



2018 Financial Results Tasks and Strategies for 2019

**SHOWA
DENKO**

- “The TOP 2021” launched -

February 15, 2019

SHOWA DENKO K.K.

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- 1 . Economic and political outlook for 2019**
- 2 . 2018 financial results and forecast for 2019**
- 3 . "The TOP 2021": Tasks for 2019**
- 4 . Strategy for each business**

Global economy will slow down:

Uncertainty increases under US-China trade friction, Brexit issue etc.

Major powers' economies:

US: Recovery continues. Dark sign arises due to trade friction and higher interest rates.

Europe: Slightly slows down. Brexit issue. Financial deficit of Italy needs attention.

China: Basic state is strong. But slowdown expected due to trade friction.

Japan: Mild economic growth. Impact of consumption tax increase.

Changes in industrial structure

Demand for AI/IoT/Big Data increases. "CASE" changes automotive industry.

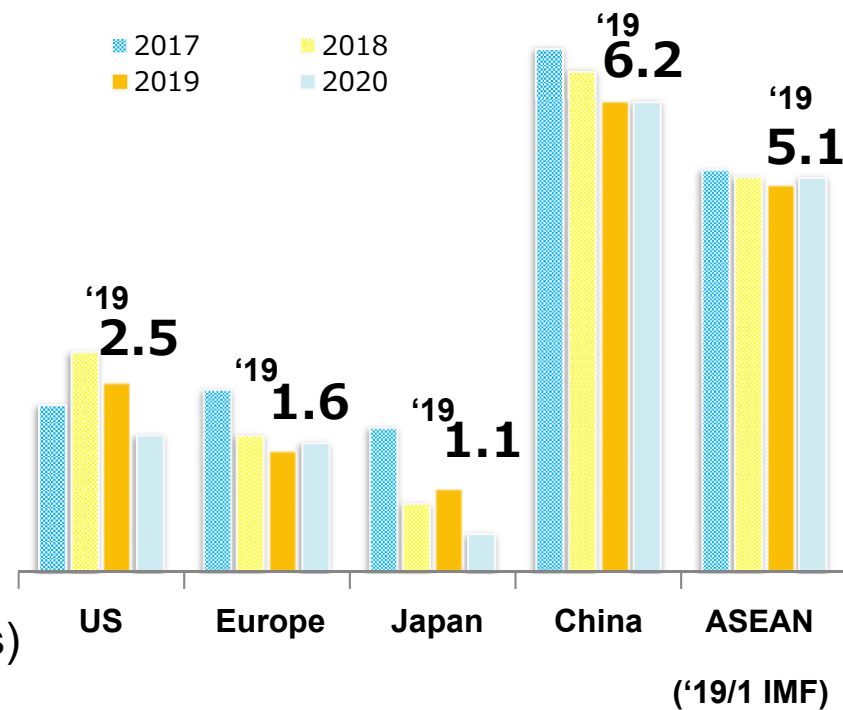
Risk factors

Slowdown in world trade (Protectionism rises)

Fall in crude oil and commodity prices

Significant labor shortage in Japan

【Growth rates of major economies (%)】



2018 financial results and forecast for 2019



◆ Record high income for 3 consecutive years. Dividend increase expected.

(Unit: Billions of yen)	2017 results	2018 results (a)	2019 forecast (b)	Increase/decrease (b)-(a)
Net sales	780.4	992.1	1,100.0	107.9
Operating income	77.7	180.0	190.0	10.0
Ordinary income	63.9	178.8	185.0	6.2
Net income attributable to owners of the parent	37.4	111.5	120.0	8.5
Annual dividend per share (yen)	¥50*	¥120 (forecast)	¥130	¥10

