



# **A Plastic Producer's Approach To The Circular Economy**

**DOE Workshop "Plastics for a Circular Economy"**

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**Seek Together™**

# DOW'S APPROACH TO DELIVERING ON A PLASTICS CIRCULAR ECONOMY



## Plastics Circularity

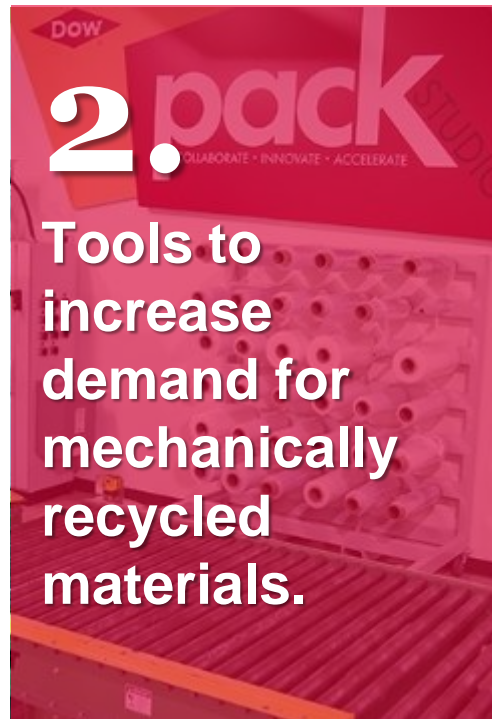
**1.**

Design for  
recyclability



**2.**

Tools to  
increase  
demand for  
mechanically  
recycled  
materials.



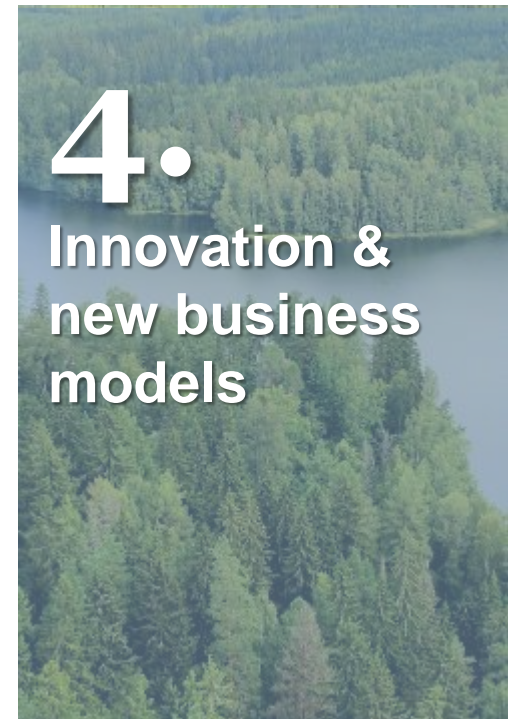
**3.**

Feedstock  
recycling  
solutions



**4.**

Innovation &  
new business  
models

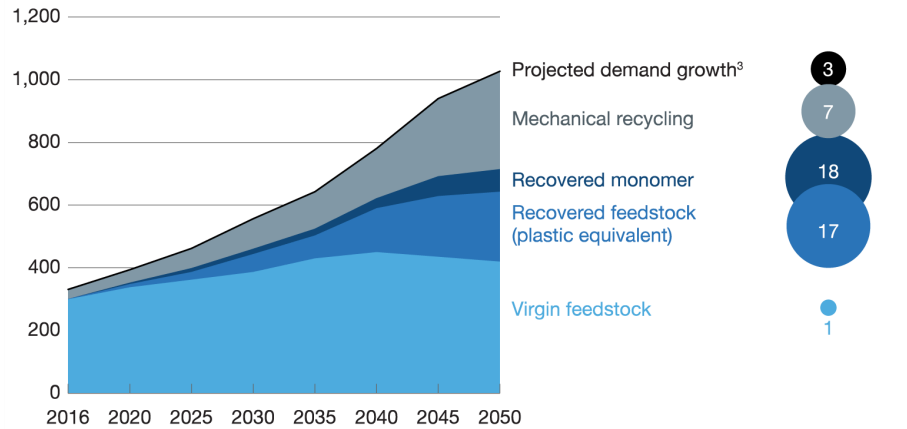


Extensive Innovation Portfolio

# WHAT IS THE FUTURE FOR PLASTIC WASTE VALORIZATION ?

By 2050, nearly 60 percent of plastics production could be based on plastics reuse and recycling.

