



LSE Commodities
Society



ANALYST REPORT

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Table of Contents

Nigeria - Dangote Refinery, and
impact on regional market
dynamics

1

How will Trump's Aluminium
tariffs impact American Market
dynamics?

8

How is EU's push for domestic
solar PV manufacturing under
the Net-zero Industry act
impacting trade relations with
China and reshaping Europe's
energy independence?

20

How will the push for greater
tariffs on Russian-produced
fertilisers affect the European
agricultural market?

32





Nigeria Dangote Refinery, and impact on regional market dynamics

- **European Refinery Disruption:** Dangote displaces European refined fuel exports to West Africa, risking up to \$17B in lost trade and forcing rerouting or closures.
- **Middle East Margin Squeeze:** Nigeria retains crude for local refining, tightening sweet crude supply and pressuring Middle Eastern refiners' margins.
- **Regional Power Shift:** Dangote enhances Nigeria's energy autonomy and geopolitical influence, reshaping West African trade flows and refining dynamics.



Global Dynamics

Effect on current European refineries: Nigeria has been one of the largest destinations for European gasoline. With Dangote now supplying domestic demand, European refineries lose a valuable export destination, facing a potential loss of up to \$17 billion.[1] We predict that European refineries may react by rerouting exports to other African nations like Ghana, Ivory Coast and Cameroon. However, Dangote could eventually scale to serve them too, and they have the pipeline, storage and regional advantage. Therefore, we may see European refiners rush to lock in long-term supply agreements with these nations soon.

Effect on current Middle Eastern refineries: Middle eastern refineries used to be one of the key destinations for Nigerian crude. The Dangote Refinery has retained approximately 13% of Nigeria's crude oil exports for domestic refining in 2024, up from 2% in 2023, thereby reducing the volume available for export to traditional markets, including the Middle East.[1] Many Middle Eastern refineries blend lighter Nigerian crude with their own heavier grades to optimize yield, losing access to Nigerian light sweet crude means they have to tweak operations on heavier or sourer grades, which is less efficient and more costly. Therefore, they will be facing tighter margins in this foreseeable period.

Nuance: While the shift in Nigeria's refining strategy clearly challenges established trade flows, it's important to note that the global oil market is fluid and adaptable. European and Middle Eastern refiners are not passive actors—they possess the capacity to reoptimize crude slates, adjust export routes, and invest in alternative feedstocks.

Regional Dynamics (With West African Context)

The Dangote Refinery represents a major inflection point in West Africa's energy landscape. Historically, countries like Ghana, Ivory Coast, Cameroon, and Senegal have been heavily dependent on imported refined products, largely sourced from European and Middle Eastern suppliers. Dangote's entrance threatens to upend these entrenched trade patterns by offering a geographically closer, cost-competitive, and politically aligned alternative.

In the short term, Dangote will prioritize satisfying Nigeria's substantial domestic fuel demand, but its scale allows for surplus capacity to be exported to neighboring markets. As logistics, pipeline, and port infrastructure mature, West African nations could increasingly pivot to Dangote's products, benefiting from reduced shipping times, lower transportation costs, and potentially more favorable financing terms.

This regionalization of supply could strengthen intra-African trade, reduce foreign exchange pressures for West African economies, and foster greater energy security. However, it also introduces new competitive pressures on state-owned refineries within the region, many of which are inefficient and heavily subsidized, potentially leading to closures or restructurings over the next decade.



Potential Price and Volatility Effects

The Dangote Refinery (650,000 bpd) will not drastically impact Brent crude prices on a global scale, but it can contribute to increased Brent price volatility through its effect on regional supply-demand balances, refinery margins, and trade flows.

Dangote will refine up to only 650,000 bpd while global crude consumption is around 100 million bpd (Dangote only accounts for 0.65% of total global demand). If Nigeria reduces crude exports, other producers will fill the gap. Brent is also affected by several factors such as OPEC decisions, US shale output and Geopolitics. **Thus, a single refinery won't have enough weight to move the needle.**

However, short term volatility may be affected.

Since less Nigerian Crude enters Europe's Brent-linked market, Brent-linked supply is tightened, making it more susceptible to short-term price swings. Potential upward price spikes may occur when refiners bid for alternative crude supplies. If Dangote stops selling crude exports to Europe, refiners must pay higher prices for alternative crude, which may cause them to cut crude intake to save margins, causing a dip in Brent demand, resulting in price instability and short term fluctuations as refiners adjust their supply chains.

Overall, while the Dangote Refinery is unlikely to shift Brent crude pricing on a global scale due to its relatively modest share of total demand, its influence on regional trade flows and refinery behavior should not be underestimated. The reallocation of Nigerian crude, particularly its reduced availability to Europe, introduces new frictions into the supply chain that can trigger short-term volatility and pricing inefficiencies. Over time, markets will adapt through diversification of supply and strategic stockpiling, but in the near term, refiners may face costlier inputs and tighter margins. Ultimately, Dangote's emergence reinforces the growing significance of regional megaprojects in shaping localized energy dynamics—even if they don't yet move the global price dial.



Regional Impacts

The immediate regional impact of the Dangote Refinery is twofold: economic and geopolitical.

Economically, the refinery will reduce Nigeria's dependence on imported petroleum products, saving billions in foreign exchange annually. Neighboring countries, many of which lack modern refining infrastructure, stand to benefit from cheaper and more reliable access to refined fuels, enhancing their economic stability. Conversely, local fuel suppliers and distributors tied to traditional European and Middle Eastern imports may experience business model disruptions.

Geopolitically, Nigeria's ascendancy as a regional energy hub will enhance its influence within West Africa. Access to Dangote's refining output could become a lever of soft power in bilateral relations, trade agreements, and regional integration initiatives like the African Continental Free Trade Area (AfCFTA). Smaller West African nations may find themselves increasingly economically aligned with Nigeria, creating new dynamics of dependency and cooperation that will reshape the political landscape.

Global Impacts

Europe:

A major export corridor is lost, Europeans will need to reroute exports to similar African nations that are smaller and riskier, but Dangote may eventually supply them too if they continue scaling. Currently, many European refineries are already under renewables, ESG and cost pressures, many may shut down if the margins become too unprofitable.

Middle East:

Middle Eastern refiners have to source for alternative crudes (WTI, Azeri Light etc.) which are more expensive and further away, which squeezes margins. To rebalance trade flows, Middle Eastern refineries may shift more output toward Asia and Europe since Nigeria is no longer a viable destination for refined products.

What Should we Look out for?

Looking ahead, observers should watch for: (1) the pace at which Dangote scales regional exports, (2) how quickly European refineries pivot or consolidate, (3) shifts in Middle Eastern export flows toward Asia and Europe, (4) movements in crude differentials as light sweet grades become scarcer, and (5) any retaliatory pricing or trade measures that could emerge in response to the growing influence of African refining. These indicators will shape how global refining balances evolve in a more fragmented and competitive energy landscape.

Global Impacts



From a supply-demand perspective, the Dangote Refinery alters the balance primarily at the regional level.

Supply Side:

- **Increased Local Supply:** With a capacity of 650,000 barrels per day (bpd), Dangote will shift Nigeria from a net importer to a net exporter of refined products.
- **Reduced Imports:** West African demand for imported refined products, especially gasoline and diesel, will decline, reducing the export share of European and Middle Eastern refiners into the region.
- **Pressure on Inefficient Refineries:** Local, smaller refineries unable to compete on price or scale will face shutdown risks.

Demand Side:

- **Stable Regional Demand:** West Africa's demand for refined products is expected to remain robust, driven by population growth and urbanization.
- **Elasticity Effects:** Lower transportation and procurement costs could stimulate marginal increases in demand across the region, although structural limits like power access and industrialization rates will cap extreme growth.

Model Summary:

Initially, the market will experience an oversupply effect as Dangote ramps production, putting downward pressure on regional refined product prices. Over time, as European and Middle Eastern suppliers retreat or reroute exports, a new equilibrium will form centered around Dangote's dominance. Brent crude demand dynamics will only be marginally affected at the global level but will experience temporary volatility regionally as trade patterns realign.

History Parallels

Aspect	Reliance Jamnagar (2010)	Saudi Aramco Jazan (2021)	Dangote Refinery (2023-25)
Location	India	Saudi Arabia	Nigeria
Capacity	1.24 million bpd (world's largest)	1.24 million bpd (world's largest)	650,000 bpd
Trigger Impact	Increased exports displaced European refiners	Reduced need for imports; realigned crude flows	Nigeria stopped importing fuel; began regional exports



Effect on Trade Flows	European refiners pushed out of Asian markets	Middle Eastern flows rebalanced internally	European/Middle East refiners disrupted in West Africa
Brent Market Impact (Short-Term)	Price volatility due to crude reallocation	Brief Brent swings as trade routes adjusted	Expected short-term volatility as Brent-linked supply tightens
Brent Market Impact (Long-Term)	Stabilization once market adapted	No significant long-term Brent effect	Likely no major Brent impact; localized market shift
Strategic Significance	Asserted India's refining dominance	Boosted Saudi energy self-sufficiency	Shifts Africa into refining exporter tier
Geopolitical Weight	Moderate (Asia-centric effect)	Regional (Middle East-centric)	Global — reshapes dynamics in Africa, Europe, and Middle East

While historical mega-refineries like Reliance Jamnagar and Saudi Aramco's Jazan caused initial market disruptions followed by rebalancing, the Dangote Refinery presents a more geopolitically diverse impact. It not only shifts Nigeria from importer to exporter, but also reshuffles market access across three major refining zones: Europe, the Middle East, and Africa. Like its predecessors, Dangote will induce short-term volatility and trade friction, but its long-term effect will likely be a localized reorganization rather than a seismic shift in global oil pricing. What sets Dangote apart is its strategic position at the crossroads of emerging markets — making its rise more geopolitically consequential than purely economic.



Conclusion

The commissioning of the Dangote Refinery marks a transformative moment for Nigeria and the broader West African energy market. While its direct impact on global Brent crude prices will be limited, its regional influence is far more profound. It will fundamentally reorganize trade flows, reinforce Nigeria's position as a regional powerhouse, and introduce both opportunities and vulnerabilities for neighboring states.

European and Middle Eastern refiners, long accustomed to West African demand, will face margin pressures and will be forced to reoptimize their export strategies. In the near term, disruptions in crude sourcing and refined product allocation could induce short-term Brent volatility. Longer term, however, the market is likely to stabilize around a new set of localized supply chains centered on Africa's emerging refining capabilities.

Strategically, Dangote's rise is a microcosm of broader shifts in global energy – from reliance on traditional hubs to a more decentralized, regionally driven landscape. The refinery not only elevates Nigeria's energy autonomy but also demonstrates the growing capacity of emerging markets to redraw the map of global energy trade. Policymakers, investors, and energy players alike must now account for a more competitive, multipolar refining environment, with Africa playing an increasingly influential role.





How will **Trump's** aluminium tariffs impact **American** Market dynamics?

- **Trump Tariffs Disrupt Market:** 25% aluminium tariff shocks global and domestic markets, raising Midwest Premium
- **Limited Domestic Offset:** U.S. production unlikely to rise significantly due to energy costs, policy uncertainty, and capital inertia
- **Technical Outlook Mixed:** RSI and ADX indicate oversold conditions but uncertainty remains amid key resistance levels and tariff risks



On 10/2/25, President Trump announced plans to raise the current **aluminium tariff** from **10% to 25%**, set to take effect on 12/3/25. We aim to analyse how these tariffs affect the American market using the Midwest Premium, the regional premium of aluminium supplied to the United States. We can think of the price of aluminium as the Midwest Premium added on to the London Metal Exchange price.



