

## The US Inflation Reduction Act and ASEAN+3 Electric Vehicle Exports: Mountain or Molehill?<sup>1</sup>

June 30, 2023

*“I think the word ‘free trade’ was meant to mean reliable friends and partners with whom we can feel we have secure supply chains.”*

*Janet Yellen, US Treasury Secretary, February 2023*

*“After exports grow and grow, market protectionism will definitely happen... This is the reality we must face.”*

*William Li, Founder and CEO of NIO, April 2023*

### I. Introduction

1. **The United States’ Inflation Reduction Act of 2022 (IRA) includes a controversial incentive to accelerate the adoption of electric vehicles (EVs) produced domestically.**<sup>2</sup> The IRA, signed into law last August, directs significant federal funding toward reducing carbon emissions through tax incentives, grants, and loan guarantees. One notable provision of the Act is a modified clean vehicle tax credit for EVs starting in 2023, whereby eligible EVs must meet sourcing requirements for both the battery components and critical minerals contained in the vehicle—the first time green subsidies have been explicitly linked to local-content requirements by a major trading economy.

2. **This note examines the potential implications of the new US clean vehicle credit for the ASEAN+3 EV industry**, which is highlighted as a promising growth sector in [AMRO \(2023\)](#). Section II provides details on the clean vehicle credit and its requirements—some of which are still being ironed out. Section III presents a brief overview of ASEAN+3 EV exports, and Section IV discusses how the clean vehicle credit could affect the outlook for the region’s EV industry. Section V concludes.

### II. The Clean Vehicle Credit, Green Subsidies, and “Friendshoring”

3. **The United States has provided consumer tax credits for EVs for more than a decade.** From 2010 through 2022, new EVs purchased—from among 266 models by 48 US and foreign brands—were eligible for a federal income tax credit of up to USD 7,500, depending on the capacity of the battery used to power the vehicle ([US Department of Energy 2023a](#)). When the Biden administration came into office, its climate agenda included

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<sup>2</sup> EVs typically refer to plug-in hybrid EVs and battery (or “all-electric”) EVs. The new clean vehicle credit also covers fuel-cell EVs that run on hydrogen. See [AMRO \(2023\)](#) for definitions and descriptions.

new consumer EV tax credits intended to better target those subsidies and incentivize companies to develop more affordable models for the mass market. Thus, the modified clean vehicle credit in the IRA instituted a price cap for sellers (eligible EVs must cost less than USD 55,000 for cars, or USD 80,000 for sport-utility vehicles, trucks, and vans) and an income cap for buyers (eligible households must make less than USD 300,000 per year and single people less than USD 150,000 per year).

**4. However, the IRA also includes other new rules that are likely to impact the global EV supply chain in three key areas:**

- *Final assembly.* First, EVs must undergo final assembly in North America (i.e., the United States and Puerto Rico, Canada, and Mexico) to qualify for a credit.
- *Battery components.* To be eligible for a USD 3,750 credit, the battery components must be manufactured or assembled in North America. The applicable percentage of the value of the battery components subject to this restriction starts at 50 percent in 2023 and increases by 10 percent each year to 100 percent in 2029. Beginning in 2024, an eligible EV may not contain any battery components that are manufactured by a so-called foreign entity of concern, i.e., an entity owned by, controlled by, or subject to the jurisdiction or direction of a government of a foreign country that is a “covered nation” (e.g., China).<sup>3</sup>
- *Critical mineral components.* To be eligible for another USD 3,750 credit, the critical minerals contained in the EV battery must be extracted or processed in the United States or a country with which the United States has a free trade agreement or be recycled in North America.<sup>4</sup> The applicable percentage of the value of the critical minerals contained in the battery starts at 40 percent in 2023 and increases by 10 percent each year to 80 percent in 2027. Beginning in 2025 an eligible EV may not contain any critical minerals that were extracted, processed, or recycled by a foreign entity of concern.

These rules appear to run counter to the fundamental principle of nondiscrimination in the multilateral trading system (Box 1).

**5. The new clean vehicle credit applies to a much smaller set of EVs than before.**

Only 35 models from 10 brands (BMW, Cadillac, Chevrolet, Chrysler, Ford, Jeep, Lincoln, Rivian, Tesla, and Volkswagen) qualify for a full or partial tax credit as of June 2023 ([US Department of Energy 2023b](#)). No ASEAN+3 brands have EV models that qualify for the credit (Box 2). However, the battery-component and critical-mineral sourcing requirements do not apply to “commercial” EVs—including leased EVs, rental EVs and EVs used for rideshare fleets—which may qualify for a clean vehicle tax credit of up to USD 40,000.<sup>5</sup>

<sup>3</sup> Official guidance to date has not further clarified this definition.

