

# Importance of Supply Security and Challenges Toward Net Zero

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# Tokyo Gas in Number

Be an Energy Driver  
-TG Global Business Company-

- Tokyo Gas is an energy utility company who supply gas and electricity in mainly Greater Tokyo region.
- Given the market maturity and increasing competition, we are expanding our business overseas.



Established  
**1885**

Employees(consolidated)  
**16,697**

Introduction of LNG  
**1969**

Customers  
**12.2mil**

LNG Import  
**13MTPA**

LNG Vessels  
**10**

LNG Terminals  
**4**

Pipeline Length  
**65,562km**

Gas Sales  
**15.4bil<sup>3</sup>m**

**5 countries**  
**15 projects**

Gas Power  
**3GW**

Renewables  
**1.5GW**



**North America**

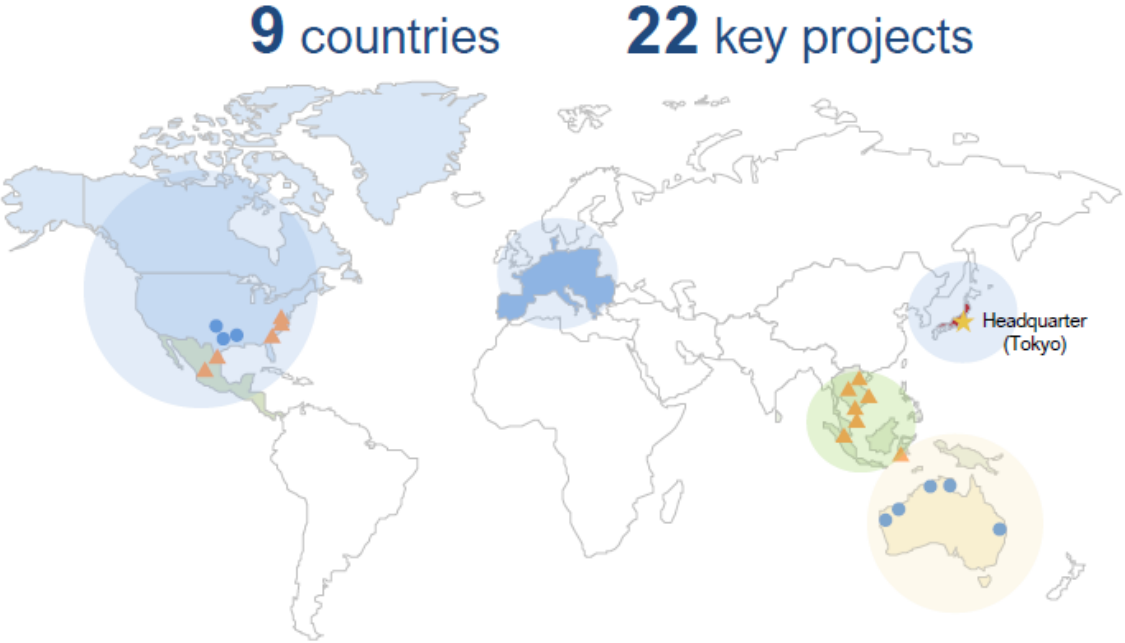
**Business:**

- Shale Projects
- Natural Gas Power Plants
- Renewable Energy

**Main Location:**

- Tokyo Gas America Ltd.  
*Houston, TX*
- TGES America Ltd.  
*South Carolina*
- Acario Ventures  
*Silicon Valley, CA*

- Upstream Assets  
▲ Midstream & Downstream Assets



**Southeast Asia**

**Business:**

- LNG terminal
- Natural Gas Power Plants
- Gas Supply
- Energy Services

**Main Locations:**

- Singapore
- Thailand
- Indonesia
- Vietnam
- Philippines
- Malaysia

**Australia**

**Business:**

- LNG Projects

**Main Locations:**

- Tokyo Gas Australia  
*Perth & Brisbane*

<Aktina Solar PJ, USA>

The first solar project overseas taking initiative from construction to commercial operation.



<Onshore wind PJ, Denmark>

TG Nordic and EWII will jointly develop 1GW of wind farm in Nordic region.



