

# CEO MESSAGE



“ To achieve sustainable growth, we must build a win-win business ecosystem with our diverse stakeholders based on robust mutual trust.

As a creative technology and market leader, Samsung SDI values communication with its stakeholders to continuously bring about change and innovation, achieve harmonious growth and move forward to greater goals. ”

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Dear stakeholders,

Thank you for your continued interest and support toward Samsung SDI.

Throughout 2018, all of our staff and executives joined forces as One Team to achieve remarkable growth. In the small-sized Li-ion battery business, we further enhanced market dominance by achieving higher sales in cylindrical batteries, the high capacity, high value-added products. Our automotive battery & ESS business embarked on a full-fledged sale of new EV batteries while winning a sizable order from a global OEM. Our electronic materials business showed steady growth thanks to our excellent performance in the semiconductor materials sector, increased sales in high value-added display materials and a boost in sales in the Greater China region.

Technology pioneers have spearheaded industrial development and changed our lives. In this age of hyper-connectivity, accelerated by the Fourth Industrial Revolution and artificial intelligence, technological competitiveness has become the key to corporate viability. Samsung SDI is therefore making every possible effort to secure our technological competence in order to preoccupy the rapidly changing market and once again play our role as a game changer in the industry. We will equip ourselves with innovative leadership in all key areas including development, manufacturing and sales to maintain our position as the market leader. Our employees will also be provided with full support in becoming experts with an innovative mindset to contribute to greater growth of the company. We will create an organizational culture that shuns unnecessary work practices and promotes values such as concentration and good execution.

Stakeholders today expect businesses to strike a balance between the creation of economic value and the fulfillment of social, environmental responsibilities. Samsung SDI began publishing the Sustainability Report in 2003 as proof of our commitment to sustainable management. Since then, we have put in our utmost efforts to fulfill our corporate social responsibilities. Samsung SDI will now take one more step forward to create business values that will positively influence the world and help people live a healthier life in a better society.

Sustainable growth can be achieved in a mutually beneficial business ecosystem based on the company's capabilities and the stakeholders' trust. In our desire to grow together with our partner companies, we will work tirelessly to create a virtuous cycle in the business ecosystem by supporting our partners in acquiring competitiveness, enhancing our fair trade process and collaborating in future technology areas. In addition to strictly complying with the laws and regulations of each country, we will pursue growth in harmony with the society by participating in global efforts to achieve the Sustainable Development Goals, including efficiently managing various sustainability issues and risk factors.

In 2019, Samsung SDI sets a new vision for our corporate social responsibility: "Move Forward Together - Enabling People." We will continue to support the education of youths to help them reach their highest potential.

