

Renewables, Grid and Market: The Challenges of the Italian Power System

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Partner Key to Energy



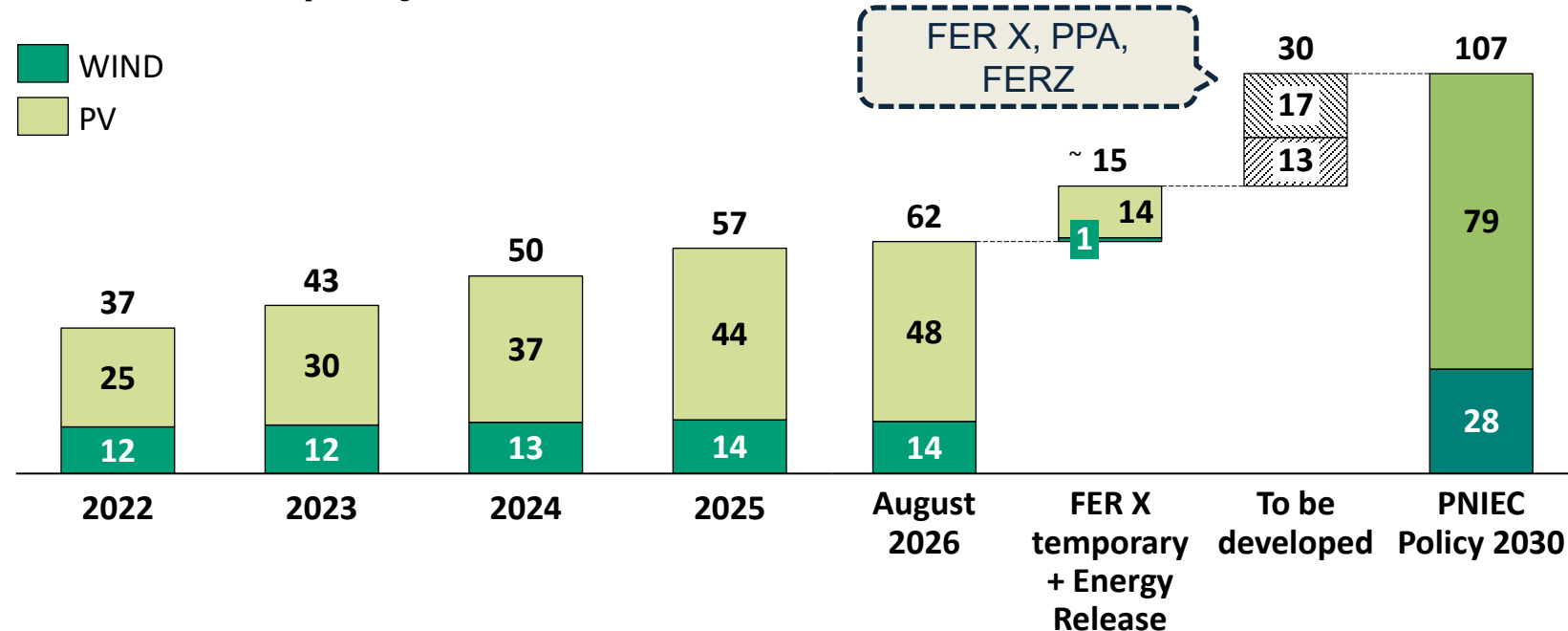
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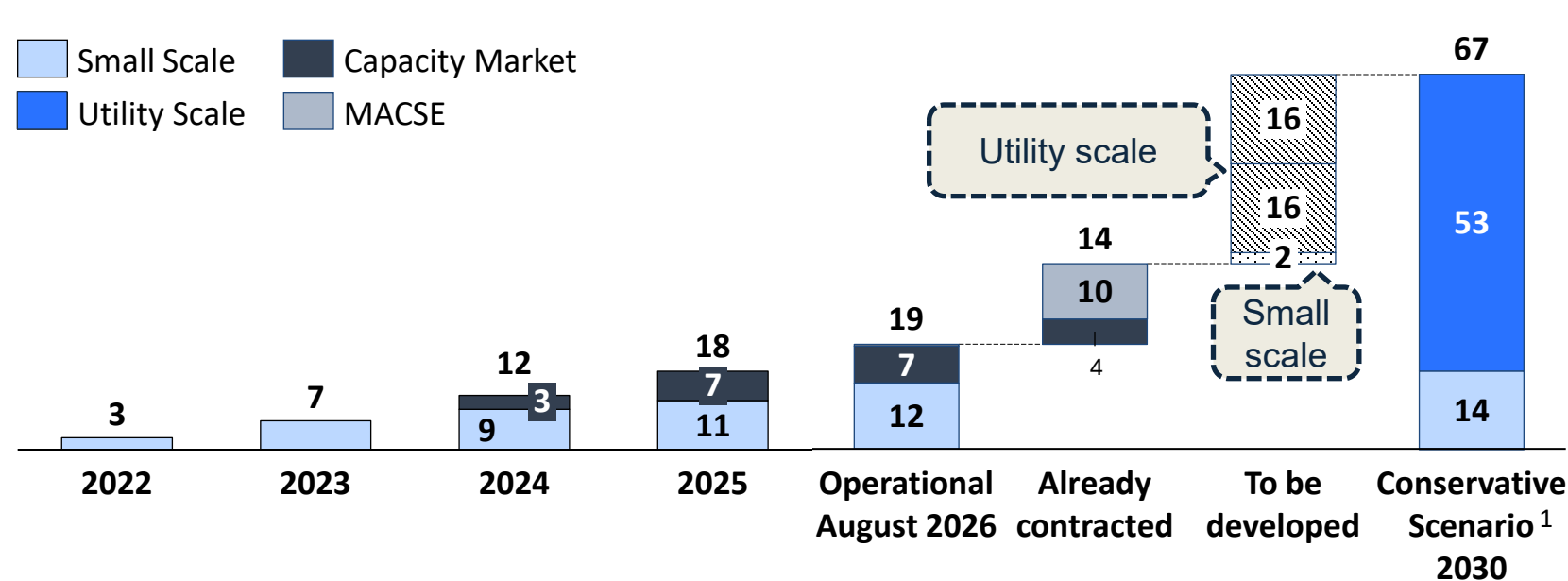


RES and BESS development is on track. Forthcoming steps will require monitoring and alignment

Wind and PV capacity, GW



BESS capacity, GWh



Dic 2026

FER-X

- Definitive: ~ 37.1 GW approved by EU, 30%/y NZIA
- Operating rules to be progressively published

9 Jun 2026

Energy Release

- New PV capacity contracted: ~ 4.5 GW
- Published the result of the auction identifying the entities assuming the obligation to develop RES

2026-2027

FER-Z

- EU Notification sent, waiting for approval
- At least 15 GW reserved for PV profile

24 Nov 2026

MACSE 2029

- Auction Nov 24th; Admission requests closed;
- Maximum quota approved for 2029: 16 GWh
- Maximum cap determined by ARERA: 27.000 €/MWh/y

Q4 2026

Capacity Market 2028

- Demand curve published and revised by Terna
- Reduction in CDP values for new BESS and PV
- Revision of standard specific consumption for Strike Price 2028
- Auction expected by Q4 2026

21 Feb 2026

DL Energia

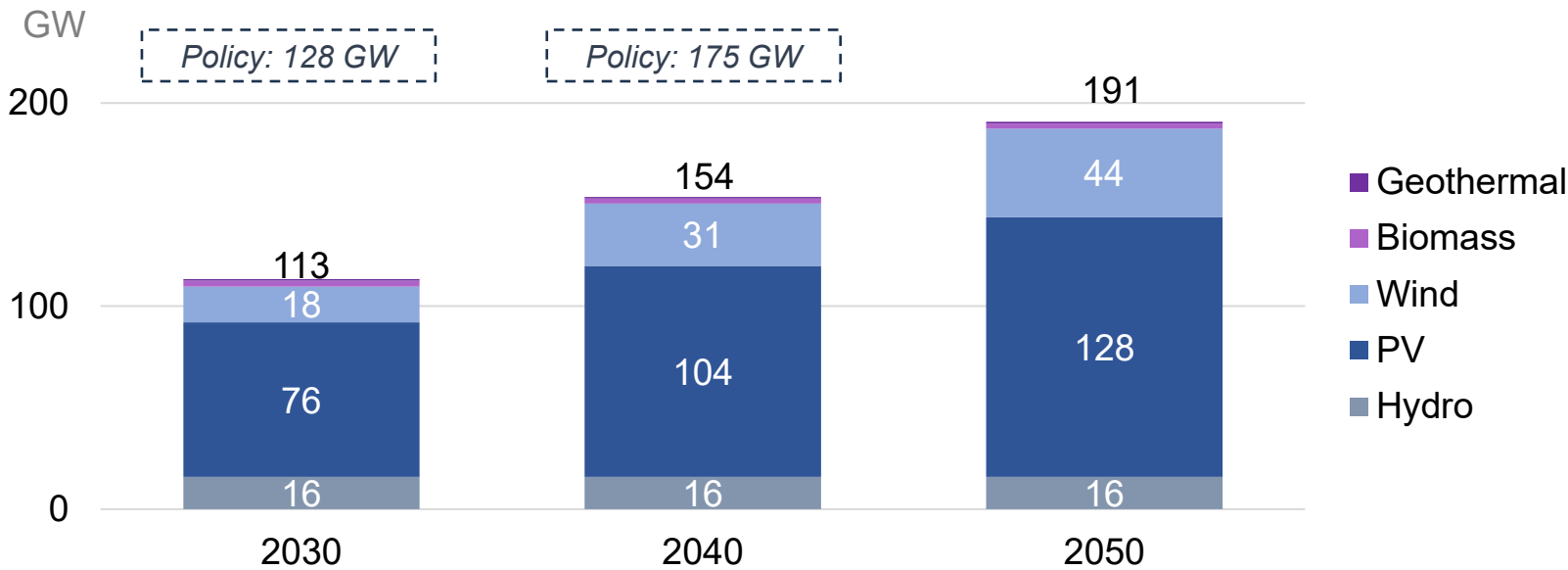
- Implementation still ongoing (art.1, 2, 4, 5, 6, 9, 10)
- Variable gas transport fee reimbursement to thermal producers, gas price cap ("tope iberico") – art. 6
- Waiting for Open season mechanism for connection requests - art.7

Source: KtE reconstruction on Dati Terna and public information
1: Timeline of New Storage Capacity Requirements, Terna