Introduction

Earlier this year, Trump imposed a 25% tariff on all aluminium products entering the US. He subsequently agreed to delay the tax on Canada and Mexico for 30 days, in return for Canada tackling the flow of drugs and Mexico controlling illegal immigration to the US. The new action ends all country exemptions (of which Canada and Mexico were originally beneficiaries), adds more downstream aluminium products under the tariff's coverage, and creates an exemption caveat for imported derivative products made using aluminium "smelted and cast" in the US.

US and Canada's aluminium industries are highly integrated, with major trading links across the value chain. They are also geopolitically tied. It is therefore important to understand the effect of Trump's tariffs on domestic market dynamics within this context.



Market View

Firm	View
	Domestic expansion is unlikely given high US wages and other barriers such as environmental factors, permitting backlogs, long lead times for new facilities, and capital discipline by smelters, which are reluctant to invest in long-term projects unless prices remain elevated for an extended period.
	The tariffs would be a clear negative for the sector, with a possible loss of 20,000 direct jobs shrinking the industry by 12.5%. It is unlikely that Alcoa will restart idled capacity in the US, given decisions around aluminium production have a horizon of 20 to 40 years and cannot be made based on a tariff structure that might not last as long.
J.P.Morgan	Around 630,000 metric tons of annual aluminium production capacity is idle in the US, so a rise in prices on the back of 25% import tariffs will make it more likely that idled production in the country would be restarted.
	The tariff would increase the affected amount of imported aluminium from 2.3 million metric tons to 5.3 million. Prices and profit margins would be boosted for domestic aluminium manufacturers.
	Aluminum tariffs wouldn't lead to more output in the U.S. without years of smelting and electricity investments. Dormant cost-efficient domestic primary aluminum capacity does not exist.

Market View

The current tariff timeline draws strong parallels to the 2018 trade war where Trump imposed tariffs on national security grounds, culminating in the signing of the USMCA to replace NAFTA, and lifting of the tariffs soon after. Tariffs were largely viewed as leverage to negotiate a better trade deal for the US and the same could be argued for today. The upcoming USMCA review in July 2026, where parties may submit revisions to the agreement and must all agree for a successful renewal, provides a strong motive for Trump to use tariffs as a negotiating tool again.



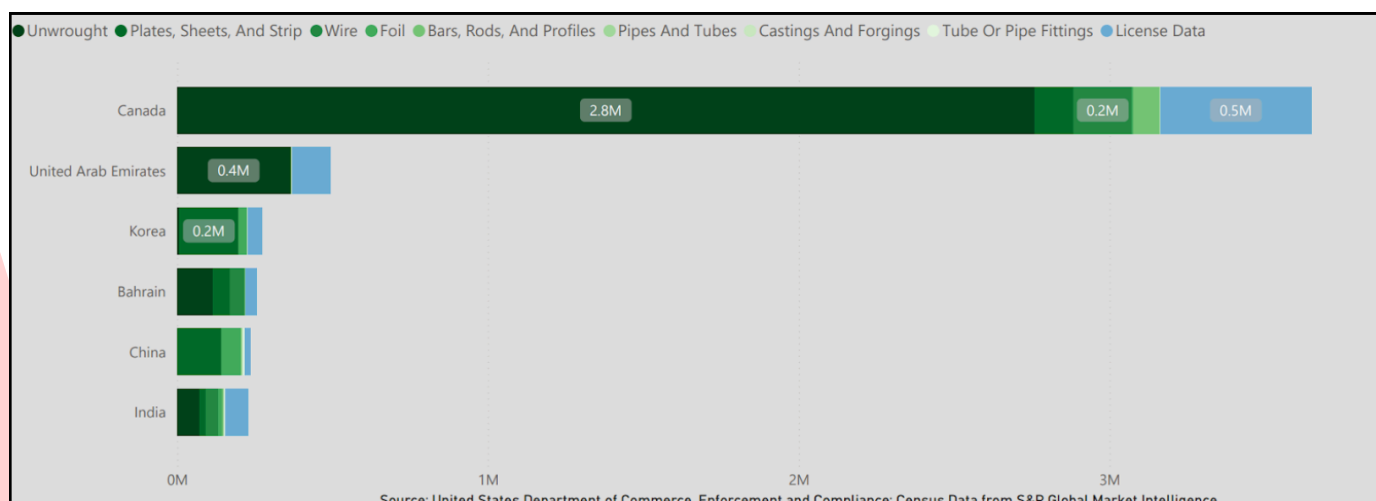
We believe his giving Canada and Mexico a 30-day extension, in return for Canada tackling the flow of drugs and Mexico controlling illegal immigration to the US, supports our analysis. As these issues have persisted even after tariffs implemented in his first term, Trump has now taken on a more aggressive stance, with higher tariffs aiming to shut perceived loopholes in earlier trade policies and even include trading partners that have previously been granted exceptions.

It is likely that the tariffs would not persist for long. The 2026 US midterm election, with a successful USMCA signing and subsequent tariff removal, will serve as a strong political win for the Trump administration. Furthermore, as the EU and China prepare to establish retaliatory trade policies, Trump will need to collate support from his closest allies. Lastly, Trump will have to contend with lobbying from major American companies that rely on aluminium as key inputs. One may even predict a Q2 2026 removal.

Economic Analysis

1. Aluminium imports to the US is expected to fall

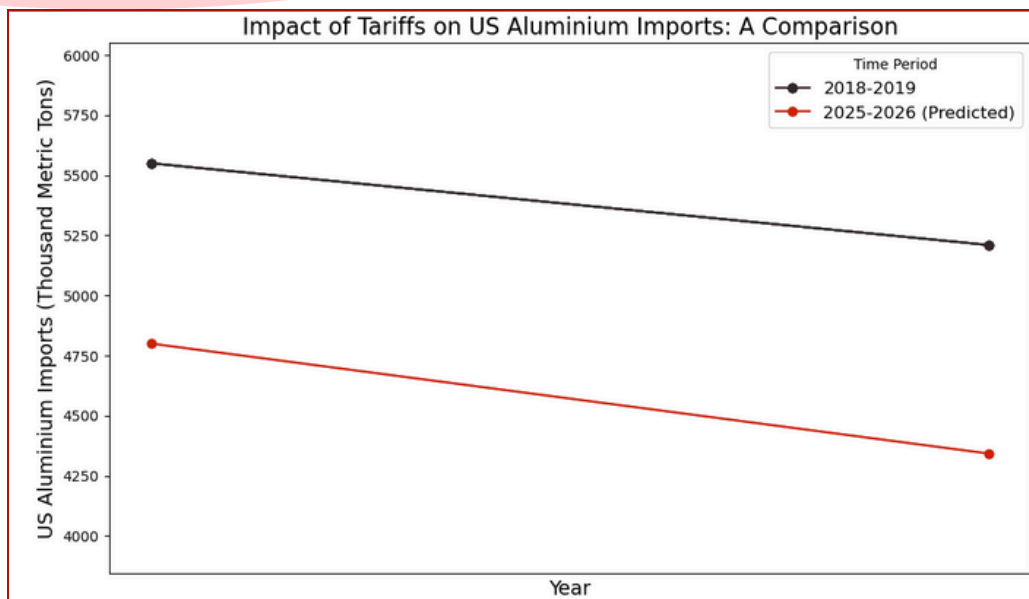
In 2024, the US had a 47% net import reliance as a percentage of consumption, with Canada supplying 57% and Mexico contributing a nonzero share (U.S. Geological Survey, Mineral Commodity Summaries 2025). A 25% global aluminium tariff will raise costs for businesses that rely on aluminium imports, encouraging them to either pass on the costs to consumers or switch to domestic, non-tariffed production.



U.S. Imports of Aluminium (for Domestic Consumption) Sorted by Country

Taking a price elasticity of demand for aluminium of -0.7 (Martin Stuermer, 2017), a price increase of 13.64% resulting from a 15% increase in the tariff (from 10% to 25%) would lead to a 9.53% decrease in demand, ceteris paribus. This implies that US businesses will import 9.53% less aluminium, leading to a fall in aluminium supply in the domestic market.

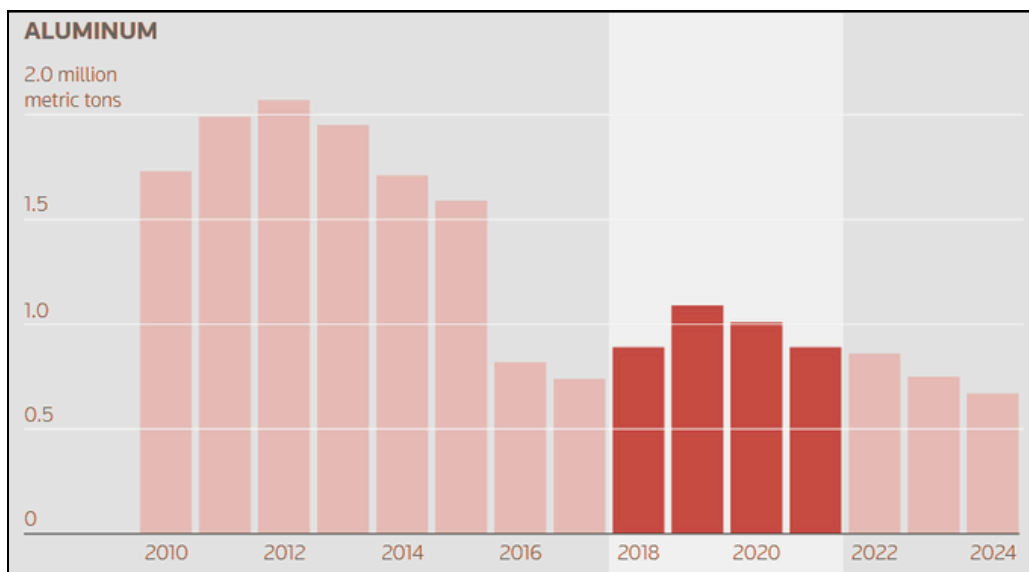




This model does not take into account the front-loading of aluminium imports to avoid tariffs, but we can compare historical data from 2018-2019 to validate our conclusion. We see that the predicted percentage change in imports closely mirrors the historical change, supporting our analysis.

2. Domestic production is unlikely to rise enough to offset the fall in supply from imports

The Noranda plant in New Madrid was bought out of bankruptcy and restarted just months after the 10% duties were imposed in 2018. It was supposed to be a poster child for the Trump administration's import tariffs, showing how tariffs can boost domestic production, yet it struggled to turn a profit and has been curtailed since 2024. Why was this the case? We analyse a few key reasons.



US domestic production failed to increase significantly during the 2018 trade war

Source: Reuters

The US reliance on imports is owed to the fact that primary aluminium production is an energy-intensive process, with electricity costs accounting for almost 40% of the total cost of production. With comparatively high energy prices, the US industrial sector pays an average of USD 0.14 per kilowatt-hour of electricity in 2024, while in Canada, the cost is significantly lower at USD 0.09 per kilowatt-hour. Primary smelters in the US simply lack the



economic incentive to produce aluminum competitively, especially compared to countries with a cost advantage, such as Canada and China. Consequently, investment in the U.S. primary aluminum industry has been limited, with two of the four remaining active smelters located in or near Western Kentucky, where electricity costs are lower due to an abundance of coal-fired power.

Moreover, the uncertainty around how long these tariffs will last is prompting domestic primary producers to withhold decisions on new projects. After all, Trump can only be in office for four years and as seen in 2019, he might revoke the tariffs on Canada and Mexico before his term even ends. The process of starting up an aluminum smelter or expanding an existing facility can take several years, involving substantial capital investment, regulatory approval, and the installation of specialized equipment. As a result, producers are reluctant to commit to these long-term projects without knowing whether the tariff policy will remain in place long enough to justify the investment.

