



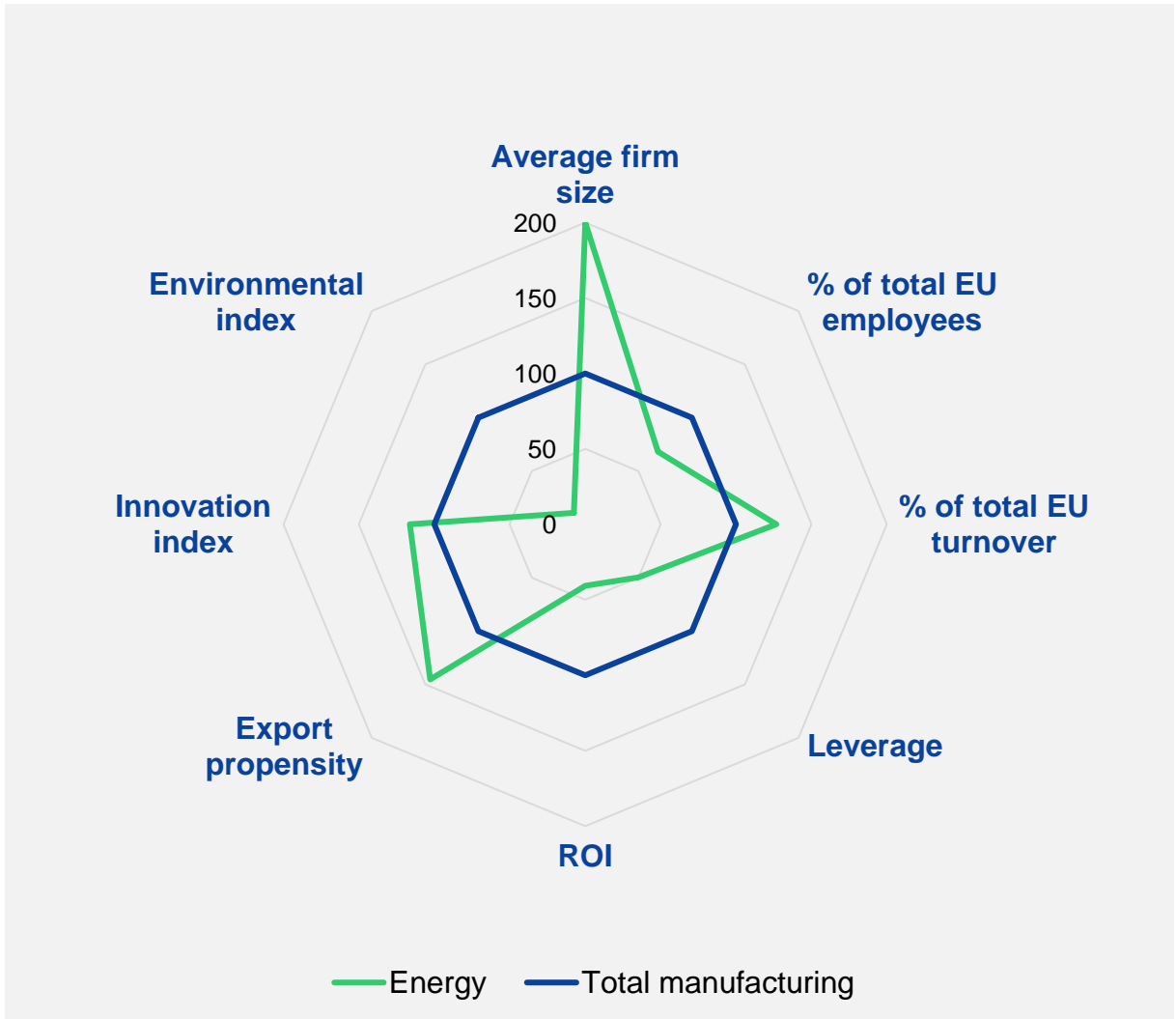
The Energy industry in Italy

Sector Kit 2024



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Overview



Source: Eurostat, Prometeia

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Key Insights

- The Italian Energy industry is characterized by **large enterprises** that hold a **substantial share of the EU market in terms of turnover**.
- Firms active in the manufacturing of Energy machinery and equipment in this sector exhibit **superior export propensity** relative to the benchmark.
- The sector's **emission intensity** is **higher** than that of the manufacturing industry, a **typical outcome** given the nature of its operations. Nevertheless, the Energy sector shows a **notable level of innovation**, reflecting considerable efforts in adopting new and more sustainable technologies.
- Given the profound transformation underway in the sector, a dedicated **section** of this report analyzes Italy's position within the **Renewable Energy industry**.

Number of firms and sector characteristics

Year 2022		Number of enterprises	Turnover mln €	Number of employees
Energy	Value	18 417	506 371	287 824
	% on total economy	0.3%	10.8%	1.5%

Breakdown by subsector

Electricity generation and transmission equipment	Value	2 218	19 590	54 768
	% on total sector	12.0%	3.9%	19.0%
Energy machinery	Value	2 463	44 553	112 332
	% on total sector	13.4%	8.8%	39.0%
Production and distribution of electric energy	Value	12 101	318 158	64 644
	% on total sector	65.7%	62.8%	22.5%
Production and distribution of gas	Value	1 635	124 070	56 079
	% on total sector	8.9%	24.5%	19.5%

Breakdown by firm size class¹

Micro	Value	14 580	4 926	16 641
	% on total sector	79.2%	1.0%	5.8%
Small	Value	2 192	9 920	32 833
	% on total sector	11.9%	2.0%	11.4%
Medium	Value	1 090	24 065	55 352
	% on total sector	5.9%	4.8%	19.2%
Large	Value	555	467 460	182 998
	% on total sector	3.0%	92.3%	63.6%

