



Year VII n°21 - Oct 2022

LNG and Natural Gas Market Outlook

REF  **ENERGIA** OSSERVATORIO

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Despite the geopolitical crisis led gas scarcity, which made security of supply the key market driver for the months and possibly years ahead, prices moved sharply lower over the past weeks, amid persistently higher than average temperatures, a contraction in gas demand in evidence since summer and savings imposed by the Government. However, according to our Security of Supply Monitoring Model, **between December and March risk for supply shortages forcing to further demand reductions remains significant.**

The evolution of gas flows towards and through Europe over the coming years depends on the LNG availability worldwide. After this year acceleration, Europe LNG demand growth is expected to slow to 3% y/y in 2023 as an effect of the economic crisis, and then grow by around 12% in 2024 when new regasification plants will reach full capacity and GDP growth should resume. **While Asian LNG demand decreased this year freeing supplies for Europe, a recovery is expected in 2023 and 2024**, which is seen as resuming competition on procurements and keeping both the **TTF and PSV averages above 100 €/MWh over the next two years**. Only in the event of a prolonged mild winter keeping demand well below average and the Asian LNG demand failing to recover, the Best Case scenario would realize, with prices averaging just above 80 €/MWh in 2023 and back below 60 €/MWh in 2024.

FRAME OF REFERENCE AND METHODOLOGY

REF-E Energy Outlooks are elaborated by MBS Consulting experts on the base of proprietary suites and market knowledge. Econometric and structural models, as well as our expert sensitiveness, detailed knowledge of regulation, and accurate monitoring of market outcomes underlie our elaborations.

Gas and electricity forecasts take into account the diverse geopolitical and economic hypothesis deriving from the potential war duration and outcome. The European Union and each single nation reaction to the disruption generated from the deterioration of both diplomatic and commercial relations with Russia are seen as key determinants of the future equilibrium of the energy markets.

In this perspective, we defined three scenarios. The **Worst Case** is characterized by permanently high prices amid a long lasting conflict which would lead to import-export bans and economic retaliation, trade flows interruption, commodities supply sharp reduction, negative or zero economic growth and the energy transition process failure. In the **Reference scenario**, prices will remain high in the short-term amid diplomatic and commercial tensions, while the energy transition process will continue and dependence on Russian commodities will be reduced. Gas and other fossil fuels supplies from alternative routes will increase initially limiting prices upward potential and successively leading to a normalization path. The economic growth suffers a contraction over the next two years, followed by recovery. The **Best Case** scenario would materialize in the event of favourable weather conditions and a fast energy transition, supported by low inflation and a faster economic recovery, reducing demand over the next few years. This would limit prices upside potential and then fuel a downward acceleration.

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SECURITY OF SUPPLY MONITORING

Starting from October, REF-E Osservatorio Energia monitors the risks for the Italian gas system in winter 2022-2023, estimating the probability of demand rationing, given by the number of days in which our model estimates that the Government reduction measures are not enough to compensate for the Russian flows reduction. This estimate is based on gas flows, storage and European consumption data and will be regularly updated on our [Weekly Report](#) to take into account the main drivers evolution, highlighting the impact of the recent developments of the economy and prices dynamics on the coverage of daily demand and what the effect of the measures implemented by the government and the European Union can be. This activity is supported by our *EU-Game* proprietary model, thorough which the evolution of gas flows across Europe over the coming years is predicted, based on gas demand and suppliers availability (such as LNG, Norway, Algeria, etc.) expectations.

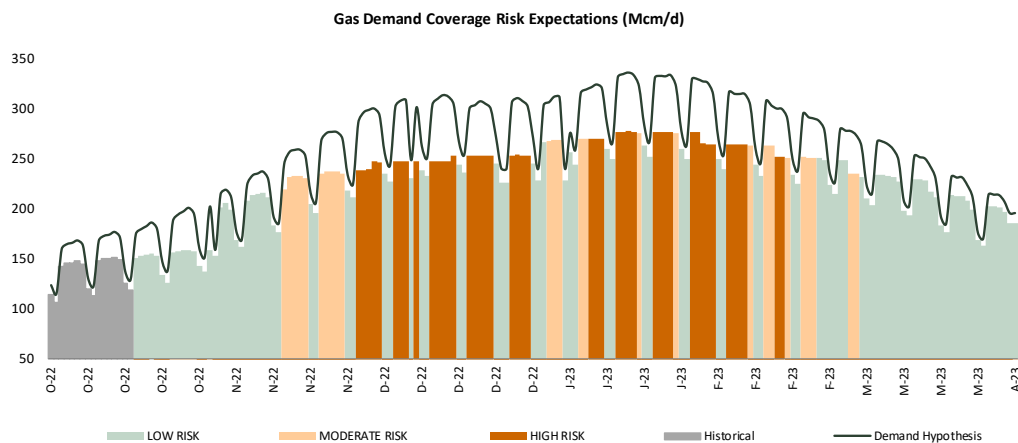
With Russian flows to Italy having reduced to 20 Mcm/d and Algeria assumed to remain stable at 70 Mcm/d, **in the upcoming winter available supplies are just above 40 Bcm**, taking into account storage availability.

Reduction needs are evaluated in respect to an average demand profile. Average temperatures are assumed, but the first 2022 three quarters development is taken into account in terms of price elasticity, leading to a **winter season consumption (from October-22 to March-23) close to 46 Bcm (-2% than the last five years average) and to a thermal year demand at 71 Bcm (Demand Hypothesis).**

Days are classified according to the security of supply risk:

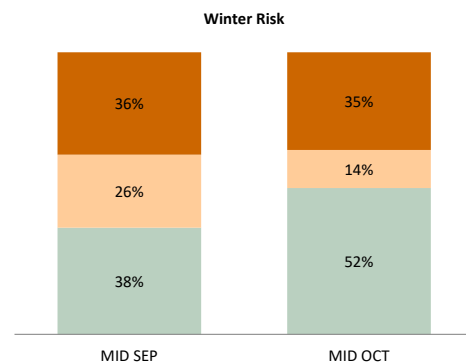
- **LOW RISK:** the estimated daily effect of government measures (households heating reduction, maximisation of coal-fired power generation and electricity demand decrease) is sufficient to cover the required gas demand reduction (almost 6 Bcm, lowering demand to near the 40 Bcm)
- **MODERATE RISK:** the estimated daily effect of government measures is not enough to cover the required reduction, which still remains within 15% of the expected demand for that day
- **HIGH RISK:** the estimated daily effect of government measures is not enough to cover the required reduction, which is more than 15% of the expected demand for that day

The historical daily demand data for the first half of October is also shown in the graph (Actual Demand).



In the first half of October, historical gas demand (grey area) was in line the available supply, following an extremely mild fall season (see [page 13](#) Chart *“Italy: Monthly Average Temperature”*). The mid-October model evaluation takes into account a higher storages filling rate than normal, which leads to lower **criticalities than estimated in mid-September. Until the middle of November demand coverage criticalities should not emerge**, with the regulatory measures ensuring the necessary reduction. **However, starting from mid-November and particularly in December, more issues may arise though, with 14% peak days at risk of rationing (orange days) and 35% at high risk (red days) between December and March.**

In the summer period criticalities will shift from demand coverage to storage injections. Assuming a gas demand of 25.4 Bcm between April-23 and September-23 (-2% compared to last year), filling storages to the same level reached this year is seen as challenging, since supplies for almost 2 Bcm may not be available. The



commissioning of the *Piombino* regasification facility or an accelerated increase of imports from Algeria (which are estimated at 26 Bcm in the next 12 months and then increase to 30 in the following year) may fill the gap. A reduction in demand could be required in the summer too, which would possibly be led by the expected high prices throughout the coming year.

Over the next winter season (2023-2024, not shown in details), criticalities in the coverage of demand (still assumed at 71 Bcm) are seen as significantly easing, following the expected start of activity of the regasification plant in *Piombino* and regasification plants in Germany, and the Algerian supplies increase. In this scenario, Italy would start exporting significant quantities (about 2 Bcm) via Tarvisio to Eastern Europe. This would significantly increase the LNG European demand though, which is likely to result in high gas prices (above 100 €/MWh) throughout 2024.

