



# SHELL LNG OUTLOOK 2018

# DEFINITIONS & CAUTIONARY NOTE

Reserves: Our use of the term “reserves” in this presentation means SEC proved oil and gas reserves. Resources: Our use of the term “resources” in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves. Resources are consistent with the Society of Petroleum Engineers (SPE) 2P + 2C definitions.

Operating costs are defined as underlying operating expenses, which are operating expenses less identified items. Organic free cash flow is defined as free cash flow excluding inorganic capital investment and divestment proceeds. Clean CCS ROACE (Return on Average Capital Employed) is defined as the sum of CCS earnings attributable to shareholders excluding identified items for the current and previous three quarters, as a percentage of the average capital employed for the same period. Capital employed consists of total equity, current debt and non-current debt. Capital investment comprises capital expenditure, exploration expense excluding well write-offs, new investments in joint ventures and associates, new finance leases and investments in Integrated Gas, Upstream and Downstream securities, all of which on an accruals basis. In 2016, the capital investment was impacted by the acquisition of BG Group plc. which are included in “Change in non-controlling interest” within “Cash flow from financing (CFFF) activities”. Divestments comprises proceeds from sale of property, plant and equipment and businesses, joint ventures and associates, and other Integrated Gas, Upstream and Downstream investments, reported in “Cash flow from investing activities (CFFI)”, adjusted onto an accruals basis and for any share consideration received or contingent consideration recognised upon divestment, as well as proceeds from the sale of interests in entities while retaining control (for example, proceeds from sale of interest in Shell Midstream Partners, L.P.). This presentation contains the following forward-looking Non-GAAP measures: Organic Free Cash Flow, Free Cash Flow, Capital Investment, CCS Earnings, CCS Earnings less identified items, Gearing, Underlying Operating Expenses, ROACE, Capital Employed and Divestments. We are unable to provide a reconciliation of the above forward-looking Non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile the above Non-GAAP measure to the most comparable GAAP financial measure is dependent on future events some which are outside the control of the company, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures consistent with the company accounting policies and the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Royal Dutch Shell plc’s financial statements. The financial measures provided by strategic themes represent a notional allocation of ROACE, capital employed, capital investment, free cash flow, organic free cash flow and underlying operating expenses of Shell’s strategic themes. Shell’s segment reporting under IFRS 8 remains Integrated Gas, Upstream, Downstream and Corporate.

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate legal entities. In this presentation “Shell”, “Shell group” and “Royal Dutch Shell” are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this presentation refer to companies over which Royal Dutch Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to “joint ventures” and “joint operations” respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as “associates”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

This presentation contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this presentation, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Royal Dutch Shell’s 20-F for the year ended December 31, 2016 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://www.sec.gov)). These risk factors also expressly qualify all forward looking statements contained in this presentation and should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, March 15, 2018. Neither Royal Dutch Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation. This presentation may contain references to Shell’s website. These references are for the readers’ convenience only. Shell is not incorporating by reference any information posted on [www.shell.com](http://www.shell.com). We may have used certain terms, such as resources, in this presentation that United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website [www.sec.gov](http://www.sec.gov).



# OVERVIEW



Queensland Curtis LNG Facility, Australia

01

**EXTERNAL ENVIRONMENT  
CREATING MORE OPPORTUNITIES  
FOR GAS AND LNG**

02

**STRONG LNG  
FUNDAMENTALS EXCEEDED  
EXPECTATIONS IN 2017**

03

**SUPPLY INVESTMENT  
REQUIRED TO MEET  
LONG-TERM DEMAND  
GROWTH**



# 01

## EXTERNAL ENVIRONMENT CREATING MORE OPPORTUNITIES FOR GAS AND LNG



# THE ENERGY CHALLENGE

01



## Growing Population

According to the World Bank, global population is expected to increase from around 7 billion today to over 9 billion by 2050, with 66% living in cities.

02



## Rising Demand

Over a billion people continue to live without electricity while another billion struggle with unreliable supplies of electricity. According to the International Energy Agency (IEA) New Policies Scenario, global energy demand is expected to grow by 30% between 2015 and 2040.

03



## Ongoing Supply

As per IEA, it is expected that renewable energy could increase significantly by 2040. However, we will still need large amounts of oil and gas to provide the full range of energy products that the world needs.

04



## Mitigating Climate Change

The world currently emits 32 billion tonnes of energy-related CO<sub>2</sub> each year. To limit the rise in global temperature to 2°C, the IEA has calculated that energy related CO<sub>2</sub> emissions need to fall to around 18 billion tonnes a year by 2040.

05

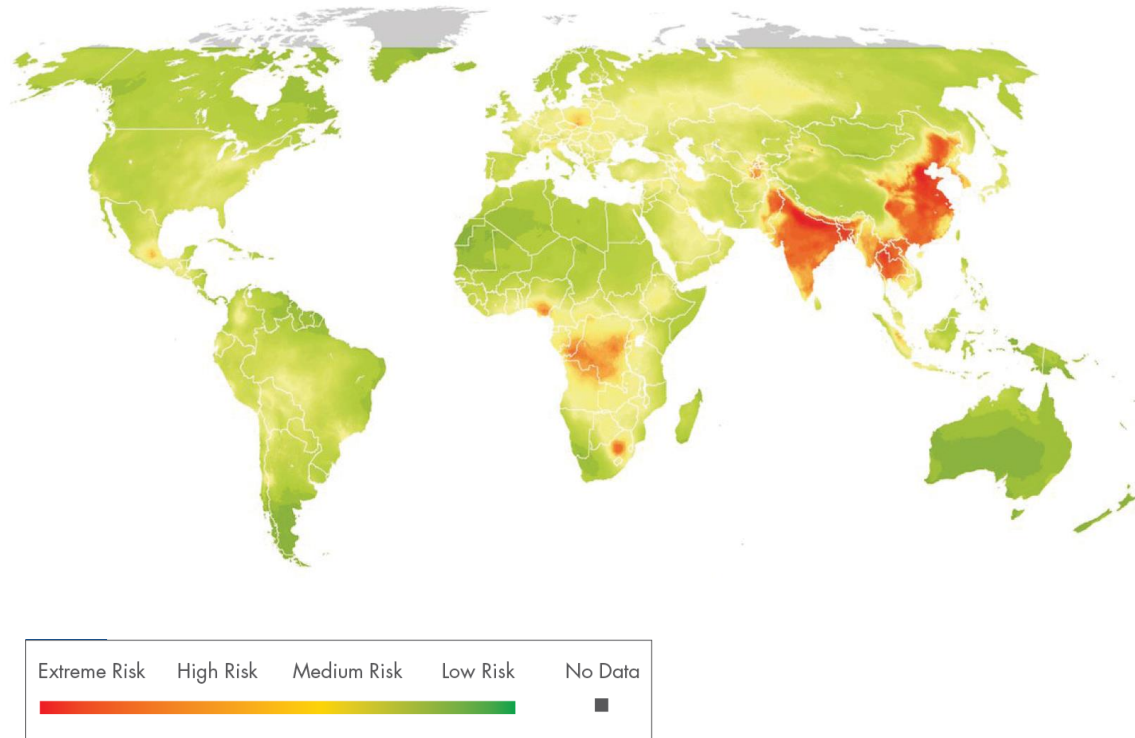


## Improving Air Quality

The World Health Organization (WHO) has found that outdoor air pollution in both cities and rural areas is estimated to cause some 3 million premature deaths a year worldwide.

# GROWING ECONOMIES NEED MORE AND CLEANER ENERGY

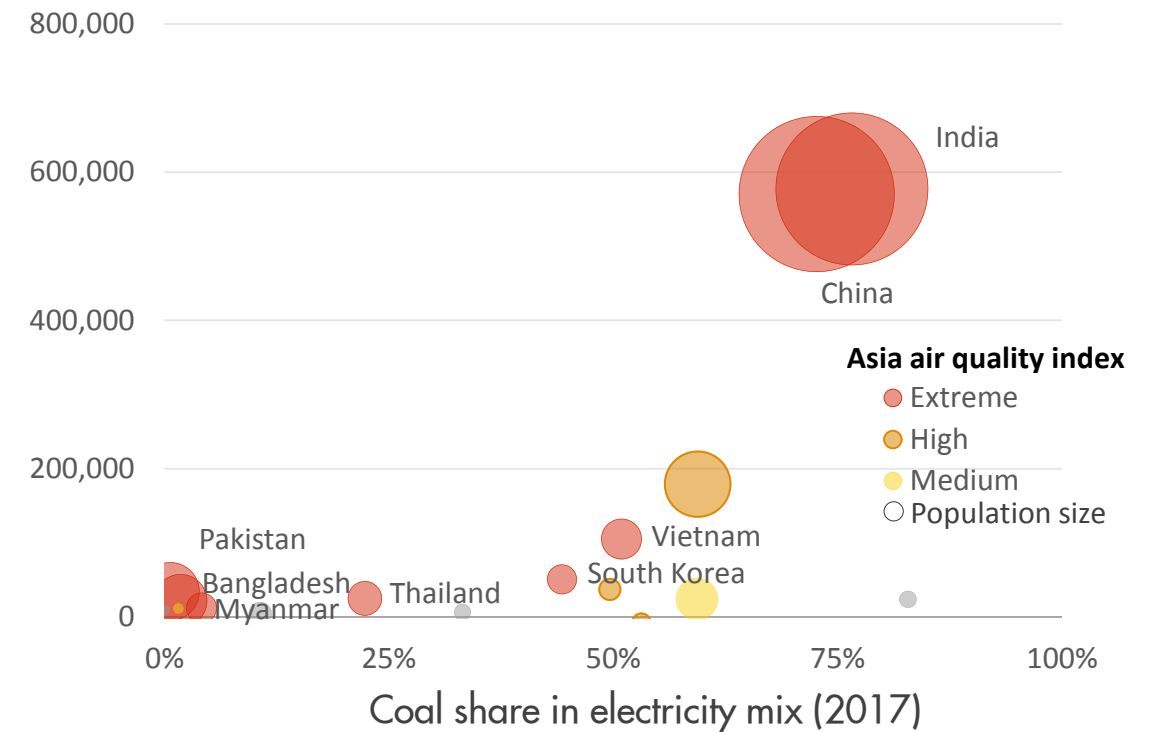
## Air quality index 2017



Source: Shell interpretation of Wood Mackenzie and Verisk Maplecroft Q4 2017 data

## Energy demand growth vs coal share

Change in energy demand (2017-2035), KTOE



# POLICY ACTIONS FOR CLEAN ENERGY SUPPORT GAS AND LNG



## GLOBAL

Increasing recognition of environmental benefits

G20 endorses the role of natural gas in energy transition

IEA credits levelling of global CO<sub>2</sub> emissions to coal displacement



## REGIONAL

EU policies supporting coal phase out

More than 10 countries announce coal phase-out ambitions - 25% of coal power capacity in EU

EU confirms reforms to strengthen EU Emissions Trading Scheme



## NATIONAL

Policies favour gas and renewables

China reforms gas market to increase competitiveness of delivered gas

South Korea's 8th Basic Plan for Energy prioritises renewables and gas, while not sanctioning new nuclear and coal