Global polymer demand 2016–50 and how it could be covered, millions of metric tons<sup>1</sup>

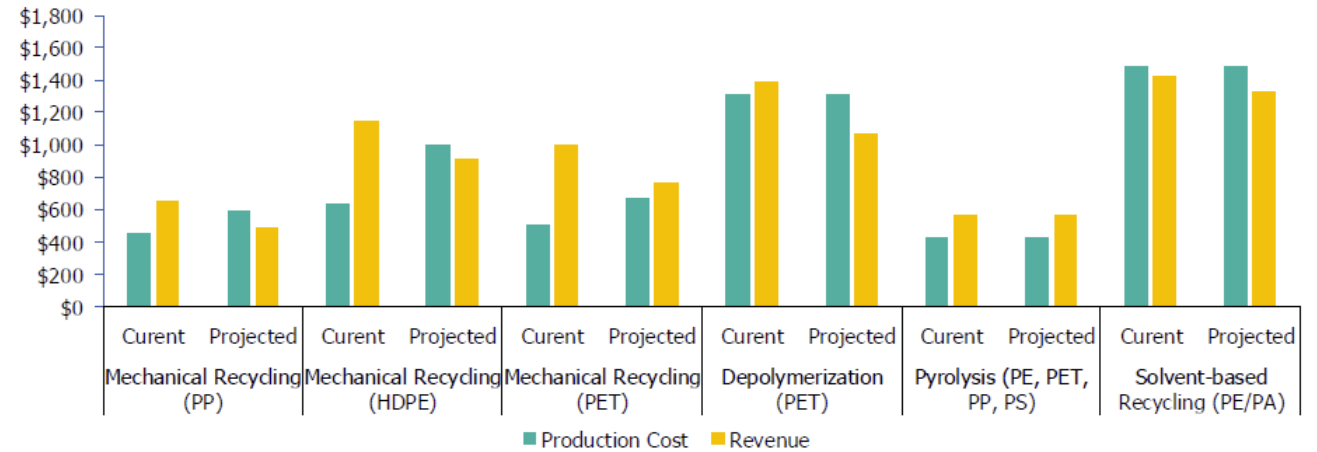


<sup>1</sup>Scenario based on a multi-stakeholder push to boost recycling, regulatory measures to encourage recycling, consistent progress on technologies, and \$75-per-barrel oil price.  
<sup>2</sup>Compound annual growth rate. Mechanical recycling limited by downcycling and applicable materials, monomerization limited by applicability to condensation polymers only, pyrolysis limited by likely rise in input costs.  
<sup>3</sup>After demand reduction, assuming annual global GDP growth of 3.1%.

Source: McKinsey Group, 2019.