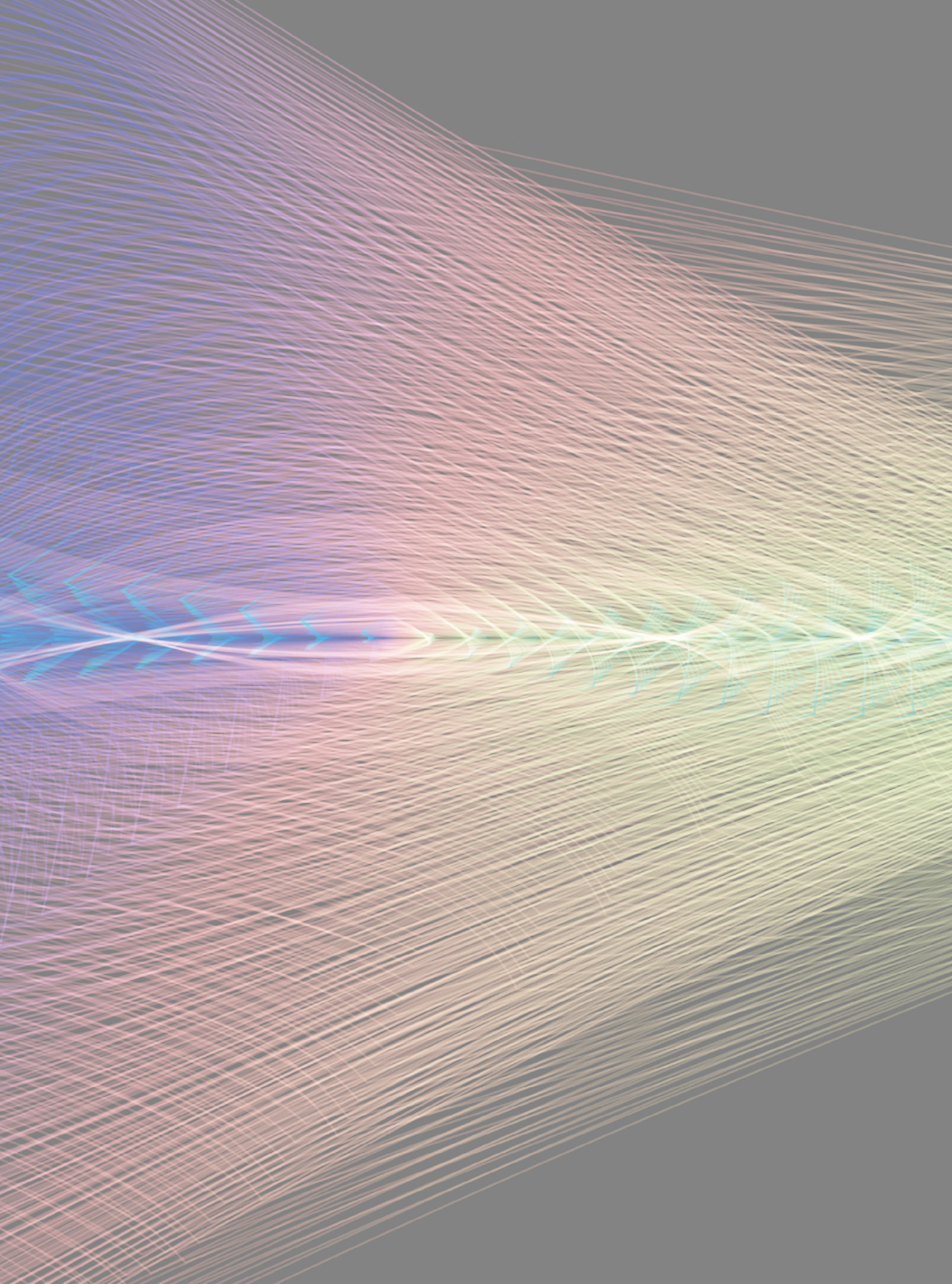
Sustainable management is a long journey toward innovation and growth. Everyone at Samsung SDI will come together to advance the company into a better business entity. I hope to see your continued interest and support.

Jun Young-Hyun,  
President and CEO of Samsung SDI



# OVERVIEW

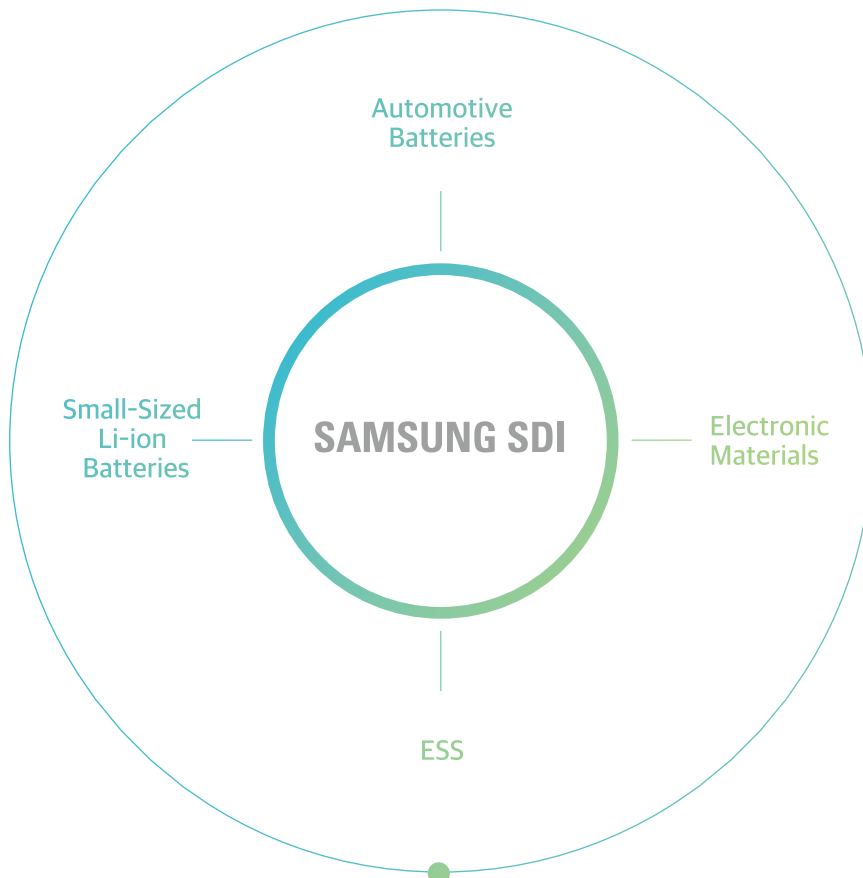
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# COMPANY PROFILE