*Not including dividend of ¥30 paid in June 2017

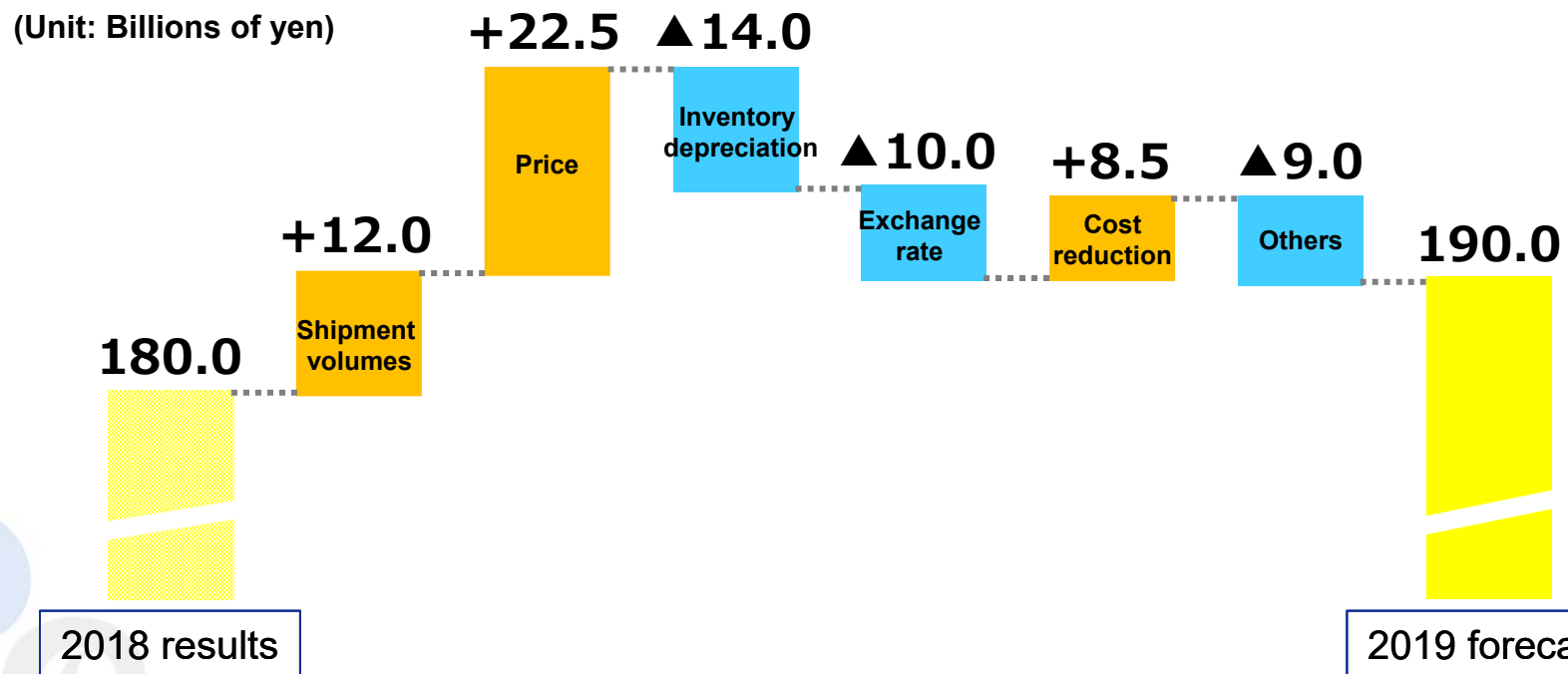
◆ Extraordinary losses

- 2018 ... Posted impairment loss of ¥22.6 billion (Domestic aluminum can business, LIB materials, Hikone Plant, Institute for Advanced and Core Technology)
- 2019 ... Posting of extraordinary loss of ¥20 billion is expected

Factor analysis: Operating income, 2018 vs 2019



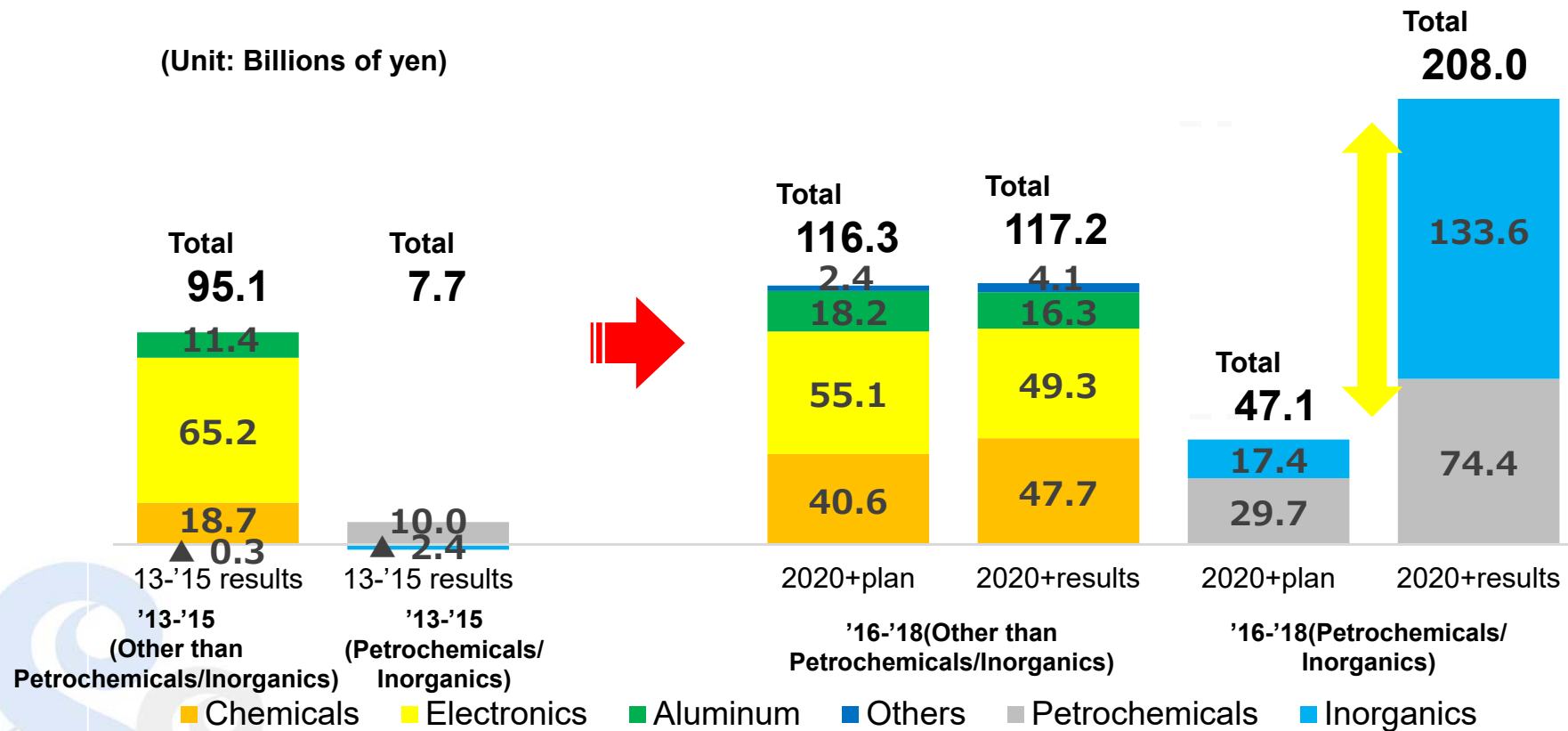
- ◆ **Positive factors:** Market prices of graphite electrodes up. Cost reduction. No periodic shutdown maintenance in 2019
- ◆ **Negative factors:** Depreciation of naphtha in petrochemicals segment. Appreciation of yen. Higher labor cost.



3-year total operating income

PROJECT 2020+ ◆ Profitability of segments other than Petrochemicals and Inorganics was stabilized and improved.

