ENERGY OUTLOOK

Year VII n°20 - July 2022

# Italian Power Market Outlook

Natural gas market turmoil is likely to extend into the coming winter season and, assuming stable growth of electricity consumption and weak hydro, perspectives for the Italian power market are tough. In the event of further gas supply disruptions leading to demand curtailments, **cross-border exchange could become pivotal**. While in summer shortages of generation capacity across Europe and reductions of power flows from abroad are fairly easily managed by boosting the domestic thermal generation, as typically low load on gas system leave room for increases of gas consumption without undermining the security, in winter the risks are much higher. In the event of Russian gas being totally cut-off and France low nuclear availability persisting over the winter season, given the low potential contribution of an increase from additional coal-fired production, this may create the need to administrate the net transfer capacity availability. There would in fact be risk for import flows from France reverting into exports, undermine the efforts put in place to contain the domestic gas demand and guarantee the supply security.

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## FRAME OF REFERENCE AND METHODOLOGY

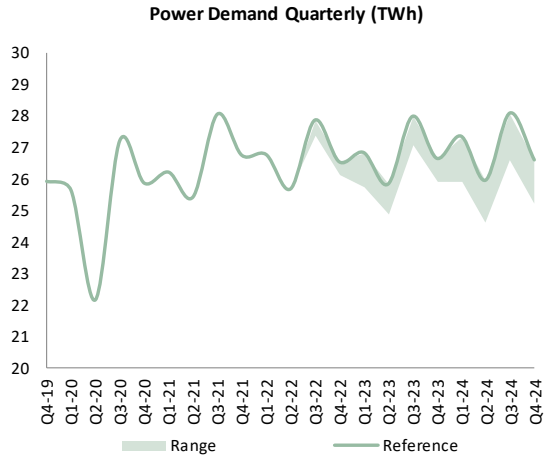
REF-E Energy Outlooks are elaborated by MBS Consulting experts on the base of proprietary suites and market knowledge. Econometric and structural models, as well as our expert sensitiveness, detailed knowledge of regulation, and accurate monitoring of market outcomes underlie our elaborations.

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 o 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.

## ITALIAN POWER MARKET OUTLOOK

**Natural gas market turmoil** (see LNG and Natural Gas Market Outlook) **is likely to extend into the coming winter season and, assuming stable growth of electricity consumption and weak hydro, perspectives for the Italian power market are tough. A progressive increase during the first half of the year confirmed the resumption of electricity consumption, which is expected to last through the rest of the 2022. With recovery trend moving on normalization path, power demand could near 322 TWh and 324 TWh in 2023 and 2024, respectively. More than 35% of demand is reliant on gas-fired generation, which leaves Italy heavily exposed to gas supply emergencies, being availability of alternative sources limited and dependency on net import high. Power prices are strictly related to the gas market and levels are expected to remain elevated at least until the end of the next winter season, with the PUN baseload average staying near the 250 €/MWh threshold in our Reference Scenario. There is a high risk for further reductions of gas supplies, logistic chains blocks and permanently high commodities prices shaping the Worst Case Scenario, where the PUN would stabilise above the 260 €/MWh threshold in years 2022 and 2023, with a slow downward movement just beginning in year 2024, despite economic contraction and high inflation weighing on consumptions. It would take a combination of a fast normalization of commodities markets with a strengthened consciousness of the energy transition process strategic role to allow a stabilization of 2022 PUN in the 200-220 €/MWh instead, with a downward trend accelerating in 2023 and continuing in 2024 in the Best Case Scenario.**

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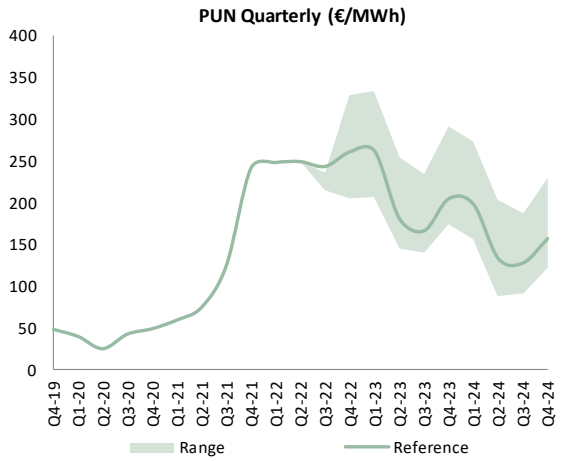


