

g-advisory
GRUPO GARRIGUES



2022-Q3 MIBEL pool prices outlook and market services

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Contents

- Why G-advisory – Simulyde?
- 2022-Q3 Regulatory highlights - Brief
- 2022-Q3 Market review
- Model  xPryce!
- Products and contacts
- Results and products overview

Why G-advisory – Simulyde?

g-advisory
GRUPO GARRIGUES

www.g-advisory.com

- ▶ **G-advisory + Garrigues.** Integrated approach combining technical and legal aspects.
- ▶ **Multidisciplinary team.** Industrial Ing., Civil Ing., Mining Ing., Forestry Ing., Chemical Ing, etc.
- ▶ **+ 20 years experience in Energy and ESG.** Supporting our clients in energy transition, sustainability and climate change.
- ▶ **+ 40 countries experience in 5 continents.** Offices in México City, Santiago de Chile, Paris and Madrid.
- ▶ **+ 40 GW of renewable capacity analysed.** Experience in all commercial technologies and innovative projects.
- ▶ **+ 5 years providing advice on electrical market.** MIBEL market outlook and pool price projections.

 **SIMULYDE**
INVESYDE

www.simulyde.com

- ▶ **Invesyde group.** Consultancy and IT services firm.
- ▶ **+ 15 years experience.** Assisting our clients to reach their goals in the energy sector.
- ▶ **+ 5 countries modelled.** Spain, Portugal, France, Italy and UK.
- ▶ **+ 6 major energy agents use our models.** Price model (xPryce) used for price and revenue projection, and ad-hoc models for any energy aspect.
- ▶ **+ 7 years modelling MIBEL.** Price projections, market and regulatory reports.

360° visión of the Spanish electricity sector



In depth knowledge of renewable technologies and market modelling



Comprehensive technical, economic, strategic, environmental and market advisory services.

Technical analysis, pool price projections, PPA, EPC and O&M contracts analysis, hybridisation assessment, storage solution analysis, cost-benefit analysis of own consumption projects, project environmental assessment, etc.

2022-Q3 Regulatory highlights - Brief

01 Royal Decree-Law 14/2022

- The RD-L aims to reduce electricity consumption in businesses and public offices: limitation of the air temperature (between 19°C and 27°C), turn off shop and public buildings lights from 22:00 onwards, etc.
- The RD-L pursues to promote electrification and deployment of renewable energies. Finally, it also speeds up the modification process in the network facilities of the gas grid to adapt them to the injection of renewable gases.

02 EU emergency package to reduce electricity bills in Europe

- The most important measure is the limitation of revenues obtained from the wholesale electricity market to 180 EUR/MWh by technologies that produce without using natural gas (expected to raise about 117,000 MEUR/year). Countries can apply more ambitious measures, e.g. Spain will be able to keep the revenue cap of 67 EUR/MWh.
- It is also relevant the "solidarity contribution" to be borne by the fossil sector (oil, gas, coal and refineries). Around 25,000 MEUR are expected to be obtained by collecting at least 33% of the windfall profits of this sector, to compensate consumers for reducing electricity demand, provide financial support to households and businesses to pay their electricity bills and facilitate liquidity in the markets.
- In parallel, each country must implement the necessary measures to reduce electricity demand by at least 10% (5% in peak hours) until 31 March 2023.

03 Royal Decree-Law 17/2022

- Reduction of VAT on natural gas to 5% and presentation of a new active demand response service (old interruptibility) for demand above 1MW. Also, the "gas adjustment mechanism" will apply to cogeneration. Finally, the criteria for determining transmission grid capacity turns more flexible.

04 Renewable auctions

- Third renewables' auction will take place on October 25 and will offer 520 MW divided into two quotas: one of 140 MW for distributed PV (installations of less than 5 MW with local character) and another of 380 MW for other sources: 220 MW for solar thermoelectric, 140 MW for biomass and 20 MW for other technologies.
- Fourth renewables' auction, which will take place on November 22 and will offer 3,300 MW: 1,800 MW reserved for PV and 1,500 MW reserved for onshore wind.

