



**Developing a global and profitable LNG portfolio**



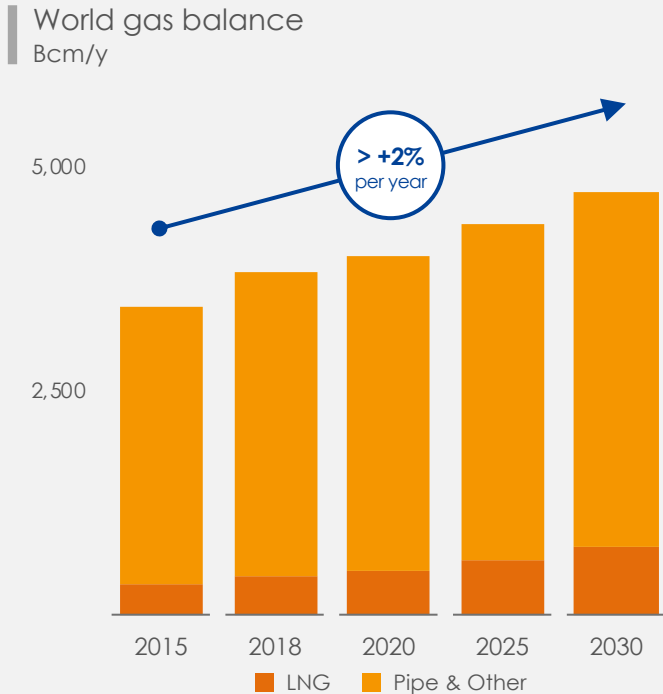


**LNG market**

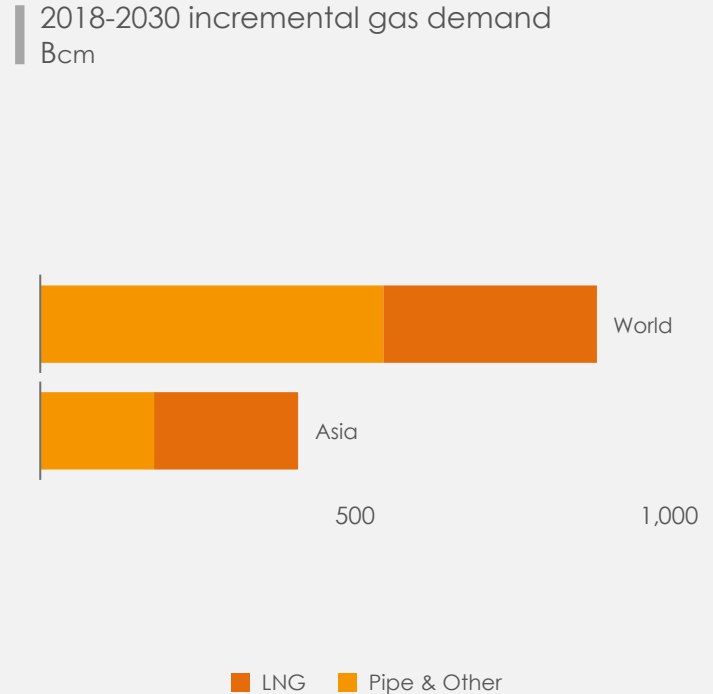
**Philippe Sauquet**

President Gas, Renewables & Power

# LNG, the engine of gas demand growth



LNG plays an increasing role in growing demand (> 15% in 2030 vs. 11% in 2018)



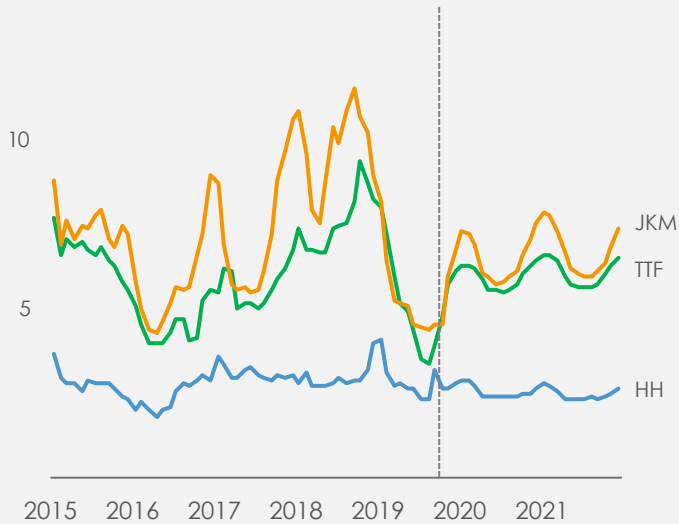
LNG demand growth mainly from Asia

Source: Enerdata, Total Energy Outlook - Momentum

# Gas prices

Markets sensitive to supply-demand fundamentals

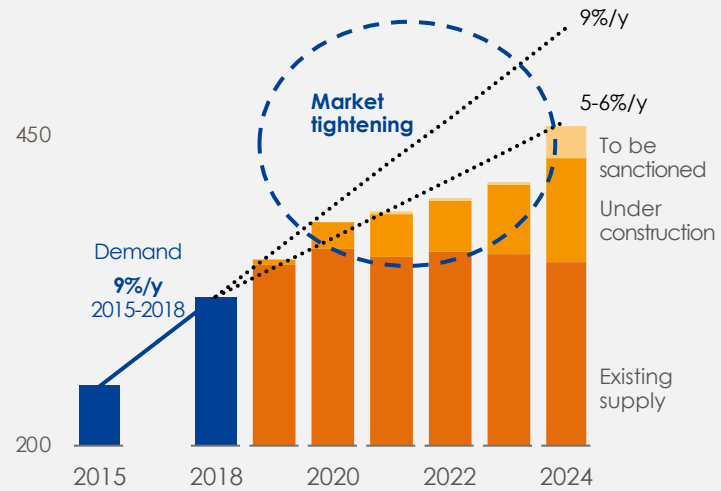
Gas prices  
\$/Mbtu



**Markets anticipate TTF/JKM recovery**  
with strong growth in LNG demand

Source: Forward 09/13/2019 (NYMEX, ICE, Platts)