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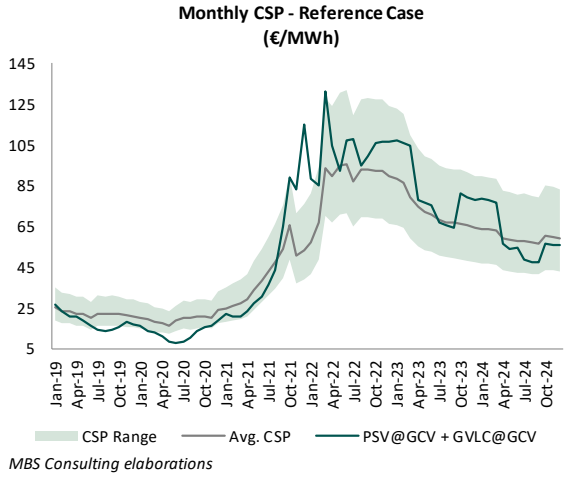
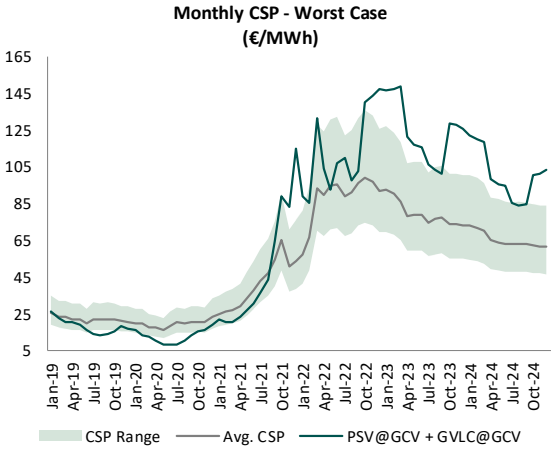
### *Generation Mix: Extreme Gas Market Conditions Favour Coal Production*

Despite a partial mitigation by switching-related CO2 swings (see ETS CO2 Outlook), **coal-fired generation is expected to remain competitive** and to stay **close to 2020-2021 generation levels** (15-20 TWh range) over the 2022-2023 period. In 2024 switching conditions are assumed to improve, following the forseen gas market normalization and CO2 move on an upward path, which would push coal power plants out of the market and reduce their power generation below 10 TWh. Mutated switching conditions affect **net import** levels too, with energy flows coming from the Northern frontiers expected to remain sustained this year and in the next future as the



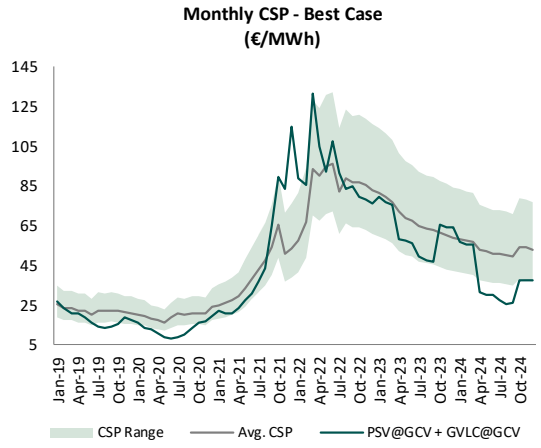

*MBS Consulting elaborations*

Italian thermoelectric fleet is challenged by the continental Europe nuclear and coal-fired generation. Thus, net import levels are expected to stabilize around 40 TWh in each of the next three years.




*MBS Consulting elaborations*

In the *Worst Case* Scenario, with gas prices stabilizing above 100 €/MWh, **the economic conditions for the Italian coal-fired generation would improve further,** bringing it in the 30-35 TWh range through the next triennium, corresponding to 50%-60% average load factor. Extreme market conditions could require the effective reactivation of generation assets already destinated to a definitive closure such as Monfalcone power plant, while Fusina and La Spezia sites could not participate, since construction activities of new units realization have already started. Under this circumstances, fuels-led high inflationary pressure would weigh on the economy and on investments, **compromising renewables growth**: between years 2022 and 2024, the sum of solar and wind capacity increase would be just 1.6 GW, while the overall renewable production (hydropower not included) would remain aligned to year 2021 levels at around 70 TWh. Import levels would stabilize above 40 TWh, with switching conditions penalizing gas fired production.