## A return to early-2017 market prices reduces mechanical recycling profitability

Profitability projections at early-2017 prices  
2019 \$/ton treated plastic

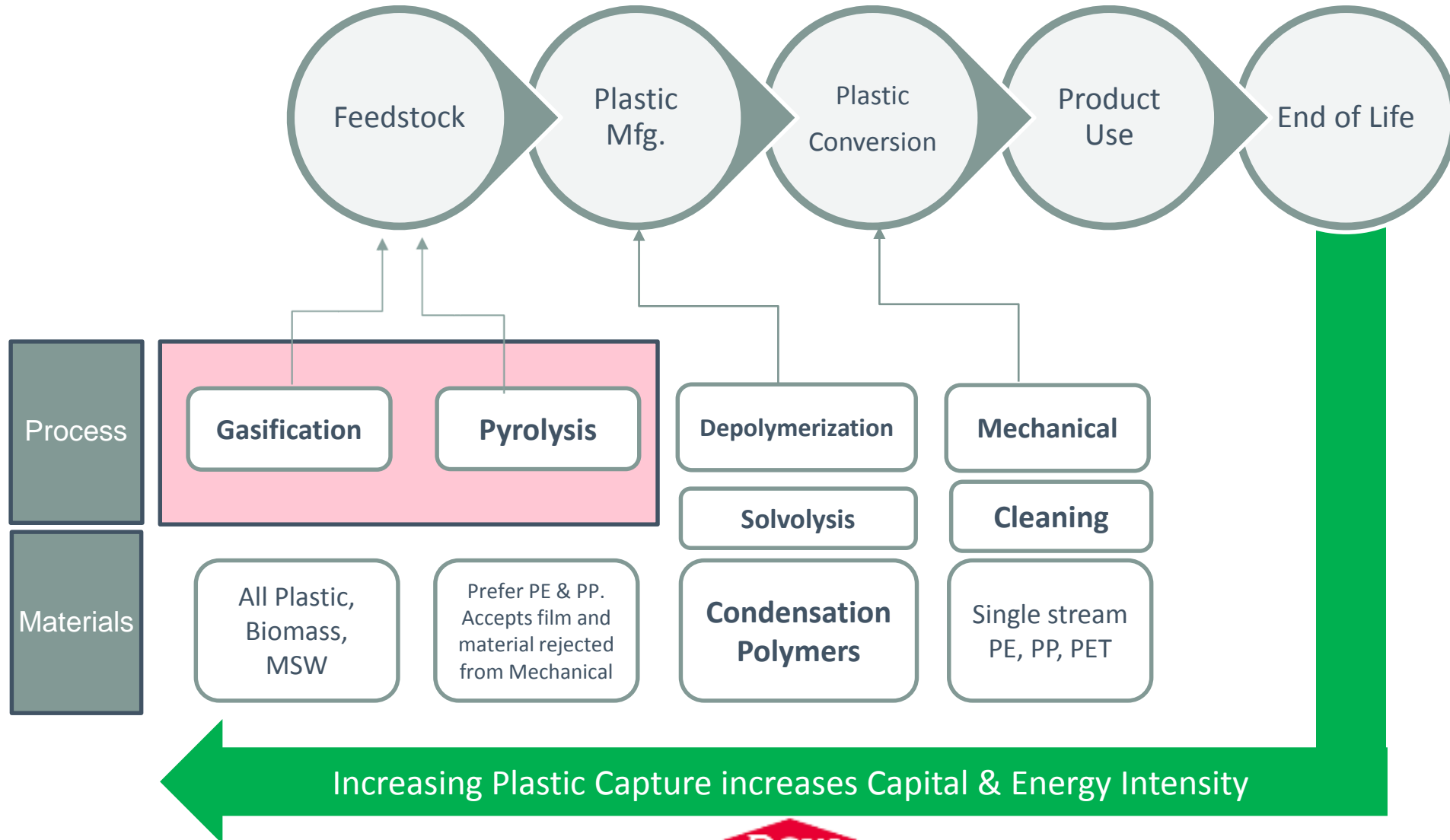


OR?

Source: LUX Research, “The Future of Plastic Recycling”, November 2019.