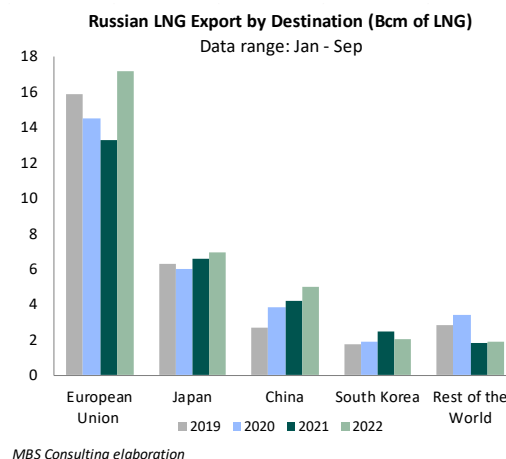
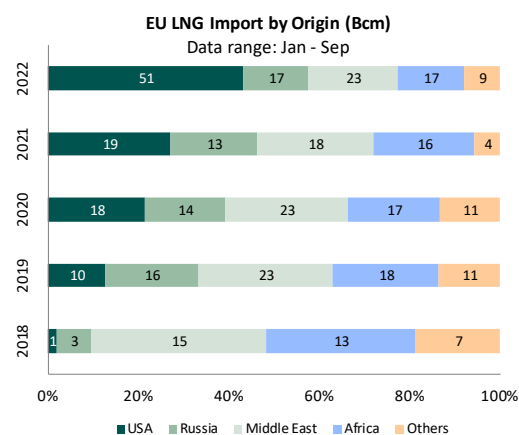
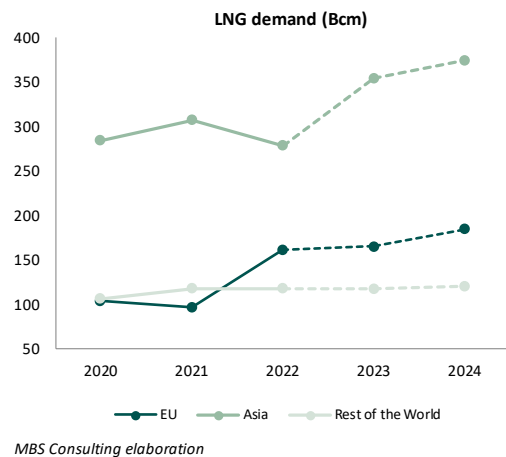
THE WORLD LNG MARKET

Europe historical last resort market role for LNG supplies leaves room to direct competition with Northeast Asian importers. Asian demand growth in 2022 was subdued, following new pandemic-related lockdowns, slow economic growth and a high gas demand elasticity to prices, which favoured a turning to the use of coal. This freed LNG supplies for Europe to compensate for the Russian flows reduction. However, with Asian (and South American) demand growth expected to resume over the next two years, the SWE LNG reference may have to stay high for Europe to remain an attractive destination.

Competition between Europe and Asia on LNG Supplies Keeps the Market Under Pressure

Global LNG demand is growing 7% in 2022, driven by Europe (above +65%) as a response to the reduction of Russian gas arrivals via pipeline and despite, having more than compensated an almost 20% reduction in China and India growth. **2023 LNG demand growth is expected to slow at 1% y/y** amid a worldwide weak macroeconomic outlook which is expected to lead to a lower growth in consumptions (but China should resume growing at 5%), **while in 2024 demand growth is expected to rebound to 6% y/y**, with the development of new regasification capacity supporting (see below an in-depth analysis of the regasification capacity growth). Between January and September 2022, Europe weight was close to 30% of the total LNG world demand, with more than 115 Bcm received (almost 50 Bcm more than last year in the same period). The US LNG covered the biggest share (more than 40% on the European import mix), having grown +170% y/y. However, **Russian LNG arrivals to Europe also grew** (close to +30% y/y), reaching above 15% of the LNG import mix, which possibly represents an additional risk in terms of security of supplies.

Europe LNG demand growth is expected to slow to 3% y/y in 2023 as an effect of the economic crisis, **and then grow by around 12% in 2024** when new regasification plants will reach full capacity and GDP growth should resume.

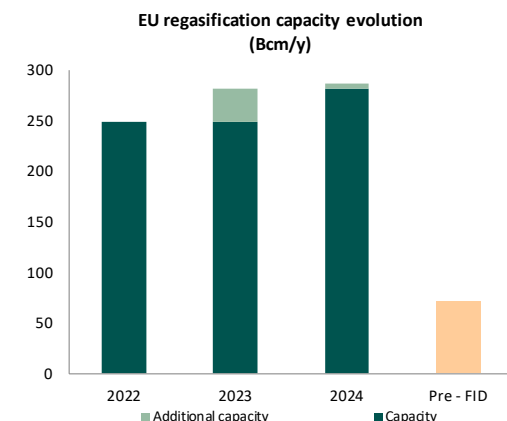
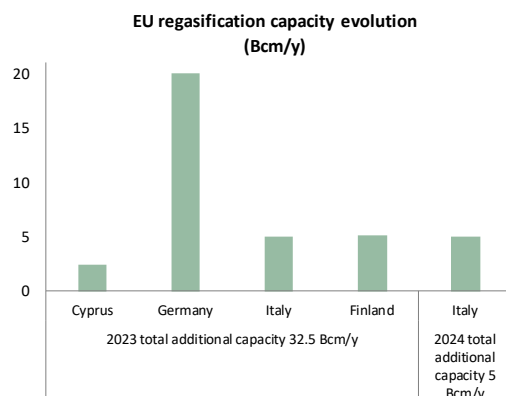
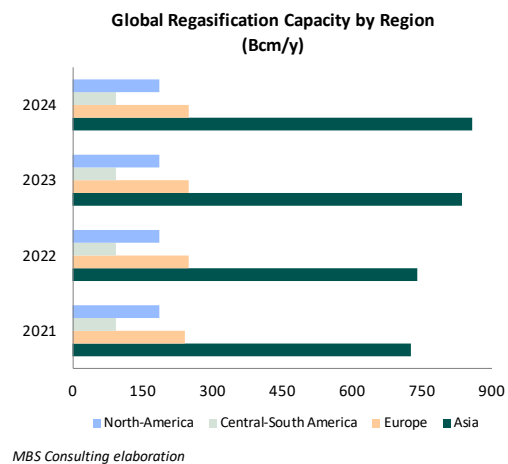


The 2022 LNG demand contraction in China (almost 20% lower year on year), follows the economic growth slowdown, with high prices and healthy inventories levels across North East Asia weighing on the overall demand reduction too. However, as new regasification capacity will be deployed and with the industrial sector back to pre-lockdown levels, in 2023 demand is expected to recover the 2022 loss (+5% y/y) and continue to grow in 2024 close to 10% y/y.

Regasification Capacity Growth Leads the Expected LNG Demand Growth Resumption

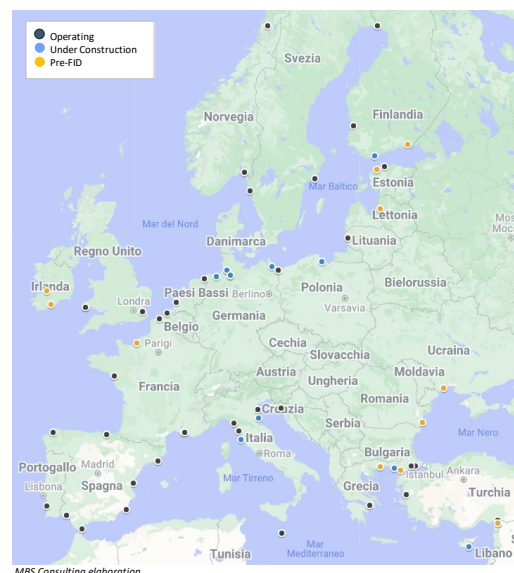
As a response to the disruption of Russian piped gas and the increasing need to attract LNG supplies, Europe is ramping up its LNG import capacity, mainly through the chartering of additional floating storage and regasification units (FSRUs). The commissioning of new regasification capacity, which will be in full swing by the end of 2024, will be the keystone to definitively abandon dependence on Russian gas.

