1 Frame of Reference

REF-E scenarios over the time horizon 2025–2050 (with projections up to 2060) are developed by MBS Consulting experts using proprietary tools and market expertise. These scenarios are based on econometric and structural models, combined with expert insights, detailed regulatory knowledge, and rigorous monitoring of market dynamics.

Gas and electricity forecasts consider various geopolitical and economic hypotheses stemming from regulatory, financial, and fundamental adjustments to disruptions caused by both the pandemic and the war in Ukraine. These factors are viewed as key determinants of the future equilibrium in energy markets.

The current scenario update incorporates climate variable trends that align with historical averages.

In this context, we have defined three scenarios:

- The **Low RES scenario**: Characterized by persistently high fuel and power prices amid negative or stagnant economic growth, this scenario hampers investments and slows the energy transition process.

- In the **Reference scenario**: Marked by progress in the energy transition process, this scenario reflects a diversification of energy sources supported by existing policies. Combined with efficiency improvements, it maintains the energy market on a transformational path. Economic growth is expected to recover gradually over the next two years.

- The **High RES scenario**: This scenario assumes favorable weather conditions and a rapid energy transition, facilitated by low inflation and a faster economic recovery. These factors would reduce demand for power and fossil fuels over the next few years, limiting upward pressure on energy prices and potentially driving a downward acceleration.

HIGH RES SCENARIO *Low energy prices & Acceleration of energy transiton*	**REFERENCE SCENARIO** *Temporary high energy prices & Slight delay of energy transition*	**LOW RES SCENARIO** *Permanently high energy prices & Slow energy transition*
The electricity system evolves pursuing achievment of currently established 2030 decarbonization targets (NIECP), supported by low inflation and a faster economic recovery driven by the resolution of the Ukrainian crisis. Post-2030 evolution trajectory to reach carbon neutrality by mid-centrury. Compared to the REFERENCE case: • Higher demand, thanks to greater electrification • Lower fuel prices • Higher CO2 prices • Faster development of renewables • Lower power prices	• Business-as-usual (BAU) evolution of the system in terms of employed technologies, market organization, energy policies after the resolution of the Ukrainian crisis • Efficiency in electricity consumption assumed to maintain the most recent trends in the long-term • Development of renewables, boosted by both merchant dynamics and incentive mechanisms, allows to partially achieve currently established 2030 targets (NIECP)	Supplies scarcity triggers long-lasting inflationary pressures and zero economic and investments growth. Compared to the REFERENCE case: • Drop of energy demand, poor energy efficiency • High fuels prices • Low CO2 prices • Reduced development of renewables • Phase-out of coal-fired capacity postponed • Higher power prices

1.1 The demand puzzle: slow recovery in a renewable-driven market

While the focus on renewable energy expansion remains central, the market must also address the challenge of subdued demand. Our projections for demand growth have in fact been adjusted downward to account for the modest recovery observed post-crisis and a partial decoupling from GDP trends; pre-crisis levels are now expected to be reached only after 2027. In the long-term, modest demand growth is primarily driven by electrification. The foreseen declines in gas prices post-2026, as supply tensions ease, are expected to exert downward pressure on power prices. Concurrently, CCGT operability is increasingly constrained by low demand and rising RES production, exacerbating negative Clean Spark Spreads (CSS) and thus further weighing on the electricity price trajectory beyond 2030. Although progress in RES installations remains promising, weak demand poses a significant challenge to renewable investments, potentially jeopardizing national installation targets.

Italian power demand rose by 2.3% in 2024, reaching 312.2 TWh, which closely aligns with our IIIQ24 projections (a variance of just 90 GWh). This marks the **first annual increase since 2018**, excluding the 2021 post-pandemic rebound. **Limited demand growth** reflects **macroeconomic challenges, delayed electrification, and weak industrial performance**, with GDP having expanded by only 0.8%, and industrial output having continued to contract, particularly in energy-intensive sectors.

Persistent industrial stagnation and modest GDP growth, projected at +0.9% for 2025, combined with the observed persistence of a **partial decoupling between economic growth and electricity consumption**, led to a **downward revision of our power demand forecast**: -0.4 TWh in 2025, -1.7 TWh in 2026, and an average reduction of -4.0 TWh annually beyond 2027 in the Reference scenario. Annual **power demand growth is now projected at 1.1% for 2025–2030 (3 TWh per year)**, a modest but still notable acceleration, not seen consistently since before 2008. Consumption is expected to exceed pre-crisis levels (320 TWh) by 2027 in the Reference scenario. **Over the medium to long term (2030–2050), demand growth is anticipated to remain steady**, exceeding 2.5 TWh per year, **driven by the electrification of final consumption and the development of new electricity use segments**, which will play an increasingly critical role in shaping future demand dynamics. The surge in PV installations spurs RES production but targets attainment is at risk without regulatory progress 2024 marked a **record year for renewable energy production** in Italy, with **129 TWh generated** (+13% from 113 TWh in 2023), bringing the RES share of total production to 42.5%, thanks to a **rebound in hydroelectric generation**, which returned to its historical average at 52 TWh (+30% y/y), and an **increase in solar production**, which reached 36 TWh (+19% y/y). The 2024 surge in RES production was driven by a **19% increase in PV output**, having offset a 6% decline in wind generation. PV production growth resulted from a 7 GW capacity expansion—exceeding 2023's 5 GW—and improved irradiation levels, while wind capacity grew by 600 MW, consistent with the prior year. Our **wind installed capacity projections were slightly adjusted on a regional basis** to better align the onshore and offshore development mix with recent trends. These revisions reflect limited offshore wind development in the Centre-North zone and sustained onshore capacity growth in the Southern and insular areas. Notably, most offshore wind projects submitted to MASE in 2023 and 2024 are concentrated in the Southern and insular regions, with only one project proposed for the Centre-North. We still expect a deceleration in RES penetration growth during 2025 and 2026**, particularly in PV deployment, with installed capacity increasing by less than 2 GW in 2025 and just under 3 GW in 2026. This slowdown is attributed to several factors. Firstly, the awaited scheduling of the FERX and "FERX Transitorio" auctions may encourage some developers to delay construction activities to ensure eligibility for auction participation. Despite the introduction of the FERX Transitorio, designed to ease the implementation of the new auctioning framework, developers are still monitoring the finalization of BANDI operational guidelines. Secondly,** regulatory uncertainty persists**, driven by delays in** regional deliberations on the "Aree Idonee" Decree** and the complexities introduced by the **Testo Unico sulle Rinnovabili (TUFER)**. The TUFER, published in its final version in the Gazzetta Ufficiale, may pose additional challenges for developers. For an in-depth analysis of its implications, refer to our newsletter publication **link**.

Under the Reference scenario, solar installed capacity is projected to reach only 51 GW and wind capacity 17 GW by 2030, significantly **below the PNIEC targets of 80 GW and 28 GW**, respectively. This shortfall is primarily attributed to **the current permitting pace, which remains insufficient to achieve the 9–10 GW of annual installations** required to meet national objectives. Our demand and RES production projections indicate that **RES generation will cover 49% of Italian electricity demand by 2030**, falling significantly short of the PNIEC target of 63 %.

Italy's storage market is progressing, with 16 GW in projects under evaluation, though regulatory changes could slow deployment The expected growth of storage in the coming years will be essential in supporting the integration of non-programmable renewable generation, ensuring greater stability and flexibility of the national electricity system. Indeed, storage systems will not only optimize energy management but also help mitigate the cannibalization effect of renewable power plants, improving the overall efficiency of the system. The **PNIEC targets 72 GWh of additional storage capacity by 2030**, encompassing utility-scale, distributed projects, and their geographical distribution**utility-scale development should contribute significantly in Southern regions**, where non-programmable renewable generation is most prevalent, while **distributed capacity is aimed to grow primarily in Northern regions**, often integrated with residential and commercial PV systems. The storage market in Italy currently factors in a **pipeline of approximately 16 GW of projects**, either authorized or under evaluation, whose realization will depend significantly on the support of regulated mechanisms. These include the MACSE auctions, scheduled for mid-2025, which primarily aim to develop capacity in the South and Islands, and the Capacity Market, which is expected to drive investments in the North, where the MACSE allocation will be limited.

Starting in 2025, while larger projects remain under MASE's jurisdiction, **Regions will manage authorizations for storage plants up to 200 MW**, which could lead to bottlenecks in the processing of requests and delay projects eligible for the first MACSE auction,. Our IVQ24 projections employ a refined methodology, now accounting for the **potential for BESS development within incentivized mechanisms** in the short and medium term, as well as RES deployment trajectories and localization over the long term. We consequently revised expectations higher for utility-scale storage in Southern and insular regions, now comprising 78% of the total as of 2030. Small-scale storage will lead in the Northern regions instead, accounting for 60% of the total. Total BESS capacity, encompassing both small- and utility-scale systems, is projected to reach **48 GWh by 2030**, a net increase of +41 GWh from 2023 levels.

PUN expected to decline towards 100 €/MWh only post-2026 with new liquefaction capacity improving the global LNG market supply-demand balance. We confirm our expectations for a **slight increase in the PUN in 2025 to 112 €/MWh**, driven by a still **tight gas market** and CO2 prices remaining around 85 €/ton, reflecting the **full implementation of the ETS reform**. However, with the continued integration of RES capacity, further price normalization post-2026, and sustained levels of electricity imports, we project **prices to fall below 100 €/MWh by 2029** in the Reference scenario and by 2026 in the High RES case.

The **annual 2024 PUN average settled at 107.6 €/MWh**, aligning closely with our IIIQ24 projections (107.8 €/MWh) While this marks a reduction of approximately 15% compared to the 2023 average of 127 €/MWh, **prices remain elevated relative to pre-crisis levels**. Despite the high level of RES production achieved over the past year, thermoelectric generation remains the marginal source in the Italian market and is expected to maintain this role in the near term. Consequently, the short-term dynamics of power prices are still primarily driven by developments in the gas market. **In 2024, gas demand stagnated** due to milder winter temperatures having reduced heating needs and a struggling industrial sector. The replenishment of gas storage was consequently facilitated, creating an additional buffer against demand fluctuations. This combined with stable gas supples, allowing prices to edge closer to pre-crisis levels.

In the short term, **the global LNG market balance remains fragile** though, since supply growth is limited and the absence of Russian pipeline gas continues to support the European demand. Norway and Algeria emerged as key suppliers, but **Italy's high network and transportation tariffs—among the highest in Europe—limit its ability to position itself as an exporting country** to Eastern and Central European nations, such as Austria, that were most impacted by the suspension of Russian flows. Prices, currently exceeding €30/MWh, are therefore unlikely to decline significantly before 2026, when the market awaits new liquefaction capacity from Qatar and the United States to ease the global LNG market tightness. However, **adjustments in gas logistic component** for the 2025–2030 period, including the stabilization of the CRVOS reimbursement mechanism and the elimination of the CRVBL component, led to a downward revision of the gas price projections. Consequently, **our PUN projections have also been revised downward**, with reductions of approximately 2 €/MWh for 2025, 6 €/MWh for 2026, and over 5 €/MWh for the post-2026 period. The anticipated decline in power demand throughout the forecast horizon limits the operability of CCGTs, thereby leading to a **reduction in Clean Spark Spread (CSS) expectations for thermoelectric plants**.

2 Key Figures

NET POWER (GW)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
CCGTs	28,0	27,8	23,7	17,6	28,0	27,8	23,7	16,7	28,0	27,8	23,7	17,6
Coal	1,5	0,0	0,0	0,0	1,5	0,0	0,0	0,0	1,5	0,8	0,0	0,0
New CCGTs	5,7	7,3	6,6	6,6	5,7	7,3	6,6	6,6	5,7	7,3	6,6	6,6
Electrochemical BESS - Power Intensive	3,6	4,4	6,4	9,4	4,0	5,5	7,3	9,7	3,5	3,8	4,7	5,7
Electrochemical BESS - Energy Intensive	0,7	9,8	23,1	37,1	0,7	13,6	31,2	51,4	0,7	7,9	13,7	25,5
Hydro	19,0	19,3	20,0	20,6	19,0	19,3	20,0	20,6	19,0	19,3	20,0	20,6
Wind	13,9	17,0	26,7	37,9	14,0	19,4	33,5	44,3	13,2	14,1	18,5	29,0
Geothermal	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Biomass	3,9	3,9	3,9	3,9	3,9	3,9	3,9	3,9	3,9	3,9	3,9	3,9
Solar	38,1	50,9	79,6	114,1	38,1	63,0	87,0	122,1	38,1	44,3	58,8	84,9

BALANCE (TWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
Demand	315,4	332,7	360,4	387,5	320,4	347,8	373,0	393,9	311,9	321,0	340,2	353,1
Net import	49,4	44,6	46,0	45,8	49,4	44,6	46,0	45,8	49,4	44,6	46,0	45,8
Hydro	45,9	46,7	49,5	52,3	45,9	47,1	50,0	52,8	45,8	46,6	48,9	51,3
Renewables	90,1	115,4	185,6	263,7	91,4	146,6	225,4	301,5	87,1	95,8	121,6	179,1
Natural Gas	104,1	106,2	77,6	44,0	108,7	93,6	53,6	25,3	99,3	110,5	110,8	79,8
Coal	2,1	0,0	0,0	0,0	1,4	0,0	0,0	0,0	5,0	2,2	0,0	0,0
Overgeneration	-0,8	-0,7	-5,1	-6,0	-0,7	-3,4	-4,5	-8,3	-0,6	-0,2	-0,6	-1,6

COMMODITIES	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
PSV (€/MWh)	35,3	27,3	25,1	25,1	21,6	10,4	10,4	10,4	55,5	55,5	44,6	44,6
Coal (€/MWh)	15,5	18,0	8,0	8,0	9,5	9,0	4,0	4,0	18,6	21,9	10,6	10,6
CO2 (€/ton)	86,3	107,3	123,0	139,7	131,1	133,1	147,2	160,5	49,3	72,3	93,0	113,0

ELECTRICITY PRICES (€/MWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
Fuel variable cost - CCGT 53%	73,5	56,9	52,2	52,2	45,0	21,7	21,7	21,7	115,6	115,6	92,9	92,9
Logistic variable cost - CCGT 53%	8,3	4,7	3,4	3,4	8,3	4,7	3,4	3,4	8,3	4,7	3,4	3,4
ETS impact - CCGT 53%	32,5	40,4	46,3	52,6	49,3	50,1	55,4	60,4	18,6	27,2	35,0	42,5
Clean Spark Spread - CCGT 53%	-2,3	-3,8	-6,2	-29,8	-1,5	-5,1	-6,8	-22,8	-3,2	-3,1	-0,9	-15,6

ZONAL PRICES (€/MWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
PUN	112,0	98,2	95,7	78,5	101,1	71,4	73,7	62,7	139,3	144,4	130,3	123,2
North	112,9	98,9	96,7	79,3	102,0	73,2	74,8	64,2	140,7	144,3	131,5	124,5
Centre-North	112,9	97,4	95,7	79,1	101,9	71,1	74,5	63,5	140,6	144,1	131,5	124,5
Centre-South	110,4	97,1	94,2	77,9	99,4	71,1	71,5	61,9	137,0	144,5	128,3	120,7
South	109,0	96,3	94,2	77,8	98,9	64,8	71,3	61,7	136,3	144,5	128,3	120,6
Sicily	110,0	98,1	93,0	74,6	98,9	64,7	71,1	55,5	136,2	144,5	127,4	120,3
Sardinia	110,2	96,1	92,7	68,1	99,3	68,4	71,6	50,0	130,8	142,8	127,0	117,6
Calabria	109,0	96,3	94,2	77,8	98,9	64,8	71,3	61,7	136,2	144,5	128,3	120,6

CAPTURED PRICES PV FIXED TILT (€/MWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
North	98,5	84,0	69,9	46,5	88,7	57,4	56,6	45,4	122,8	127,0	108,4	91,5
Centre-North	98,9	79,3	68,2	46,9	89,0	51,4	56,7	45,4	123,5	127,4	109,2	92,4
Centre-South	88,0	77,8	64,4	44,9	77,8	51,6	51,7	44,1	108,4	124,7	99,8	82,9
South	84,4	76,0	64,0	44,6	76,6	38,5	51,4	44,0	106,2	124,5	99,4	82,3
Sicily	84,5	76,2	60,9	37,8	76,7	38,5	51,2	36,2	106,3	124,5	96,6	81,8
Sardinia	87,0	77,2	59,7	26,0	76,9	50,7	51,1	29,7	101,5	122,8	96,7	73,7
Calabria	83,8	75,5	63,5	44,0	76,0	38,0	50,9	43,3	105,5	124,1	98,9	81,7

CAPTURED PRICES PV TRACKER (€/MWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
North	100,4	86,2	72,0	47,8	90,1	59,1	57,4	43,7	124,1	129,8	111,0	95,2
Centre-North	100,8	81,9	70,5	48,4	90,6	53,5	57,6	43,8	124,8	130,4	111,9	96,2
Centre-South	92,4	81,4	67,5	47,0	81,7	54,3	53,3	42,7	113,0	129,0	104,3	88,0
South	88,9	79,5	66,8	46,4	80,4	41,7	52,8	42,6	110,8	128,4	103,5	87,1
Sicily	89,7	80,2	64,2	40,6	81,0	42,1	52,9	35,9	111,4	129,0	101,6	87,2
Sardinia	90,8	80,3	62,7	28,5	80,3	52,8	52,4	29,9	105,7	126,6	100,6	78,2
Calabria	88,1	78,8	66,0	45,4	79,7	40,9	52,1	41,9	109,9	127,9	102,7	86,0

CAPTURED PRICES WIND ONSHORE (€/MWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
North	115,4	95,9	89,0	71,9	103,8	70,3	68,0	60,4	144,8	142,4	127,3	117,8
Centre-North	114,8	93,3	85,1	67,2	103,4	67,2	64,8	55,8	145,0	142,0	126,9	114,9
Centre-South	103,9	88,8	78,1	61,3	93,6	65,0	56,1	48,9	132,3	136,9	118,6	104,4
South	101,3	86,8	78,9	61,9	93,1	53,0	55,8	47,6	131,3	136,8	119,5	105,6
Sicily	100,1	86,1	76,7	57,1	92,7	51,5	55,4	37,7	129,5	136,2	116,7	102,9
Sardinia	104,4	86,3	74,7	45,5	95,2	58,6	56,3	30,6	118,5	132,5	114,5	97,6
Calabria	101,3	86,8	78,9	61,9	93,0	53,0	55,8	47,7	131,2	136,8	119,4	105,6

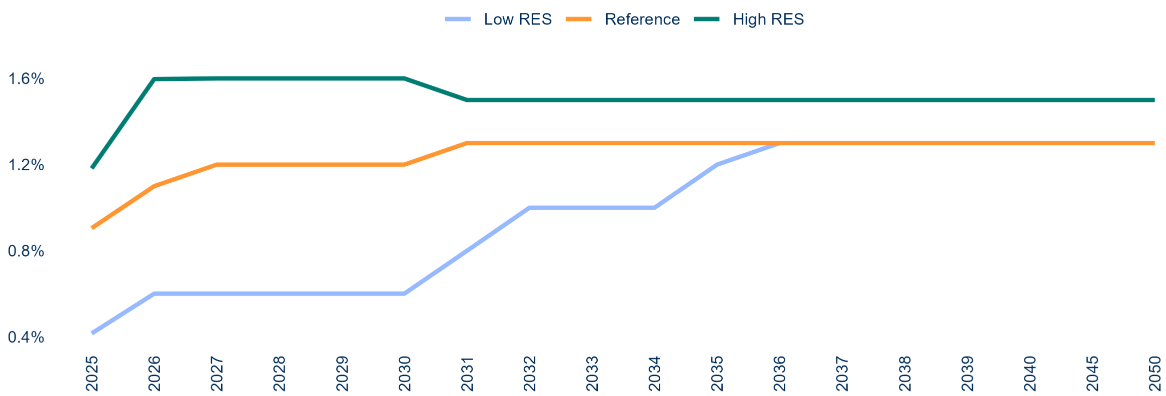
CAPTURED PRICES WIND OFFSHORE (€/MWh)	Reference				High RES				Low RES			
	2025	2030	2040	2050	2025	2030	2040	2050	2025	2030	2040	2050
North	0,0	96,2	89,9	72,8	0,0	70,1	68,9	65,1	0,0	0	0,0	119,4
Centre-North	0,0	94,2	84,7	68,2	0,0	67,9	63,8	58,8	0,0	0	0,0	117,1
Centre-South	0,0	91,7	80,5	65,8	0,0	66,7	57,2	54,4	0,0	0	0,0	110,5
South	103,7	89,3	84,0	67,7	95,3	55,9	59,6	50,8	133,9	139	123,9	110,3
Sicily	0,0	92,3	83,8	64,7	0,0	58,5	61,2	43,4	0,0	0	0,0	112,0
Sardinia	0,0	91,6	85,1	57,9	0,0	63,9	64,0	37,9	0,0	0	0,0	109,4
Calabria	0,0	0,0	84,0	67,7	0,0	0,0	59,6	50,8	0,0	0	0,0	110,3

3 Macroeconomic Context

3.1 GDP

IN THE SHORT TERM, POSITIVE WAGE DYNAMICS AND THE COMPLETION OF THE DISINFLATION PROCESS ARE EXPECTED TO GRADUALLY SUPPORT CONSUMPTION AND INVESTMENTS, DESPITE THE END OF INCENTIVES IN THE CONSTRUCTION SECTOR. IN THE MEDIUM TO LONG TERM STABILIZED FINANCING RATES, A GENERAL IMPROVEMENT OF THE MACROECONOMIC CONTEXT AND FUNDS ALLOCATED THROUGH THE NRRP ARE ANTICIPATED TO DRIVE MORE STABLE AND ROBUST GDP GROWTH

GDP Growth Rate
%



Source: MBS Consulting elaborations

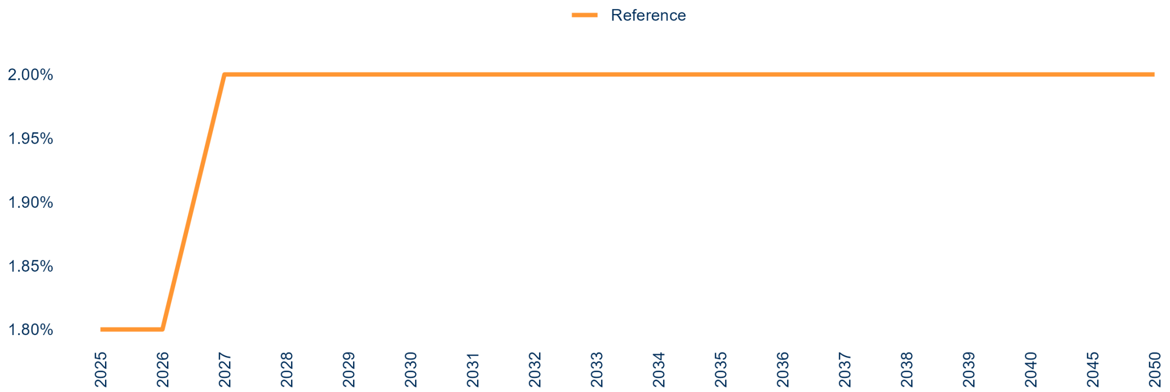
25-26	The reduction in financing rates initiated in 2024, alongside positive trends in wages and labor market conditions, is expected to support slightly stronger GDP growth of 0.9% in 2025. These dynamics are anticipated to drive a recovery in investment and consumption, contributing to higher growth of 1.1% in 2026. In a worst-case scenario, growth would remain subdued at 0.4% in 2025 and 0.6% in 2026, with persistent inflationary pressures keeping investment and consumption constrained. Conversely, if inflation remains under control and investment outpaces expectations, GDP growth could reach 1.2% in 2025 and 1.6% in 2026.
27-30	In both the Reference and Best scenarios, economic expansion is expected to steadily converge with earlier forecasts, driven by the successful rollout of NRRP initiatives, a rebound in the global economy, and a faster pace of reforms tied to the green transition.
31-50	Over the long term, the Reference and Best-case scenarios are based on the expectation that annual GDP growth will stabilize within the 1-2% range. In contrast, the Worst-case scenario reflects the continued impact of setbacks in critical investments on economic performance.
Main updates	Short-term GDP projections were slightly revised downward, due to the delay in consumption recovery despite the growth of households purchasing power. Moreover, the industrial sector is still stagnant, contributing to the deterioration of GDP growth expectations.

