Energy for a New Era

JERA's Challenge for the Future of its H_2 Business

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JERA's Profile

- ✓ JERA was founded in April 2015 by merging the fuel and thermal power generation sectors of TEPCO and CHUBU Electric Power. We now boast deep expertise in this field through its vertically integrated functions from upstream to downstream.

Upstream Development and Fuel Procurement

Gas liquefaction Base

Fuel Transportation and Trading

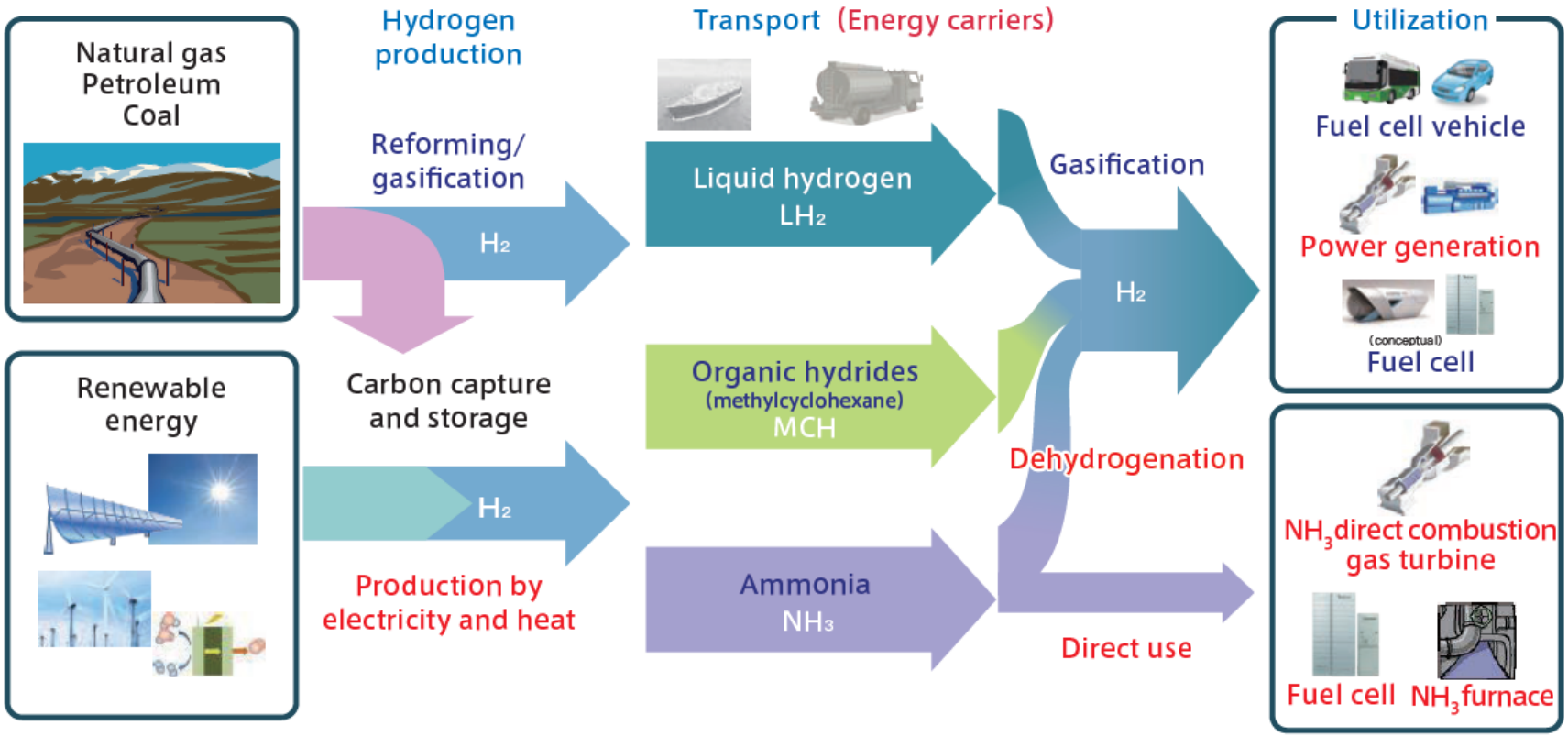
LNG Receiving and Storage Terminals

Domestic Power Generation

Overseas Power Generation
(including Renewables and Batteries)

