



Accelerating the Circular Economy

PLASTICS RECYCLING

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Agenda

1 | SUEZ at a glance

**2 | Plastics recycling market in Europe:
the demand side**

3 | Towards higher quality recycled plastics

Suez at a glance

SUEZ key figures

15.1 BILLION €

total revenues in 2015
(2/3 municipalities,
1/3 industrials)

400,000

industrial and
business customers

74 MILLION €

in research and
development

82,000

employees
world wide

7 TWH

of energy produced every year from waste

92 MILLION

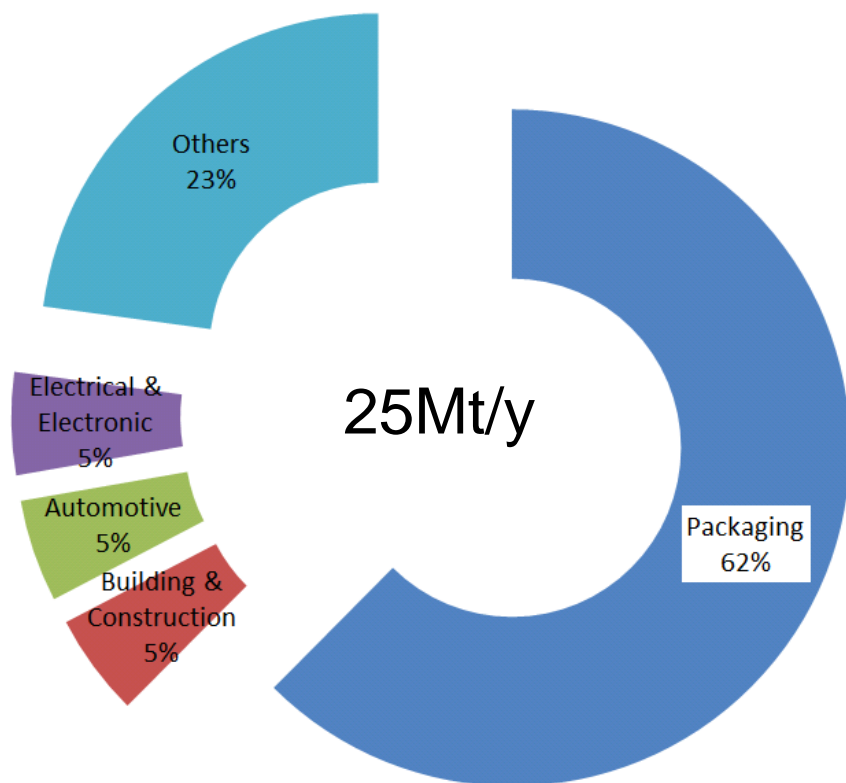
people supplied in
drinking water

16 MILLION

tons of waste
recovered

Focus on the EU plastics recycling market: the demand side

Origin of plastics waste in Europe



Nearly **60%** of the total plastics waste is:
PP and PE

Source: European Parliamentary Research Service Blog, 2013

Packaging recycling is key to reach EC recycling targets

Treatment of plastics waste today in Europe

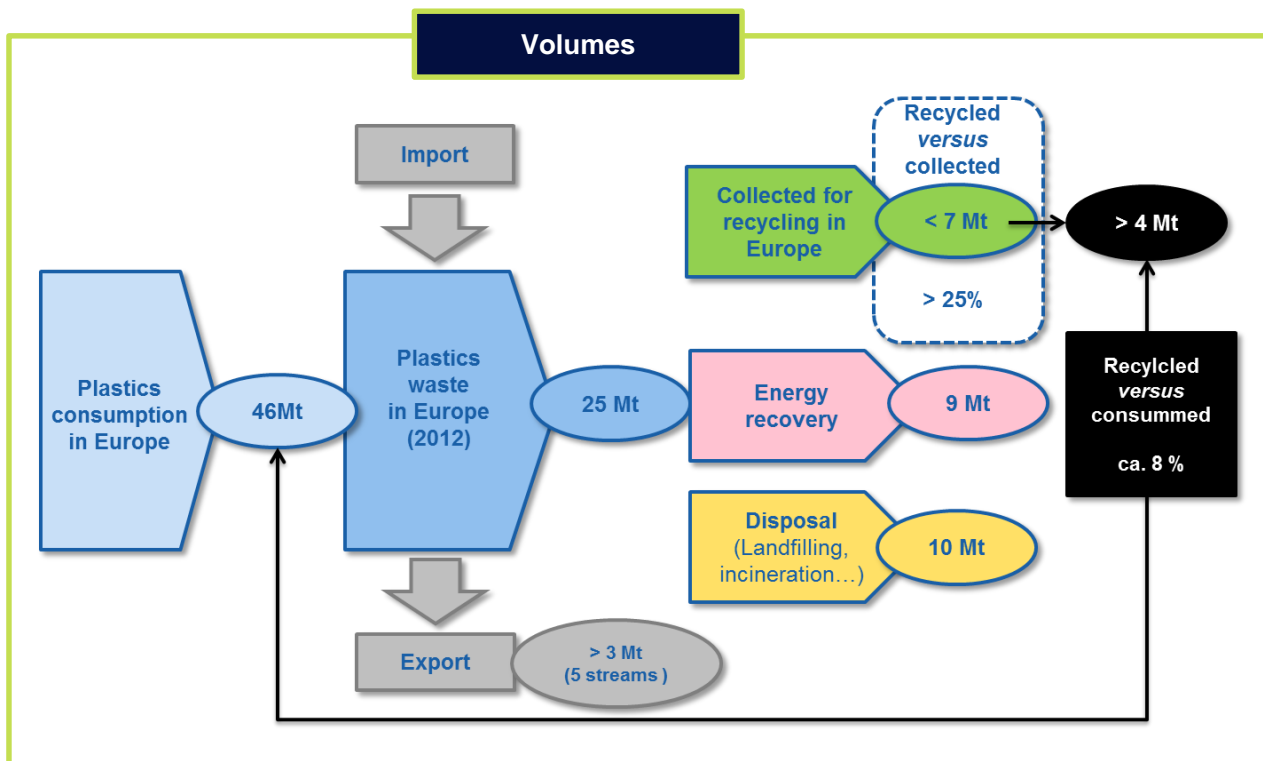
Regulations

- **Packaging Waste Directives** (94/62/EC & 2004/12/EC)

Recycling plastics packaging target : 22,5% > increased to 55% by 2025 by the Plastic Strategy Action

- **Waste directive** (2008/98/CE)
- **WEEE Waste Directives** (2002/96/EC & 2012/19/EU) and **ELV directives** (2000/53/EC) : waste collection and recycling objectives

Volumes



Regulations used mainly to push towards selective collection & sorting while the share of recycled plastics is only 8% of the virgin plastic volumes