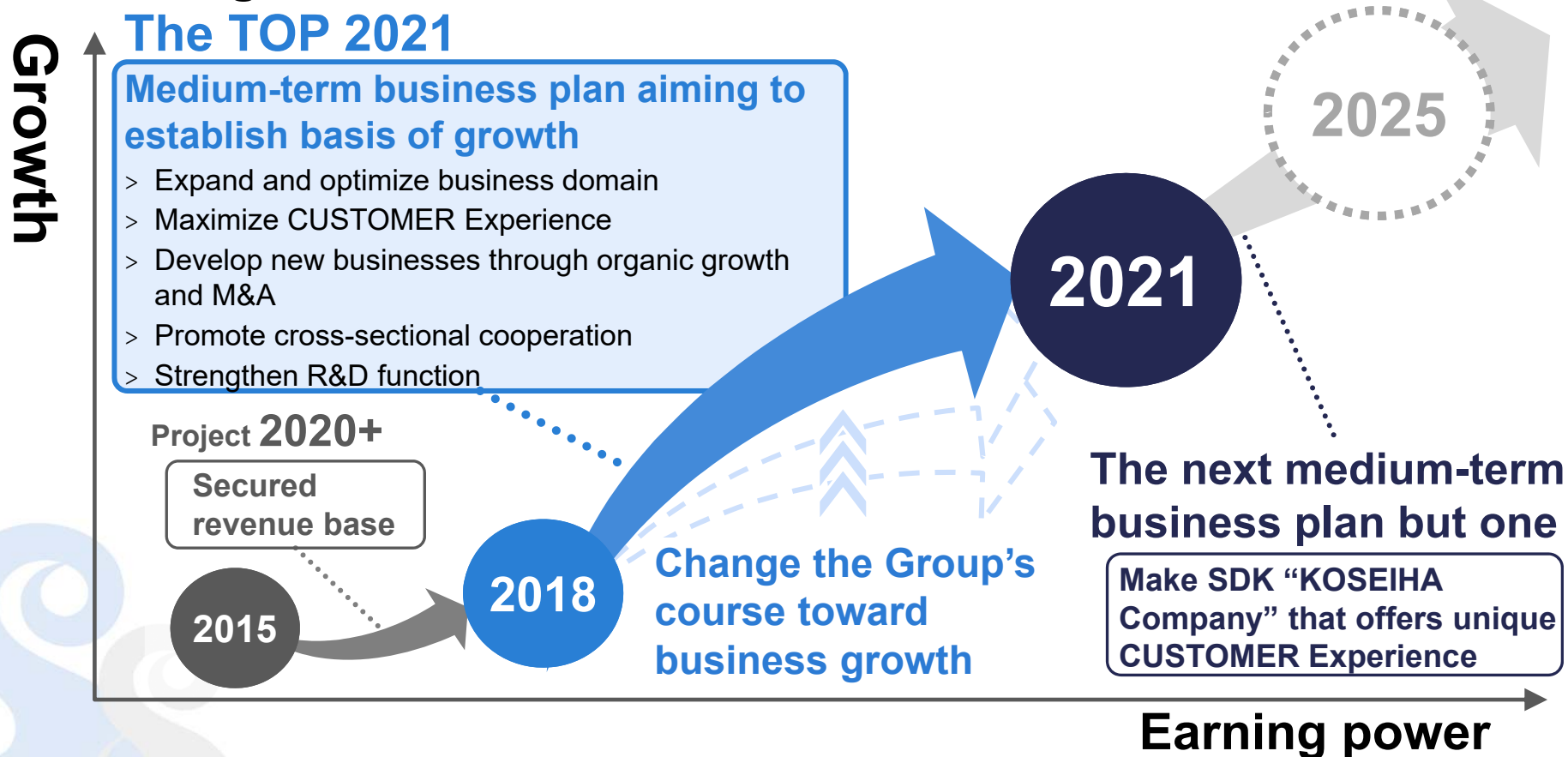
(Unit: Billions of yen)



Not including "Adjustment."

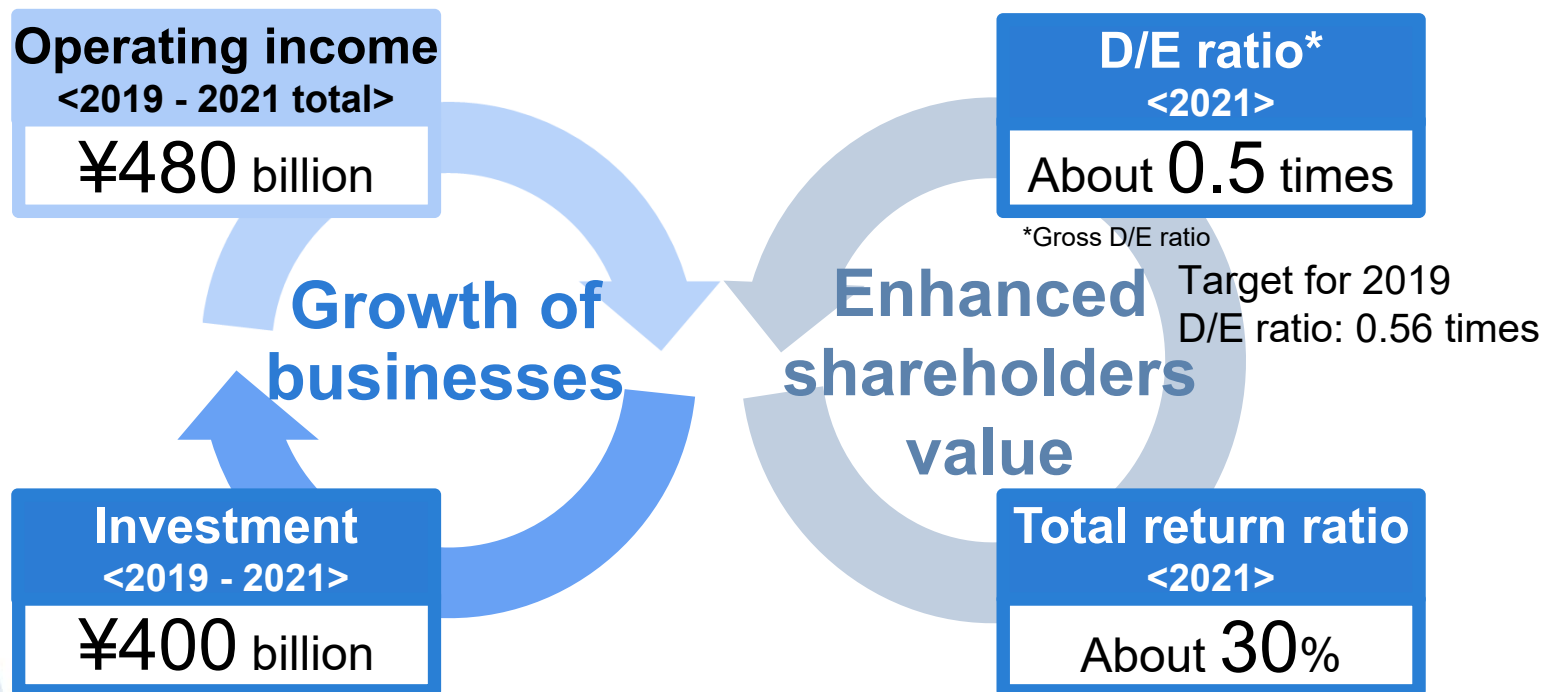
In 2017, LIB materials was transferred from Others segment to Electronics segment.

