European Union

EaP 10 YEARS Eastern Partnership

Eastern Partnership LNG Network

4th workshop of the Eastern Partnership LNG Network

17 December 2019, Świnoujście, Poland

“The Global LNG boom: Implications and Benefits for the European Markets”

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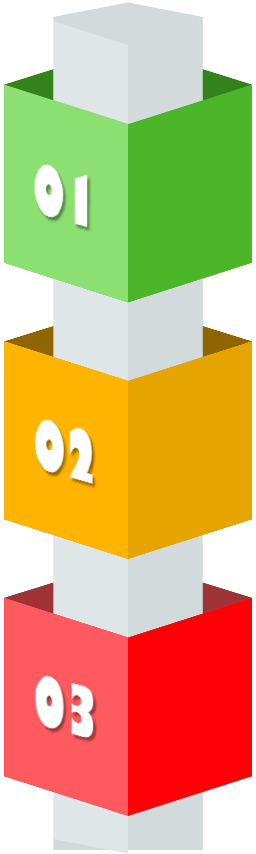
OAPEC



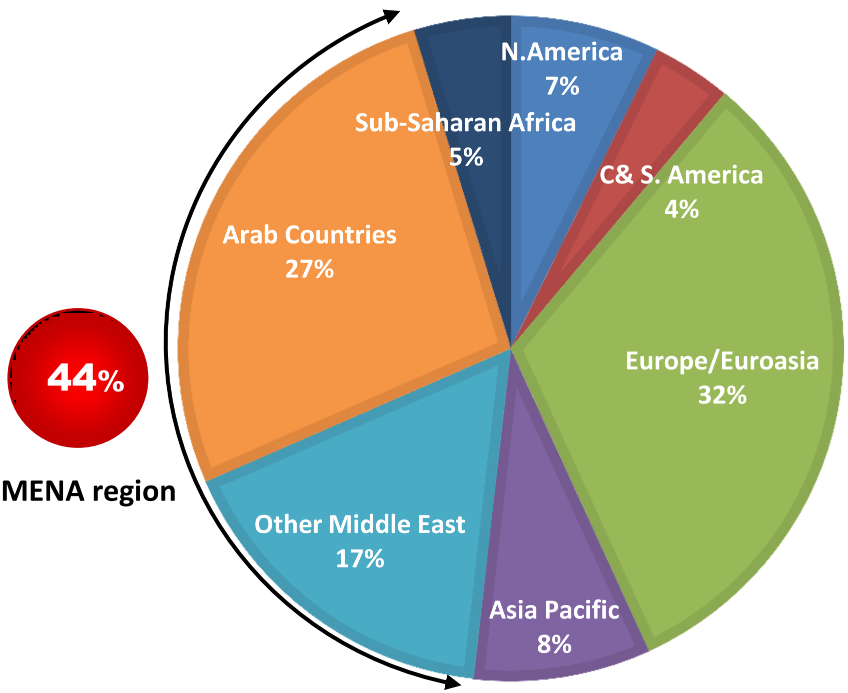
Setting the Scene: Key Figures of Natural Gas and LNG Globally

Arab Region- Europe: Strategic Partnership In the LNG sector

Global LNG Boom: Possible Implications and Benefits for European Markets

Item-1 Distribution of Proven Gas Reserves in 2019

Distribution of the World's Total Proven Gas Reserves, 2019

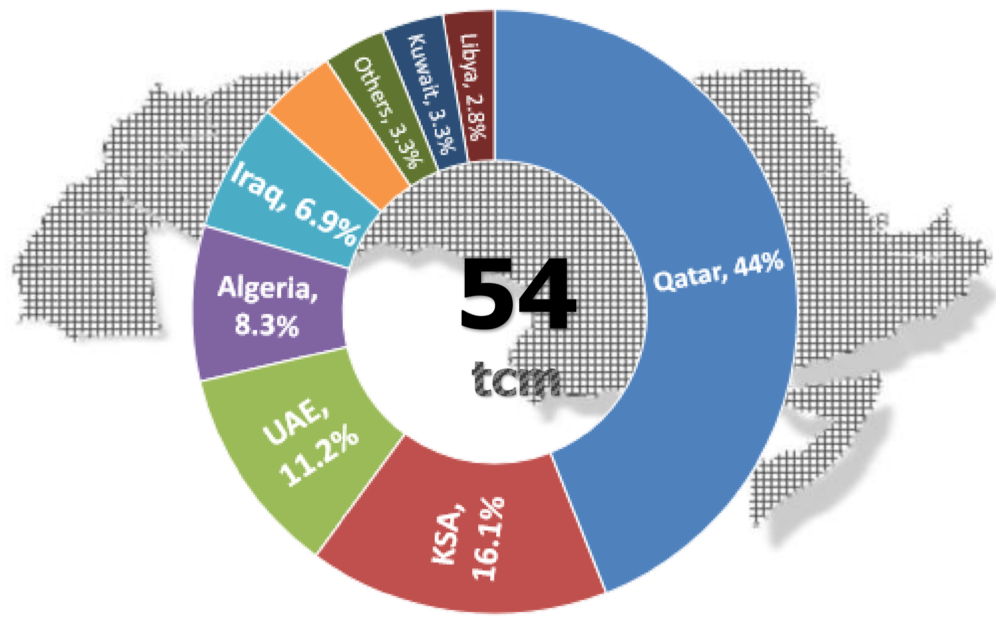


Total gas reserves : 205 tcm

Source: OAPEC, Oil & Gas Journal 2019.

27% Share of proven gas reserves in the Arab countries

Distribution of Proven Gas Reserves per Arab Country , 2019



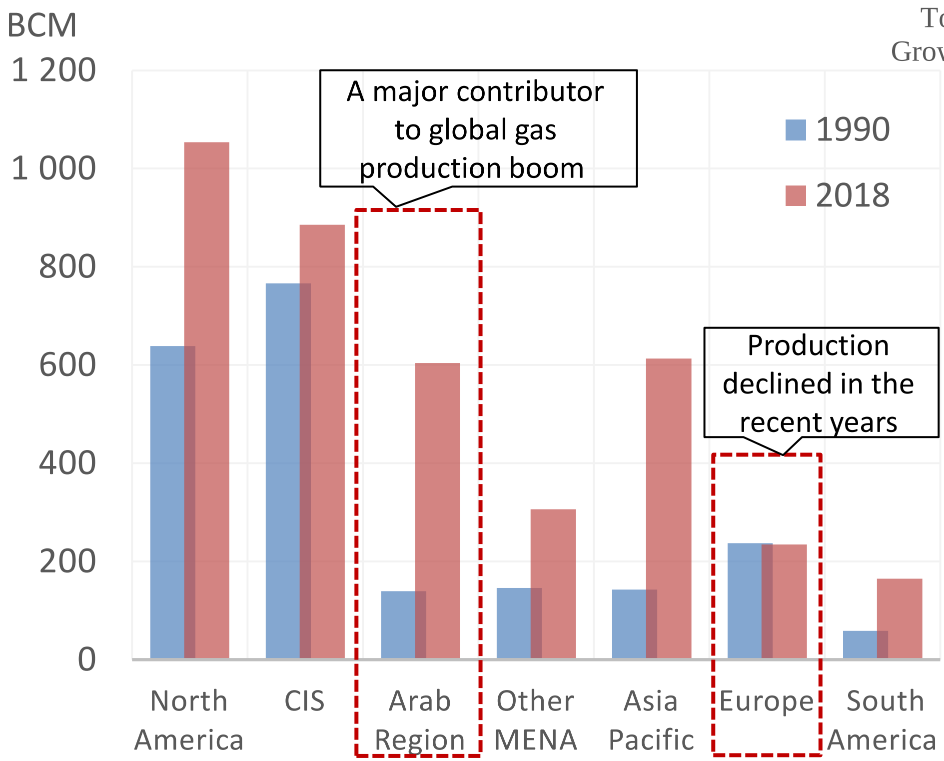
Source: OAPEC

! Irregular distribution of proven gas reserves in the Arab region

Qatar Is the largest gas reserve holder in the Arab region, thanks to the massive reserves of North Gas field.