JERA's objectives in Hydrogen Business

- ✓ While we currently focus on fuel and thermal power generation, we have also recently commenced research into hydrogen business in order to counteract global warming, diversify procurement energy sources and to develop new business opportunities.

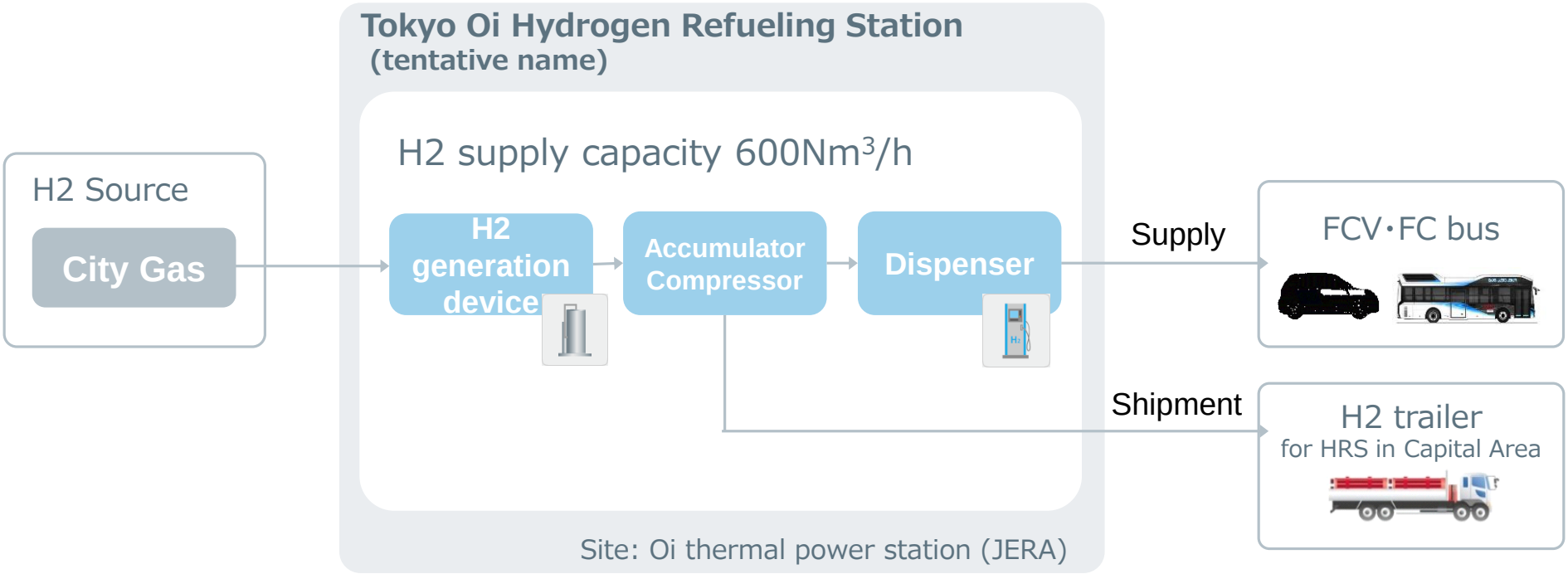


Source: Japan Science and Technology Agency