<sup>4</sup> According to [US Department of the Treasury \(2023\)](#), the United States has free trade agreements with 21 countries including Japan, Korea, and Singapore. However, the agreement with Japan is not a “free trade agreement” (or “regional trade agreement” in the World Trade Organization’s terminology) as such but an agreement between the two countries not to enact bilateral export restrictions on minerals critical for EV batteries. The agreement was signed in March 2023 for the express purpose of granting Japan’s automakers wider access to the new EV tax credit ([Lawder 2023](#)).

<sup>5</sup> Commercial vehicles are defined here as motor vehicles used by businesses.

### **Box 1. Does the Clean Vehicle Credit Run Afoul of World Trade Organization Rules?**

The 2022 Inflation Reduction Act has raised concerns in the World Trade Organization (WTO) regarding subsidies and the treatment of domestic versus foreign entities ([WTO 2022](#)).

Under the WTO agreements, member countries cannot discriminate between their own and foreign products, services, or nationals. The principle of “national treatment”—giving others the same treatment as one’s own nationals—means that imported and locally produced goods should be treated equally after the foreign goods have entered the market. Providing a consumer tax credit only for locally assembled EVs and not for imported EVs prima facie would be a violation of national treatment.

The WTO Agreement on Subsidies and Countervailing Measures (SCM) disciplines the use of subsidies and regulates the actions countries can take to counter the effects of subsidies. Only “specific” subsidies—i.e., financial contributions by a government that provide benefits to an enterprise or industry or group of enterprises or industries—are subject to the SCM Agreement disciplines. Many countries, including China and Japan, have consumer tax credits for EVs. But local content subsidies, i.e., subsidies contingent on the use of domestic over imported goods, are explicitly prohibited by the SCM Agreement.

If the United States is found in violation of its commitments under WTO agreements, its trading partners could use the WTO’s dispute settlement procedure to seek the withdrawal of the subsidy or the removal of its adverse effects. They could potentially even be entitled to take retaliatory trade action against the United States. For example, other countries could add similar restrictions to their EV tax credits, discriminating against US-produced vehicles. Retaliation could also target other unrelated sectors, e.g., agricultural goods.

The WTO has no specific agreement dealing with climate change and the environment. While the WTO agreements confirm governments’ right to protect the environment, the basic principle of non-discrimination has primacy.

### **Box 2. ASEAN+3 Electric Vehicles in the United States**

In the past few years, automobile manufacturers from four ASEAN+3 economies have entered, or announced plans to enter, the US EV market—established names from Japan and Korea as well as newcomers from China and Vietnam.

#### ***Japan***

- Nissan invested early in battery electric vehicles (BEVs)—the LEAF was introduced in the United States in 2010 and has been produced in its plant in Tennessee since 2013. From 2010 to 2022, Nissan BEVs sold in the United States were eligible for a USD 7,500 consumer tax credit per car.
- Toyota introduced the Prius plug-in hybrid EV (PHEV) to the US market in 2012 and its first BEV, the bZ4x, last year. From 2010 to 2022, Toyota EV models sold in the United States were eligible for a tax credit of USD 2,500 to USD 7,500 per car, although the credits began phasing out in October 2022. The Prius is manufactured exclusively in Japan, but the company has announced that it will update its manufacturing facility in Kentucky to start producing EVs and open a battery plant in North Carolina, both by about 2025.
- Honda currently sells no EVs in the United States but has announced that it will retool several of its existing plants to establish a new EV hub in Ohio, which will begin preparing for production as early as January 2024; the Ohio EV hub will also include a new EV battery plant, which is scheduled to be completed by the end of 2024.

- Among the smaller automakers, Subaru currently has one EV—built in collaboration with Toyota at their factory in Japan—in the United States and plans to introduce more EV models there by 2025. Mazda currently has no EVs in the US national market but plans to launch a PHEV in 2024 and a BEV in the second half of this decade. Mitsubishi currently offers one PHEV model in the United States and no BEVs; it plans for 100 percent of its sales to be either pure electric or hybrid by 2035.

#### **Korea**

- The Hyundai Motor Company (including the Genesis and Kia brands) first entered the US EV market in 2014, but it was not until the launch of new electric models in 2021 that sales started to rise significantly. From 2010 to 2022, Genesis, Hyundai, and Kia EVs sold in the United States were eligible for a consumer tax credit of USD 4,543 to USD 7,500 per car. By the end of 2022, Hyundai was neck-and-neck with Ford for second place in US EV sales, after Tesla. In February 2023, Hyundai rolled its first EV off a US assembly line as it began making the Genesis GV70 at its plant in Alabama. The company has broken ground on a dedicated EV assembly and battery plant in Georgia, with production expected to begin in 2025.

#### **China**

- China has invested heavily in developing a thriving EV industry ([AMRO 2023](#)). In 2022, Chinese automakers took three of the top five spots in global EV sales: BYD ranked first, surpassing Tesla, while SAIC ranked third and Geely fifth, after Volkswagen. However, China is still a relatively small EV supplier in the United States. Polestar—owned by Geely-Volvo and manufactured in Luqiao, China—sold fewer than 10,000 premium EVs in the United States last year (compared to about half a million for Tesla) despite the USD 7,500 credit. Starting in 2024, the new Polestar 3 will be built in the Volvo facility in South Carolina for the US and European markets.

