

How are the shipping and chartering model changing for small to mid-scale floating LNG import projects?

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Fearnley LNG | www.fearnleys.com | An Astrup Fearnley Company

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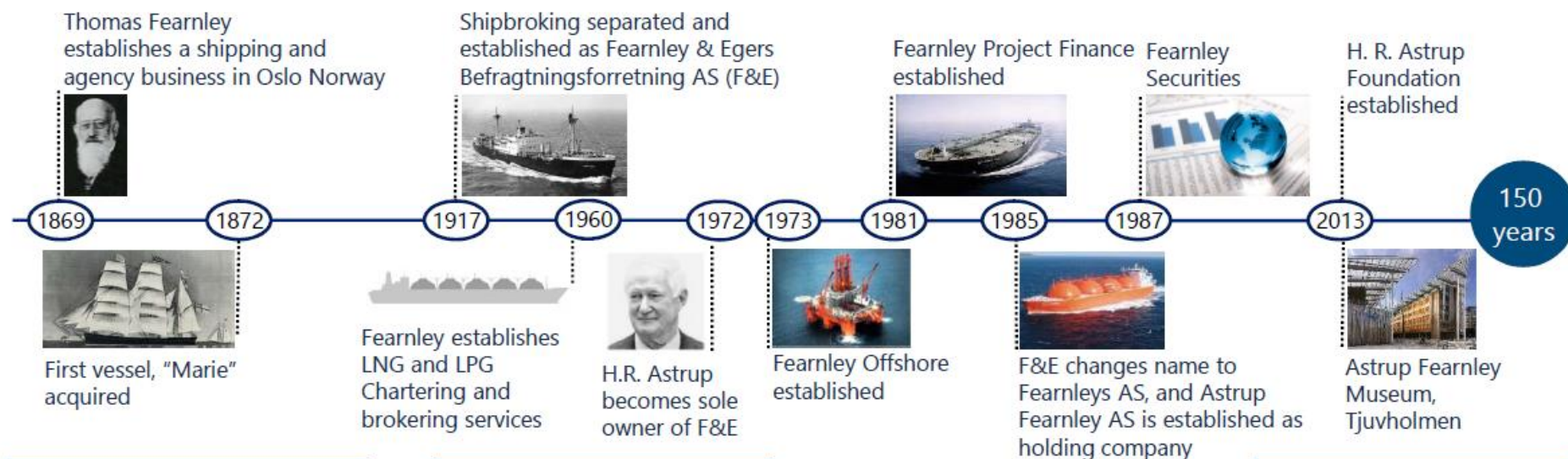


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Fearnley LNG – Company Overview



- **380+ employees in the Astrup Fearnley Group.** Fearnleys is one of the largest international ship broking companies in the market today.
- **Company dates back to 1869.** Fearnleys has been a leading full service ship brokerage house for decades and has 150 years of shipping experience.
- **LNG Involvement since early 1970's.** Fearnleys contracted and chartered some of the first purpose built LNG carriers, built at the Moss/Rosenberg yard in Norway and delivered in 1973-76.
- **Extensive LNG Shipping Services.** Fearnley LNG is active in: Vessel Contracting, Chartering, Sale & Purchase, Ship Financing and LNG Advisory & Consulting.





- Fearnleys is a **leading broker on the LNG & FSRU segment**
 - Fearnleys are and have been involved in **FSRU tendering**, design developments, project development and FSRU contracting
 - Fearnleys have an extensive track record including **yard & FSRU contract negotiations** and project development
 - Fearnleys have mainly acted as project developers **Commercial Advisor** in FSRU tenders and have been doing so for several projects run by state and private owned entities
- Fearnley LNG works closely with all companies offering FSRU solutions in the market. Our activities include, but are not limited to:
 - Working closely with existing & new projects to promote their FSRU/FSU projects
 - Placed more than 10 newbuilding contracts with shipyards for new FSRUs
 - Chartered/sold existing LNG vessels to new terminal developers
 - Working on new floating terminal projects incl. India/Thailand/Indonesia/Myanmar/China
 - Acted as advisor to Chinese state Oil Major to assist in implementation of their FSRU & FSU terminal in Tianjin
 - Advised a close client on a FSRU project in Mediterranean
 - Advised a close client on a FSRU project in Baltic Sea now sanctioned with vessel under construction
 - Advised a close client on a large scale FSRU in South East Asia.
 - Advised a close client for FSU projects in Indonesia & Panama
 - Advising South African Government on multiple FSRU and LNG commercial aspects in South Africa