Source: Prometeia Structural Database

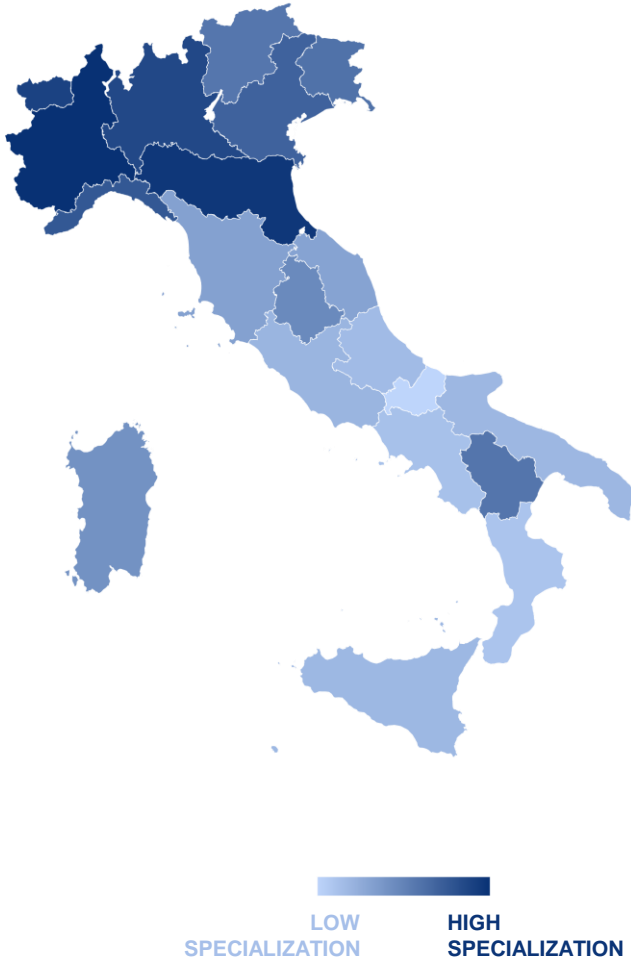
Key Insights

- The **Energy sector**, comprising over 18 thousand enterprises, **constitutes a major player in the Italian economy, accounting for almost 11% of the total turnover**, with a production value exceeding 506 billion euros.
- The highest concentration of firms and turnover is attributed to the **Production and distribution of electricity**, whereas the segment involved in producing **Machinery for energy** companies employs the greatest number of individuals.
- Nearly **3% of enterprises** in this sector are **classified as large enterprises**, generating more than 92% of the sector's turnover, a figure significantly higher than the manufacturing industry average of 60.3%.

1. As a reference, manufacturing in Italy has the following structure:

- Number of enterprises: Mic. 84.9%, Sm. 10.8%, Med. 3.3%, Large 1%
- Turnover: Micro 8.6%, Small 12.4%, Medium 18.7%, Large 60.3%
- Number of employees: Mic. 26.7%, Sm. 21.7%, Med. 19.7%, L. 31.9%

Specialized districts or regions



Top 5 region by specialization, 2021	Specializ. index ¹
Piemonte	1.4
Emilia-Romagna	1.4
Valle d'Aosta	1.3
Lombardia	1.3
Liguria	1.2

Top 5 region by number of empl., 2021	Number of employees
Lombardia	74 228
Emilia-Romagna	34 416
Veneto	30 282
Piemonte	29 747
Lazio	15 808

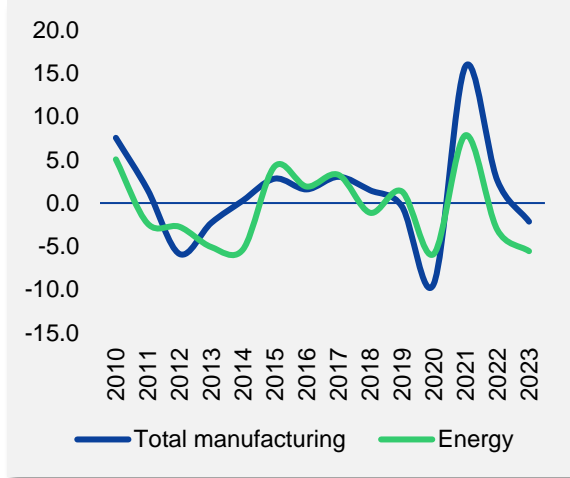
Source: Istat

Key Insights

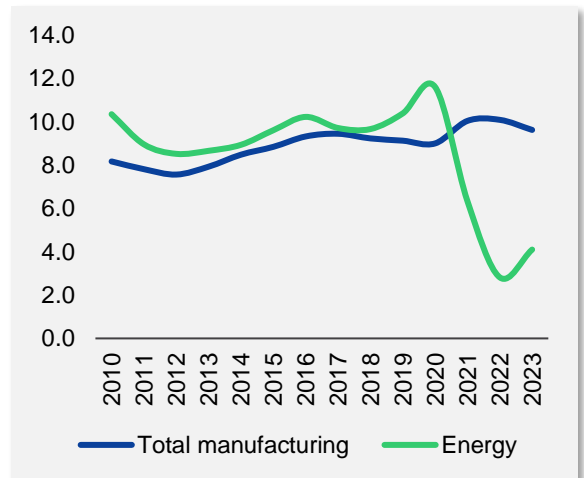
- In the **Energy industry**, **specialized regions** are clustered in **Northern Italy**, with Piemonte having the highest specialization index at 1.4. Emilia-Romagna, Valle d'Aosta, Lombardia, and Liguria follow with indices ranging from 1.4 to 1.2.
- Consistent with this specialization, **Lombardia** and **Emilia-Romagna** rank first and second in terms of the **number of workers** in the sector, with Lombardia employing more than twice as many workers as Emilia-Romagna. Veneto, Piemonte, and Lazio rank third to fifth, respectively.

Industry financials

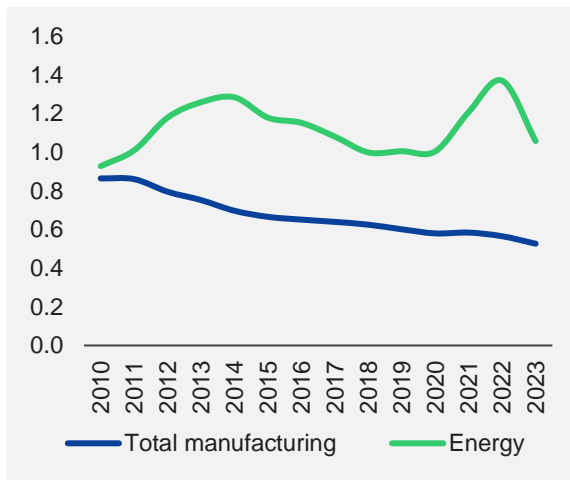
Turnover (Constant Prices, YoY change %)