In 2021 the global regasification capacity was 1330 Bcm, mainly concentrated in Asia (representing 55% of the World total, of which 80% located in Japan, 40% in South Korea, and 17% in China). Based on the regasification projects underway around the world, **global regasification capacity should grow 8% y/y in 2023**, led by China (+30% y/y). **Europe regasification capacity is 249 Bcm/y to date, 8 Bcm/y higher than in July**, following the commissioning of two chartered FSRU in the Netherlands.



An additional FSRU is currently in the pre-FID stage in France with an import capacity of 5 Bcm/year in the port of **Le Havre**, on the northern French coast. The proposed project could be operational from late 2023.

Regasification capacity is also growing worldwide, with South America, led by Brazil, likely to become an additional competitor to Europe for LNG supplies. Brazilian LNG demand surged last year (+200% y/y), owing to historic drought conditions. Despite abundant hydro resources combined with high gas prices and shifted US deliveries to Europe having resulted in a 75% LNG demand decrease in 2022 so far, **three FSRU are currently under construction along Brazil's coastlines adding a total capacity of 15 Bcm/y and should be operational by 2023**. Investments in LNG regasification terminals will provide flexibility for natural gas supply as Brazil is set to lose most Bolivian gas



flows by 2025, and the lack of pipeline interconnection combined with insufficient national production could cause difficulties in meeting growing domestic demand.

Table 1. Upcoming Regasification capacity

Region	Country	Plant	Expected Start Year	Capacity (Bcm/y)
Asia Pacific	Australia	Port Kembla Gas Terminal, New South Wales	2023	2.7
Asia Pacific	India	Dhamra	2022	6.8
Asia Pacific	India	Jafrabad (Vasant 1 FSRU)	2022	6.8
Asia Pacific	India	Jaigarh (Hoegh Giant FSRU)	2022	6.8
Asia Pacific	India	Karaikal Port	2022	1.4
Asia Pacific	Indonesia	Jawa	2022	2.9
Asia Pacific	Indonesia	Teluk Lamong	2022	0.3
Asia Pacific	Philippines	Philippines LNG	2022	4.1
Asia Pacific	Philippines	Pagbilao LNG	2024	4.1
Asia Pacific	Thailand	Nong Fab, Rayong Province	2022	10.2
Asia Pacific	Vietnam	Hai Linh's LNG terminal	2022	4.1
Asia Pacific	Vietnam	Thi Vai I phase	2022	1.4
Asia Pacific	Taiwan	Datan Borough Taoyuan	2023	4.1
Asia Pacific	Taiwan	Taichung expansion II	2026	5.4
Asia Pacific	China	Tianjin Phase II, Tianjin province	2023	6.8
Asia Pacific	China	Yantai , Yantai port, Shandong province	2022	6.8
Asia Pacific	China	Tianjin Onshore Expansion II, Tianjin province	2023	6.5
Asia Pacific	China	Qingdao expansion III, Shandong province	2023	9.5
Asia Pacific	China	Longkou , Yantai port, Shandong province	2023	8.8
Asia Pacific	China	Nanshan LNG Phase I, Shandong province	2023	6.8
Asia Pacific	China	Binhai, Yancheng city, Jiangsu province (Expansion I)	2023	4.1
Asia Pacific	China	Yangjiang, Guangdong province	2023	2.7
Asia Pacific	China	Huizhou LNG terminal, Guangdong	2024	8.4
Asia Pacific	China	Zhoushan expansion, Zhejiang province	2024	6.8
Asia Pacific	China	Putian LNG terminal	2025	7.7
Europe	Cyprus	Vasilikos	2023	2.4
Europe	Finland	Hamina	2022	0.1
Europe	Finland	FSRU Exemplar	Late 2022	6.5
Europe	Germany	Brunsbüttel FSRU (Hoegh)	2023	5.0
Europe	Germany	Stade FSRU (Transgas Power)	2023	5.0
Europe	Germany	Wilhelmshaven FSRU (Hoegh Esperanza)	2022	5.0
Europe	Germany	Lubmin	2022	5.0
Europe	Germany	Lubmin (Dynagas)	2023	5.0
Europe	Germany	Wilhelmshaven FSRU	2023	5.0
Europe	Italy	Golar Tundra (Piombino)	2023	5.0
Europe	Italy	BW Singapore (Ravenna)	2024	5.0
Europe	Greece	Alexandroupolis FSRU Terminal	Late 2023	5.5
Europe	Netherlands	S188 (Eemshaven)	Operational	4.0
Europe	Netherlands	Golar Igloo (Eemshaven)	Operational	4.0
Europe	Poland	Gdansk	2025	6.1
South-America	Brazil	Barcarena	2022	5.5
South-America	Brazil	Sao Paulo (TRSP)	2023	5.0
South-America	Brazil	Terminal Gas Sul	2023	5.2
Total				220

*Green highlighted lines indicate projects expected deadlines variations compared to our previous update

MBS Consulting elaboration

World LNG Supply Growth is Key to Maintain the World LNG Market Balanced

The unprecedented surge in cargo arrivals was partially facilitated by rising global LNG supplies, with the US posting the strongest growth in LNG deliveries (+15% y/y since the beginning of the year). The world liquefaction capacity increased by an additional 2 Bcm/y since July as the Russian *Portovaya LNG* terminal started commercial operations in September, bringing the new 2022 overall capacity at almost 23 Bcm/y. (the *Calcasieu Pass* Plant and the sixth train of the *Sabine Pass* facility, both in the US, started operations in the first half of this year). The current existing liquefaction capacity is therefore around 590 Bcm/y globally, with 2022 growing at 5% and 2023 expected to grow at 2%.

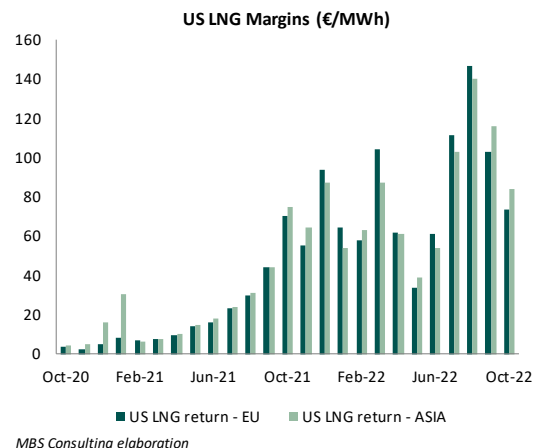
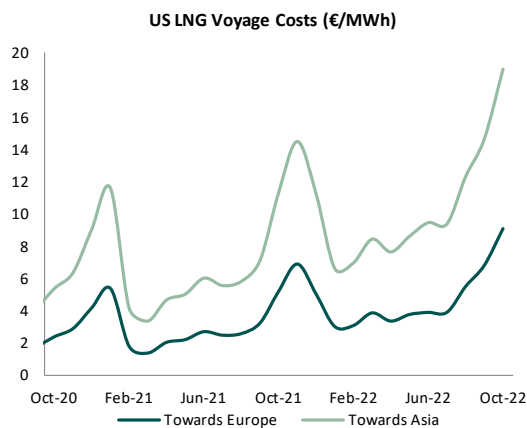
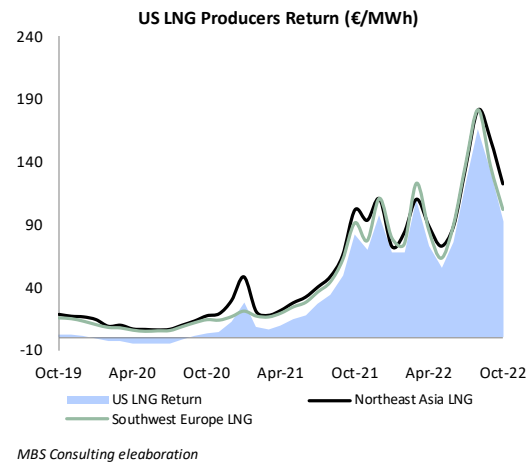
Returns on New Liquefaction Capacity: The Long-Term Contracts Knot

The Russian invasion of Ukraine and its dramatic impact on supplies and spot prices incentivized European buyers to close long-term LNG contracts with US and Middle Eastern producers, paying significant premiums either on the Henry Hub price or on Brent (Qatari and Russian LT contracts are mostly oil linked, while US producers are moving back to Henry Hub indexation). Almost 50% of European long-term deals are in force with Qatar, while China has signed close to 40 of LT contracts in the past two years according to available data.