The EU Circular Economy Package: a starting point to tackle the issue

Political coherence / Global vision / Benefits for the EU

WASTE LEGISLATIVE PROPOSALS

- Waste Framework Directive: 65% recycling target for municipal waste (2030) ; unified calculation method ; adapted definitions (“final recycling process” ...) ; general requirements for Extended Producer Responsibility
- Landfill Directive: 10% recycling target for municipal waste (2030)
- **Packaging & Packaging Waste Directive: 75% recycling target for packaging (2030)**
- WEEE / Batteries & Accumulators / End of life vehicles

To be reviewed and finalized by 2017

ACTION PLAN (NEXT 4 YEARS)

- Production: BREFs, Ecodesign
- Consumption: Ecolabel, GPP
- Waste management: Waste to Energy
- SRM market (quality standards), Fertilizers, REUSE, waste shipment
- Sectorial action: **Strategy on Plastics (55% Recycling plastics packaging target)**, Marine litter, Food waste, Construction & Demolition, Biomass & Bioenergy
- Innovation & Investments: Funds under Horizon 2020, Juncker Plan, Cohesion Funds

Not yet finalized. Concrete recommendations to come within next 4 years

- The Commissions’ perspective: a major political and economic project
- Industry reactions: overall satisfied ≠ NGOs: disappointed
- Political reactions: mitigated

Big opportunities in the value chain created by the new regulation

To bring the plastics recycling rate in Europe for PACKAGING WASTE to 55% it takes...