Market Prospects: Hydrogen for mobility fuel

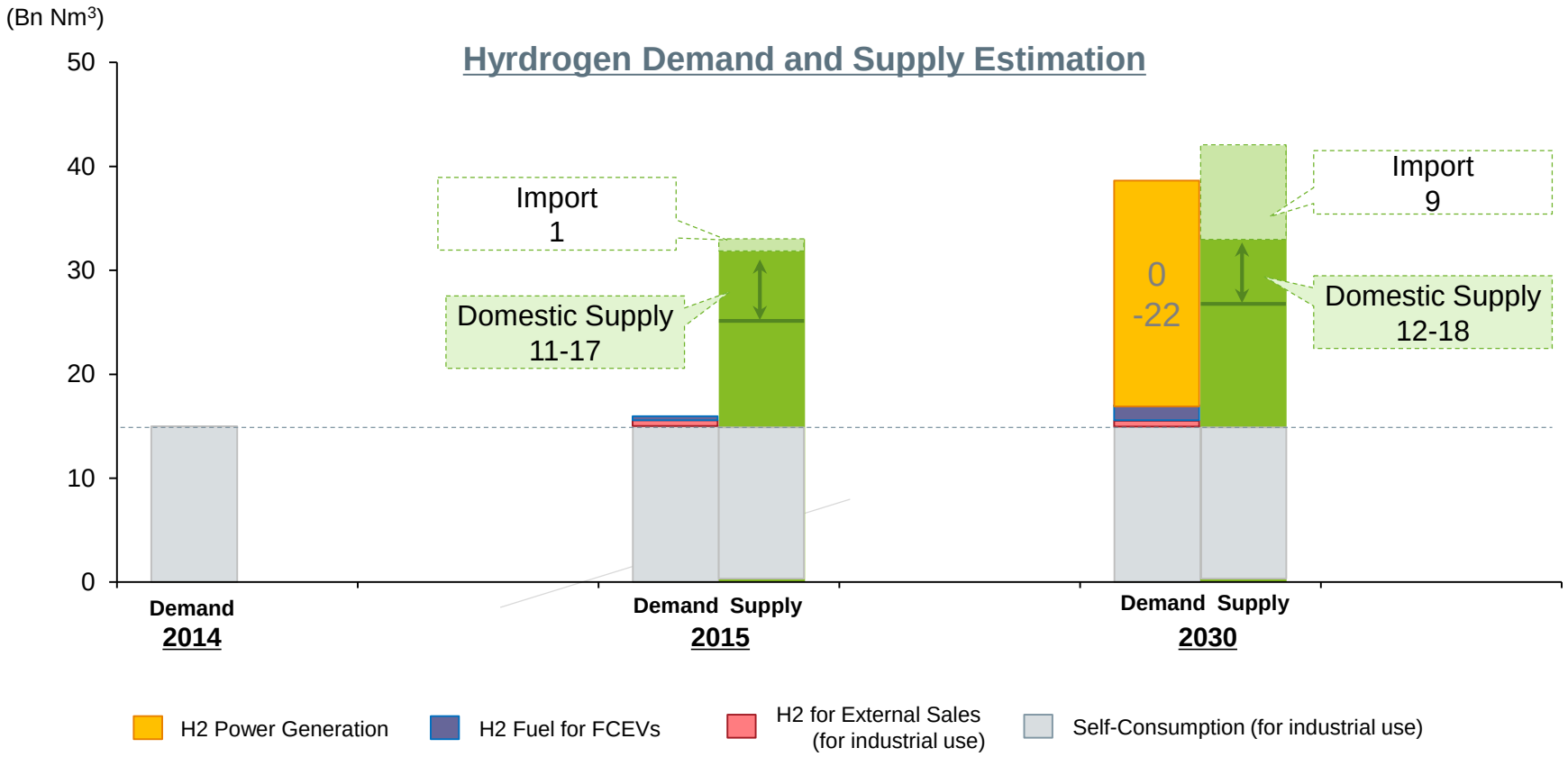
- ✓ In Japan, the hydrogen market is in the early stages, driven by the use of hydrogen for mobility fuel.
- ✓ JXTG Nippon Oil & Energy Corporation and JERA will jointly build Tokyo Oi Hydrogen Refueling Station, which is to start operation in 2020.

