Electrification & EU Industrial Competitivity

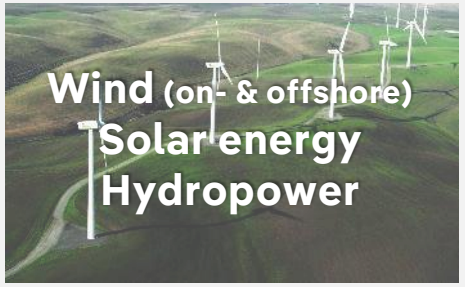
20.03.2025

About Iberdrola – A clear commitment to transition

Ahead of the global energy transition for more than 20 years

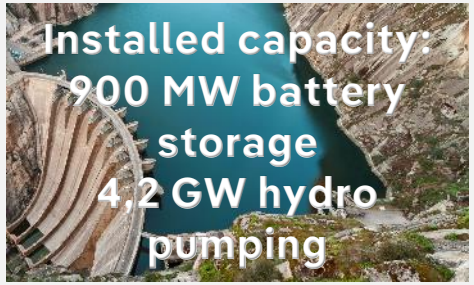
150 b€ invested in the last 20 years, 44 GW renewable installed capacity & serving 100 million people

Leader in renewables



Leader in networks

Leader in storage

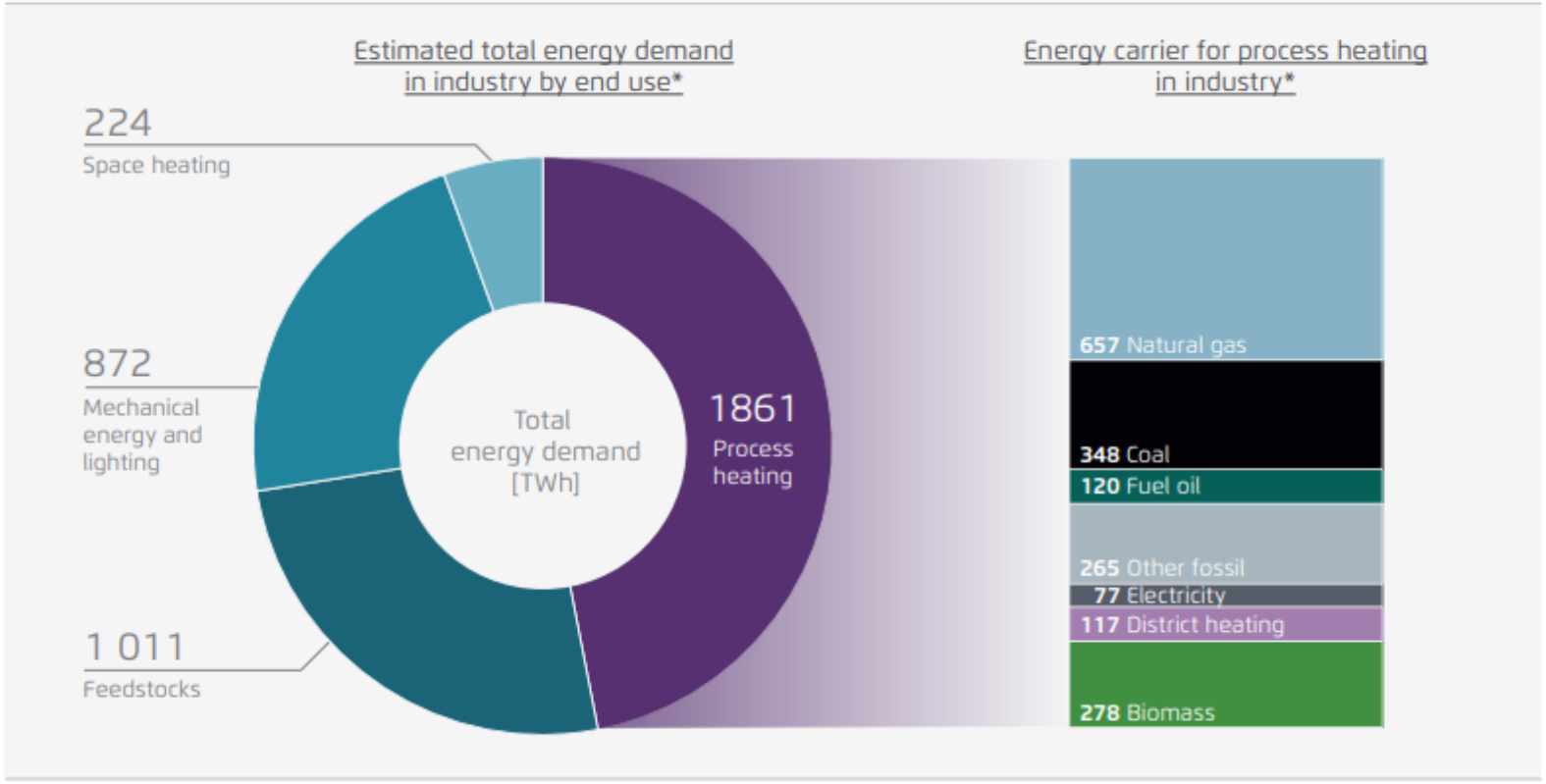


Leader in Green H2

The electrification of the industry – the value of it

Industrial heat processes mean about a 25% of EU energy consumption
Today more than 75% of this heat is produced by fossil fuel sources

Energy demand of process heating and its energy sources in the EU



Source: Agora Industry - "Direct electrification of industrial process heat"

