ADVANCED FACTORIES
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FIRA BARCELONA

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Advanced Factories 2025

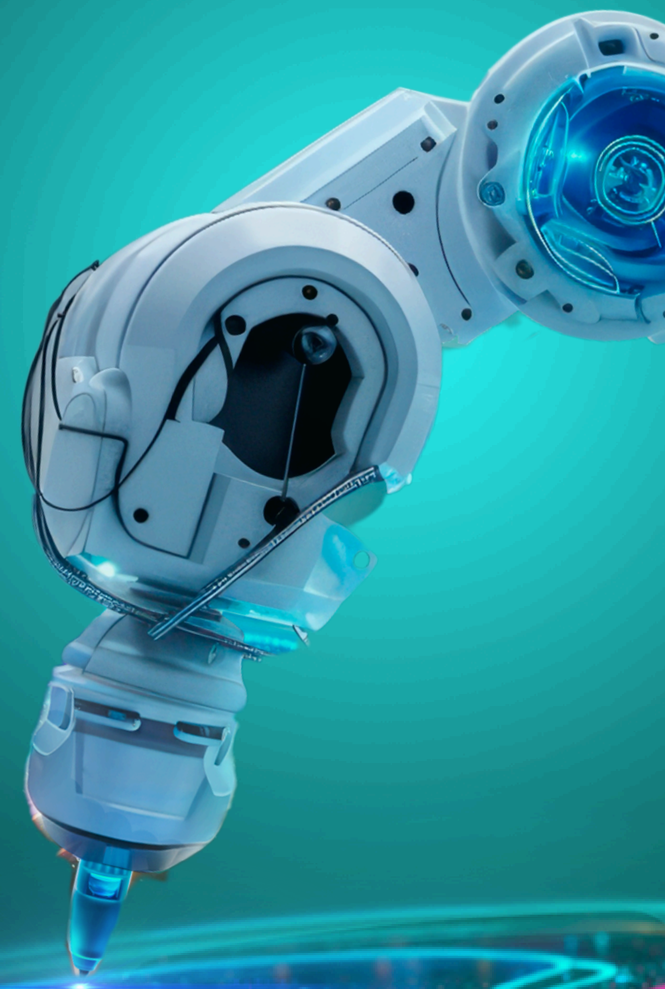
Technological Trends for the Factory of the Future

From Micro to Macro: These Are the Trends That Will Shape Industrial Growth in Spain in 2025

The industrial sector is facing a crucial moment in its development, with major challenges at both the macro and micro levels, in order to remain a driving force of Spain’s economy and employment.

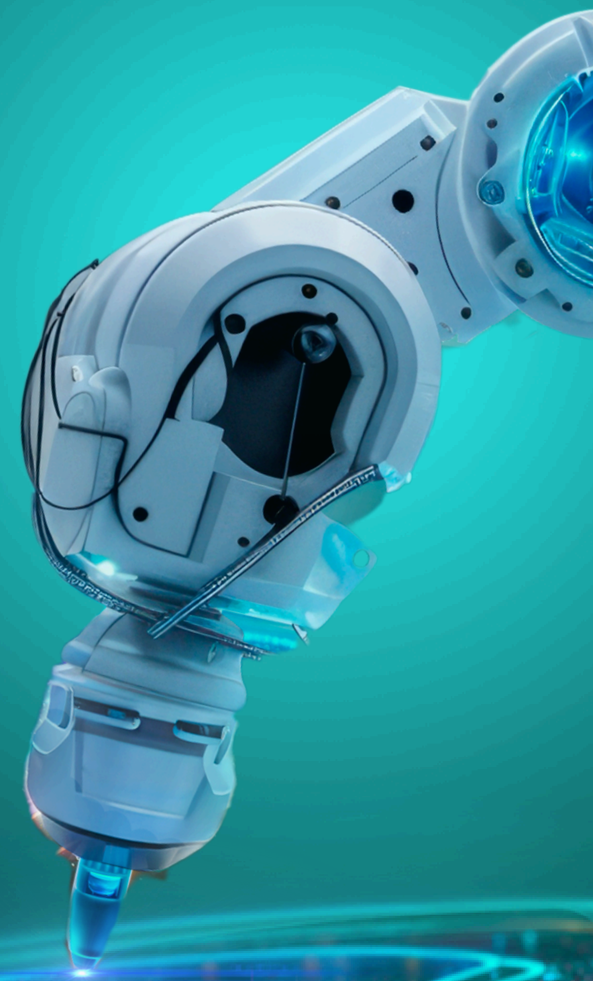
The obsolescence of certain production processes, the limited adoption of Industry 4.0 technologies among many SMEs, difficulties in attracting and retaining talent, rising energy costs, burdensome bureaucracy, the ongoing need for investment, and the growing competition from new international players all threaten its development. On top of these structural challenges, macroeconomic factors—such as the geopolitical context that is reshaping the rules of international trade—further complicate the outlook.