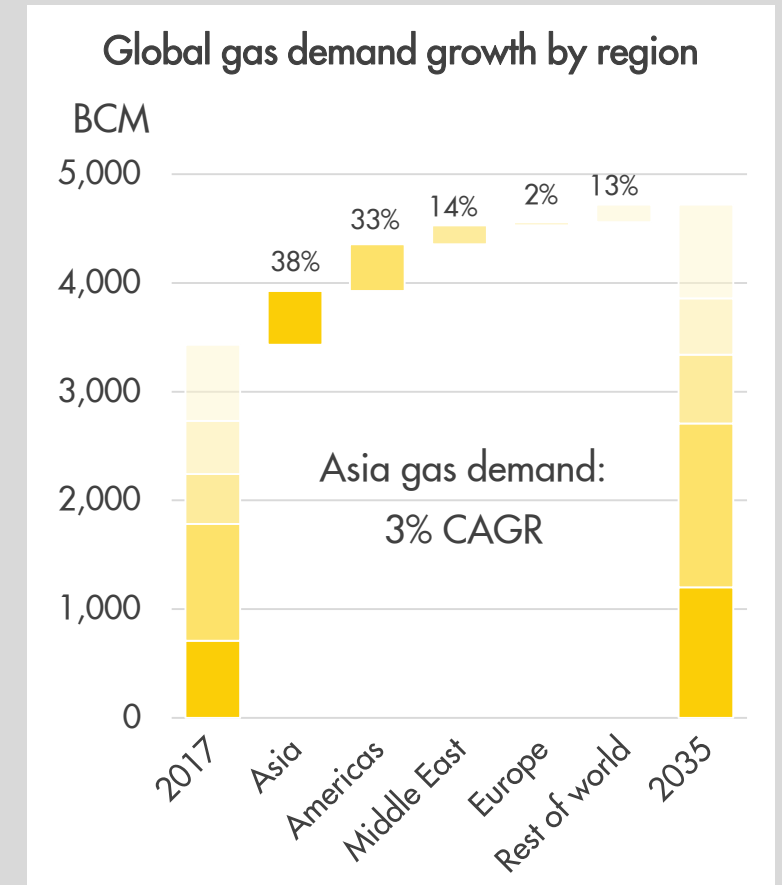
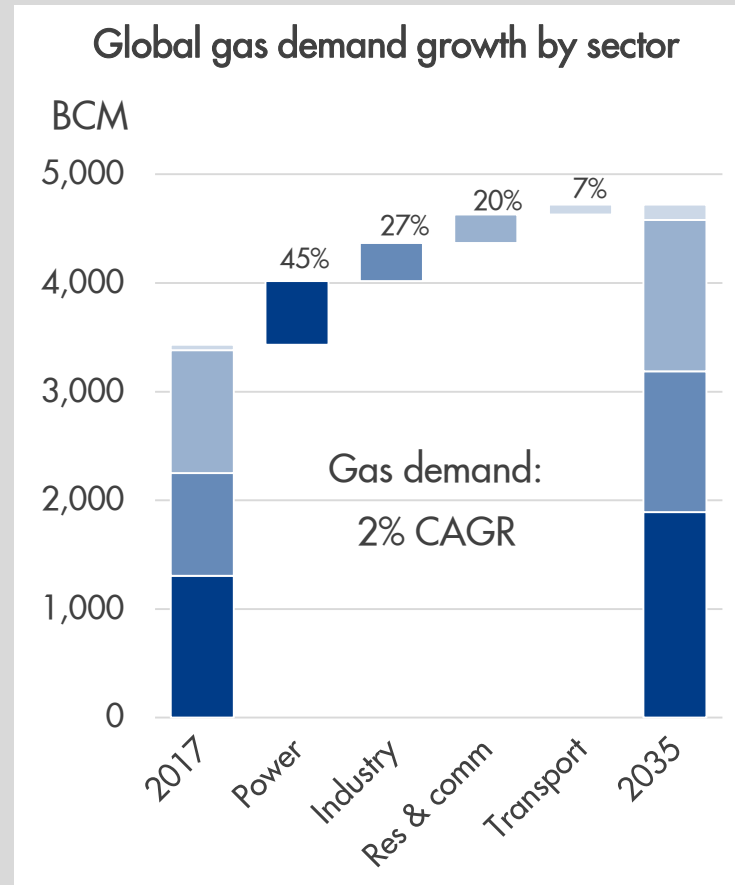
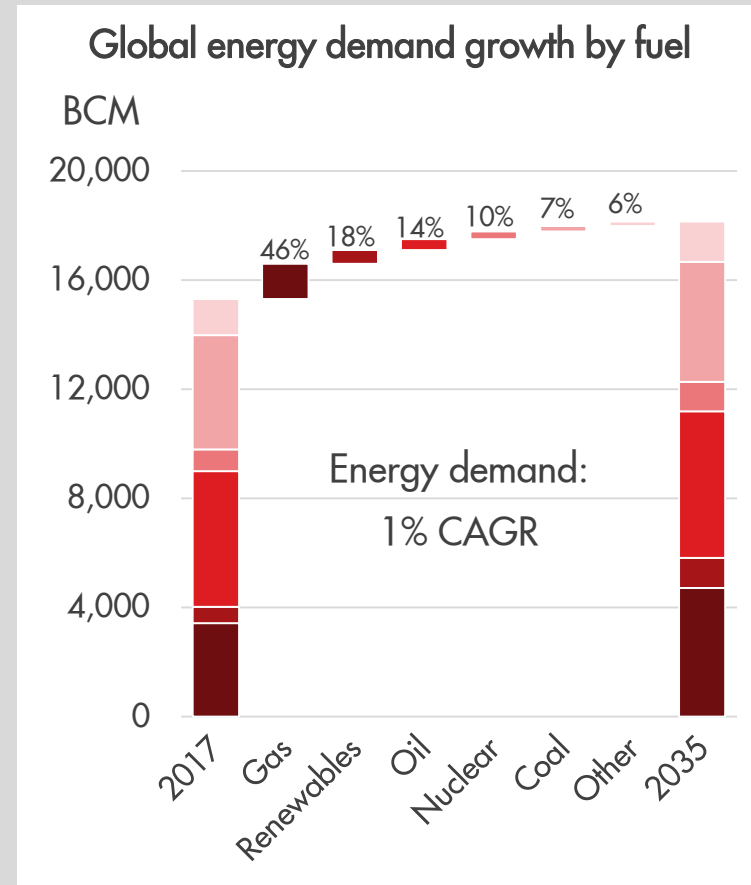
## LOCAL

Policymakers targeting air quality

Berlin closes local coal-fired power plants to improve air quality

Beijing meets ambitious 2017 air quality targets, supported by coal to gas switching

# GAS PLAYS GROWING ROLE TO MEET ENERGY CHALLENGE



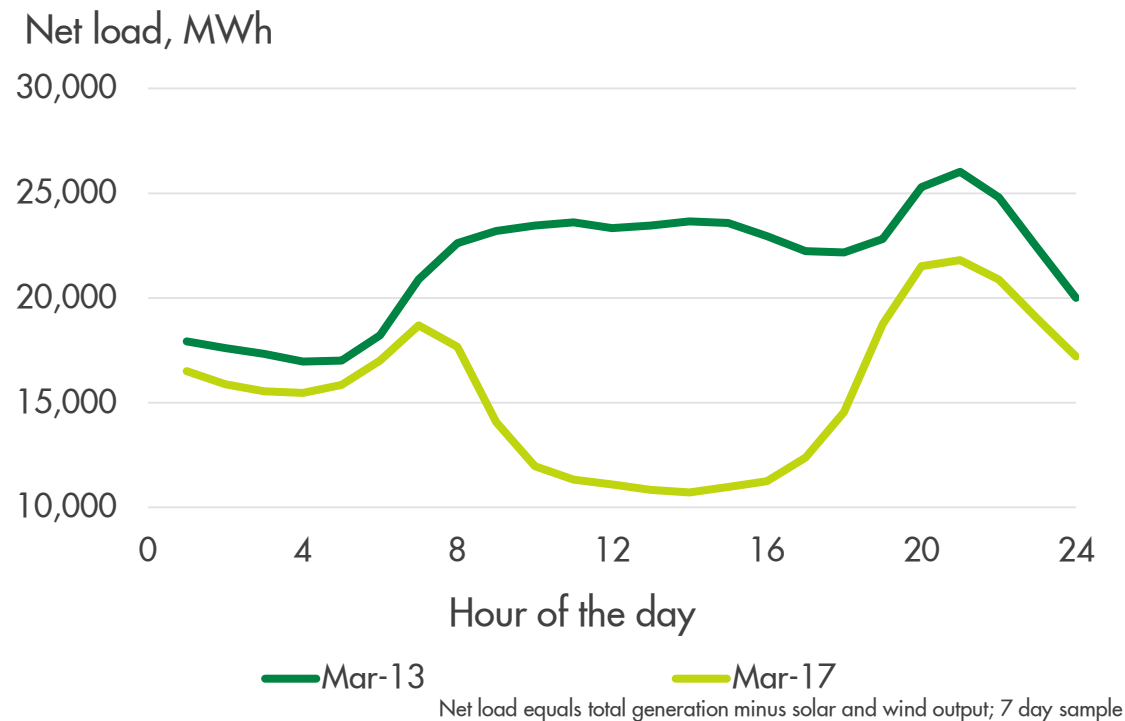
Source: Shell interpretation of Wood Mackenzie Q4 2017 data

CAGR - Compound Annual Growth Rate



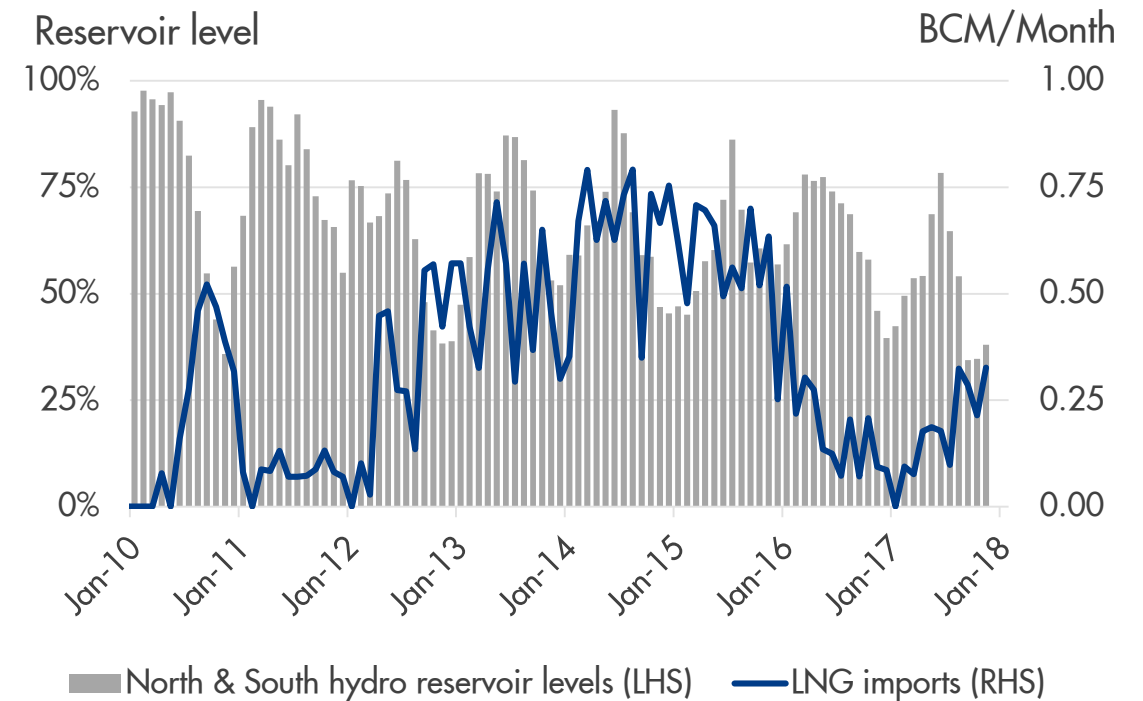
# GAS SUPPORTS RENEWABLES

Flexible gas generation complements solar to provide reliable power generation in California



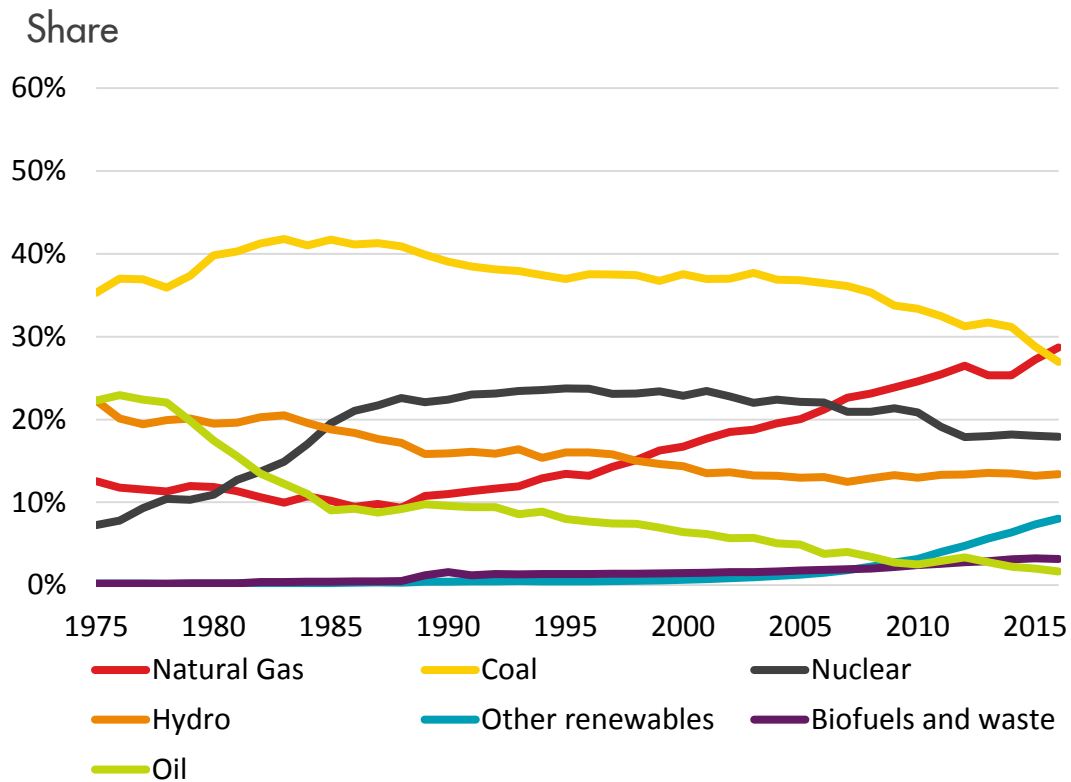
Source: Shell interpretation of Wood Mackenzie Q4 2017, IHS Markit and CAISO data

