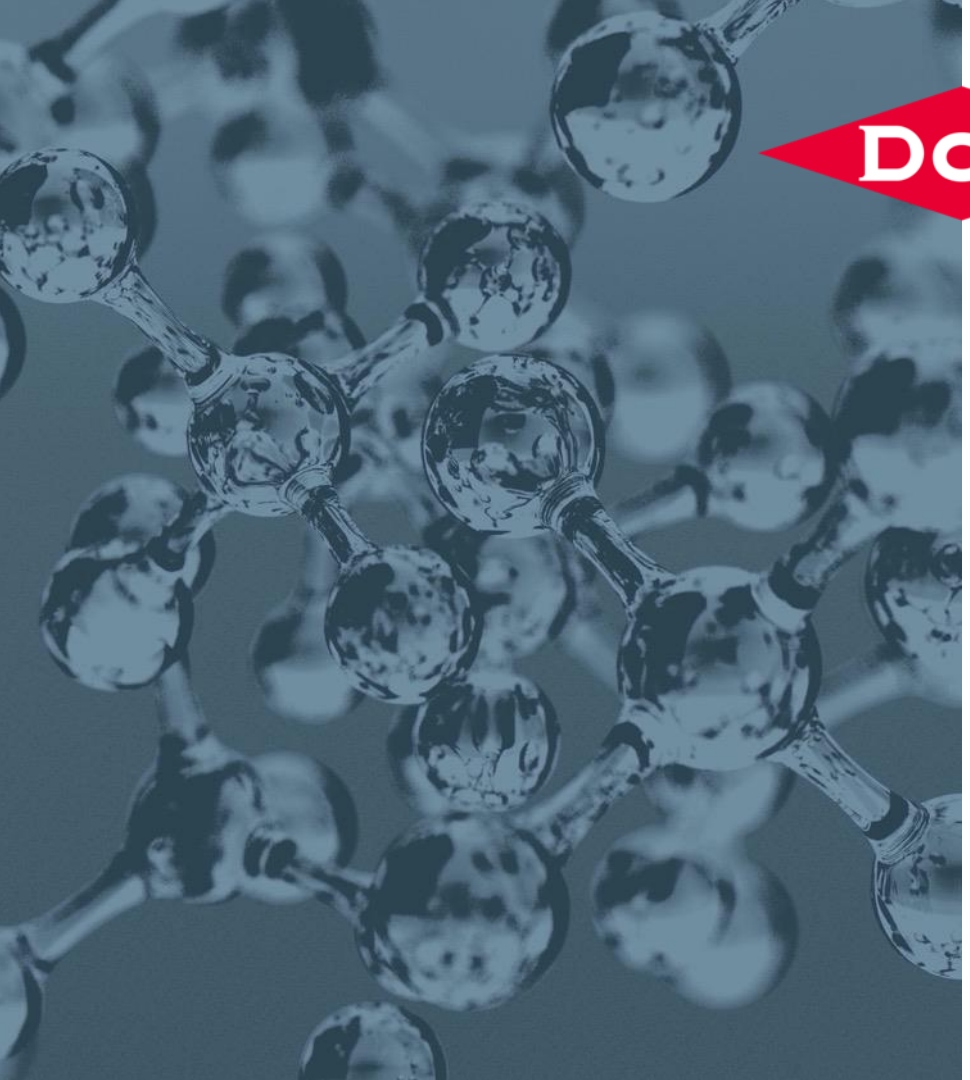


Development and Optimization of Food Packaging in Circularity

Supot Katetopragran

Commercial Director

Dow Thailand


By 2050,
the world's population will reach
9.8 billion
Source: www.un.org


45% more energy
Source: World Energy Outlook

~40% reduce more GHG emissions

Source: European Union


The world will need…
50% more food
Source: World Bank

The European green deal

December 2019

#EUGreenDeal

The European Green Deal is about **improving the well-being of people**. Making Europe climate-neutral and protecting our natural habitat will be good for people, planet and economy. No one will be left behind.