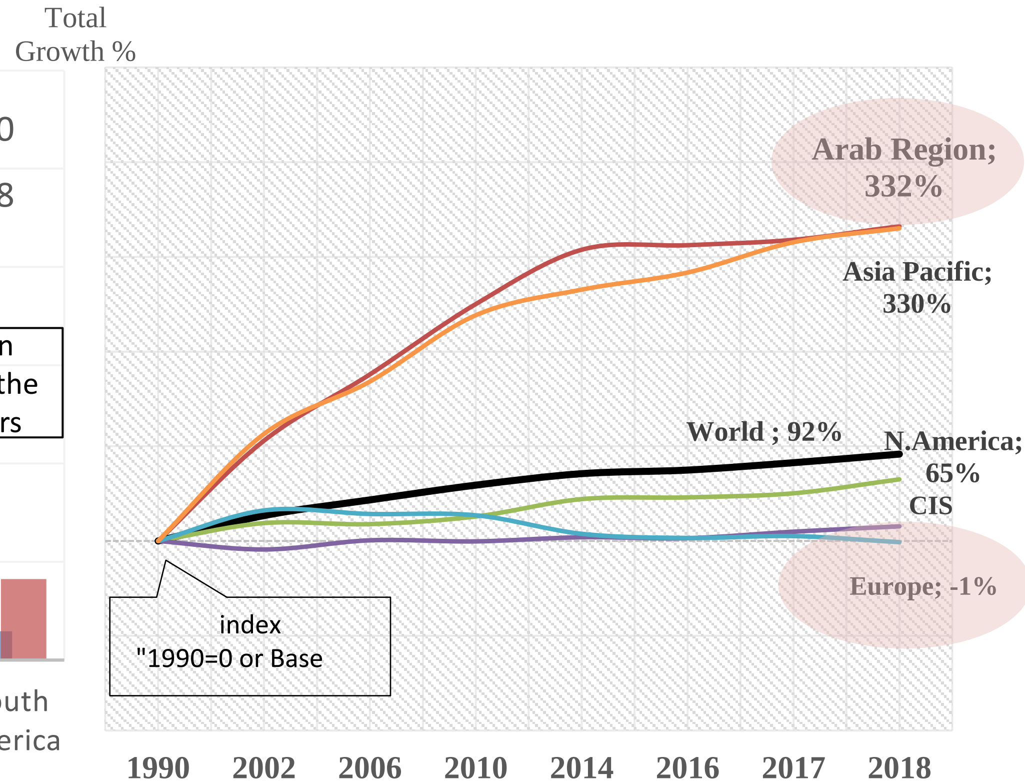
Item-1 Development of Gas production per region, bcm

Development of Gas production per region, bcm (1990-2018)



Source: OAPEC, Cedigaz 2019.

Total Growth (%) in Gas Production Per Region (1990-2018)



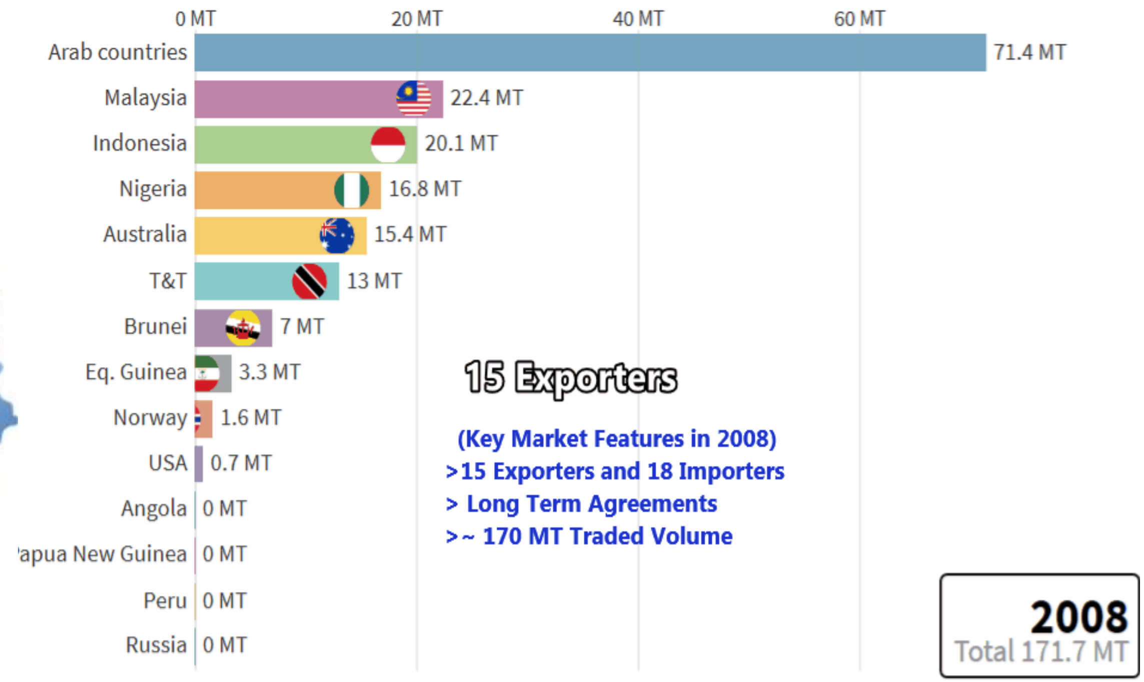
Source: OAPEC, cedigaz 2019.

Gas production has grown in all regions, thanks continuous exploration and development activities in gas producing countries.

