

# Korean EV Trends and Prospects and the Korea-China-Japan Cooperation Plan

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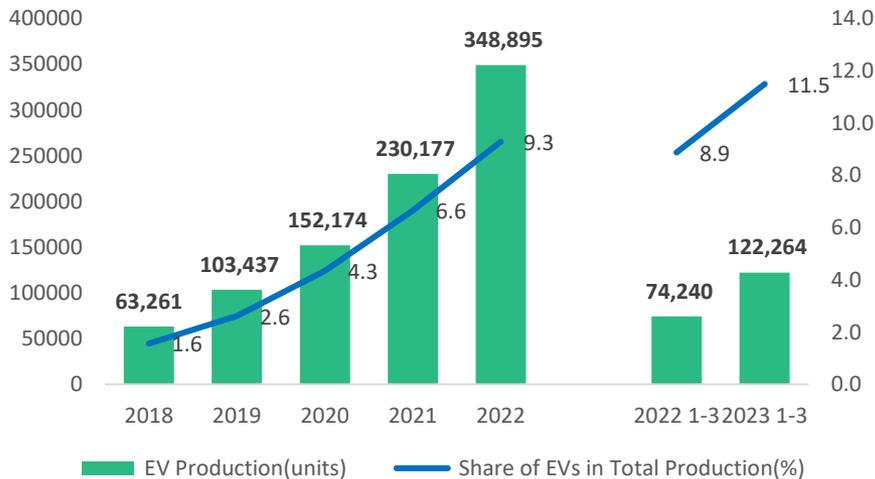
Trilateral Cooperation Plan

# 1 Korea's EV Trends and Prospects

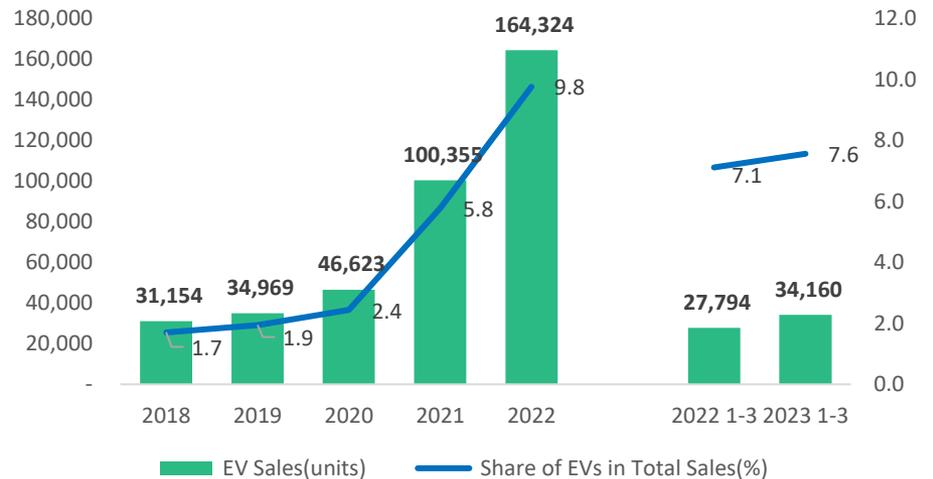
## EV production grew by +51.6% and domestic sales by +63.7% in 2022

- Production in 2022 increased 51.6% year-on-year to 348 thousand units.
  - Production in Q1 of 2023 rose 64.7% to 122 thousand units, accounting for 11.5%.
- Domestic sales rose 63.7% year-on-year to 164 thousand units accounting for 9.8%.
  - Sales in the Q1 of 2023 rose 22.9% to 34 thousand units due to eased supply of auto chips.
  - Korea to grow into the fourth major electric vehicle market after China, EU, U.S.