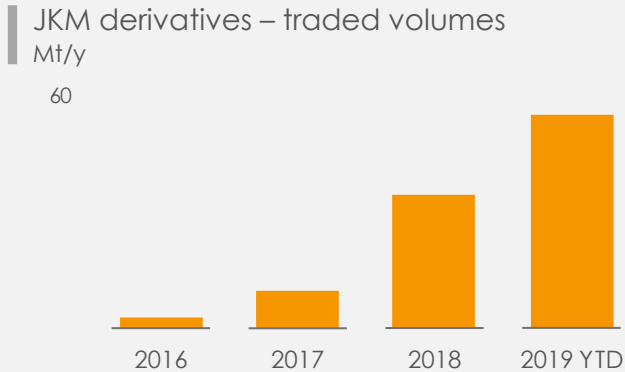
Medium-term LNG supply & demand  
Mt/y



**Market tightening 2021+**



# New trends impacting LNG markets



Source: GIGNL  
\* Short term = < 4 years

**2/3 of global LNG sales still sold through long term oil indexed contracts but...**

**...trend toward commoditization**

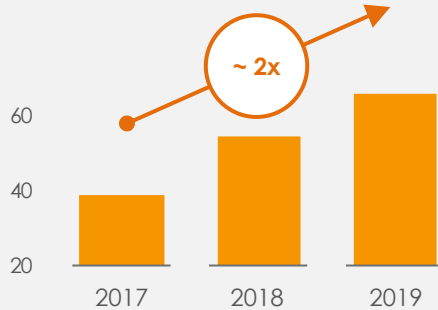
- Long term contracts for Europe indexed to spot gas prices
- Rapid growth in JKM swap derivative market
- Increase in short-term and spot trades: from 27% in 2017 to 32% in 2018
- First LNG Freight Financial swap

**Total LNG's portfolio well positioned** to benefit from market trends

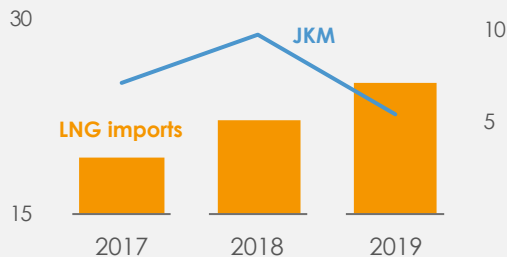
# Asia: switch from coal to gas driven by policies

Supported by low prices

China LNG imports  
Mt/y



India LNG imports vs. Prices (JKM)  
Mt/y and \$/Mbtu



## China growing LNG customer

- Ambitious target for share of gas in energy mix of > 15% by 2030
- Air quality policies
- Unbundling of pipe gas operation
- Increasing regas capacity: +50 Mt/y by 2025

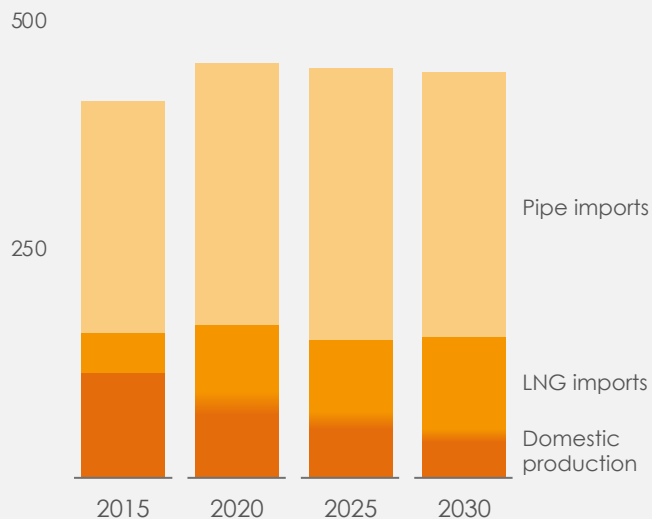
## India long-term growing LNG customer

- Share of gas in energy mix target: from 7% in 2018 to 15% by 2030
- Investment in gas infrastructure
- Market opening