#### **Vietnam**

- Vietnamese EV maker VinFast delivered its first 45 cars to customers in California in March 2023, its first sales outside Vietnam. It shipped a second batch of EVs to the United States and Canada in April and announced that production at its planned EV plant in North Carolina will begin in 2025.

### **III. ASEAN+3 EV Exports: The Current Landscape**

6. **The EV industry has become one of the hottest sectors in the region ([AMRO 2023](#)).** Indonesia and Thailand aspire to become EV hubs for ASEAN, luring automakers from China, Europe, Japan, Korea, and the United States to invest and build factories there (Table 1). Indonesia, in particular, is keen to develop a nickel-based EV industry at home—from making nickel metal, to producing battery components and assembling EVs. Thailand also has a relatively complete EV production industrial chain, while others like Malaysia are focusing on parts and components. Between 2017 and 2022, EVs accounted for about 10 percent of ASEAN+3's total motor vehicle exports, although there is significant variation across economies (Figure 1).

**Table 1. Selected ASEAN: EV Industry Development and Production Targets**

EV supply chain node:	Indonesia	Malaysia	Thailand	Vietnam
Mineral resources	■	■	■	■
Battery production	■	■	■	■
PHEV production	■	■	■	■
BEV production	■	■	■	■
Research and development	■	■	■	■
Production target(s)	Production of 600,000 EVs by 2030.		Production of 250,000 EVs by 2025, and 50 percent of total auto production to be EVs by 2030.	Production capacity of 3.5 million EVs by 2040, 4.5 million by 2050.
Incentives for EV production and investment	Exemption from customs duty on semi and completely knocked down kits (during initial project stage) and on production-related capital goods	FDI pioneer status; investment tax allowance; exemption of import and excise duties	Corporate tax exemption (duration depending on EV type); import tariff exemption for production machinery	Under consideration

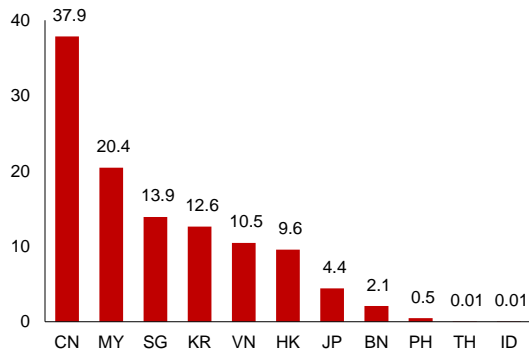
Source: [Tham \(2022\)](#); [AMRO \(2023\)](#).

Note: ■ In production; ■ Planned; ■ No announced plans as yet. BEV = battery electric vehicle; EV = electric vehicle; FDI = foreign direct investment; PHEV = plug-in hybrid electric vehicle.

7. **The region's EV exports are currently dominated by the Plus-3 economies,** whose share has remained stable at over 99 percent since 2017, in both value and volume terms. However, trade patterns within the group have shifted substantially over the years. In 2017, Japan accounted for over two-thirds of the region's EV export earnings but as of early 2023, this share has fallen to less than 20 percent while China has increased its share to over 50 percent (Figure 2). The latter's ability to produce low-priced EVs has helped drive its export volumes: the average price of China's EV exports is well below that for Japan and Korea (Figure 3). At the same time, China's average EV export price has risen over the years, suggesting that upgrading in terms of quality and/or vehicle category has been taking place. ASEAN EV exports mostly come from Malaysia and Singapore;<sup>6</sup> recently, EV exports from Vietnam have started to grow (Figure 4).

<sup>6</sup> These are mostly PHEVs exported to neighboring countries (and to Europe, in the case of Singapore). Between 2017 and 2022, Malaysia and Singapore exported about 1,200 units and 600 units per year, respectively.

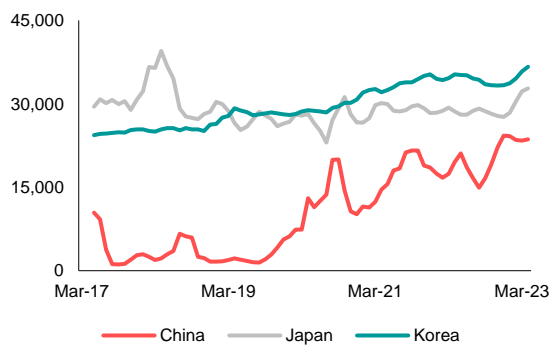
**Figure 1. ASEAN+3: Electric Vehicle Exports**  
(Percent of economy's total motor vehicle exports)



Source: IHS Markit; AMRO staff calculations.