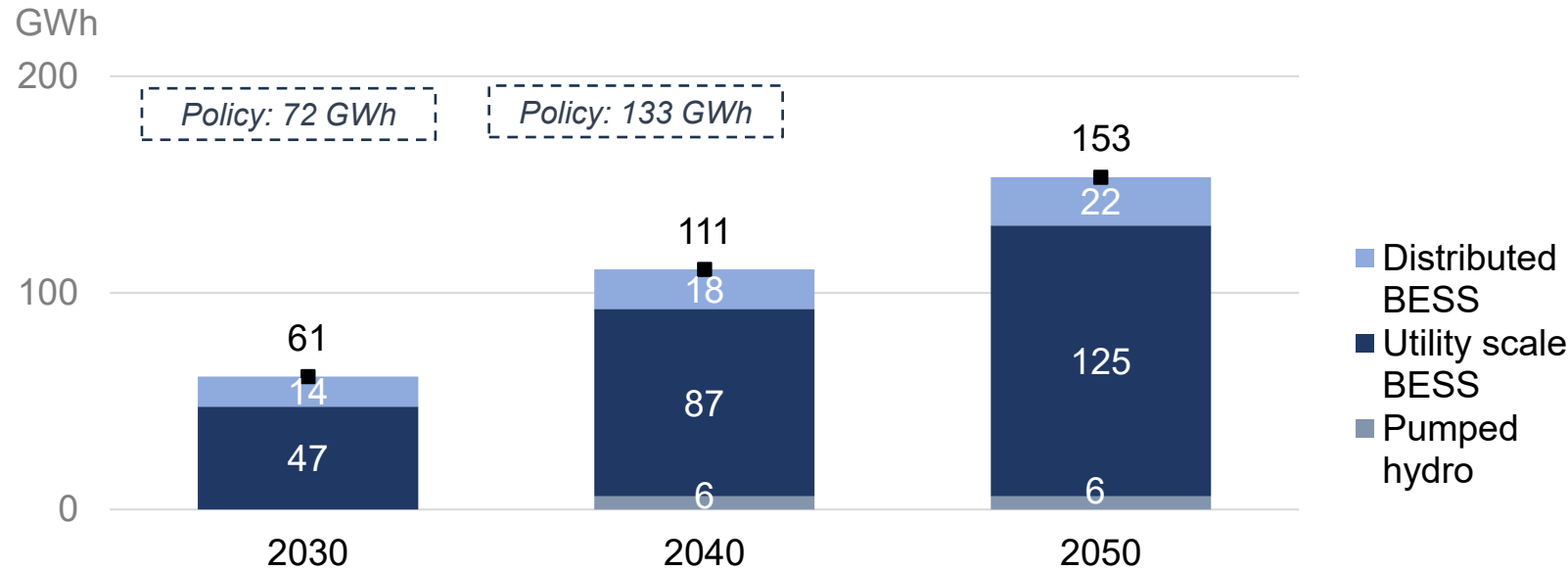


Scenario: RES, BESS capacity and grid expansion

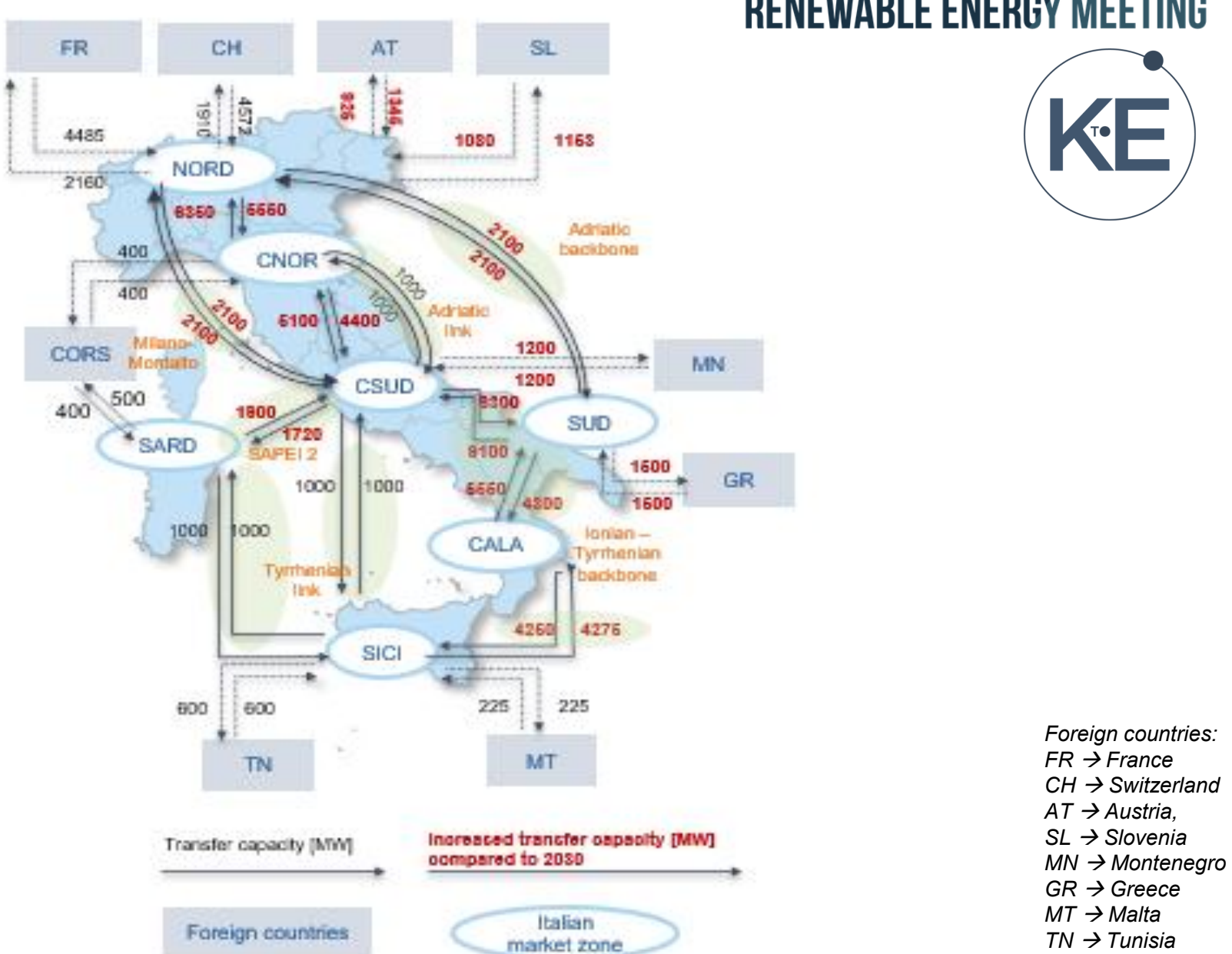
RES Capacity installed - Reference



Storage capacity^{1,2} - Reference



Inter-zonal Net Transfer Capacity - 2050



Renewable expansion requires faster permitting and accelerated BESS and grid development, supported by regulated mechanisms, with 16 GW of additional inter-zonal transmission capacity planned by 2050 to enable RES integration and price convergence.

Source: Italian Power Market Report – Reference scenario Q2 2026



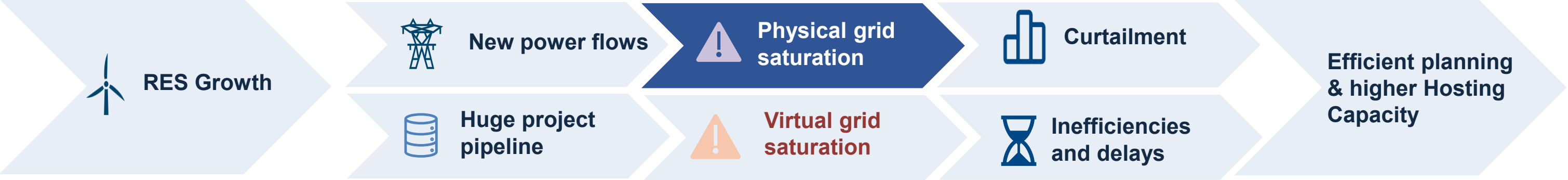
1: In addition to existing pumped hydro capacity (50 GWh).
2: The increase of pumped hydro capacity is due to Pescopagano and Campolattaro, both in CSUD.



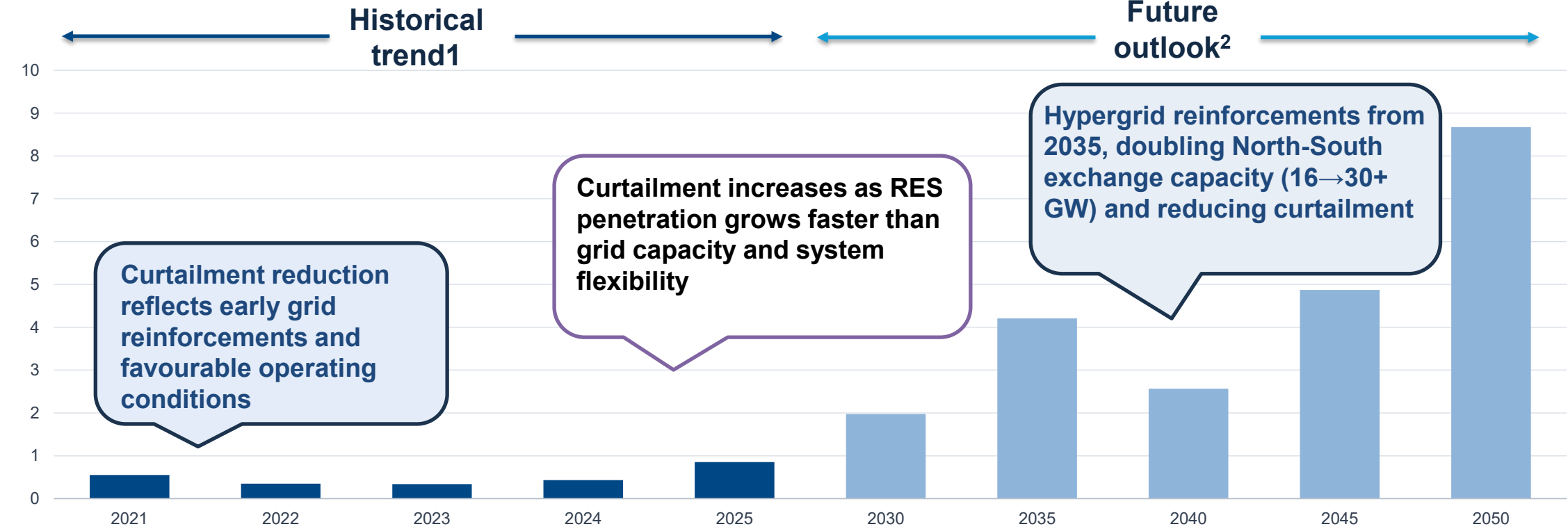
IMPACT ON THE SYSTEM AND THE NEED FOR PLANNING



Physical grid saturation



Curtailment of RES (TWh)



The growth of renewables can lead to physical grid saturation, when grid capacity is insufficient to accommodate power flows in specific areas and hours, requiring increase of transmission capacity, greater flexibility and real-time control to limit congestion and curtailment.