This situation is forcing both the European Union and Spain to rethink their industrial development strategies, driving digitalization in the sector and strengthening the reshoring of production, thereby restoring European autonomy.



With the aim of assessing the state of industry in the current context, Advanced Factories 2025 has developed the Industrial Digitalization Barometer in Spain, a study that analyzes the challenges and progress in automation and robotics within the manufacturing sector, based on the opinions of more than 700 executives and professionals from over a dozen industries, including automotive, metallurgy, chemical and pharmaceutical, capital goods, electronics, food and beverages, energy, packaging, logistics, textile, construction, aerospace, railway, defense and armaments, and shipbuilding.

5 technological trends and 5 challenges shaping industrial growth



TRENDS

- Cibersecurity
- AI
- Productivity
- Lack of talent
- Automatization

CHALLENGES

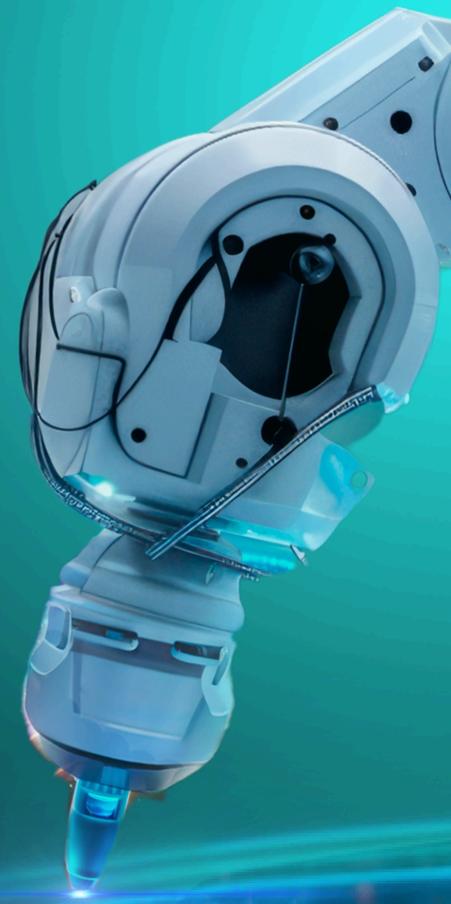
- Productivity vs. Competitiveness
- Administrative Simplification
- International Trade
- Energy Costs
- Internationalization

TECHNOLOGICAL TRENDS

1. Cybersecurity, a Key Technology for Industrial Competitiveness

Technology will play a crucial role in ensuring industrial competitiveness in Spain and Europe, with cybersecurity standing out as a key area of focus in the coming months, according to more than half of the industry (52.1%). Executives also highlight automation and robotics (44.7%) and the use of AI in production processes (30.9%) as essential drivers to increase profitability and improve process efficiency.

Particularly important in this regard is the promotion of digitalization among SMEs and micro-SMEs, which make up 95% of the Spanish business fabric. Currently, the digital gap between small and medium-sized enterprises and large corporations reduces productivity and slows down the adaptability of a significant portion of Spain’s industrial sector.



TECHNOLOGICAL TRENDS

2. More Productivity, Lower Costs, and Fewer Errors

More than 70% of professionals in the industrial sector state that technology improves their companies' productivity. In addition to gaining efficiency, executives also highlight other benefits of digitalization, such as cost reduction (47.6%) and fewer production errors (39.5%).

Similarly, the barometer confirms that digital transformation is a decisive factor in the sustainability and resilience of the Spanish industry, with 32% of professionals reporting that it has optimized the use of materials and resources in their companies.

