

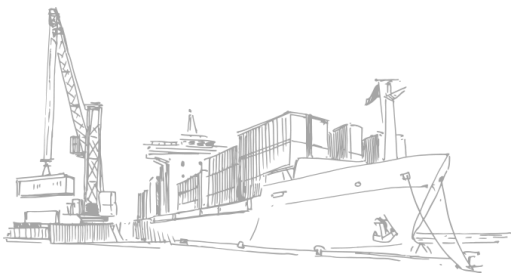
The Promotion of **Green** / **Blue** Ammonia as a Carbon Neutral Energy in Korea

2021. 8. 25





Brief History of LOTTE Fine Chemical



**The largest Asian Ammonia
& Urea manufacturer**

60~70's

- **1964** | Established as Korea Fertilizer Co.
- 1967 | Nationalized
- 1976 | IPO

**Diversifying products &
Expanding to Specialties**

80~90's

- 1980 | Methylamine(MA), Dimethylformamide(DMF)
- 1994 | Reacquired by Samsung group Samsung Fine Chemical
- 1994 | Launching Cellulose-ether biz (MECELLOSE®)
- 1995 | Semiconductor Developer (TMAC, TMAH)
- 1999 | Epichlorohydrin(ECH)

**Enhancing Specialties &
Strengthening Competitiveness**

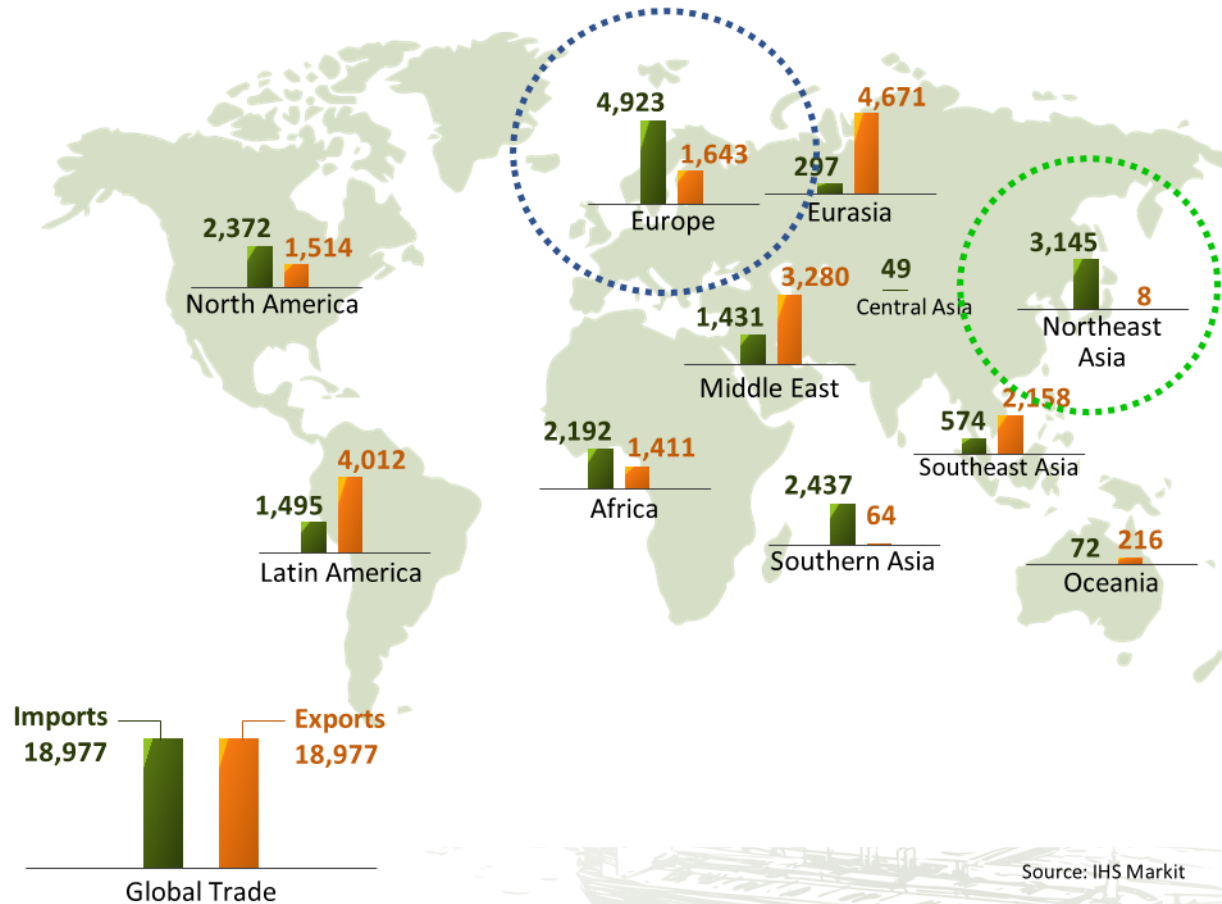
00~20's

- 2000 | Pharmaceutical capsule & coating material (AnyCoat®)
- 2008 | Launching EUROX®
- 2010 | Paper strengthening agent (PTAC)
- 2010 | Chemical toner for Printer
- 2011 | Additives for Health cares (HECELLOSE®)
- 2016 | Acquired by LOTTE group LOTTE Fine Chemical
- **2021** | Promoting the Green/Blue NH₃ as a Carbon-neutral Energy

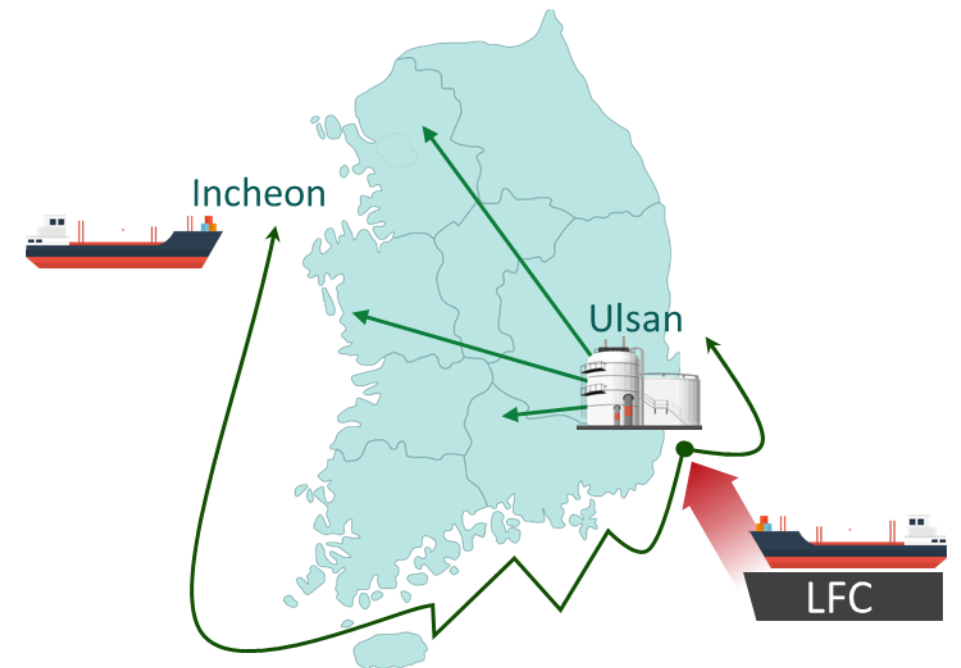


Global Ammonia Trades & LFC's Business

Global Trade Outlook (2020, KT)



