Pragmatic Approaches for Clean Fuel Ammonia

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Shigeru Muraki

President, Clean Fuel Ammonia Association

Solution of Energy Trilemma by Fuel Ammonia

Environmental Sustainability

Clean Fuel Ammonia Supplies

Low Carbon Intensity

Direct Combustion Technologies

Energy Security

Diversified Supplies

with Blue & Green Ammonia Supplies

Geopolitics in Supply Chain

with Locations and Key Components & Materials

Economics

Low-Cost H_2 Carrier

with Established Supply Chain

Low-Cost C-free Energy for CN

Initiatives of leaders for clean ammonia supply chain

In April 2023, global leaders met to discuss various issues including ammonia at G7 held in Japan.

"G7 Climate, Energy and Environment Ministers' Communiqué" Sapporo, April 16, 2023]

Low-carbon and renewable hydrogen and its derivatives such as ammonia: We recognize low-carbon and renewable hydrogen and its derivatives such as ammonia should be developed and used where they are impactful as effective emission reduction tools to advance decarbonization across sectors and industries, notably in hard-to-abate sectors in industry and transportation.

We also note that some countries are exploring the use of low-carbon and renewable hydrogen and its derivatives in the power sector to work towards zero-emission thermal power generation if this can be aligned with a 1.5° C pathway and our collective goal for a fully or predominantly decarbonized power sector by 2035, ・・・・・・・・

We affirm the importance of developing international standards and certification including for a GHG calculation methodology for hydrogen production and mutual recognition mechanism for carbon intensity-based tradability, transparency, trustworthiness and sustainability.

(item no 67)

2023/5/19 19:18 MAINICHI PHOTOGRAPHY
https://mainichi.jp/graphs/20230519/mpj/00m/030/184000f/20230519mpj00m030180000p

Step-by-Step Approaches for Low CI

1st Step

Proposed certification in the Basic Hydrogen Strategy in Japan (June, 2023)

0.84-CO_2/t-NH_3 (“Gate-to-Gate” in NH_3 production)

CCS of CO_2 from SMR process with minimum additional costs to produce viable Clean Ammonia Supply for early penetration into energy market

Further Steps

〇Lower CI in production

- CO_2 recovery from flue gas by advanced low-cost system
- Switching fuel from natural gas to H_2
- Supply of green hydrogen
- New process such as ATR

〇Boundary Changes

- Well to Gate

  Establishment of methodologies to access CI in gas productions
- Well to Market

  C-free transportation by ammonia fueled carriers