

CHINA: TRADE SHOCK 2.0

Grace Fan / Rory Green / EM Team

- As protectionist gales blow across the US/EU and a supply glut squeezes China's champion green industries (solar, EVs, batteries), Beijing's formidable mercantilist export engine today is facing hurdles far different to those seen by Japan in the 1980s.
- EMs to the rescue? China's last 'big' escape valve from the crunch of its structural 3 D's overhang (debt, decoupling, demographics) and cyclical green downturn lies in EM hands – that is, EM capacity to absorb Chinese surplus green goods or to triangulate their trade to DMs.
- In our survey of big EMs with large consumer markets (India, ASEAN, Brazil, Mexico), we find one clear and recurring theme: Protectionism in varying degrees is the rule rather than the exception – as EMs increasingly jostle to get a bigger piece of the pie and move up the value-added chain.
- Still, the devil lies in the details: In the world's third-largest market for both renewables and autos, India's success at establishing a burgeoning solar supply chain is based on its tactical flexibility of relaxing strict local content rules for Chinese inputs when needed – leading to a soaring import bill.
- In Brazil, President Lula's pro-Beijing tilt has not stopped the government from slapping tariffs on Chinese EVs and renewables – in the service of Lula's vision of reindustrializing the country.
- For ASEAN, the strong appetite for new EV investments from Chinese firms as countries compete to become the region's EV manufacturing hub is crisscrossed with domestic content stipulations and belied by the region's current, lacklustre embrace of renewables.
- For Mexico, no matter who wins the US presidential race, the triangulation of Chinese trade via the "back door" of the southern border is likely to be closed off – starting with Chinese-made autos.
- We see two key takeaways as a result: **1)** China will have to absorb part of the pain of its own domestic slowdown, and **2)** More trade frictions are on the way, with the disruptor itself becoming disrupted and trade frictions leading to more ruptures ahead.

Chinese conundrum: From disruptor to ruptures

As strong protectionist winds blow across the US/EU at a time of structural slowdown for the Chinese economy, Beijing's formidable mercantilist engine is facing hurdles far different to those seen by Japan in the 1980s. Whether in solar, steel or (soon) semiconductors, the global trade conundrum is one and the same. With one in three manufactured items worldwide made in China, who will buy all the excess surplus goods being produced if the Chinese themselves are not picking up the slack?

EMs to the rescue? If DMs are closing their doors, China's last 'big' escape valve from the crunch of its structural 3 D's overhang (debt, decoupling, demographics) lies in EM hands – that is, the EM capacity to absorb China's massive oversupply of goods or, barring that, to triangulate their trade back to DMs.

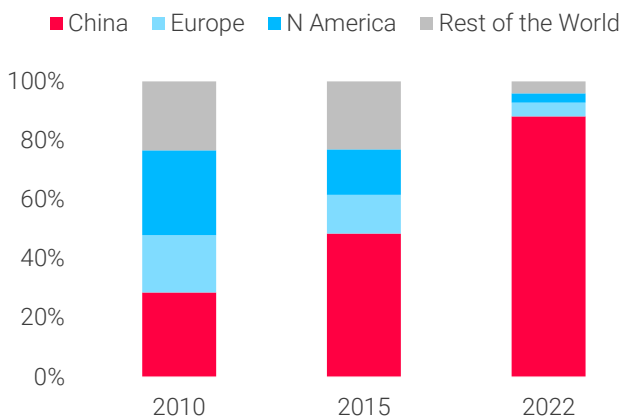
China's "new three": For disruptor and disrupted alike, the energy transition raises the stakes.

Although the overhang of China's weak economy is evident across multiple industries, we narrow our focus in this note to renewables (solar/wind) and electric vehicles (EVs), with a nod to the CCP's "new three" export champions (e.g., solar, EVs, lithium-ion batteries). By one estimate, output related to clean energy expanded in 2023 to account for up to 40% of China's GDP growth as Chinese lenders hastily swapped out property from their portfolios to prioritize the Party's policy favourites. In turn, solar cells, EVs and lithium-ion batteries tripled their share of China's export basket last year to 4.5% of total exports (vs 1.5% in 2020), aided by rock bottom prices from the mainland's surfeit of supply.

Beijing has long weaponized commodities boom and bust cycles to squeeze out its competitors – most famously in the solar sector in the early 2010s when European, US and Japanese rivals all went out of business, leaving the Chinese solar sector with a near-monopoly of the solar photovoltaic (PV) supply chain to this day (see charts below). But whereas a decade ago, DMs were willing to buy low-cost Chinese goods (in exchange for the hollowing out of their industrial heartlands) so as to import deflation to their economies, in the post-pandemic age of growing domestic and geopolitical strife, with US-China decoupling leading the way, that trade is increasingly intolerable for most Western policymakers – and, for the US, unacceptable.

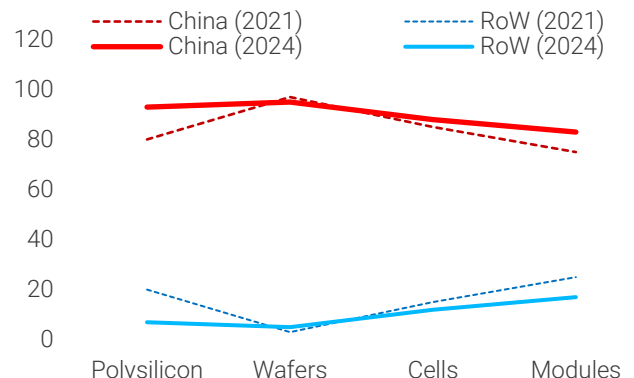
Last one standing: China's iron grip on the solar polysilicon market

% of total



Chinese solar dominance: Still expanding in three out of four segments

% of total



Sources: IEA, GlobalData TS Lombard.

This brings us back to EMs as the remaining piece of the puzzle for figuring out the fate of Chinese excess capacity and whether the Global South has the bandwidth to accept it. In our initial survey of major EM countries with big domestic consumer markets (India, ASEAN, Brazil, Mexico), we find that **protectionism in varying degrees, is the rule not the exception and that the Global South (irrespective of the rhetoric of geopolitical convergence) will not be China's buyer of last resort**, at least when it comes to absorbing the overhang of Chinese green energy products exceeding China's own domestic demand. From India to Brazil, Thailand to Indonesia, core EMs are all jostling to get a bigger piece of the value-added pie, usually via a coordinated programme of tariffs and local content rules. This is true whether the government tilts pro-Beijing or not (here, fellow BRICS members Brazil and India exemplify two sides of the divide). It is equally true for countries with sophisticated electronics supply chains (e.g., India, Malaysia) and critical minerals reserves (e.g., Brazil, Indonesia, Philippines).

At the same time protectionism is relative – meaning the devil lies in the details. After all, EMs have even less capacity or ability than DMs to cut China out of their supply chains. The clearest example of how a rival power is managing its balancing act is **India** – the biggest EM winner from a technology and value-added standpoint of multinational firms' increasingly adopting a 'China+1' strategy. Despite its successful Make-in-India programme that is expected to soon catapult the country into becoming the world's second biggest solar module producer (eclipsing Southeast Asia), the Modi government has tactically relaxed both high tariffs and strict local content policies where essential inputs (e.g., solar cells) can only be obtained from China. Consequently, its trade deficit with China ballooned last year to 1.5x pre-Covid levels, with soaring imports of solar cells and lithium-ion batteries numbering among its top five imports from its northern neighbour.

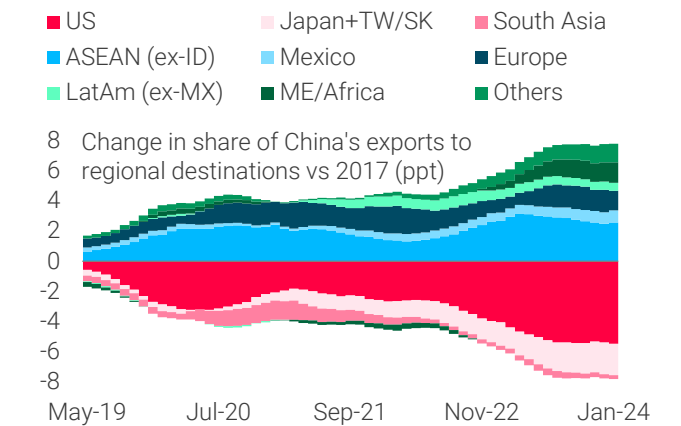
By contrast, India – home to a thriving domestic auto sector – has chosen to flex its muscles in the EV space, notably by rejecting Chinese EV champion BYD's request to open a US\$1bn EV factory in India last year. For its part, Beijing has weighed tightening general export controls on select solar tech and manufacturing equipment (likely aimed at the US, EU and India), but has thus far opted for caution – whether on the grounds that its near-monopoly will not be derailed anytime soon or to reserve this policy for a future moment.

Like India, Brazil has important domestic industries to protect and nurture. Notwithstanding the fact that China is Brazil's biggest trading partner, as alarm calls from automakers and renewables manufacturers about unfair competition from cheap Chinese imports began to ring in Brasilia, the Lula government pushed through new tariffs on EVs and renewables in swift succession late last year. Still, key differences between Brazil and India are also evident. In the solar sector, the vertiginous climb of Brazilian solar imports from China may have already peaked with local demand likely to soften from here on out. Brazil's solar module assembly sector is also at the most basic level of value-add, unlike India's moves into other solar segments. Another difference is that, unlike India, Brazil has wholeheartedly embraced BYD after it has built a string of factories in the country over the past decade. Under President Lula's vision of reindustrialization for Brazil, so long as foreign firms create Brazilian jobs, they will be welcomed in as locals. This is similar to the approach that the US and Europe adopted in the 1980s in confronting and taming the Japanese mercantilist challenge in the auto industry, and it will stem the tide of finished Chinese EVs into the country.

