AURORA ENERGY RESEARCH

Electrification or deindustrialisation? Our outlook on the Belgian power market

Public Report

19 June 2024

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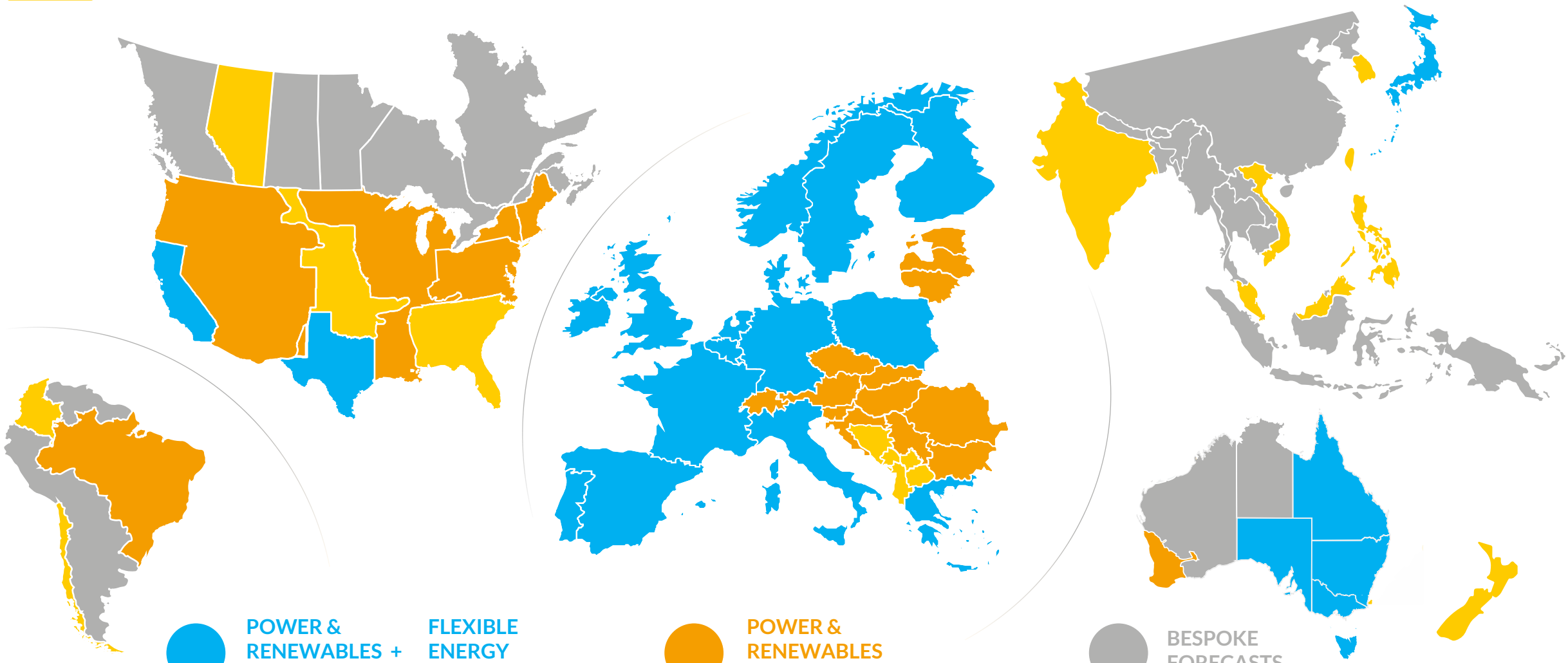

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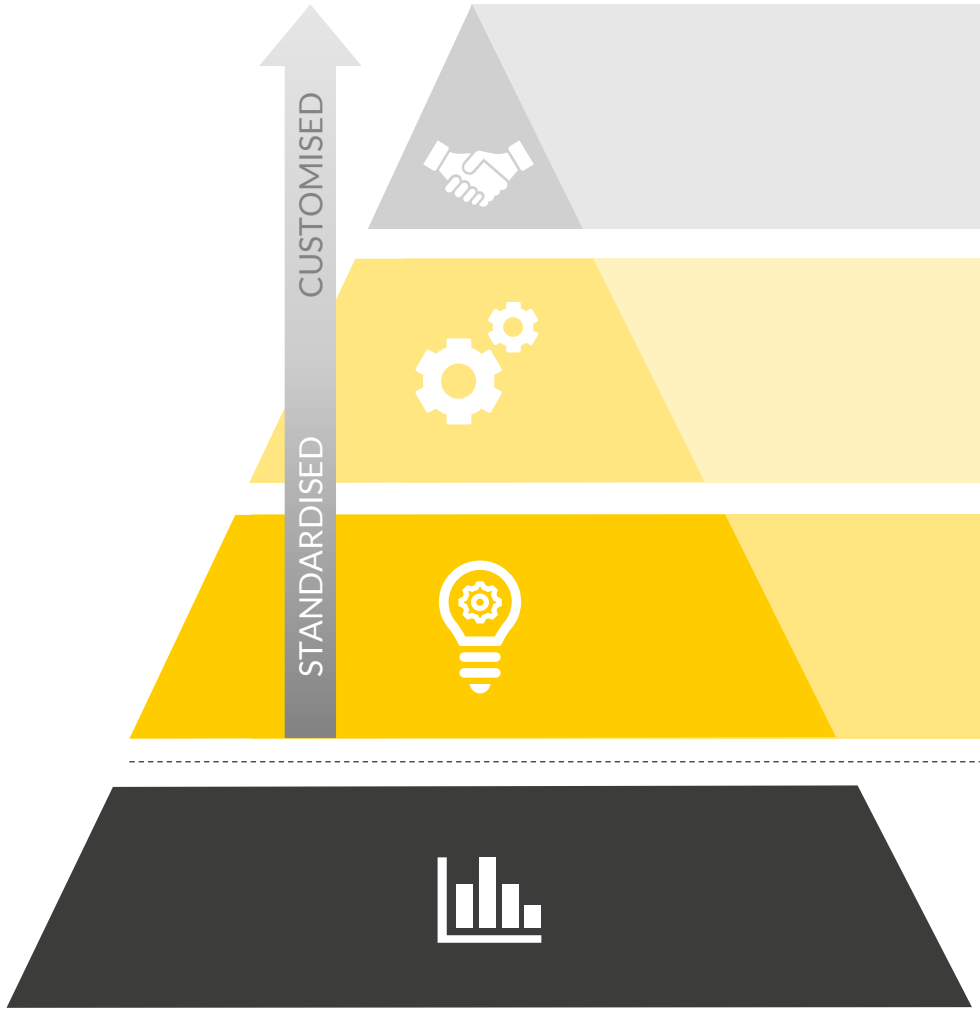

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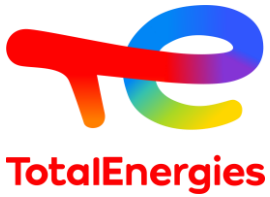

Source: Aurora Energy Research

Introducing our researchers

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Looking to understand more about the Belgian power market?

Curious about Aurora's offerings and services?

