



---

## ICS Professional Talk: LNG Commercial Operations

**Christopher Wan, MICS**

# SAFETY FIRST

## PLEASE REVIEW THE FOLLOWING FOR YOUR LOCATION



Do not take this call while driving, even when using a headset or hands-free



Please ensure that discussions are not overheard



Know the name of the building, room and floor number



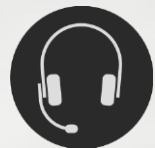
Phone number for emergency (often separate internal or external depending on seriousness)



Be familiar with sound of the fire alarm



Location of nearest fire alarm, fire extinguisher, emergency exits and muster points



When using a headset, ensure you are still able to hear the fire alarm



Location of first aid kit and/or first aider



# Contents

1. Introduction
2. What is LNG and how is it used?
3. Development of the LNG industry
4. LNG Operations and what we do
5. Skills and competencies of a Commercial Operator
6. LNG trading from a commercial lens
7. Energy Transition and the role of LNG
8. Q&A/Networking



# 1. Introduction

NOT FOR DISTRIBUTION

# About me



## Profile:



**Christopher Wan, MICS**

Team Lead, LNG Commercial Cargo Operations  
Shell Eastern Trading (Pte) Ltd.



Singapore



+65 9728 8275



christopher.wan@shell.com



## Professional

- 10 years of LNG experience; across Finance and Commercial Operations
- Started career in London with Gazprom (SEFE) before joining Shell in 2014
- Career highlights include:
  - Building a team capable of running substantial LNG portfolio
  - Risk managed the Repsol acquisition 2014 and Shell/BG Group merger 2016
  - Commercial operations start-up of Shell equity LNG infrastructure projects
  - Navigating crisis management events to safely lift and deliver LNG
  - Operational execution of industry millstones



## Personal

- Originally from the UK, relocated to Singapore in 2014
- Academics: Geography graduate from the University of Birmingham, UK
- ICS membership since 2022
- Avid outdoor enthusiast: trail running, cycling, football



## **2. What is LNG and how is it used?**

NOT FOR DISTRIBUTION



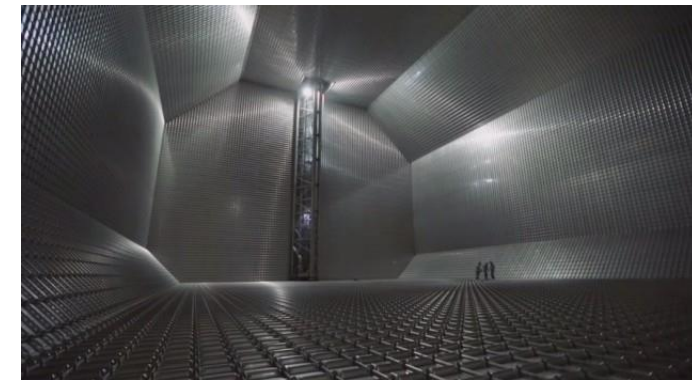
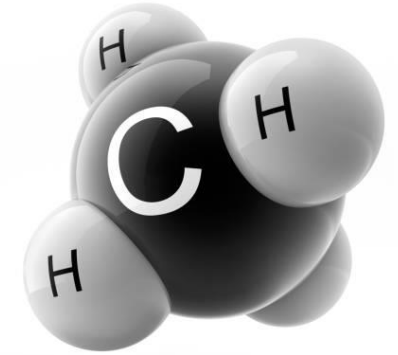
# Properties of LNG

## LNG at a glance

- **Properties:** mix of hydrocarbons, predominately methane and ethane.
- **LNG:** natural gas is extracted, processed and liquified by reducing temperature to -162 degrees Celsius (1/600<sup>th</sup>) of original volume.
- **Transport:** state of the art maritime technology, enables shipping over long distances.
- **Infrastructure:** LNG was traditionally competitive in geographical regions without interconnected gas pipeline infrastructure...this is now changing.

## Characteristics of LNG

- LNG composition will change through time – known as cargo weathering
- Evaporation: the physical quantity differences between load and discharge – boil off gas (BOG)
- Stringent LNG storage conditions. Managed in cryogenic tanks
- Tank management: in-transit sloshing and rollover considerations
- LNG as a marine fuel can achieve ~23% less GHG emissions compared to oil based marine fuels
- LNG unit of measure is referenced in both mass and energy value with the calorific value driving the value of the commodity