For ASEAN countries (principally Thailand, Indonesia and Vietnam), we find strong appetite for joining the EV manufacturing revolution (if on their own terms of progressively higher local content requirements). However, there is lacklustre appetite for new solar/wind projects that would aid the parallel decarbonization of their power grids. This uneven approach to the energy transition could well add growing risks to the region's future economic development potential

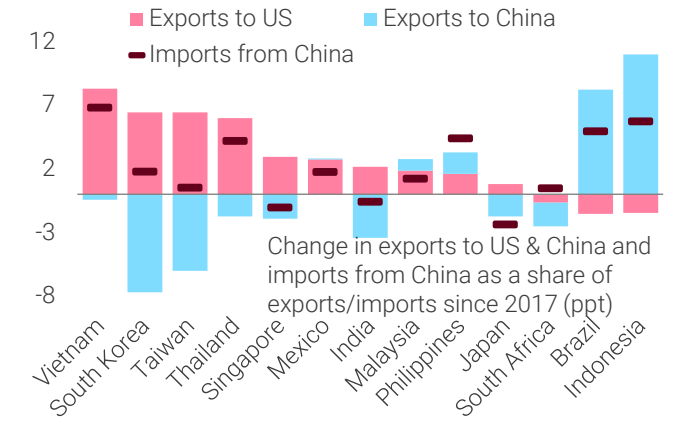
later this decade. From a trade perspective with China, however, it means that ASEAN – like India and Brazil – will welcome select Chinese firms as investors into their local economies, but will not accept the unimpeded flow of green products as imports. This also reinforces the conclusion of our colleague Jon Harrison in his 11 March 2024 EM Watch ([Decoupling challenge set to intensify](#)) that China's export growth may have peaked and that Beijing will find it increasingly difficult to maintain its share of exports to EMs (see charts below) including ASEAN and Mexico.

China will need new export destinations



Source: CEIC, GlobalData TS Lombard.

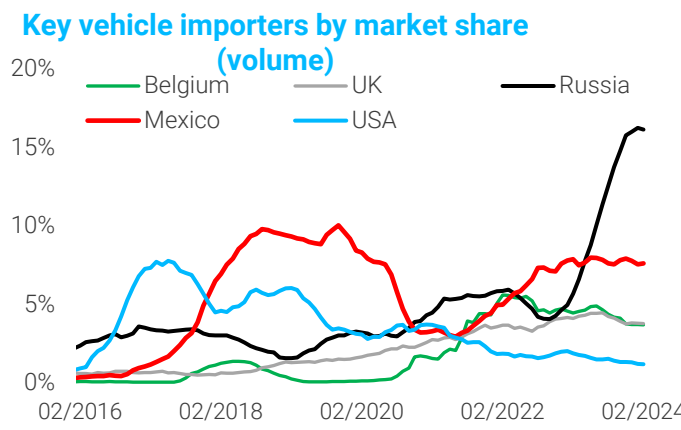
ASEAN exports face growing threat



Source: US Customs and Border Protection, GlobalData TS Lombard.

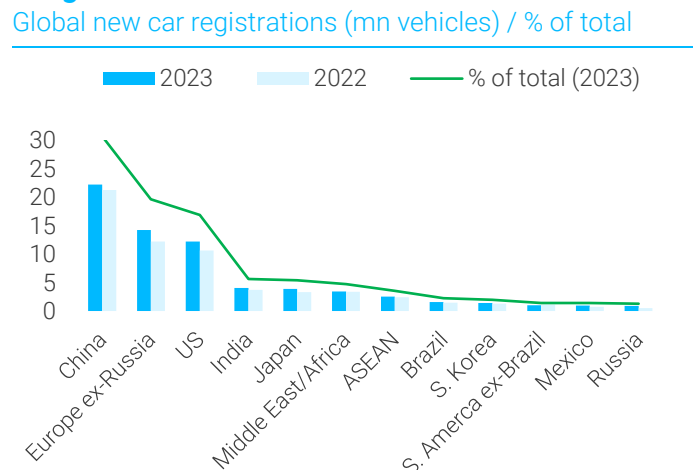
Mexico is the odd man out in this group. Under outgoing President Andrés Manuel López Obrador (AMLO), the Mexican government has both welcomed the surge of nearshoring interest from a growing number of Chinese investors since the pandemic, as well as a growing uptick in imports of Chinese-made autos and container shipments (this latter category saw a reported jump of 35% yoy in 2023 and 60% yoy in January 2024)..

Russia and Mexico topped the list of China's auto export destinations by country in 2023 . . .



Sources: CEIC, GlobalData TS Lombard.

. . . but both account for only a tiny percentage of the global auto market



Sources: ACEA, GlobalData TS Lombard.

Still, as the charts above show, Mexico's auto market is too small to move the needle, even as it became the second biggest export market for Chinese autos by volume last year after Russia. Be that as it may, as the saying goes, Mexico is so close to Uncle Sam and so far from God. No

matter who wins the US presidential race, both Biden and Trump have signalled with increasing vehemence in recent weeks that they will close off any attempt by Chinese firms to use Mexico as the “back door” into the US market – starting with Chinese-built autos.

With the triangulation of trade from this route likely to be cut off, we see two key takeaways: **1)** China will have to absorb part of the pain of its own domestic slowdown, via sector consolidation and sector contraction; and **2)** More trade frictions are on the way, with the disruptor itself becoming disrupted and trade frictions leading to more ruptures ahead. There is yet one more hypothetical lever that might yet bail out China’s renewed – and now new ‘green’ – mercantilism, keeping the EM escape valve prised open and perhaps even DM market openness. The potential lever in question is the climate crisis. That is, for the sake of hitting ‘net zero’ targets, countries could import the abundantly available cheap Chinese green products, thereby conceding mercantilist rents to China at the cost of their own deindustrialization (and, in the geopolitical perspective of the US and its allies, their national security).

Setting out the hypothesis in this way makes the conclusion seem unarguable: *it ain’t going to happen*. Even if, looking out – say – a decade or more the global mood had changed thanks to a succession of catastrophic extreme weather events, that would be too late to ‘save’ China’s present green industrial overcapacity. Yet amidst the coming agony of sector contraction, there will be corresponding rewards for China, similar to the past. This Darwinian survival of the fittest often ensures that the remaining Chinese firms that make it through will be formidable competitors to global firms, if not best in class.

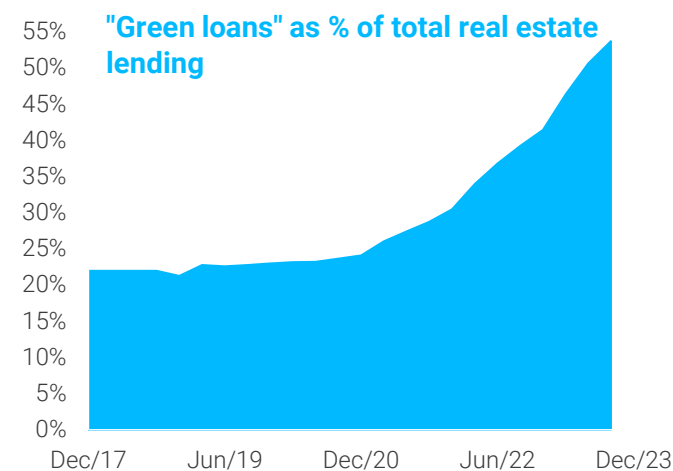
China: On the brink

China has long presented a unique challenge to global manufacturing but a new type of pain is on the way. Its combination of manufacturing scale (more than one-third of the global total), advanced technical ability, relatively low wages and expansive state support are unprecedented in history. National mobilization towards tech innovation and advanced manufacturing combined with a structural slowdown in domestic activity and demand, is driving a new China trade shock. When coupled with decarbonization dynamics, the trade equation becomes even more fraught. The world's biggest carbon emitter and energy transition superpower may be in the 'bust' part of its green manufacturing cycle but instead of retreating, it is unleashing the full force of its excess capacity on the world.

Beijing is seeking to move towards a new political-economic model predicated on "higher quality growth", increased security and innovation. In practice, China is attempting to reshape the domestic economy channelling resources away from property and infrastructure towards innovation and manufacturing progress, with tech viewed as a panacea for growth and the social and security problems facing the country. Raising consumption is also part of the "common prosperity" agenda, one that will take difficult and slow reform efforts to have any impact on domestic demand. Emphasis on the "new three" champions (solar PV, EVs, lithium-ion batteries) is just the tip of its 'new economy' export spear.