3.2 Inflation rate

2024 AVERAGE INFLATION INDEX CONFIRMED THE EFFECTIVENESS OF THE MONETARY POLICY UNDERTAKEN BY EU. A SLOW BUT STEADY EASING OF THE FUNDS RATE IS NECESSARY, AND IT SHOULD NOT ADD EXCESSIVE PRESSURE ON PRICES. THIS SITUATION SUGGESTS THAT, IN THE MEDIUM TO LONG TERM, INFLATION COULD REMAIN STABLE AROUND THE 2% TARGET

Inflation Rate

%



Source: MBS Consulting elaborations

25-26	THE DISINFLATION PROCESS HAS BEEN COMPLETED, WITH THE OVERALL INDEX FALLING BELOW THE EU TARGETS. GIVEN THESE ENCOURAGING RESULTS, THE COMMISSION IS CONTINUING ITS PATH OF INTEREST RATE REDUCTIONS, MARKING THE FOURTH CONSECUTIVE CUT. NONETHELESS, THE EASING OF MONETARY POLICY REMAINS PRUDENT AND DEPENDENT ON PERFORMANCE OUTCOMES. IN LIGHT OF THIS, IN THE SHORT TERM, THIS EASING COULD LEAD TO A SLIGHT UPTICK IN INFLATION, EXPECTED TO REACH 2.3% IN 2025. FROM 2026, INFLATION IS ANTICIPATED TO REALIGN WITH THE EU TARGET OF 2%. AN ELEMENT OF UNCERTAINTY STEMS FROM A POTENTIAL INCREASE IN GEOPOLITICAL AND TRADE TENSIONS, PARTLY INFLUENCED BY THE OUTCOME OF THE U.S. ELECTIONS.
27-30	The 2024 average inflation rate fell below the 2%, proving the EU monetary policy effective. Our scenario foresees an alignment with this value in the medium term, with a progressive stabilization.
31-50	Long-term assumptions envisage the inflation rate to stabilize at around 2%, in line with the ECB's medium term inflation target.
Main updates	Short-term inflation rates remained in line with our previous market update.

4 Commodities

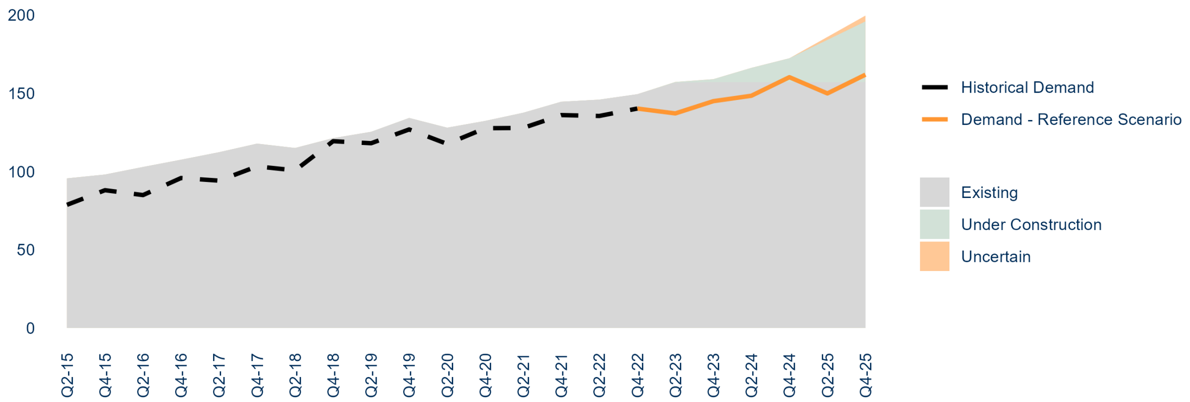
4.1 Natural Gas

4.1.1 LNG

THE HALT OF RUSSIAN PIPELINE GAS FLOWS BOOSTS EUROPEAN LNG DEMAND, WHILE SUPPLY GROWTH REMAINS LIMITED WORLDWIDE. OVER THE NEXT TWO YEARS, THE GLOBAL LNG MARKET BALANCE REMAINS FRAGILE AS A RESULT. THE TIMELY DEVELOPMENT OF NEW LIQUEFACTION FACILITIES IS KEY TO ACHIEVING LOWER PRICES IN THE MEDIUM TO LONG TERM

World LNG Demand-Supply Balance

Bcm NG/quarter



Source: MBS Consulting elaborations

25-26

Global LNG demand is expected to grow nearly 5% in 2025 and 2026, led by Europe as 30 Bcm of regasification capacity (mostly in Germany) replaces Russian piped gas. Meanwhile, China's LNG demand growth is set to slow due to increased piped gas from Russia via the Power of Siberia pipeline (40 Bcm/y). In South and Southeast Asia, LNG will remain vital for supporting rapid economic growth. However, short-term global supply growth is constrained by construction delays, particularly in the US, tightening the market and potentially driving up winter prices.

27-30

Global LNG demand is projected to reach 660 Bcm by 2027, then stabilize below 5% annual growth due to increased renewables in power generation and improved energy efficiency. With new liquefaction capacity from the US and Qatar coming online as scheduled, market tightness should ease, leading to a gradual normalization of LNG prices.

31-50

In the long term, pressure on the LNG market is expected to ease as new capacity expands and green energy commitments take effect.

Main updates

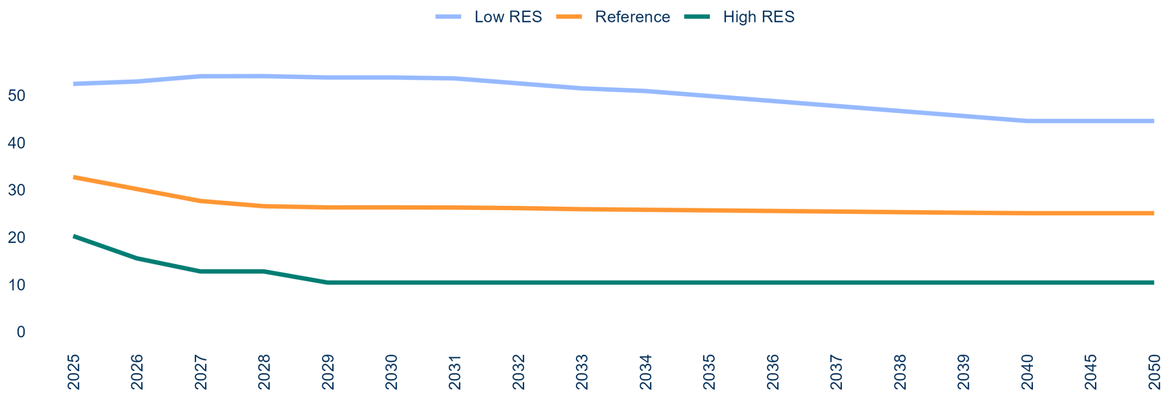
Global LNG demand growth aligns with our previous market assessment, though we have revised European demand upwards and slightly lowered China's growth forecast, while global demand remains on track with earlier projections.

4.1.2 TTF Price

A FULL RECOVERY TO PRE-CRISIS GAS DEMAND LEVELS IN EUROPE IS UNLIKELY IN THE FORESEEABLE FUTURE, AS ENERGY EFFICIENCY IMPROVES AND RENEWABLE POWER GENERATION CONTINUES TO ADVANCE. OVER THE LONG TERM, WE EXPECT DEMAND DECLINES TO ACCELERATE DUE TO EUROPE'S DECARBONIZATION EFFORTS, RESULTING IN A LOWER TTF PRICE TREND, TOWARD 25 €/MWH

TTF Price

€/MWh GCV



Source: MBS Consulting elaborations

25-26

In our Reference scenario, the TTF yearly average for 2025 and 2026 is projected to remain elevated, above 30 €/MWh, due to a fragile market balance and potential pressure from geopolitical tensions. Storage dynamics will play a crucial role, as a faster withdrawal compared to the previous two years could lead to higher prices during the 2025 summer season, coinciding with the refilling season.

27-30

From 2027 onwards, further normalization is expected due to the significant deployment of new liquefaction capacity. Assuming progressive growth in global LNG supplies and an acceleration of the energy transition, European gas prices are projected to steadily decline towards 30 €/MWh by 2028.

31-50

The European decarbonization process will continue to reduce gas demand, gradually pressuring prices back towards the long-term equilibrium of 25 €/MWh. In the Low Res scenario, geopolitical tensions could leave commodity shortages unresolved, keeping prices just below 45 €/MWh in the long term. In contrast, effective green policies, supported by economic growth, could push prices significantly lower in the High Res scenario, with the TTF averaging near 10 €/MWh in the long term.

Main updates

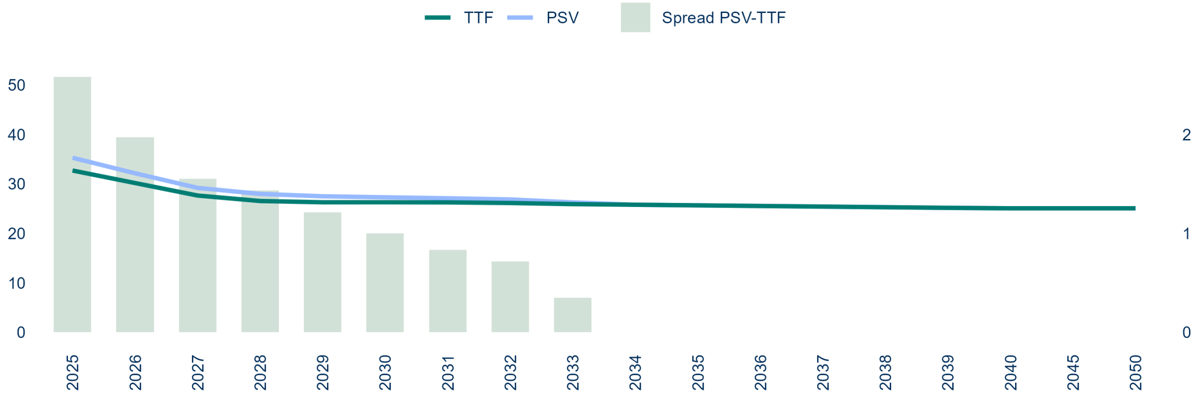
Gas price projections for the TTF remain in line with our previous market update, though slightly revised downwards in the medium to long term. This adjustment reflects the growing LNG supply wave, which is expected to accelerate the reduction in prices. However, geopolitical tensions are still anticipated to exert pressure on global gas prices in the short-term.

4.1.3 Spread TTF-PSV

AS PIPED FLOWS FROM NORWAY REMAIN CRUCIAL FOR ADEQUATE DEMAND COVERAGE, THE PSV GAS PRICE IS EXPECTED TO MAINTAIN A PREMIUM OVER THE TTF IN THE SHORT-TO-MEDIUM TERM. IN THE LONG TERM, THE REBALANCING OF FLOWS IS ANTICIPATED TO LEAD TO A GRADUAL NARROWING OF THE SPREAD TOWARDS ZERO

Spread PSV-TTF

€/MWh GCV



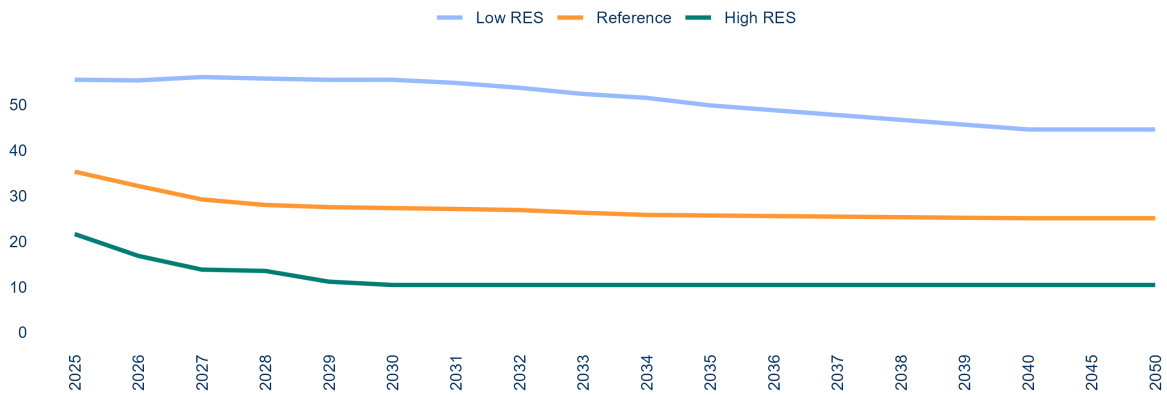
Source: MBS Consulting elaborations

25-26	The PSV-TTF spread is expected to stay near 2 €/MWh on average, both in 2025 and in 2026, as Italy's reliance on piped gas flows from Norway via Passo Gries remains high. Fluctuations throughout the year are anticipated to be in line with seasonality.
27-30	Flows from the TAP and Algeria, along with LNG arrivals, are expected to partially replace imports from the North in the medium term, leading to a progressive narrowing of the spread to below 1 €/MWh by 2030.
31-50	The PSV-TTF spread is expected to converge towards zero in the long term, as flows rebalance from North to South and LNG, combined with the underlying demand reduction driven by decarbonization, plays a key role.
Main updates	The PSV-TTF spread is still expected to remain positive in the short and medium term, having been revised upwards due to Italy's continued reliance on piped gas flows from Norway and high transport tariffs. However, it is projected to gradually reduce towards zero in the long run as flows rebalance and LNG plays an increasing role.

4.1.4 PSV Price

THE ITALIAN GAS PRICE CONTINUES TO BE CLOSELY TIED TO THE EUROPEAN HUB PRICE, WITH THE TTF SIGNIFICANTLY AFFECTING PSV TRENDS. IN THE LONG RUN, WE FORESEE THE PSV ALIGNING WITH EUROPEAN PRICES, TARGETING 30 €/MWH BY 2030

PSV Price
€/MWh GCV



Source: MBS Consulting elaborations

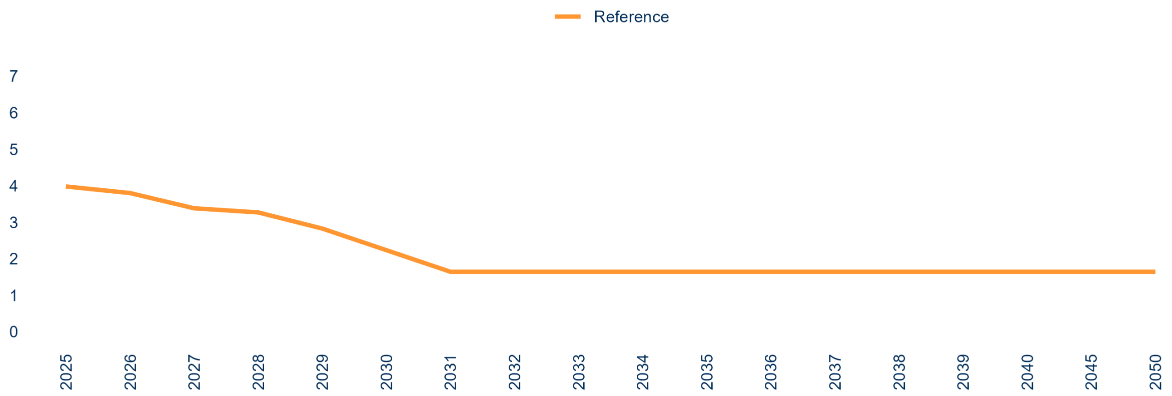
25-26	We expect both the 2025 and 2026 PSV yearly averages to remain just below the 35 €/MWh threshold, despite subdued demand growth. The conditions for the Italian gas market stabilization are unlikely to be met in the next couple of years. However, the entry of the Ravenna regasification terminal (5 Bcm/y of capacity) in 2025 may help alleviate some of the pressure, which, however, remains high.
27-30	The PSV is expected to follow the mid-term normalization of European gas prices towards 30 €/MWh by 2030, as a gradual rebalancing of the global gas demand-supply dynamics aligns with the anticipated acceleration of the energy transition.
31-50	The PSV reference price is expected to stabilize, aligning with TTF prices at around 25 €/MWh in the long term.
Main updates	As for the TTF, medium-term PSV projections have been revised slightly lower. This adjustment reflects the growing LNG supply wave, which is expected to accelerate the reduction in prices. However, geopolitical tensions are still anticipated to exert pressure on global gas prices. The short-term PSV forecast has been slightly revised upwards, as Italy’s reliance on Norway remains crucial and average transport tariffs remain high.

4.1.5 Logistics Costs for Italian Gas-Fired Units

GAS LOGISTIC COSTS ARE EXPECTED TO REMAIN HIGH IN THE SHORT-TERM DUE TO THE INCREASE FOLLOWING THE LAST-RESORT STORAGE INJECTION ACTIVITY IN PARTICULAR. HOWEVER, A PARTIAL REFUND WILL BE AVAILABLE FOR GAS-FIRED POWER PLANTS PRODUCERS. VARIABLE GAS COSTS SHOULD START GRADUALLY DECREASING FROM 2028 ONWRADS, FOLLOWING THE EXPECTED GAS PRICES NORMALIZATION

Logistic Costs for Italian Gas-fired Units

€/MWh GCV



Source: MBS Consulting elaborations

25-28

The ARERA Resolution 599/2024 confirms all downstream PSV variable components for Q1-25, as anticipated. The only exception is the RET component, which covers costs related to White Certificates and efficiency measures, along with a refund mechanism for thermoelectric producers, covering nearly 40% of costs. The RET component will increase from 1.1 €/MWh to 2.6 €/MWh starting in July 2025, due to uncertainties and delays in the 2025 regulatory framework for White Certificates definition. The same Resolution confirms that thermoelectric producers can request an exemption of over 60% of the CRVOS component (which covers storage injection incentives) for Q1-25. The remaining losses, stemming from extra costs incurred from 2022 emergency gas purchases (nearly 5 billion euros), will be recovered through final customers' bills over five years. The CRVBL component (covering charges related to gas system balancing activities) will be zero starting January 2025, thanks to the improved natural gas price scenario. As a precautionary measure, we assume a gradual return to historical average levels in the second half of 2025 to account for the volatility of the current transport cost environment, which impacts prices.

29-50

A gradual normalization of the average variable logistic costs below 4 €/MWh is only expected beyond 2028, coherently with the foreseen normalization of gas prices and the recovery of the storage-related losses, nearing 1.6 €/MWh on average by 2030.

Main updates

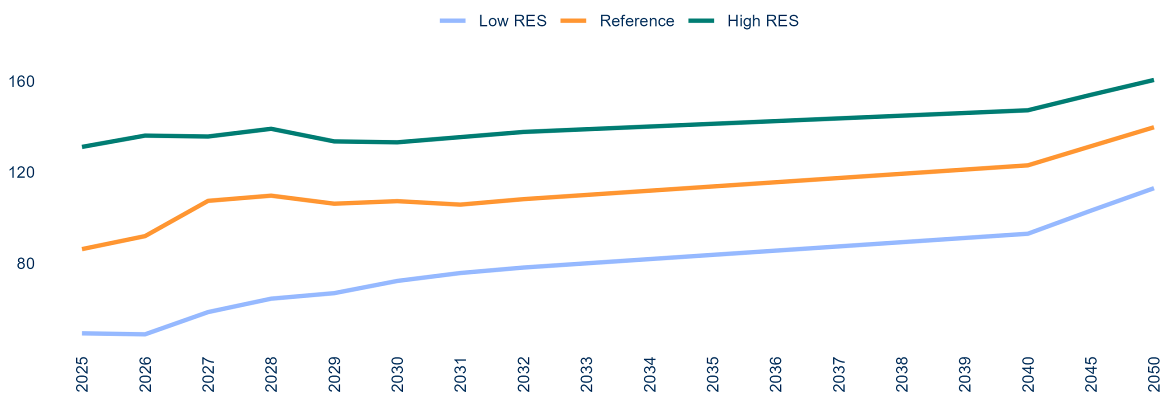
The variable transport charges forecast incorporates the latest regulator interventions to mitigate the recent commodities surge on bills, compensated by an increase in storages and balancing cost.