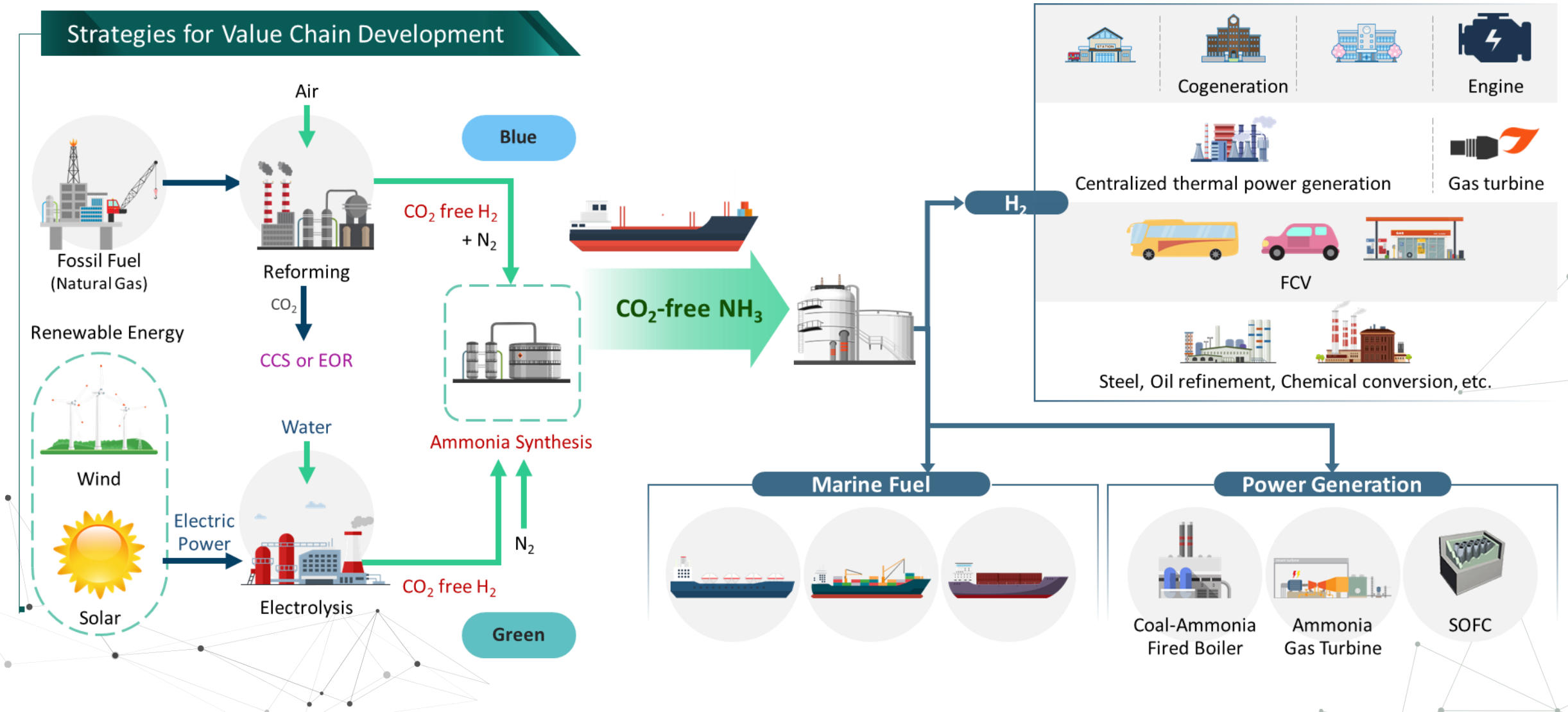
Domestic Supplying



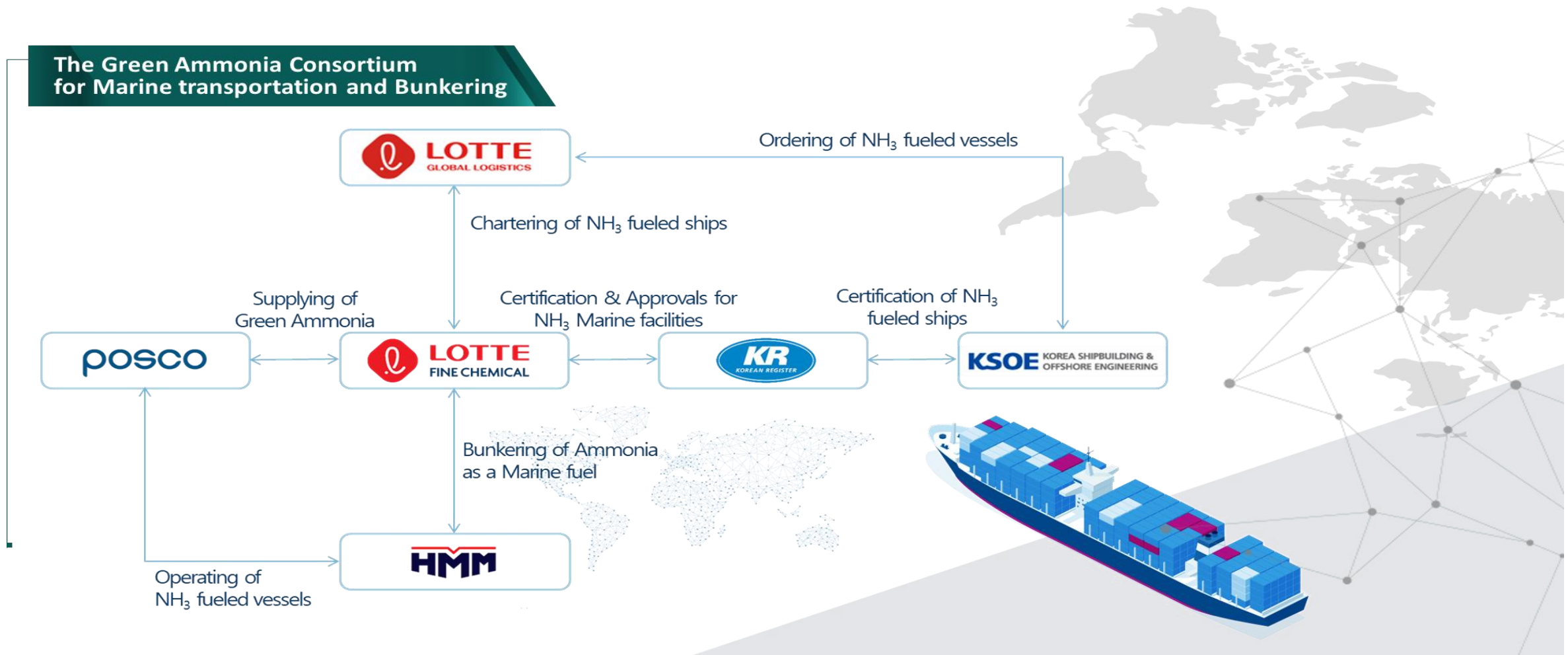
- Storage Capacity: 93KT
- Handling Volume : 60 ~ 70% of 1,400KT

