



**ENEOS**

# **ENEOS Vision and Strategy for the Future in the Japan Oil Industry**

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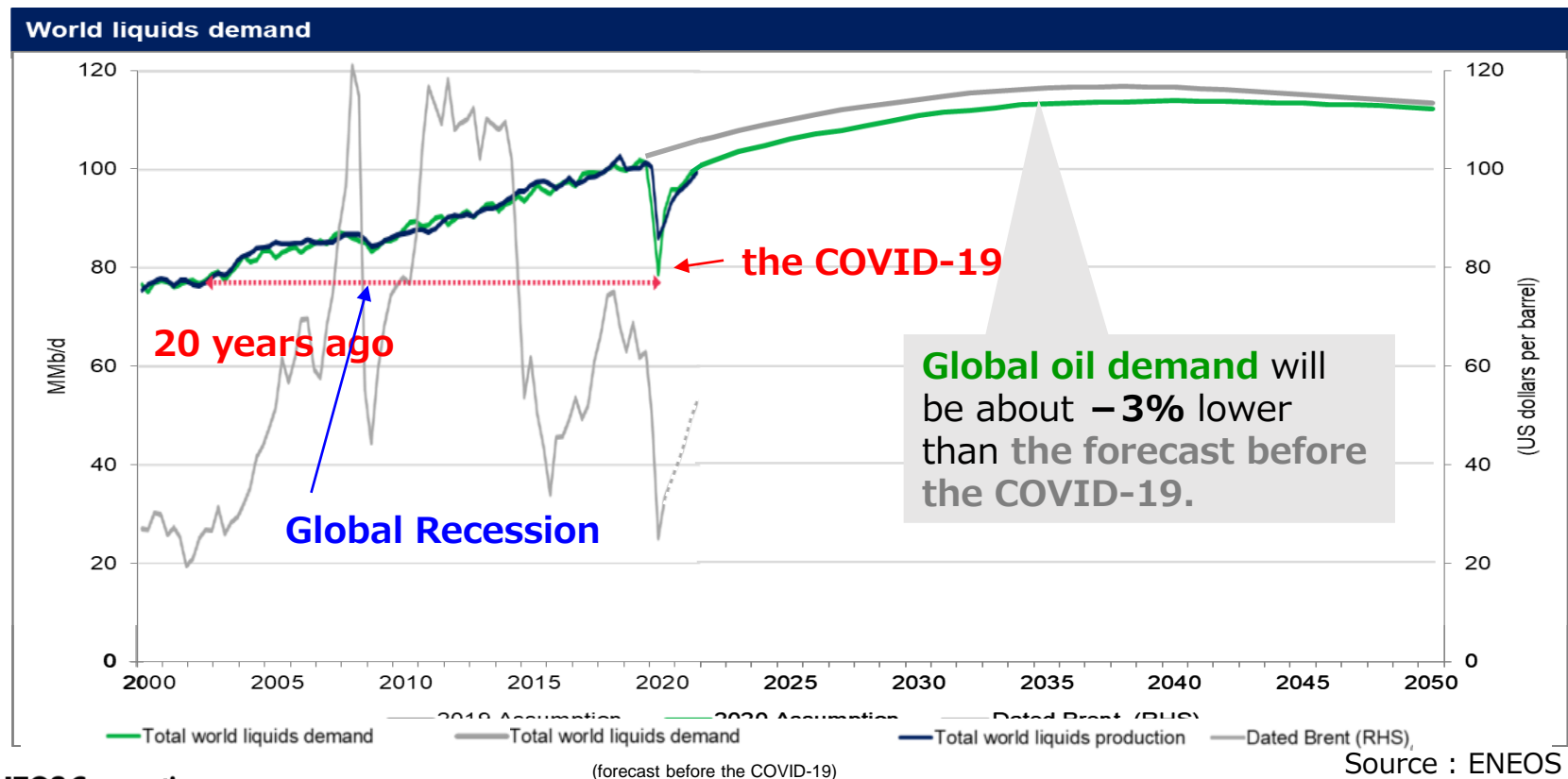
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# 1-1 Global Oil Demand (w/ Impact of the COVID-19)