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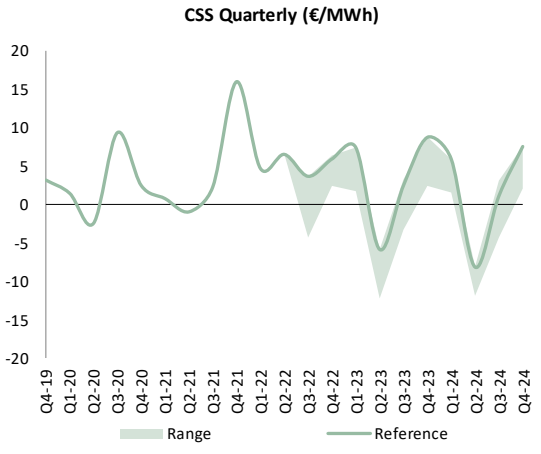
Only in the event of very mild winter temperatures keeping gas demand below average and pushing prices lower the *Best Case* Scenario would take shape, leading gas-fired generation back to 118 TWh in year 2022 and to just above 112 TWh in 2023 and 2024, as renewable production gains ground. The energy transition would in fact be favoured by the economic recovery and regulation, with focus on the need to promptly reduce the level of energy dependence at European level. Solar and wind capacity may increase by 5.7 GW and 3 GW respectively by year 2024 end, while renewable production (hydropower not included) hit 90 TWh. Coal-fired production phase out would be favoured by highly competitive gas-fired generation and would stall below 15 TWh in the 2022-2024 period.

### *New Gas-Fired Capacity Weighs On Production Share*

With scarce hydro conditions destinated to last for the whole 2022 gas-fired production is expected to maintain a share of above the 120 TWh, but dip down to 112 TWh in 2023 when new gas-fired capacity is planned to come online (4 GW), adding to normalized hydro contribution and leading to higher competition. The Clean Spark Spread (CSS) of 53%-efficiency CCGTs (the marginal technology in the Italian power system) remains positive consequently. Only very favorable coal-to-gas switching conditions, led by a fast normalization of the gas market and a contextual upward move of the CO2 price, would support gas-fired generation, leading the baseload CSS of 53%-efficiency CCGTs to swing



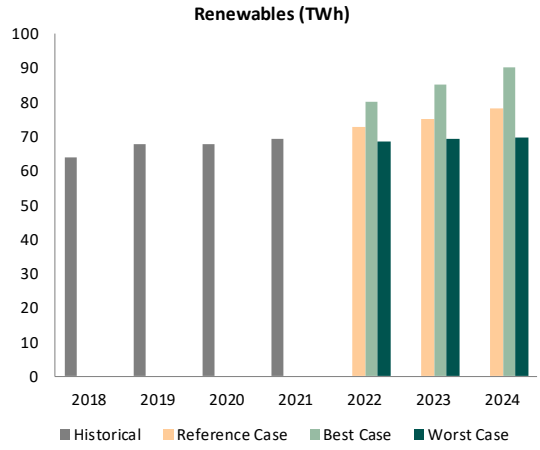

*MBS Consulting elaborations*

between -10 and 6 €/MWh over the different quarters. Natural gas scarcity and high prices would translate into coal-fired generation regaining market shares instead, with the baseload CSS of 53%-efficiency CCGTs stabilizing in the lower end with values between -12 and 2 €/MWh level.

### *RES-E Perspectives*

RES-E evolution over the next three years is expected to follow the long-term equilibrium trajectory and is mainly driven by an increase of solar and wind generation capacity (at different paces depending on the alternative market scenarios). The overall renewable generation capacity is expected to grow from the 57-60 GW range in 2022 to the 58-66 GW in 2024. Renewable production (hydropower not included) is expected to overcome the 68-80 TWh threshold in 2022 and to hit just below 70-90 TWh in 2024. Favourable market conditions are needed to support the development of renewable energy, fostering both PPAs and merchant investments with a minimum level of rate of return guaranteed. However, there is a high risk for bureaucratic deadlocks and logistic chains damages caused by sanctions, bans and deteriorated commercial relations deriving from the conflict in Ukraine limiting the RES growth potential in the short-term.

