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Competitiveness without Capacity? Public Finance, Industrial Strategy, and the EU's Net-Zero Transition

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Abstract

Aim: This article examines how public financing and institutional capacity shape the development of strategic clean-energy value chains in the European Union. The author investigated whether the EU's current policy architecture, which is centred on financial mobilisation, market-based instruments, and de-risking; can support the industrial capabilities required to achieve net-zero objectives.

Methodology: The study used a qualitative, institutional political economy approach, combining analysis of the academic literature with examination of EU legislation, policy documents, and institutional reports, while focusing on the governance of investment, production, and risk in transition vulnerable sectors.

Results: Despite the availability of financial instruments and regulatory incentives, limitations in public institutional capacity constrain their effectiveness. Investment tends to favour projects aligned with private risk–return profiles, while production, learning, and technological control concentrate in regions with established industrial coordination. As a result, the domestic development of strategic regions remains uneven and fragile.

Implications and recommendations: Achieving net-zero objectives requires a shift from a finance-centred policy model toward deliberate capacity-building. This includes strengthening public functions of direction-setting, long-term risk absorption, strategic coordination, and conditional support for industrial development, moving beyond narrow market-failure correction.

Originality/value: The article contributes to the literature on climate transitions and industrial policy by distinguishing public financing from public industrial capacity. It argues that the success of the EU sustainable transformation depends not only on the scale of investment mobilised, but also on the institutional ability to coordinate, govern, and anchor strategic value chains within Europe.

Keywords: European Union, climate policy, net-zero transition

1. Introduction – The Industrial Meaning of Decarbonisation

European climate transition is often thought of as a climate strategy centred on emissions reduction. In practice, its implementation points to a far deeper transformation, i.e. the reshaping of Europe's productive systems. Decarbonisation is only achieved by industrial change. Net-zero cannot be delivered through emissions pricing and regulatory targets alone – it depends on who controls key technologies, where manufacturing capacity is located, how strategic inputs are secured, and whether public institutions are willing to commit capital over long time horizons (Rodrik, 2014). The twin transition is not simply an environmental project, it is a reorganisation of value chains, production structures, and technological capabilities that reshapes economic power within and beyond Europe (Hausmann et al., 2014). It is the path to competitiveness in a world where Europe is lagging behind in terms of production (Dahlström et al., 2025).

Over the past decade the European Union has developed a complex architecture of transition finance. Revenues from emissions trading (European Environment Agency, 2025), the issuance of common green bonds (Sertore, 2022), dedicated innovation and cohesion instruments (European Parliament & Council of the European Union, 2021; 2023), and large-scale EIB lending (European Investment Bank, 2024) have mobilised substantial volumes of capital for low-carbon investment. However, this financial architecture has not consistently translated into domestic productive capacity in key value chains such as batteries, grid components, or renewable manufacturing (Sgaravatti et al., 2023). Europe thus faces a paradox: it is rich in transition finance, yet increasingly constrained in transition capabilities. Public money encourages investment, but often without anchoring production domestically or securing long-term industrial resilience (Zaklan et al., 2021).

This outcome cannot be explained just by comparative advantage or differences in global costs. While such factors matter, persistent capacity gaps in critical sectors reflect governance choices that shape where learning, scaling, and control occur. The organization of public intervention influences not only the speed of distribution, but also the geography of production and the distribution of industrial rents.

Despite its framing as an implementation summit (Burnett et al., 2025), COP30 in Belém did not deliver a binding roadmap to phase out fossil fuels or establish formal mechanisms for industrial transformation. The final decision omitted explicit fossil-fuel phase-out commitments and instead focused on scaled-up climate finance goals and voluntary implementation initiatives, leaving key mitigation pathways undefined, exposing a credibility gap between ambition and delivery capacity (de Carvalho, 2025). The emphasis on capital flow and voluntary coordination highlighted a gap between ambition and the institutional capacity to deliver tangible transformation. This reinforces the central claim of this article, namely that credibility in the current phase of the transition depends less on targets and pledges than on demonstrable production and coordination. For Europe, entering this phase with a mature regulatory framework, yet with gaps in domestic industrial capacity, underlines a strategic risk of continuing to treat climate objectives and industrial strategy as separate policy domains.