# Opportunity for LNG in Europe

## European gas balance

Bcm/y



Source: TOTAL Energy Outlook, Momentum

**Increasing role of gas** with coal and nuclear decommissioning and growth of renewables

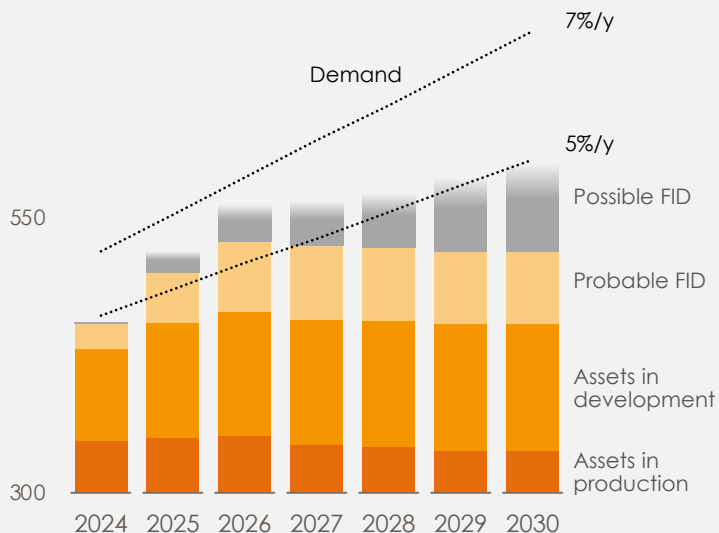
**Domestic production decreasing**

**European regas capacity** providing **flexibility**



# Medium-term LNG supply-demand outlook

LNG supply & demand  
Mt/y



## Many LNG projects under study but priority to the most competitiveness ones

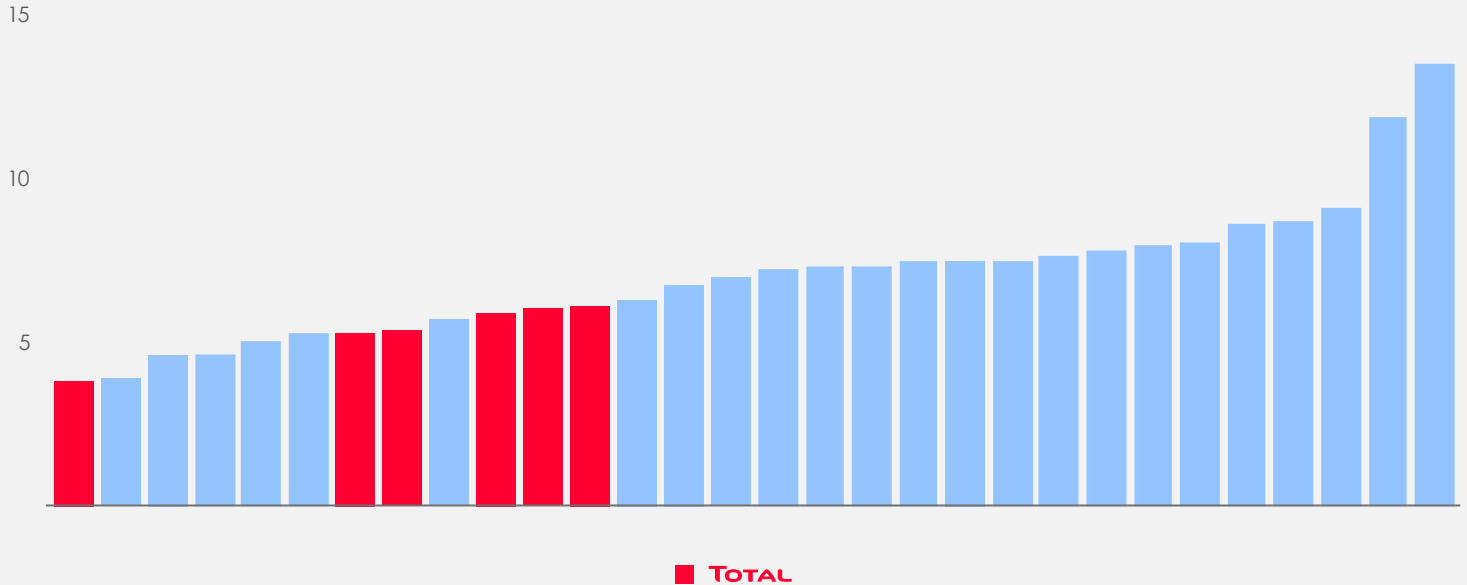
- Present low gas prices challenge new projects
- Advantage for projects with secured long term sales (Mozambique LNG)
- US merchant greenfield projects at risk

## Priority to low breakeven projects

Reference: Total Energy Outlook - Momentum

# Priority to low breakeven projects

Breakeven - Integrated LNG projects  
\$/Mbtu – DES Asia – pre-FID and under construction



Source: WoodMackenzie LNG tool, 2019 Q2, Breakeven @10% IRR



**Growing LNG production  
with competitive projects**

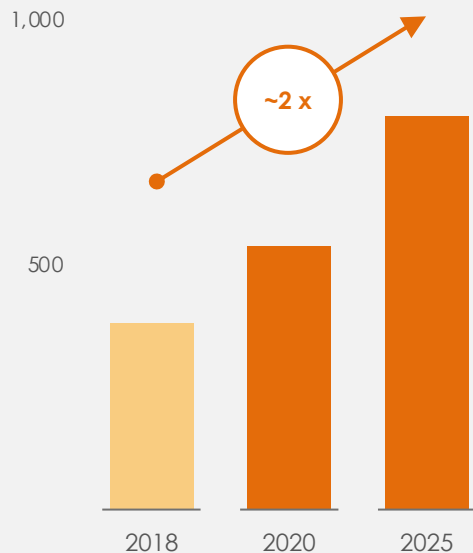
**Arnaud Breuillac**

President Exploration & Production



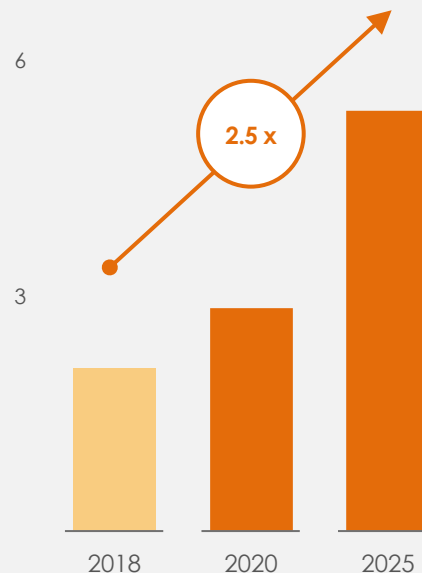
# Rapidly expanding LNG

Total integrated gas production  
kboe/d



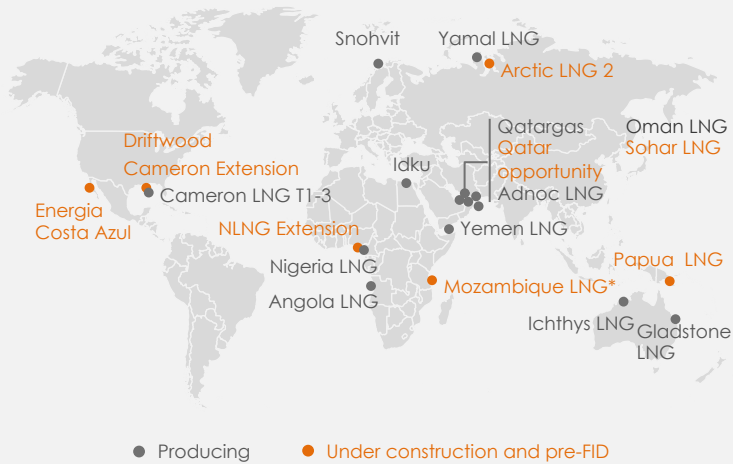
Share of Group production  
from **14%** in **2018** to **22%** by **2025**