GREATER COMPLEXITY AHEAD

-  **Expected overgeneration**
More hours with generation exceeding demand
-  **Importance of location**
The value of flexibility and the extent of congestion vary by area, therefore location is a key factor

MITIGANTS

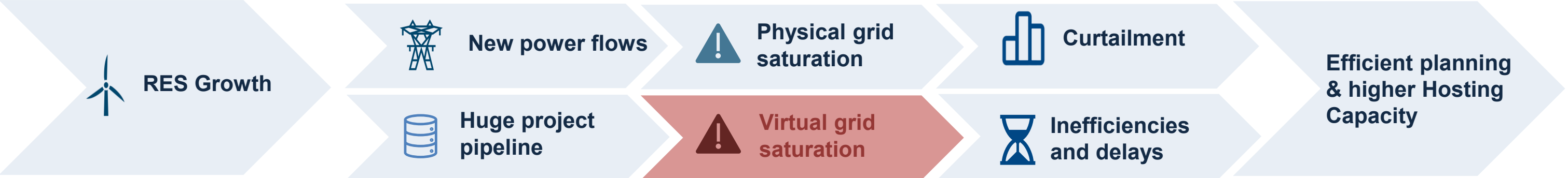
-  **Grid expansion**
New transmission infrastructure (e.g. Hypergrid) to increase interzonal exchange capacity and hosting capacity for new connections
-  **Greater need for flexibility**
BESS, demand response and system services
-  **Real-time control**
Greater observability and controllability of distributed resources through UPDMs³

Source: Italian Power Market Report – Reference scenario Q2 2026

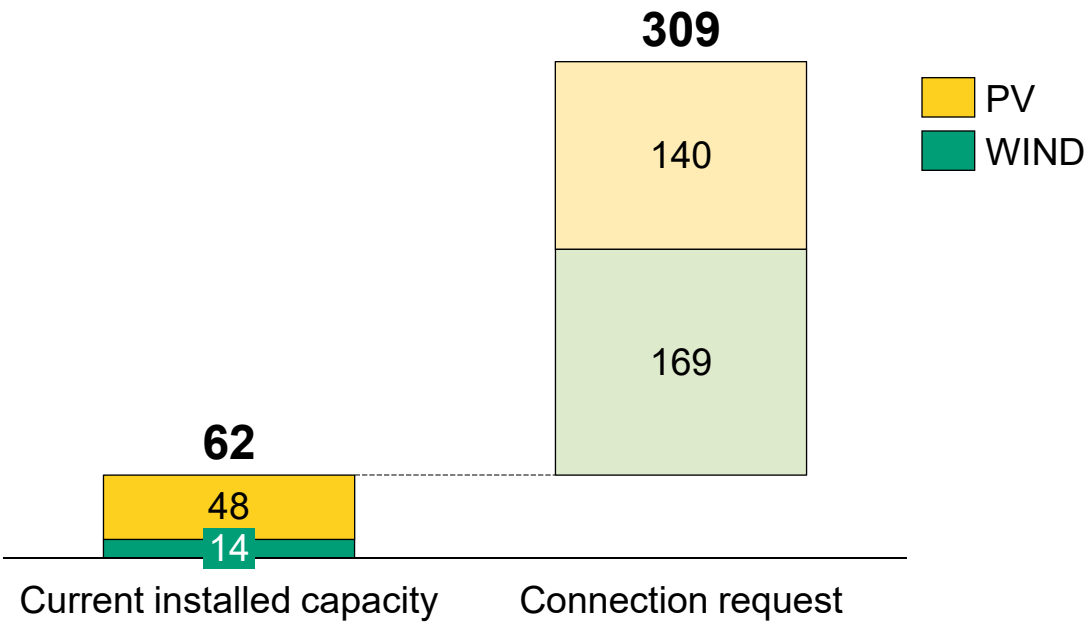
1: Source: ARERA, based on Terna data (Reports 335/2023, 344/2025, 301/2026) – energy not produced due to modulation;



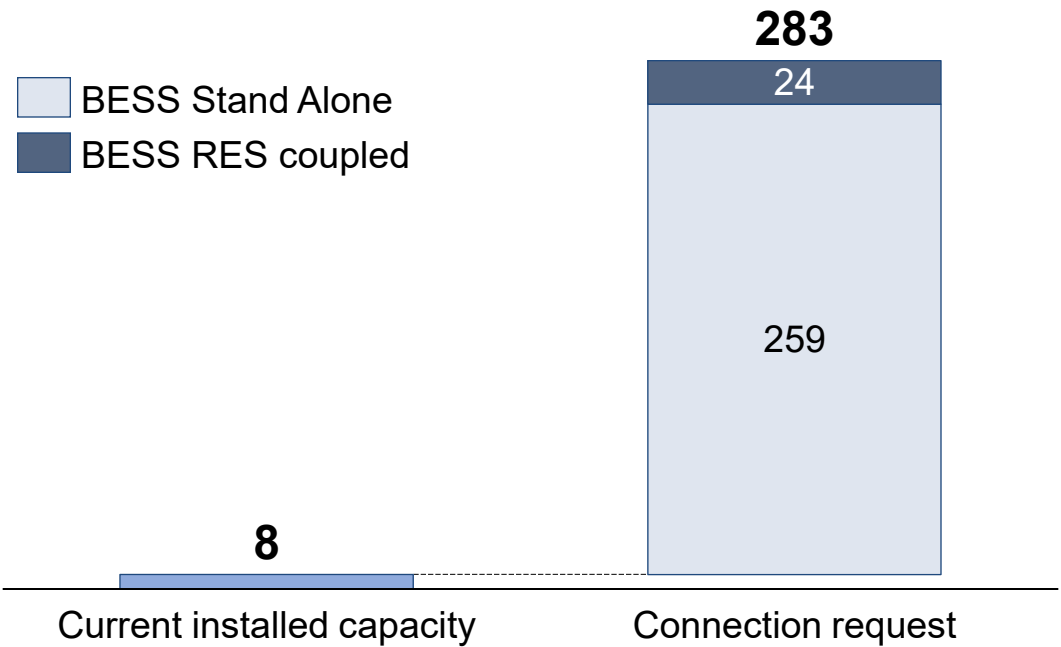
Virtual grid saturation



RES installed vs. connection request capacity [GW]



BESS installed vs. connection request capacity [GW]

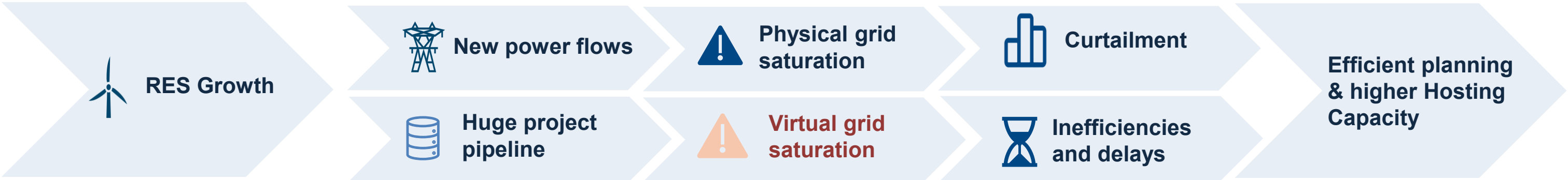


Virtual grid saturation is driven by excessive connection requests and theoretically committed grid capacity, increasingly at transmission level as RES shifts from small distributed plants to large utility-scale installations. This can hinder new connections and create inefficiencies.

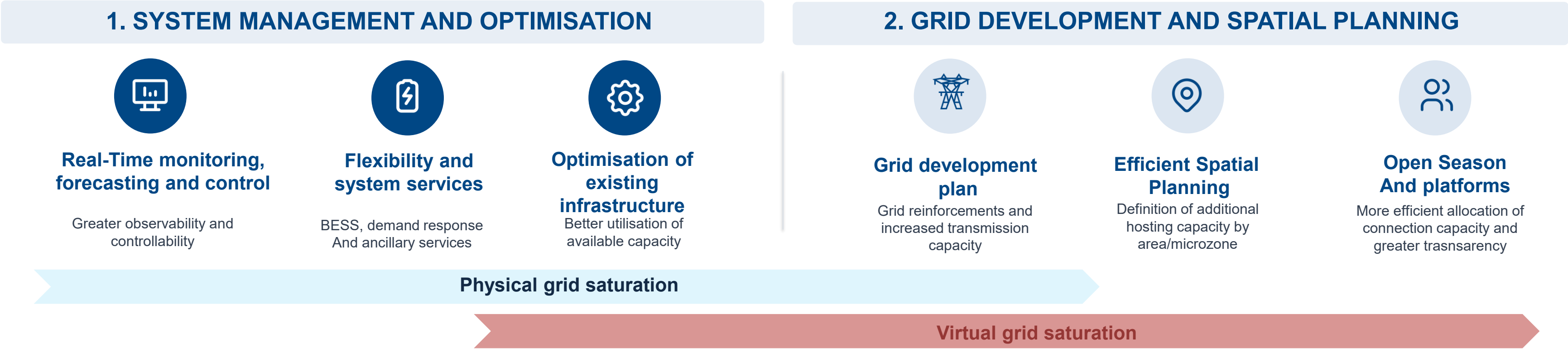
Source: Italian Power Market Report – Reference scenario Q2 2026



Efficient planning & higher hosting capacity



THE GOAL: INCREASING HOSTING CAPACITY



Increasing hosting capacity requires an integrated approach combining real-time grid management and flexibility with coordinated system development and connection planning to enable greater RES integration while ensuring a more efficient grid.



Connection reforms and Open Season



AS IS

TO BE

DM MASE
08/09/2026

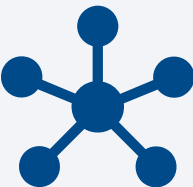


First come, first served

Priority and grid capacity reservation were assigned simply based on the chronological order in which connection requests were submitted to Terna.



