Closing the Loop to End Plastic Waste in the Environment

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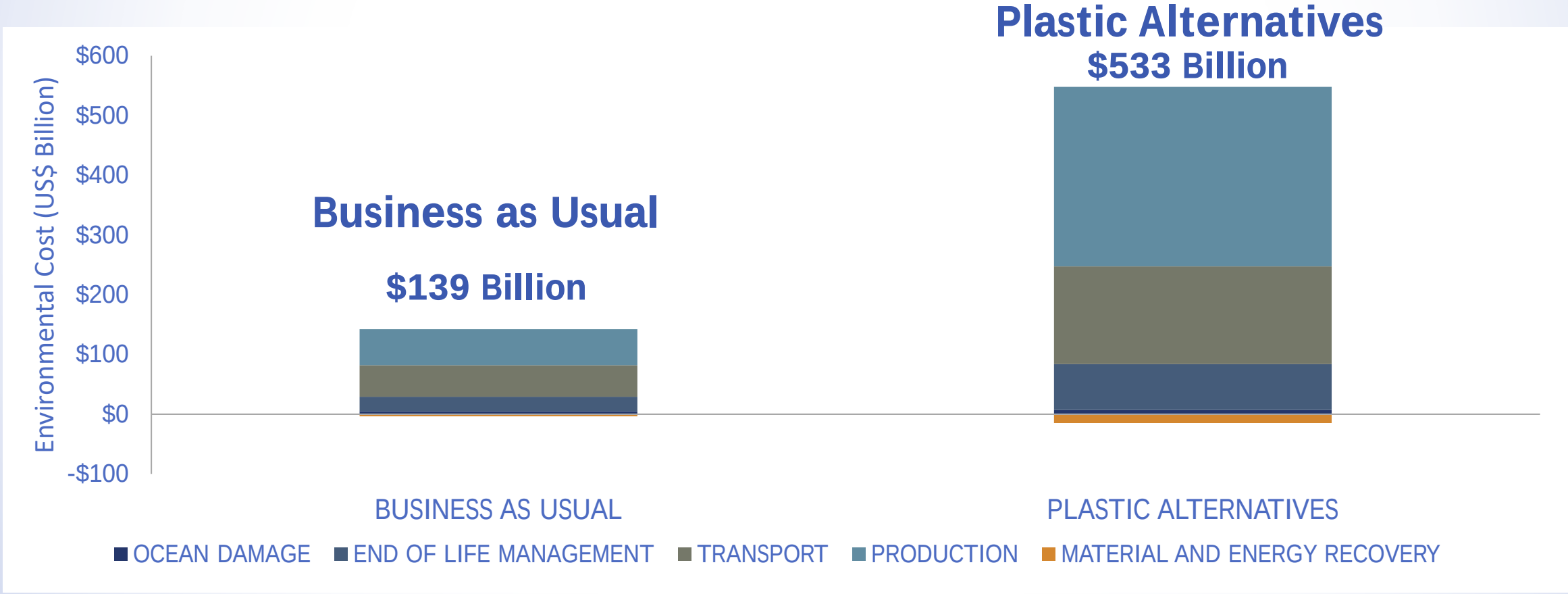
Plastics Division Members