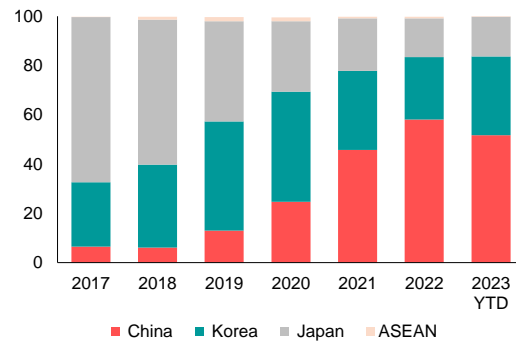
Note: Data refer to the sum of HS codes 870360, 870370, and 870380, divided by the total of HS code 8703 (parent code). BN = Brunei; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

**Figure 3. Plus-3: Electric Vehicle Export Prices**  
(US dollar per unit, 3-month moving average)



Source: IHS Markit; AMRO staff calculations.

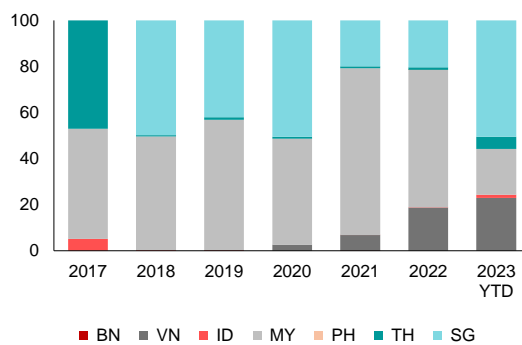
**Figure 2. ASEAN, China, Japan, and Korea: Electric Vehicle Exports**  
(Percent of ASEAN+3 EV export value)



Source: IHS Markit; AMRO staff calculations.

Note: Export value data are in US dollars and up to April 2023. Data refer to HS codes 870360, 870370, and 870380. ASEAN = Association of Southeast Asian Nations; EV = electric vehicle. YTD = year-to-date.

**Figure 4. ASEAN: Electric Vehicle Exports by Economy**  
(Percent of ASEAN EV export value)



Source: IHS Markit; AMRO staff calculations.

Note: Export value data are in US dollars and up to April 2023. Data refer to HS codes 870360, 870370, and 870380; data are not available for Cambodia, Lao PDR, and Myanmar. EV = electric vehicle. BN = Brunei; ID = Indonesia; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand; VN = Vietnam; YTD = year-to-date.

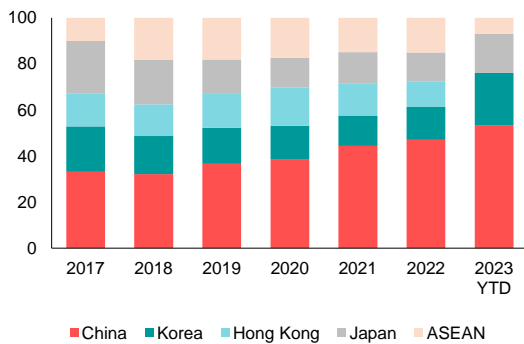
8. **The Plus-3 economies also dominate the region's EV battery exports, but not as completely as for EV exports.** China is the single largest exporter of lithium-ion batteries in the region, accounting for over half of ASEAN+3 export volume in 2022, followed by Korea and Japan (Figure 5). China's advantage stems from solid vertical integration across the entire battery supply chain. ASEAN economies—primarily Malaysia, Singapore, and Vietnam—accounted for over 18 percent of the region's volume of battery exports (nearly 10 percent in value terms) before the pandemic. Foreign EV battery manufacturers were enticed by their ample infrastructure, business-friendly environment, low-cost yet relatively high skilled labor, and proximity to critical mineral sources (Jennings 2022, AMRO 2023). However, ASEAN's battery export share has yet to recover to pre-pandemic levels (see Figure 5).

9. **The share of ASEAN+3 EV exports going to the United States has declined over the years.** Most of the region's EV exports are shipped to trading partners outside the United States—to the European Union, the United Kingdom, the Middle East, Australia, and

New Zealand. Demand from Europe and ASEAN+3 has been on an upward trend, with the latter’s share growing almost five-fold between 2017 and 2022 (Figure 6). In contrast, the US share of the region’s EV exports has fallen to about 11 percent in 2022 from over 20 percent 6 years ago. Korea is now the region’s largest EV exporter to the United States, and consequently the most exposed to any decline in US demand caused by the IRA (Figure 7).

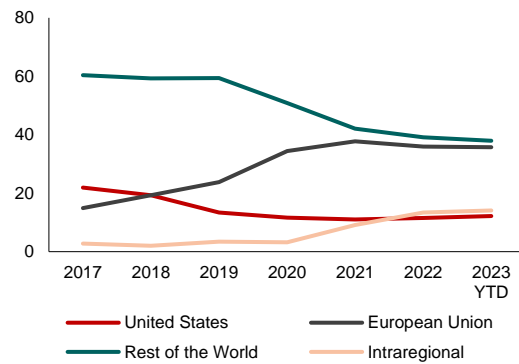
10. **But the US share of the region’s EV battery exports is growing.** While most of the region’s EV battery trade has generally stayed within the region—likely driven by Plus-3 manufacturers sourcing batteries from neighboring peers—the US share of the region’s EV battery exports rose to 23 percent in 2022, from about 13 percent in 2019 (Figure 8). The US share of ASEAN+3 battery exports started growing right when the IRA was announced in August 2022 and has continued to grow to almost 35 percent in 2023 to date—likely driven by EV automakers rushing to get ahead of the implementation of the local-content requirements for batteries (Figure 9).

