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From Vulnerable Spoke to Iberian Node: Weaponized Interdependence, Energy Chokepoints and Spanish Strategic Autonomy on the 2030 Horizon

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Abstract:

Economic interdependence has become an instrument of state coercion. Spain, positioned at the intersection of energy, mineral and data networks, is exposed to the panopticon and chokepoint effects identified by Farrell and Newman. The closure of the Strait of Hormuz in February 2026 exposed the vulnerability of the Iberian spoke. This paper argues that Spain should strengthen its strategic autonomy through H2Med, the protection of critical infrastructure and communications, and a stronger Defence Industrial Base. The objective is open strategic autonomy, not autarky.

Keywords:

weaponized interdependence; chokepoint; panopticon effect; H2Med; open strategic autonomy; mineral sovereignty.

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Introduction: The End of Liberal Interdependence

Economic interdependence, traditionally regarded as a stabilising factor, has become a tool of pressure between states. The real topology of globalisation (a hub-and-spoke architecture rather than a flat network) turns cooperation into the most efficient instrument of coercion in the international system¹. Spain operates at the intersection of three weaponized networks (energy imports, submarine connectivity and mineral processing) and holds positions both as a spoke (fossil energy, minerals) and as an emerging node (green hydrogen, Iberian connectivity).

Four vectors converge on the 2030 horizon: the energy shock of the closure of the Strait of Hormuz in February 2026²; the Trump Shock of tariff and energy coercion set out in the 2025 EU-US trade framework³; China's quasi-monopoly over the processing of critical minerals⁴; and the pattern of undersea sabotage consolidated after the Nord Stream blast⁵. This analysis diagnoses Spain's exposure to both effects and sets out a three-axis doctrinal response (node, shield and network) to transform structural vulnerability into a capacity for autonomous action.

Theoretical Framework: The Hub-and-Spoke Architecture and the Distribution of Power in Global Networks

In 2019, Henry Farrell and Abraham Newman formulated the theory of weaponized interdependence as a structural diagnosis: globalisation adopted a hub-and-spoke topology, far from the decentralised network it had promised, in which a small number of nodes (payment systems, submarine cables, energy straits, semiconductor lithography or mineral refining) concentrates a disproportionate share of traffic, much as air travel clusters around a few major airports: whoever controls the hub controls the flow⁶. States with jurisdiction over those nodes acquire two distinct coercive capabilities. The SWIFT payment system illustrates them: the United States monitors the financial flows that pass

¹ FARRELL, Henry and NEWMAN, Abraham L., "Weaponized Interdependence: How Global Economic Networks Shape State Coercion", *International Security*, vol. 44, no. 1, 2019, pp. 42-79.

² CONGRESSIONAL RESEARCH SERVICE, "Iran Conflict and the Strait of Hormuz: Impacts on Oil, Gas, and Other Commodities", report R45281, Washington, DC, March 2026.

³ "Trump clinches trade agreement with EU with 15% tariff", NPR, 28 July 2025.

⁴ INTERNATIONAL ENERGY AGENCY, "Global Critical Minerals Outlook 2025", IEA, Paris, 2025.

⁵ CONLEY, Heather A. et al., "Security Implications of Nord Stream Sabotage", Center for Strategic and International Studies (CSIS), Washington, DC, 2022.

⁶ FARRELL, H. and NEWMAN, A. L., "Weaponized Interdependence", op. cit.

through it and has excluded Iran and Russia from it⁷.

The panopticon effect (a reference to the surveillance mechanism of Bentham and Foucault) consists of the systematic extraction of information on the transactions flowing through the controlled nodes. It is a surveillance capability that turns cooperation into vulnerability and is structurally asymmetric: it cannot be neutralised through bilateral agreements.

The chokepoint effect is the capacity for denial: the unilateral exclusion of an actor from a critical network at a cost it cannot absorb without changing its policies. Energy markets and high-technology supply chains are its principal vectors, as shown by the weaponization of Russian gas in 2022 and China's restrictions on rare earths.

In the Spanish case, what matters most is to identify in which networks the country operates as a dependent spoke and in which as a node. The diagnosis is asymmetric: a vulnerable spoke in hydrocarbon imports and mineral processing; a critical node in submarine connectivity; and an emerging node, by deliberate design, in the European hydrogen network. Spanish geoeconomic policy consists of accelerating the favourable asymmetry where it has nodal capacity and reducing exposure where it remains a spoke.

