

JX Nippon Mining & Metals Group Medium-Term Management Plan for Fiscal 2020 to 2022

Explanatory Material

July 14, 2020

 **JX Nippon Mining & Metals**

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 - Basic Policies and Strategies
 - Targets of Plan
 - Environmental Awareness, Business Strategies, and Technology Development Strategies
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1. Review of the Previous Medium-Term Plan

Basic Policies of the Previous Medium-Term Management Plan of the JX Nippon Mining & Metals Group

Making current Core Businesses More Profitable

- Boost profitability of the Caserones Copper Mine
 - Maintain high operating rate
 - Become more competitive by achieving thoroughgoing cost reductions
- Expand the scale of advanced materials business
 - Increase production capacity
 - Boost competitiveness by making use of IoT and AI
- Copper smelting & refining, recycling
 - Safe, stable operations
 - Boost cost competitiveness and pursue efficiency

Cultivating and Strengthening Next-Generation Core Businesses (Developing technology-based businesses)

- Develop markets, strengthen sales, and develop technologies in anticipation of the arrival of the IoT society
- Actively devote management resources to promising areas
 - Invest strategically in independent development
 - Actively utilize Group technologies, M&A, and CVC

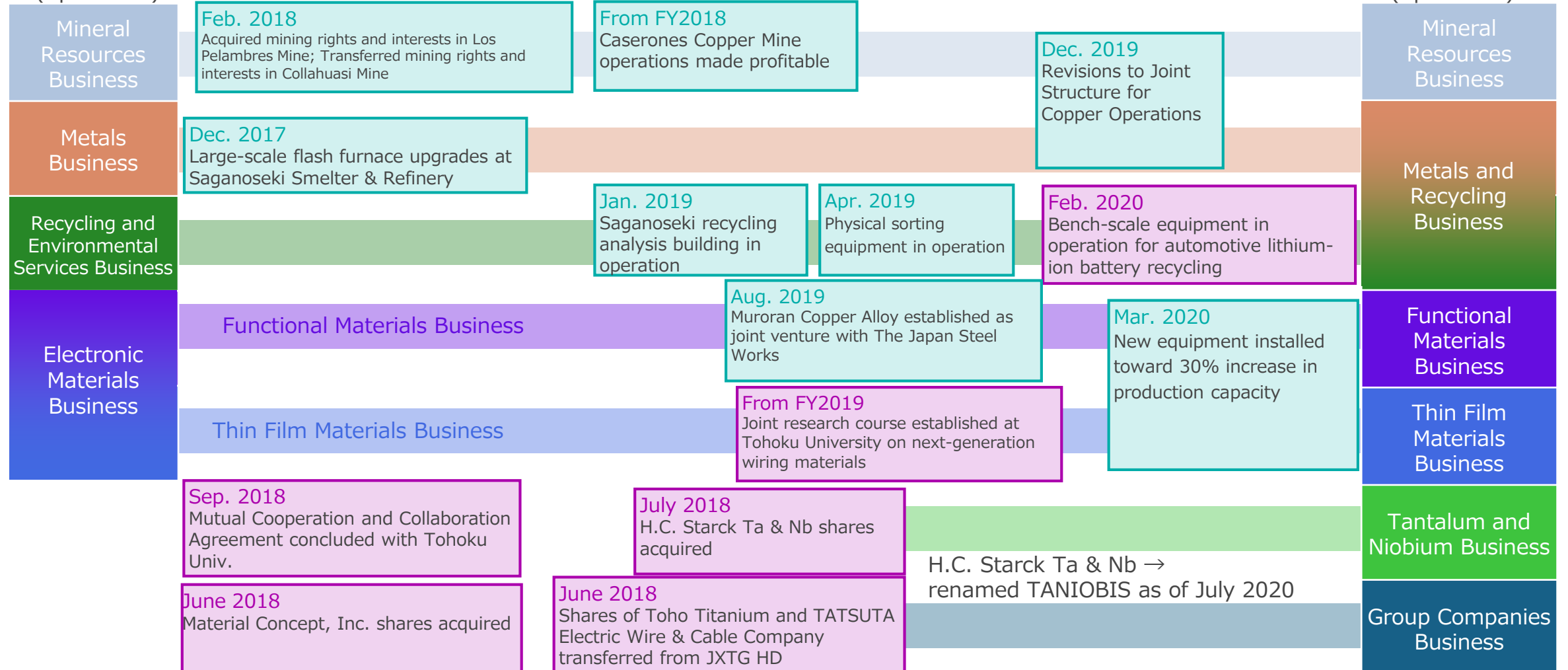
1. Previous Medium-Term Plan: Main Policy Measures

