



SPAIN: NEW INDUSTRIAL, DIGITAL AND ENERGY POWER

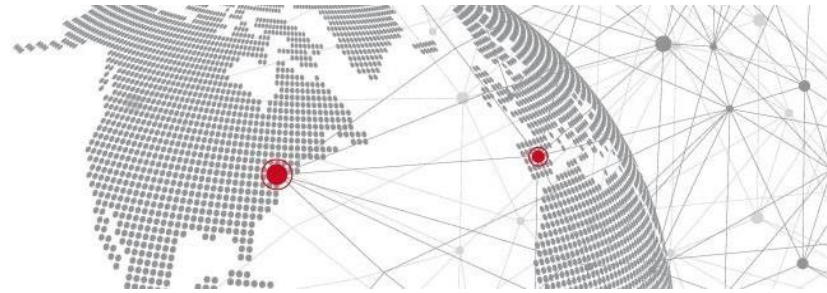
POSITION PAPER

December, 2024



AmChamSpain

American Chamber of Commerce in Spain



December 2024

Strategic Proposal

Spain: New Industrial, Digital and Energy Power American Chamber of Commerce in Spain (AmChamSpain)

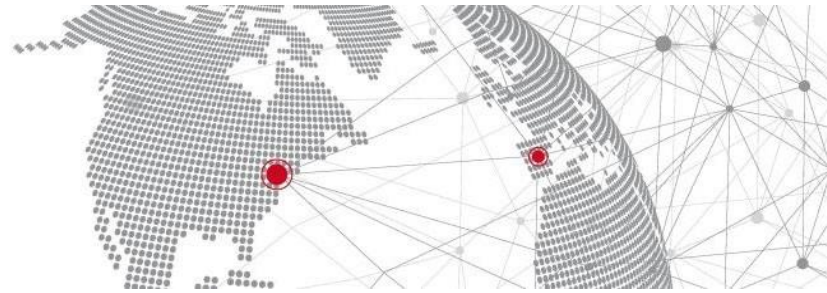
A. Introduction

In a global context of transformation towards sustainable models and reorganization of global value chains, Spain has a unique opportunity: to position itself as a center of attraction for sustainable industry and technology and an energy benchmark in Europe. With abundant renewable resources, a solid industrial infrastructure and a strategic geographic location, **the country is well-positioned to double the weight of the industry, reaching 22% of GDP by 2035.**

Spain's renewable generation capacity, combined with a stable and competitive price environment, offers a highly attractive context for attracting industries for which the cost of energy is a determining factor. Sectors such as metallurgy, glass, ceramics, cement, chemicals, paper, fertilizers, automotive and other energy-intensive industries, as well as data centers needed for the deployment of Artificial Intelligence and drug research centers, require a stable and affordable energy supply in order to operate profitably. With its energy offer, Spain has the potential to become the preferred destination for these sectors in Europe, consolidating itself as a center of attraction for high added value industry integrated into global value chains.

Spain has abundant sun and wind resources, and a capacity to manage large spaces significantly greater than the rest of Europe. Thanks to previous regulatory decisions and private sector investments, the country already generates more than 50% of its electricity from renewable sources. Furthermore, the robust and efficient Spanish electricity grid has reliably integrated these sources, facilitating the electrification of end-uses in the industrial sector.

In addition, Spain occupies a prominent position in digital infrastructure at a global level thanks to the extensive deployment of efficient, high-capacity and high-speed next-generation grids. The country has reached approximately 92% coverage in 5G and 96% in fiber. This solid connectivity foundation enables the adoption of digital solutions and new technologies that contribute to making efficient use of resources and extending the lifespan of equipment, increasing productivity



while reducing costs. Ultimately, this contributes to a competitive transformation of the industry.

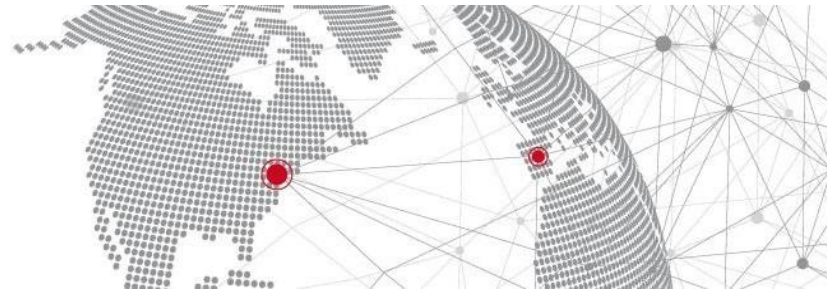
To take full advantage of these benefits, it is essential to implement specific incentives that continue to reduce energy costs and use all energy resources during the transition process. This would not only allow the country to consolidate itself as an important energy exporter, but also as an attractive hub for the installation of sustainable industry and technology. In this way, the trend of the last two decades can be reversed, in which the participation of industry in the Spanish economy has been significantly reduced, from 18% to 11%, halting a process of industrial relocation that, as warned by the Draghi report, among others, runs the risk of becoming irreversible throughout Europe if urgent measures are not taken.