## Current Company Status

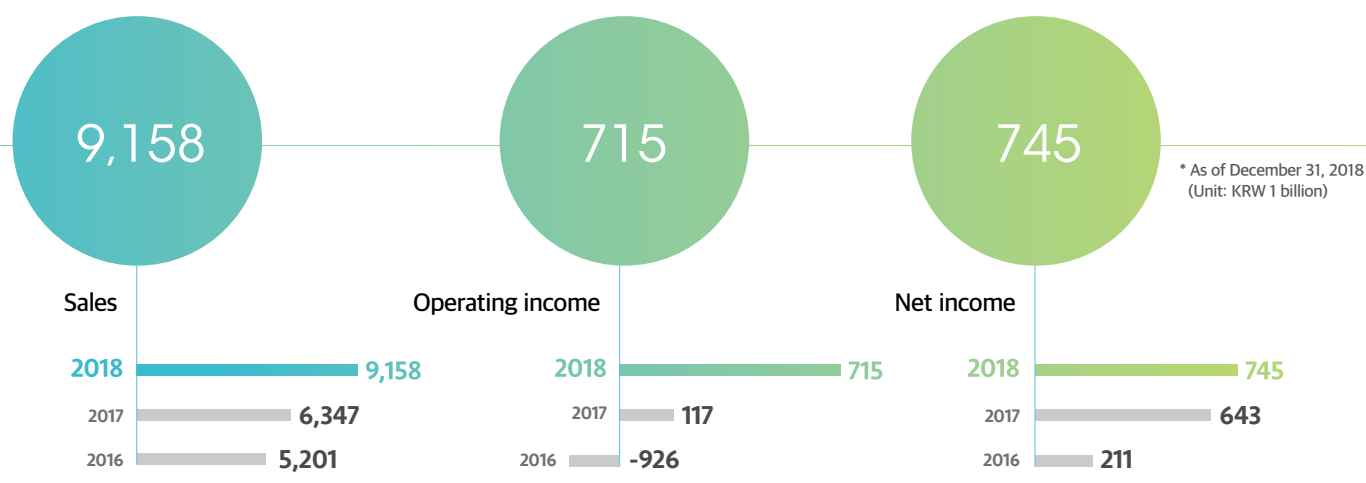
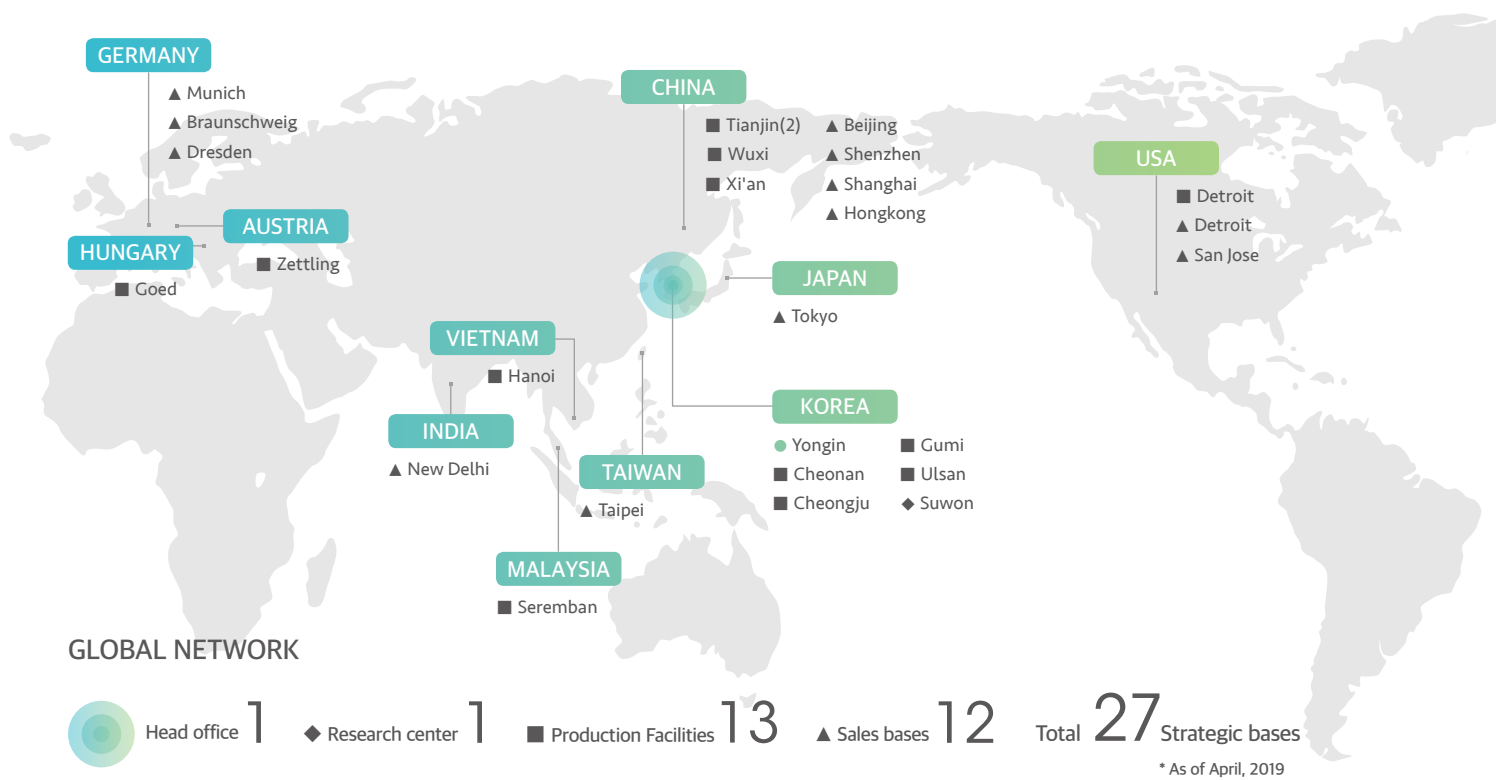
Founded in 1970, Samsung SDI currently produces advanced materials for use in the IT and automotive industries, secondary batteries for ESS (energy storage systems), semiconductors, displays, and photovoltaics. Samsung SDI has its head office, research center and production facilities located in Korea. Overseas, Samsung SDI has production facilities and sales bases in North America, Europe, South America, China and Southeast Asia. Samsung SDI intends to lead the market as “a creative leader in energy and advanced materials” by concentrating on securing differentiated technologies with growing importance amid the rapid progress in artificial intelligence and autonomous vehicles among others. Most notably, for sustainable corporate growth, Samsung SDI pursues harmonious growth by seeking measures to realize its vision of social and environmental values while creating economic value as well.