We now move on to the secondary aluminum production industry, which occupies 84% of domestic production as it is based on the recycling of aluminium scrap and is less energy intensive. The US has traditionally relied on imports to supply scrap aluminium, as domestic scrap supply is often insufficient to meet demand. However, this supply of scrap is once again subject to the impact of tariffs, which will reduce its availability.

We note that the US exported 1.6 million metric tons of aluminum scrap in 2024, representing around 37% of its total annual aluminum production of 4.27 million metric tons. In the case of a severe supply shock, there is a possibility for legislation to mandate that more scrap remain in the US, such as through export restrictions or incentives. Such measures could boost production from the secondary industry, although the extent of this would still depend on the available spare capacity in the sector.

Overall, it is unfeasible to assume that domestic US production can and will expand in a sufficiently short time or in sufficiently large quantities to fill the import shortfall.

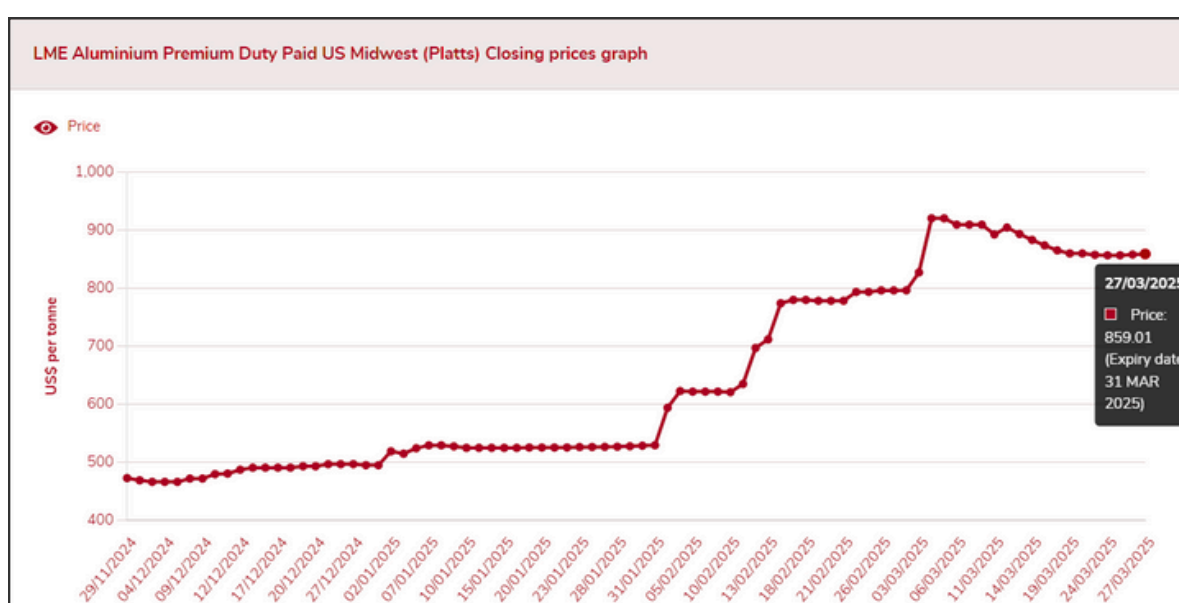
3. Global demand for aluminium is expected to fall

There is extensive research and historical evidence that tariffs raise prices and reduce economic growth. The Tax Foundation found that the 2018-2019 trade war decreased US GDP by 0.2%, while the current steel and aluminium tariffs are expected to shrink GDP by 0.4%. Aluminium is a critical material in the construction and manufacturing sectors, which are directly linked to economic growth. Tariffs and retaliatory tariffs also create uncertainty, discouraging long term investments in these sectors.

PMI by country	Actual	Expected	Previous
UK Manufacturing PMI March 2025	44.6	46.4	46.9
US Manufacturing PMI March 2025	49.8	52.7	51.8
Euro Area Manufacturing PMI March 2025	48.7	48.2	47.6

Recent declines in global PMI readings indicate contractions across major economies, leading to less demand for aluminium as an input

4. Effect on prices

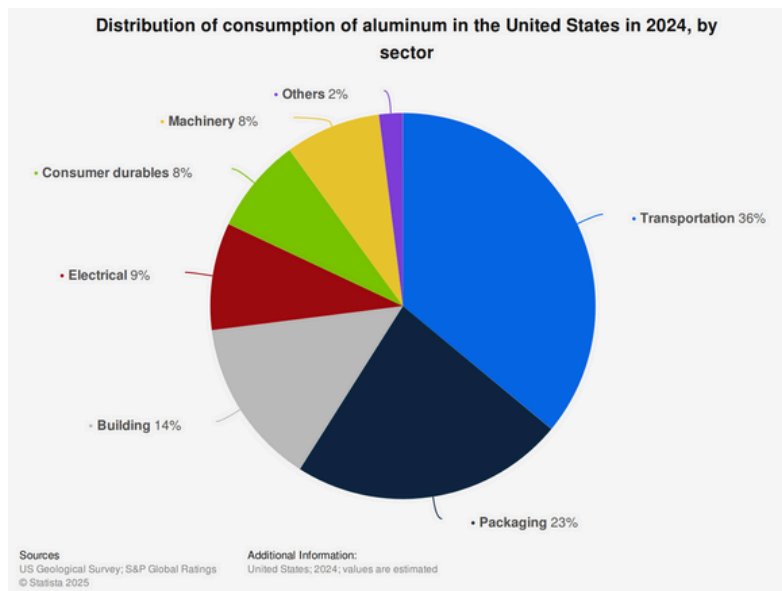


As domestic supply falls, the Midwest Premium is expected to rise. It has since soared to 39 cents per pound, and we see sharp rises corresponding to the announcement and confirmation of tariffs.

Global aluminium prices will fall as demand falls, although it will take longer to play out as we wait for the full contractionary effects of the tariffs on the economy.

5. Industries most likely to be affected

Transportation and packaging will take the biggest hits



Importantly, we predict headwinds for two current major trends that are contingent on aluminium inputs. One, the green energy transition, which relies on aluminium as a component of solar panels and wind turbines. Two, increasing focus on national security, for which the US Department of Homeland Security has designated 16 critical infrastructure sectors, nearly all of which rely on aluminium products. The military demands high-purity primary aluminium alloys, which offer consistently high quality for use in defense-related products.

Technical Analysis



Currently, Aluminium is traded at a price of around USD 2540.

Relative Strength Index

According to the Relative Strength Index (RSI) which measures the magnitude of recent price changes to analyse overbought or oversold conditions, Aluminium has an RSI of about 29. This signals that aluminium is currently being oversold, which could represent a potential entry opportunity.



Currently, Aluminium prices are bearish due to market uncertainty and the potential for negative surprises regarding the economic news releases like the US JOLTS, PMI data and Powell's speech.

Average Directional Index

The Average Directional Index (ADX) is a technical analysis indicator that measures the strength of a trend. The ADX value ranges from 0 to 100. A higher ADX indicates a stronger trend, while a lower ADX suggests a weak or sideways market. It is usually combined with +DI (Positive Directional Indicator) and -DI (Negative Directional Indicator) to determine trend direction and strength. It shows a noticeable increase in the last 6 months, signalling a potential breakthrough of a sideways market. Currently, Aluminium has an ADX of around 20, signalling a potentially moderate upward trend as corroborated by the RSI.

Support / Resistance Lines

Furthermore, the blue trendline represents the higher lows, while the top orange horizontal line represents a key resistance line which traders take profit at. In our opinion, this ascending triangle represents potential bullish sentiments where the bulls are entering the market to support the prices along the blue trendline. The other orange horizontal line portrays a minor support line where traders enter a position in the market.

Parabolic SAR

The Parabolic SAR is a trend-following indicator that helps traders identify potential reversals and trend strength. The distance between the SAR dots provides insights into momentum and volatility. Currently, the Parabolic SAR dots are above the candlesticks and are spaced out relatively more than previously. This short term down trend is likely due to economic uncertainty from Trump's everchanging tariffs and the upcoming Powell speech on 4 April 2025.





Fibonacci Retracement & Extension Levels

The fibonacci retracement identifies potential support and resistance levels by plotting horizontal lines at key Fibonacci ratios (23.6%, 38.2%, 50%, 61.8%, and 78.6%) between a significant high and low in a price trend. It is believed that traders would trade and prices would find key support / resistance lines at these golden ratios.

30 July 2024 is chosen as the swing low due to the major reversal and correction of the previous downward trend. 11 March 2025 is chosen as the swing high due to the change in the short term trend where there was a month of bearish sentiments, longer than previously.

According to prior data, the 61.8% level (USD 2400) and 50% level (USD 2460) are major historical support zones and we believe that Aluminium prices would be supported at these 2 levels.

For the more aggressive trader, one can enter at the 50% level (USD 2460) and use the 78.6% level at USD 2314 as a stop loss limit. Rationale would be that any price breakthrough of this level would signal potential downward momentum. The take profit at the strong resistance line of USD 2720 of the fibonacci retracement graph can be used. This would result in a risk reward ratio of 1.78x.



Projections and Recommendations

It is highly likely that the tariffs will serve as a temporary negotiating tool rather than a permanent measure, with our earlier projection being Q2 2026. Once agreements are reached, the Midwest Premium will return to normal levels. On the global side, we are bullish on aluminium for 2 reasons.

1. Stronger demand from the Eurozone

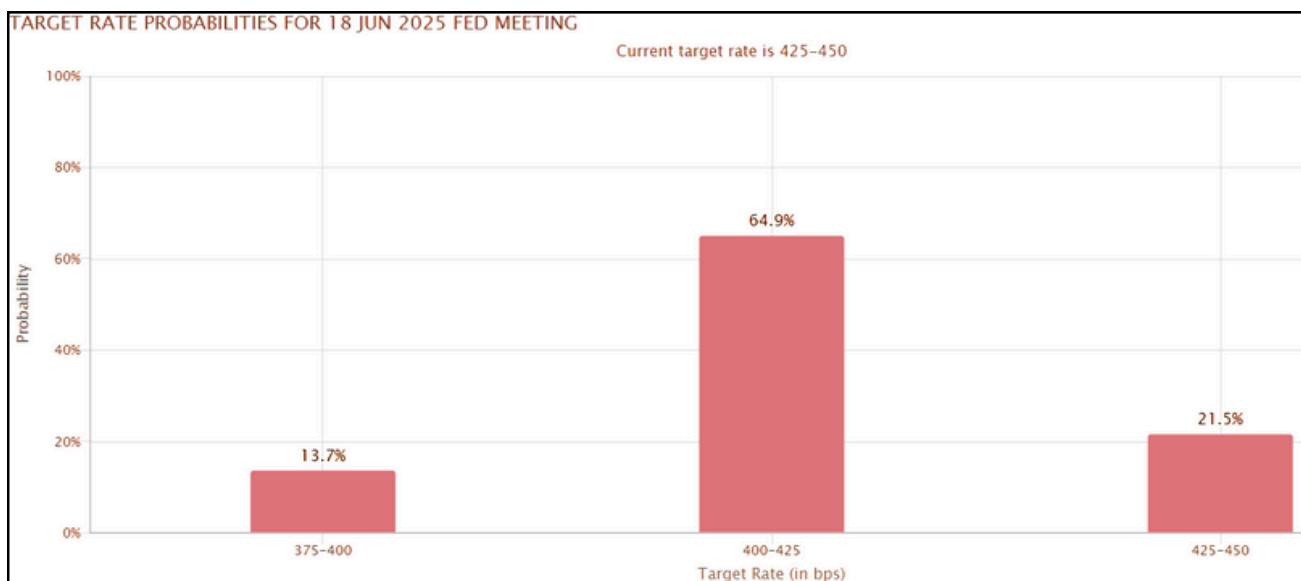
The Eurozone, particularly Germany, is poised to drive significant aluminium demand. As the region's largest economy with a strong manufacturing sector, Germany recently enacted a landmark fiscal stimulus package and revised its debt brake to accommodate increased defence spending. This policy shift is set to inject substantial capital into the economy, stimulating industrial production and infrastructure development. Germany's March PMI

surged to 48.3, surpassing expectations and signaling a rebound in manufacturing activity. Aluminium, being a key material in sectors like aerospace, automotive, and construction, will benefit from this resurgence.