< EV production in Korea >



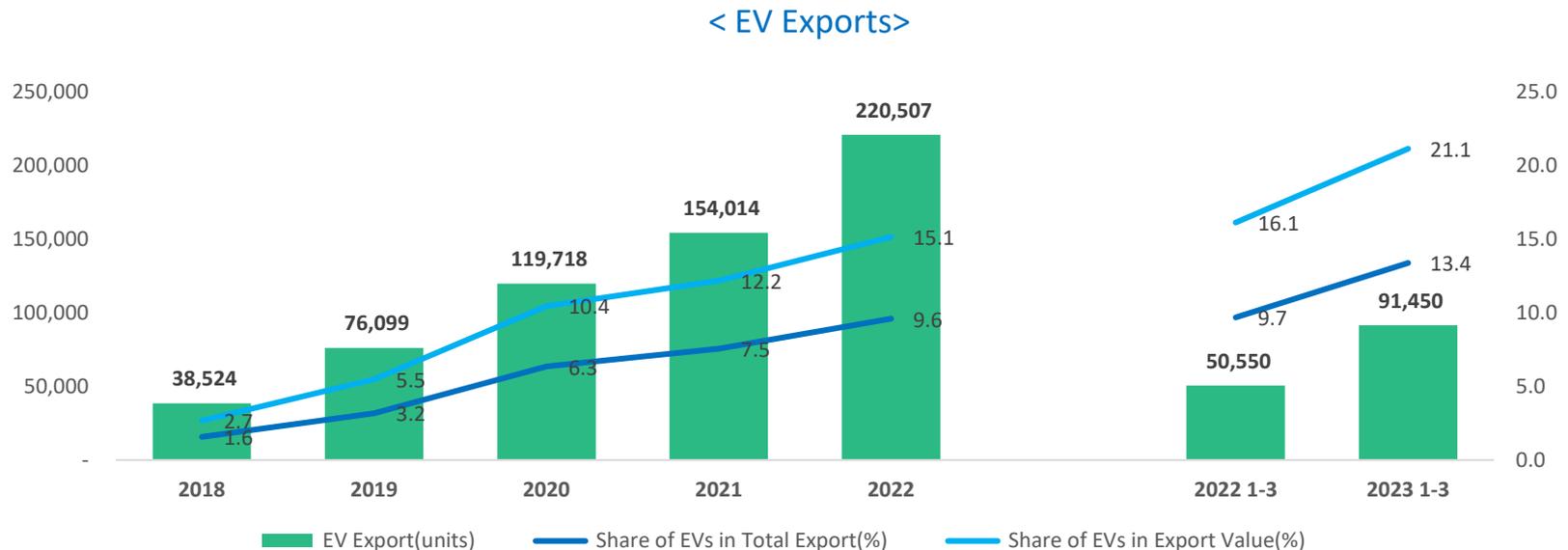
< EV Domestic sales >



# 1 Korea's EV Trends and Prospects

## Exports increased 43.2% year-on-year to 220,507 units in 2022

- EVs account for 9.6% of all exported vehicles.
  - Major export regions: North America 36.8%, EU 34%, Middle East 3%, Oceania 2.9%, etc.
  - Due to high-end and high-value-added EVs, the proportion of export value is 15.1%
- Q1 of 2023, EV shares reached 13.4% and the proportion of exports value reached 21.1%.
  - Hyundai Motor Group sold ~340,000 EVs in 2022 ranking 6th in the world (4.5% share)



# 1 Korea's EV Trends and Prospects

## 2023 EVs Subsidy Scheme

### Expanding the govt.'s target for EVs to achieve carbon neutrality

- The govt. has actively promoted subsidy policies popularizing EVs, cumulatively supplying 402,000 units.
- In 2023, the EV subsidy budget will be expanded to supply about 270,000 units.
- Details of the subsidy plan in 2023
  - + Strengthen difference in subsidies according to driving range and performance to induce performance improvement
  - + Subsidies according to manufacture's follow-up management capabilities, e.g. operation of direct maintenance center
  - + Incentives when OEMs produce low-emission vehicles, expand charging stations, and develop innovative technologies

| Criteria for base price  | Incentives   |  |
|--|--|--|
| Less than KRW57 million: 100%<br>KRW57-85 million: 50%<br>Over KRW85 million: 0% | Subsidies for increasing the distribution targeting low-emission vehicles (KRW1.4 million), charging infrastructure (KRW200K), and innovative technology (KRW200K) | <ul style="list-style-type: none"><li>• Up to KRW6.8 million for medium and large vehicles, up to KRW5.8 million for small vehicles</li><li>• 80-100% differential payment according to follow-up management capabilities</li><li>• 10% additional support for vulnerable groups and small business owners</li></ul> |