Plastics and Sustainability

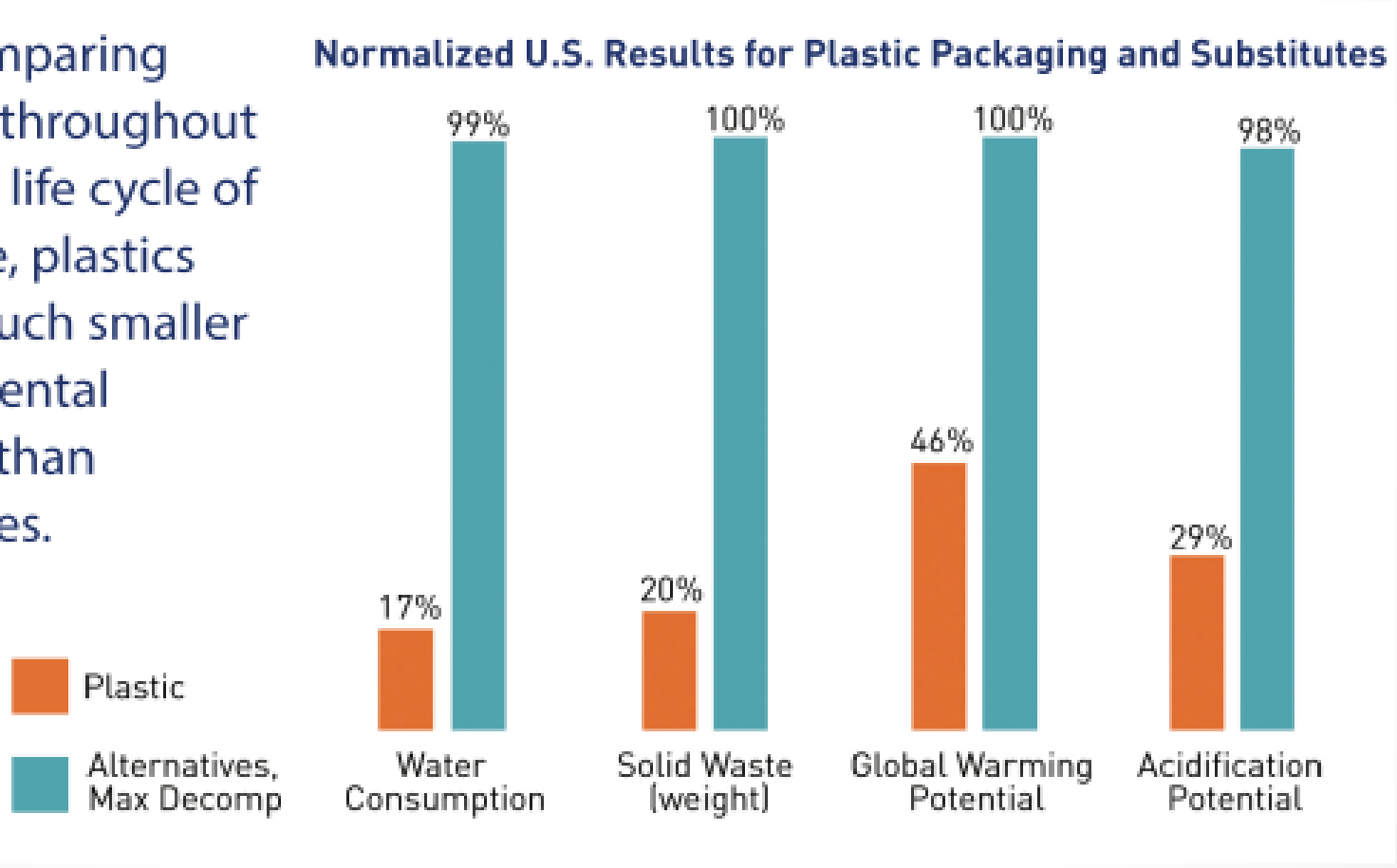
Environmental cost of plastic use in consumer goods is 3.8 times less than alternatives



Trucost, Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement, July 2016.

