Dow plastics for a circular world

Supot Katetopragran
Commercial Director
Dow Thailand


Plastic is part of a circular economy.
DOW RESTRICTED
DON'T LET IT
GO TO WASTE.

Global Commitments from Brands

- Over 400 signatories including nearly 200 businesses representing **over 20% of the global plastic packaging market** to the global commitment of Ellen MacArthur Foundation.
- Consumer goods companies and retailers commit to increase recycled content in their packaging to an average of **22% by 2025**, compared with the **2018 global average of just 4%.**
- The recycled content targets from consumer packaged goods companies, retailers, and packaging producers amount to a demand of **5 million tonnes** of recycled plastics by 2025 (with several companies still to set their 2025 targets)
- 139 companies in total, have now committed to making **100%** of their plastic packaging reusable, **recyclable**, or compostable by 2025.

The Ellen MacArthur Foundation: New Plastics Economy Global Commitment

Global Sustainability Strategy – Plastics for a Circular World

This perception is Valid. And the reality is unacceptable. We don't believe any plastic should end up in the environment.

Our three-part strategy represents our commitment. We believe in plastic for a circular world.

We are **inspiring and creating value** with innovative solutions for responsible plastics use, reuse, repurposing and recycling.

We will deliver circular economy solutions.

Pillars to Enable Recycling and Circularity

Plastic circularity

Innovative products accelerating market segment strategy

Design for Recyclability	Mechanical Recycling Product & Application development	Feedstock Recycling Solutions	Renewable Solutions
Dow us uniquely positioned with resins and technologies that enable more plastic packaging to be recycled RECYCLEREADY TECHNOLOGY for store drop-off recycling by DOW Retain polymer modifier by DOW Recycle if Clean & Dry – Store Drop-off – PLASTIC – BAGS / FILM / WRAP – how2recycle.info	Develop options to improve the quality of recyclate from flexible packaging by • Economics & speed • Enabling partnerships • Regional infrastructure for plastic recycling pack STUDIOS	Evaluate technologies for feedstock recycling via • Pyrolysis • Gasification 	Explore and evaluate new technologies like bio-feedstocks 

Building on our extensive P&SP foundation

Increasing complexity

Design for Recyclability

RECYCLEREADY TECHNOLOGY

..is the Application Development tool to design “**Sustainable Packaging**”

..It is a way to create flexible packaging that can be easily “**Recycled**”

- Mono-material solutions and structure simplification
- All-PE pouch development with and without barrier
- TF-BOPE for all-PE structures vs OPP/OPA/OPET
- Barrier Adhesives to enhance barrier performance
- OPULUX™ high temperature gloss lacquer
- RETAIN™ integrated compatibilizer for PIR/PCR recycling

DON’T LET IT GO TO WASTE.

Design for Recyclability: Case Study

- A successful joint development between **Dow**, brand owner **RB**, and converter **Drukpol Flexo**
- New re-sealable pouch **designed for recyclability** and end-of-life disposal into existing recycling streams
- Using Dow's **polyethylene (PE) films**, the stand-up pouch was designed for RB's FINISH perfume-free dishwasher detergent line.

Mechanical Recycling: Product and Application Development

Recycler | **Material science** | **Application development** | **Value chain reach**

Waste management companies

Equipment Manufacturers

Compatibilization

Property enhancement

PCR benchmarking

Convertor

Equipment manufacturer

Brand owner

Retailer

DON'T LET IT GO TO WASTE.

Dow's Formulated PCR Product Details: AGILITY CE

- Dow's offering is a **one-pellet formulated PCR** solution with **70% post-consumer recycled content**
- This formulated resin will be used in the **core-layer of the collation shrink film** with virgin resins in the skin layers
- Depending on structure and layer ratio, this will give approximately **35-50%** in the overall structure
- Film and application test data can be provided on request
- **Formulation design and trial support** will be provided by Dow
- **Samples** available for trials on request, **commercial product** will be available early 2020