The EU will:

Become climate-neutral by 2050

Protect human life, animals and plants, by cutting pollution

Help companies become world leaders in clean products and technologies

Help ensure a just and inclusive transition

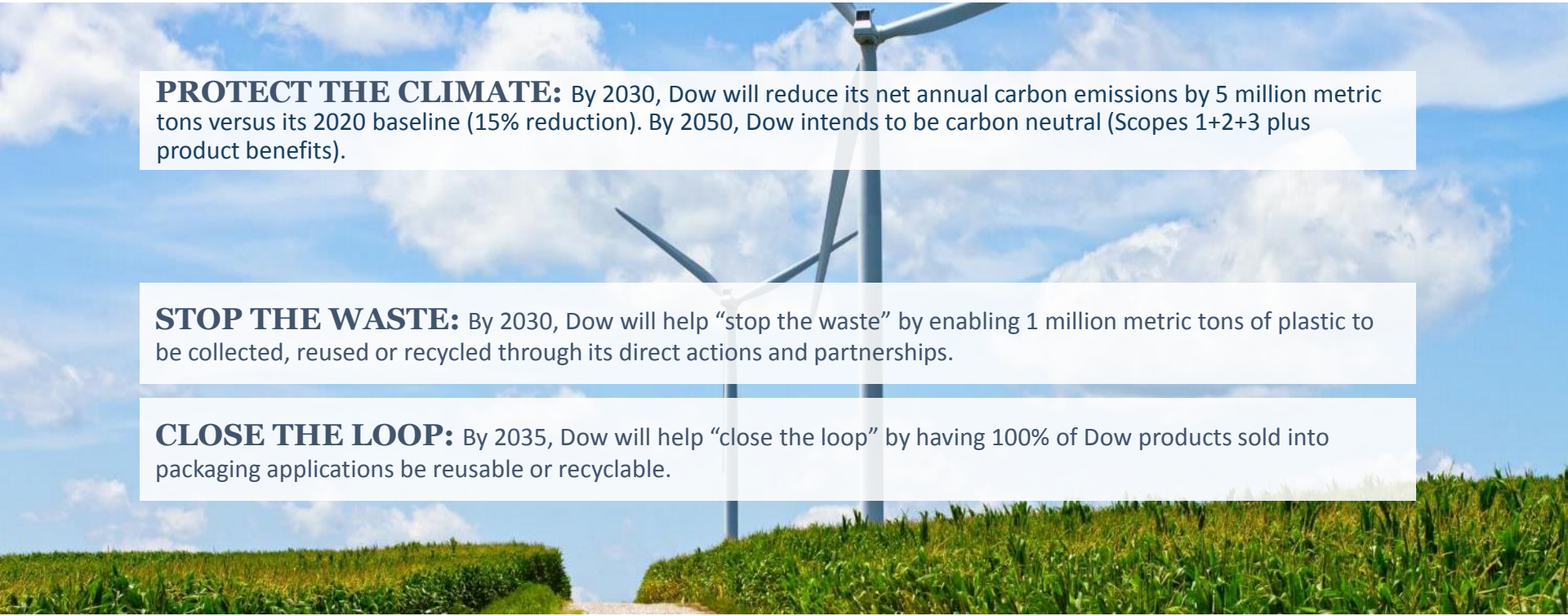
Examples of Brand owners' Sustainability Goals

Ambition 2030

- Reduce our footprint and aim for circular solutions based on regeneration and restoration
- Carbon neutral for the decade
- Reduce our use of virgin petroleum plastic in packaging by 50%
- Create solutions so no packaging finds its way to the ocean

- Halve the greenhouse gas impact of our products across the lifecycle by 2030
- Net zero emissions from all our products by 2039
- By 2025, reduce the amount of virgin plastic in our packaging by 50%
- By 2025, help collect and process more plastic packaging than we sell

DOW SUSTAINABILITY TARGETS



PROTECT THE CLIMATE: By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons versus its 2020 baseline (15% reduction). By 2050, Dow intends to be carbon neutral (Scopes 1+2+3 plus product benefits).

STOP THE WASTE: By 2030, Dow will help "stop the waste" by enabling 1 million metric tons of plastic to be collected, reused or recycled through its direct actions and partnerships.

CLOSE THE LOOP: By 2035, Dow will help "close the loop" by having 100% of Dow products sold into packaging applications be reusable or recyclable.

CIRCULAR ECONOMY SOLUTIONS

PILLARS TO ENABLE RECYCLING AND CIRCULARITY

Plastic circularity

Innovative products accelerating market segment strategy

Design for Recyclability

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

Mechanical Recycling Product & Application development

Develop options to improve the quality of recyclate from flexible packaging by
- Economics & speed
- Enabling partnerships
- Regional infrastructure for plastic recycling

pack STUDIOS
COLLABORATE · INNOVATE · ACCELERATE

Feedstock Recycling Solutions

Evaluate technologies for feedstock recycling via
- Pyrolysis
- Gasification

Renewable Solutions

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

Fresh To table – Food And Packaging Waste Reduction

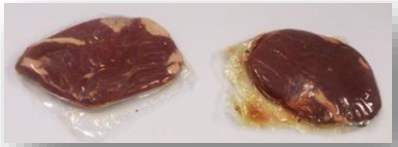
Ex-PS tray & cling film
17g packaging
4 days shelf life

MAP
30-40g
packaging
10 days shelf life

VSP
13-19g
packaging
21 days shelf life

BSB
3g packaging
35 days shelf life!!