05 Royal Decree 568/2022

- RD 568/2022 develops a general framework of the regulatory sandbox, defined as an experimental environment in which tests or trials can be carried out within the framework of the execution of pilot projects, to facilitate research and innovation in the electricity sector.

06 CNMC measures

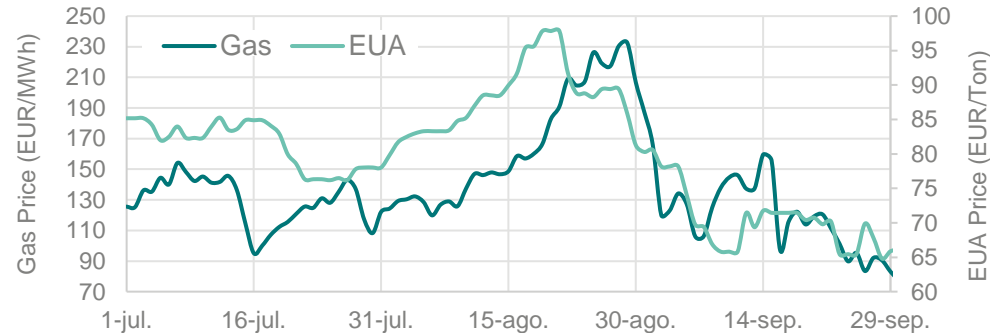
- New measure that alleviates the financial pressure faced by electricity suppliers and direct consumers.
- Approval of the conditions applicable to non-frequency services (CSNF) and other services electricity system, that aims to allow storage and demand to take part in services in which until now only pumped storage plants could (technical restrictions and voltage control).



Further regulatory and market highlights included in our Quarterly subscription to MIBEL pool price projection. [Click here](#) to contact for further information.

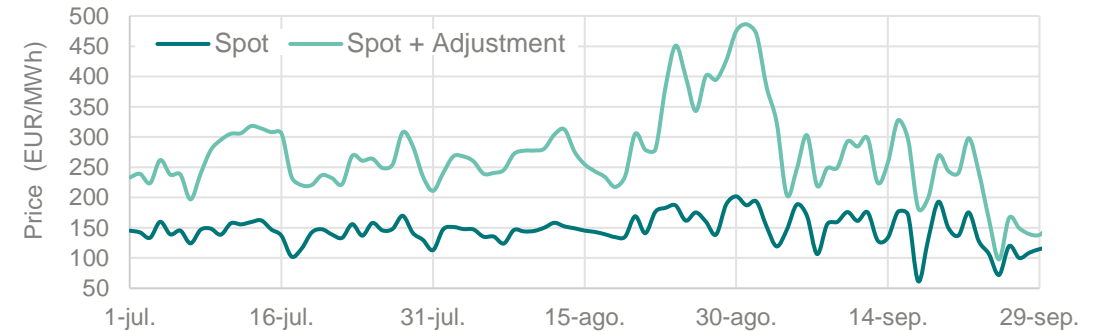
2022-Q3 Market review

Fundamentals (Gas, EUAs)



- Gas prices have experienced an unprecedented record-breaking rise in 2022-Q3.
- Several events with NordStream (leaks in a turbine, preventive works and even leaks in both pipelines), beside the efforts of Member States to fill storages and a very dry summer, have further strained markets.
- Q3 closed with a record average of 138.20 EUR/MWh, 50 EUR/MWh more expensive than 2022-Q2.
- Forward MIBGAS products indicate that high prices may continue: 2022-Q4 at 107.98 EUR/MWh and Yr-2023 at 142.67 EUR/MWh.
- CO2 prices have remained high and stable this Q3, between 65 EUR/Ton and 98 EUR/Ton, with an average of 79.85 EUR/Ton (3.60 EUR/Ton less than Q2). EU Commission President confirmed that there are no major changes expected in the medium-term regarding EU ETS.