Arab region has recorded the highest growth rate in total gas production compared to other regions over (1990-2018)

Item-1 Development of Global LNG trade: Supply boom

Gas/LNG projects in the Arab region



Development of Global LNG Exports in MT

Source:(OAPEC)

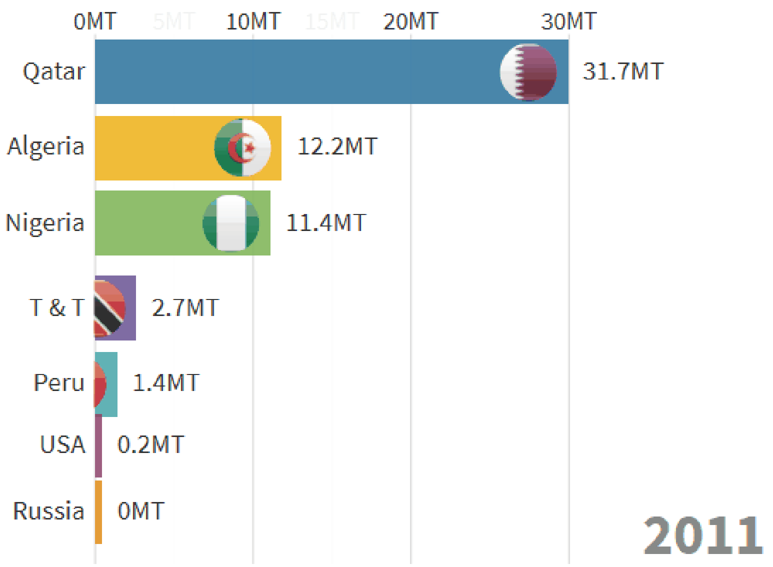
140 mtpa or 35% of

GLOBAL NAMEPLATE CAPACITY IN 2018

Led by Qatar

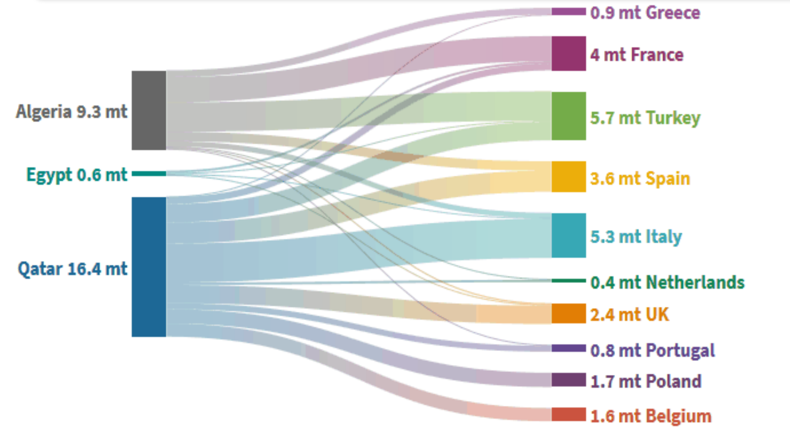
Total LNG exports increased by **80%** between 2008 and 2018, as a result of new projects came onstream in Australia, USA, Russia and other new players

Item-2 LNG trade between Arab region and Europe.. Current Figures!



Top LNG exporters to Europe

THE ARAB LNG DESIGNATIONS IN EUROPE IN 2018

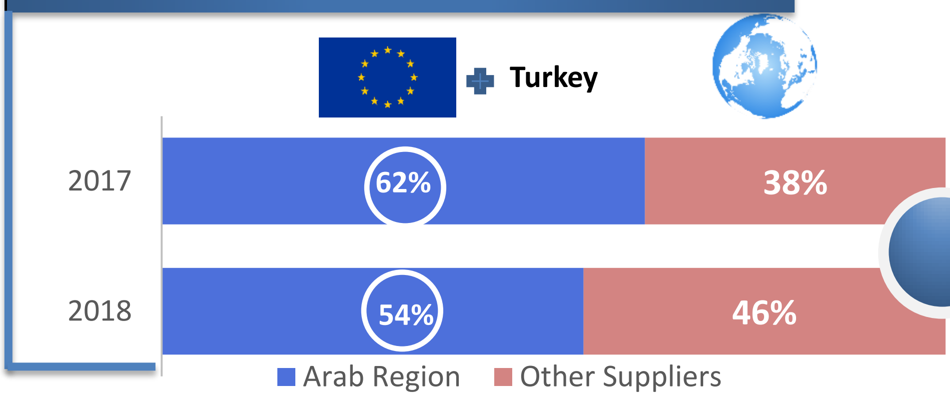


Arab LNG exports destinations in 2018

mt: million tonnes

Source: OAPEC

ARAB REGION LNG EXPORTS TO EUROPE



Arab region is the largest single source of LNG exports to Europe

Europe acts as the balancing mechanism between medium/long term and Spot LNG

LNG Long Term Contracts: Good or Bad?

Stable LNG Procurement for Buyers

Security of Supply

Sellers provide some flexibility on seasonality of demand

Stability of Entire Market

To launch new LNG projects

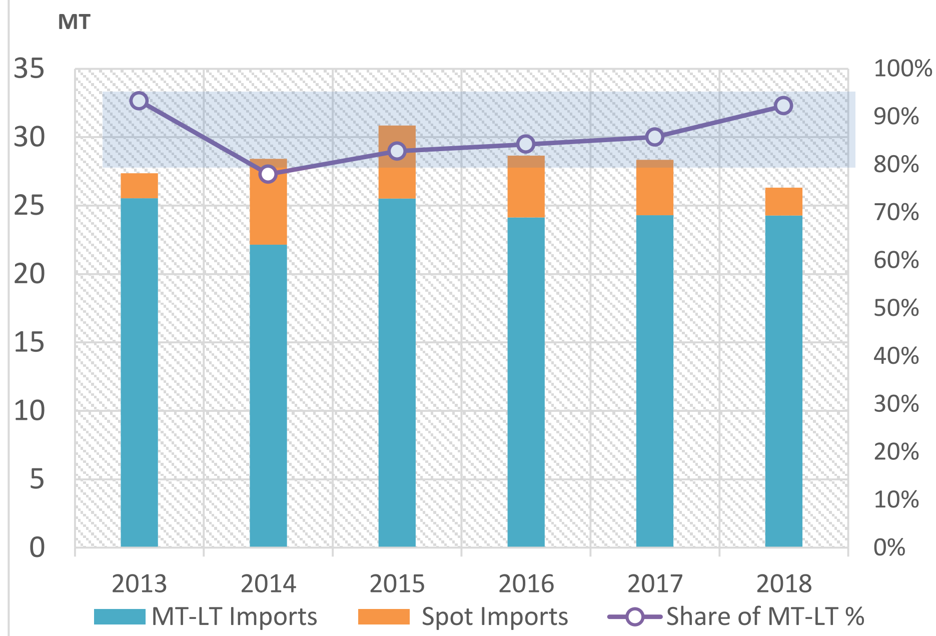
Take-or-Pay Penalty

Sellers could waive the penalty (ex.PGNiG & QG deal)

High Priced gas ..indexed to Oil

New contracts dropped close to 11%, compared with 13-15% 10 years ago.