- ...60 additional big plastic packaging sorting plants with 80 kt/y capacity each (4,8 Mio. t/y total new capacity)
- ...170 additional plastic recycling plants with 25 kt/y input capacity each (4,25 Mio. t/y total new capacity)

Financial needs are tremendous,
however there is today no viable downstream market to sustain such investment

But cost gap between primary and secondary raw materials remains

Market price simulation

Crude oil market price

When the crude oil price is low, historically:

$$\frac{\text{crude oil price}}{0,45} < \text{virgin} < \frac{\text{crude oil price}}{0,30}$$



Virgin plastics market price

The recycled plastics can empirically be sold at a maximum value which is:

- 80% of the virgin HDPE for r-HDPE
- 90% of the virgin PP for r-PP



Recycled plastics maximum market price

R-plastics Cost simulation

Bales (post collection & sorting) market price

+

Production of SRM process costs

=

Very few correlation with the price of the crude oil or the resin

Recycled-plastics (R-plast) cost

Market price of the recycled resins can be empirically determined from the crude oil price, while their cost is hardly correlated with crude oil

Encouraging the demand side

Moving from a Push to Pull policy => key issues to accelerate the circular economy for plastic recycling

- 1. Stimulate demand**
- 2. Guarantee Quality**

Stimulate Demand

SUEZ suggestions:

1. Fiscal incentives (ex: 0% VAT in China)
2. Support Secondary Raw Materials (ex: Orplast in France for r-plastics)
3. Ambitious Green Public Procurement (ex: 40% target recycled paper in France - 2020)

Guarantee Quality

Example of EU measures:

1. Coordinate national End-of-Waste
2. Certification on some flows: EU CertPlast for plastics

Transition towards a Circular Economy: gaining speed and ensure high quality and critical mass are essential

Towards higher quality for recycled plastics

Brand Owners Targeting Circular Polymers

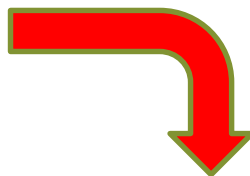
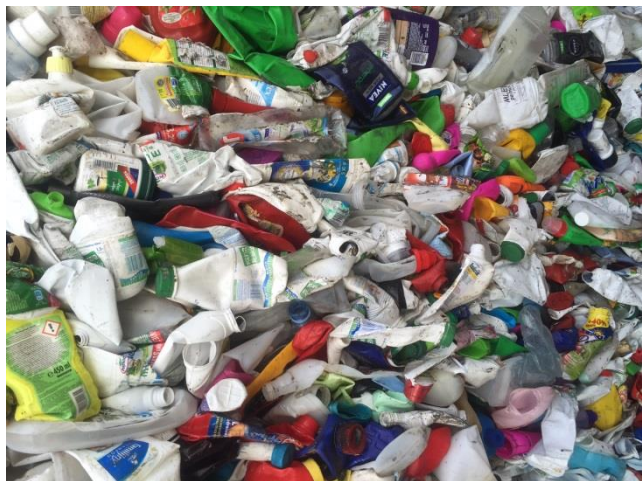
Brand Owners Gains

- Show environmental responsibility
- Reduce CO₂ footprint
- Become more independent from the virgin plastics suppliers (reduce supply problems and high price volatility)