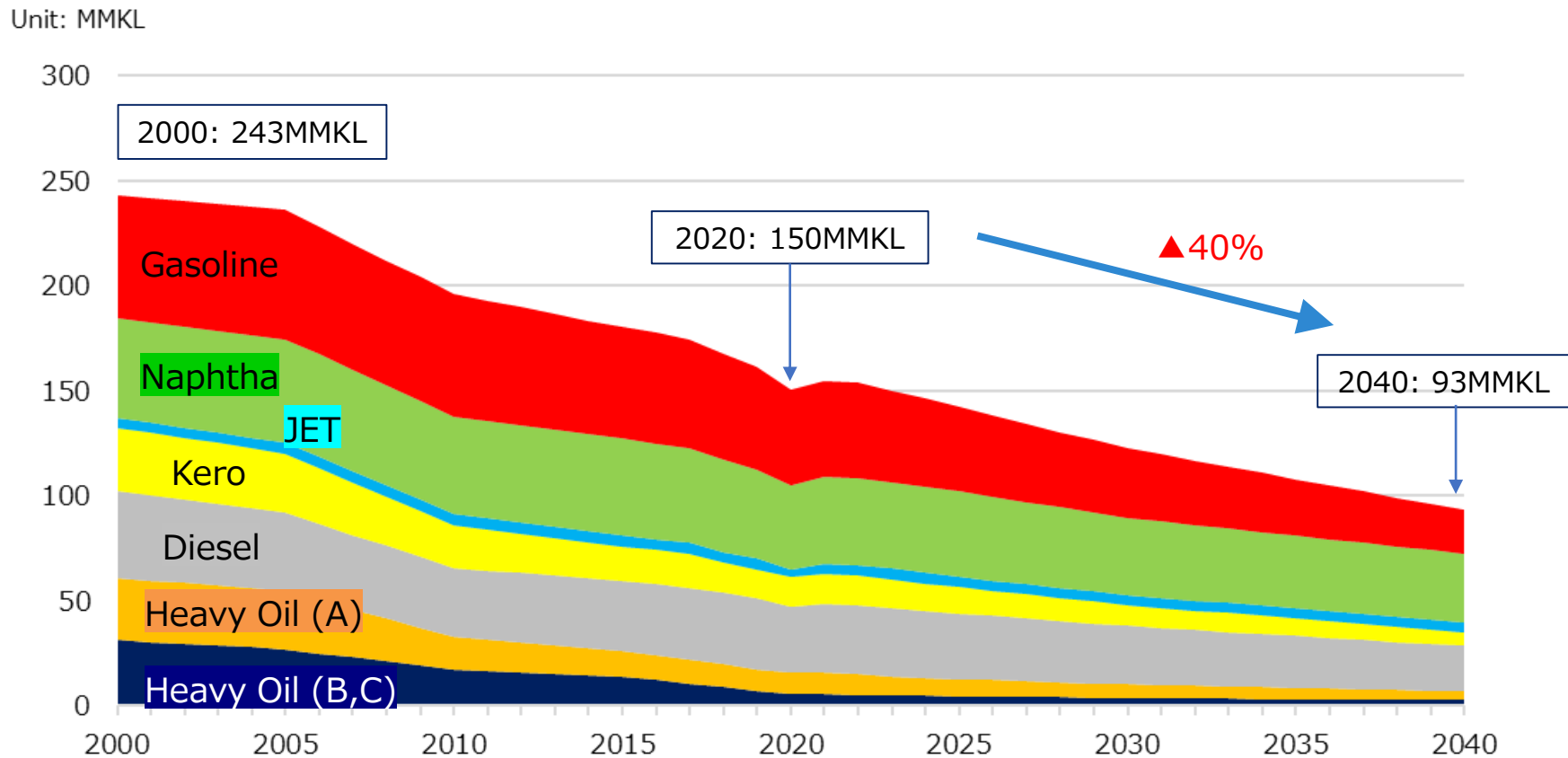
- Declining in demand for Fuel Oil due to COVID-19; almost equal to FY 2000 (worse than the Global Recession).
- Expecting the recovery in Fuel Oil demand; in FY 2023 at the earliest; to the level of FY 2019 – prior to COVID 19
- Global Oil demand after FY 2024 is expected to gradually increase despite 3% less than the level of FY 2019 by economic stagnation and “new normal” life style. **However, ...**