Returns for LNG producers are higher than Sep-2021, supported by high gas prices. However, there is risk for the crisis-led uncertainties faced by LNG developers both in terms of costs and suppliers struggling to provide reliable offers for procurements putting new investment decisions at risk.

High inflationary pressures pushed new LNG plants development costs 20% higher than pre-crisis, which should translate into an equivalent increase in long-term contracts prices.

Moreover, **US LNG voyage costs to European and Asian routes** increased 80% and above 70% respectively (taking into account the EUR-USD exchange rate weakening) and, should competition between buyers intensify over the coming winter, in order to manage the peak seasonal demand, transportation costs could increase further.



Although US producers profit margins remain high for both destinations, **it is currently more remunerative to sell LNG in Asia**, resulting in a potential risk of supply shortages towards Europe over the coming cold season, should Asian LNG demand grow at a faster pace than the expected one.

On the demand side, customers have scope for spot trades to benefit from reduced prices in the future should supplies become more abundant following the new wave of LNG supply coming online globally from 2025/2026. This translates in a **reported standoff for new long-term contracts** (nearly 50% of LNG supply to Europe is in fact currently estimated to be sold via spot and short-term contracts), which would be needed to lock-in returns on investments. Therefore, expectations for prices to decrease, based on the assumption of investments in gas and LNG infrastructure providing energy security across Europe, may paradoxically disincentivize LT contracting, bringing as a result a subdued LNG liquefaction capacity growth and slowing the gas market normalization path.

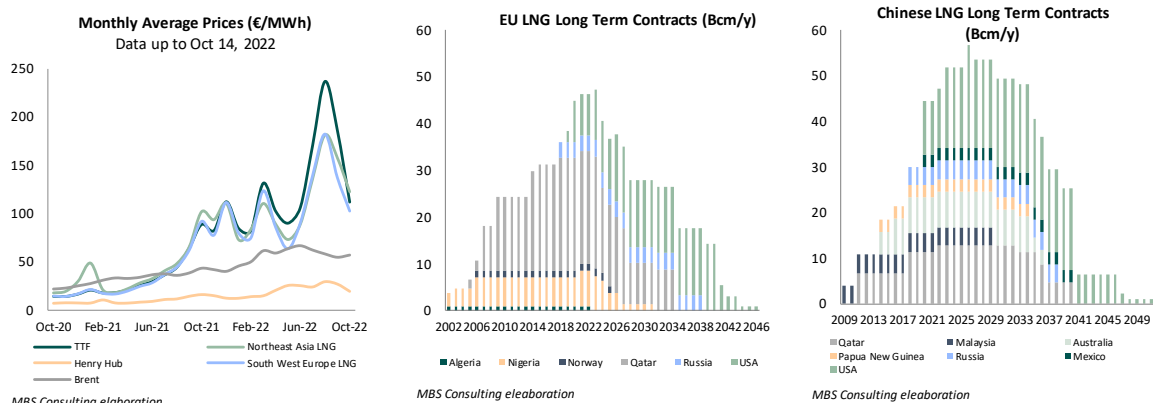


Table 2. Existing European LNG Long Term Contracts

Source (Export country/Plant)	Seller	Buyer	Import country	ACQ (Bcm/y)	Start date	End date
Algeria/Skikda-Bethioua	Sonatrach	Cepsa Gas	Spain	1.0	2002	2022
Nigeria/Bonny T3	Nigeria LNG	Galp Energia	Portugal	1.0	2003	2023
Nigeria/Bonny T3	Nigeria LNG	Naturgy Energy Group	Spain	2.7	2002	2024
Nigeria/Bonny T1-3	Nigeria LNG	Galp Trading	Portugal	1.4	2021	2031
Nigeria/Bonny T4 & 5	Nigeria LNG	Galp Energia	Portugal	1.9	2006	2026
Nigeria/Bonny T4 & 5	Nigeria LNG	Pavilion Energy	Spain	0.5	2006	2026
Norway/Hammerfest	Equinor	Iberdrola	Spain	1.5	2006	2025
Qatar/Ras Laffan Qatargas I	Qatargas	Naturgy Energy Group	Spain	1.0	2005	2024
Qatar/Ras Laffan Qatargas III	Qatargas	PGNiG	Poland	1.5	2015	2034
Qatar/Ras Laffan Qatargas III	Qatargas	PGNiG	Poland	1.2	2018	2034
Qatar/Ras Laffan Qatargas IV	Qatargas	Centrica	UK	4.1	2014	2023
Qatar/Ras Laffan Qatargas IV	Qatargas	Petronas	UK	1.5	2014	2023
Qatar/Ras Laffan Qatargas IV	Qatargas	Shell	Netherlands or UK	1.5	2019	2023
Qatar/Ras Laffan RasGas I	Qatargas	Endesa	Spain	1.0	2005	2025
Qatar/Ras Laffan RasGas II T2	Qatargas	Edison	Italy	6.2	2009	2034
Qatar/Ras Laffan RasGas II T3	Qatargas	EDF Trading	Belgium	4.6	2007	2027
Qatar/Ras Laffan RasGas II T3	Qatargas	ENI	Italy	2.8	2007	2027
Russia/Yamal	Novatek	Naturgy Energy Group	Spain	3.4	2018	2038
United States/Calcasieu Pass	Venture Global	PGNiG	Poland	2.0	2023	2043
United States/CP2	Venture Global	EnBW	Germany	1.0	2026	2046
United States/Plaquemines	Venture Global	PGNiG	Poland	5.4	mid-2020s	2040
United States/Plaquemines	Venture Global	EnBW	Germany	1.0	mid-2020s	2040
United States/Rio Grande T1 & 2	NextDecade	Engie	France	2.4	2026	2041
United States/Sabine Pass	Cheniere	Centrica	UK	2.4	2019	2040

MBS Consulting elaboration

The Gas Prices Surge Fails to Fuel a Liquefaction Capacity Growth Acceleration

Overall, projects under construction are expected to become operational as scheduled, with the exception of a few months delays in a less than 25% of the plants, while no new FID was taken since the last summer.

Close to 50 Bcm of new liquefaction capacity are under construction in the US and should become operational by 2024, along with the *Energia Costa Azul* plant in Mexico (8.4 Bcm/y) and the *LNG Canada* facility (18.9 Bcm/y). Only two US projects, *Plaquemines* and *Corpus Christi Stage 3*, were sanctioned this year with the *Final Investment Decision* (FID), adding both 13.5 Bcm/y of liquefaction capacity to the Gulf Coast by 2025. Nearly 70% of the projected global pre-FID capacity (around 200 Bcm/y) is in the US. However, **the North Field East project in Qatar (45 Bcm/y) remains a key pillar to guarantee the European security of supply.** The facility is not expected to start operations before the end of 2025 though, while its expansion phase (the *North Field South* project of almost 22 Bcm/y of capacity) could be sanctioned already by the end of 2022. *Coral FLNG's* floating facility in Mozambique and the third train of the *Tangguh LNG* plant in Indonesia are expected to become operational by the end of this year, adding nearly 10 Bcm/year to global LNG production.

Except for *Portovaya LNG* terminal, the degree of uncertainty for Russian LNG projects is still high instead. *Arctic LNG* Train 1 construction is currently on hold, with sanctions blocking access to foreign technologies, while the expansion project of Train 2 and 3 (for an overall capacity of almost 27 Bcm/y) is shelved. Gazprom renewed plans for the *Ust Luga LNG* Terminal, formerly known as *Baltic LNG*, which has currently resumed its construction work (almost 18 Bcm/y of liquefaction capacity) and should be operational by 2025.