4.2 EU ETS

4.2.1 CO2 Allowances Price

THE ETS REFORM AIMS AT SUPPORTING A RAISE OF THE CO2 PRICE BY TIGHTENING THE EMISSIONS CERTIFICATES MARKET THROUGH A COMBINATION OF SUPPLY CURTAILMENT AND DEMAND-INCREASING MEASURES. THE INCLUSION OF NEW SECTORS, SUCH AS THE MARITIME, WILL CONTRIBUTE TO SUSTAINING THE ENVISIONED PRICE INCREASES

CO2 Price, EU ETS Mechanism
€/tCO2eq



Source: MBS Consulting elaborations

25-26	In our Reference scenario, the average CO2 price for 2025 is projected to spike above 85 €/ton, driven by the ETS reform kick-off. The phasing out of free allowances for aviation (50% by 2025) and the removal of 90 million permits in 2024 are expected to put upward pressure on allowance prices by reducing supply. The inclusion of the maritime transport sector will further increase demand. However, concerns linger about the pace of demand recovery, which is expected to be slow due to ongoing economic challenges.
27-30	The supply-demand gap is expected to widen starting in 2026 as the maritime sector joins the ETS and the phasing out of free aviation allowances is fully implemented. By 2030, the Market Stability Reserve's reinforcement and an increase in the Linear Reduction Factor to 4.4% will further tighten the market, pushing the average CO2 price towards 110 €/ton.
31-50	By 2034 the removal of free allowances for sectors covered by the CBAM will reach full implementation, inducing a further increase in allowances demand. Long-term targets depend on the ETS system's efficiency, with the CO2 price projected to exceed 120 €/ton by 2040 in the Reference scenario and potentially approach 150 €/ton in the Low scenario, assuming stricter decarbonization efforts in Europe.
Main updates	Our CO2 price targets remain consistent with our prior market update.

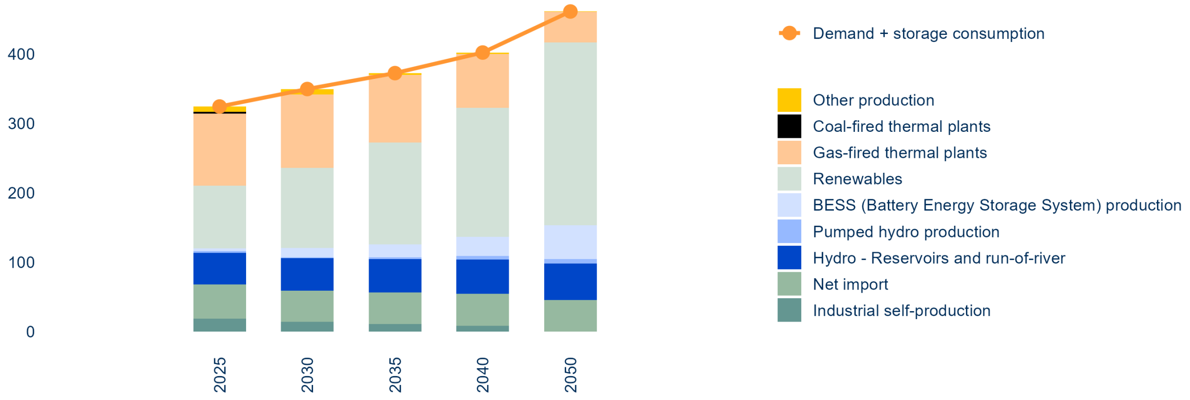
5 Energy Mix

5.1 Day-Ahead Market Energy Balance

5.1.1 Reference Scenario

IN THE SHORT TERM, SUBDUED DEMAND IS INCREASINGLY COVERED BY GROWTH IN RES AND NET IMPORT FLOWS. IN THE MID TERM, GAS-FIRED GENERATION CONTINUES TO SERVE AS THE BACKBONE OF THE ENERGY MIX. IN THE LONG TERM, RENEWABLES WILL EMERGE AS THE PRIMARY SOURCE OF ELECTRICITY PRODUCTION, WITH GAS-FIRED GENERATION PROVIDING ESSENTIAL SUPPORT

DAM Energy Balance, Reference Scenario
TWh



Source: MBS Consulting elaborations

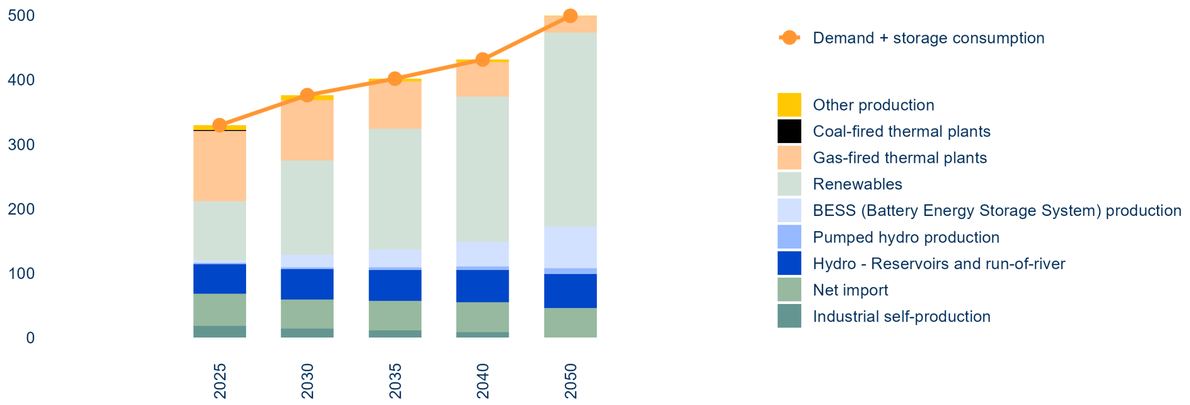
25-26	Reduced electricity demand in Europe, coupled with overgeneration from recovering nuclear capacity and increased hydroelectric production, has driven up electricity imports from the Northern border. The positive momentum in new RES installations is likely to persist in 2025-2026, while gas-fired thermal plants remain the marginal source in the energy mix.
27-30	Coal-fired units are set to phase out by 2025, except for those in Sardinia, which will remain operational until the Tyrrhenian Link is completed—projected for 2030 in the Reference case and 2029 in the Low case. By 2030, RES are expected to supply around 47% of total electricity demand.
31-50	Renewable energy is projected to reach 70% of the energy mix by 2040 and 85% by 2050. The share of gas-fired thermal plants will reach 10% by 2050. Favorable market conditions will promote the development of energy-intensive storage solutions, thereby enhancing their contribution to the energy mix.
Main updates	Short-term shifts in the production mix reflect updated commodity prices.

5.1.2 High RES Scenario

GREATER COMMITMENT TO DECARBONIZATION IN THE EUROPEAN ECONOMY DRIVES STRONG RENEWABLE ENERGY GROWTH, WHICH IS EXPECTED TO APPROACH THE CURRENT 2030 PNIEC TARGET, REACHING 55% OF THE ELECTRICITY MIX BY 2030 AND EXCEEDING 85% BY 2050. THIS EXPANSION IN RENEWABLES WILL BE FURTHER SUPPORTED BY SIGNIFICANT INCREASES IN BATTERY STORAGE CAPACITY

DAM Energy Balance, High RES Scenario

TWh



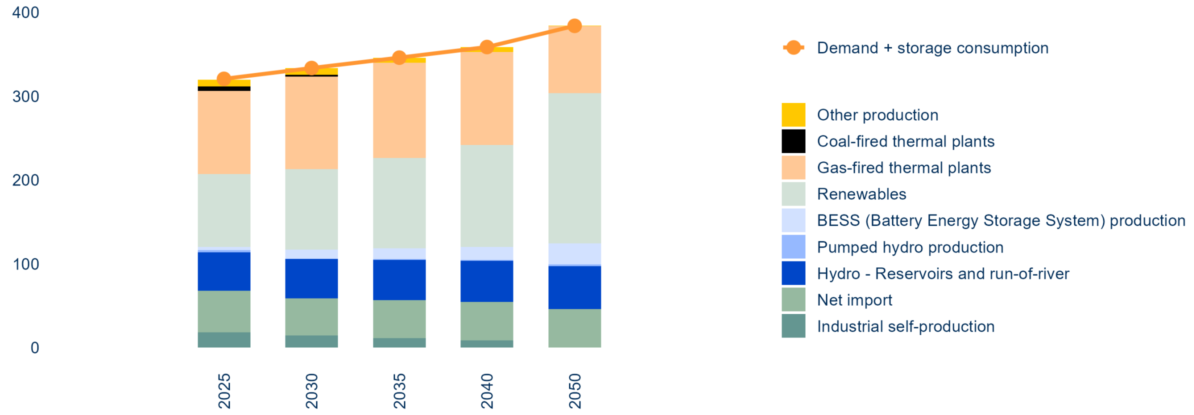
Source: MBS Consulting elaborations

25-26	A rapid surge in decarbonization efforts is driven by rising commodity prices, increased EU ETS costs, and streamlined approval processes for new renewable projects, all of which collectively boost investment in energy efficiency. The phase-out of coal-fired units across the peninsula is projected by 2025. Gas-fired thermal plants are expected to supply up to 34% of national electricity demand by then, with net electricity imports exceeding 49 TWh.
27-30	By the end of 2028 coal-fired units are entirely phased-out. Falling renewables' costs and a greater effort to reach decarbonization goals support renewables development. In 2030 the ratio between renewable energy and total electricity consumption reach 59%. Improvements in the electricity grid will facilitate the reduction of electricity imported from neighborhood countries.
31-50	In the long term, gas-fired thermal plants will remain essential for system security, but their share of the energy mix is expected to decrease to 15% by 2040 and 6% by 2050 as storage capacity expands. Despite advancements in storage and grid improvements, achieving full renewable integration will face challenges such as grid congestion and overproduction, underscoring the need for greater electrolyzer capacity to effectively manage surplus renewable energy.
Main updates	Short-term shifts in the production mix reflect updated commodity prices.

5.1.3 Low RES Scenario

A SLOWER ECONOMIC RECOVERY TRANSLATES INTO REDUCED ELECTRICITY DEMAND AND LOWER INVESTMENTS IN DECARBONIZATION. THE COMPLETION OF KEY GRID INFRASTRUCTURE PROJECTS FACILITATES THE PHASE-OUT OF COAL UNITS BY 2034, WHILE RENEWABLES AND BATTERY STORAGE SYSTEMS GRADUALLY EXPAND THEIR SHARE IN THE ENERGY MIX

DAM Energy Balance, Low RES Scenario
TWh



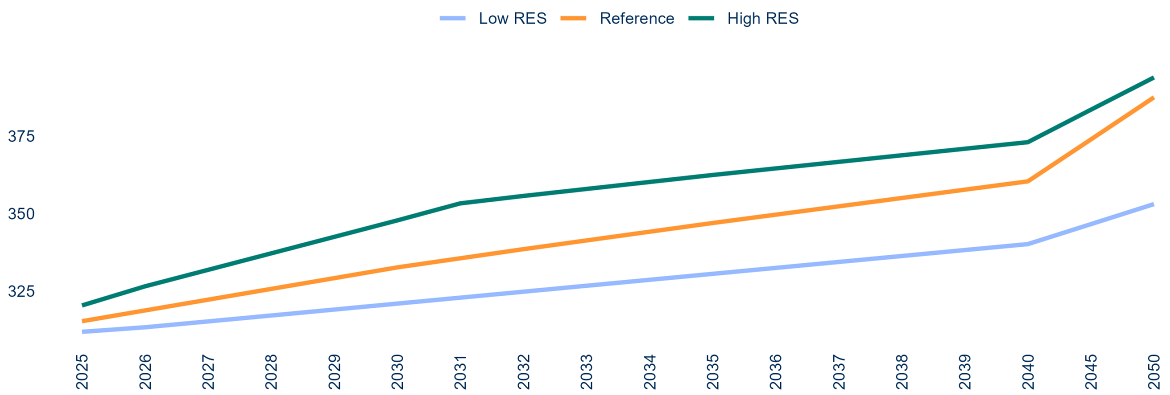
Source: MBS Consulting elaborations

25-26	Coal-fired thermal plants remain a significant power source, but lower gas prices will increase the share of gas-fired plants to 32% of demand. Net imports are expected to stabilize at 49 TWh in 2025, reducing coal generation from 7 TWh in 2024 to to 5 TWh.
27-30	CM-led investments are set to come online, but the phase-out of coal-fired capacity is delayed until 2035, coinciding with the completion of significant network investments. By 2030, net imports are expected to decline to just over 44 TWh, while gas-fired generation will account for 35% of total electricity demand. Hydroelectric output is projected to stabilize around 46.5 TWh per year, with renewable energy sources steadily increasing their share in the energy mix.
31-50	The projected rise in CO2 prices is expected to further erode the competitiveness of coal generation, leading to its full phase-out by 2035 with the completion of the Tyrrhenian Link. Meanwhile, gas-fired generation is anticipated to account for 22% of the energy mix by 2050. The evolving dynamics of the Day-Ahead Market (DAM) and the continued expansion of renewable energy sources will support the long-term integration of 10 GW of energy-intensive storage.
Main updates	Short-term shifts in the production mix reflect updated commodity prices

5.2 Electricity Demand

2024 MARKED THE FIRST POWER DEMAND INCREASE SINCE 2018, DRIVEN BY INDUSTRIAL RECOVERY AND STABILIZING GAS PRICES AFTER THE 2022–2023 PEAKS. DEMAND IS PROJECTED TO REACH PRE-CRISIS LEVELS BY 2027, WITH LONG-TERM GROWTH SUPPORTED BY ELECTRIFICATION AND EFFICIENCY GAINS

Italian Electricity Demand
TWh



Source: MBS Consulting elaborations

25-26

A subdued economic recovery over the next two years is expected to bring electricity demand to 315 TWh by 2025 and 319 TWh by 2026 (+1.1% annually). In the High RES scenario, stronger economic growth pushes demand above 320 TWh by 2025, returning to pre-crisis levels, while in the Low RES scenario, it remains below 320 TWh until 2030.

27-30

In the Reference case, gradual electrification and modest GDP growth drive power demand to over 320 TWh by 2027 and 330 TWh by 2030. In the High RES scenario, stronger economic growth and faster electrification push demand to nearly 350 TWh by 2030. Conversely, in the Low RES scenario, slower economic recovery (+0.6% annually) and delayed electrification keep demand near pre-crisis levels (just above 320 TWh) until after 2030.

31-50

After 2030, advanced transportation electrification and widespread adoption of heating and cooling technologies are expected to boost electricity consumption, though efficiency improvements in industrial and residential sectors may temper growth. In the Reference Scenario, annual demand growth moderates to +2.7–2.9 TWh, surpassing 360 TWh by 2040 and stabilizing around 385 TWh long-term. Alternative scenarios vary: the High RES case projects demand exceeding 390 TWh by 2050, while the Low RES case anticipates stabilization near 350 TWh due to slower electrification and weaker economic growth.

Main updates

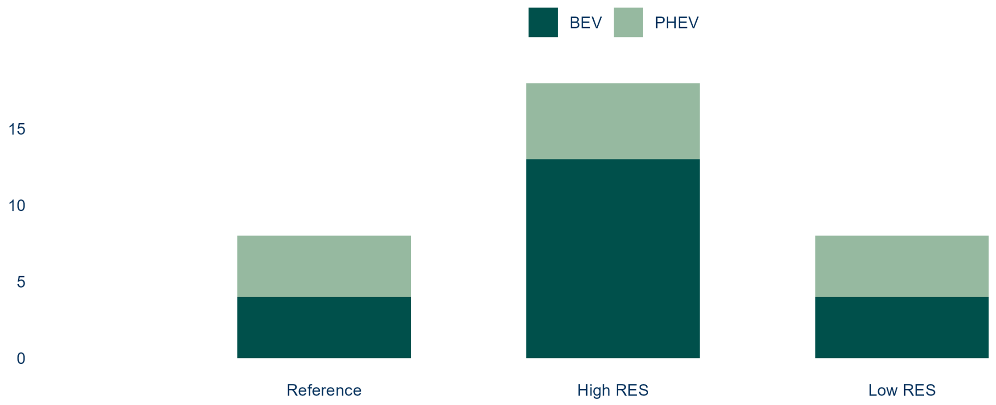
Our projections have been revised downward, compared to our previous update, due to persistent industrial stagnation and modest GDP growth projections. Additionally, the partial decoupling observed between economic growth and electricity consumption has further tempered expectations for electricity demand.

5.2.1 E-mobility

ADDITIONAL ELECTRICITY DEMAND FROM ELECTRIC VEHICLES (EVS) CAN VARY SIGNIFICANTLY DEPENDING ON THE FUTURE IMPLEMENTATION OF E-MOBILITY SOLUTIONS IN URBAN AREAS, EMISSIONS REDUCTION TARGETS IN TRANSPORTATION, AND OVERALL LONG-TERM TRANSPORTATION HABITS

Electricity Consumption from Electric Vehicles in 2030

TWh



Source: MBS Consulting elaborations

25-40

Electric vehicle (EV) numbers are projected to reach 1.2 million by 2025, 4.5 million by 2030, and 11.1 million by 2040 in the Reference scenario, resulting in total consumption of 2 TWh, 7.6 TWh, and 18.7 TWh from EVs, respectively. In the High RES scenario, a more rapid adoption of electric vehicles is expected to reach 6 million by 2030 and 15 million by 2040. Conversely, in the Low RES scenario, the development of e-mobility experiences a 5- to 10-year delay compared to the Reference scenario, with the target of 4.5 million EVs only being achieved by 2040.

30

The NIECP envisages 6.5 million electric vehicles in Italy in 2030 - 4.3 million are pure EVs (BEV: Battery Electric Vehicles) – accounting for about 8 TWh of additional electricity demand. In our Reference view we estimate additional 7.5 TWh to come from BEV and PHEV (Plug-in Hybrid Electric Vehicle). This means that our hypotheses consider a greater consumption per EV compared to NIECP figures. Main differences are most likely connected to the underlying assumptions about e-mobility applications in cities or long-term transport.

31-50

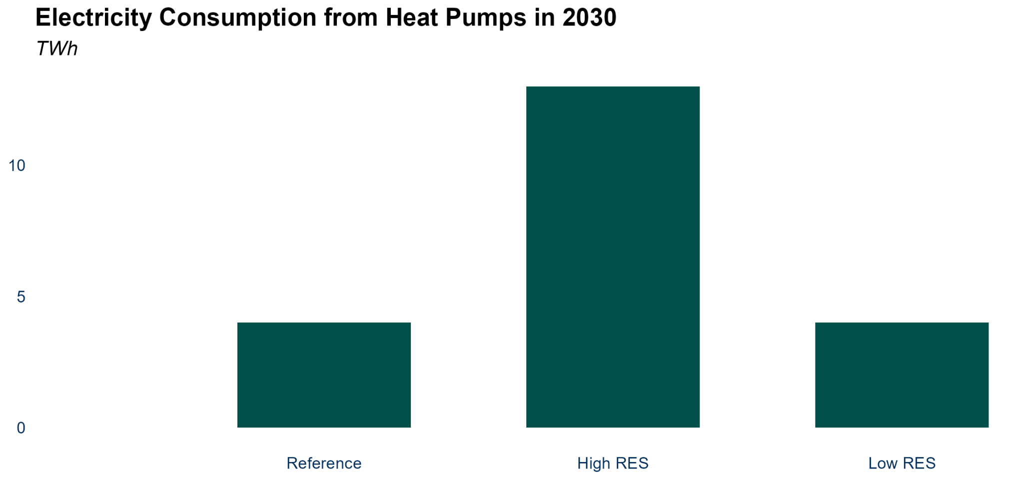
Despite the recent Green Deal proposals at the EU level regarding transportation, the uncertainty surrounding the future expansion of a market still in its early stages of development leads us to assume a business-as-usual (BAU) trend over the long term, beginning with the annual level of electric vehicle (EV) additions projected for 2030.

Main updates

E-mobility demand hypotheses are in line with the previous update.

5.2.2 Heating and Cooling

THE ADDITIONAL ELECTRICITY DEMAND FOR HEATING AND COOLING WILL DEPEND ON THE GROWTH RATE OF INSTALLATIONS FOR RESIDENTIAL AND INDUSTRIAL USES, WHICH MAY BE FURTHER SUPPORTED BY DECARBONIZATION INCENTIVES



Source: MBS Consulting elaborations

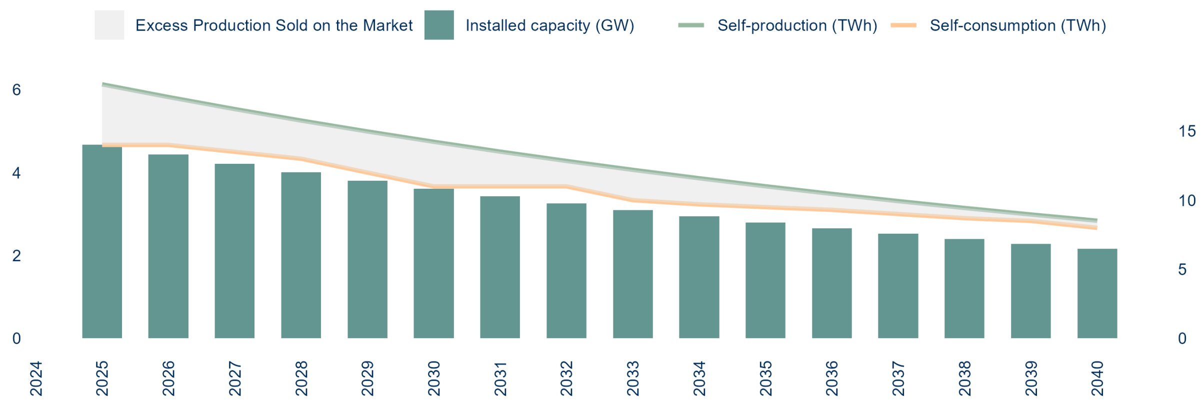
25-40	Heating and cooling (H&C) is projected to represent additional electricity requirements ranging from 2 TWh to 5 TWh in 2025, 4 TWh to 13 TWh in 2030, and 8 TWh to 17 TWh in 2040, depending on the scenario analyzed.
30	Our assumptions lead to estimate 6.7 TWh of H&C consumption in 2030, as per the reference scenario, corresponding to around 1.8 million installations for civil uses.
31-50	We assume a BAU trend in the long-term horizon, starting from the annual level of additional installations and consumption reached in 2030.
Main updates	H&C demand hypotheses are in line with the previous update.

