

# Mitsubishi Chemical's Approaches to Sustainability & Plastic Recycling

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# Mitsubishi Chemical's Business Field



## Industrial Materials

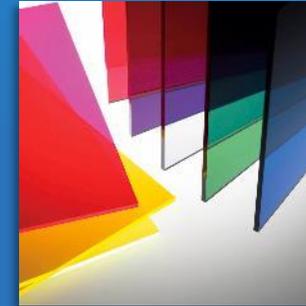
Carbon Chemicals



Carbon



MMA



## Performance Products

Advanced Polymers



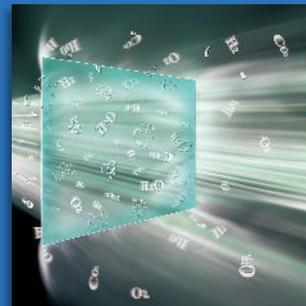
High Performance Chemicals



Information, Electronics & Displays



High Performance Films



Advanced Moldings & Composites



Environment & Living Solutions



New Energy



# Our Focus Markets and Solutions



## Automobiles, Aircraft (Mobility)

Contributing to improved resource and energy efficiency by working on weight reduction, electrification, and conversion to renewable resources and materials

### Major Business Domains

Advanced Polymers  
High Performance Chemicals  
Advanced Moldings & Composites

## Packaging, Labels, Films

Contributing to the safe storage and distribution of food and reduction of food loss, etc., with outstanding barrier performance

### Major Business Domains

Advanced Polymers  
High Performance Films

## IT, Electronics, Displays

Contributing to a smart society and more comfortable daily life by providing materials for next-generation displays

### Major Business Domains

Information, Electronics & Display  
Advanced Moldings & Composites

## Our Focus Markets and Solutions

## Environment, Energy

Contributing to energy conservation, effective use of water resources, improved productivity in the agricultural, fisheries and livestock industries, and mitigation of climate change

### Major Business Domains

Environment & Living Solutions  
New Energy

## Medical, Food, Bio Products

Contributing to resolution of medical issues and health maintenance by providing such as medical, pharmaceutical and functional dietary materials.

### Major Business Domains

Advanced Polymers  
High Performance Chemicals  
High Performance Films  
Advanced Moldings & Composites  
Environment & Living Solutions

