



ENEOS

ENEOS's Strategic Approach to Hydrogen Society

March 2025

**Hydrogen Business Department
Negishi Yoshinori**

ENEOS Corporation
[E'-ne-ohs]

ENEOS Group Japan's Premier Energy and Materials Corporate Group

ENEOS Group Overview

ENEOS



ENEOS Xplora



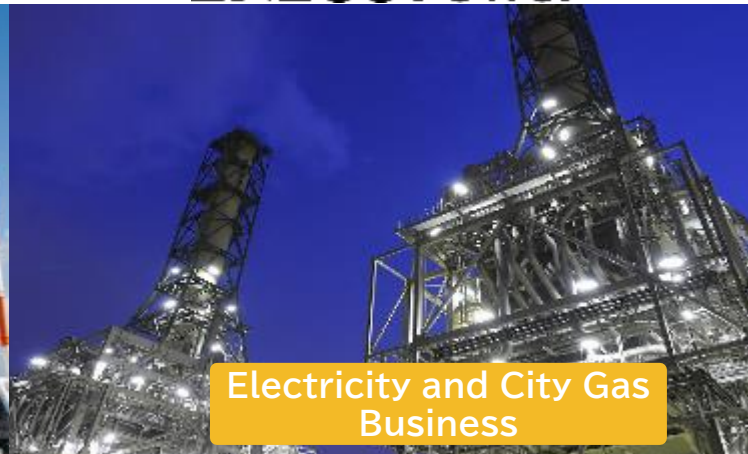
JX Advanced Metals



ENEOS Materials