**Figure 5. ASEAN+3: Battery Exports**  
(Percent of total EV battery export volume)



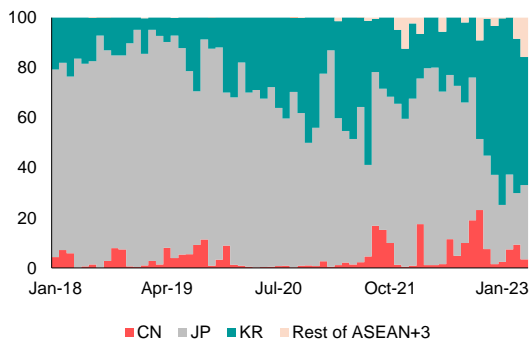
Source: IHS Markit; AMRO staff calculations.  
Note: Data refer to HS code 850760 (lithium ion batteries), the majority of which is for electric vehicles. ASEAN = Association of Southeast Asian Nations; YTD = year-to-date.

**Figure 6. ASEAN+3: Electric Vehicle Exports by Destination**  
(Percent of total EV export volume)



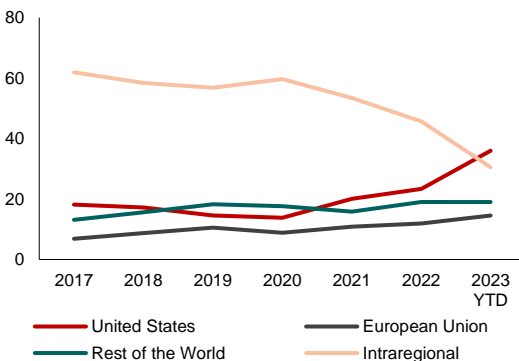
Source: IHS Markit; AMRO staff calculations.  
Note: Data refer to HS codes 870360, 870370, and 870380. EV = electric vehicle. YTD = year-to-date.

**Figure 7. ASEAN+3: Electric Vehicle Exports to the United States by Economy**  
(Percent of the region’s total EV export volume to the United States)



Source: IHS Markit; AMRO staff calculations.  
Note: Data refer to HS codes 870360, 870370, and 870380. EV = electric vehicle. CN = China; JP = Japan; KR = Korea.

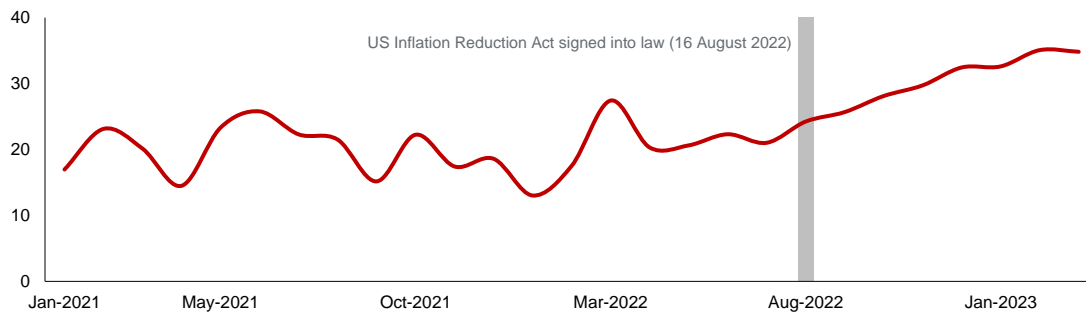
**Figure 8. ASEAN+3: Battery Exports by Destination**  
(Percent of total battery export volume)



Source: IHS Markit; AMRO staff calculations.  
Note: Data refer to HS code 850760 (lithium ion batteries), the majority of which is for electric vehicles. YTD = year-to-date.



**Figure 9. ASEAN+3: Battery Exports to the United States**  
(Percent of total EV battery export volume)



Source: IHS Markit; AMRO staff calculations.

Note: Data refer to HS code 850760 (lithium ion batteries). EV = electric vehicle; YTD = year-to-date.

#### IV. Clean ... but Mean? The IRA's Potential Impact on ASEAN+3 EV Exports

11. **The new clean vehicle credit in the IRA could potentially reduce demand for EVs produced in ASEAN+3—with adverse implications for future EV-related FDI in the region.** Providing a tax credit of USD 7,500 for an eligible EV selling for USD 55,000 is equivalent to a price subsidy of 13.6 percent—and a corresponding disadvantage for a non-eligible imported EV of a similar class. This could discourage US consumers from buying non-eligible EVs, including EVs assembled in or containing battery components from ASEAN+3 and EVs with batteries containing critical minerals from ASEAN+3 (other than “free trade partners” Japan, Korea, and Singapore). EV-related FDI in ASEAN+3 could suffer a decline if many automakers opt to shift their production facilities to the United States instead, to take advantage of the tax credit there.