Flexible LNG supply balances hydro generation to provide reliable power in Brazil

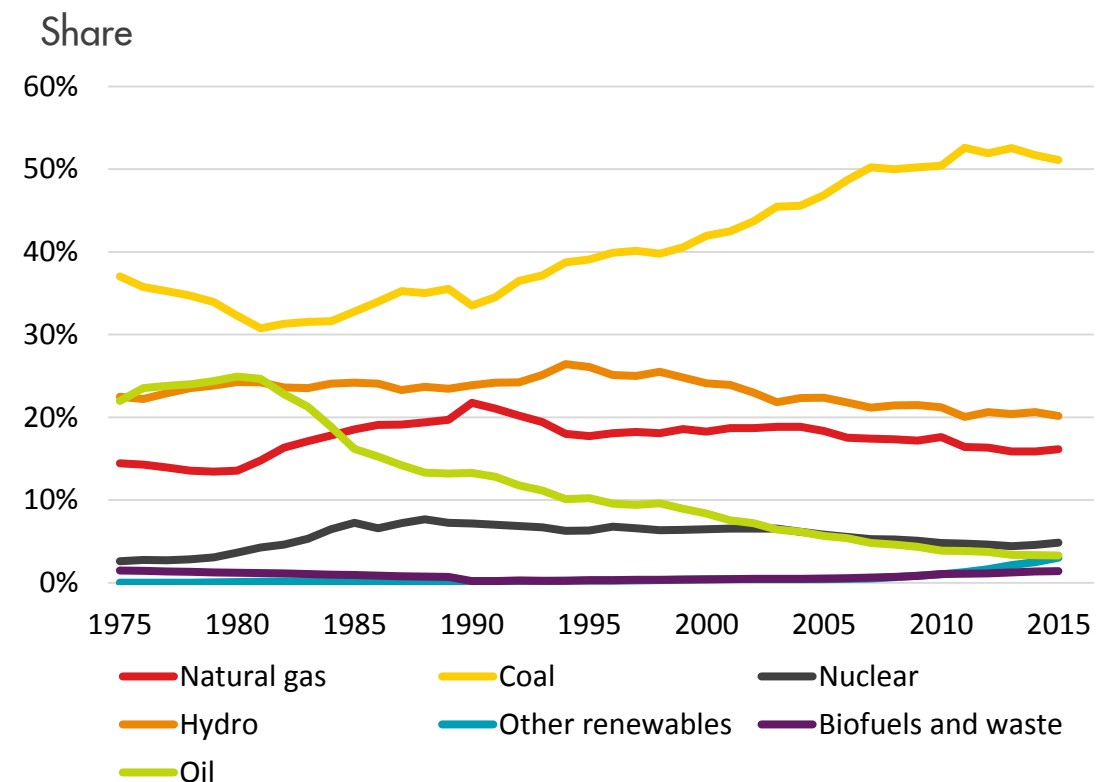


# OECD LEADING THE MOVE TO GAS AND RENEWABLES FOR POWER GENERATION

## OECD electricity output by source

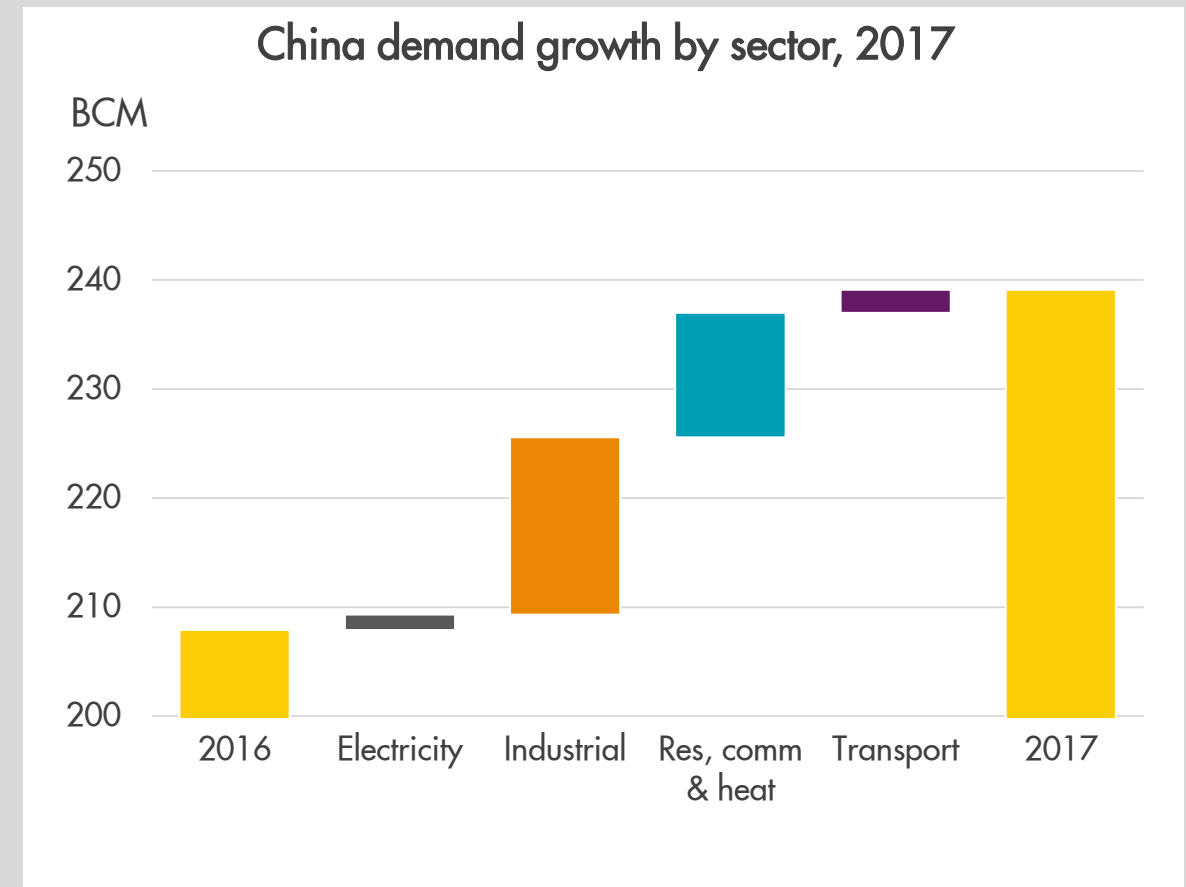
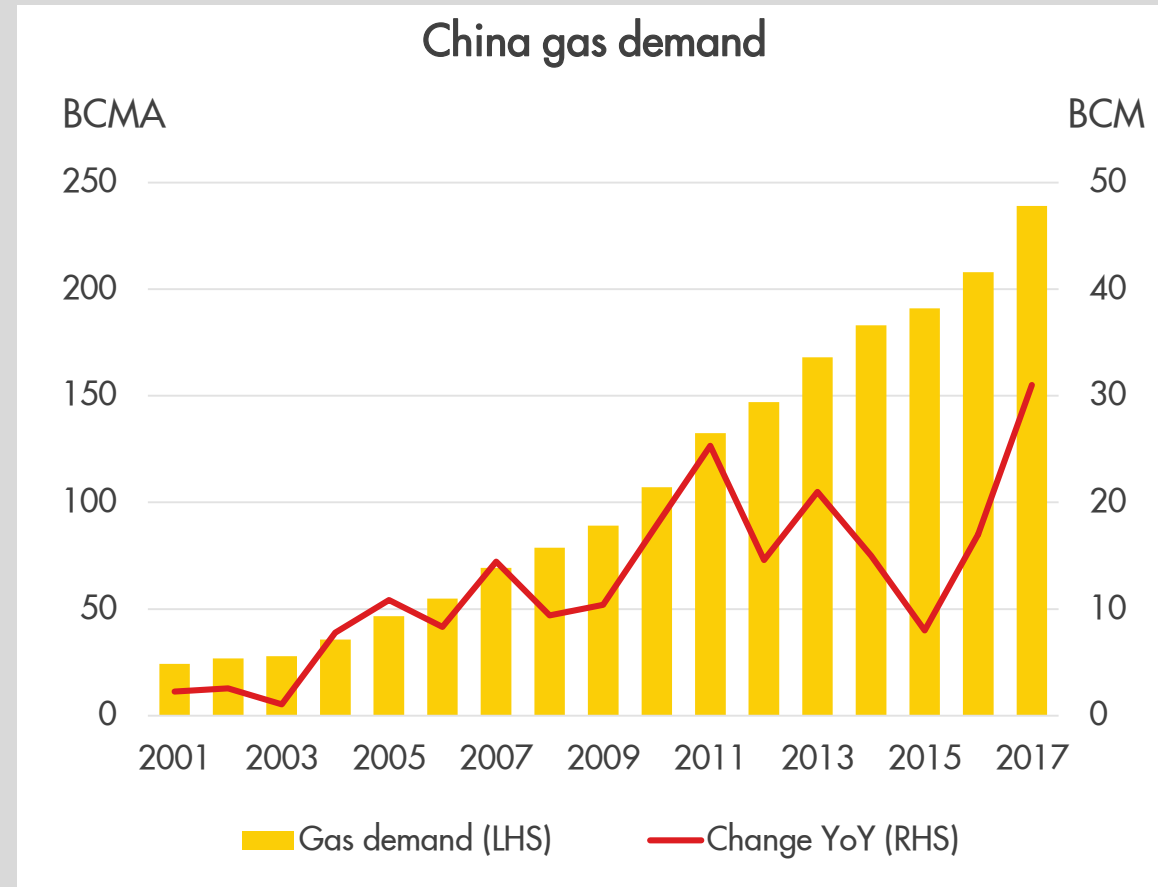