The Chokepoint Effect on the Spanish System

Hormuz 2026: The Materialisation of an Energy Chokepoint

Around 20% of the world's oil and liquefied natural gas (LNG) passes through the Strait of Hormuz⁸. On 28 February 2026, a US-Israeli military offensive against Iran triggered Tehran's retaliation; the Revolutionary Guard declared the strait 'closed' as of 2 March and attacked vessels attempting to transit it⁹. The chokepoint materialised immediately: vessel traffic collapsed to 5% of its usual level¹⁰ and QatarEnergy, whose exports depend entirely on Hormuz, declared force majeure on 4 March. The US Energy Information Administration (EIA) estimated that Gulf producers withdrew 7.5 million barrels per day

⁷ FARRELL, Henry and NEWMAN, Abraham L., "Underground Empire: How America Weaponized the World Economy", Henry Holt and Co., New York, 2023.

⁸ HOUSE OF COMMONS LIBRARY, "Israel/US-Iran conflict 2026: Reopening the Strait of Hormuz", briefing CBP-10636, UK Parliament, 2026.

⁹ CONGRESSIONAL RESEARCH SERVICE, "Iran Conflict and the Strait of Hormuz", R45281, op. cit.

¹⁰ HOUSE OF COMMONS LIBRARY, "Israel/US-Iran conflict 2026: Reopening the Strait of Hormuz", briefing CBP-10636, UK Parliament, 2026, op. cit.

from the market in March, a figure it expected to rise to 9.1 million in April¹¹.

The price responded with one of the largest monthly increases: Brent rose from around \$72 on 27 February to nearly \$120 at its March peak, an increase of more than 50%¹²; the EIA put the March average at \$103 and projected a quarterly peak of around \$115¹³. The Federal Reserve Bank of Dallas modelled the impact of such a disruption on global output¹⁴. The price has proved as volatile as the episode itself: in mid-April, amid signs of de-escalation, Brent fell by more than 9% in a single session¹⁵. The physical chokehold on the route, by contrast, has proved far more persistent. Almost half of the affected crude has been rerouted through Saudi and Emirati pipelines¹⁶. After more than three months of closure and with traffic at minimal levels, the June 2026 memorandum between the United States and Iran has achieved only a precarious reopening. The main channel remains obstructed, harassment of shipping persists, and the dispute over transit fees keeps the situation tense. Industry estimates do not expect flows to normalise before 2027¹⁷.

This episode yields a structural conclusion: the reopening of a chokepoint does not restore the status quo; it certifies the vulnerability of the supply chain. Even if traffic flows are restored, the consequence will be the loss of reliability of Gulf routes and an acceleration towards alternative vectors¹⁸. For Spain, a tactical ceasefire does not reverse the spoke's vulnerability: the exposure has already materialised, and its only viable countermeasure is diversification and its own nodal capacity.

The blow also struck a Europe whose energy security was structurally degraded. Underground gas reserves are the buffer that allows the continent to get through the cold season. At the end of the 2026 winter, EU gas storage fell below 30% in several markets¹⁹; at the start of the injection season, reserves stood at around 31 bcm, the

¹¹ U.S. ENERGY INFORMATION ADMINISTRATION, "Short-Term Energy Outlook", Washington, DC, April 2026.

¹² "A timeline of how the Iran war shook oil prices", CNBC, 21 April 2026.

¹³ U.S. ENERGY INFORMATION ADMINISTRATION, "Short-Term Energy Outlook", op. cit.

¹⁴ FEDERAL RESERVE BANK OF DALLAS, "What the closure of the Strait of Hormuz means for the global economy", Dallas, March 2026.

¹⁵ "As oil prices plunge below \$91 after weeks, a new Hormuz crisis emerges", Al Jazeera, 18 April 2026.

¹⁶ WEITZ, Rockford, "Re-Opening the Strait of Hormuz Won't Restore the Status Quo", The Fletcher School, Tufts University, May 2026.

¹⁷ HOUSE OF COMMONS LIBRARY, "Israel/US-Iran conflict 2026: Reopening the Strait of Hormuz", briefing CBP-10636, op. cit.; and "US, Iran sign memorandum to reopen Strait of Hormuz", Reuters, 17 June 2026.

¹⁸ WEITZ, R., "Re-Opening the Strait of Hormuz Won't Restore the Status Quo", op. cit.