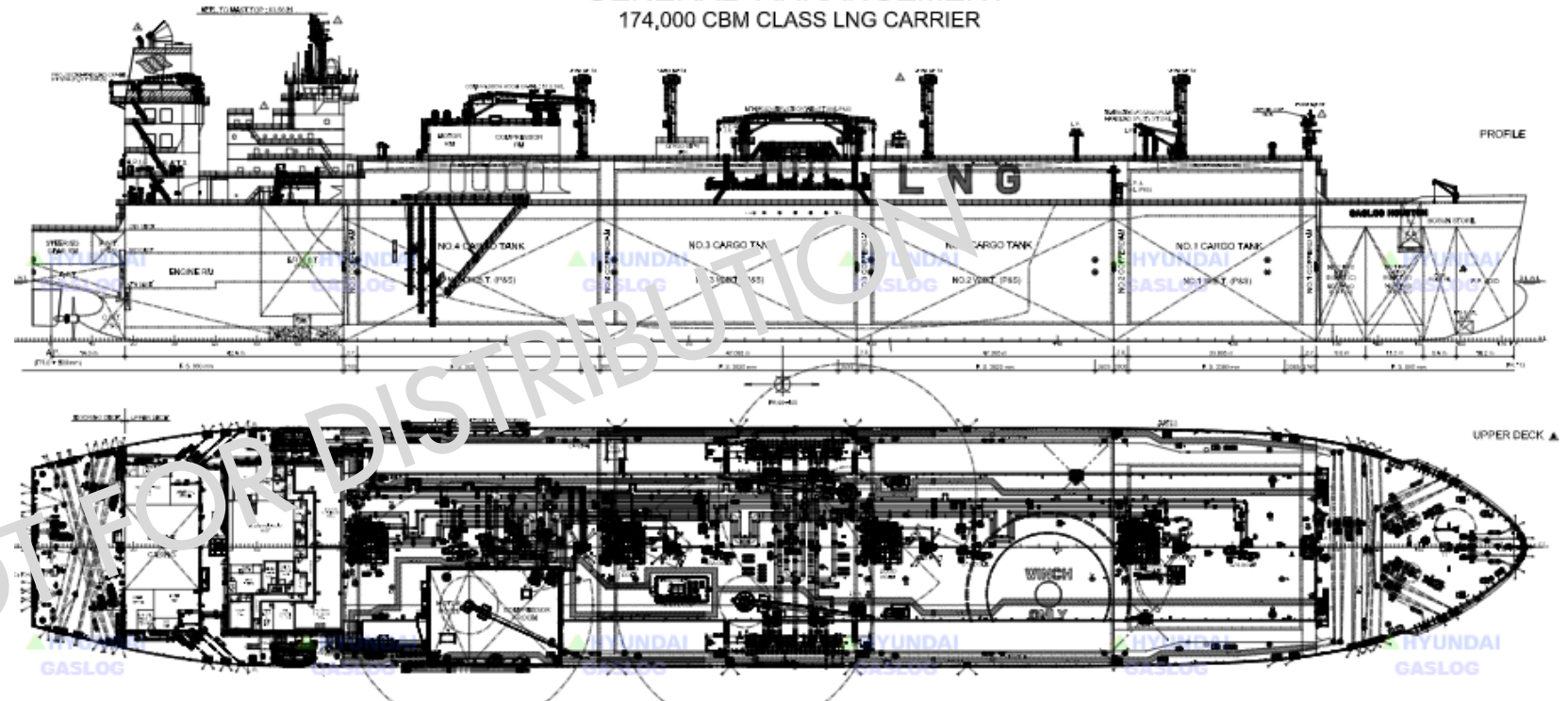


# LNG Vessels

## Typical Ship Specifications:

- Length Overall: 289m
- Beam: 46m
- Draft: 12.6m
- Height overall: 54m
- Light ship: 35k tonnes
- Cargo tanks: 4 segregated tanks
- Tank capacity: 150-266k m<sup>3</sup>
- Filling rate: 12,000 m<sup>3</sup>/h
- Boil off rate: up to 0.1% per day
- Speed: 19.5 knots
- Cryogenic LNG containment system.
- Fuel system: Dual fuel (LSMGO, LNG)