## Non-OECD electricity output by source



Source: Shell interpretation of International Energy Agency (IEA) data

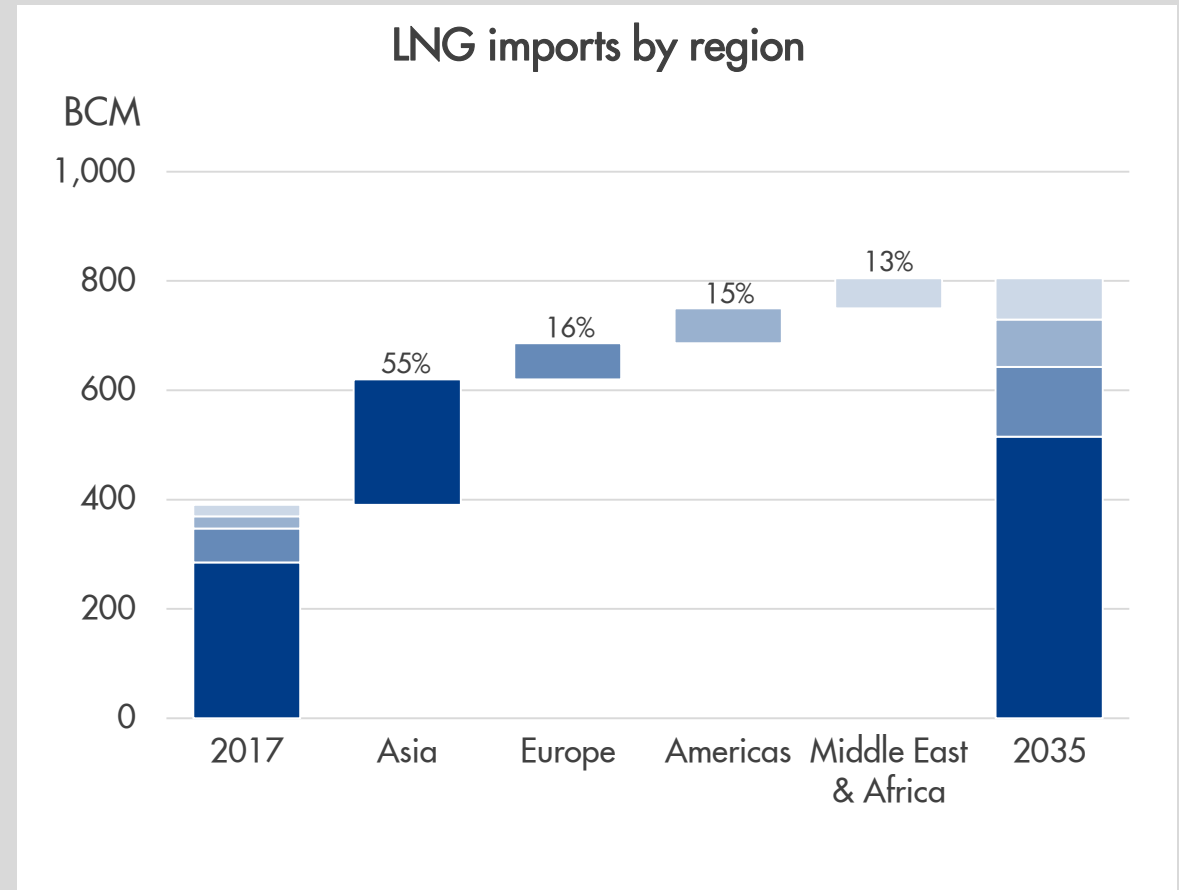
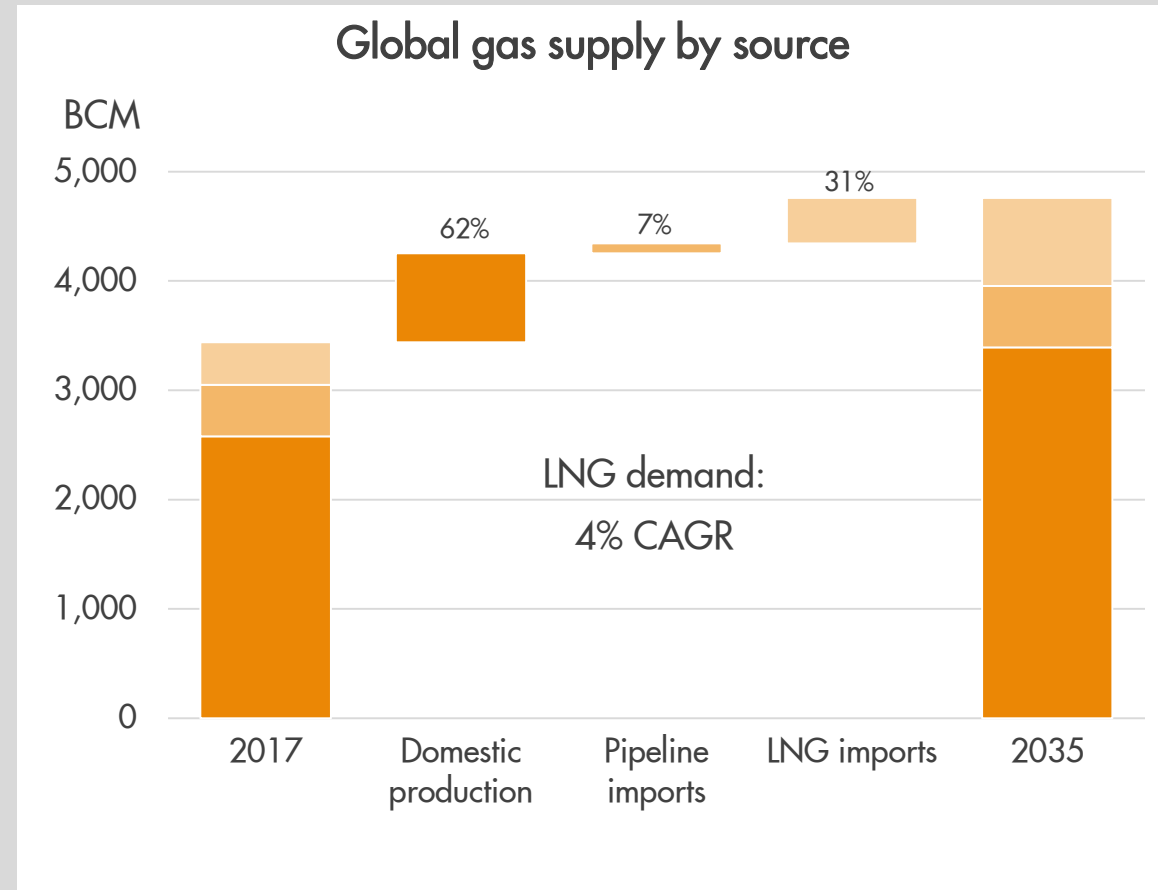
# STRONG CHINA GAS DEMAND DRIVEN BY GROWTH OUTSIDE POWER



Source: Shell interpretation of IHS Markit, China National Bureau of Statistics and Chinese customs data; latest estimates for 2017



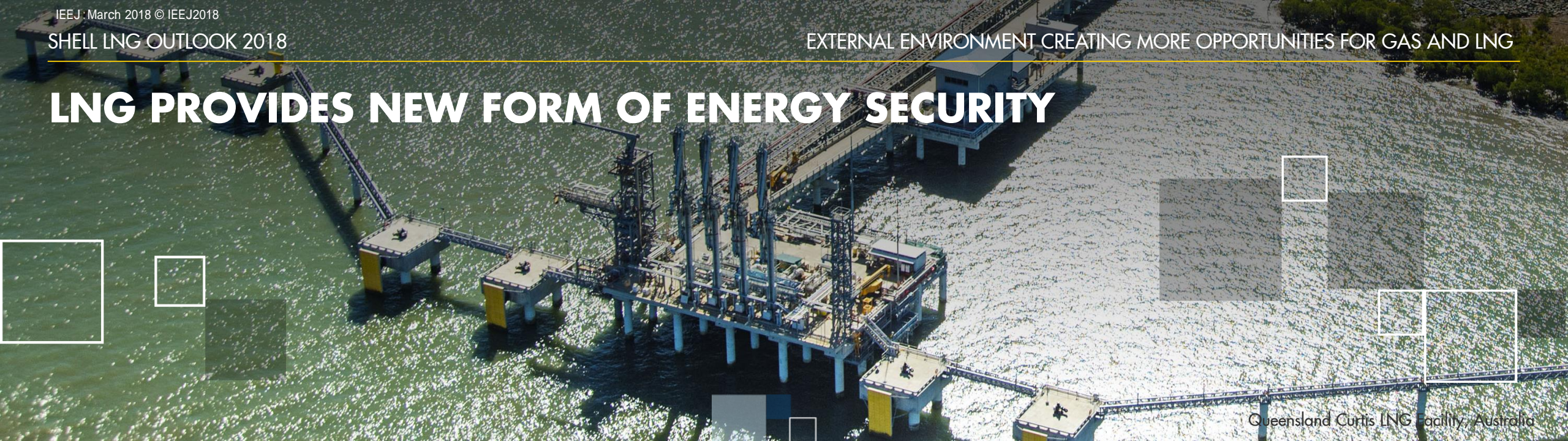
# LNG IS THE FASTEST GROWING GAS SUPPLY SOURCE



Source: Shell interpretation of Wood Mackenzie Q4 2017 data

CAGR - Compound Annual Growth Rate

# LNG PROVIDES NEW FORM OF ENERGY SECURITY



Queensland Curtis LNG facility, Australia

## LNG SOLVES GAS MARKET UNCERTAINTIES:

- Declining domestic production
- Pipeline disruptions
- Falling nuclear utilisation and reliability
- Hydroelectric seasonality, renewable intermittency
- Weather disruptions

## LNG RESILIENT TO ITS OWN UNCERTAINTIES:

- Geopolitics
- Timing of new supply
- Existing plant output
- Changing trade patterns
- Gas supply and demand uncertainty