This article argues that Europe's reliance on market-led instruments and fragmented governance prevents the transition from functioning as a coherent industrial strategy. Existing financing mechanisms are primarily designed to mobilise capital and 'de-risk' private investment (Sandri et al., 2021). They are far less equipped to build public capacity to shape technological pathways, secure supply chains, or direct production in ways that reflect collective priorities (Mazzucato & Penna, 2016). The EU risks delivering a transition that meets regulatory targets while reinforcing external dependency, regional unevenness, and long-term vulnerability (Tagliapietra, 2024).

This article differentiates public industrial capacity from public financing, showing that capital mobilisation without strategic direction cannot secure Europe's position in the foundations of the transition (Chang & Andreoni, 2021). The main claim is not that Europe does not have enough resources, but that it lacks the ability to coordinate, plan, and absorb risk in ways that align climate

goals with productive systems (Lamperti et al., 2019). To reach net-zero, Europe must move beyond financial engineering towards direction-setting, i.e. building institutions capable of shaping markets rather than assuming that markets will internalise strategic priorities on their own.

2. Industrial Strategy under the Green Transition

2.1. Industrial Policy as Direction-Setting, Not Subsidy Allocation

Industrial policy is often thought of only as the allocation of subsidies or the provision of investment incentives. This understanding reflects a period in which governments sought primarily to correct market failures without introducing major changes to market structures (Rodrik, 2014). In the context of the sustainable transition, strategic sectors, including renewable manufacturing, green steel, heat pumps, and grid technologies, are not just sites of capital deployment but systems composed of supply chains, innovation and skills formation (European Commission, 2023).

An industrial strategy for decarbonisation has to change markets rather than just stimulate them. Direction-setting, deciding which technologies, capabilities, and infrastructures must exist to make climate targets feasible, becomes a main public function rather than an implicit outcome of private investment (Parks, 2022). Without direction, capital flows may be substantial while production systems remain misaligned with long-term transition needs and goals.

2.2. Decarbonisation as Structural Transformation

Decarbonisation alters the foundations of industrial economies, production, value creation, and energy use across the entire system. For these changes to occur, there is a need to create productive systems capable of absorbing investment into long-lived infrastructures that cannot be governed by price signals alone or coordinated through marginal adjustments (Avelino et al., 2016).

This perspective challenges the assumption that climate policy can remain technologically neutral or institutionally light. Structural transformation involves sequencing, learning, and coordination over time, all of which depend on public capacity rather than on market responsiveness alone.

2.3. Public Finance versus Public Industrial Capacity

Public finance is much more than an enabler of private investment, and this article distinguishes three functions of public intervention. **Mobilisation** increases the volume of investment directed toward low-carbon activities by improving expected returns or lowering capital costs. **Risk-sharing** redistributes uncertainty between public and private actors through guarantees, blended finance, or revenue stabilisation mechanisms. **Capacity-building** concerns the creation, retention, and reproduction of productive capabilities over time.

Mobilisation and risk-sharing are obligatory for success, but they do not determine where production takes place, who accumulates learning, or which actors retain strategic control. They examine how much investment occurs and at what cost, not the structure of the production systems that emerge. In the context of climate and industrial transitions, capacity-building is the governance of planning, coordination, learning, and strategy required to point industrial activity toward desired outcomes, thus enabling governments and institutions to plan the development of strategic value chains rather than assuming that private investment alone will deliver (Hölscher et al., 2018).

While mobilisation and risk-sharing can be delivered through market-compatible instruments, capacity-building requires institutional functions that markets do not supply, such as direction-setting, strategic procurement, risk absorption beyond private tolerance, and governance over system-critical assets. When public finance is confined to the first two roles, it may successfully accelerate deployment while simultaneously externalising production and deepening dependency.

2.4. Analytical Framework: Alignment and Failure Modes

Europe's transition remains financially dynamic yet industrially fragile (Hoffmann et al., 2024), hence the article adopts a framework structured around four interdependent dimensions. **Direction** – as in the articulation of priorities that define in which areas technologies and skills must be developed. **Production** – the domestic and regional ability to manufacture, scale, and maintain critical technologies. **Finance** – the allocation of capital and the governance of risk across public and private actors. **Institutions** – the organizational capacity to coordinate, plan, and enforce conditionality.