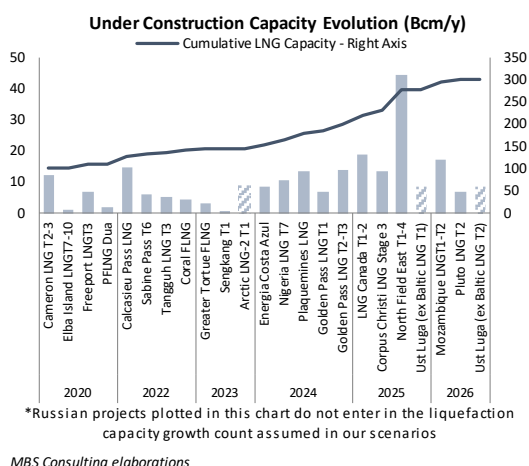


Table 3. Liquefaction Projects in Pre-FID Stage

Country	Plant	Expected FID	Expected Start Year	Capacity (Bcm/y)
Cameroon	Cameroon FLNG Expansion	Not Defined	2026	1.4
Canada	Woodfibre LNG	2023	2027	2.8
Canada	LNG Canada Expansion T3-4	Not Defined	2026	17.6
Canada	Kitimat LNG	Shelved	2027	13.5
Canada	Goldboro LNG T1-2	Shelved	2025	13.0
Canada	Bear Head LNG T1-2	Not Defined	2027	2.7
Canada	Cedar FLNG	2023	2027	5.4
Indonesia	Sengkang Expansion T2-4	Not Defined	2026	2.0
Indonesia	Abadi LNG	Not Defined	2027	12.8
Mauritania	Greater Tortue FLNG T2	2023	2026	3.4
Mexico	MPL Puerto Libertad T1-2	2022	2026	16.2
Mexico	Vista Pacifico	Not Defined	2025	5.4
Tanzania	Tanzania LNG	2025	2029	13.5
Mozambique	Rovuma LNG T1-T2	2023	2026	20.5
PNG	Papua LNG T1-2	2023	2027	12.2
Qatar	North Field South Expansion T5-6	2022	2027	21.6
Russia	Ust Luga (ex Baltic LNG T1)	UC	2025	8.8
Russia	Ust Luga (ex Baltic LNG T2)	UC	2026	8.8
Russia	Obssky LNG T1	Shelved	2024	6.8
Russia	Vysotsk LNG T2	Shelved	2022	1.6
USA	Texas LNG Brownsville T1	2022	2026	2.7
USA	Texas LNG Brownsville T2	2022	2027	2.7
USA	Rio Grande T1-2	2022	2026	14.6
USA	Port Arthur LNG T1-2	2022	2024	14.9
USA	Magnolia LNG	2022	2026	11.9
USA	Lake Charles	2022	2026	20.3
USA	Jordan Cove	Shelved	2025	5.3
USA	Gulf LNG Pascagoula T1-2	Not Defined	2025	14.9
USA	Freeport LNG T4	2023	2026	6.9
USA	Driftwood LNG T1-2	2022	2025	22.4
USA	Delfin FLNG	2022	2025	17.6
USA	Cameron LNG T4	2022	2026	9.5
USA	Alaska LNG T1-3	2023	2025	27.0
USA	CP2 LNG	2023	2026	27.0
USA	Delta LNG T1-T2	2022	2025	13.5
USA	Commonwealth LNG	2023	2026	10.8
Total				365

*Green highlighted lines indicate projects expected deadlines variations compared to our previous update

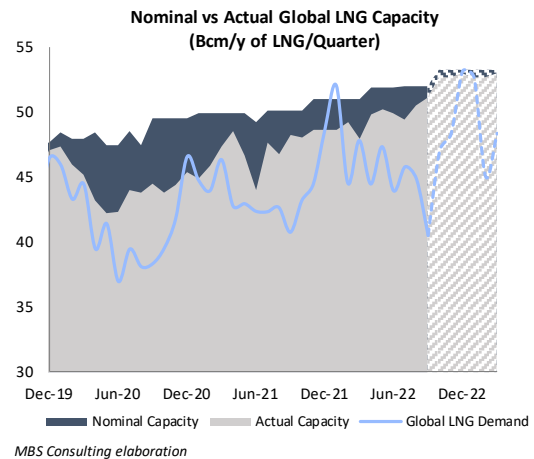
MBS Consulting elaboration

LNG Liquefaction Plants Planned Outages Are in Line With Seasonal Averages

Despite perspectives for LNG demand remaining sustained over the next winter season, the percentage of plants undergoing planned maintenance is in line with the historical average, leaving the market vulnerable in the event of unplanned outages adding to the picture.

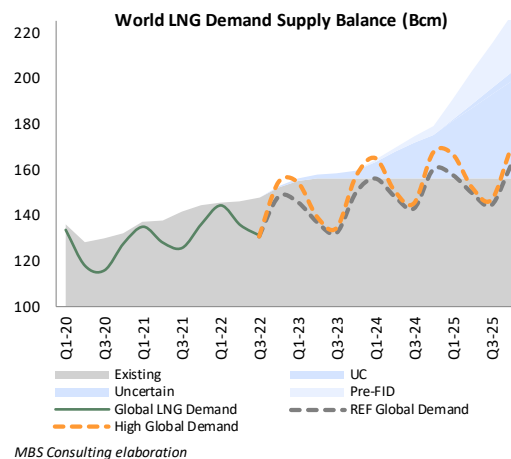
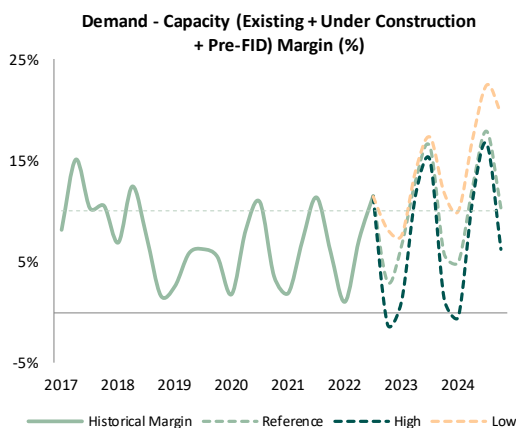
Freeport LNG plant in the US is scheduled to partially resume production by the end of November, following a five months outage caused by an explosion in June. The plant will be likely back at full capacity by March 2023.

Planned maintenances in Australia will reduce liquefaction capacity in Australia in Q4-22, limiting availability for Asian importers and increasing competition for US cargoes. Australian liquefaction capacity will in fact be 10% lower than its full capacity, with both the *Queensland Curtis* and the *Australia Pacific* plants affected.



A Tight Demand-Supply Balance Supports Prices

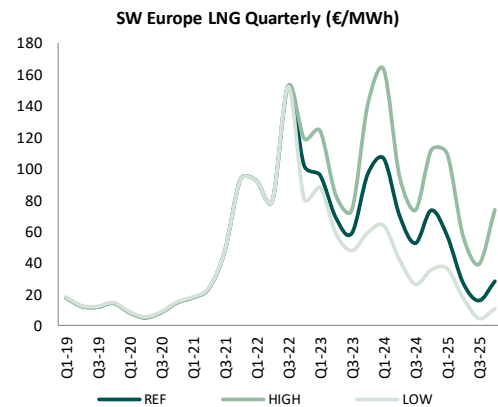
The demand-supply margin is now lower than the 10% threshold, above which adequate coverage in less favourable than normal market conditions is assumed as guaranteed. Despite a positive LNG supply growth outlook, a **high risk for market tightness is therefore addressed in our scenario, especially in the upcoming winter months**. In the event of unscheduled outages affecting any major liquefaction plant and/or higher than average demand amid low temperatures may in fact lead the market to severe imbalances. A stronger than expected resumption of the Chinese economic growth is also seen as a potential risk for the world LNG demand-supply balance. **Market tensions are expected to gradually reabsorb starting from 2024**, mainly amid the foreseen liquefaction capacity growth leading to more abundant supplies.



World LNG prices are consequently expected to remain high over the next winter season and until 2024.

The reference 2022 average price is expected to settle above 100 €/MWh in 2022, around 80 €/MWh in 2023 and above 70 €/MWh in 2024. A normalization is seen in 2025, when the SWE LNG price should average close to 30 €/MWh. This price matches returns on investments in new Middle Eastern LNG liquefaction capacity, if current transport costs and the exchange rate are taken into account. Should the expected fuels prices normalization lead to lower costs of transport and the EUR-USD move back to parity, the equilibrium for the SWE LNG would converge towards 25 €/MWh.