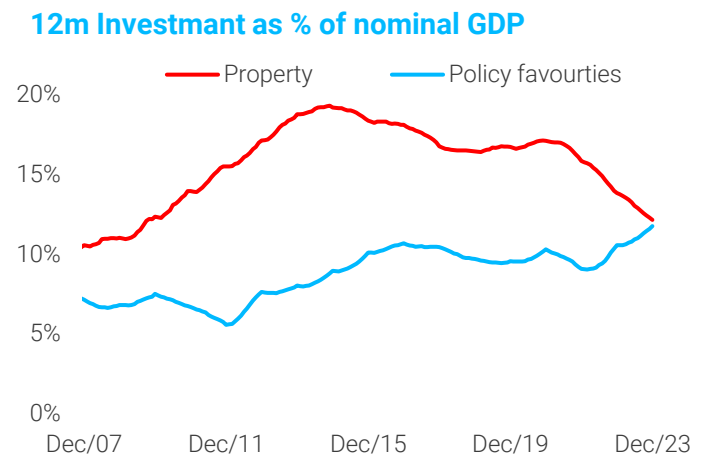
New development goals are laudable but will be difficult to achieve owing to structural headwinds from the "3 Ds": namely, debt (property), decoupling and demographics. As Beijing increases tech investment to combat a slowing growth and domestic demand remains weak, China will move further up the value chain: importing and consuming less, leaving more excess production of a higher quality available for export. Trade frictions are already rising. This dynamic has accelerated through the Covid and property market-induced slowdown. Shockingly, "green loans" now equal RMB30trn – over half the total amount of outstanding real estate related lending, including mortgages (see charts above).

Industrial policy turbo-charged



Sources: PBoC, TS Lombard.

New growth model emerging

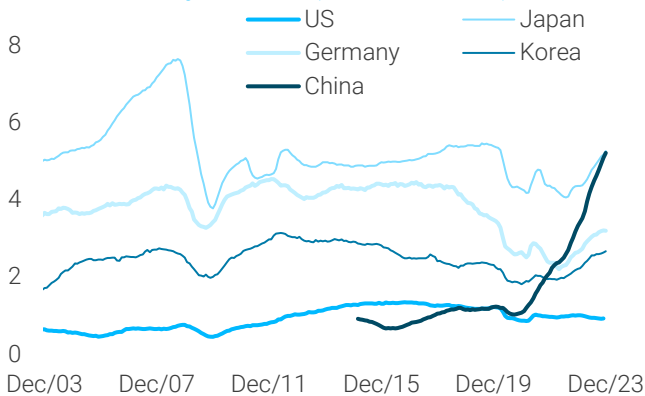


Sources: NBS, TS Lombard.

China shows no signs of slowing industrial policy implementation. Xi Jinping is all in on 'tech tech'; indeed, just this week the President toured a number of prominent advanced manufacturing sites including those focused on new materials and batteries. The Central Economic Work Conference held late last year and the recently concluded National Peoples Congress both placed technology innovation at the forefront of government work in 2024. Two of the top three priorities concern industrial policy an increase from one in 2023 and zero in 2022.

The first of many trade shocks

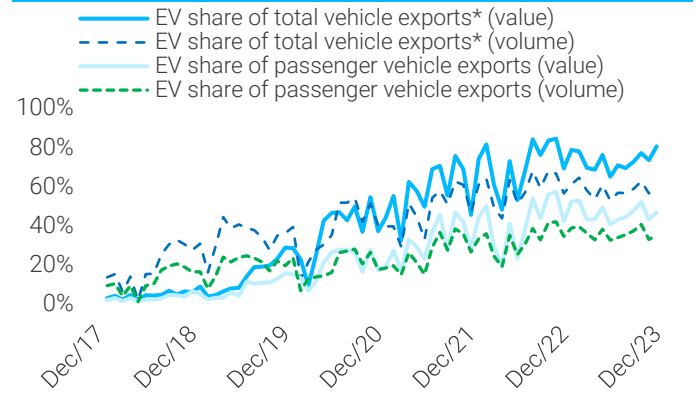
Car exports by volume (12m sum, mn)



Sources: CEIC, TS Lombard.

EVs account for most car export gains

% of total

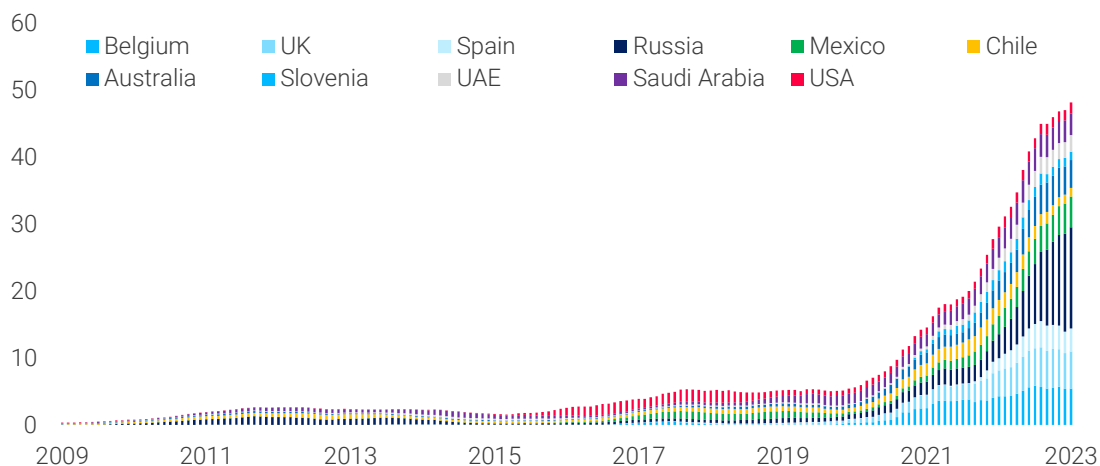


*Includes heavy vehicles..

Sources: CEIC, TS Lombard.

Local governments are of course following political directives. Provincial targets for 2024 lean heavily on "high quality growth" and "new productive forces". Resources are being directed at manufacturing investment and to exports. A number of important regions have launched export promotion strategies focussed on advanced manufacturing, explicitly vehicles.

Vehicle exports have surged – Russia sees the biggest jump, US\$ bn

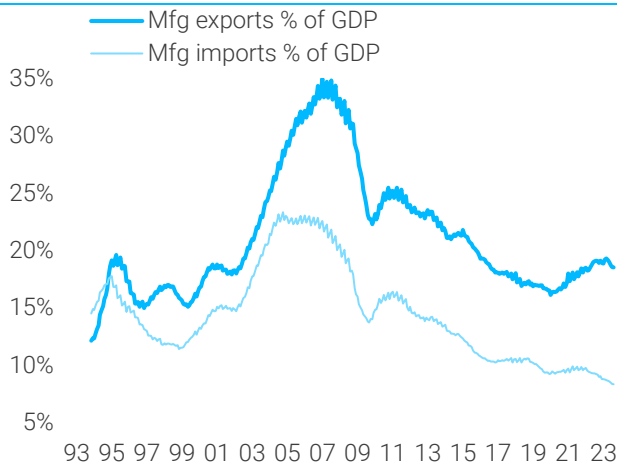


Sources: CEIC, TS Lombard.

Pushback against Chinese exports is rising globally. Even Brazil under a pro-China leader is considering tariffs on PRC steel (after raising them on the "new three" imports, as we detail in the

Brazil section). Thus far, Beijing's strategy has been muted and non-escalatory. For instance, European probes into EVs were met with proportionally much narrower examination of brandy and cognac exports to the PRC. This is likely to continue at least until the US election in November. Longer term, China will seek ad-hoc bilateral arrangements in an attempt to maintain market share. Carrots (investment and access to Chinese markets) and sticks (controls of core commodities and Chinese demand) will be utilized. Success is likely in certain EM as we discuss in this report, but will be much harder in DM.

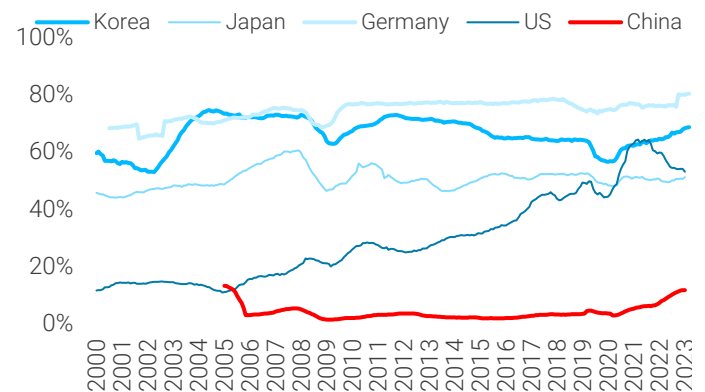
China self-reliance is everyone's problem



Sources: CEIC, TS Lombard.

China exports still a lower share of production than peer manufacturers

Passenger vehicle exports as % of production, 12mma



Sources: CEIC, TS Lombard.

Going abroad for growth is the prevailing trend. For private firms, domestic competition created by state support and weak demand is pushing corporates to seek overseas markets. Rising tariffs, mean that companies are increasingly setting up production facilities in low-cost manufacturing bases, primarily those with trade links to advanced economies. Vietnam, Eastern Europe and Mexico are the locations of choice. Outbound manufacturing investment reached a new high in 2023 even as domestic private sector FAI contracted. We expect this trend to continue with investment flows increasingly driven by tariff barriers.

The trade shock is only beginning. Looking at the current account surplus to GDP in 2023, China is 2.2% – comparable to that of Japan and Korea (at 1.8%) but far below that of Germany (6.9%) and Taiwan (18%). The problem is less ratio than scale: China's GDP is almost four times larger than Germany and the trajectory of its manufacturing surplus to imports is only widening (see above chart on the left). Movement up the value chain has led to market-driven import substitution for domestic producers and increasingly competitive exports. That dynamic is now turbo-charged by industrial policy, with active de-Americanization occurring and export promotion. For all the talk of excess capacity of vehicles (estimated at 5-10mn units/year of overcapacity), for China, auto exports are still a much lower percentage of total production than competitor nations. This will certainly rise as EVs make further inroads; so too will the manufacturing surplus. The second China trade shock is just getting started.