GENERAL ARRANGEMENT  
174,000 CBM CLASS LNG CARRIER





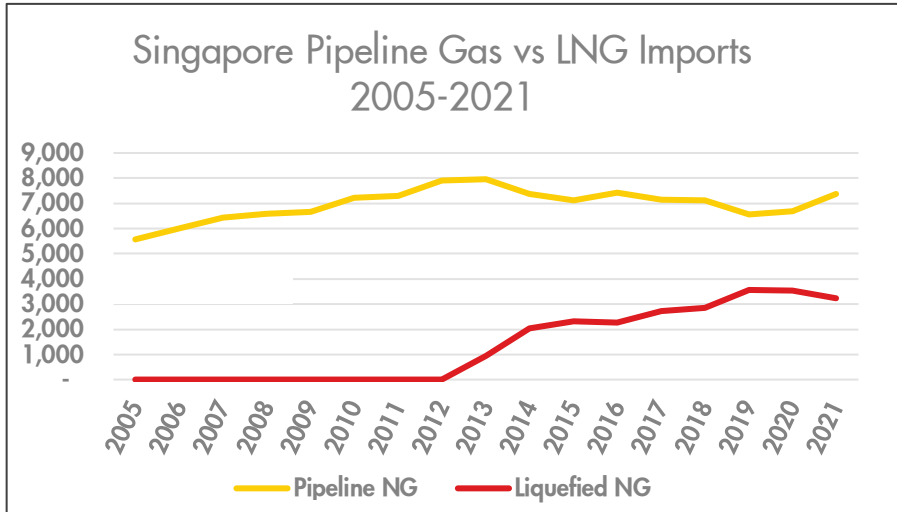
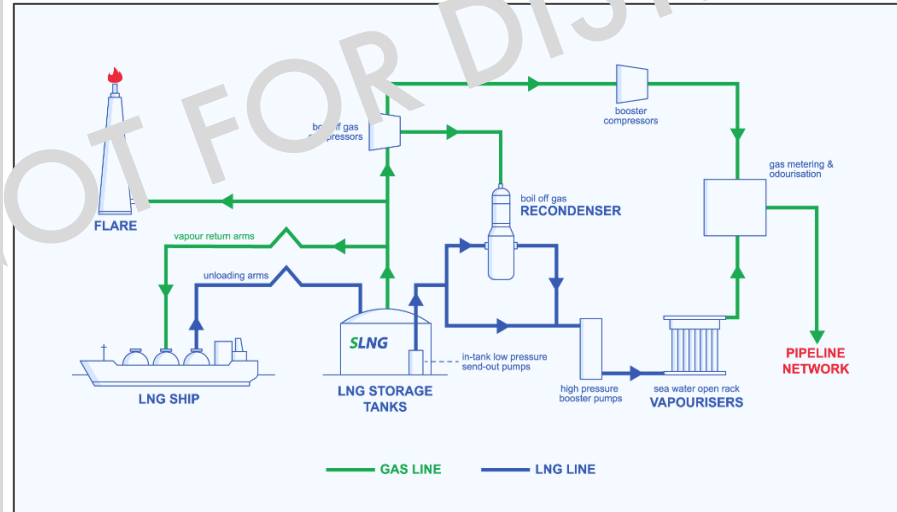
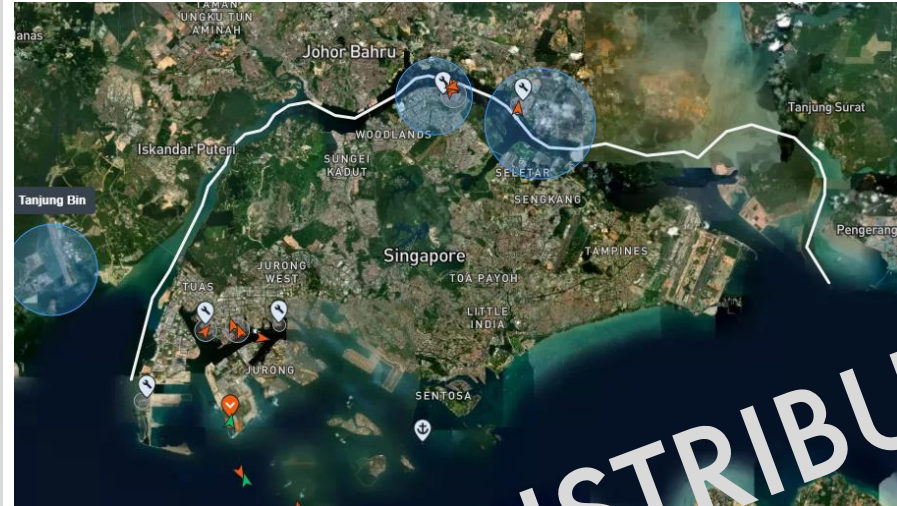
NOT FOR DISTRIBUTION

*Maran Gas Olympias  
Drydock Sep 2022,  
Singapore*



# LNG in Singapore

- **Singapore's energy mix:** 95% of electricity is generated using natural gas where up to 30% is imported as LNG.
- **SLNG Terminal:** Singapore LNG terminal commenced operations in 2013. 40 hectare site, 2 jetties with 3 tanks (180-260k m3) allowing send out capacity of ~11 mtpa/~150 cargoes per year.
- **Energy diversification:** Established Singapore as not only a LNG trading hub but to diversify reliance on pipeline gas.