Immature projects occupy grid capacity “on paper”



“One-to-one” connection solutions for each request



First ready, first served

Grid capacity reservation is secured only after obtaining the authorization to build the plant.

- Priority based on the authorization publication date
- Capacity is effectively reserved only after obtaining the required authorization (PAS/AU)
- Regulated overbooking: capacity can be allocated beyond the available grid capacity

CRITERIA



Microzones



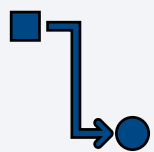
Additional maximum capacity



Quarterly Open Season

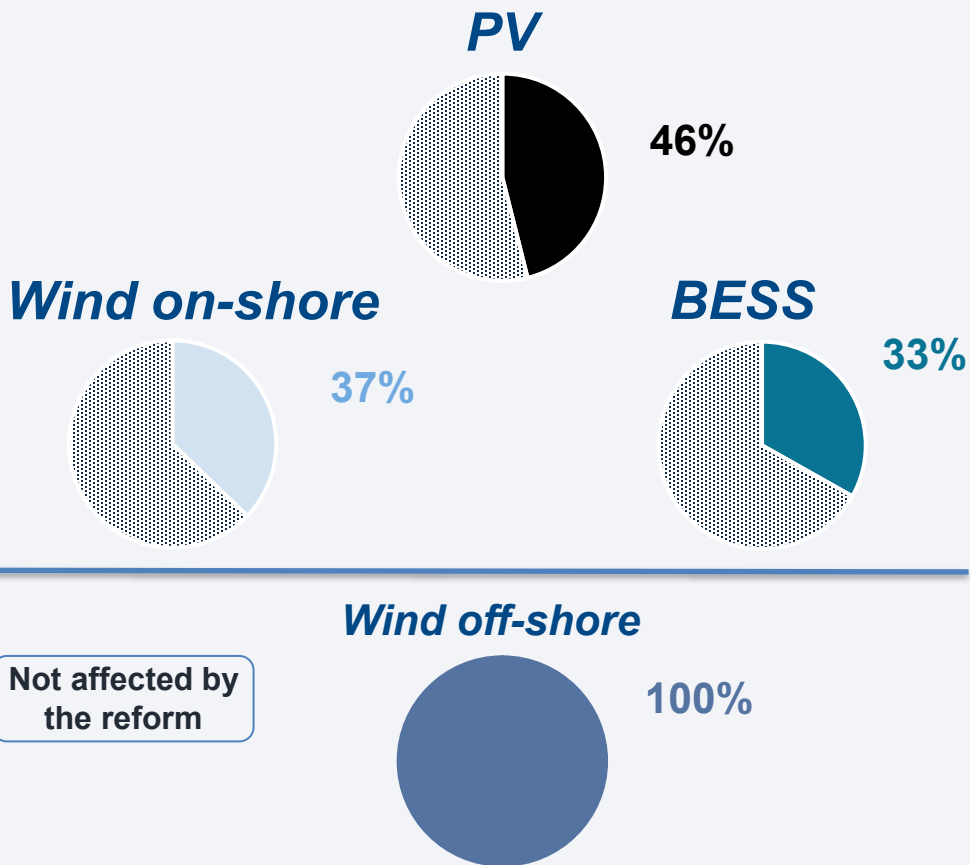


TE.R.R.A. platform



Expected impact of the reform

Share of connection requests associated with mature projects



The reform tackles virtual saturation directly by replacing premature reservation with authorization-based allocation. It also enables more targeted physical grid investment by giving Terna a clearer picture of genuinely mature demand, reducing the risk of redundant reinforcement and stranded capacity.





MARKET SCENARIO HIGHLIGHTS

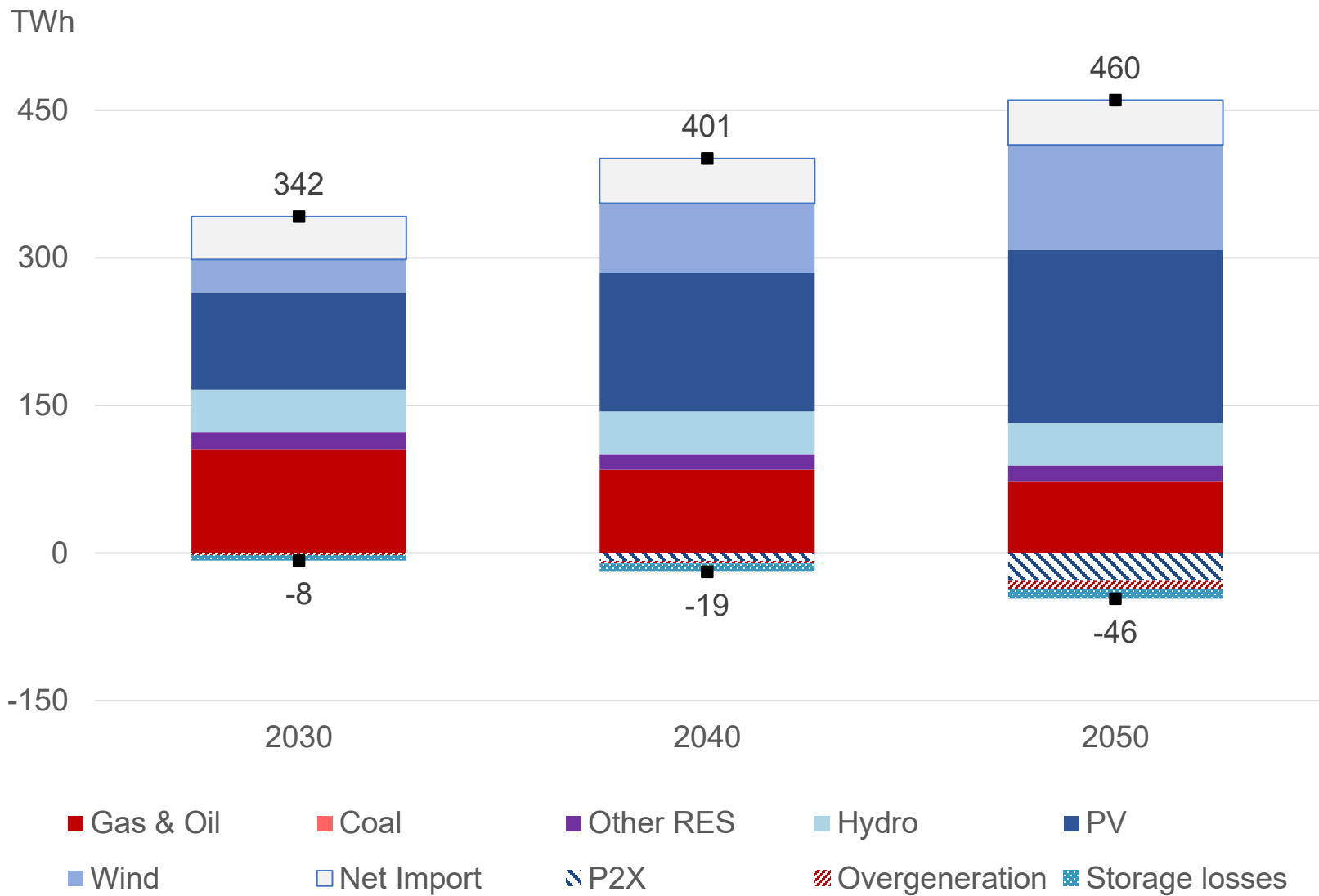
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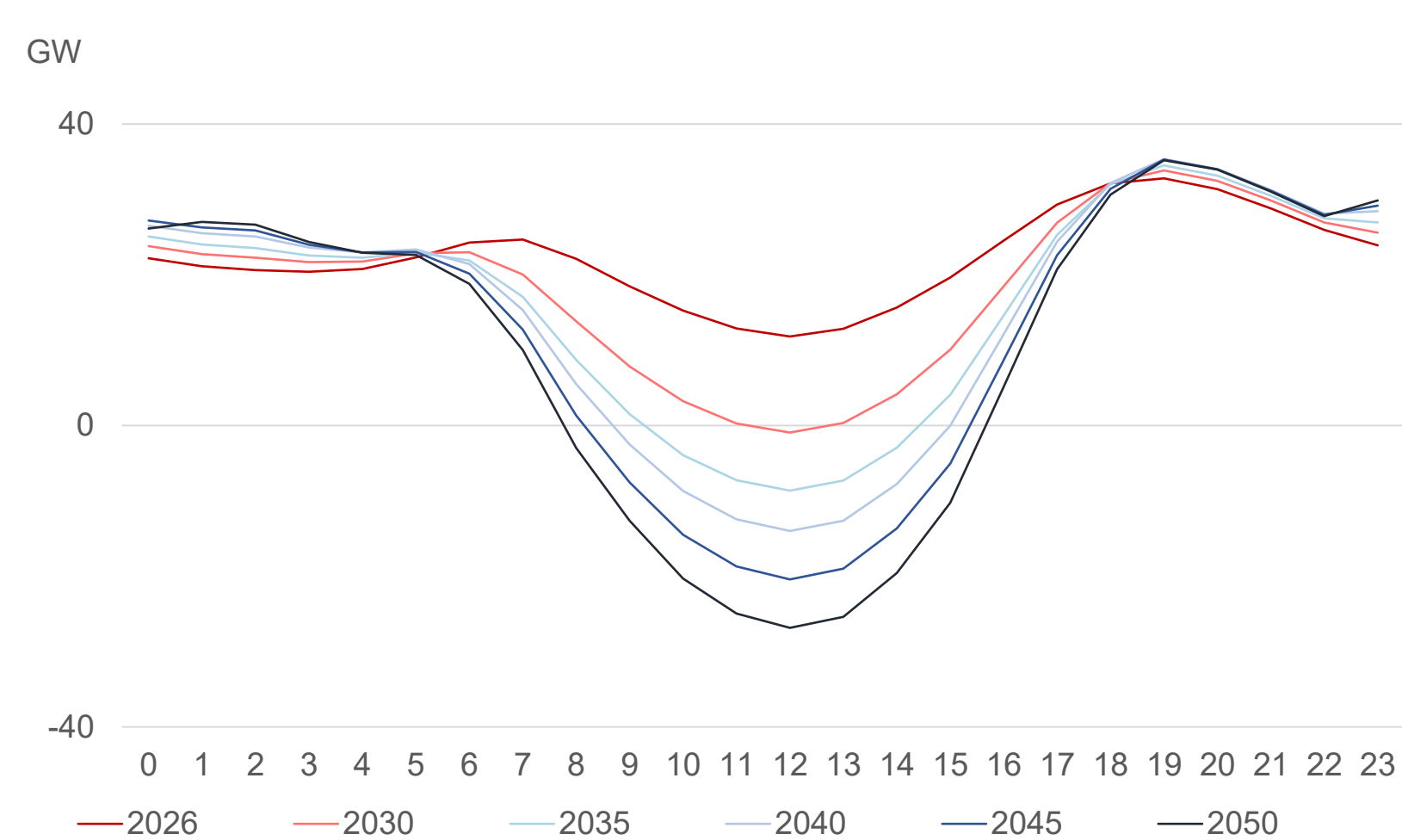


Energy mix – Electricity Balance

Electricity Balance¹ - Reference



Residual load hourly shape - Reference



As renewable generation expands, residual load decreases, and flexible resources are required to manage progressively steeper ramps

The electricity system is shifting toward lower carbon energy mix. Coal-fired generation was phased out between 2024 and 2025 (except in Sardinia). New storage helps to contain the growing volatility of non-programmable sources. In the long term CCGTs provide support to system security and adequacy.