Fossil fuel imports savings potential

45 b€ in 2025

130 b€ in 2030

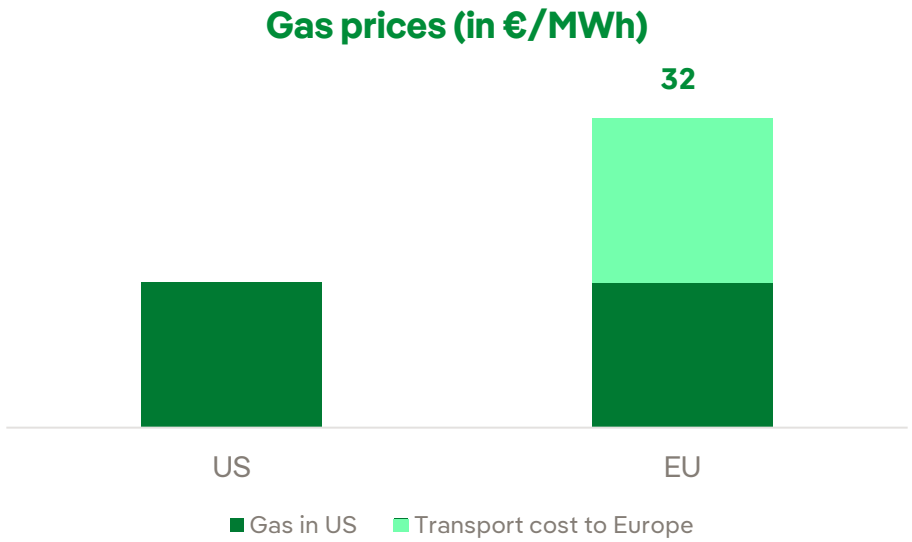
260 b€ in 2040

2025-2040
2.5 trillion

Source: Jorgensen, APAE presentation

EU industrial competitiveness – Global competition

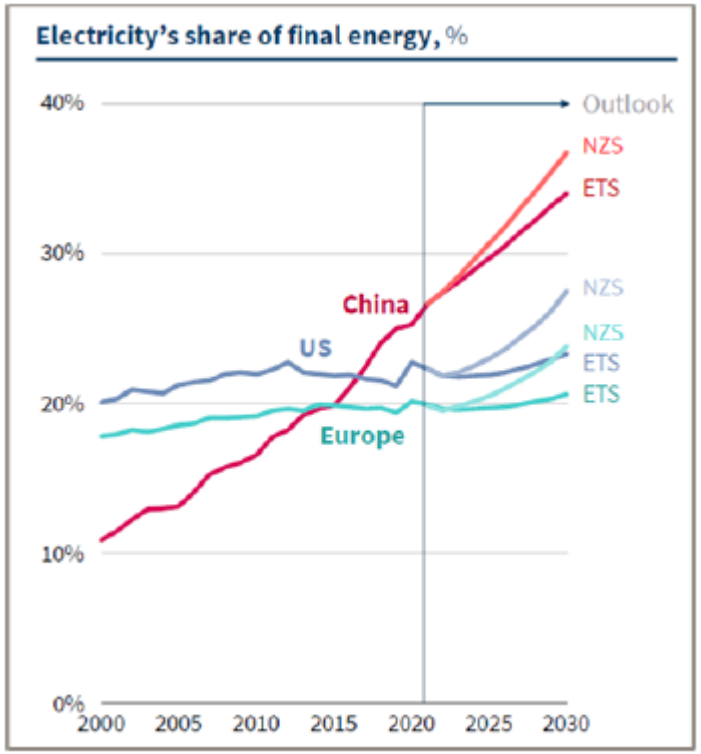
US resources



✓ **Electricity Bill – TAXES and LEVIES:**

EU = 4 times more than US

Electrification in China

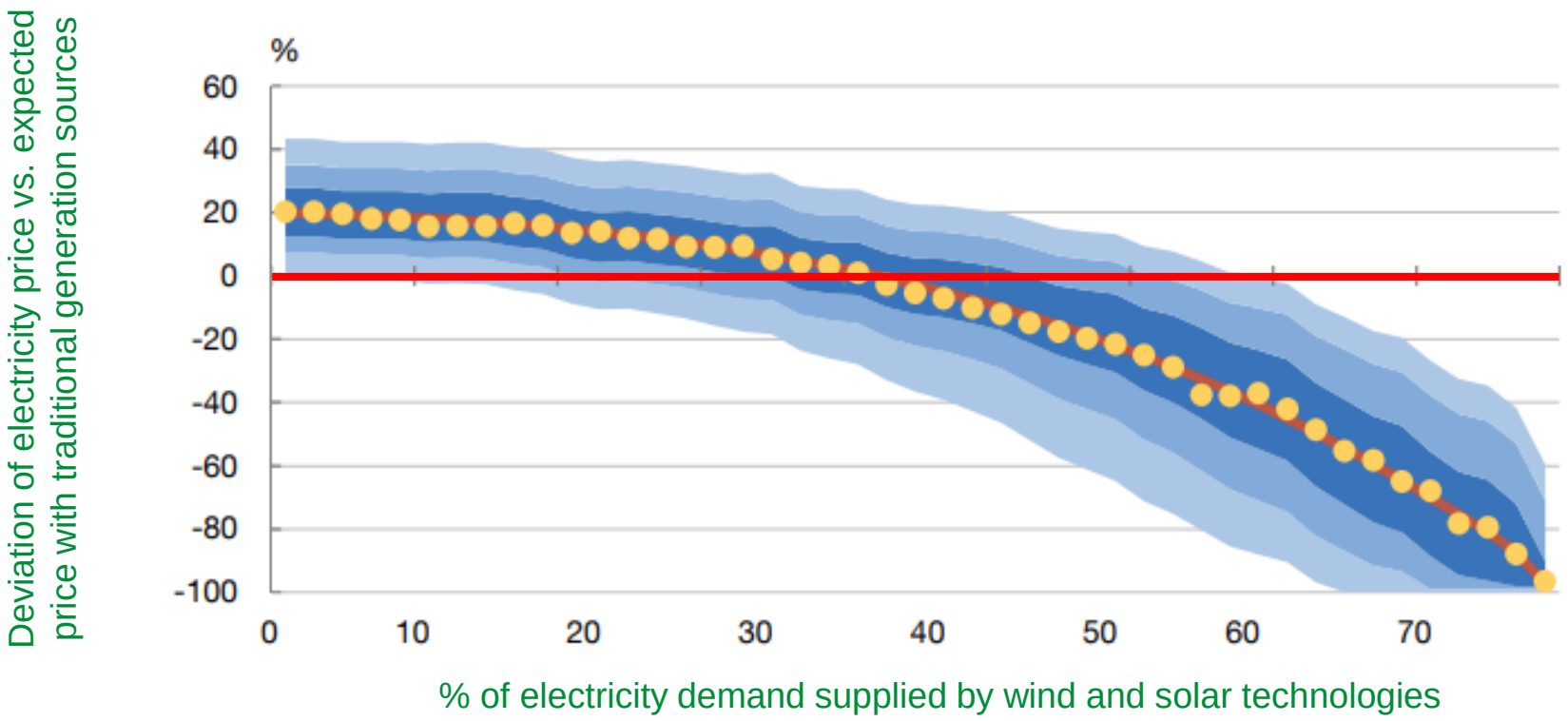


2000: 10% **2025:** ~30% **2035:** 35%

EU has no oil or gas reserves. Strategic security or competitiveness cannot be based on them

The electrification of the industry – Impact of RES in market prices

Correlation between electricity Price and deployment of Renewable generation
Historical data 2015-2024 from Spain



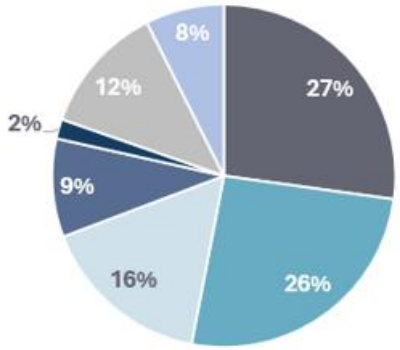
Source: Spanish Central Bank: El impacto de las energías renovables sobre el precio mayorista de la electricidad. BOLETÍN ECONÓMICO (bde.es)

How to address electrification?

