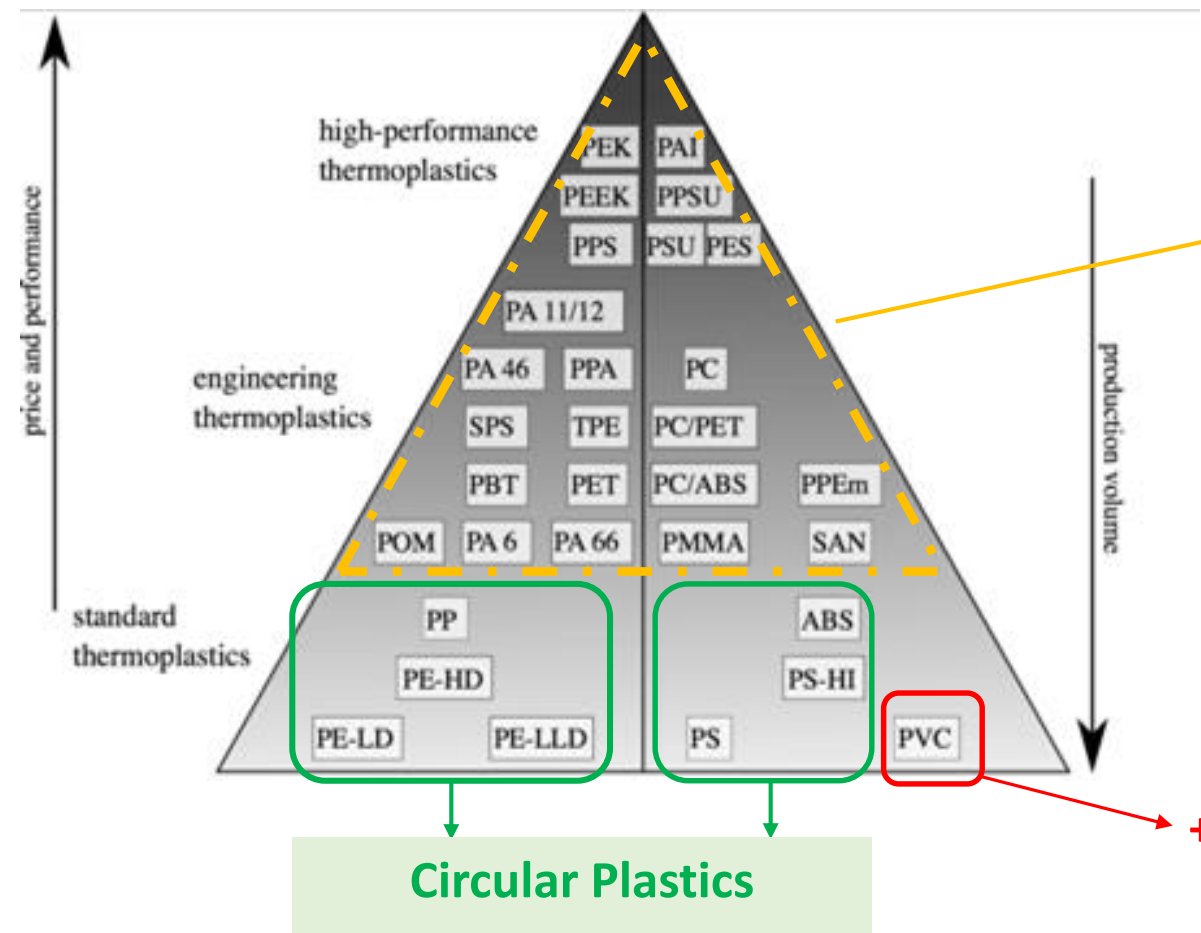
Ongoing R & D :

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- PP > 95 %

We guarantee :

- Qualities
- Volume
- Fixed Price

Current challenges



H2020
Grant Agreement N° 820687

MMA two

Second generation
Methyl MethAcrylate



LIFE18 ENV BE 000368 - **LIFE PlasPLUS: Recycling of high-quality secondary thermoplastics and critical raw materials coming from mixed WEEE and EoL vehicles**



