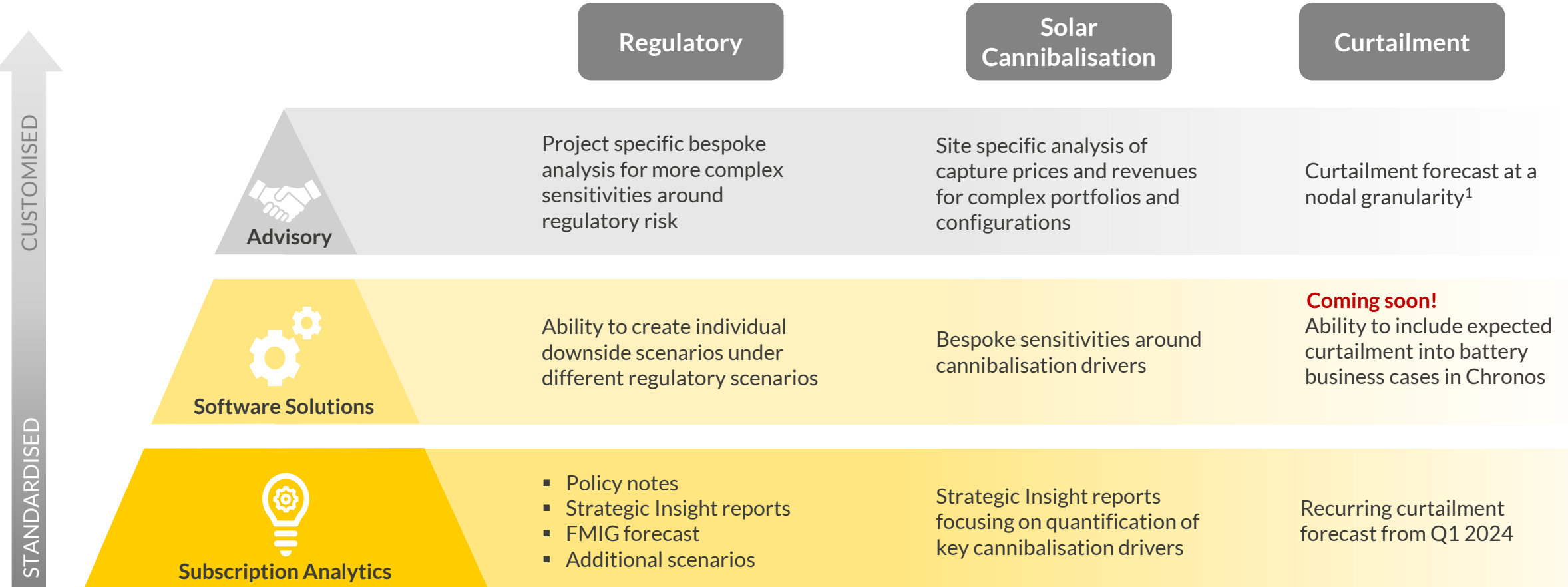


Financing the Energy Transition in Spain: Risks and Mitigations

16 October 2023

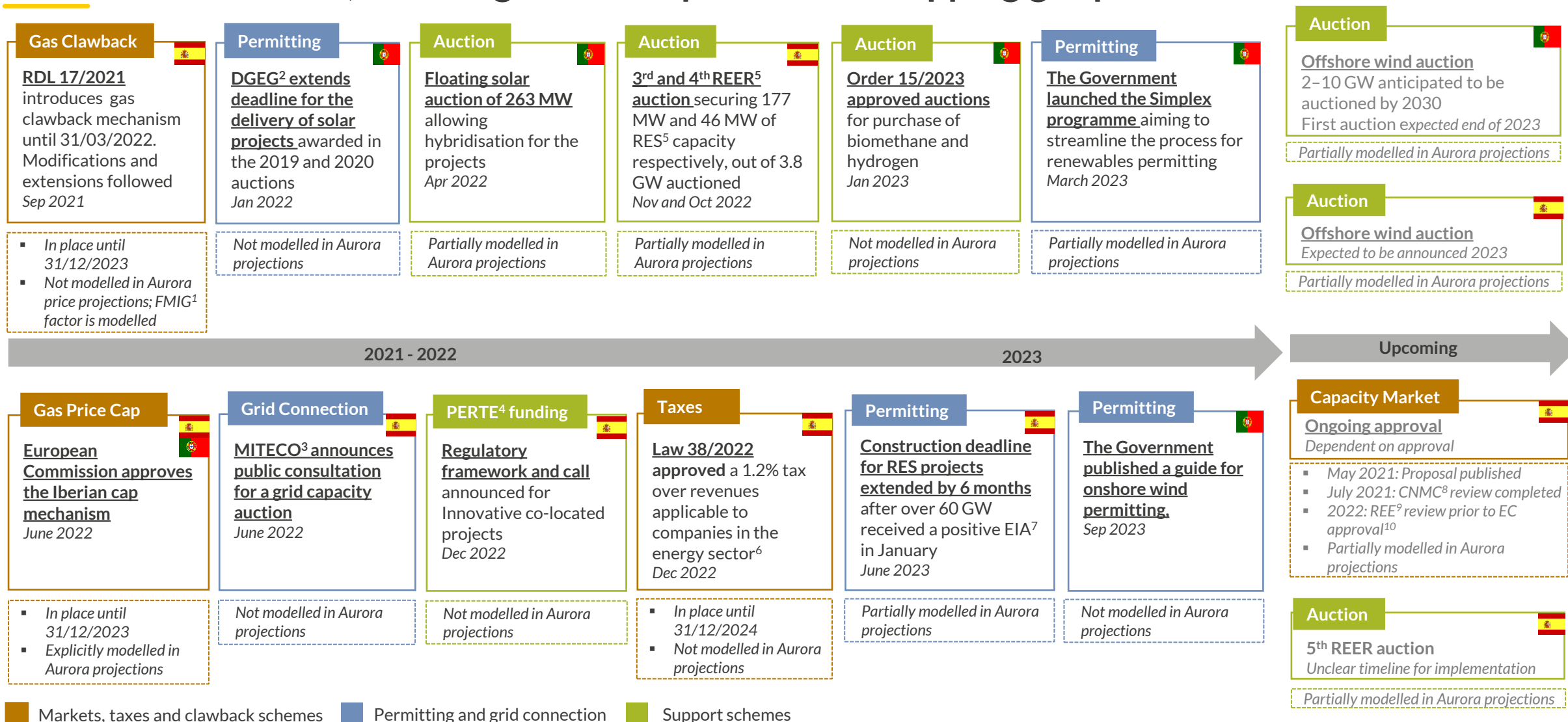


Our market leading models underpin a comprehensive range of integrated services enabling us to quantify the biggest risks in the Iberian Market



1) Subject to data availability.

The Iberian governments addressed high market prices by facilitating renewable buildout, reducing “windfall profits” and capping gas prices