The Italian authorization process slowness for new renewable projects has been a significant obstacle to the a fast transition so far and is assumed to contain the pace of new units' realization. However, the recent DL Aiuti and DL Semplificazioni (Newsletter 266), aiming at overcoming some locks, may favor an acceleration of RES development.

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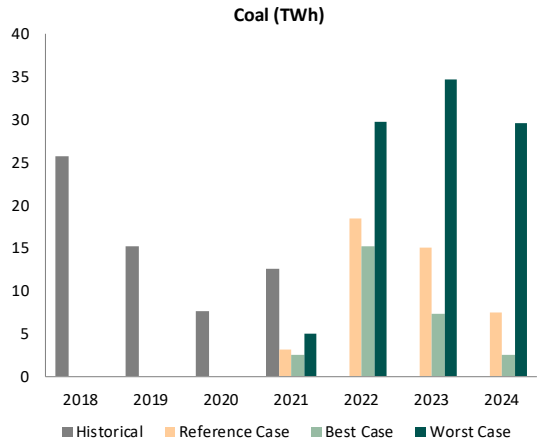


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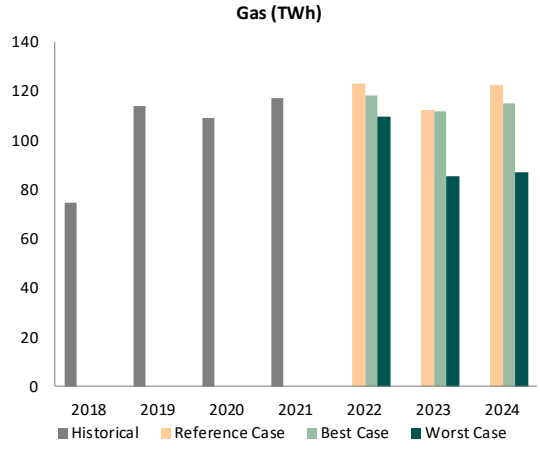


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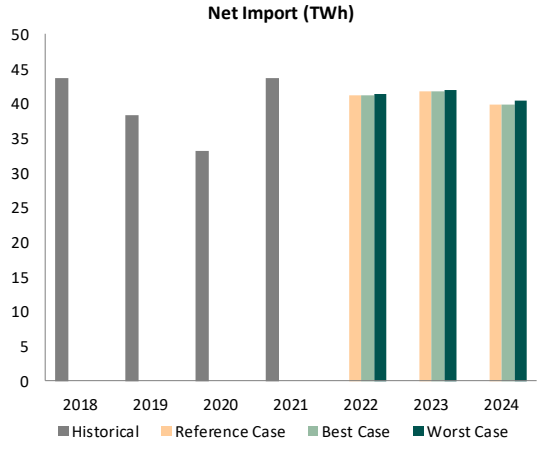
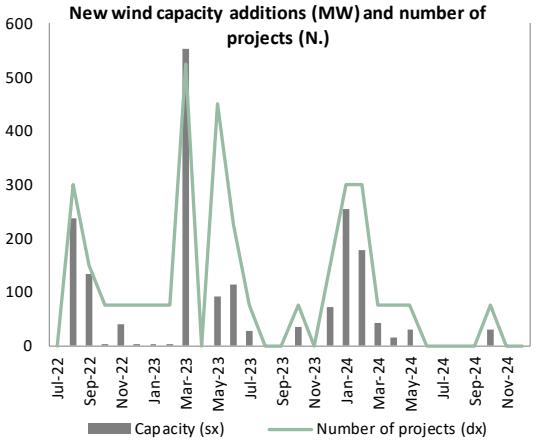



*MBS Consulting elaborations*

Assuming the longest actual times registered for each technology[1], to which is added an average estimated time required for construction and activation of the new plant, more than 40 wind and almost 90 solar new projects could join the Italian market between the second half of 2022 and the end of 2024, bringing 4 GW of additional renewable capacity (1.8 GW for wind and 2.2 GW for solar) compared to the 35 GW currently available[2] in the system.