<Floating offshore wind>

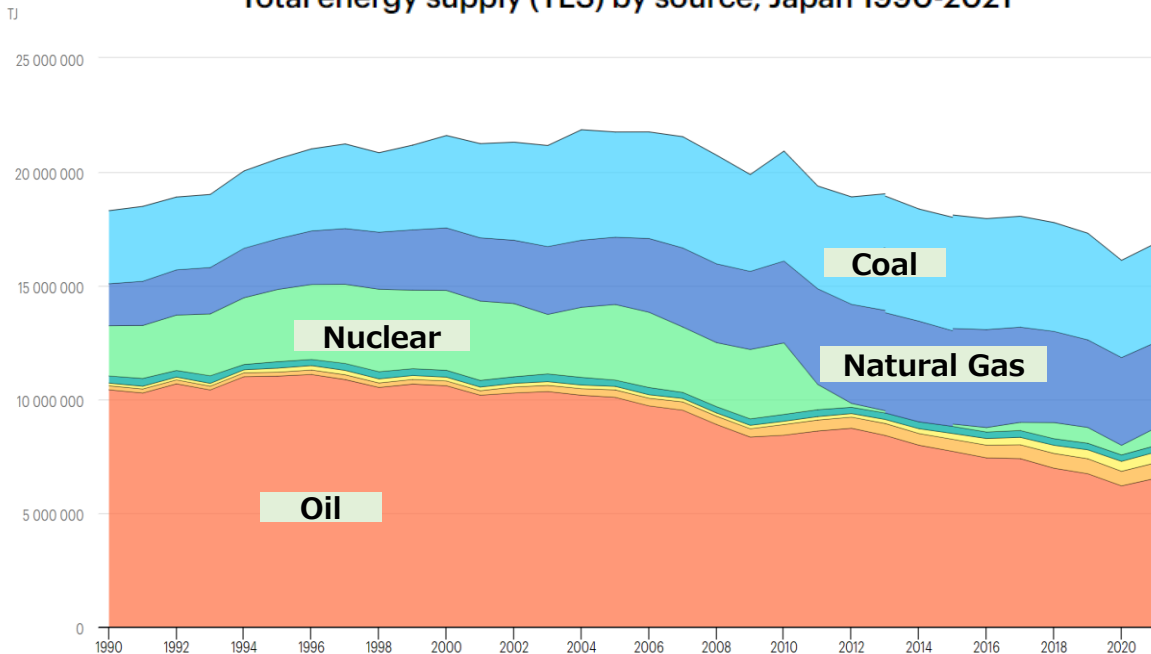
Became one of the primary shareholders of Principle Power Inc.(PPI)



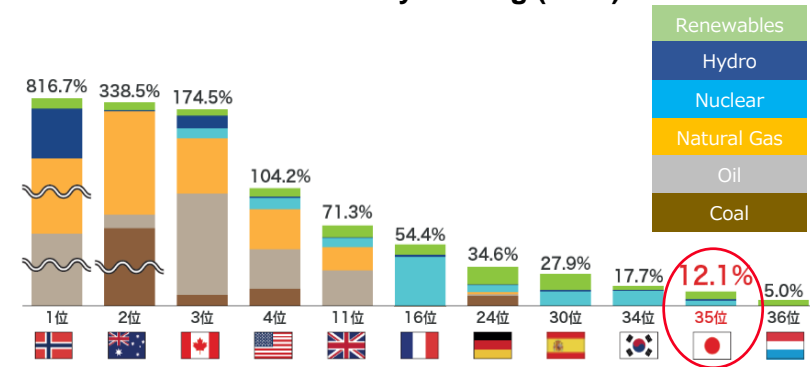
# Japan is the island of energy poverty

- Japanese energy self-sufficiency is one of the lowest among major countries with its share rating 12.1% in 2019...
- Due to the high import dependency and many natural disasters, supply of security as well as safety operation are the utmost importance in terms of energy strategy.

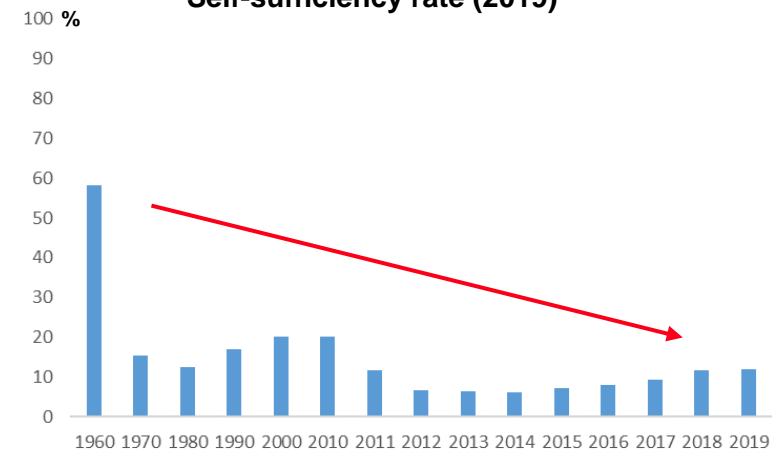
Total energy supply (TES) by source, Japan 1990-2021