Spot, Medium and long term LNG quantities to the European market from Arab region



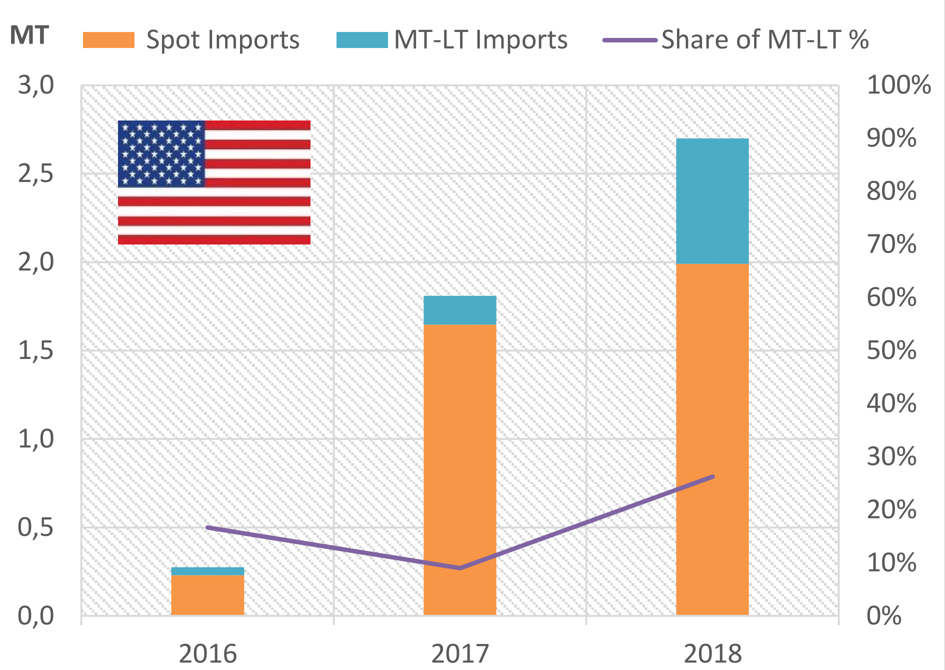
Source: OAPEC, GIIGNL

The overwhelming part of Arab LNG shipments to Europe is based on MT/LT contracts (80-95% in total)

Recently some agreements have been renewed to prove the key role of Arab region as an established LNG supplier to Europe

Item-2 Europe acts as the balancing mechanism between medium/long term and Spot LNG

Spot, Medium and long term LNG quantities to European market from USA



Source: OAPEC, GIIGNL

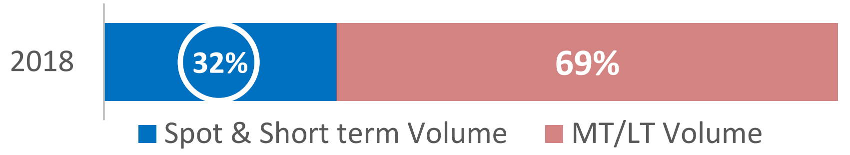
LNG supplies flood the market as results of US, Russia and Australia new projects startup. As a consequence, Spot LNG prices dipped leading to prices convergences across regions

GLOBAL GAS SPOT PRICES CONVERGE ON WORLDWIDE SUPPLY GLUT

Source: S&P Global Platts

USA gains a higher market share via its spot LNG shipments to the European markets which represent over 80% of US total shipments

Spot LNG market still has a small share and is more vulnerable to volatile spikes



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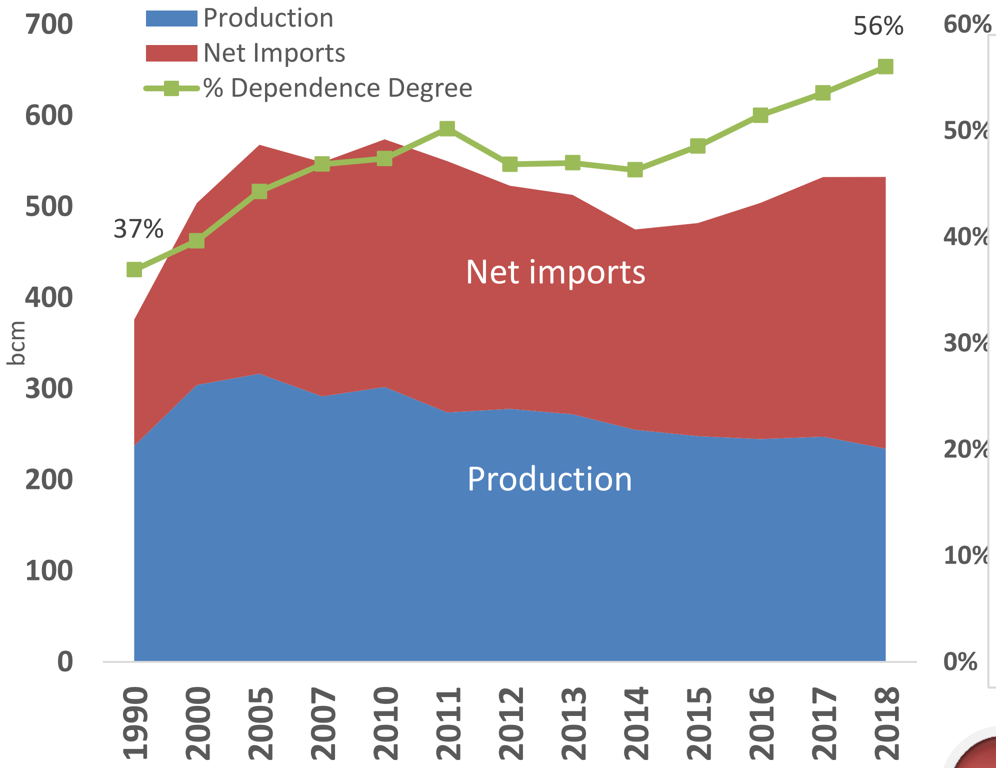
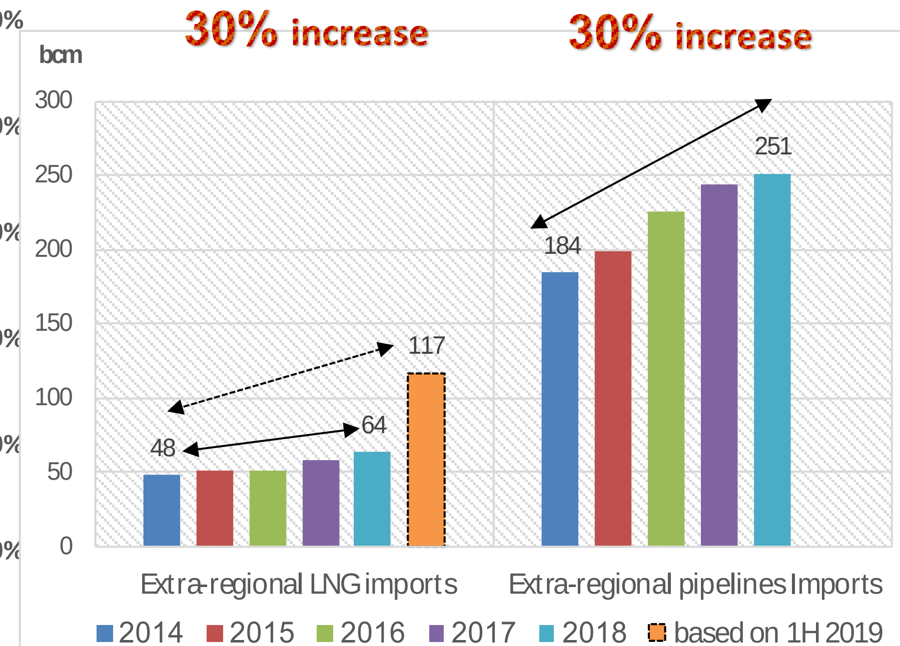
Item-3 Gas Supply in Europe.. Higher Dependence on extr-regional Imports