Green/Blue Ammonia Business in Korea

Strategies for Value Chain Development



Green/Blue Ammonia in Korea : Bunkering



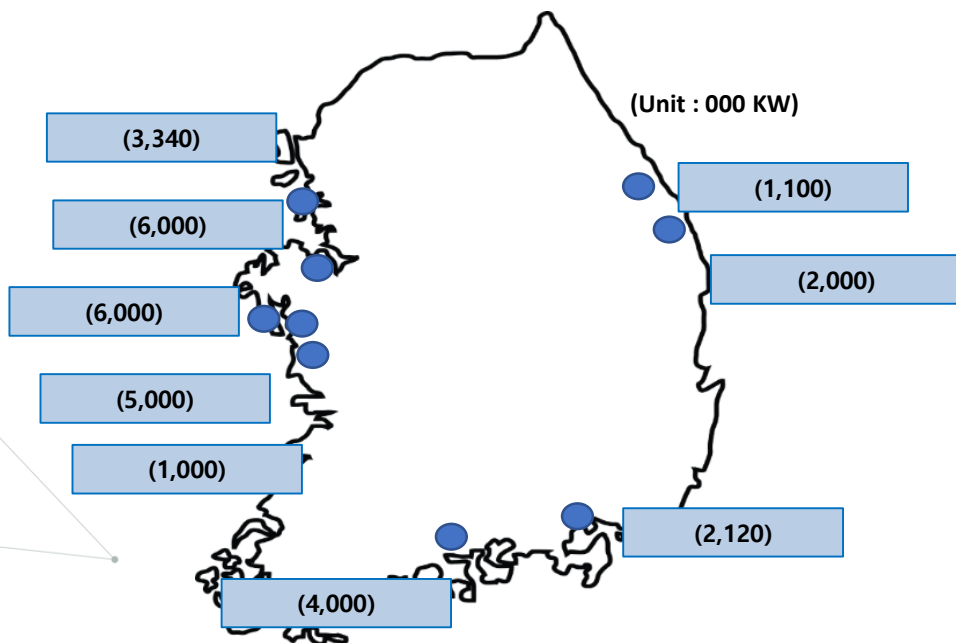
Korea has geographical advantages for bunkering having competitive port infrastructure

- Busan port is today Top 6 bunkering port in the world and the port has only 50km distance from Ulsan where the Lotte ammonia terminal locates.



Green/Blue Ammonia in Korea : Power Plants(Co-Firing)

- Huge potential market in the Korean power plant industry for ammonia



Source : Kepco E&C

- Current coal power plants capacity in Korea is 3.5mil kW
- Considering 20% Co-Firing with ammonia, the ammonia demand will be about 17mil MT per year

- Non-Carbon(Ammonia/Hydrogen) fuel will be supported by the Korean government with policy aid following the carbon neutral scenario draft released by the 'carbon neutral council' in 5th Aug.



Green/Blue Ammonia in Korea : Ammonia Cracking /H₂ Carrier

□ The Green Ammonia consortium was launched in July by KIER

- 5 government-sponsored research institutes and 13 companies joined into the consortium including Lotte Fine Chemical
- The consortium will cooperate to develop technologies concerning the entire cycle of green ammonia that includes production, transportation, storage, extraction and use
- The movement shows that extracting from green ammonia will be the main way to obtain green hydrogen in Korea