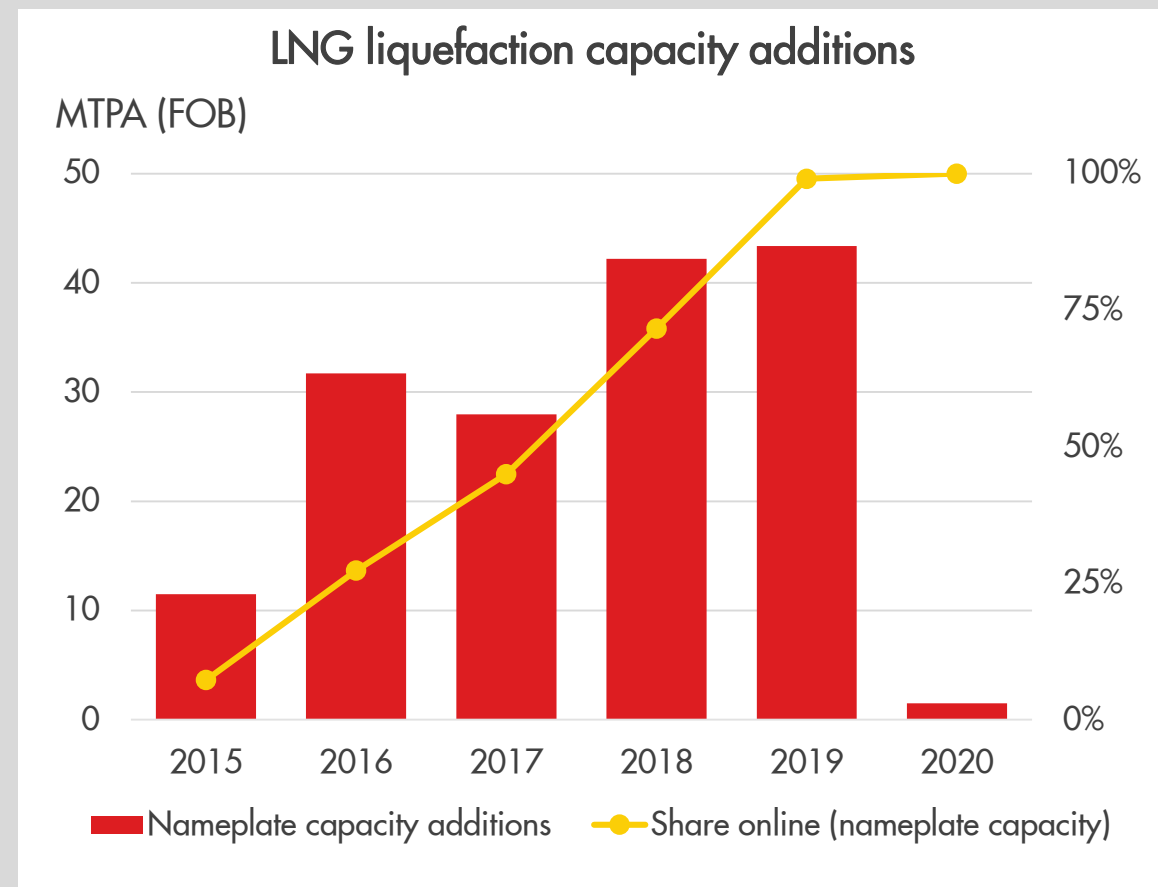
# 02

## STRONG LNG FUNDAMENTALS EXCEEDED EXPECTATIONS IN 2017

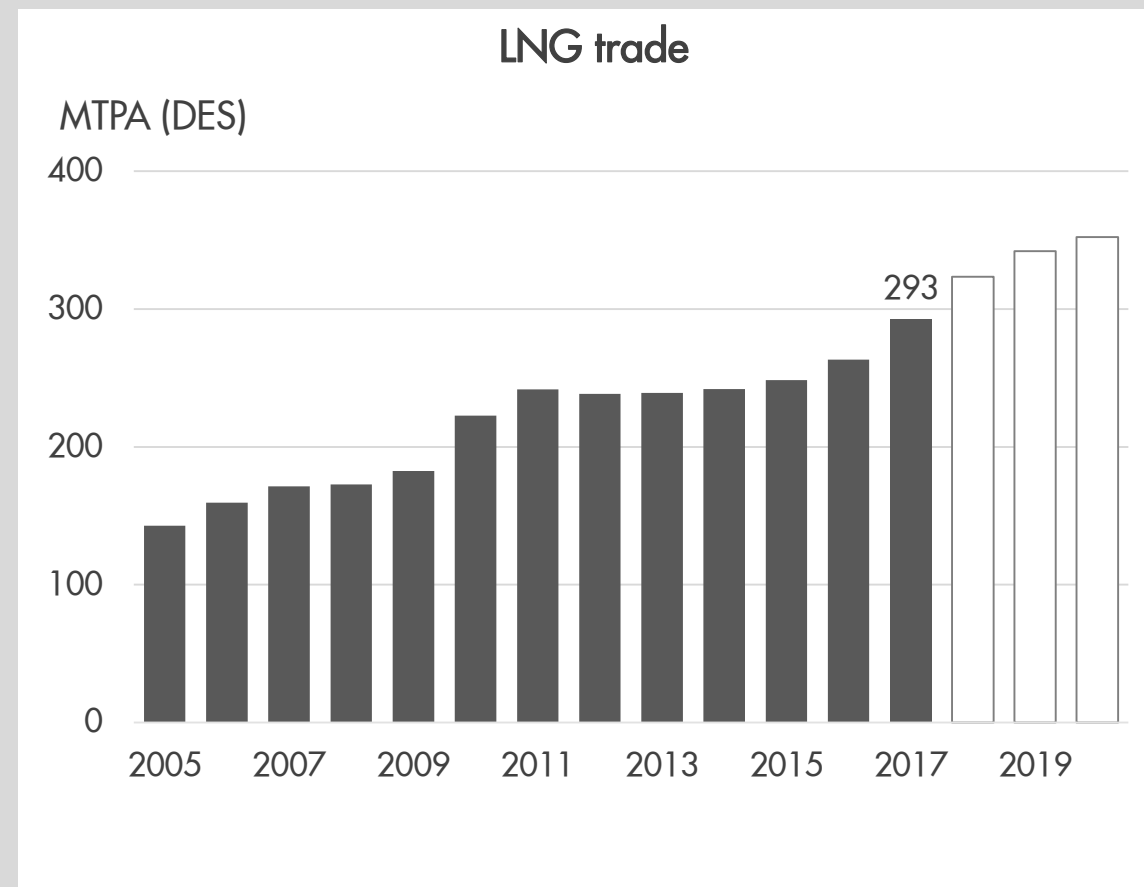




# UNPRECEDENTED LNG CAPACITY EXPANSION 45% COMPLETE



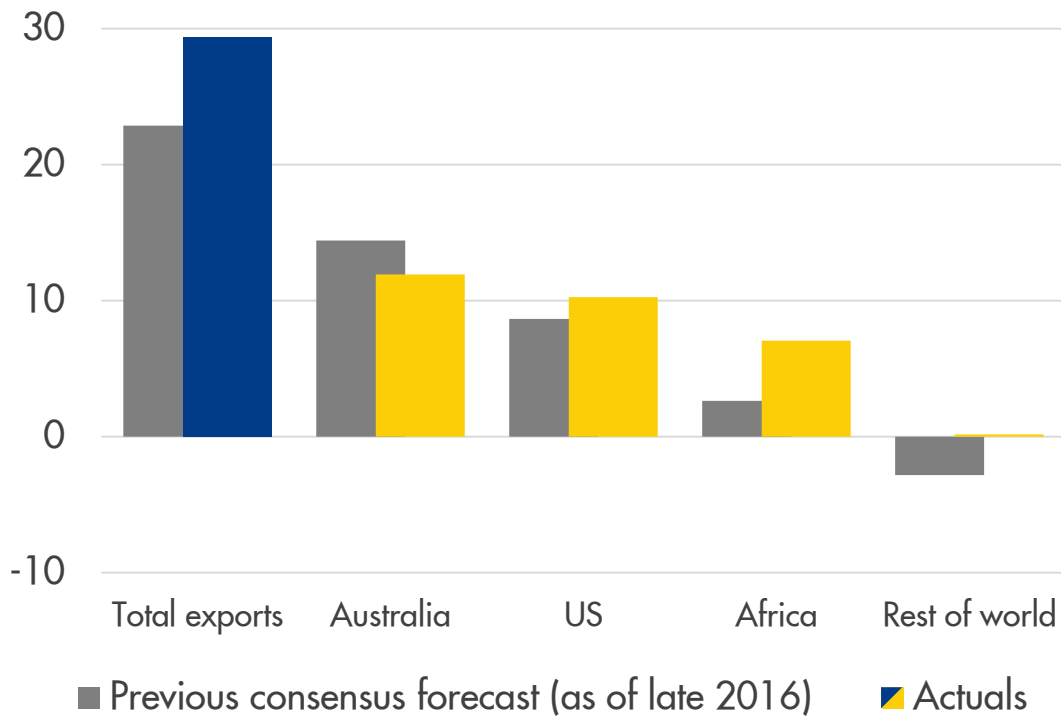
Source: Shell interpretation of IHS Markit Q4 2017 data



# GLOBAL LNG MARKET CONTINUES TO DEFY EXPECTATIONS

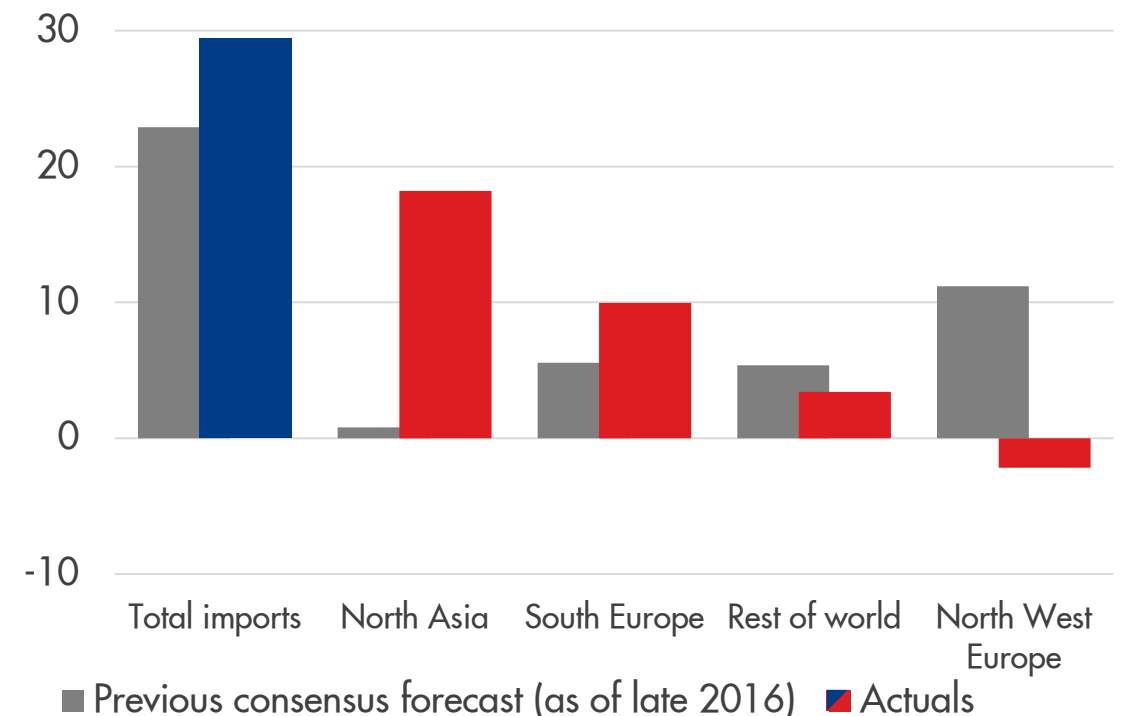
## Net exports: 2017 YoY

Million tonnes (DES)



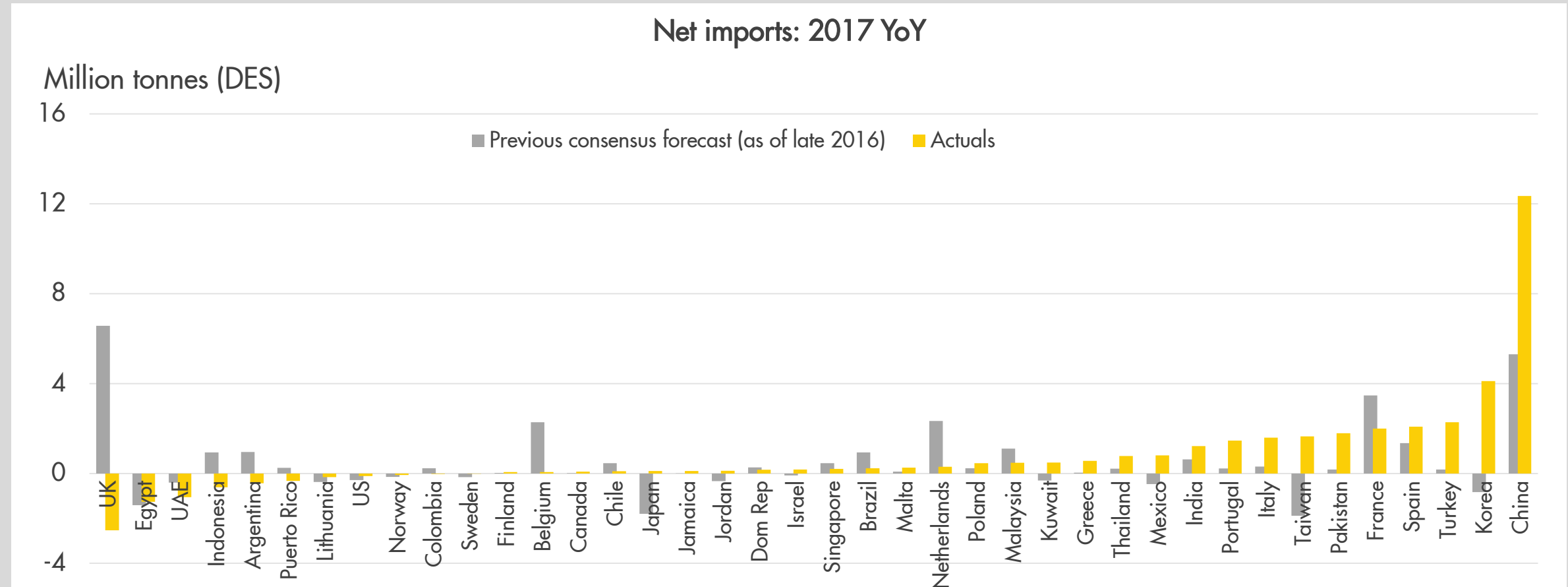
## Net imports: 2017 YoY

Million tonnes (DES)



Source: Shell interpretation of IHS Markit, Wood Mackenzie and Poten & Partners 2016 and Q4 2017 data

# 29 MT INCREASE IN LNG IMPORTS IN 2017



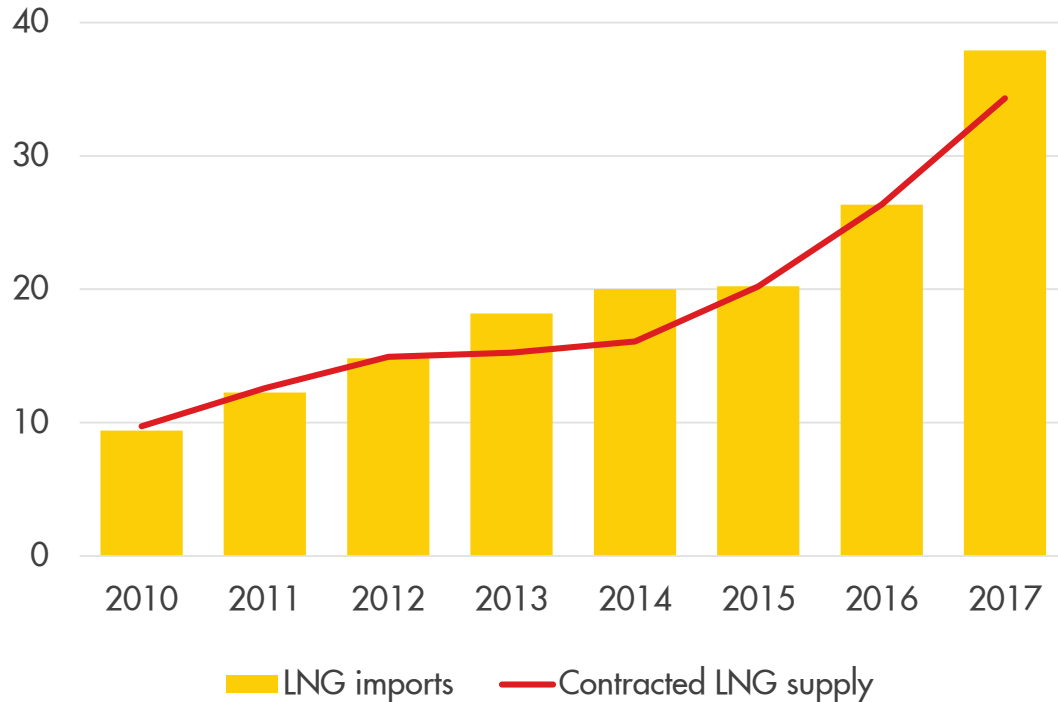
Source: Shell interpretation of IHS Markit, Wood Mackenzie and Poten & Partners data 2016 and Q4 2017