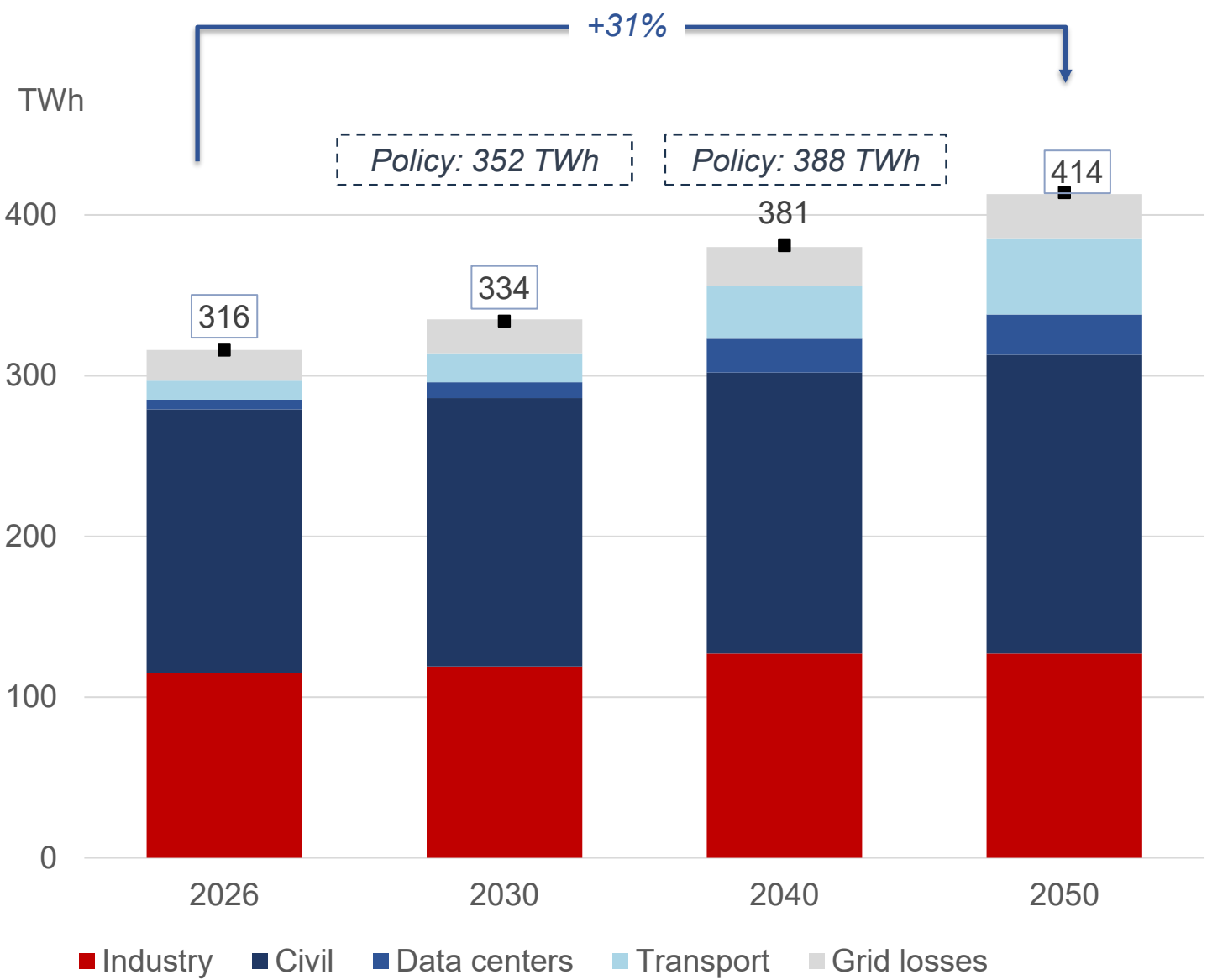
1: Electricity Balance on energy markets (MGP and MI)