On the basis of “earning power” strengthened by “Project 2020+,” “The TOP 2021” will change the Group’s course toward long-term business growth



Utilize earned cash for enhancing corporate value.

Set targets for D/E ratio, total return ratio and total investment.



*Gross D/E ratio
Target for 2019
D/E ratio: 0.56 times

Total investment in 2019
¥118 billion
Decision-making base

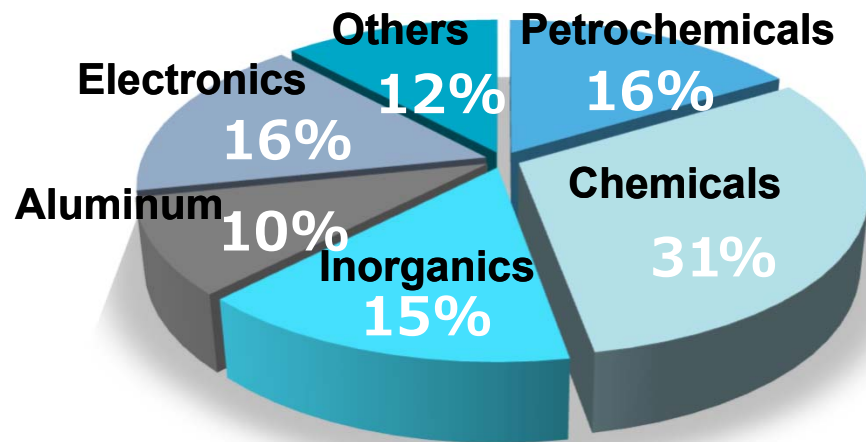
Dividend in 2019 (planned):
¥130/share

Consider purchase of own stock
in a timely and continuous manner

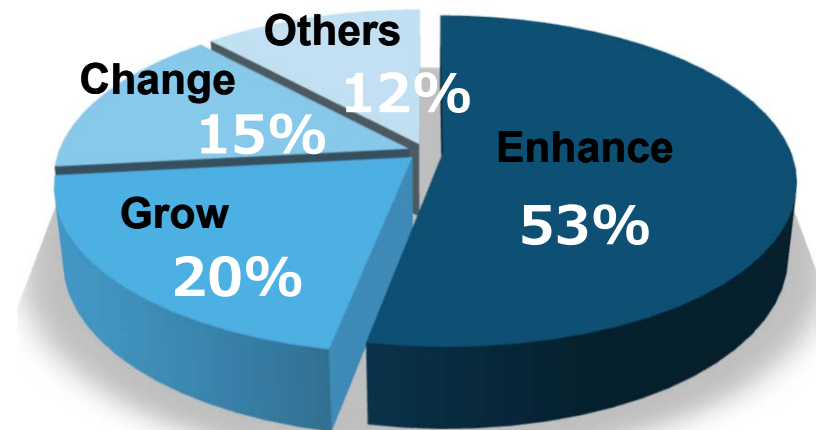
2019 capital investment and M&A

Total capital investment: ¥118 billion (Decision-making base)

Share of each segment



Share of each business portfolio



◆ Major investments

- High-purity gases for electronics
- SiC epitaxial wafer for power devices
- Commercialize new derivatives of petrochemicals
- Improvement (Plants of former SGL, Basic chemicals facilities in Kawasaki Plant)
- Increase production of other products in promising fields

◆ M&A

- Investigating possible M&As based on road maps of our businesses

Back-casting from our goal for 2025, promote our Group strategy, and strengthen business bases.

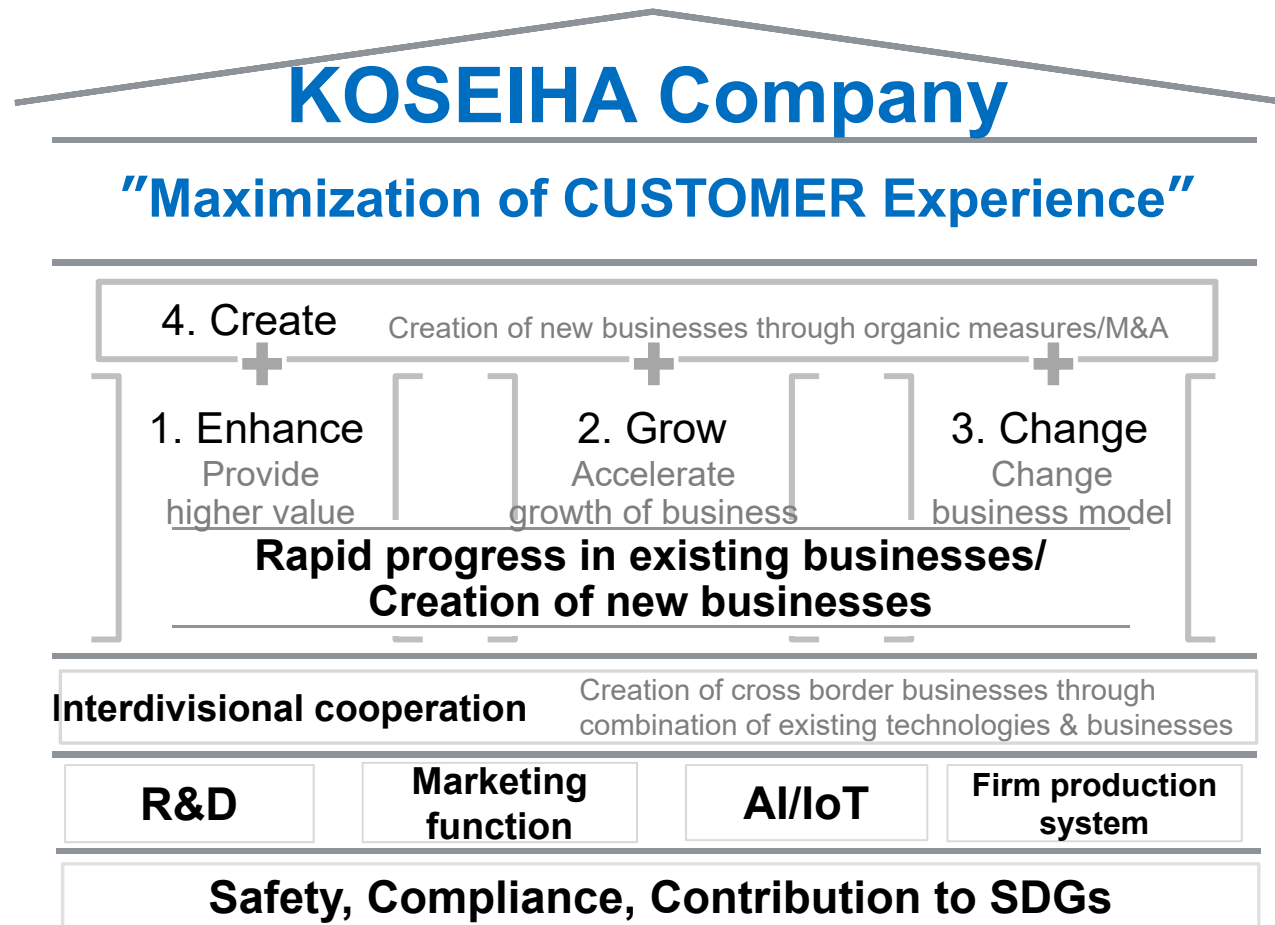
Our goal (Vision)