B. Energy Generation and Efficiency

Spain has made significant progress in its renewable generation capacity. According to the PNIEC 2023–2030, renewable electricity generation is projected to reach 81% of the total by 2030, with an installed capacity of 214 GW, of which 160 GW will be of renewable origin and 22.5 GW will correspond to energy storage. This progress makes Spain a leader in clean energy and lays a solid foundation for sustainable and ambitious reindustrialization that will attract massive international investment.

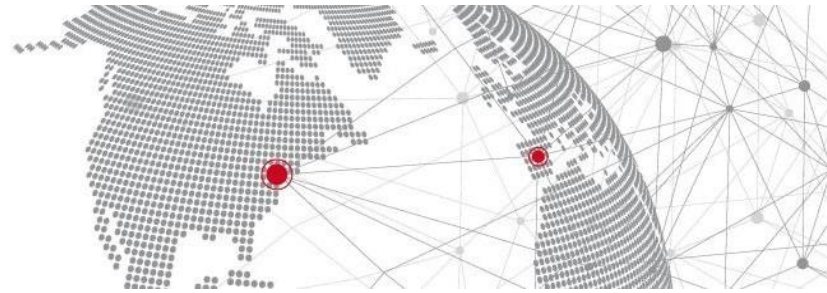
As part of an orderly transition towards a more decarbonized economy, **Spain must use all its energy and digital potential to attract industry:**

- **Green Hydrogen and its Derivatives:** Green hydrogen is positioned as a key element in the transition towards a decarbonized economy, especially in industrial and transport sectors where direct electrification presents greater challenges. Produced through electrolysis using renewable energy, its usefulness goes beyond being a simple energy vector. It also acts as a basis for the creation of derivatives such as **ammonia, methanol and synthetic fuels (e-fuels)**, which allows it to be used as a substitute for natural gas in high-energy-intensity industrial processes, such as steel and cement production, or as an alternative to diesel and kerosene in maritime and air transport. Spain, thanks to its renewable generation capacity and strategic location, is leading emblematic initiatives such as the green hydrogen corridor in Puertollano. These projects not only reinforce its role as a future exporter of hydrogen and its derivatives to Europe and other global markets, but also



consolidate its capacity to support the international energy transition. Spain is in a privileged position to export these products, either by sea or through infrastructure such as the BarMar project, a new gas pipeline that will connect Barcelona and Marseille. At the same time, European countries such as Germany are investing heavily in the creation of hydrogen distribution grids that could be generated in Spain, with projects such as the construction of 9,000 kilometers of infrastructure financed with 19 billion euros. **This deployment should act above all as a driver of sustainable reindustrialization, promoting innovation, attracting investment and generating qualified jobs in strategic sectors.**

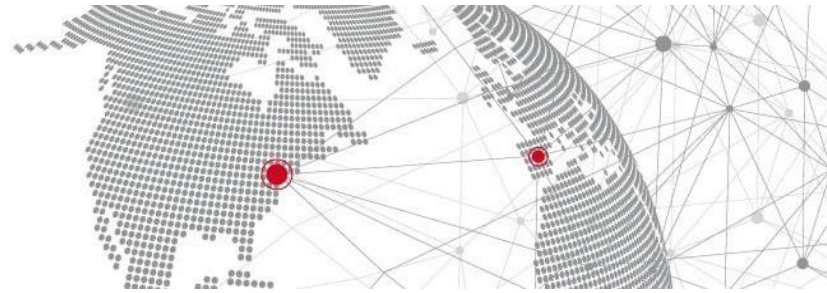
- **Biomethane:** Biomethane, a renewable substitute for natural gas, offers an immediate and efficient solution to reduce dependence on fossil fuels in sectors such as heat generation and mobility. It can be integrated directly into existing gas infrastructure, reducing costs and accelerating adoption. **Spain has a high potential to lead in biomethane production thanks to its great availability of biomass, contributing to the decarbonization of the energy sector and rural development.**
- **Natural Gas as a Transition Energy:** Natural gas, and clean energy sources resulting from its decarbonization, must act as a backup source during the transition, providing stability to the system while renewables and storage are deployed. **Spain has 7 regasification plants and is the country with the largest regasification capacity in Europe (35% of European capacity).** This allows liquefied natural gas (LNG) to be received from anywhere in the world, diversifying supply sources, increasing energy security and strengthening its resilience to geopolitical crises.
- **Electricity and gas distribution network:** New technologies are transforming the energy distribution model by minimizing losses during transport. **It is proposed to evolve to a “hub & spoke” model with generation and storage points closer to consumption,** complementing the current system by reducing transportation losses, increasing efficiency and strengthening resilience to fluctuations in demand. Inspired by the data center model, this distributed approach would enable the energy network to be scaled and made more flexible, while taking advantage of the expertise and infrastructure of large distributors.



