Ten years after the Paris Agreement entered into force, European climate policy faces a fundamental contradiction. The European Union has strengthened its long-term climate commitments, yet national governments increasingly question the instruments required to meet them. Germany exemplifies this tension: while maintaining ambitious emissions targets, it risks prolonging fossil fuel dependence through additional gas infrastructure, uncertainty over renewable energy support and insufficient progress in transport and buildings. Such inconsistencies undermine investment certainty, increase long-term economic costs and weaken Europe's geopolitical position.

The central economic challenge is not the availability of clean technologies but the coordination of infrastructure, investment and regulation. Renewable energy, electrification, storage and digitalised networks can reduce import dependence while strengthening industrial competitiveness. However, their benefits depend on coherent policy frameworks and European market integration. Ahead of COP31, Germany should therefore promote an EU strategy that connects credible emissions reductions with energy security, industrial transformation and social resilience.

1. Ten Years After Paris: The Costs of Climate Policy Inconsistency

The Paris Agreement fundamentally changed expectations about the future of the global energy system. Since its entry into force in November 2016, renewable energy technologies have become economically competitive, investments in clean energy have expanded and climate neutrality has become an established objective of European economic policy. Nevertheless, current global emission pathways remain far from consistent with the Paris Agreement's temperature goals. A temporary exceedance of 1.5°C is increasingly difficult to avoid, making rapid emission reductions all the more urgent to limit the extent and duration of overshoot. Geopolitical conflicts, inflationary pressures and concerns about industrial competitiveness have reinforced political demands to slow down the transformation. Yet delaying decarbonisation does not eliminate its costs; it redistributes and increases them. Continued investment in fossil fuel infrastructure creates financial risks when utilisation declines, while postponing electrification prolongs exposure to international fuel price volatility. Climate-related damages, meanwhile, place growing pressure on public budgets, infrastructure and economic productivity.

This contradiction is particularly evident in Europe. The EU has adopted a legally binding objective of reducing net greenhouse gas emissions by 90 percent by 2040 compared with 1990 levels, complementing its target of at least 55 percent by 2030 and climate neutrality by 2050. However, achieving these targets requires substantial additional investment in electricity grids, renewable generation, industrial processes, heating and mobility. Weakening the regulatory conditions for such investments while maintaining the targets creates uncertainty rather than flexibility. The economic consequences extend beyond emissions: firms postpone investment decisions,

financing costs increase and infrastructure development becomes misaligned with future demand. Climate policy credibility therefore depends not merely on legislative ambition but on the consistency of the instruments used to deliver it.

2. Germany's Energy Policy: Managing Dependencies Instead of Reducing Them

Germany illustrates the growing tension between long-term climate commitments and short-term energy policy. Under Germany's Federal Climate Change Act (Bundes-Klima-schutzgesetz, Section 3), greenhouse gas emissions must decline by at least 65 percent by 2030 compared with 1990 levels, with net greenhouse gas neutrality to be achieved by 2045. These nationally binding targets operate within the broader framework of the Paris Agreement and EU climate legislation. According to the German Environment Agency's 2026 projections, however, existing measures would deliver a reduction of only 62.6 percent by 2030, leaving a gap of approximately 30 million tonnes of CO_2 equivalents. Transport and buildings remain major sources of emissions, while investment uncertainty threatens progress in both sectors. The challenge is not a lack of viable alternatives: heat pumps, electric vehicles, renewable electricity and efficiency technologies are commercially available. Rather, policy incentives, infrastructure provision and long-term investment requirements remain insufficiently aligned.

German energy policy also risks drawing the wrong conclusions from recent geopolitical crises. Russia's invasion of Ukraine exposed the economic and political consequences of dependence on imported fossil fuels. The subsequent diversification of gas supplies improved short-term security but did not resolve the structural vulnerability. Liquefied natural gas remains internationally traded, price-sensitive and exposed to geopolitical disruptions. Replacing dependence on one supplier with dependence on multiple suppliers may reduce concentration risks, but it does not eliminate fossil fuel price risks. Additional investments in gas infrastructure therefore require careful scrutiny of future demand, utilisation and compatibility with climate targets. Otherwise, consumers and taxpayers risk financing assets whose economic usefulness declines as electrification progresses.