¹⁹ EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS (ACER), "Gas Factsheet: Key Developments in winter 2025-2026", 2026.

lowest level since 2018, with the indefinite loss of Qatari LNG that led the Union to relax its filling target from 90% to 80%²⁰.

Transmission to the Spanish System and Fiscal Fragility

Transmission to Spain operated through its high external energy dependence. With hydrocarbons still accounting for around three-quarters of primary consumption and short-term demand inelastic, the rise in crude prices passed through to domestic prices and aggravated a trade deficit already strained by the energy bill. On the fiscal side, the surge in costs and the pressure on spending compromised Spain's room to comply with the revised European fiscal rules. The exposure is structural: as long as the energy mix remains anchored in fossil imports, every shock at a distant chokepoint will transmit to the core of the national economic system.

China's Mineral Hegemony

Spain faces an even more structural mineral vulnerability. According to the International Energy Agency, China refines 19 of the 20 strategic minerals it monitors, with an average share of around 70%, and concentrates close to 90% of the world's rare-earth processing²¹. The vulnerability is not theoretical: in April 2025, after China introduced export controls on seven heavy rare earths, exports collapsed and European and US carmakers cut production or halted plants for lack of permanent magnets²². These materials are essential inputs for the Spanish Defence Industrial and Technological Base (BITD): radars, guidance systems, communications electronics and high-density batteries²³. The European Critical Raw Materials Act stipulates that by 2030 no single third country may supply more than 65% of a strategic raw material²⁴.

The Trump Shock as a Second Chokepoint

A second vulnerability is transatlantic. Under the trade framework reached in July 2025, and faced with the threat of a 30% tariff, the European Union accepted a baseline tariff of

²⁰ PALACIOS, Luisa and DOWNS, Erica, "European Gas Storage: The World's Winter Buffer Is Dwindling", Center on Global Energy Policy, Columbia University SIPA, April 2026.

²¹ INTERNATIONAL ENERGY AGENCY, "Global Critical Minerals Outlook 2025", op. cit.

²² INTERNATIONAL ENERGY AGENCY, "With New Export Controls on Critical Minerals, Supply Concentration Risks Become Reality", IEA, Paris, 2025.

²³ "La era del rearme y la preparación de la industria de defensa española", Research Paper, IEEE-CESEDEN, Ministry of Defence, 2026.

²⁴ EUROPEAN COMMISSION, "Regulation (EU) 2024/1252 establishing a framework for ensuring a secure and sustainable supply of critical raw materials", Official Journal of the European Union, 2024.

15% on most of its exports and committed to purchasing \$750 billion in US energy (oil, LNG and nuclear fuel) over three years, in place of Russian supply²⁵. The Commission presented this as a diversification that reinforces energy security; many analysts, by contrast, consider the purchases unlikely to materialise, since the Union would have to triple its energy purchases from the US relative to 2024²⁶. To that physical constraint is added the fact that the Union is not a passive actor: it has the Anti-Coercion Instrument, which empowers it to respond in a calibrated manner to third-party coercion²⁷. Its effective activation, however, depends on an intra-European political cohesion that is historically fragile and exposed to competing vetoes. The agreement thus describes a vector of pressure and a political intention, not an inescapable destiny. Regardless of its execution, the coupling reduces Spain's room to diversify towards the Mediterranean or North Africa and chains its security of supply to Washington. The simultaneous activation of both chokeholds, the adversarial one at Hormuz and the transactional one of US LNG, forces Spain into a double de-risking with respect to China and the United States.

The Panopticon Effect and the Grey Zone

After the Nord Stream blast in September 2022, critical undersea infrastructure has become the preferred front of the 'grey zone', that intermediate space between peace and war where hostile actions are deniable and attribution is difficult²⁸. The pattern of subsequent incidents, with cable cuts in the Baltic, points to covert operations that exploit the legal vacuums of international waters²⁹. Spain presents two surfaces of exposure: the Medgaz pipeline, which connects it to Algeria, and the submarine cable landing points, infrastructure through which virtually all intercontinental data traffic flows³⁰. Both are vulnerable to sabotage by autonomous underwater vehicles, to operations against landing stations and to the use of anchors by merchant vessels as cover.

The Electricity Grid and 5G Regulatory Shielding

The digitalisation of the electricity grid introduces a second vector. Increasingly

²⁵ "Trump clinches trade agreement with EU with 15% tariff", NPR, 28 July 2025.