5.2.3 Industrial Self-Production and Self-Consumption

INDUSTRIAL SELF-CONSUMPTION WILL GRADUALLY DECREASE AS EXISTING ASSETS REACH END-OF-LIFE AND THE EXEMPTIONS ACCORDED TO CLOSED DISTRIBUTION SYSTEMS WILL BE AT LEAST PARTIALLY REMOVED

Self-production, Self-consumption and Installed Capacity

GW,TWh



Source: MBS Consulting elaborations

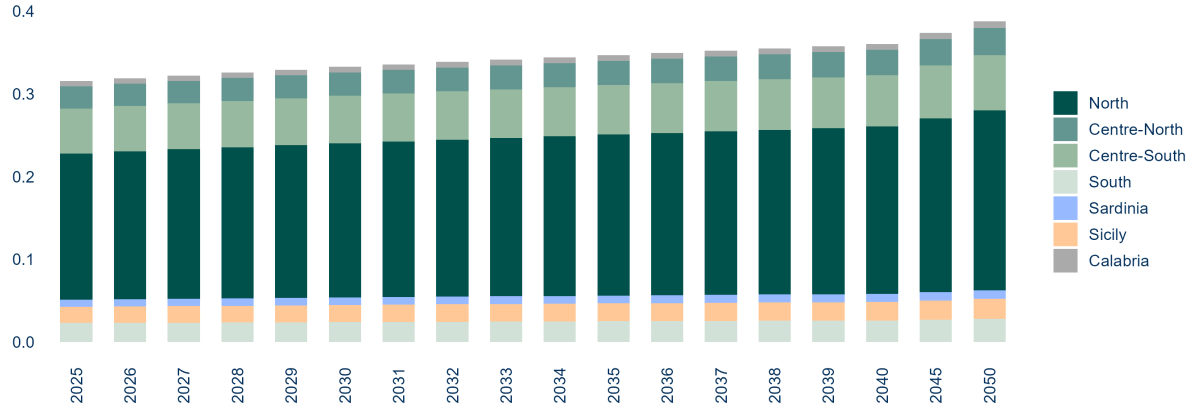
25	Law 91/2014 affirms that grid and general system tariff components should be applied to the electricity consumed and not only to the electricity withdrawn from the public grid. Following this approach, the exemptions accorded to RIU (Re Interne di Utenza) and SEU (Sistemi Efficienti di Utenza) and closed distribution systems, and the benefits currently in force for existing plants related to self-consumption will be at least partially removed for new subjects/projects that apply for similar mechanisms.
26-50	The excess of self-produced electricity that is not consumed by the industrial sites (self-consumption) and is thus sold on the market (differential between self-production and self-consumption) is expected to gradually decrease, consistently with the expected end-of-life of existing power plants that serve industrial sites.
Main updates	Industrial self-production and self-consumption hypotheses are in line with the previous update. Self-production/consumption hypotheses are the same in all the three scenarios.

5.2.4 Zonal Distribution of Electricity Demand

ZONAL DISTRIBUTION OF ELECTRICITY DEMAND IS ESTIMATED IN LINE WITH MOST RECENT REGIONAL TRENDS

Zonal Distribution of Electricity Demand, Reference Scenario

TWh



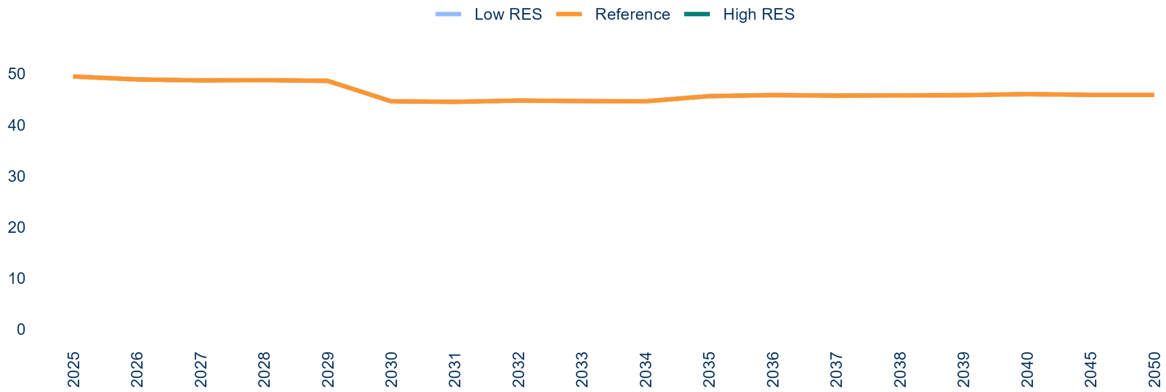
Source: MBS Consulting elaborations

15-20	In 2015, the approval of the European guidelines on capacity allocation and congestion management (CACM) introduced new parameters to be followed in the zonal configuration review process. In 2018, Terna began a process to review the zonal configurations in compliance with such rules.
21-onwards	The current zonal configuration derives from the base case proposed by Terna in compliance with the CACM. Differences compared to the previous configuration: (i) elimination of the limited production poles, (ii) inclusion of a new bidding zone corresponding to the Calabria region, (iii) displacement of the Umbria region from the Centre-North zone to the Centre-South market zone.
25-50	The zonal distribution of electricity demand is based on historical regional data published by Terna and subsequent econometric elaborations. In the Reference case, the zonal distribution of electricity needs is as follows: North (57%), Central-North (9%), Central-South (17%), South (7%), Calabria (2%), Sicily (6%), Sardinia (3%). Slight differences in such figures between the alternative cases are the result of the econometric elaborations performed.
Main updates	The approach adopted and the distribution quotas is in line with the previous update.

5.3 Net Import

THE RECOVERY OF NUCLEAR CAPACITY FROM O&M OPERATIONS INITIATED IN 2022 (ALONG WITH THE CONNECTION OF THE FLAMANVILLE REACTOR AFTER LONG DELAYS), INCREASED HYDROPOWER PRODUCTION IN SWITZERLAND, AND LOWER ELECTRICITY DEMAND ACROSS EUROPE, IS EXPECTED TO SUSTAIN NET IMPORTS INTO THE NORTHERN ZONE. NET IMPORTS ARE PROJECTED TO REACH 50 TWH BY THE END OF 2024. AFTER 2029, THE COMPLETION OF A 600 MW INTERCONNECTOR WITH TUNISIA (MONTEL) WILL ENHANCE EXPORT CAPABILITIES.

Net Import
TWh



Source: MBS Consulting elaborations

25-26

Building on the trends observed in 2023 and 2024, net imports from neighboring countries are expected to remain above the historical average in the short term. This sustained level is primarily attributed to the ongoing recovery of French nuclear power production following two years of operation and maintenance disruptions, enhanced hydroelectric output in Switzerland, and a slower-than-anticipated rebound in European electricity demand. Net imports are projected to reach 49.4 TWh in 2025, with a slight reduction to 48.9 TWh in 2026, accounting for nearly 16% of short-term electricity demand.

27-30

The persistent combination of subdued electricity demand and ongoing expansion of renewable energy capacity across Europe is anticipated to result in systemic overgeneration in the medium term, reinforcing imports as a cost-efficient option for Italy. This is further supported by the projection that the PUN will remain at a premium compared to other European prices over the same horizon. Net imports are expected to stabilize at an average of approximately 49 TWh annually through 2029. However, with the commissioning of the Elmed interconnection linking Sicily and Tunisia by late 2028, the net import balance is projected to decrease to around 45 TWh, as over 3.5 TWh of electricity is redirected for export.

31-50

Import levels are expected to remain stable also after 2030, ranging above 45 TWh. The slight increase in net import seen from 2035 is due to an estimated reduction (1 TWh ca.) in the export flows towards Tunisia, following the implementation of the Tunisian system development plan.

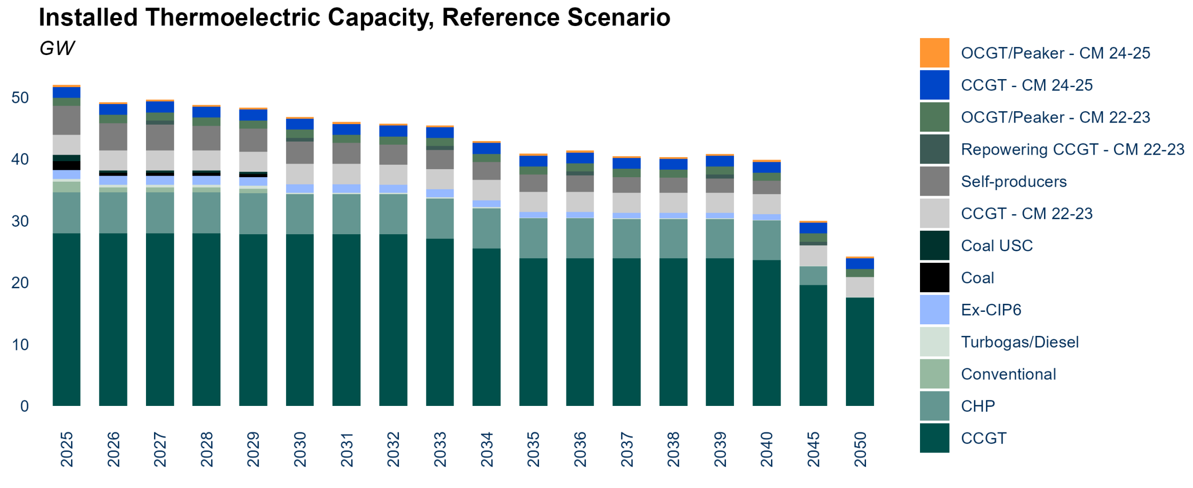
Main updates

Import hypotheses are in line with the previous update.

5.4 Thermoelectric Generation

5.4.1 Installed Capacity, Reference Scenario

CAPACITY MARKET AUCTIONS WILL COMPREHENSIVELY BRING 7.3 GW OF NEW GAS-FIRED CAPACITY BY MID 2025. SARDINIAN COAL-FIRED UNITS TO BE PHASED-OUT ONLY IN 2029, CONSIDERING THE TYRRHENIAN LINK ENTERING IN 2030

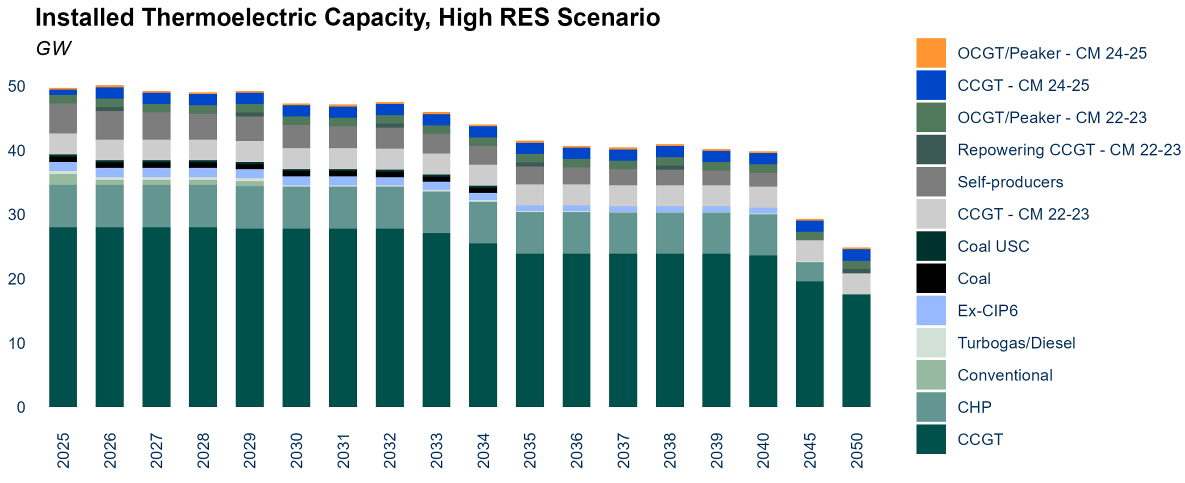


Source: MBS Consulting elaborations

25-26	2024 CM capacity should enter the market between late 2024 and mid-2025.
27-30	Auction results show also that Sardinia coal-fired capacity will not be substituted by gas-fired units, as only storage capacity was awarded in the island. Anyway, while coal-fired plants on the peninsula will be phased-out after 2025, Sardinia units are expected to operate until the Tyrrhenian Link infrastructure is fully completed (2030).
31-50	The amount of capacity auctioned through the CM is expected to grant full system adequacy at least through to 2030. No other thermoelectric capacity investments are envisaged after the wave of investment brought by the last CM auctions. Existing CHP power plants continue to support industrial activities under the assumption of a BAU evolution of the industrial needs they serve. Some ageing CCGT capacity exit the market.
Main updates	Thermoelectric capacity hypotheses are in line with the previous update.

5.4.2 Installed Capacity, High RES Scenario

CAPACITY MARKET AUCTIONS WILL COMPREHENSIVELY BRING 7.3 GW OF NEW GAS-FIRED CAPACITY ONLINE BETWEEN MID 2025. SARDINIAN COAL-FIRED UNITS TO BE PHASED-OUT ONLY IN 2029, CONSIDERING THE TYRRHENIAN LINK ENTERING IN 2030

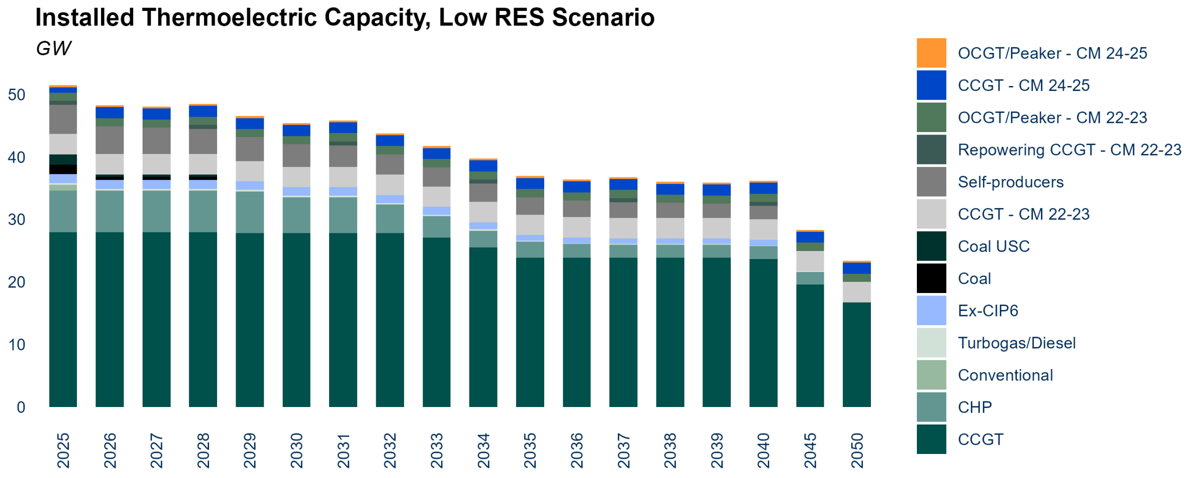


Source: MBS Consulting elaborations

25-26	Capacity secured in the 2024 Capacity Market auctions has experienced widespread delays, with notable examples such as the CCGT Ostiglia project now rescheduled for commissioning in February 2026. Most of this capacity is expected to gradually enter the market over the course of 2025.
27-30	Auction results show also that Sardinia coal-fired capacity will not be substituted by gas-fired units, as only storage capacity was awarded in the island. Anyway, while coal-fired plants on the peninsula will be phased-out after 2025, Sardinia units are expected to operate until the Tyrrhenian Link infrastructure is fully completed (2029).
31-50	No other thermoelectric capacity investments are envisaged after the wave of investment brought by the last CM auctions. Most of existing CHP power plants gradually exit the market, substituted by greener solutions. Some ageing CCGT capacity exit the market following strong competitive conditions.
Main updates	Thermoelectric capacity hypotheses are in line with the previous update.

5.4.3 Installed Capacity, Low RES Scenario

CAPACITY MARKET AUCTIONS WILL COMPREHENSIVELY BRING 7.3 GW OF NEW GAS-FIRED CAPACITY ONLINE BETWEEN 2022 AND EARLY 2025. PHASE-OUT OF COAL-FIRED UNITS IS POSTPONED UNTIL 2034 WHEN THE TYRRHENIAN LINK BECOMES OPERATIVE



Source: MBS Consulting elaborations

25-26 Capacity secured in the 2024 Capacity Market auctions has experienced widespread delays, with notable examples such as the CCGT Ostiglia project now rescheduled for commissioning in February 2026. Most of this capacity is expected to gradually enter the market over the course of 2025.

27-30 Thermal capacity expected to be stable in the second half of the decade in the Low RES scenario.

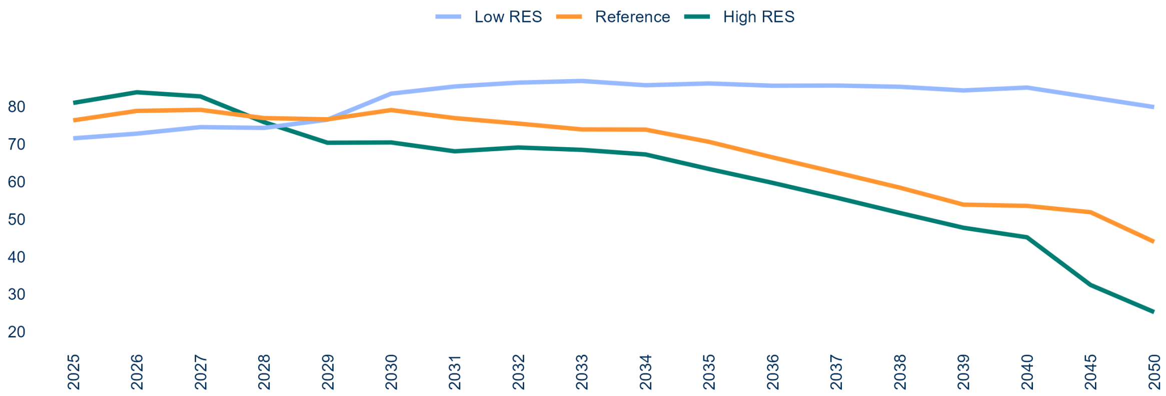
31-50 No other thermoelectric capacity investments are envisaged after the wave of investment brought by the last CM auctions. Existing CHP and CCGT power plants are projected to remain operative. The commissioning of the Tyrrhenian Link is postponed until 2035, determining a delayed phase-out of all coal power plants.

Main updates Thermoelectric capacity hypotheses are in line with the previous update.

5.4.4 Residual Demand for CCGTs

EXISTING CCGTS COULD EXCEED 2000 EOH IN THE SHORT TERM, WITH EXPECTATIONS TO RANGE BETWEEN 2000 AND 1300 EOH IN THE MID- AND LONG-TERM. THIS VARIATION IS ATTRIBUTED TO THE SIGNIFICANT INCREASE IN PRODUCTION FROM NEW RENEWABLE ENERGY INSTALLATIONS, ALONG WITH A HIGHER DEGREE OF COMPETITION INTRODUCED BY NEWLY BUILT CAPACITY FOLLOWING THE 2024-2025 CAPACITY MARKET AUCTIONS.

Residual demand for CCGTs
TWh



Source: MBS Consulting elaborations

25-26

The existing fleet of combined cycle gas turbines (CCGTs) is projected to average approximately 2200 EOH during the 2024-2025 period, exhibiting significant zonal variations. In the Northern zone, the load factor for CCGTs is around 1800 EOH, while the Southern zones show lower figures, averaging about 1000 EOH. Notably, Calabria stands out with an average of 3000 EOH.

27-30

After the phase-out of coal-fired units, residual demand is expected to rebound. However, existing combined cycle gas turbines (CCGTs) will face significant competition from sustained import levels and new high-efficiency entrants supported by the capacity market. In the low scenario, residual demand is further reduced due to the effects of energy efficiency improvements and increased renewable penetration. Conversely, in the high scenario, residual demand gradually increases as switching conditions improve.

31-50

Existing CCGTs (53%-efficiency) stabilize around 2000 EOH. In the Low scenario, the great renewable penetration influences competitive dynamics and existing units remain close to 1600 EOH. In the High scenario, the improvement of switching conditions is hampered by the high level of imports from abroad, with EOH of existing units over 2000 favored by phase-out after 2035. High-efficiency units stabilize below the 4800 EOH only in the Low scenario.

