Energy Resilience Leadership Group

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A New Industrial Agenda: Increasing Germany's Energy Resilience

Germany and the European Union (EU) confront multifaceted challenges amid the ambitious journey towards climate neutrality. Recent geopolitical upheavals, including Russia's war on Ukraine and ensuing energy crises, necessitate a reevaluation of industrial and energy security strategies. Energy resilience emerges as a linchpin for protecting citizens and industries, reflecting the role energy systems themselves play and the services they provide for our transformation in an increasingly geopoliticized world economy.

Despite the EU's significant reliance on few third countries for energy imports, little change has occurred over the last decades. The crises in the energy markets and the rising inflation have led to income losses and competitiveness challenges exacerbated by global economic shifts. Major economies like the USA and China are swiftly promoting clean energy development to assert leadership in the green industrial revolution, highlighting the need for a comprehensive EU industrial policy approach beyond the European Green Deal.

To maintain momentum towards climate neutrality, energy-intensive industries must diversify energy supply chains and embrace alternative, non-fossil business models. Efficiency, direct electrification, and innovation play pivotal roles in reducing the cost of green energy production and enhancing energy resilience. Challenges persist in transitioning industrial value chains away from fossil fuels, particularly for sectors reliant on internationally traded commodities like petrochemicals and primary steel production. The long service life of industrial process heat systems necessitates decarbonization efforts to align with climate goals. Complementary uses of indirect electrification, in form of renewable hydrogen and its derivates, include processes that require high temperature incineration processes, that are designed for constant consumption of energy.

Besides uncertainties surrounding competitive power prices and infrastructure development, the value of resilience for our society needs to be qualified and quantified. A failed transition could lead to decreased competitiveness and disruption of key value chains, with severe consequences for downstream markets. Limited willingness to pay for green commodities poses challenges for passing on higher production costs to consumers, highlighting the need for strategies to foster resilience-oriented "green lead markets" in circular economy, storage, flexibility, and carbon management, where unavoidable and hard-to-abate emissions remain.

10 Guiding principles for green production and energy resilience

A holistic energy resilience framework is essential, shifting from a traditional security-focused approach to one that encompasses the transformative role of energy systems in a geopolitically complex economy. The framework suggested emphasizes ensuring sufficient and reliable supply of materials, fuels, technologies, and skills while meeting projected energy demand in a secure, flexible, and efficient manner.

1. Prioritizing energy-efficient solutions and direct electrification over indirect methods like renewable fuels of non-biological origin (RFNBOs), where possible, ensures optimal resource allocation.
2. Recognizing global market mechanisms is essential, particularly for energy-intensive industries reliant on global supply chains.

3. To maintain competitiveness, the electricity market must be redesigned to sustainably provide low prices and supplemented by technology open capacity mechanisms, supporting Europe's industrial prowess.
4. Demand-side actions are emphasized for cost reduction, necessitating adaptation to intermittent energy supply through flexible consumption.
5. Digitalization integration enhances cost monitoring, system flexibility, and grid management efficiency.
6. Localizing clean energy sources mitigates reliance on specific suppliers or technologies, boosting resilience.
7. Europeanized rather than national approaches capitalize on geographical advantages and resource diversity, facilitating a cost-effective energy transition based on the Internal Market.
8. Innovation plays a pivotal role in pushing the boundaries of possibility and expediting the energy transition. Prioritizing public support for R&D and investment in new technologies fosters a future-proof energy system.
9. Leveraging existing infrastructure and prioritizing green grids while utilizing cleaner energy sources are key strategies.
10. Policymaking should shift focus towards innovative actors, particularly Small and Medium Enterprises (SMEs) and cleantech startups, as catalysts for change.

Industrial policy framework for innovation

The single market is Europe's key asset to drive down costs for the transformation, but it needs to be strengthened to enable transformation and development of future technologies. With Germany and Europe being at the international technology frontier, it is important to focus on accelerating innovation efficiently in a competitive environment, rather than micro-managing and overregulating. We suggest:

1. **Future-Proof Electricity Market**: To ensure affordable clean energy, rapid reforms are needed to lower electricity costs and provide investment incentives. This includes optimizing financing for renewable assets, incentivizing flexibility and innovation in industrial power demand, and establishing technology neutral, market-oriented capacity mechanisms.
2. **Regulatory Sandbox**: To accelerate the adoption of new technologies and develop a leaner regulatory framework, "sandboxes" should be leveraged to allow testing and scaling without burdensome regulations. This approach fosters innovation while ensuring safety and environmental protection.
3. **Financial and Tax Incentives**: Tax incentives are proposed as an efficient alternative to subsidies for supporting clean technology development. Every euro that first has to be collected and then distributed is less efficient than a euro that does not have to be collected and then distributed.
4. **Grants and Public Guarantees**: To avoid permanent subsidies, targeted public guarantees and regressive grants are suggested to incentivize the adoption of new technologies, with funding allocated based on innovation height. These measures aim to boost bankability of smaller companies, market entry and manufacturing of cleantech solutions.
5. **Integrated approach to Energy Resilience**: To maximize currently available resources and boost energy resilience, EU institutions should embark on a new integrated approach favouring European programmes that promote and implement innovation within ecosystems. We need an integrated energy system based on sector coupling (electricity, heating and cooling, hydrogen and derivatives, natural gas, carbon management), and sector integration covering the whole value chain (production, transmission and distribution, consumption).