²⁶ "Trump's EU trade deal is based on massive energy purchases that are unlikely to materialize, analysts say", CNBC, 29 July 2025.

²⁷ EUROPEAN COMMISSION, "Regulation (EU) 2023/2675 on the protection of the Union and its Member States from economic coercion by third countries (Anti-Coercion Instrument)", Official Journal of the European Union, 2023.

²⁸ CONLEY, H. A. et al., "Security Implications of Nord Stream Sabotage", op. cit.

²⁹ "Infraestructuras submarinas críticas: el nuevo frente en el mar", Armed Forces Staff College (ESFAS), CESEDEN, Ministry of Defence, 2025.

³⁰ ESFAS-CESEDEN, "Infraestructuras submarinas críticas", op. cit.

dependent on connected control systems to manage renewable intermittency, the grid is exposed to cyberattacks on operational technology capable of causing systemic blackouts³¹. The response combines Zero Trust architectures, security operations centres and segmentation of operational environments. On the regulatory side, the National Security Framework for 5G networks and services, approved by Royal Decree 443/2024, requires that critical network elements be located on national territory under direct control and restricts the access of high-risk suppliers to core functions, neutralising the panopticon effect at its infrastructural root³².

The Nodal Response: Spain as a Geoeconomic Hub

Faced with the vulnerability of traditional hydrocarbon routes, Spain has placed green hydrogen as its great bet for autonomy. The H2Med project, the European Union's first renewable hydrogen corridor, seeks to transform the peninsula from an 'energy island' into an exporting node towards the industrial core of the continent³³.

H2Med within the Energy Highways Framework

The project obtained political backing on 10 September 2025: Ursula von der Leyen, in her State of the Union address, launched the Energy Highways initiative and identified eight priority bottlenecks in energy infrastructure³⁴. The Commission formalised it in December 2025³⁵, and the renewal of its Project of Common Interest status, confirmed by the Parliament and the Council through the second delegated act, validated the two axes of the corridor and allowed European funds to finance up to half of the investment³⁶. Table 1 summarises the technical characteristics of these two axes:

³¹ "Protección de la ciberseguridad de las infraestructuras críticas y sus cadenas de suministro", ICC Spain, December 2024.

³² "Real Decreto 443/2024, de 30 de abril, por el que se aprueba el Esquema Nacional de Seguridad de redes y servicios 5G", Official State Gazette (BOE), BOE-A-2024-8715.

³³ H2MED, "El proyecto H2Med. Preguntas frecuentes", h2medproject.com, accessed June 2026.

³⁴ VON DER LEYEN, Ursula, "State of the Union Address 2025", European Commission, Strasbourg, 10 September 2025.

³⁵ EUROPEAN COMMISSION, "Communication on Energy Highways", COM(2025) 1005 final, Brussels, 10 December 2025.

³⁶ ENAGÁS, "The European Union renews the Project of Common Interest (PCI) status of H2med", press release, April 2026.

Table 1. Technical characteristics of the H2Med corridor

Characteristic	BarMar (Spain-France)	CelZa (Portugal-Spain)
Route	Subsea (Barcelona-Marseille)	Onshore (Celorico da Beira-Zamora)
Length	400 km	270 km
Capacity	2.0 Mtpa	0.75 Mtpa
Compression station	140 MW (Barcelona)	30 MW (Coreses)
Estimated investment	€2,135M	€350M
Entry into operation	2032	2032

Mtpa: million tonnes of renewable hydrogen per year; €M: million euros; MW: megawatts. Estimated joint investment in the corridor: €2,500M. Source: own elaboration based on h2medproject.com and Enagás.

The joint investment is estimated at €2.5 billion³⁷. The company in charge of BarMar, incorporated in July 2025, divides ownership among Enagás (50%), NaTran (33.3%) and Teréga (16.7%), and is headquartered in the Provence-Alpes-Côte d'Azur region³⁸. A state adversary need not operate on the floor of the Gulf of Lion: it is enough to attack the onshore nodes, in particular the 140 MW compression station at the port of Barcelona or the interconnection points with the national grids, concentrated infrastructure with little redundancy³⁹. The security of H2Med is therefore a problem of protecting critical onshore points and duplicating capacity, not a passive attribute of bathymetry.

Hydrogen Competitiveness and Industrial Traction

Spain's geoeconomic advantage lies in its low-cost production capacity: thanks to its wind and solar endowment, Spain aims to produce green hydrogen below €2 per kilogram⁴⁰. Anchor projects such as HyDeal España, oriented towards steelmaking and the fertiliser industry, illustrate the transition from the experimental to the industrial phase and consolidate the internal demand of the export corridor.

