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Analysis

Battery Supremacy

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In the Summer of 2022, Viktor Orbán sparked [international outrage](#) by lamenting that countries where Europeans and non-Europeans mingle were “*no longer nations.*” Amid the uproar, a dramatic pronouncement in the same speech largely escaped notice: Orbán declared his ambitions to make Hungary a “superpower” in electric vehicle (EV) battery production, with the world’s third-largest manufacturing capacity.

The scale of the economic undertaking was staggering. Orbán aimed for a dominant position in a key value chain, trailing only China and the United States and competing with Germany. The ambition far exceeded the size of the Hungarian economy, which is roughly equivalent to the Munich metropolitan area. And the rhetoric was backed with action: by luring South Korean and Chinese gigafactories with generous incentives, Hungary developed an EV battery manufacturing capacity of 87 GWh per year, reaching 4th place in the global battery race.

Orbán’s program baffled many Hungarian economists, who [questioned](#) the decision to bet so heavily on a single, technologically volatile industry in the absence of sufficient energy, water, and labor force to support production at this scale. The strategy conjured memories of the forced industrialization of the Soviet-era, and pipe dreams to turn resource-poor Hungary into “the land of iron and steel.”

The new industry also came with devastating ecological costs: battery gigafactories have brought a relentless flow of news headlines about environmental damages, including toxic chemicals found in groundwater. This sparked public outrage in communities near existing and planned production sites. Following the announcement of Chinese battery giant CATL's gigafactory in the Debrecen area, a public hearing on the factory's environmental permits descended into [chaos and fistfights](#). The regime crushed dissent—scrapping mandatory public hearings by decree, blocking referendums and data requests, and harassing and intimidating protesters.

Yet, the Hungarian strategy garnered support from an unlikely source: Brussels. Battery production is central to the European Union's new industrial policy paradigm. Despite Orbán's open political conflict with European institutions, EU Commission Vice President Maroš Šefčovič [lauded Hungary](#) as a “pioneer” and a “champion” of decarbonization objectives and strategic autonomy.

In its desperate attempt to catch up with China, the EU has reduced scrutiny over member countries' industrial policy aims. This will have long term implications. While Hungary's powerful EV battery sector may appear to advance EU objectives, it generates profound ecological damage and increased geopolitical risk. Orbán seeks leverage control over a key value chain as a political weapon.

The EU's EV push

The European Commission has long set its sights on EV battery technology. The sector occupies a central position in the EU's [revitalized industrial policy drive](#). In 2017, the [European Battery Alliance](#) was formed to coordinate stakeholders and facilitate the construction of 20–25 gigafactories in Europe. At that time, automakers were hesitant to invest in their own capacity for battery production, citing market uncertainty and funding constraints. The Commission intervened with a [Strategic Action Plan on Batteries](#) in 2019, asserting the industry as “a strategic value chain, where the EU must step up investment.”

Since then, several developments have propelled the sector forward. In 2020, the EU Green Deal mandated bloc-wide climate neutrality by 2050. To that end, the union banned the sale of polluting vehicles beginning in 2035. Importantly, the EU significantly relaxed its prohibition of state aid—prior to November of 2021, governments were largely [prevented](#) from subsidizing domestic companies in order to ensure a level playing field within the common market. Together, these initiatives have encouraged generous subsidies for gigafactory projects across the continent.

Re-shoring battery production is not the most expedient path to decarbonization. China, Japan, and Korea together hold over 90 percent of market share in batteries and have a sizable cost-advantage due to energy price differentials. The EU nonetheless wants to move away from import-reliance and justifies its pivot on three grounds: climate neutrality, strategic autonomy, and the protection of Europe's automotive industry.

EU officials argue that battery cells produced elsewhere may lack the EU's environmental standards. They also highlight heightened supply chain disruptions that may risk import supply. By localizing production, the EU aims to lessen vulnerabilities amid geopolitical tensions and trade uncertainties. Increasingly conscious of the possibility for “[weaponized interdependence](#),” EU officials are [wary](#) of opportunities for nontransparent, nondemocratic regimes to exploit trade dependencies for coercive purposes, a concern intensified by Russia's

leveraging of energy. If China were to invade Taiwan, prompting Europe to reply with economic sanctions, severing trade ties with China would be extremely costly.

Finally, Europe's automotive industry is the backbone of its manufacturing employment. The industry has already suffered setbacks given the progressive phase-out of the internal combustion engine. Since the Biden administration's Inflation Reduction Act showered green (and not so green) industries with subsidies, fears that the continent will see its industrial base diminish have become more widespread.