## Creative Energy & Materials Solution Leader

Company name	SAMSUNG SDI CO., LTD.
CEO	Jun Young-Hyun
Foundation	January 1970
Location of the head office	150-20, Gongse-ro, Giheung-gu, Yongin-si, Gyeonggi-do
Major shareholders (with more than 5% of shares)	Samsung Electronics 13,462,673 shares (19.58%) National Pension Service 8,147,452 shares (11.85%)

\* As of December 31, 2018



### Current Business Status

Samsung SDI consists of an energy solution business that manufactures and sells small-sized Li-ion and medium-to-large-sized batteries and an electronic materials business that produces and sells materials for semiconductors and displays. Despite the difficult business environment in Korea, the company grew in both sales and operating income in 2018.



# BUSINESS MODEL

## Creative Energy & Materials Solution Leader

Samsung SDI's business model is a process aimed at creating values for all resources and relationships. It strives to realize long-term values through effective management of all resources and relationships on the basis of its core values - Excellence, Customer and Innovation.

### INPUT

Financial Capital	Listed on Korea Stock Exchange in 1979	
	No. of issued stocks (Common)	<b>68,764,530</b>
	Cash dividends	<b>10.1%</b>
	Procurement of financial capital from shareholders and investors	
Disclosure of business status including general meetings of shareholders		
Intellectual Capital	Intangible assets	<b>866.3 billion KRW</b>
	R&D investment (percentage of revenue)	<b>604 billion KRW(6.6%)</b>
	R&D staff (percentage of total employees)	Domestic <b>2,260 persons(22.2%)</b> Overseas <b>375 persons(2.6%)</b>
	Operation of a total of 27 strongholds	
Social and Relational Capital	Engagement with local community and implementation of social contribution activities through Green Planet Environment School, as well as donation of eyesight recovery surgeries	
	Investment in social contribution activities	<b>5 billion KRW</b>
	Investment in social contribution activities	
Manufacturing Capital	Production facilities	<b>13</b>
	Production capacity	Small-sized Li-ion batteries <b>1,617 million KRW</b> EMC <b>9,399 Tons</b> Polaroid film <b>91.16 million m<sup>2</sup></b>
	Tangible assets	<b>4.61 trillion KRW</b>
	Investment in social contribution activities	
Human Capital	Total number of employees	<b>24,718</b>
	Executive directors / Non-executive directors	<b>3 / 4</b>
	New recruits	<b>8,188</b>
	Education and training expenditures	<b>9.7 billion KRW</b>
Natural Capital	ISO 14001 certification	
	Energy reduction investment costs	<b>1.84 billion KRW</b>
	Energy consumption	<b>18,947 TJ</b>

### VALUE CHAIN

We run a preliminary product development system to launch competitive, differentiated products ahead of others while implementing systematic management of project development and product information.

- Research and development of safe products **1 2**
- Development of eco-friendly batteries

We operate a reasonable procurement process based on an on-time procurement system and strive to strengthen our fair and transparent win-win partnership with suppliers.

- Establishment of mutual growth with partner companies **6**
- Fair and transparent management of contracts and operation
- Conflict mineral management and recycling

We strive to secure cost competitiveness by optimizing global resource operations and operating a plan-based production system, while making improvements toward environmentally harmless production processes that are safe for humans.

- Improvement of environmental efficiency **3 4**
- Management of workplace safety
- Increased profitability through cost management

We strive to strengthen the visibility of our logistics to make improvements in terms of lead time, costs and operation risks.