# 1-2 Petro-Products Demand in Japan

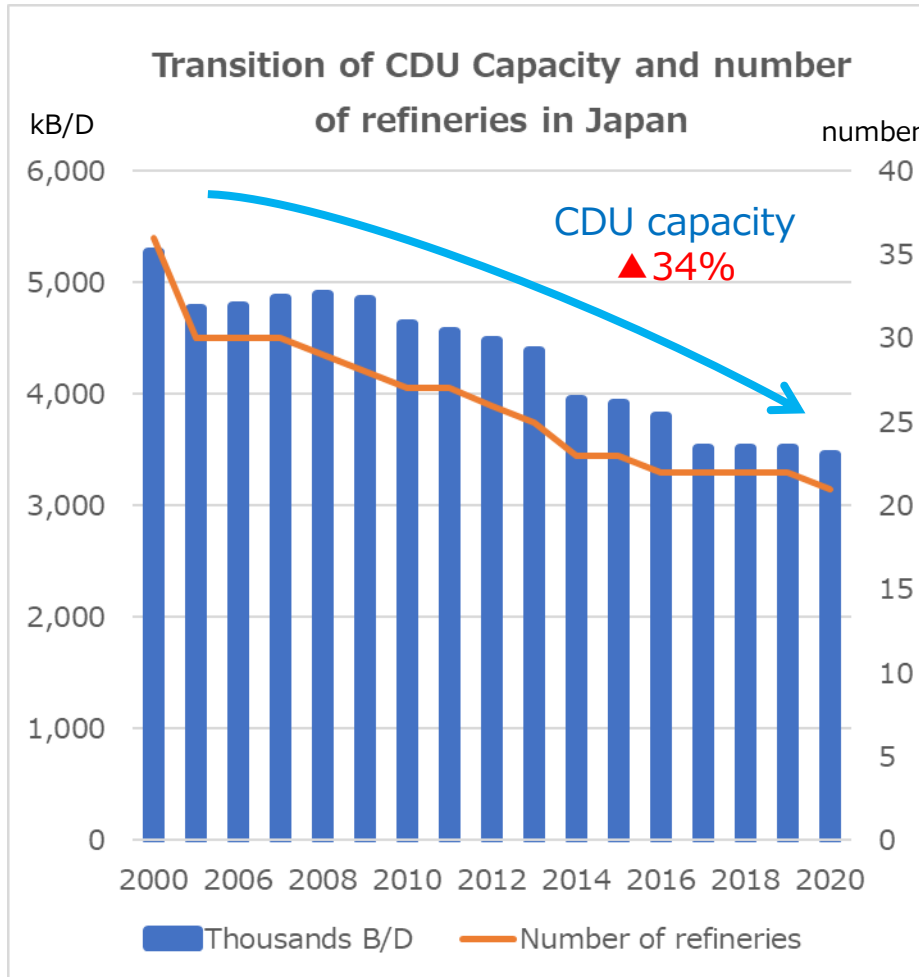
- 2000 to 2020 actual: 38% decline due to shrinking demand for **heavy oil** for power plant and industrial fuel
- 2020 to 2040 forecast: about 40% decline due to shrinking demand for **gasoline** by advancing energy efficiency