Assessing alignment

The Hungarian battery industry undermines two of these stated aims. Because the EU leaves monitoring and enforcement of its climate standards to member states, [they can easily disobey](#). In fact, investors were drawn to Hungary by explicit promises of relaxed regulations, including streamlined permit procedures and exemptions from mandatory environmental impact assessments. The manufacturing of EV batteries is extremely energy-intensive. An energy-poor country, relying heavily on Russian natural gas imports and lagging behind on renewables, has neither the resources nor the network infrastructure to sustain the industry. Water usage in the face of frequent droughts is also causing anxieties—the estimated daily water demand of Samsung's factory in Göd is equivalent to a city of [120,000 people](#). Many of these production segments are low value-added, highly water- and energy-consuming, involve hazardous toxic chemicals, and localizing them may adversely impact other environmental goals.¹

Hungary's EV battery push also deviates from the EU emphasis on strategic autonomy. Though inviting Chinese companies like CATL to build battery factories in Hungary does offer a closer supplier, it offers little protection in the face of a serious geopolitical fallout. Orbán is unlikely to expropriate factories, as are the Germans who have recently demonstrated their reluctance to [seize Russian assets](#).

Strategic autonomy is further undermined by the Orbán regime's vehement opposition to loosening ties with Russia or China. The administration has been obstructing sanctions (calling them "pointless exhibitionism") and remains steadfast in sourcing Russian natural gas. Hungary has welcomed billions in Chinese investment (often financed by opaque Chinese loans) and even [invited Chinese police](#) to patrol the streets of Budapest.

Ironically, in its attempt to reduce dependence on nondemocratic external partners, the EU might find itself reproducing such a reliance within its own borders. Hungary's centrality in a key value chain could enable Orbán to shield his autocratic regime from EU-level censure and ensure the flow of EU funds to his networks. It is a concerning political exposure, given Orbán's demonstrated [propensity for open blackmail](#)—and exactly the type of risk that the EU's pursuit of strategic autonomy aimed to counteract.

The primary incentive driving the EU's support for Orbán, then, appears to be the protection of the European carmakers and industrial base. It is unclear, however, why the EV industry has been singled out as the continent's jobs engine. If taxpayer resources are used to create jobs and prop up industries, ensuring high domestic value-added and the ability of local firms to join the value chain should be guiding principles. This was the traditional aim of industrial policy: to move up the value chain. Hungary's EV battery industry, by contrast, generates three-shift assembly line jobs in foreign-owned battery factories—a far cry from high quality jobs creation.

With Chinese firms' dominance in the entire EV industry (and other green technologies), embracing Chinese FDI may be inevitable. In fact, it is no longer accurate to speak of a battery race—it is a landslide victory for China. If Europe wants to catch-up, low value-added manufacturing could arguably pave the way for further development. Welcoming market-leading firms like CATL can foster [dynamic production networks](#): joint ventures with local partners, technology transfer, and eventual upgrading or leapfrogging.

But there are reasons to doubt this optimistic scenario in the Hungarian case. Upgrading would require upskilling—and decades of defunding in Hungary's education sector severely constrains these prospects. Leapfrogging failed to materialize in the case of Western-European (mainly German) FDI, and it appears more challenging with Chinese or Korean investors, known for tightly guarding technology and R&D. What further sours the economic calculus is the fact that the state foots a significant bill, covering on average 15 percent of the investment value in subsidies and additional sums in infrastructure development.

Hungary's bid for battery supremacy is political, not economic. Throughout the past fourteen years, Viktor Orbán has learned that [catering to the German automotive industry](#) can protect his regime from EU censure. Hungary transitioned into an autocracy, marked by an increasing crackdown on civil rights and widespread corruption, yet German FDI kept flowing. The alignment of interests between Orbán and German industry has contributed to the "[EU's authoritarian equilibrium](#)," in which the German conservative CDU/CSU parties cooperate with Orbán in exchange for favors to their key industry.

In 2022, the EU shifted to a more proactive stance against democratic backsliding. As a historic first, it utilized financial sanctions: the bloc suspended €34.1 billion in development funds, citing breaches of the rule of law. In this openly contentious relationship, Orbán surely sees the value in controlling a choke-point for German car-makers. While national borders often lose economic significance in value chain geography, a critical production segment clustered under Hungarian jurisdiction can hold political relevance. This opens the door to weaponizing the value chain, for instance, by obstructing battery cells' export permits or applying other punitive administrative measures.

Searching for alternatives

Hungary is not the only EU country pursuing an industrial policy focused on battery production. Battery factories are rapidly being rolled out across the Union, although not at uniform speed. Over the next six years, the bloc is [poised](#) to meet its motor vehicle production demands with domestically manufactured batteries, achieving a total capacity of 1,319 GWh per year.

