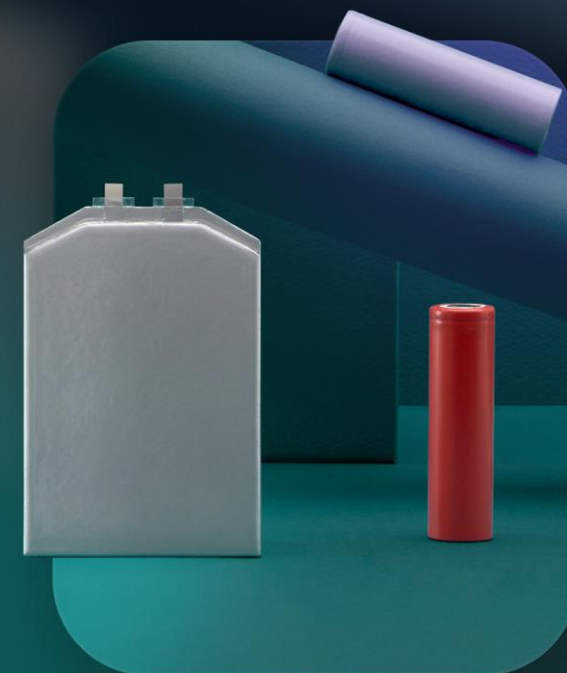
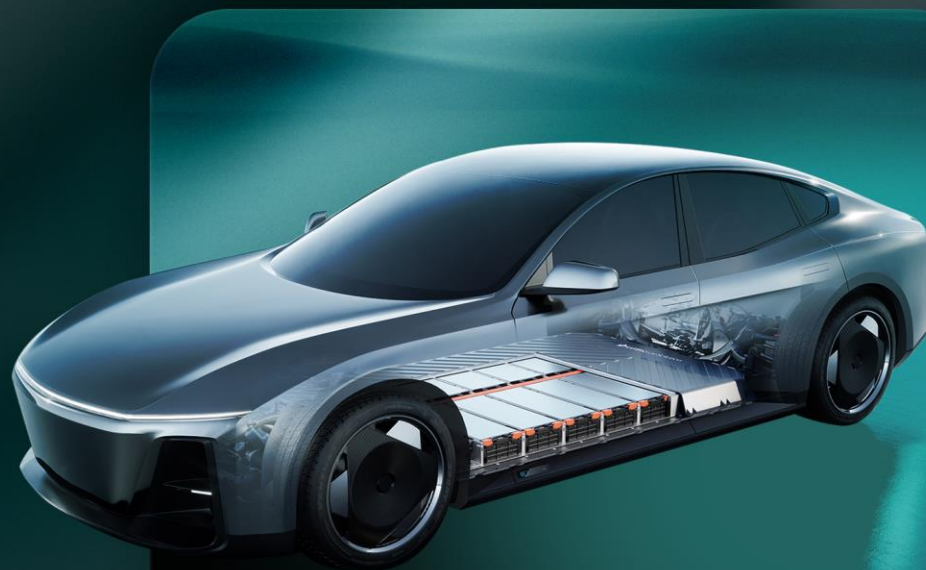




# LG ENERGY SOLUTION COMPANY INTRODUCTION



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- Vision
- Global Initiative
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+ LG Group Introduction