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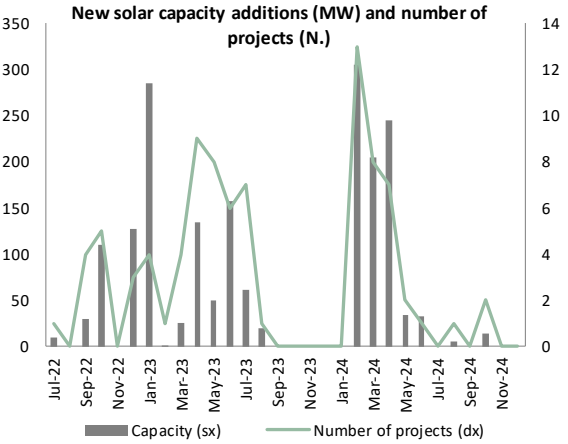


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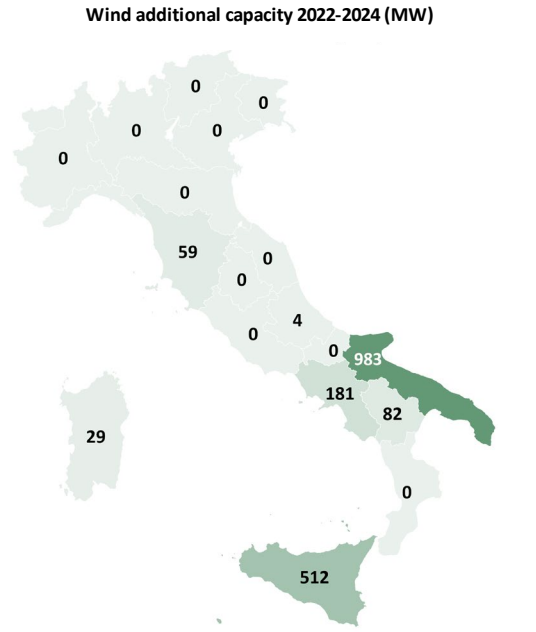
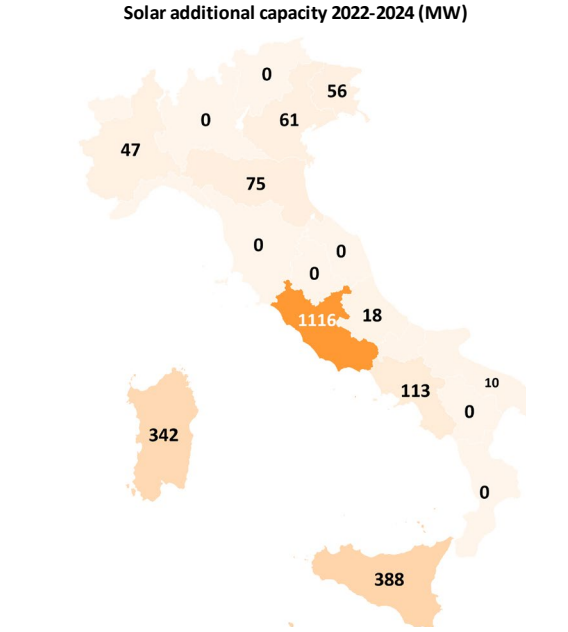
More than half of the **new wind projects** expected to conclude the permitting procedures are destinated to Puglia (53%), followed by Sicily (28%) and Campania (10%), and the remaining share (9%) is distributed between Tuscany, Sardinia and Basilicata.




Lazio is estimated to have the highest share of solar capacity additions (50% of all new projects), followed by Sicily (17%), Sardinia (15%) and Campania (5%), while the residual share (13%) is allocated among the rest of the regions.

[1] The **MBS Authorization Database** monitors the evolution of permitting procedures for new wind and photovoltaic power plants and contains data on plant's type and size, promoter, location, procedure to which it is subjected (VA, PAUR, EIA), application submission date and public notice submission date. The database contains details on projects submitted applications in 2018 and is revised every two weeks by adding updates on new projects and/or completed authorizations. The Ministry of Ecological Transition (MITE) website or on the single Regions' websites are the main sources of information, but in some cases also the local province websites can provide useful documentation.