Integrated gas CFFO  
B\$ - 60 \$/b

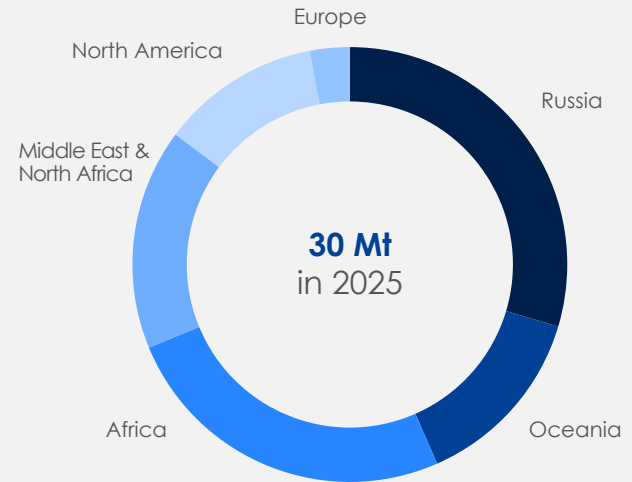


# Growing LNG production with competitive projects

## LNG assets

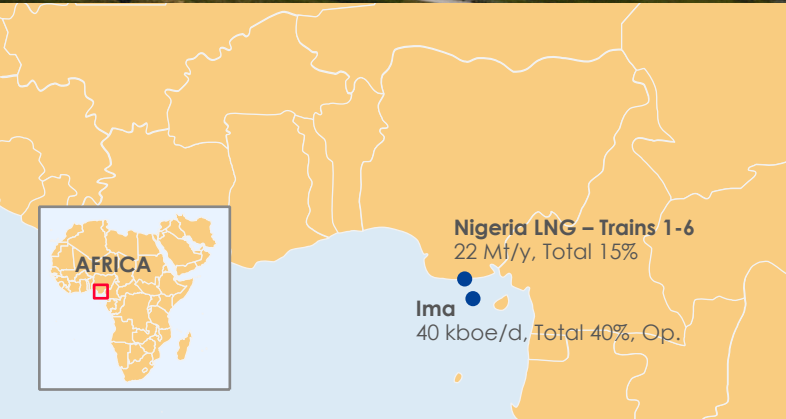


## LNG 2025 equity production



Present in all major basins

# Leveraging existing Nigeria LNG for a low cost expansion



## Valorizing large, low cost Nigerian conventional gas resources

- Upstream gas from Ima\* offshore field

## Adding 7 Mt/y to existing 22 Mt/y plant

- Increasing trains 1-6 capacity, adding train 7
- Optimized **brownfield low cost** development
- Targeting < 700 \$/t

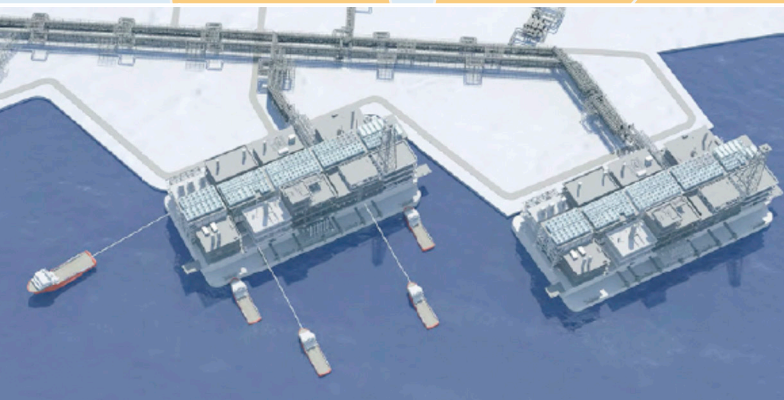
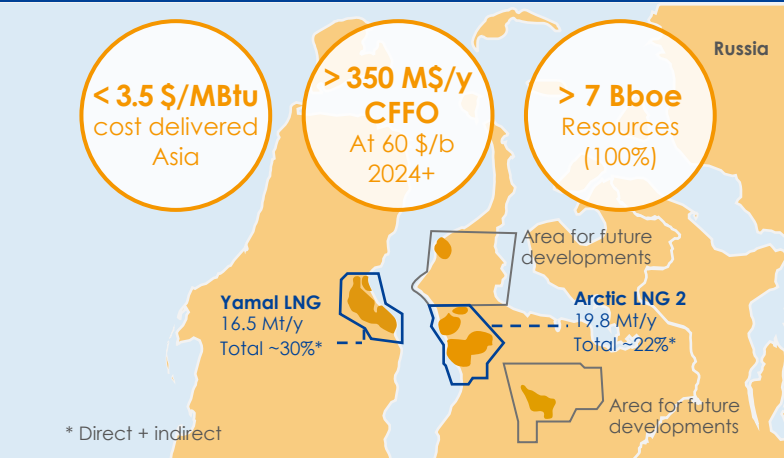
**FID by end 2019** – first LNG in 2023

\* Future contributor of Nigeria LNG



# Arctic LNG 2: in the footsteps of Yamal LNG success

Increasing equity production in Russia to ~9 Mt/y by 2025



**FID Sept. 2019**, first LNG by end-2023

Leveraging **low upstream costs**

Developing **cost effective GBS\* design**, LNG plant **30% lower** unit costs **vs. Yamal LNG**

**Significant synergies and shipping optimizations**

- Increasing use of **Northern Sea Route**
- **Pooling fleet with Yamal LNG**, building new **Arc7 hybrid designs**
- **New transshipment terminals in Kamchatka** (Asian market-80%) and **Murmansk** (European market-20%)

\* Gravity-based structure

# North America: building strong liquefaction position

Developing partnership with Sempra

## Cameron LNG, US, 16.6%



- Train 1 started, trains 2&3 by mid-2020 (3 x 4.5 Mt/y)
- Cameron LNG brownfield extension under study\*
- Low cost shale gas supply