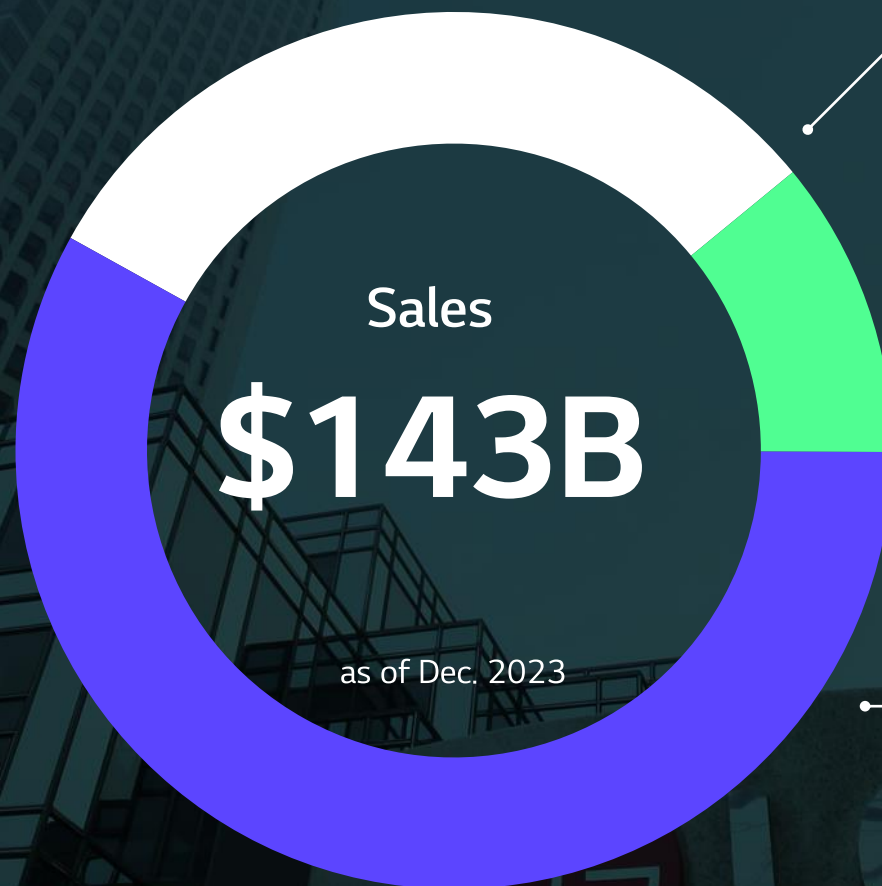
## LG Group | Overview

Established **1947.1**

Affiliated companies **60+**

Overseas subsidiaries **290+**

Employees **270K+**  
Korea 140K  
Overseas 132K



**Chemicals**

**33%**

LG Chem  
LG H&H  
Farmhannong  
...



**Communications / Services**

**11%**

LG U+  
LG CNS  
LG HelloVision  
...



**Electronics**

**56%**

LG Electronics  
LG Display  
LG Innotek  
...



+ LG Group Introduction

# LG Group | History

Established Lucky  
Chemical Co., Ltd.  
(Today's LG Chem)

Established Goldstar  
(Today's LG Electronics)

Completed the  
construction of  
Lucky Goldstar  
Twin Tower

Changed  
Group CI from  
Lucky Goldstar → to LG

1996

Established  
LG Telecom  
(Today's LG U+)

2003

Launched  
LG Corporation,  
the holding company

2017

70th anniversary  
of founding LG

2020

Established  
LG Energy Solution



+ LG Group Introduction

# LG Group | Next-Generation growth engine

## LG Electronics

- Telematics
- HVAC\*\*
- AVN\*
- EV motors

## LG Chem

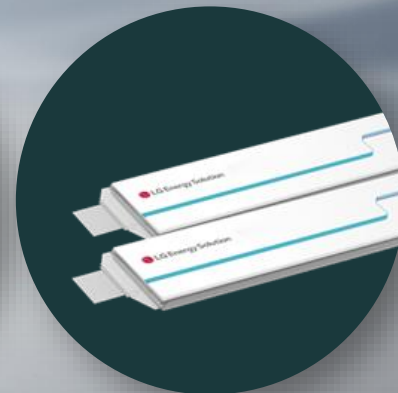
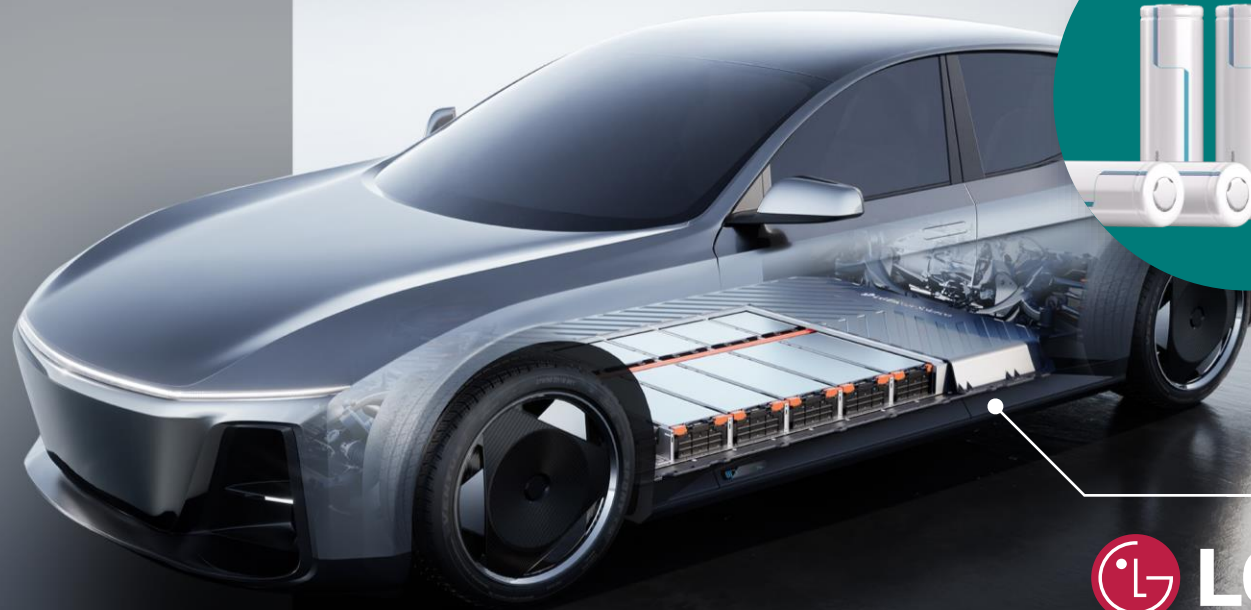
- Cathode, Separator, CNT