In the Worst-Case Scenario, such as a colder than average winter and/or liquefaction plants significant unscheduled outages, the SWE benchmark would average above 110 €/MWh this year and close to 105 €/MWh in 2023.



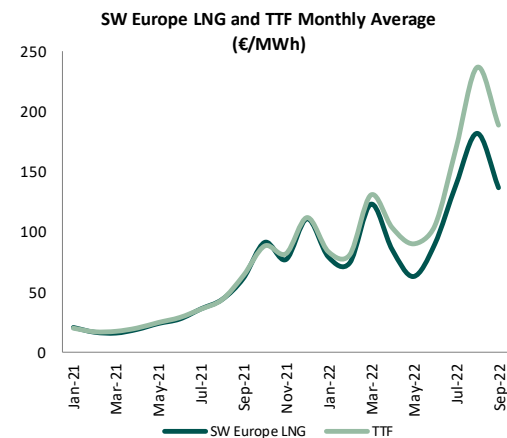
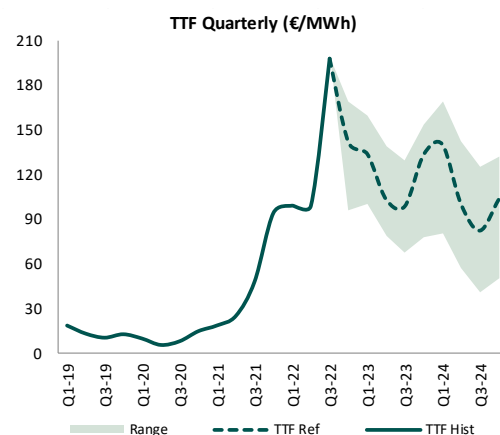
EUROPEAN GAS MARKET

The world LNG market tightness keeps the European prices high, demand is consequently adjusting, with reductions in evidence since summer and a gradual recovery expected only after 2024. Meanwhile, a major rebalancing of the European energy mix is taking place and the European regulation supports storage injections. Nevertheless, there are still security of supply risks.

Following the Russian gas supplies over 50% y/y reduction (almost 45 Bcm lower) between January and September 2022, arrivals from alternative pipeline routs and LNG have in fact increased 28% (55 Bcm higher) in the same period, which, in combination with a demand reduction close to 10% between January and September, allowed to fill storages. In Q4-22 Russian supplies are going to be 85% lower than in Q4-21 though, and, even allowing for alternative arrivals remaining 30% above Q4-21 and healthy storage withdrawals, this would require demand to reduce further by 13% to maintain the system on balance.

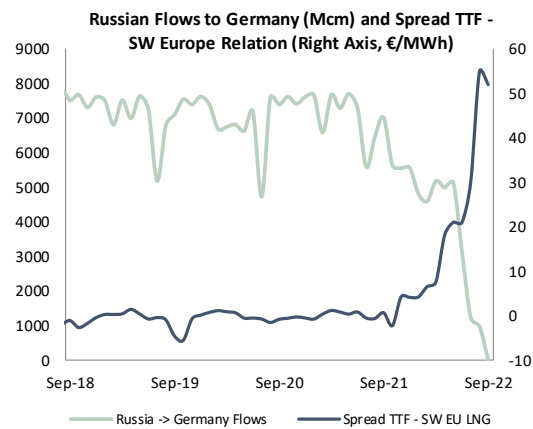
The LNG Market Drives Gas Prices in Europe: TTF and PSV to Remain Under Pressure in the Short-Term

Since the beginning of the year LNG arrivals towards Europe rose by 65% compared to the same period in 2021 and now weights 35% on the import mix, becoming the key determinant of the TTF gas price direction. A direct correlation between the LNG share and the TTF-LNG spread was also observed.

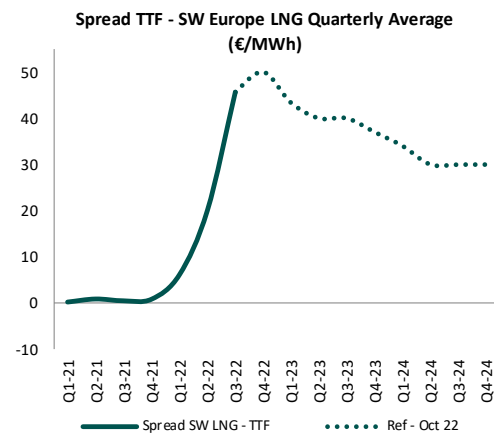


As Russian flows towards Germany (via Nord Stream 1 and Mallnow pipelines) sharply reduced starting from this summer, the TTF – SW Europe LNG spread rose above 50 €/MWh in September. With Northern Europe regasification capacity on the growth, in our **Reference** scenario the **TTF premium over the LNG (averaging close to 30 €/MWh in 2022)** is seen as reaching 40 €/MWh in 2023 when the German regasification capacity

will be fully operational; the TTF 2022 and 2023 averages would lay at 135 €/MWh and just below 120 €/MWh respectively. The assumed subsequent increase of North African and Azerbaijani flows would gradually lead the TTF-SWE spread lower, with the 2025 Reference seen at 20 €/MWh and the TTF below 80 €/MWh.

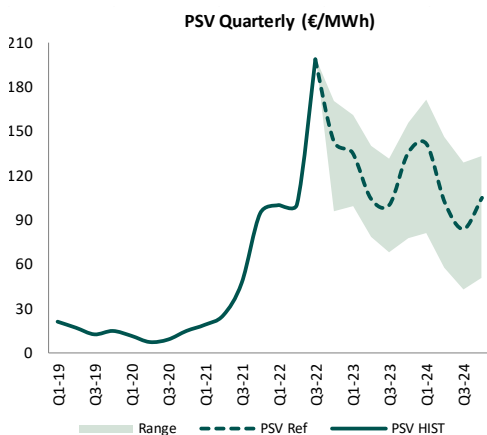


MBS Consulting elaboration

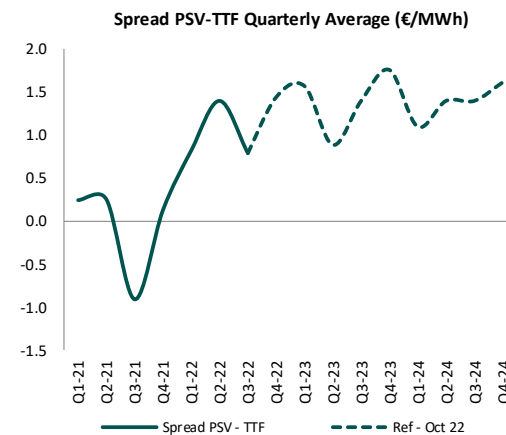


MBS Consulting elaboration

The Italian gas price dynamics are strictly related to the European ones, with the TTF determining the PSV major trend, while the PSV-TTF spread is expected to follow a seasonal pattern, with domestic demand coverage and exposure to scarcity risk leading to a higher premiums in winter, coherently with a higher competition on supplies from Northern Europe, than in summer.



MBS Consulting elaboration

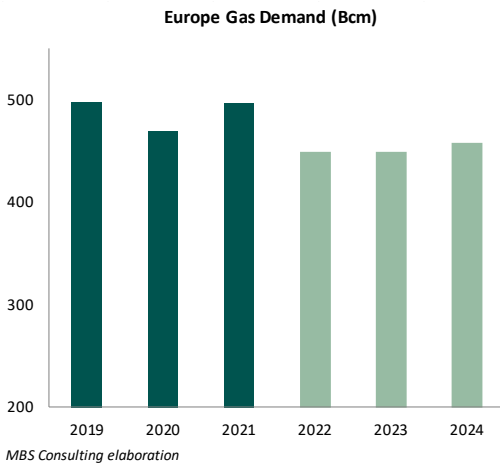


MBS Consulting elaboration

In our *Reference* scenario the PSV averages 135 €/MWh in 2022, close to 120 €/MWh in 2023 and below 110 €/MWh in 2024.

With prices having reached levels seen as hardly sustainable in the medium to long-term, our variation range is skewed to the downside. There is in fact a higher possibility for the *Best Case* scenario to realize compared to the *Worst Case*. The latter would in fact realize only in the event of Russian LNG supplies to Europe being reduced further, which would reverberate on LNG and TTF prices. Tensions on gas supplies in Northern Europe (which would reduce the availability of imports from Passo Gries) combined with winter temperatures below the seasonal norm, may also add further criticality to the picture.