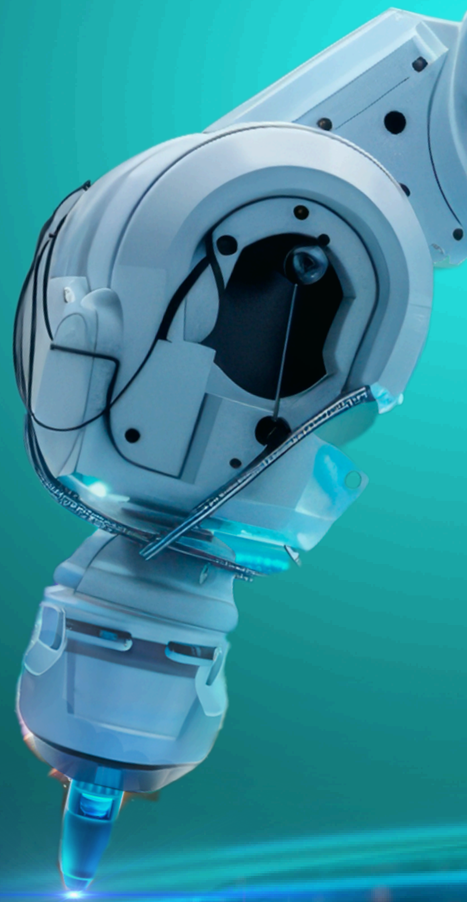
Overall, technology is enabling the industry to evolve and adapt to an increasingly strained and changing market. It facilitates the opening of new business lines and supports the achievement of the European Union's sustainability goals, which, in sectors such as automotive, are driving a transformation of the industrial model itself.

TECHNOLOGICAL TRENDS

3. The Spanish Industry: Highly Automated

87% of the industry confirms that it has adopted automation technologies in its production processes to some degree. Specifically, the survey reveals that nearly 4 out of 10 industrial companies have a medium level of automation, implementing technologies in some of their processes, while a quarter (24.9%) have a high degree of automation in key operations critical for their productivity. Meanwhile, 22.5% are still limited to trials and pilot projects.

In contrast, 13% of industrial companies have not yet implemented automation technologies, which is holding back their productivity.

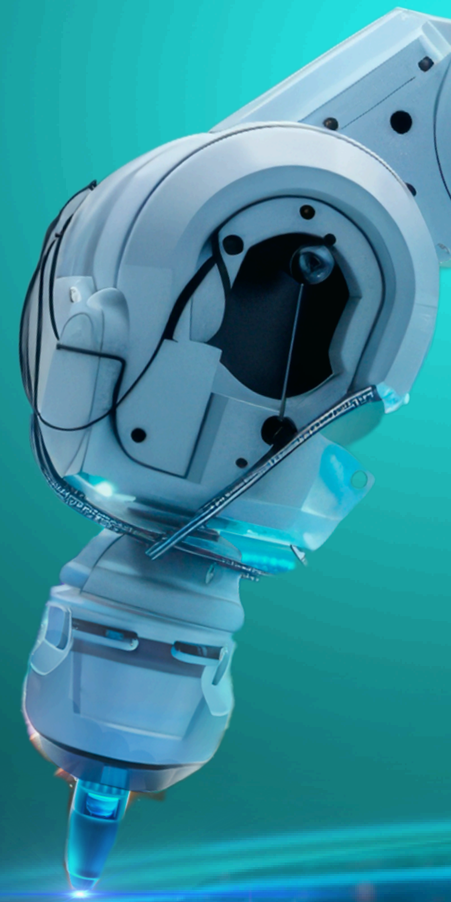


TECHNOLOGICAL TRENDS

4. AI, the Leading Technology

Currently, 6 out of 10 industrial companies (57.9%) have adopted AI or plan to do so in the near future. Following this, executives highlight robotics technologies (45%) and cybersecurity (30%) as the digital tools they are already incorporating or are close to deploying.

With adoption levels above 20%, the barometer points to other solutions such as IT-OT integration and the Industrial Internet of Things; while below this threshold are Digital Twins, at 15.2%, and Additive Manufacturing, at 14.2%.