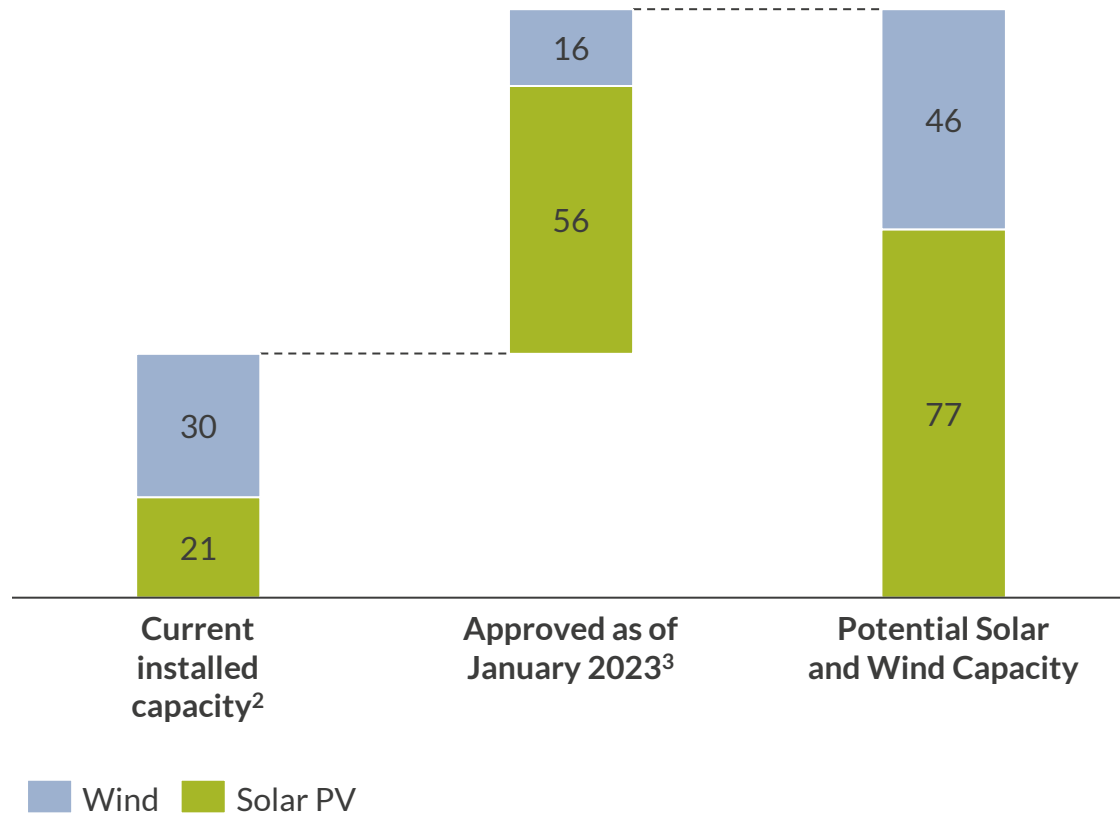
1) Gas Price Internalisation Factor used to calculate clawback amount. 2) Direção Geral de Energia e Geologia. Deadlines were extended for projects outside of these auctions for nine months in March 2023. 3) Ministerio para la Transición Ecológica y el Reto Demográfico. 4) Proyecto Estratégico para la Recuperación y Transformación Económica. 5) Régimen Económico de Energías Renovables. Renewable Energy Sources. 6). Threshold is 2019 revenues > 1bn €. 7) Environmental Impact Assessment. 8) Comisión Nacional de los Mercados y la Competencia 9) Red Eléctrica España. 11) EC approval process can take up to 18 months.

Developers face high competition to bring projects to completion since over 76 GW of renewables received an EIA¹ permit in Iberia in 2023

Of approximately 105 GW that were evaluated, at least 72 GW of capacity received a positive EIA as of January 2023

Historically, permitting has been the main bottleneck for RES projects in Iberia; developers face new challenges considering regulatory deadlines

Environmental Impact Assessment approvals, GW



Supply Chain constraints:



- Long delays in ordering equipment leading developers to have to place orders before having final permits.
- High competition for EPC⁵ contractors.
- Banks are unlikely to finance a large portfolio of projects that have the same EPC provider, thereby avoiding concentration risk.

Project Finance



- Increased interest rates increase the cost of debt.
- Higher uncertainty over merchant prices, especially for solar assets, will lead to more stringent financing conditions.
- Projects need to have all permits and licences to drawdown Project Finance.