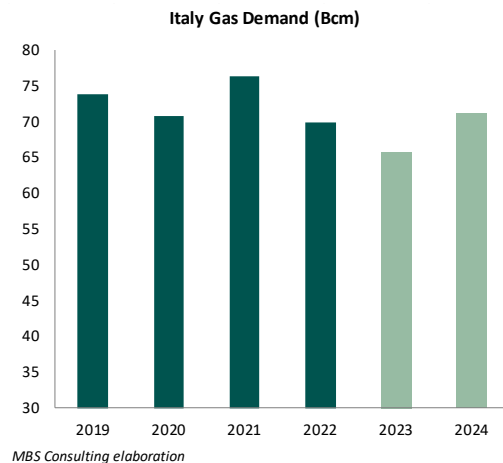
High Prices Weigh on Gas Demand



A contraction of gas demand across Europe was observed in 2022 (settling below 450 Bcm, 10% lower than 2021 and 8% lower than the last five years average), which is seen as deriving from the crisis-induced price surge and related economic activities slow down. The European regulation is also limiting gas consumption through direct gas saving measures and indirectly through power saving measures.

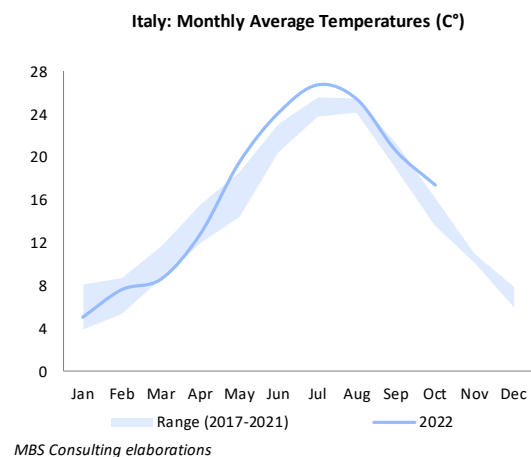
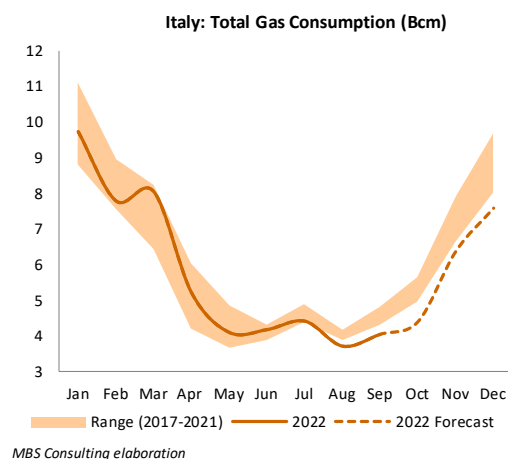
At the end of July the EU adopted a regulation on [Co-ordinated Demand Reduction Measures for Gas](#) whereby EU member states should have target a 15% voluntary reduction in gas demand over the period between August 1st 2022 and March 31st 2023, compared to its five-year average. Meanwhile, at beginning of October, the EU adopted the 2022/1854 [Emergency Intervention to Address High Energy Prices](#) imposing a 10% reduction on the

monthly power demand compared to the 2017-2021 averages from Dec-22 to Mar-23 and a 5% reduction on peak¹ hour consumption.



High prices weigh on Italian gas demand too: over the first nine months of this year the Italian gas demand was 4% below that of the same period in 2021. Industrial demand marked the biggest drop (-12% y/y) amid high commodities prices, followed by households consumption (-7% y/y) with higher than average temperature having weighed in summer. Thermoelectric demand rose by 2% compared to 2021 instead, since drought limited renewable electricity production, especially hydro.

In our *Reference* scenario, the 2022 Italian gas demand is settling near 70 Bcm, a 8% reduction compared to 2021, under the weight of the retail and industrial sectors, and reduces further in 2023, when the effect of gas consumption containment measures will add to the high prices and economic growth slow down, to then gradually recover from 2024 onwards.

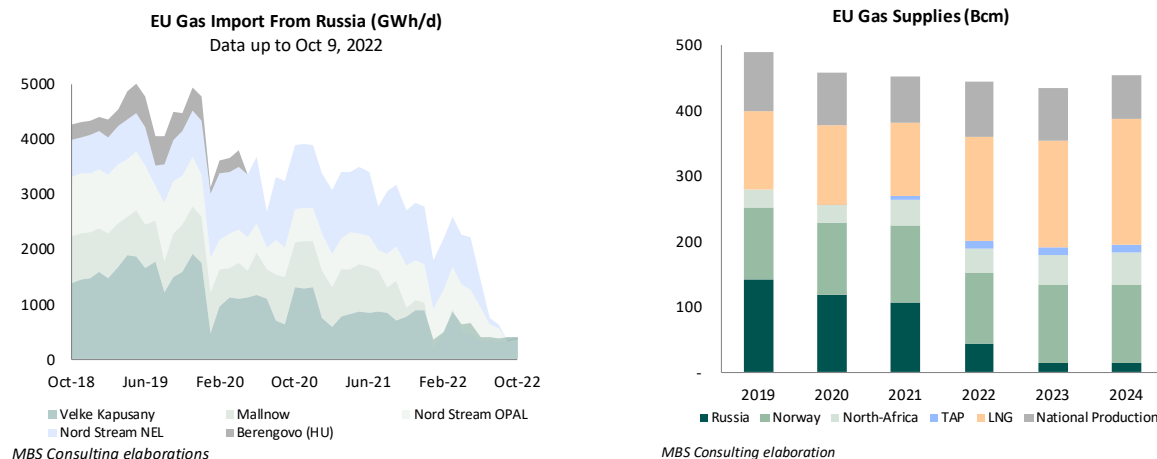


¹ Peak hours are defined as the 10% hours in a month with the highest consumption.

At the beginning of October the Italian government has in fact approved the [National Gas Consumption Containment Plant \(DM 383/2022\)](#) which provides for a series of measures that should ensure significant savings on gas consumption over the next years:

- **Households heating reduction:** introduction of temperature limits, daily hours of switching on and off heating systems, the duration of the heating period according to the climatic bands into which the Italian territory is divided (for public buildings, condominiums and commercial activities). **These interventions should lead to savings of 15 Mcm/d.**
- **Maximisation of coal-fired power generation,** with a rebound in production of the remaining coal-power plants in Italy **which should lead to savings of 7 Mcm/d.**

The European Import Mix Adjusts to Russian Supplies Reductions



After a planned closure of a few days in August of the Nord Stream 1 due to maintenance work, pipeline flows entering Germany are actually still null. A series of explosions and subsequent gas leaks in the Baltic Sea also occurred, affecting German supplies further. In September, a regulatory debate on the Austrian transit section stopped flows entering in Italy via Tarvisio with no significant resumption so far.

This led Norway to displace Russia as the top gas supplier to Europe via pipeline in 2022, with almost 90 Bcm exported to the Region since January (+6% compared to the same period in 2021) and **potential to reach 120 Bcm by 2024**. The Norwegian government have in fact committed to keep production at this latter level at least until 2026 and, at the end of September the *Baltic Pipeline* became operational, adding 10 Bcm/y of transmission capacity between Norway and Poland.

More than 70% of Algerian gas flows were diverted to Italy (17 Bcm since the beginning of 2022, +13% y/y) while Spain only got around 7 Bcm so far (-39% y/y). Following the conclusion of the agreement between *Eni* and *Sonatrach*, gas flows to Italy should raise by further 9 Bcm/y by the end of 2023, leading to an overall volume of 30 Bcm/y. **Algerian supplies to Europe could consequently reach 50 Bcm by 2024**. However, this increase will have a limited impact on the peak import capacity that we estimate to increase to between 75 and 80 Mmc/d this winter and up to 90 in the next one.

