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Transition to Future Vehicle in South Korea

Saebyul Hwang, Manager, KOTRA
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Automotive industry

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Automotive industry in South Korea

World's 5th largest automobile manufacturing country

5th
in Car manufacturing countries

60%
Export rate

1.8 M
on car demands

10
Korean Companies
out of the top 100 auto parts companies worldwide

* Source : Invest Korea

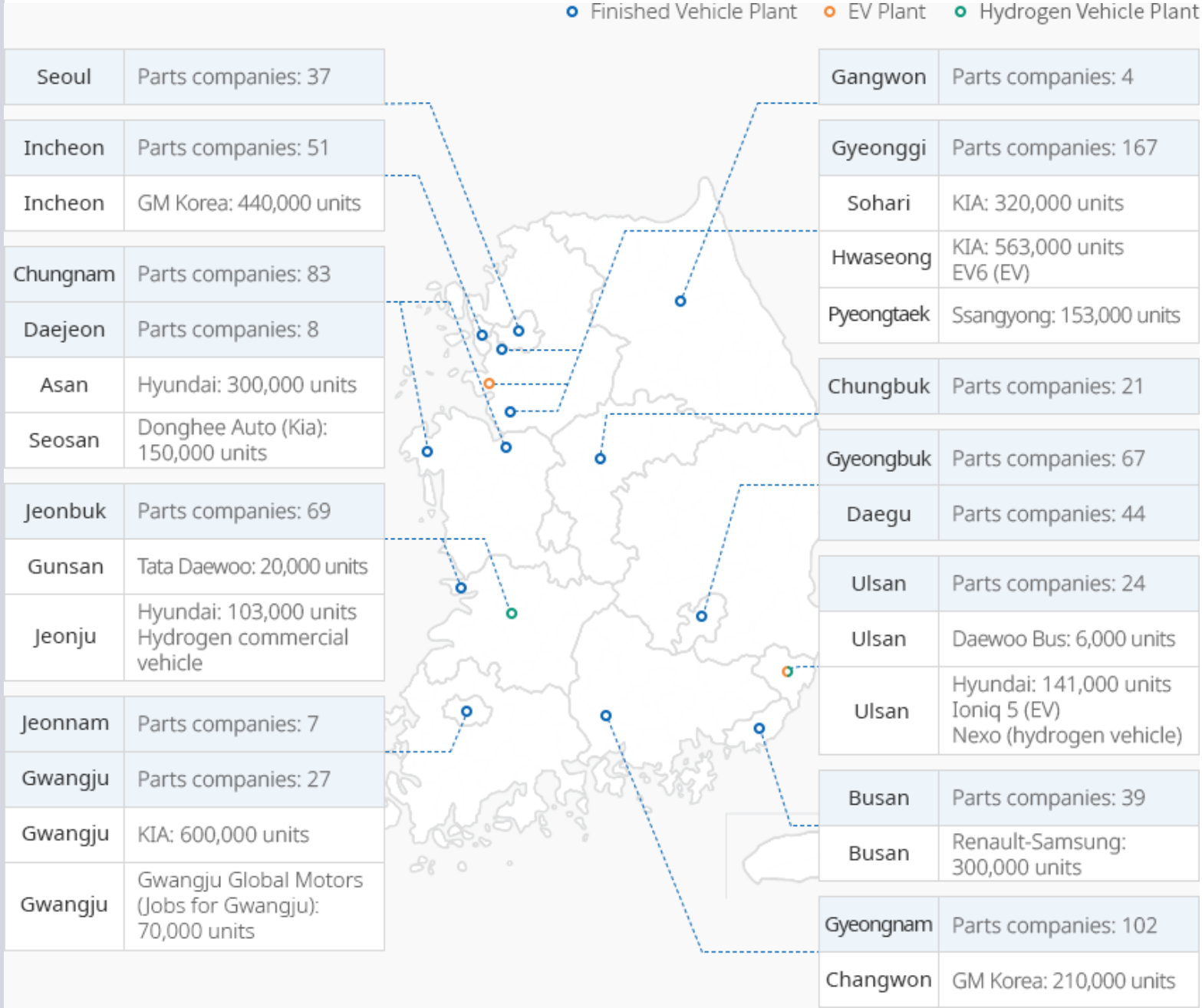
01 Transition to Future Vehicles
Through Special Strategies by Region