# 1 Korea's EV Trends and Prospects

Auto Industry Global Top 3 strategy (2022.09)

## Global production of 3.3 million units in 2030, market share of 12%

- Vehicles: Supply 4.2 million EVs and 300,000 FCEVs by 2030
- Charging infrastructure: More than 1.23 million electric vehicle chargers by 2030 and more than 660 hydrogen charging stations
- Accelerate the transition to Software-defined vehicles (SDVs)
- Employ 30,000 professionals and upgrade internal combustion engines at the same time



Source: MOTIE, Auto Industry Global Top 3 strategy (2022.09)

## 2 Investment plans in the auto industry

### Domestic and Foreign investment

## The Auto Industry plans to invest ~KRW 95 trillion + $\alpha$ until 2026

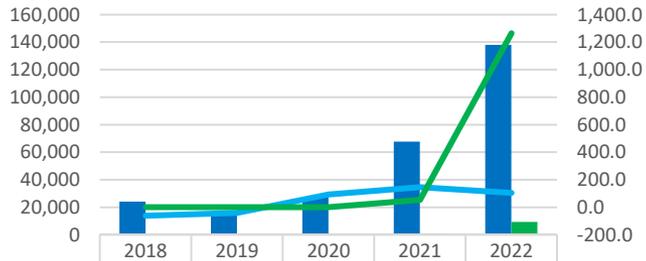
- Hyundai-Kia construction of EV plants in Ulsan (200K units), Gwangmyeong (150K units), and Hwaseong (200K units) beginning 2023
  - Construction of an EV plant in Georgia, USA, and production of the IONIQ5 at the Indonesia plant
  - 3.64 million electric vehicles production target by 2030
  - Investing KRW24 trillion in the EV sector by 2030, 31 new EV models (17 Hyundai and 14 Kia)
- GM Korea Technical Center Korea (GMTCK) plays in a key role in GM's EV transition
- KG Mobility plans to release four new models including an EV pickup by 2025.
- Renault Korea is cooperating with Geely for EV development, HEV to be launched in 2024
- Auto parts are expanding overseas investment to supply EV parts to global OEMs
  - Ajin Industry, SL, and Seoyon E-Hwa expanding investments in US subsidiaries

# 3 Korea-China Automobile Trade

## Korea-China Auto Trade Widens as EV Sales Rise

- Auto exports to China increased by 104% to \$140 mil in 2022.
- EV exports rose 1,264% to \$9.4 million.
- Chinese import cars increased by 75% to \$600 million.
- EV imports rose 497% to \$170 million.

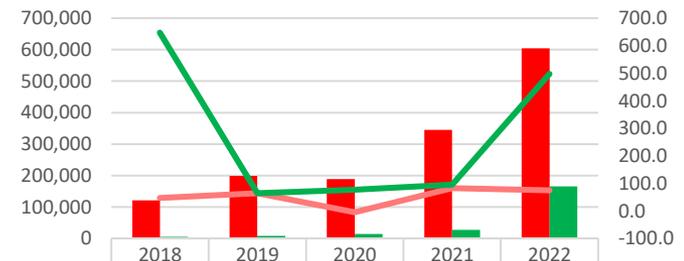
< Auto exports from Korea to China >



|                                    | 2018   | 2019   | 2020   | 2021   | 2022    |
|------------------------------------|--------|--------|--------|--------|---------|
| Vehicle Export Value (Thousand \$) | 23,976 | 14,341 | 27,601 | 67,582 | 137,912 |
| EV Export Value (Thousand \$)      | 0      | 0      | 448    | 686    | 9,364   |
| Vehicle Export Growth Rate (%)     | -60.7  | -40.2  | 92.5   | 144.9  | 104.1   |
| EV Export Growth Rate (%)          | 0.0    | 0.0    | 0.0    | 53.1   | 1,264.6 |

Source: KITA (based on MTI 741, 7414)