At Start of Previous Medium-Term Plan (April 2017)

May 2019
Formulation of Long-Term Vision

Strengthening Core Businesses
Developing Next Generation

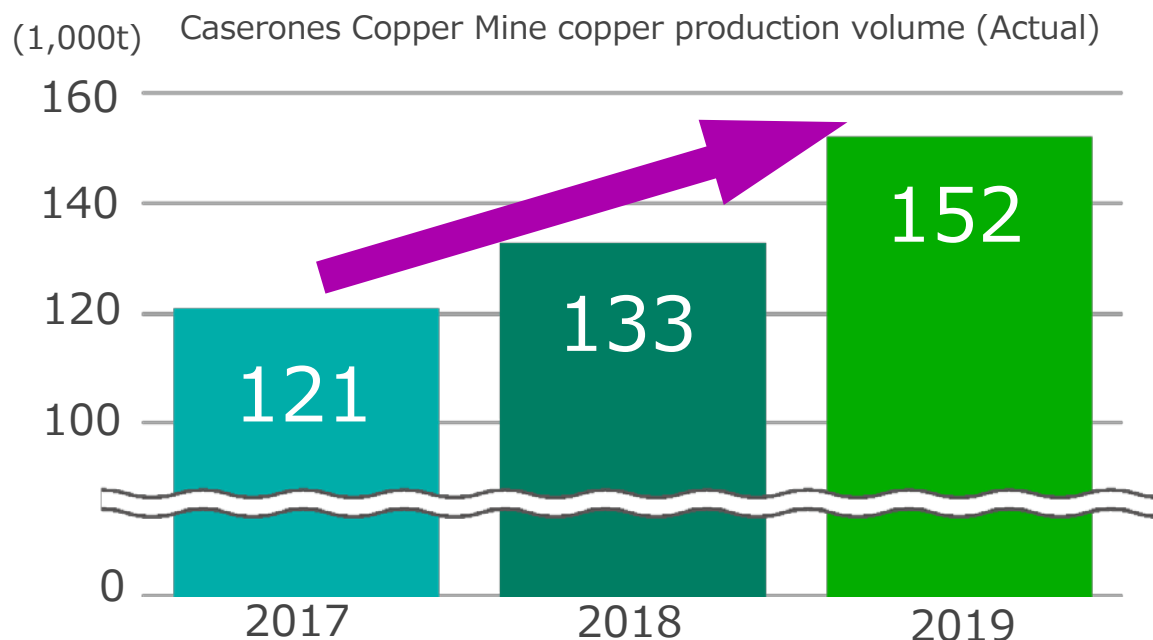
At Start of Current Medium-Term Plan (April 2020)