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Agenda

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I. Introduction

II. Our view on the future of the Belgian power system

III. Deindustrialisation vs. electrification

IV. Policy to strengthen Belgian industry

V. Key takeaways and conclusions

To achieve its 2050 net zero target, Belgian power demand is expected to increase, driven by the electrification of industry, transport and heat

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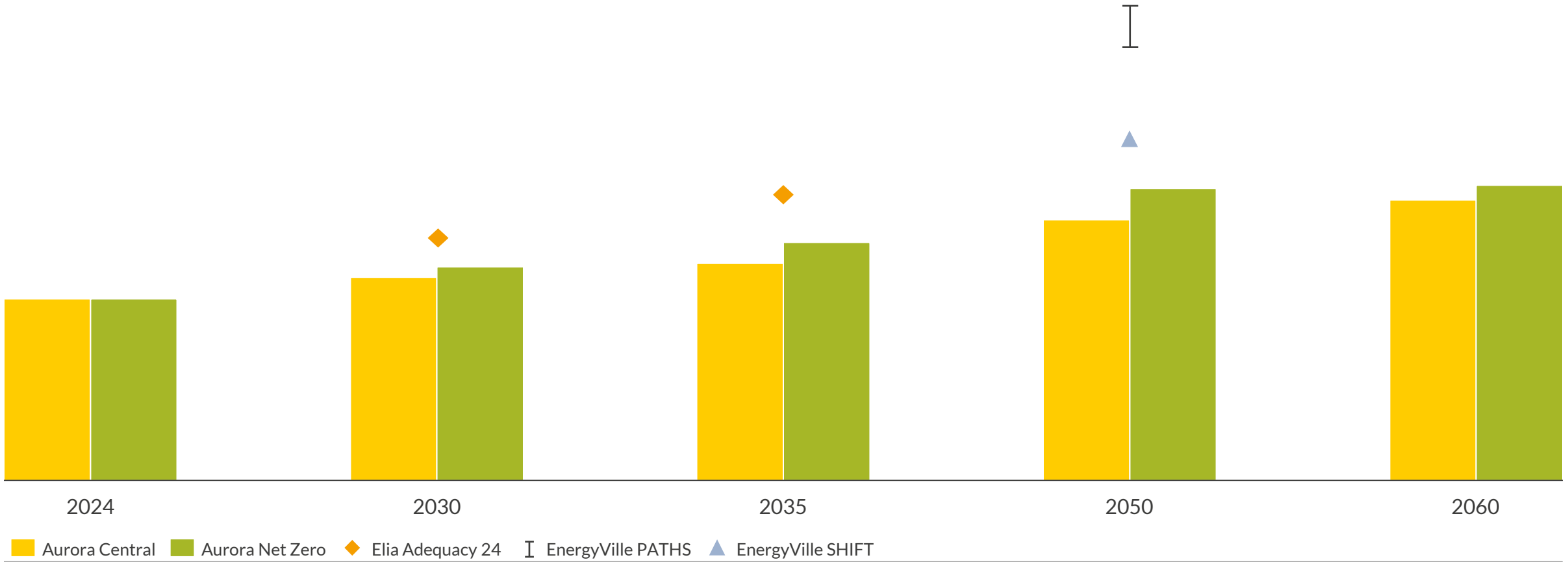
Power demand outlook for Belgium
TWh

All data is provided in our Round Table report for clients.

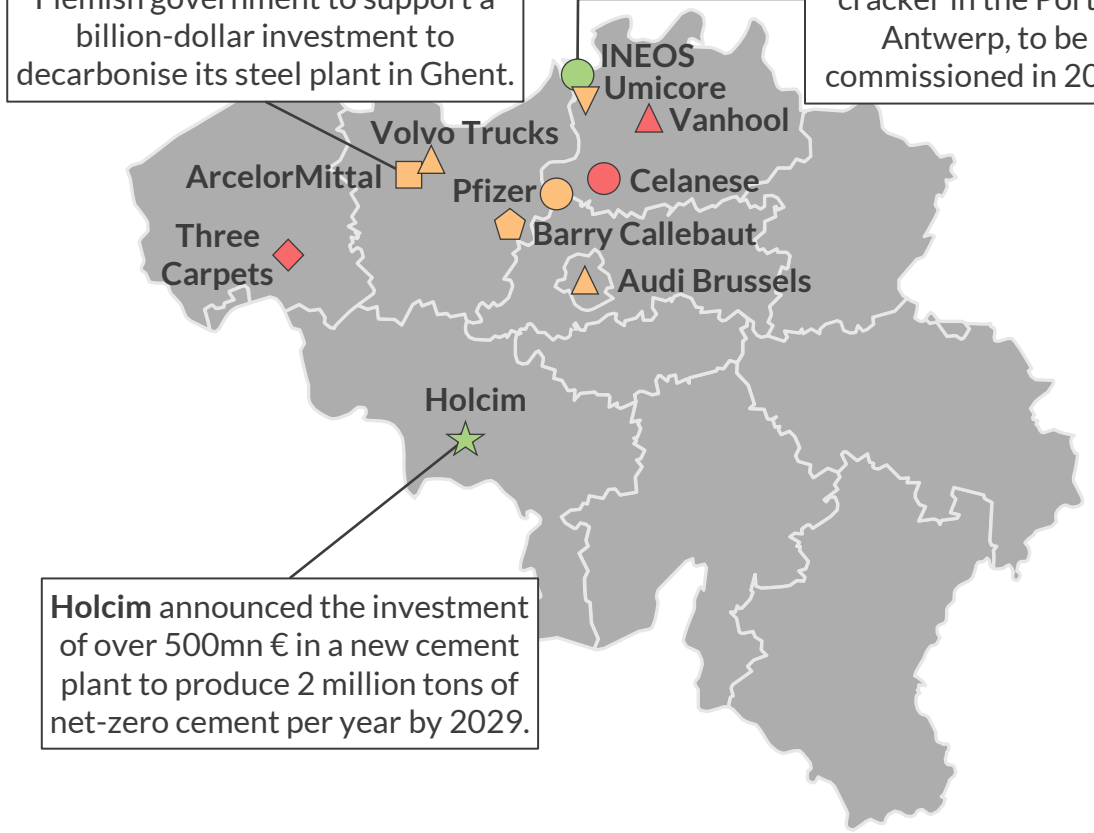


Sources: Aurora Energy Research, Belstat, Elia, EnergyVille

However, fears of a Belgian deindustrialisation wave are growing as companies are moving away and industrial production is falling

In May-24, **ArcelorMittal** signed an agreement with the Federal and Flemish government to support a billion-dollar investment to decarbonise its steel plant in Ghent.

INEOS is building a new low-carbon ethane cracker in the Port of Antwerp, to be commissioned in 2026.



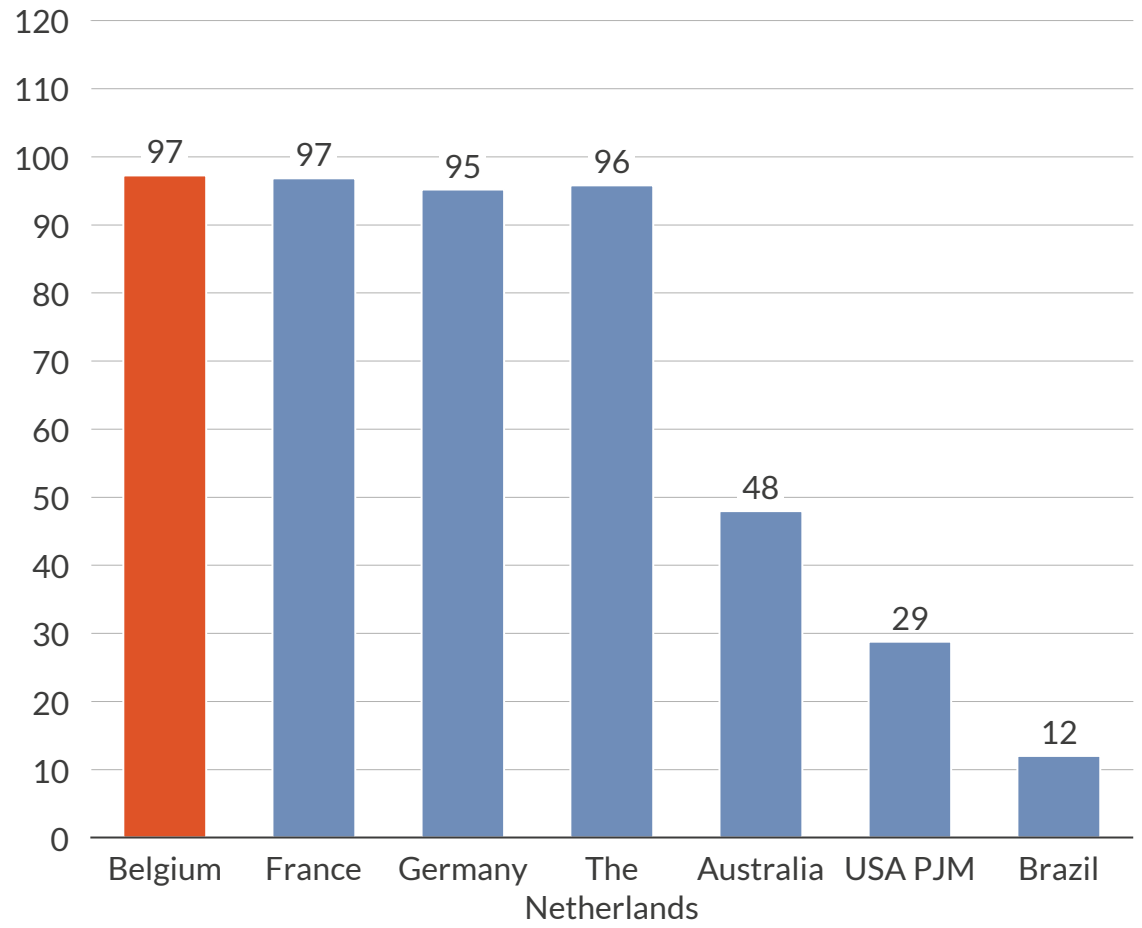
Holcim announced the investment of over 500mn € in a new cement plant to produce 2 million tons of net-zero cement per year by 2029.