[2] MBS estimations based on Terna's renewables consistency data in the end of June 2022.

Projections based on the authorizations process (plus construction/activation) are in line with the Reference scenario assumptions for solar capacity development, while they indicate a potential acceleration of wind technologies development, with a penetration rate that may lie between the Reference and the Best case. Still, at this moment the strong commitment to permitting simplification and the extraordinary effort to accelerate green transition, which is pushing the demand for new projects higher, as evident from the number of requests recently registered, is negatively counterbalanced by an unprecedented increase of raw material costs and logistics' bottlenecks limiting the aimed RES acceleration.

### *Jumping Through The Hoops: The Power Market Between Gas Supply Cuts, Hydro Drop And Capacity Shortage*

Over the first half of 2022, the Italian power market faced challenging times since geopolitical tensions had a significant impact on the energy sector and brought commodities prices to record highs. With a quick end to the conflict out of play, the European gas market tension keeps worsening and are expected to persist at least until Q1-23. The risk for gas demand being curtailed is significant, which makes the thermoelectric demand more crucial than ever. The Reference scenario is based on a subtle market equilibrium, assuming normal winter climate conditions and long-term Russian contracts being honoured, which would secure gas supplies for power generation with a minimum probability of disruption. However, there are significant risks potentially altering this balance.

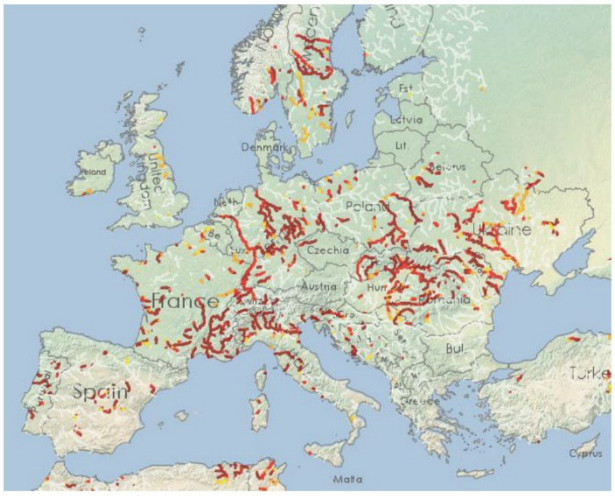
### *Droughts Across Europe Undermine Thermal Power Plants Availability*

Hydrology conditions of the Po river basin are now classified at the highest level of drought severity. Beyond crop yields expected reduction and water restrictions in most of the Northern Italy, insufficient water availability forced operation of different units to stop for a total of nearly 2 GW so far and puts further temporary output reduction or shut-down at risk (roughly 5 GW).

The situation is critical wide across Europe as well. According to the latest JRC Report on Drought in Europe, the early heat waves and persistent lack of precipitation not only widely impacted river discharge in the past months, but also hydropower generation and cooling systems of the other power plants have suffered the reduced volumes of stored reserve volumes. The Low Flow Index (LFI)[3] in the end of June points to criticalities in the northern Italy, eastern Europe, southern France and Germany.

**Plants criticalities and rivers drought status**

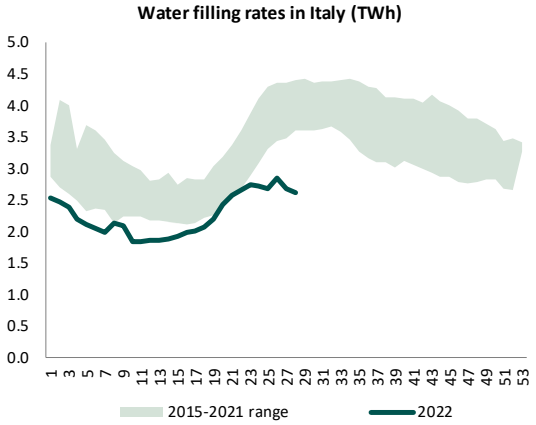
| Plants already stopped (2.4 GW) | Plants at risk of being stopped (4.8 GW) |
|---|---|
| Moncalieri (TO, IREN) | Turbigo (MI, IREN) |
| Sermide (MN, A2A) | Piacenza (A2A) |
| Ostiglia (MN, EP) | La Casella (PC, ENEL) |
| | Chivasso (TO, A2A) |
| | Tavazzano (LO, EP) |