# LNG ACCOMMODATES CHINA GROWTH AND SEASONAL DEMAND

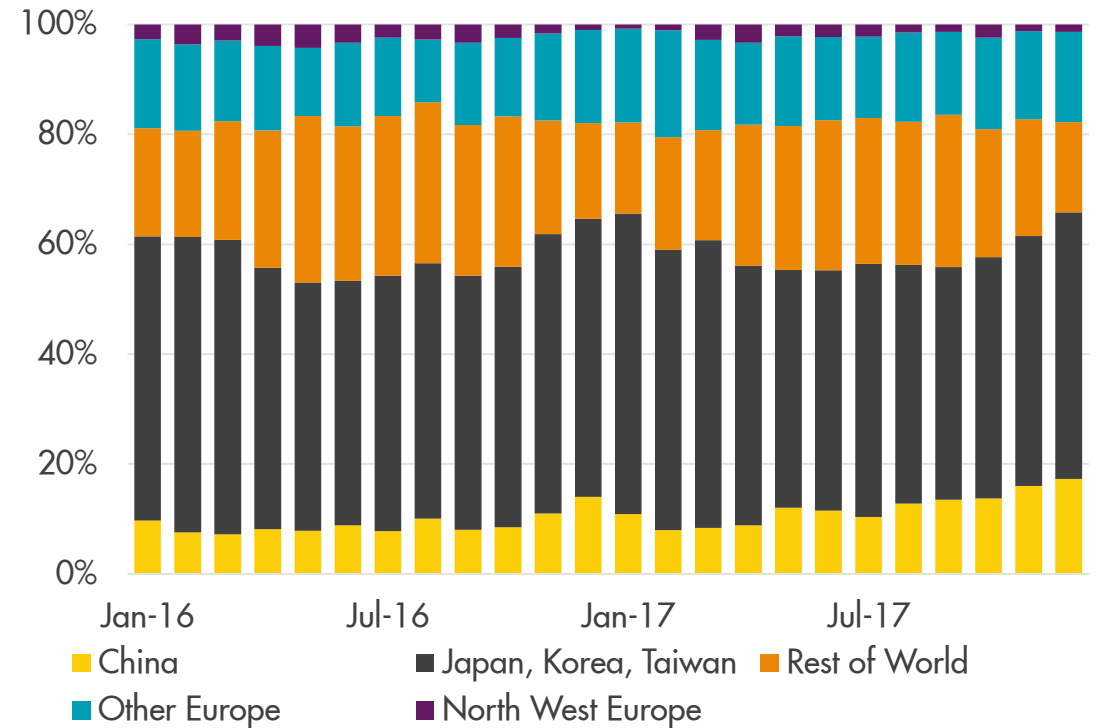
## China LNG imports

Million tonnes



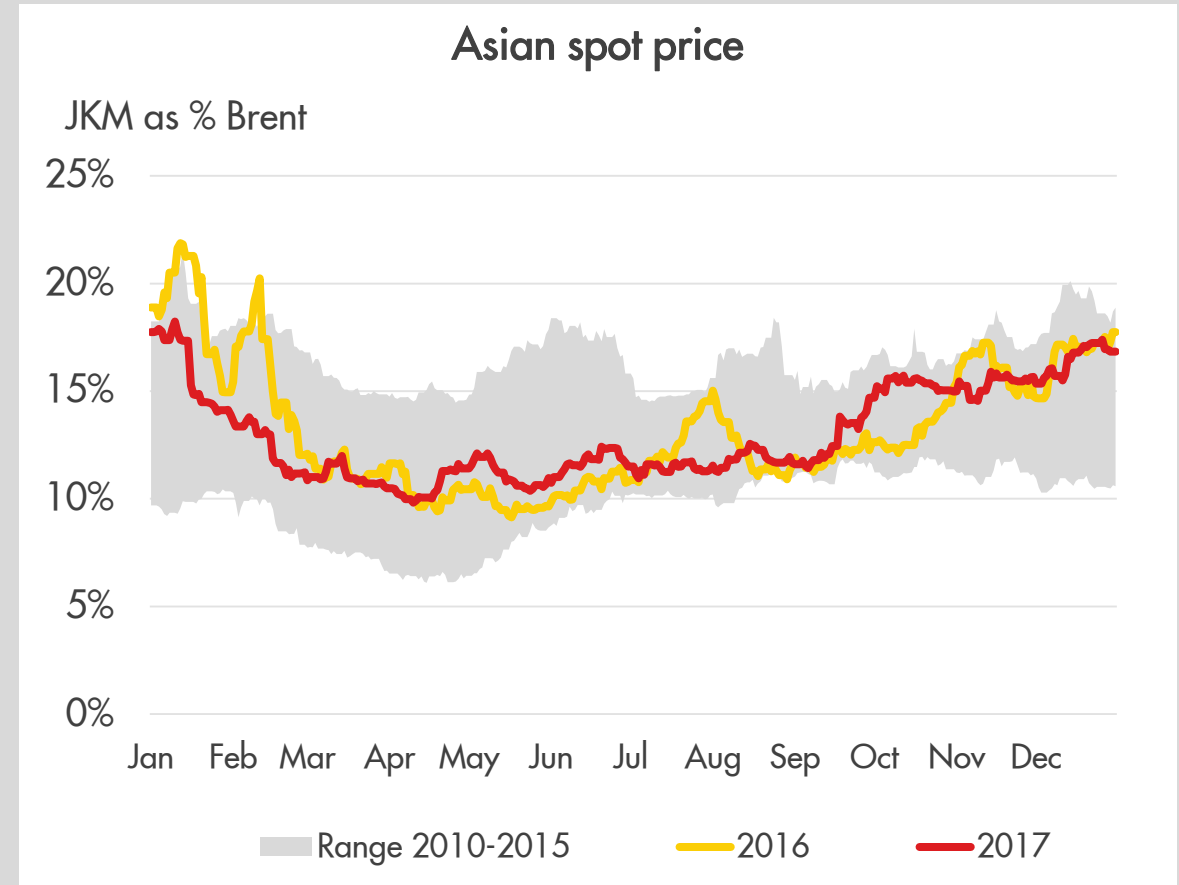
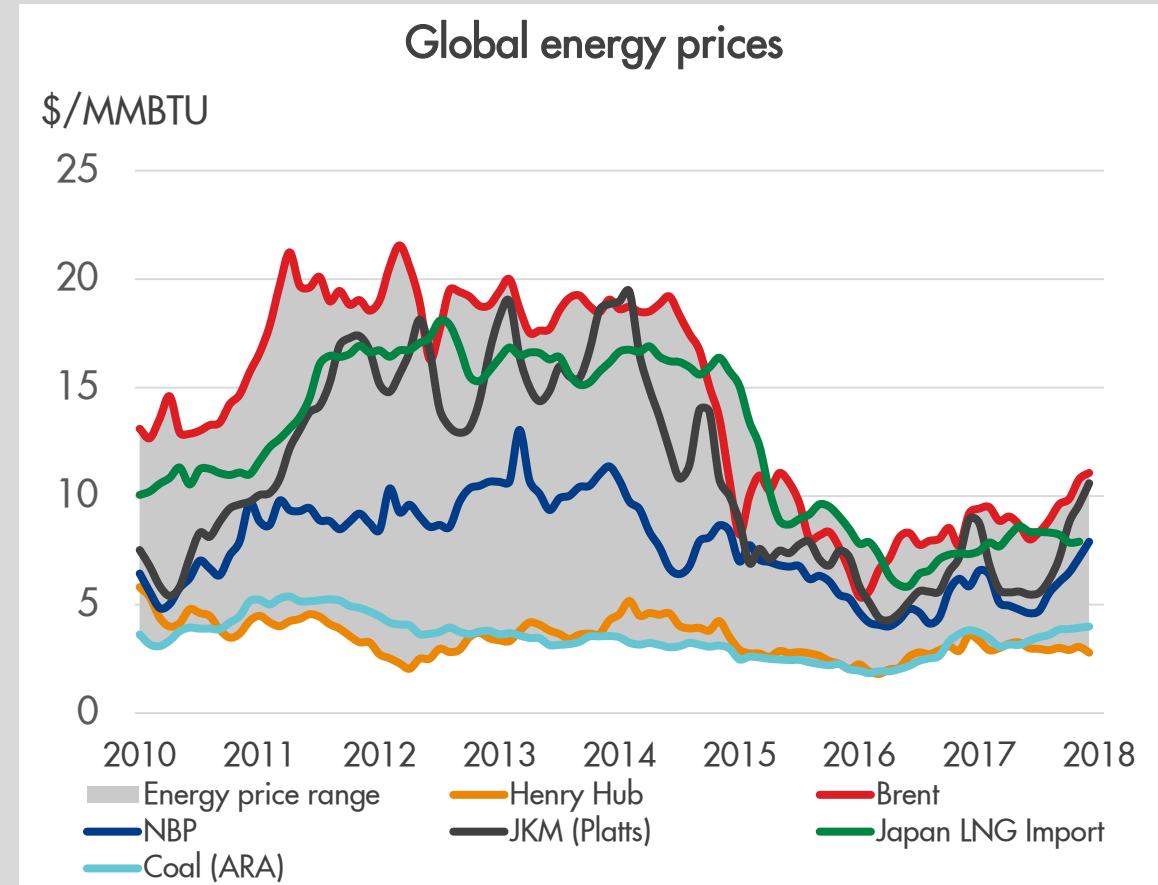
## Demand seasonality

Share of cargoes



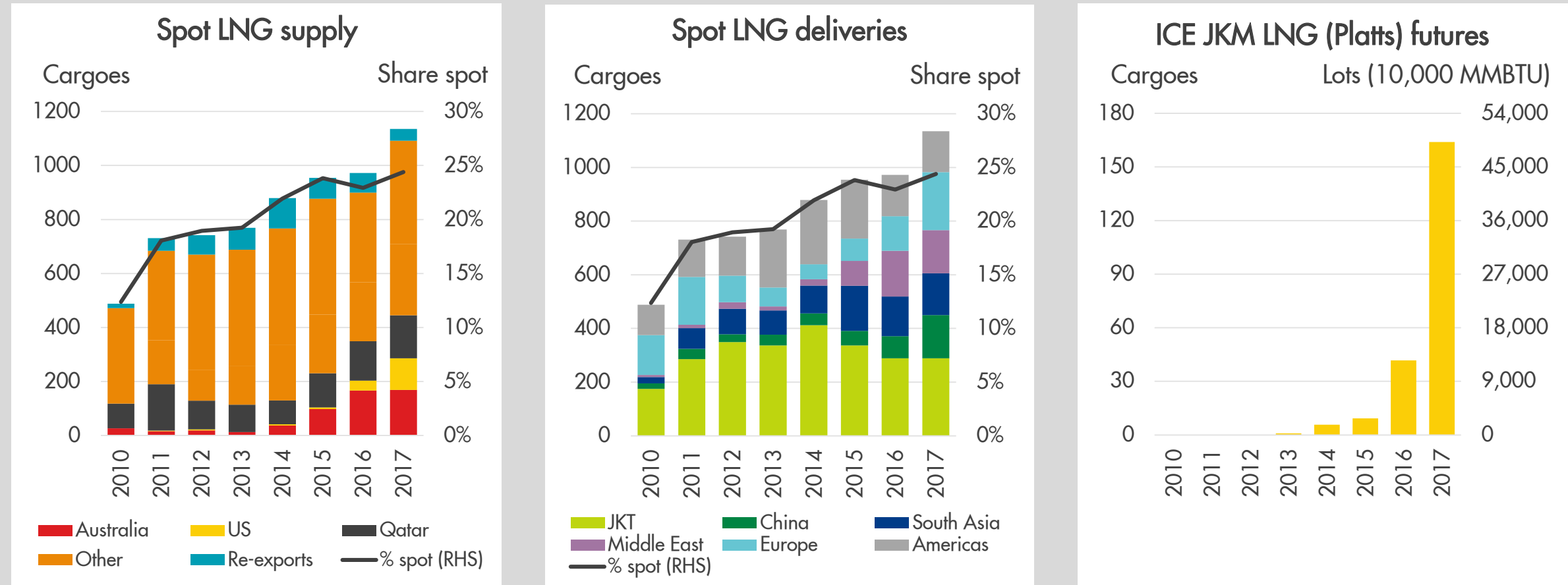
Source: Shell interpretation of IHS Markit Q4 2017, S&P Global Platts, ICE data and Wood Mackenzie Q4 2017 data