- **Extending the Lifespan of Renewable Facilities:** Upgrading and repowering existing wind and solar facilities will increase their efficiency and capacity, maximizing the use of installed resources. This not only optimizes public and private investment, but also ensures a more consistent and robust renewable supply.
- **Battery Storage:** With a projection of **22.5 GW of storage capacity by 2030**, batteries will be essential to manage the intermittency of renewables and ensure a stable supply. In addition, the development of new hydraulic pumping and thermal storage facilities in solar thermal power plants should be promoted, allowing the use of surplus renewable generation..
- **Extending the Lifespan of Nuclear Power Plants and Commitment to New Modular Solutions:** Extending the lifespan of Spanish nuclear plants until 2035–2040 would ensure a stable source of low emissions during the transition to a renewable-based system. This measure would avoid a greater dependence on combined gas cycles and their associated emissions, ensuring energy security while deploying more renewables and storage technologies. In parallel, and as in other countries, **the marginal incorporation of Small Modular Reactors (SMR's)** could complement existing nuclear capacity, offering a flexible and scalable solution to meet industrial uses in specific regions, always with designs that prioritize safety and efficiency.
- **Digital Infrastructure for the Energy Transition:** An advanced digital infrastructure is key to enabling decarbonization solutions and promoting circularity in the Spanish economy, essential elements for a competitive energy transition. The rise of softwarization and the increasing implementation of artificial intelligence require data centers, which are energy-intensive but essential to support digitalization and technological innovation. Furthermore, the exponential increase in data traffic projected for the coming years demands a more robust connectivity infrastructure, based on next-generation grids that guarantee the efficiency and resilience of the system.

C. Strategic Axes for Sustainable Reindustrialization

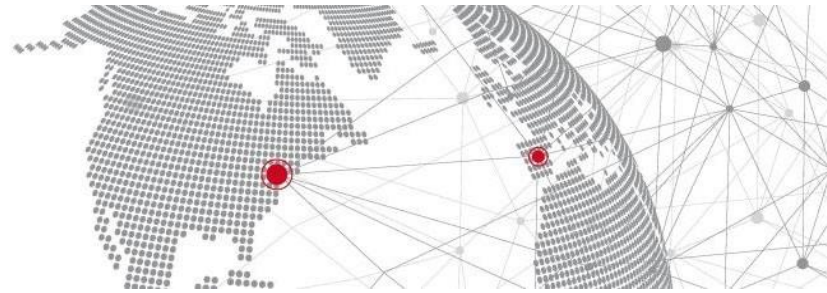
To double Spain's industrial capacity in a sustainable manner and position it as a global benchmark in the energy transition, the following strategic axes



are established: These axes are accompanied by clear success indicators and an analysis of their viability and the conditions necessary for their fulfilment.

C.1. Energy Infrastructure

- **Development of Hydrogen and E-fuels Facilities**
 - i. Expand the calls for proposals and the budget allocated to incentive programs, prioritizing those that contemplate the integration of the value chain (production, storage, transportation and consumption) of hydrogen and E-fuels, taking advantage of Spain's renewable capacity and its strategic location as an energy bridge to Europe.
 - ii. Promote the integration of hydrogen and e-fuels in intensive industrial sectors and heavy, maritime and air transport, facilitating their adoption as a sustainable alternative to fossil fuels.
 - iii. Reduce administrative barriers: Simplify the processes for accessing aid and streamline regulatory procedures to encourage the participation of companies and consortia in innovative projects.
 - iv. Develop specific tools to monitor the economic impact of incentive programs, with mechanisms to redirect resources based on results.
 - v. Promote public-private collaboration projects for the development of green hydrogen infrastructure, including innovation centers and shared infrastructure grids
- **Investment in Advanced Energy Storage Solutions**
 - i. Expand energy storage capacity through batteries, hydroelectric pumping and thermal storage, ensuring a constant supply in the face of intermittent renewable energy.
 - ii. Promote emerging technologies, such as long-term storage and hydrogen-based solutions, that allow for an efficient balance between energy generation and demand.
- **Modernization of Distribution and Transmission Grids**