## LG Display

- In-vehicle Display

## LG Innotek

- EV components



EV Battery

 **LG Energy Solution**

LG

ENERGY SOLUTION



+ Overview

# LG Energy Solution



Company name

LG Energy Solution



Established

2020.12



CEO

Kim, Dong-Myung



Employees(2023)

35,764

Domestic 12,166 / Overseas 23,598



Sales(2023)

\$25.9B

Business Area

Advanced  
Automotive



Mobility & IT



ESS



+ Overview

# History

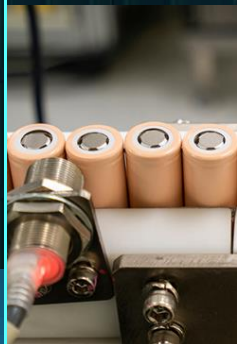
# History

Began Lithium-Ion Battery Research

1992

Mass-Produced Cylindrical Lithium-Ion Batteries

1999



1947

LG Chem Founded  
(start of LG Group)

1996

Began Lithium-Ion Battery Development

2000

Founded United States R&D Office

2004

Completed Construction of Nanjing Plant in China

2009

Supplied the World's First Mass-Produced EV Batteries (GM Volt)

2012

Completed Construction of EV Battery Plant in the U.S.

2013

Developed the World's First Future Batteries (Stepped, Curved, Wire Battery)

2015

Began mass production of ESS battery cell

+ Overview

# History

# History

Developed the World's First Free-Form Battery

2018

LG Energy Solution Established

2020.12



2017

Completed Construction of EV Battery Plant in Poland

2020.12

Established 'Ultium Cells' with GM

2021.4

Joined both RE100 and EV100 initiatives, as the first global battery manufacturer

2021.9

Signed MoU with Hyundai Motor Group and Indonesian Government to Establish EV Battery Cell Plant