[3] The Low-Flow Index (LFI) indicator is used for the operational, near real-time monitoring of hydrological droughts and may be visualized as both aps and graphs, providing information on the spatial distribution of the drought events and on the temporal persistence of the drought over a specific location. The LFI indicator is dimensionless, ranging from 0 to 1 in terms of real values, and from yellow to red on the map, where 1 corresponds to a maximum drought severity. Four classes are considered, varying from Low Hazard to Very High Hazard (if the index is above 0.75).

### *Hydropower Generation At Minimums*

There are little possibilities for a recovery of hydro over the next months, with stored water volumes in week-28 36% lower compared to the same week 2015-2021 average level, and 27% below the minimum registered in 2017.




*MBS Consulting elaborations*

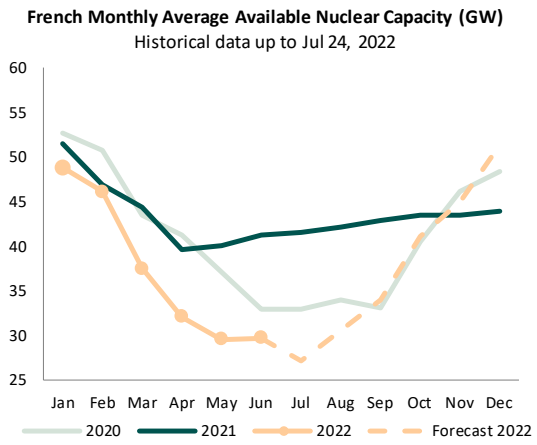
### *Coal Generation As Ready-To-Use Substitute Of Gas In Europe Is Not Granted*

Re-activation of conventional power plants destinated to closure is among the first measures adopted across Europe. Germany is preparing for a massive return of obsolete power plants to replace gas units to ease pressure on gas demand and be ready to tackle with gas supply interruptions in winter. So far, the German Government announced the voluntary return to market of nearly 6 GW of hard-coal and fuel oil units, currently kept as grid reserve and will be allowed to remain on the market until April 2024. On top of that, nearly 2 GW of security reserve lignite units are allowed back in October and mandatory closure dates of about 2.6 GW of hard-coal units were renounced. Reactivating capacity may not be as easy though, as low water levels alongside the rivers, Rhine for example, limit the supply of the solid fuels to the power stations. The expected rainfalls after the July heat wave may help, but talks on railway transport priority for coal and oil are ongoing meanwhile. The German Government estimates nearly 20 TWh gas demand savings through the generation switch, nearly half of which will be exported.

In Italy, the coal fleet contribution remains limited. The possibility to reactivate plants under decommissioning was taken into account, but of the three candidates (Fusina, la Spezia and Monfalcone), just Monflacone could effectively be restart, since construction activities are already running at the other closed sites. However, to a certain extent and assuming the full availability of coal stocks, maximizing the national coal generation may help in limiting the use of gas. Pushing load factors to the limit (above the 70%) would in fact save nearly 2.5 Bcm of gas in 2022 and 5 Bcm in 2023 compared to the Reference case.

### *Security Issues At French Nuclear Plants Add Tension To The European Power Market*

The low availability of nuclear reactors in France, amid the expiring of a number of 10-years overhauls and refueling stops, was further enhanced in the last months. Heat related restrictions and insufficient water levels strone when heat waves pushed electricity consumption higher, leading to record-high price spikes and reverse cross-border flows, leaving only Italy and Switzerland as net importers of electricity from France. A return of temperatures back to the seasonal norm and the holiday related easing of demand, followed by the scheduled increase of capacity availability in the autumn, would ease the supply-demand tension. However, risk for stress corrosion issues, strike actions and delays of planned starts could undermining the French supply availability over the winter period is not negligible.