1. Previous Medium-Term Plan: Progress on Two Major Themes

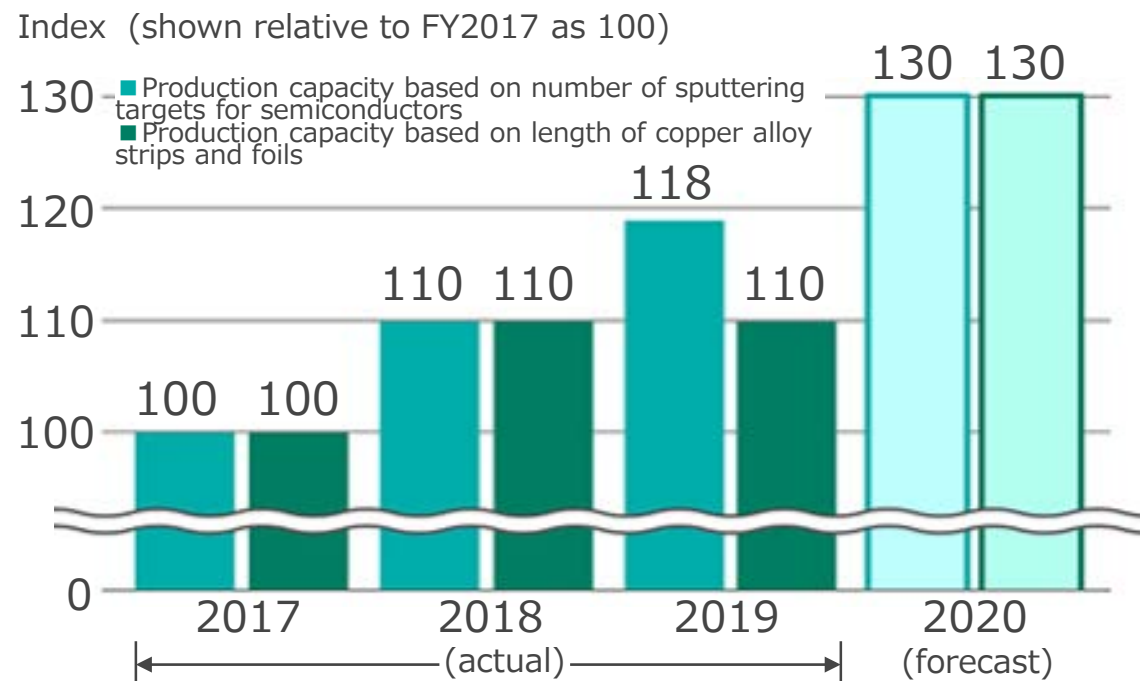
Boost profitability of the Caserones Copper Mine

Thanks to greater and more stable production, operations at the Caserones Copper Mine **have been profitable since fiscal 2018**



Enhance production capability toward expanding the scale of advanced materials business

Preparations have been completed for further production increases, by **steadily raising production capacity** since the previous medium-term plan



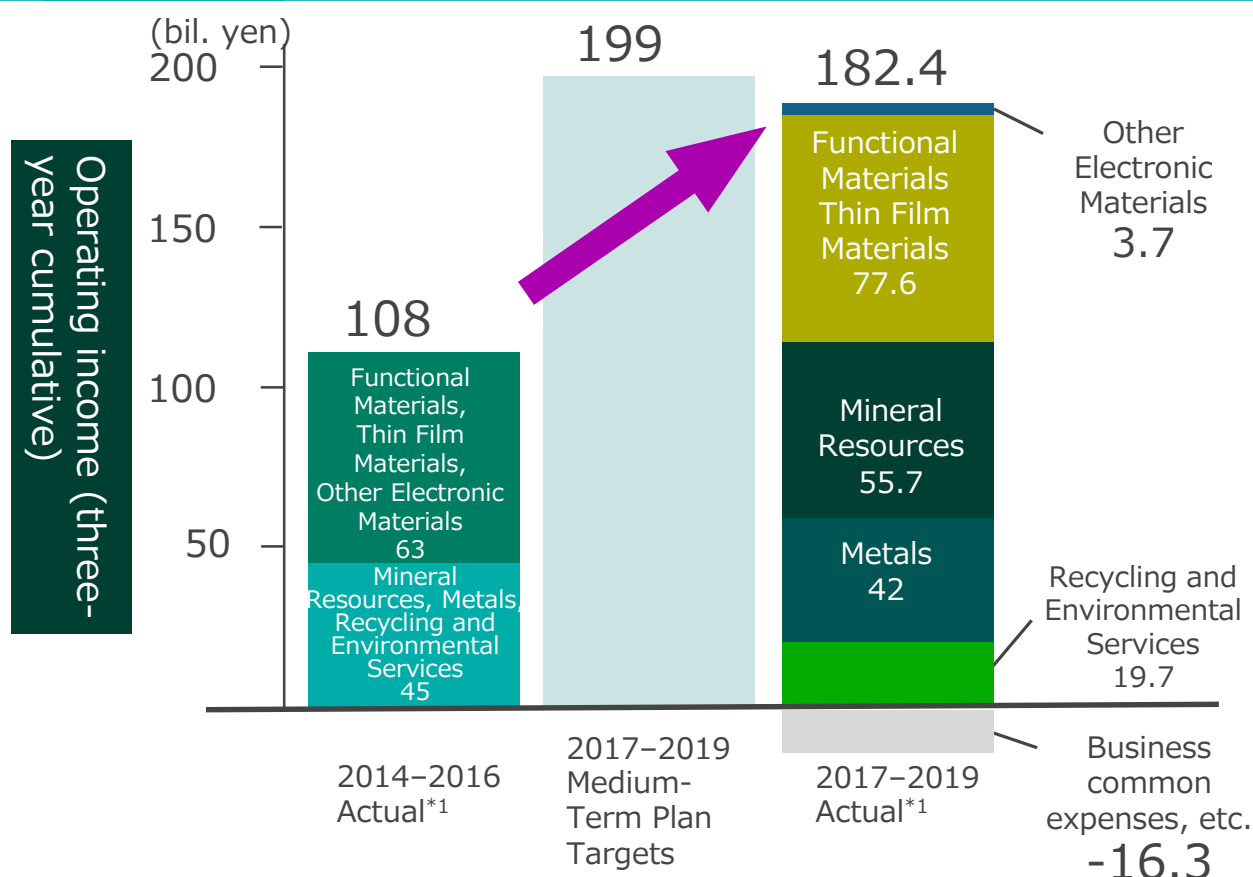
1. Previous Medium-Term Plan: Performance and Investment