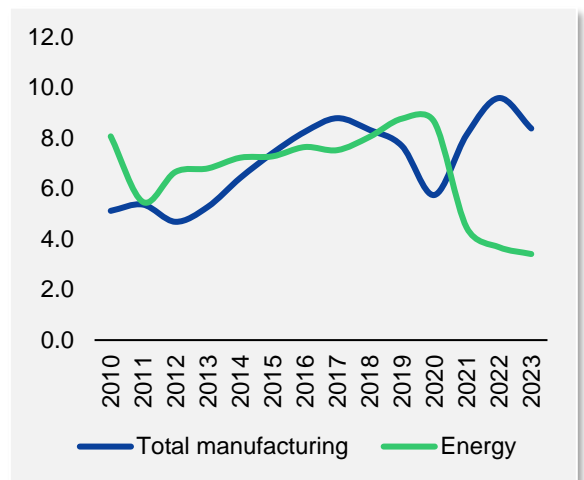
EBITDA



Leverage



ROI

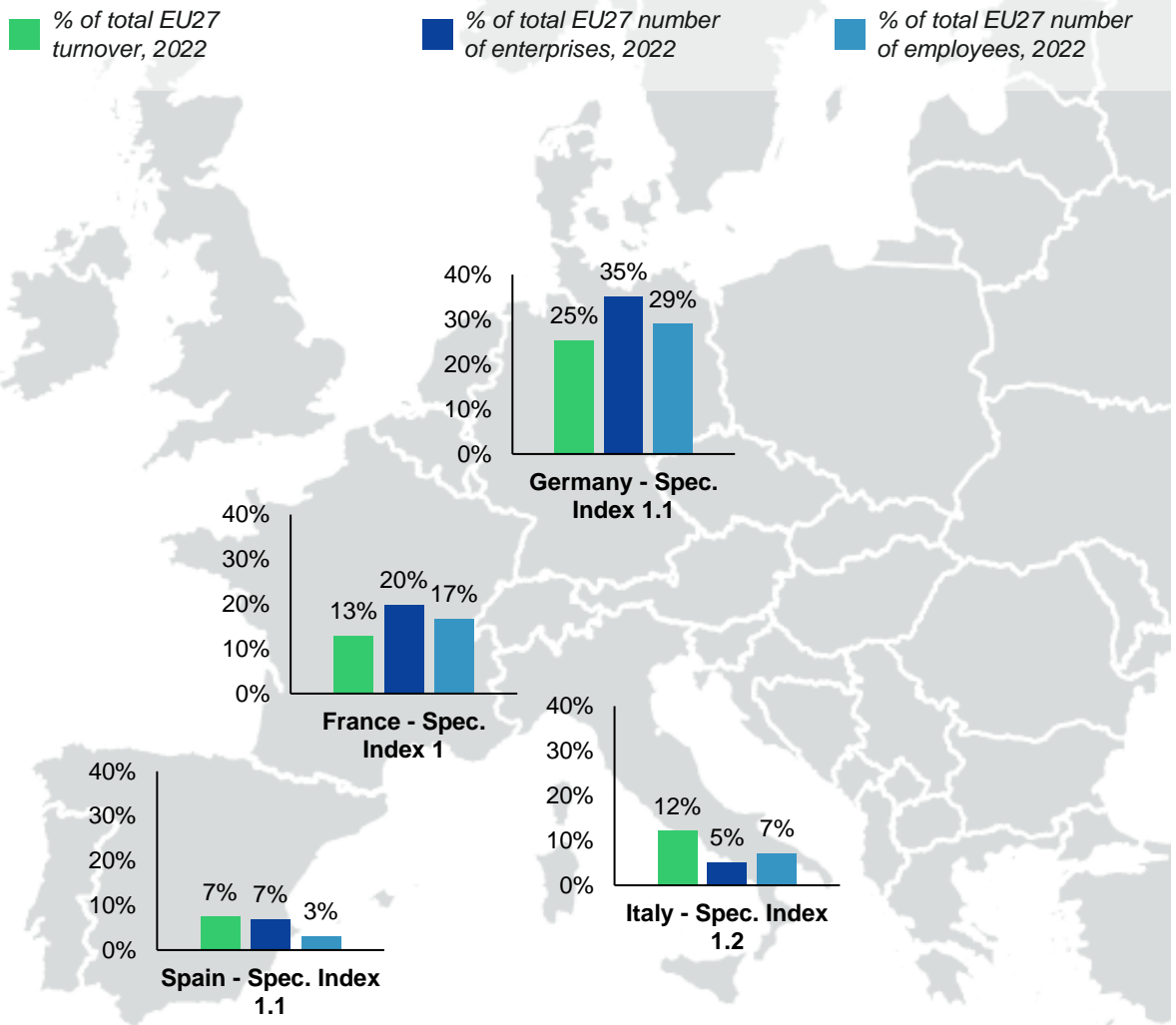


Source: Prometeia Financials Database

Key Insights

- Following a **turnover increase** in 2021, driven by the rebound from the COVID-19 crisis, the Energy industry's turnover at constant prices declined in 2022 and 2023, primarily due to the **cost increase** stemming from international tensions that elevated the costs of **energy inputs**.
- Historically**, the energy sector's **profit margins** have been **higher** than those of the manufacturing industry. However, the substantial increase in input prices has led to margin erosion in recent years, a trend that reversed only in 2023.
- During these challenging years, the **leverage index** increased after almost a **decade of reduction**. Nevertheless, in 2023, the sector's financial stability returned to historically average levels.

International benchmarking



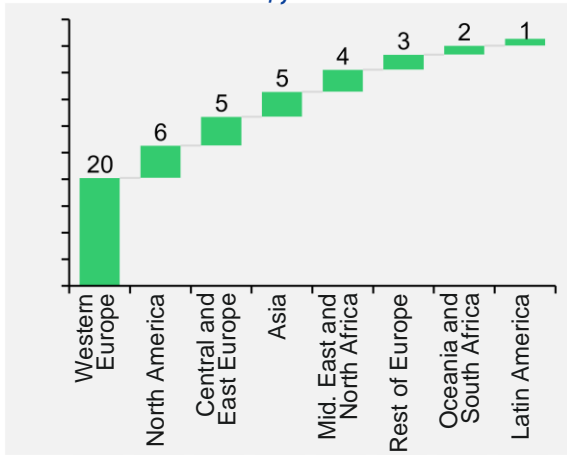
Source: Eurostat, Prometeia Structural Database

Key Insights

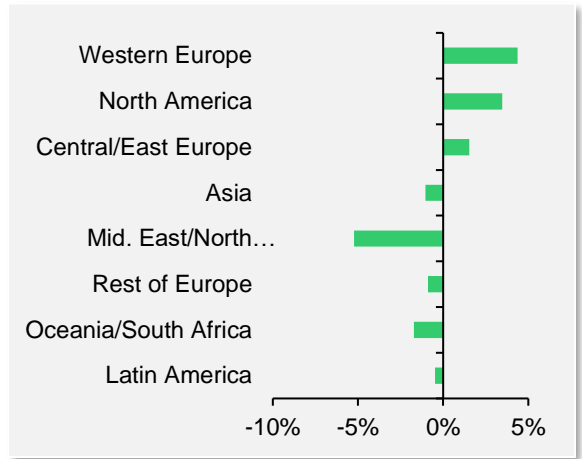
- The Italian Energy industry holds a **significant position in Europe**. With over 18 thousand enterprises, Italy accounts for 5% of the total number of Energy enterprises in Europe.
- Firms in this sector generate approximately **12% of the total EU27 industry turnover**, positioning Italy second among EU countries, though it significantly lags behind Germany, which accounts for 25%.
- The specialization index indicates that **Italy is quite specialized in this sector**, with a score of 1.2.