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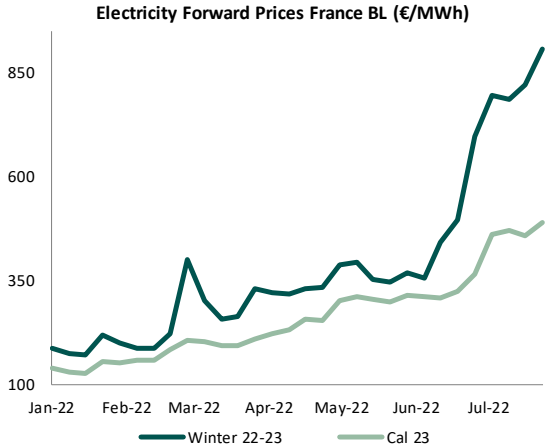


*MBS Consulting elaborations*

**Nuclear low availability reduces imports and supports demand for gas-fired production, creating a strong need for coordination between gas security and electric system dispatching management**

To cope with reduced hydro availability in 2022 and Q1-2023, dependence on natural gas remains elevated. Most likely gas-fired generation will in fact account for 123 TWh share of the national generation mix in 2022 and would only decline at 112 TWh in 2023, should the hydroelectric output return to the normal. Further variations of gas-to-power demand over the next winter season must therefore rely on other alternative sources availability and their deployment. In the event of further of gas supply disruptions leading to demand curtailments, **cross-border exchange could become pivotal**. While in summer shortages of generation capacity across Europe and reductions of power flows from abroad are fairly easily managed by boosting the domestic thermal generation, as typically low load on gas system leave room for increases of gas consumption without undermining the security, in winter the risks are much higher. In the event of Russian gas being totally cut-off and France low nuclear availability persisting over the winter season, given the low potential contribution of an increase from additional coal-fired production, this may create the need to administrate the net transfer capacity availability. There would in fact be risk for import flows from France reverting into exports, which would undermine the efforts put in place to contain the domestic gas demand and guarantee the supply security.

## POWER YEARLY PROJECTION SUMMARY

| Scenario | | Power demand (TWh) | PUN (€/MWh) | CSS (€/MWh) |
|---|---|---|---|---|
| Reference | 2022 | 320 | 250 | 4 |
| | 2023 | 322 | 203 | 3 |
| | 2024 | 324 | 154 | 2 |
| Worst | 2022 | 314 | 264 | 1 |
| | 2023 | 311 | 278 | -3 |
| | 2024 | 307 | 223 | -3 |
| Best | 2022 | 319 | 227 | 3 |
| | 2023 | 321 | 166 | 0 |
| | 2024 | 321 | 115 | 0 |

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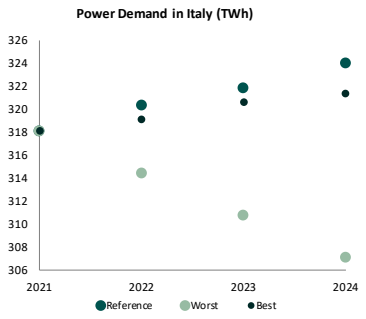


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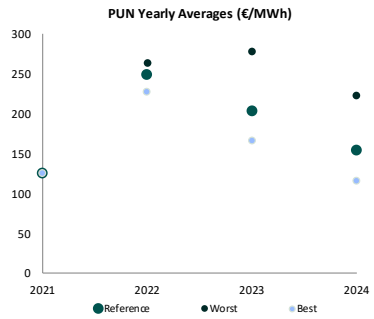


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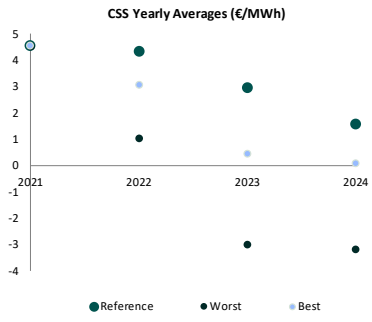


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**EDITOR-IN-CHIEF**
Virginia Canazza

**DIRECTOR OF ENERGY OBSERVATORY**
Claudia Checchi

**EDITOR**
Simona Soci

**TEAM**
MBS Consulting Practice Energy

**PUBLISHER**
MBS Consulting S.p.A.

**EDITORIAL OFFICE, EDITING**
Dalia Imperatori
Phone +39 02 89096061
E-mail: d.imperatori@mbsconsulting.it

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Società diretta e coordinata da Cerved Group S.p.A.

via degli Olivetani 10/12
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