## Fundamental Materials

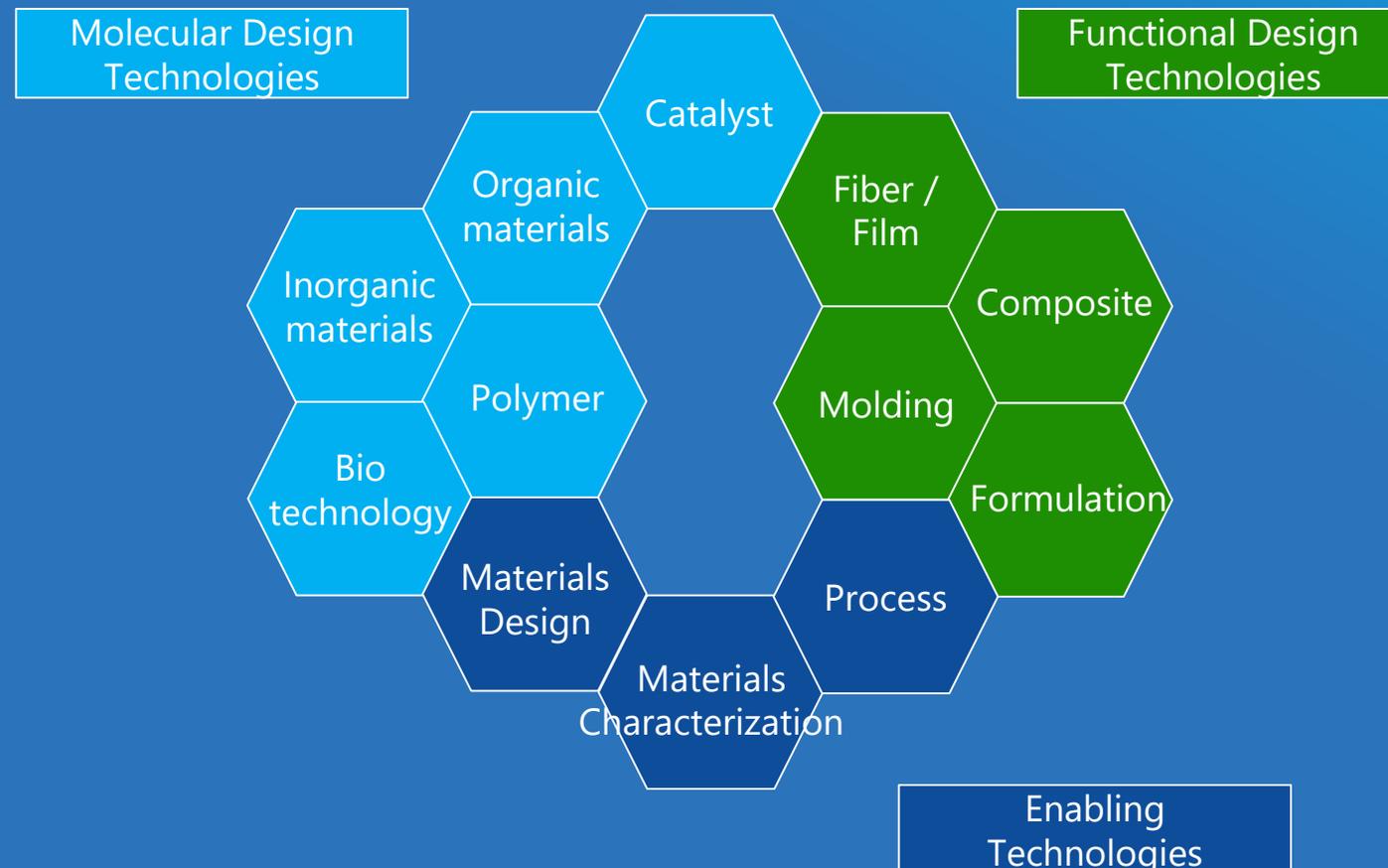
### Major Business Domains

Carbon Chemicals Carbon MMA



# Technology Platforms

We continue to build upon our core technologies to create new solutions for the evolving needs for customers.