India: Aggressive green goals drive hefty import bill

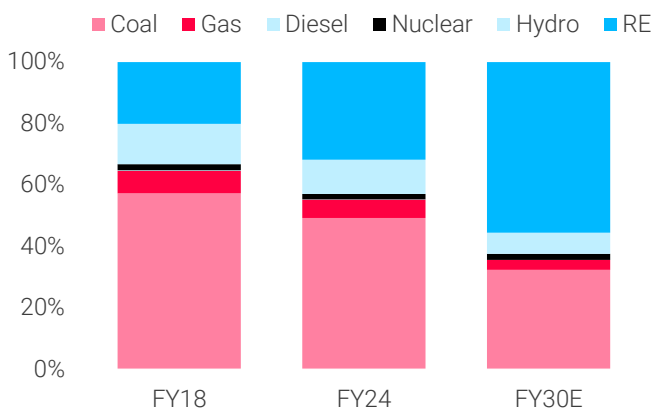
India, the world's third-biggest carbon emitter and oil importer, has unveiled ambitious plans to decarbonize its power and transport sectors to 2030; but as a result it will find it impossible to wean itself off of low-cost Chinese inputs in the medium to long term despite strong

protectionist leanings. As we describe below, the dilemma that the government currently faces on whether to restrict Chinese solar module imports or to allow them in to hasten decarbonization clearly shows that the demand intensity of India's renewables plan cannot be met by domestic producers alone in a steady and affordable way. Even as the country has made visible green progress in just a few years' time, blessed as it is with abundant renewables resources and proactive policies, Indian firms remain highly dependent on China for everything from critical minerals and core technologies to green manufacturing machinery and essential components.

India's commitment to nearly doubling non-fossil fuel-based energy sources from 26% of its current total power generation to 50% by 2030 relies heavily on its solar expansion plans. As the government aims to install almost 500GW of renewables by 2030 (up from 182GW today), India is targeting renewables capacity additions of 50GW every year. While that may be overly optimistic compared with the ~10GW added in 2023, industry experts we spoke with said that 35-40GW/year is a reasonable expectation in the second half of this decade. In 2024, India is likely to add around 25GW of new solar and wind capacity. Encouragingly, traction seems to be building with new renewable energy tenders for a cumulative capacity of 15GW issued in February alone.

Composition of installed power generation capacity

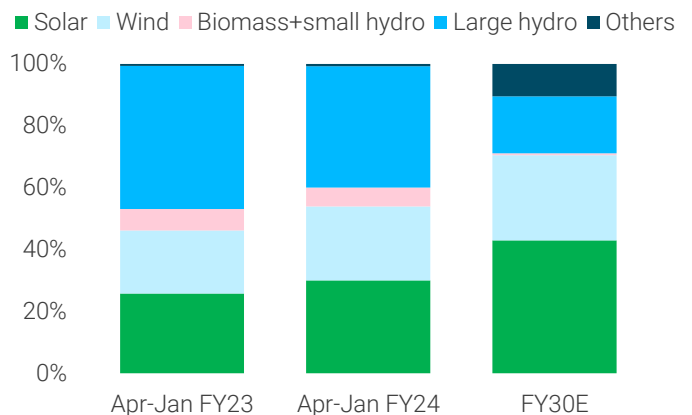
% share



Source: Central Electricity Authority (CEA).

Electricity generation by renewables

% share



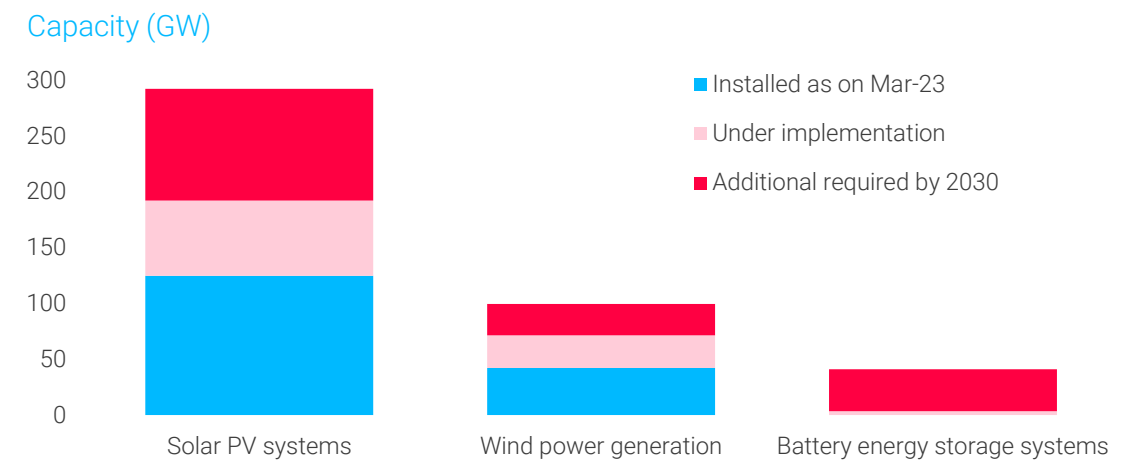
Source: CEA.

Among India's most proactive steps to shield itself from Chinese dominance are the production-linked incentive (PLI) schemes that it introduced for domestic manufacturing firms

three years ago amid the breakdown in global supply chains due to Covid. Aimed at increasing economic self-reliance, the PLI schemes provide financial rewards to companies based on a percentage of their revenue and were launched for 14 sectors, including production of solar modules and advanced chemistry cell (ACC) batteries. In 2023, the installed capacity of solar modules doubled to 38GW from 18GW in 2022, and is expected to cross 100GW in the next two years – allowing **India to surpass Southeast Asia as the world's second-largest solar module producer**. The government hopes to replicate the success of the PLI for solar modules for a

similar incentivised production of ACC batteries, green hydrogen and electrolyzers, for which the current manufacturing capacity is negligible. In January 2024, the government invited bids from companies for the second time in two years to build mega plants with 10GWh capacity for ACC batteries, after 30GWh of capacity were already allocated to three companies in 2022. Meanwhile, bids for the PLI schemes for green hydrogen production and manufacturing of electrolyzers exceeded the capacities for which they were invited. Even so, the production capacity of both the ACC batteries and green hydrogen will remain a fraction of India's requirement for years to come as the domestic sectors grow from a tiny base.

Demand for key renewables through 2030



Source: Confederation of Indian Industry and Ernst & Young report, October 2023.

To prevent cheap imports from flooding the Indian market, the government has also imposed various tariff and non-tariff barriers. For example, in early 2022, the Modi administration levied a basic customs duty of 40% on solar modules and 25% on solar cells. Prior to that, in 2019, it issued the Approved Lists of Models and Manufacturers (ALMM) for both solar modules and solar PV cells to regulate the entry of firms into the market as well as to ensure quality standards. The ALMM for solar modules took effect in 2021 but for the current fiscal year, it was suspended in order to boost the installation of solar power projects. The ALMM is being brought back into effect from 1 April 2024 for state-subsidized projects to return some market space to domestic producers whose increased capacity prompted them to export modules (a majority to the US) instead of catering to the local market.

As for solar PV cells, an ALMM was never issued given limited domestic capacity. In FY18, China accounted for 89% of India's total solar cell imports, but while India's solar cell imports from China fell by 85% between FY18-21 due to overstocking and an anti-dumping investigation, in FY22 they almost doubled yoy, catapulting China's share to an even higher 94% of the total. **The upshot is India will continue importing solar PV cells (although almost 68GW of cell capacity is under various stages of implementation,** which will raise India's capacity almost 6x from 2023 levels by 2026.

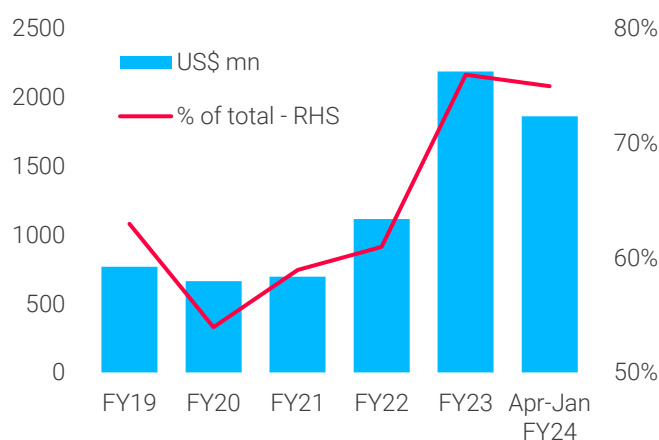
Other critical gaps persist in the availability of raw materials and other inputs. For instance, India produces only 6GW of solar glass even though its capacity to produce modules is 6x as much. Capacities of ~38GW for polysilicon manufacturing and ~58ingot-wafer manufacturing are likely to come onstream in the next couple of years, but so far India is almost completely dependent on imports. The government has aired the possibility of increasing local content rules

in these segments, but with China potentially tightening its future export control rules for both critical minerals and solar manufacturing machinery, implementation is by no means guaranteed.