# A CLOSER LOOK AT THE RECYCLING TECHNOLOGY SPECTRUM



# TOOLS TO ENABLE NON-RECYCLABLE PACKAGES TO BECOME RECYCLABLE



**Mono-material  
Design**

**Protective  
Coatings**

**Packaging Performance  
Modelling**

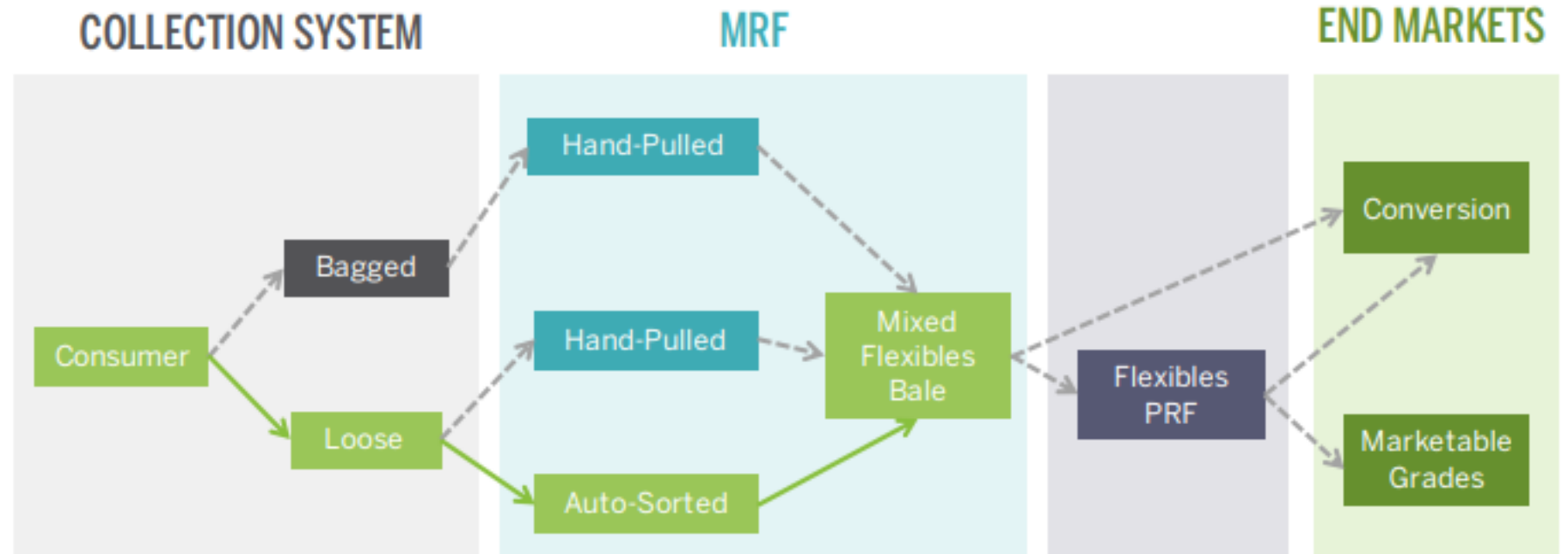
**Compatibilizers**

**Structure  
Simplification**

**Film Orientation  
Technologies**



# ADDRESSING THE CHALLENGES FOR THE MRFs AND END MARKETS



Source: RRS, " FLEXIBLE PACKAGING SORTATION AT MATERIALS RECOVERY FACILITIES," 2016.