2022.3

Established 'NextStar Energy' with Stellantis

2023.3

Groundbreaking for LG Energy Solution - Honda joint venture plant

2023. 5

Established EV Battery Cell Plant with Hyundai Motor Group in the U.S

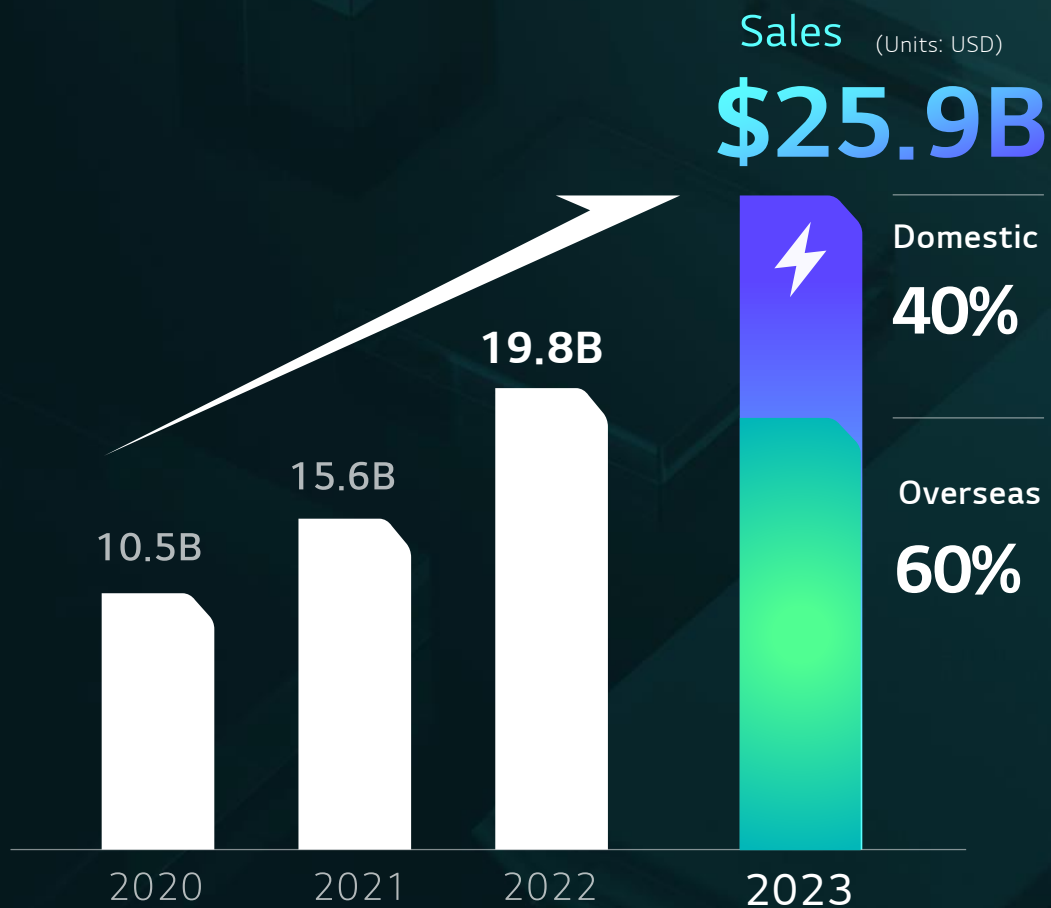
2023. 8

Established Battery Recycling Joint Venture with Huayou Recyclin



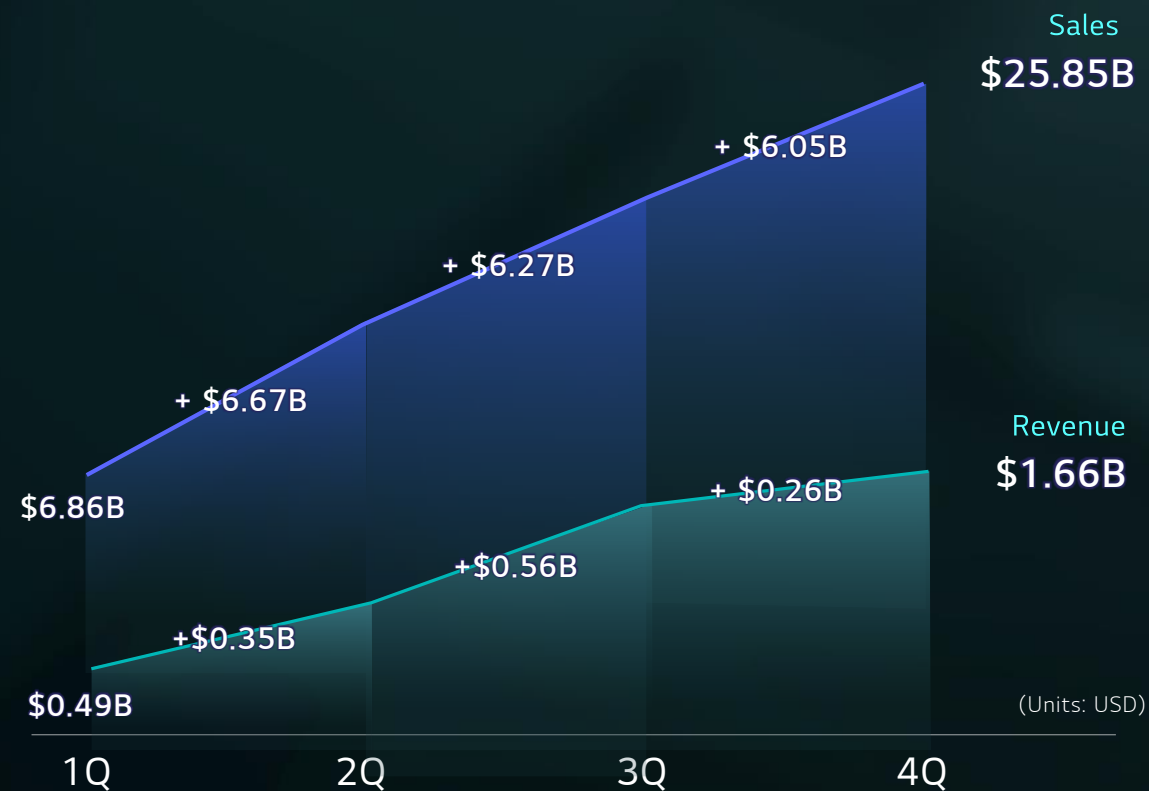
+ Overview

# Management Performance



Spin off in December 2020

## Sales and Revenue Quarterly



+ Business

# Business Area

## Advanced Automotive

Contributing to the popularization of electric vehicles with the world's best high-tech battery products

EV / PHEV / HEV /  $\mu$ -HEV  
Cell · Module · Pack · BMS



## Mobility & IT

Leading wireless innovation by actively targeting new markets, such as IT and LEV

IT Equipment / Power Tools / LEV  
Cylindrical · Pouch · Free-Form



## ESS

Unlocking the smart grid era by providing various ESS battery products

Grids / Commercial / Residential  
Cell · Pack · Rack



+ Business

# Product Line-up



Cylindrical

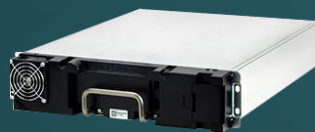


Pouch  
(small)



Pouch  
(medium and large)

Cell



Module



EV Pack



ESS Rack/Pack

Pack  
/Rack

BMS



Cell

Module

Pack / Rack



+ Business

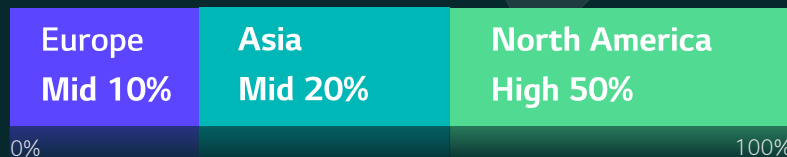
# Global Network

- Marketing(6)
- R&D(3)
- Manufacturing(10)
- Headquarter(1)

- A Advanced Automotive
- M Mobility & IT
- E ESS

mid to long term Capacity

## 550~570GWh /Year



Headquarter

Seoul

R&D