India is trying to develop new supply chains across other green industries too. In an encouraging development, lithium reserves were discovered in three Indian states in 2023, but they now need to be assessed for feasibility of extraction. The government has **also sped up partnerships with many countries in search of critical materials and minerals.** It formed a JV named KABIL between three state-run firms in 2019 for exploration and acquisition of lithium and cobalt assets overseas; KABIL has already signed agreements with the Australian, Argentinian and Chilean governments to do so. India is also part of the Quad (alongside Australia, the US and Japan – a group that China has criticized as the “Indo-Pacific NATO”) and, in 2023, this group committed to diversifying clean energy supply chains and expanding regional manufacturing capabilities. More recently, India has joined the US-led Mineral Security Partnership to strengthen critical mineral supply chains.

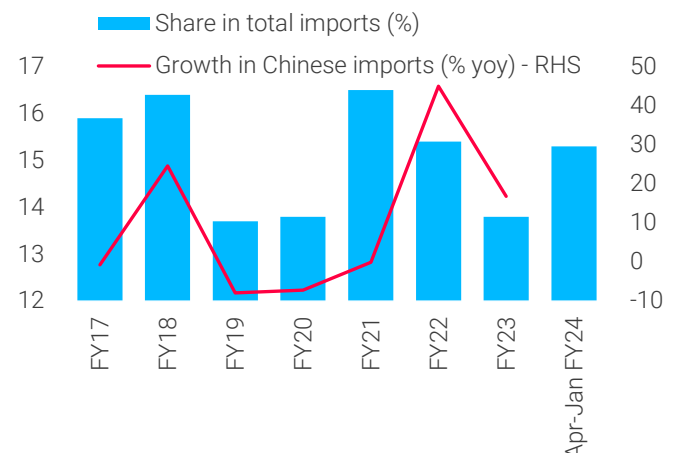
For now, India’s dependence on lithium-ion imports from China is surging, contributing to a sharply deteriorating trade balance with China: the FY23 trade deficit with China was 1.5x greater than pre-Covid levels in FY19, with total imports rising 40% between FY19-23 and exports contracting slightly over the same period. Strikingly, **lithium-ion and unassembled solar PV cells were among India’s top 5 imports from China in 2023 (up 216% and 11% respectively from 2019 levels),** notwithstanding simmering border tensions between the two countries.

India’s imports of lithium ion from China



Source: Department of Commerce.

China’s share in India’s imports*



Source: Department of Commerce. *FY24 growth figure is unavailable.

In the EV sector, top Chinese EV maker BYD has also emerged as the market leader in India’s relatively niche but fast-growing mid-size EV passenger car market – beating longer established brands such as Hyundai, Kia and BMW. BYD started selling passenger EVs in India only in 2022, and has already managed to make a splash in the local market despite facing several challenges (including being slapped by a US\$9mn fine for underpayment of taxes and having its planned US\$1bn EV factory scuttled last year by the government). In the entry-level EV car market, India’s Tata Motors is the dominant player but China’s SAIC-owned MG Motor is the second-largest seller. Still, in the wake of the government’s announcement last week of sharply lower EV tariffs on some imports (in an apparent win for Tesla’s years-long lobbying efforts), more EV players are expected to come in. This will shake up the young market, even if the limited number of vehicles (40,000 maximum over five years) that can qualify for the lower tariffs is small

peanuts for a firm like Tesla. Last year, EVs made up only 2% of new car sales, but the government's goal is to grow this to 30% by 2030.

By contrast, in the wind turbine sector, India is already a key global player. It ranks as the world's second largest market for gearbox manufacturing and the second-largest supplier in the APAC region (after China) of blades and generators. Despite such strengths, the Global Wind Energy Council has warned that India needs a "roadmap for a resilient supply chain" of raw materials such as rare earth metals and non-standard steel. It has also pointed out that China is the primary supplier of castings despite India's otherwise sophisticated manufacturing supply chain.

India has long suffered from a shortage of skilled labour across the manufacturing and infrastructure sectors, and this hinders the ramp up of its green plans too. Skilled personnel are needed for the complex upstream processes for manufacturing products such as metallurgical-grade and solar-grade silicon, ingot and wafer manufacturing. Similarly for the wind sector, critical jobs such as casting and forging demand more skills. Finally, funding constraints also continue to plague the broader infrastructure sector, including renewables. A 2023 report by industry lobby, the Confederation of Indian Industry co-authored with Ernst and Young said that the **"intricate interplay of demand volatility and policy uncertainty" makes financial institutions wary of lending** to firms like domestic solar module makers. Even when credit is made available, it is at a "significantly higher" cost.

ASEAN: EV race sizzles, yet renewables stall

China's solar dominance – and the US' 12-year sector battle against Chinese "dumping" – has famously thrown up lucrative trade opportunities for ASEAN (primarily Vietnam, Thailand and Malaysia via their triangulation and value-add of Chinese solar products to the US). However, with key US trade loopholes finally being shut down and more to come in the next wave of DM protectionism – led by the geopolitically charged process of US-China decoupling – ASEAN countries are fiercely jockeying now for the next slice of the manufacturing pie in core next-generation platforms: from EVs to semiconductors.

1) EV battleground: Big opportunities, new risks

Four countries – Thailand, Indonesia, the Philippines and Malaysia – are at the forefront of the battle to become regional EV hubs. Southeast Asia today may account for less than 1% of the global EV market, but the arrival of affordable Chinese-made EVs has upended the automotive playing field. Last year, EV prices in select countries such as Thailand plunged to nearly the equivalent of their gasoline-fueled counterparts, as a brutal price war first initiated by Tesla in China moved overseas. This has put Japanese automakers who have traditionally reigned over the Southeast Asian auto market, led by Toyota, on the back foot. It has also created big opportunities and risks ahead for local policymakers who are hungry for FDI inflows in the EV sector, yet must face the same arduous challenges that DMs are grappling with. How quickly a new transport paradigm is adopted hinges on three additional factors – sufficient EV charging infrastructure, grid stability and energy security – as more EVs take to the streets.

Thailand today leads the rest of the EV pack in Southeast Asia, helped by its role as ASEAN's regional auto hub and as a global Top 10 auto producer. The country is in pole position today for

EV sales, with more than 70% of EVs sold last year taking place in Thailand by one count. This trend has been facilitated by three factors:

1. **Thailand's zero-tariff policy for Chinese-made battery EVs** (BEVs), a stipulation of the the ASEAN-China Free Trade Agreement (FTA), negotiated at a time when China's auto sector was not yet globally competitive;
2. **The Thai government's strategic pairing of progressively lower consumer EV subsidies with low import taxes, plus per-unit production targets set at a ratio of 2-3x the import volume of BEVs** to convince automakers to build plants in Thailand (see table below); and

Key points of Thailand's 2024-27 EV incentive scheme (EV3.5)

Vehicle type/price	Consumer EV subsidies per vehicle	Battery capacity	Excise tax reduction	CBU import duty cut	
Passenger car (retail price ≤THB2mn)	2024: THB100,000; 2025: THB75,000	If car is imported or produced domestically	50 kWh or more	2024-25: Up to 40% lower duties for imports of Completely Built Units (CBUs) of BEVs if other requirements are met*	
	2026-27: THB50,000	If produced domestically			
	2024: THB50,000; 2025: THB35,000	If car is imported or produced domestically			10 kWh to less than 50 kWh
	2026-27: THB25,000	If produced domestically			
Pick-up truck (retail price ≤THB2mn)	THB100,000	Only if produced domestically	50 kWh or more	2024-25: 0%; 2026-27: 2%	Normal rates apply
Motorcycle (retail price ≤ THB150,000)	THB10,000	Only if produced domestically	3 kWh or more	2024-27: 1%	Normal rates apply
* 2024-25: Two BEVs must be domestically produced in Thailand for every one BEV imported as a Completely Built Unit (CBU) if local EV production starts in 2026 (2:1 ratio) . If domestic EV production begins in 2027 , three BEVs must be produced for every one CBU imported (3:1 ratio)					

US\$1 = THB36 (March 2024).

Sources: Excise Department, Baker McKenzie.

3. **Fixed EV targets**, first unveiled in 2020, that set auto production goals for Thailand at 30% zero-emissions vehicles (ZEVs) by 2030 and 50% ZEVs by 2050.

As a result, even as overall car sales fell last year in Thailand by 9% yoy, BEVs vaulted to 12% of new car sales (vs 1.2% in 2022), with Chinese cars accounting for the bulk of the total (at 11% of new car sales). With consumer EV subsidies in line for new reductions next year, Thailand's Electric Vehicle Association in January projected that frontloaded consumer demand

could allow BEV sales to double this year to 150,000, totalling 20% of new car sales. To sweeten the pot, the government last month also unveiled new tax deductions for firms that convert their commercial fleets to EVs by December 2025 among other supportive sector policies.

At least 10 Chinese EV firms, battery and parts manufacturers are either in the process of setting up shop in Thailand or have already opened up factories – spurred by the combination of the country's attractive EV programme and the weak Chinese domestic market that has forced EV automakers to look abroad for survival. The list includes China's Great Wall Motor, which began local production of EVs in January at its factory in Rayong (with an annual capacity of 120,000 units), just over a month after its rival Hozon (under its Neta brand) first kicked off EV output in the country. China's top EV maker BYD, having eclipsed Tesla last quarter as the world's top BEV producer, is scheduled to start mass production in Thailand next month at its 150,000-unit/year factory.