The largest economies, Germany, France, and Italy have announced gigafactory projects, aiming to supply battery cells sufficient for about 150 percent of their current production volumes (importantly, these are maximum capacity numbers, factories can always produce less). Ownership profiles of these planned investments vary greatly, however (Figure 2).

Figure 1. Planned battery cell production capacities by 2030 in GWh (maximum capacities) – compared to demand estimates

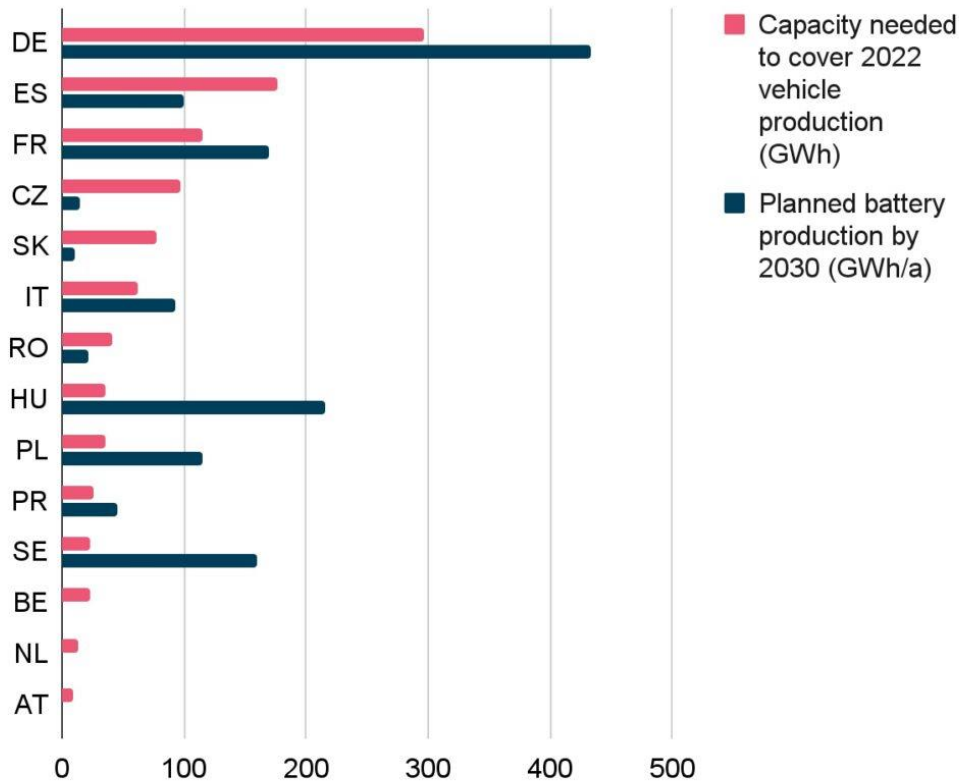
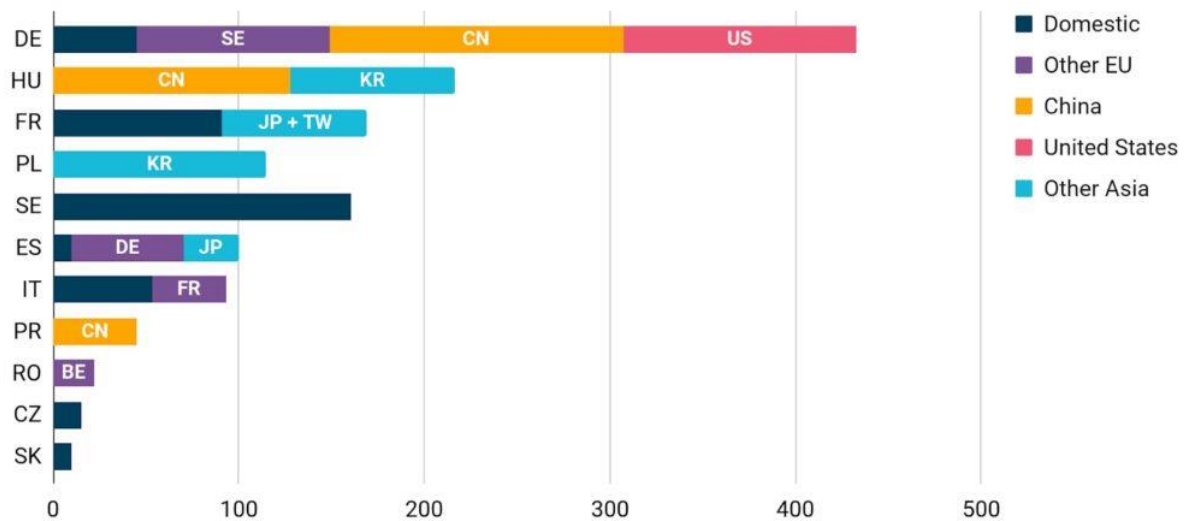


Figure 2. Ownership patterns of planned battery gigafactories, GWh of capacity



In the German case, where by far the largest capacity is needed, domestic firms contribute to a smaller extent than in France or Italy. Over a third of Germany's capacity is set to be produced by China's CATL, the same firm that has ignited strong local political pushback in Hungary.