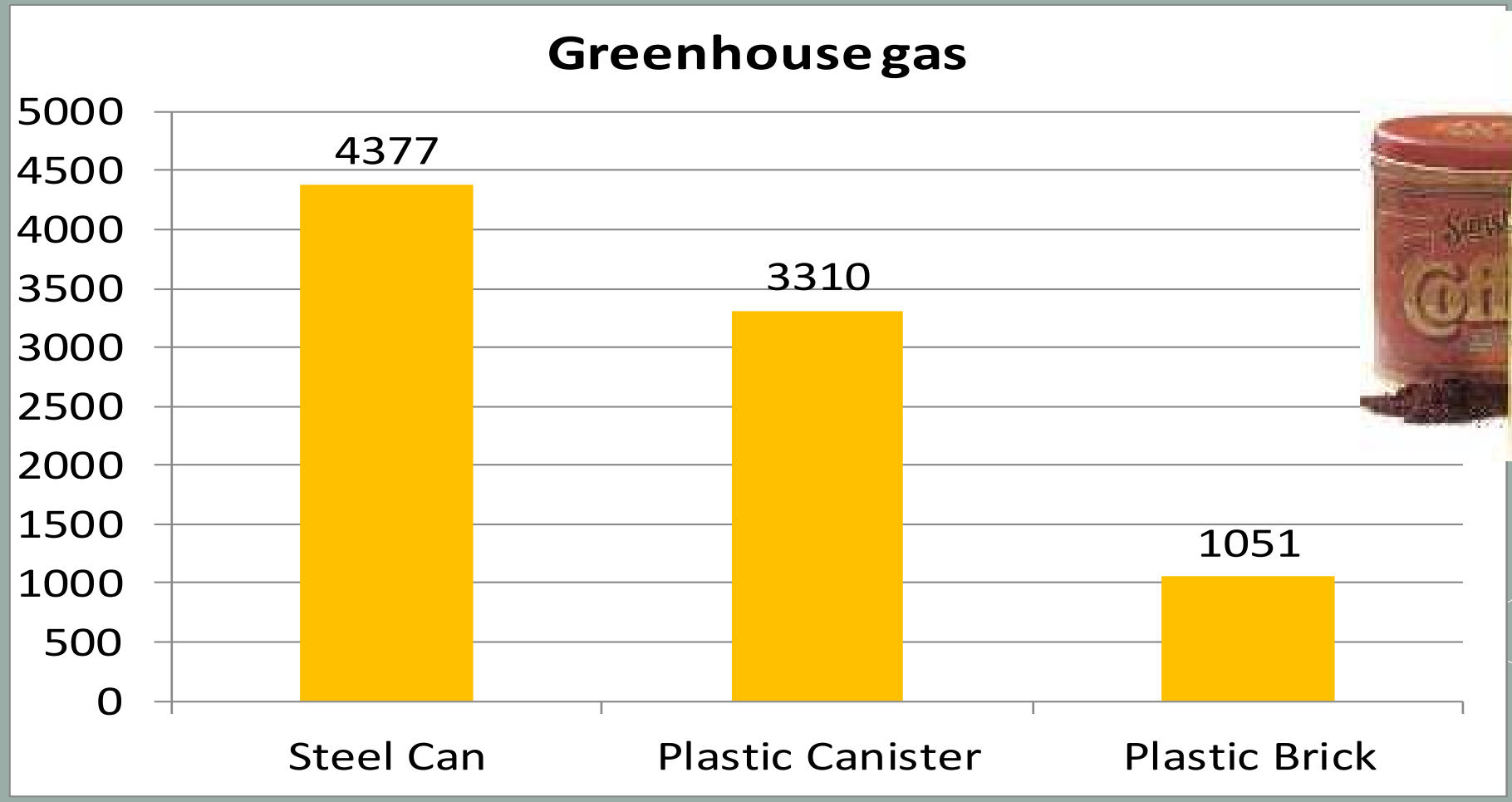
Environmental Impacts: Plastic v. Other Materials

When comparing materials throughout the entire life cycle of a package, plastics leave a much smaller environmental footprint than alternatives.