New investments Uncertain future Plant closure

Steel Chemicals Cars Cement Textile Food Batteries

Wholesale electricity prices in 2023

€/MWh (real 2023)



Sources: Aurora Energy Research, De Tijd, Trends, De Morgen

In this Webinar, we present our latest outlook on the Belgian power market and discuss the role of industrial demand in the Belgian power system

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Outlook on the Belgian power system

- We present our outlook on the Belgian power market, including the evolution of commodity and power prices, power demand and the generation mix.

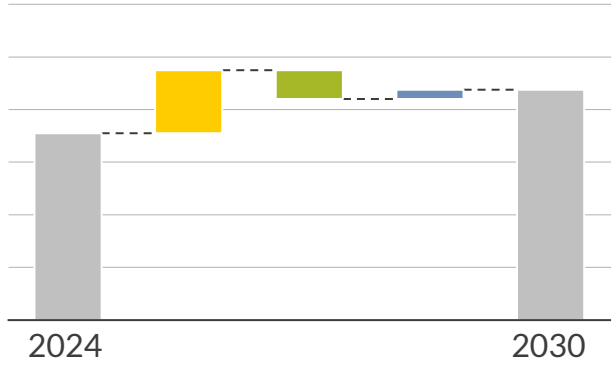
Electrification vs. deindustrialisation

- We present a breakdown of the Belgian power demand and discuss the demand outlook for different Belgian industrial sectors.
- We assess the risk of deindustrialisation of the Belgian economy and develop a deindustrialisation scenario for the Belgian power system.

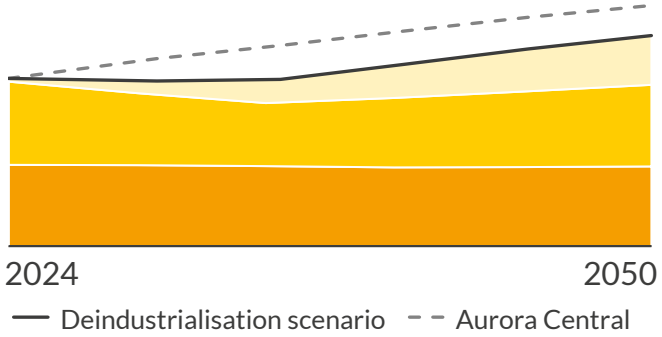
Policy to strengthen Belgian industry

- We provide an overview of the policy at EU level including ETS, CBAM and the EU Net Zero Industry Act.
- We compare industrial power prices in Belgium with those in neighbouring countries and other competitors.
- We discuss policy options at the national level to lower the retail price for Belgian industry.

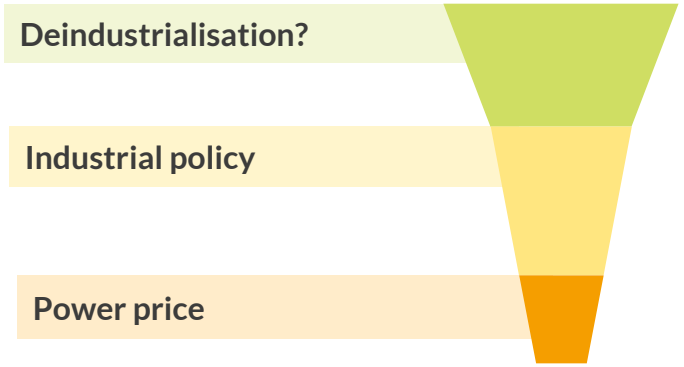
Drivers for the Belgian baseload price



Power demand in a deindustrialisation scenario



Policy options



Source: Aurora Energy Research

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Even though renewable capacity will grow significantly, Belgian RES production will not be enough to meet the growing demand when nuclear phases out

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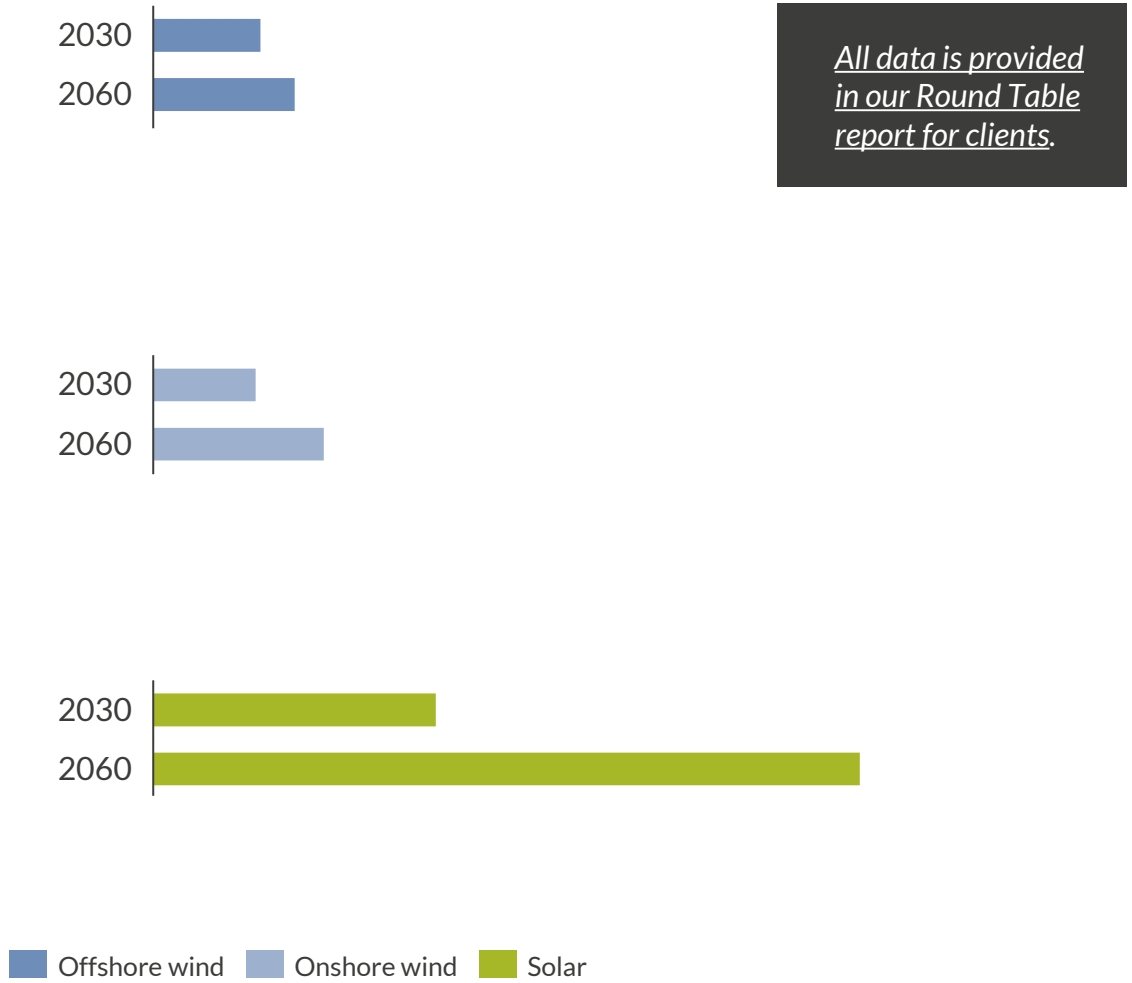
Renewable Capacity vs Potential – Aurora Central