Main updates

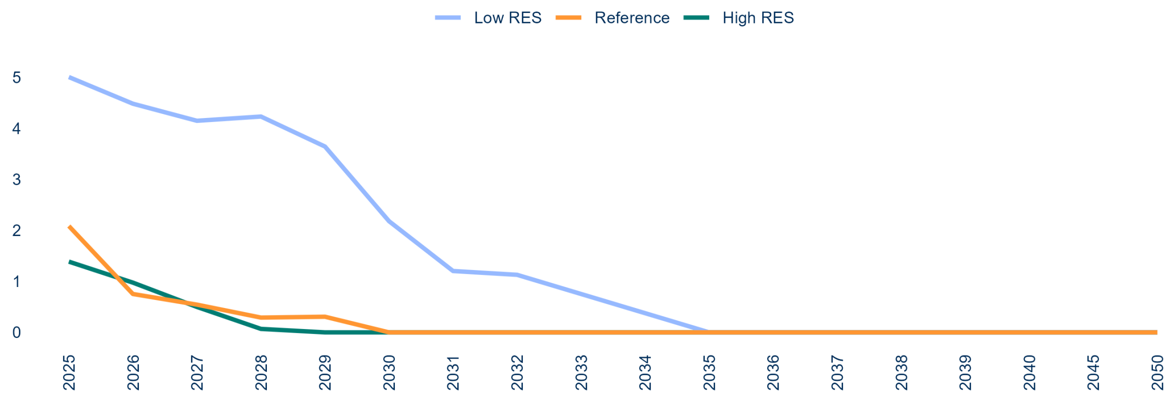
CCGT residual demand hypotheses are in line with the previous update.

5.4.5 Coal-fired Production

THE PHASE-OUT OF COAL-FIRED THERMAL PLANTS IS EXPECTED TO OCCUR IN 2025, EXCEPT FOR THE SARDINIAN PLANTS, WHICH ARE SET TO CLOSE IN 2029. THIS TIMELINE COINCIDES WITH THE FULL COMPLETION OF THE TYRRHENIAN LINK IN 2030.

Coal-fired Production

TWh



Source: MBS Consulting elaborations

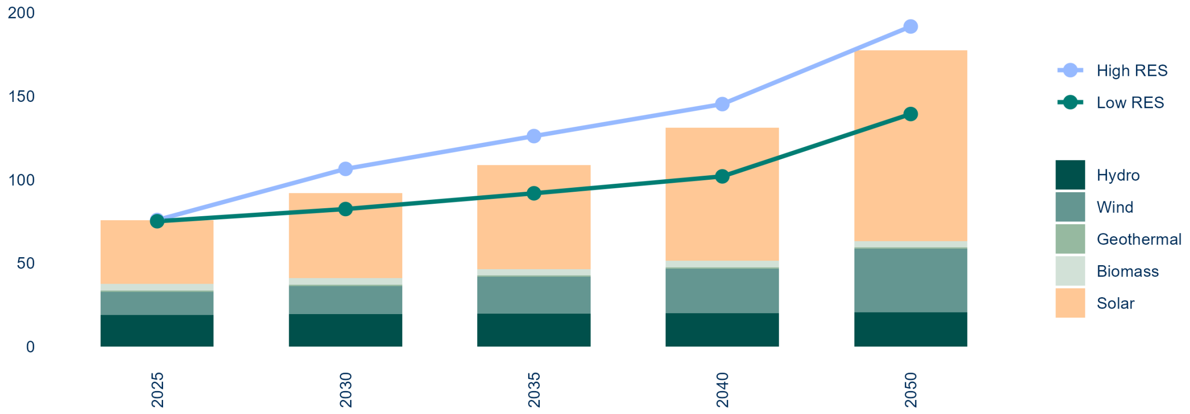
25-26	The decline in electricity demand, coupled with favorable switching conditions, is expected to significantly reduce coal production. In the Reference Scenario, coal output is projected to fall to 2.1 TWh by 2025, while in the High RES Scenario, it will drop further to just above 1 TWh. Conversely, in the Low RES Scenario, coal production is anticipated to reach 5.0 TWh in 2025.
27-30	The timeline for coal phase-out differs across scenarios, driven largely by the readiness of key grid infrastructure, particularly the Tyrrhenian Link. In the Reference Scenario, only the units in Sardinia are expected to remain operational beyond 2025, with their retirement aligned to the completion of the Tyrrhenian Link in 2030. In the High RES Scenario, full coal plant decommissioning is anticipated by 2028. Conversely, in the Low RES Scenario, coal-powered units are projected to remain active until 2035.
31-50	Coal units remain operative beyond 2030 only in the Low RES scenario, until the complete phase-out projected in 2035, with the entrance of the Tyrrhenian Link.
Main updates	Short-term shifts in coal production reflect updated commodity prices and power demand projections.

5.5 Reneweable Generation

5.5.1 Renewable Installed Capacity

THE SIGNIFICANT INCREASE IN RENEWABLE ENERGY SOURCE (RES) CAPACITY OBSERVED IN THE PAST YEAR IS EXPECTED TO CONTINUE IN THE SHORT TERM. IN THE LONG TERM, RES MARKET PARITY WILL BE STRENGTHENED BY RISING COMMODITY PRICES AND THE ACTIONS TAKEN TO MEET DECARBONIZATION TARGETS

Net Renewable Installed Capacity
GW



Source: MBS Consulting elaborations

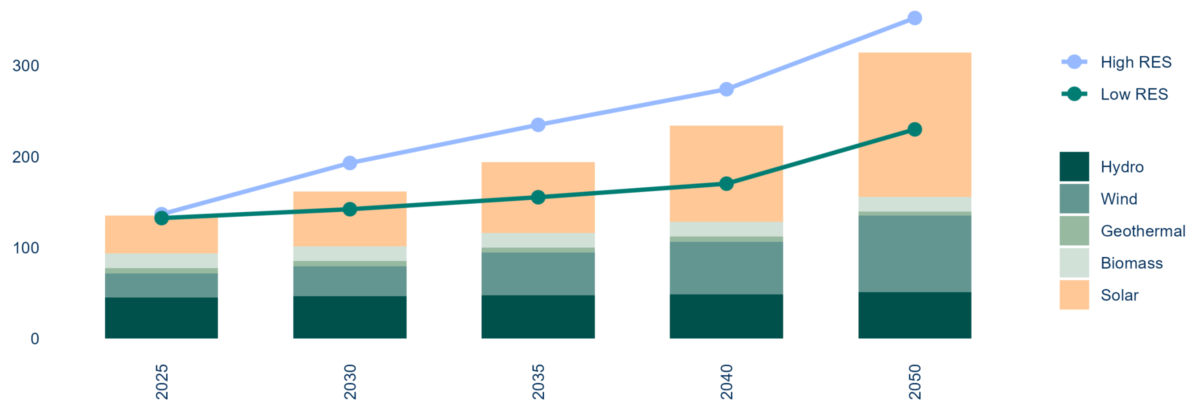
25-26	By the end of 2025, 38 GW of solar and 14 GW of wind capacity are expected to be operational. An analysis of renewable growth trends, considering bureaucratic and technical challenges, forecasts an additional 1.5 GW of wind and 2.7 GW of solar capacity by 2026. However, growth is expected to slow compared to 2023–2024, particularly for PV, due to developers delaying construction to qualify for the FERX and "FERX Transitorio" auctions.
27-30	Market parity conditions, combined with the FerX incentive scheme, are expected to accelerate progress toward long-term targets. The Reference scenario projects 51 GW of solar and 17 GW of wind capacity by 2030, raising the RES share to nearly 50% of total energy demand through a market-driven approach. In the High RES scenario, faster technology cost declines and favorable economic conditions drive even greater growth, with solar reaching 63 GW and wind 19 GW by 2030.
31-50	The Reference scenario projects steady growth in renewable penetration, with solar capacity reaching 80 GW and wind 27 GW by 2040. Achieving long-term decarbonization goals faster may require greater investments in grid infrastructure and advanced energy storage.
Main updates	Projections for RES installed capacity remain consistent with the previous update, except for wind capacity, which has been revised downward. This adjustment reflects the limited growth observed in recent years, averaging approximately +500 MW annually.

5.5.2 Renewable Production

RES PRODUCTION IN 2024 INCREASED BY APPROXIMATELY +15% COMPARED TO 2023, DRIVEN PRIMARILY BY HIGHER HYDRO AND SOLAR OUTPUT DESPITE A DECLINE IN WIND PRODUCTION. WHILE SOLAR AND WIND PRODUCTION PERFORMANCES WERE BELOW AVERAGE, THE IMPACT WAS MITIGATED FOR SOLAR BY A SIGNIFICANT EXPANSION IN INSTALLED CAPACITY. ACHIEVING ITALY'S NECP TARGETS FOR THE ELECTRICITY SECTOR WILL REQUIRE SUBSTANTIAL EFFORT: THE 2030 RES/GDC TARGET OF 63% CAN ONLY BE REACHED WITH A MAJOR ACCELERATION IN THE PERMITTING PROCESS OVER THE COMING YEARS AND STRONG SUPPORT FROM THE FER-X INCENTIVE SCHEME

Net Renewable Production

TWh



Source: MBS Consulting elaborations

25-26

Wind generation is projected to surpass 26 TWh while solar generation will approach 42 TWh by 2025. In the High RES scenario, more favorable economic conditions result in even higher projections, with wind reaching 27 TWh and solar approaching 43 TWh within the same period.

27-30

Assuming a business-as-usual market trajectory and the resolution of permitting process bottlenecks in the near future, it is expected that 90% of the 2030 RES/GDC target will be met. Full achievement of the 63% target is anticipated only with a greener, more ambitious evolution of the Italian energy system. Meeting the more stringent Green Deal objectives—potentially setting the RES/GDC target around 70%, though still under discussion—would require a significantly greater effort.

31-50

The reduction of technology costs and consolidated market parity conditions could allow both solar and wind generation to almost triple by 2040, with respect to 2024 values, in the Reference scenario. Boundary conditions of alternative scenarios lead to different degrees of renewable development and production level.

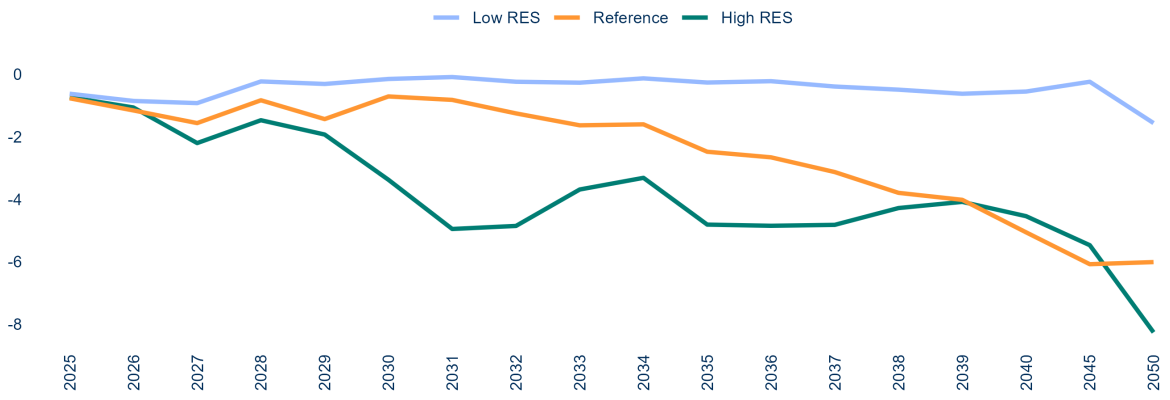
Main updates

Short-term projections for RES production have been slightly revised as a result of recent changes in RES installation trajectories.

5.5.3 Day-Ahead Market Overgeneration

OVERGENERATION IS LIKELY TO EMERGE AS A MAJOR CHALLENGE IN THE LONG TERM DUE TO HIGH RENEWABLE PENETRATION, ESPECIALLY IN THE SOUTHERN ZONES. EXPANDING ENERGY-INTENSIVE STORAGE SYSTEMS AND ELECTROLYSIS CAPACITY WILL BE ESSENTIAL TO REDUCE MARKET IMBALANCES

Day-Ahead Market Overgeneration
TWh



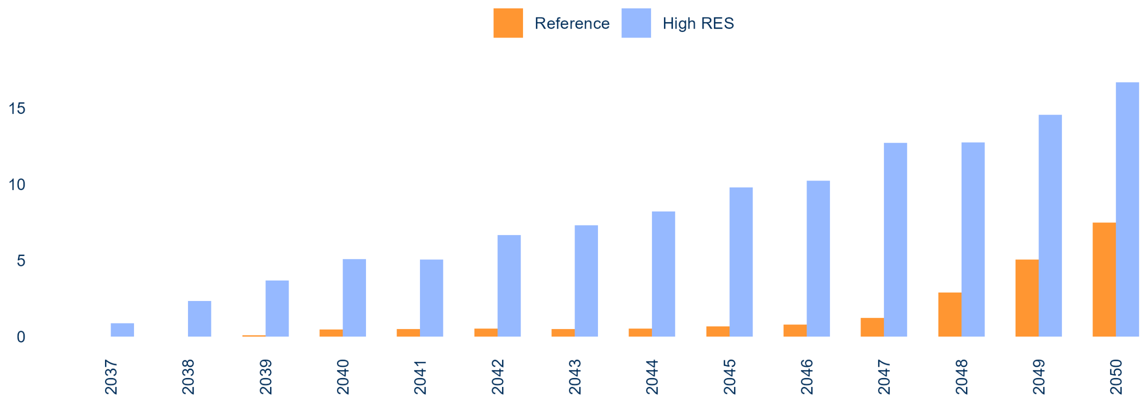
Source: MBS Consulting elaborations

25-26	Under BAU market conditions and moderate renewable penetration, the risk of overgeneration remains low in both the Reference and Low RES scenarios. However, a more significant increase in capacity installation in the South macro-zone could lead to more frequent overgeneration during specific hours in the High RES scenario.
27-30	The anticipated increase in renewable energy penetration after 2027 is expected to heighten the risk of overgeneration, potentially resulting in approximately 3 TWh of excess electricity by 2030 in the High RES scenario. This curtailment effect could be further amplified by specific local grid constraints. In comparison, the Reference scenario projects a more moderate level of overgeneration, reaching around 0.7 TWh by 2030. Overall, overgeneration is set to escalate throughout the decade, driven by the rapid expansion of renewables in the Southern regions, and could be exacerbated by delays or inadequacies in grid reinforcement.
31-50	To effectively manage the increasing penetration of renewable energy and the resulting overgeneration, substantial investments in grid reinforcement and high-capacity energy storage solutions will be essential throughout the 2030s. These measures will be critical for balancing the grid and maintaining a stable energy supply, particularly in regions more susceptible to overgeneration. Additionally, this excess energy production presents an opportunity to expand electrolysis capacity, which would not only harness surplus energy but also support continued investments in renewable energy sources.
Main updates	Short-term day-ahead market overgeneration updated to factor in the adjustments to demand projections.

5.5.4 Electrolyzer Installed Capacity

LONG-TERM RENEWABLE EXPANSION IN THE SOUTHERN REGIONS, PARTICULARLY ON THE ISLANDS, IS EXPECTED TO RESULT IN SIGNIFICANT EXCESS ENERGY GENERATION. GRID UPGRADES AND THE DEPLOYMENT OF BATTERY ENERGY STORAGE SYSTEMS (BESS) MAY PROVE INSUFFICIENT TO FULLY MITIGATE THIS ISSUE, NECESSITATING THE IMPLEMENTATION OF ELECTROLYSERS. BY 2040, INSTALLED CAPACITY COULD REACH 0.5 GW UNDER THE REFERENCE SCENARIO AND UP TO 4 GW IN THE HIGH RES SCENARIO, WITH CAPACITY PRIMARILY CONCENTRATED IN SARDINIA AND SICILY

Electrolyzer Installed Capacity
GW



Source: MBS Consulting elaborations

35-40

In the long term, the expansion of renewable capacity—particularly in the Southern regions—is expected to significantly increase the incidence of systematic overgeneration, especially on the islands. Grid investments and battery energy storage systems (BESS) will likely prove inadequate to address this issue, thereby creating favorable conditions for the adoption of green hydrogen technologies. In the Reference scenario, installed electrolysis capacity could reach nearly 0.5 GW, predominantly concentrated in Sardinia. Over time, electrolysis capacity can effectively mitigate overgeneration by offering a mechanism to store surplus renewable energy. Moreover, by enhancing demand during periods of high RES production, it can help stabilize prices and alleviate the cannibalization effect, particularly during the later stages of the transition.

Main updates

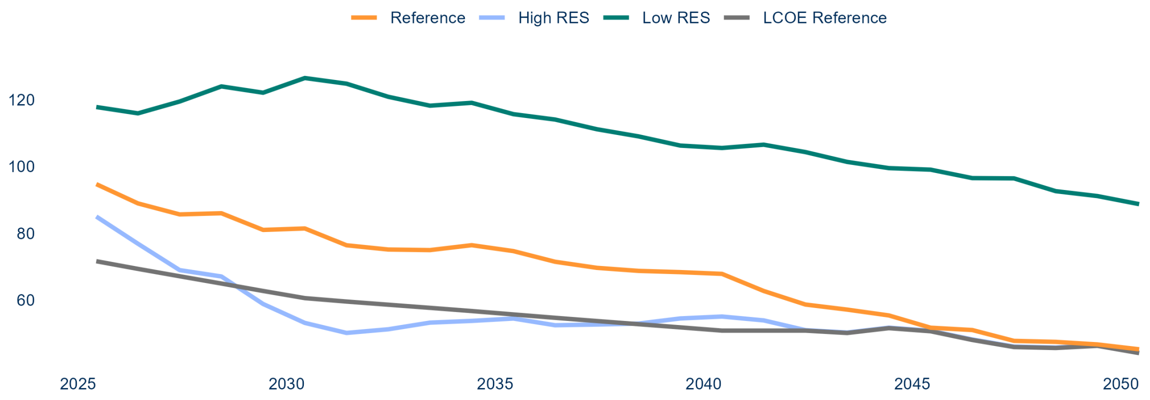
Electrolyzer capacity hypotheses are in line with the previous update.

5.5.5 Solar Market Parity

DESPITE THE ANTICIPATED LONG-TERM REDUCTION IN PRICES—DRIVEN BY THE NORMALIZATION OF GAS PRICES AND THE GRADUAL INTEGRATION OF RENEWABLE ENERGY SOURCES INTO THE ENERGY MIX—SOLAR TECHNOLOGY REMAINS COMPETITIVE, EXHIBITING CAPTURED RATES THAT EXCEED THE LEVELIZED COST OF ELECTRICITY

Fixed-tilt Solar PV LCOE and Captured PUN

€/MWh



Source: MBS Consulting elaborations

25-26

Despite potential challenges in securing land and rising land costs, technology costs for solar projects have decreased over the past year. This reduction has been primarily driven by declining panel costs, supported by increased competition among sellers. These trends are supporting the market parity for solar technologies, with baseload prices projected to stabilize between 80 and 100€/MWh during the 2025-2026 period. As a result, solar power plants are expected to capture rates that exceed the estimated levelized cost of electricity (LCOE), ranging between 66 and 82 €/MWh, depending on the market zone.

27-30

Despite the potential cannibalization effect on unlevered projects situated in the Southern regions, decling investement costs for solar projects and expected captured prices above 80 €/MWh support return on investements for pv plants.

31-50

The long-term outlook for the renewable energy sector from 2030 onwards appears promising, driven by the continuous decline in technology costs and the adoption of enhanced Power Purchase Agreement (PPA) best practices, which are expected to bolster non-incentivized investments. However, the cannibalization effect may emerge as a significant concern in specific regions, such as Sardinia and Sicily, where the grid infrastructure may lack the capacity to efficiently manage and redirect energy flows.

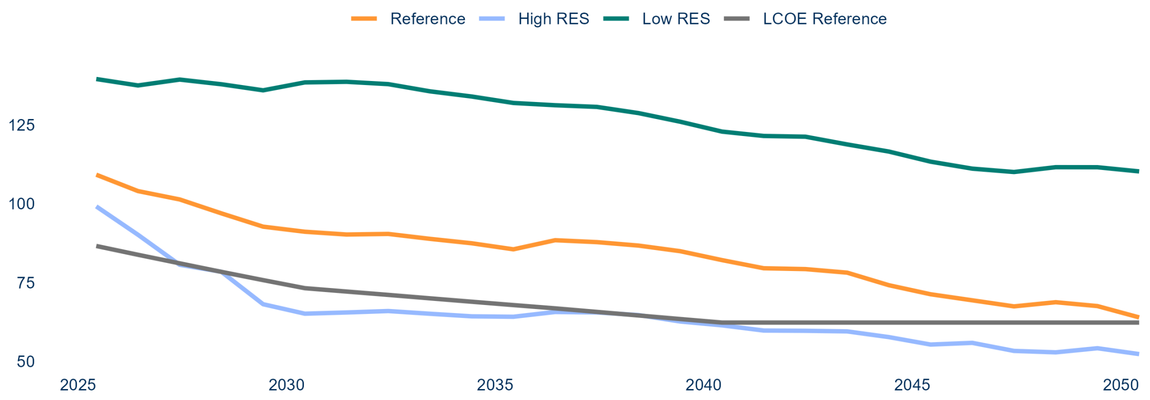
Main updates

Adjustments to solar captured prices are determined by revised commodity prices and electricity demand evolution trend.