Self-sufficiency ranking (2019)



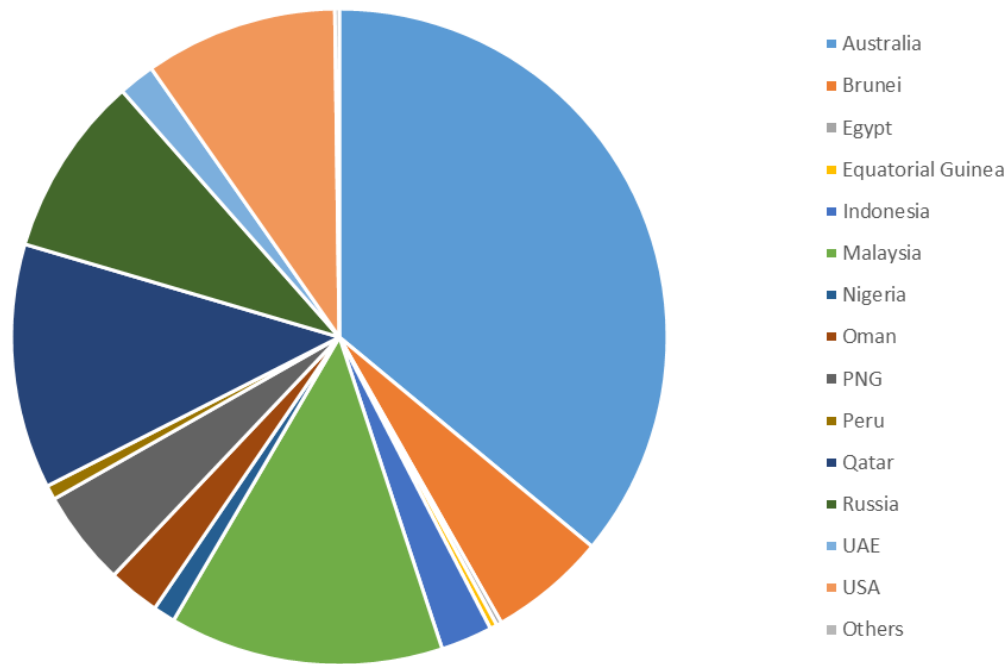
Self-sufficiency rate (2019)



# Efforts to keep supply of security

- LNG supply sources are diversified globally to avoid geopolitical risks such as depending too much on certain region and sea route.
- Industry and government are working closely to keep supply of security as well as to increase their presence in the LNG market.

LNG Import by Countries (2021)