EU officials typically highlight that battery production is a rapidly growing market, with an estimated annual value of up to €250 billion by 2025. If EU countries are to appropriately seize market share, domestic value added will be key.

Value creation is distributed unevenly in global value chains: it is highest in pre-production (R&D, design) and post-production (marketing, sales), but lowest in assembly work. Therefore, rather than batteries “Made in Europe,” the aim for growth should be batteries “Invented in Europe.” These technologies evolve in fast and nonlinear ways, so European ownership and control of these firms should be at the heart of growth strategies. Luring Chinese assembly lines into Europe is unlikely to do the trick.

Swedish battery production offers a useful point of comparison. The country’s 2020 [battery strategy](#) was created in an inclusive process that involved stakeholders from industry, local governments, and academics. So far, gigafactories in Sweden produce 60 GWh of capacity per year, and an additional two are planned to add another 100 GWh by 2025. Outstripping even the Hungarian capacity/demand ratio of 600 percent, this will amount to a capacity/demand ratio of 700 percent. Unlike the Hungarian case, which involves no domestic companies, the Swedish strategy is built around Swedish-owned battery giant Northvolt, and its joint venture with Volvo. This ensures that higher value-added activities like R&D happen locally, promising a much stronger growth engine. [Dóra Györffy’s analysis](#) highlights that, while Hungary notably lacks all important production factors, particularly energy and water, Sweden’s strategy is strengthened by local access to raw materials and, crucially, a robust renewable energy sector. The cold climate in Sweden reduces the need for extensive cooling in battery production, leading to lower water usage. In contrast to Central and Eastern Europe’s race-to-the-bottom to attract investment, the [Nordic Battery Belt](#) is a collaborative project of Sweden, Norway, and Finland.

The Swedish case demonstrates that under the right conditions, the EU-based battery value chain can indeed fulfill the desired aims—it can provide a viable growth impetus through a “national champion” firm like Northvolt, its environmental footprint can be mitigated if renewables are used to cover the production’s energy needs, and an EU-based firm can contribute to strategic autonomy.

Lessons for Europe and beyond

The Hungarian case raises concerns about the EU’s new “geopolitical” industrial policy, which seems blind to the leverage risks posed by an autocratic member state. In the bloc’s so-called friendshoring efforts, it should more carefully assess who its friends really are.

Furthermore, if the EU is serious about its environmental pledges, it ought to strengthen its monitoring and enforcement capacities. There are stringent and progressive [regulations](#) in place, but enforcement remains weak. Strengthening it might entail the creation of a [new EU Environment Authority](#) or better corporate due diligence frameworks to sanction environmental and labor rights violations.

A common European subsidy scheme would also be preferable to relaxing state rules. Competitive EU subsidy wars harm the public as well as fiscally weak and small member states. In Hungary’s case, the added insight is that an autocratic regime can more successfully play the race-to-the-bottom by squeezing the public sector to reorient funds, or lifting environmental or labor protection standards without facing political accountability.

The academic literature often links the effectiveness of industrial policy to state capacity while overlooking the role of democratic oversight. This case highlights that without transparent and inclusive processes, industrial policies risk being derailed. It is essential that

various stakeholders, like environmental NGOs, local governments, academics, trade unions, and journalists have a seat at the table.

Finally, as the EU and member states pour fiscal resources into the EV industry, a critical question arises: is there a comparable commitment to fundamentally transforming mobility towards more sustainable, less car-dependent models? A truly sustainable approach would aim not just for more electric cars but for fewer cars overall. Moreover, higher levels of infrastructure development and maintenance may be more effective engines for job creation in the long run.

Footnotes

1. Hungary's case echoes a well known phenomenon: decarbonization efforts often produce adverse ecological effects on the periphery. In the case of lithium, a key battery mineral, extraction sites in Chile and Argentina saw severe environmental injustices and social tensions triggered by water depletion, as well as toxic chemicals contaminating soil and air—prompting scholars to conclude that green electromobility has a colonial shadow.