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# Certified Circularity through Advanced Recycling

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# Energy products and human development are inextricably linked

People



Population expands >25%

×

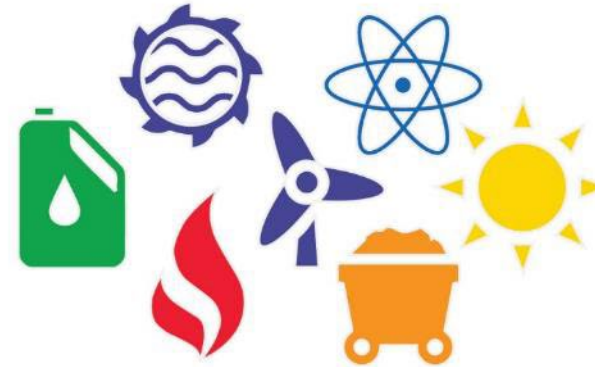
living standards



GDP more than 2x

=

Energy + modern products needs



Energy demand grows 15%

Demand for modern products rise

# Plastics can play a key role, making modern life possible

- Plastics demand expected to grow at or faster than GDP through 2050<sup>1</sup>
- Plastics help enable performance and sustainability benefits across industries, from vehicle lightweighting and medical applications to food packaging (e.g. shelf life) and greenhouse films

Better fuel economy<sup>2</sup>  
enables lower GHG per mile



**7%**

fuel economy improvement possible with a 10% reduction in vehicle weight<sup>2</sup>

Lower lifecycle GHG<sup>3,4</sup> than the alternatives /  
Less solid waste<sup>5,6</sup>



**1/3**

of all food produced in the world is being wasted and not eaten by end consumers<sup>6</sup>



**8-10%**

of global greenhouse gas emissions are associated with food that is not consumed<sup>6</sup>