Yet the real prize for Chinese EV firms is not the Thai domestic market (with ~800,000 vehicles per year in new car sales), but its export market which is 40% larger and which could eventually allow Chinese firms to sell their vehicles tariff-free both intra-ASEAN and to ASEAN FTA partners. If the firms can achieve a 40% domestic content requirement, thereby qualifying for a Made-in-Thailand label, a back door to other markets (including the EU and US) now increasingly off limits to them could also follow. Whether they can succeed in doing so before they swamp the domestic market replicating China's glut is another matter altogether.

As for ASEAN's other top contenders for an EV hub, Indonesia and the Philippines are both looking to leverage their critical mineral resources to move up the EV manufacturing value-added chain starting with EV batteries. Of the two, Indonesia has a definite edge over its competitor, as ASEAN's largest auto market and home to more than half of global nickel output (vs the Philippines' 15%) as well as growing cobalt production and large deposits of copper and tin. The Jokowi government also scored a recent win when BYD announced in January that it would invest US\$1.3bn in an EV factory in Indonesia; the firm will join Vietnam's VinFast among other EV challengers to Japanese auto incumbents in the market. BYD's decision came after the administration's relaxation of stringent EV rules that included delaying the onset of onerous 40% and 60% EV local content requirements to 2026 and 2027 respectively and agreeing to slash duties for imported EVs.

Looking ahead, although Indonesia has set an ambitious EV auto production target of 600,000 units by 2030, the more lucrative market opportunity lies in building out US-focused EV battery supply chains, given the price premium that a 'China-free' supply chain will command in the West and the fact that nickel is more widely used in EV batteries in the US than in China (where nickel-free batteries such as lithium-iron-phosphate batteries are more popular and sodium-ion batteries are on the way). Still, neither Indonesia nor the Philippines have an FTA today with the US; and the relatively high carbon footprint for their nickel operations will draw environmental criticism. In the event of Trump winning the US presidential race, more delays to an accelerated uptick in US BEV sales are likely. Malaysia, the world's sixth largest exporter of semiconductors beat Indonesia to the punch last year when Tesla agreed to open its first regional sales office in Selangor. Despite such strengths, the country may have a weaker hand to play than its neighbours as chips and related electronic components are small, light and therefore easily shipped – even if more of these inputs will be needed as connected cars grow increasingly smarter.

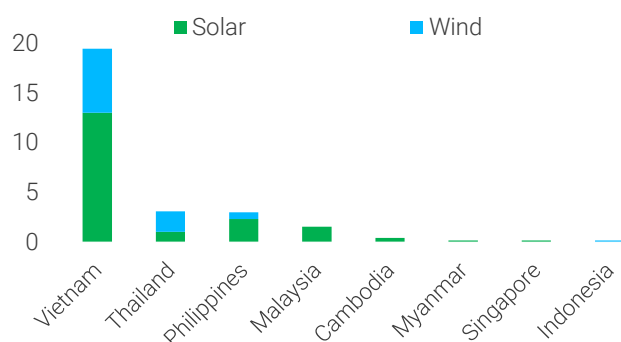
2) Solar/wind: Bright potential, cloudy outlook

The flip side of the coin of this EV battle – and ASEAN’s potential Achilles’ heel – is the region’s failure to date to embrace solar and wind energy. Despite the vibrancy of its regional economy and abundant resources, **ASEAN’s average annual renewables investments has ranked among the lowest globally in recent years**, coming in just above sub-Saharan Africa. In addition, its energy mix has been unusually lopsided when it comes to solar and wind deployment: Vietnam alone accounts for a full two-thirds of ASEAN’s operational utility-scale solar and wind capacity as of end-2023 (see chart below left). This was the result of an uncontrolled surge in solar buildout with more than 20GW coming online, the bulk in 2019-20, unleashed by generous solar feed-in tariffs. The ensuing fallout of this boom-and-bust cycle now stands as a cautionary tale of poor planning exacerbated by corruption and regulatory lapses. Grid congestion and significant renewables curtailment noq plague the national grid in key regions, with mounting financial losses for state utility Vietnam Electricity and the private sector (see here for a good summary)..

Looking ahead, Southeast Asia on paper has a robust pipeline of 220+GW of prospective utility-scale solar and wind projects (the bulk of these in the Philippines and Vietnam, as the chart below right illustrates). The rub is that just 3% of that total was in construction as of yearend 2023. Equally importantly, **a significant number of these projects are for offshore wind – a sector that, outside of China, has seen its fair share of technical challenges and cancelled projects** last year, also putting project timelines in doubt. As with other markets, ASEAN uptake has been slowed by higher interest rates, lack of local and international climate financing, unclear policy support and red tape (led by the usual delays in renewables permitting and transmission line buildout). The region’s relatively young fleet of coal-fired plants that adds to the costs of financing the energy transition is another reason for the foot-dragging, with powerful stakeholders resistant to change.

Vietnam alone accounts for two-thirds of ASEAN’s utility-scale solar/wind capacity . . .

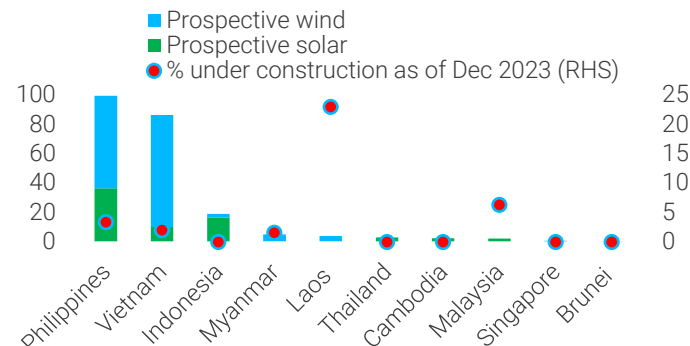
Total operating utility-scale solar/wind capacity* (GW)



*As of Dec 2023. Does not include wind capacity of ≤10MW and solar capacity of ≤20MW.
Source: GEM.

. . . while just 3% of prospective ASEAN solar/wind projects totalling 220GW are under construction

Prospective utility-scale solar/wind projects (GW)*



*Does not include wind capacity of ≤10MW and solar capacity of ≤20MW.
Sources: GEM, GlobalData TS Lombard.

Although Indonesia ranks third in the region with prospective projects, Southeast Asia’s largest economy is a notable solar and wind laggard – with less than 1% today of its total utility-scale operating capacity coming from these two sources (vs hydro at 8.2%, bioenergy at 6.2% and geothermal at 5% in 2022). **Strict local content rules (at a minimum 40% today) have saddled solar and wind projects with higher costs**, making it difficult for domestic players to get

a foothold and scale up, as in other EMs. Meanwhile, coal is cheap and plentiful; and Indonesia's much-heralded US\$20bn deal with G7 countries in the Just Transition Energy Partnership (JETP) to phase out coal-fired power plants is still bogged down, for now, in negotiations. The incoming new government under President-elect Prabowo Subianto could certainly set a different course, but he campaigned on a platform of continuity and energy security. As a result, few expect his administration to usher in a new dawn for solar and wind, despite his tacit pro-Beijing slant.

The upshot is that barring more proactive government policies, ASEAN has little runway to speed up its energy transition, much less absorb a huge influx of Chinese renewables imports over the next one to three years. Yet failure to do so will have material consequences: It will keep electricity prices higher than they otherwise should be, complicating the region's move up the advanced manufacturing supply chain (including for EVs and chips). It will also add to stranded asset risks for a region that is already among the most vulnerable in the world to climate change.

Solar and wind targets for key ASEAN countries (GW)

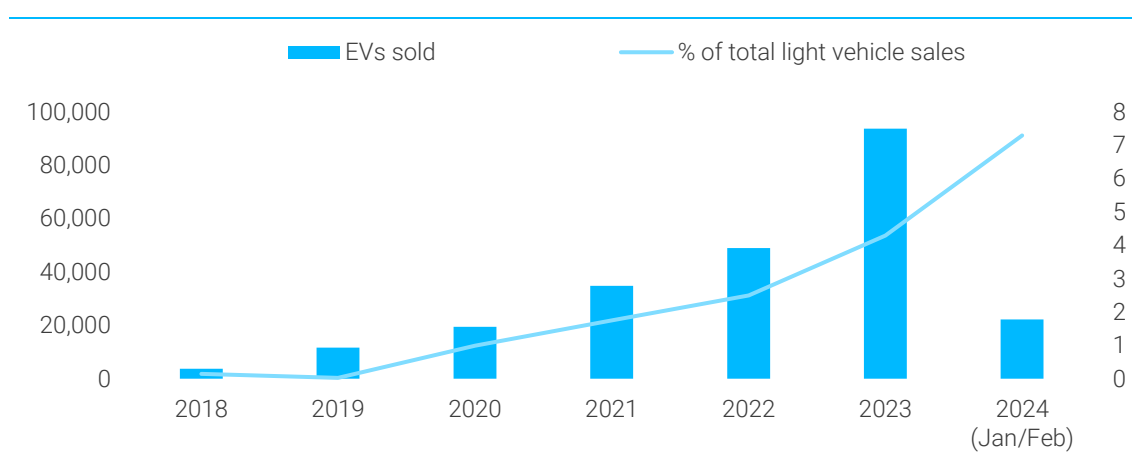
Country	Target year	Solar	Wind	Source
Indonesia	2030	4.8	0.7	PLN's Electricity Business Plan (RUPTL) 2021-30
Malaysia	2030	6.9	0	National Energy Transition Roadmap
Philippines	2030	21.6	1.5	Power Development Plan (PDP) 2020-40
Thailand	2037	14.1	3.05	Power Development Plan (PDP2018 Rev.1)
Vietnam	2030	22.6*	24.9	National Power Development Plan (PDP) VIII for the period of 2021-30

*The government is prioritizing rooftop solar over utility-scale solar in this plan; but recent proposed regulations have been criticized for curtailing interest in new projects.
Source: Ember.