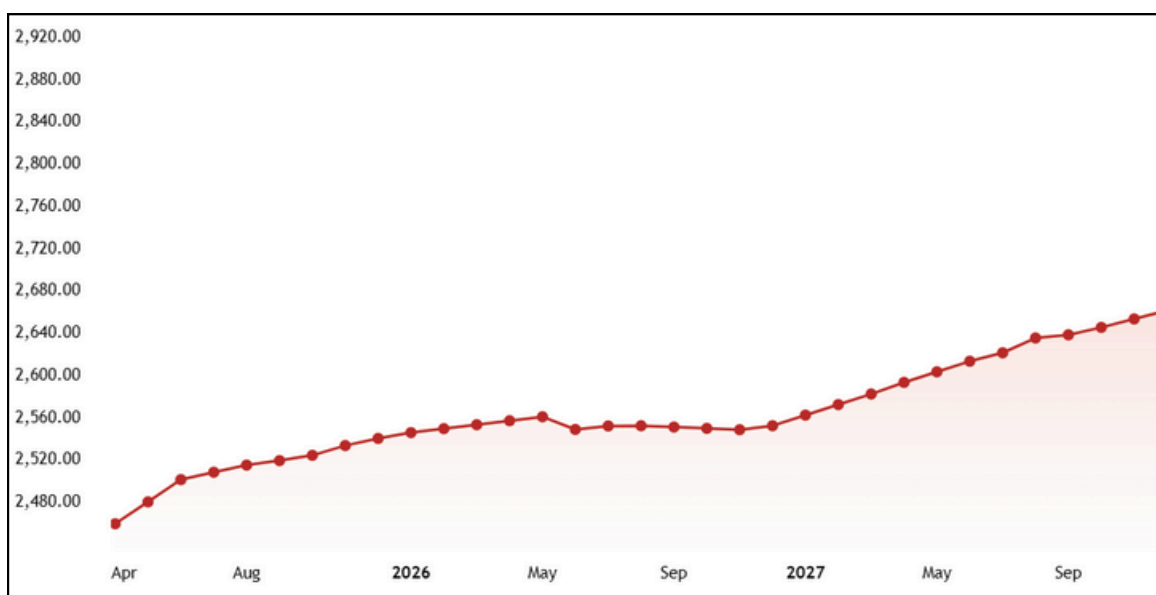
Additionally, Europe is under mounting pressure to increase defence spending due to the US reducing its military presence. The current administration's alignment with Russia, evidenced by its coercion of Ukraine into an unfavorable peace deal and the public fallout with President Zelensky at the White House, has diminished European confidence in US security guarantees. Aluminium is essential for military applications, and a structural shift toward enhanced defence infrastructure will provide long-term support for aluminium prices.



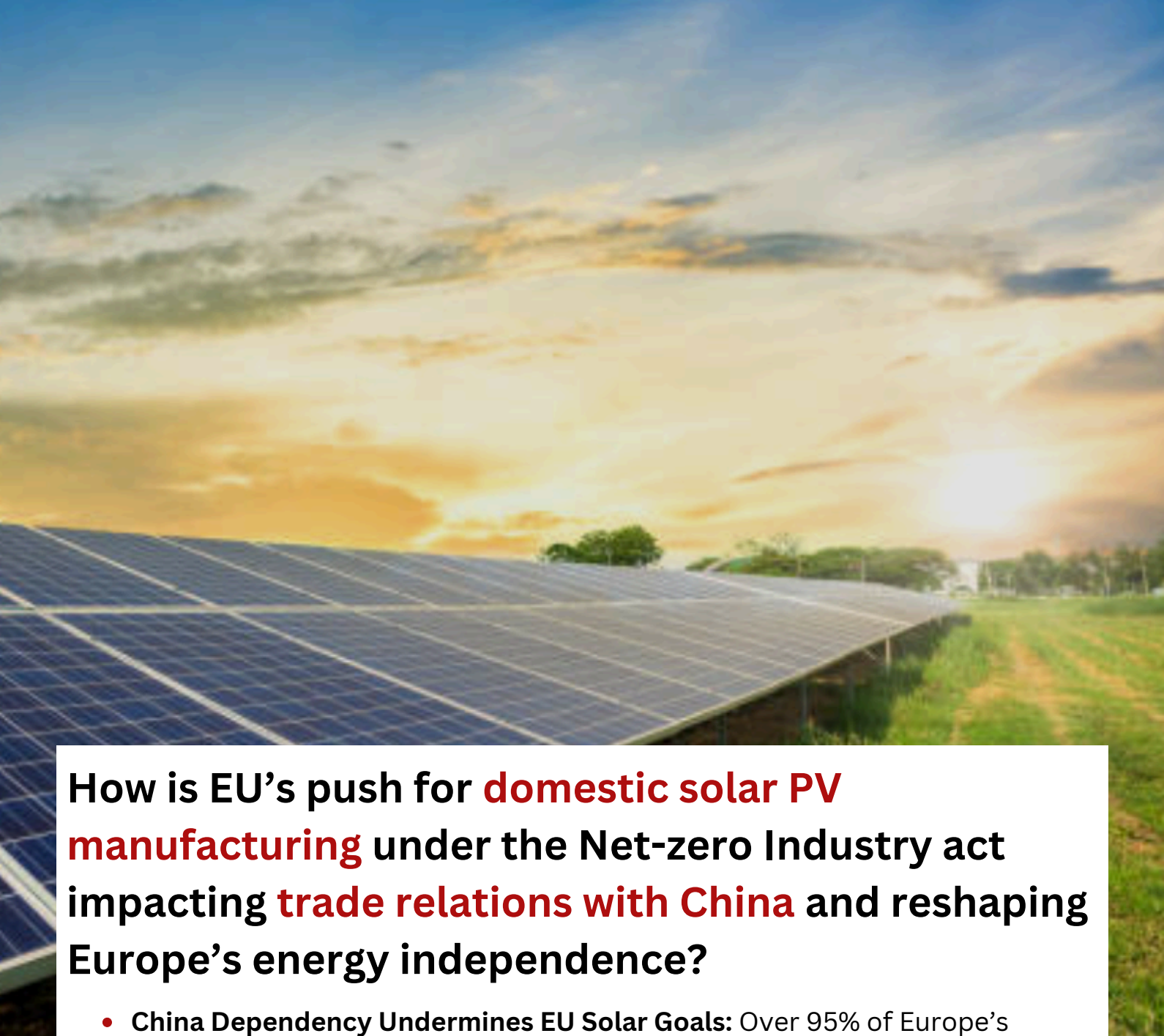
2. Central bank rate cuts



Central banks worldwide currently face a dilemma between cutting rates to stimulate economic growth or keeping rates steady to combat inflation from tariffs. The chart shows a divided market outlook on the probability of rate cuts. Without the tariff threat, they are free to pursue an expansionary monetary policy, leading to more demand for aluminium.



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How is EU's push for **domestic solar PV manufacturing** under the Net-zero Industry act impacting **trade relations with China** and reshaping Europe's energy independence?

- **China Dependency Undermines EU Solar Goals:** Over 95% of Europe's solar panels are imported from China, which dominates 80–95% of all PV manufacturing stages; this concentration exposes the EU to geopolitical and supply chain risks.
- **Cost vs Resilience Trade-Off:** European-made solar panels are up to 40% more expensive due to labour and energy costs; while the Net-Zero Industry Act aims for self-sufficiency, protectionist moves risk slowing deployment and raising costs.
- **Strategic Path Forward:** A balanced strategy combining stockpiling, import diversification, targeted R&D, and trade transparency offers greater energy security than aggressive reshoring, acknowledging the short-term inevitability of Chinese supply reliance.

Introduction

Solar energy has been placed at the forefront of the European Union's energy transition, the goal being to grow its fleet of installed solar PV capacity to **600 gigawatts (GW) in 2030** from the current 338GW. The current situation, however, is that over 95% of Europe's Solar panels are imported from China, a critical dependency.

The Net-Zero Industry Act (NZIA), signed on June 29 2024, was created to address this critical dependency by increasing domestic manufacturing of renewable energy technologies. Specifically, the goal of the act is to ensure that EU manufacturing of net-zero technologies is close to 40% of their total deployment needs. Ultimately, the creation of NZIA will have significant impacts on EU-China trade relations and likely assist heavily in Europe's quest for energy independence, especially given the larger geopolitical backdrop in which crucial supply lines have grown more politicized and where Russia's weaponization of gas supplies has increased awareness of foreign dependencies. Thus, the solar strategy is a response to a shifting global order in which energy technologies have evolved into tools of geopolitical influence, in addition to being a climate policy.



Current Solar PV Supply Chain

There are 5 key stages that go into the manufacturing of solar PVs. Raw silicon, derived from quartz, is purified into high grade polysilicon or monocrystalline silicon, which serves as the primary material for solar cells. The purified silicon is then melted and formed into ingots. These ingots are then sliced into thin silicon wafers, which are treated with chemicals and coatings to form photovoltaic cells that can convert sunlight into electricity. This process includes doping the silicon, adding anti-reflective coatings, and creating electrical contacts. Individual solar cells are interconnected and encapsulated between glass sheets, protective layers, and frames to form solar PV modules or panels.



Currently, China dominates all 5 stages of this process. Global solar PV manufacturing capacity has increasingly moved from Europe, Japan and the United States to China over the last decade. To understand just how dependent the EU currently is on China, we can examine the Solar PV manufacturing process and subsequent supply chain. China has invested over \$50 billion in new PV supply capacity, more than ten times that of Europe. Hence, China's share in all the key manufacturing stages for solar PVs exceeds 80%. The shifts in solar manufacturing capacity can be further illustrated by the graphs below:

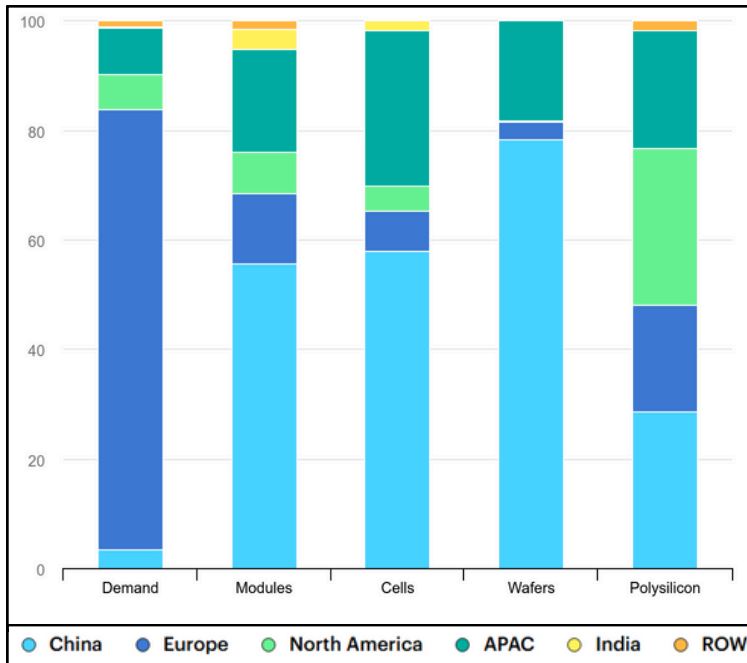


Fig 1: Solar PV manufacturing capacity by country and region, 2010

Source: <https://www.iea.org/reports/solar-pv-global-supply-chains/executive-summary>

Clearly, capital and energy intensity characterise the relay stages of the value chain, with jobs and production costs accounting for the later stages. It is evident from this information that current EU manufacturing capacity is lacking compared to deployment needs:

- Polysilicon: 26 GW (but mostly for semiconductors)
- Ingots/Wafers: Negligible
- Cells: Negligible
- Modules: 10 GW (operating at only 10% capacity)

As for the US, their module manufacturing capacity surged from 8 GW to 51.7 GW (2022-2025), a 600% increase driven by tax credits. New U.S.

facilities are expected by late 2025, but will not be substantial enough to combat China's monopolistic position over the market.