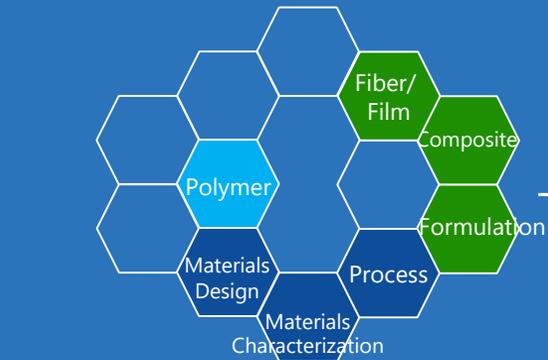


# Technology Platforms Related to Focus Markets

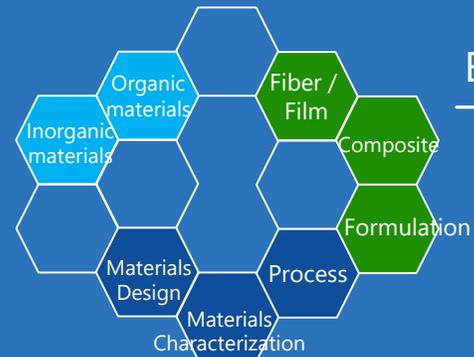
Molecular Design Technologies

Functional Design Technologies

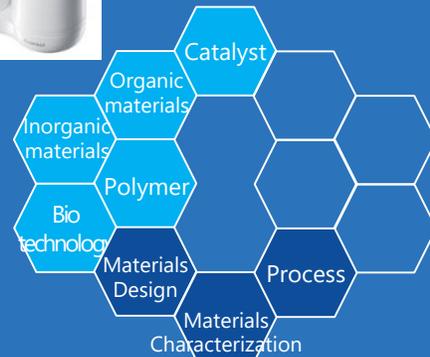
Enabling Technologies



Packaging, Labels, Films



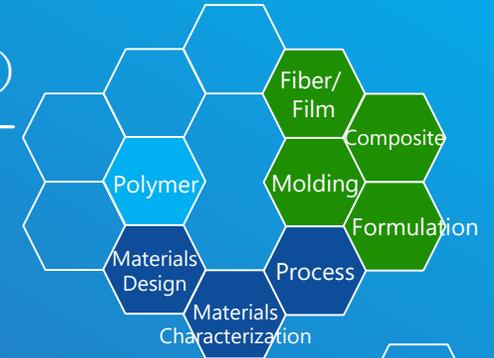
Environment, Energy



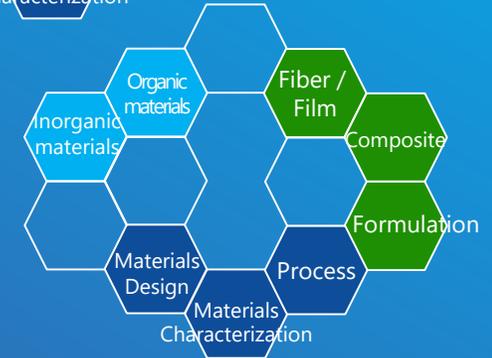
● Fundamental Materials



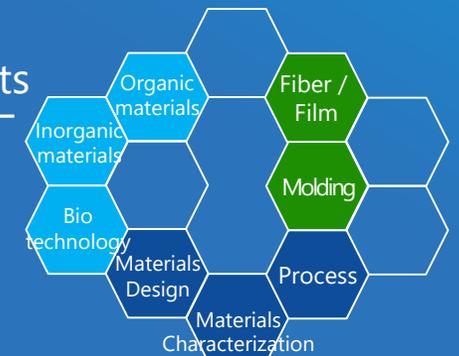
Automobiles, Aircraft(Mobility)



IT, Electronics, Displays



Medical, Food, Bio Products



# Mitsubishi Chemical's Approach to Sustainability



- ▶ 2007 Set the criteria for business activities: **Sustainability**, Health, Comfort
- ▶ 2011 Start of **KAITEKI** management:
  - Maximize total corporate value through the three axes of MOE, MOT and **MOS**.
  - Along with economics that emphasizes capital efficiency, we view sustainability as part of our corporate value.