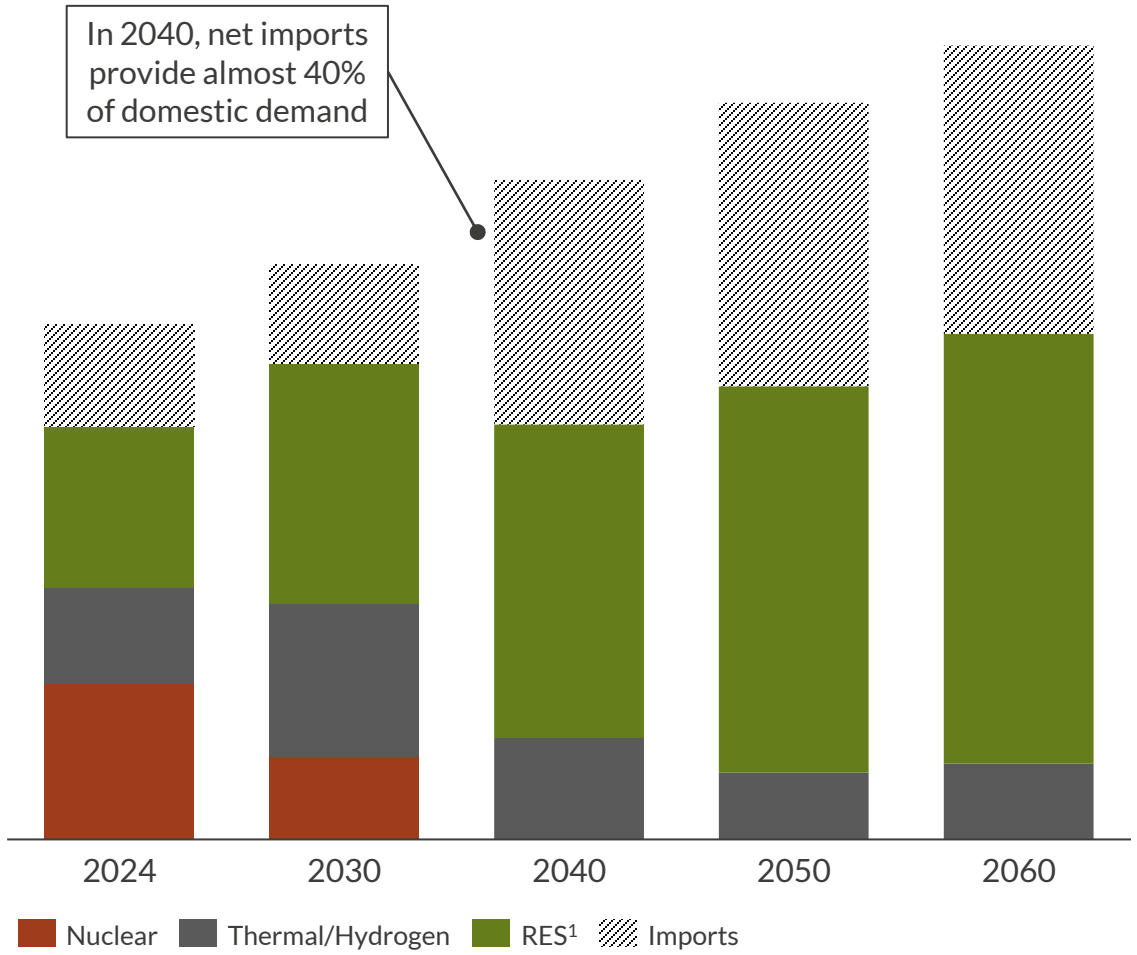
GW



All data is provided in our Round Table report for clients.

Electricity Production and Net Imports – Aurora Central

TWh



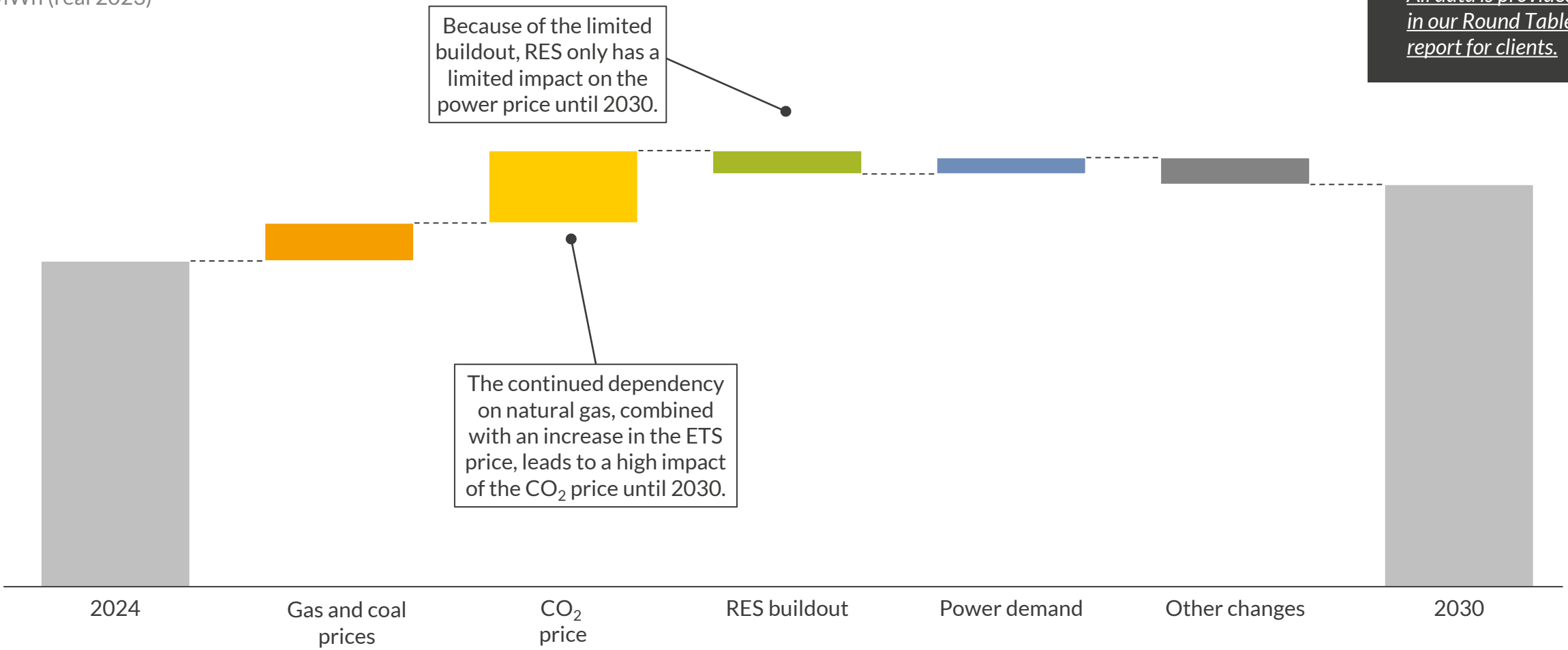
1) Including biomass and biogas.