Though China's upscaled production has been instrumental in bringing down costs worldwide for solar PV, it is important to take note of the fact that 40% of this production is located in Xinjiang, a region with alleged human rights violations and forced labour practices. This heavy reliance on production concentrated in a single region presents a significant vulnerability in the solar PV supply chain.

Contrastingly, the EU accounts for only 11% of global polysilicon production, at around 26GW. Furthermore, this production is largely used for semiconductor production as opposed to Solar panel production.

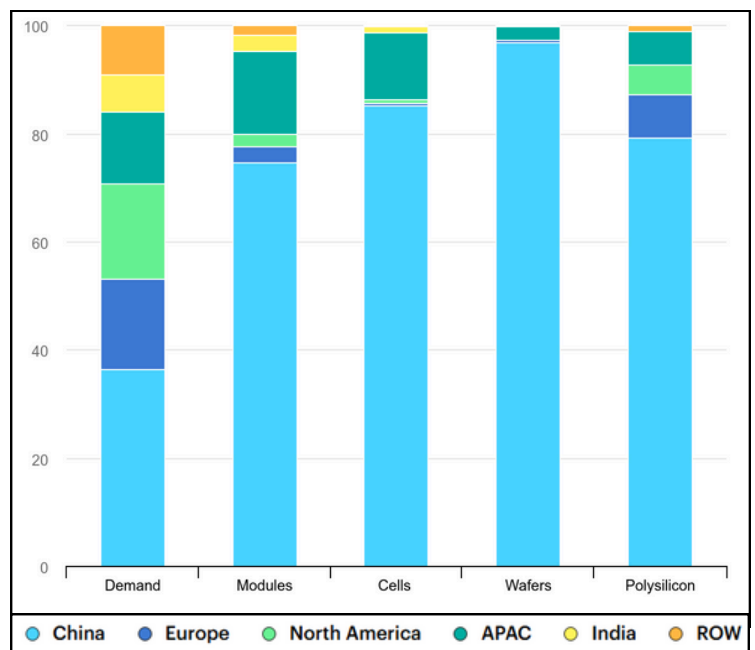


Fig 2: Solar PV manufacturing capacity by country and region, 2021

Source: <https://www.iea.org/reports/solar-pv-global-supply-chains/executive-summary>

Thus, given the lack of solar PV production outside of China and escalating trade restrictions against China during Trump's current term, the solar PV market faces a heightened risk of supply chain disruptions. Since 2011, the number of antidumping, countervailing and import duties levied against parts of the solar PV supply chain has increased from just 1 import tax to 16 duties and import taxes, with 8 additional policies under consideration.

On an overall global scale, by 2025, global new photovoltaic installations are forecast to maintain an annual growth rate of over 10%, with module demand rising to 650–700 GW. Solar PV is projected to become the world's largest electricity source by 2035 (16% share) and 4.5% by 2050. Europe alone forecasts 110 GW new capacity in 2025, and emerging technologies like TOPCon and perovskite cells could increase efficiency to 30%+ by 2025, supported by process innovations like silver-coated copper electrodes. 45 countries will reach GW-scale annual installations by 2025, up from 16 in 2021, with new markets like Malaysia and Iran emerging.



Other Critical Metals Involved in the Production Process

Other than silicon, PVs rely on metals such as:

1. Silver - Forms conductive layers on silicon solar cells, to help collect and transmit the electrical current generated from sunlight.
2. Tellurium - Used in thin-film solar technology, enabling the efficient absorption and conversion of sunlight into electricity.

It is crucial to consider how the prices of these commodities will affect solar panel production costs.

Silver

The rapid increase in solar panel production over the past decade has led to higher overall demand for silver.



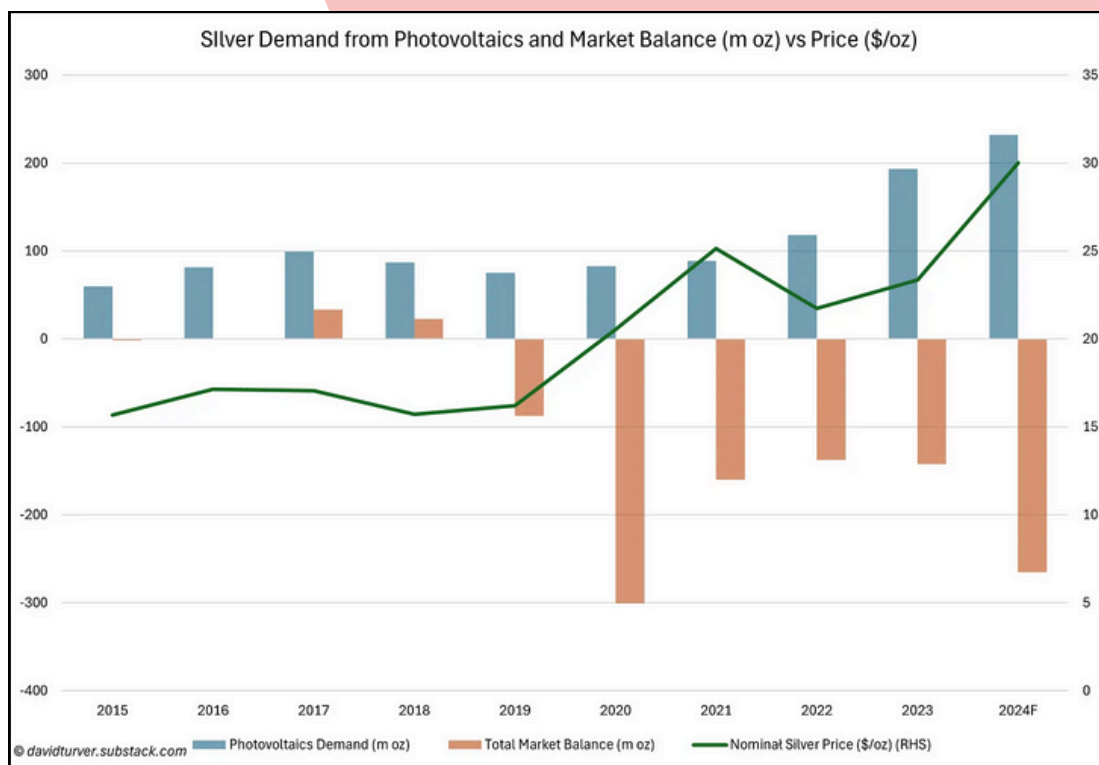


Fig 3: Silver Demand from Photovoltaics and Market Balance (m oz) vs Price (\$/oz), 2023
Source: <https://davidturver.substack.com/p/will-silver-curb-growth-of-solar-power-pv>

As Fig 3 shows, the demand for silver for photovoltaic production, as depicted by the blue bars, has seen a spike from less than 100m oz to nearly 200m oz in 2023. However, as shown by the orange bars, the total market balance for silver has been in deficit since 2019, and widened to nearly 150m oz in 2023. Hence, silver prices have nearly doubled from \$16/troy ounce to \$30/troy ounce today.

According to the VDMA (the German Engineering Foundation), a 400W panel contains about 3.8g of silver or 0.12 toz. In 2023, with silver forecasted to cost just over \$23/toz, this silver would have cost about \$2.89 per panel or about 5% of total panel costs assuming \$0.15/W of capacity. However, the solar panel market is moving towards TOPCon technology which uses about 15mg of silver per Watt. Hence, a typical 400W panel uses 6g of silver and at today's price of around \$30/toz, silver costs \$5.80 per panel, about 10% of panel costs, nearly twice as high as before.

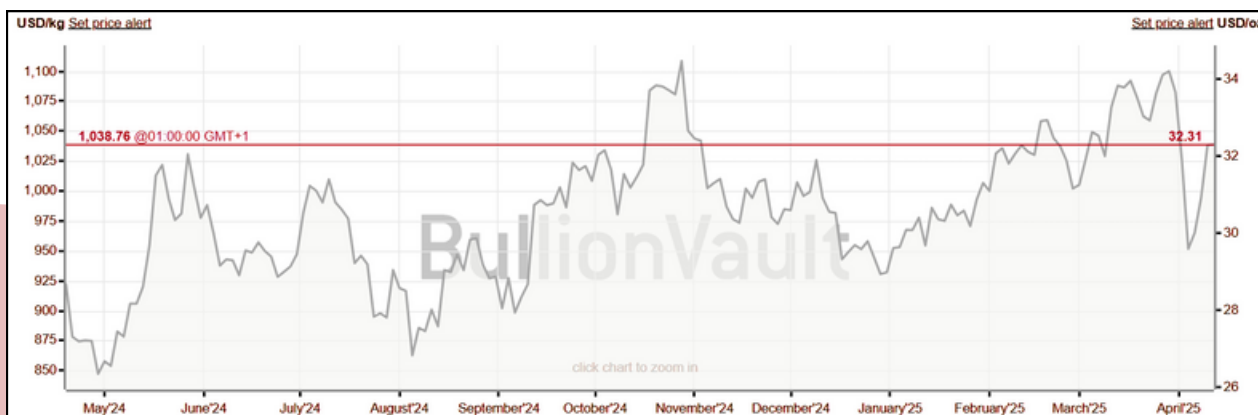


Fig 4: 1 year Silver prices (\$/toz), 2025
Source: <https://www.dailymetalprice.com/silver.html>

As shown in Fig. 4, silver prices have experienced significant volatility, driven in part by geopolitical tensions. However, silver is inherently more price-sensitive than metals like gold due to its lower market liquidity and more variable industrial demand. If the EU aims to deploy 700 GW of solar capacity by 2030, manufacturers will likely face mounting pressure to absorb elevated silver costs.