Campine

SERI PLAST
POLYPROPYLENE COMPOUNDS



**+ Brominated Flame Retardants
Plastics & Sb**

Plastics from Comet Traitements = Circular Plastics



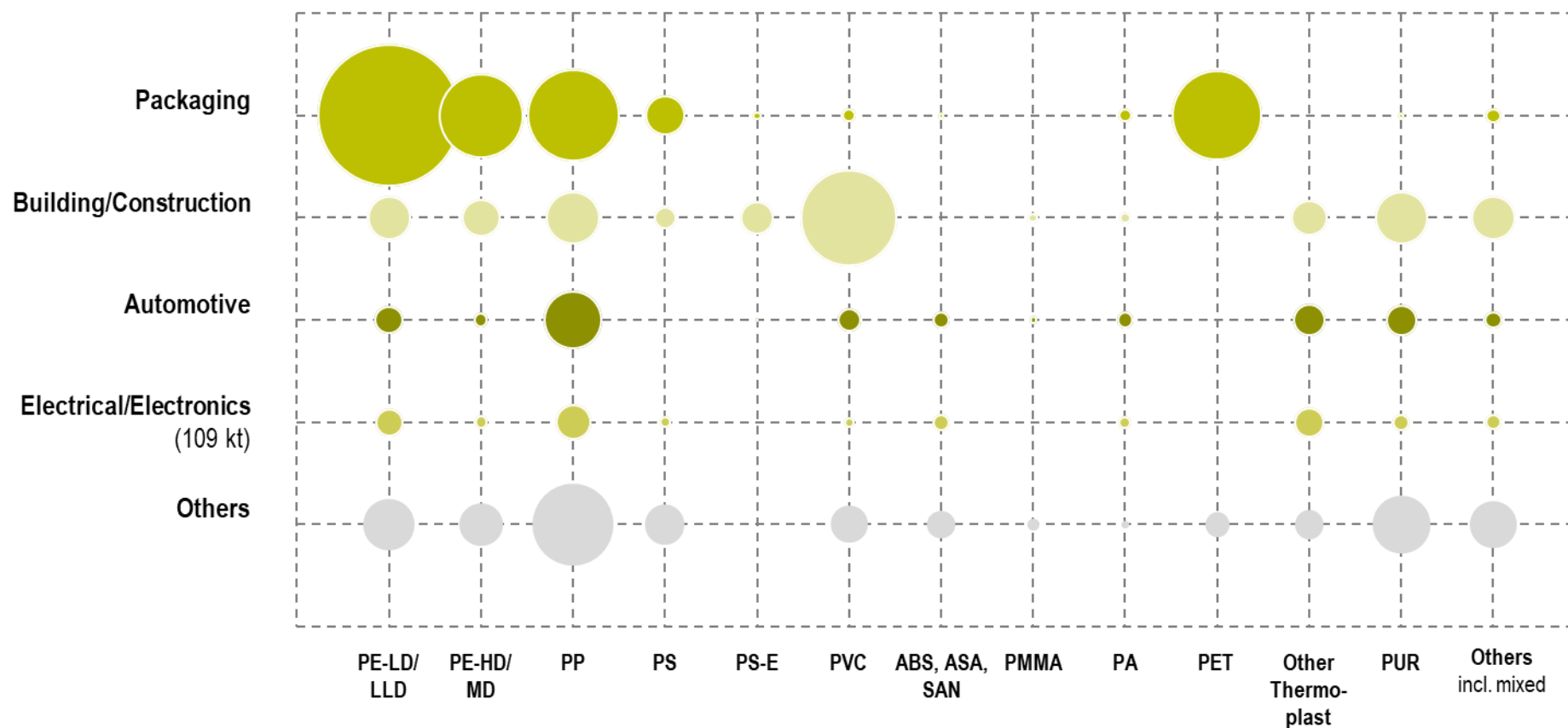
Applications :