Means to realize Vision (Value)

Pillars of Group strategy

Strengthen business foundation

Corporate social responsibility



Redefine course of action for each business in accordance with its market conditions and financial goal

Financial goal

Higher profitability

Growth in sales

Portfolios of existing businesses

Enhance

In matured market, enhance offering value by evolving business model

Enhance ①

Petrochemicals
Industrial gases
Basic chemicals

Enhance ②

HD media
Carbon (Graphite electrodes)

Change

Change business model, considering entry into downstream sector

Change ①

Aluminum cans
Aluminum rolled products (High-purity aluminum foil)

Change ②

Aluminum specialty components (including Shotic™)
Functional chemicals
Ceramics

Grow

In growth markets, accelerate business growth at home and abroad

Grow ①

Electronic chemicals (High-purity gases for electronics)

Grow ②

Advanced battery materials (LIB materials)
Electronic materials (esp. Red LEDs)
SiC epitaxial wafer for power devices

Portfolio of New businesses

Create

Vision for 2025

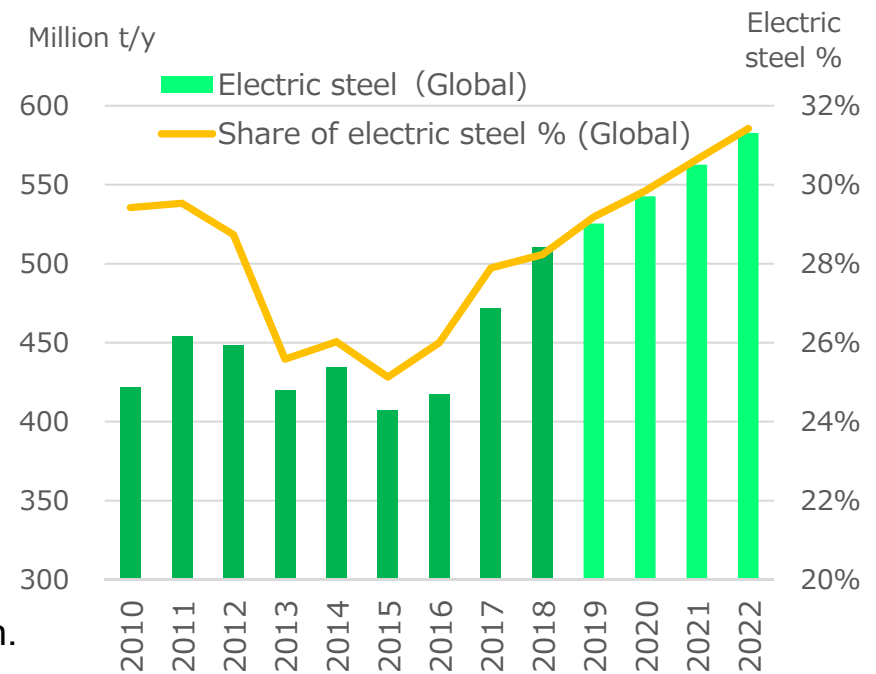
- Achieve “Low Cost No.1 with Decisive Lead” and “Value in Use No.1” for customers, and realize the most competitive and profitable graphite electrode business.

Business environment & tasks

- Record high world steel production (1.8 bn tons) in 2018
→ China: up 6.6% Rest of the world: up 2.5%
- Environmental awareness pushes up supply of scrap steel and production of electric steel.
- Tight supply of graphite electrodes continues in 1H 2019
- Rise in prices of needle coke has already been incorporated into our 3-year business plan.

Measures to be taken in 2019

- Take advantage of strong market and realize larger margin.
- Realize effect of business integration. (Reduce distribution cost. Standardize lineup of grades.)
- Realize stable production and process improvement in all plants. (Best balance of stable production and cost) Improve facilities of former SGL plants. Start operation of SDKC’s expanded plant.
- Gain stronger presence in China in medium- to long-term perspective.



(WSA and SDK’s estimate)

Vision for 2025

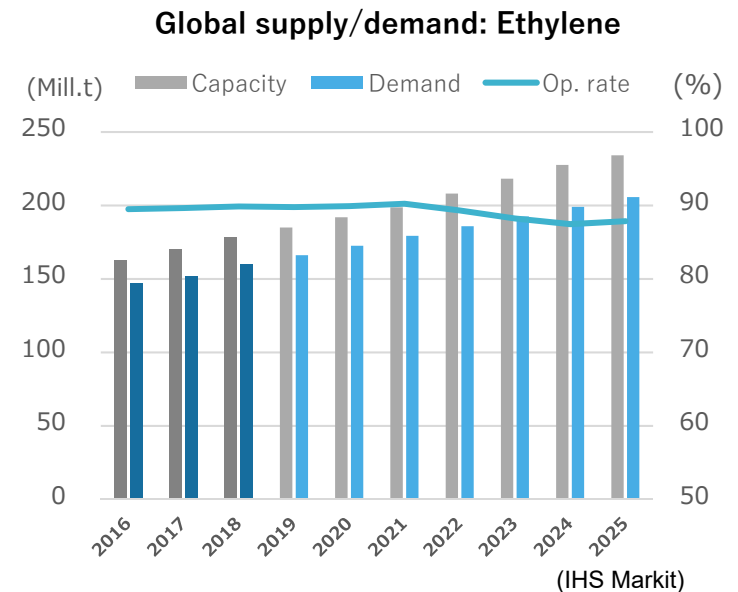
- Maintain global competitiveness. Establish business base resistant to market fluctuation.