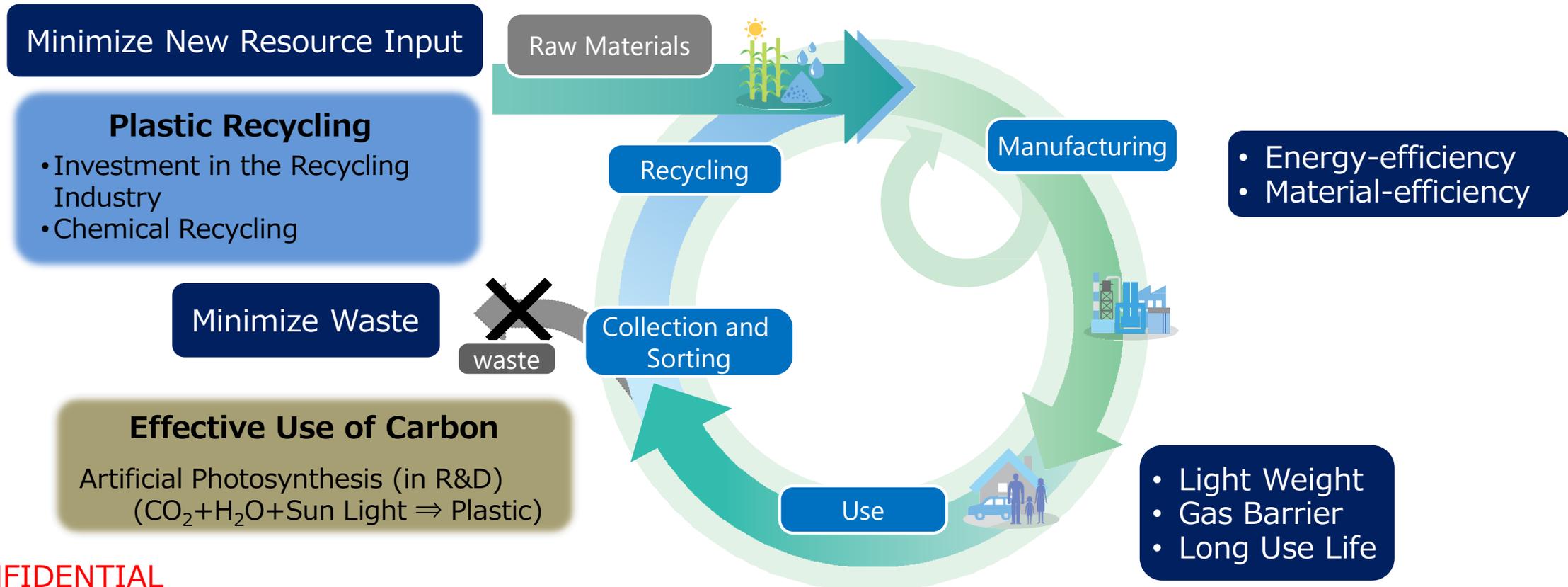


# Use of Plastics in a Circular Society

Plastics make our life better, if manufactured, used and recycled in a responsible manner.

## Carbon Cycle

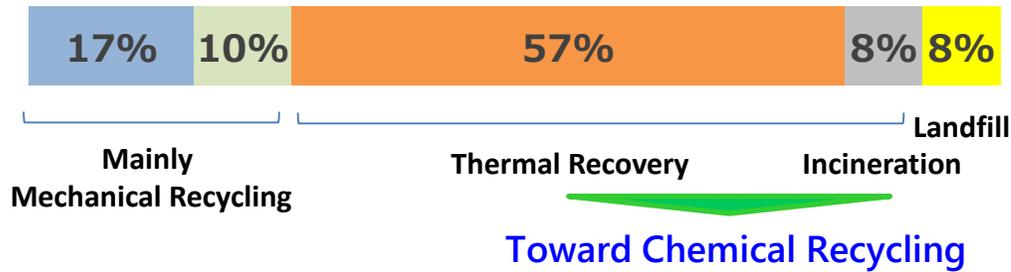
- Bio-based plastic
- Bio-degradable plastic
- Marine-degradable plastic



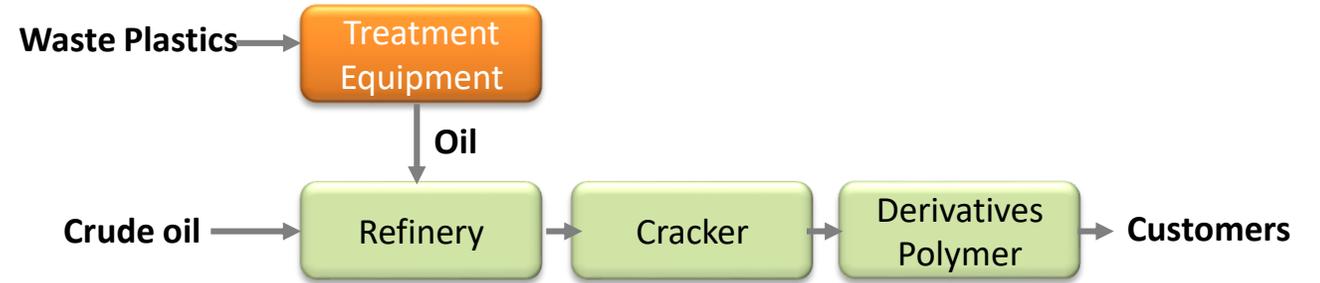
# Chemical Recycling

## Percentage of Waste Plastics Recycling in Japan (2018)

Source: Plastic Waste Management Institute (Material Flow of Plastic Products 2018)