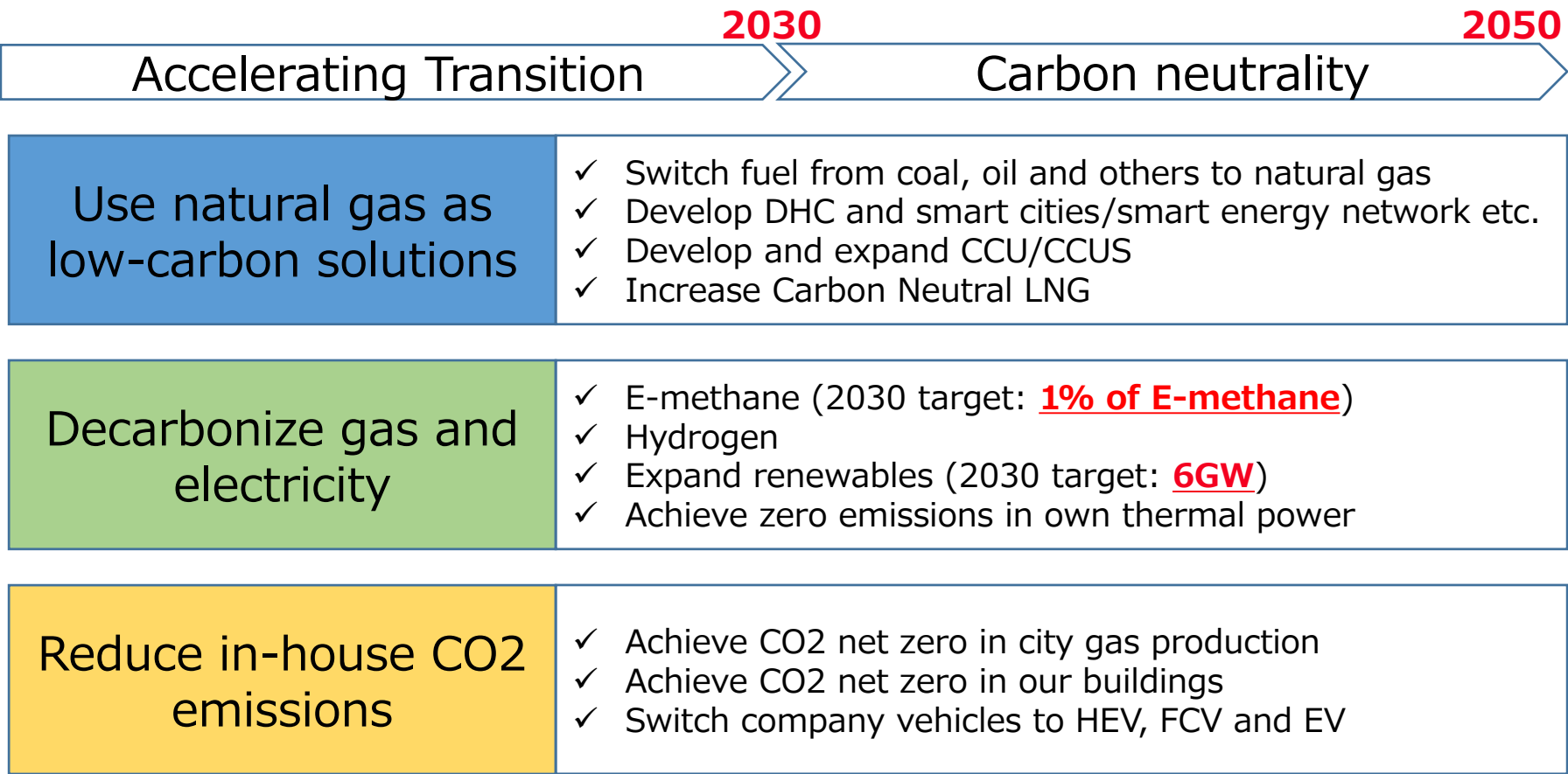


LNG Producer Consumer Conference



- In 2019, Tokyo Gas announced the new corporate vision for committing CO2 net zero by 2050.
- We have raised the target to reduce 17MT of CO2 by 2030 across all our business activities worldwide.

## Roadmap for CO2 net zero





# Accelerating natural gas to reduce CO2

- Lowering carbon footprint of heating demand is one of the major challenge in Japan as heating demand has the share of 60% in entire final energy consumption in industrial sector.
- Mostly the area where difficult to electrify in terms of technology and economic perspective, we believe natural gas will play an evitable role in transition period.