Metropolitan
(Seoul, Gyeonggi, Incheon)
Center of Future Vehicle

Dongnam
(Gyeongbuk, Ulsan, Gyeongnam)
Traditional Automaker Production

Chungcheong
(Chungbuk,Chungnam)
Strong in the automotive parts industry

Honam
(Jeonbuk, Jeonnam)
Heavy vehicle (e.g. Truck, Lorry) production base



Seoul	Parts companies: 37
Incheon	Parts companies: 51
Incheon	GM Korea: 440,000 units
Chungnam	Parts companies: 83
Daejeon	Parts companies: 8
Asan	Hyundai: 300,000 units
Seosan	Donghee Auto (Kia): 150,000 units
Jeonbuk	Parts companies: 69
Gunsan	Tata Daewoo: 20,000 units
Jeonju	Hyundai: 103,000 units Hydrogen commercial vehicle
Jeonnam	Parts companies: 7
Gwangju	Parts companies: 27
Gwangju	KIA: 600,000 units
Gwangju	Gwangju Global Motors (Jobs for Gwangju): 70,000 units

Gangwon	Parts companies: 4
Gyeonggi	Parts companies: 167
Sohari	KIA: 320,000 units
Hwaseong	KIA: 563,000 units EV6 (EV)
Pyeongtaek	Ssangyong: 153,000 units
Chungbuk	Parts companies: 21
Gyeongbuk	Parts companies: 67
Daegu	Parts companies: 44
Ulsan	Parts companies: 24
Ulsan	Daewoo Bus: 6,000 units
Ulsan	Hyundai: 141,000 units Ioniq 5 (EV) Nexo (hydrogen vehicle)
Busan	Parts companies: 39
Busan	Renault-Samsung: 300,000 units
Gyeongnam	Parts companies: 102
Changwon	GM Korea: 210,000 units

* Source : Invest Korea

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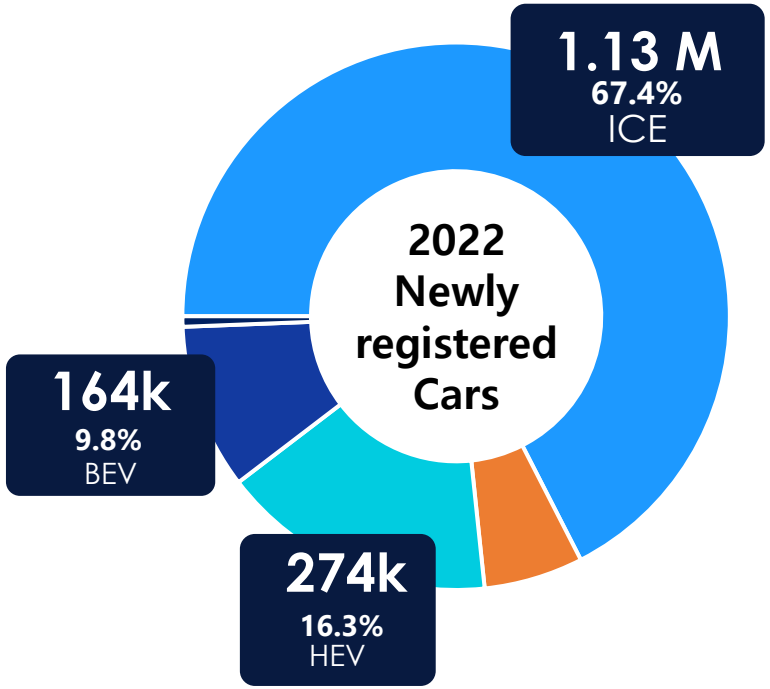
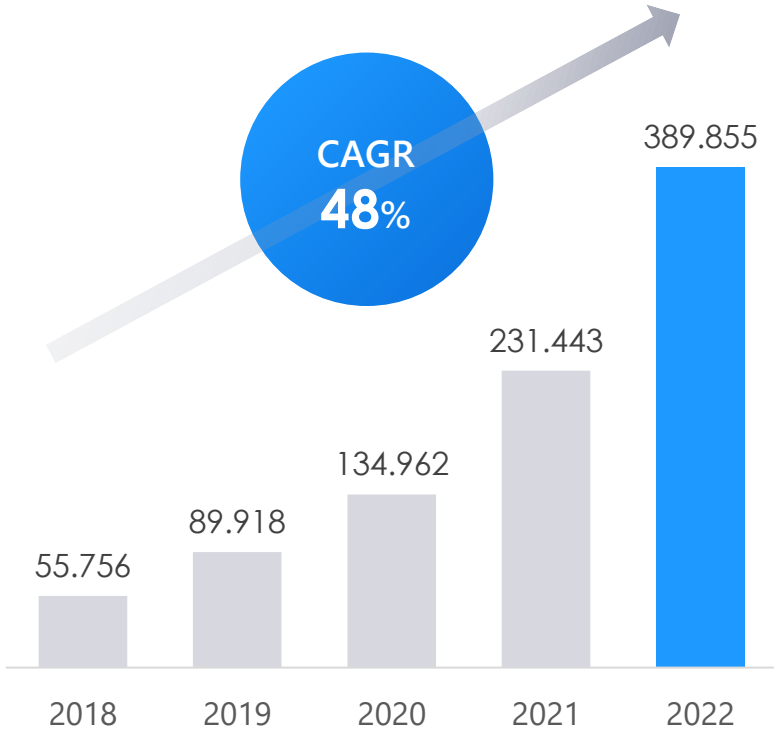
02