Business environment & tasks

- Sharp drop in crude oil prices requires attention, but strong demand is expected to continue until 2021
→ Depreciation of naphtha will squeeze profit in 1H, but this effect will not matter in medium- to long-term perspective.
- Increase in supply of petrochemicals from North America may temporarily weaken supply/demand balance, but strong demand in Asia will absorb that increase.
- Realize stable operating income. Maintain high operating rate of crackers.

Measures to be taken in 2019

- Promote development and commercialization of new derivatives.
- Improve reliability of crackers: Maintain stable plant operation, utilizing precaution system.
- Strengthen cooperation with JXTG. (CROS)



Vision for 2025

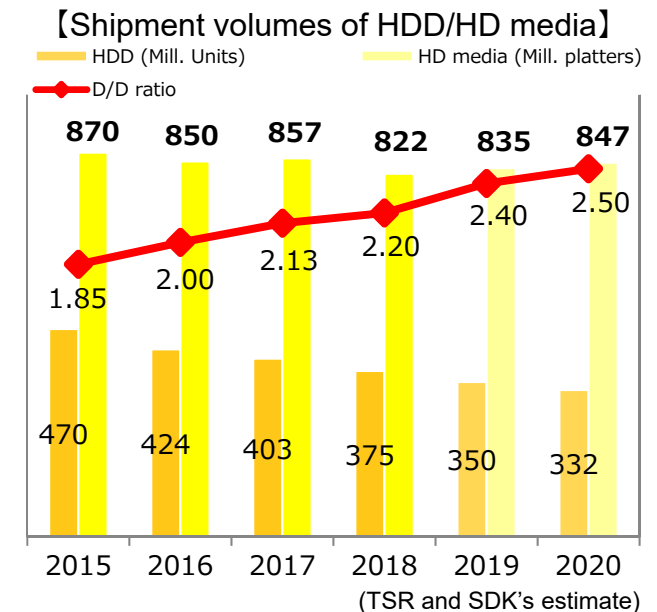
- Provide “Best in Class” media featuring technical advantages for growing NL storage market.
- Secure market share of 25% by maintaining the position of No.1 independent media supplier.

Business environment & tasks

- Though SSD’s share in storages for mobile PCs increases, shipment volumes of HD media slightly increases due to an increase in demand for storage devices for data centers.
- In 2019, shipment volumes of HD media for use in mobile PCs will decrease. Shipment volumes of HD media for use in data centers will recover in 2H 2019, though the demand will not increase during 1H 2019 due to backlash from rapid increase in investment in data centers during 2018.

Measures to be taken in 2019

- Start mass production of 1.8TB/platter media (largest capacity in the world) for use in NL 16TB HDDs.
- Prepare for supply of leading-edge media (MAMR/HAMR) in 2H 2019.
- Improve performance, quality and cost competitiveness of our HD media through maximization of internal production of aluminum platters.



Business strategy (SiC epitaxial wafer for power devices)

Vision for 2025

- Become global top SiC epi-wafer manufacturer, and have market share of 30% or more.

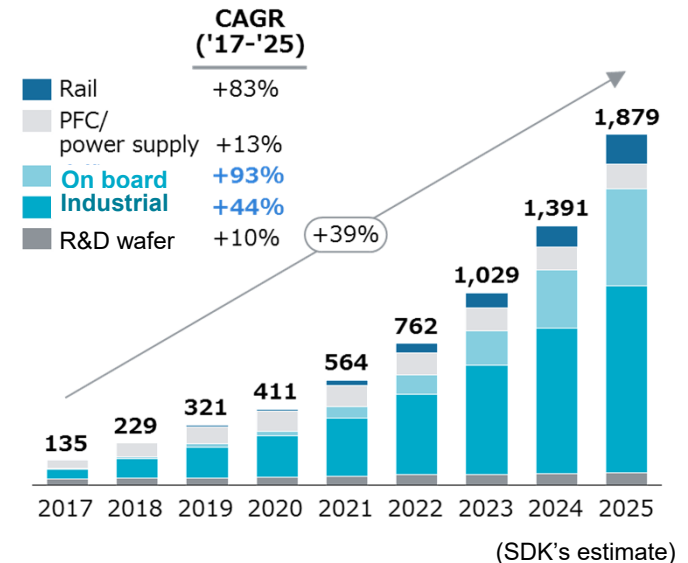
Business environment & tasks

- Market will expand due to the increase in demand for EV chargers, PV power conditioners, etc.
- Demand for SiC-based power devices for use in automotive power trains, rail cars and other devices will increase.
- SDK's shipment volumes of SiC epi-wafer will be tripled by 2021 from that in 2018.

Measures to be taken in 2019

- Continue positive capital investment to respond to rapid growth of the market.
- Strengthen response to diversified demands from other countries' power device manufacturers. (Sales to European manufacturers. Respond to 6" fabrication introduced by Asian manufacturers)
- Produce high-value-added products through improvement in uniformity in wafer thickness, density, and other properties.