# SPOT PRICES CONTINUE TO REFLECT STRONG DEMAND FOR LNG



Source: Japanese customs data (Japan LNG import), S&P Global Platts (JKM), ICE (NBP, Brent, ARA coal), NYMEX (Henry Hub)

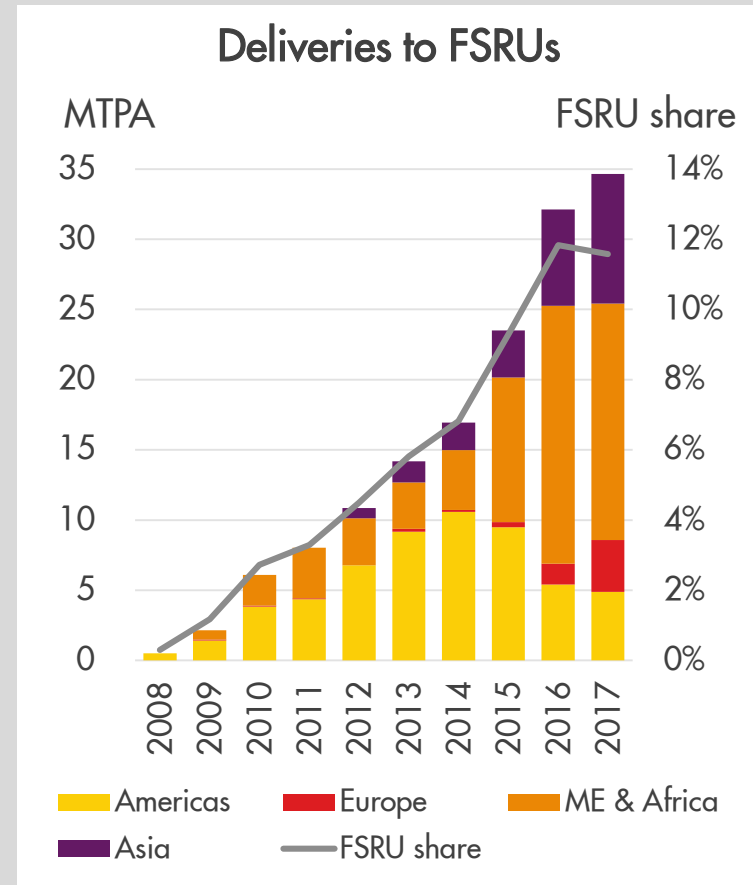
# PHYSICAL AND FINANCIAL LIQUIDITY INCREASE AS MARKET EVOLVES



Source: Shell interpretation of IHS Markit Q4 2017, S&P Global Platts and the ICE data



# FAST, FLEXIBLE FSRUs CONTINUE TO INCREASE LNG IMPORTS



## FSRU importing markets

### Existing

■ Argentina	■ Egypt	■ Jamaica	■ Malta
■ Brazil	■ Indonesia	■ Jordan	■ Pakistan
■ China	■ Israel	■ Kuwait	■ Turkey
■ Colombia	■ Italy	■ Lithuania	■ UAE

### Under Construction & Development

■ Bahrain	■ Russia
■ Bangladesh	■ Panama
■ Chile	
■ Ghana	

### Proposed

■ Croatia	■ Ivory Coast
■ Cyprus	■ South Africa
■ El Salvador	■ Sri Lanka
■ Hong Kong	

Source: Shell interpretation of IHS Markit Q4 2017 data

# DEMAND FOR LNG IN TRANSPORT GROWS GLOBALLY

■ Diverse marine segments choosing LNG

■ LNG bunkering network developing globally

■ LNG road fuelling network developing in China (2000+ stations) and EU (100+ stations)



Container Ship



Cruise Ship



Tanker



LNG Fuel Station



Barge



Car Carrier



Ferry



LNG Heavy Duty Truck



# 03

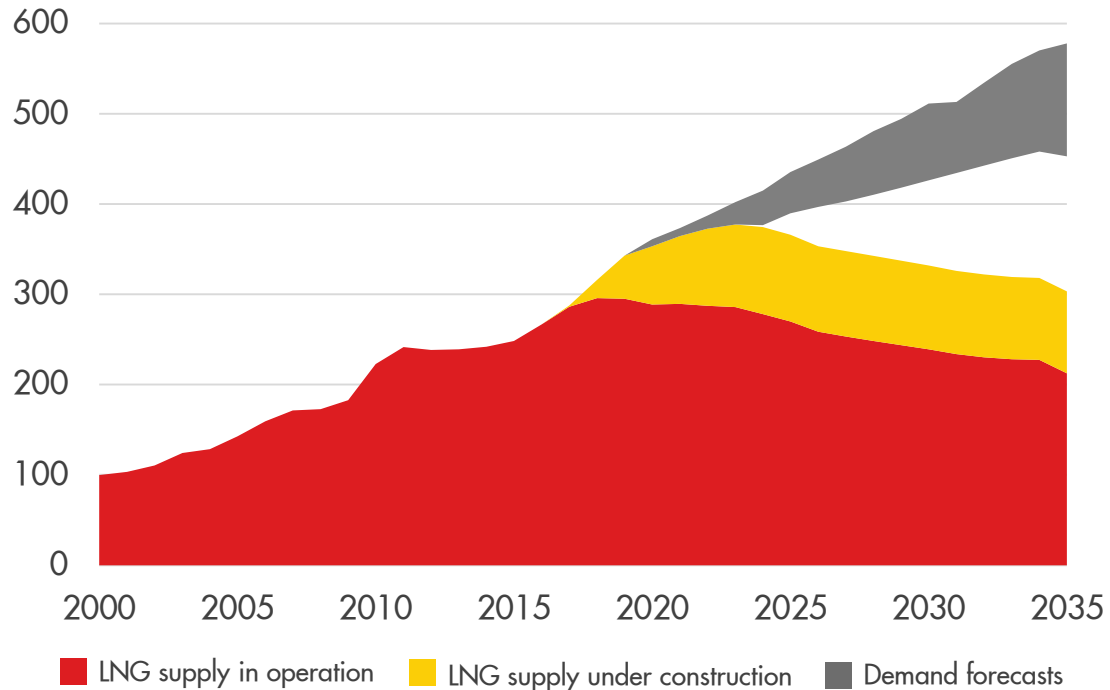
**SUPPLY  
INVESTMENT  
REQUIRED TO  
MEET LONG-TERM  
DEMAND  
GROWTH**



# LACK OF SUPPLY INVESTMENT RISKS FUTURE GLOBAL LNG MARKET GROWTH

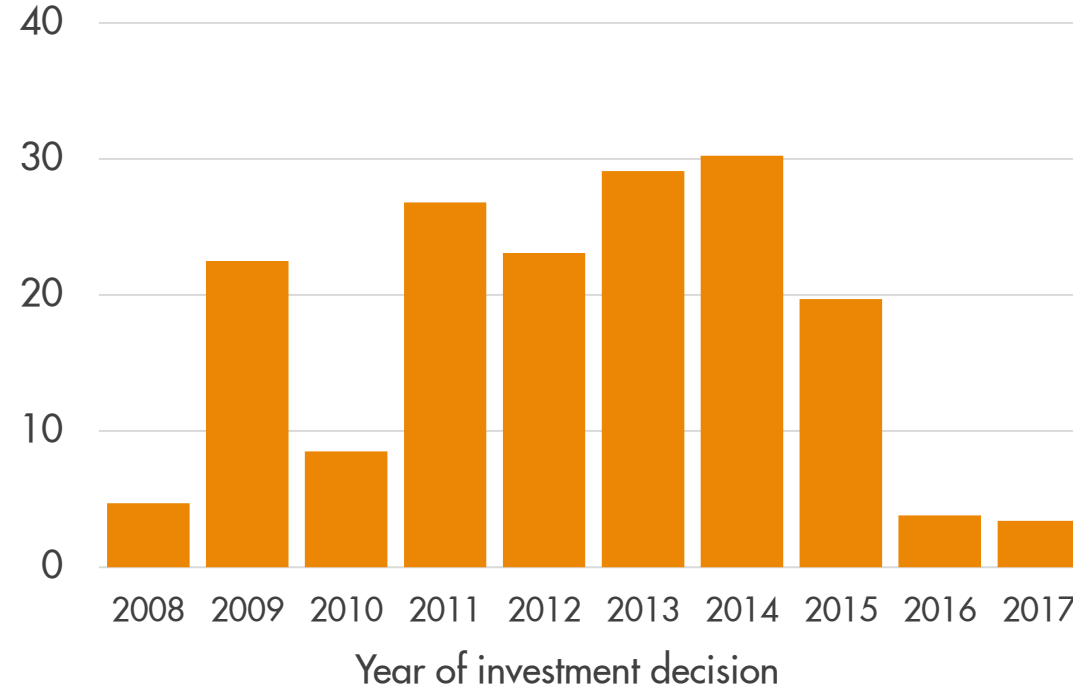
## Emerging LNG supply-demand gap

MTPA (DES)



## Investment in liquefaction capacity

MTPA (FOB)

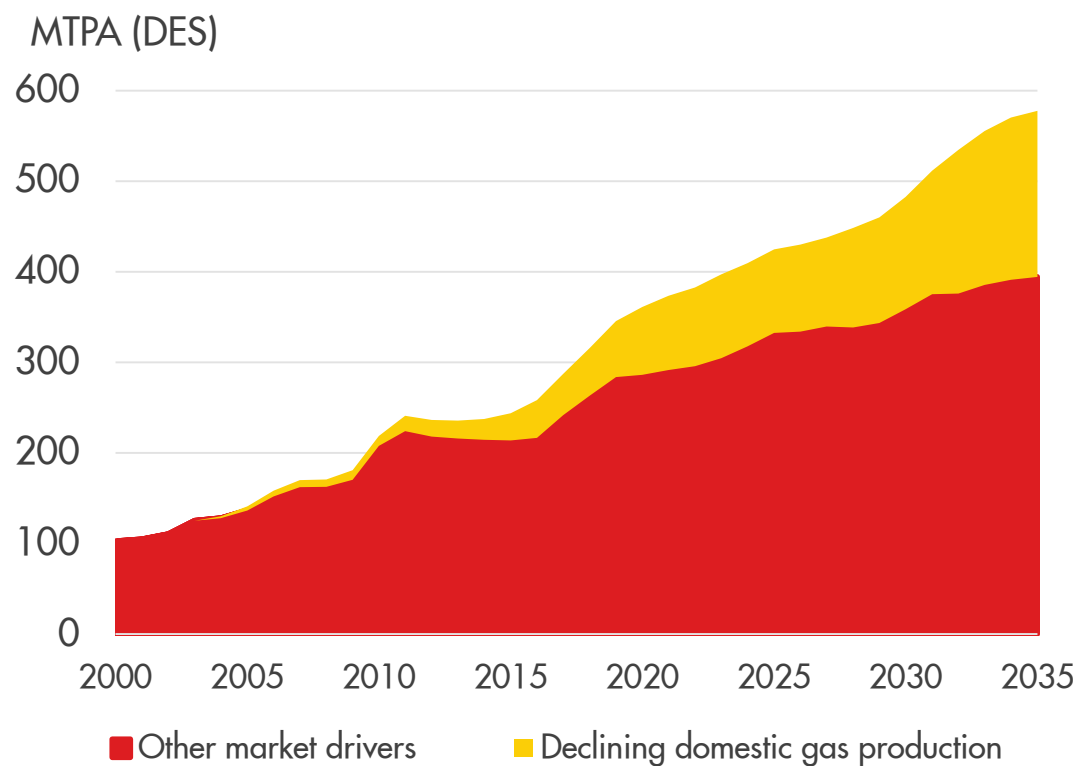


Source: Shell interpretation of IHS Markit, Wood Mackenzie, FGE, BNEF and Poten & Partners Q4 2017 data