- Eco-friendly transport **4**

# VALUE

Distribution

Manufacturing

Purchasing

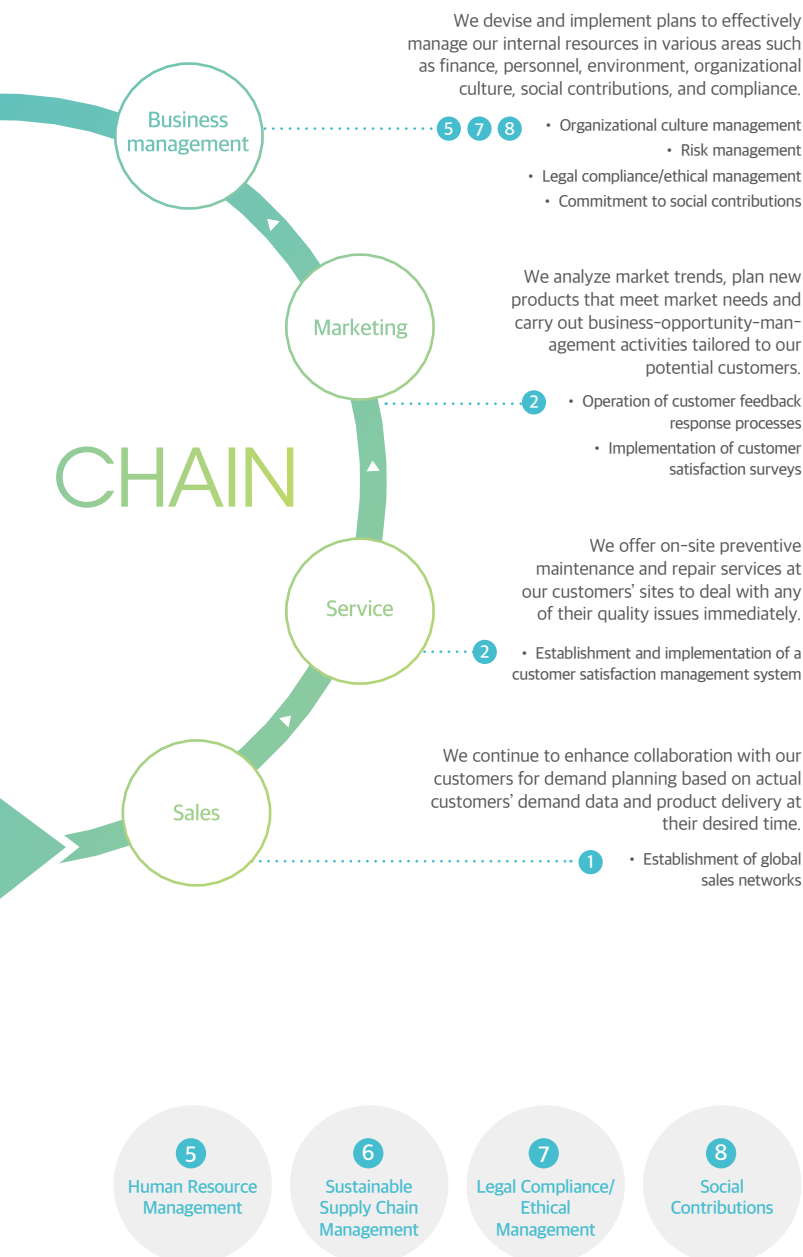
Research and development

### Sustainability Management Issues



To attain sustainable value creation, we manage major business elements as material sustainability management issues and present the impact of each type of capital in our performance results.

OUTPUT



Financial Capital

Revenue	Energy Solutions	6.9542 trillion KRW
	Electronic Materials	2.2041 trillion KRW
Net income		745 billion KRW

1

Intellectual Capital

Establishment and approval of strategic directions for each business division		
Registered patents		14,384

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Social and Relational Capital

Corporate taxes		291.2 billion KRW
Partners whose contracts were terminated due to irregularities		0 partners
Beneficiaries of free eyesight restoration surgery		228,563 (cumulative)
Beneficiaries of Green Planet Environment School		26,210 (cumulative)

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Manufacturing Capital

Main production output	Small-Sized Li-ion Batteries	1,514 million
	EMC	6,341 Tons
	Polarizer Film	84,874,000 m <sup>2</sup>
S-partner certification		91 companies
Total purchase amount		7.0896 trillion KRW

2 6

Human Capital

Ratio of local recruits		59.2%
Ratio of female managers		8.2%
Ratio of certified quality-control engineers		33.1%
Employee injury rate/loss rate		0.18% / 17.12%

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Natural Capital

Greenhouse gas (GHG) emissions		1,129,564tCO <sub>2</sub> e
Energy reduction performance	Fuel reduction	1.0 billion KRW
	Power reduction	7.9 billion KRW

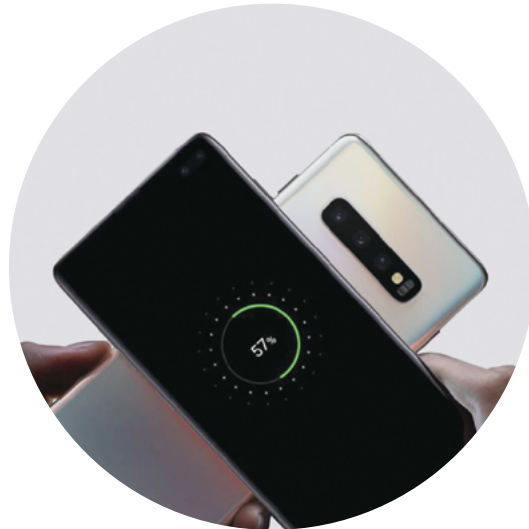
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# OUR BUSINESS