Oslo, Norway

Astrup Fearnley Museet is a private museum of contemporary art and has since its opening in 1993 been one of the most important art institutions in Oslo. It is beautifully located in a building designed by world-renowned architect Renzo Piano.

The museum shows changing exhibitions by leading international and Norwegian contemporary art and houses the Astrup Fearnley Collection. The collection is one of Norway's most important and extensive private art collections, with iconic works by artists like Damien Hirst, Anselm Kiefer and Jeff Koons.



How are the shipping and chartering model changing for small to mid-scale floating LNG projects?

➤ WHAT?

In this presentation, we are talking about IMPORT PROJECTS:

- upto 150,000 cbm of storage
- 0,4-1,0 mtpa in demand
- 300-600 MW in demand

➤ Existing Examples:

- Malta FSU
- Melaka FSU
- Jamaica FSU
- Bali FRU + FSU

➤ WHY?

- LNG is Available &.....
- Gas Prices are COMPETITIVE!

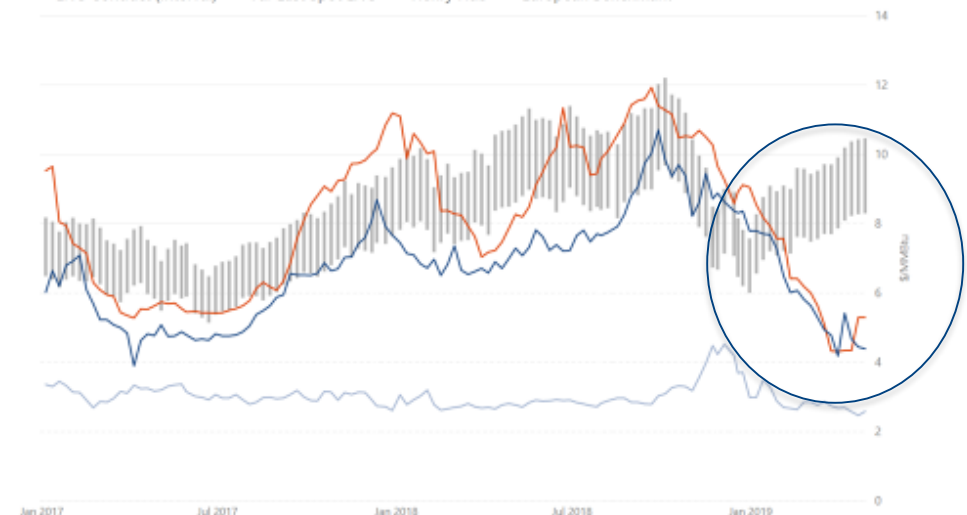
➤ WHERE?

- All over the world!