E-Mobility Trend

10% of newly registered vehicles are electric
An average annual increase (CAGR) of 48% over the past five years



Number of newly registered EVs (last 5 years)



* Source : Korea Automobile & Mobility Association (Feb 2023)

Domestic EV sales by brand in Korea

Brand	2020	2021	2022	CAGR 21-22
Hyundai	18,952	42,889	71,019	65.5%
Kia	8,936	28,998	49,419	70.4%
Tesla	11,826	17,828	14,571	▽18.3%
Mercedes Benz	608	1,363	5,006	267.3%
BMW	152	366	4,888	1,235.5%
Audi	601	1,553	2,771	78.4%

EV sales ranking by model (passenger cars)

Model	Brand	Nr of units
IONIQ5	Hyundai	27,399
EV6	Kia	24,852
IONIQ6	Hyundai	11,289
NIRO	Kia	10,164
Model3	Tesla	6,965

EV Production of Hyundai – expected to expand significantly

Hyundai Motor aims to produce
3.64 million electric vehicles per year by 2030

In the first half of 2023:
HM reported brisk sales of EVs in Korean and overseas markets

- Ranked second after Tesla in Electric car sales in the US
- 11% increase compared to 2022

Hyundai Motor's electric vehicle production plan

USA EV sales ranking in the 1H in the US

	Brand	Units
1	Tesla	336,892
2	Hyundai·KIA	38,457
3	GM	36,322
4	Volkswagen	26,538
5	Ford	25,709

Price increase factors

Regulation	Increase in Demand
U.S. IRA European CRMA	more demand over supply Preference for smaller cars

Reduced subsidies	Material Risks
Reduced in US, Europe abolished in China	China's raw material export restrictions

Suspension of ICE sales

Europe
Ban on ICE sales after 2035

U.S.
50% electric vehicles by 2050

South Korea
No political restrictions, but OEMs plan to end production on ICE

To popularize EVs
Key factor: Securing favorable pricing for batteries, which account for 40% of the cost of EVs

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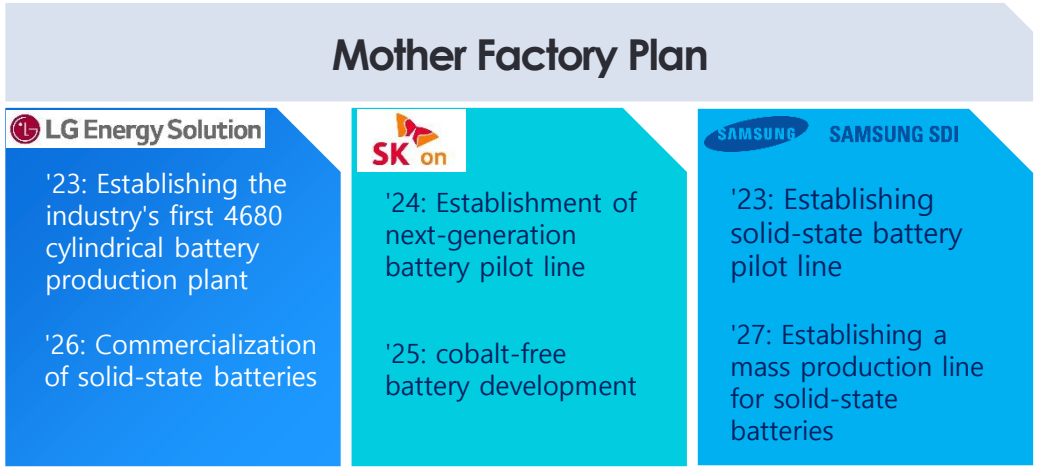
Korea Strategy for Battery