Source: Aurora Energy Research

In our Central view, the ETS price has the largest impact on power prices until 2030, and baseload prices increase when nuclear phases out in 2035

Decomposition of drivers for the Belgian baseload power price – Aurora Central
€/MWh (real 2023)

All data is provided in our Round Table report for clients.



Source: Aurora Energy Research

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Belgian industry makes up 48% of the Belgian power demand, with the highest consumption coming from the chemical, steel and food sector

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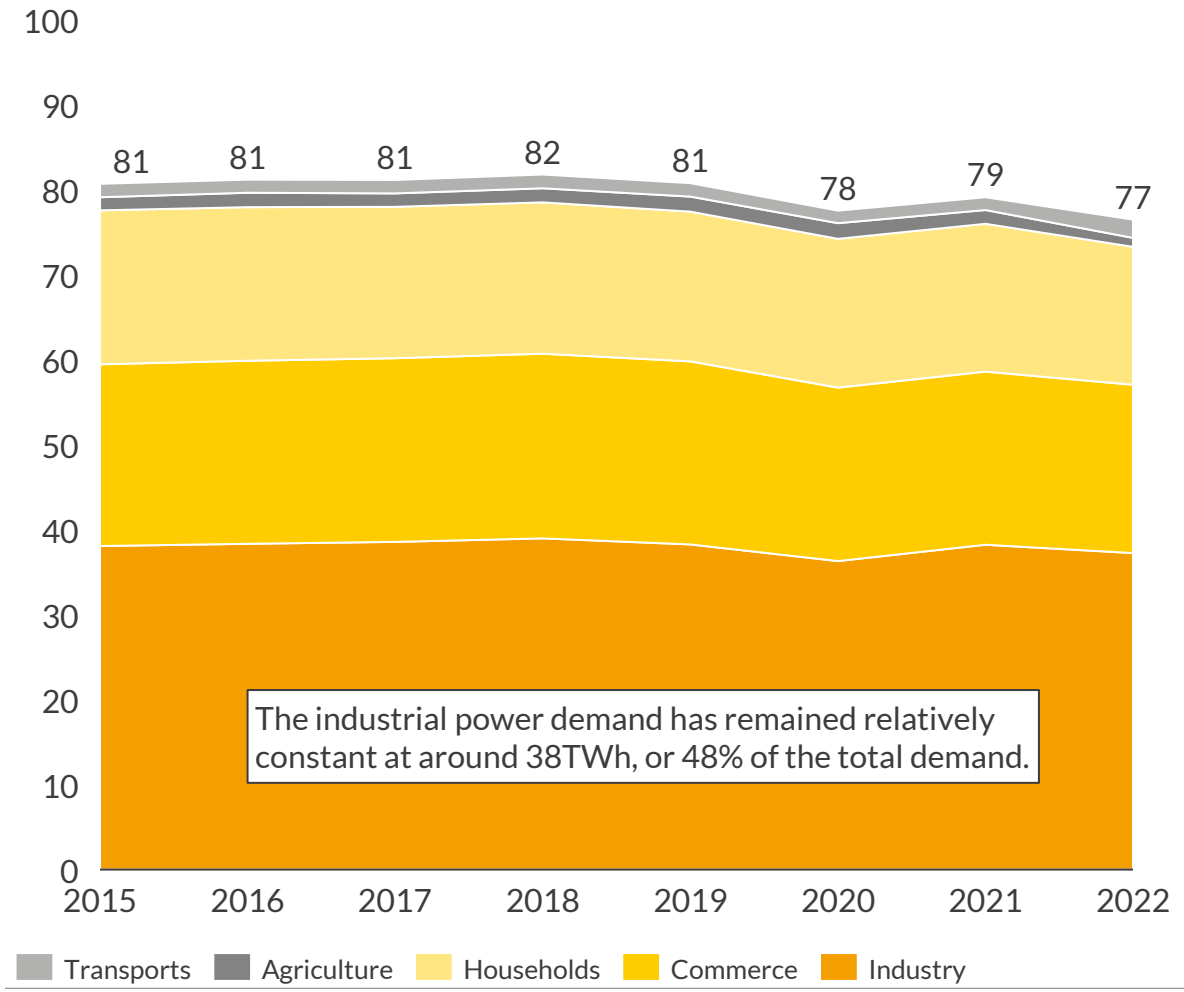
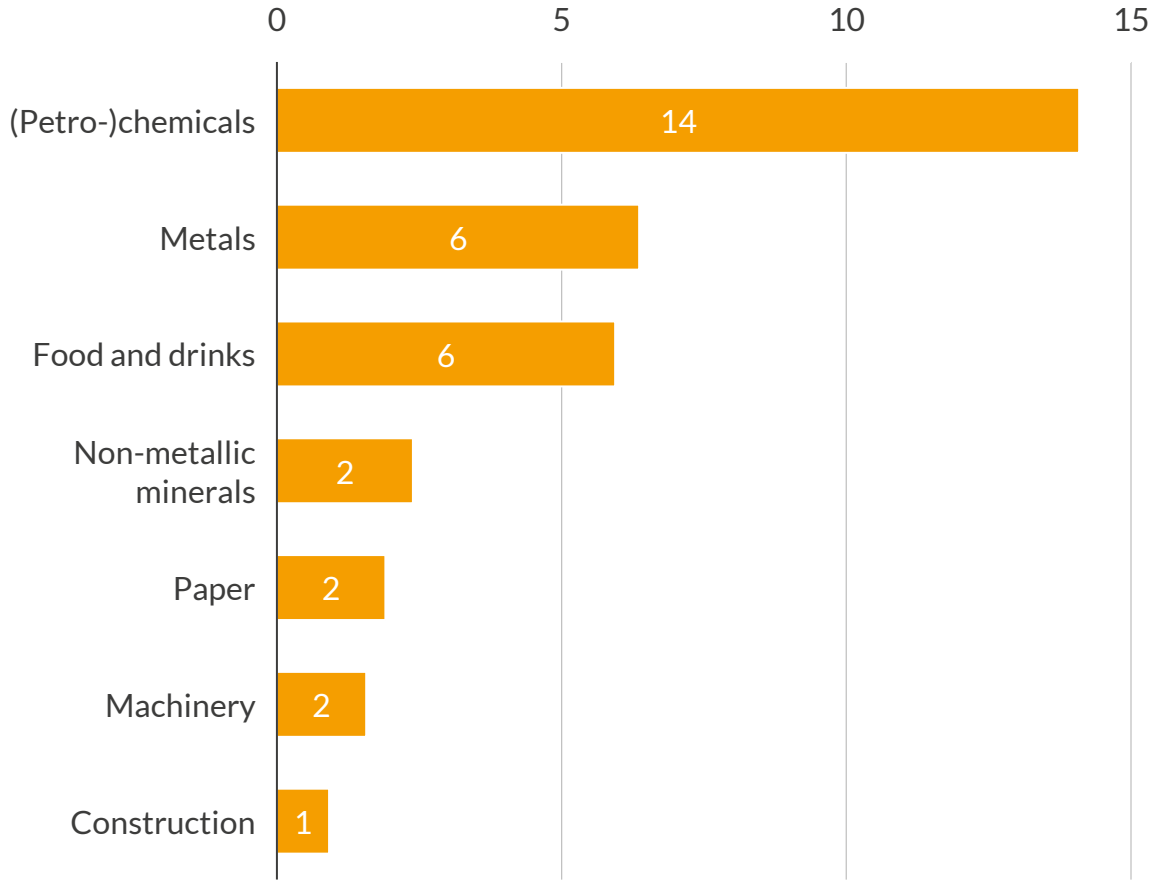
Belgian power demand breakdown by sector (excl. losses)

TWh



Power demand per industrial sector (2022)

TWh



Sources: Aurora Energy Research, Statbel, CREG

Decarbonising Belgian industry will require electrification and more efficient processes, leading to a net increase in industrial power demand towards 2050