【Overview of Tokyo Oi Hydrogen Refueling Station 】



Market Prospects: Hydrogen for power generation

✓ The importance of global Hydrogen fuel supply chain network will be evident if hydrogen power generation is commercialized.

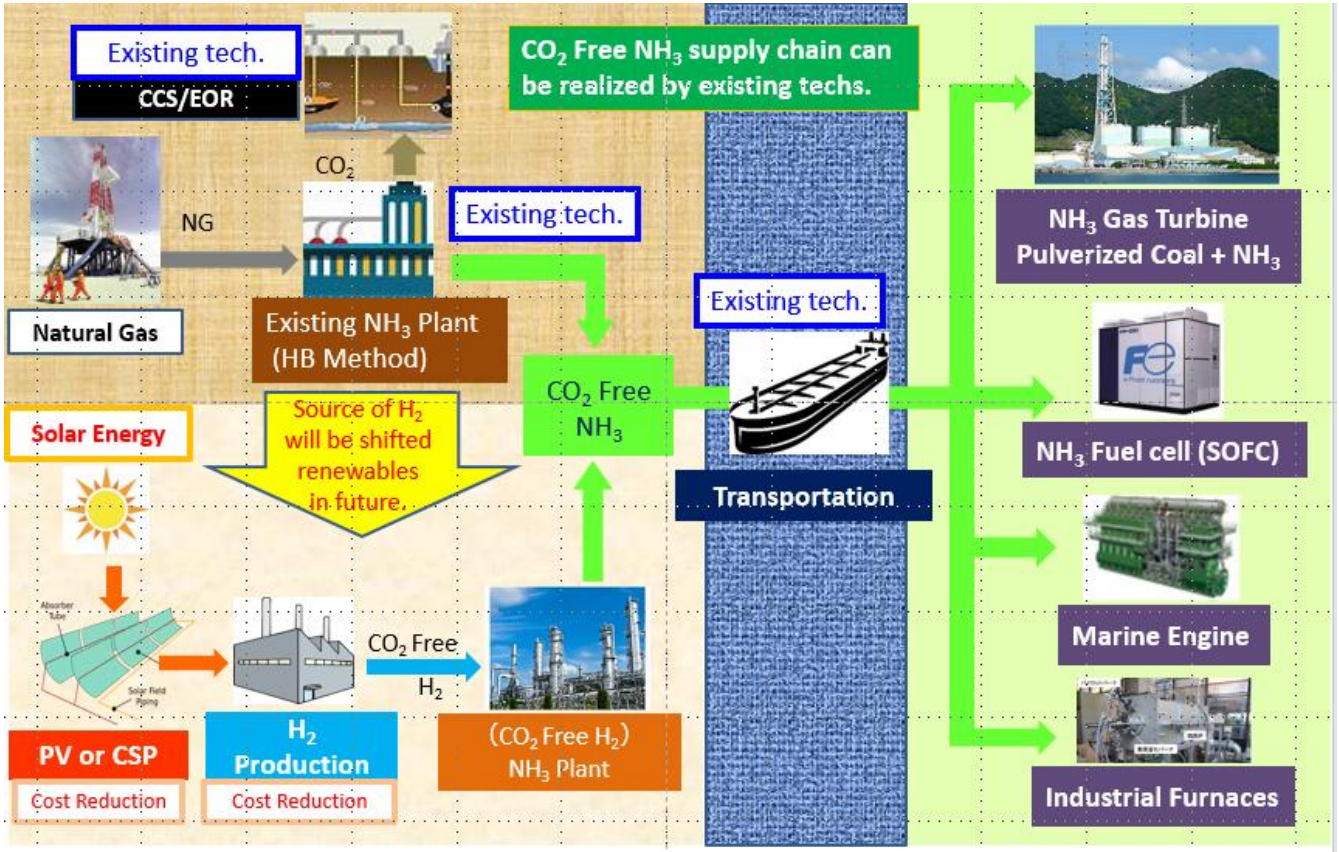


Source: New Energy and Industrial Technology Development Organization (graphed by JERA)

Market Prospects: Direct Use of Energy Carrier (1)

- ✓ Direct use of a hydrogen energy carrier is one option for hydrogen power generation. We consider that Ammonia may be relatively useful in thermal power plants.