Tellurium

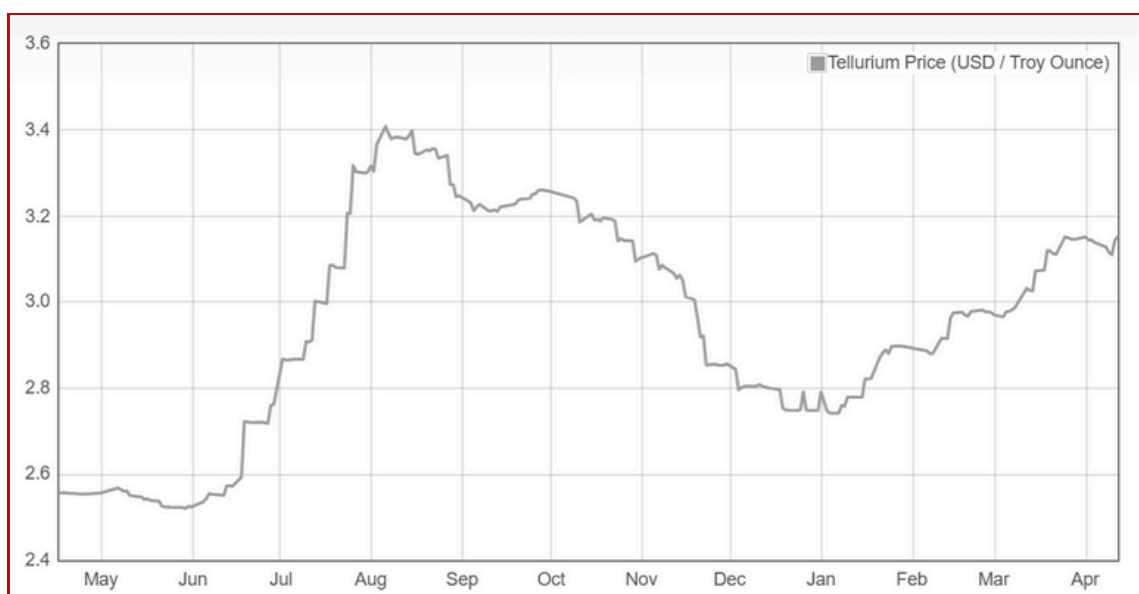


Fig 5: 1 year Tellurium prices (\$/toz), 2025

Source: <https://tradingeconomics.com/commodity/tellurium>

Though not as volatile, and much cheaper than silver, tellurium's price trajectory is shaped by its limited production scalability. Tellurium is mainly recovered as a byproduct of the electrolytic refining of copper rather than through the mining of ores, making it extremely sensitive to production changes in copper. Global production of tellurium has barely reached 500 metric tons, but demand is projected to exceed 1200 metric tons annually by 2030. Despite increased demand, studies project a widening supply gap peaking at 508 metric tons in 2036, which will likely exert sustained upward pressure on prices. Given that tellurium is mainly refined and not mined in the EU, and approximately 90% of the EU's tellurium supply depends on Canada (56%) and China (34%), rising prices will make it difficult for the EU to ensure energy security moving forward.

The Divergent Trajectories of Europe and China

The current disparity is due to China and Europe's different approaches to solar production. The mid-1990s saw the emergence of China's solar sector, which was first driven by domestic demand but eventually switched its focus to exports. China's industrial capacity had increased tenfold by 2008, making it the world's largest manufacturer. China's supremacy was cemented after the nation shifted its focus to domestic deployment with significant subsidies in response to the 2008 financial crisis.

Cheap imports from China, meanwhile, posed an existential danger to European manufacturing. In 2011, the European Commission concluded that Chinese solar panels were being sold at 88% less than their true value after European businesses filed petitions for anti-dumping investigations. The "price undertaking" agreement that followed in 2013 permitted duty-free exports up to 7 GW per year as long as prices stayed above €0.56 per watt.

The EU restrictions were extended in 2015 and 2017, albeit with lower levies, since China countered with anti-dumping investigations into EU wine imports. However, taking into account the requirements of both importers and consumers as well as producers, the Commission eliminated these levies in August 2018. The EU's objective of expanding solar deployment and acknowledging that European producers had not benefited from the diminished Chinese presence were both reflected in this decision.

Some European businesses were forced out of the market by the strain of competition, while those that stayed were encouraged to innovate. Most notably, solar PV became more competitive with fossil fuels in the production of energy due to the decline in equipment costs.



Europe's Solar Panel Dilemma: Cost-Efficiency vs. Geopolitical Resilience

One major issue is the price difference between solar panels made in China and those made in Europe. German-made panels were roughly 40% more expensive at \$0.38/watt in 2022 than Chinese panels, which cost about \$0.26/watt. This difference was mostly caused by greater labour (\$0.04/watt) and energy (\$0.05/watt) expenses.

This disparity is likely to have increased since then due to a 40% decline in Chinese panel pricing. Prices dropped as low as \$0.15/watt by September 2023, making it harder for European producers to compete. The effects are already apparent: in August 2023, Norwegian Crystals declared bankruptcy, and the following month, Norsun announced a temporary halt to production because of Chinese excess.

This has led to a clear separation between importers/installers and European manufacturers. Importers caution that such limits would restrict access to reasonably priced components required to reach EU deployment targets, while manufacturers demand anti-dumping measures and trade restrictions against Chinese panels.

The EU is moving away from classic European free-trade ideals and toward partial import substitution with the NZIA. There are three possible reasons to encourage home production:



1. **Encouraging decarbonisation:** Since the global solar market is so oversupplied, there isn't a compelling argument here. Currently, the EU imports twice as much as it deploys, building up a stockpile that is equal to more than a year's worth of deployment. In 2025, the world's manufacturing capacity is predicted to increase to over 1,000 GW, with China continuing to have an 80–95% market share.
2. **Fostering Green Growth and Job Creation:** The research indicates that encouraging green growth and job creation would have the opposite effect. Instead of manufacturing, the majority of solar-related occupations are in deployment. If deployment slows more than new manufacturing jobs are created, imposing trade restrictions could result in net job losses due to increased prices.
3. **Boosting energy independence and thus, geopolitical resilience:** This is still the only reasonable explanation. Two dangers arise from the EU's total reliance on China: a geopolitical risk that China may impose export restrictions in order to further its political goals, and an economic risk that China may take advantage of its position to demand rents. Price control is just one aspect of China's power. China has a near-monopoly on ingots and wafers and produces around 80% of the world's polysilicon, giving it control over crucial supply chain chokepoints. Only eight Chinese plants account for half of the world's wafer capacity, and there are hardly any other large-scale providers. By obtaining patents for cutting-edge technology and gaining experience in the construction of manufacturing equipment, China has also transformed from a low-cost producer to a leader in innovation. The actual magnitude of these dangers is still unknown, though. As of right now, there is no proof that China exploits its market dominance to demand economic rent. Profit margins are either negative or very narrow, and the market is oversupplied. The competitiveness of non-Chinese producers would inevitably increase if China started collecting rents.

Alternative Solutions?

The biggest issue with the current situation is a sudden interruption of Chinese solar panel exports, which could come as a result of EU decisions on forced labour or deliberate Chinese restrictions due to geopolitical tensions - such a situation can easily be compared to the Russian gas disruption, however, it is important to distinguish the two since a restriction would delay new deployments without affecting existing installations.

An estimated 40 GW of stockpiles, or over a year's worth of EU deployment, are already maintained by European firms. With delays measured in months rather than years, this stockpile would give breathing room while new production capacity was established if imports were entirely stopped.



This analysis reveals several resiliency strategies:

- **Stockpiling as a buffer:** At a comparatively cheap cost, formal stockpiling arrangements could guarantee supply-chain dependability. 20 GW of panels would cost between €400- €550 million a year to store, which is around 10% of its worth and far less than the projected €2 billion in subsidies required to create the same quantity domestically.
- **Accelerating Solar Deployment:** Since reliance on imported fossil fuels is a bigger danger to Europe's economic security than reliance on imported panels, accelerating solar deployment should take precedence over building manufacturing skills. Though ongoing attention to permits and grid connection is essential, current installation rates (56 GW in 2023) surpass the 54 GW required to satisfy EU commitments.
- **Import Diversification:** The EU might encourage nations with comparative advantages (such as inexpensive electricity) to expand their manufacturing capabilities rather than aiming for costly self-sufficiency. With up to €300 billion committed by 2027, the Global Gateway program may be a useful strategic instrument, especially in Africa, where the EU has committed €150 billion.

EU-China Trade Relations

The EU's push for domestic solar manufacturing is creating new tensions in an already complex trade relationship with China. With over half of the EU's module assembly capacity reportedly in danger of closing, the industry's desperation is apparent in the European Solar Manufacturing Council's January 2024 letter to the European Commission asking for emergency assistance.

The threat of a trade war has been heightened by calls for new anti-dumping laws that are reminiscent of the 2013 tariff conflicts. But compared to ten years ago, the EU is in a more challenging position now:

1. China's dominance in the solar supply chain is more entrenched
2. Europe's clean energy transition depends more heavily on rapid solar deployment
3. Chinese overcapacity is creating even more extreme price pressures

Chinese retribution would probably follow any new trade restrictions, possibly focusing on vital European exports. The ramifications might go beyond solar to other sustainable technologies like wind, hydrogen, or energy efficiency devices where the EU still has a competitive edge.

Energy Independence

Europe's idea of energy independence is changing as a result of the **drive toward local solar manufacturing**. Reducing dependency on imported fossil fuels was the main goal of energy independence in the past. The present strategy broadens this idea to encompass renewable energy technology manufacturing capability.

This raises the possibility of a paradox: achieving industrial self-sufficiency through protectionist policies may impede the use of solar energy, hence extending reliance on fossil fuels. According to the economic argument, deploying imported panels quickly will improve energy security more than deploying domestically produced panels more slowly.

A more nuanced approach is emerging that balances several objectives:

1. Maintaining access to affordable solar panels to accelerate deployment
2. Developing strategic stockpiles to mitigate short-term supply disruptions
3. Investing in next-generation solar technologies where Europe might develop competitive advantages
4. Using trade and investment policies to diversify supply sources beyond China
5. Focusing domestic manufacturing support on the most strategic parts of the value chain



Conclusion

With broad ramifications for Europe's energy independence and ties with China, the EU's push for local solar PV manufacture under the NZIA marks a dramatic change in industrial and trade policy. The economic examination indicates that a too-active pursuit of local production could jeopardize rather than improve energy security, notwithstanding the understandable desire for strategic autonomy.

A balanced strategy would acknowledge that decades of investment and scale economies that are difficult to swiftly duplicate are the reasons behind China's supremacy in solar manufacturing. Europe could be better off concentrating on the following instead of trying to match Chinese capability throughout the whole value chain:

1. **Ensuring the security of supply through stockpiling and diversification** - establishing an official European Solar Security Reserve, similar to the strategic petroleum reserves of the EU, and mandating that importers keep minimum stock levels equal to three to six months' worth of anticipated installations, with frequent rotation to guarantee technological currency.
2. **Accelerating deployment to reduce fossil fuel dependence** - establishing a single European permission framework with maximum processing timeframes of three months for residential projects and six months for utility-scale projects, which will unify and expedite approval procedures for solar systems across member states.
3. **Targeting R&D and manufacturing support toward next-generation technologies** - establishing a European Solar Innovation Fund with a particular focus on technologies like building-integrated photovoltaics, tandem and perovskite solar cells, and sophisticated recycling techniques where Europe may gain a competitive edge.
4. **Using diplomatic and trade tools to address legitimate concerns about forced labour while maintaining access to affordable panels** - establishing a Solar Supply Chain Transparency Protocol that would demand traceability from importers without enforcing unaffordable fees, using a phased strategy that gives priority to transparency enhancements over short-term import limitations.