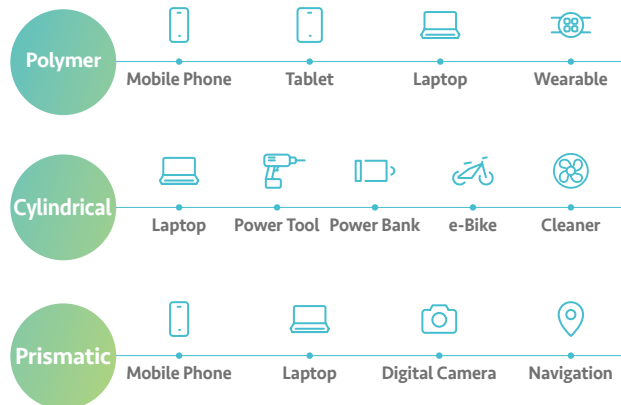
## Small-Sized Li-ion Batteries



The Small-Sized Li-ion Battery Division develops and sells cylindrical, prismatic, and polymer battery cells. Based on a quality-oriented management philosophy and ongoing technological innovations, Samsung SDI maintains a large market share in the global Li-ion battery market. We are continuously expanding into business fields that are expected to have high market growth potential due to the expansion of excellent 5G and IoT based technologies such as IT devices including smartphones, wearables, and Bluetooth headsets. We are also expanding into new areas such as power tools, e-bikes, gardening tools, and vacuum cleaners, all of which require eco-friendly high-efficiency technologies.

## APPLICATION

While mobile phones, laptops and tablets are the three IT devices we are focusing on as targets for battery development, we are also expanding into the market for batteries used in non-IT devices, including power tools and e-bikes.



### BUSINESS CASE

#### Development of a Polymer Solution for 5G Smartphones

Ahead of the release of 5G phones and new mobile services, Samsung SDI has developed high-capacity (4.45V) technology that, compared to existing smartphone batteries, increases capacity by approximately 5%. Most notably, the new technology supports the high-capacity required by the 5G environment, has improved safety and enhances user convenience. Battery solutions are anticipated to continue to develop in line with the launch of full-fledged 5G services and diverse new products, including flexibles.



## Automotive Batteries



Driven by technological advances in batteries, which are not merely power sources, but also fundamental elements for future innovations, the anticipated age of electric vehicles is gradually approaching at a fast pace. Samsung SDI is making ceaseless effort to attain technological advances that enable dynamic yet safe driving of electric vehicles as well as longer range. Our vision in the eco-friendly clean energy solution sector becoming a reality by concentrating on the technological upgrades of batteries used for eco-friendly low-carbon vehicles. With the development of high-efficiency and high-capacity Li-ion secondary batteries and their provision to automakers worldwide, Samsung SDI helps minimize CO<sub>2</sub> emissions and various pollutants from traditional internal combustion engine vehicles. We are achieving sustainability through products created not only for economic efficiency but also eco-friendliness.

### APPLICATION



**Electric Vehicles (EV)** - It is crucial for EV batteries to have high energy density within a given amount of space. By applying high-capacity materials with optimum lifetime performance and by designing optimized battery components, Samsung SDI is driving innovations in extending the EV range.



**Plug-in Hybrid Electric Vehicles (PHEV)** - Batteries for PHEVs demand a balance between the energy density required for electric-mode driving and the output density needed to support an engine. Samsung SDI strives to attain an optimal balance through its competitiveness in advanced battery development.



**Hybrid Electric Vehicles (HEV)** - In response to the recent trends and growing popularity of electric vehicles, we are securing a greater investment efficiency to provide solutions for improved fuel economy and enhanced automotive performance.



**Micro/Mild HEV** - We offer mid-range solutions aimed at improving fuel economy and automotive performance with little investment.

### BUSINESS CASE

#### A Next-Generation Battery Cell created through Innovative Materials and Differentiated Design

At Auto China 2018, held in April 2018, Samsung SDI featured a high-capacity battery cell created from the technology of high nickel cathode materials with a lower proportion of cobalt and a higher ratio of nickel. Using this material technology that significantly reduces internal resistance in battery cells, an EV can not only drive for up to 620 km on a full charge, but also charge itself up to 80% of its capacity within 15 minutes. Samsung SDI also featured prismatic battery cells that can achieve a high level of energy density by maximizing the utilization of their internal space along with 21700 (21 mm in diameter, 70 mm in height) cylindrical battery cells whose capacity has been improved by 50% over the 18650 battery cells. Based on such differentiated technological capabilities, Samsung SDI continuously contributes toward expanding the EV market.



ESS



Samsung SDI is leading the global market based on the strength of eco-friendly energy solutions and Li-ion energy storage devices for the future. We ensure the stability of power grids and provide optimized solutions according to our customer's needs and the environment, through our cutting-edge technology that has the capacity to improve the quality of electrical energy. Samsung SDI's activities in the ESS business have been going strong since 2011. Within three years, we reached the number one rank in the industry, thanks to our world-class stability of small-sized Li-ion batteries. The quality of ESS is ensured by applying the same batteries as those supplied to EVs. Based on solutions optimized for specific countries, we were also able to pioneer markets faster than other competitors in the European utility/residential market, the American utility/commercial market, the Japanese residential market, and the Korean utility/industrial market.