Source: Franklin Associates, April 2018

“Reduce” via Plastics Packaging

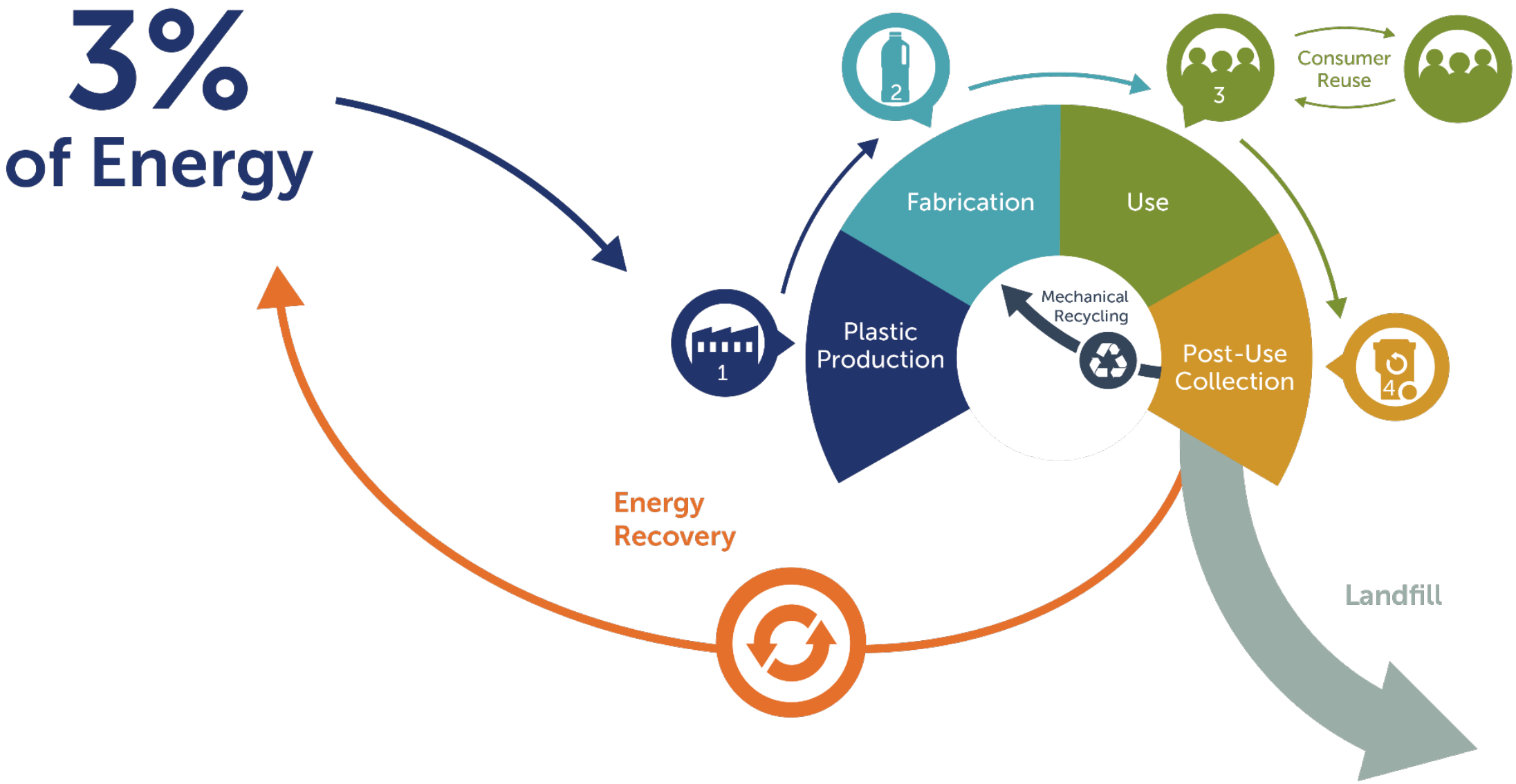


Source: Franklin Associates, September, 2008

Reduced Food Waste

- Saves money
- Reduces environmental effects
- Keeps foods fresh and sanitary

The Plastics Economy Today



U.S. Resin Manufacturer Sustainability Goals

✓ **2040 Goal**

- 100% of plastics packaging is reused, recycled or recovered

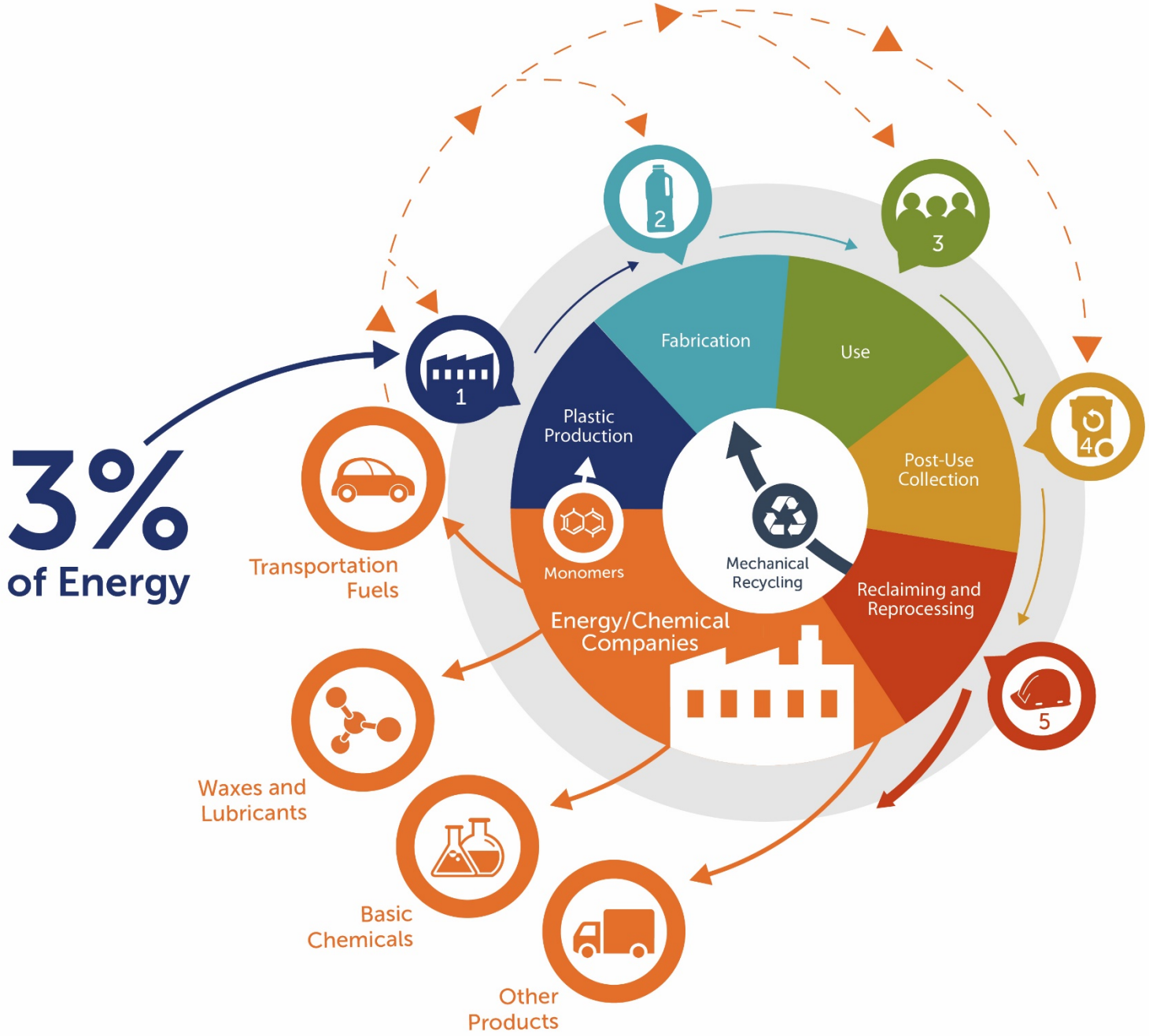
✓ **Interim Goal (2030)**

- 100% of plastics packaging is recyclable/recoverable

✓ **Best practice goal**

- 100% of Division's U.S. manufacturing sites participate in Operation Clean Sweep Blue by 2020, with all North American sites by 2022

Plastics in a Circular Economy



MATERIALS RECOVERY FOR THE FUTURE

Research Collaboration

Polypropylene Recycling Coalition

- Launched July 8th
- $35 million / 5 years
- Potentially 1.6 billion lbs / year available
- RFP for grants
  - PP sorting equipment
  - Consumer education
- Explore hub and spoke, secondary sortation

PATHWAY to CIRCULARITY
POLYPROPYLENE RECYCLING COALITION
AN INITIATIVE OF THE RECYCLING PARTNERSHIP

Keurig Dr. Pepper, Braskem, Walmart Foundation, ACC, Danone, EFS Plastics, KW Plastics, LyondellBasell, Procter & Gamble, St. Joseph Plastics, Winpak

What is Advanced Recycling?