International trade

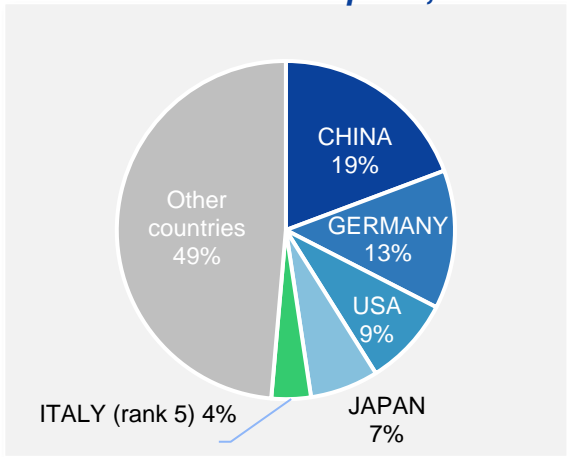
Italian export by area of destination
Bln \$, 2022



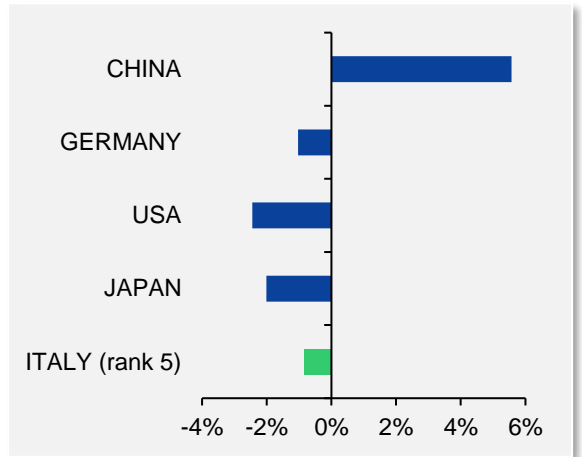
Italian export by area of destination
Var 2013-2022 of the share



World main exporters
% on total world exports, 2022



World main exporters
Var 2013-2022 of the share



Source: Prometeia Fipice Database

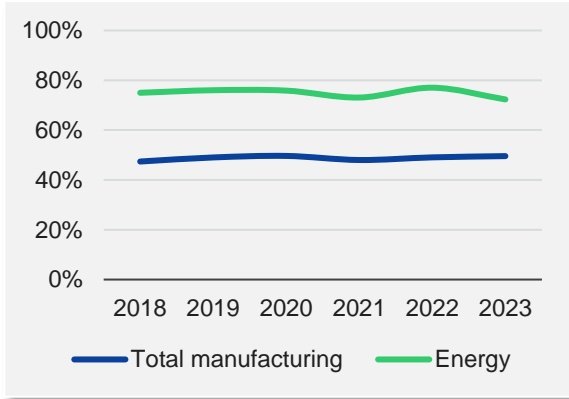
Key Insights

- The **largest share of the Italian exports of the Energy industry** is directed **towards Western Europe**, with exports to this region increasing by 4% since 2013. In contrast, exports to the MENA region have declined substantially, falling by 5% in the past ten years.
- The **leading exporter** in the Energy sector is **the China**, which accounts for approximately 19% of global exports. It is followed by Germany (13%), the US (9%) and Japan (7%).
- **Italy ranks 5th among the leading exporters** in the industry, with a **4% share of global exports** as of 2022. Since 2013, Italy's market share has slightly declined.

Competitive advantages of Italian firms

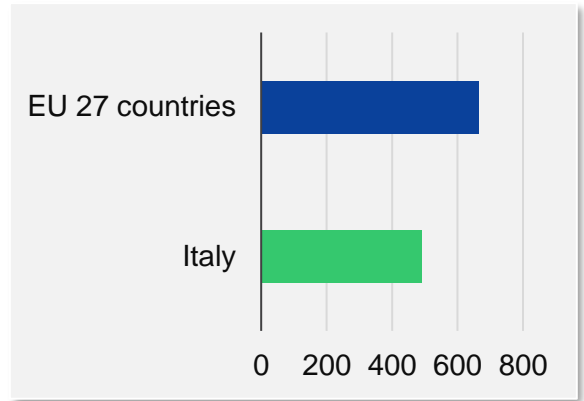
Export propensity

(ratio between exports and production value)



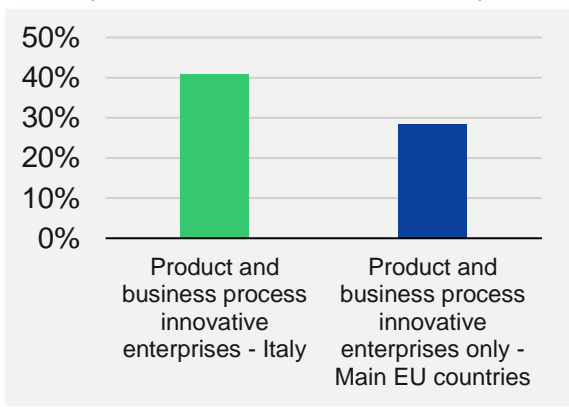
Emission intensity

(GHG grams per € of output)



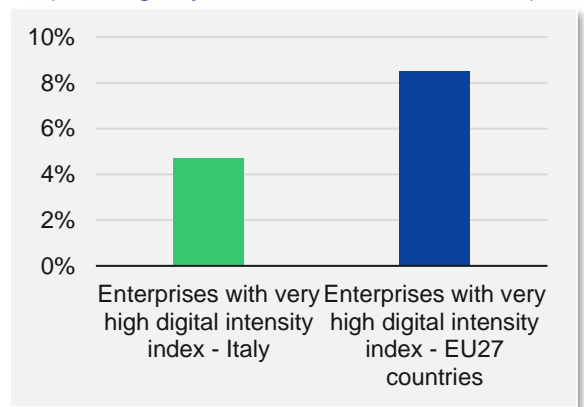
Innovation propensity

(% of innovative firms on the total)



Digital intensity

(% of digitally advanced firms on the total)



Source: Eurostat, Prometeia Economics Database

Export propensity data only refers to the manufacturing of machinery and equipment used by the Energy industry

Key Insights

- The **Energy manufacturing industry has a strong export orientation**, exceeding the benchmark and gravitating around 75% in recent years.
- The Italian Energy industry has outperformed EU countries in **emission intensity**, with **significantly lower emissions per output produced than the EU27 average**.
- Italian companies in the Energy sector have shown a **good propensity towards innovation**, performing better than the EU27 countries' average, while the industry lags behind EU countries in terms of Digitalization.