5.5.6 Wind Market Parity

DESPITE THE ANTICIPATED LONG-TERM REDUCTION IN PRICES—DRIVEN BY THE NORMALIZATION OF GAS PRICES AND THE GRADUAL INTEGRATION OF RENEWABLE ENERGY SOURCES INTO THE ENERGY MIX—WIND MARKET PARITY IS ENSURED BY CAPTURED PRICES THAT EXCEED THE LEVELIZED COST OF ELECTRICITY

Wind LCOE and Captured PUN
€/MWh



Source: MBS Consulting elaborations

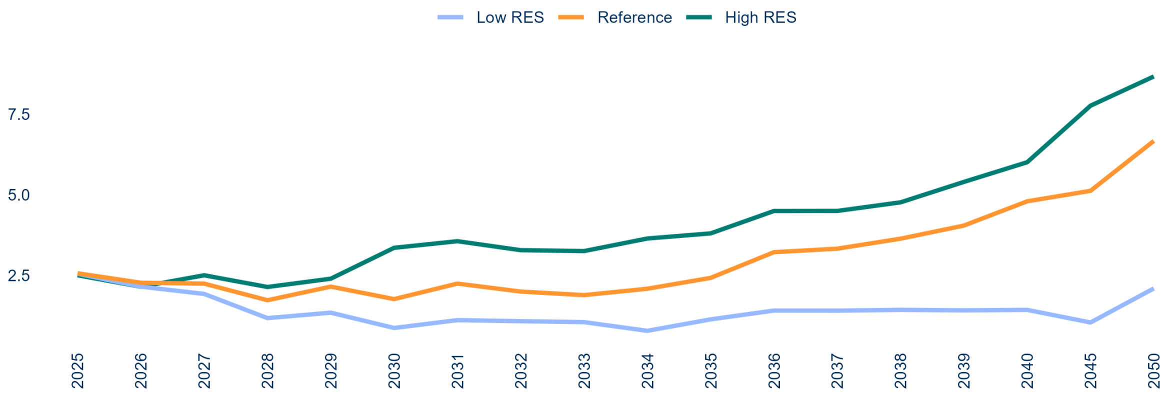
25-26	Market parity continues to be guaranteed for wind plants despite the investement intensity of those projects, benefitting of their wider generation profile capable of capturing higher prices than solar plants. This is largely due to their broader generation profile, which allows wind projects to capture higher prices compared to solar plants. With annual captured prices aligning closely with baseload prices, wind power plants are expected to cover LCOE levels ranging between 85 and 90 €/MWh, in all the zones.
27-30	Gradual reduction in investement costs for wind projects and captured prices close to 90€/MWh support wind market parity in the mid-term. Potential price cannibalizzation dynamics remain limited untill 2030, as a strong capacity development is expected to accelerate during the 2030s. However, site-specific factors may still influence the economics of individual projects.
31-50	The long-term outlook from 2030 onwards appears promising, driven by the ongoing decline in technology costs and the adoption of enhanced Power Purchase Agreement (PPA) best practices that support non-incentivized investments.
Main updates	Adjustments to wind captured prices are determined by revised commodity prices and electricity demand evolution trend.

5.6 Storage

5.6.1 Pumped Hydro Production

DAY-AHEAD MARKET OPPORTUNITIES FOR PUMPED HYDRO POWER PLANTS MAY EMERGE IN THE SHORT TERM DUE TO VOLATILE PRICE FLUCTUATIONS; THESE OPPORTUNITIES ARE EXPECTED TO PERSIST IN THE LONG TERM AS NON-PROGRAMMABLE RENEWABLE GENERATION CONTINUES TO GROW

Pumped Hydro Production
TWh

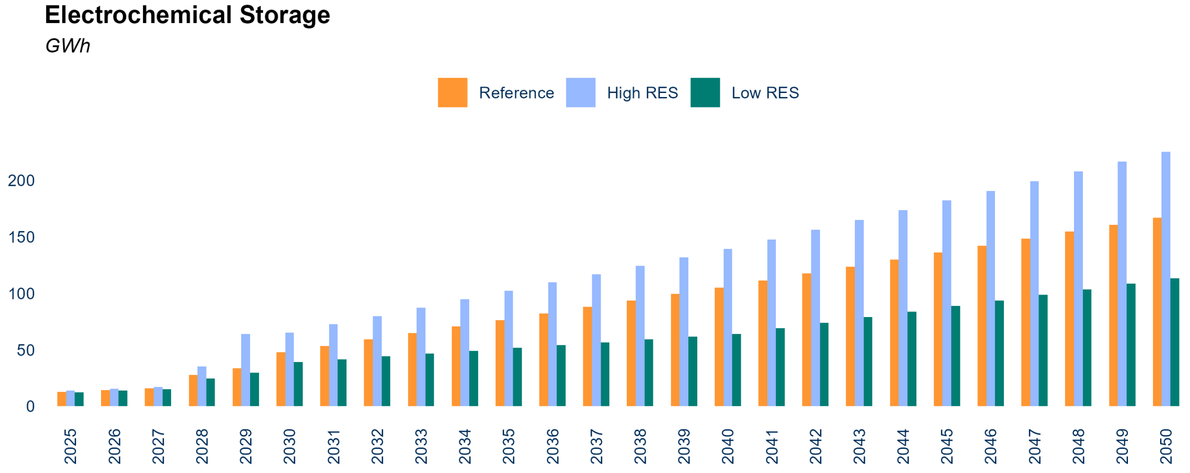


Source: MBS Consulting elaborations

25-26	Intra-day price spreads on the Day-Ahead Market (DAM) may reveal opportunities for pumped hydro units; however, the Ancillary Services Market, particularly during the real-time balancing phase, is anticipated to remain their primary source of revenue. Pumped hydro production is projected to hover around 2.5 TWh.
27-30	Under an accelerated RES development path compared to the BAU trajectory, pumped hydro production could reach 3.9 TWh by 2030 in the High RES scenario, driven by new opportunities emerging in the DAM as RES penetration increases. In contrast, the Low RES scenario limits pumped hydro production to around 2 TWh.
31-50	As non-programmable renewable sources exceed 50% of total electricity demand, market opportunities are set to grow further. Pumped hydro units will play a pivotal role in reducing the solar cannibalization effect and alleviating network congestion, with production projected to reach nearly 7 TWh by 2050.
Main updates	Short-term variations in pumped hydro production align with updated commodity prices and power demand forecasts. Currently, pure pumped hydro capacity stands at approximately 4 GW, with no further increases anticipated in the future.

5.6.2 Battery Energy Storage System

ELECTROCHEMICAL STORAGE SYSTEMS WILL BE KEY DRIVERS OF DECARBONIZATION. IN THE SHORT TERM, SMALL-SCALE DISTRIBUTED CAPACITY WILL SUPPORT SOLAR INTEGRATION, MAINLY IN THE NORTH. CAPACITY MARKET AUCTIONS AND FAST RESERVE PROJECTS WILL ENABLE UTILITY-SCALE CAPACITY ENTRY. THE REAL MARKET BOOST WILL COME FROM MACSE (2028–2030), DRIVING SIGNIFICANT STORAGE CAPACITY, CRUCIAL FOR RES INTEGRATION, MAINLY IN THE SOUTH AND ISLANDS



Source: MBS Consulting elaborations

25-26

In the coming years, projects from the December 2020 Fast Reserve auctions, part of Terna's pilot for ultra-fast frequency regulation, are expected to become operational. Additionally, the 2024 Capacity Market auction has initiated the development of energy-intensive storage in Italy, adding over 1.5 GW of 4-hour systems. With the continued installation of distributed storage, total electrochemical storage capacity could exceed 15 GWh.

27-30

The anticipated growth of storage capacity will be crucial for integrating non-programmable renewables and improving the stability and flexibility of Italy's electricity system. The PNIEC targets 72 GWh of additional storage by 2030, spanning utility-scale and distributed projects, with a focus on Southern regions where renewable generation is concentrated. Italy's storage market has a robust pipeline of projects, but their realization depends heavily on regulated support mechanisms, including the MACSE auction planned for mid-2025, aimed at expanding capacity in the South and islands. By 2030, total BESS capacity is projected to reach 48–65 GWh, combining small-scale and utility-scale systems.

31-50

Energy-intensive applications are expected to grow, driven by market signals from expanding renewable installations. In the Reference scenario, PNIEC targets are projected to be met by the mid-2030s, with storage capacity reaching 105 GWh by 2040, rising to 140 GWh in the High RES case.

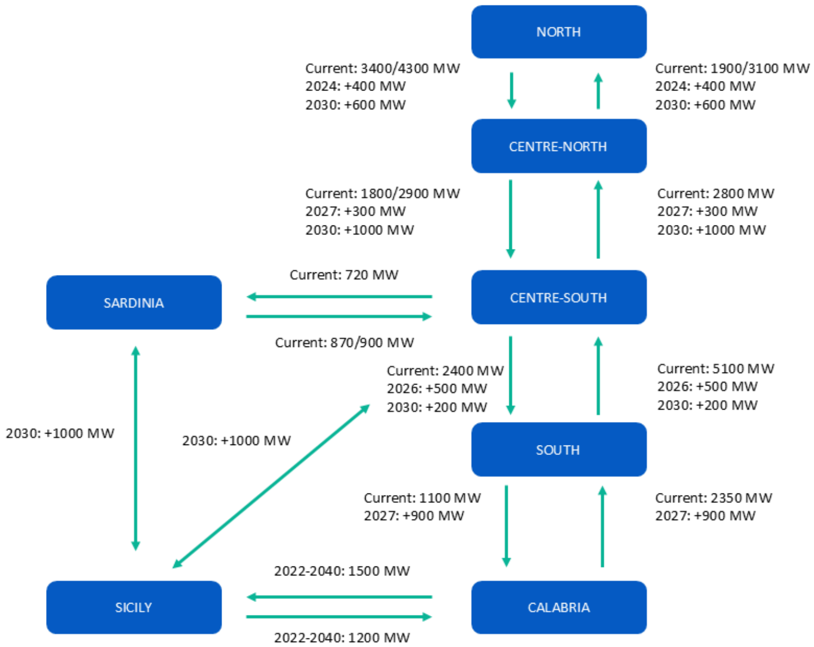
Main updates

BESS capacity hypotheses have been updated in line with potential project pipeline and expectation on MACSE auction.

6 Transmission Grid

6.1 Grid Reinforcements

SIGNIFICANT GRID REINFORCEMENTS ARE EXPECTED TO BE IMPLEMENTED BY THE MID-2020s, WITH MAJOR UPGRADES, SUCH AS THE TYRRHENIAN LINK AND ADRIATIC LINK, SLATED FOR COMPLETION IN THE 2030s. THE EXPANSIVE DEVELOPMENT OF RENEWABLE ENERGY SOURCES WILL TRIGGER THE NEED FOR ADDITIONAL GRID UPGRADES, AS INTER-ZONAL CONSTRAINTS WILL NOT BE FULLY RESOLVED



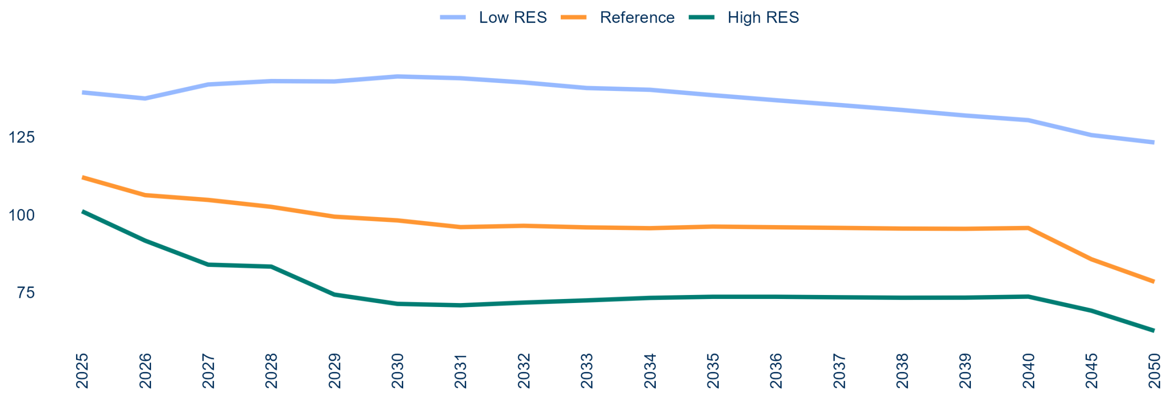
25-26	In all the scenarios proposed, network constraints are aligned with the most recent indications provided by Terna.
27-30	Grid reinforcements are expected to improve flow management and reduce inter-zonal congestion on the mainland. By 2030, two key HVDC infrastructures are set to become operational: the Tyrrhenian Link, key to decommission Sardinia's coal-fired units, and the Adriatic Link, designed to alleviate bottlenecks between South and North. However, both projects are anticipated to face delays compared to the Terna-Arera schedule.
31-50	Under BAU assumptions, inter-zonal constraints on the mainland are expected to gradually reduce starting from 2035. In the Low scenario, Terna's proposed 30 GW Hypergrid infrastructure will be implemented, while the High scenario projects more limited long-term network development.
Main updates	Grid development hypotheses are in line with the previous update.

7 Power Market Prices

7.1 Baseload PUN

THE PUN IS EXPECTED TO REBOUND TO 112 €/MWH IN 2025, DRIVEN BY GAS MARKET TENSIONS AND CO2 PRICES STABILIZING AT 85 €/TON DUE TO FULL ETS REFORM IMPLEMENTATION. HOWEVER, GREATER RES INTEGRATION, POST-2026 PRICE NORMALIZATION, AND STEADY ELECTRICITY IMPORTS ARE FORECAST TO LOWER PRICES BELOW 100 €/MWH BY 2029 IN THE REFERENCE SCENARIO AND BY 2026 IN THE HIGH RES CASE

Baseload PUN
€/MWh



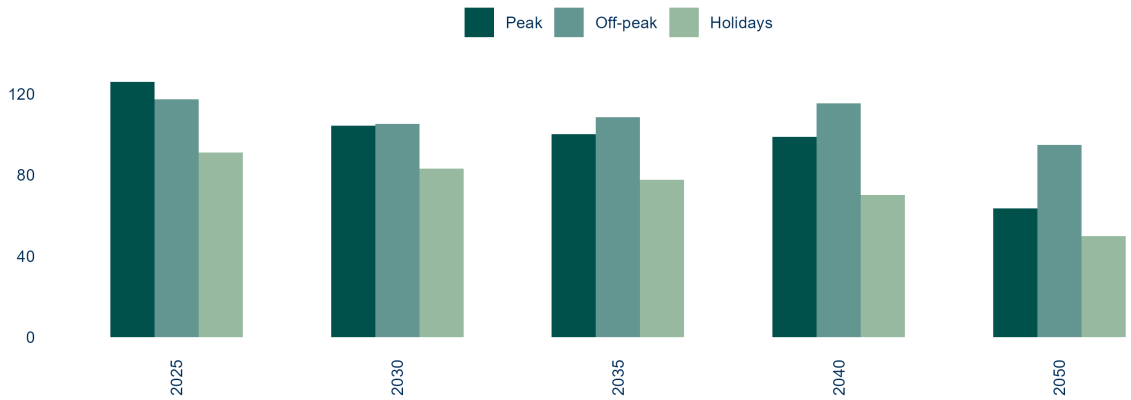
Source: MBS Consulting elaborations

25-26	In the Reference scenario, market dynamics are expected to stabilize by 2026 as the gas market approaches equilibrium. In 2025, potential gas market tensions and a demand-driven recovery supporting the ETS mechanism are projected to push average prices to approximately €112/MWh, before easing to €106/MWh in 2026. In the High RES scenario, stronger economic conditions and accelerated RES integration may temper price increases, with the PUN forecast to average around €101/MWh in 2025.
27-30	In the medium term, sustained imports, gas price normalization driven by expanded LNG supply from new liquefaction capacity in the USA and Qatar, and increasing RES penetration are expected to push energy prices downward. As a result, electricity prices are projected to decline to 98 €/MWh by 2030. In the High RES scenario, enhanced decarbonization efforts could further reduce prices, averaging €71/MWh on the same horizon.
31-50	In the long term, power prices will remain heavily influenced by the cost profile of CCGTs, which are expected to act as the marginal technology for 80% of the time in 2040, decreasing to less than 60% by 2050. As a result, long-term ETS dynamics are likely to drive baseload prices upward, partially offset by the cost-reducing effect of rising RES penetration. The projected PUN for 2040 is expected to range between €130/MWh and €74/MWh, depending on the scenario.
Main updates	The downward revision of short-term gas price projections, driven largely by adjustments to the logistics component, alongside the adjustment to demand projections, entailing a reduction in CSS forecasts, jointly led to lower PUN projections throughout the entire horizon.

7.1.1 Peak-Load/ Off-Peak PUN

RENEWABLES PENETRATION, DRIVEN BY SOLAR ENERGY, IS ANTICIPATED TO HAVE A SIGNIFICANT IMPACT ON PEAK AND OFF-PEAK DYNAMICS AFTER 2030, WHEN AN INVERSION IN PRICE SPREADS BETWEEN TIME SLOTS IS EXPECTED TO TAKE PLACE

Average PUN per Time Slots, Reference Scenario
€/MWh



Source: MBS Consulting elaborations

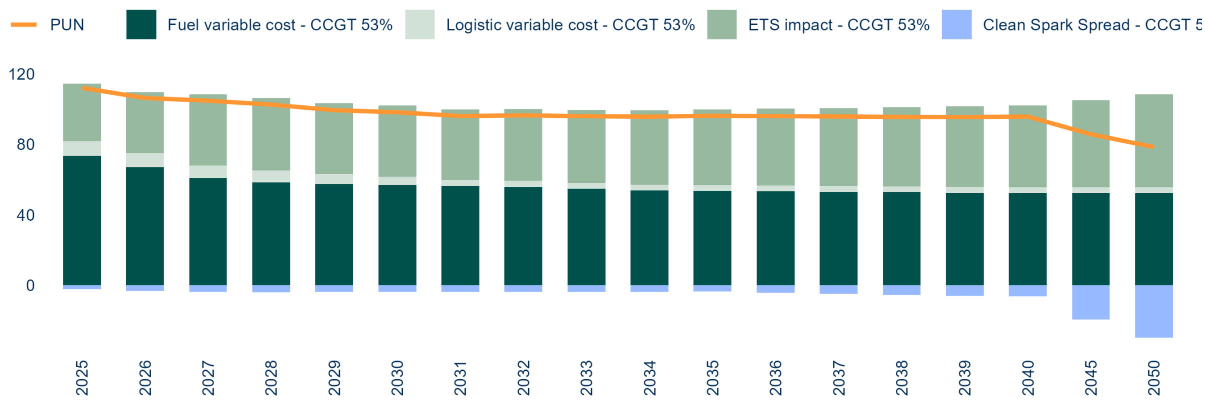
25-26	The favorable price spread between evening and midday hours is anticipated to persist in the short term, as the penetration of renewables remains below 50% of gross domestic consumption.
27-30	The continued expansion of solar capacity is expected to further suppress midday prices, particularly during periods of abundant sunlight and low demand, such as in spring. This trend will progressively narrow the disparity between peak and off-peak prices.
31-50	The long-term persistence of reversed hourly price differentials is expected to drive higher prices during off-peak hours. The growing integration of energy-intensive electrochemical storage systems, coupled with improved storage unit operability, is likely to alleviate the cannibalization effect caused by non-programmable solar power plants.
Main updates	The price trends for the various categories of hours align with the findings from the previous market update.

7.1.2 Baseload PUN Components, Reference Scenario

THE DECREASE IN RESIDUAL DEMAND FOR CCGTs CAUSED BY STAGNANT ELECTRICITY DEMAND, CONTINUED NET IMPORTS, AND SUBSTANTIAL RES GENERATION WILL RESULT IN A REDUCTION OF CSS FOR EXISTING CCGTs IN THE SHORT TERM. FOLLOWING THE PHASE-OUT OF COAL-FIRED UNITS, CSS IS EXPECTED TO STAY NEAR -3 €/MWh AND BECOME INCREASINGLY NEGATIVE IN THE LONG TERM AS THE RISING PENETRATION OF RENEWABLES AND CM-SUPPORTED NEW BUILDS AFFECT COMPETITIVE DYNAMICS

Baseload PUN Components, Reference Scenario

€/MWh



Source: MBS Consulting elaborations

25-26

The moderation of commodity prices, increased net imports from foreign countries, and a sluggish recovery in demand are heightening market competition for CCGTs. As a result, a negative CSS of approximately -2.3 €/MWh is anticipated for thermal plants in the Reference scenario for 2025.

27-30

In the latter half of the 2020s, intensified competition from newly constructed Capacity Market units, a growing share of RES, and downward pressure from normalized gas prices are expected to keep the CCS in negative territory, averaging -3.5 €/MWh.

31-50

In the long term, renewables are expected to dominate the generation mix, driving down both power prices and the CSS, which is projected to reach approximately -30 €/MWh by 2050. Despite rising demand, existing CCGTs are expected to remain the marginal technology, operating as such for around 80% of the system's hours in 2040.

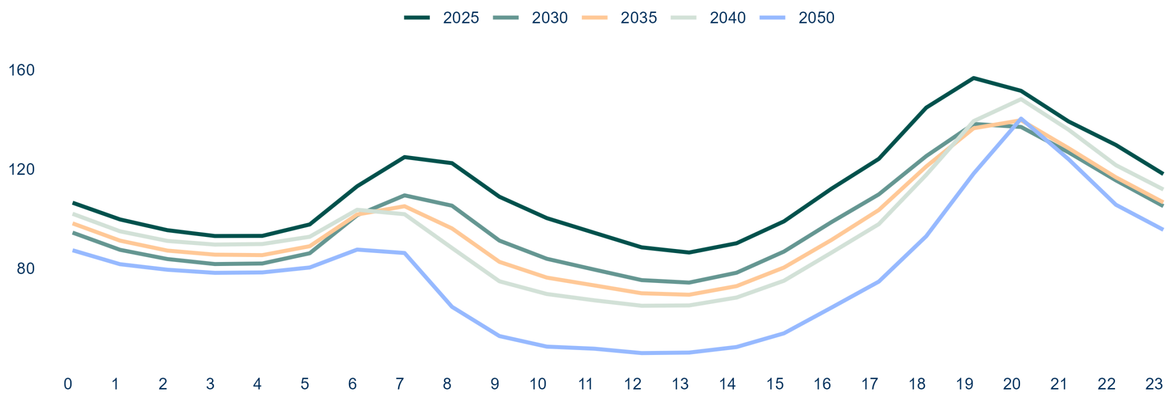
Main updates

Short-term projections for the baseload PUN component have been revised to account for updated commodity prices and adjusted demand expectations.