Project Profitability

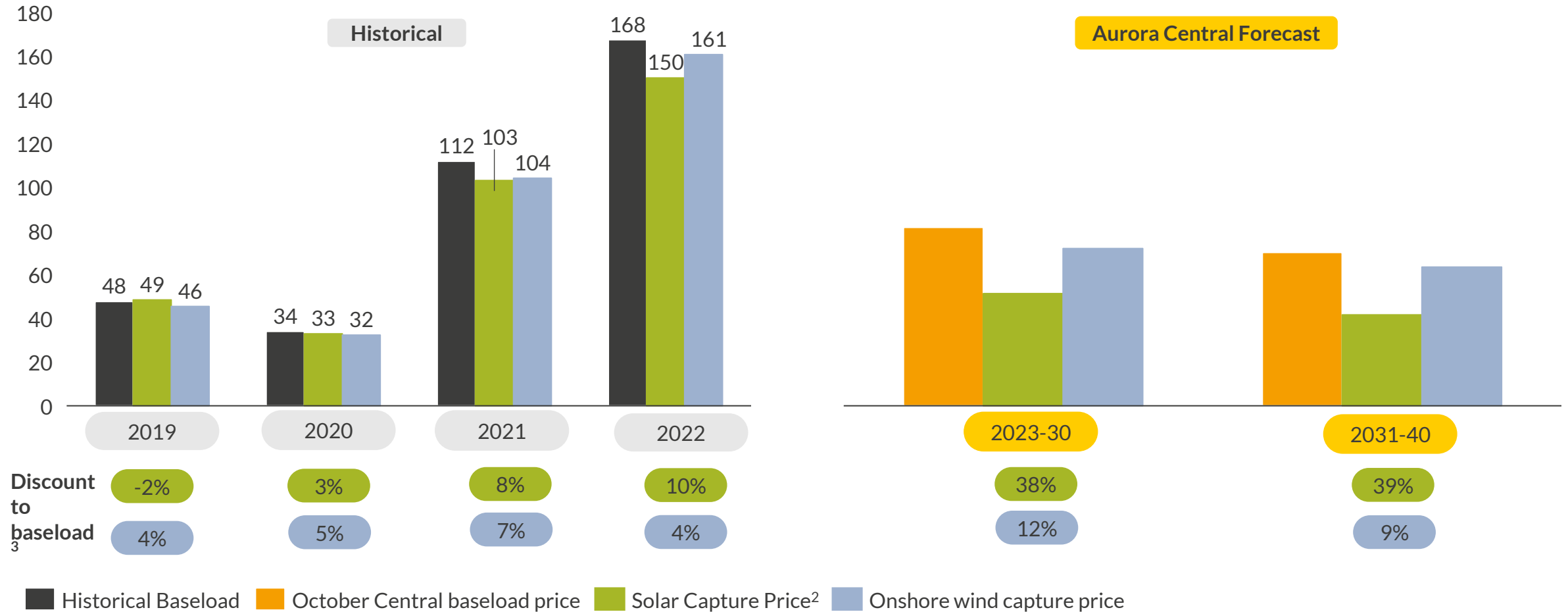


- Lower price forecasts will negatively affect revenues.
- Increased curtailment risk due to grid constraints.
- Conditions on EIA permits may increase CAPEX costs.
- Increased cost of debt will affect Equity IRR.

1) Environmental Impact Assessment. 2) Installed capacity as of June 2023. 3) Refers to the projects with an approved access permit from 2018 onwards that received a positive EIA permit by January 2023. 4) Approved between January 2023 and May 2023. 5) Engineering, Procurement, and Construction.

Solar discount to baseload has been increasing in recent years; we expect this trend to continue reaching 38% on average in the 2020s

Baseload and renewables capture prices¹
€/MWh (real 2022)