Source: EMA, SLNG, Kpler



### **3. Development of the LNG industry**

NOT FOR DISTRIBUTION

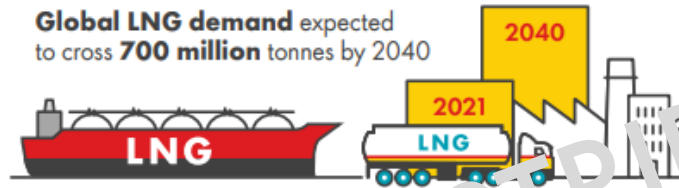


# Global LNG growth trends

## At a glance:

- Worlds **largest producers** are include: Qatar, Australia and US.
- World **largest consumers** include: China, Japan and South Korea.
- Market liberalisation** continues to open up new market opportunities.
- Use of LNG includes power generation (gas fired power plants), city gas and marine bunker fuel.
- Energy mix transition** where many countries have committed to emissions targets. LNG to play a key role.
- LNG Sources** are both onshore and offshore.

Natural gas plays a significant role in the progressing net-zero emissions ambitions

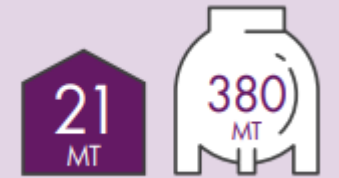


Asia is expected to absorb nearly 70% of LNG demand growth through to 2040 ~70%



Energy systems remain fragile and sensitive to a multitude of external factors

Global LNG trade hits 380 million tonnes, an increase of 21 million tonnes compared to 2020



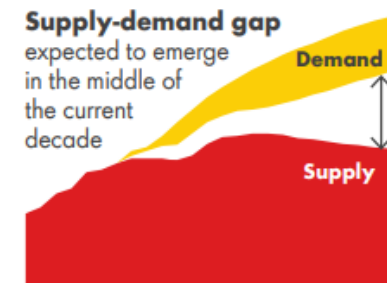
Energy security, emissions and economic growth in Asia to drive the future of LNG demand