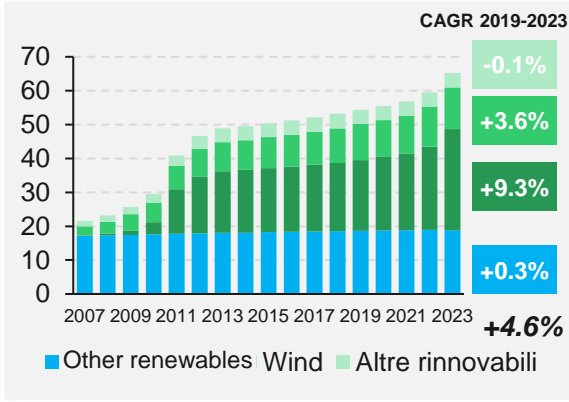
Focus | The Renewable Energy industry in Italy

Sector Kit 2024

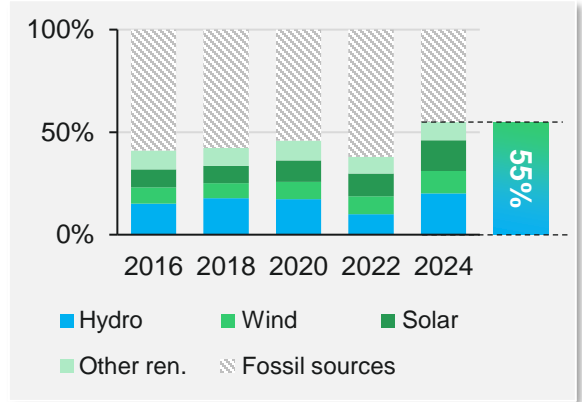


Renewable energy production

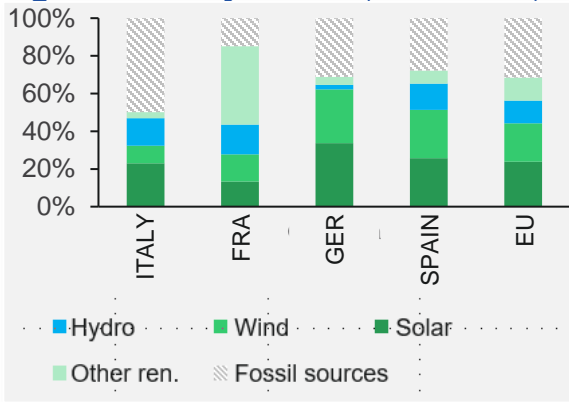
Renewable production capacity
(Italy, installed GW)



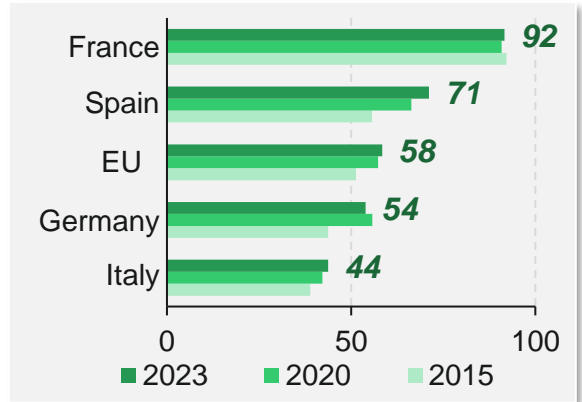
Production of electricity by source
(Italy, average first 6 months of each year)



Installed capacity for electricity generation by source (% on the total)



Clean electric energy
(% on the total)



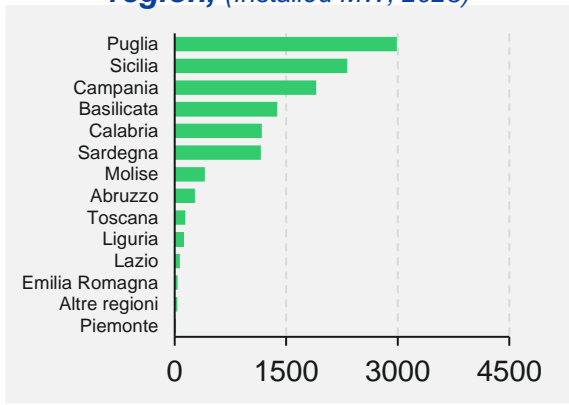
Source: EMBER

Key Insights

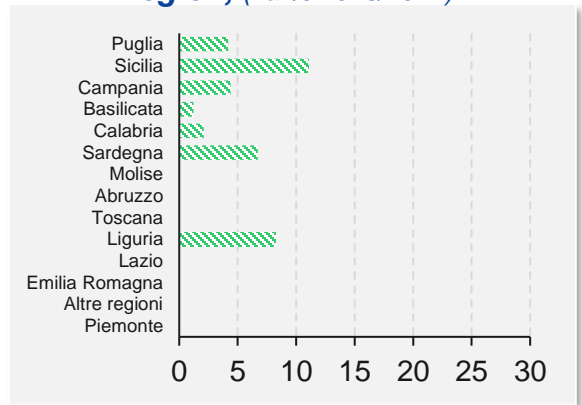
- Italy's renewable **energy production capacity** has seen **strong growth** in recent years, with a compound annual growth rate (CAGR) of 4.6% from 2019 to 2023, **driven particularly** by the expansion of **solar energy generation capacity**.
- In the first half of 2024, **more than 50% of electricity** in Italy was generated **from renewable sources**, largely due to the significant contribution of hydropower.
- However, **Italy still lags behind its European peers**, with its green energy generation capacity well below the European average.

Wind and solar production capacity by region

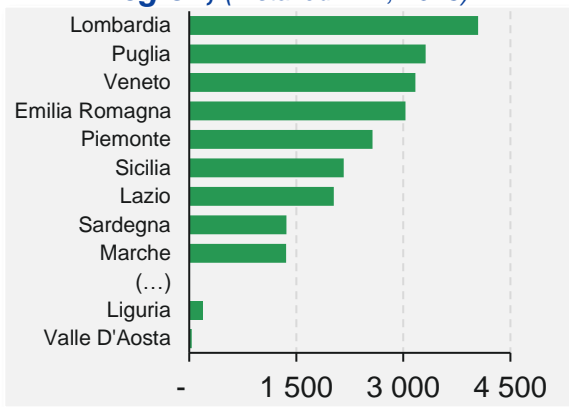
Production capacity from wind by region, (Installed MW, 2023)



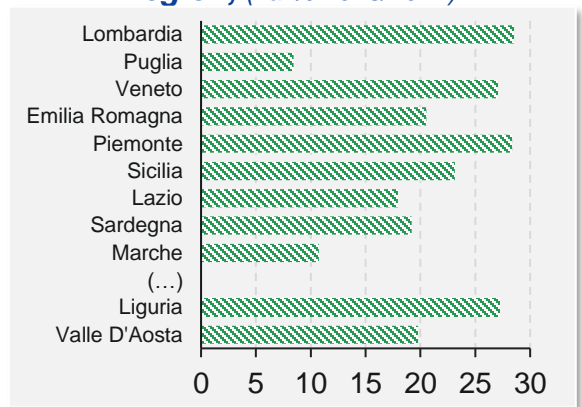
Production capacity from wind by region, (var% 2023/2022)



Production capacity from PV by region, (Installed MW, 2023)



Production capacity from PV by region, (var% 2023/2022)