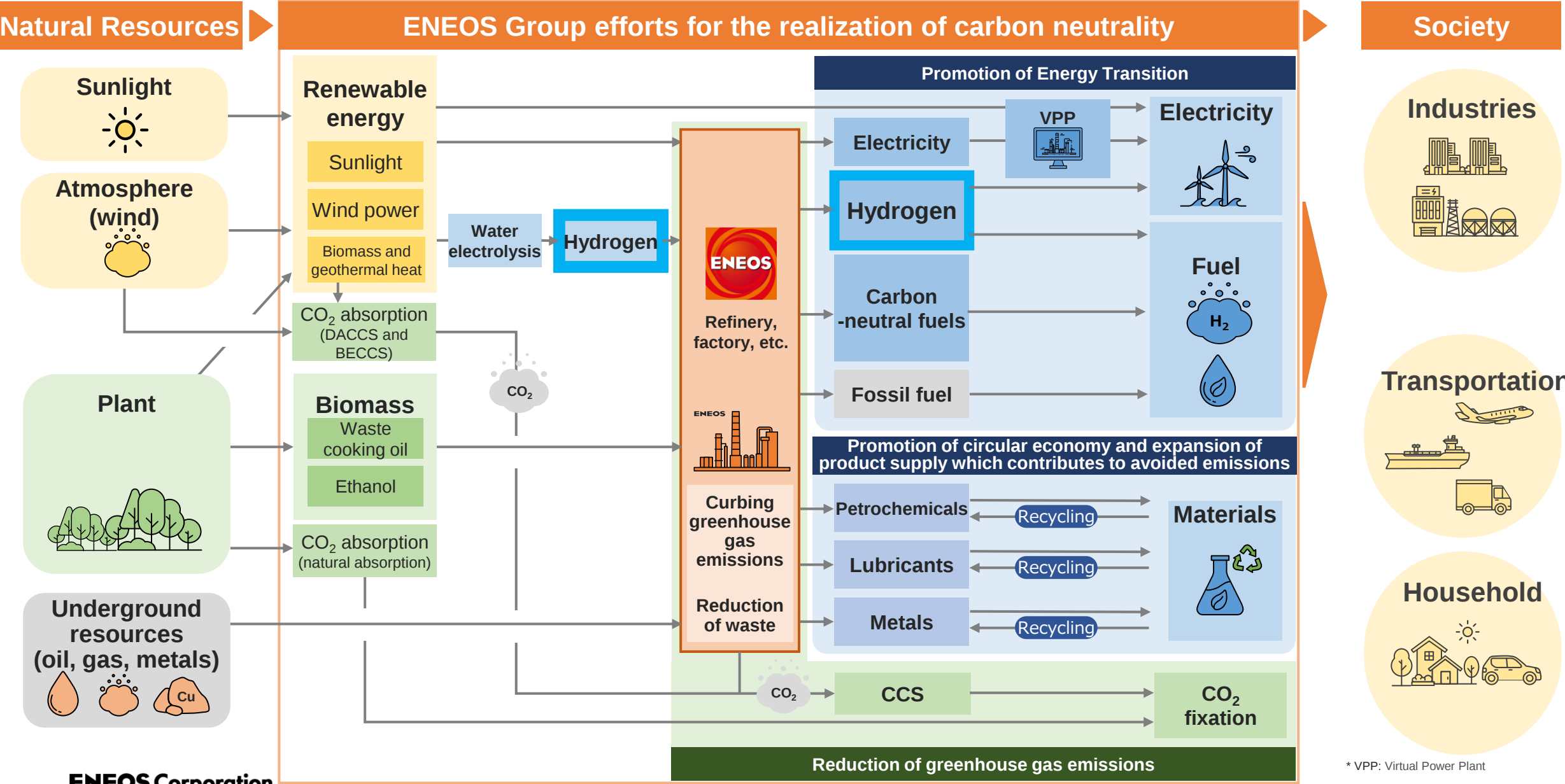
ENEOS Power



ENEOS Renewable Energy



Conceptual Diagram of Carbon Neutrality Plan

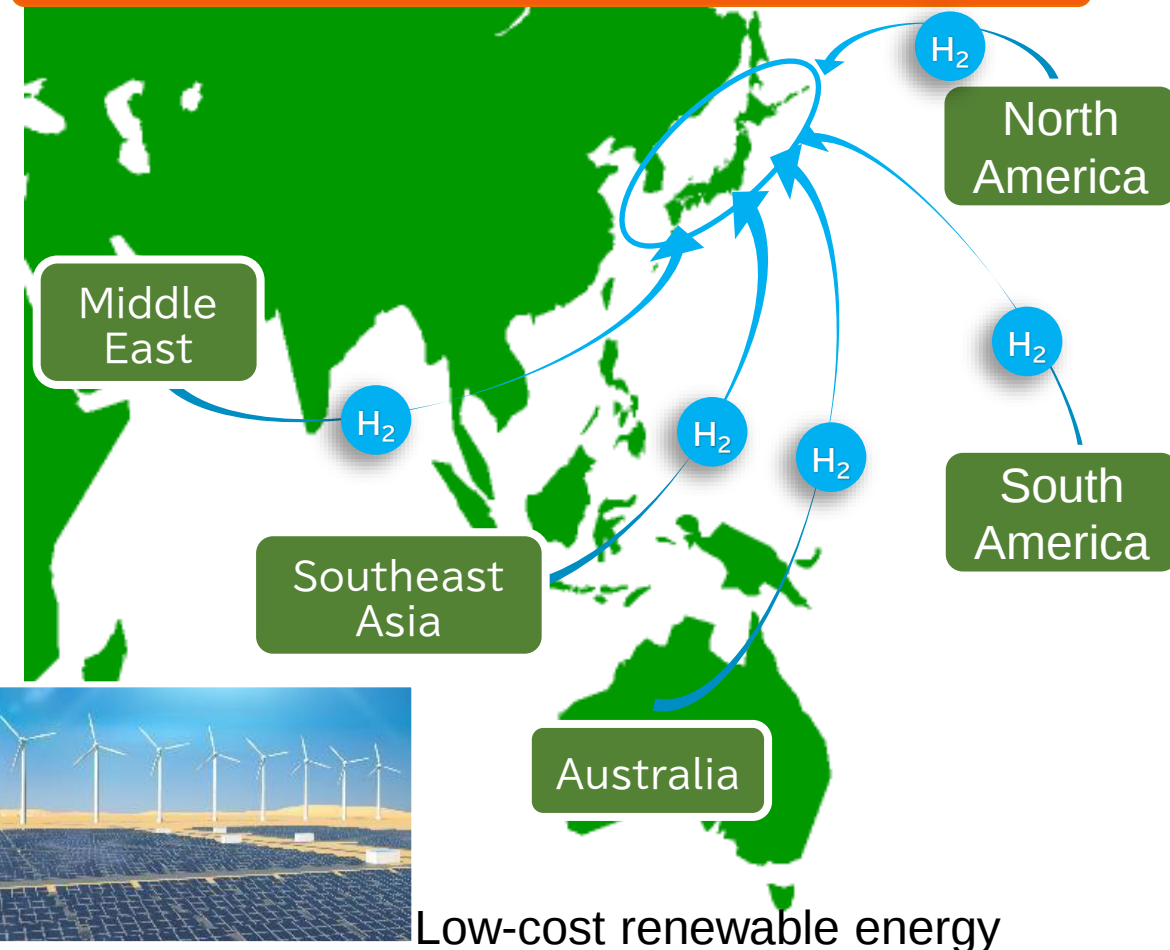


* VPP: Virtual Power Plant

ENEOS Clean Hydrogen Supply Chain

- Australia, Southeast Asia and the Middle East are promising sources of hydrogen
- ENEOS refineries are candidate receiving sites for hydrogen in Japan