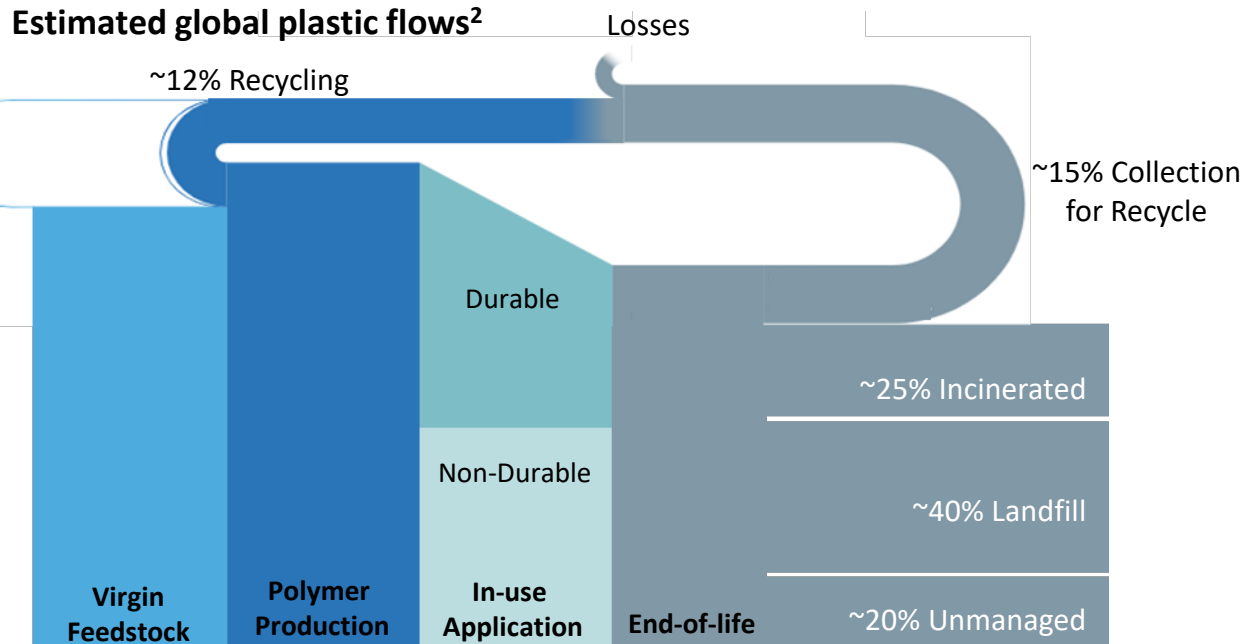
Less water use<sup>5</sup>



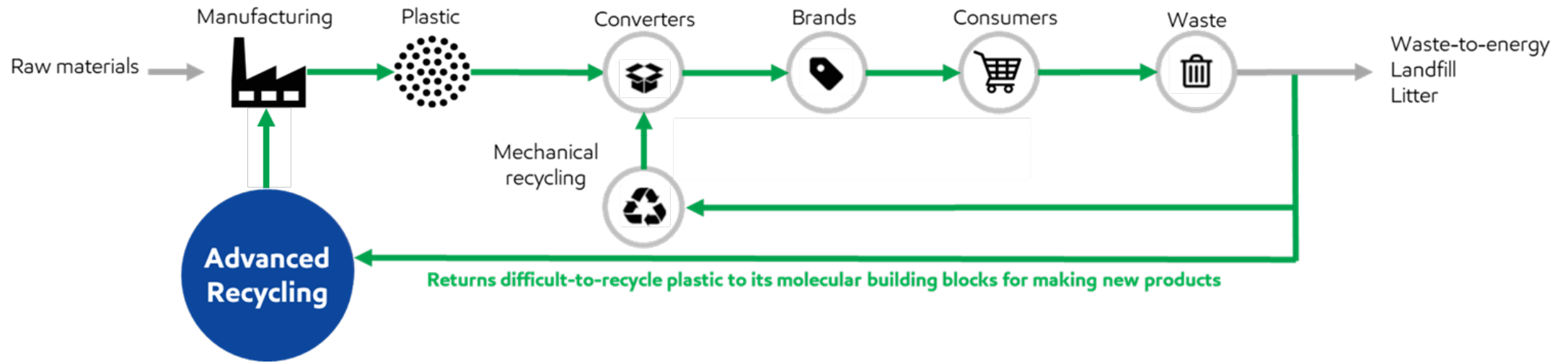
<sup>1</sup>EM 2022 internal analysis  
<sup>2</sup>According to the Department of Energy's Office of Energy Efficiency & Renewable Energy.  
<sup>3</sup>Per April 2018 report of Franklin Associates; U.S. packaging market; Max Decomp.; Figure 4-1; Impacts as defined in Chapter 4.7: Global Warming Potential (GWP) results, and indexed to the alternatives as a group (including steel; aluminum; glass; paper-based packaging; fiber-based textiles; and wood).  
<sup>4</sup>McKinsey & Co, Climate Impact of plastics, 13 of 14 applications analyzed has lower GHG impact than the next best non-plastic alternative, US based in 2020  
<sup>5</sup>Per April 2018 report of Franklin Associates as in reference 3  
<sup>6</sup>According to the United Nations Environment Programme (UNEP) Food Waste Index Report, released in March 2021.

# Scalable solutions for end-of-life plastics

- End-of-life challenges for all materials:
  - Waste entering the environment due to inadequate waste management infrastructure<sup>1</sup>
- About 15% of plastics collected for recycle<sup>2</sup>
- Innovative and scalable solutions required for all materials
  - Waste management infrastructure (~\$600G<sup>3</sup>)
  - Enhanced collection and sortation combined with circular solutions
  - Brings quality of life benefits beyond materials management



# Advanced recycling is a necessary complement to mechanical recycling



## Estimated relative comparisons for key circular solutions

Type	Feedstock Flexibility	Product Considerations	Capital Intensity	Tech Readiness Level	Scalability
<b>Mechanical Recycling<sup>1</sup></b> (e.g. PET)	Clean, sorted streams	Often down-cycled	Low	Deployed	Limited
<b>Advanced Recycling Thermal Pyrolysis<sup>1</sup></b>	Blended municipal plastic waste	Virgin quality	High	Early-stage commercial	Med / High
<b>EM Exxtend™ Advanced Recycling Co-Processing<sup>2</sup></b>	Blended municipal plastic waste	Virgin quality	Med / High	Commercial	High

# Progressing scalable steps to drive advanced recycling

## ExxonMobil's path to 500 kta capacity

- >11M lbs of plastic waste processed as of June 2022 at our advanced recycling facility in Baytown, Texas
- Large-scale facility expected in Baytown by year-end 2022 with initial capacity of 30 kta
- Plans for 500 kta advanced recycling capacity by year-end 2026



## Houston Recycling Collaboration

- Collaboration with City of Houston, LyondellBasell, Cyclyx, and FCC Environmental Services
- Drive step change in Houston's plastic recycling rate
  - First of its kind
  - Scalable
  - Community-focused solutions
- Plastic waste collected will help feed mechanical and advanced recycling operations by LyondellBasell and ExxonMobil



# ExxonMobil's commitment to mitigating plastic waste



**ExxonMobil**



Sealed Air, ExxonMobil, and Ahold Delhaize USA Collaborate on Groundbreaking Circularity Initiative



Ahold Delhaize | USA



# Certified Circularity through Advanced Recycling

Connect to learn more

## Thank you!



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