India and China set 2030 emissions targets

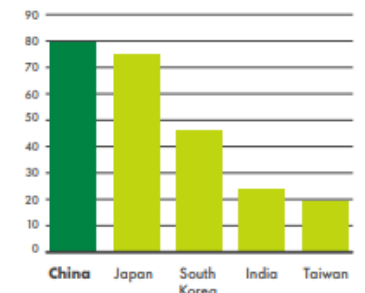


Global LNG market expected to be **tight in the near term**

**Supply-demand gap** expected to emerge in the middle of the current decade



China becomes the world's top LNG importer, with 79 million tonnes in 2021

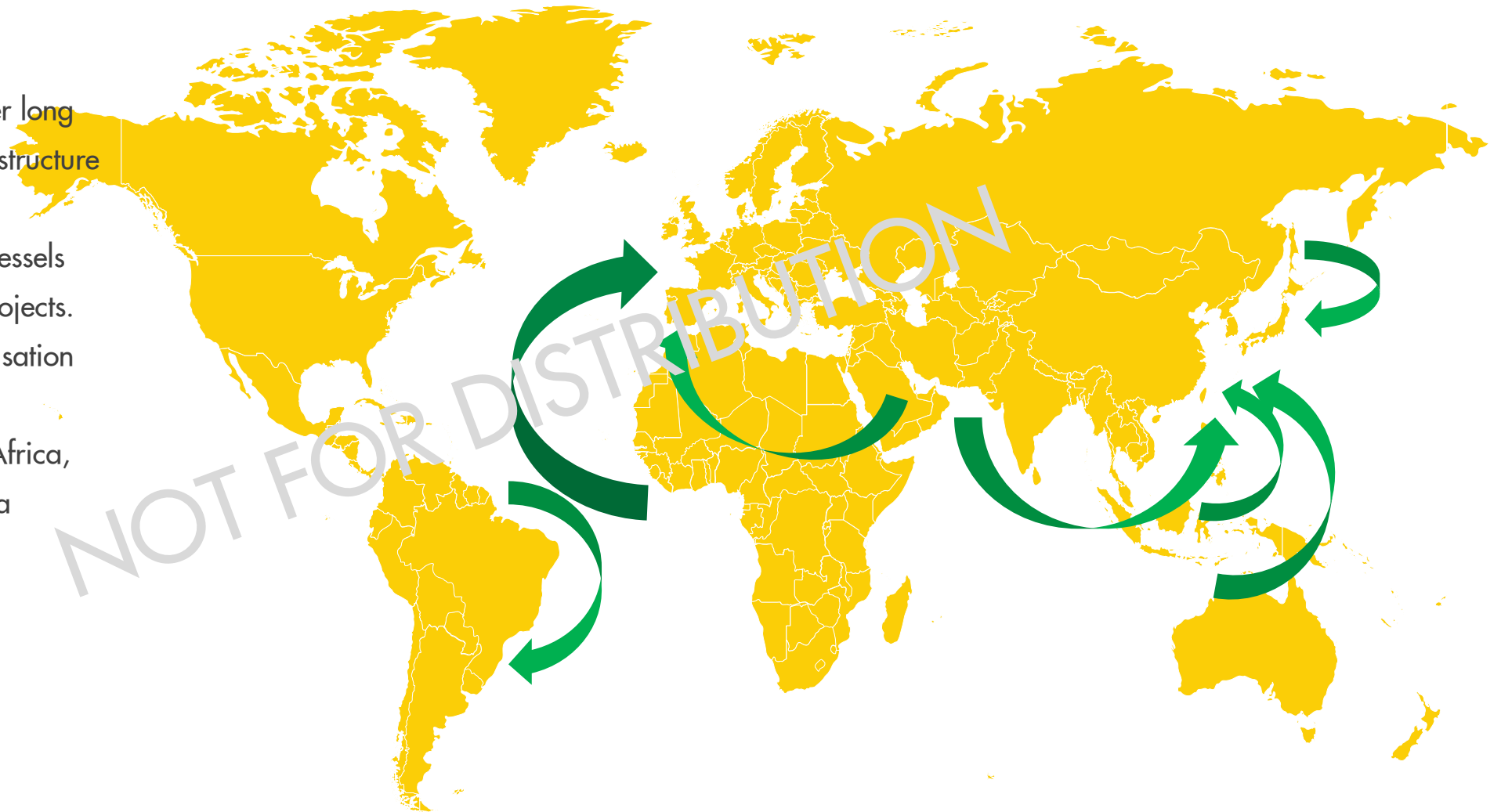




# Growth of Global LNG Trade

## 1990s to 2000

- **Early trade flows** were under long term contracts with few infrastructure vs today.
- **Tramline trade routes** with vessels commissioned for specific projects.
- **Few opportunities** for optimisation for incremental value.
- Dominance of Qatar, West Africa, Russia and Western Australia supplying Asia and Europe.





# Growth of Global LNG Trade

## 2000s to Present

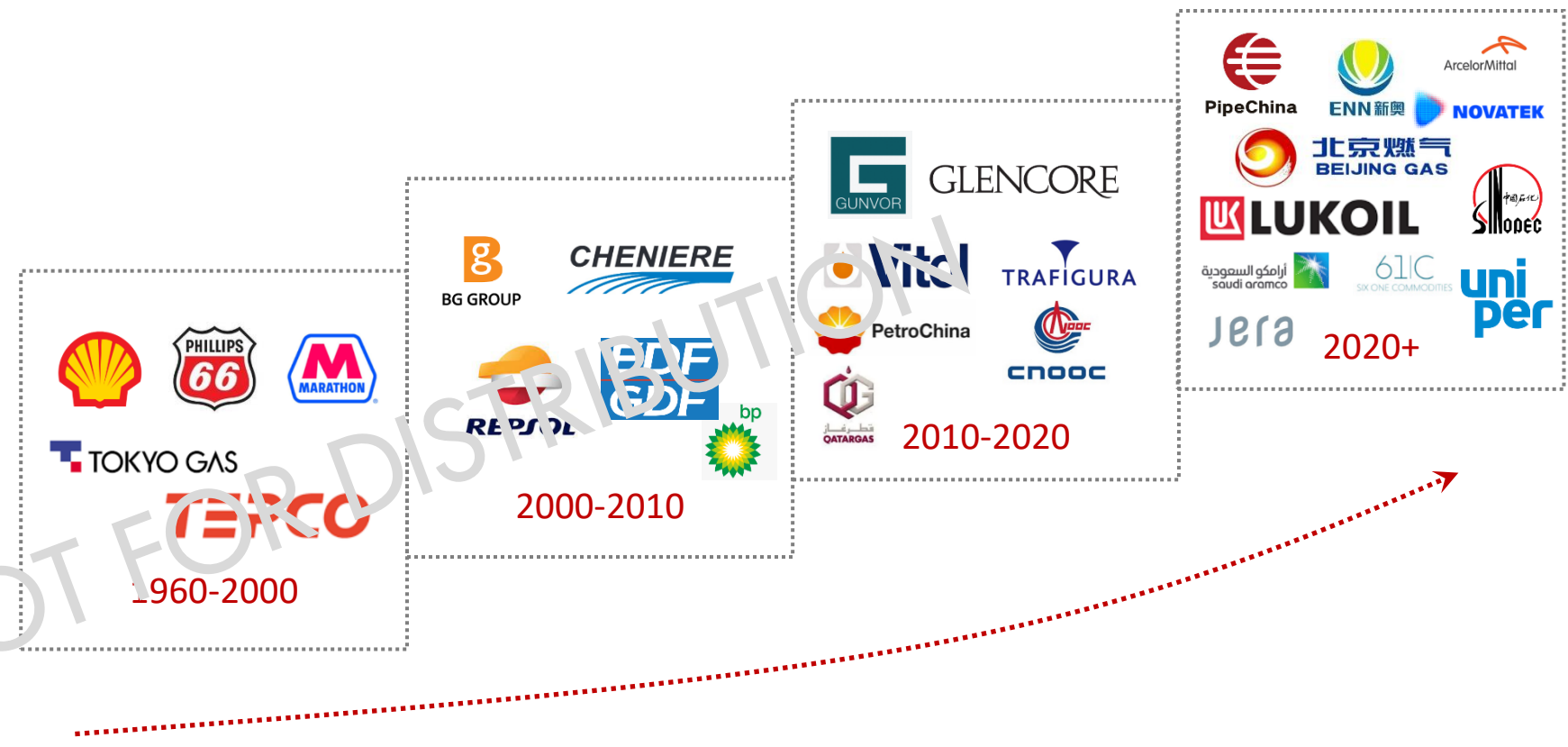
- **Changing landscape** through development of infrastructure, natural disasters and geopolitics.
- **Trade flows** are liquid with plentiful players in the market
- **Shift from term to spot** contracts mirroring mature commodities such as crude oil.
- **Shale gas revolution** in the US, swinging the entire global LNG landscape