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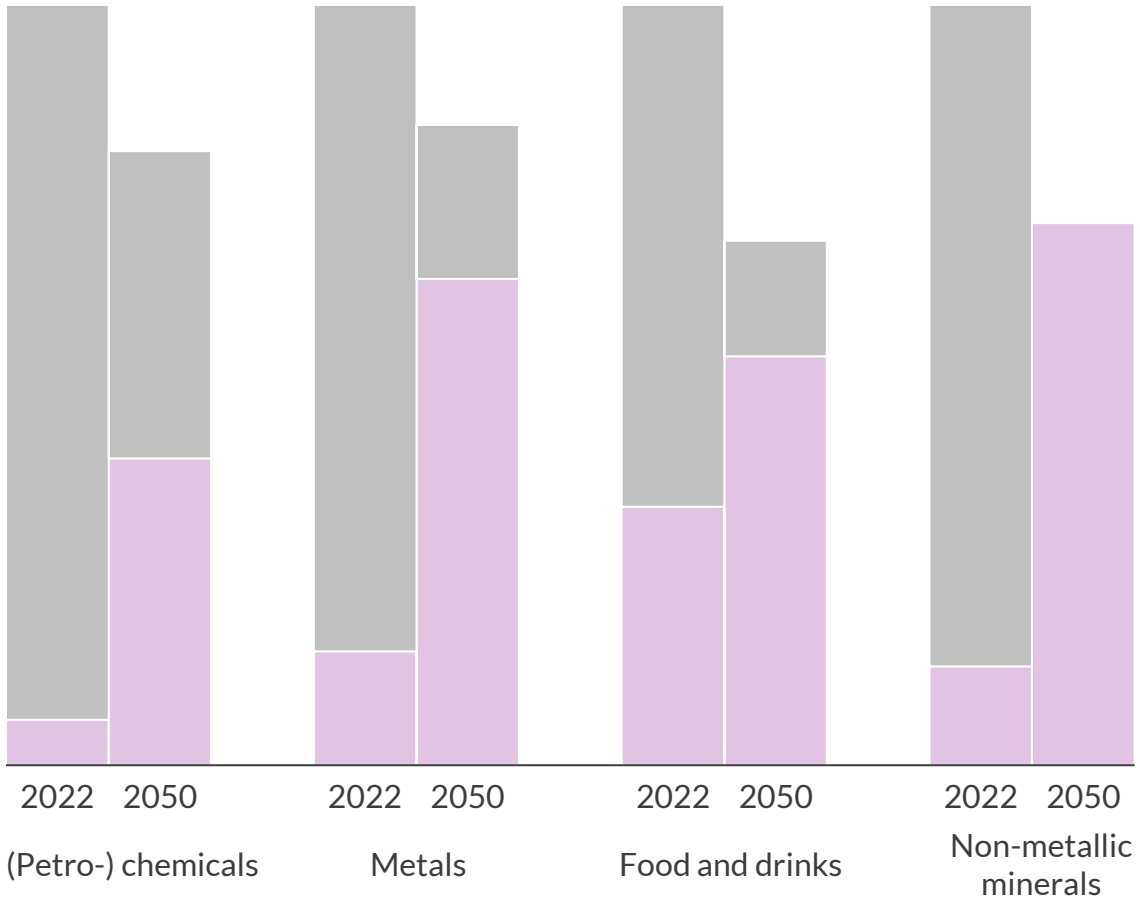
Energy demand breakdown by industry[1]

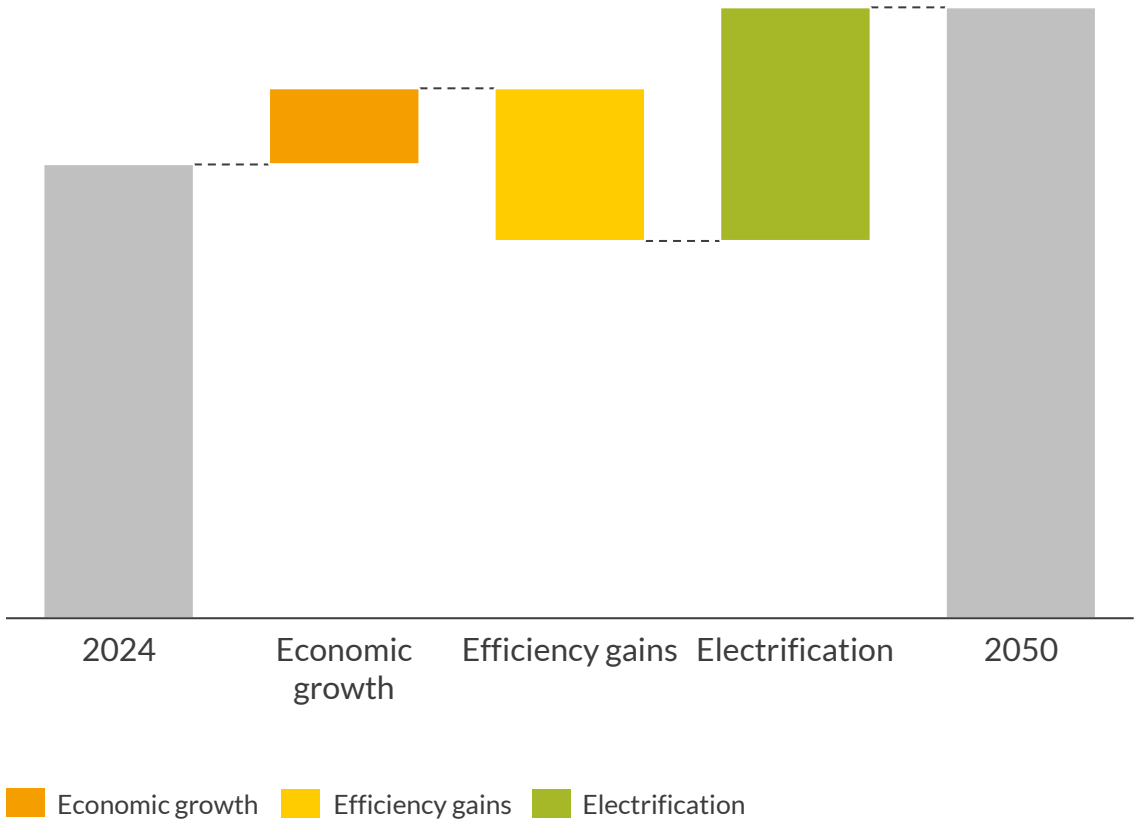
%



Industry power demand in Aurora Central scenario

TWh

All data is provided in our Round Table report for clients.



1) Based on an EU benchmark of the industrywide electrification potential and a decarbonisation pathway considering new industrial processes. 2) The electricity share includes the power required to produce hydrogen through electrolysis.

Sources: Aurora Energy Research, Material Economics

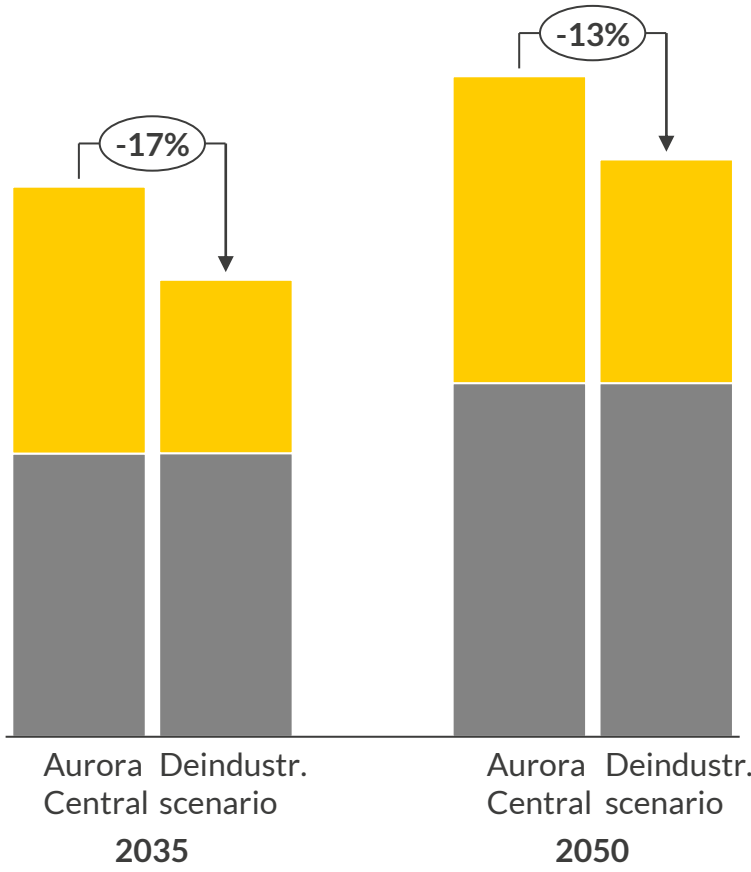
However, certain industries may have an incentive to relocate due to concerns around the competitiveness of production in Belgium