Transition failure does not come from weakness in any single dimension, but from misalignment between them. Therefore, the main question is not whether Europe invests enough or has enough capital, but whether investment, production, and governance are aligned towards long-term goals.

3. Europe's Financing without Strategy

3.1. Institutional Dispersion as Mandate Failure

Europe's transition governance is suffering from coordination problems (Kulovesi et al., 2024). The fragmentation observed across EU climate and industrial policy reflects mandate design rather than total failure. Existing institutions are optimised for regulatory compliance, financial accountability, and risk minimisation, not for strategic direction.

No single actor is responsible for ensuring that climate targets correspond to feasible production pathways. Authority over regulation, finance, and territorial implementation is dispersed, while responsibility for industrial outcomes remains absent (Bellanca, 2024). This allows capital to flow without guaranteeing that it contributes to the development of domestic productive systems, particularly in regions already exposed to transition risk.

3.2. De-Risking beyond Its Historical Role

De-risking has become the dominant logic of public intervention in Europe's green transition (Gabor & Braun, 2025). In its early phases, this approach addressed genuine market barriers faced by emerging technologies and contributed to rapid deployment. As the transition moves into sectors characterised by capital intensity, long asset lifetimes, and systemic interdependencies, however the limits of de-risking become structural rather than temporary.

De-risking reduces private exposure to uncertainty, but it does not determine where learning occurs, which supply chains deepen, or who retains strategic control over production. The problem is therefore not de-risking as such, but the fact that it operates without responsibility for the industrial structures it produces.

3.3. Bankability Bias

Project selection based on bankability functions as a structural filter within Europe's transition architecture. Golka et al. (2024) analyse how sustainable finance models that centre on private capital reinforce investment in bankable projects while leaving out commercially uncertain but strategically essential sectors. Investments that align with private risk–return profiles are prioritised, while projects that are strategically essential but commercially uncertain are sidelined. Bankability reflects investor rationality.

This bias can help explain why Europe can mobilise large volumes of low-carbon investment while remaining dependent on imported technologies. Capital allocation follows financial viability rather than industrial priority. Over time, this pattern reinforces uneven distribution, concentrating benefits where capacity already exists while leaving structurally weaker regions exposed.

3.4. Fragmentation, Capacity, and Credibility

International climate governance shifts toward implementation benchmarks, the standing of climate leadership depends on demonstrable delivery capacity. Here, Europe's fragmented industrial governance poses both a material and a political risk. Averchenkova & Chan (2023) provided a governance perspective on net-zero commitments, explaining why policy capacity and implementation mechanisms are necessary for credibility beyond targets. Being a part of global discussions with ambitious targets but limited domestic capacity exposes a credibility gap, where commitments are clear yet the infrastructures required to fulfill them remain uncertain.

4. The Risk of a Transition without Sovereignty

4.1. Dependency as an Outcome of Institutional Design

In the green transition, strategic dependency is defined as an external constraint caused by geopolitics, global competition, or Europe's relative cost position (Kustova, 2024). Europe's dependencies are, to an extent, the outcome of its own policy architecture. When public intervention prioritises rapid distribution and market access, while neglecting capacity formation, and when production concentrates in jurisdictions where industrial coordination already exists.

Dependency is not an exogenous shock but a by-product of mobilisation without concrete direction. Financial flows accelerate diffusion, but they do not anchor learning, manufacturing, or upstream integration domestically. Therefore, transition scales quickly but remains externally conditioned, with limited public control over the systems on which decarbonisation depends.

4.2. Vulnerability of Acceleration

The acceleration of the sustainable transition alters the risk of dependency. In a slow transition, reliance on external supply chains may be manageable. Under conditions of rapid scale-up, however, depending on imports becomes a binding constraint. Bottlenecks, price volatility, or policy shifts abroad translate immediately into domestic delays and cost overruns (Millard, 2024).

The faster Europe attempts to decarbonise without domestic production, the more exposed it becomes to disruptions over which it has little influence. What appears as a trade issue under stable conditions becomes a systemic risk once decarbonisation is compressed into a short time horizon.