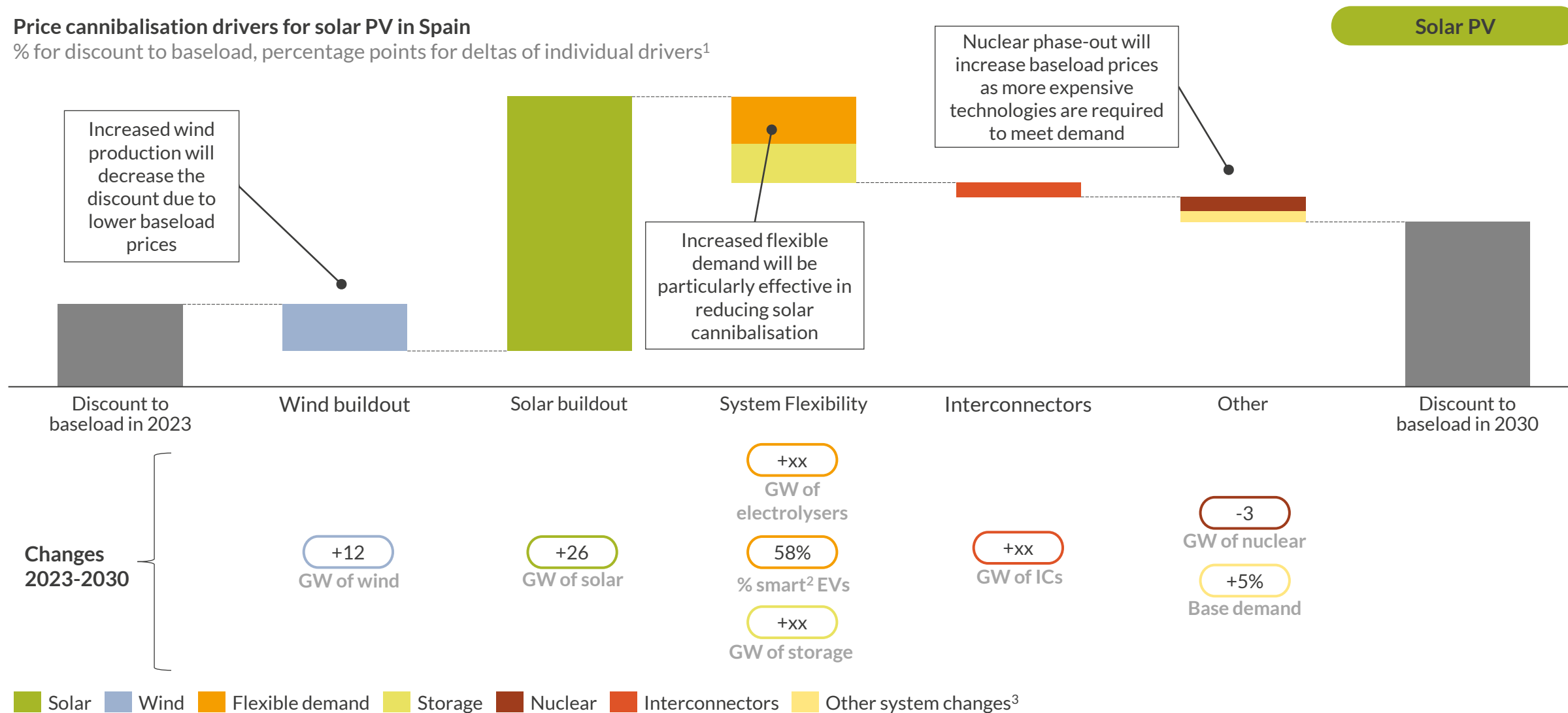
1) Prices are inclusive of the generation tax from 2024, which we assume to continue throughout the forecast horizon. Forecast values refer to uncurtailed generation weighted average across fleet. 2) Refers to utility-scale Solar PV. 3) For the forecast period, values shown reflect the average across each period.



In Spain, growth of renewables and the increase in flexible demand are the key determinants for solar PV cannibalisation

Price cannibalisation drivers for solar PV in Spain

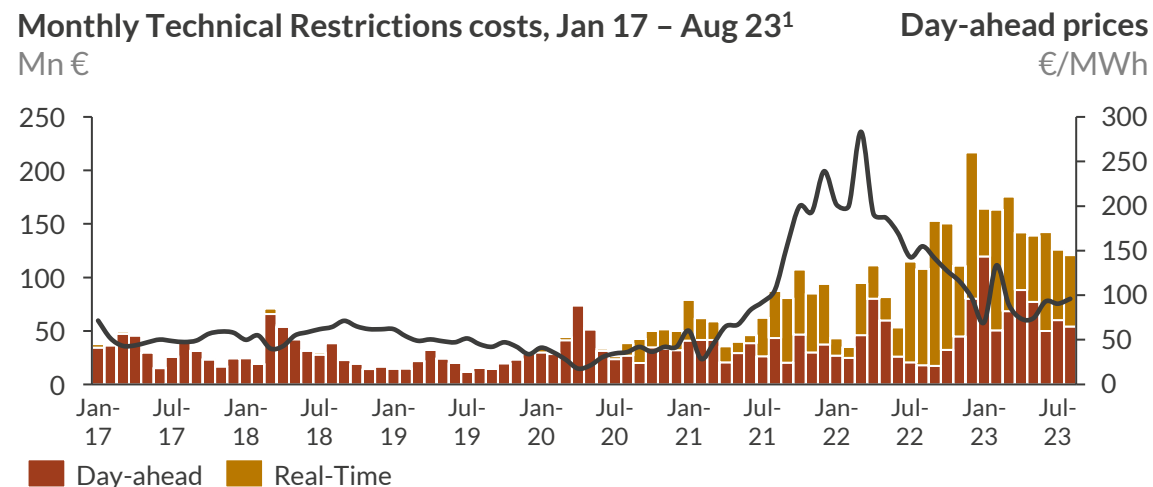
% for discount to baseload, percentage points for deltas of individual drivers¹