7.1.3 PUN Hourly Shape

INCREASING SOLAR PENETRATION SIGNIFICANTLY AFFECTS PRICES DURING PEAK DAYTIME HOURS AND WORSENS DAILY PRICE DIFFERENTIALS IN THE LONG TERM. THIS IMPACT IS PARTIALLY OFFSET BY THE DEVELOPMENT OF STORAGE UNITS

Hourly PUN Shape
€/MWh



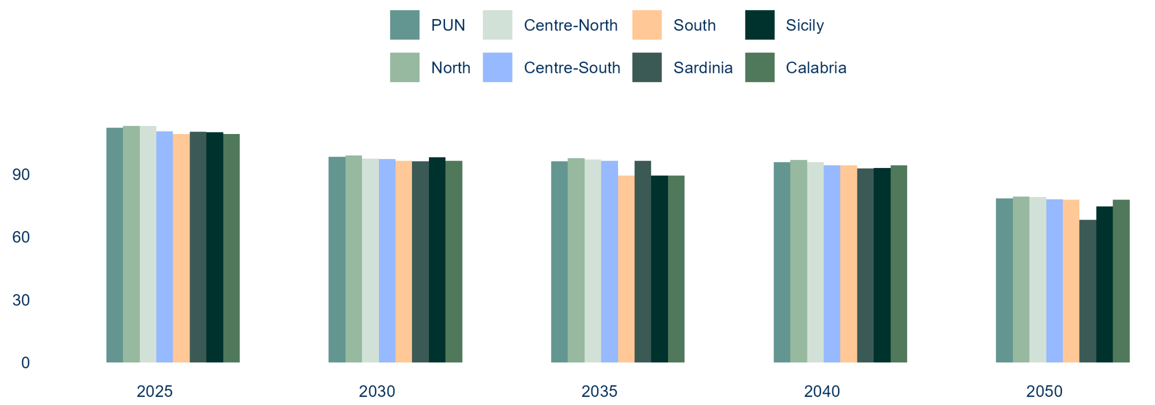
Source: MBS Consulting elaborations

25-26	The impact of solar production during peak daytime hours is still modest due to limited penetration. As a result, price differentials throughout the day are currently at average levels.
27-30	As solar penetration increases and the cannibalization effect intensifies, the disparity between central hours and morning/evening peak hours grows wider. While the combined deployment of single-axis trackers, grid enhancements, and energy-intensive storage solutions helps alleviate this issue, its impact remains limited.
31-50	As renewable penetration advances, both intra-day price differentials and the number of hours with prices at 0 €/MWh increase, encouraging investments in electrolysis capacity. This scenario makes time-shifting applications in the Day-Ahead Market appealing and stimulates new investments in energy-intensive storage units.
Main updates	The PUN hourly shape aligns with the findings of the previous update. The lower short-term absolute values reflect the impacts of the revised commodity assumptions.

7.2 Baseload Zonal Prices

IN THE SHORT TERM, ZONAL PRICES ARE EXPECTED TO DIVERGE DUE TO FLUCTUATIONS IN THE DEMAND-OFFER BALANCE AMONG DIFFERENT ZONES. IN THE LONG TERM, THE SIGNIFICANT EXPANSION OF RENEWABLE ENERGY SOURCES IN THE SOUTHERN MACRO-ZONE, ENABLED BY IMPROVEMENTS TO THE TRANSMISSION GRID, WILL REDUCE BASELOAD ZONAL PRICES

Baseload Zonal Prices, Reference Scenario
€/MWh



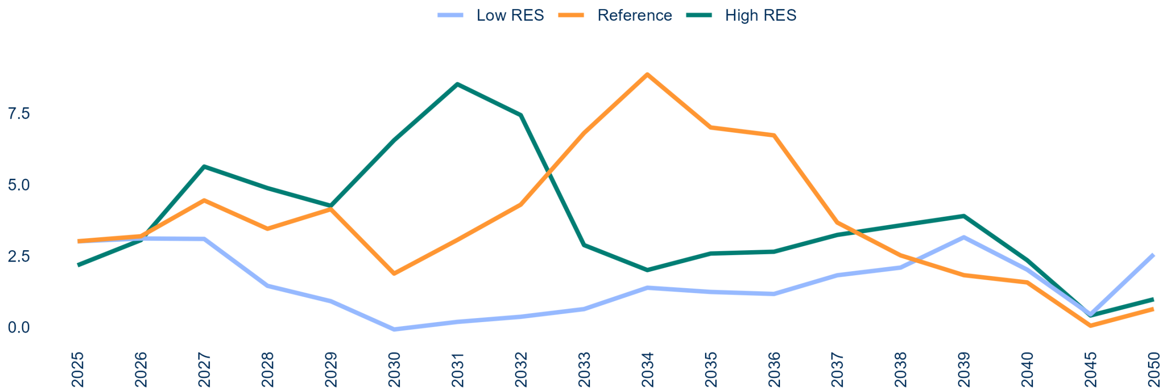
Source: MBS Consulting elaborations

25-26	Network congestion is not a significant issue on the mainland. Southern regions experience lower prices, while increased CCGT operations in the Northern zones push prices above the PUN, consistent with recent historical trends. However, with electricity demand remaining below historical levels and renewable penetration following a gradual path, price spreads remain modest.
27-30	Surging renewable penetration is projected to exacerbate inter-zonal congestion through 2030; while major grid enhancements, such as the completion of the Adriatic Link, will improve energy exchanges from South to North, they will only partially mitigate congestion in the medium term. Continued expansion of renewable capacity in the Southern zones is likely to increase the frequency of congestion events, upsurging the incidence of price spreads over time.
31-50	Despite completed grid improvements, bottlenecks between the Northern and Southern zones are expected to persist, maintaining price differentials of up to 1.5 €/MWh throughout the 2030s. Additional grid reinforcements, set to commence in 2035, are projected to ease inter-zonal congestion on the mainland. However, similar challenges are likely to remain significant in island regions.
Main updates	The dynamics of zonal prices are in line with the previous update.

7.3 Evolution of Baseload PUN-South Price Differential

THE TREND IN THE SPREAD BETWEEN THE PUN PRICE—PRIMARILY INFLUENCED BY THE PERFORMANCE OF THE NORTHERN MARKET ZONE—AND THE PRICES IN THE SOUTHERN MARKET ZONES IS HEAVILY DEPENDENT ON ASSUMPTIONS REGARDING RENEWABLE PENETRATION, STORAGE DEVELOPMENT, AND THE TIMING OF GRID INFRASTRUCTURE IMPLEMENTATION

Baseload PUN-South Price Differential
€/MWh



Source: MBS Consulting elaborations

25-26

The spread between the PUN and the Southern market zones is expected to remain at recent historical levels in the short term, with the Southern zone experiencing a discount. This dynamic is driven by a general decrease in electricity demand and an increasing share of RES in the generation mix, leading to lower prices compared to the Northern zones. Despite the rise in import flows, CCGTs in the North are still needed to meet demand, resulting in average prices that are higher.

27-30

In both the Reference and High RES cases, the incorporation of renewable technologies results in a wider spread, despite network interventions. Conversely, in the Low RES scenario, the spread decreases due to more restrained growth in renewables, allowing for gradual enhancements in the operational conditions of gas-fired units until 2030, when coal generation becomes less competitive compared to gas.

31-50

In the Reference case, the significant penetration of renewables in Southern regions increases the spread during the first half of the 2030s, signaling the market for new electrochemical battery energy storage systems (BESS) to enter and prompting new grid investments. In the High RES scenario, the expected and accelerated development of storage and network investments contributes to a reduction in the spread. However, ongoing growth in renewable energy sources causes the spread to widen again in the second half of the 2030s.

Main updates

The evolution of the spread between the PUN and Southern zonal prices is substantially in line with the previous update; minor shifts in short-term projections depend on the updated hypotheses on commodities levels and the changes to demand forecasts.

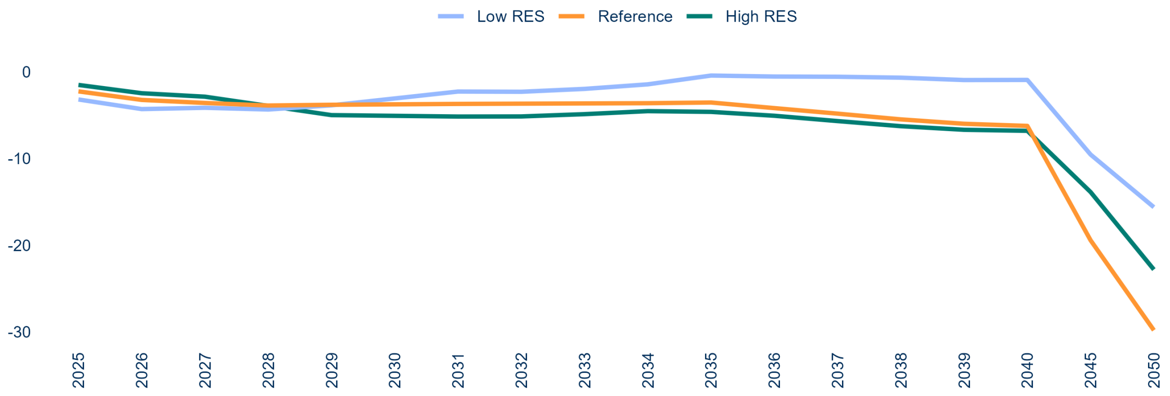
7.4 Clean Spark Spread

7.4.1 Baseload CSS for Existing CCGT Units

BASELOAD CSS IS PROJECTED TO DECLINE IN THE SHORT TERM AS STAGNANT POWER DEMAND GROWTH, SUSTAINED IMPORTS, AND INCREASING RES PENETRATION REDUCE CCGT PRODUCTION. BY 2040, VALUES ARE EXPECTED TO STABILIZE BETWEEN -7 AND -1 €/MWh, DEPENDING ON THE SCENARIO. MISSING MONEY ISSUES ARE LIKELY TO EMERGE IN THE LATTER HALF OF THE 2020s AND BECOME MORE PRONOUNCED IN ALTERNATIVE SCENARIOS

Baseload CSS for Existing CCGTs

€/MWh



Source: MBS Consulting elaborations

25-26

The anticipated energy outlook, characterized by stagnant electricity demand, a growing share of RES, and increased import levels, is expected to intensify competition for the existing fleet. These factors will place downward pressure on the CSS for CCGTs, with average values projected at -2.7 €/MWh over the 2025-2026 period.

27-30

Market competition is set to intensify with stabilized imports from Northern borders, increased renewable capacity, and new high-efficiency CCGTs from CM auctions. These factors will keep baseload CSS negative, averaging around -3.5 €/MWh in the High RES scenario, where accelerated RES growth and heightened thermoelectric competition amplify the pressure in the second half of the 2020s.

31-50

Post-2030, the decommissioning of aging capacity will enable existing CCGTs (53%-efficiency) to remain the marginal technology for approximately 80% of the operating hours through 2040. During this horizon, baseload CSS is expected to range below -2 €/MWh, and until -6 €/MWh. In the High RES scenario, baseload CSS is projected to fall further, staying below -7 €/MWh in the long-term (post-2040). Conversely, in the Low RES, increased CCGT generation will result in higher baseload CSS, though it is still expected to remain below -4 €/MWh from 2040 onwards.

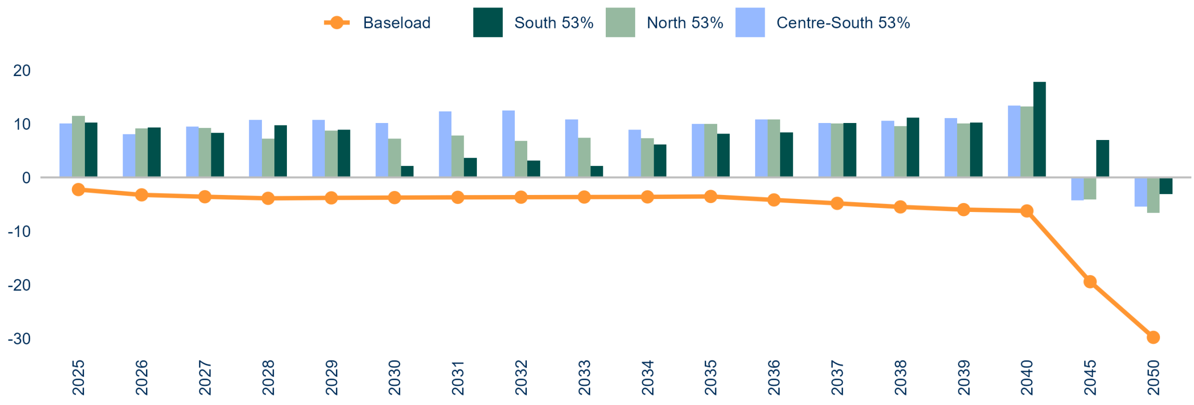
Main updates

CSS estimations are in line with the previous update.

7.4.2 Day-Ahead Market Profitability for CCGT Units

IN THE NEAR TERM, CURRENT UNITS ARE LIKELY TO FACE LESS FAVORABLE SWITCHING CONDITIONS, BUT THE RISING SOLAR PENETRATION IS PROJECTED TO INCREASE EVENING PRICE PEAKS OVER THE MEDIUM TO LONG TERM. HIGH-EFFICIENCY UNITS WILL OPTIMIZE DAM VOLUMES WHILE MAINTAINING A DOUBLE-DIGIT MARGINAL CAPTURE

Captured CSS of CCGT Units, Reference Scenario
€/MWh



Source: MBS Consulting elaborations

25-26

In the short term, captured CSS for existing CCGTs are projected to average around 10 €/MWh. The energy mix composition across different market zones will significantly influence margins for thermal units. In southern bidding zones, slow demand growth and continued RES installations are expected to limit plant operability. However, despite similar trends and stable import flows from the northern border, CCGT margins in the northern zones should remain stable, supported by strong zonal demand.

27-30

As renewable capacity increases, existing units tend to concentrate their operations during evening hours to maximize captured margins. The high-efficiency gas-fired capacity captured CSS is subject to competitive market conditions as new projects enter the market with support from the latest CM auction. Despite this, the high efficiency of these projects enables them to maintain an average captured margin of 10 €/MWh.

31-50

Growing renewable penetration intensifies overgeneration phenomena and accentuates evening price spikes, determining an increasing trend for captured marginality for existing units in the second half of the 2030s, but load factors reduce progressively on increasing renewables share and increase competition from high efficiency units.

Main updates

Expected load factor and marginality of CCGT units depend on updated hypothesis concerning commodity prices, market dynamics and new thermoelectric installed capacity.

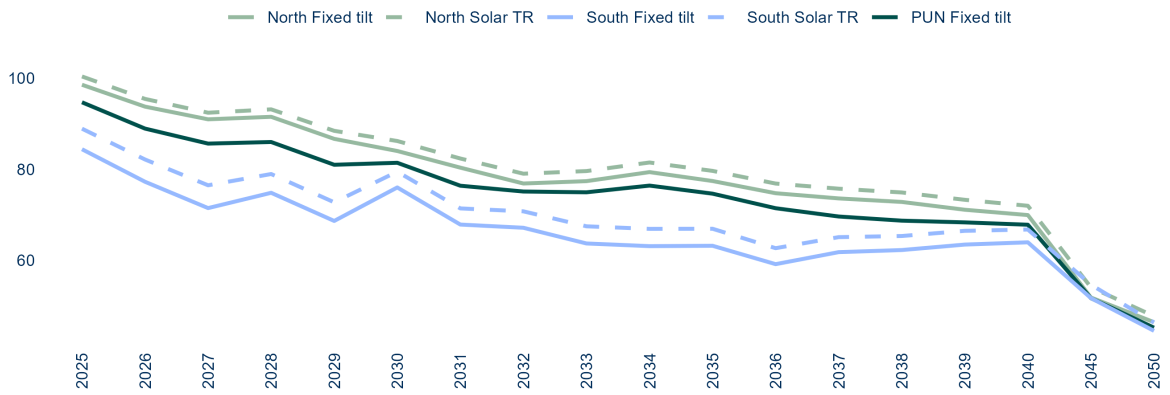
7.5 Captured Prices of Renewable Sources

7.5.1 Solar Captured Prices

A GROWING CANNIBALIZATION EFFECT ON SOLAR PRICES BECOMES APPARENT IN THE LATE 2020s, PARTICULARLY IN SOUTHERN MARKET ZONES, WHERE HIGH RENEWABLE PENETRATION AND LIMITED INTERCONNECTION CAPACITY WITH NORTHERN ZONES EXACERBATE THE IMPACT

Solar Captured Prices, Reference Scenario - detail of North and South market zones

€/MWh



Source: MBS Consulting elaborations

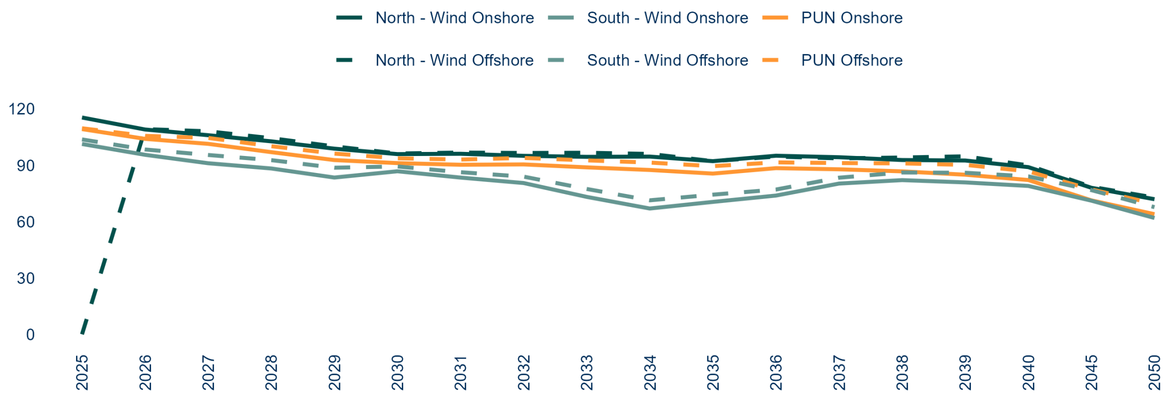
25-26	Solar power plants stand to benefit from projected moderate increases in power prices, with captured prices varying between approximately 94€/MWh and 100€/MWh in the Northern zone, depending on the technology (Tracker or Fixed Tilt). In the Southern zones, captured prices range between 77€/MWh and 88€/MWh.
27-30	The accelerating rate of RES installations, along with the resulting cannibalization and overgeneration effects — only partially mitigated by energy storage systems and grid improvements — is influencing zonal captured prices. These prices are diverging from baseload prices and are projected to fall below 90 €/MWh by 2030, even in the Northern zones.
31-50	The growing frequency of overgeneration highlights the need for energy-intensive storage systems to partially mitigate the cannibalization effect. After 2030, this effect intensifies for solar captured prices, especially in Southern market zones with higher renewable penetration, driving long-term prices below 50 €/MWh in both Northern and Southern regions.
Main updates	Short-term outcomes are driven by shifts in commodity prices and power demand projections, influencing power prices.

7.5.2 Wind Captured Prices

WIND GENERATION IS LESS CONCENTRATED THAN SOLAR PRODUCTION, WITH ITS OUTPUT MORE EVENLY DISTRIBUTED ACROSS BOTH SEASONS AND HOURS OF THE DAY. THIS BROADER DISTRIBUTION ENABLES CAPTURED PRICES TO MATCH — OR EVEN SURPASS — BASELOAD PRICES

Wind Captured Prices, Reference Scenario - detail of North and South market zones

€/MWh



Source: MBS Consulting elaborations

25-26

Captured prices are closely aligned with zonal baseload prices and benefit from a modest uptick in power prices, with values nearing 100 €/MWh across all zones.

27-50

Captured prices remain closely aligned with zonal baseload prices over the long term. Increased solar production leads to overgeneration in the early 2030s, but outcomes for both sources are shaped more by zonal market dynamics than price trends. By 2030, captured prices exceed 95 €/MWh in the Northern zones and approach 90 €/MWh in the South, supported by a more balanced production profile across the day and year.

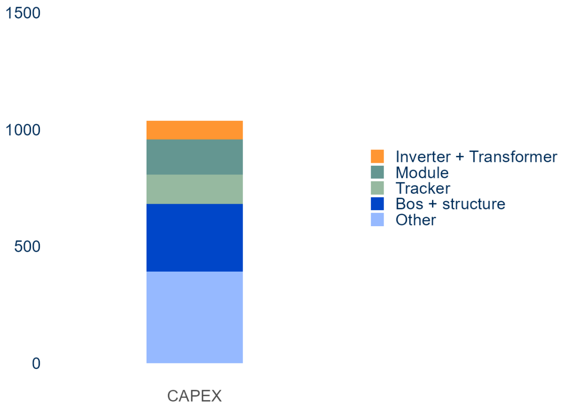
Main updates

Short-term outcomes are driven by shifts in commodity prices and power demand projections, influencing power prices.

7.5.3 Investment costs and IRR of Solar and Wind

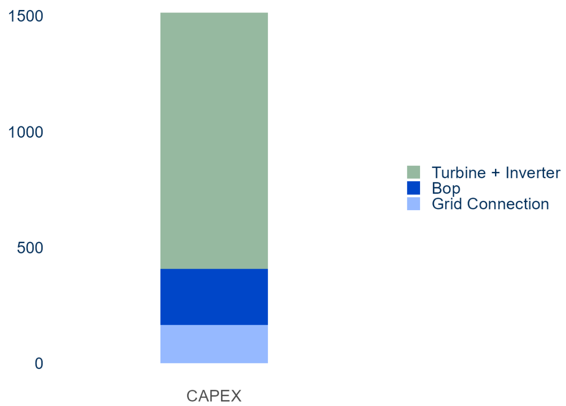
INTENSE COMPETITION IN THE PV MODULES MARKET DRIVES DOWN INVESTMENT COSTS FOR SOLAR IN THE MID AND LONG TERM, EVEN THOUGH GRID CONNECTION AND LAND COSTS MAY RISE. HIGHER TECHNOLOGY COSTS FOR WIND

Capex Utility Scale Tracker
€/kW



Source: MBS Consulting elaborations

Capex Utility Scale Wind
€/kW



Source: MBS Consulting elaborations

Solar

The high competition in the PV modules market, predominantly led by Chinese manufacturers, has driven the costs of PV modules down to around €150,000 per MW. Nearly 30% of the total cost for a module is attributed to polysilicon, a relatively inexpensive but highly volatile material. Other critical materials with high demand and low availability, such as silver, could potentially increase the price of the technology in the future. Generally, due to market competitiveness, PV modules account for only 15% of the total solar CAPEX. Two significant costs impact the total CAPEX for solar technologies. The cost of connecting to the grid, which varies greatly by project, is expected to rise in the coming years. This is due to the increasing number of projects in remote locations, complicating high-voltage grid connections. Additionally, the cost of land acquisition or rental, which constitutes nearly 8% of the total cost, has increased in recent years. The anticipated acceleration of new installations in the coming years may further drive up land demand for solar projects, as available sites diminish, thereby increasing rental costs. This cost structure typically results in an IRR of around 7% (base case considering South zone, pre-tax captured prices, 30 years time horizon) for solar projects, with regional variations according to different zonal captured prices. For agri-voltaic projects, a markup of 20%-40% on the total investment cost must be applied, leading to a lower expected IRR of around 6%.