## Record & Forecast: Petro Products Demand in Japan

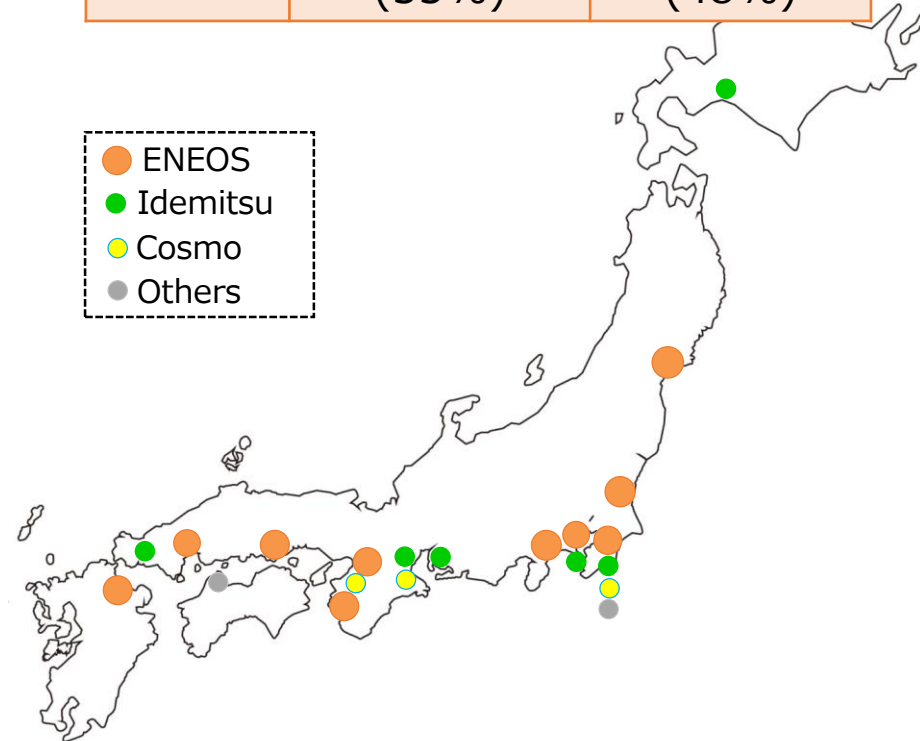


# 1-3 Refineries in Japan

36 refineries, 5.3 million B/D in 2000 → 21 refineries, 3.5 million B/D in 2020

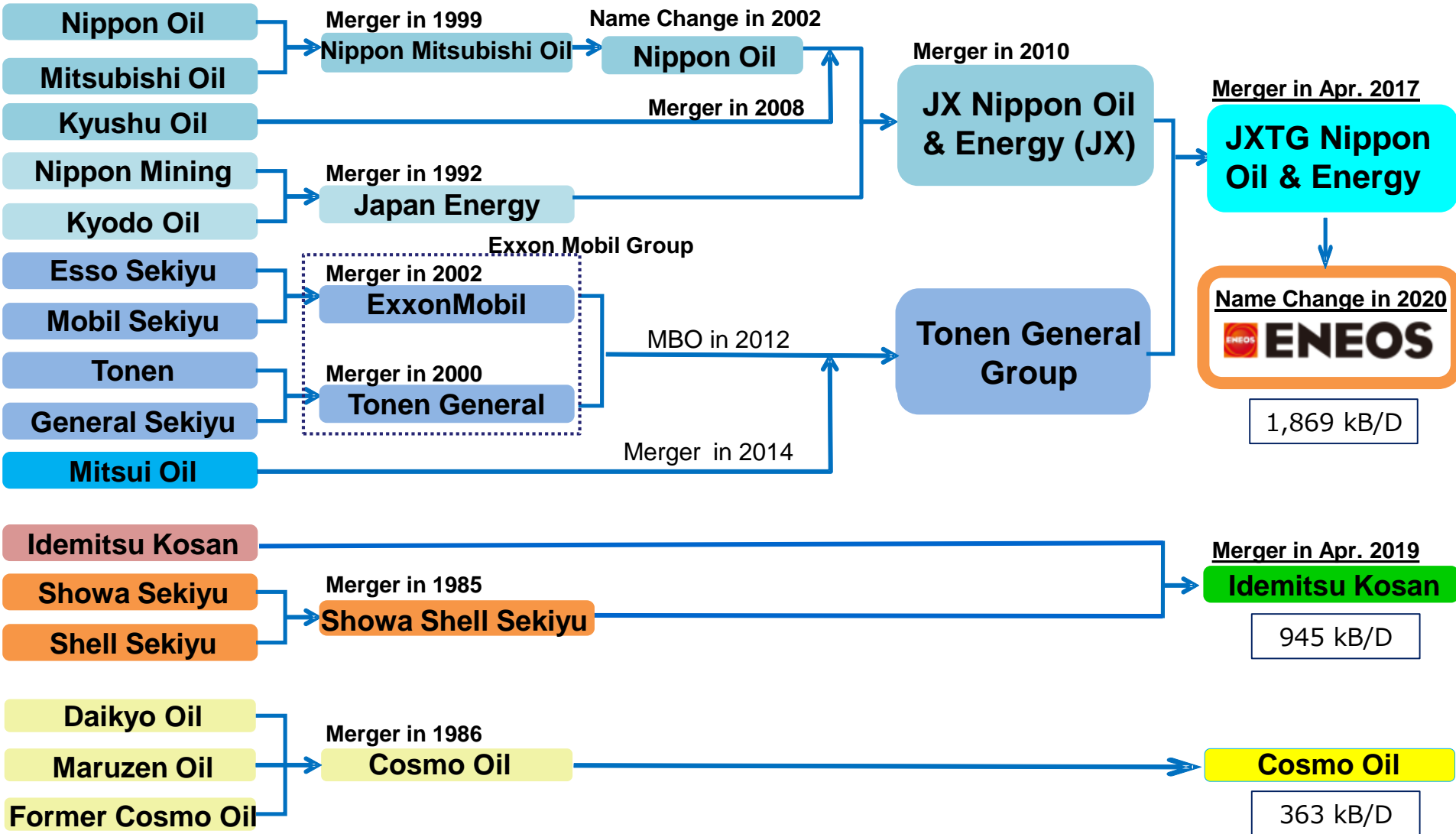


	CDU Capacity (kB/D)	Number of Refineries
Total in Japan	3,458	21
ENEOS	1,869 (55%)	10 (48%)