SUEZ as Gain Creator

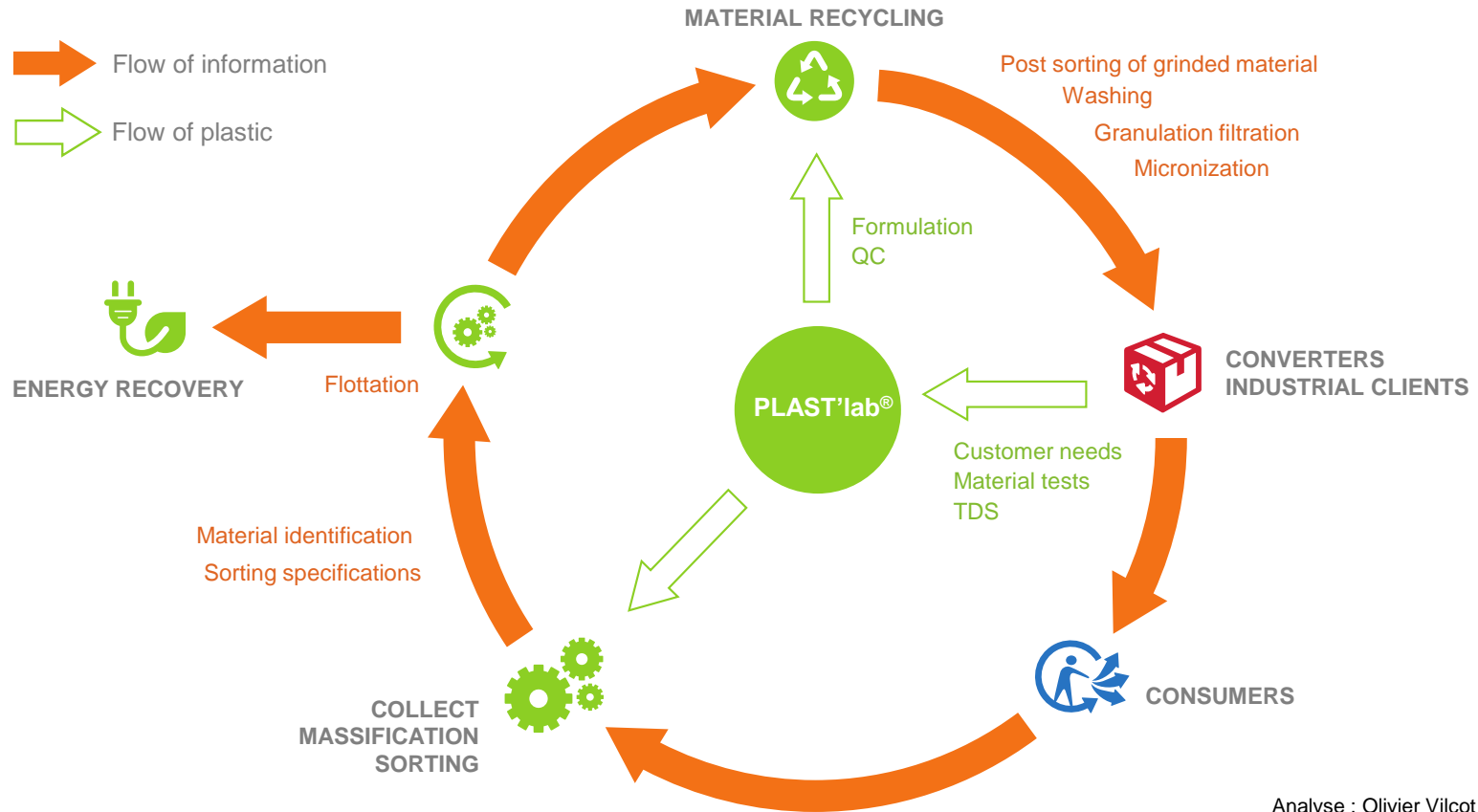
- Offer advise on Eco-design and circular raw materials
- Offer circular polymers which can replace virgin plastics

Higher Quality Needed



Enter the ,virgin like' compound market

SUEZ PLAST'lab[®] : key rule for plastic regeneration



QCP – Quality Circular Polymers project



- Company with its roots in the virgin polymer industry
- SUEZ largest shareholder and strategic partner for raw materials supply
- Integrated & automated plant to produce high quality PP, PE compounds from packaging household waste
- 35 kt/a output capacity with option to expand to 100 kt/a

QCP – The Production Process