Clean hydrogen production outside Japan

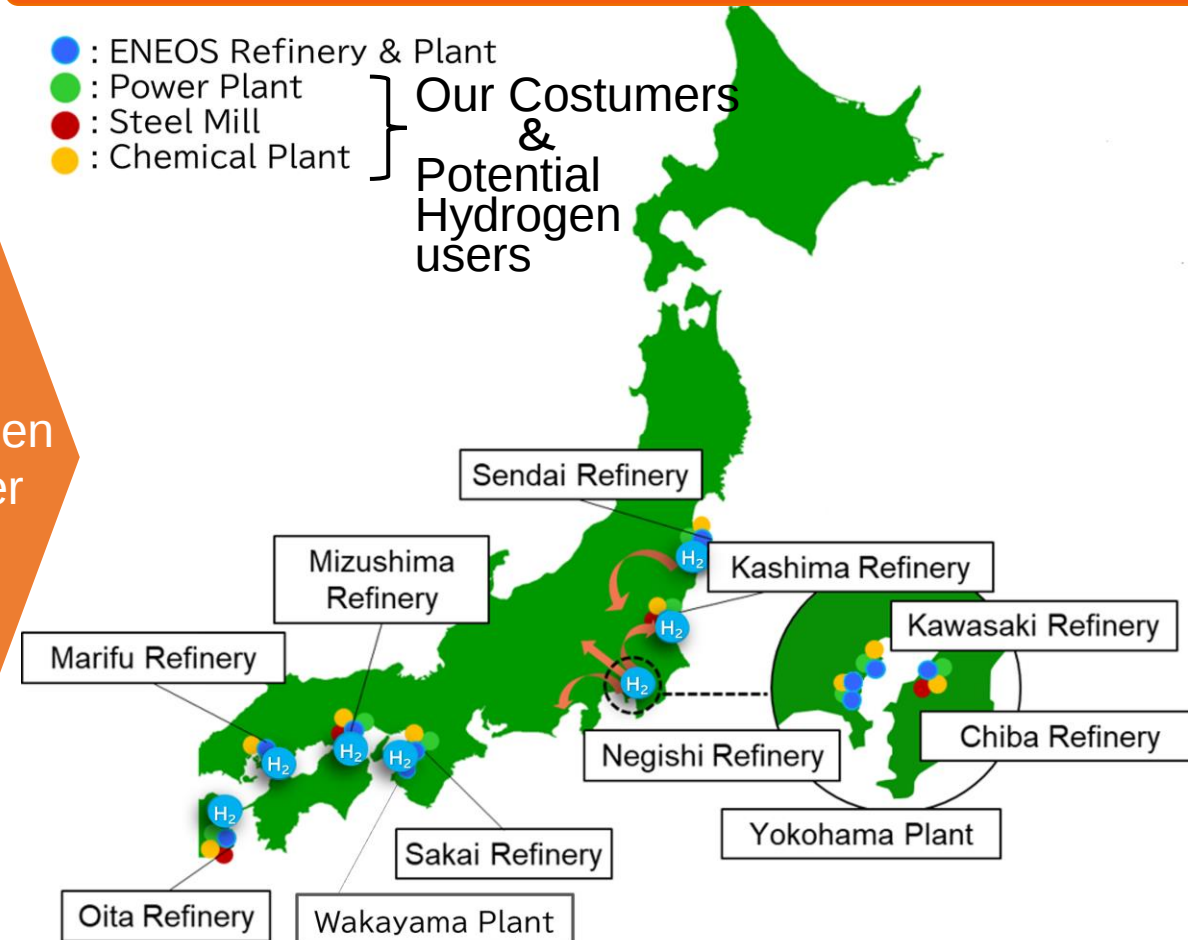


Low-cost renewable energy

Receiving at ENEOS existing assets in Japan