Brazil: Strategic tariffs for industrialization

The Lula administration's top priority is attracting investment to Brazil; so long as Chinese firms invest in local industrial capacity and create jobs, they are welcome. This policy of supporting local industry, for better or worse, has long been at the heart of Lula's vision of a reindustrialized Brazil. With inflows of Chinese solar modules and EVs surging last year (and irrespective of the President's own China-friendly stance), the government last quarter promptly imposed a raft of protectionist measures on core green industries. Below, we take a closer look at three key sectors – EVs, solar and wind – that received new tariff protections, limiting Brazil's capacity to absorb excess Chinese green goods into the medium term, while potentially slowing decarbonization in some segments.

EV sales nearly doubled in 2023 amid rising Chinese imports



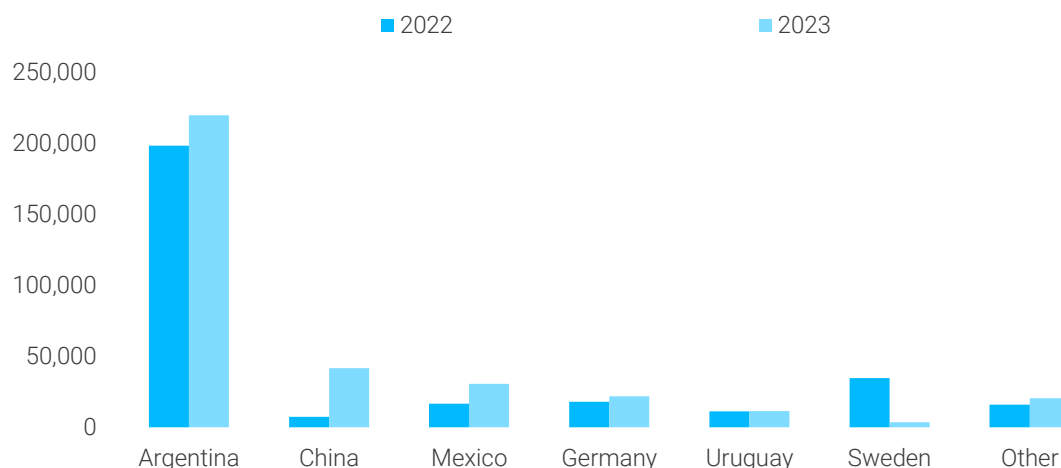
Source: ABVE.

1. EVs: The race for survival

Bolstered by an influx of cheaper Chinese cars, EVs are slowly but surely gaining traction in Latin America's largest economy. Brazil is one of the few major economies that still lacks a broad electro-mobility plan (either of fixed EV targets or a planned phase out of internal combustion engines [ICE]). Still, low-carbon vehicle sales finally started to take off in the past two years, as Chinese brands transformed the competitive landscape in the country. In 2023, EVs made up 4.3% of new car sales, up from 2.5% the year before. The jump in sales of both battery-operated EVs (BEVs) and plug-in hybrid EVs (PHEVs) has been a direct result of growing Chinese imports (see chart below), with the sticker price of BYD's premium EVs nearly on par today with that of ICE models.

In 2023, China vaulted into the No. 2 spot for car imports to Brazil, sparking fears of an “invasion” of Chinese-made EVs

Total light vehicles



Source: ANFAVEA.

With the domestic auto lobby sounding the alarm about “unfair” Chinese competition, the Lula government took swift action last November with its adoption of progressively steeper tariffs on imported EVs that took effect on 1 January. Back in 2015, Brazil had fully exempted BEVs from Brazil’s hefty auto import duty of 35% and imposed a small levy of 2-4% on hybrids. The new programme gradually phases in rising import taxes on both BEVs and hybrids until mid-2026 when the tariff returns to the original 35% level for all models (see table below). These tariffs also helped the government to solve the challenge of finding a source of revenue to subsidize investments in the decarbonisation of the country’s transport sector. Brazilian law prohibits the creation of any new government programme that will require new government spending without stipulating a source of funding. With the revenues from the tariffs, the government was able to launch its National Green Mobility and Innovation Programme (MOVER) at the end of last year.

Instead of subsidies, the government has announced import tariffs on EVs

Type of vehicle				
Date of tariff	Hybrid electric	Hybrid plug-in	Battery electric	Electric cargo
Jan-24	12%	12%	10%	20%
Jul-24	25%	20%	18%	35%
Jul-25	30%	28%	25%	35%
Jul-26	35%	35%	35%	35%

Source: Federal Government of Brazil.

Despite the onset of higher tariffs this year, the Brazilian Electric Vehicle Association (ABVE) expects EV sales to jump 60% yoy to hit 150,000 units by December, as interested consumers frontload purchases ahead of still-higher tariffs in 2025-26.

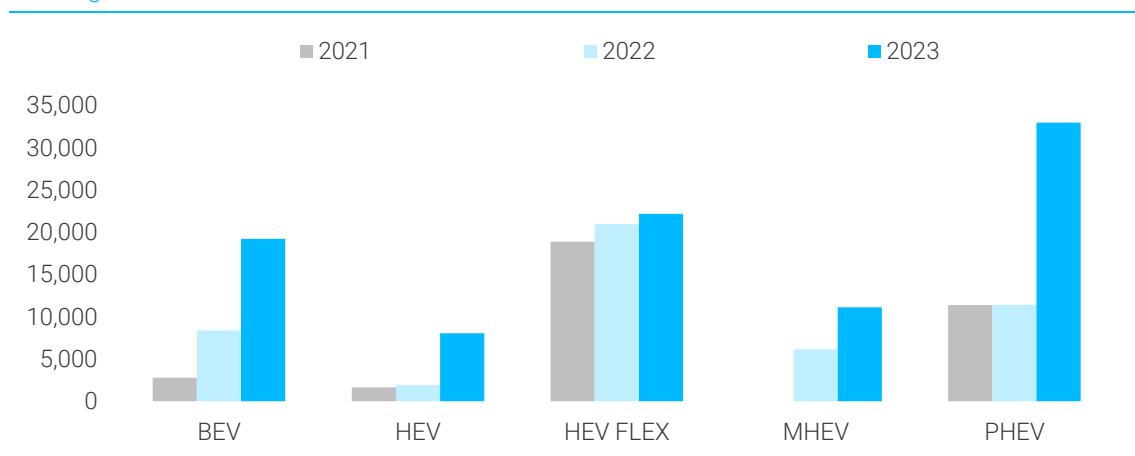
So far, the programme appears to be having the desired result: encouraging new FDI from legacy and Chinese automakers alike. In recent months, Stellantis, General Motors, Toyota, Volkswagen and Hyundai have all announced ambitious investments plans, with the goal of

expanding the number of low-emission vehicles in Brazil. This week, BYD announced additional investments in Brazil, bringing the total at its Bahia complex to BRL5.5bn. The total investment plans by automakers in Brazil through 2030 have reached nearly BRL120bn (US\$23.8bn) – a coup for the Lula administration.

This torrent of new FDI plans is particularly noteworthy, as Brazil's powerful ethanol lobby has long argued that the country does not need EVs to decarbonize its light-vehicle transport sector. The availability of pure ethanol at filling stations across the country, coupled with the limited reach of EV charging infrastructure has previously dampened greater consumer interest for BEVs. Instead, the initial driving force behind the expansion of the EV market has been Toyota with its hybrid flex vehicles that the company developed as a prototype back in 2018 (with the support of then-São Paulo Governor Geraldo Alckmin, who is now Brazil's Vice President). These vehicles can run on up to 100% ethanol and have significantly lower carbon emissions compared to hybrids that run on gasoline. Toyota's hybrid-flex vehicles until recently dominated the EV market and were the only hybrid flex vehicles produced locally until mid-2023, when Chinese automakers Great Wall Motors and Chery launched their own hybrid flex vehicles that were manufactured in Brazil (see chart below).

Brazilian EV sales by technology

Total light vehicles



Source: ABVE.

Although Chinese automakers BYD and Great Wall Motors heavily lobbied against the new tariffs it's worth noting that their local investment plans are fully in line with Lula's longstanding goal of reindustrializing Brazil. Great Wall Motors plans to start production in its factory in São Paulo state this May. Meanwhile BYD is the poster child of a successful Chinese transplant to Brazil: it began producing electric buses nearly a decade ago at a plant in Campinas, São Paulo state. Since 2020, it has also been producing lithium Iron phosphate (LFP) batteries for a broad range of EVs at a plant in the Manaus Free-Trade Zone in Amazonas state. BYD's new EV plant in Bahia state, which is going to begin production later this year, will have the capacity to produce 150,000 vehicles per year (double Brazil's 2023 EV sales), with plans to increase production to 300,000 vehicles in a second phase. While BYD will produce some hybrid models, its focus will be BEVs. The firm also has two solar module plants in Brazil (more below) and recently hinted that it plans to expand production of lithium batteries in Brazil, through a partnership with Minas Gerais-based lithium miner Sigma Lithium.

2. Solar: Little chance of success

By contrast, the government's plans to increase solar module production in Brazil will be challenged by rock-bottom Chinese solar PV prices despite the return of higher import tariffs.