Development of gas balance in Europe 1990-2018



Source: OAPEC, GIIGNL

Development of Europe's Gas Imports 2014-2018



Source: OAPEC, GIIGNL

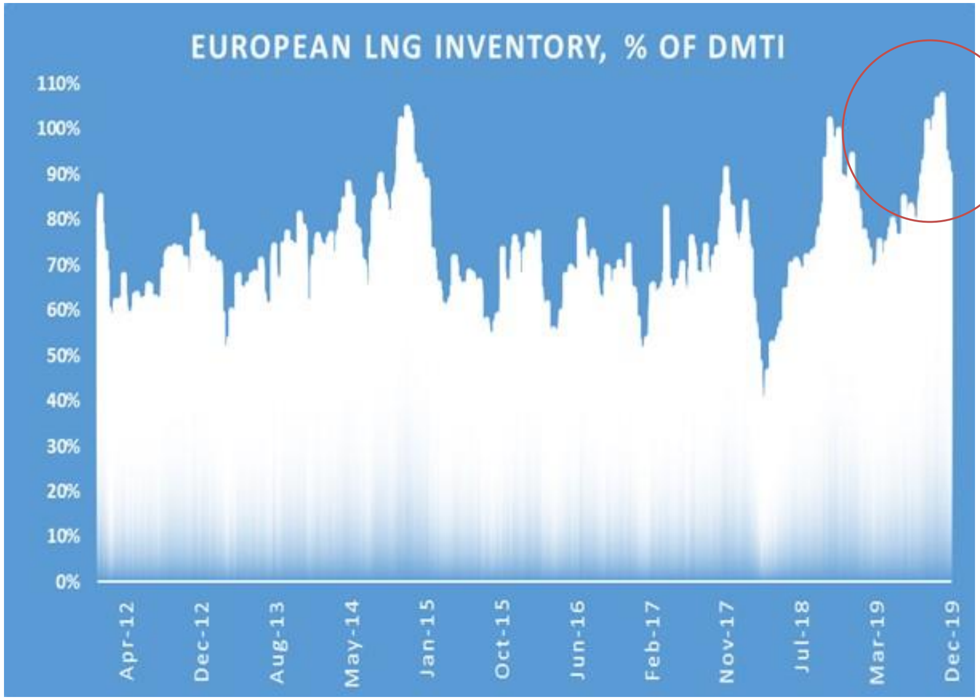
Between 2014 and 2018, gas imports via pipelines increased and LNG by 30% to meet the demand rebound.

The degree of dependence on gas imports is growing due to continuing gas production depletion and the gas demand rebound in the past few years.

However, the early estimates for 2019 show that LNG imports will grow further (65% YOY), in an oversupplied LNG market.

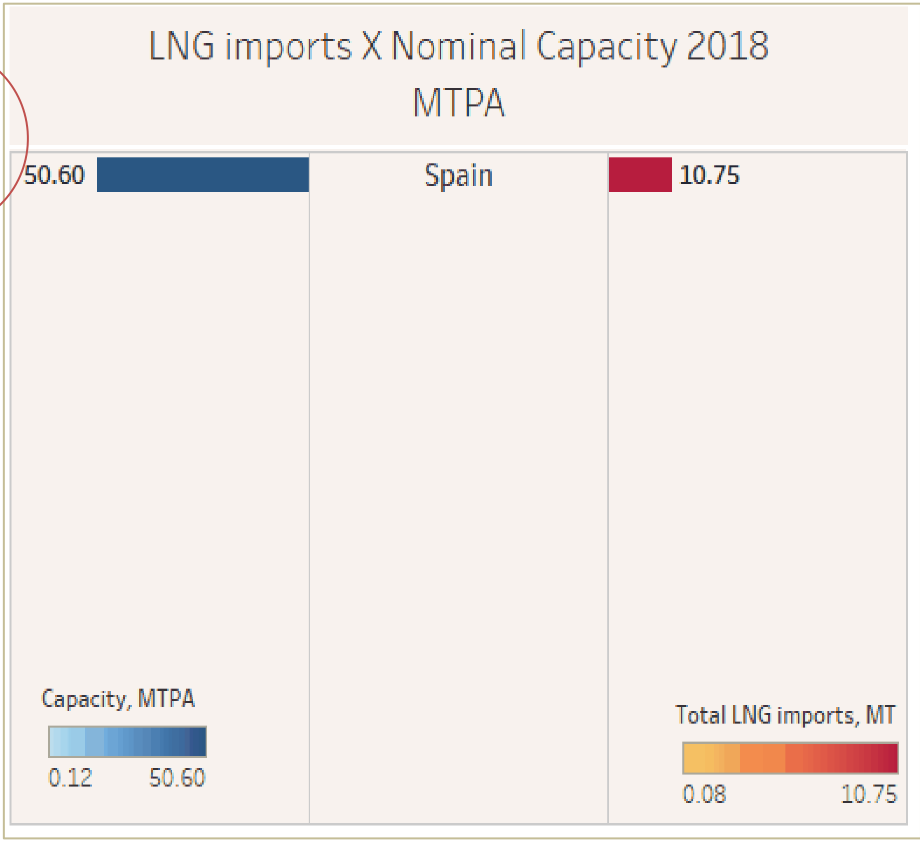
EU

LNG is flooding the European markets.. Record Storage Levels!



Source: Gie

* DMTI: declaration of maximum terminal inventory



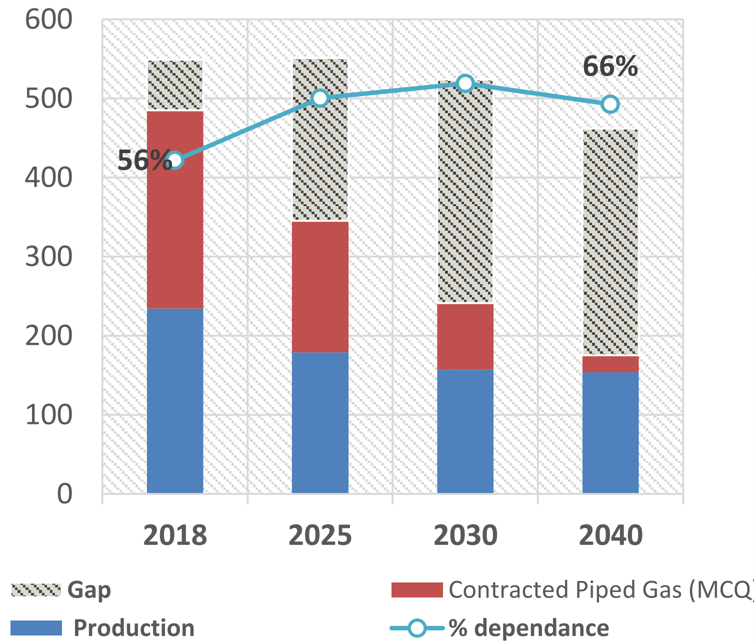
Number of European LNG terminals	
Operational Terminals	35
▪ Large scale	29
▪ Small & Med. Scale	6
Total Capacity, MTPA	173