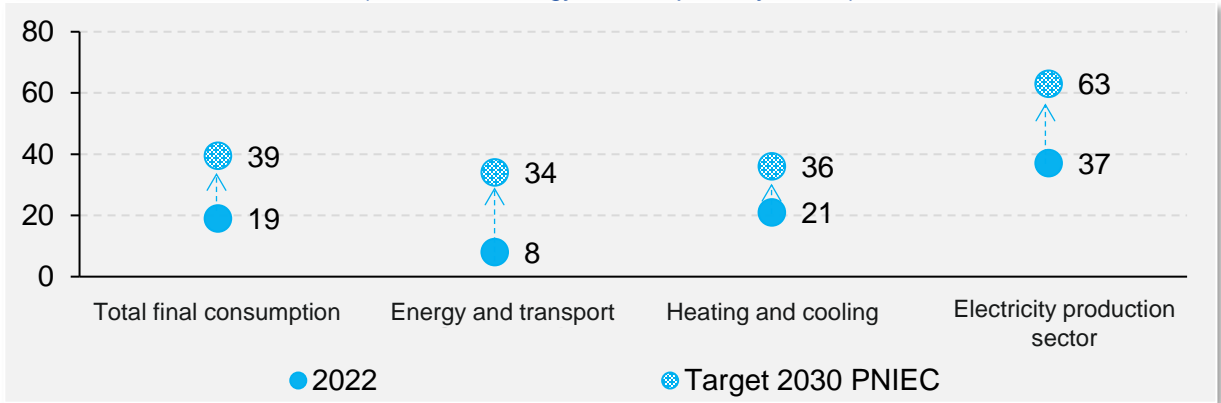
Source: ANEV, GSE

Key Insights

- **Wind energy production** is predominantly **concentrated in Southern and Central Italy**, where the majority of investments in the last years have also been focused.
- In contrast, **photovoltaic energy generation capacity** is led by **Lombardy**, followed by **Puglia** and **Veneto**. In this case, production is more evenly distributed across regions, and the growth in production capacity reflects a similarly dispersed pattern.

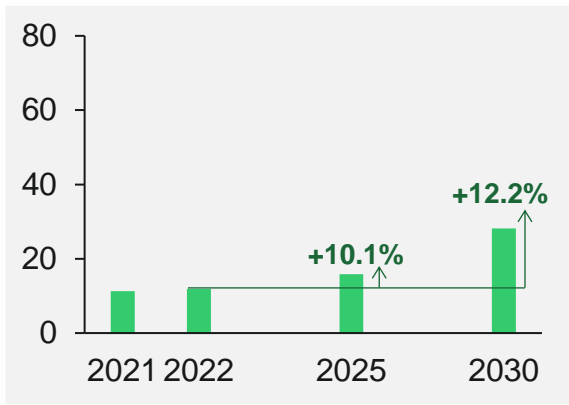
Renewable energy production expected growth to 2030

Share of renewables in energy use, 2022 and target 2030
(% on total energy consumption by sector)



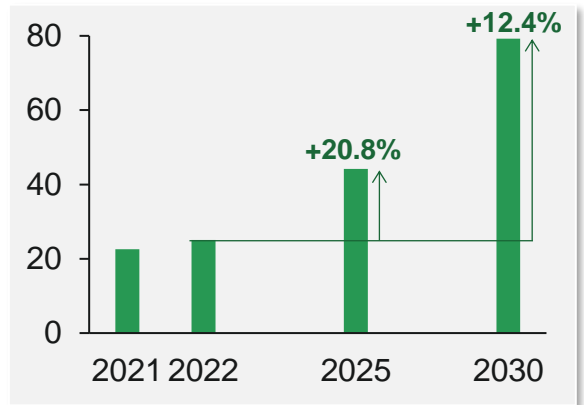
Wind power capacity

(GW and CAGR, 2021-'22 and target PNIEC)



Solar power capacity

(GW and CAGR, 2021-'22 and target PNIEC)



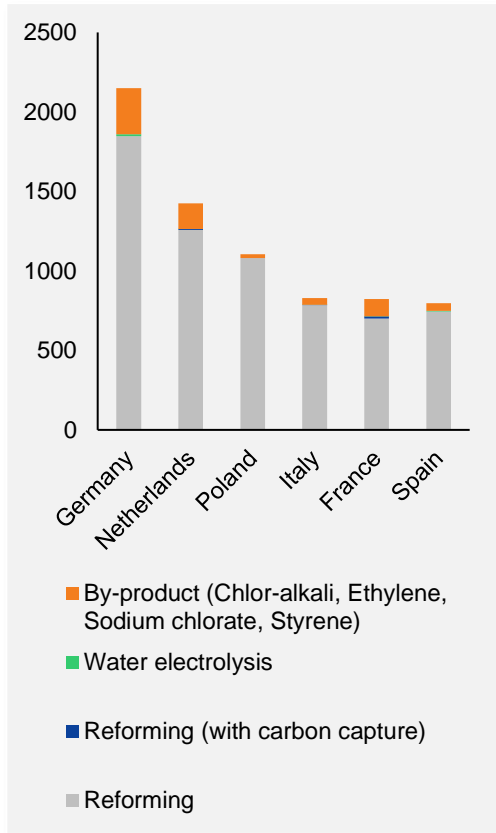
Source: EMBER, PNIEC 2024

Key Insights

- The targets set within the National Energy and Climate Plan (PNIEC) mandate that **by 2030, nearly 40% of the energy used in Italy must be sourced from renewables**. Particularly challenging are the goals for the transportation sector, where renewable energy use must more than quadruple.
- This also implies a significant increase in renewable energy generation capacity, with **wind and solar energy generation needing to grow at an annual rate exceeding 12% until 2030**.

Hydrogen production in the European Union and in Italy

Hydrogen production by category
(Kt, 2022)



Hydrogen production locations by category
(Italy, 2022)