Spot-Market price



- 2022-Q3 price remained high, following the gas price trend, affected by the situation with Russian gas. Still, spot price in Spain remained lower than in the rest of Europe due to the gas adjustment mechanism, which has lowered the price by around 12%.
- The reduced gas imports from Russia, a reduction in nuclear generation in France and the drought in Europe pushed the CCGTs more than ever, raising prices.
- During 2022-Q3, nuclear produced 22%, wind-generated 18% and solar 14%, but CCGTs produced more than 34%, being the leading technology in the generation mix.
- In figures, average price was 146.26 EUR/MWh, and the adjustment mechanism was 124.18 EUR/MWh (270.45 EUR/MWh summing both). Regarding futures, 2022-Q4 stands at 156.75 EUR/MWh and CAL-23 goes up to 198.13 EUR/MWh (551.89 EUR/MWh for France), an increase of 23% compared to the price at the end of Q2.

Model



xPrice model key features

The xPryce model, used to simulate the MIBEL electricity market in the analysis for this report, was developed by **Simulyde**.

- **Fundamental Model**, simulating the hourly operation of the electricity system, optimizing timing decisions taken by market agents and representing in detail both generation and demand.
- **Model output, pool hourly price projections** for all the simulated years in the base scenario (the “Base Scenario”) and in all the alternative scenarios; **hourly generation and capture prices for every technology**.
- **Modelling of France included**, due to its paramount importance in MIBEL price formation.
- **Optimization of the operations of plants involved in the market**, in order to simulate the pool dispatch, thermal, renewable and hydro units are represented using all their technical and economic characteristics.
- **Hourly thermal and hydroelectric programming**, for a yearly time horizon.

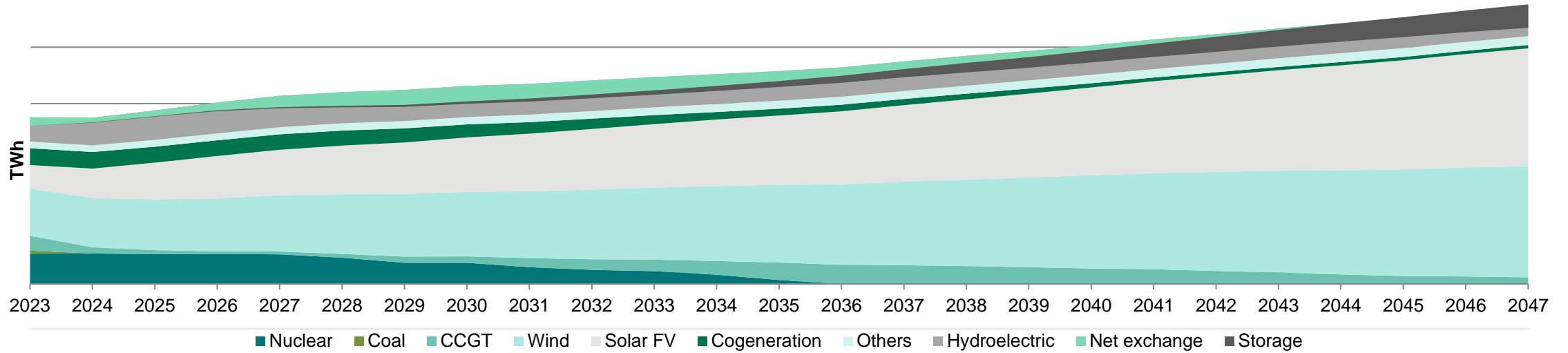
Fundamental models strengths

- **Fundamental models** are able to simulate the market clearing by considering the operation of the market, physical features of the power system, regulatory effects, etc.
- For **long-term horizons**, punctual events that have not occurred in the past and that are bound to happen in the future can be simulated, such as nuclear power plant decommissioning or the establishment of new interconnections between market areas.
- Given **that statistical models** operate under the assumption that **history will be repeated** in the future, fundamental models can be considered more flexible tools with accurate long term results.