# DEVELOPING MARKETS FOR RECOVERED PLASTIC FILMS

Improving roads  
with recycled  
plastic



Plastics Road lives up to its name as  
Dow debuts new asphalt recipe

~420,000 lbs plastic waste diverted  
145 miles of roads



# Keeping *hard-to-recycle* plastic out of the environment

## The Hefty® EnergyBag®

TO **DATE**

**20** PROGRAMS REACHING OVER

**400,000** HOUSEHOLDS

**458** U.S. TONS OF WASTE DIVERTED FROM LANDFILLS AND CREATED ENERGY EQUIVALENT TO THAT OF

**2,183** BARRELS OF DIESEL FUEL

**2019 GOALS** Adding another **130,000** households by year-end 2019



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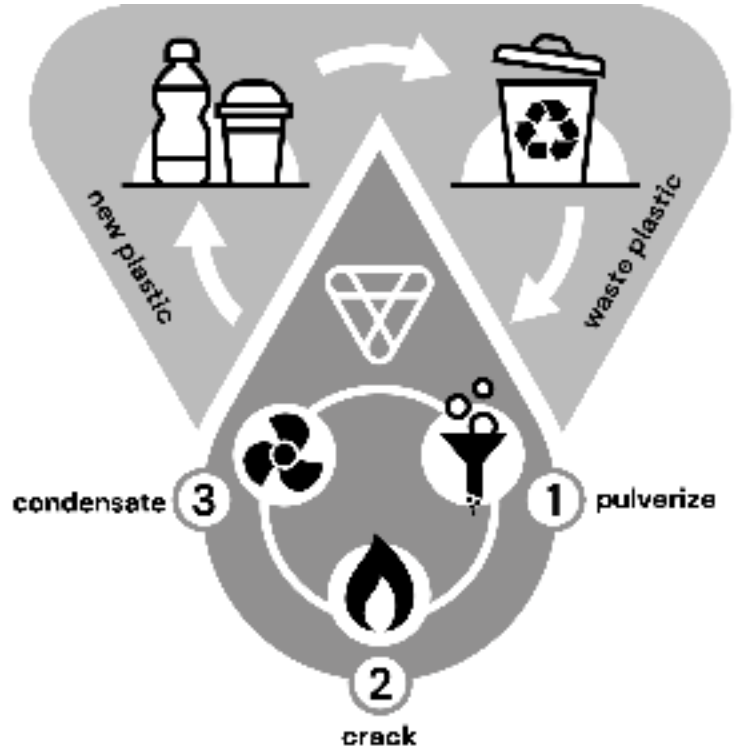
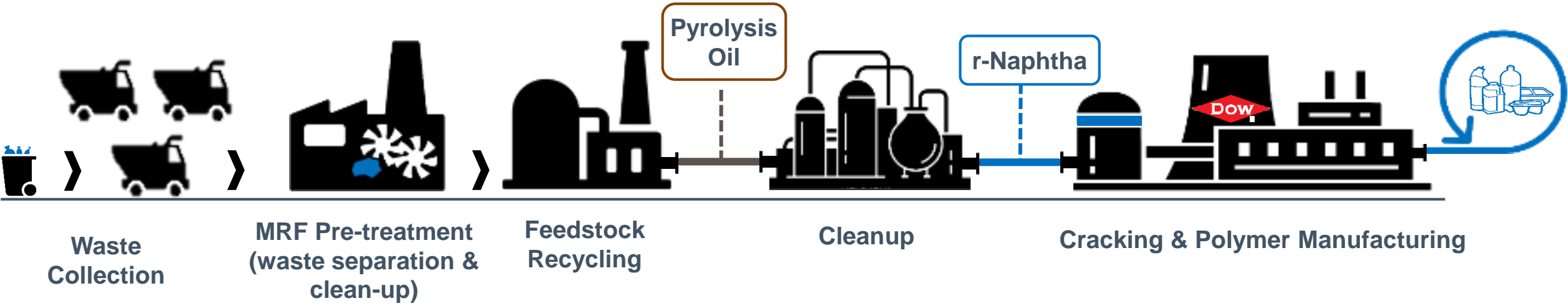