LNG oversupply and Asian balance killing the arb

Gas Prices

• LNG Contract (Interval) • Far East Spot LNG — Henry Hub — European Benchmark

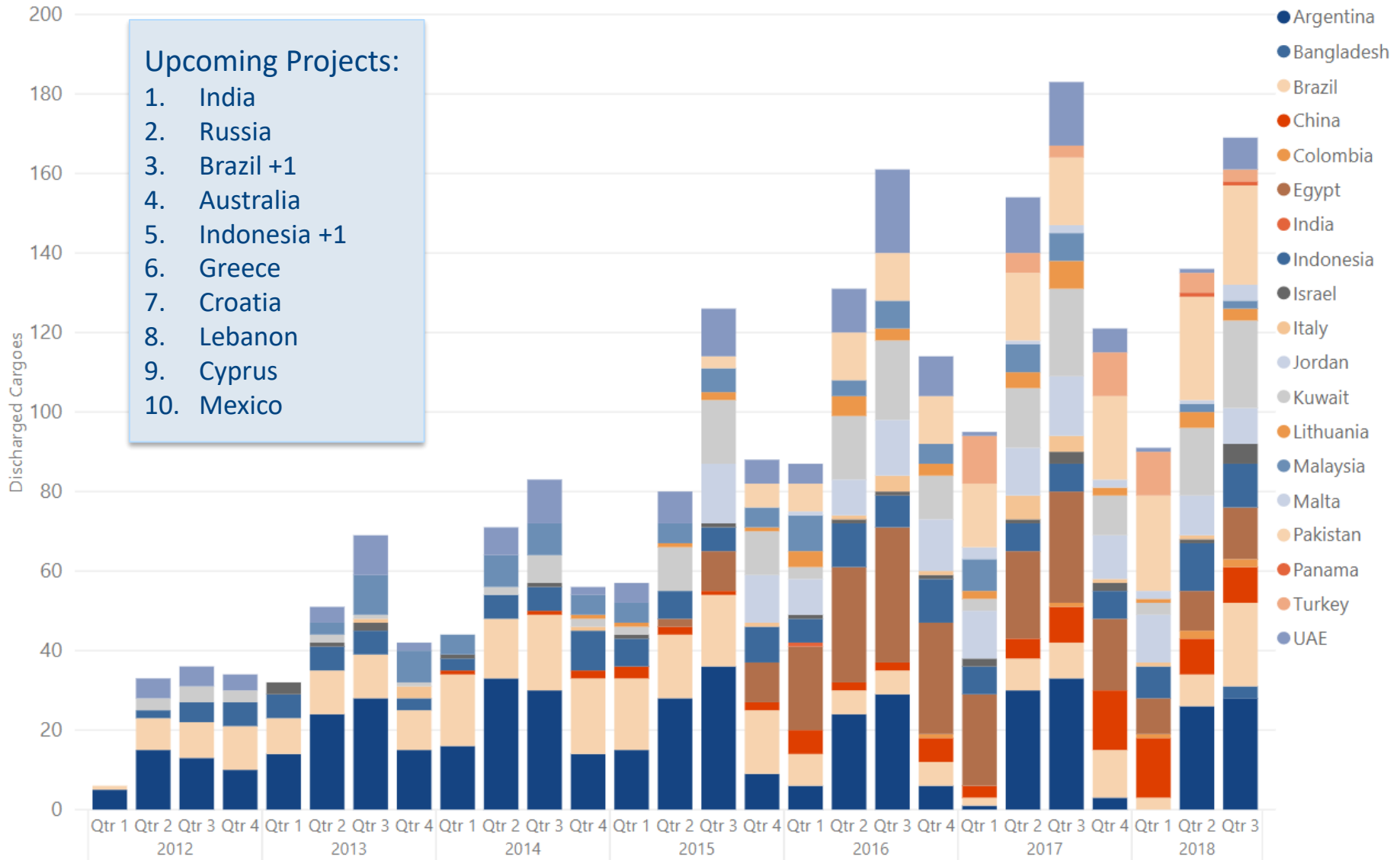


Sources: Fearnleys, Bloomberg
Note: LNG Contract band based on Brent 3 month average.

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Today's Floating LNG Import Projects and Usage