## APPLICATION



### Utility

We are contributing to the standardization of renewable energy power generation and ensuring the stability of power grids for power supply systems, including power generation, transmission, and distribution.  
[Installed locations] Electric power companies, industrial complex microgrids, etc.



### C&I (Commercial & Industrial)

We are increasing power operation stability and self-consumption by helping reduce daytime maximum loads in office buildings such as commercial offices, public institutions, schools, and hospitals.  
[Installed locations] Buildings, plants, etc.



### Residential

We are linking households to solar power generation systems to make eco-friendly energy available 24-hours a day, resulting in higher energy self-consumption rates and lower power bills.  
[Installed locations] Residences



### UPS

We ensure reliable power quality and continuity that prevents operational gaps in data centers to achieve minimized total power consumption and reduced capital investment.  
[Installed locations] Plants, financial institutions, IT companies (servers), etc.



### Telecom

We offer not only lighter weight, smaller volume, and higher energy density, but also improve lifetime performance. Through the use of lithium batteries, we have brought about innovative savings in maintenance costs.  
[Installed locations] Base transceiver stations

## BUSINESS CASE

### Promotion of High-Density High-Voltage Power Products at Exhibitions

Samsung SDI participated in Intersolar Europe 2018, held in Munich, Germany, in June 2018 to introduce a number of new battery models. Under the theme of "Powering Tomorrow - Samsung SDI leads the energy of tomorrow," we introduced upgraded market-leading high-density, high-voltage products for the first time and proposed new future values and directions for ESS through a next generation model concept that integrates ESS to fast charging stations. We also introduced a 1,500V high voltage platform for utility and commercial use, and second generation new residential modules that can increase the voltage to a maximum of 600V, in line with the high voltage trend. Most notably, the "high-voltage residential ESS module," a new model equipped with cylindrical 21700 cells, has almost doubled its energy density in a single year through innovations in areas ranging from cells to modules, in addition to having a lightweight and compact design, attesting to Samsung SDI's unique competitiveness.

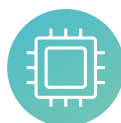


## Electronic Materials



We embarked on our electronic materials business in 1994 with the development of EMCs for semiconductors. Since then, we have expanded into new business areas through technological developments based on audacious challenges and self-innovation. The Electronic Materials Division develops and sells materials used in semiconductors, displays, and next-generation energy sectors. While fortifying our market dominance in the existing market for materials used in semiconductors and LCD displays, we are also making continuous efforts to secure a leading position in the market for next generation advanced materials that include OLED materials and separation membranes for secondary batteries. We lead technological trends based on advanced technologies and specialized competencies for various materials used in semiconductors, displays, secondary batteries and photovoltaics.

### APPLICATION



#### Semiconductors

Our electronic materials are used as patterning materials (including SOH, SOD, and slurry) to form semiconductor wafer patterns and as packaging material (EMC) used to protect chips against the external environment.



#### Displays

Our electronic materials are chiefly used in display panels such as LCDs and OLEDs, and are sold in the form of films or base materials. They are used for films, such as polarizer film (POL) and anisotropic conductive film (ACF), and as process materials for organic light emitting diodes (OLEDs) and Color PR (color photo-resist) layers.



#### Next-Generation Energy

Our electronic materials are used for photovoltaic (PV) paste - a highly-viscous conductive material used to form electrodes of solar cells - and as a separation membrane that serves as an interlayer to prevent short-circuits between the cathodes and anodes of secondary batteries and therefore as a core material that determines stability.

### BUSINESS CASE

#### Development of Optical Clear Adhesive (OCA), Core Materials for Foldable Smartphones

Samsung SDI has developed the Optical Clear Adhesive (OCA), a core material for foldable smartphones. OCA is a necessary adhesive for display manufacturing, used to attach polarizer films or the like. The screens of foldable phones should be able to fold, so the adhesive employed must be foldable and durable. We have secured growth momentum in the foldable phone market by preempting next-generation display materials through the development of an OCA for foldable phones.