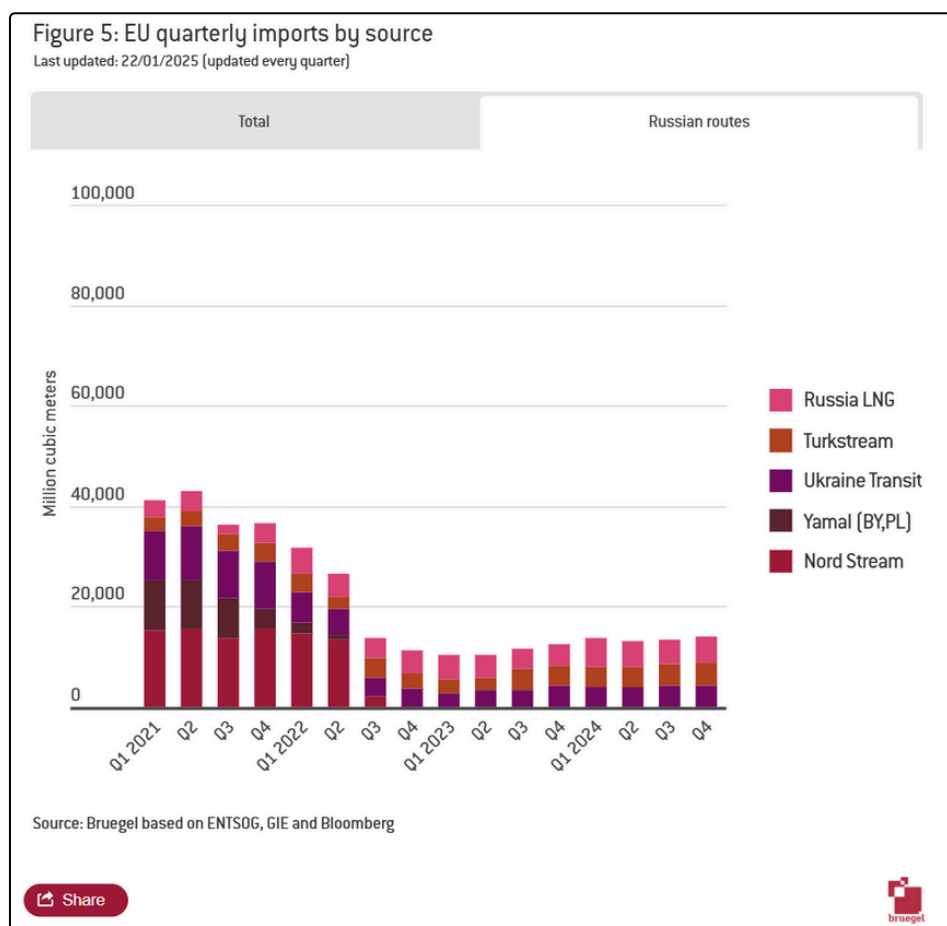
This strategy would lay the groundwork for increased resilience over time while acknowledging the fact that, in the short to medium term, some level of involvement with China in clean energy supply chains is unavoidable. The overall goal of rapid decarbonisation should be prioritized, and this reliance should be managed rather than eliminated.





How will the **push for greater tariffs** on Russian-produced fertilisers affect the **European agricultural market**?

- **Russia Circumvents Sanctions via Fertiliser Exports:** Sanctioned Russian gas is redirected into fertiliser production, boosting EU imports by 40% and undermining the sanctions' intent.
- **EU Tariffs Too Slow for Industry:** Planned fertiliser import tariffs rise gradually to €315/tonne by 2028, but producers and farmers argue delays risk permanent industry damage and fail to provide short-term relief.
- **Mixed Impact on Wheat Prices:** Fertiliser tariffs raise production costs, but global oversupply, strong harvests, and cheaper imports have so far kept EU wheat prices stable.



Source: <https://www.bruegel.org/dataset/european-natural-gas-imports>

Fig 1. EU Quarterly Imports of Natural Gas from Russian sources

In February 2022, Russia launched a full-scale invasion of Ukraine, marking a significant escalation in the ongoing conflict that began in 2014. In response to this aggressive move, the Western world imposed stringent sanctions on Russian-produced oil and natural gas, aiming to cripple Russia's economy and disrupt its ability to finance the war. These sanctions were part of a larger set of economic measures designed to pressure Russia, with the goal of weakening its war chest and reducing its capacity to continue its military offensive.

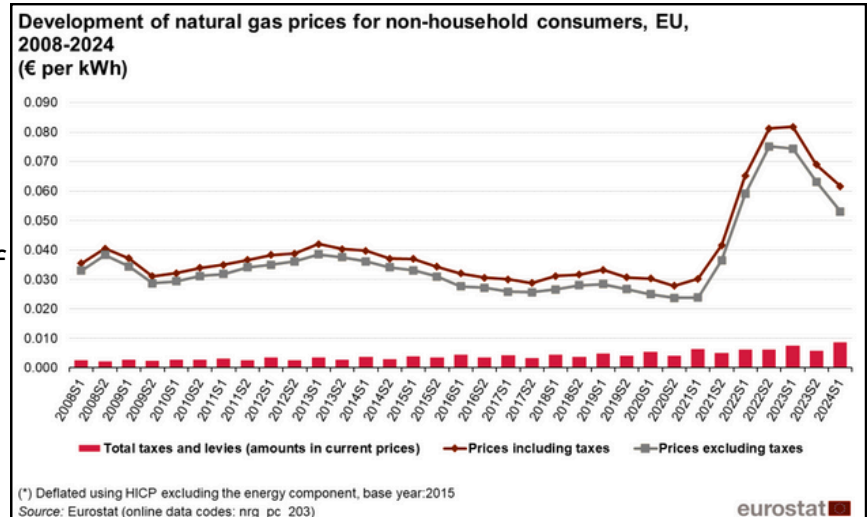
However, Russia found ways to circumvent these sanctions, particularly in the natural gas sector. A significant portion of its natural gas, which had been affected by sanctions, was redirected towards fertilizer production - a highly energy-intensive process. This allowed Russia to continue utilizing its natural gas resources, and continue generating revenue, without directly violating sanctions. The production of fertilizers, in which natural gas accounts for 70% to 80% of operating costs, provided Russia with a means to export value-added products, rather than raw natural gas, to the European market. As a result, Russian fertilizer exports to Europe surged, with imports increasing by over 40% year-over-year in the first eight months of 2024. This strategy not only circumvented sanctions but also enabled Russia to generate substantial revenue from its natural gas while contributing to increased competition in the European fertilizer market.

Impact of Sanctions on Russia on the price of natural gas for fertiliser producers

As illustrated in the graph above, the price of natural gas for non-household companies surged dramatically from €0.040/kWh in the second half of 2021 to €0.080/kWh in the second half of 2022. This sharp increase placed enormous financial pressure on industries that rely heavily on natural gas, particularly the production of nitrogen-based fertilizers. Natural gas is a critical input in the production of

ammonia, which is a key component in fertilizers. As a result, fertilizer producers across the European Union faced skyrocketing production costs, forcing many to reduce output or cease operations entirely. For instance, Yara International, one of the world's largest fertilizer producers, temporarily reduced ammonia production at its European facilities due to the prohibitive costs of natural gas. Similarly, CF Industries, a major American-based fertilizer company, also paused production at its UK plants, citing the high cost of gas as the main reason for scaling back operations. OCI Nitrogen, another key player, cut back its production capacity, significantly impacting the availability of fertilizers in the European market.

These reductions in fertilizer production not only disrupted supply chains but also contributed to higher prices for agricultural products, further straining the agricultural sector in Europe. The inability of these companies to maintain their operations at sustainable profit margins underscored the broader economic challenges posed by the energy price crisis in Europe.



Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Natural_gas_price_statistics#Natural_gas_prices_for_non-household_consumers
Fig 2. Natural Gas Prices for non-household consumers in EU, 2008-2024 (€ per kWh)

Government Response in the EU

Over the past two years, the European Union (EU) has experienced a significant increase in the importation of inexpensive fertilizers from Russia. In 2024 alone, EU imports of Russian fertilizers surged by over 33%, reaching 6.2 million tonnes valued at €2.2 billion. This trade contributed approximately €550 million in tax revenue to the Russian government. Specifically, between January and August 2024, exports of mineral fertilizers from Russia to the EU rose by 43% year-on-year, totaling 3.3 million tonnes. In monetary terms, this represented a 32% increase to €1.1 billion.

Russia and Belarus have become some of the largest exporters of fertilizers and agricultural products to the EU. This trend persists despite existing sanctions on various Russian imports. Russia leverages its abundant natural gas reserves to produce fertilizers at lower costs, thereby generating substantial revenue streams that can potentially support its ongoing military activities in Ukraine.

This situation has raised concerns within the EU about the bloc's dependency on Russian fertilizers, which not only affects the competitiveness of European producers but also poses risks to the EU's long-term food security.

In response, the EU is seeking to reduce its reliance on Russian imports and strengthen its own agricultural sector. Measures under consideration include imposing tariffs on Russian and Belarusian fertilizers and agricultural products, as well as investing in domestic production capabilities. These steps aim to enhance the EU's food security and diminish the geopolitical leverage that Russia holds through its fertilizer exports.

In response to increased reliance on Russian-produced fertilisers, the EU put forward a proposal to modify customs duties on the imports of fertilisers originating in or exported directly or indirectly from the Russian Federation and the Republic of Belarus. The EU plans to implement these customs duty modifications in progressive stages. From 1 July 2025 to 30 June 2026, the tariffs will be 40 EUR / tonne, after which they will be further increased to 60 EUR / tonne from 1 July 2026 to 30 June 2027, and then 80 EUR / tonne from 1 July 2027 to 30 June 2028. From 1 July 2028 onwards, these tariffs will be pushed up steeply to a prohibitive 315 EUR / tonne, which is almost a 100% ad valorem tax (based on the price of Russian-based fertilisers in 2024).

The justification given for this was to allow time for the domestic production of fertilisers within the EU to ramp up. This is designed to buy domestic producers the 2–3 years they need to expand capacity, secure alternative feedstocks, and retrofit plants for greener ammonia production, while avoiding a sudden spike in costs for farmers. By smoothing the price impact through gradual increases, the Commission is attempting to ensure that growers aren't hit with crippling input bills overnight.



The intention is that only once a critical mass of EU production and diversified import routes is in place does the tariff jump to punitive levels - thereby safeguarding food security, reducing exposure to geopolitical supply risks, and signaling investors to back a cleaner, more autonomous fertilizer industry without derailing agricultural livelihoods.

Reaction of Various Stakeholders

While the reasoning behind the tariffs by the EU were sound, there were a lot of mixed reactions from the various EU-based stakeholders who would be impacted by these modifications.

EU Fertiliser Producers

Firstly, as mentioned earlier, fertiliser companies in the region have been struggling with issues of increasing costs of labour and natural gases, and have thus been cutting back on its production. Moreover, the EU has also been strongly pushing for reductions in greenhouse gas emissions and shifting to renewable energy sources in the region, mainly through the European Green Deal, which aims to transform the EU into a climate neutral economy by 2050. However, the increased operational cost of doing so is an additional burden on fertiliser companies, who are particularly affected by the phase-out of free carbon emissions permits, and the requirement to use 42.5% renewable energy in production processes.

With all these factors affecting fertiliser producers in the EU in the past few years, Russia has already capitalised on this and been able to capture a significant share of 25% of the EU's fertiliser import market, up from 17% in 2022. As a result, the main concern raised by various fertiliser companies is the timing of the modifications. The chief executive of Yara International, Svein Tore Holsether, said that "the EU has dragged its feet on action", and that the gradual phasing-in of the tariffs would take a couple of years to actually impact the agricultural season. Leo Alders from Fertilisers Europe went so far as to say that in order to level the playing field, the EU should have considered a more aggressive approach of 30% tariffs immediately, in order for the tariffs to be more punitive against Russian fertilisers.

As mentioned previously, the European fertilizer industry is grappling with significant challenges due to insufficient policy support and high energy costs, leading to a substantial decline in domestic ammonia production.



In 2021, approximately 70% of the EU's ammonia production capacity was shut down, primarily due to soaring natural gas prices, which are a critical input for ammonia production. Although some capacity has been restored, about 40% remained offline at the start of 2023, and many plants have been permanently closed. Analysts suggest that these closures are unlikely to reverse, given the persistent high energy costs and lack of competitive advantage in the EU compared to other regions.

The absence of robust policy measures and financial support for EU-based fertilizer companies has exacerbated the situation. Without decisive action, there's a growing risk that production will continue to shift outside Europe, making it increasingly difficult to re-establish domestic manufacturing capabilities in the future. Industry leaders argue that these steps are insufficient and delayed, and could potentially lead to a permanent loss of Europe's fertilizer production capacity.