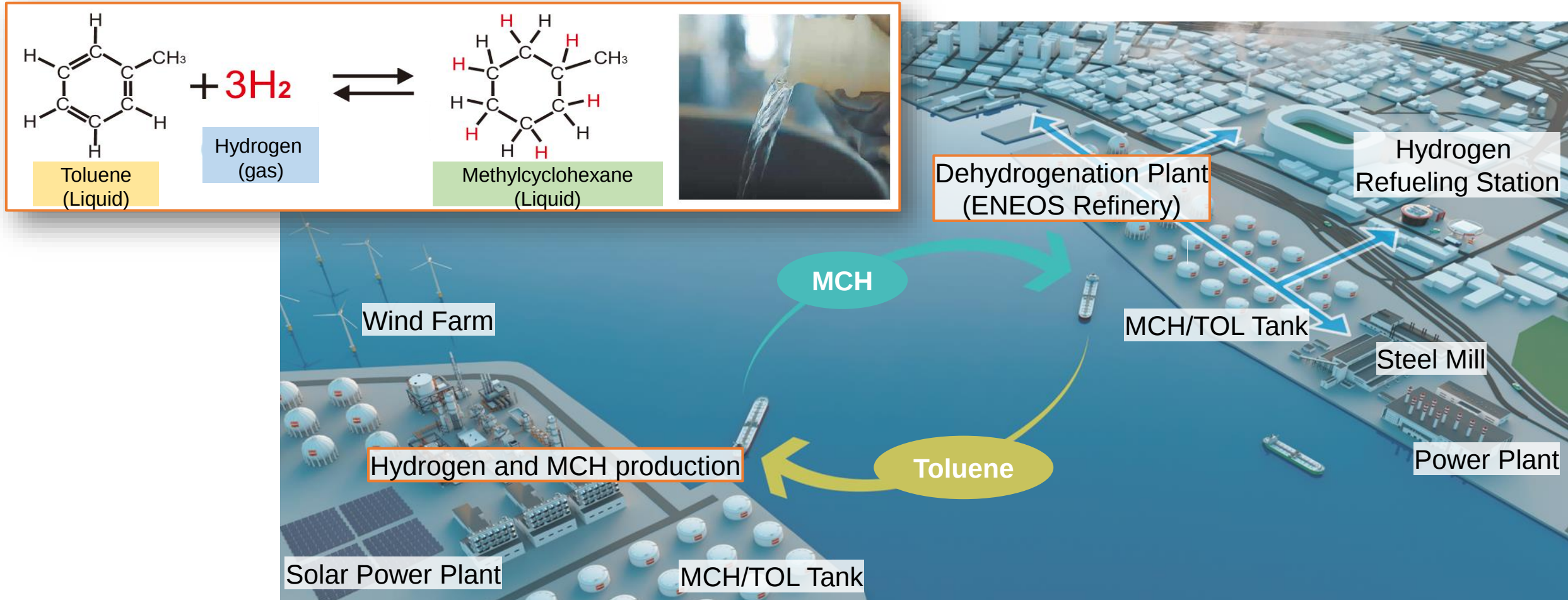
- : ENEOS Refinery & Plant
- : Power Plant
- : Steel Mill
- : Chemical Plant