Our Contribution:
SURLYN™ as Sealant in Vaccum Packaging



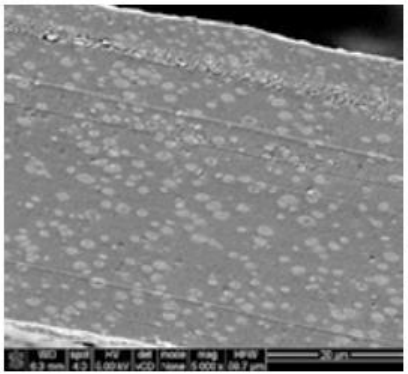
SURLYN™

Functional Unit: 1kg of meat

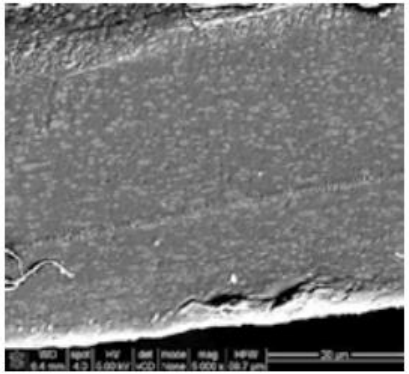
DOW's RETAIN™ COMPATIBILIZER

Examples of Recycled streams	DOW compatibilizer
PE-PA or PE-EVOH (case of packaging films and containers like gas tanks)	*Retain 3000*

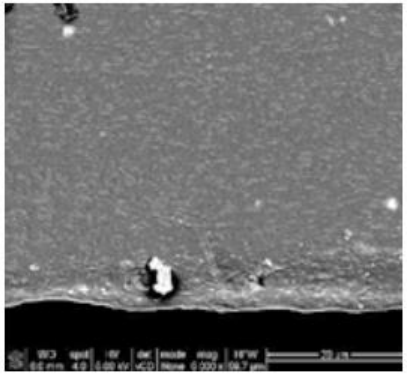
Pictures 1, 2 and 3: Comparative Scanning Electron Microscopy of PA Based Barrier Film Recycle



Film With No Recycle Compatibilizer



Film With Recycle Compatibilizer (1: 0,25 PA : RETAIN™)



Film With Recycle Compatibilizer (1: 0,5 PA : RETAIN™)

Retain™ polymer modifier by DOW

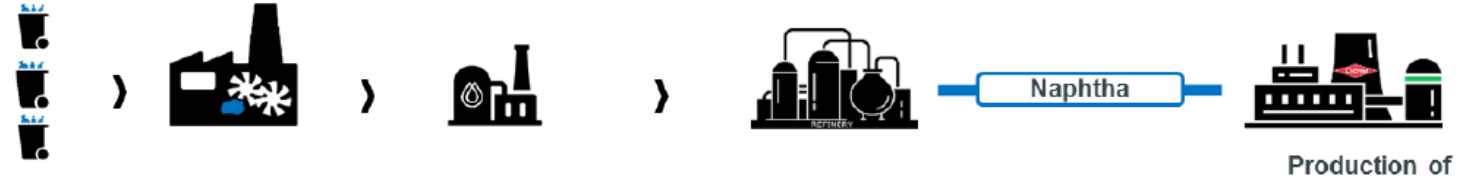
ABUSE BARRIER OPTICS

FEEDSTOCK RECYCLING

fuenix
Let no plastic go to waste

DOW

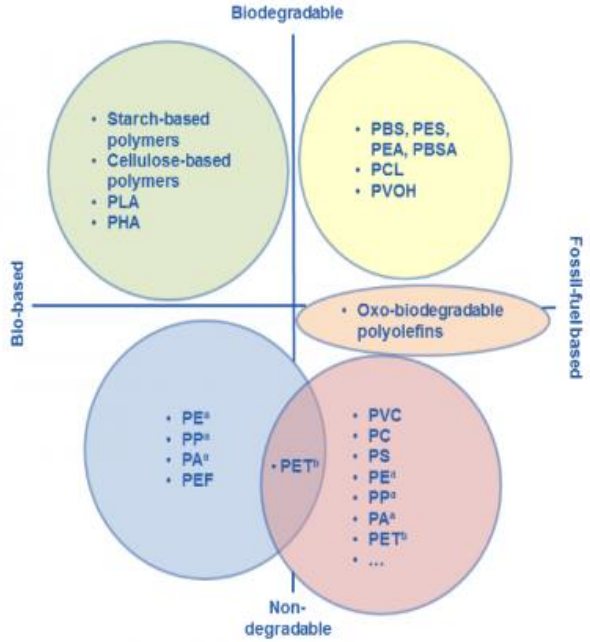
Certified Sustainability • ISCC • Certified GHG Savings



