ExxonMobil

Exxtend™ technology for advanced recycling

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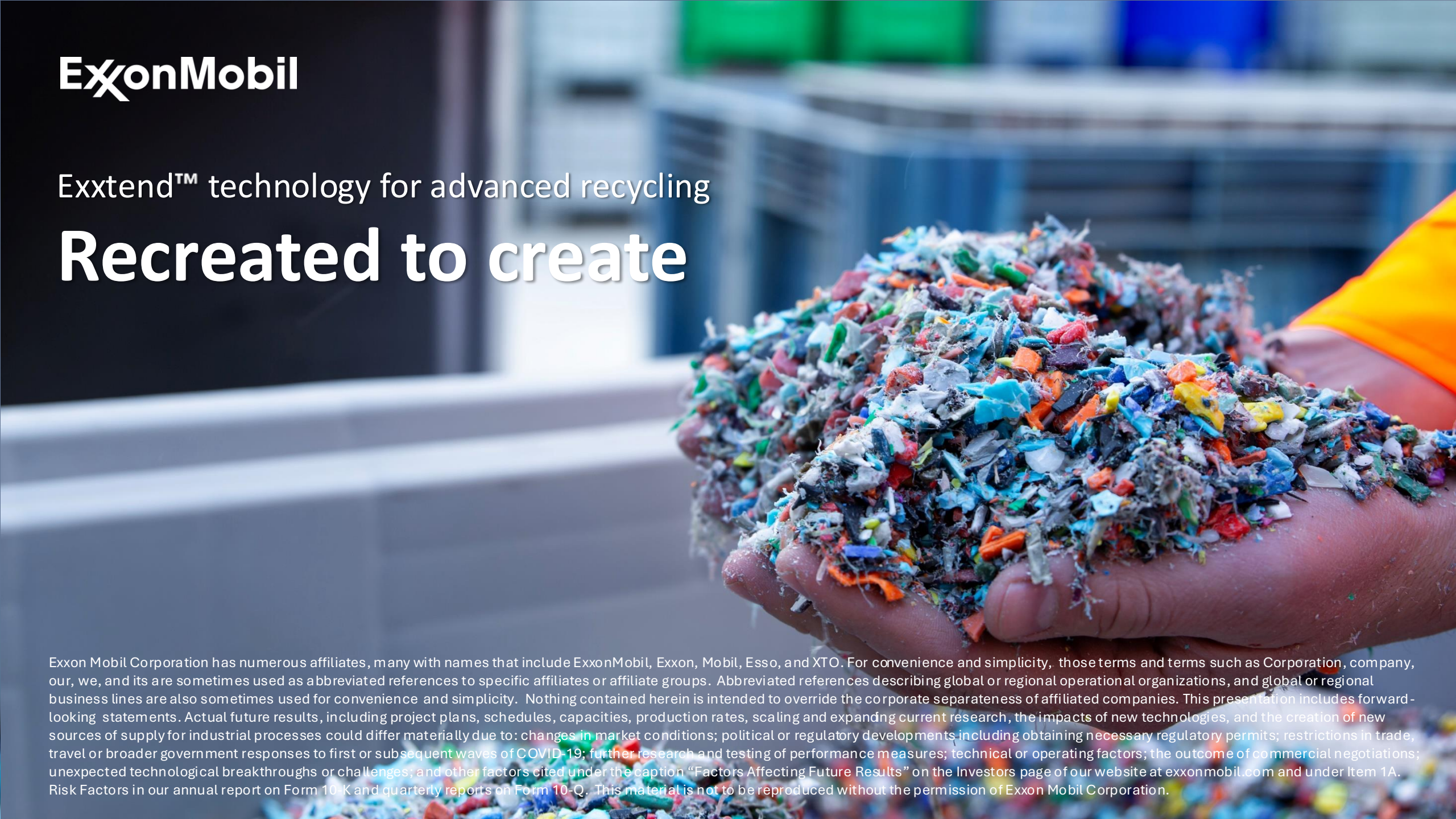
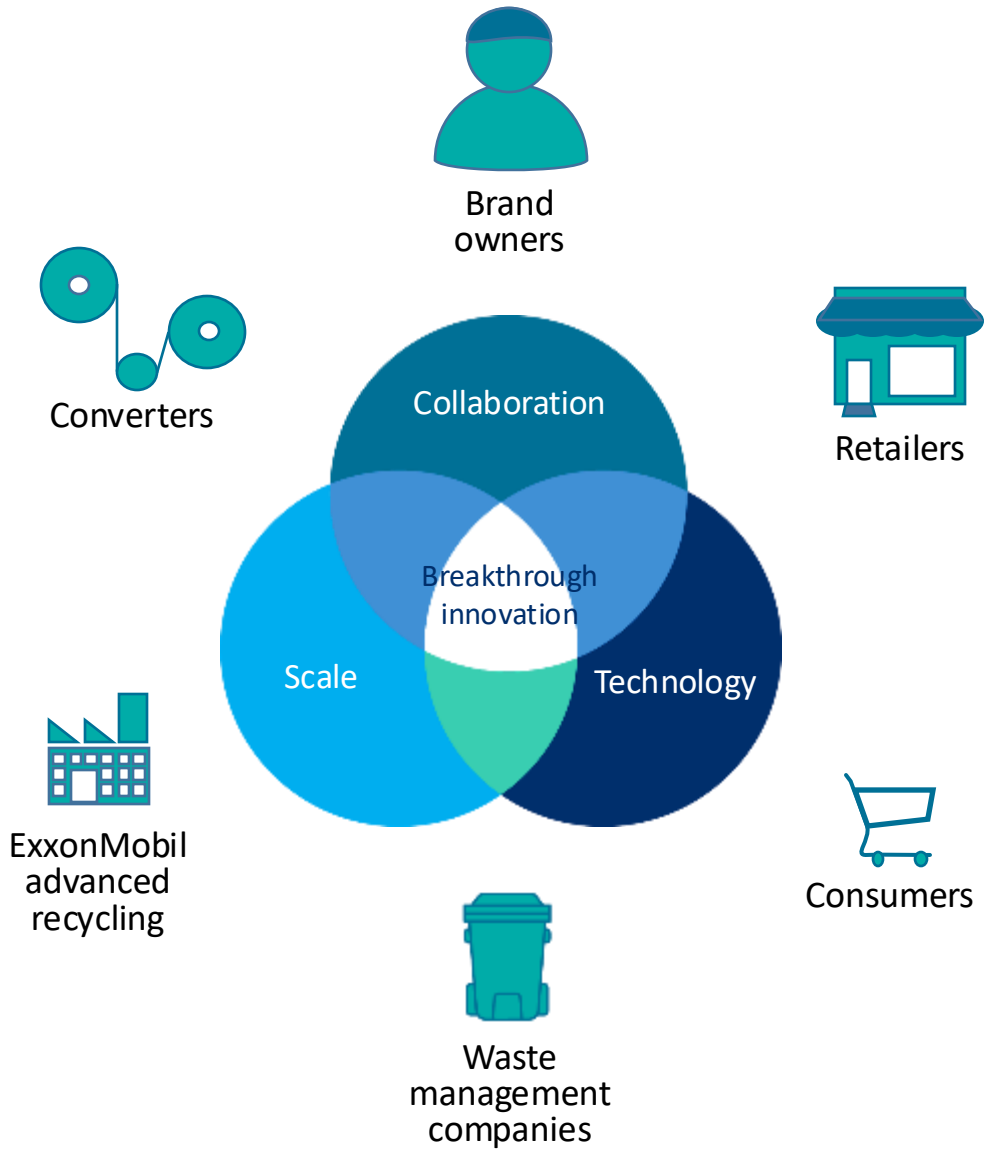