Our Customers
&
Potential
Hydrogen
users



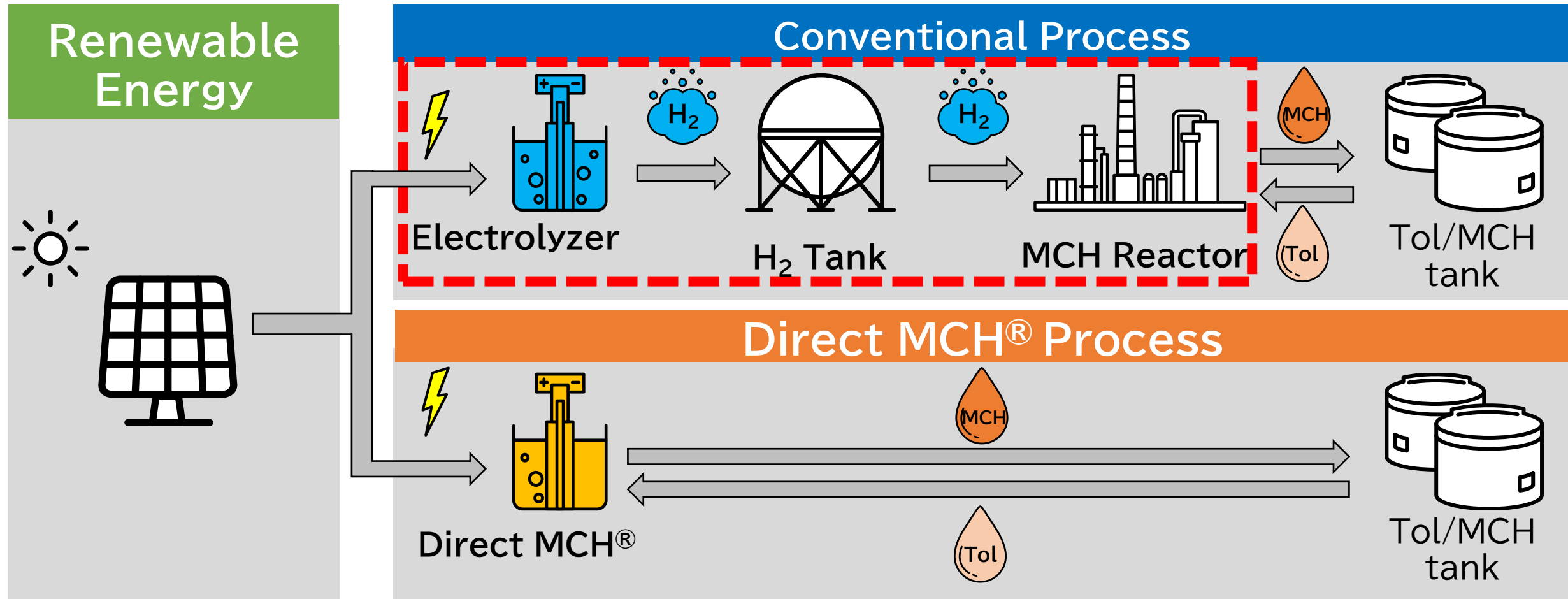
Features and Advantages of MCH as Hydrogen Carrier