# How the LNG industry evolved

- 1960-2000:** first large scale production of LNG, driven by the majors and state owned energy companies.
- 2000-2010:** foundations of portfolio trading built, FID on projects with equity model. US shale gas shifted the industry.
- 2010-2020:** Commodity traders entering the industry lured by **lucrative margins** following the Tohoku Earthquake of 2011 and the rise of China in LNG.
- 2020+:** further liberalisation and market access, surge of private companies setting up trading entities in key trading hub locations including Singapore, Dubai and London.





## **4. LNG Operations and what we do**

NOT FOR DISTRIBUTION

# LNG Commercial Cargo Operations



What my friends think I do



What my mum thinks I do



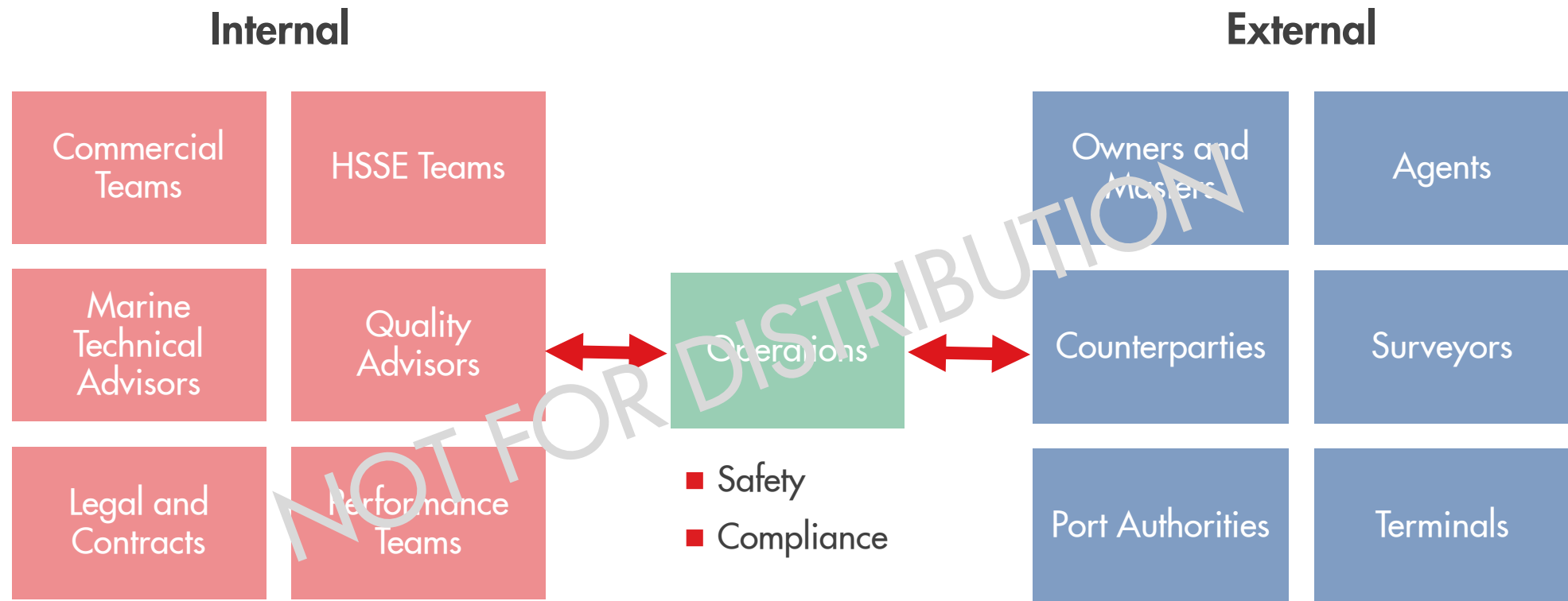
What I think I do



What I really do



# Role of Commercial Operations





# Commercial Operations Activities



**Operational readiness:** deal reviews and operational start up capability across long/short term contracts and infrastructure projects

**Contractual obligations:** perform as per contract including all nominations (Ship size, cargo source, destination etc.)