Magok/Daejeon/Gwacheon

A

M

E

Ochang(2) 2005, 2023

## KOREA

2003, 2014, 2018

China

Nanjing(3)

A

M

E



2024  
Japan

Tokyo



2023  
Taiwan



Taipei

2023  
India

New Delhi



Indonesia

Hyundai Motor Group JV

A Karawang 2024



2014  
Australia

Victoria



Canada

NextStar Energy (Stellantis)

A

Windsor, Ontario \*



USA

A

Holland, Michigan 2020

M

E

Queen Creek, Arizona \*

Boston, Massachusetts 2023

A

Ultium Cells(GM)

Plant 1 | Warren, Ohio 2022

Plant 2 | Spring Hill, Tennessee 2024

Plant 3 | Lansing, Michigan \*

Honda JV

A

Fayette County, Ohio \*

Hyundai Motor Group JV

A

Bryan County, Georgia \*

+ Business

# Global Production System

## Asia Mid 20%


**China** 2003, 2014, 2018  
 Nanjing(3)   


**Indonesia** 2024  
 Karawang 

Hyundai Motor Group JV



## Europe Mid 10%




**Poland** 2017  
 Wroclaw 



## KOREA


**Ochang(2)** 2005, 2023  
  


## North America High 50%



**Canada** NextStar Energy (Stellantis)  
 Windsor, Ontario \* 



**USA**  
 Holland, Michigan 2020 


Queen Creek, Arizona \*  

Ultium Cells(GM)  
 Plant1\_Warren, Ohio 2022 

Plant2\_Spring Hill, Tennessee 2024 

Plant3\_Lansing, Michigan \* 

Honda JV Fayette County, Ohio \* 

Hyundai Motor Group JV Bryan County, Georgia \* 

mid to long term Capacity

# 550~570GWh/Year



Advanced  
Automotive



Mobility & IT



ESS

+ R&D

# Core Technologies

## Material



- 01 High-Ni Cathode Material
- 02 HV(High Voltage) Mid-Ni Cathode Material
- 03 Si based Anode Material