Source: Italian Power Market Report – Reference scenario Q2 2026

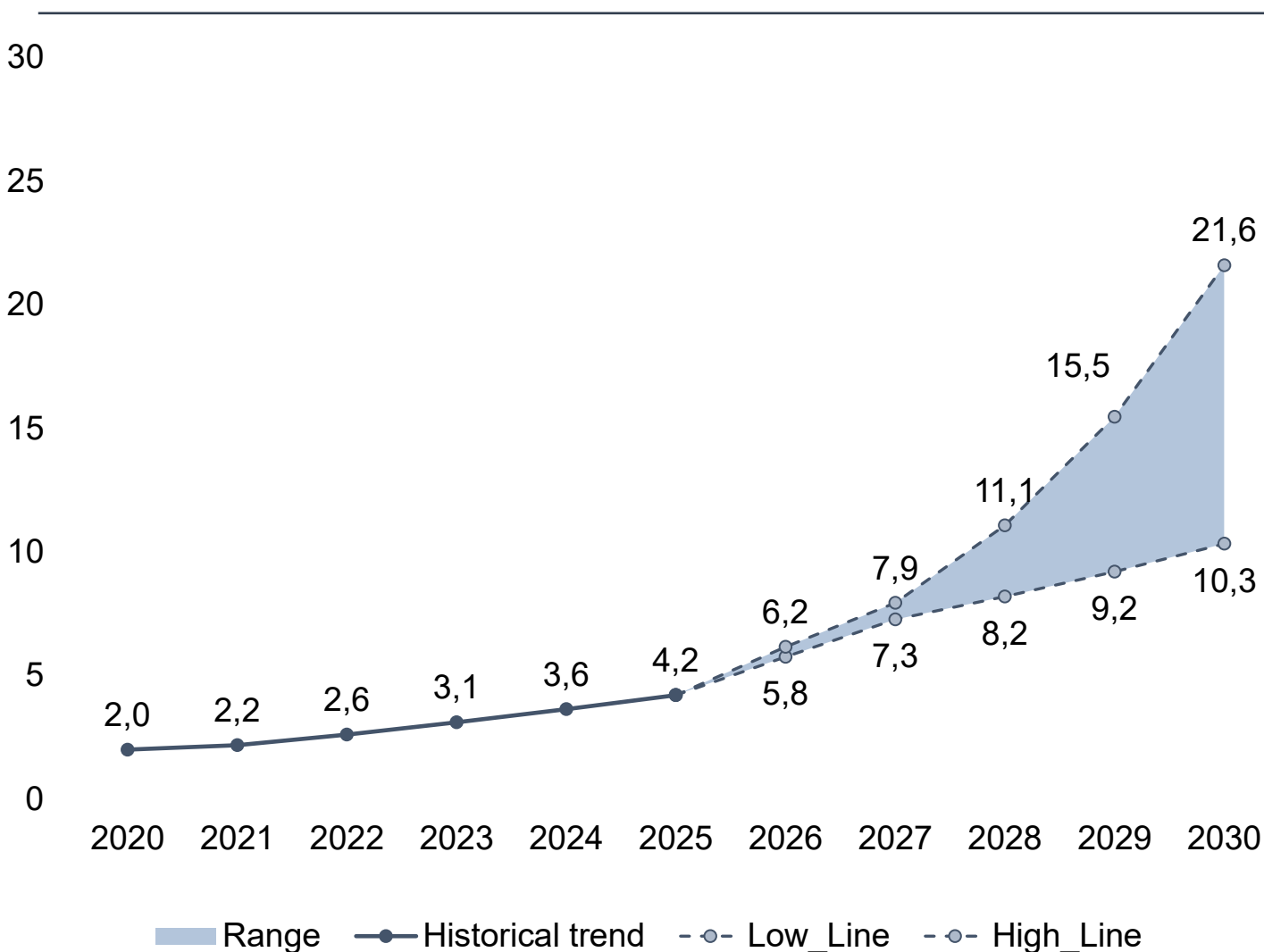


Structural drivers – Electricity demand

Electricity Demand - Reference



DC Demand range (TWh/y)¹ – KtE Outlook



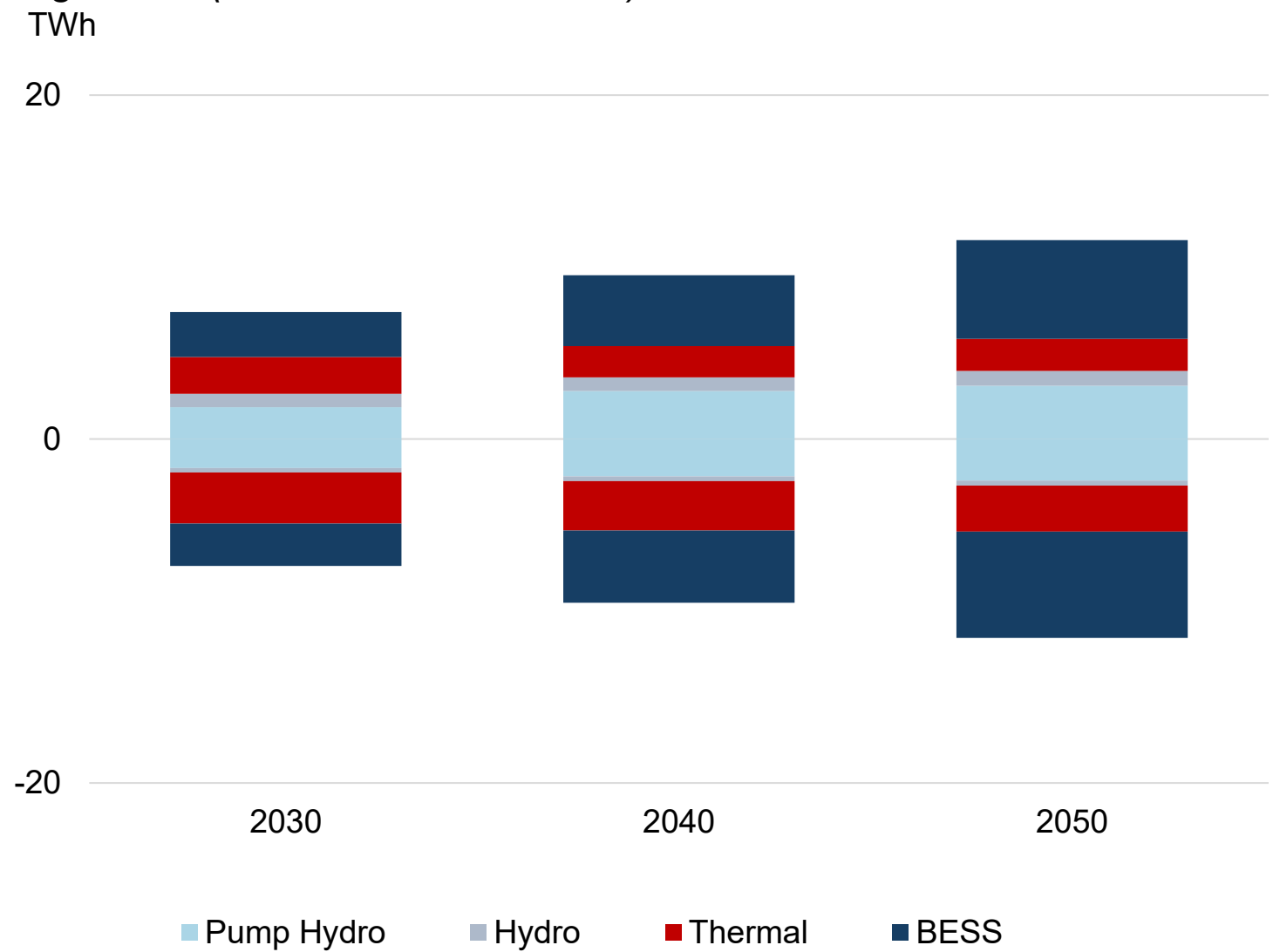
Italy's electricity demand grows led by electrification in civil and transport sectors. Industrial consumption remains mostly stable due combined effect of limited growth and efficiency improvements. Emerging datacenter load partially offsets this trend.

Source: Italian Power Market Report – Reference scenario Q2 2026

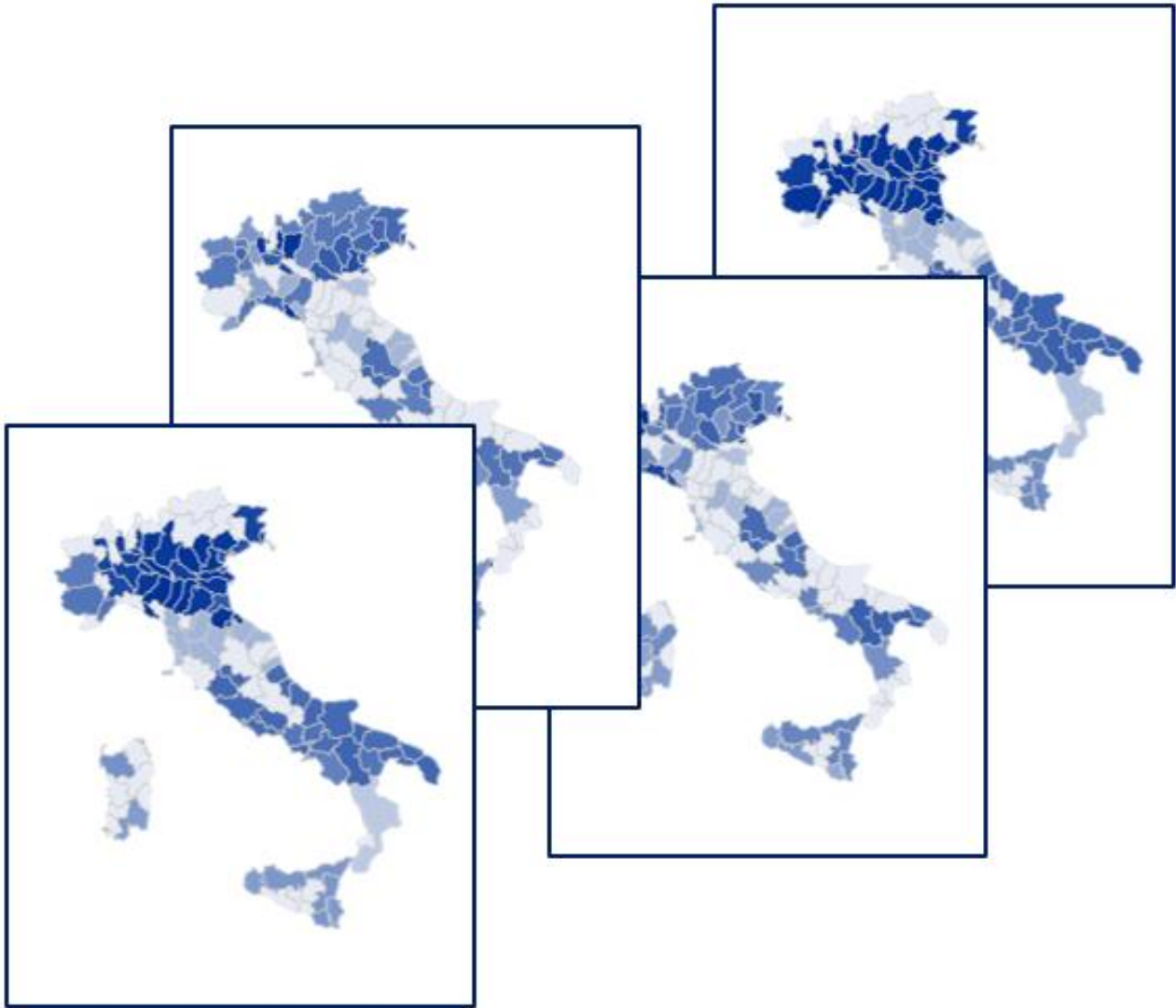


Energy mix – Electricity Balance

Ancillary Service Market Volumes: Downward and Upward regulation (Ex-ante MSD and MB) - **Reference**



Services needs by province, 5y ahead
Upward/Downward Regulation, 220 kV/330 kV



Growing system services needs will reinforce the role of CCGTs as a source of flexibility, while storage technologies — both pumped hydro and BESS — will progressively gain relevance after 2030. Capturing value will require a stronger focus on locational value and nodal exposure

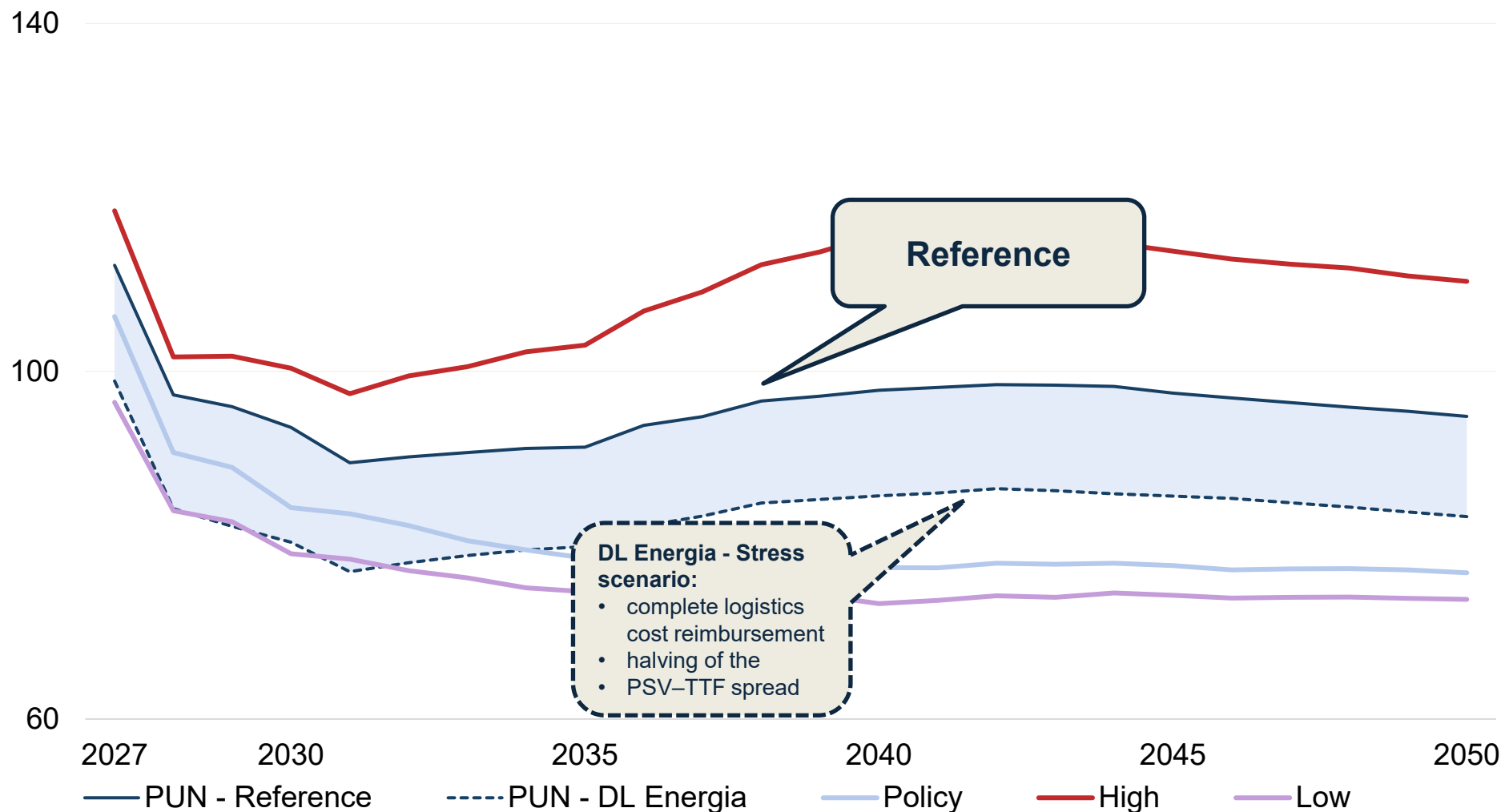
Source: Italian Power Market Report – Reference scenario Q2 2026