# 1-4 History of the Japanese Oil Industry

Consolidated into 3 major companies by several times of merger



## 2-1 Business Environment Awareness

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### **Decline in domestic oil demand will accelerate**

- Response to global warming, low-carbon society
- Government carbon neutral policy



Considering the future of refineries and gas stations

### **Refinery**

- Shift to petrochemicals and derivatives
- Digital transformation
  - Asset management w/ digital twin
  - AI optimized & automated operation
  - Overall SCM optimization

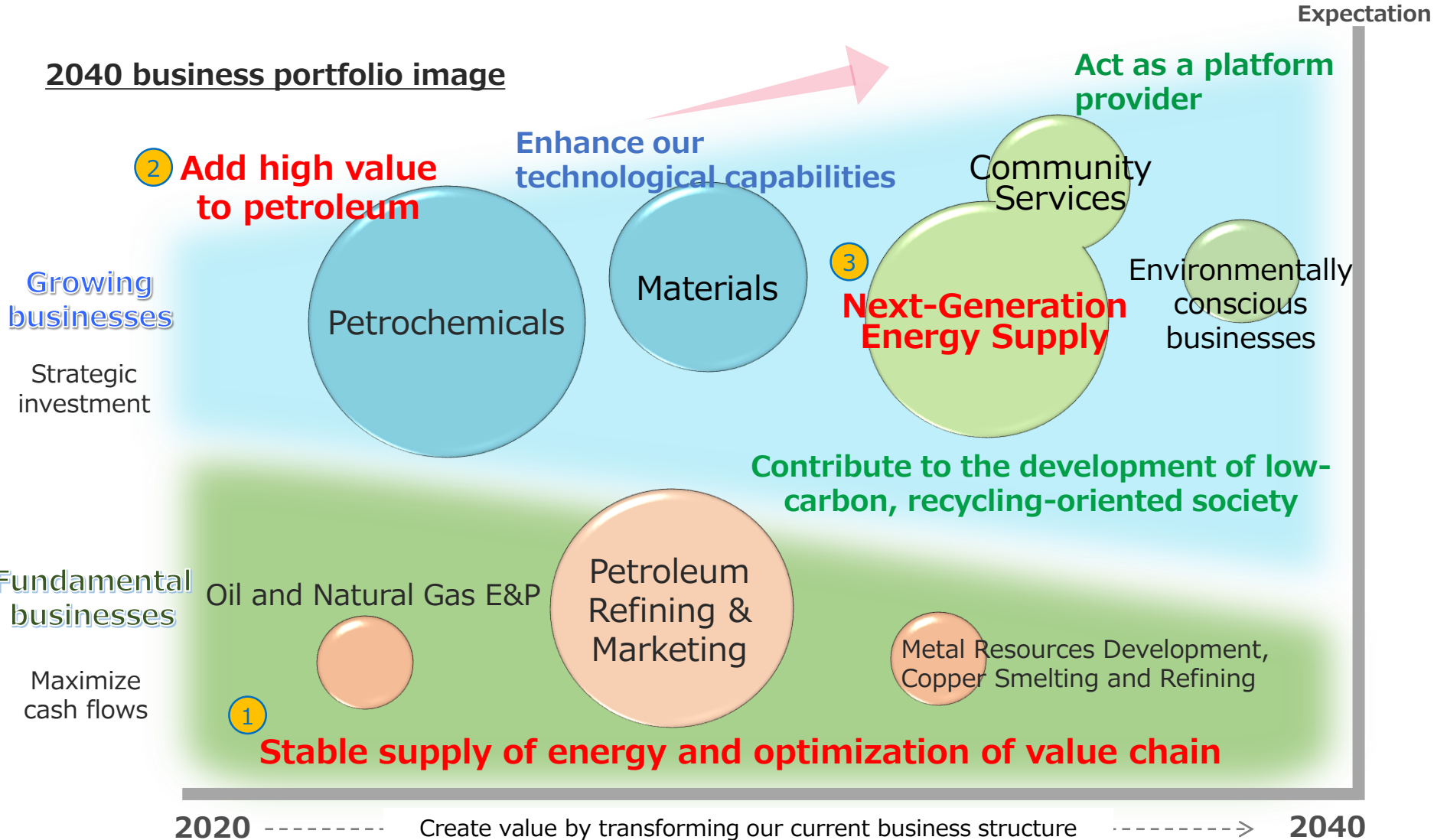
### **Gas station**

- Clean energy supply
- Local community hub

# 2-2 Overview of Our Future Businesses to 2040

- Growing business: Shift to value-added petrochemicals, next-generation energy supply
- Fundamental business: Stable supply of energy and optimization of value chain

## 2040 business portfolio image





# 3-1 Business Strategy (1.1) Future vision of digitalization

ENEOS promote the introduction of digital technologies in our refineries for safe/stable and efficient operation; in order to enhance our business competitiveness.