In essence, fertiliser companies have criticised the delay in response by the EU, the lack of proper policy and cost support, and the potential ineffectiveness of the tariffs in achieving its desired outcome of increased domestic fertiliser production.

Farmers and Agricultural Cooperatives

Secondly, farmers and agricultural cooperatives have been especially vocal in response to the tariffs, with the main stakeholder for this being Copa-Cogeca, which represents European farmers and agri-cooperatives to the EU. Many European farmers are dependent on imported fertilisers, due to its more competitive price, and also with dwindling domestic production of fertilisers. With Russian and Belarusian fertilisers being tariffed, one of the biggest concerns for farmers is the potential fertiliser shortfall in the EU, and whether it can be offset by increased domestic production at a competitive price.

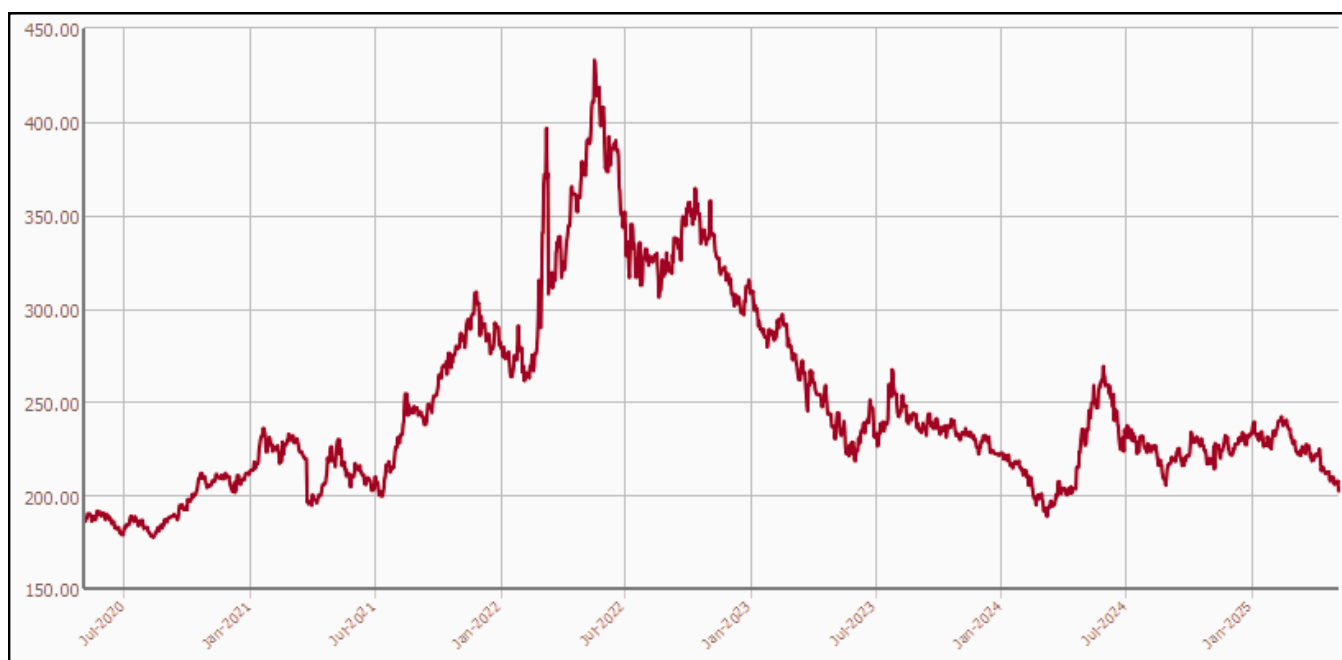
While the Commission emphasised on the importance of keeping fertilisers affordable for farmers within the EU, there was no clear action plan outlined. Moreover, there is a lack of a proper impact assessment done by the EU Commission on the potential impacts of tariffs, and what they could do to circumvent the potential negative consequences. As a result, there is a big fear amongst European farmers that the increased difficulty of obtaining sufficient fertilizer at an affordable price would force them to pass on increased cost of production down to consumers, and push up prices of their agricultural products.

In short, the access and affordability of fertilisers is the biggest criticism that farmers have in response to the tariffs on Russian fertilisers.

Impact on Grain Markets - Focusing on Wheat

In order to streamline the potential impact of tariffs on the European agricultural market, we decided to focus on the effects of the tariffs on Wheat prices in the EU. The EU (and UK) import a large share of nitrogen fertiliser for cereals. Such tariffs will make farm nitrogen more expensive: COPA-Cogeca notes fertiliser is roughly 30% of variable costs for EU cereal growers. Higher fertiliser prices will therefore raise wheat production costs, even as farmers seek alternative supplies.

Recent wheat price history (2020–25)



Source: <https://www.capitaliq.com/ciqdotnet/Estimates/Commodities/Tearsheet.aspx?TradingItemId=113213482>

Fig 3. 5Y MATIF Wheat - Milling Price Chart from 05/20 to 04/25 (in €/MT)

World wheat prices spiked after Russia's Feb 2022 invasion. By mid-2022, Black Sea export disruptions had sent prices to unprecedented highs (MATIF Wheat reached 433 €/MT in mid-May). As the market started to relax, further incidents like Russia's threat to leave the Black Sea Grain Deal caused a momentary immediate spike in prices. Once the deal was renewed, prices eased. Overall, by November 2022, wheat retreated noticeably. Thereafter global harvests were mostly ample – record Northern Hemisphere crops kept markets relatively well supplied – so prices generally trended down or sideways through 2023. A modest spring rally in early 2024 (as farmers bought seed/fertiliser) lifted prices slightly to 264.75 €/MT, but by summer 2024 they remained near 2021–22 levels. Overall, the Food and Agriculture Organisation of the UN (FAO) notes the *cereal price index* in April 2025 was roughly unchanged year-on-year and still ~20% below its May 2022 peak, indicating broad wheat price pressures have eased.

Impact on Costs & Supply

In the short run, since nitrogen fertiliser already represents about 30% of a cereal farmer's variable costs, a sudden tariff-driven price jump directly squeezes margins. As mentioned earlier, agricultural cooperatives like COPA-Cogeca warn that increased fertilizer costs "will generate agricultural inflation...lower incomes for producers and reduced competitiveness". Faced with higher input prices, farmers may respond by cutting fertilizer use (risking lower yields) or demanding higher grain prices to break even. Back in March 2022, in the UK, for example, a 35% surcharge on Russian fertilisers (plus outright bans) did result in reduced imports from Russia by ~80%, forcing sourcing from elsewhere, which in theory should raise UK farmers' costs. However, domestic wheat prices remained low through 2023–24, owing to an abundant world supply of wheat, and a strong pound.

Hence, it is important to note that In both EU and UK, any cost-driven yield loss could tighten domestic wheat supply and thus put upward pressure on prices if demand is steady. However, other factors (cheap imports, good harvests) can blunt that effect.

Longer-term, the picture is more mixed. As discussed earlier, EU policymakers argue tariffs will "increase domestic production" of fertilisers and diversify sources. Indeed, Europe still has nitrogen capacity, but it is throttled by high natural-gas costs. If tariffs endure, they would spur investment in alternative fertiliser production (e.g. recycling of organic nutrients or green ammonia) or prompt shifts in crop choices. At the same time, the EU and UK would likely increase imports from non-Russian suppliers (e.g. Middle East, North Africa) – which may have their own price risk or logistics delays. Over several seasons, such adjustments could partially offset the tariff shock.

However, if domestic fertilizer output remains high-cost, farmers may eventually need subsidies or other cost support (as proposed by COPA-Cogeca) to avoid being forced to reduce wheat yields or offshoring of domestic fertilizer producers.

Multi-Variable Effects on Wheat Prices

Understanding that wheat prices are influenced by multiple, overlapping drivers – not just fertiliser costs – is imperative in this discussion. Direct grain supply matters: ample exports and shipments from Ukraine, Belarus and other countries tend to depress prices. When these countries are able to export at scale – such as through reopened Black Sea corridors or favorable diplomatic conditions – global wheat supply rises, pushing prices down. For instance, despite the imposition of fertilizer tariffs and logistical constraints, Ukraine remains a key supplier to the EU under temporary trade liberalisation measures. This dynamic continues to exert downward pressure on EU-grown wheat prices, as imported grain is often cheaper than domestically produced alternatives – especially when factoring in higher fertiliser costs.



Another key price determinant is currency fluctuation. A stronger Euro or Pound relative to the US Dollar makes dollar-denominated wheat imports (from the US, Canada, and others) more affordable for European buyers. This can cap domestic wheat prices by increasing competition from foreign grain. Conversely, a weaker Euro or Pound raises import costs and may lend support to local wheat prices. For example, during the second half of 2023, a relatively strong Pound made UK imports of grain and fertilizer more cost-effective, restraining domestic price growth in the UK, despite higher production costs.

Finally, *weather shocks* have become increasingly pivotal in recent years. Heatwaves, unseasonal droughts, floods, and storms — exacerbated by climate change — frequently disrupt planting and harvesting cycles. In 2022, severe droughts in France and Spain curtailed yields significantly, pushing up prices in local and regional markets. Similarly, excessive rains or late frosts can damage crops during key developmental stages. These unpredictable climatic events introduce major year-to-year volatility in production volumes, and in turn, pricing. As climate variability intensifies, wheat price forecasting becomes increasingly challenging, requiring close monitoring of both agronomic conditions and meteorological forecasts across Europe and major global producers.



Conclusion

The EU's move to impose **progressive tariffs** on Russian and Belarusian fertilisers is a bold geopolitical and economic strategy aimed at **weakening Moscow's war funding** while fostering a more resilient and self-sufficient European agricultural sector. However, as this analysis has shown, the impact of such a policy is far from straightforward. While the tariffs are designed to give domestic fertiliser producers time to scale up and transition to greener production methods, the slow implementation timeline risks being too little, too late — especially in the eyes of both fertiliser manufacturers and farmers, who continue to grapple with volatile input costs and policy uncertainty.

The fertiliser market shock triggered by the post-2022 energy crisis has already left lasting scars on Europe's production capacity, and while tariffs may eventually restore competitiveness to EU-based producers, they could also cause short-term price distortions that harm growers. Wheat markets, in particular, are vulnerable to rising nitrogen costs, given fertiliser's large share in cereal production expenses. Yet as the data shows, other forces — such as strong global harvests, currency effects, and steady import flows from Ukraine — have, for now, prevented fertilizer tariffs from translating directly into higher wheat prices.

Ultimately, the effect of these tariffs on the European agricultural market will be shaped by how effectively the EU can bridge the gap between short-term strain and long-term resilience. If the bloc succeeds in scaling up low-carbon fertiliser production and diversifying supply chains, it may reduce strategic dependencies and enhance food security. But if structural cost disadvantages persist, there is a real risk that Europe could face long-term erosion in its agricultural competitiveness. Policymakers must therefore act decisively — not only through tariffs, but with complementary support measures for both fertiliser producers and farmers — to ensure that geopolitical strategy does not come at the cost of economic sustainability.

About LSE Commodities Society

Established in 2024, the LSE Commodities Society is the first of its kind at the London School of Economics (LSE), dedicated to exploring the dynamic world of commodities. Our mission is to provide students with unique insights into market trends, emerging opportunities, and the broader impact of commodities on the global economy.

We pride ourselves on fostering meaningful connections with leading industry professionals and firms, creating a platform for knowledge exchange and career development. Through events, workshops, and speaker sessions, we aim to bridge the gap between academia and the professional commodities sector.

Our growing alumni network reflects our commitment to diversity and collaboration, empowering members to navigate and excel in this ever-evolving field. Whether you're passionate about energy, agriculture, or metals, the LSE Commodities Society is your gateway to a deeper understanding of this vital industry.

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