Price projections – PUN and Zonal Prices

Baseload PUN: Reference and effects of DL Energia

€/MWh

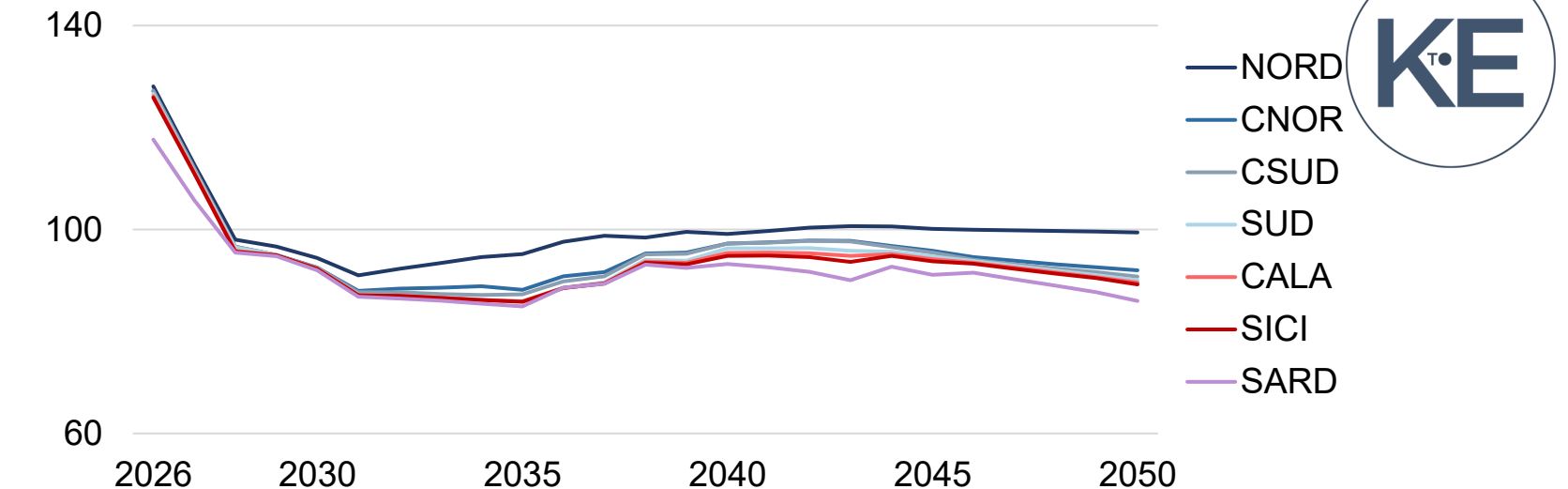


Falling gas cost and progressive RES penetration could cut electricity prices by 2030; in the long term, rising CO2 prices could drive a partial price rebound. Price volatility and zonal price splitting set to increase over the long term.

Full implementation of gas-related cost-containment measures would impact PUN of -12 €/MWh on average.

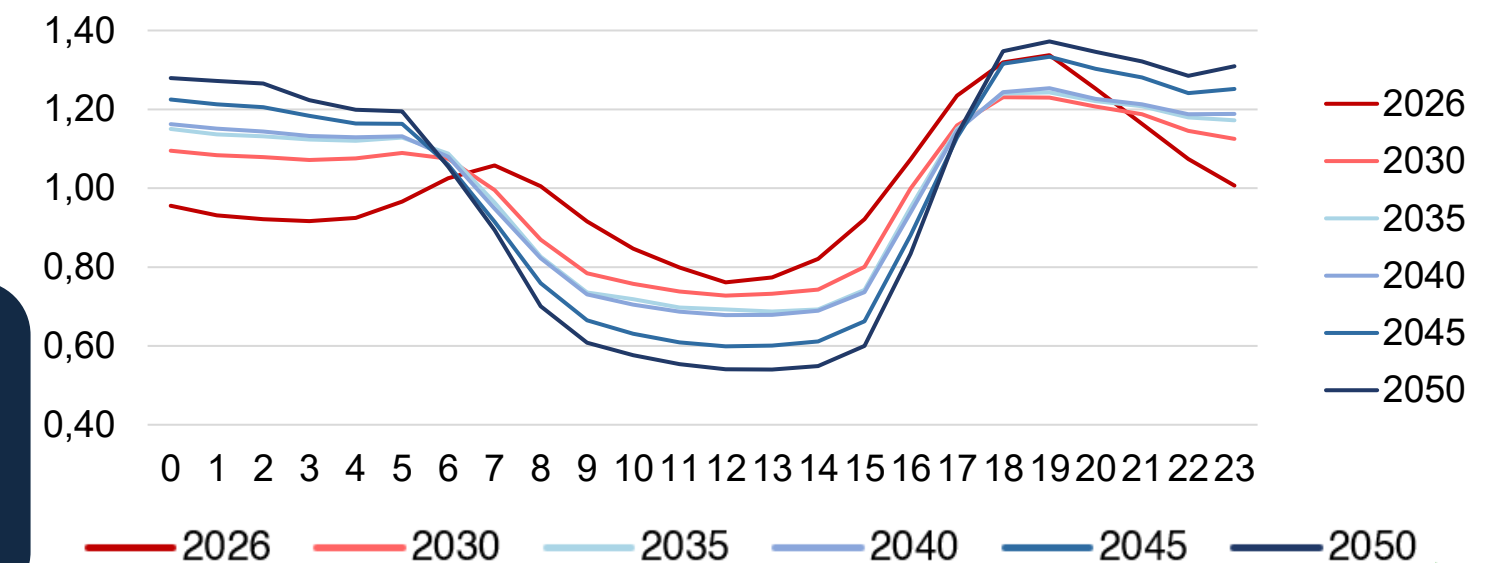
Zonal Prices - **Reference**

€/MWh



PUN hourly shape, annual average - **Reference**

Normalized prices¹



Prices in 2026 real terms

1. Ratio with the average annual PUN. The charts show the price volatility over the 24 hours of the day, represented as an annual average.