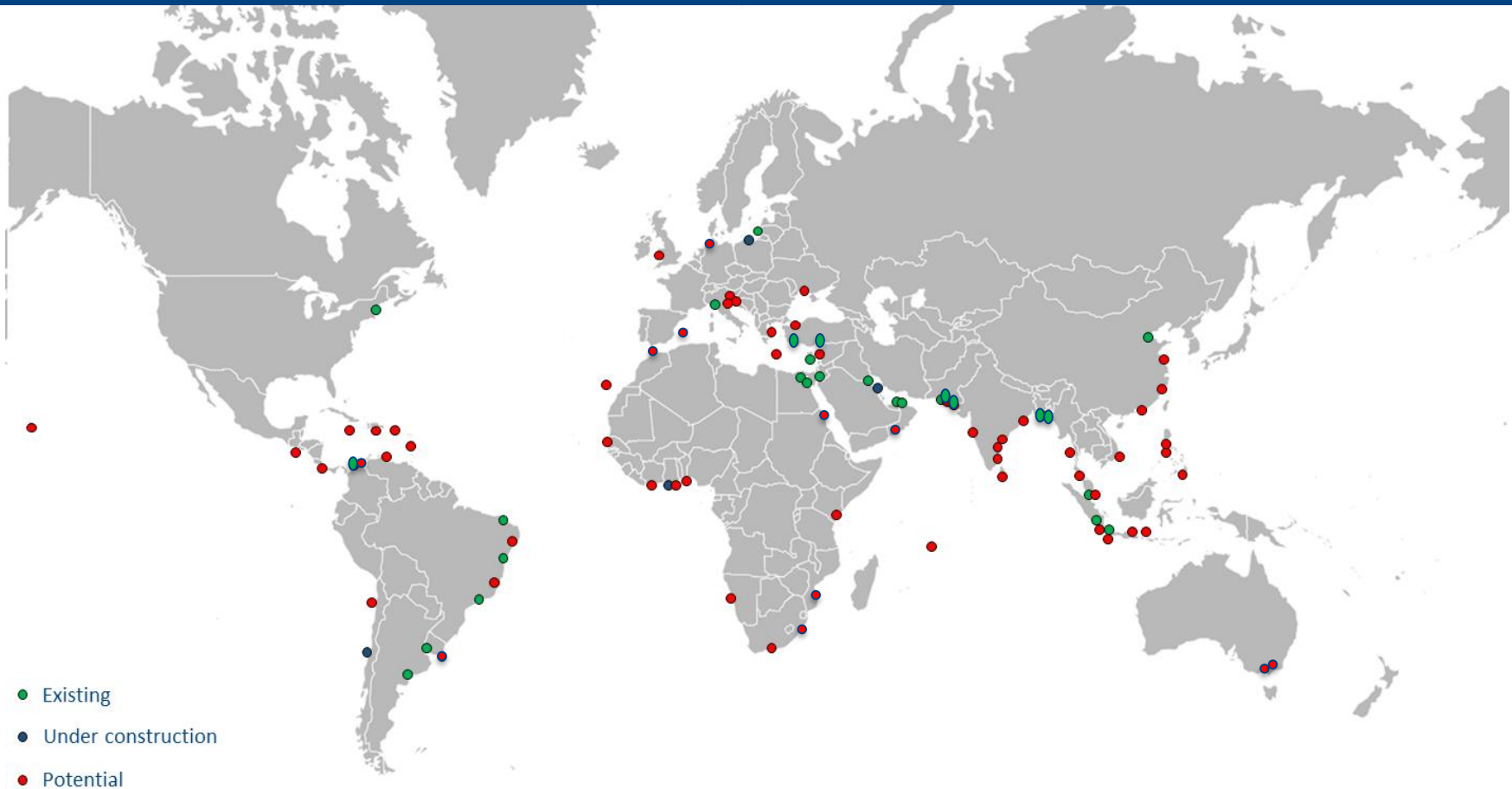
Floating LNG Discharges



FSRU Projects

Commonly said that there are always 40+ potential import projects around the world

Floating Import Projects Around the World



In recent months, Fearnley have been contacted by many typically price sensitive markets as the price competitiveness of LNG are recognized, but also as LNG as fuel is in focus with IMO 2020 and ports need to position themselves with availability of LNG as fuel!

The Gas Station Case

- The import terminal model is changing, giving changes to which companies promote the facility
- The shipping or import strategy is also changing with suppliers interested in securing outlet for their LNG
- Security of supply or availability of LNG as fuel may also play a role for attracting business to the location that may otherwise be lost to locations with such services

From selling Gasoline.....