12. **However, the new clean vehicle credit might not boost US demand for EVs by very much, so foregone EV exports from the region might be small.** As noted earlier, from 2010 until last year, *all* new EVs purchased in the United States were eligible for a federal income tax credit of up to USD 7,500. The initial assessment was that the tax credits were generally not large enough to make EVs cost-competitive against conventional vehicles or traditional hybrids at prevailing prices for vehicles and fuel ([US Congressional Budget Office 2012](#)). Subsequent research concluded that the tax credits did boost EV sales<sup>7</sup>—although most of the credits went to households that would have bought an EV anyway. EVs in the United States are mostly purchased by upper-income households as second vehicles ([Nordhaus and Nunes 2023](#)). Despite recent growth in EV market share, the percentage of US consumers who say they are “very unlikely” to consider an EV for their next vehicle purchase has been growing steadily—reaching 21 percent in March 2023 ([J.D. Power 2023](#)). High purchase price is not the only barrier to mass EV adoption in the United States: even if the new clean vehicle credit improves the affordability of eligible EVs, the lack of public charging infrastructure remains an impediment to demand.<sup>8</sup>

13. **ASEAN+3 EVs are price competitive.** Nothing in the IRA prohibits US consumers from purchasing an EV made in the region or an EV with battery components sourced from the region. The least expensive Tesla model currently in the United States is priced at more

<sup>7</sup> [Jenn, Springel, and Gopal \(2018\)](#) found that every USD 1,000 offered as a rebate or tax credit increased average sales of EVs by 2.6 percent. [Xing, Leard, and Li \(2021\)](#) found that the tax credits led to a 29 percent increase in EV sales in 2014.

<sup>8</sup> In fact, the new clean vehicle credit, with its more stringent conditions, might even slow or reverse the growth in overall EV demand in the United States. The question then will be whether the tax credit will increase demand for eligible EVs and conversely, lower demand for ineligible EVs within this small (and apparently slow growing) pool of buyers.



than USD 38,000 after factoring in the USD 7,500 tax credit; the recently unveiled comparable China-made 2025 Volvo EX30 will be priced at about USD 36,000 after factoring in the 25 percent tariff on vehicles imported from China (Voelcker 2023).<sup>9</sup> China reportedly has a cost advantage of more than USD 10,000 over European automakers in small EVs (White 2023). The new tax credit would affect EVs exported from Japan and Korea more as they are now more expensive than competing models that are eligible for the subsidy (Kane 2023a). Out of about 70 EV models currently on sale in the United States with an effective price below USD 55,000 (i.e., after the tax credit, if applicable), about half are from Korea, Japan, Vietnam, and China (Figure 10).

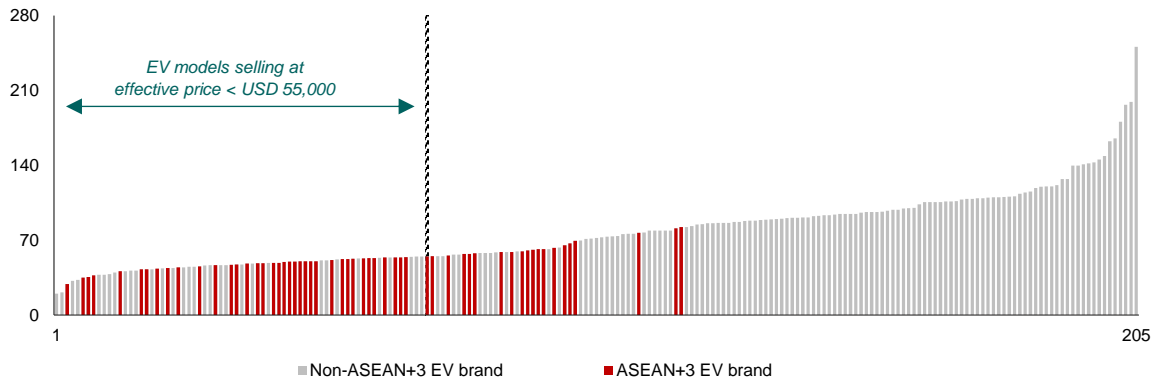
**14. Fully isolating (from) China in the global EV battery supply chain is almost impossible under the current dominant technology.** China produces three-quarters of the world's lithium-ion batteries and, together with Japan and Korea, is home to the world's top 10 EV battery producers (AMRO 2023). Over 93 percent of EV batteries imported by the United States during 2017–22 came from the Plus-3 and Malaysia, over 60 percent from China alone (Figure 11). Over half of the world's lithium, cobalt, and graphite processing and refining capacity, and 70 percent to 85 percent of production capacity for cathodes and anodes (key battery components) are in China (AMRO 2023). China could also have the largest share of nickel globally by 2027, thanks to its investments in Indonesia (Chang and Bradsher 2023). Given China's dominance in this area, enforcing the critical minerals requirement could progressively shrink the pool of EVs eligible for the full clean vehicle tax credit that compete with ASEAN+3 EV exports, and thus dampen the overall impact of the IRA on the region's exporters.