*1: For the reporting years 2014 to 2016, interest received and interest paid are excluded from ordinary profit and loss in accordance with the Japanese Accounting Standards (J-GAAP). IFRS is applied to the figures for 2017 to 2019.
(The figures for both periods exclude the impairment loss recognized for the Caserones Copper Mine and inventory valuation factor.)
*2: An impairment loss of minus 128.6 billion yen recognized for the Caserones Copper Mine in fiscal 2017.

Performance

Excluding the Caserones Copper Mine impairment loss,^{*2} the targets were largely met.

The 2017 impairment loss was booked as future necessary costs for weather-related risks and environmental measures became clear with the increased pace of production; and these costs as well as the mining plan revisions were factored into the long-term production plans.



Investment

Strategic investment increased more than planned levels.

Planned

Strategic investment of 70.0 bil. yen
Business maintenance, etc. 130.0 bil. yen

Actual

Strategic investment of 90.0 bil. yen
Business maintenance, etc. 120.0 bil. yen

Actual examples of strategic investment

Meeting market growth	Strengthened overall processes for copper foil and copper alloy strips, and sputtering targets for semiconductors
Boosting competitiveness	Raised copper concentrate processing capacity at Saganoseki Smelter & Refinery
Expanding business sectors	Acquired shares of H.C. Starck Ta & Nb (current TANI OBIS)

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Looking at Performance

2. Long-Term Vision 2040: Aiming to foster the development of society's innovation with advanced materials

The JX Nippon Mining & Metals Group Long-Term Vision 2040 was drawn up in fiscal 2019, aimed at meeting changes in society and achieving sustainable growth as an enterprise.

Notable changes in social trends

- Severe resource shortages and depletion due to growing middle class
- The challenges of coping with the shrinking Japanese markets and achieving sustainable growth especially in emerging economies
- Growing needs for advanced materials

Correspondence to the SDGs

Needs for advanced materials are expanding in various fields toward achieving a sustainable society

- Goals seen as closely related to our business areas



2. Long-Term Vision 2040: Aiming to foster the development of society's innovation with advanced materials

Basic Policy

Transforming from an equipment industry company to **a technology-based company**, achieve high profitability even in the face of fierce global competition, while **contributing to the realization of the sustainable society aimed for in the SDGs**

Redefine the
role of each
business



Focus Businesses



Base Businesses

Develop and
strengthen
new
businesses

In-house
development



**Co-creation-
type
development**

Develop human
resources who
could create
new value

- Reform of the organizational culture
- Development and expansion of engineering personnel

2. Redefining Our Businesses in the Long-Term Vision



Focus Businesses

Businesses where differentiation through technology can achieve a global competitive advantage **(core of growth strategy)**

Business Name and Main Products and Services

- Functional Materials Business: Treated rolled copper foils, copper alloy strips/foils
- Thin Film Materials Business: Sputtering targets for semiconductors, InP wafers(*)
- Tantalum and Niobium Business: Tantalum and niobium powders, oxides, and chlorides
- Businesses undertaken by Toho Titanium and TATSUTA Electric Wire & Cable Company