## Process /Pack Design / SW Algorithm



- 01 Dry Electrode Process
- 02 CTP (Cell to Pack)
- 03 Diagnostics Technology



+ R&D

## R&D Status

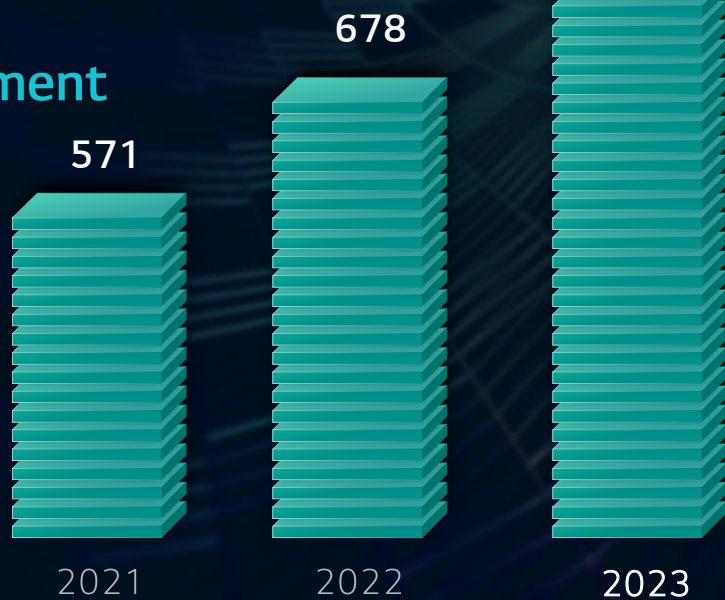
### Human Resources

(Units: Person)



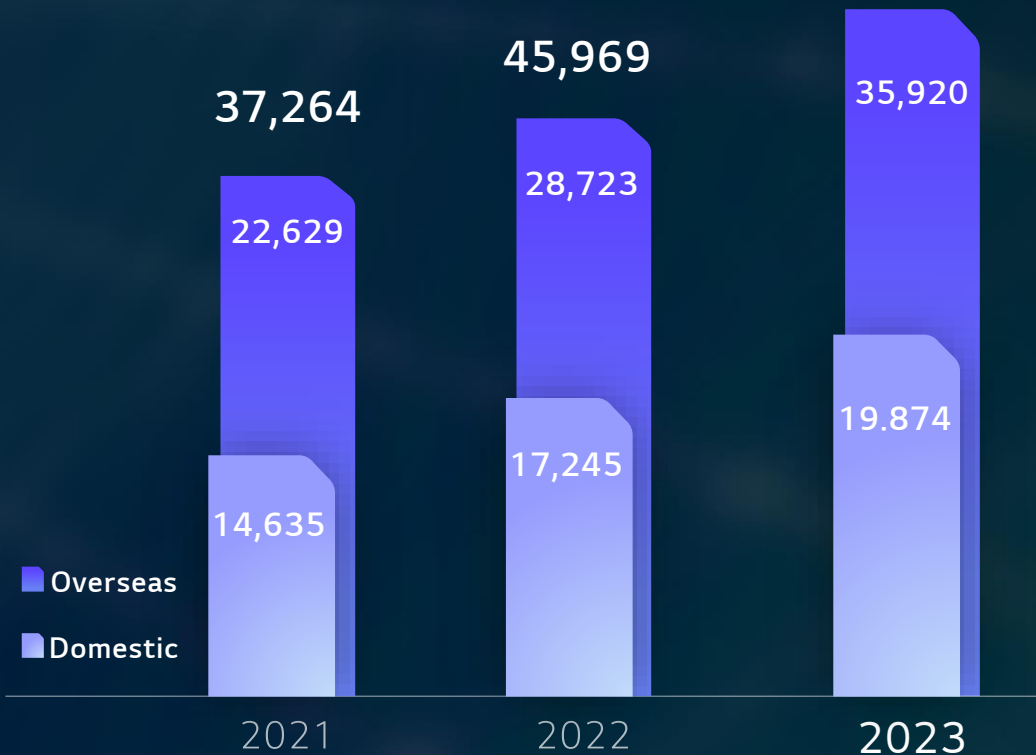
### Investment

(Units: M\$)



### Intellectual Property Rights

55,794



(as of Dec 2023, Grant and Pending)