## Energia Costa Azul, Baja California, 10-15%

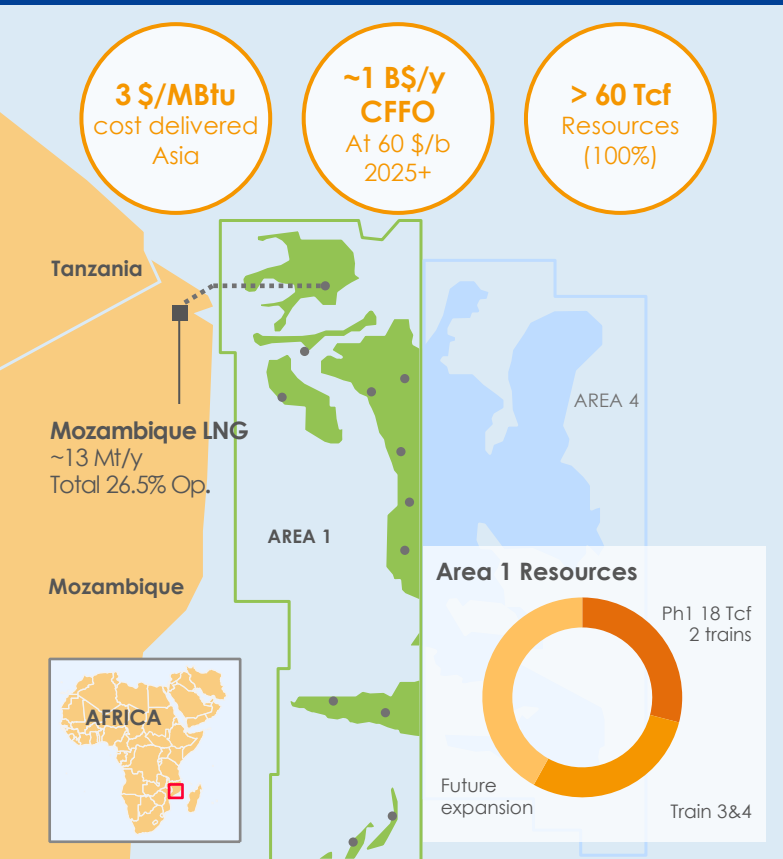


- Competitive brownfield
- Phased development: Ph1 at ~3 Mt/y
- FID turn of 2019
- Low cost shale gas supply from Permian
- Total offtake ~1 Mt/y, strong advantage on shipping cost linked to Asia Pacific location

**~3.5 Mt/y equity production by 2025**

\* FERC/DOE authorizations granted

# Mozambique LNG: unlocking world-class gas resources



## Giant high quality resources

- Gas composition well adapted to liquefaction
- Well productivity ~30 kboe/d

## Mozambique LNG: leveraging large scale to lower costs

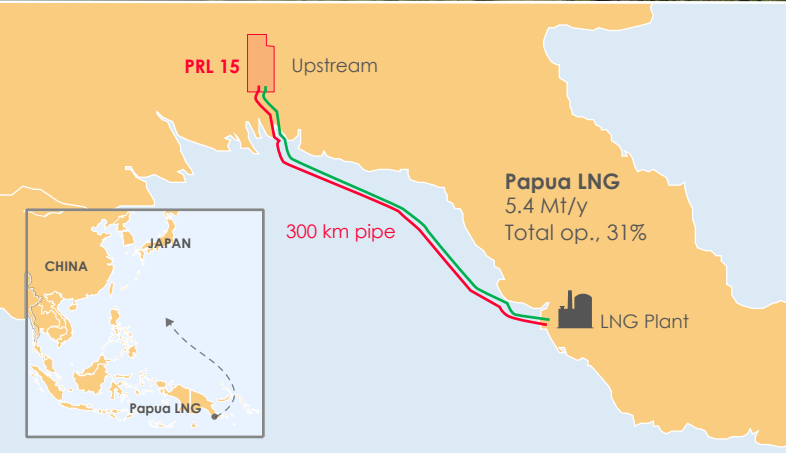
- Upstream: **subsea to shore**
- **2 x 6.4 Mt/y** LNG plant **< 850 \$/t**
- **Onshore synergies** with Rovuma LNG
- **FID June 2019**, first LNG in 2024
- Launching studies on train 3&4 in 2020

**~90% volume sold** under long term contracts largely **oil indexed**

Note: Subject to closing



# Moving forward with attractive Papua LNG project



## Favorable reservoir characteristic

- Well productivity ~30 kboe/d

## Low cost brownfield LNG extension project

- Maximizing synergies with PNG LNG
- 3 x 2.7 Mt/y project: 2 trains Papua LNG, 1 train PNG LNG

## Low shipping costs, close to Asian markets

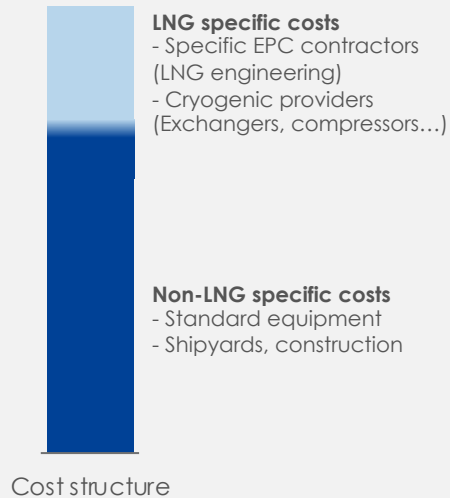
## Targeting FID by 2021

# Leveraging favorable market to launch projects

## LNG project cost structure

%

100%

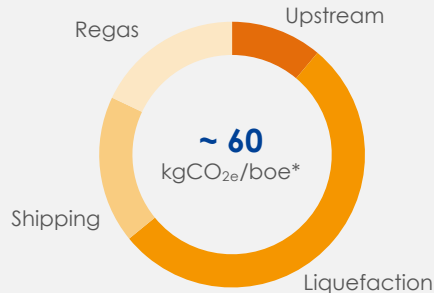


## ~75% of LNG project costs non-specific to LNG industry

- Significant spare capacity within the supply chain
- Chinese contractors offering competitive alternative for LNG and offshore projects