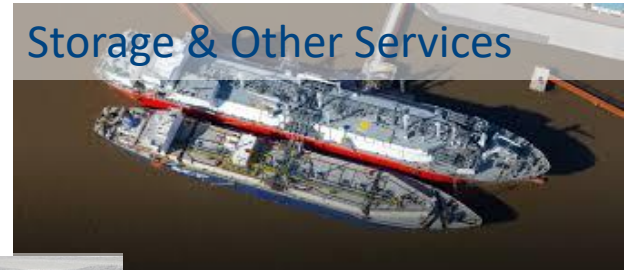


....to selling «Services»



Rethinking the use of LNG Import Terminals

FSRUs as LNG hub's



- How are project owners developing the project structures?
 - Mix of separate project finance based structures & part of existing infrastructure & port development
- What role are ship owners and charters playing?
 - Ship owners need to adapt to a more Business Development / project risk environment – securing a fixed rate of return for a fixed period may not work as charterers or end users ability to pay often are weak at start, but increase over time. This means more project risk for owners and clearly different risks compared to being a traditional “shipowner”
- Future trends for charters
 - Charterers may not be the large IOCs or utilities, but entrepreneurs, traders or owners/operators of ports or smaller utilities with a captured market (islands), but seeing the potential locally and regionally in LNG as fuel, LNG to power, LNG for distribution, etc.
 - We will see requests for shorter charter durations with options, more flexible payment terms, requests to perform multiple tasks and more project based finance
- Ship conversion to FLNG to balance demand and supply?
 - Will develop as the 1990s and early 2000 built steam driven LNG carriers are phased out from the trading fleet – cost is still an issue, but cost to do FSU only is significantly less than FSRU
 - As the LNG itself is the interest for many projects, the “regas onboard”

How are the shipping and chartering model changing for small to mid-scale floating LNG import projects?

Servicing smaller niche markets – how will this evolve?

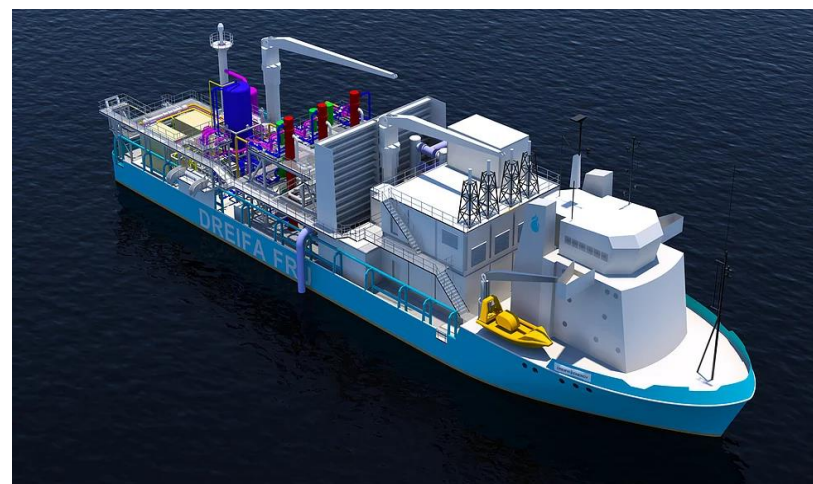
- Will need to get the whole infrastructure cost down
- Will need smaller vessels to serve both imports and break-bulk/distribution competitively
- Will also be driven by environmental focus
- IMO 2020 will give a new market for LNG as fuel to the maritime industry, but LNG may also make inroads in the onshore transportation fuel markets

- Will need new cost cutting ideas!

Cost reduction in the supply chain Example: ShipInox



Cost reduction in terminal operations Example: DREIFA



How are the shipping and chartering model changing for small to mid-scale floating LNG import projects?

- Cost for servicing small to mid scale floating import projects is today the largest challenge.
- Can we learn from other Industries? – how will this evolve?

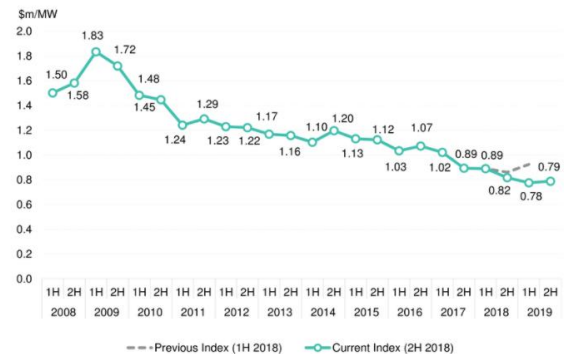
- Since in Holland development?