< Auto imports from China to Korea >



|                                    | 2018    | 2019    | 2020    | 2021    | 2022    |
|------------------------------------|---------|---------|---------|---------|---------|
| Vehicle Import Value (Thousand \$) | 121,025 | 198,379 | 188,921 | 345,176 | 603,961 |
| EV Import Value (Thousand \$)      | 4,867   | 7,994   | 14,157  | 27,747  | 165,861 |
| Vehicle Import Growth Rate (%)     | 47.1    | 63.9    | -4.8    | 82.7    | 75.0    |
| EV Import Growth Rate (%)          | 647.8   | 64.3    | 77.1    | 96.0    | 497.8   |

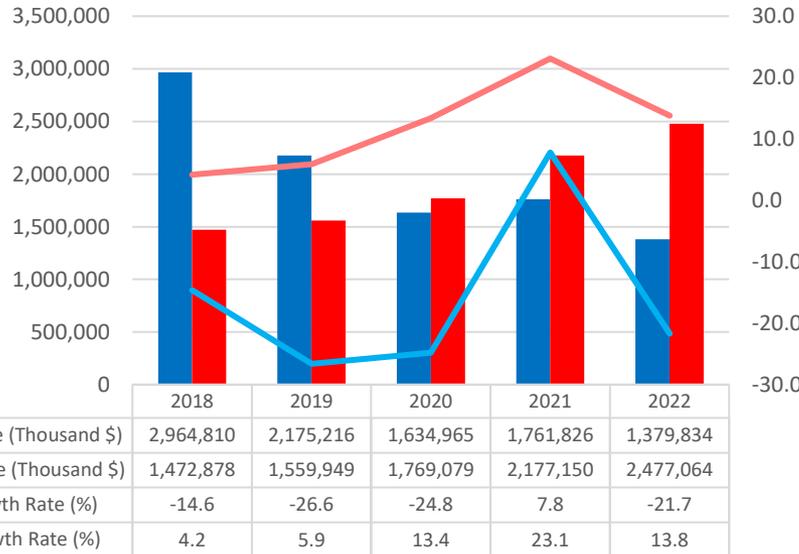
Source: KITA (based on MTI 741, 7414)

# 3 Korea-China Automobile Trade

## Auto Parts and EV Battery Imports Increased Significantly

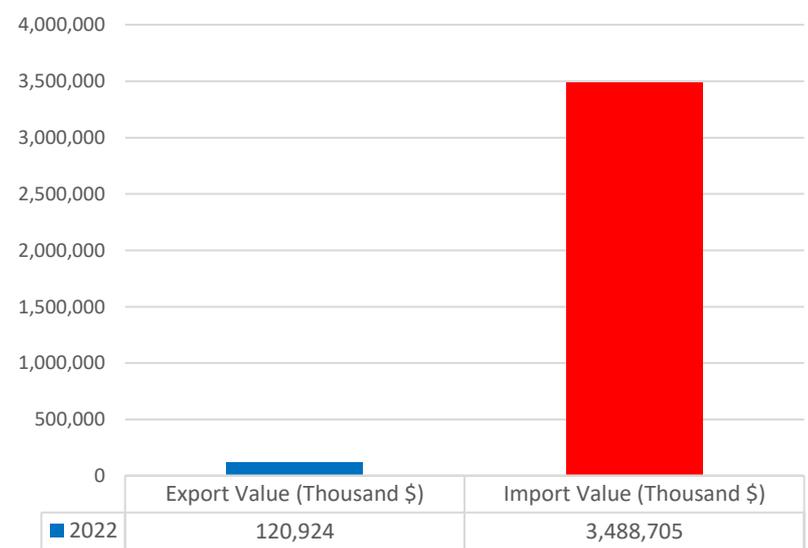
- Auto parts trade amounted to \$3.86 billion, while Korean exports fell 21.7%
- China imports rise 13.8% to record steady growth, and China ranked first among all parts importers.
- EV batteries imported from China are increasing.