1) Incremental impact of each driver, tested each on a cumulative basis (on top of the previous variable), following the order presented in the slide. 2) % of smart EVs from total passenger fleet (ICEs, EVs), i.e., smart EVs optimise their charge according to the hourly wholesale price. 3) Includes all the remaining changes e.g., base demand, thermal fleet capacity, and commodity prices, in this order.

The cost of managing grid constraints increased in the last 3 years accounting for 3.2b€; renewables curtailment increased sharply in Spain in 2022 and 2023

I Congestion management costs have increased since January 2021 remaining high since

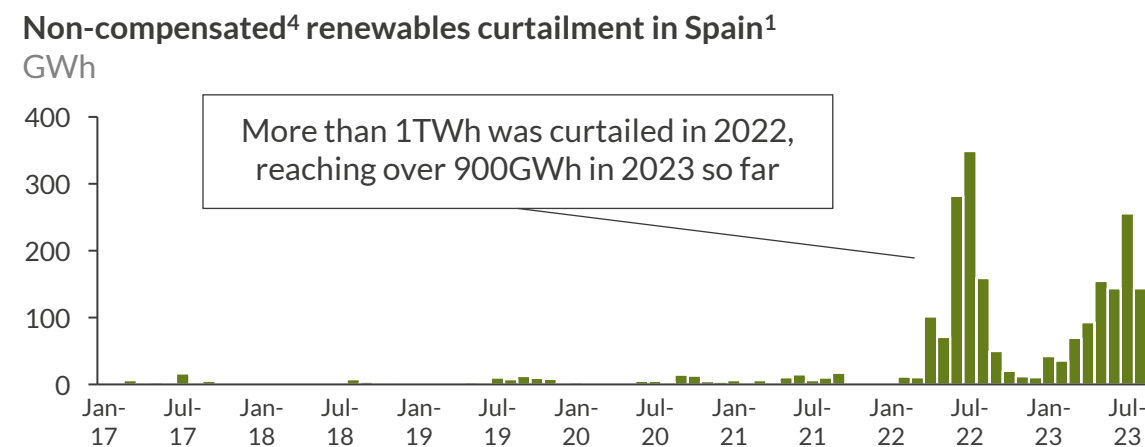


III REE planned to invest 1.9 €b for grid investment in their last Network Development Plan (2021-26)

REE investments 2021-26, €m

Renewables and Technical Restrictions	Demand Support	Security of supply
1,872	820	729
Peninsular and island connections	Operating needs	TN renovation
1,487	405	328
		54 ²
		8 ³

II Non-compensated curtailment started to become significant as of May 2022 with the first significant solar curtailment



- Technical Restrictions costs increased in the last three years with an average of 390 €m/year between 2017 to 2020 increasing to 800 €m in 2021, 1.3 €b in 2022 and 1.2 b€ in 2023 so far
- 2022 saw the first year with significant non-compensated⁴ renewables curtailment accounting for more than 1TWh and 1.2% of the total production of those types of assets
- According to the latest Network Development Plan (21-26), investment in grid investment will only be 1.9 €b while the congestion for the last 3 years (20-23) already accounts for 3.2 €b so far

1) Data from June to August 2023 are preliminary. 2) Generation and Storage. 3) Interconnections. 4) Technical Restrictions day-ahead Phase 1 downward.

To know more about these events get in touch with:

Maria Clara Cardoso, Commercial Associate



maria.cardoso@auroraer.com

AURORA



ENERGY RESEARCH