Industry	Investment trend	Export share	Energy intensity	Flight risk
Measure	*Investment/year mn €[1]*	*% Exports of gross output*	*% Energy cost per value added*	
(Petro-) chemicals				High
Metals				Very high
Food and drinks				Medium
Non-metallic minerals				High
Paper				Medium
Machinery				Low

2019 2022

High risk Medium risk Low risk

Total power demand in Belgium
TWh



1) Nominal values converted to € real 2022.

Sources: Aurora Energy Research, SPF Economie, Statbel, CREG

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Under the Green Deal Industrial Plan, the EU has legislated a variety of measures to support energy intensive, trade exposed (EITE) industries

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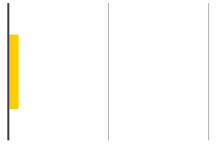
Policy / Instrument	Description	Playing Field	Annual Value[1] (bn € real 2023)	BEL Industry Assessment
EU Emission Trading System (ETS)	▪ The EU ETS applies the 'cap and trade' principle, where a limit is set on the total amount of emitted greenhouse gases. ▪ The EU is targeting a 62% reduction in emissions from the energy, manufacturing, and air and maritime travel sectors by 2030, compared to 2005 levels.			Free allowances to domestic industry being phased out by 2034
Carbon Border Adjustment Mechanism (CBAM)	▪ CBAM extends the EU ETS outside the EU. It aims to limit carbon leakage through the application of an adjustment tariff on imported, carbon-intensive products. ▪ Under a transitional regime, CBAM reporting obligations commenced in October 2023, while payments commence in 2026.			CBAM partially compensates for being exposed to the EU ETS
Net-Zero Industry Act (NZIA)	▪ Policy program intended to increase EU manufacturing capacity across key net-zero technologies[2] and their upstream suppliers. ▪ Provides greater access to state aid to support net-zero industries.			Greater opportunity for state aid Larger countries could outspend Belgium
Important Projects of Common European Interest (IPCEI)	▪ Public support for selected technologies[3] of economic and/or strategic importance which may otherwise remain underfunded due to the large inherent risks.			Firms are supported through battery and hydrogen projects

Benefit Threat

1) Annual value is measured with respect to public revenues or costs at the EU level. It excludes any financial flows at the national public level as well as any from private sources. EU ETS and IPCEI based on average annual revenues or expenditures, respectively, over 2021 to 2023 period. CBAM based on projected revenues in 2030. NZIA based on anticipated annual expenditures between 2023 and 2030. 2) Technologies include solar PV, wind, EVs, electrolysers, fuel cells, and heat pumps. 3) Technologies include microelectronics, batteries, hydrogen, and the cloud. Sources: Aurora Energy Research, European Commission.

Cost compensation brings the industrial electricity price in Belgium closer to neighbouring countries, but power prices remain above other competitors

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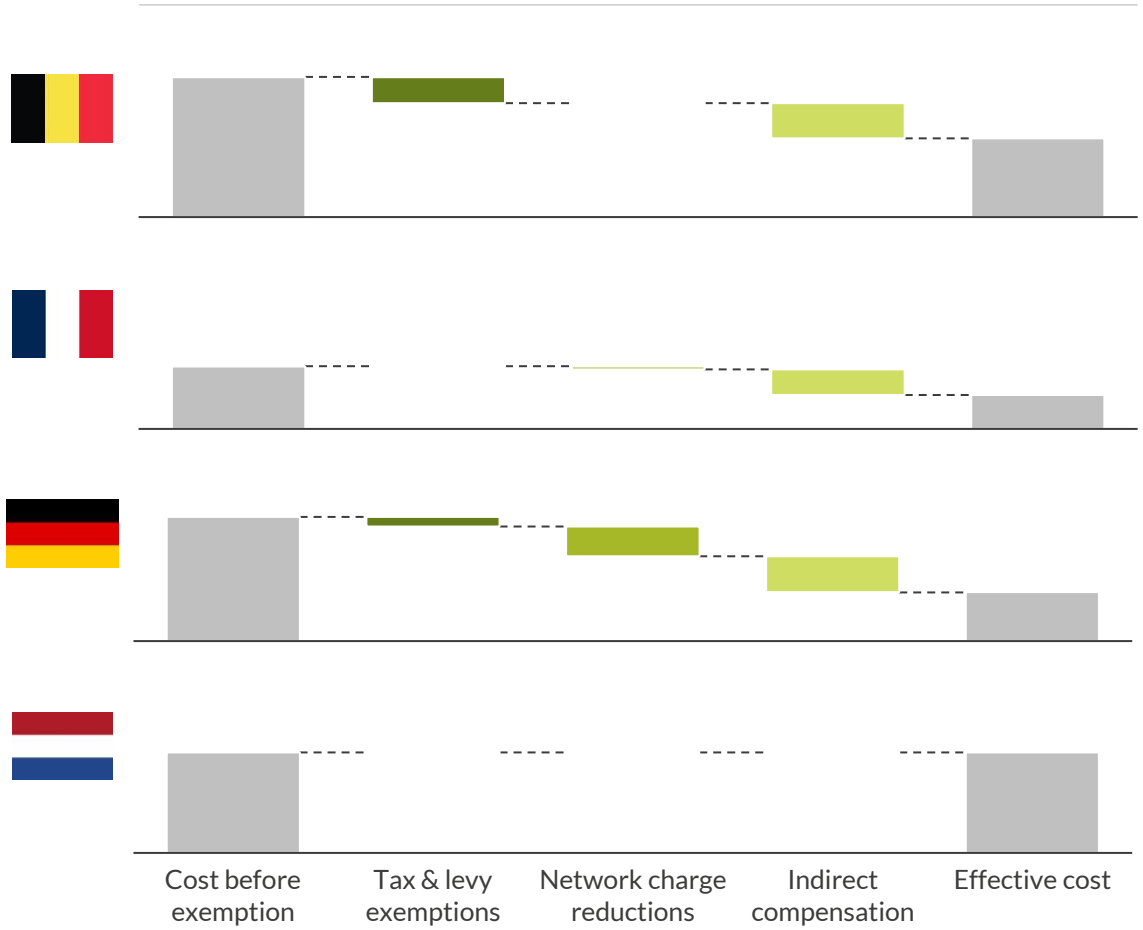
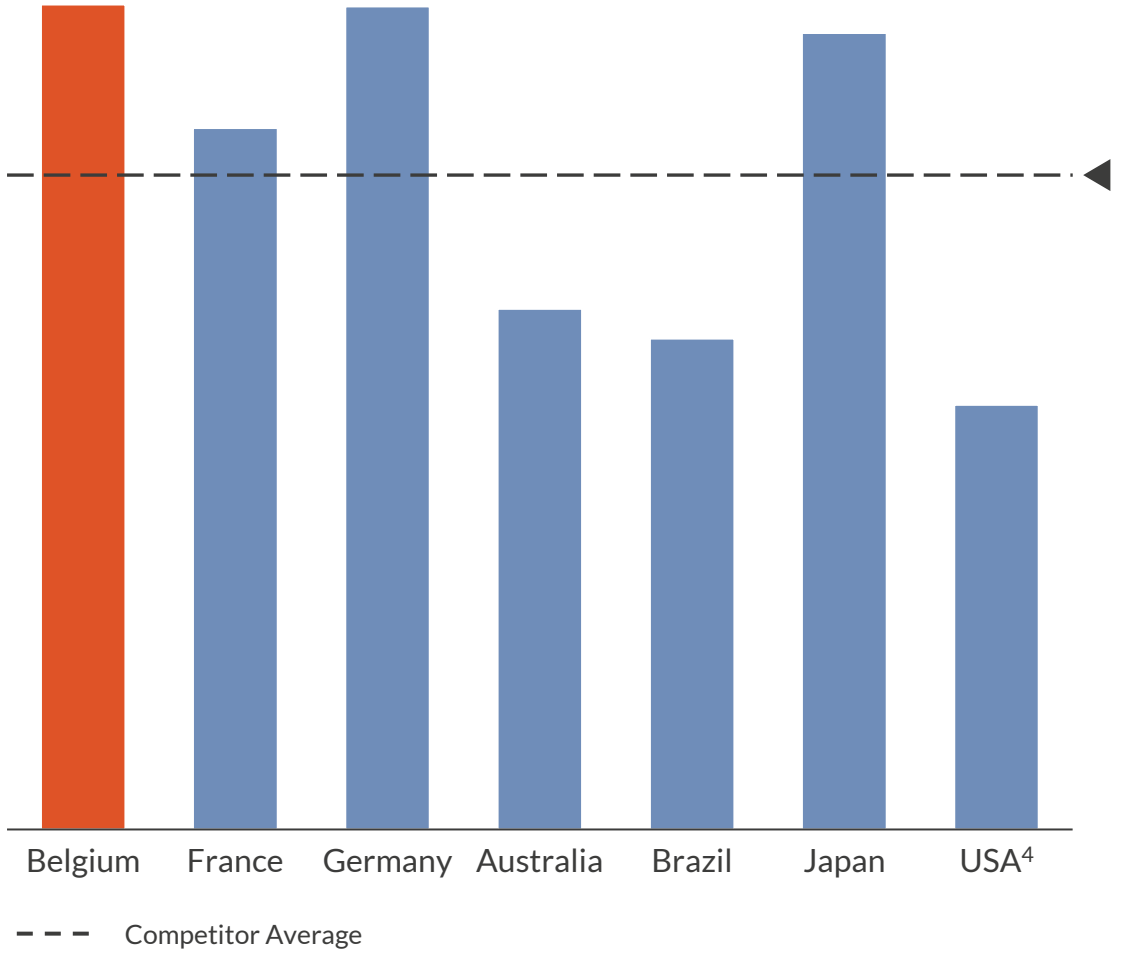
Industrial electricity price breakdown for neighbouring countries in 2024[1,2]
€/MWh



