URGENT PROBLEM, TRANSFORMATIVE SOLUTIONS:
The transition to a circular economy and the emergence of advanced recycling technologies for plastics

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Eastman, at a glance . . .

- A Fortune 500 company
- 2018 revenue of approx. **10 billion USD**
- Serve customers in over **100 countries**
- Approx. **14,500 employees**
- A journey from a diversified to a specialty chemicals company
- A **century of innovation** embedded in our culture
- Operating **four business segments:**
  - Additives & Functional Products
  - Chemical Intermediates
  - Fibers
  - Advanced Materials
World-class specialty plastics for worldwide markets

Ophthalmics
• Sunglasses
• Reading glasses

Durables
• Food containers
• Baby bottles
• Appliances

Packaging
• Household
• Cosmetics
• Food and beverage

Medical
• Devices, bags, and tubing
• Suction and drainage
• Culture tubes

Electronics
• Displays
• Tablets and notebooks
• Smartphones

3D Printing
• Printing filaments
• Powder

Retail and Architecture
• Molding and trim
• Store displays
• Skylights
Our world is evolving

Attitudes about plastics are changing rapidly. Public sentiment has become increasingly negative.
Our plan to impact the world with chemical recycling

Reduce the >170 million metric tons being landfilled and incinerated via:

- Strategic partnerships with customers who generate large amounts of industrial scrap.
- Enabling expansion of take-back programs by world’s leading brands.
- Working with recycling companies to consume what can’t be mechanically recycled.


CHEMICAL RECYCLING

Virgin feedstock → Polymer production → Applications → Waste creation

- Feedstock recycling <1%
- Chemical (monomer) recycling <1%
- Mechanical (polymer) recycling 12%
- Process losses 4%
- Collected for recycling 16%
- Incinerated 25%
- Landfills 40%
- Unmanaged dumps or leaks 19%

*1Durable applications with an average lifetime >1 year will end up as waste only in later years; nondurable applications go straight to waste.
*2150 million metric tons of mixed plastic waste from nondurable applications that end up as waste in same year, plus 110 million metric tons of mixed plastic waste from production in previous years.

McKinsey & Company
Vision for a sustainable future

Transforming our product portfolio to participate in the circular economy via three loops.

Operational today

- Mechanical recycle stream technology

New plant operational by 2022 limited commercial quantities 2020

- Carbon renewal technology

- Advanced circular recycling

Eastman's chemical recycling solutions
MECHANICAL VS CHEMICAL RECYCLING

MECHANICAL RECYCLING

- Requires clean sources of unmixed PET or HDPE
- Washed, cleaned up polymer flake for re-melting
- Difference in key properties

CHEMICAL RECYCLING

- Robust process enables broader mix of inputs
- Broken down chemically, impurities removed
- Indistinguishable from prime materials

SIGNIFICANT LIMITATIONS OF MECHANICAL RECYCLING CAN BE ADDRESSED THROUGH CHEMICAL RECYCLING TECHNOLOGIES, OPENING UP A BROADER MIX OF PRODUCTS FOR RECYCLING
Technology Developments

Material suppliers and start ups are making announcements and investments around chemical and mechanical recycling.

Conversion Technologies

Decomposition Technologies

Purification Technologies

Mechanical Recycling

Level of Breakdown

Purity of Stream Required

High

Low
A unique approach to converting circular feed streams into basic chemical building blocks.
ADVANCED CIRCULAR RECYCLING (ACR)

Enables polymers to be unzipped back to their basic composition.

Recovered Polyester → Depolymerization → Purification Process → Existing Specialty Plastics Production

- rDMT
- rMEG
- rCristal
- rEastar
- rTritan

Safely capture impurities, colorants, additives, and non-polyester plastics.

Recovered Polyester
Why Mass Balance?

Mass balance efficiently enables the future of recycling, without disrupting the existing supply chain or infrastructure.
In conclusion

Solving plastic waste challenges require **collaboration between all players in value chain** with a big picture perspective.

**Mass balance** accounting framework **is a critical enabler for** driving rapid, large scale, **global circular transformation**.

**Full acceptance of Mass balance** for driving “recycled content” across value chains could **remove limitations** for brands and other organizations **to meet sustainability goals** by making more recycled materials available and marketable.

To learn more, read the [Ellen MacArthur Foundation CE100 whitepaper](#)