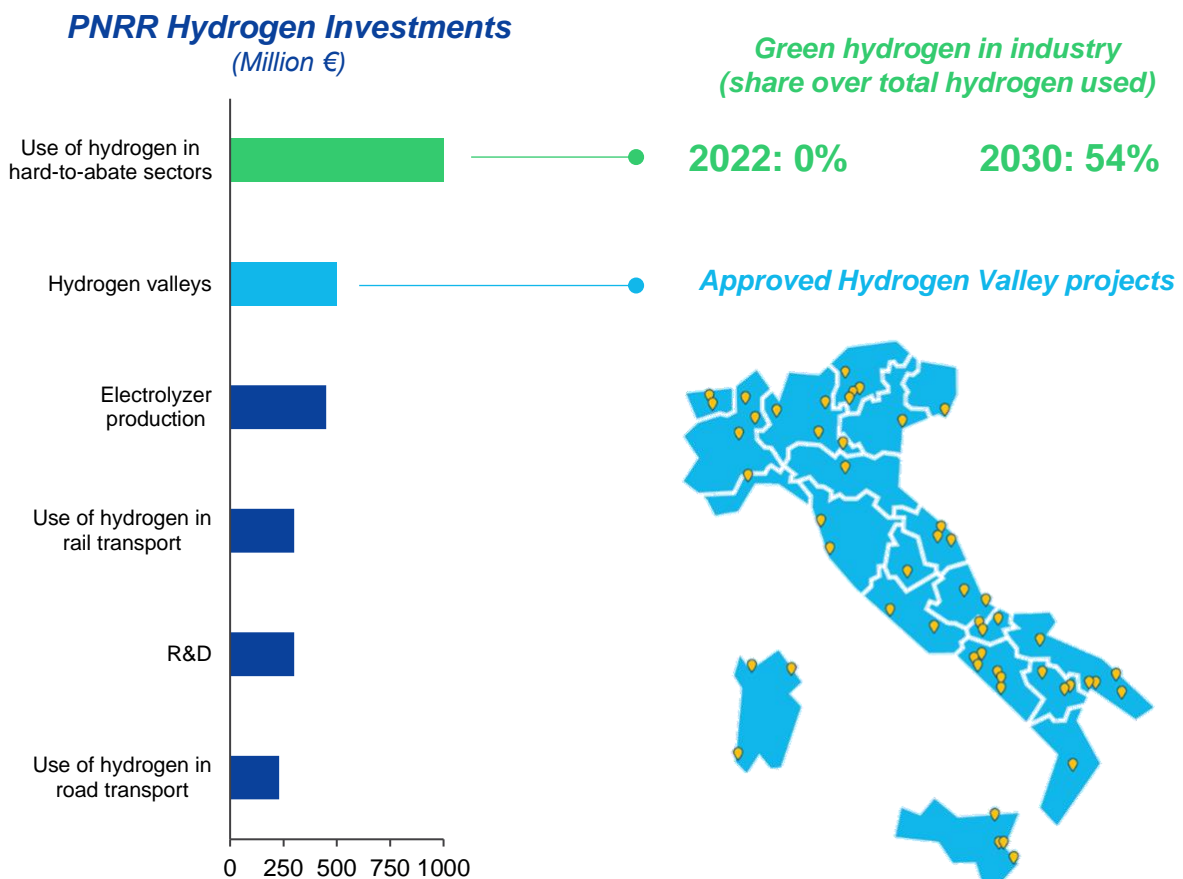


Source: European Hydrogen Observatory

Key Insights

- Hydrogen holds a **unique position** in contributing to national **environmental goals** and ensuring a more secure and reliable energy production, especially when generated from renewable energy sources through **electrolysis**.
- Currently, **hydrogen production in Europe** is concentrated in Germany, the Netherlands, and Poland, with Italy following. However, in all these countries, the capacity for producing **clean hydrogen** (via electrolysis or carbon capture technologies) **remains negligible**.
- In **Italy**, there are only **two hydrogen production plants** utilizing electrolysis (located in Bolzano, Trentino, and Troia, Puglia), accounting for just **0.2%** of the total hydrogen produced in the country.

Hydrogen production expected growth



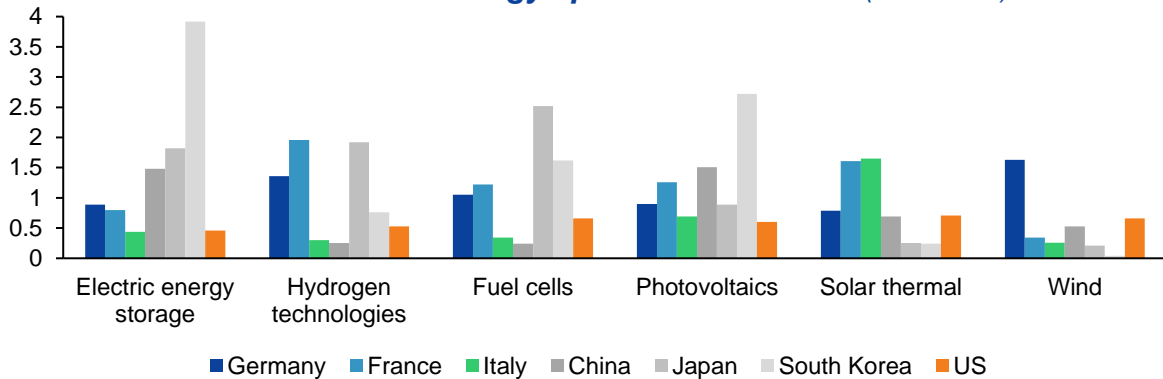
Source: Italia Domani, H2IT, PNIEC 2024

Key Insights

- Hydrogen can play a crucial role in supporting the country's decarbonization efforts, both through its **potential use in "hard-to-abate" sectors** and in **selected applications such as mobility**. However, this requires the **development of a national hydrogen ecosystem**.
- Consequently, **nearly €3 billion has been allocated in the PNRR** for the development of a hydrogen industry in Italy.
- Of this, **€500 million** has been earmarked for the **creation of Hydrogen Valleys**, strategically located in decommissioned industrial areas already connected to networks, to help build a widespread hydrogen production and distribution network for nearby SMEs.

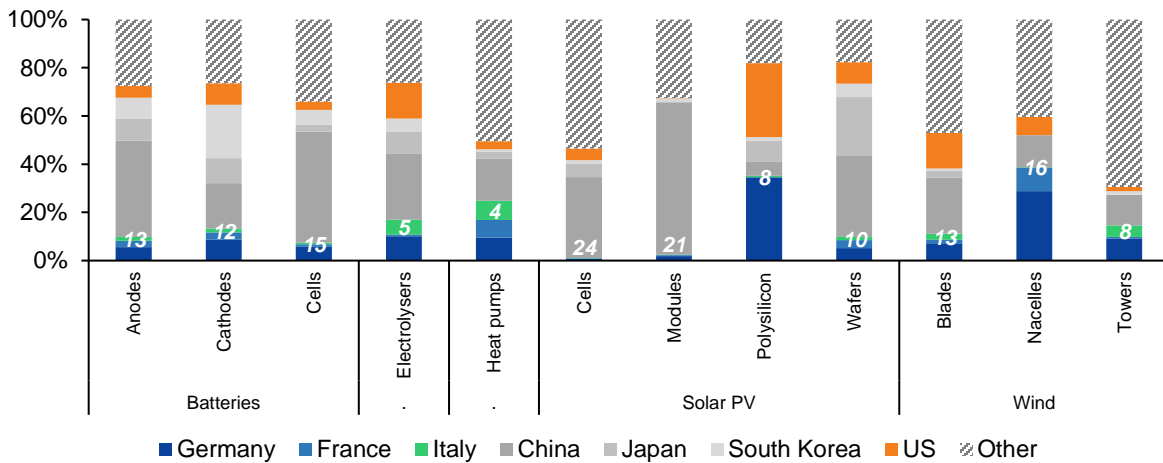
Clean energy manufacturing technologies

Low-carbon technology specialization index (2017-2020)