## DCS Plant Operation

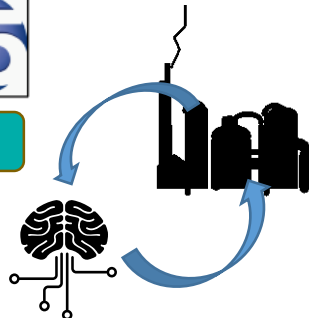
### Staff work



Operation Management with digital applications



### DCS Operation



Anomaly Detection & Automated Operation with AI

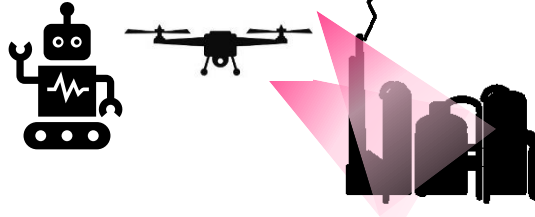


Video Communication

## Field Operation

### Field Patrol

Inspection with Drones & Robots



### Field Operation

Efficient Field Operation with Mobile Device

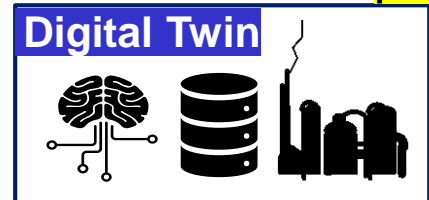
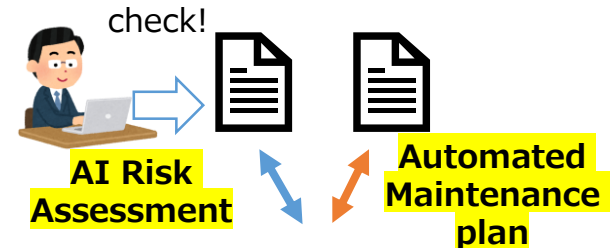


## Asset Management

Asset Management with Digital Twin

Inspection Plan & Report

Repair Plan & Report



# 3-2 Business Strategy (1.2) Digitalization roadmap

ENEOS proceed the digitization based on the following road map.

~2019

2020

2021-22

2023-25

2026~

2030~

## 1. Advanced DCS Operation

● Alarm Management, Advanced Process Control, Navigation System

● Anomaly Detection (Big Data Analysis)

● AI Optimization & Automation

**AI Optimized  
& Automated  
Operation**

## 2. Advanced Field Operation

● Enhance Field Sensors

● Mobile Device, Wearable Tools

● Drones (Image Analysis)

● Robots

**Efficient Field Operation**

**Auto Field Patrol  
& Inspection**

## 3. Advanced Asset Management

● More Accurate & Efficient Inspection

● Digital Twin (3D model and Data lake)

● AI Risk Access.