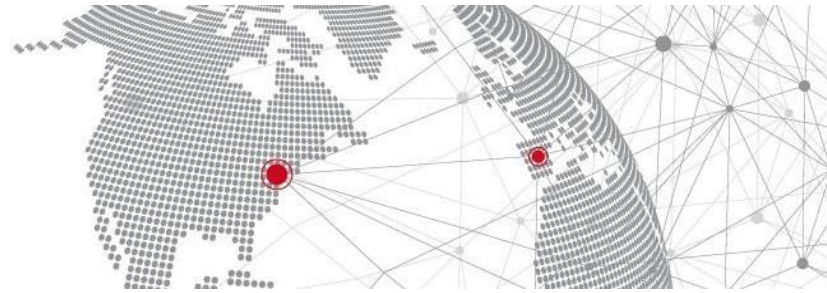
- i. Increase investment in electrical infrastructure to support growing energy demand and facilitate the integration of renewables, **removing the annual limit of 0.13% of GDP in network investments.**
- ii. Adapting the transport infrastructure for new clean gases and **allowing the *blending of hydrogen with natural gas***, which will allow hydrogen to be transported through existing gas grids. Technical studies indicate that gas grids can accept hydrogen blends in proportions varying between 5% and 20% without significant modifications and countries such as Germany and the Netherlands are already implementing pilot *blending* projects.

- **Smart Grids and Efficient Energy Management**

- i. Implement connected sensors and advanced meters to monitor energy flow in real time, optimize distribution and anticipate grid failures, facilitating the transition to smart grids.
- ii. Promote the integration of Artificial Intelligence (AI) technologies to predict renewable energy generation based on weather conditions and dynamically adjust battery storage, ensuring system stability during low production periods.
- iii. Develop smart grids that automatically adjust energy distribution according to demand, maximizing efficiency and promoting the integration of renewable sources such as solar and wind power.

Success and viability indicators:

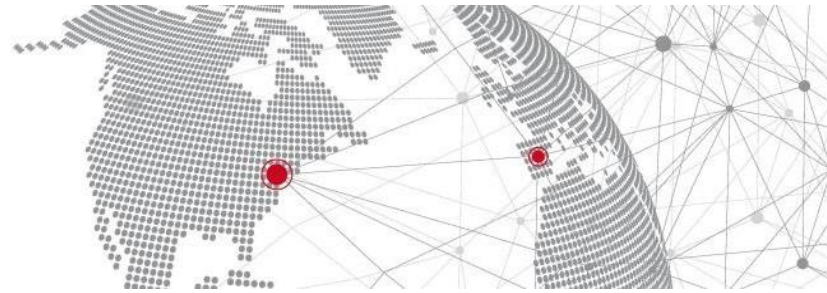
1. **Projected green hydrogen capacity: 12 GW by 2030.**
 - Viability: Achievable if the framework is in place to drive significant investment and public-private support.
 - Necessary: Regulatory simplification, European funds and acceleration in the construction of plants and grids.
2. **Storage capacity of 22.5 GW by 2030.**
 - Viability: Possible with a regulatory framework that encourages innovation and reduces technological costs.
 - Necessary: Economic incentives for storage projects and technology diversification.



3. **Reduction of renewable energy discharges by 20% by 2030.**
 - Viability: Achievable if progress is made in storage and grids.
 - Necessary: Integrate advanced energy management systems and increase cross-border interconnections.