- 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

DOW

Bio-Plastic vs Bio-degradable plastic



Bio-Plastics	Bio-degradable Plastics
Derived from renewable Bio-based sources (vegetable oils, corn starch, straw, food waste)	Derived from either renewable Bio-based or Fossil based sources
Final products can be exactly the same as other plastic like PE, PP, etc…and recyclable.	Can be decomposed by action of living organism at controlled environmental condition. For example: Bio-compostable plastic needs to keep at the temperature of 50-60 C with aerobic condition

Bio-Based Renewable Polyethylene

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

PLASTIC WASTE COLLECTION INFRASTRUCTURE

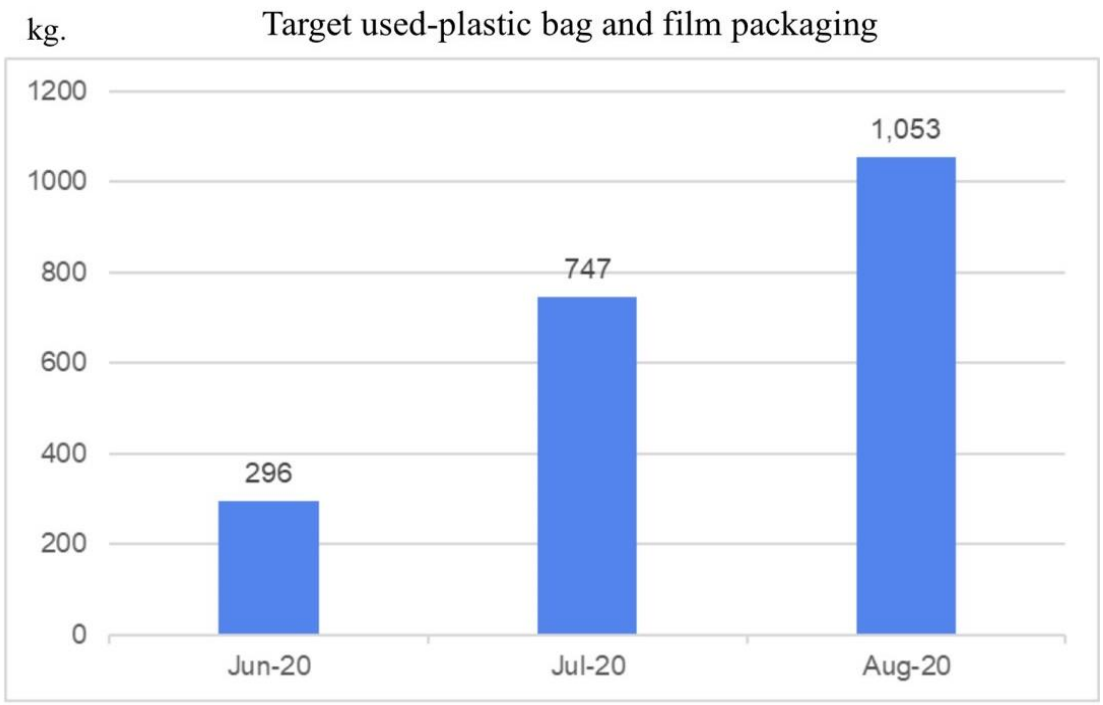
PPP PLASTICS – A COLLABORATION AMONG STAKEHOLDERS IN PLASTICS VALUE CHAIN

MAGIC HAND X WON

- Collect low- value plastic waste (low bulk density) for recycle
- Cultivate a good habit to segregate waste at source
- 350 drop points throughout Bangkok and nearby provinces

PROGRESS


"ถังวนถุง"


kg.
Target used-plastic bag and film packaging
1200
1000
800
600
400
200
0
296
747
1,053
Jun-20
Jul-20
Aug-20

SUMMARY

- Waste segregation at source is a crucial factor for circular economy for plastic to success.
- Redesign of plastic packaging is necessary to improve recyclability and value increase of waste
- 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.
- Create the market of recycled plastics by encouraging the use of Post-consumer-recycled resin to increase demand of plastic waste materials.

Are you ready?

Seek

Together™