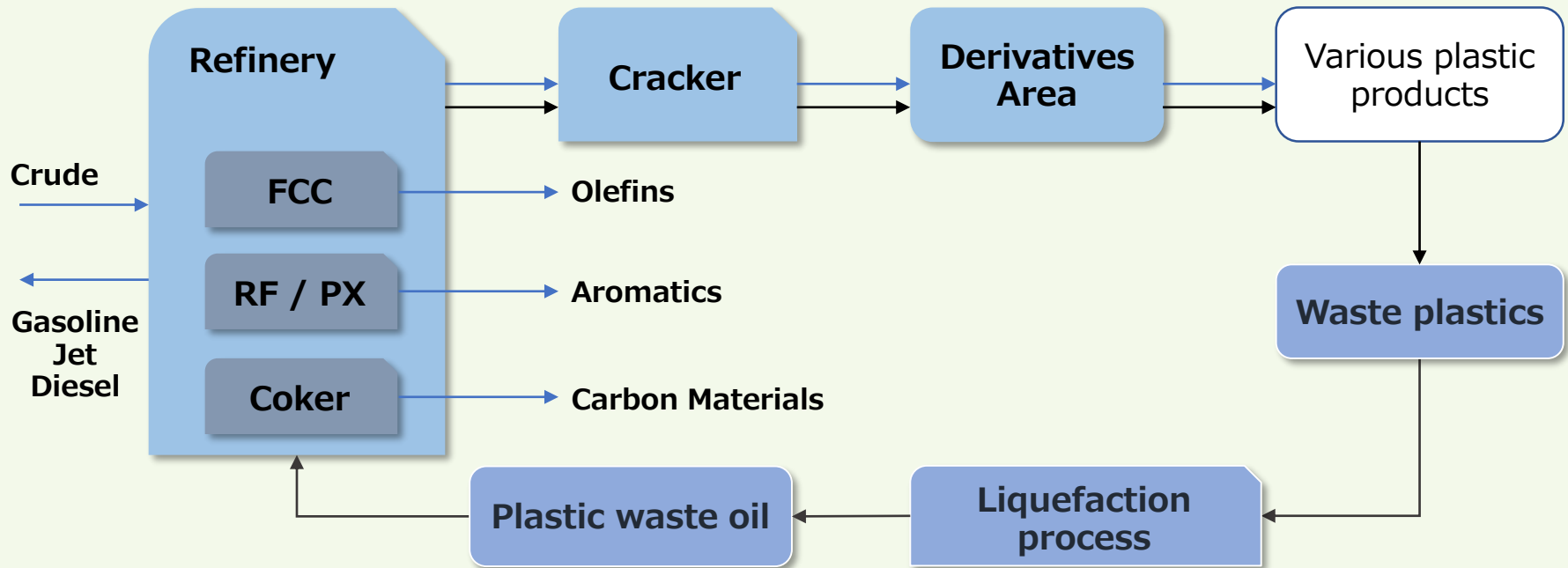
**Asset Management  
w/ Digital Twin**

# 3-3 Business Strategy

(2) Add high value to petroleum

## Vision

Increase competitiveness and profitability by promoting chemical refineries and entry into the derivative business



**Refineries will maintain the supply capacity according to the demand structure. In addition, to strengthen the competitiveness of refineries, we promote the shift to chemical refineries.**

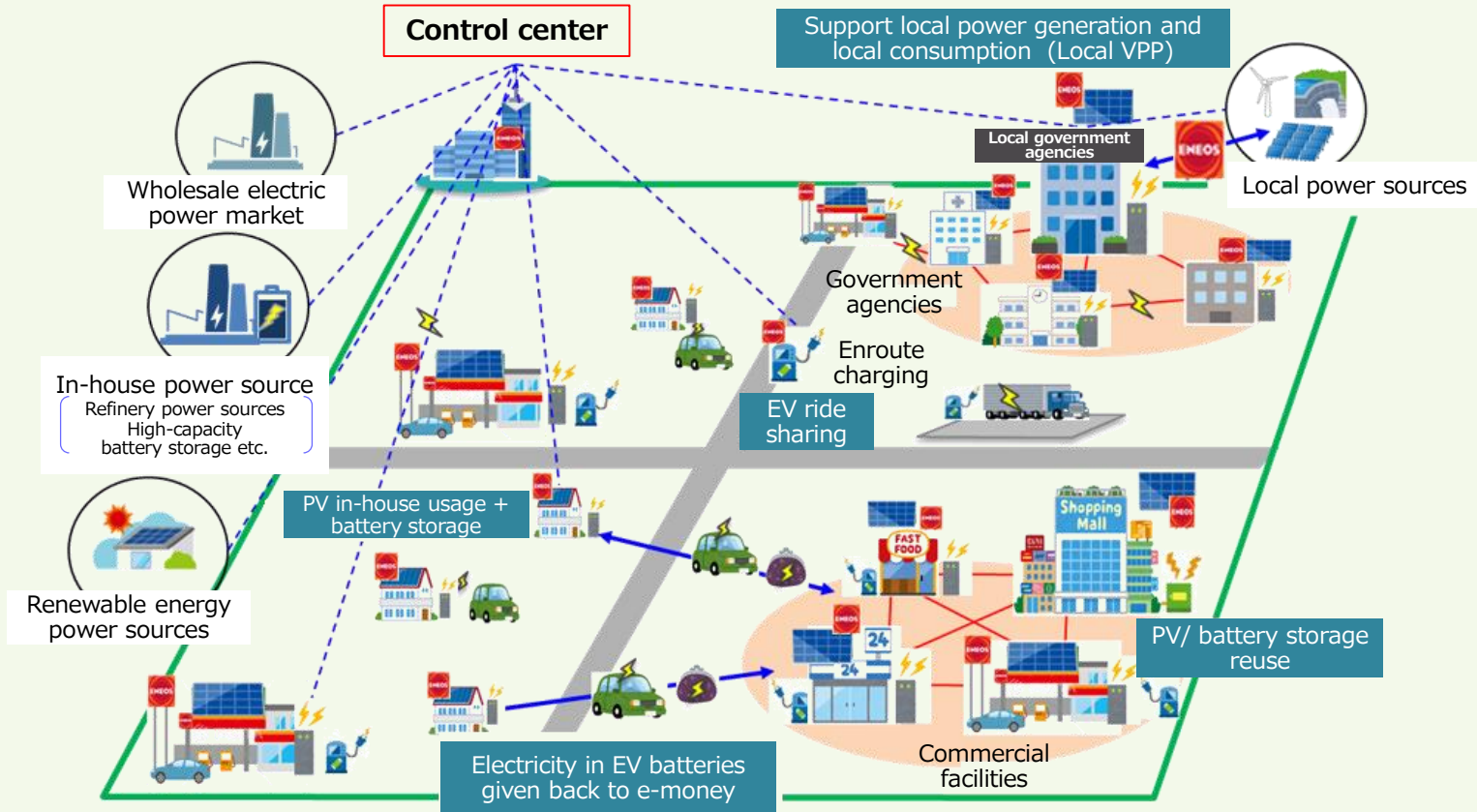
- To strengthen cooperation with neighboring chemical companies
- To develop the derivatives areas, without limiting basic petrochemical products
- To utilize refineries to recycle petrochemicals from plastic wastes