**Hefty**  
**ENERGYBAG**

 **DON'T LET IT GO TO WASTE.**



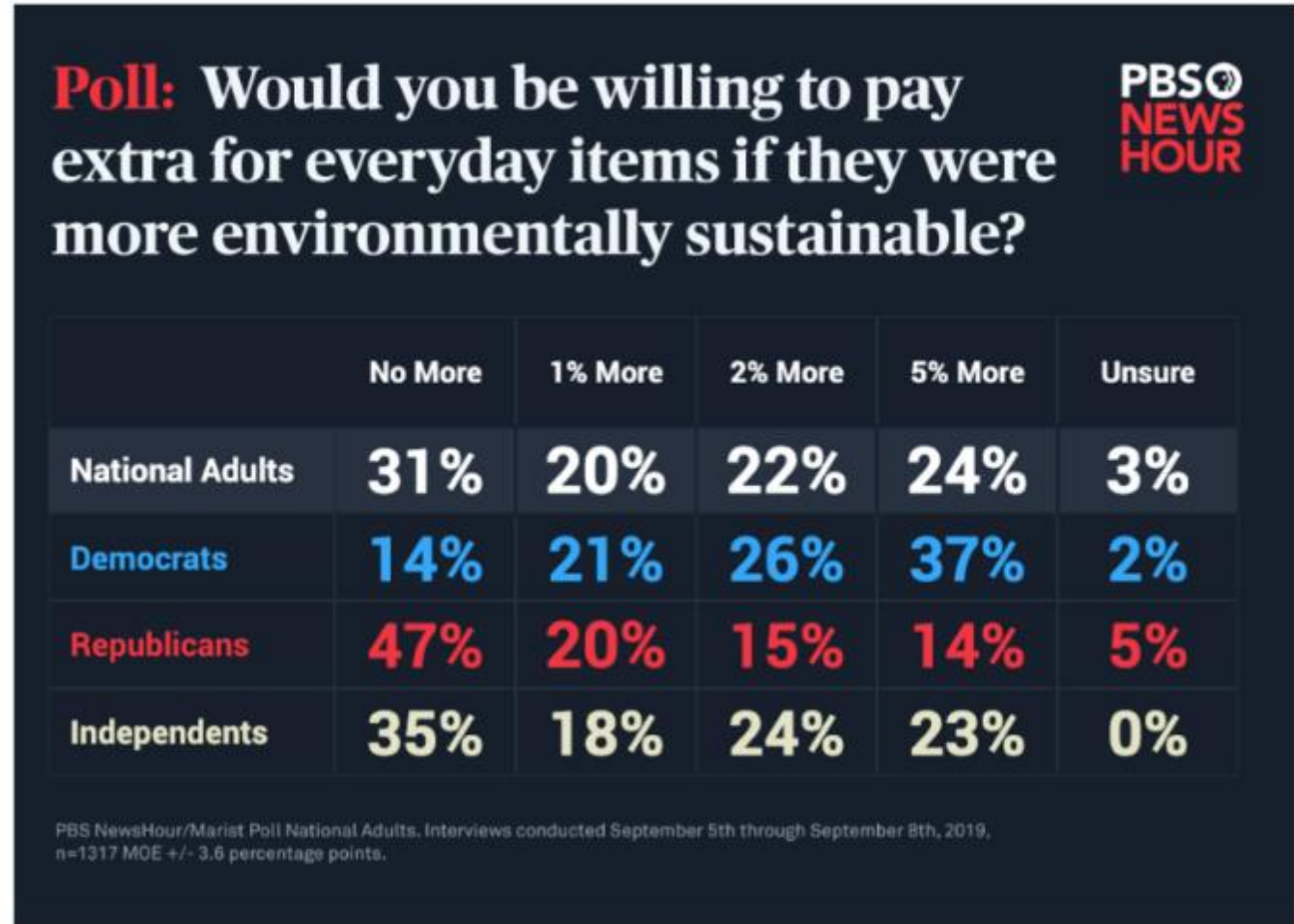
# VALUE CHAIN COLLABORATION IS THE WAY FORWARD



Dow has partnered with Fuenix Ecology Group for the supply of a new feedstock made from recycled plastic waste, to produce new Dow polymers.

# CHALLENGES

- Continue to improve upon the systems that are in place and improving consumer engagement.
- How do we gauge when the package and recycling system are not compatible?
- Are we willing to accept closed loops, processes by which new end markets can be addressed / built on our way to full circularity?
- Where will scale be advantaged?
- Driving demand for products created from recycled materials





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