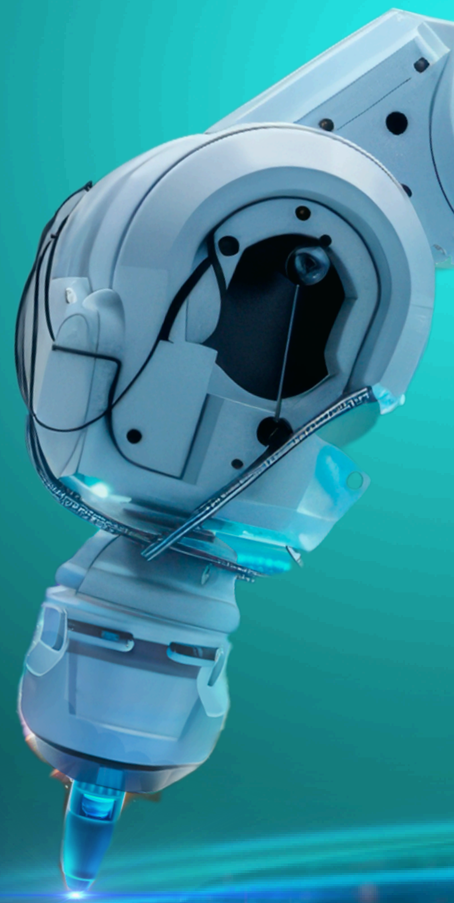
TECHNOLOGICAL TRENDS

5. Costs, Financing, Limited Talent, and Reluctance: The Main Obstacles

Half of the professionals in the industrial sector point to the high costs of implementing technology as the main barrier to advancing their digitalization. This is further reinforced by the fact that 20% of respondents report a lack of financing to apply digital tools that would improve productivity—a figure that rises to 30% when it comes to insufficient funding for machinery renewal.

It is therefore not surprising that 42% of executives are calling for greater resources to support the adoption of technology and/or advanced machinery in production processes in order to increase the industry's competitiveness.

Meanwhile, 4 out of 10 executives mention the lack of qualified professionals as a challenge in addressing the process transformation required for digitalization. In this regard, the shortage of talent stands out as one of the main obstacles to the growth of the manufacturing sector itself. In fact, 60% of the professionals who took part in the study report difficulties in finding skilled workers.



CHALLENGES

1. Gap Between Productivity and Industrial Competitiveness

Spanish productivity lags behind that of neighboring economies. In contrast, its competitiveness is considerably stronger, as reflected in the increase of Spanish exports from 7% to 9%. This disparity is also evident in investment in R&D&I. For instance, Spain invests three times less than Germany.

One of the key challenges for the industry is to reverse this equation and bring Spanish productivity up to the levels of other European countries, which will also require aligning R&D&I investment with that of other EU regions.

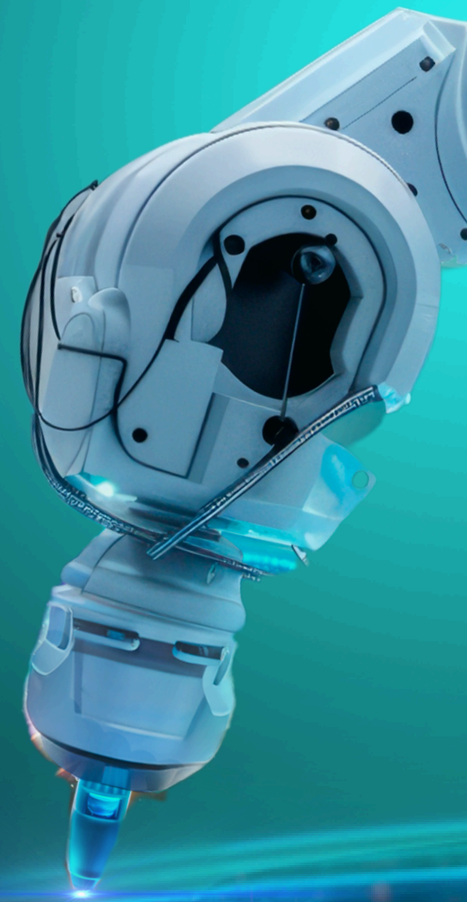
CHALLENGES

2. New Rules of the Game for International Trade

The reintroduction of tariffs by the U.S. on foreign industrial products has created a new trade context that has reopened the debate on the return of protectionist policies, the partial deglobalization of certain value chains, and the strengthening of strategic autonomy strategies by major powers.

At the national level, the regions most affected are Andalusia, the Basque Country, Catalonia, and the Valencian Community, particularly in agri-food, automotive, and capital goods industries.

In response to this situation, experts at **Advanced Factories 202**5 have called for strategies and investment to boost production efficiency through technology. In addition, representatives of the Spanish Government and regional administrations have stressed the need to diversify markets and deepen trade relations with Asian countries.