< Auto Parts trade with China >



Source: KITA (based on MTI 742)

< EV batteries trade with China >



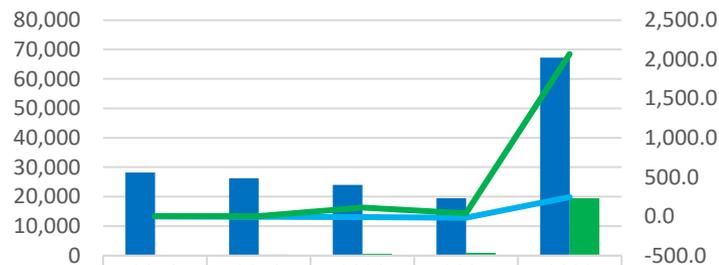
Source: KITA (based on HS 8507602000)

# 3 Korea-Japan automobile trade

## Total vehicle trade volume with Japan decreased, but EVs are rising

- Auto exports to Japan increased by 245.8% to \$67 million in 2022.
- Japanese car imports fall 50.1% to \$476 million.
- Exports of Korean EVs increased sharply last year to \$20 million due to the IONIQ5 (776 units)

<Auto exports from Korea to Japan >



|                                    |        |        |        |        |         |
|------------------------------------|--------|--------|--------|--------|---------|
| Vehicle Export Value (Thousand \$) | 28,190 | 26,293 | 23,990 | 19,432 | 67,187  |
| EV Export Value (Thousand \$)      | 0      | 311    | 651    | 900    | 19,504  |
| Vehicle Export Growth Rate (%)     | -2.8   | -6.7   | -8.8   | -19.0  | 245.8   |
| EV Export Growth Rate (%)          | 0.0    | 0.0    | 109.6  | 38.2   | 2,067.3 |

Source: KITA (based on MTI 741, 7414)

< Auto exports from Japan to Korea >



|                                    |           |           |         |         |         |
|------------------------------------|-----------|-----------|---------|---------|---------|
| Vehicle Import Value (Thousand \$) | 1,232,159 | 1,232,481 | 883,285 | 953,007 | 475,522 |
| EV Import Value (Thousand \$)      | 70        | 30        | 39      | 1,072   | 2,556   |
| Vehicle Import Growth Rate (%)     | 5.2       | 0.0       | -28.3   | 7.9     | -50.1   |
| EV Import Growth Rate (%)          | -27.9     | -57.8     | 30.3    | 2,681.3 | 138.5   |

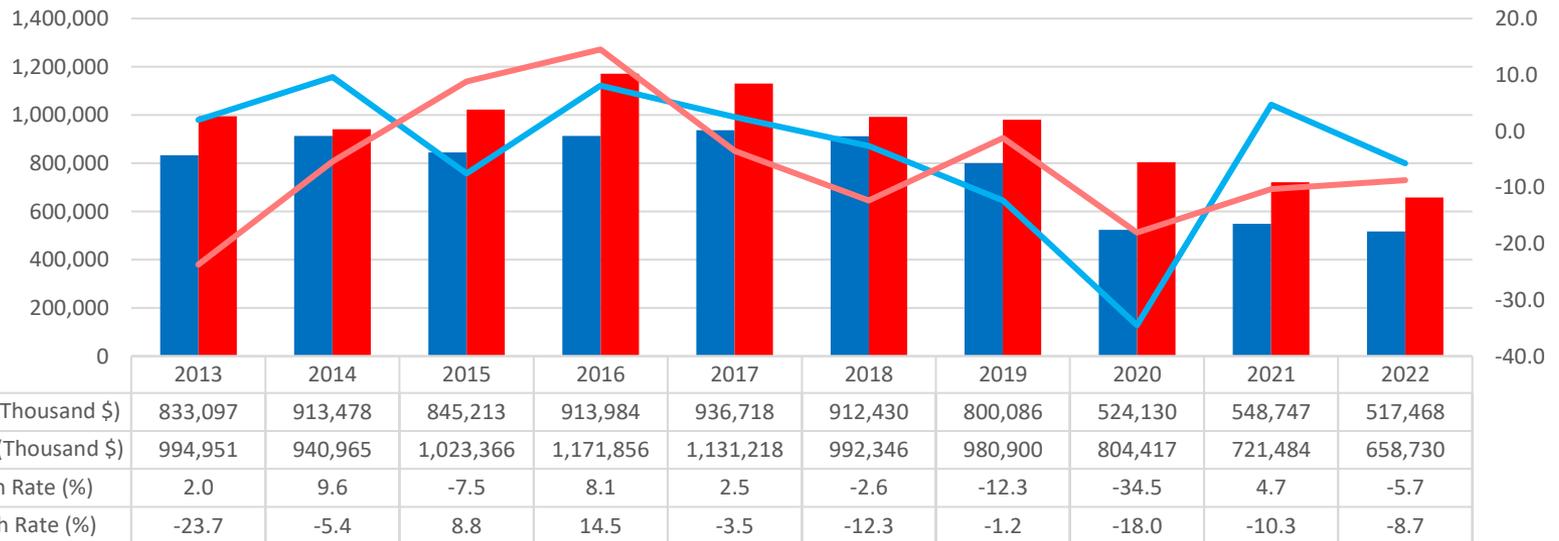
Source: KITA (based on MTI 741, 7414)