**Monitor operations:** communication with agents and surveyors (potential issues)

**Manage in-transit cargo:** ensuring quantity and quality are on spec and shipping documentation whilst staying in tune with commercial strategy (VIP)



**Internal HSSE clearances:** ship/terminal Vessel compatibility, external vessel clearance between Owner's and the terminal

**Vessel performance:** scenario checks, voyage orders and instructions



**Communication:** manage and co-ordinate operations across the buyers/sellers, vessel, terminal, agents and surveyors

Follow up and verify post cargo operations to validate cargo quantity and quality



# Operational Scenario

- LNG Flow Ltd. is a major LNG portfolio player with world class reputation for reliable delivery of LNG to global customers.
- LNG Flow Ltd. is scheduled to load a term supply cargo from Princeton LNG Terminal. The terminal has reported a fault within the facility and has requested a delay in the loading date.
- LNG Flow Ltd. has just sold this cargo discharging into Japan where it is peak winter and tank inventory is extremely low.
- The performing vessel has a planned crew change and bunkering scheduled en-route to the discharge port.

**What would you do?**

NOT FOR DISTRIBUTION

# Some considerations...

- **Impact:** how long is the delay going to be?
- **Demurrage claims:** monetary claim for excess laytime at terminal.
- **Non-monetary compensation:** if the vessel was delayed, could we lift additional volume and make incremental sales?
- **HSSE focus:** what are the issues and is there risk of compromise?
- **Performance Failure:** failing to meet the delivery window on both sides of the deal.
- **Owner's matters:** are these critical? Re-scheduling of crew change and vessel bunkering to meet discharge arrival window.
- **Relationship and reputation:** preserving and leveraging on relationships.
- **Portfolio flex:** does LNG Flow Ltd. have alternative options?





## **5. Skills and Competencies of a Commercial Operator**

NOT FOR DISTRIBUTION



# Key Skills and Competencies

## COMMERCIAL MINDSET



Partner the business to contribute and deliver commercial value. This is driven through deep understanding of the business and strategy.

## SOLUTIONS ORIENTED



Proactive action and anticipate next steps. Collaborate to problem solve and execute agreed plan of action. Taking the wider perspective.

## MANAGING INCOMPLETE INFORMATION



Apply knowledge, skill and experience to execute actions. Extract information to complete gaps or build in case assumptions.

## ANALYTICAL



Filter through 'noise' to distil key information with value. This is both quantitative and qualitative i.e. data trends, commercial intel etc.

NOT FOR DISTRIBUTION

# Skills and Competencies



Eye for detail to capture and mitigate risks across HSSE, commercial and compliance



Accurately present facts distilled in a meaningful manner to support decision making



Provide options and solutions in the midst of ambiguity or incidents



Push boundaries yet uphold integrity and reputation.



Angle communications to clearly convey and articulate across stakeholders



Dealing with operational complexity and influence outcomes real time decision making





## **6. LNG trading from a commercial lens**

NOT FOR DISTRIBUTION



# Commercial Contract Structures

## LNG Contracts

- Dictates, terms, standards and obligations of the Buyer and Seller.
- Bespoke long term LNG sale and purchase agreements (SPA) up to 20 years.
- Spot transactions in the prompt are executed under bespoke a Master Agreements/Confirmation Notice.
- Customised contracts provide the ability build in optionality across pricing, volumes, LNG source and delivery period.
- Relationships are still critical to leverage on out of contract 'favours'.

Nomination  
timelines

Pricing indices  
cross  
commodity

Quality  
(Lean/Rich)

Operational  
tolerance

Volume skews  
(seasonality)

Source supply  
(FTA)