The same problem arises in the electricity sector. An excessive focus on expanding gas-fired generation risks underestimating the contribution of batteries, demand-side flexibility, interconnections and decentralised renewable generation. Dispatchable capacity remains necessary, but its volume and technological composition should be determined by system-wide flexibility requirements rather than assumptions based on conventional electricity markets. Germany's priority should be to modernise and digitalise electricity networks, accelerate smart meter deployment, enable flexible consumption and remove regulatory barriers to storage and vehicle-to-grid applications. Without these changes, even inexpensive renewable electricity cannot realise its full economic value.

The underlying problem is therefore one of political and institutional coordination. Germany's energy transition does not primarily suffer from a technology deficit. It suffers from inconsistent incentives, inadequate infrastructure planning and insufficient integration between electricity, heating, transport and industrial policy.

3. Energy Sovereignty and Industrial Competitiveness Are Closely Connected

Fossil fuel import dependence is not only a climate problem but also an economic vulnerability. Oil and gas prices transmit geopolitical disruptions directly to European households and companies, affecting production costs, purchasing power and inflation. A strategy based primarily on securing additional fossil fuel supplies leaves this transmission mechanism largely intact. By contrast, domestic renewable electricity and electrification reduce exposure to globally traded fuels. Heat pumps use energy substantially more efficiently than fossil fuel boilers, while electric vehicles require considerably less final energy than combustion-engine vehicles. These efficiency gains translate into lower structural energy demand and, over time, reduced import requirements.

However, European energy sovereignty cannot be achieved through national self-sufficiency. Electricity markets benefit from cross-border interconnections, geographical diversity in renewable generation and shared flexibility resources. The economic value of renewable energy depends on the ability to transport electricity, shift consumption and integrate storage across regions. European electricity market integration is therefore not merely a question of efficiency but an instrument of strategic resilience. Coordinated grid expansion, digital infrastructure and common standards for flexibility can reduce system costs while limiting the need for additional fossil fuel backup capacity.

Industrial competitiveness must be considered within this framework. The global shift towards low-carbon technologies is already reshaping investment patterns and industrial competition. According to the International Energy Agency, global clean energy investment is expected to reach approximately USD 2.2 trillion in 2026, nearly twice the investment in fossil fuels. For European industry, delaying electrification and clean technology deployment therefore risks losing competitiveness in rapidly expanding markets.

European companies require affordable electricity, reliable infrastructure and predictable regulatory conditions to invest in electrified industrial processes. Repeatedly

questioning climate targets or weakening implementation instruments risks discouraging precisely those investments needed to preserve Europe's industrial base. The EU's Clean Industrial Deal provides a framework for connecting industrial development and decarbonisation, but its effectiveness depends on concrete financing mechanisms, infrastructure investment and consistent implementation.

Targeted public support can help overcome high initial investment costs, particularly in energy-intensive industries. However, support should be conditional on credible transformation pathways and should avoid perpetuating inefficient fossil fuel structures. Renewable hydrogen, for example, should primarily be directed towards applications where direct electrification is difficult, including selected industrial processes. Similarly, carbon capture should focus on genuinely hard-to-abate residual emissions rather than legitimising continued fossil fuel use where economically viable alternatives exist. Strategic prioritisation is necessary because public financial resources, renewable electricity and infrastructure capacity are limited.

4. The Political Economy of a Just Transition

The economic benefits of decarbonisation do not automatically translate into political support. Households face different investment capacities, housing conditions and mobility constraints. Higher fossil fuel prices can therefore impose disproportionate burdens on people who lack affordable alternatives. The political challenge is to address these distributional effects without weakening the incentives needed for structural change.