Source: Italian Power Market Report – Reference scenario Q2 2026

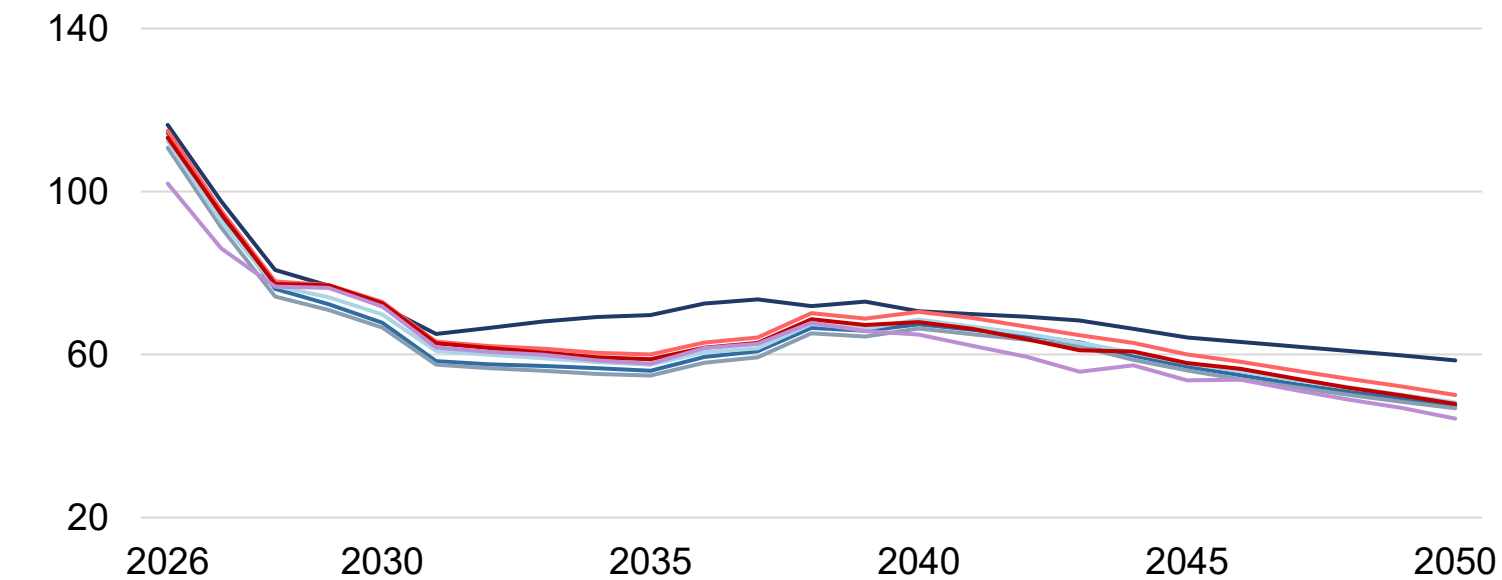


Price projections – Captured Prices



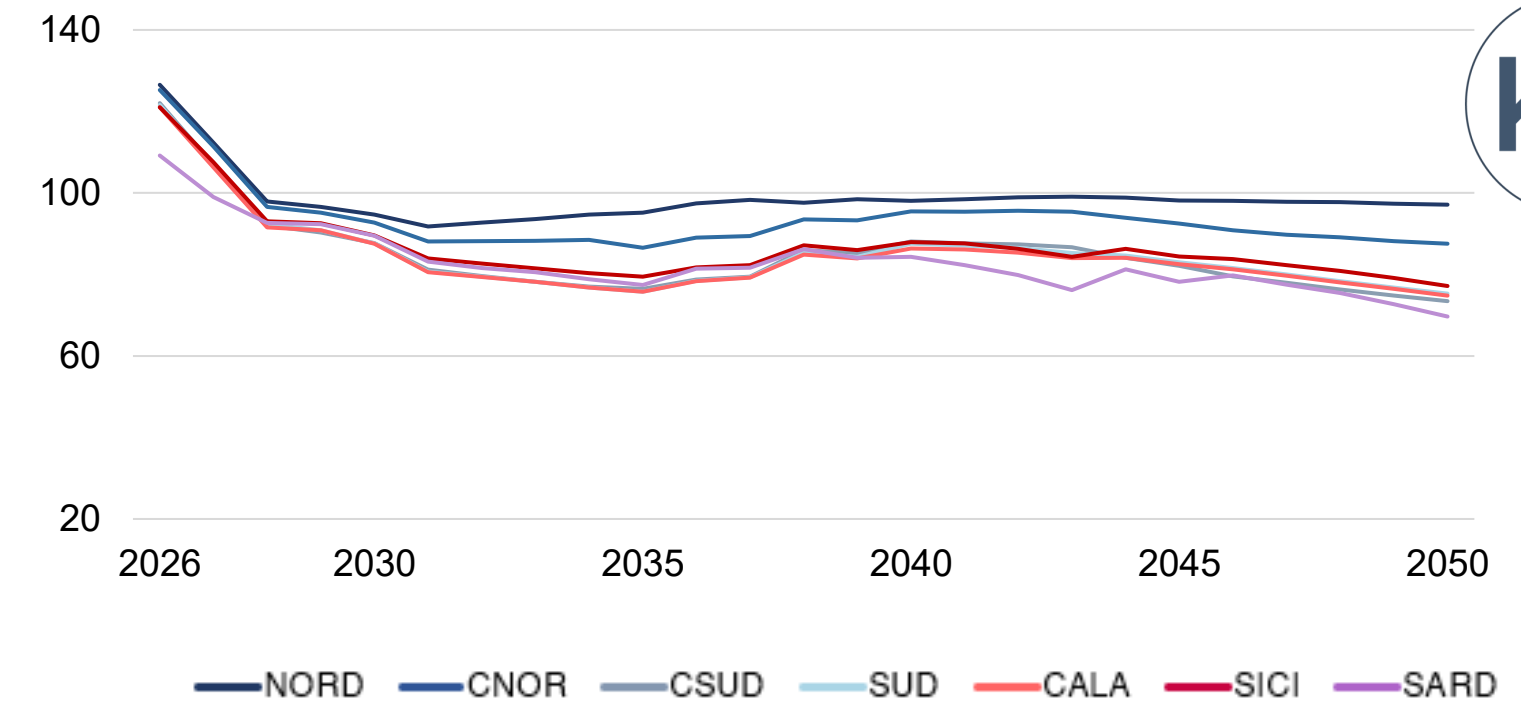
PV tracker, Captured Price - Reference

€/MWh



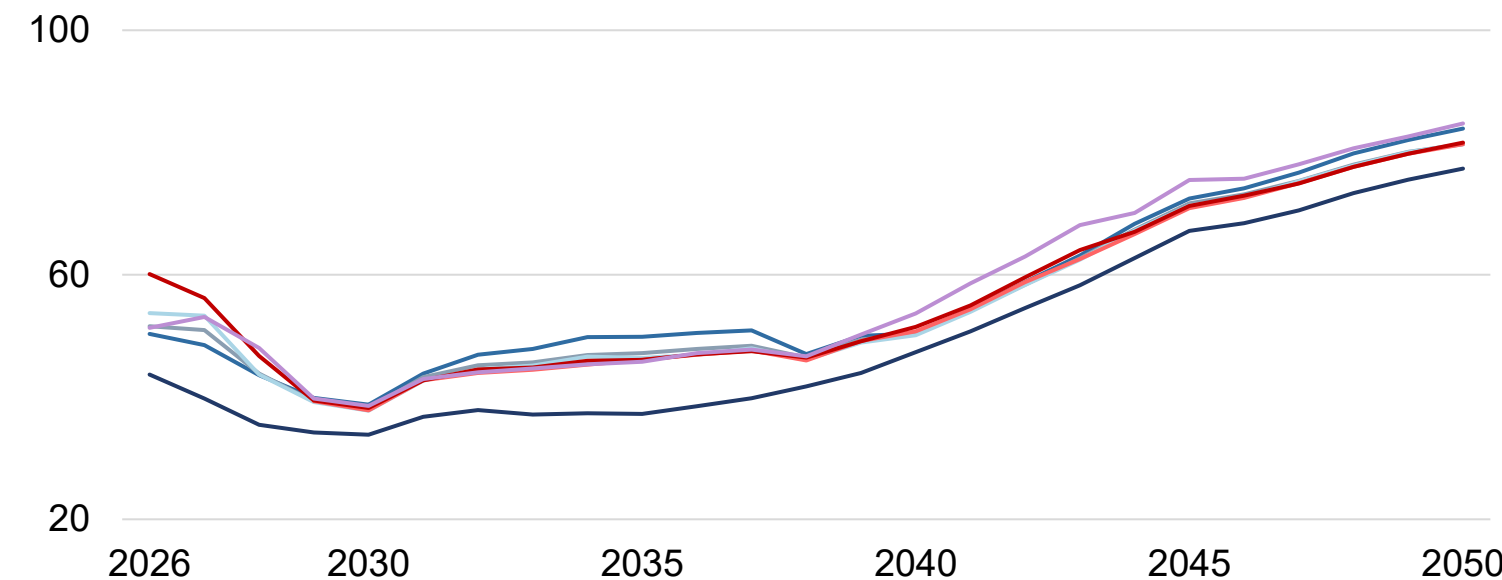
Wind Captured Price - Reference

€/MWh



BESS Captured Spread¹ - Reference

€/MWh



Technology-specific characteristics shape capture prices: PV suffers from cannibalization effect, wind remains broadly linked to baseload prices, while BESS increasingly captures value from growing intraday price spreads.

Prices in 2026 real terms
1: BESS installed capacity in Italy (E/P= 4-8h).MGP- MGP captured spread

Source: Italian Power Market Report – Reference scenario Q2 2026

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RES Business Models

ILLUSTRATIVE



	PURE MERCHANT	NON - REGULATED			REGULATED			SELF - CONSUMPTION
		BASELOAD EQUIVALENT	PPA	COUPLED BESS	FER - X	ENERGY RELEASE	FER - Z	
Structure	Full Merchant	Hedging forward market	Pay-as-Produced (/ Pay-as- Scheduled)	Merchant (/ PPA / Tolling)	CfD on max 95% of injected energy	CfD on 50% of injected energy	CfD on a predefined profile	SSPC (/ TIAD)
Duration	Plant useful life	1 – 3 y	7 – 12 y	Plant useful life	20 y	20 y + max 20 y	15 y	Plant useful life
Main features	Potential Upside Price Risk	Open position management	Total hedge Counterparty Risk	Intrinsic hedge profile cost Optimization	Total hedge Highly competitive auction	Partial hedge Potential upside	Technology mix complexity Profile and volume risk	Price hedge Bill management
Risk-Reward			¹		¹	¹		
Complexity			¹		¹	¹		
Bankability								

Regulated schemes and PPAs constitute main options to provide financial support linked to market prices, encouraging competitiveness and efficiency while still ensuring a stable return on investment.

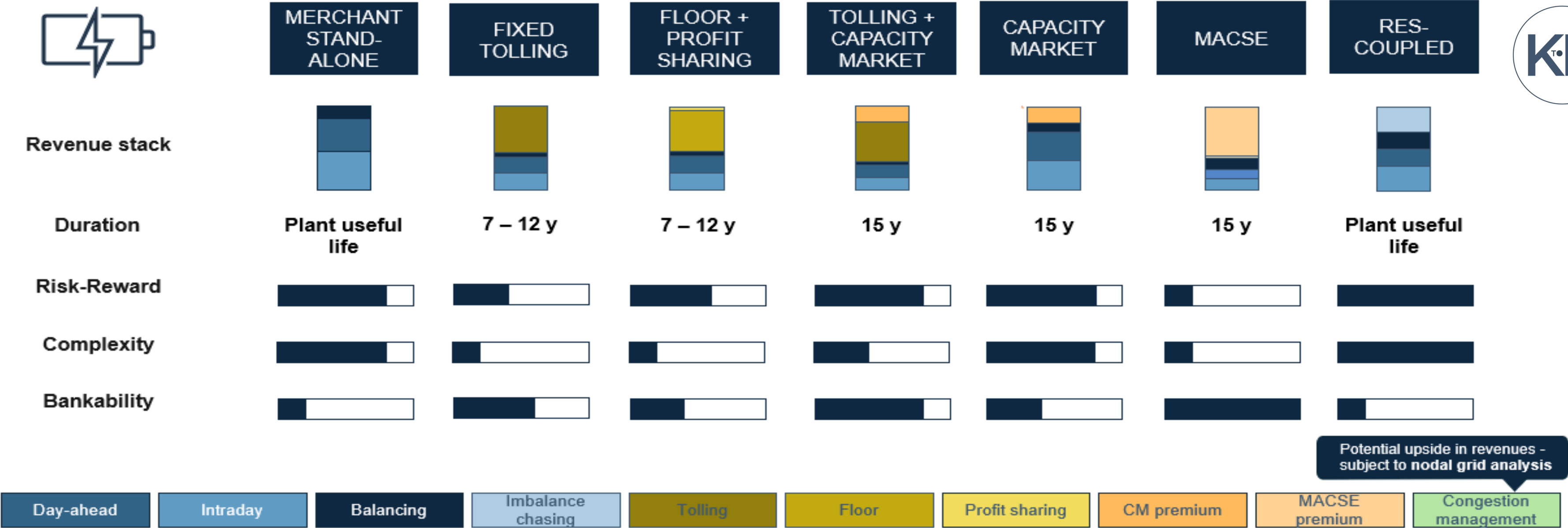
¹.Assumption of no self-dispatching.

Source: Italian Power Market Report – Reference scenario Q2 2026



BESS Business Models

ILLUSTRATIVE



In 2025, BESS strengthened their role in Italy and became increasingly competitive in ancillary services, while business models continued to span from merchant value maximization to contracted structures focused on revenue certainty and risk mitigation.

Source: Italian Power Market Report – Reference scenario Q2 2026

CM revenue estimated using CM 2027 derating factors.
MACSE analysis based of 1st MACSE auction results for a full MACSE project or a hybrid project with remaining merchant tail.



CONCLUSIONS

AS IS

TO BE



Infrastructure

Grid infrastructure designed and authorized by the lead developer

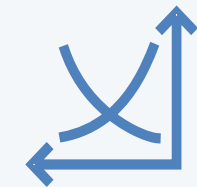
Fragmented connection process with significant authorization and coordination bottleneck



Terna designs, authorizes and builds grid infrastructure on its own initiative

A more streamlined connection process, removing key authorization and coordination bottlenecks

DM 291/2026



Market

RES and BESS deployment supported by dedicated regulated mechanism

Support mechanism provide revenue certainty and foster RES and BESS deployment



Market signals become increasingly important

Price signals, flexibility needs and location becomes increasingly important to maximize project value and to orient investment decisions





Thank you for your attention!

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Italian Power Market Report

*Navigating Economic, Technological, Regulatory,
and Infrastructural Developments
in the Italian Electricity Market*

Q2 Update

*Diversification and investments are the foundations of
energy security*



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