C.2. Energy Intensive Industry

- **Competitive Conditions for Energy-Intensive Companies**
 - i. Adopt fiscal and regulatory policies that allow electro-intensive companies, such as steel and aluminum, as well as those in sectors such as advanced technology, chemicals and automotive, to find in Spain a competitive environment in terms of energy costs and stability and to reinvest in decarbonization and energy efficiency projects, using bridging technologies to maintain their competitiveness while reaching the full potential of industrial-scale development of new technologies.
 - ii. Establish competitive energy rates through long-term agreements with renewable and nuclear plants.
 - iii. **Allow electro-intensive companies to reinvest in decarbonization projects, facilitating the adoption of clean technologies and modernization of facilities, up to a maximum of 25% of emission rights** which is permitted by EU regulations (as is already the case in Germany and France), instead of the 12% in force in Spain.
 - iv. Create sustainable industrial clusters, integrating supply chains and clean energy.
 - v. Maximize the potential of Spain's forest mass, one of the largest in Europe, as a key pillar in the industrial transition. This would be achieved through the implementation of professional forest management which, in addition to reducing the risk of fires, would position forests as natural CO₂ sinks. This, in turn, would open up new economic opportunities linked to sustainability and the development of a competitive bioeconomy.
 - vi. Strengthen Spain's mining capacity, particularly in the south of the country, due to its strategic role in the electro-intensive and technological industry. This region is home to critical minerals that are scarce in Europe, such as lithium and copper, whose sustainable exploitation would allow progress towards greater industrial

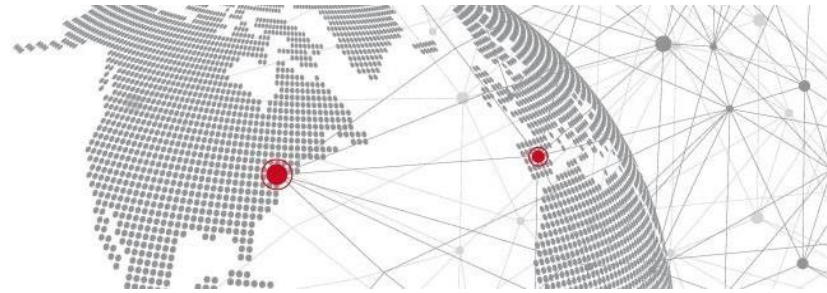


autonomy and strengthen Spain's competitiveness in strategic sectors such as energy transition and advanced technologies.

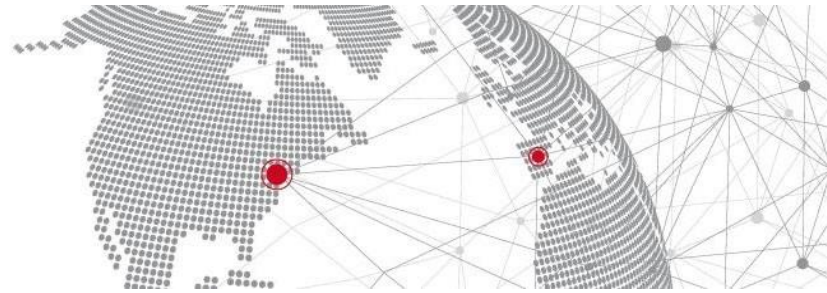
- vii. Promote investments in technology parks and infrastructures for the storage, processing and analysis of biological and genetic data, health data and image processing. This would position Spain as a benchmark in biomedical research, health and the development of clinical trials. This focus on a highly specialized sector would be key to reindustrialization, as well as the training, attraction and retention of highly qualified talent, providing a differential competitive advantage.

Success and viability indicators for the Energy-Intensive Industry

1. **Extending mechanisms to support the competitiveness of the electro-intensive industry:**
 - Success indicator: Maintain and increase current mechanisms beyond 2024, with 80% coverage of the offsetting needs for indirect costs related to emission rights for strategic sectors.
 - Viability: Highly feasible if aligned with existing community guidelines.
 - Necessary: Public-private collaboration to design support instruments compatible with European regulations.
2. **Reducing energy costs for electro-intensive sectors:**
 - Success indicator: Reduce energy costs by 20% by 2028 in key sectors such as steel, aluminum, chemicals and advanced technology.
 - Viability: Feasible with an ambitious energy policy, based on incentives for long-term contracts (PPAs) linked to renewables and nuclear plants.
 - Necessary:
 - i. Accelerated investment in renewables and bridging technologies such as green hydrogen.
 - ii. Modernization of transmission and distribution infrastructure.
 - iii. Regulatory framework that promotes energy competitiveness.
3. **Relocation of companies from European regions with high energy costs:**