**Niihama LNG Terminal  
(Feb 2022)**



**Onahama Satellite Terminal  
(Jan 2016)**



**Shinjuku DHC Project (\*Large scale renewal project)  
(Oct 2018)**

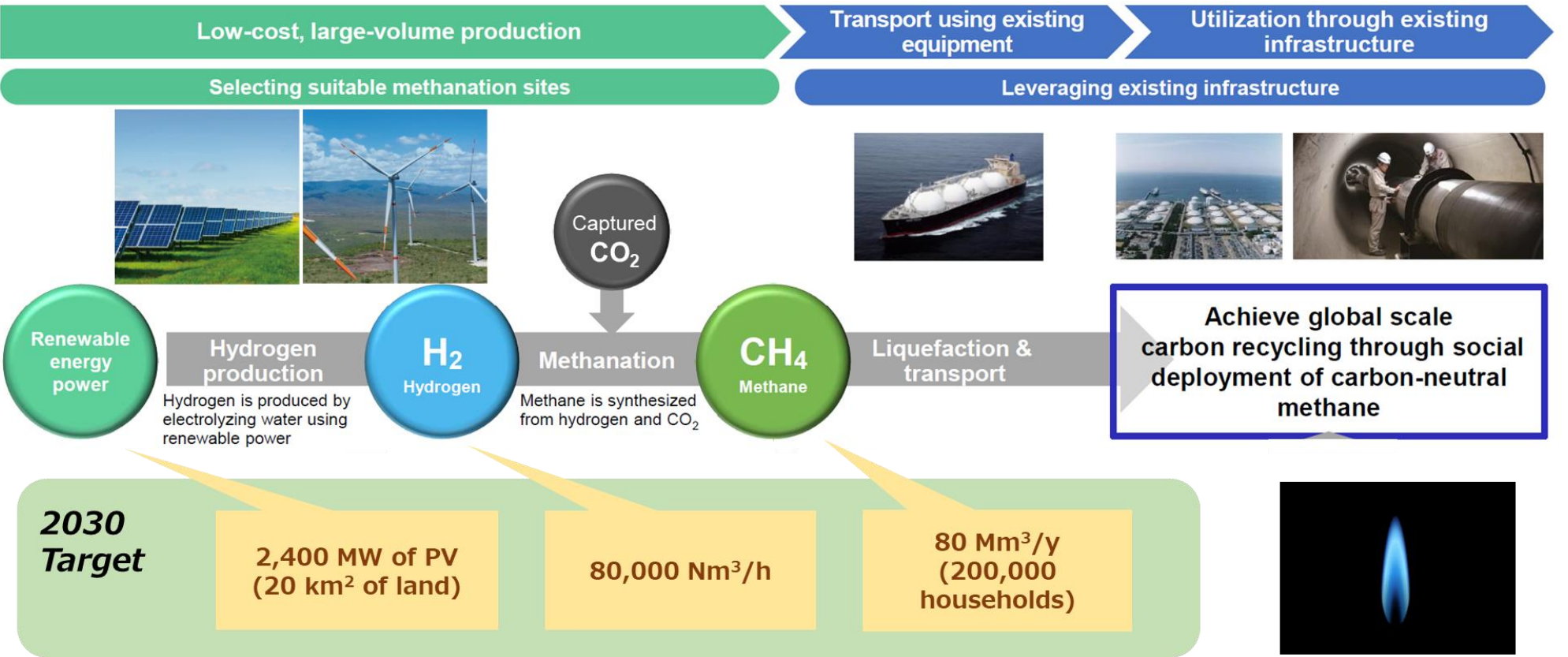


**Tamachi Smart Energy Network Project  
(Jul 2020)**



# Building E-methane value chain

- Tokyo Gas will challenge building an E-methane value chain through coordination with public sector and global companies.
- Our target is to supply 80 Mm<sup>3</sup>/y of E-methane to our customers by 2030.

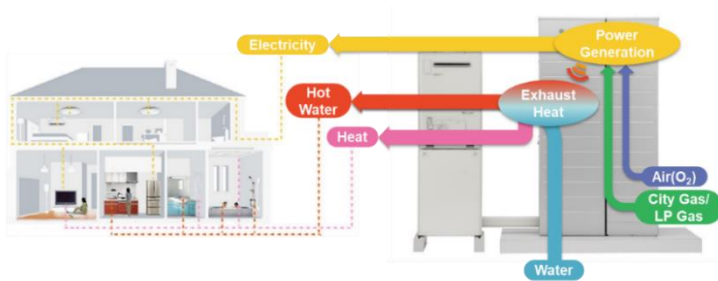




# Challenges to develop hydrogen business

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- Promoting overall hydrogen supply chain in Japan and overseas to expand the hydrogen business.
- As for the development of hydrogen supply chain, the use of hydrogen businesses are already in progress.
- We are also developing hydrogen production as well as building hydrogen network.



## Fuel cell

- ✓ Tokyo Gas has sold over 140,000 units of fuel cell system since 2009.
- ✓ Overall efficiency reaches 97%-LHV.

## Hydrogen refueling stations

- ✓ Tokyo Gas operates four hydrogen refueling stations.
- ✓ At the newest site, Toyosu Station, hydrogen is generated from the Carbon Neutral LNG supplied by Shell.

## Hydrogen town

- ✓ Tokyo Gas operate hydrogen pipeline connected to fuel cells at a hydrogen town, formerly the Olympic village.
- ✓ This is the first private sector project to supply hydrogen to a community in Japan.

- ✓ Energy market is in a complex situation with many events happening in a short period.
- ✓ It is important to configure diversified and best energy mix to secure supply of security as it will impact every industry beyond energy market.
- ✓ Natural gas and LNG will play a vital role in the current energy system and onward as it has abundant of reserves, cleanest among fossil fuel and suitable to complement the intermittency of power generated by renewables
- ✓ Every stakeholder in the energy value chain need to tackle with decarbonization challenges as net zero future will not go away.

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