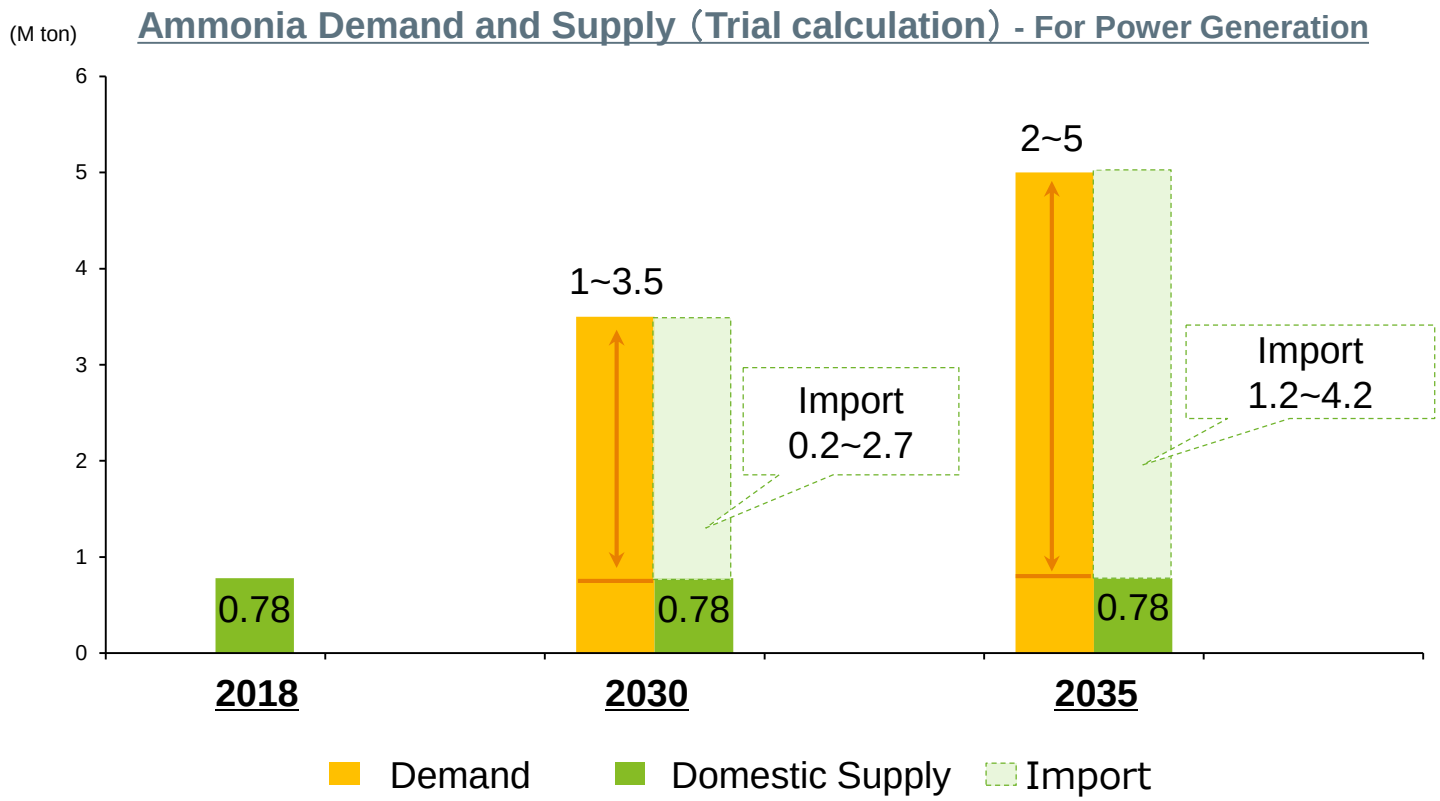
【Overview of CO2-free Ammonia Value Chain】