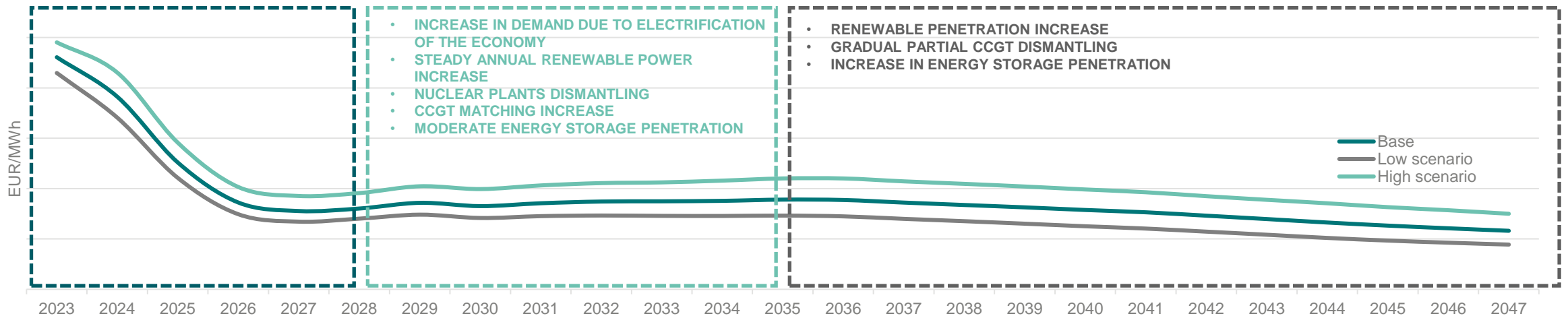
	Fundamental models	Statistical models	Examples
Structural changes	✓	✗	Regulatory changes (taxes, subsidies, windfall profits, etc)
New market events	✓	✗	Nuclear/coal/CCGTs plants decomissioning path modification, external events (interconnections)
Market clearing	✓	—	Falling prices with the increase in renewable generation

Results overview

Generation projection



Pool Price projection



- REDUCTION IN DEMAND DUE TO HIGH COMMODITY PRICES AND GOVERNMENT MEASURES
- RAPID RENEWABLE PENETRATION
- COAL PLANTS DISMANTLING
- DECLINE IN NATURAL GAS PRICES

- INCREASE IN DEMAND DUE TO ELECTRIFICATION OF THE ECONOMY
- STEADY ANNUAL RENEWABLE POWER INCREASE
- NUCLEAR PLANTS DISMANTLING
- CCGT MATCHING INCREASE
- MODERATE ENERGY STORAGE PENETRATION

- RENEWABLE PENETRATION INCREASE
- GRADUAL PARTIAL CCGT DISMANTLING
- INCREASE IN ENERGY STORAGE PENETRATION

Products and contacts

Report

A Complete MIBEL market outlook and pool price projection

B Quarterly subscription to MIBEL pool price projection

C Specific analysis for innovative projects

- Hybridization, Self-consumption, Batteries, Hydrogen

Content

- 01** Spanish Electricity System Overview
 - Demand, Generation, Transmission, Distribution and Retail activity
- 02** MIBEL Electricity Market
 - Market operation review, historical market pool prices, futures
- 03** 25 years MIBEL pool price projection
 - Base, Low and High Scenarios. Elaboration of other alternative scenarios
- 04** 25 years MIBEL Energy mix and production projection
 - Base, Low, High Scenario and other alternative scenarios.
- 05** 25 years capture price projection
 - Technologies capture prices
 - Specific asset capture price estimation
 - Capture ratios
- 06** Quarterly Market and Regulatory highlights review

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