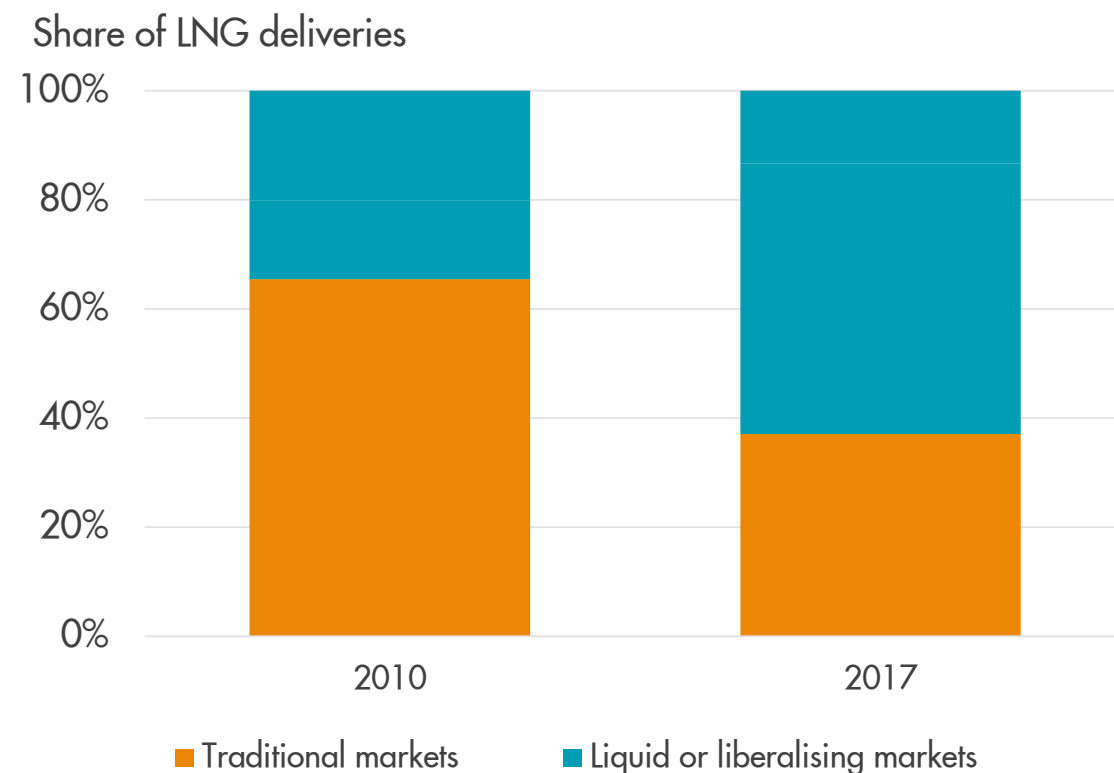


# LNG BUYERS AND THEIR NEEDS ARE CHANGING

## Drivers of LNG demand



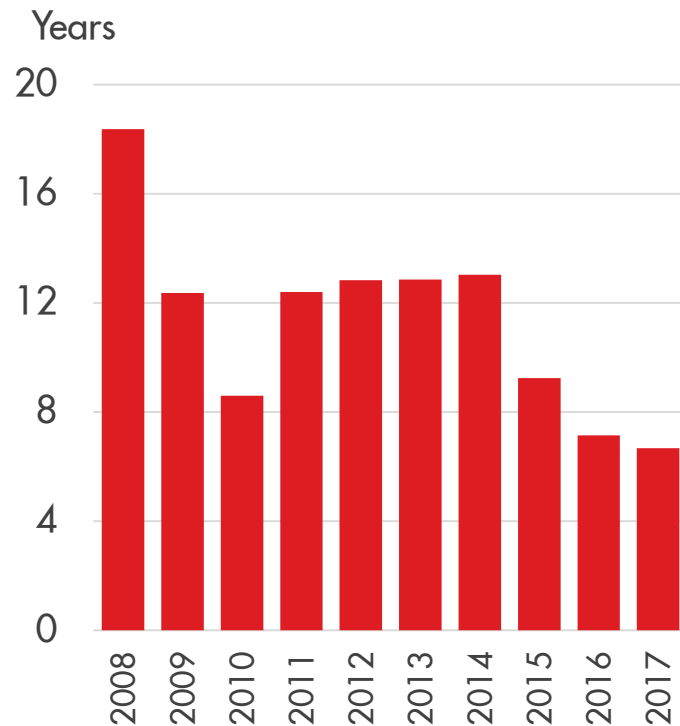
## LNG buyers' domestic gas competition



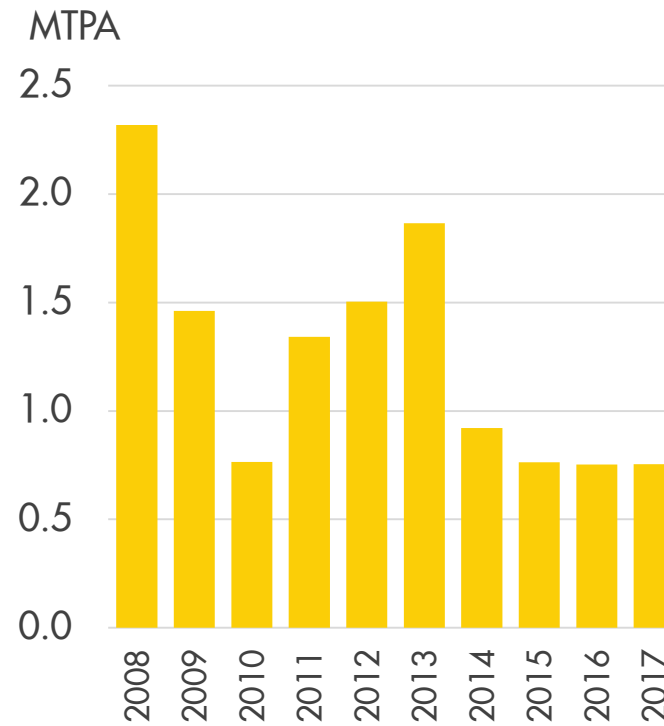
Source: Shell interpretation of Wood Mackenzie Q4 2017 data

# LNG BUYERS SIGNING SHORTER AND SMALLER CONTRACTS

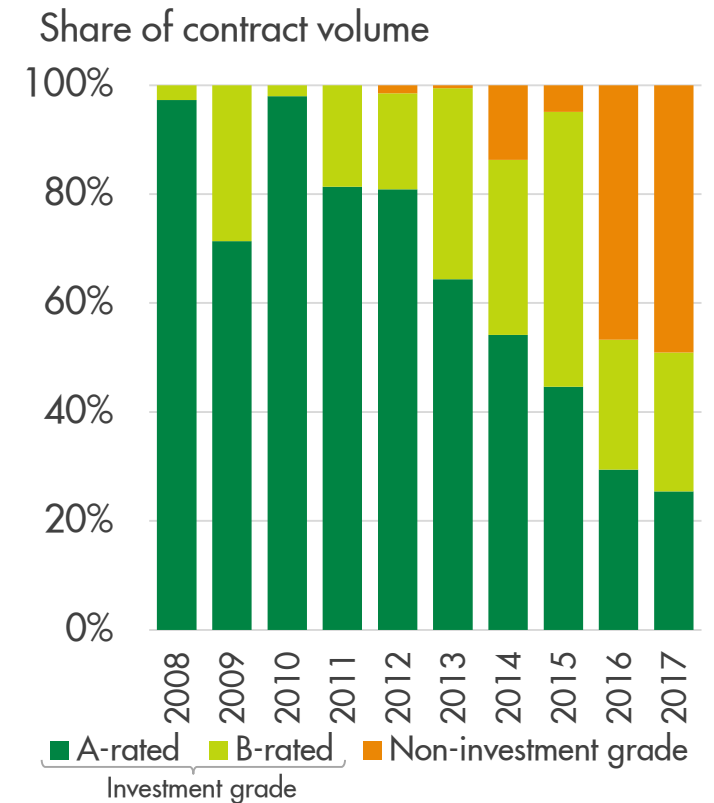
## Average contract length



## Average contract volume



## New long-term contract credit rating

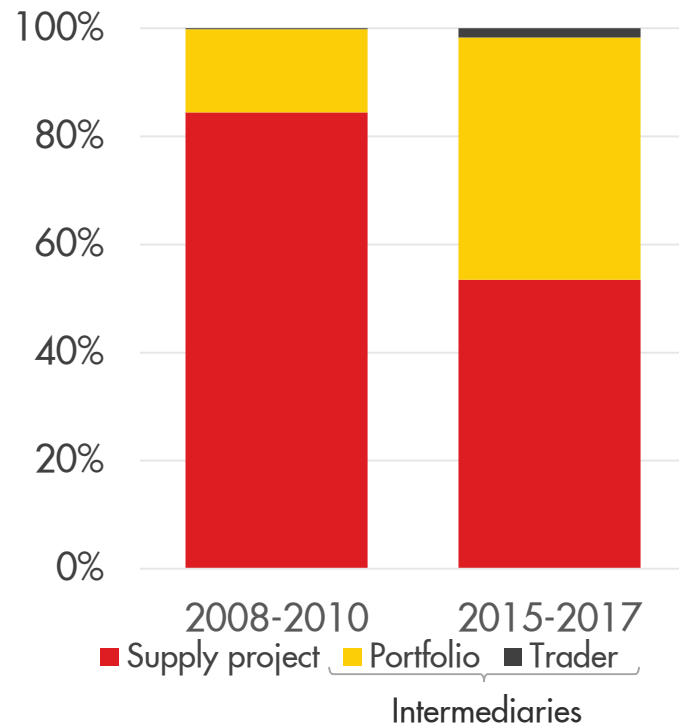


Source: Shell interpretation of IHS Markit Q4 2017, Moody's and Fitch data

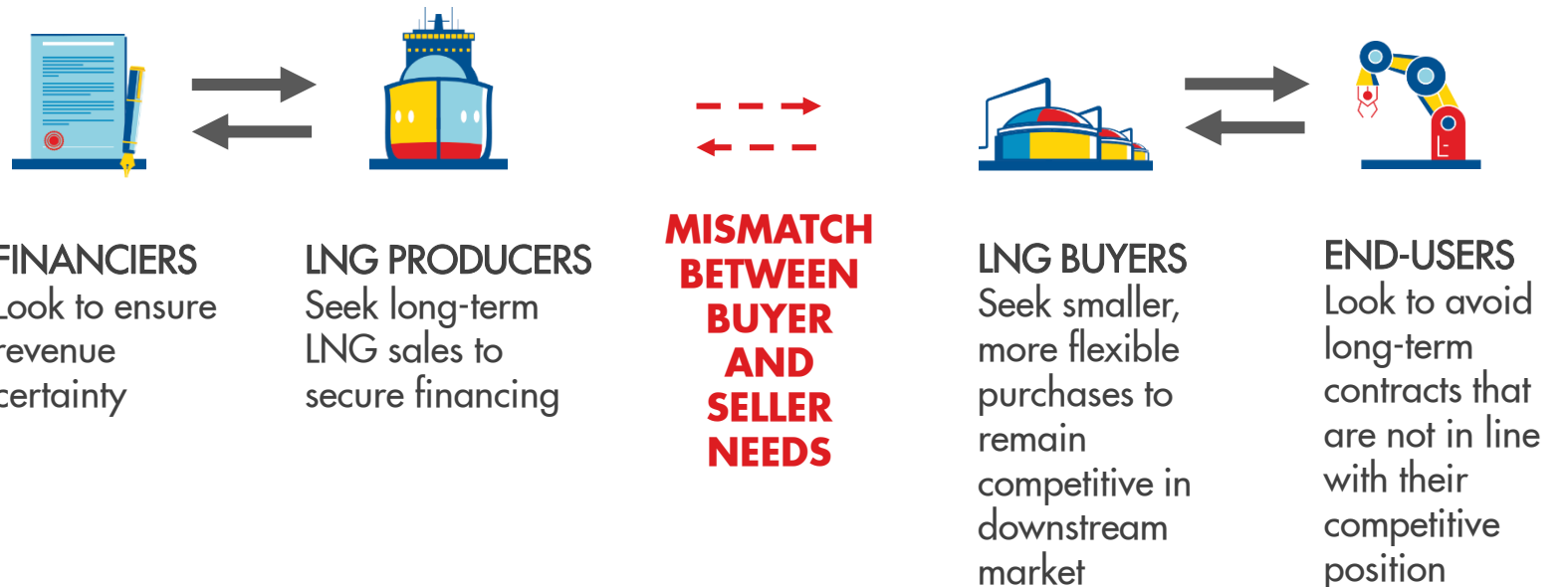
# LIQUEFACTION INVESTMENT NEEDED TO MEET DEMAND GROWTH

## Term sales to importers by supplier type

Share of total contract volume



## STALEMATE CONSTRAINING GROWTH OF LNG SUPPLY



Source: Shell interpretation of IHS Markit Q4 2017 data

## SUMMARY

### External environment creating more opportunities for gas and LNG

- Multiple levels of policy support gas and LNG demand
- Gas supports renewable power generation and provides cleaner non-power energy supply

### Strong LNG fundamentals exceeded expectations in 2017

- 11 % increase in LNG imports
- Physical and financial liquidity increases as market evolves

### Supply investment required to meet long-term demand growth