# Reducing LNG GHG footprint

## LNG GHG emission breakdown



## GHG main contributor

- Liquefaction process itself
- Shipping

## Liquefaction improvement initiatives



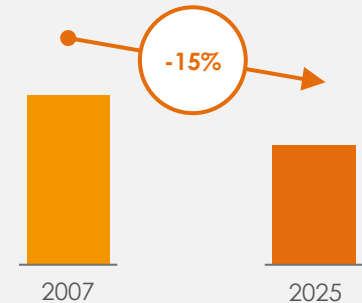
## Process and operations efficiency:

up to 10% GHG reduction

**High efficiency** turbines:  
up to 15% GHG reduction

**All electric approach** (grid, renewable): up to > 50% GHG reduction

## Shipping emission by LNG carrier type



## Portfolio arbitrage

**Improve insulation** (membrane technology)

Select **optimized propulsion** (LNG as fuel, low pressure two stroke engine)

Install **reliquefaction systems**

\* Scope 1+2 from gas production to regas at terminal

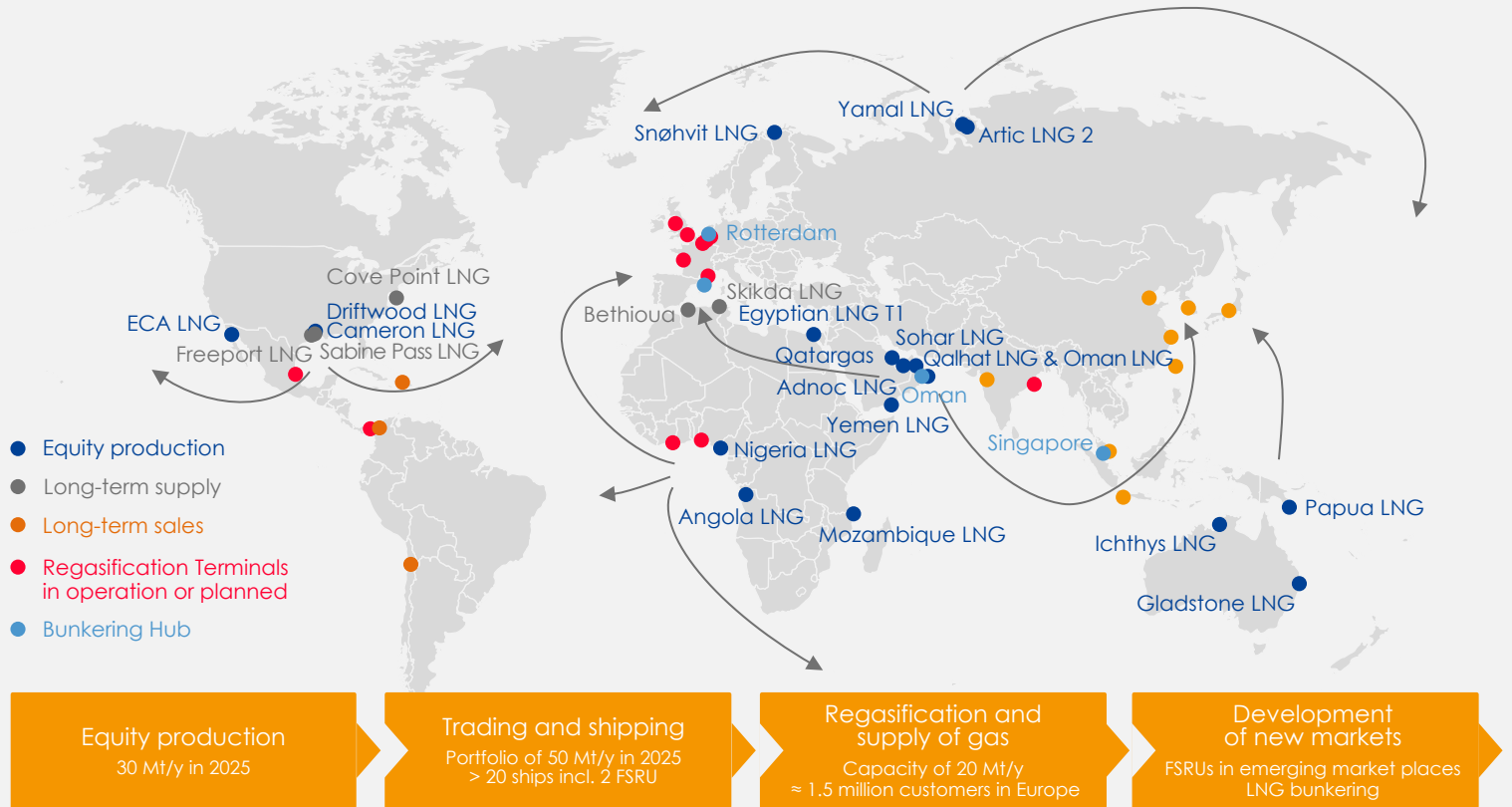




**Growing a resilient and  
profitable LNG portfolio**

**Laurent Vivier**  
Senior Vice President Gas