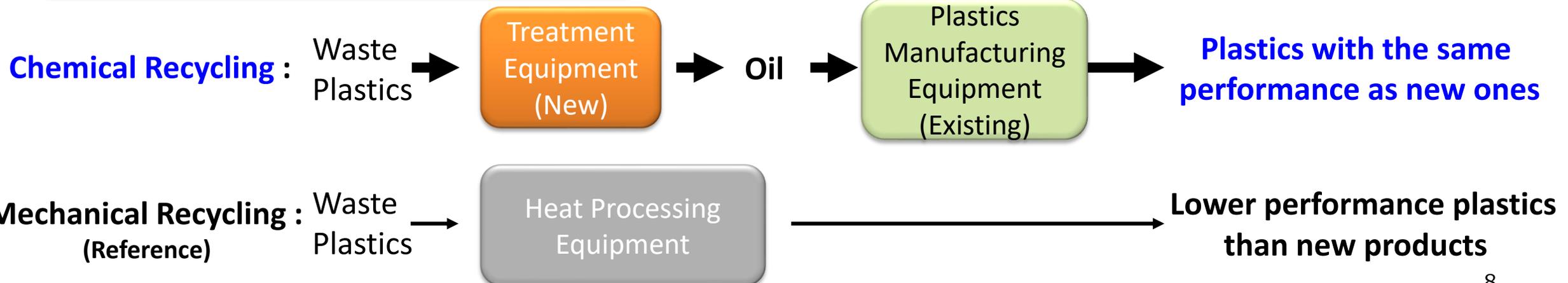


## Image of a Value Chain with Chemical Recycling

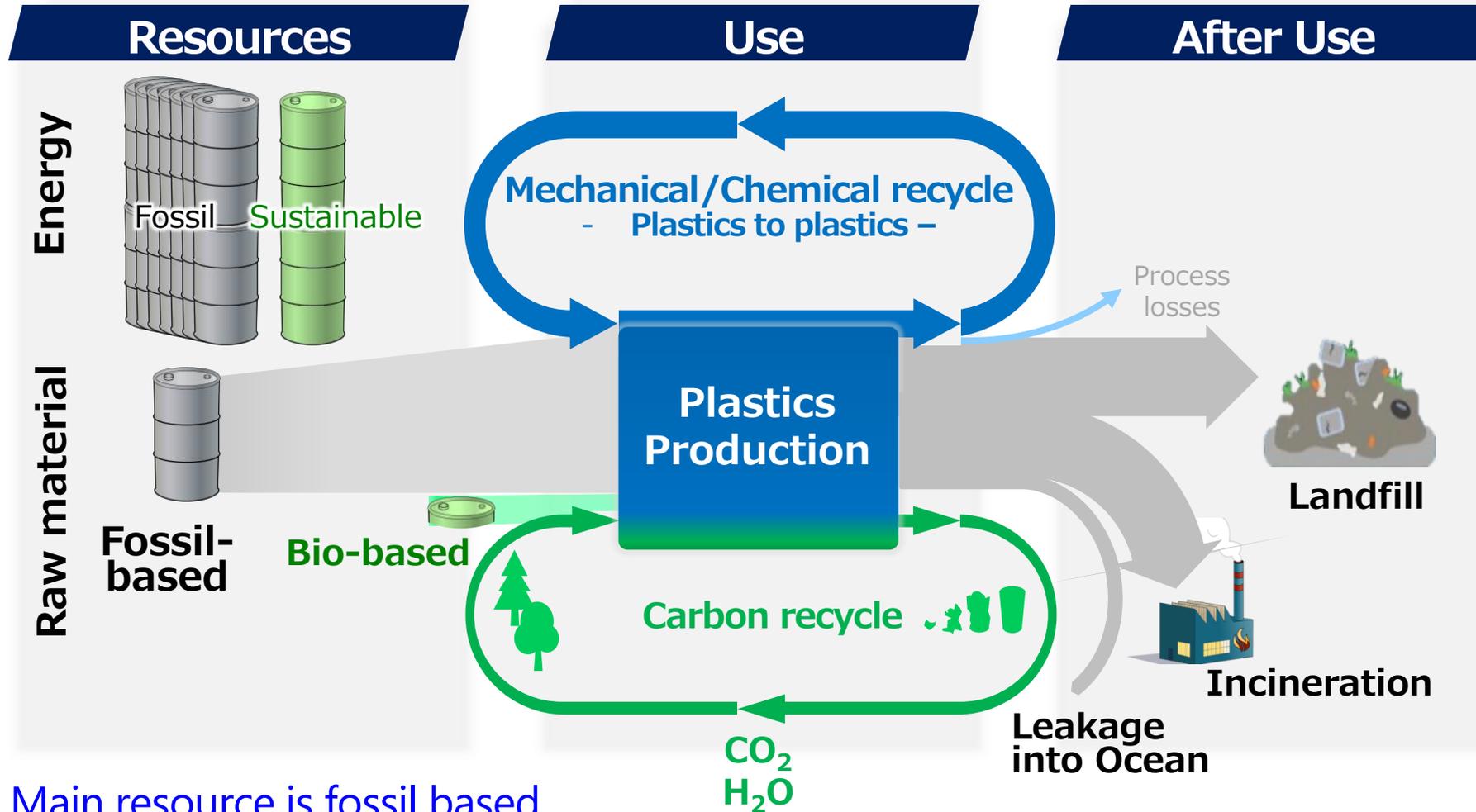


## Chemical Recycling & Mechanical Recycling

Established an LLP with ENEOS to study technology