+ R&D

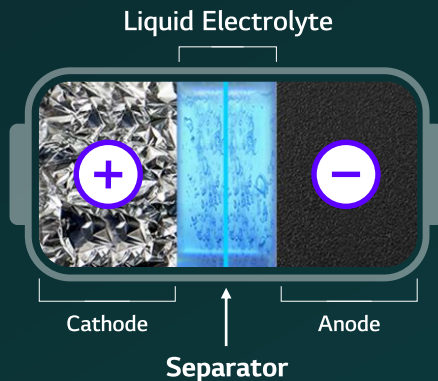
# The Next-Generation Batteries

## Solid-State Battery

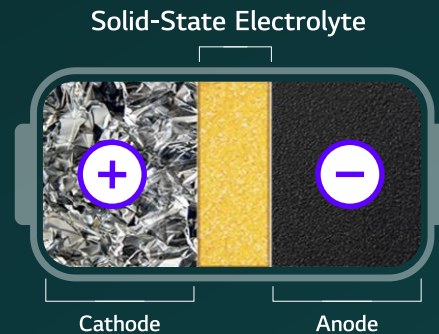
**E-mobility, Wearable Devices, Ships/Aircraft, Robots**

Solid-state batteries are rechargeable batteries with a solid-state electrolyte between a cathode and an anode, enabling high energy density and high capacity with a low risk of combustion

### Lithium-Ion Battery



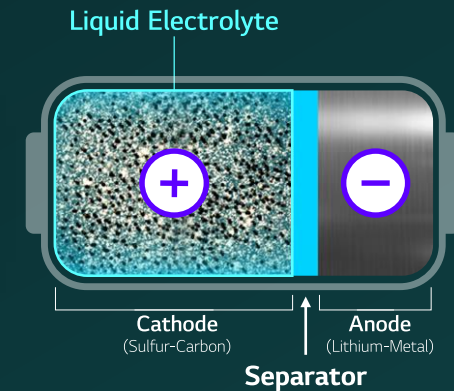
### Solid-State Battery



## Lithium-Sulfur Battery

**Lithium-Sulfur Battery**

Lithium-sulfur batteries are made from lightweight materials, such as sulfur-carbon composite in the cathode and lithium-metal in the anode, giving them an energy density 1.5 times higher than conventional lithium-ion batteries.



+ ESG

## ESG Vision

# We **CHARGE** Toward a Better future



### Climate Action

Achieving carbon neutrality by 2050

### Circular Economy

Establishing closed loop at global sites

### Human Rights Management

Creating human rights risk-free business sites

### Human Capital Management

Fostering diverse talent

### Product Stewardship

Managing eco-friendliness, safety and quality across product life cycle

### EH&S

Environmental impact, Biodiversity protection, Workplace EH&S management

### Responsible Supply Chain Management

Securing over 90% of ESG low-risk group by 2030

### Shared Growth & Greater Impact on Local Communities

Reinforcing brand image for mutual growth and cooperation

### Compliance & Ethics management

### Governance

### ESG Disclosure

### Stakeholder Communication and Engagement

8 Critical Areas

4 Key Enablers



+ ESG

# Global Initiatives

ESG



Global Compact  
Network Canada

## UN Global Compact UNGC

Uphold 10 principles of UNGC in the areas of human rights, labor, environment and anti-corruption

\*Disclose SDGs-related activities & achievements



## Global Battery Alliance GBA

Contribute to establishing ESG standards for sustainable battery ecosystem, and participating Battery Passport system development