- What about Wind Power Cost

- Wind turbine CAPEX are down 55% in 10 y
- Its overall efficiency has also increased
- It used to be owned/operated locally, but is now being bought up by larger funds and energy companies

Turbine price by delivery date



Source: BloombergNEF

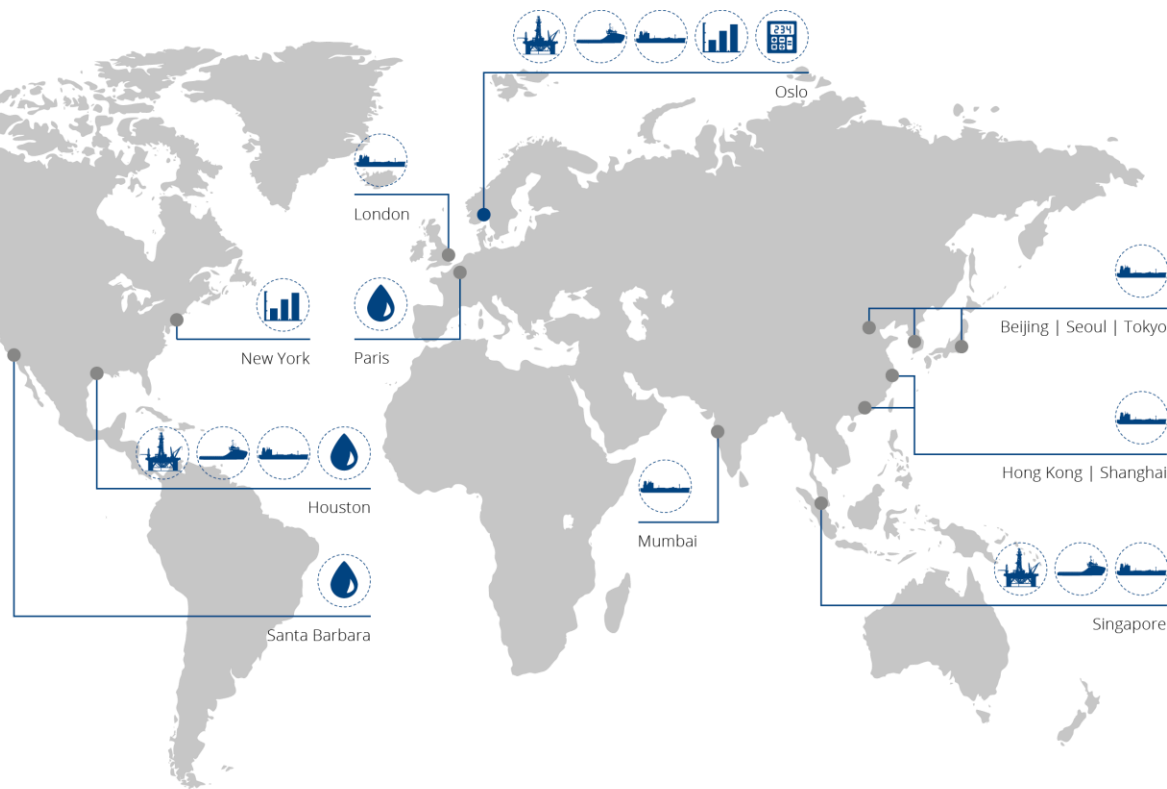
Conclusion

- Increased requirements for small to medium sized LNG receiving systems
- Players will be different; Entrepreneurs, Port Operators, Traders & Bunker Suppliers will develop LNG import terminals
- We move into “retail” so Import Terminals become like “petrol stations” making revenues on usage of LNG as Fuel, city gas, trucking, power & peak-shaving.
- Each project have its challenges, but in addition to local permits and licenses; cost is often number one, requiring new structures and finance solutions!



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New FSRU Owners

Traditional LNGC Owners still in the game to be asset owners – more pragmatic?

Terminal Service Optimisation is the key word

FSRUs by Main Owner

● Live ● Order