Plummeting prices have been a blessing for Brazil's rapidly expanding solar generation capacity; now the country's second biggest energy source, solar is just shy of 40GW, equivalent to more than 17% of the country's generation capacity (up from just 4.3% at the end of 2020 and 11.6% at the end of 2022). However, unlike the country's well-established wind turbine industry, Brazil's domestic solar module production is still nascent. The government's reinstatement last December of a 10.8% import tariff on solar panels (which went into effect on 1 January), coupled with its move to end temporary tax reduction measures for some 300 solar components, is unlikely to significantly reduce the market share of imported solar panels, in part because imports continue to get cheaper. Prices of solar modules in Brazil fell by a whopping 40% last year, thanks to the cratering prices of Chinese products that fell 50%. Even with the lower prices, Brazil's imports of Chinese solar panels rose to US\$3.84bn, up 7.5% from 2022 imports. **In both 2022 and 2023, PV panels and cells were the number-one item imported to Brazil from China.**

Solar tariff is unlikely to have a significant dent on imports

	Import tariff*	Tariff-free quota
Jan-24 to June-24	10.8%	US\$1.13bn
July-24 to June-25	10.8%	US\$1.05bn
July-25 to June-26	10.8%	US\$717mn
July-26 to June-27	10.8%	US\$403mn
*Applies to PV components and panels		

Source: MDIC.

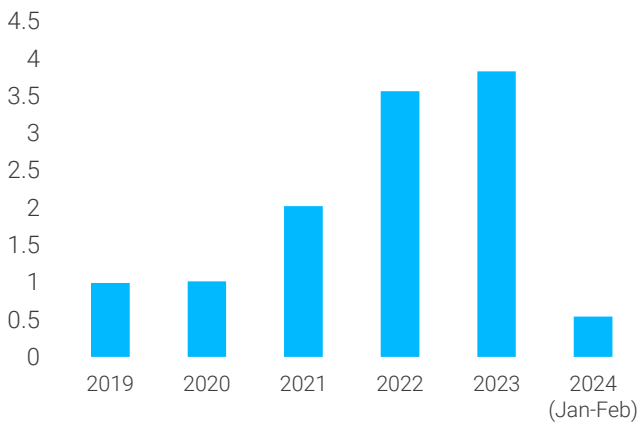
The silver lining is that these tariff revenues will help to develop other green industries because these funds will be used for other government programmes. One irony of this situation is that BYD – with two solar module plants in Brazil – has become a striking advocate for more import protections for domestically manufactured solar panels as a result. The firm has complained that its local plants cannot compete with imports and that its factory in Campinas is operating at a fraction of its installed capacity.

Imported PV panels will continue to dominate the market, but the expansion of solar capacity has stabilized – albeit at a high level, which will limit Brazilian demand. Because of legislation passed in early 2022 to slowly phase-out the grid-fee exemption for distributed generation, the segment saw rapid growth that year, as consumers rushed to lock in the 25-year grid-fee exemption before the deadline. Demand remained strong last year, despite the modest increase in the grid-fee to 15% of the full rate. Because the 2022 law stipulates that the fee will increase by 15 percentage points each year until 2029, when new projects will pay 100% of the fee, demand for distributed generation units spiked in 2022. Demand flattened last year, in part because of the higher grid fee, but also because rising interest rates reduced financing for new distributed generation units. As a result, Brazil imported 17.5GW of PV capacity in 2023, down 1.7% from imports of 17.8GW of capacity in 2022, according to Brazilian renewable power consultancy Greener. Expansion of the sector is expect to slow further this year, according to the Brazilian Solar Power Association (ABSOLAR).

There are still drivers for solar investments. Although the combination of lower prices to purchase rooftop solar capacity, coupled with rising electricity prices should could continue to drive investment in distributed generation, the rapid expansion seen in 2022 and 2023 are unlikely to be repeated. The recent broadening of the wholesale market to include all high-voltage power consumers will drive some investment in larger solar farms, but much of this demand is already being met by existing projects. Following the surge of new solar and wind capacity in recent years, Brazil currently faces excess capacity during the day, when solar and wind generation capacity is at its peak. More investment is now needed to guarantee power supplies during peak consumption hours in the evening. The Mines and Energy Ministry appears to be warming to the use of battery energy storage systems (BESS), but for now, there are no clear regulations for the sector. **This means that until there are new drivers for solar power, such as green hydrogen production or the increased electrification of the industrial sector, Brazil is unlikely to have the demand to import greater volumes of Chinese PV modules.**

After breakneck growth, Brazil's PV module imports stabilized last year

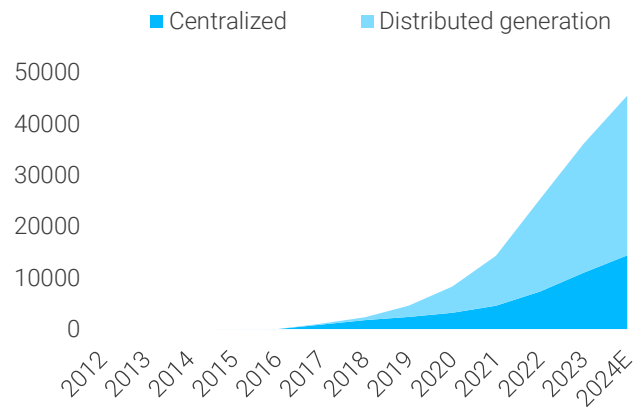
US\$ bn



Source: Comexstat, Abinee.

Expansion of solar capacity will slow

MW



Source: ABSOLAR.

3. Wind: New tariff to help local producers

Chinese wind turbines exports to Brazil could be limited by new tariffs and solid domestic production. Last December, the Lula government announced new tariffs on wind turbines to try to create incentives for companies to produce larger capacity turbines in Brazil. The country already has a robust turbine industry and roughly 80% of local demand is currently met by local suppliers; however, the number of companies producing turbines in Brazil has declined in recent years. A 11.2% import tariff is now levied on all wind turbines of up to 7,500kW: previously, the exemption applied to wind turbines with capacity of up to 3,330kW. The exemption for turbines with a capacity exceeding 7,500kW will last only one year, giving local producers time to begin production. Electric equipment manufacturer Weg has already said that starting in 2025, it plans to produce turbines with a capacity exceeding 7,000kW. **As a result, demand in this growing market segment will be met by locally produced turbines, meaning that the protective tariff will likely achieve the desired result.**

BNDES financing will favour domestic content, which could further limit Chinese imports in some segments. For example, the BNDES' FINAME line of credit for the acquisition of solar and

wind equipment, electric buses and low-carbon heavy vehicles will only be offered to domestically produced vehicles or equipment. Similarly, new lines of credit announced as part of the government's industrial programme will also benefit domestic manufacturing.

The bottom line is that Brazil will continue to import green products from China, but as Lula's tariff programme gradually phases in, Brazilian firms and households will pay the price.

Although this will add some speed bumps to Brazil's energy transition, they will be temporary in our view. Brazil is already far ahead of most countries and holds price of place today as the G20 member with the greenest power mix (at over 90% renewables in 2023). At the same time, reindustrialization as Lula envisions it only goes so far. Whether Brazil can leverage its considerable resources to catapult itself further up the value-added chain as decarbonization gathers pace is another question altogether.

Authors



Grace Fan
Managing Director,
Global Policy and
Disruptive Themes
Research



Shumita Deveshwar
Chief India
Economist



Elizabeth Johnson
Managing Director,
Brazil Research



Rory Green
Chief China Economist
Head of Asia Research

Disclaimer

This report has been issued by TSL Research Group Limited in conjunction with its subsidiaries Lombard Street Research Limited, Lombard Street Research Financial Services Limited, and Trusted Sources UK Limited (together "TSL Research Group"). This report is intended to be viewed by clients of the TSL Research Group only. The contents of this report, either in whole or in part, shall not be reproduced, stored in a data retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without written permission of TSL Research Group.

The information and opinions expressed in this report have been compiled from publicly available sources believed to be reliable but are not intended to be treated as advice or relied upon as fact. Neither TSL Research Group, nor any of its directors, employees or agents accepts liability for and, to the maximum extent permitted by applicable law, shall not be responsible for any loss or damage arising from the use of this report including as a result of decisions made or actions taken in reliance upon or in connection with the information contained in this report. TSL Research Group does not warrant or represent that this report is accurate, complete, or reliable and does not provide any assurance whatsoever in relation to the information contained in this report. Any opinions, forecasts or estimates herein constitute a judgement as at the date of this report based on the information available.

There can be no assurance that future results or events will be consistent with any such opinions, forecasts, or estimates. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied is made regarding future performance. This information is subject to change without notice, its accuracy is not guaranteed, it may be incomplete or condensed and it may not contain all material information concerning the company and its subsidiaries. The value of any securities or financial instruments or types of securities or financial instruments mentioned in this report can fall as well as rise. Foreign currency denominated securities and financial instruments are subject to fluctuations in exchange rates that may have a positive or adverse effect on the value, price or income of such securities or financial instruments. This is a generic research report and as such does not have regard to the specific instrument objectives, financial situation, and the particular needs of a client. Clients should seek independent financial advice regarding the appropriateness of investing in any of the types of financial instrument or investment strategies discussed in this report.

By reading this report you accept [TS Lombard's terms and conditions](#).

Registered Office: John Carpenter House, John Carpenter Street, London, England, EC4Y 0AN. Registered in England No. 10232483