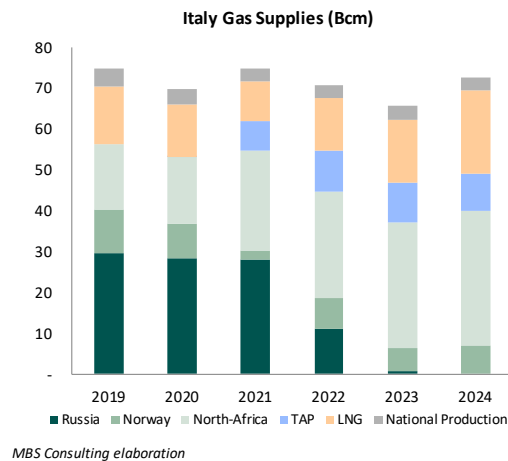
TAP flows from Azerbaijan are growing too, with **almost 8 Bcm delivered since January**, 57% higher than the same period in 2021 and in line with its maximum capacity of 10 Bcm/y.

Libyan flows reduced by almost 30% instead, confirming the decreasing trend in force since 2019.

EU national gas production rose by 9% since the beginning of 2022 compared to the same period in 2021, but reductions are expected over the coming years. Despite the energy crisis, Dutch Government has in fact decided to limit Groningen gas production, capping it at 2.8 Bcm/y starting from October 2022 and the extraction activity expected to end by 2024 at latest.

Since the beginning of 2022, Italian gas imports were substantially in line with those of the same period in 2021 (+0.5% y/y), mainly driven by storage build-up needs in summer months. However, missing gas volumes from Russia (-51% compared to the same period last year, almost 11 Bcm) were replaced by higher LNG arrivals (+27% y/y), strong Norwegian flows (+384% y/y) and modest Algerian deliveries (+13% y/y). TAP flows ramped up too (+57% y/y) amounting to almost 8 Bcm.

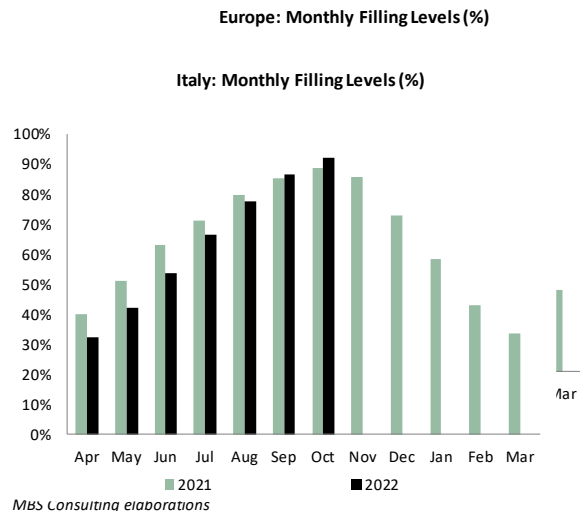
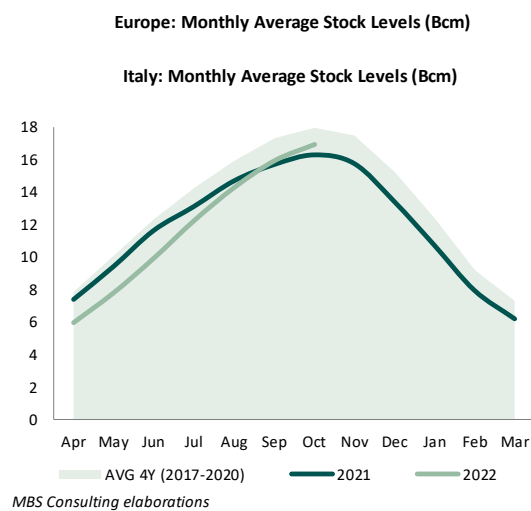
In our *Reference* scenario Russian flows will be substantially null from 2023, more than offset by strong LNG arrivals and ramping up Algerian flows.



Minimum Gas Storage Obligations Support Injections in European Storages

The new [Storage Regulation adopted in late Jun-22 by the European Commission](#) enforced the member states to fill storage reserves to at least 80% of their capacity before the 2022/2023 winter season, and to 90% ahead of all following winter periods. Several EU member states (including Italy, Belgium, France and Germany) adopted strictest storage regulations, aiming for fill targets above 90%. **Abundant storage injections followed despite extremely low Russian supplies**, with European gas reserves close to be 90% full at the end of September (at almost 105 Bcm), 13% higher compared in 2021 but still 5% below historical average.

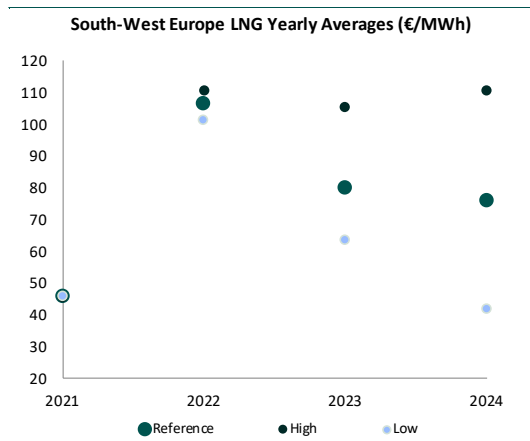
Italy stocks are above the European target, with injections having been favoured by a series of regulatory interventions to force public storage operators activity. As a result, Italian gas reserves are currently 92% full at almost 17 Bcm, 4% higher compared in 2021 but still 6% below historical average.



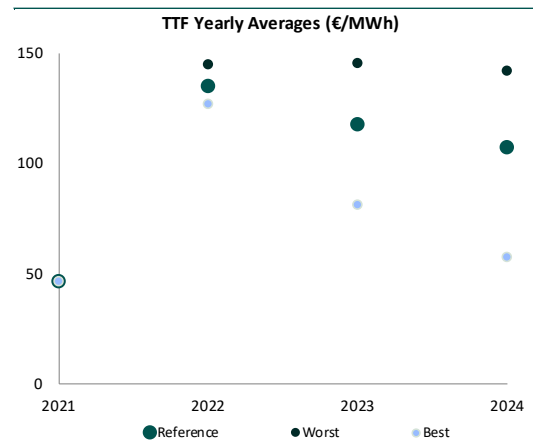
GAS YEARLY PROJECTIONS SUMMARY

Scenario		South-West Europe LNG (€/MWh)	TTF (€/MWh)	PSV (€/MWh)	PSV-TTF Spread (€/MWh)
Reference	2022	107	135	136	1.1
	2023	80	118	119	1.4
	2024	76	107	108	1.4
Worst	2022	111	145	143	-1.4
	2023	105	145	147	1.5
	2024	111	142	145	2.7
Best	2022	101	127	125	-1.9
	2023	64	81	81	-0.3
	2024	42	57	58	0.5

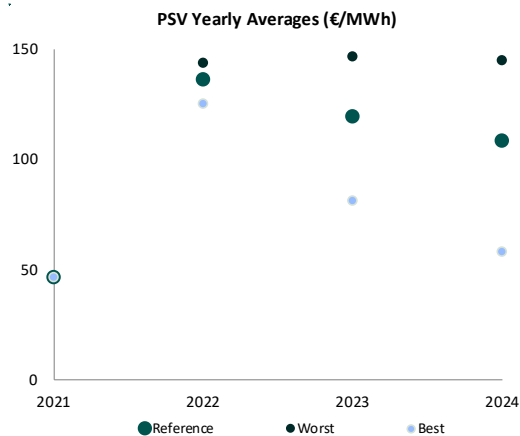
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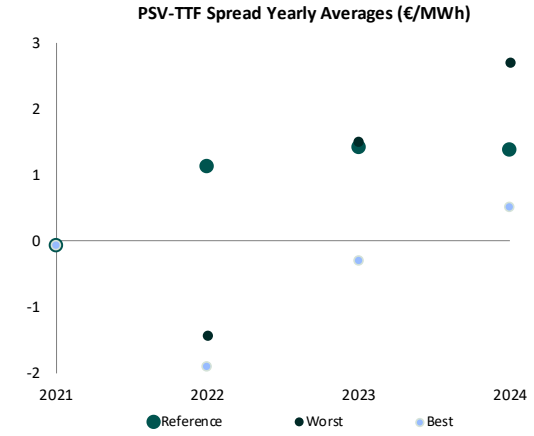
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