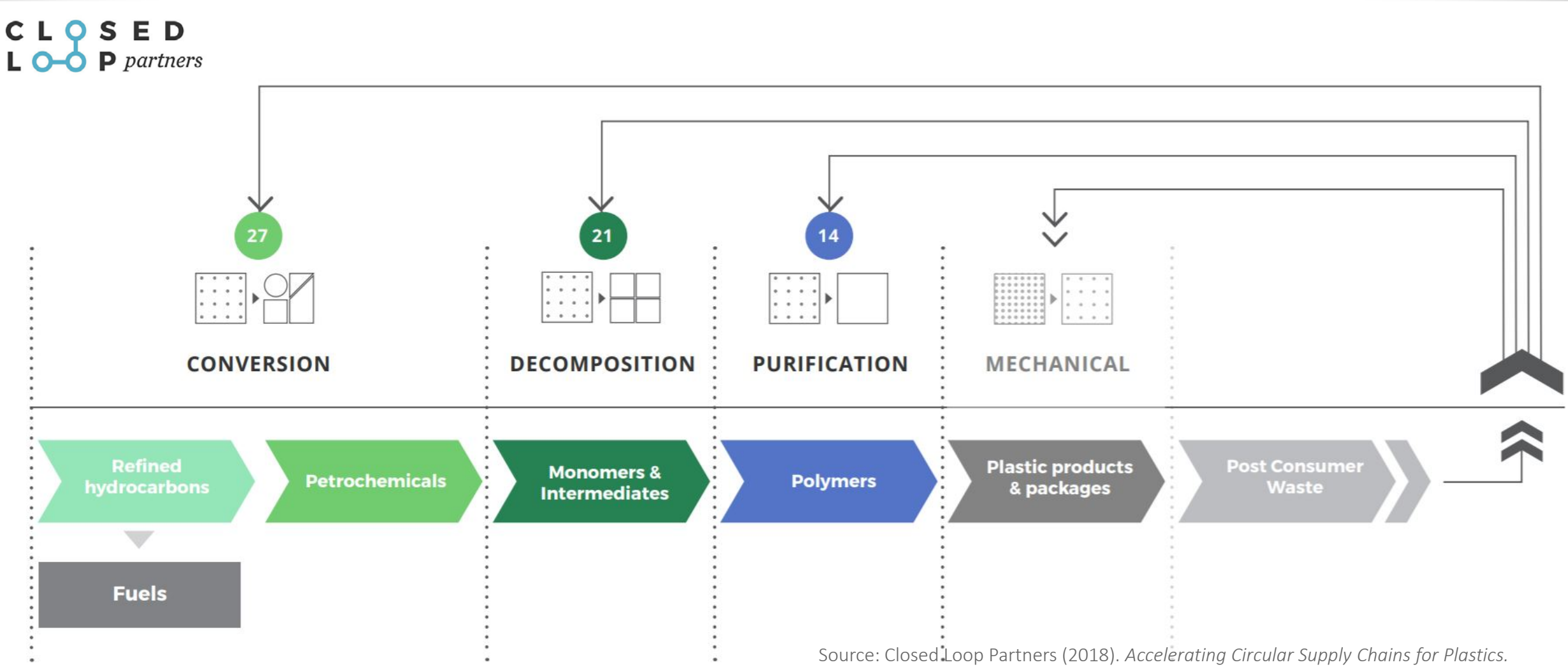
Leveraging chemistry to convert post-use plastics into valuable products which extend the life of the plastic

Outputs:

- Virgin like plastics
- Specialty chemicals
- Basic building blocks (monomers)
- Chemical feedstocks (naphtha)
- Fuels

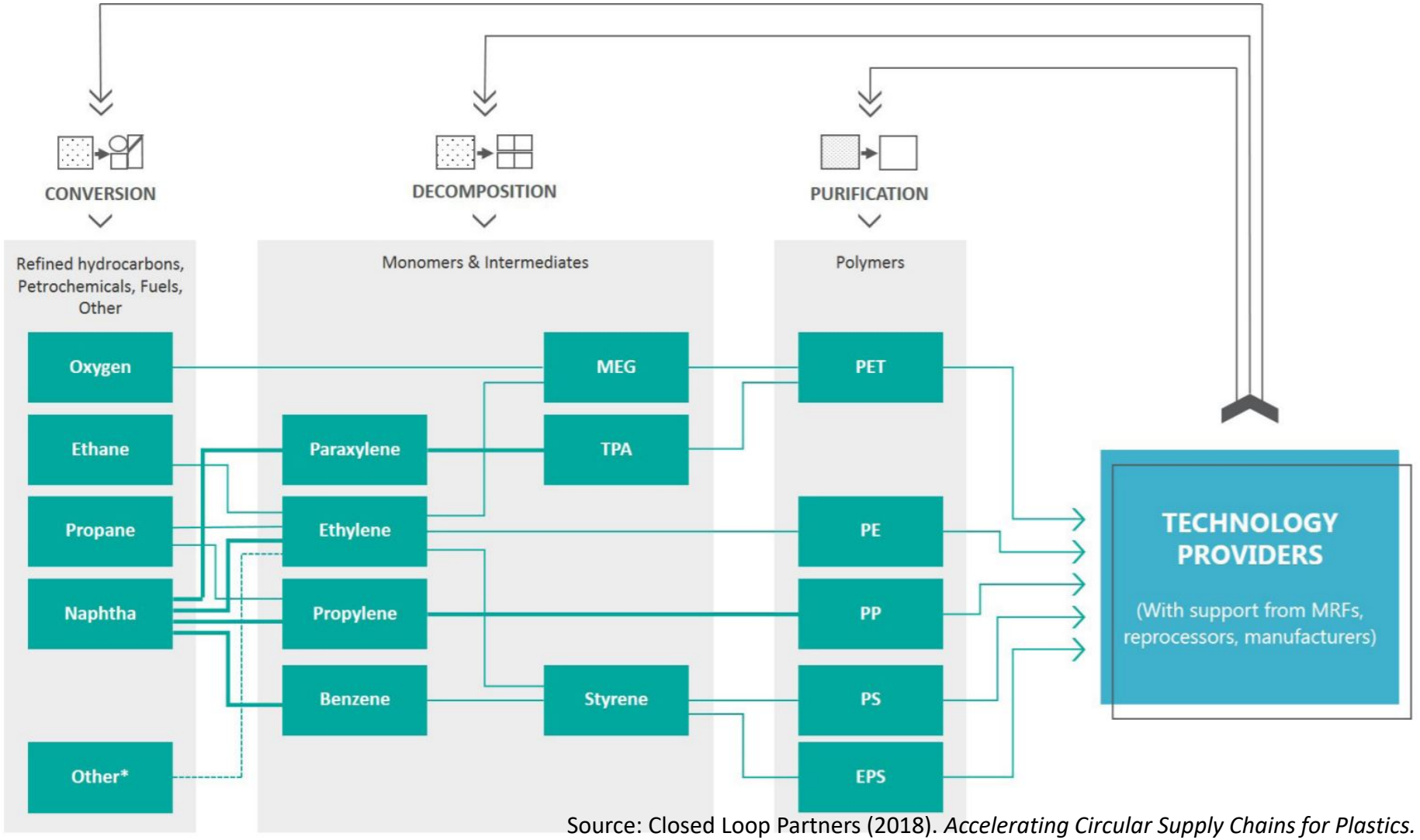
Products are then used as alternative to fossil based products