62% of the process heat demand could be electrified existing technologies

Low-hanging fruit

- Industrial applications **Temperature < 500**
- **Food&Beverage, Pulp, Paper, Wood, Textiles, Chemicals, Transport, Equipment and Machinery**
- Directly electrified with existing technologies (heat pump, e-boiler, thermal storage) will give a competitive edge. Huge flexibility potential.

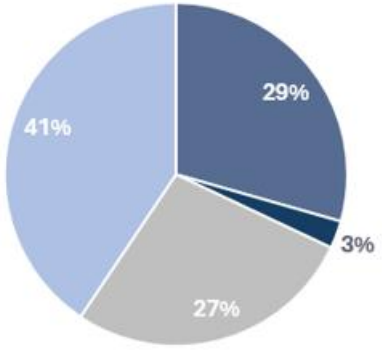


Industrial Applications <500°C

850 TWh, 45%

Hard-to-abate – in need for alternative solutions

- Industrial applications **Temperature > 500**
- **Iron & Steel, Non-metallic Minerals** (cement, glass, etc.), **Chemical and Petrochemicals**
- Limited electrification potential with existing technologies. Need future technological advancement and cost reduction.

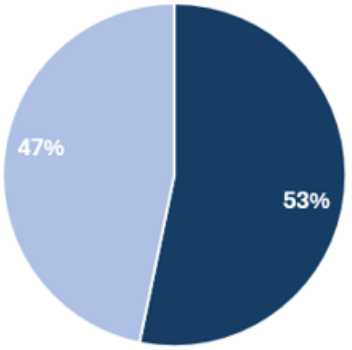


Industrial Applications >500°C

900 TWh, 49%

Electrified Industry with short-term competitiveness issues

- Industrial applications currently electrified
- **Non-Ferrous Metals (Aluminum) and parts of the Steel processes** (production with electric arc furnaces)
- Processes rely heavily on electricity and face **external competition** and **overcapacity** in international markets.
- Traditionally base load consumption



Industrial applications that are currently electrified

80 TWh, 4%

Pulp & paper | Food | Non-ferrous metals | Chemical & petrochemical | allic minerals | Iron & steel | Other

Source: Agora Industry - "Direct electrification of industrial process heat"

Not all industry is the same: Adapted Solutions

Easy-to-abate Industry	Hard-to-abate – in need for alternative solutions	Electrified Industry with short-term competitiveness issues
• Industrial applications **Temperature < 500** • **Food, beverage, Pulp, Paper, Wood, Textiles, Chemicals, Transport Equiment and Machinery**	• Industrial applications **Temperature > 500** • **Iron & Steel, Non-metallic Minerals** (cement, glass, etc), **Chemical and Petrochemicals**	• Industrial applications currently electrified • **Non-Ferrous Metals (Aluminum) and parts of the Steel processes** (production with electric arc furnaces)
Pragmatic approach: Hybrid solutions • *Progressive substitution of fossil fuel steam by electric equipment (mainly e-boiler + thermal Storage to be charged in hours with low electricity price)* In the EU this represents a demand of **600 TWh/year** 	Focus on **multiple technological pathways**: • Promote **innovation** • Industrial **hubs** • Funding streams from **ETS,** specific calls under **Innovation Fund** • EU wide IPCEIs flagship projects to develop the whole value chain • Coordinated **infrastructure planning** (H2, electricity) • Protection against **carbon leakage** • Based on **cost-efficiency**	**Targeted support**: • **EU resilience analysis** (dependencies, risks for EU economy) • Specific time bond **direct aid** (until structural cost reductions arrive) 

Clean Industrial Deal requires differentiated approach to address EU industries needs

Real life example: Paper company

Technical data

- ✓ **Location:** Middle-North of Spain
- ✓ **Gas consumption**: 100 GWh/year
- ✓ **Heat production cost:** 30% annual OPEX
- ✓ **Emmisions:** ~18 tn eqCO_2

Electrification project

- ✓ **Electrification target**: 50 GWh/year
- ✓ **Electrification impact:** 50% of gas consumption

Why didn't it go through FID?

- ✓ **Fossil fuel subsidies**: Gas boilers get tax deductions that are lost when switching to e-boilers.
- ✓ **Market risk**: Factory faced risks due to competition with peer industries using gas (a future drop in gas prices makes the plant uncompetitive).
- ✓ **Outdated Technology Classification**: Technologies with similar systems (e.g. solar thermal systems) - capturing onsite solar energy for heat - receive Energy Savings Certificates, but PV with thermal energy storage + e-boilers are not eligible.

Other barriers

- ✓ **Taxes and levies: electricity x4 vs gas**
- ✓ **GBER requirement: 75% onsite production**
- ✓ **Permitting**
- ✓ **Physical supply of electricity. Grids.**