Wind

The primary cost for a wind plant is the turbine and inverter, which account for 60% of the total cost. Grid connection represents 10% of the wind CAPEX, which is approximately €1.5 million for an onshore wind project. In the short and mid-term, technology costs are unlikely to decrease due to the low rate of new installations, which limits the potential for economies of scale. However, as the technology matures, particularly in Northern countries where installation rates are higher, there may be a reduction in technology costs. Despite this, the CAPEX for a wind project is expected to remain above €1 million until 2040. This cost structure typically results in an IRR of around 7% (base case considering South zone, pre-tax captured prices, 20 years time horizon) for onshore wind projects.

Main updates

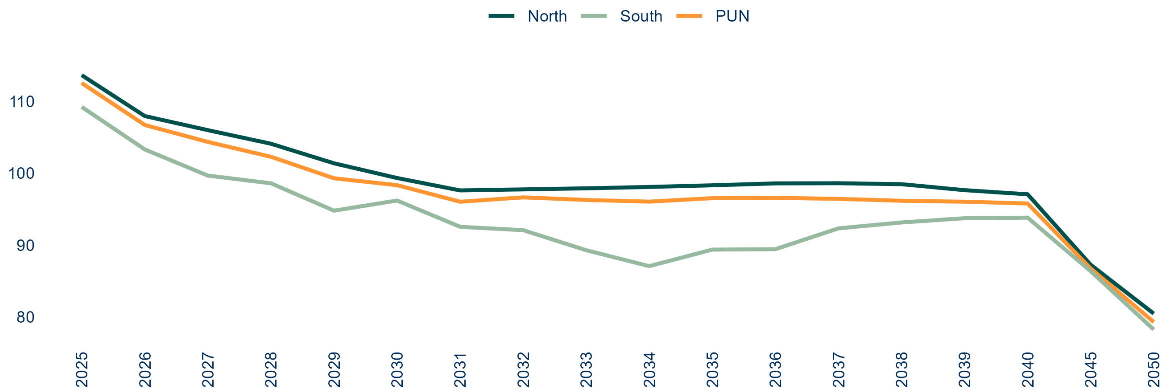
Cost structure for solar and wind technologies is in line with the previous update.

7.5.4 Hydro Run-of-River Captured Prices

HYDROPOWER GENERATION IS MORE SENSITIVE TO SEASONAL WATER INFLOWS TRENDS THAN TO HOURLY VARIABILITY, SO THAT CAPTURED PRICES REMAIN BASICALLY IN LINE WITH BASELOAD PRICES

Small-size, Run-of-river Hydro Captured Prices, Reference Scenario

Small-size, Run-of-river Hydro Captured Prices, Reference Scenario



Source: MBS Consulting elaborations

25-26	Captured prices closely align with zonal baseload prices and benefit from elevated power prices.
27-50	Captured prices are expected to remain closely aligned with zonal baseload prices in the long term. The overgeneration resulting from increased solar production significantly influences the early 2030s; however, the performance of both sources remains more closely tied to zonal market dynamics than to changes in price structure. Additionally, both sources benefit from a production profile that is more evenly distributed throughout the day and across the year.
Main updates	Short-term outcomes are backed by the trend in commodity prices and their impact on power prices. Mid- and long-term results remain consistent with the previous update

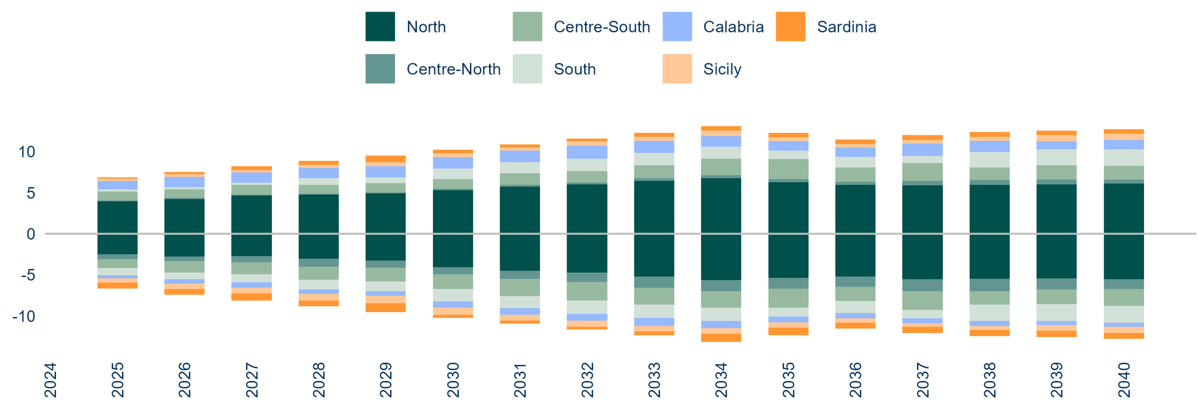
8 Ancilliary Services & Fuels Mix

8.1 Ancilliary Services Volumes, Reference Scenario

THE DEMAND FOR ANCILLARY SERVICES IS EXPECTED TO REMAIN BELOW RECENT LEVELS DUE TO CHANGES IN SYSTEM MANAGEMENT STRATEGIES IMPLEMENTED BY THE TSO AND INVESTMENTS IN GRID INFRASTRUCTURE AT CRITICAL NODES. HOWEVER, IN THE LONG TERM, THE EXPANSION OF RENEWABLE ENERGY CAPACITY IS LIKELY TO DRIVE AN INCREASED NEED FOR SYSTEM SERVICES

ASM Ex-ante Zonal Volumes, Reference Scenario

TWh



Source: MBS Consulting elaborations

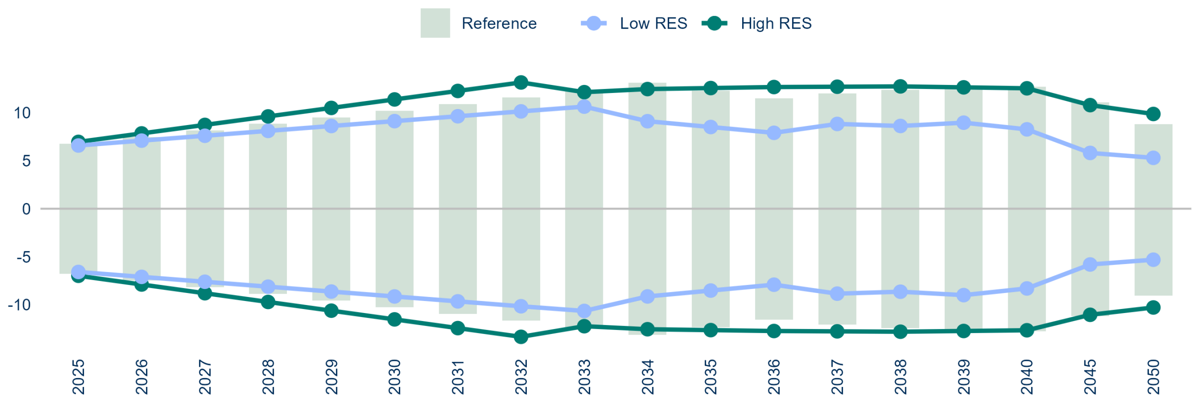
25-26	Procured ex-ante ancillary services volumes are expected to partially recover from 2022 but will remain below historical levels due to: (i) availability of thermoelectric reserves, (ii) changes in network management practices by Terna since the 2022 cost-containment scheme, and (iii) feasibility intervals imposed on power plants under the new Intra-Day Market structure.
27-30	The exit of coal-fired units on the mainland and the progressive increase in the energy mix of renewable production are compensated by the entry of (i) new thermoelectric and energy intensive storage capacity sustained by the CM mechanism, and (ii) the diffusion of power intensive BESS that are going to reduce the need of ex ante scheduling, given the availability of flexible resources in the system.
31-50	The increasing share of renewables in the energy mix will be balanced by (i) the addition of new thermoelectric capacity and storage systems supported by the Capacity Market mechanism and MACSE. This is expected to reduce the need for ex-ante scheduling, thanks to the greater availability of flexible resources within the system.
Main updates	ASM volumes reflect recent structural market trends throughout the simulated horizon. Upward and downward volumes from our model are symmetric due to the deterministic simulation approach. The contingent portion of the balancing market linked to real-time imbalances is not included in the estimates.

8.2 Ancilliary Services Volumes, Alternative Scenario

ANCILLARY SERVICES EX-ANTE VOLUMES EVOLVE ACCORDING TO THE COMPOSITION OF THE GENERATION MIX AND DAM DYNAMICS IN THE DIFFERENT SCENARIOS. IN THE POST-2030 SCENARIO, STORAGE SYSTEMS AND GRID REINFORCEMENTS ARE EXPECTED TO LIMIT THE EXPANSION TREND IN THE THREE SCENARIOS

ASM Ex-ante Zonal Volumes, Alternative Scenario

TWh



Source: MBS Consulting elaborations

25-26

Procured ex-ante ancillary services volumes are projected to remain low compared to recent levels in the alternative scenarios as well, with variations arising from the differing degrees of competition in the thermoelectric sector within the Day-Ahead Market. This competition results in varying levels of running reserves.

27-30

In the High RES scenario, the swift expansion of non-programmable renewable generation is mitigated by advancements in grid infrastructure and the accelerated deployment of energy-intensive storage solutions. In contrast, the Low RES scenario sees the proliferation of less flexible resources, thereby increasing the demand for additional volumes in the Market for Secondary Reserves.

31-50

In the High RES scenario, continued grid development and significant growth in energy-intensive storage assets contribute to limiting ASM volumes. In contrast, in the Low RES scenario, ASM volumes remain stable due to a greater presence of CCGT in the Day-Ahead Market and the continued operation of coal plants until 2035. Additionally, the development of energy-intensive storage facilitates better regulation of the system.

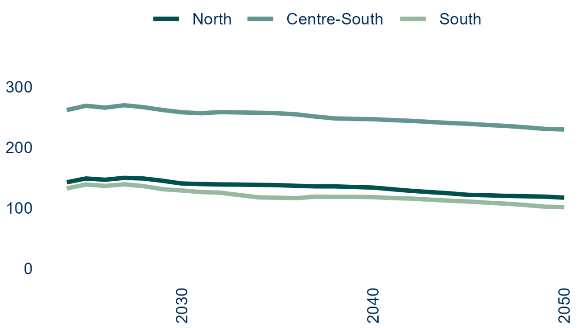
Main updates

ASM short-term volumes incorporate the variations in commodities level.

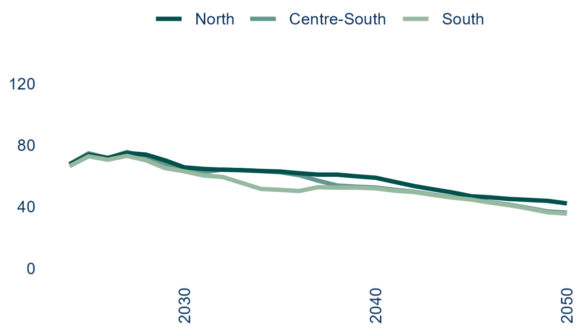
8.3 Ancilliary Services Market prices

GRID BOTTLENECK RESOLUTION AND THE PENETRATION OF BESS ARE KEY DRIVERS OF FUTURE COMPETITIVE DYNAMICS IN THE ANCILLARY SERVICES MARKET. THE CAPACITY MARKET STRIKE PRICE (FOR DELIVERY YEARS) MAY EMERGE AS THE REFERENCE UPPER PRICE, SIGNIFICANTLY AFFECTING THE CENTRE-SOUTH MARKET ZONE.

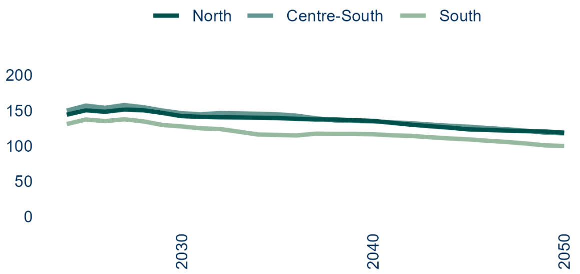
Start-up



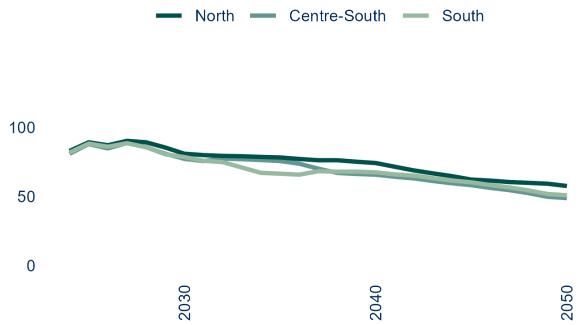
Shut-down



Upward regulation



Downward regulation



Source: MBS Consulting elaborations

25-26

In the delivery years of the Capacity Market's, the strike price is anticipated to exert a cap on prices for start-up and upward regulation, particularly in the Centre-South market zone. However, the decline in ASM volumes may promote increased price competition across Italy compared to previous years.

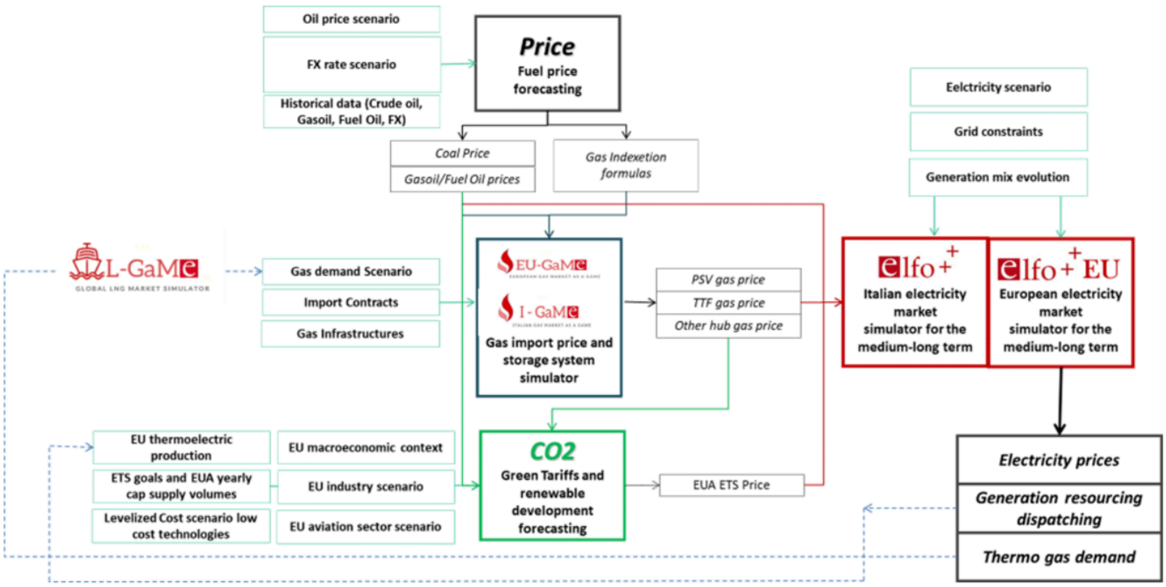
27-50

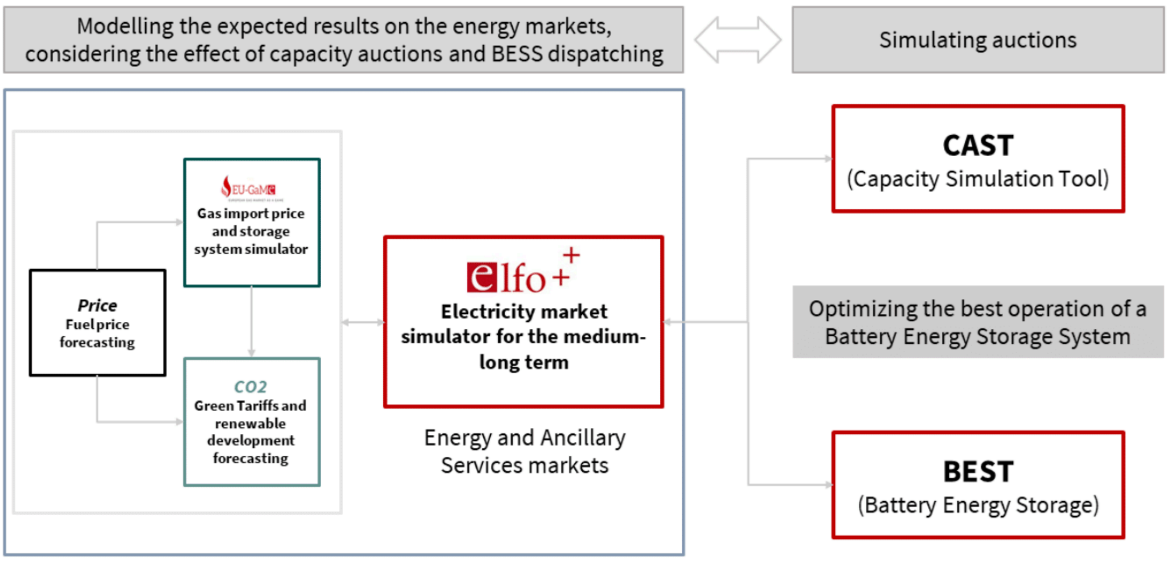
Price competition in the ancillary services market is expected to increase gradually as innovative technological solutions, such as electrochemical storage, become available at more competitive prices. Assuming the extension of the capacity remuneration mechanism, the strike price, along with the Levelized Cost of Storage (LCOS) of batteries, could emerge as key factors shaping ancillary services prices in the future.

Main updates

Price projections are derived from a statistical approach that analyzes the historical bidding strategies of market participants in the ancillary services market. It is assumed that the historical distributions of price spreads between Day-Ahead Market (DAM) and ancillary services prices for each type of service will remain constant in the future. In comparison to the previous release, the updated short-term price projections for ancillary services now reflect the impacts of revised assumptions regarding DAM dynamics and prices.

9 Our Suite of Market Models





ELFO ++ suite has been included among the benchmark models for energy systems' planning in the World Bank database and it is included in the top list of electricity market simulation models prepared in 2017 by the Joint Research Center of European Commission. ELFO ++suite and its database are used for research acvities in numerous universities with which REF-E has a consolidated collaboration (Florence School of Regulation, University of Milan-Bicocca, Bocconi University, Milan Catholic, Milan Polytechnic, Turin Polytechnic, University of Pavia, University of Padua, University of Verona, others).

10 Acronyms

ACER	Agency for the Cooperation of Energy Regulators
AL	Adriatic Link
ARERA	Autorità di Regolazione per Energia Reti e Ambiente
ASM	Ancillary Services Market
BAU	Business-As-Usual
BESS	Battery Energy Storage System
BM	Balancing Market
CALA	Calabria, market zone of the Italian system
CCGT	Combined Cycle Gas Turbine
CDS	Clean Dark Spread
CM	Capacity Market
CNOR	Centre-North, market zone of the Italian system
CpC	Cost per Cycle (referred to BESS)
CRM	Capacity Remuneration Mechanism
CSS	Clean Spark Spread
CSUD	Centre-South, market zone of the Italian system
DAM	Day-Ahead Market
EC	European Commission
ECB	European Central Bank
EI	Energy Intensive (referred to BESS)
ETS	Emission Trading System
EV	Electric Vehicles
FED	Federal Reserve (US)
GCV	Gross Calorific Value
GDC	Gross Domestic Consumption
GDP	Gross Domestic Product
GHG	Green House gases
GME	Gestore dei Mercati Energetici
GSE	Gestore dei Sistema Energetico
GY	Gas Year
H&C	Heating and Cooling
HVDC	High Voltage Direct Current
IDM	Intraday Market
IMF	International Monetary Fund
IPEX	Italian Power Exchange
LNG	Liquefied Natural Gas
NDP	National Development Plan
NIECP	National Integrated Energy and Climate Plan
NORD	North, market zone of the Italian system
NRRP	National Recovery and Resilience Plan

OCGT	Open Cycle Gas Turbine
OECD	Organization for Economic Co-operation and Develpment
OTC	Over-the-counter
PdS	Piano di Sviluppo (Development Plan, Terna)
PEV	Pure Electric Vehicle
PHEV	Plug-in Hybrid Electric Vehicle
PI	Power Intensive (referred to BESS)
PSV	Punto di Scambio Virtuale
PUN	Prezzo Unico Nazionale
PV	Photovoltaic
RES	Renewable Energy Source(s)
RES-E	Electricity from Renewable Energy Source(s)
RIU	Reti Interne di Utenza
SARD	Sardinia, market zone of the Italian system
SEU	Sistemi Efficienti di Utenza
SICI	Sicily, market zone of the Italian system
STEG	Société Tunisienne de l'Electricité e du Gaz
SUD	South, market zone of the Italian system
TAP	Trans Adriatic Pipeline
TIDE	Testo Integrato del Dispacciamento Elettrico
TL	Tyrrhenian Link
TSO	Transmission System Operator
TTF	Title Transfer Facility
TYNDP	Ten-Year Network Development Plan
WACC	Weighted Average Cost of Capital