Export of clean technologies

(% on total world exports; Italy position in the world exporters rank is reported in white)



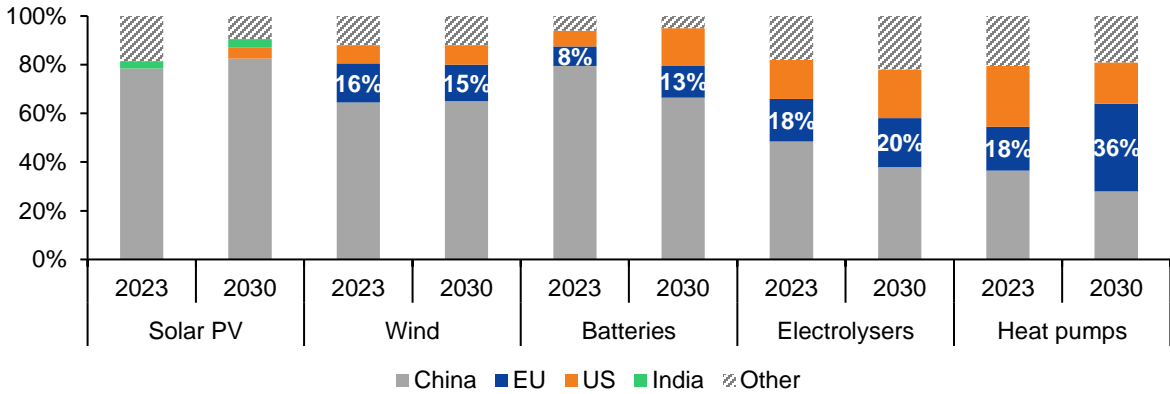
Source: PNIEC 2024, Prometeia elaboration on TDM data

Key Insights

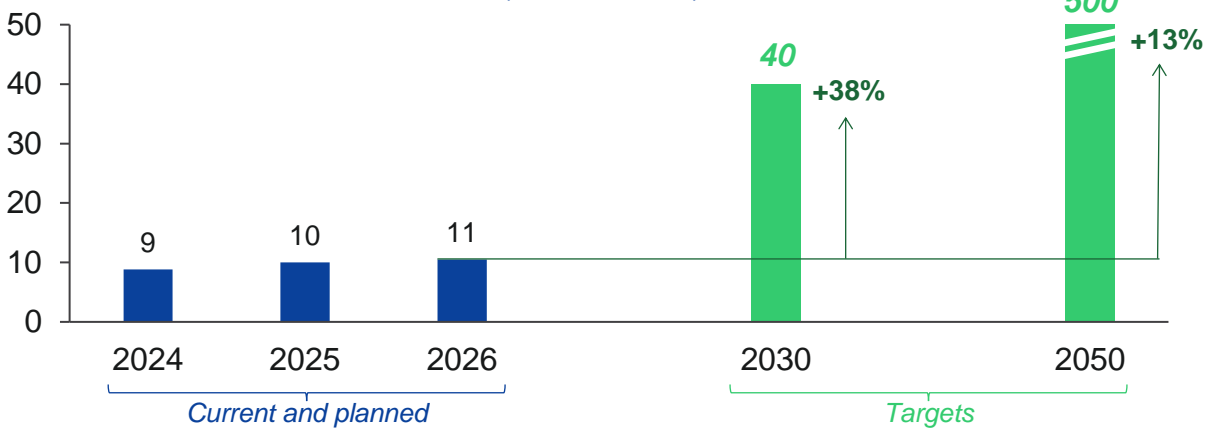
- The **manufacturing products** identified by the International Energy Agency (IEA) as **essential for the energy transition** include **batteries, electrolyzers** (for green hydrogen production), **photovoltaics, heat pumps, and wind energy technologies**.
- The specialization index indicates that **Italy is relatively underdeveloped** in all these technologies. However, in terms of export data for these technologies and their components, Italy currently ranks **among the top 10 exporters** for **electrolysers, heat pumps** (fourth place), **polysilicon, wafers, and wind energy towers**.

Clean energy manufacturing technologies expected growth

Geographical concentration of current and announced manufacturing capacity



Current, planned and target electrolyser manufacturing capacity in the EU (GW and CAGR)



Source: IEA, European Hydrogen Observatory

Key Insights

- While EU's role in the production capacity of solar photovoltaic technologies is expected to remain marginal compared to Asian giants, **in the 2030 outlook Europe will enhance its industrial positioning in the production of batteries, electrolysers, and heat pumps.** For wind energy technologies, the production share is expected to remain stable but significant.
- Notably, Europe is projected to experience **substantial growth in electrolyzer production capacity** for green hydrogen, with an **annual growth rate of 38%** from 2026 **to 2030**, outpacing the significant growth expected in other regions worldwide.

Notes

Industry definition

- The analysis encompasses activities classified under NACE Rev.2 codes C27.1, C27.2, C28.1, D35.

Data sources

- Information on the industry structure, characteristics, trade data, and financials are sourced from official statistics (Eurostat, ISTAT) and Prometeia Databases (Structural, Financials, Economics, Fipice).
- Financial data for the year 2023 are estimates based on currently available information.

Overview

- The radar chart on page 3 illustrates the industry's positioning relative to the entire Italian manufacturing sector across various indicators. The manufacturing index is standardized to 100, and the index value for the specific sector indicates its performance against this benchmark. An upper limit of 200 is set to facilitate graphical representation.

International Benchmarking

- The charts on page 7 present data for the top four countries in the European Union by sector turnover.
- Some EU countries do not provide complete information; however, this limitation is confined to smaller countries and does not affect the reported rankings.

Competitive advantages of Italian firms

- *Export propensity* is calculated as the ratio of export value to production value within the sector.
- *Innovation propensity* is an index representing the percentage of “innovation-active enterprises” over the total number of respondents to the Eurostat Community Innovation Survey (CIS), referring to 2020.
- The *Digital Intensity Index* (DII) is a composite indicator, derived from the survey on ICT usage and e-commerce in enterprises. Here, the share of enterprises with high or very high digital intensity as of 2021 is represented.
- *Emission intensity* is calculated as the ratio between GHG emissions of the sector in grams and the industry's production value (or gross value added, depending on the most relevant indicator) at current prices, based on data from 2021.

Clean energy manufacturing technologies

- Since the manufacturing of these technologies and their components is incorporated in larger traditional sectors (most of them part of the analyzed electrical equipment and machinery sectors, NACE C27-C28), the analysis here has been focused on the international trade of the products themselves, that can be identified in more granular terms using the Harmonized System (HS). The identification of the relevant codes has been sourced from IEA.
- It should be noted that, even with the detailed six-digit HS, a perfect match is not available for electrolyzers, which fall within a broader category of products under code 854330: “machines and apparatus for electroplating, electrolysis or electrophoresis”.