From Peripheral Spoke to Central Node: Relevance and Resilience, Not Coercion

This infrastructure does not, however, amount to energy hegemony. Supplying around 10% of European hydrogen consumption does not turn Spain into a chokepoint or grant it any capacity for denial over its partners: German steelmaking or French chemicals

³⁷ H2MED, "El proyecto H2med", op. cit.

³⁸ ENAGÁS, "The H2med hydrogen corridor reaches a key milestone with the creation of the BarMar joint venture", press release, 3 July 2025.

³⁹ CONLEY, H. A. et al., "Security Implications of Nord Stream Sabotage", op. cit.

⁴⁰ GREEN HYDROGEN ORGANISATION, "Spain", country profile, accessed June 2026.

could pivot towards imports of green ammonia from Namibia, Chile or North Africa. Hydrogen is substitutable and no monopoly exists; to seek a reverse coercion over allies would be analytically untenable and politically incoherent with the foundations of the European Union and NATO.

The strategic value of the node is of a different nature, and the Farrell-Newman framework clarifies it: centrality in a network does not by itself amount to chokepoint capacity, which also requires the node to be difficult to substitute. Spain gains centrality and relevance, not denial power. From that centrality three dividends derive. First, resilience: producing on its own territory a significant fraction of its energy reduces its exposure to external chokepoints. Second, diplomatic weight: becoming a structural supplier of the European energy architecture gives Spain a voice in the governance of the system, where as a spoke it was a passive subject. Third, the capture of industrial value, by anchoring electrolyzers, decarbonised steelmaking and the chemical industry around competitive hydrogen.

Although industry estimates project covering around 10% of European hydrogen consumption in the early 2030s⁴¹, this target will operate in a scenario of extreme uncertainty, strictly conditioned by the real maturation of demand and commercial viability against other vectors.

Intra-European Friction: The French Factor

The main geoeconomic obstacle to the Iberian node is not technical but jurisdictional: the practical veto power that France exercises over continental transit. French energy doctrine, anchored in a nuclear fleet that generates close to 70% of its electricity (against around 21% in Spain), has historically been wary of Iberian interconnections: in 2022, after two decades of discussion, France buried the trans-Pyrenean MidCat pipeline, citing cost and timelines, which forced the shift towards the BarMar undersea route⁴². The underlying logic is competitive: with a hydrogen strategy based on its own nuclear electricity, France has little incentive in a corridor that would allow cheaper Spanish hydrogen to compete with French hydrogen⁴³. That rivalry is also fought in European

⁴¹ ENAGÁS RENOVABLE, “Enagás Renewable joins the H2med Alliance in Berlin”, press release, September 2025.

⁴² “France, Portugal and Spain scrap the trans-Pyrenean MidCat pipeline and agree on the BarMar undersea corridor”, Reuters, October 2022.

⁴³ SPRINGER NATURE, “France’s Hydrogen Strategy: Focusing on Domestic Hydrogen Production to Decarbonise Industry and Mobility”, 2024.

regulation, where France leads the campaign to put nuclear-derived ‘low-carbon’ hydrogen on a par with renewable hydrogen, against the opposition of Spain, Germany and Portugal⁴⁴. Any realistic assessment of the Iberian node must internalise that its viability depends less on undersea engineering than on France’s willingness to act as transit territory and not as a rival hub. At the Iberian scale, moreover, cooperation with Portugal coexists with latent competition for the same European green-industrialisation funds: both countries act as a bloc before Brussels but compete to attract investment.

Mineral Sovereignty as the Second Nodal Pillar

The second pillar demands pragmatism: it is where the gap between strategic rhetoric and real capabilities is widest. Primary mining is not a solution for 2030: extraction projects mature over ten to fifteen years, clash with the European environmental framework and social opposition, as the blockage of the Cáceres lithium project illustrates; and the exploration of tellurium in seamounts is merely prospective. The plausible vector is a combination of friendshoring (supply from reliable partners such as Australia, Canada or Chile), strategic reserves and the recycling of batteries, magnets and electronic components, within the 65% per-country ceiling set by European legislation⁴⁵ and of the PERTE Chip for semiconductors. Without securing these supplies, the energy node will be born strategically subordinate. Building the H2Med infrastructure with electrolyzers dependent on Chinese rare earths forces an unavoidable transitional vulnerability: Spain will continue to operate as a spoke captive to Beijing throughout the 2030s in order to establish itself as an energy node. Mineral security is therefore a prerequisite of energy security, even if it matures much more slowly.