# 3 Korea-Japan Automobile Trade

## Auto Parts Trade between Korea and Japan Falls

- Automotive parts trade down after hitting a record high of \$2.09 billion in 2016.
- Japan ranked third among auto parts importers.
- EV battery trade between Korea and Japan is low.

< Auto Parts trade with China >



Source: KITA (based on MTI 742)

# 4 Trilateral Cooperation Plan

## Korea-China Investment and Cooperation

### Hyundai to establish hydrogen fuel cell plant in Guangzhou

- Plans to produce 6,500 hydrogen fuel cells per year in Guangzhou plant.
- Launched NEXO at the 2023 Shanghai Motor Show
- China plans to supply 50k units of FCEV and 300 hydrogen charging stations by 2025 and 1 million units by 2030.



### KG Mobility plans to produce 100k EVs/year with BYD collaboration

- The “Torres EVX” to be released this year will be equipped with BYD batteries and “cell to pack” technology.



### Ecopro-SK on-GEM plans to set up a precursor plant in Saemangeum

- EcoPro, the world's largest anode material company, with SK On, a battery manufacturer, and GEM, a precursor producer in China, plan to establish a precursor plant worth about 50k tons/year.



# 4 Trilateral Cooperation Plan

## Korea-Japan Investment and Cooperation

### LG Energy Solution-Honda establishes battery joint venture in U.S.

- Construction of a plant in Ohio, USA, to be completed at the end of 2024, is expected to secure 40GWh production capacity.
- Korean battery – Japanese carmaker's first cooperation



### Sumitomo Chemical establishes battery separator factory in Daegu

- In 2015, Sumitomo Chemical invested about Y9billion to establish a separator plant to produce 70 million square meters/year, which is ~10% of the world's demand
- U.S. Panasonic to produce in South Korea and deliver to Tesla plants



### Posco-Honda to cooperate comprehensively in EV business

- Steel sector: Expanded application of eco-friendly automotive steel plates and electric steel plates/EV parts
- Battery material sector: Cooperation in supplying cathode and anode materials and joint development of solid-state batteries

| 포스코그룹이 日 혼다에 공급 예정인 전기차부품 |                 |
|---------------------------|-----------------|
| 포스코                       | 자동차 친환경 강판      |
| 포스코 모빌리티솔루션               | 구동모터 코어         |
| 포스코 퓨처엠                   | 양극재, 전고체 배터리 소재 |

자료: 포스코홀딩스

## 4 Trilateral Cooperation Plan

### Cooperation in new mobility industries utilizing each country's strengths and technologies

- **Expansion of technological cooperation in new mobility industries including autonomous driving, UAM, and hydrogen vehicles**
  - Complementary cooperation using each country's raw material supply chain and EV production infrastructure
  - Activation of trade using the three-country's RCEP agreement
- **Vitalization of market entry through EV market regulation improvement and standardization**
  - Standardization of charging station, battery replacement, maintenance, battery recycling, hydrogen fuel cell, hydrogen charging station, etc.
  - Cooperation for EV supply and charging infrastructure in Southeast Asia
- **Arrangement of regular exchanges between the three countries**
  - Regular meetings, conferences, and exhibitions of automobile associations (KAMA, CAAM, JAMA, etc.)
  - Expansion of cooperation in new mobility industries such as autonomous driving, UAM, and hydrogen, which are in the early stages of the market

**»» Korea-China-Japan takes the lead in EVs in the global market!**