**15. The IRA has not, to date, shunted EV-related FDI away from ASEAN+3 toward the United States.** To be sure, the IRA is encouraging EV automakers to produce EVs and batteries in the United States to serve the domestic market. Many have already done so or announced plans to do so (Box 2). US manufacturing construction spending has boomed since the latter part of 2022 in the aftermath of the IRA and similar policy announcements (Figure 12). But the United States is not the only market for EVs—other markets, including the ASEAN+3 region, are larger and/or faster growing (Figure 13). FDI locational choices are based on many factors, of which domestic market size is just one. While global EV-related FDI announcements showed heightened interest in the United States in 2022, there are no signs that this will be at the expense of FDI in ASEAN+3 (Figure 14). China continues to lead the region in terms of announced projects, followed by Thailand, Indonesia, and Malaysia. These are mostly concentrated in EV (automobiles, parts, and components) manufacturing, EV charging stations, as well as minerals processing.<sup>10</sup>

<sup>9</sup> The Trump administration imposed a 25 percent tariff on imports of various imports from China, including automobiles, in 2018. These tariffs are still in place.

<sup>10</sup> Some recent examples: in December 2022, China's EVE Energy announced it would build a USD 422.3 million battery production base in Malaysia (Aman 2022); in March 2023, Ford announced a USD 4.5 billion battery material investment in Indonesia and US company Envirotech Vehicles signed a lease agreement to establish an EV manufacturing plant in the Philippines (Reuters 2023a, Philippines Department of Finance 2023); in April 2023, China's Changan announced it would invest USD 581 million in Thailand to set up its first EV manufacturing base outside China (Regalado 2023); in May 2023, China's BYD announced plans to expand into EV manufacturing and assembly in Vietnam (Reuters 2023c).

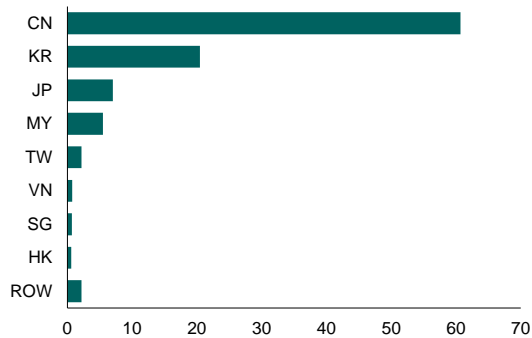
**Figure 10. United States: Electric Vehicle Prices**  
(Thousands of US dollars, lowest to highest price)



Source: Kane (2023b); AMRO staff calculations.

Note: Data correspond to effective prices of 205 electric car models available in the United States, where effective price refers to the price after the tax credit (if applicable).

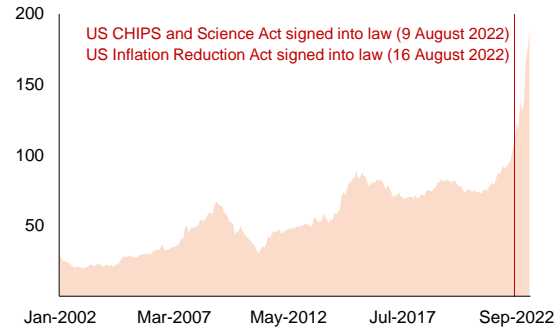
**Figure 11. United States: Battery Imports by Source, 2017–22**  
(Percent of total value of battery imports)



Source: IHS Markit; AMRO staff calculations.

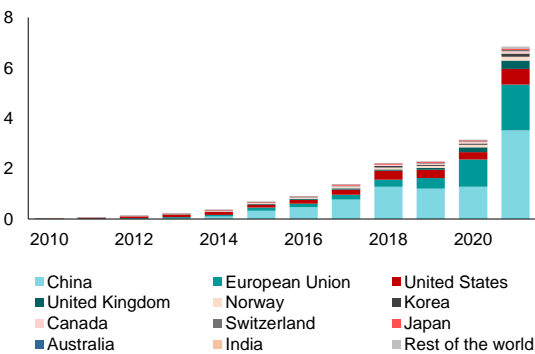
Note: Data in US dollar terms. CN = China; HK = Hong Kong; JP = Japan; KR = Korea; MY = Malaysia; ROW = rest of the world; SG = Singapore; TW = Taiwan Province of China; VN = Vietnam.