Supporting a circular economy for plastics. Together.

Plastics can play a key role, making modern life possible

Even under the IEA Net Zero Emissions by 2050 scenario, global demand for primary chemicals is projected to be 20% higher than 2022.[1]

Plastics help to enable performance and reduce potential environmental impacts across industries,
from reducing vehicle weight and medical applications to food packaging (e.g. helping to extend shelf life) and films used to construct greenhouses

Better fuel economy[2] enables lower GHG per mile

7%

fuel economy improvement possible with a 10% reduction in vehicle weight[2]

Lower lifecycle GHG[3,4] than the alternatives / Less solid waste[5,6]

1/3

of all food produced in the world is being wasted and not eaten by end consumers[6]

8-10%

of global greenhouse gas emissions are associated with food that is not consumed[6]

Less water use[5]

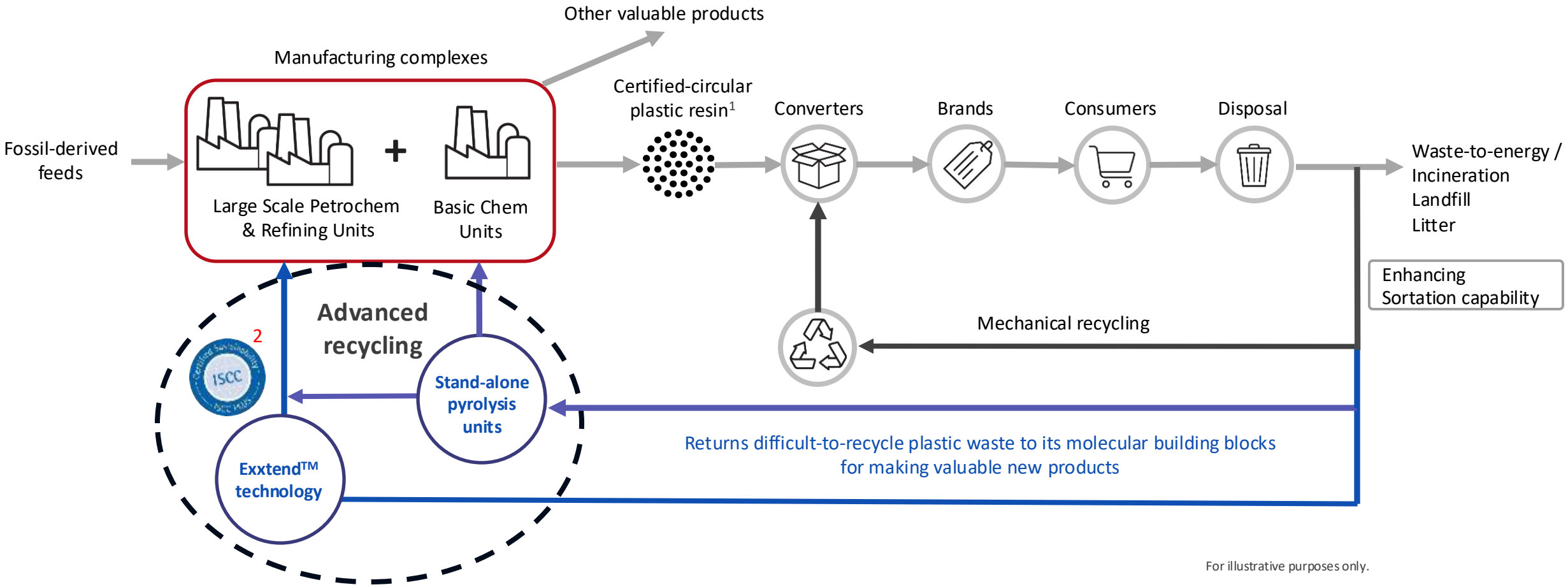
[1] 2023 IEA report "Net Zero Roadmap: A global pathway to keep the 1.5°C Goal in Reach."
[2] According to the Department of Energy's Office of Energy Efficiency & Renewable Energy.
[3] Per April 2018 report of Franklin Associates; U.S. packaging market; Max Decomp.; Figure 4-1; Impacts as defined in 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).
[4] 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
[5] Per April 2018 report of Franklin Associates as in reference 3
[6] According to the United Nations Environment Programme (UNEP) Food Waste Index Report, released in March 2021.

The global waste management challenge

- ~3 billion people worldwide are estimated to lack access to controlled waste disposal facilities[1]
- ~12% of the global municipal solid waste stream is plastic[2]
- Right now, less than 10% of plastic waste is recycled[3]
- Solutions will require innovation and global collaboration among the plastics value chain, governments, NGOs, and consumers

[1] United Nations - https://unhabitat.org/news/10-feb-2020/un-habitat-partners-with-wwf-to-tackle-global-challenge-of-waste-management-in
[2] World Bank, What a waste 2.0
[3] Source: (National Overview: Facts & Figures on Materials, Wastes and Recycling) EPA.gov

Exxtend™ technology aims to accelerate progress towards a more circular economy



For illustrative purposes only.