Number of European LNG terminals providing different services				
Regasification	Truck loading	Reloading	Bunkering	Transshipment
35	24	16	14	10

In the light of low regasification rates, LNG terminals offer additional services like loading of bunkering ships, reloading, …etc

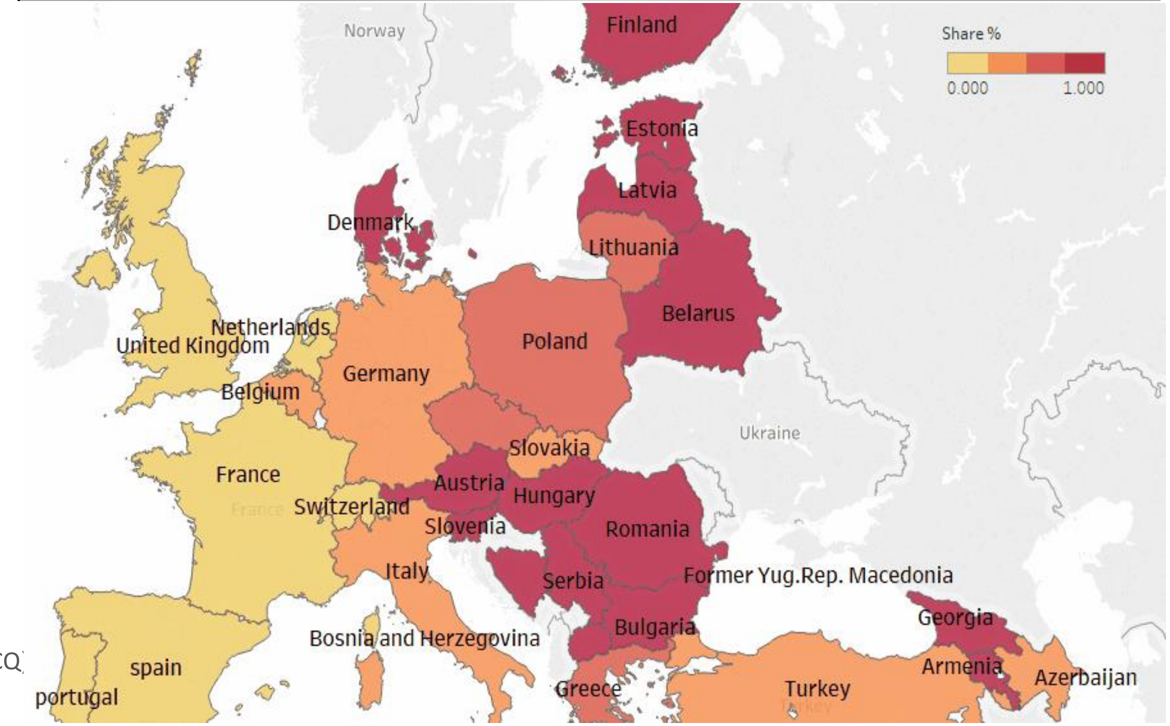
Item-3 Future Gas Supply in Europe.. Role of LNG in diversifying supply sources

Prospects for Europe's Gas Supply in bcm 2018-2040



Source: Author interpretation on CEDIGAZ outlook 2019

Share of Russian Gas in National Imports per each Country, 2018



The map is based on the share of Russian Gas in total gas imports per each country

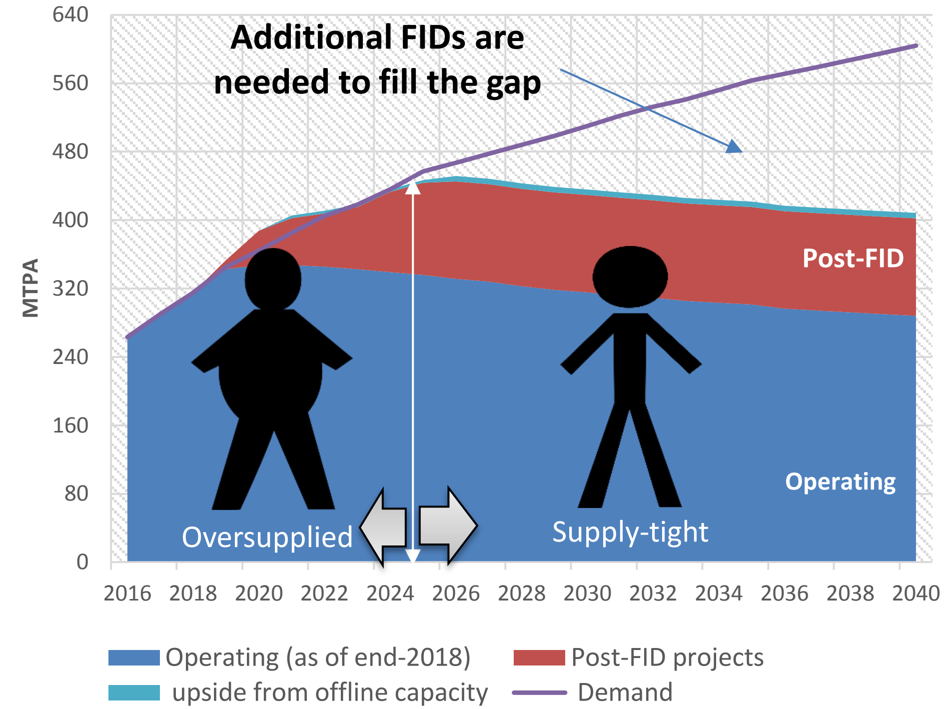
Some European countries notified their intention not to renew natural gas supply agreements after expiry date.

LNG is set to play a broader role in the European future gas supply which will help to achieve diversification and security of supply

EU

Item-3 Outlook of Global LNG Supply/Demand Balance

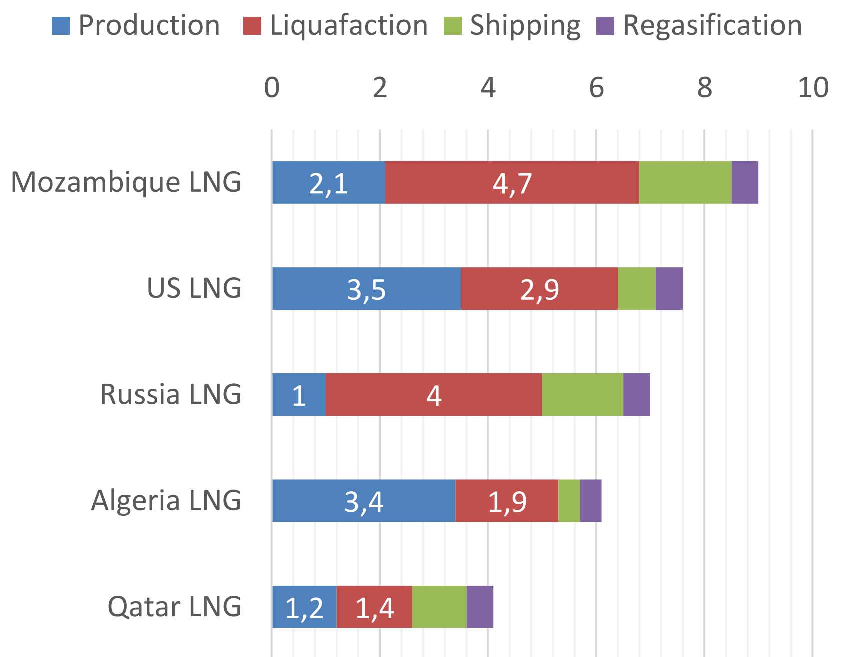
Future outlook of LNG Supply X Demand 2016-2040