4.3. Sovereignty as Productive Capability

Debates on European sovereignty and strategic autonomy are conflicting; scholars show that EU policy discourse is torn between capacity-building for self-reliance and commitments to open markets and legal obligations under global trade regimes (Rekowski, 2025; Steinbach, 2023). This article rejects both interpretations. In the context of the green transition, sovereignty should be understood as control over reproduction, along with the capacity to sustain, adapt, and govern essential production systems over time, rather than remaining dependent on external decisions that shape domestic outcomes (Tagliapietra & Veugelers, 2023).

Productive sovereignty implies the ability to maintain deployment despite external shocks, shape technological trajectories rather than merely adopt them, retain learning-by-doing within domestic industry and prevent strategic lock-in to externally controlled systems.

This is selective, and it does not require full value-chain autonomy, yet it demands public capacity in critical segments where dependency translates directly into vulnerability for workers, regions, and energy users.

5. From Financial Mobilisation to Strategic Public Industrial Capacity

5.1. Strategic Capacity as a Public Function

Strategic industrial capacity is the ability of the public authorities to perform a set of functions that markets alone do not provide. These include: defining mission-oriented technological priorities, coordinating domestic productive capabilities across value chains, shaping demand through long-term planning, absorbing early-stage risk beyond private tolerance, and retaining governance leverage over key assets.

These functions are well developed in the industrial policy literature (Chang & Andreoni, 2021). What remains underdeveloped in the European context is their institutional articulation at EU level. Existing actors are organized primarily around financing mandates, leaving capacity-building functions fragmented or absent (Tagliapietra & Veugelers, 2020).

5.2. Instruments of Capacity beyond Subsidies and De-Risking

Institutional reform should be accompanied by instruments that translate strategic intent into tangible outcomes. The following aspects are vital.

First, demand instruments, including long-term procurement contracts and manufacturing capacity auctions, that can convert distribution certainty into domestic potential. If designed around learning curves and localization requirements, these instruments may prevent lock-in to external supply while remaining compatible with market participation (Rodrik, 2004).

Second, targeted risk absorption and public equity positions can stabilise early-stage industrial investment where private finance remains structurally reluctant. Unlike blanket de-risking, these mechanisms reward strategic contribution rather than bankability alone, which ensures that public capital generates public accomplishments (Laplane & Mazzucato, 2020).

Lastly, the supply-chain sovereignty mechanisms, including strategic stockpiles, public futures contracts, and value-chain mapping, can help manage dependency. Recent disruptions in wind, battery, and hydrogen sectors illustrate the cost of neglecting these tools (Eddy, 2025; Millard, 2025).

6. Proposed Policy Directions

A credible pathway to climate neutrality requires a shift from a financing architecture that responds to market signals toward an industrial architecture that shapes market formation. The directions outlined below are propositions for new institutional design principles aimed at aligning climate ambition with productive capacity.

European institutions currently operate under mandates that prioritise investment and financial soundness. To act strategically, these mandates must explicitly incorporate capacity-building as a core objective. This implies a shift from mobilisation to coordination, bankability to strategic relevance, risk minimisation to selective risk absorption, and funding volumes to capability outcomes.

Without reform, new instruments risk being absorbed into existing logics that privilege financial throughput over structural transformation.

6.1. Planning as Coordination under Uncertainty

The function of planning under green transition is coordination under uncertainty. Effective planning identifies bottlenecks, sequences investment across value chains, and aligns expectations among actors in contexts where private coordination fails.

Competent planning should be adaptive and revisable. It is closer to mission governance than to forecasting, and reflects the reality that industrial feasibility must precede, not lag behind, climate ambition.

6.2. Public Risk Absorption as Leverage, Not Subsidy

The EU's current de-risking architecture treats risk-sharing as a quantitative lever to mobilise private capital (Kaskarelis et al., 2025). From an industrial perspective, risk absorption is qualitative and directional: it determines which capacities are built and whose interests they serve (Mazzucato & Penna, 2016; Rodrik, 2014).