- Success indicator: Attract at least 10% more companies in strategic sectors relocating from Eastern Europe and Germany by 2030.
 - Viability: Achievable with a competitive and predictable tax and regulatory environment.
 - Necessary:
 - i. Attractive tax and financial incentive package.
 - ii. Legal stability and commitment to the energy transition.
- 4. Increased investment in industrial decarbonization projects:**
- Success indicator: Ensuring that electro-intensive companies reinvest up to 25% of the emission rights permitted by EU regulations in decarbonization projects by 2027.
 - Viability: Possible with regulatory alignment at the level of countries such as Germany and France.
 - Necessary:
 - i. Relax national regulations to maximize the reinvestment of emission rights.
 - ii. Co-financing programs for clean technologies.
- 5. Creation of sustainable industrial clusters:**
- Success indicator: Establish at least 5 sustainable industrial clusters in Spain by 2030.
 - Viability: Feasible with coordinated policies between local and national administrations.
 - Necessary:
 - i. Specific incentives for the integration of supply chains and clean energy.
 - ii. Infrastructure for the transportation of clean gases such as hydrogen.
- 6. Promoting bioeconomy and forest sustainability:**
- Success indicator: Increase by 30% the added value generated by the sustainable management of the Spanish forest mass by 2030.
 - Viability: Highly achievable with the professionalization of forest management.
 - Necessary:
 - i. Investment in training and certification programs for sustainable practices.



- ii. Economic incentives for bioeconomy projects.

7. Development of a technological hub in biomedicine and advanced research:

- Success indicator: Attract at least 20 major biomedical and genetic data research projects by 2030.
- Viability: Feasible through improved infrastructure and talent attraction policies.
- Necessary:
 - i. Public and private investments in specialized technological parks.
 - ii. Strategies for retaining and attracting highly qualified talent.

C.3. Digital Transformation and Data Centers

- **Promoting the Adoption and Development of Digital Solutions**

- i. To make the industry aware of the opportunities and benefits of digitalization to achieve a competitive green transformation
- ii. Position Spain as a hub for innovation in green digital solutions that contribute to decarbonization and circularity

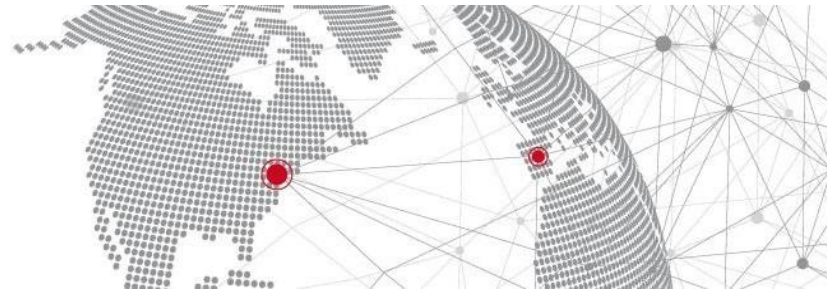
- **Developing digital capabilities in the industry**

Promote the acquisition of digital skills by industries as part of Spain's National Digital Skills Plan to promote their digitalization

- **Incentives for Data Centers and Digital Technologies**

- i. Position Spain as a global digital hub through tax incentives and sustainable energy supply.
- ii. Promote data centers necessary for the deployment of Artificial Intelligence that use renewable energy and low-environmental-impact cooling technologies.

Success and viability indicators:



1. Increase in the number of Connected Industries 4.0

- Viability: Possible with appropriate financing mechanisms and funds for industry digitalization
- Necessary: adoption of new technologies such as artificial intelligence, the Internet of Things or connected sensors, among others.

2. Monitoring avoided emissions thanks to digital solutions

- Viability: Possible with incentives for avoided emissions
- Necessary: rely on companies with experience in providing green digital solutions

3. Digital training of at least 75% of the industry by 2030

- Viability: Possible with a range of courses tailored to their needs, as well as incentives for companies to implement courses for workers, based on the experience of agents in the digital ecosystem.
- Necessary: design an offer of courses within the National Digital Skills Plan, as well as provide the necessary support to the industry for the implementation of its own courses

4. Increasing the energy efficiency of data centers

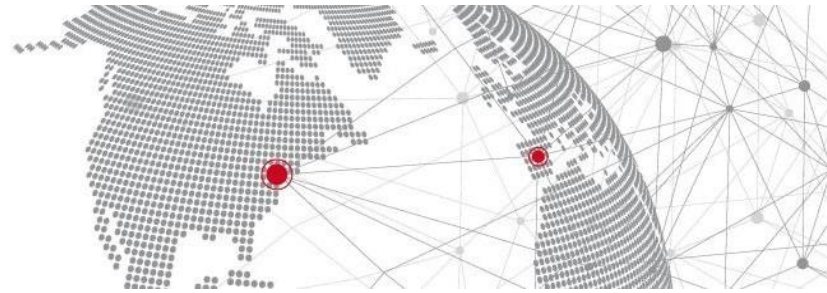
- Viability: Possible by promoting the adoption of new, more efficient technologies
- Necessary: innovation in new cooling methods and investment in more efficient technologies that allow for increased energy efficiency

5. Generation of 50,000 direct and indirect jobs in data and technology sectors by 2030

- Viability: Realistic thanks to the growth of digitalization and connectivity.
- Necessary: Invest in technological training and ensure a reliable energy supply.