Types of Advanced Recycling



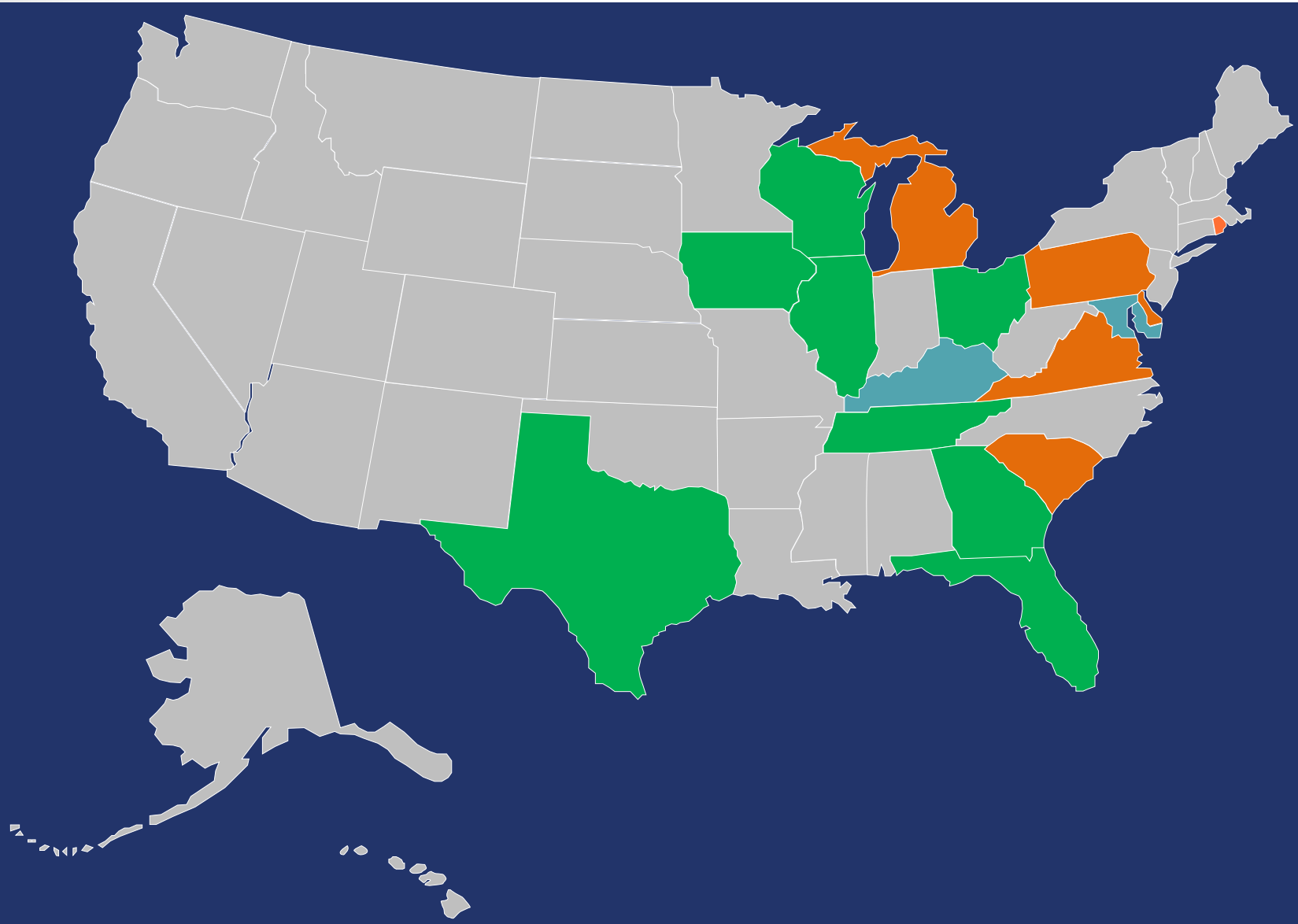
Source: Closed Loop Partners (2018). *Accelerating Circular Supply Chains for Plastics.*

