

# Message in a Bottle.

## Understanding the Plastic Lifecycle.



# Impact Beyond the Environment.

## The Plastic Lifecycle.

Plastics recycling has been active in many countries for decades; Platts Analytics does not expect an immediate step change in recycling but rather higher growth rates going forward.

PET bottles are the most mature recycling market and have the best transparency; other plastics are expected to follow the recycled PET market lead.

There have been many challenges over the past five years that have resulted in low growth rates of recycled plastics.

The low-price environment from 2015 - 2017 squeezed plastic recycler's profits and many processors went out of business. Plastics recycling needs a high-priced virgin polymer environment to be economically viable on a standalone basis.

The January 2018 Chinese import ban of mixed plastics waste forced material into landfills and incineration last year. Other countries are also restricting imports of mixed plastics wastes.

# S&P Global Platts as Plastics. Sustainable Insight.

Pollution is driving the recycling news cycle and social media has focused on ocean pollution and the well-publicized, negative impacts on marine life. There is a need to change consumer behavior, especially in Asia where the majority of the pollution is taking place.

PET bottles are the highest volume plastic recycled. Platts Analytics estimates that 35% of total PET bottles are recycled globally which equates to over 7 million metric tons in 2015.

15% of the recycled PET bottles (RPET) were used to produce new food grade bottles and this process is referred to as “closed loop” recycling.

The other 85% of RPET was used to produce polyester fibers and this process is called “cascade recycling”.

By 2030, Platts Analytics forecasts that up to 60% of PET bottles will be recycled and the RPET closed loop recycling back into new food grade bottles will increase from 15% in 2015 to as high as 50% in 2030.

# The Paths Plastics Waste Can Take



## Dispose

### Pollution

Pollution kills marine life and can prevent storm drains from working causing severe flooding. There is no impact on virgin polymer or oil demand, there is an urgent need to change consumer behavior and eliminate pollution.

### Landfill

Plastic bottles and packaging are used one time, thrown away and then sit in a landfill for decades. No impact on either virgin polymer or oil demand.

### Incineration for Power Generation

Energy recovery from burning the waste plastics to generate electricity. However, there are air emissions to consider. There is no impact on either virgin polymer or oil demand.



## Recycle

### Recycled (closed loop & cascade)

Current method to manage plastic waste; collect, sort, grind, wash, dry and generate flakes and pellets to use again. Reduces the demand for virgin polymer, the need to build new plants and will also reduce oil demand.

### Recycled into non-plastics applications

Such as lumber, railroad ties, construction materials, roads, etc. The recycled plastic displaces other commodities like wood and asphalt. Minimal impact on virgin polymer demand but will affect demand for other commodities.



## Decompose

### Chemical Depolymerisation

Current method to manage plastic waste; collect, sort, grind, wash, dry and generate flakes and pellets to use again. Reduces the demand for virgin polymer, the need to build new plants and will also reduce oil demand.

### Decomposed into Mixed C5-C12 Hydrocarbons

Another longer-term technology to decompose mixed plastics waste streams. No impact on virgin polymer demand but would decrease oil demand as the hydrocarbons produced could be used as transportation fuels.

# Plastics Recycling Issues



## Regulations

Increasing bans on single use plastics including grocery bags, straws and utensils. Governments approving new plastics regulations and recycling targets.



## Company Policies (or ESG/Environmental, Social and Corporate Governance)

Company recycling programs and recycled content targets for bottles and packaging. The “Green Consumer” driving a circular economy.



## Global Waste Plastics Trade

More countries have bans on importing containers of mixed plastic waste. The waste plastics will have to be managed and recycled in the country of origin.

# 40+ Years of U.S. Plastics Recycling

**1971**

Woodsy Owl “Give a hoot, don’t pollute” slogan introduced.

**1972**

First residential plastics recycling facility opens in Pennsylvania.

**1980s**

Major cities begin curb side collections.

**1985**

Plastics recycling exceeds 100 million lbs (45,000 mt).

**1988**

Resin Identification Code (RIC) was developed by the Society of the Plastics Industry.

**1990s**

Steadily increasing recycled PET content.

**2000s**

Recycling centres accept and sort mixed waste plastics. Recycling becomes part of everyday life.

**2008**

ASTM took over the RIC system and issued the Standard Practice for Coding Plastic Manufactured Articles for Resin Identification.

**2014**

Access to PET bottle recycling centres reaches over 90% of the population.

## By 2030

**18**

**Million Metric Tons**

of PET bottles will be recycled back into products that replace.

**50%**

**Recycled PET Content**

for Coca Cola, Danone, Nestlé and Pepsi for water and beverage bottles.

**60%**

**of PET bottles**

will be recycled, meeting global commitments for closed loop recycling PET bottles into food grade pellets for new bottle production.

**100%**

**Recycling Target**

for PET bottles from the Japanese government.