Benefits of Dow's Formulated PCR Resins

Keeps waste away from landfill, oceans & environment

Consistent quality & performance

Suitable third-party certification

Reduce dependency on virgin plastics from fossil fuels

Lower carbon footprints & energy savings*

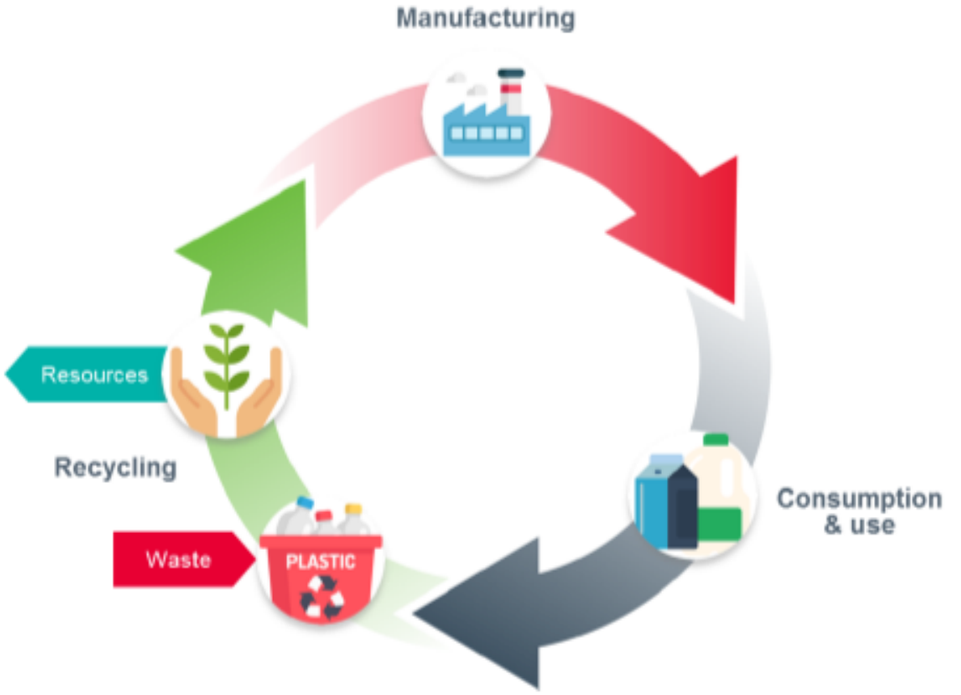
Socio-economic benefits in the value chain

Feedstock Recycling

- Dow's announced an agreement with the Fuenix Ecogy Group, Netherlands for the supply of **pyrolysis oil feedstock** made from recycled plastic waste
- This feedstock will be used to produce **new polymers** at Dow's production facilities in Terneuzen, Netherlands
- Products will be certified by **mass-balance** and scale-up is expected in 2020

Feedstock Recycling: Benefits

- Plastics produced by Chemical Recycling **is comparable to virgin material**
- Chemical recycling **increases the types of plastics that can be recycled**, this is essential tor meet ever increasing recycling targets and commitments from governments and brand-owners
- Chemical recycling **creates a complete closed loop for plastics**, moving towards a truly **Circular Economy**.
- Chemical recycling **increases the number of products** and applications in which recycled plastics can be used including high quality food contact applications



Bio-Based Renewable Polyethylene

A lower carbon footprint offering to help reduce dependency on fossil fuel based feedstock

Bio-based Renewable PE: Benefits

Replacing fossil products and raw materials

Sustainable forestry

No food/feed competition

57% fewer CO2 emissions

No direct or indirect change in land use

Cradle-to-gate analysis done for bio-based LDPE vs Fossil fuel LDPE completed by Anthesis for our customer ELOPAK with Dow and UPM inputs

Summary

- Plastic waste is a major challenge in Asia for today and the future
- Redesign of plastic packaging is necessary to improve recyclability and value increase of waste
- Dow is working with value chain partners programs to change the linear economy of plastics to make it more circular
- Plastic resin producers are ready to change, Brand Owners are ready to change, Customers are ready to change, Government is ready to support the change.

Are you ready?

Thank you

Seek

Together™