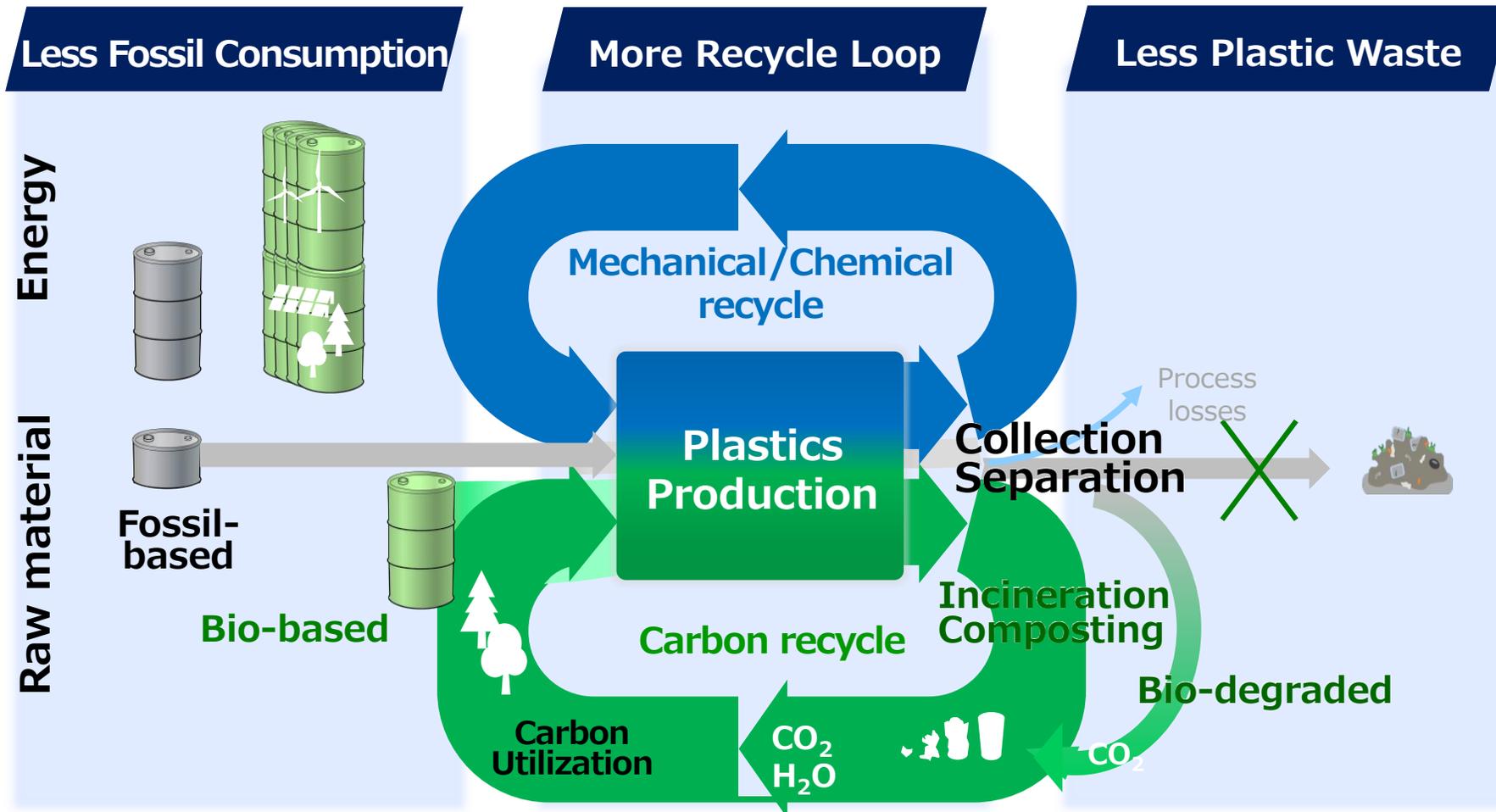


# Current Plastics Flow



- Main resource is fossil based
- Little is recycled

# Plastics Flow of the Future



- Minimized fossil resource usage (Energy & Raw material)
- Minimized waste