Risk absorption includes selective first-loss guarantees tied to capacity outcomes, counter-cyclical buffers to prevent industrial collapse during volatility, and public equity positions where continuity of production is system-critical (Wigger, 2024). The objective is not to maximise financial return, but to preserve learning trajectories and option value.

Public support is exchanged for contributions to collective capacity, including domestic production, skills development, and long-term commitment to strategic assets. Industrial capacity develops over long horizons and exhibits strong path dependence. Once production systems erode, rebuilding them is costly and slow. Structural policy must therefore prioritise irreversibility for main capacities, ensuring that learning, infrastructure, and organizational capabilities are not subject to cyclical withdrawal.

7. Conclusion

Potentially, Europe's climate transition has reached a structural threshold and the financial movement is no longer sufficient on its own. The EU now faces a choice of whether to continue pursuing ambitious targets atop fragmented and market-dependent industrial foundations, or to reorganize its institutions around the ability to build, coordinate, and sustain the production systems that make decarbonisation feasible.

Across the article, one pattern remains clear. Europe does not lack resources but the institutional integration is needed to translate those resources into durable solutions. This asymmetry produces a transition that is financially dynamic yet industrially fragile, exposing European society to cost volatility, supply-chain disruption, and external control.

Credibility will be judged not by regulatory ambition alone, but by whether Europe can demonstrate control over the material conditions of its transition. Ambition without capacity now risks undermining legitimacy rather than strengthening it.

Directing the climate strategy toward strategic public industrial capacity does not imply abandoning markets, but embedding them within a framework capable of fulfilling long-term commitment.

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Konkurencyjność bez zdolności produkcyjnych. Finanse publiczne, strategia przemysłowa i transformacja UE ku neutralności klimatycznej

Streszczenie

Cel: Artykuł analizuje, w jaki sposób finansowanie publiczne oraz zdolności instytucjonalne kształtują rozwój strategicznych, czystych łańcuchów wartości energii w Unii Europejskiej. Bada, czy obecna architektura polityki UE, skoncentrowana na mobilizacji finansowania, instrumentach rynkowych oraz mechanizmach de-riskingu, jest w stanie wspierać zdolności przemysłowe niezbędne do osiągnięcia celów neutralności klimatycznej.

Metodyka: Badanie wykorzystuje jakościowe podejście z zakresu instytucjonalnej ekonomii politycznej. Łączy analizę literatury, unijnego ustawodawstwa, dokumentów programowych oraz raportów instytucjonalnych, koncentrując się na zarządzaniu inwestycjami, produkcją oraz ryzykiem w sektorach kluczowych dla transformacji.

Wyniki: Pomimo dostępności instrumentów finansowych i licznych regulacji, ich skuteczność jest ograniczana przez niedostateczne zdolności instytucjonalne sektora publicznego. Faworyzowane są projekty zgodne z największymi zwrotami dla prywatnych jednostek, a zdobywanie nowych umiejętności oraz kontrola technologiczna koncentrują się w regionach dysponujących już rozwiniętymi mechanizmami. W rezultacie rozwój strategicznych regionów pozostaje nierównomierny.

Implikacje i rekomendacje: Realizacja celów neutralności klimatycznej wymaga odejścia od modelu polityki skoncentrowanej wyłącznie na finansowaniu na rzecz świadomego budowania zdolności instytucjonalnych. Obejmuje to wzmocnienie publicznych funkcji wyznaczania kierunków rozwoju, długoterminowej absorpcji ryzyka, strategicznej koordynacji oraz warunkowego wsparcia rozwoju przemysłowego, wykraczającego poza wąsko rozumianą korektę niedoskonałości rynku.

Oryginalność/wartość: Artykuł wnosi wkład do literatury dotyczącej transformacji klimatycznych i polityki przemysłowej poprzez rozróżnienie pomiędzy finansowaniem publicznym a publiczną zdolnością przesyłową. Dowodzi, że powodzenie zrównoważonej transformacji UE zależy nie tylko od skali zmobilizowanych inwestycji, lecz także od instytucjonalnej zdolności do koordynacji, zarządzania oraz trwałego zakotwiczenia strategicznych łańcuchów wartości w Europie.

Słowa kluczowe: Unia Europejska, polityka klimatyczna, transformacja ku neutralności klimatycznej