C.4. Creating a Legal and Tax Security Framework for Investors

- i. Avoid retroactive changes that undermine investor confidence.



- ii. Simplify regulation to reduce bureaucracy in energy and industrial projects.
- iii. In the medium term, replace the subsidy system with the tax credit system used in other jurisdictions. For example, the US Inflation Reduction Act (IRA). The US directly and automatically reduces the tax burden by \$3/kg for companies that generate green hydrogen. Being automatic and linked to the beneficiary's tax activity, it does not depend on a competitive process or approval from specific agencies, reducing bureaucracy and increasing the financial predictability of the promoters.
- iv. Eliminate all taxes that double the tax burden on energy companies that must lead the paradigm shift with their investments in sustainability.

Success and viability indicators:

15% annual increase in direct foreign investment for 10 years

- Viability: Ambitious but possible if Spain guarantees legal stability and competitiveness.
- Necessary: Strengthen international confidence with fiscal measures and a clear framework.

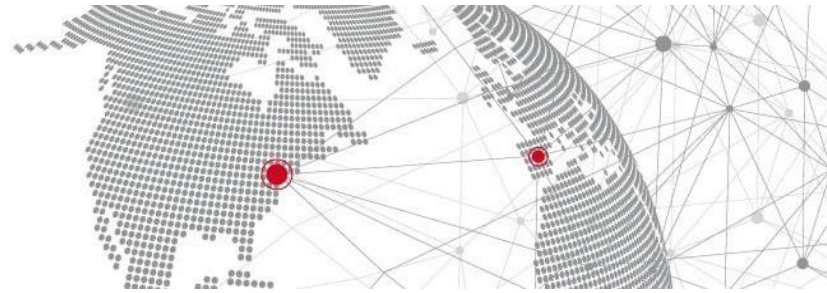
C.5. Public-Private Coordination and Infrastructure Development

· **Public-Private Collaboration**

Create a **National Council for Industrial and Energy Transition** for projects of national interest that coordinate efforts between key sectors and guarantee synergies in planning.

- **Modernization of distribution infrastructure**
 - Deploy high-capacity energy transport grids and improve international interconnections.
 - Deploy more efficient next-generation telecommunications grids that contribute to the development of a future-proof digital infrastructure.

Success and viability indicators:



Increase in the annual budget for energy infrastructure to 0.5% of GDP by 2030

- Viability: Feasible with political support and mobilization of European funds.
- Necessary: Prioritize strategic investments and ensure transparency in execution.

C.6. Talent Development and Training in Energy and Sustainable Industry

- **Professional Training and Retraining**
- Design training programs in collaboration with universities, companies and technical training centers.
- Promote skills in renewable energy, hydrogen and sustainable manufacturing.
- Capitalize on the attraction of migrations that are a key source of talent and labor that drives industrial and technological growth, especially in emerging sectors such as renewable energy and advanced technologies.

Success and viability indicators:

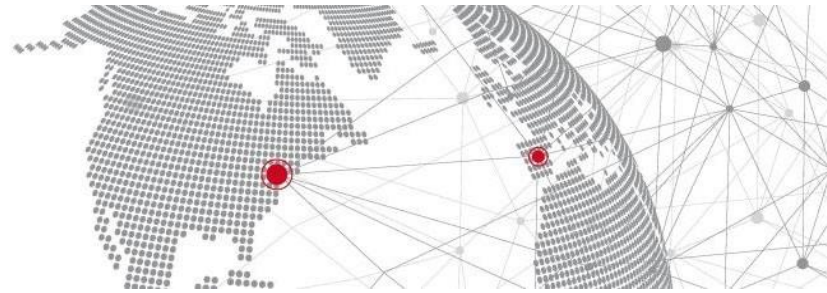
Training of 150,000 new professionals in renewable energy and sustainable industry by 2030.

- Viability: Achievable with a continuous and collaborative approach.
- Necessary: Expand technical training programs and ensure employability in green sectors.