**Figure 12. United States: Total Manufacturing Construction Spending**  
(Millions of US dollars, seasonally adjusted)



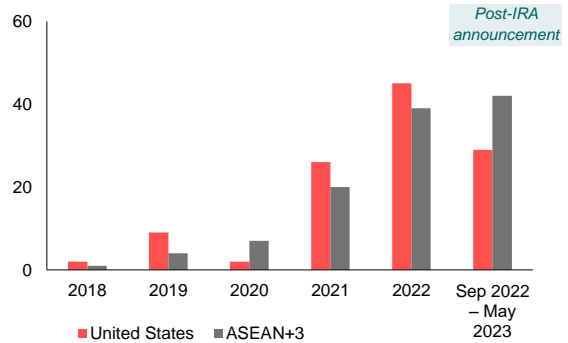
Source: US Census Bureau.

**Figure 13. World: Electric Vehicle Sales by Economy**  
(Millions of Units)



Source: AMRO (2023).

**Figure 14. ASEAN+3 and United States: Announced FDI Projects Related to Electric Vehicles**  
(Number of projects)



Source: Orbis; AMRO staff calculations.

Note: Includes all announced projects that use any of the following terms in their Orbis project headline: “electric vehicle”, “EV”, “lithium ion”, “lithium”, “nickel”, “cobalt”, “graphite”, “manganese”, “cathode(s)”, “anode(s)”, “LFP”, and “electrolyte(s)”. FDI = foreign direct investment; IRA = Inflation Reduction Act of 2022.

## V. Conclusion

16. **The IRA should not short-circuit ASEAN+3 EV ambitions.** There is no obvious need for ASEAN+3 economies to rethink their EV strategies in light of this new US policy. EVs are an integral part of climate change mitigation and medium/long-term growth strategies in most ASEAN+3 economies. There are too many uncertainties surrounding the implementation of the IRA and the evolution of EV demand in the United States to warrant any radical change in direction for the region’s EV and battery manufacturers at this point.

17. **Instead, the region’s EV industry should use the opportunity to ramp up the quality and price competitiveness of its products.** As the adage goes: “When life gives you lemons, make lemonade.” The new clean vehicle credit is not a total ban on imported EVs but a subsidy intended to undercut the price of a particular segment of imported EVs. ASEAN+3 EV exporters can find ways to minimize or neutralize its impact. One way is to make their EVs more competitive, for example by improving battery range, technical specifications, and overall buyer experience ([Reuters 2023b](#)). If they succeed in winning over US consumers by exporting EVs or producing EVs in the United States at competitive prices, this should help to strengthen the industry, as past experience has shown (Box 3).

18. **Non-US markets are also promising sources of export growth—including at home in the region, where increased cooperation will be key.** Many Chinese EV automakers are now looking to export to ASEAN and many other overseas markets. In May 2023, ASEAN economies agreed to “explore cooperation and collaboration for the development of the regional EV ecosystem” ([Sari 2023](#)). Substantial progress in this area would help to drive market demand for EVs and boost ASEAN+3’s ambition to become a global EV production hub. Specifically, barriers to EV adoption would need to be overcome and clear and comparable EV standards across ASEAN+3 economies developed, e.g., in terms of technology, battery swapping, and battery disposal. Free trade agreements could be leveraged to establish supply chain synergies across ASEAN+3. For example, tariff reductions under the Regional Comprehensive Economic Partnership are already helping to expand the manganese supply chain—used for new energy batteries—linking China, Japan, and Malaysia ([Xinhua 2022](#)).

### Box 3. History Lesson: The US Voluntary Export Restraint on Automobiles from Japan

After the oil price shock of 1974, Japan’s automakers made serious inroads into the US market by producing small, fuel-efficient cars with an emphasis on quality. Unable to compete, the US auto industry lost 10 percent of its market share to them in just five years ([Collins and Dunaway 1987](#)).

In 1981, Japan imposed a “voluntary export restraint” (VER) on automobiles to the United States to pre-empt more restrictive measures pushed by the US auto industry. The VER remained in place until 1994—almost a decade beyond the duration requested by the United States.

Aside from an initial drop in market share (that was subsequently recovered), the VER ultimately did not hurt Japanese automakers but instead helped them to increase profits, improve quality, achieve greater brand admiration, and advance foreign direct investment (FDI). The immediate effect of the VER was a marked increase in price for Japanese auto exports to the United States due to the reduction in supply imposed by the quota. This was followed by quality upgrading as Japanese automakers, faced with a limit on the number of units they could export, began to sell more expensive (higher quality) cars. [Feenstra \(1988\)](#) estimates that Japanese cars improved quality-wise by 30 percent between 1980 and 1985. Enhanced product differentiation and branding came next as Japanese automakers turned to non-price competition to maintain market share and

introduced luxury divisions like Acura, Infiniti, and Lexus in the late-1980s. The VER also opened up FDI as a profitable option for Japanese automakers, who quickly set up shop in places like Marysville, Ohio (Honda), Smyrna, Tennessee (Nissan), and Georgetown, Kentucky (Toyota). By the end of the 1980s, almost all Japanese auto manufacturers had started US production.

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