# Integrated and diversified along the value chain



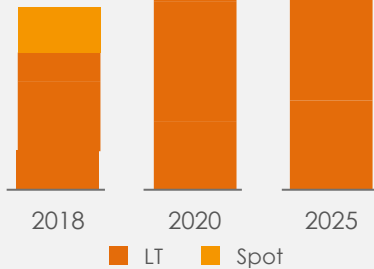


# LNG Portfolio: sustainable growth

60% of LNG sales from Group production by 2025

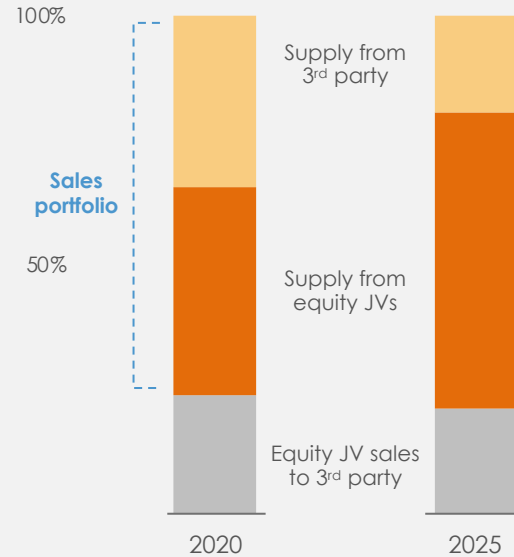
LNG sales  
Mt/y

50



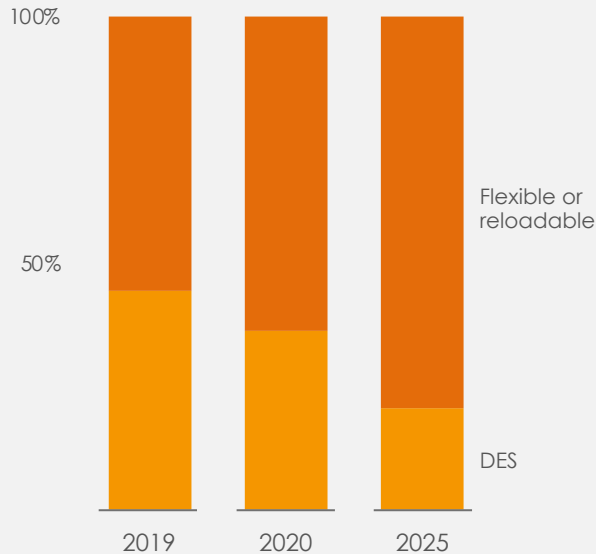
**Managing 50 Mt/y by 2025**

Supply by sources  
%



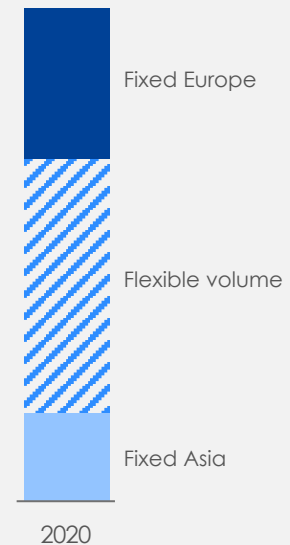
# A balanced portfolio open to optimization

## Portfolio flexibility



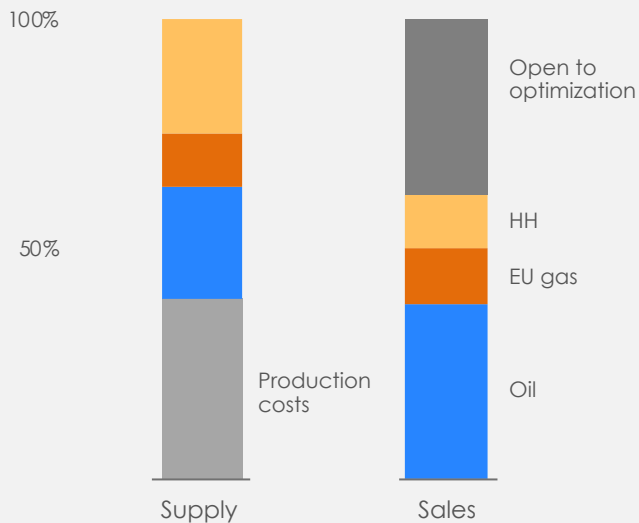
~65% of portfolio has **flexible** destination or is **reloadable in 2020**

## Sales destinations %

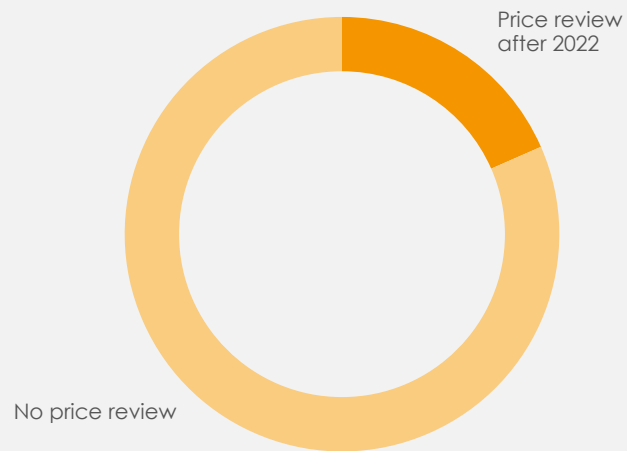


# Resilient sales portfolio benefiting from oil price upside

2020 index exposure  
%

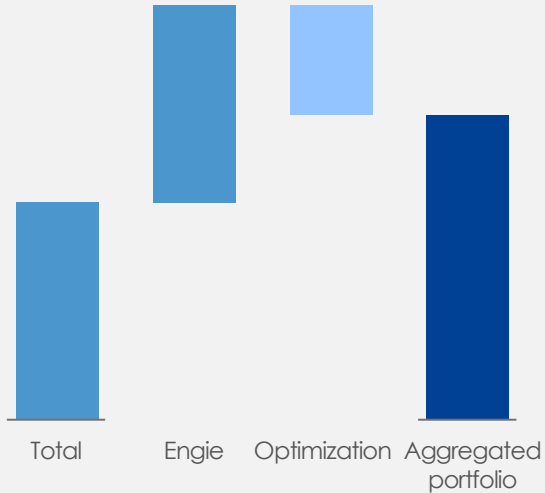


Long term contract price reviews  
%



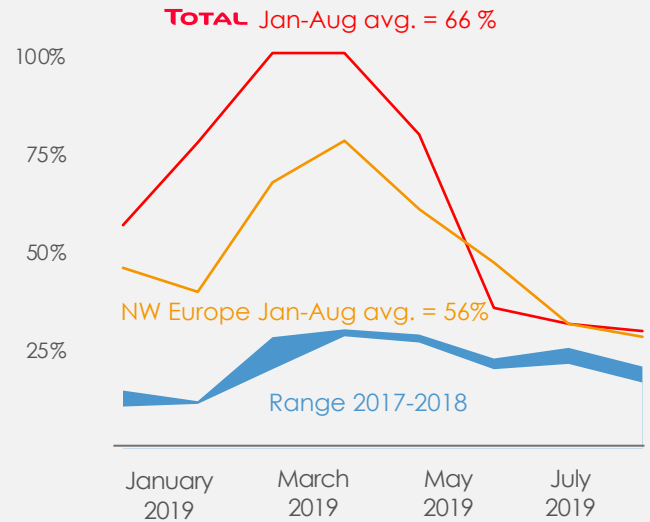
# Engie LNG: creating value combining two LNG portfolios