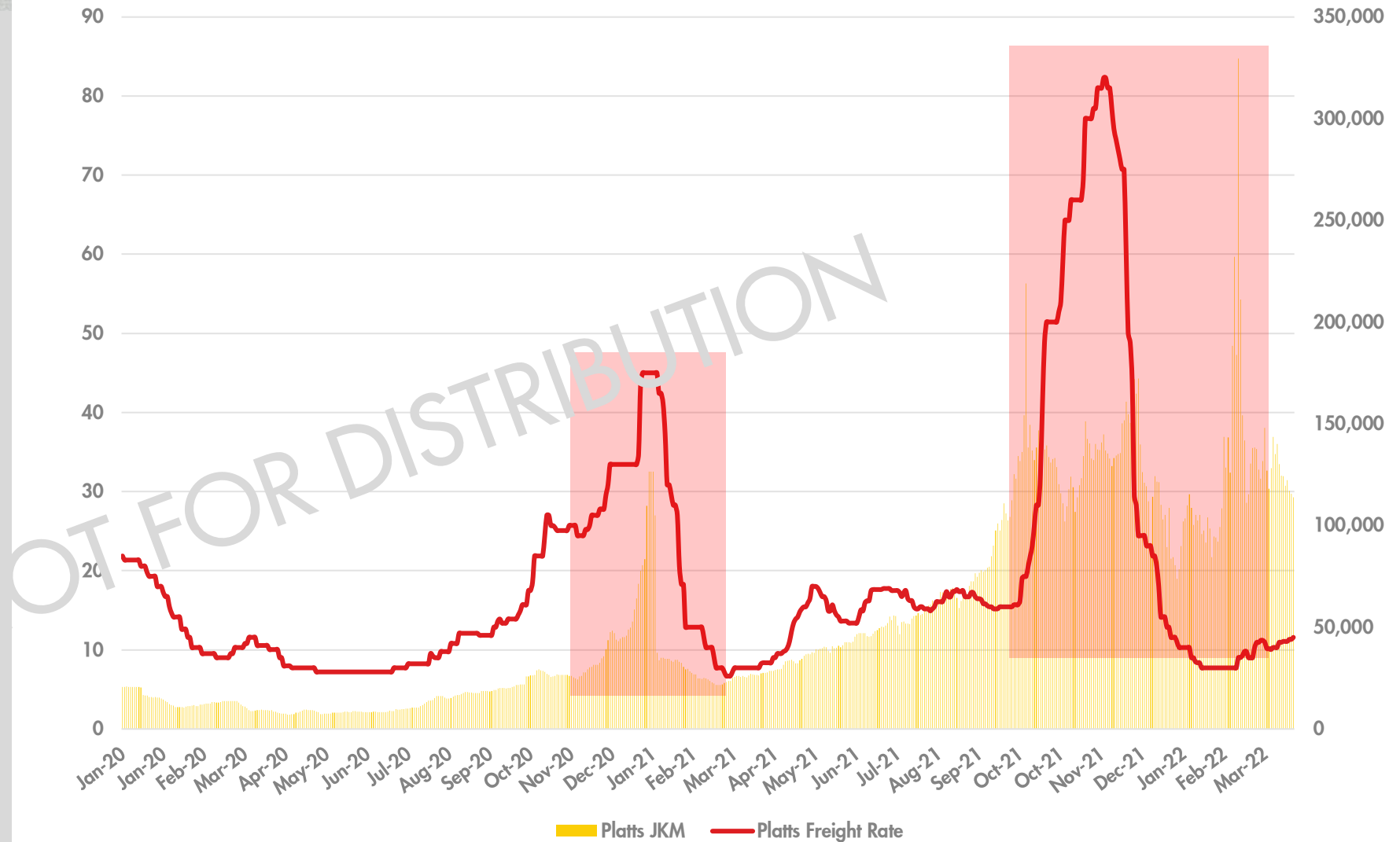
Failure regime

FM clause



# LNG Market Analysis

2020-2022: Platts Daily JKM vs Asia Freight Rates



NOT FOR DISTRIBUTION

## Market commentary:

- Market assessed benchmarks (JKM/Asia freight) of LNG and freight rates.
- Largely positive correlation through 2020 to mid 2021.
- Global economic recovery drove demand for LNG and a sustained rise in JKM throughout 2021.
- Freight rates spiked to record levels of more than \$300k/day.
- European gas demand outstripped supply, competing with Asia LNG flow resulting in record JKM level \$84/MMBtu.
- TTF continues to trade at a premium to JKM driving a reverse arb where Asia has traditionally been the premium market.



# 7. Energy Transition and the role of LNG

NOT FOR DISTRIBUTION



# Energy Transition



- Reducing green house gas emissions is a hot topic – what is being done in the fossil fuel industry?
- Industry has developed mechanisms to support – carbon neutral LNG.
- LNG: a transition fuel or a fuel in transition?
- What is next: Bio-LNG, Liquefied Sustainable Gas in its infancy.

# The world needs more & cleaner energy

- The world today is dynamic and fast-changing, and for many, energy is a defining feature
- Lives and livelihoods, economies and communities depend on convenient, reliable and affordable energy to thrive
- As the global population increases and incomes rise, demand for energy will grow
- Meanwhile the need to address stresses on the environment – especially climate change – has never been more important



# Q&A

NOT FOR DISTRIBUTION



NOT FOR DISTRIBUTION