Products of Advanced Recycling



Source: Closed Loop Partners (2018). *Accelerating Circular Supply Chains for Plastics.*

Policymaker Interest in Advanced Recycling



Legislation enacted (8)

Legislative activity (6)

Regulation in progress (2)

Notable Environmental Benefits

- Advanced recycling (pyrolysis) of mixed plastic waste emits **50% less CO_2** than incineration of mixed plastic waste
- Chemically recycled plastics cause significantly **lower CO_2 emissions** than those produced from primary fossil resources

Regulation of Advanced Recycling

Advanced recycling facilities regulated as manufacturing:

- Air: permits and Clean Air Act (CAA) compliance, also state permits
- Water: Clean Water Act (CWA), states typically implement National Pollution Discharge Eliminations Systems (NPDES) permit programs
- Product storage: Spill Prevention, Control and Countermeasure (SPCC)

Air emissions:

- No atmospheric oxygen or halogens
- Products spend virtually no time at the dioxin formation temperature
- Emissions lower than food manufacturing, hospitals and universities

https://plastics.americanchemistry.com/Product-Groups-and-Stats/Plastics-to-Fuel/Regulatory-Treatment-of-Plastics-to-Fuel-Facilities.pdf

https://plastics.americanchemistry.com/Plastics-to-Fuel-Manufacturing-Emissions-Study.pdf

EMF Recycled Content Commitments

Source: https://newplasticseconomy.org/assets/doc/GC-Spring-Report.pdf

Announced Domestic Investments

New Investments in U.S. Plastics Recycling

Announced since July 2017

59

projects in the U.S.

Combined projects valued at

$5.0

billion

Potential to divert

3.4

million tons of waste*
from landfills

*Mostly plastic, but includes other waste (MSW, cartons, electronics, etc.)

Infrastructure Investments, Circular Solutions

Examples

Very Recent Announcements

Berry to supply recycled plastic packaging for Mondelēz Philadelphia brand

Nova Chemicals, Enerkem partner on advanced recycling technolog for plastics

Braven Environmental invests in pyrolysis facility in Virginia

The company has invested $31.7 million in the new manufacturing operation in Cumberland County, Virginia.

Michelin invests in Canadian plastic recycling technology firm

Advanced Recycling Alliance for Plastics

Advocating on behalf of technologies that leverage chemistry to convert post-use plastics into new plastics, specialty chemicals, fuels and other products.

Advanced Recycling Alliance for Plastics

ADVANCING SOLUTIONS FOR PLASTICS RECYCLING

agilyx

BRIGHTMARK

Braven Environmental
(formerly Golden Renewable Energy)

GREENMANTRA TECHNOLOGIES

NEW HOPE ENERGY

RENEWLOGY

AmSty

Chevron Phillips Chemical Company LP

Sealed Air

Honeywell

Ravago

TETRA TECH

Marine Debris - Our View

Plastic & other litter in the environment is unacceptable

Plastics deliver significant societal benefits

Plastic makers have a role in helping to provide solutions


$1.5 BILLION
COMMITTED TO KEEPING
PLASTIC WASTE OUT OF
THE ENVIRONMENT.
ALLIANCE TO
END PLASTIC WASTE

Stay Connected

@Am_Chemistry

@Adv_Recycling

@craigcookson

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