Source: Ceidigaz, Shell data

Post-FID as of August 2019, Qatar expansion is not included

LNG Long Run Marginal supply cost (LRMC) to Euro
$/MMBTU



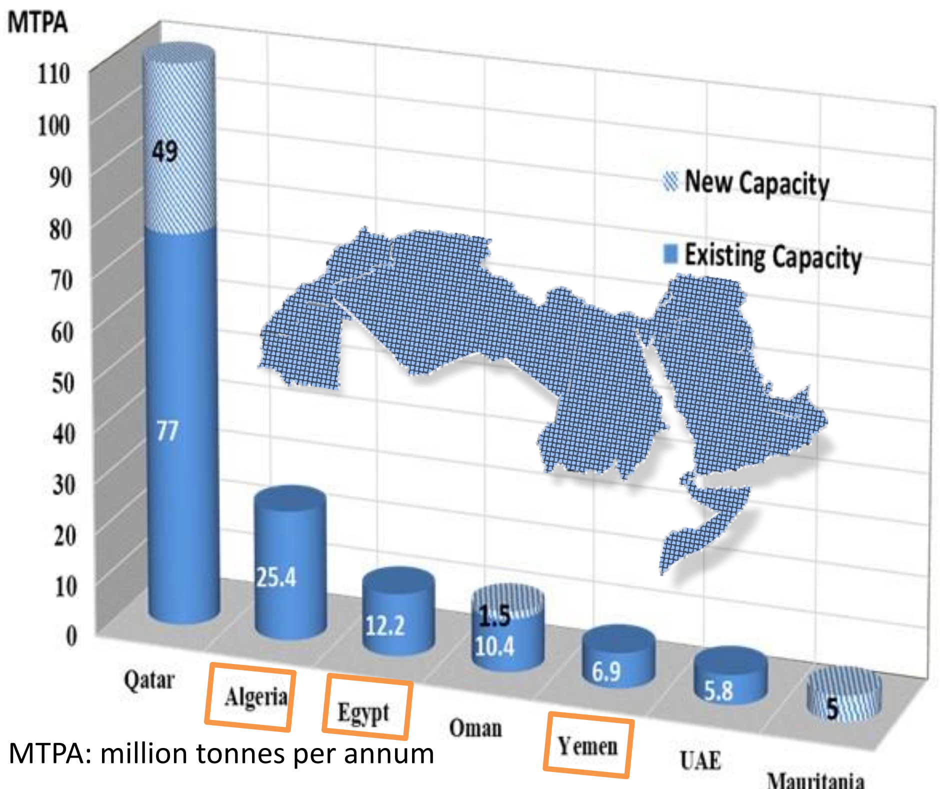
Source: different sources

Additional LNG projects with credible FID potential could push the supply gap to late 2020s.

Qatar is at the head of the curve. There is no doubt that Qatar is the cheapest source of new global supply.

Item-3 Future prospects for Arab Countries-Europe co-operation in LNG field

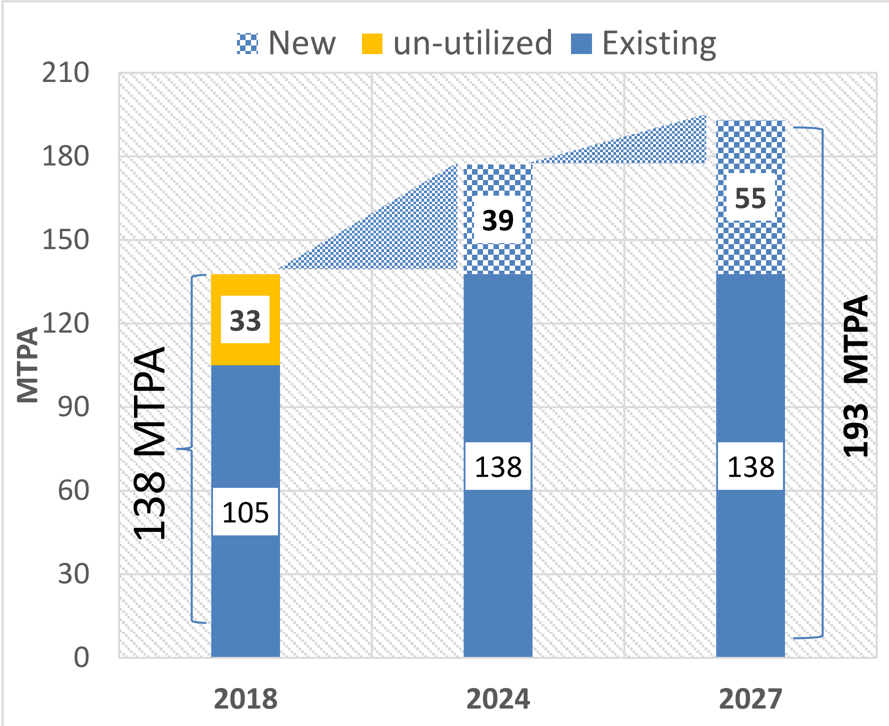
Ongoing LNG projects in the Arab Countries over 2019-2027