The Deterrent Response: The Doctrine of Network Autonomy

Network Autonomy as a Doctrinal Framework

The conceptual framework that guides the modernisation of the Spanish BITD is what Guillem Colom Piella formulates as ‘network autonomy’. In his Analysis Paper “Fuerza futura, decisiones presentes” (IEEE-CESEDEN, March 2026), he argues that the strongest case is not autarky, ‘something impossible and unreal’, but reducing critical dependencies, diversifying, building reserves and securing sufficient European industrial

⁴⁴ “France leads push for EU to boost nuclear-produced hydrogen”, Reuters, February 2023.

⁴⁵ EUROPEAN COMMISSION, “Regulation (EU) 2024/1252”, op. cit.

capacity, positioning Spain in high-value niches through consortia and clusters⁴⁶. The 2025 Industrial and Technological Plan for Security and Defence goes beyond the accounting target of 2% of GDP committed to NATO. Its purpose is to consolidate a sovereign industrial base that prevents the paralysis of our capabilities by external dependencies⁴⁷.

The Technical Shield against the Panopticon Effect

Against the espionage of data traffic on submarine cables, quantum key distribution (QKD) protects the exchange of the encryption key: it detects any interception attempt and triggers an alert, attacking the confidentiality that the panopticon exploits, not the physical sabotage of the cable, which is a different problem of protection and redundancy. Its scope demands realism: allied agencies, including France's ANSSI, subordinate QKD to post-quantum cryptography and reserve it for niche uses. Spain has placed here one of its most advanced bets, the QKD-GEO system of Hispasat and Thales Alenia Space: the first Spanish geostationary quantum key distribution system, endowed with €103.5 million from the Aerospace PERTE and managed by the CDTI, Spain's principal contribution to the European quantum communication infrastructure (EuroQCI)⁴⁸. To this is added, in the electromagnetic spectrum, the development of national signals-intelligence capabilities and, on the regulatory side, the perimeter of the 5G National Security Framework already described. The combination of these segments aims to reduce Spain's exposure surface and to protect its most sensitive communications, without pursuing a chimerical parity with the signals-intelligence capabilities of the superpowers.

Economic Impact and European Dimension

The defence industry has consolidated as a strategic engine: in 2024, the defence, security, aerospace and space sector generated revenues of €16,153 million⁴⁹. The 2025 Plan foresees an additional impact on GDP and the creation of tens of thousands of

⁴⁶ COLOM PIELLA, Guillem, "Fuerza futura, decisiones presentes: el planeamiento de la defensa como política pública", Analysis Paper, IEEE-CESEDEN, Ministry of Defence, March 2026.

⁴⁷ GOVERNMENT OF SPAIN, "Plan Industrial y Tecnológico para la Seguridad y la Defensa", La Moncloa, 23 April 2025.

⁴⁸ HISPASAT and THALES ALENIA SPACE, "Development begins on the first geostationary satellite quantum key distribution system (QKD-GEO)", press release, 21 January 2025.

⁴⁹ PwC SPAIN, "The defence, security, aerospace and space sector generated revenues of €16,153 million in 2024", 2025.

jobs⁵⁰. With a strongly export-oriented profile⁵¹, the industrial-policy challenge is to move from subsystem supplier to integrator. The collapse of FCAS in June 2026, abandoned by France and Germany over an irresolvable industrial dispute between Dassault and Airbus, confirms that same friction and reorients the Spanish path towards the new Airbus-Indra Team Gen 6 initiative, which, together with continuity in the Eurodrone, marks the realistic itinerary towards that status, materialising network autonomy through strategic industrial concentration.