1 Certified-circular plastics are virgin quality plastics that are accompanied by an ISCC PLUS "Sustainability Declaration" that matches the mass of virgin quality plastics that we sell to a corresponding amount ofplastic waste that we transformed back into usable raw materials through advanced recycling.

2 ISCC PLUS mass balance approach using the "determined by mass" option with "certified free attribution" applied. **Does not represent GHG emissions or recycled content.**

What is desirable feedstock for Exxtend™ technology?

Best fit

Challenged fit

Polypropylene
Examples – Bottle caps, meal trays, medical items

Simple multi-layer films
Limited PVDC and PVC content

Polystyrene
Examples – Food takeaway containers, egg trays

Polyvinyl chloride
Examples – Plastic piping, shrink wrap, food trays

Low-density polyethylene
Examples – Plastic bags, bin liners

TARGET FOR MECHANICAL RECYCLING

Sorted HDPE
High-density polyethylene
Examples – Shampoo, detergent bottles

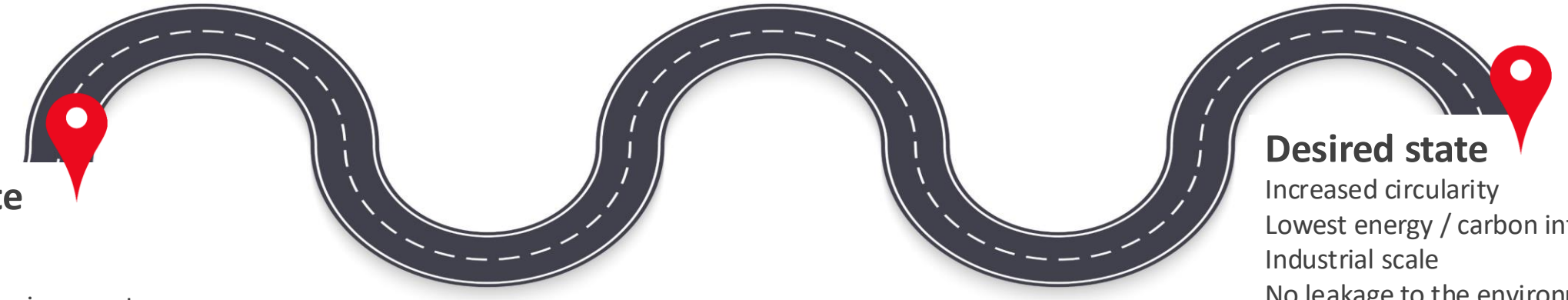
Sorted PETE
Polyethylene terephthalate
Examples – Bottles for water, soft drinks

All halogenated materials
Non-plastic (fiber/paper/cardboard)

Source: ExxonMobil Data

Many solutions needed to address plastic waste at scale

Advanced recycling is one of them



Current state
Low circularity
Limited scale
Waste entering environment

Desired state
Increased circularity
Lowest energy / carbon intensity
Industrial scale
No leakage to the environment

Improved systems and technology

Waste management infrastructure	Sortation	Advanced + mechanical recycling	Design for recyclability	Reduce + reuse

Enablers

Consumer education	Market + science-based policies	Government prioritization

Overcoming feedstock challenges together

Challenges

- Limited access to recycling programs
- Lack of recycling standards and fragmentation across current programs
- Confusing consumer education
- Films, flexibles, and other mixed-polymer feedstock too often not accepted
- Lack of sorting capacity

Actions needed

- Expand collaborations with cities and value chain
- Support efficient policy
- Harmonize standards for recycling programs
- Educate consumers
- Build new sorting infrastructure

HOUSTON RECYCLING COLLABORATION

ExxonMobil · lyondellbasell (Advancing Possible) · cyclyx · FCC

TENCATE GRASS · American Chemistry Council

ALLIANCE TO END PLASTIC WASTE · cyclyx

Founding Member

iSustain

The Recycling Partnership
SOLVING FOR CIRCULARITY

ExxonMobil

ExxonMobil approach to scale: collaboration and technology

TENCATE GRASS

Collaborating on collection

ALLIANCE TO END PLASTIC WASTE

cyclyx

HOUSTON RECYCLING COLLABORATION

ExxonMobil lyondellbasell

cyclyx FCC

Scaling recycling technology

ISCC

Helping meet demand for circularity

Berry

amcor

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

Sealed Air

Ahold Delhaize | USA

Exxtend™ | Recreated to create

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