Source: Green Ammonia Consortium

Market Prospects: Direct Use of Energy Carrier (2)

- ✓ It may be necessary to import substantial quantities of ammonia, if ammonia power generation is implemented in Japan.

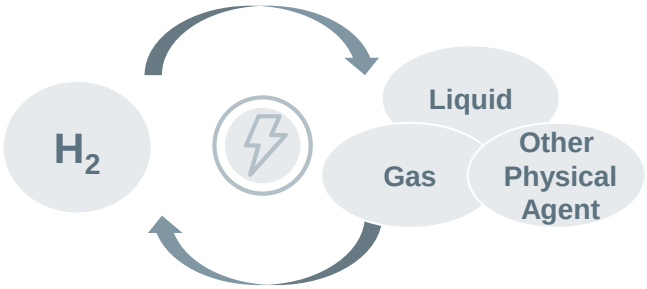


Source: Cabinet Office of Japan and The Institute of Energy Economics, Japan (summarized and graphed by JERA)

Challenges and Proposals

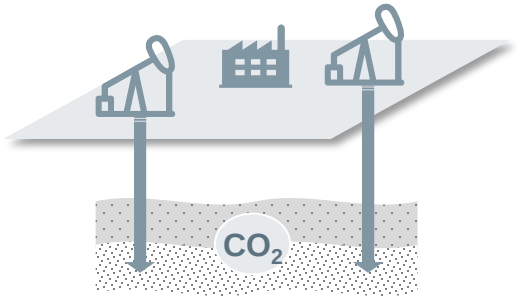
Energy Conversion

Inferior Efficiency to
Other Energy Sources



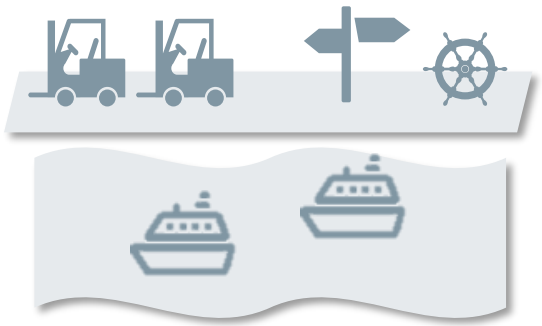
CO2 Storage and Utilization

Difficulties in Land Acquisition and
Room for Technological Improvement



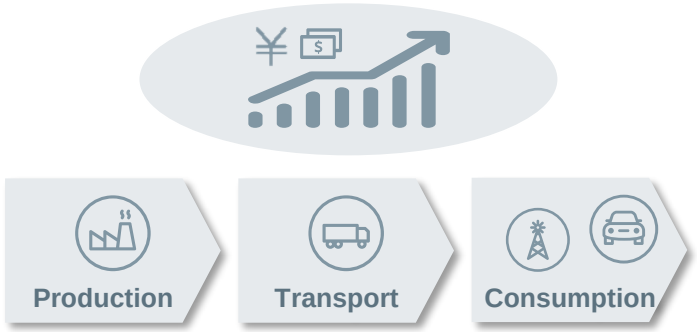
Import Infrastructure

Undeveloped Infrastructure
in Trading Ports



Energy Cost

High Cost Supply Chain



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[Disclaimer]
The numbers of energy demand and supply forecast expressed or implied in this presentation are quoted from existing researches or experimentally calculated based on those. Those are NOT JERA's business plan, view, outlook, etc.