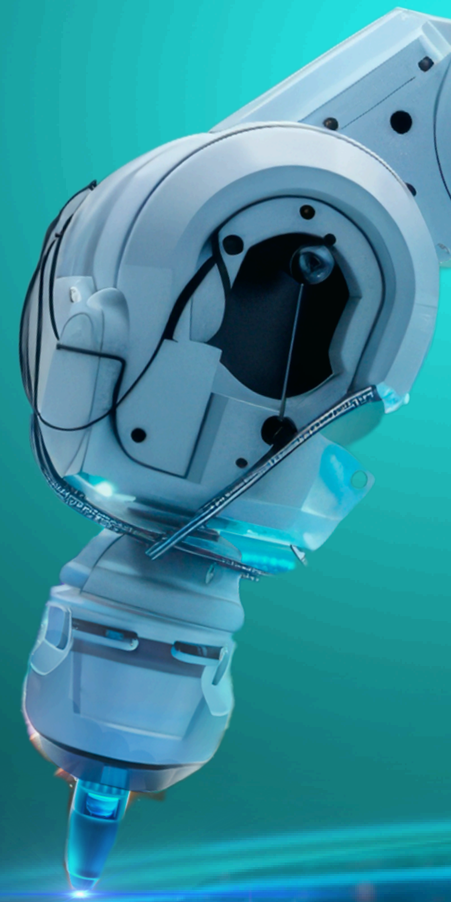


CHALLENGES

3. Limitations of SMEs in Scaling and Internationalization

Many Spanish industrial companies, especially SMEs and micro-SMEs (which account for 95% of the national business fabric), lack the capabilities needed to grow in size, expand internationally, or participate in large-scale strategic projects. As discussed at Advanced Factories 2025, business fragmentation, low levels of professionalized management, and difficulties in accessing financing limit their scalability and their integration into global value chains.

Equally significant is the claim made by SMEs, who point to the persistent disconnect between the education system and company needs—particularly in Vocational Training and Dual Vocational Training—as a real structural issue in the Spanish economy.



CHALLENGES

4. Administrative Simplification

Data from the barometer conducted by Advanced Factories 2025 show that for 39% of professionals in the sector, **administrative simplification** is crucial to European competitiveness.

The lack of coordination between administrations and procedures leads to delays, uncertainty, and additional costs that affect both national investment and the attraction of foreign capital. Industrial companies and SMEs highlighted at the event the administrative complexity and lack of consistency when processing projects, accessing subsidies, or setting up new facilities.

CHALLENGES

5. Sustainability and Energy Cost Control

Energy costs and sustainability go hand in hand among the top priorities for making Spanish industry more competitive, according to 29% and 25% of surveyed executives, respectively. These are two factors with a significant impact on the bottom line.

Despite the moderation of gas and electricity rates compared to the peaks of 2022, Spain continues to have some of the highest industrial energy prices in Europe, according to Eurostat data from 2024. This situation particularly affects energy-intensive sectors (such as chemicals, paper, and steel), whose exports lose competitiveness compared to countries with more affordable energy. In addition, the high dependence on external energy sources limits national industrial autonomy.

On the other hand, strict European decarbonization regulations—such as the CBAM (Carbon Border Adjustment Mechanism), set to take effect in 2026, the Green Taxonomy, and the forthcoming Corporate Sustainability Due Diligence Directive, which will require large corporations to prevent and address negative impacts on human rights and the environment throughout their value chains—are creating additional pressure on industrial companies, which must adapt their processes to comply with environmental and traceability requirements.