\*Serves the Board of Directors of GBA

E

RE100

## RE100 Renewable Electricity 100%

Aim to source 100% of electricity at all global sites renewably by 2030

EV100

## EV100 Electric Vehicles 100%

Aim to convert company-owned vehicles to EV 100% by 2030

\*First Korean battery manufacturer to join both RE100/EV100



TASK FORCE ON  
CLIMATE-RELATED  
FINANCIAL  
DISCLOSURES

## Taskforce on Climate-related Financial Disclosures TCFD

Strengthen climate-related risks and opportunities assessment and disclosure

\*First Korean battery manufacturer to officially declare support for the TCFD

S



## Responsible Business Alliance RBA

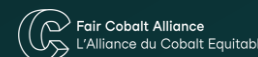


## Responsible Minerals Initiative RMI

## Responsible Labor Initiative RLI

ESG risks management across entire value chain

\*First Korean battery manufacturer to join RBA



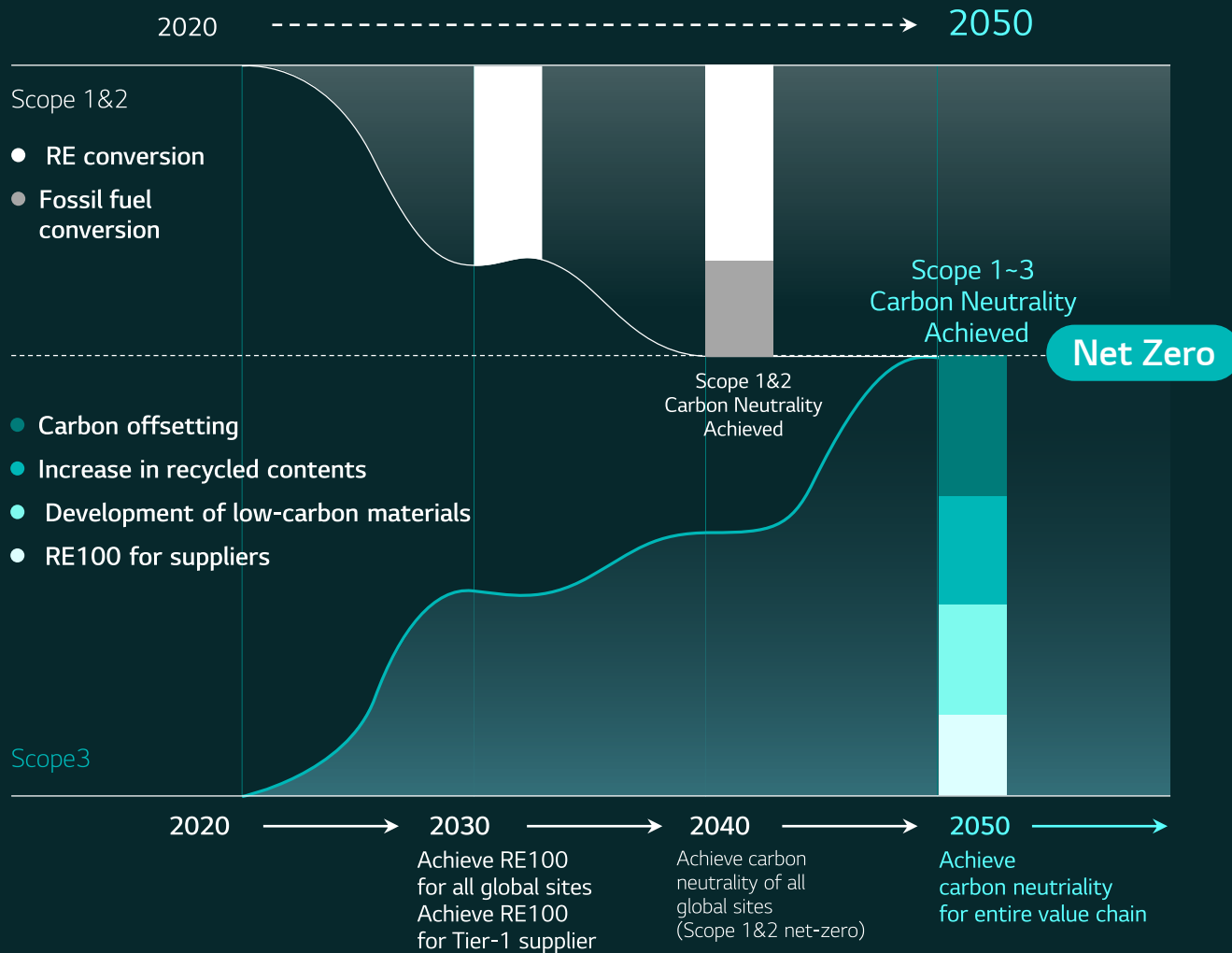
## Fair Cobalt Alliance FCA

Contribute to eradication of forced labor and child labor in cobalt mines in DRC and supporting local communities

\*First Korean company to join FCA

+ ESG

# Carbon Negative



## LG Energy Solution

## Suppliers

2030

A

- Achieve RE100\* / EV100 at all business sites
- Achieve 53% emission reduction from BAU emission

E

- Achieve RE100 for Tier-1 suppliers
- \* Core battery materials (ex. CAM, AAM, Cu-Foils)

2040

B

- Achieve Scope1&2 carbon neutrality (Scope 1&2)

F

- Achieve RE100 of core value chain

2050

C

- Achieve carbon neutrality throughout the value chain (Scope 1-3)

Post-2050

D

- Achieve carbon negative

## RE Conversion

2021	2023	2030
1,180 GWh	1,881 GWh	7,889 GWh (예상)



+ ESG

# Battery Ecosystem







# THANK YOU

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