Geoeconomic Risk Matrix

The matrix in Table 2 summarises the risk vectors analysed and classifies them according to their theoretical effect:

Table 2. Geoeconomic risk matrix (2025-2030)

Risk	Probability	Impact	Trigger	Effect (typology)
Chronification of the Hormuz blockade	High	Critical	Failure of the reopening memorandum	Chokepoint
Sabotage of Medgaz and submarine cables	High	Very high	Hybrid actions in the grey zone	Dual
Chinese mineral coercion	Very high	High	Restriction of rare earths and lithium	Chokepoint
Transatlantic tariff war	High	High	Trump Shock protectionism	Chokepoint
Cyberattack on the electricity grid	Medium	High	Vulnerabilities in control systems	Dual
Espionage in 5G networks	Medium-high	High	High-risk suppliers in the core	Panopticon
Semiconductor disruption	Medium	Very high	Geopolitical blockade of Taiwan	Chokepoint
Delay in H2Med execution	Low-medium	Medium-high	Lack of coordination and cost inflation	Endogenous
Intra-European friction over H2Med	Medium-high	High	Nuclear-renewable rivalry and French control of interconnections	Endogenous

Own elaboration. The 'effect' column classifies each risk according to the Farrell-Newman typology, expanded with the 'endogenous' category; 'dual' combines denial and surveillance; 'endogenous' designates an internal risk not attributable to external coercion. Probability expresses the occurrence or recurrence of the risk in 2025-2030, as a qualitative assessment.

The distribution of risks is uneven: four operate as pure chokepoint (Hormuz, mineral coercion, the tariff war and semiconductors); one as pure panopticon (5G espionage);

⁵⁰ GOVERNMENT OF SPAIN, "Plan Industrial y Tecnológico para la Seguridad y la Defensa", op. cit.

⁵¹ PwC SPAIN, "The defence, security, aerospace and space sector in 2024", op. cit.

two, undersea sabotage and the cyberattack on the electricity grid, are dual, the characteristic signature of the grey zone; and two, the H2Med delay and intra-European friction, are endogenous but amplify exposure to all the others. None admits a purely defensive response: all require the articulation of nodal capacity, technical-regulatory shielding and industrial deterrence.

Alternative Scenarios and Limitations

This analysis must be framed within three structural conditioning factors. First, it is worth distinguishing between the impact on prices and the physical interruption of supply. The crude risk premium is volatile and reversible (in April 2026 it partially deflated amid signs of de-escalation⁵²), so the price figures should be read as a cyclical maximum; the physical interruption of transit, by contrast, has proved much more persistent, and its eventual normalisation would not return the system to the previous status quo. Second, nodal capacity is still a long-term projection. The execution of H2Med and its impact on European consumption will depend on the financial viability of the project and on the take-off of demand. Third, the viability of the whole architecture requires, as Colom Piella underlines, sustained political leadership capable of transforming external pressure into internal cohesion. Consequently, the scenario projects a roadmap whose final materialisation will depend on state will.

Conclusions: Towards an Open Strategic Autonomy

The conversion of energy, data and minerals into instruments of coercion constitutes an inescapable paradigm on the 2030 horizon. Spain must move from a vulnerable interdependence to a strategic interdependence in which its nodal capacity provides it with positional and diplomatic leverage. The objective pivots on three strategic imperatives:

First: the implementation of the H2Med corridor, integrated into the Energy Highways, is the lever with the greatest potential for Spain to exercise its own node effect. Its execution requires cataloguing the Barcelona compression station and the interconnection points as critical infrastructure, and forcing a transactional exchange with France backed by the

⁵² "As oil prices plunge below \$91 after weeks, a new Hormuz crisis emerges", Al Jazeera, 18 April 2026, op. cit.

joint pressure of Lisbon and Berlin: offering regulatory flexibility on nuclear hydrogen exclusively in exchange for binding guarantees of schedule and transit for BarMar. Conceding partially in this dossier from a position of strength costs less than indefinite dependence on the French veto.

Second: mineral sovereignty and the protection of grey-zone infrastructure require the immediate execution of two operational imperatives: constituting the national strategic reserve of critical minerals for the BITD, with defined coverage targets, and reinforcing the surveillance of Medgaz and the submarine cable landing points through maritime situational awareness and NATO coordination. The articulation of signals intelligence, quantum key distribution and the 5G National Security Framework completes the shield against the panopticon in the critical segments.

Third: the paradigm of open strategic autonomy requires forging balanced alliances free of critical subordinations; industrial rearmament and energy deployment thus cease to be economic variables and become the foundations of our sovereignty of decision. Four observable milestones will tell whether the transition from spoke to node is real or rhetorical: the final investment decision on BarMar, the effective endowment of the mineral reserve, the cataloguing of the corridor's nodes as critical infrastructure, and the signing of binding supply contracts that materialise European industrial dependence. The Iberian node will not be proclaimed: it will be verified.

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