- Automotive
- Electrical Appliances
- Construction
- Logistics

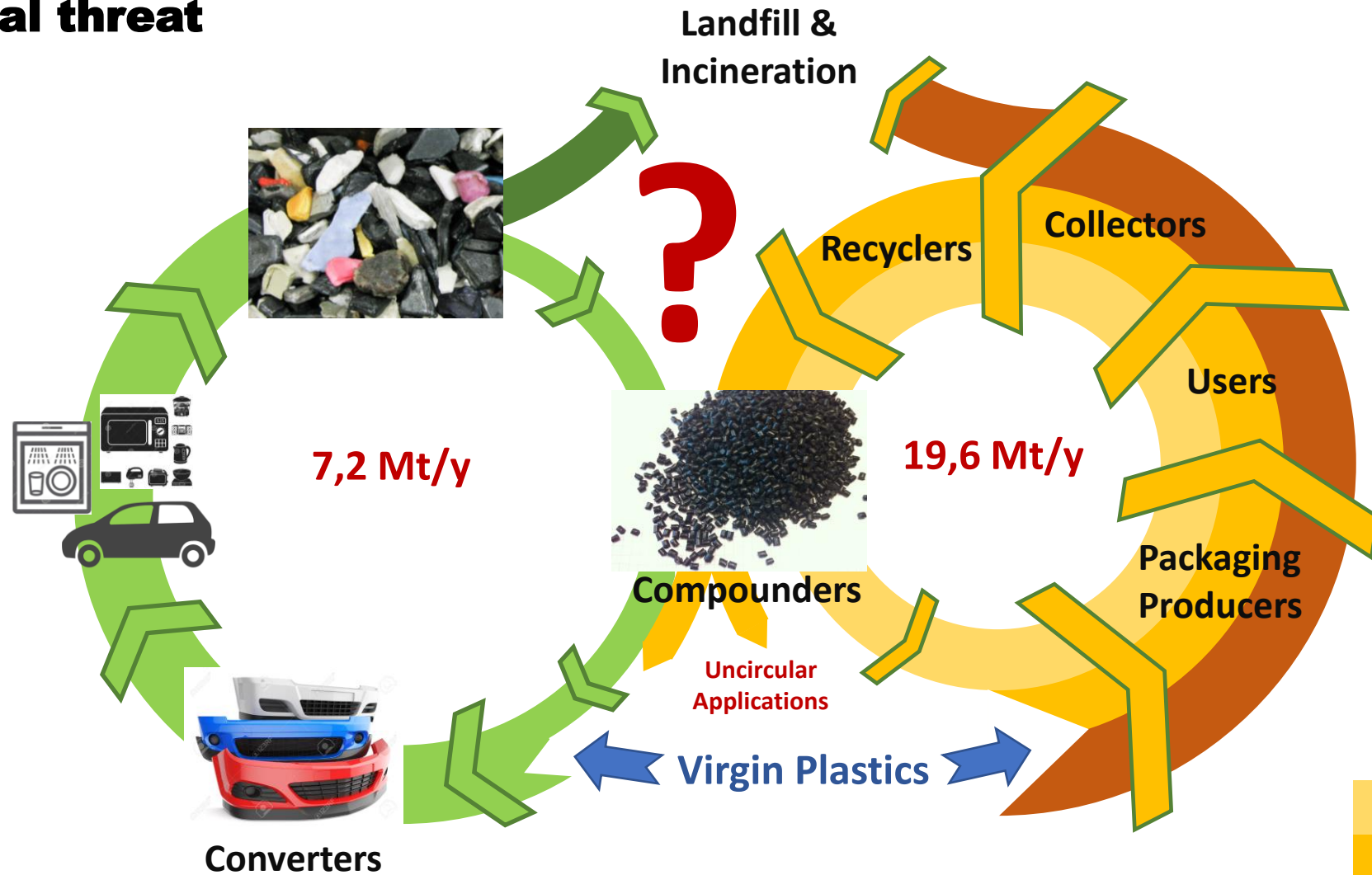
"Recyclability and
Multicircularity"
proved

Potential threat

The Structure of converted polymer types by the relevant industries and the “Plastic Material Recycling” legislations



Potential threat



**Packaging Recycling
UE Objectives :**

? % recycled content

? % Material recycling

? % Landfill & Incineration



Thank you for your attention