D. The Reorganization of Globalization: An Opportunity for Spain in the New Geopolitical Framework

The pandemic and rising geopolitical tensions have accelerated a process of reorganizing global supply chains towards countries considered "friendly" and safe. The new concept of strategic autonomy involves attracting massive investments in energy, industry and technology centers.

In this global reorganization, Spain has unique advantages: a solid logistics and port infrastructure, institutional stability within the European Union, a consolidated industry, a highly qualified workforce and a business ecosystem capable of leading this change.



As energy costs and security concerns rise in countries such as Germany and Eastern Europe, some companies are looking to relocate their industrial operations to more stable and energy-competitive destinations. Spain, with its industrial infrastructure, high-capacity ports and access to clean energy, can attract a portion of the industry that would otherwise be based in foreign markets. This relocation trend represents an opportunity to strengthen the Spanish industrial sector and reduce economic dependence on tourism and other cyclical sectors.

The bet must take into account the use of tariff policies by the main world markets. Thus, in the EU, the implementation of the carbon border adjustment mechanism, which will be fully applied from 2026, represents a competitive advantage for the Spanish sustainable industry. This tariff can stand as a benchmark in industrial sustainability by attracting international capital and promoting the competitiveness of national industrial sectors.

Strategic Vision: To make Spain the preferred destination for industrial companies seeking security and sustainability within the European framework, promoting a more resilient and diversified economy.

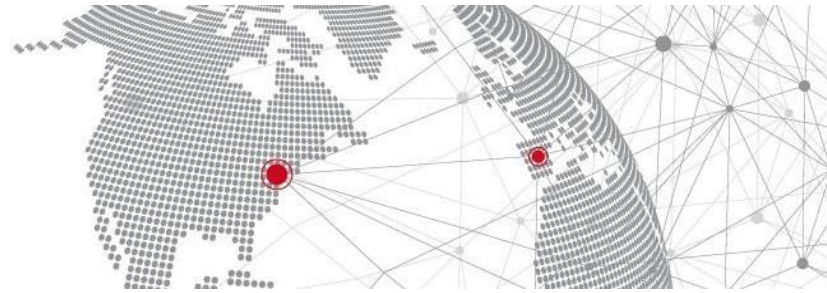
Proposal for Action:

- Launch promotional campaigns in Europe and global markets, highlighting Spain's stability and its energy and infrastructure advantages for the decarbonized industry.
- Create specific incentives for the relocation of energy-sensitive industries from Eastern Europe and Germany to Spain, including tax benefits and priority access to sustainable energy infrastructure.

E. Conclusion

Sustainable reindustrialization is a unique opportunity for Spain to strengthen its economy, increase its energy security, develop its digital infrastructure and position itself as a leader in European industry.

In the context of global reorganization towards friendly and safe countries, Spain has a geopolitical and energy advantage that makes it the ideal destination for companies seeking stability within the European market.



The progressive increase in renewable energies, together with the indispensable contribution of natural gas and the extension of the life of nuclear plants during the transition to be able to satisfy demand in all its forms, will allow us to move towards a decarbonized economy while building a solid base of renewable energy, and of sustainable carbon as a new source of raw material of non-fossil origin, together with various storage systems, which also facilitate the contribution of green hydrogen and its derivatives as a new energy vector.

Digitalization is a lever to achieving competitive sustainability. Relying on an efficient connectivity infrastructure, digital technologies such as artificial intelligence or the Internet of Things (IoT) facilitate the collection of data from various activities and environments, which can then be analyzed to generate scenarios that optimize the use of resources in production processes and facilitate the predictive maintenance of facilities and equipment. This, in turn, allows for increased productivity and reduced costs, promoting economic growth in the industry.

Sustainable reindustrialization is a unique opportunity for Spain to strengthen its economy, increase its energy security, advance its digital transformation and strategic autonomy, and position itself as an energy, industrial and technological leader in Europe.

Ultimately, Spain's success will depend on its ability to combine five key pillars: energy, sustainability, technology, natural capital and talent. A strategy that integrates these elements will be essential to ensure the country's leadership in the energy transition, green industry and technological autonomy.

The American Chamber of Commerce in Spain (AmChamSpain), with more than a century of history in the country, aims to actively contribute as a bridge between international investors, Spanish companies, business organizations and the Government of Spain. Our goal is to foster a framework of collaboration and trust that will enable us to move forward together towards an ambitious and well-articulated strategy. With collective effort and commitment, Spain has the potential to strengthen its industrial fabric, increase its weight in GDP and position itself as a benchmark in sustainability and industrial development at a global level.