* MTPA: million tonnes per annum

Source: Author

Outlook of Total LNG Capacity (MTPA) in the Arab Countries



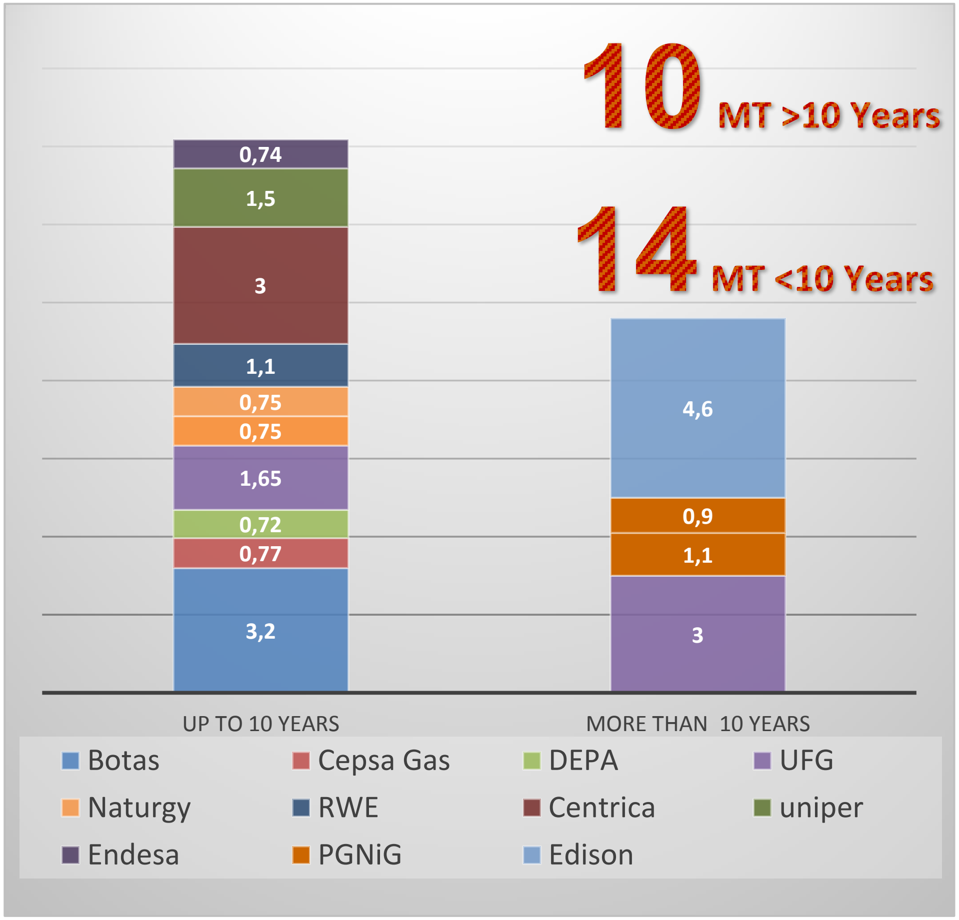
Source: Author

Qatar will boost its LNG export capacity to 110 MTPA by 2024 and eventually to 126 MTPA by 2027. FID to be taken in early 2020.

LNG capacity in the Arab region will be boosted by around **60%** in total by 2027 to increase LNG supplies to different European markets.

Item-3 LNG SPAs between Arab LNG exporters and European electric & gas Utility companies

Medium and long term SPAs between European electric and gas utilities with Arab NOCs.



Major electric and gas utility companies in Europe (Cepsa, Naturgy, DEPA, ..) have inked LNG SPAs (Sale and purchase agreements) with Arab LNG exporters

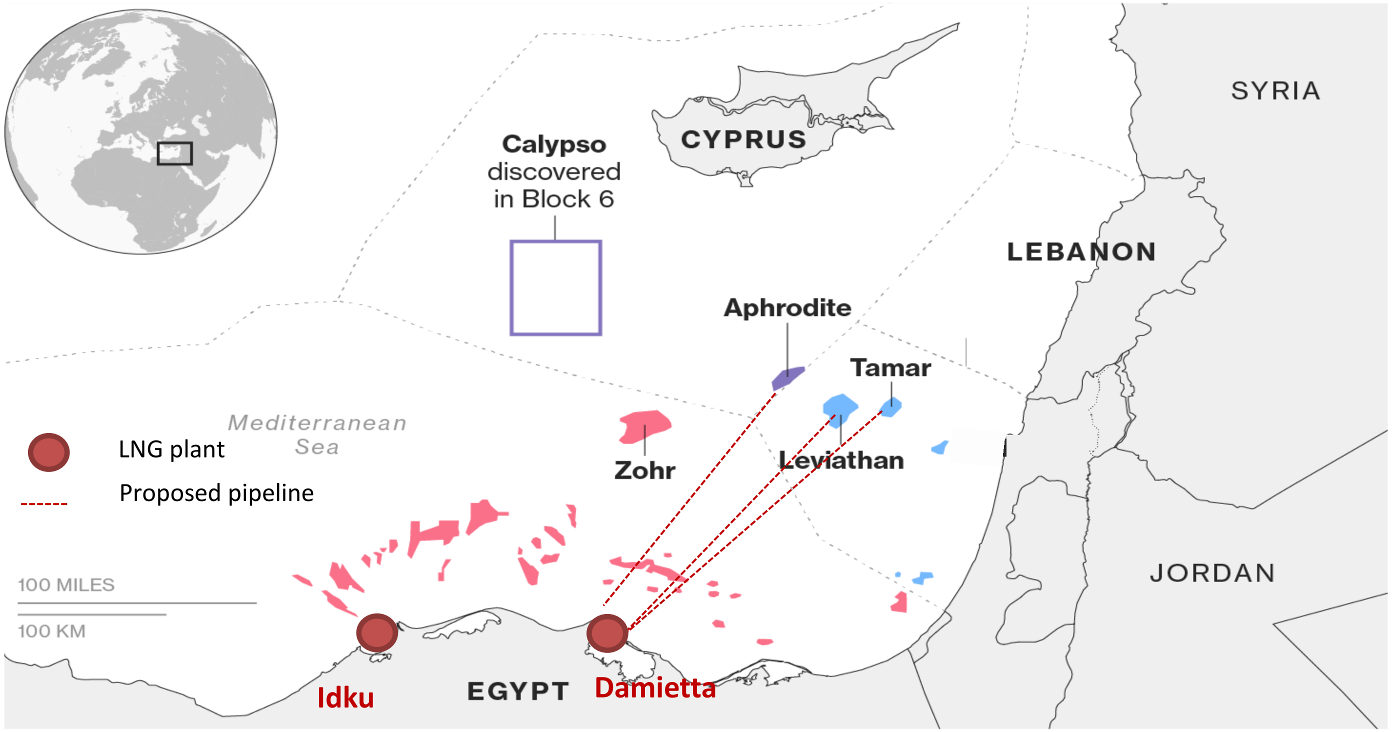
The TCQ (total contracted quantities) in force on the medium and long term basis is ~ **24 MT** (million tonnes) which represent 50% of Europe's current LNG needs.

Some agreements will expire in the years to come. Negotiations on renewal are ongoing with more flexibility expected

-Quantities in million tonnes and the duration is the remaining contract length considering 2018 is the base year.
-Arab NOCs include Qatar Gas, Ras Gas, SEGAS and Sonatrach

Item-3 Future prospects for Arab Countries-Europe co-operation in LNG field

Egypt and the EU have signed a memorandum of understanding (MoU) for strategic cooperation in Energy in April 2018



1. Egypt's Zohr giant gas discovery in 2015… What's Next?
2. Potential gas hub for all East Mediterranean gas discoveries and export to the European market
3. Egypt has two stopped LNG plants on the Mediterranean with Total existing capacity of 12.2 MTPA (17 bcma)
4. Capacity can be upgraded to 32 MTPA (45 bcma) by adding new LNG trains

Key message

Key message

LNG contributed to the formation of long-established economic ties between Arab region and Europe, that achieve "**energy security**" for both partners.

LNG is set to play a broader role in the Future European gas supply. It achieves diversification and security of gas supplies to Eastern and central European markets. This breaks the monopolistic practices and creates competition at the right price signals.

Thank You

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