# 3-4 Business Strategy

## (3.1) Next-generation Energy Supply

### Vision

Efficient, stable supply of low-carbon energy



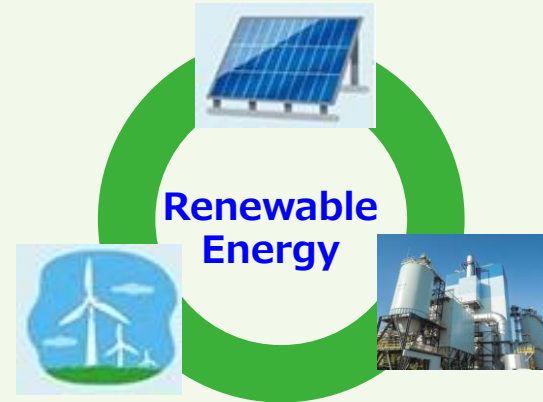
**Gas station will transform into next-generation energy supply bases by utilizing the network that is deployed all over the country.**

- To use as a source of household power and EV power from solar power and storage batteries, and as H<sub>2</sub> stations
- To provide a comprehensive energy platform service through integrated utilization of distributed power sources (VPP)

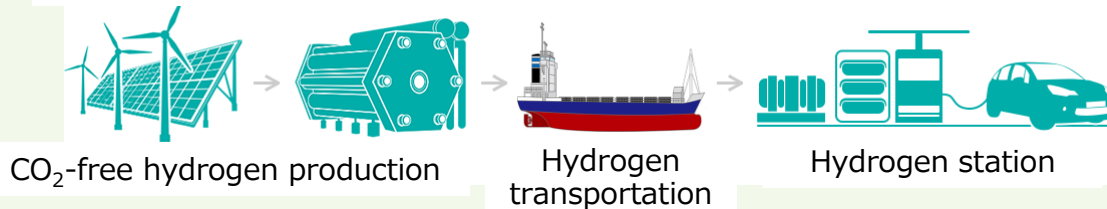
### Renewable Energy

Effective use of idle lands in refineries

- Solar power
- Wind-power
- Biomass power station



### Hydrogen supply chain



### CO<sub>2</sub>-free Hydrogen

- Production in overseas
- Transportation by liq.H<sub>2</sub> or MCH
- Supply at hydrogen stations

### Supply clean energy as next-generation energy

- To deploy renewable energy business (Solar, Onshore/Offshore wind-power, biomass)
- To build a CO<sub>2</sub>-free hydrogen supply chain (incl. overseas, green/blue-hydrogen)

# Conclusion

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ENEOS, an energy company representing Japan,

1. will maintain a stable supply of petroleum products with digital technologies, while shift to supply of new environment-friendly energy due to the decrease in petro-products demand, and,
2. will convert to the business structure in a timely manner; in response to stable supply of the energy-needed in the world toward the future.

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*Thank you for your attention !*



**ENEOS**