Global demand for SiC epi-wafer (thousands)



Business strategy (High-purity gases for electronics)

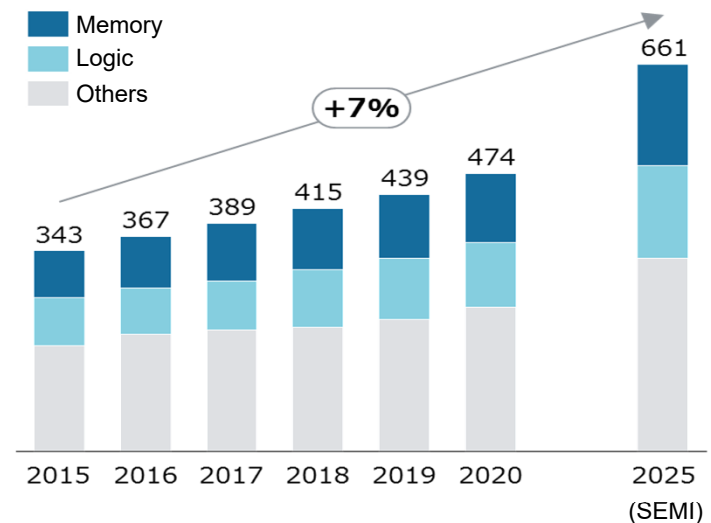
Vision for 2025

- Secure global top position in the growing market of high-purity gases for electronics

Business environment & tasks

- Growth of semiconductor memory market will level off in 2019. But market for other semiconductors will continue to grow.
 - Increases in number of layers and fineness of line pitch lead to the rise in consumption of etching gases faster than the growth of semiconductor market.
- The amount of generated data in the world has been increasing. Demand for semiconductors for on-board use also increases. Demand for semiconductors will increase further in and after 2020.
- We must establish stable and timely supply system for high quality gases.

Growth of global semiconductor market (\$ billion)



Measures to be taken in 2019

- Invest aggressively in expansion of capacity to produce high-purity gases, centering on etching gases. Strengthen supply system through formation of alliances and other measures.
- Accelerate establishment of overseas bases. (Establish optimized supply chain management system through formation of distribution network among production bases in East Asia.)

Vision for 2025

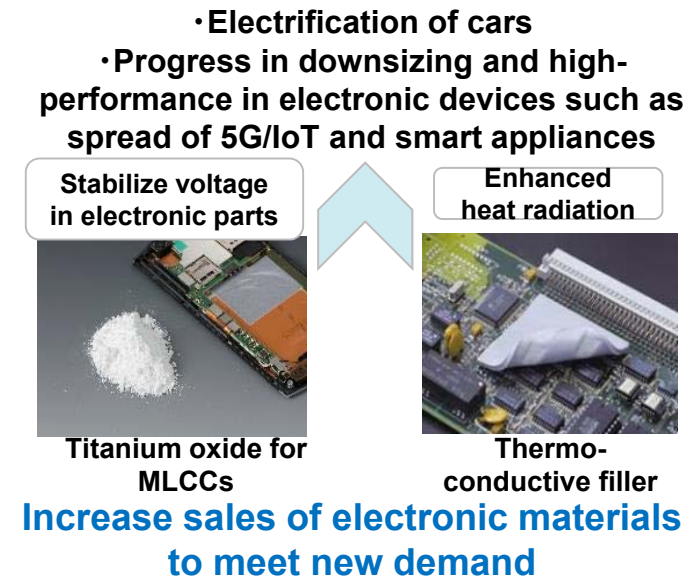
- As “One Stop Shopping Company for Ceramics,” we will offer the best solution to solve issues our customers face by utilizing high quality products and technologies to customize these products. We will expand our ceramics business by increasing sales and changing the business into solution oriented one.

Business environment & tasks

- Diffusion of xEVs and progress in car electrification
→Range of application of high-value-added products including thermo-conductive fillers is expanding.
- Demand for inorganic materials for electronic devices is increasing
→We expanded capacity to produce titanium oxide nanoparticles for MLCCs
- We maintain top market share in thermo-conductive fillers of spherical and roundish grades.

Measures to be taken in 2019

- Completed structural reform in 2018. Increase production of thermo-conductive fillers, titanium oxide nanoparticles for MLCCs and high-value-added abrasives for heavy-duty grinders.
- Secure top position in the market for titanium oxide nanoparticles for use in MLCCs by continuously expanding capacity to produce the product.



Vision for 2025

- Aluminum cans: Establish business structure which has stable profitability, resistant to changes in external environment.
- Aluminum specialty components: Constantly achieve sales of about ¥50 billion and operating income of about ¥5 billion.
- Aluminum rolled products: Aim to realize operating income rate of 10% through strengthening R&D and cost competitiveness, and expanding international sales.

Business environment & tasks

- Enforcement of stricter environmental regulation will boost growth of EV market, and needs for weight reduction and electrification of cars will increase.

Measures to be taken in 2019

- Aluminum cans: Streamline production capacity for domestic market and reduce fixed cost. Promote introduction of pricing formula linked to aluminum metal price. Expand/strengthen overseas production bases. (Consider new production bases in Southeast Asia including Vietnam and Thailand.)
- Aluminum specialty components: Enhance profitability. Offer solutions to respond to needs for weight reduction of cars and diffusion of xEVs.
- Aluminum rolled products: Increase sales of high-value-added aluminum foil for electrolytic capacitors. Strengthen cost competitiveness.
- Pursue thorough cost reduction (Cost roadmap)

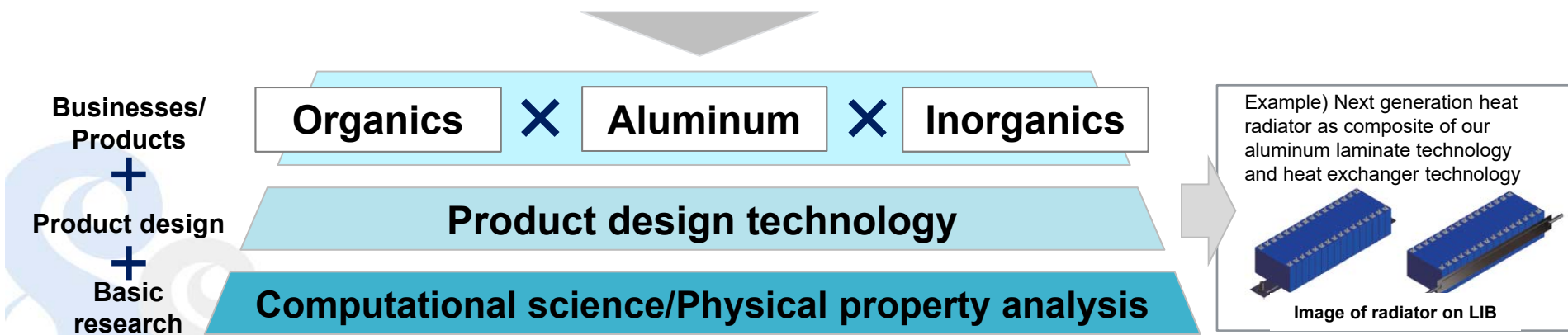
Automotive Multi-material Project

Due to progress in electric-power operation, electrification and weight reduction of cars, car manufacturers require materials with higher performance.