Baseload electricity prices in 2030 from Aurora's Central Scenario[3]
€/MWh (real 2023)



1) Industrial electricity prices based on the following assumptions: annual consumption in 2024 of 1TWh; full load hours of 8,000h; monthly peak load of 125MW; and, connection to the highest voltage transmission grid in each country. 2) Belgium based on prices in Flanders; effective costs in Wallonia and Brussels are 51 and 74 €/MWh. 3) Based on Aurora's APR24 Central Scenario. 4) Price forecast for PJM which is a regional transmission organisation (RTO) operating along the eastern seaboard of the US.
Sources: Aurora Energy Research, E-Bridge.

Affordable energy is a key concern in the 2024 Belgian elections, different policies exist to bring down the retail price of industrial consumers

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	Instrument	Description	Implementation status
Commodity	**Nuclear PPAs**	▪ Fixed-price baseload PPAs of nuclear power from Doel 4 and Tihange 3 within the 2-sided CfD mechanism ▪ Includes the requirement to provide demand flexibility when needed by the TSO	EC approval required Operational in 2025
Commodity	**Offshore wind PPAs**	▪ Fixed-price PPA for 20 years for offshore wind power from the Princess Elisabeth Zone for the CfD strike price + max 3 €/MWh ▪ Up to 50% of the total electricity generation under the CfD can be carved out	Included in the KB tender Operational in 2030
Grid fees	**Reduced transmission tariff**	▪ Discount of 60-80% on the Elia high-voltage grid tariffs paid by large industrial consumers ▪ Up to 160mn € has been made available per year in the budget for the entire industry	Approved by Parliament Case-by-case basis
Taxes and levies	**Energy norm**	▪ Annual study that compares the industrial and residential electricity prices in Belgium with neighbouring countries ▪ Institutional platform to align electricity bill components with neighbouring countries	Annual reporting
Taxes and levies	**Excise duty reform**	▪ Reform of all federal levies previously charged by Elia into a single special excise duty on energy, with the amount fixed by law ▪ Includes exemptions for industrial energy-intensive processes	Implemented
Regional	**Green Certificate Exemption**	▪ Support scheme for electro-intensive companies in Wallonia and Flanders that exempts access holders from the costs due to the quota obligation for green power and CHP certificates	Implemented

Source: Aurora Energy Research

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Key takeaways and conclusions

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1 We expect baseload power prices in Belgium to increase by 2030, mostly due to an important increase in the ETS price and an increase in the gas price. In 2035, net imports increase to close to 40% of domestic demand when the two remaining nuclear reactors phase out. This leads to a further increase in the Belgian baseload price.

2 Near-term capture prices for renewables projects are currently below merchant LCOEs, requiring government support or fixed-price PPAs for projects to be profitable. After 2035, merchant-based buildout of RES is possible as the costs of renewables go down and capture prices stay relatively high.

3 The Belgian chemical, metal and non-metallic minerals sectors are identified to be at the highest risk of moving away due to concerns around the competitiveness of production in Belgium. A deindustrialisation wave in Belgium could significantly reduce power demand in 2035 and would lead to a reduction in the baseload price. Annual RES revenues would be reduced, and this would lead to a reduction in the buildout of solar and wind by 2050.

4 EU policy, including ETS, CBAM and the Net Zero Industry Act, partially protects Belgian industry from competition with other markets, though the risk of industrial flight remains due to Belgium's limited fiscal capacity to support domestic industry and fundamental differences in cost drivers compared to other manufacturing countries. Cost compensation brings the industrial electricity price in Belgium close to neighbouring countries, but power prices remain above other competitors. PPAs from offshore wind and nuclear can bring the power price for industry further down.

Sources: Aurora Energy Research

Belgian Power & Renewables Forecasts:

Dive into key market analysis and forecasts for the Belgian power and renewables markets

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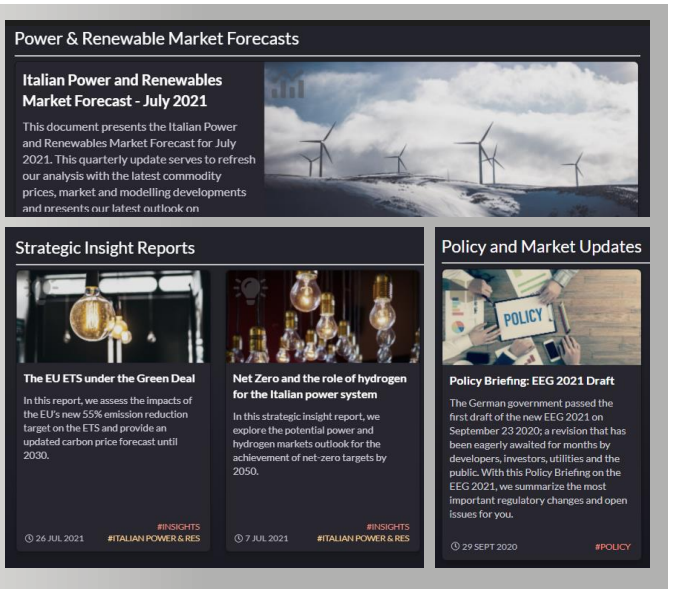

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Source: Aurora Energy Research

Details and disclaimer

Publication
Electrification or deindustrialisation?
Our outlook on the Belgian power market

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