DEMANDS OF THE INDUSTRY

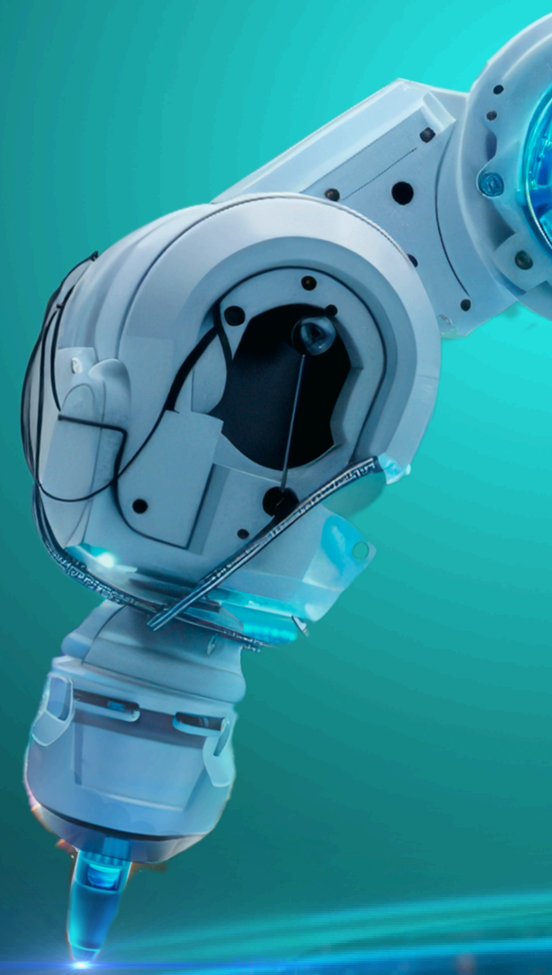
During Advanced Factories 2025, experts from the industrial sector and various institutions called for strategies and initiatives to overcome the challenges facing the industry. Among the most notable are:

1.**Increase public investment**: To implement industrial policies that foster the development of innovative projects, attract capital, and draw in talent.

2.Boost digitalization: Especially so that SMEs can incorporate robotics technologies to improve profitability and efficiency, through projects such as the PERTE program for the automation and robotization of the manufacturing industry.

3.Strengthen training policies and talent acquisition: To ensure the workforce is trained and develops new digital and technological skills, while also sparking the interest of younger generations.

4.Establish efficient regulation: To legislate only where necessary, with the aim of stimulating industrial growth and progress, and to simplify administrative procedures that facilitate access to support schemes.



DEMANDS OF THE INDUSTRY

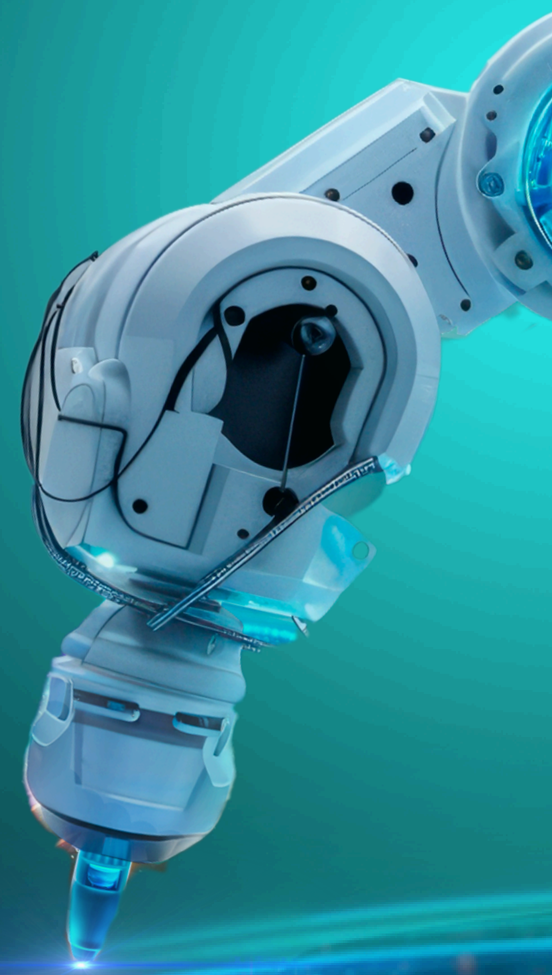
5.**Market diversification:** To reduce dependence on specific countries and mitigate risks associated with trade barriers.

6.**Public-private collaboration:** To address current political and economic challenges and ensure sustainable competitiveness across all actors in the business ecosystem.

7.**Consolidate industrial governance with a long-term vision:** Spain needs a stable, ambitious industrial policy aligned with European objectives of strategic autonomy, ecological transition, and digitalization.

8.**Strengthen industrial capacities in emerging technologies:** Spain cannot limit itself to importing technology; it must actively participate in its development, testing, and industrialization in order to generate its own knowledge and added value. At the same time, the industry stresses the importance of not overlooking “medium-tech” sectors (such as chemicals, automotive, food, or pharmaceuticals), which will continue to be essential and indispensable for driving the economy and generating employment.

9.**Improve the social perception of industry:** Increase visibility of its technological component, while showcasing the career opportunities offered by the industrial and manufacturing sectors, with the aim of attracting more young talent.



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