Automotive Multi-material Project will develop new multi-material products that take advantages of our diverse materials and technologies centering on aluminum, through back-casting of changes in market and customers' needs.



- Light weight/ High rigidity
- Adhesion of different materials
- Electric insulation
- Heat radiation/ Heat storage



Examples of our contribution to SDGs – 1

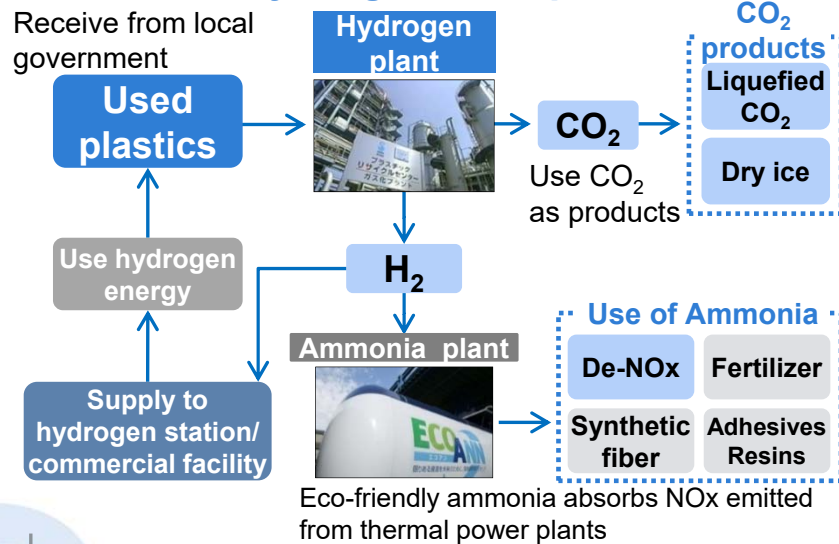
We utilize used plastics as materials to produce chemicals.

We produce graphite electrodes which melt steel scrap for reusing.

Thus we contribute to conservation of natural resources and energy, and reduction of CO₂ emission.

Case①: Chemical recycling of plastics Basic chemicals

Chemical recycling of used plastics

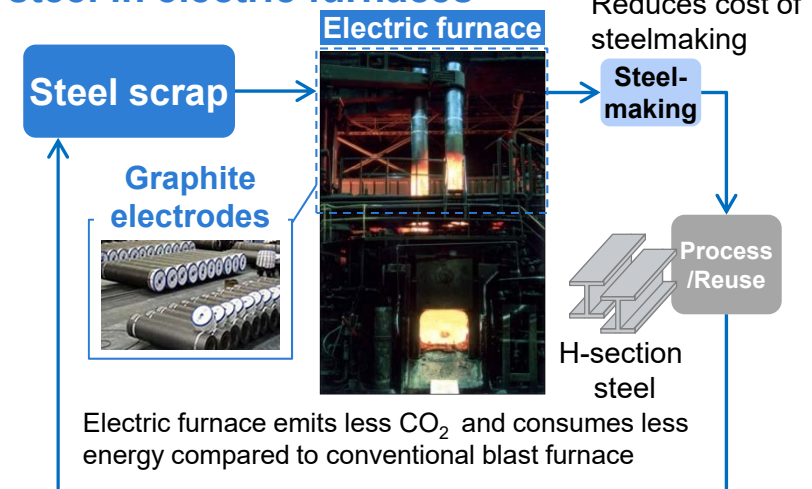


We achieve zero-emission through recycling of used plastics



Case②: Graphite electrodes Carbon

We produce graphite electrodes to melt steel in electric furnaces



Graphite electrodes contribute to recycling of steel



Examples of our contribution to SDGs – 2



SiC epitaxial wafer for power devices we produce realizes drastic reduction of power loss and energy conservation.

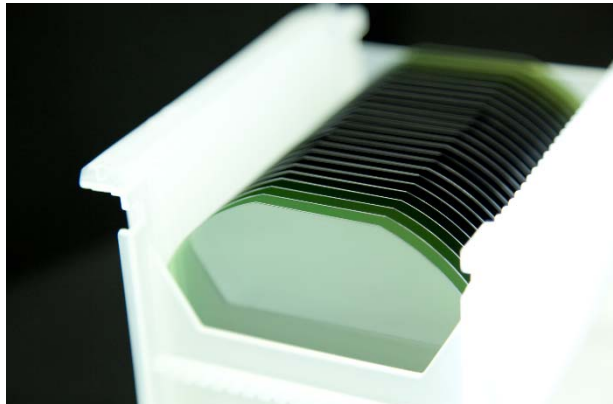
Aluminum components we produce contribute to weight reduction of cars.

Thus our revolutionary technologies contribute to environmental protection.

Case③ : SiC epi-wafer for power devices

Device solution

High-grade Epi enables power devices to have high performance in AC/DC conversion, frequency conversion, and boosting/reducing of voltage.



High-grade Epi contributes to energy conservation in EVs and electric equipment

Contributes to SDGs

- 7 AFFORDABLE AND CLEAN ENERGY
- 13 CLIMATE ACTION

Case④: Aluminum components for weight reduction of cars

Aluminum specialty components

Our aluminum specialty components contribute to weight reduction of cars.



Crash box of a car including aluminum components

Contributes to SDGs

- 7 AFFORDABLE AND CLEAN ENERGY
- 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
- 13 CLIMATE ACTION

Note

Performance forecast and other statements pertaining to the future as contained in this presentation are based on the information available as of today and assumptions as of today regarding risk factors that could affect our future performance. Actual results may differ materially from the forecast due to a variety of risk factors, including, but not limited to, the economic conditions, costs of naphtha and other raw materials, demand for our products such as graphite electrodes and other commodities, market conditions, and foreign exchange rates. We undertake no obligation to update the forward-looking statements unless required by law.