- Hydrogen can be carried by MCH derived from toluene hydrogenation process
- MCH / toluene are liquid at room temperature, offering significant logistics benefits using existing infrastructure
- ENEOS refineries will be hubs to deliver hydrogen to nearby hard-to-abate industries



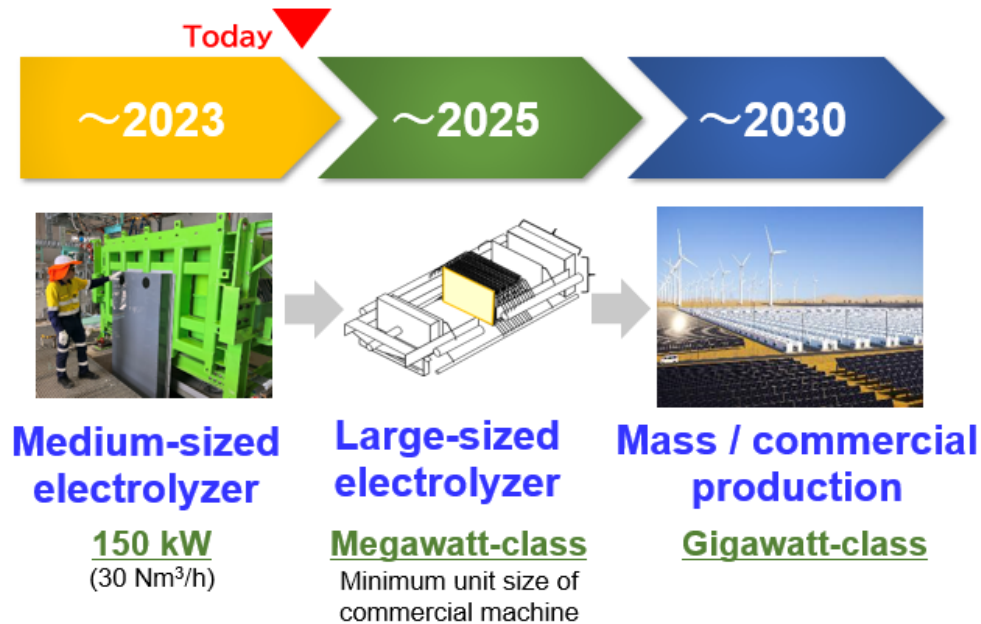
Direct MCH[®] Process

- ENEOS's proprietary technology will significantly reduce costs of carrier conversion
- Simplified process increases flexibility against variable electricity input from VRE, volatile market, etc.



Technology Development Roadmap

- Medium-sized demonstration successfully completed by October 2023
- Planning megawatt-class demonstration, paving the way for Gigawatt-class commercialization



The demonstration of Direct MCH was conducted as part of Green Innovation Fund Projects of Large-scale Hydrogen Supply Chain Establishment / Direct MCH electrosynthesis technology development (P21017). This project have been commissioned by the New Energy and Industrial Technology Development Organization (NEDO). We would like to express our sincere thanks to all parties involved.

ENEOS Corporation

Ribbon Cutting Ceremony – 30 January 2023



Tomohide Miyata
Representative Director,
President of ENEOS HD

Hon. Dr Steven Miles MP
Former Premier of
Queensland

Hon. Mick de Brenni MP
Former Minister for Energy
and Clean Economy Jobs

For Sustainable Clean Hydrogen Value Chain

- ENEOS is developing infrastructure and technology to build clean hydrogen supply chain
- Global collaboration is key in establishing sustainable hydrogen value chain



ENEOS Efforts

Building Clean Hydrogen
Supply Chain

Direct MCH[®] Technology
Development



Global Collaboration

Strategic Alignment

Cost Reduction Efforts

Demand Creation