R&D investment of more than $18B by 2023



-Korean government promotes large-scale R&D for next-generation battery development
- Supports the development of solid-state batteries, lithium metal batteries, lithium-sulfur batteries, etc.

Mass production of the world's first solid-state battery

Enhancing Rechargeable (Secondary) battery competitiveness

- **Support for materials & equipment suppliers**
  - Tax deduction
  - Establishing specialized industry complexes
  - R&D support in equipment development
  - Human resource development
- **Reinforcing the secondary battery product line**
  - Investing $130 million in R&D for ternary batteries
  - By '25: Mass production of LFP batteries for EV
  - By '27: Securing world-class competitive
  - By '30: increase export 5 times by investing $130 million in ESS battery R&D
- **Establishment of a recycling system for secondary batteries**
  - Revving up recycling
  - Introducing battery passport
  - Establishment of a certification system

* Source : Ministery of Trade- Industry and Energy (Apr 2023)

Battery supply and demand plan by Korean OEMs

Hyudai·Kia

- Next 10 years: Investing $ 8,300 Million (₩ 9.5T) to improve battery performance, technology development, and infrastructure construction
- Establishing a joint venture with SK ON and LG Energy Solutions
- Establishment of used battery collecting and recycling system
- within ‘23: A hybrid model with a self-designed battery to be released
- By ‘25: equipped with a jointly-developed LFP battery

Renault Korea

- Per year: 200,000 EV production facilities investment in Busan

KG Mobility

- By November ‘23: EV SUV launch and collaboration with BYD in China

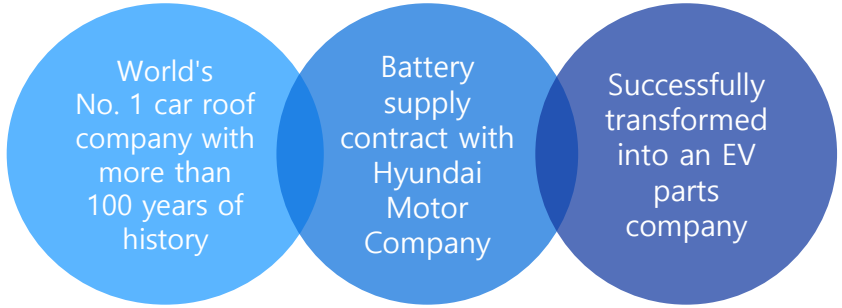
GM

- Due to IRA in the US: No plan to produce EVs in Korea - Only US production is being reviewed

Successful Transformation

Webasto's first passenger car battery

- Factory in KR: Its First car battery pack factory in Dangjin, Chungcheongnam-do since 2022
- Production Scale: 110,000 battery packs annually
- Buyer: Hyundai Motors
- Goal: Producing 160,000 batteries annually by 2025



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04

InterBattery Europe 2023

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InterBattery Europe 2023

2023. 6.14(WED) – 16(FRI)
Messe Munich, Munich, Germany

* Photo : LG Energy Solution

Exhibition
- LG Energy Solutions, Samsung SDI and more
- 74 companies from the battery sector participated

Battery Day Europe
- 56 sessions from LG Energy Solutions, Samsung SDI, ACC, Freyr, and more

Business Meeting
- Meetings between major Korean battery material, component, and equipment companies and European companies

2024 Exhibitions
- ’24 March .6-8: Coex, Seoul, Korea
- ’24 TBD : Europe

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Thank you

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