Shipping  
Days



Value creation from optimized shipping **~0.2 \$/Mbtu**

Europe regas utilization  
%



Value of monetizing available regas capacity **~0.25 \$/Mbtu**

# New outlets

Accessing new markets through FSRUs and local partnerships

New 2019 sales

## Guanghai Energy / China:

SPA 0.7 Mt/y DES from June 2020 for 10 years

## Taipower / Taiwan:

MOU/HOA 0.9Mt/y DES from January 2024 for 9 years

**Bunkering** with CMA CGM 0.6 Mt/y

Republic of Benin

Development of a LNG import FSRU

Supply of up to **0.5 Mt/y**

**15 years**, starting 2021



TOTAL and AES in Dominican Republic and Panama

Partnership to develop gas-to-power sales

**1 Mt/y**

**10 years** starting 2017



**Adani Partnership:** leveraging Indian market potential

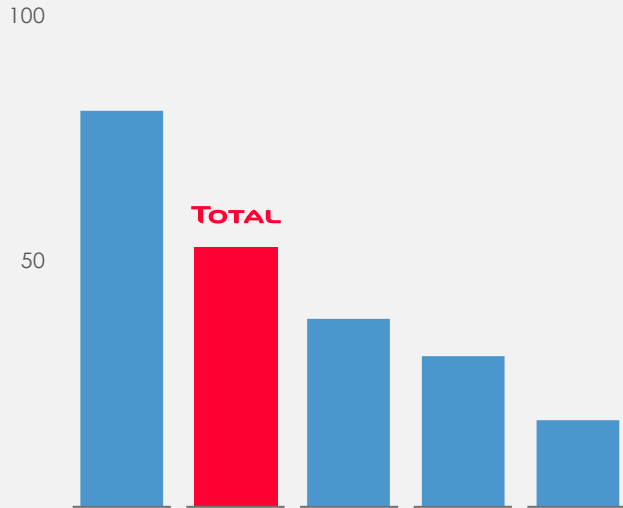
Regasification terminal of Dhamra LNG – **5 Mt/y**



# World #2 LNG player worldwide

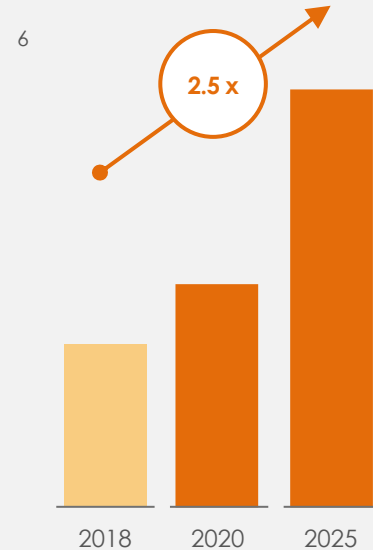
## Integrated LNG

2025 LNG portfolio  
Mt/y for Total and Peers\*



\* BP, Chevron, ExxonMobil, and Shell

Integrated gas CFFO  
B\$ - 60 \$/b





# Disclaimer

This document may contain forward-looking information on the Group (including objectives and trends), as well as forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, notably with respect to the financial condition, results of operations, business, strategy and plans of TOTAL. These data do not represent forecasts within the meaning of European Regulation No. 809/2004.

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Financial information by business segment is reported in accordance with the internal reporting system and shows internal segment information that is used to manage and measure the performance of TOTAL. In addition to IFRS measures, certain alternative performance indicators are presented, such as performance indicators excluding the adjustment items described below (adjusted operating income, adjusted net operating income, adjusted net income), return on equity (ROE), return on average capital employed (ROACE) and gearing ratio. These indicators are meant to facilitate the analysis of the financial performance of TOTAL and the comparison of income between periods. They allow investors to track the measures used internally to manage and measure the performance of the Group. These adjustment items include:

## (i) Special items

Due to their unusual nature or particular significance, certain transactions qualified as "special items" are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. However, in certain instances, transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may be qualified as special items although they may have occurred within prior years or are likely to occur again within the coming years.

## (ii) Inventory valuation effect

The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments' performance and facilitate the comparability of the segments' performance with those of its competitors.

In the replacement cost method, which approximates the LIFO (Last-In, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differentials between one period and another or the average prices of the period rather than the historical value. The inventory valuation effect is the difference between the results according to the FIFO (First-In, First-Out) and the replacement cost.

## (iii) Effect of changes in fair value

The effect of changes in fair value presented as an adjustment item reflects for some transactions differences between internal measures of performance used by TOTAL's management and the accounting for these transactions under IFRS.

IFRS requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices.

Furthermore, TOTAL, in its trading activities, enters into storage contracts, which future effects are recorded at fair value in Group's internal economic performance. IFRS precludes recognition of this fair value effect.

The adjusted results (adjusted operating income, adjusted net operating income, adjusted net income) are defined as replacement cost results, adjusted for special items, excluding the effect of changes in fair value.

Euro amounts presented herein represent dollar amounts converted at the average euro-dollar (€-\$) exchange rate for the applicable period and are not the result of financial statements prepared in euros.

This document also contains extra-financial performance indicators, including a carbon intensity indicator for energy products used by Total customers, that measures the average greenhouse gas emissions of those products, from their production to their end use, per unit of energy. This indicator covers the direct GHG emissions of production and processing facilities (scope 1) and their indirect emissions associated with energy purchase (Scope 2), as well as the emissions associated with the use of products by the customers of the Group (Scope 3) which Total does not control (for the definitions of scopes 1, 2 and 3, refer to Total's Registration Document).

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