General fuel subsidies and price caps are particularly problematic because their benefits increase with consumption and frequently favour higher-income households. Moreover, they encourage continued dependence on fossil fuels and place additional pressure on public budgets. More effective instruments include targeted direct payments, investment support for efficient heating systems, affordable public transport and incentives for building renovation. Carbon pricing can contribute to efficient emissions reductions, provided revenues are redistributed fairly and viable alternatives become accessible.

The EU's Social Climate Fund represents an opportunity to link emissions reductions with targeted social support. Its effectiveness will depend on whether national implementation prioritises structural improvements rather than temporary compensation alone. In Germany, this requires integrating housing, transport and energy policy more consistently. Social acceptance depends less on weakening climate objectives than on ensuring that households can participate in and benefit from the transition.

5. COP31: Five Priorities for German and European Climate Leadership

COP31 in Antalya takes place at a moment when the credibility of European climate policy depends increasingly on implementation. The EU's international negotiating position will be weakened if ambitious targets coexist with policies that delay domestic transformation.

Germany should therefore use the conference as an opportunity to promote a coherent European agenda rather than merely reaffirm existing commitments.

First, safeguard the credibility of European climate legislation. The EU's 2040 target requires predictable intermediate pathways, effective monitoring and credible national implementation. International carbon credits must not substitute for substantial emissions reductions within Europe. Germany should align sectoral policies and infrastructure planning with its own 2045 climate neutrality objective and support the implementation of existing EU legislation.

Second, establish energy system flexibility as a European infrastructure priority. Grid modernisation, digitalisation, storage, demand response and cross-border interconnections should receive greater strategic attention. European coordination can lower system costs, improve security of supply and accelerate renewable integration. Regulatory frameworks must allow decentralised producers, consumers and storage operators to participate effectively in electricity markets.

Third, reduce fossil fuel dependence through electrification rather than new long-term import commitments. Energy security policy should distinguish clearly between necessary short-term precautions and investments that risk creating fossil fuel lock-in. Gas infrastructure planning should reflect declining demand under credible climate pathways, while investment incentives should accelerate clean heating, electric mobility and industrial electrification.

Fourth, mobilise targeted European investment for industrial decarbonization. The EU should strengthen the Innovation Fund and InvestEU and operationalise the proposed Industrial Decarbonisation Bank to accelerate industrial electrification, clean production technologies and energy efficiency. Public support should be conditional on credible emissions reduction pathways and complemented by investment in electricity grids and infrastructure. The objective must be to leverage private capital for structural transformation rather than subsidise continued fossil fuel dependence.

Fifth, reinforce international climate cooperation through credible finance and partnerships. Europe's responsibility extends beyond domestic emissions reductions. Cooperation with emerging and developing economies should support renewable energy deployment, technology trans-

fer, adaptation and climate-resilient infrastructure. Financial commitments must be transparent and additional, with particular attention to countries facing high climate vulnerability and restricted access to investment capital.

Conclusion: The Economic Risk Lies in Delaying Transformation

European climate policy is increasingly evaluated through the lenses of competitiveness, affordability and security. This is justified, but the resulting political conclusions are often misguided. Fossil fuel dependence exposes Europe to recurring price shocks, geopolitical risks and the prospect of stranded investments. Delaying de-carbonisation does not protect industrial competitiveness; it increases uncertainty and risks locking capital into technologies with declining economic prospects.

Germany's principal challenge is to restore coherence between its climate objectives and its economic policy. The necessary technologies are available, but their successful deployment depends on coordinated investment in infrastructure, reliable regulation and socially balanced incentives. At the European level, integrated electricity markets, common infrastructure priorities and credible industrial transformation policies can generate benefits that fragmented national strategies cannot achieve.

COP31 should therefore mark a shift from debating climate ambition towards implementing an economically consistent transition strategy. The decisive question is no longer whether Europe can afford to accelerate decarbonisation, but how much economic and geopolitical vulnerability it is willing to accept by delaying it. Europe's energy transition is not a trade-off between climate protection and prosperity. Properly designed, it is a prerequisite for long-term economic resilience and strategic sovereignty.

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