*InP wafer: Wafer for compound semiconductors made of iridium and phosphorus, used in optical communications



Base Businesses

Businesses that keep the organization robust and resilient, through never-ending efforts to boost competitiveness

Business Name and Main Services

- Mineral Resources Business: Development of resources including rare metals, copper, and silicate flux, and mining operations and investment management
- Metals and Recycling Businesses: Smelting and refining to produce refined copper, sulfuric acid, rare metals, and precious metals
Recovery of copper and precious metals from scrap, and detoxification of industrial waste



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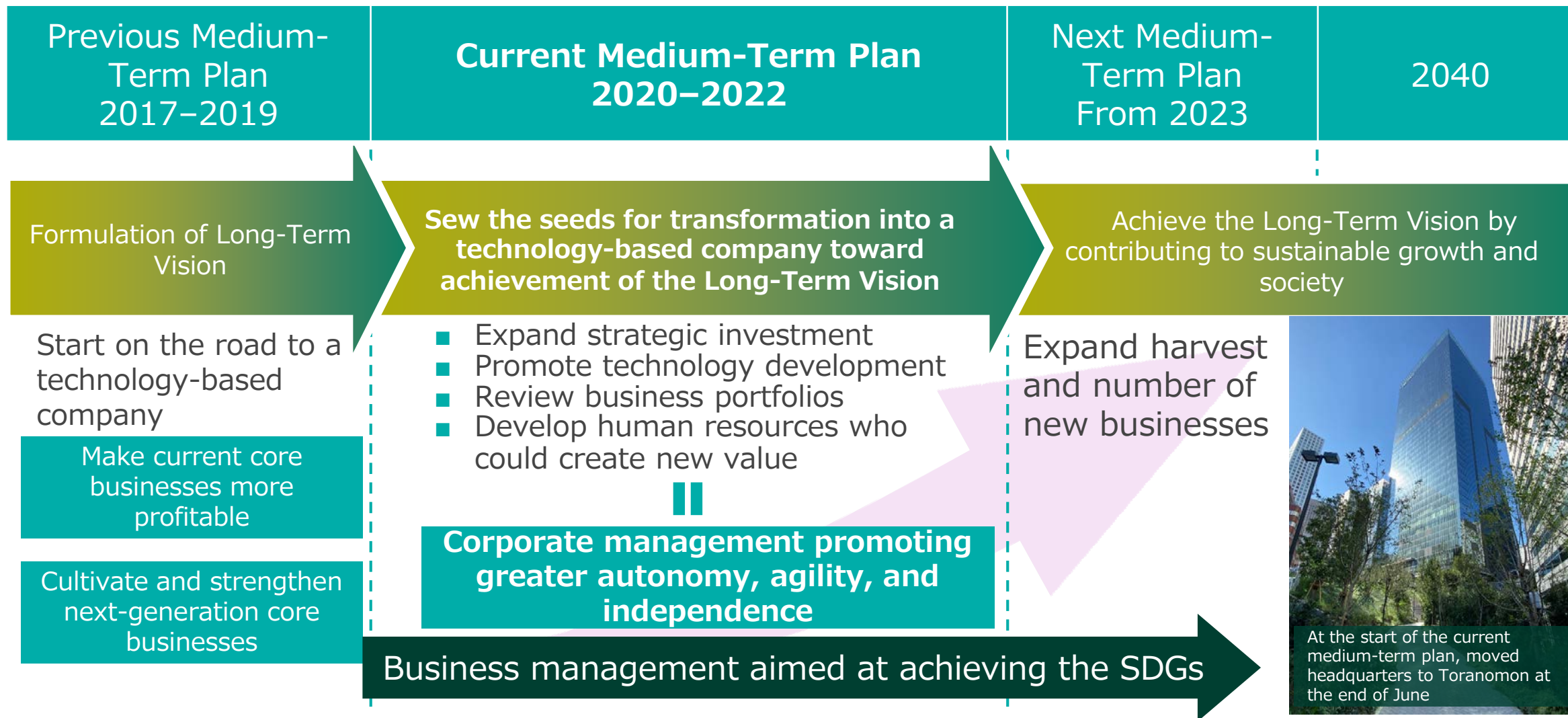
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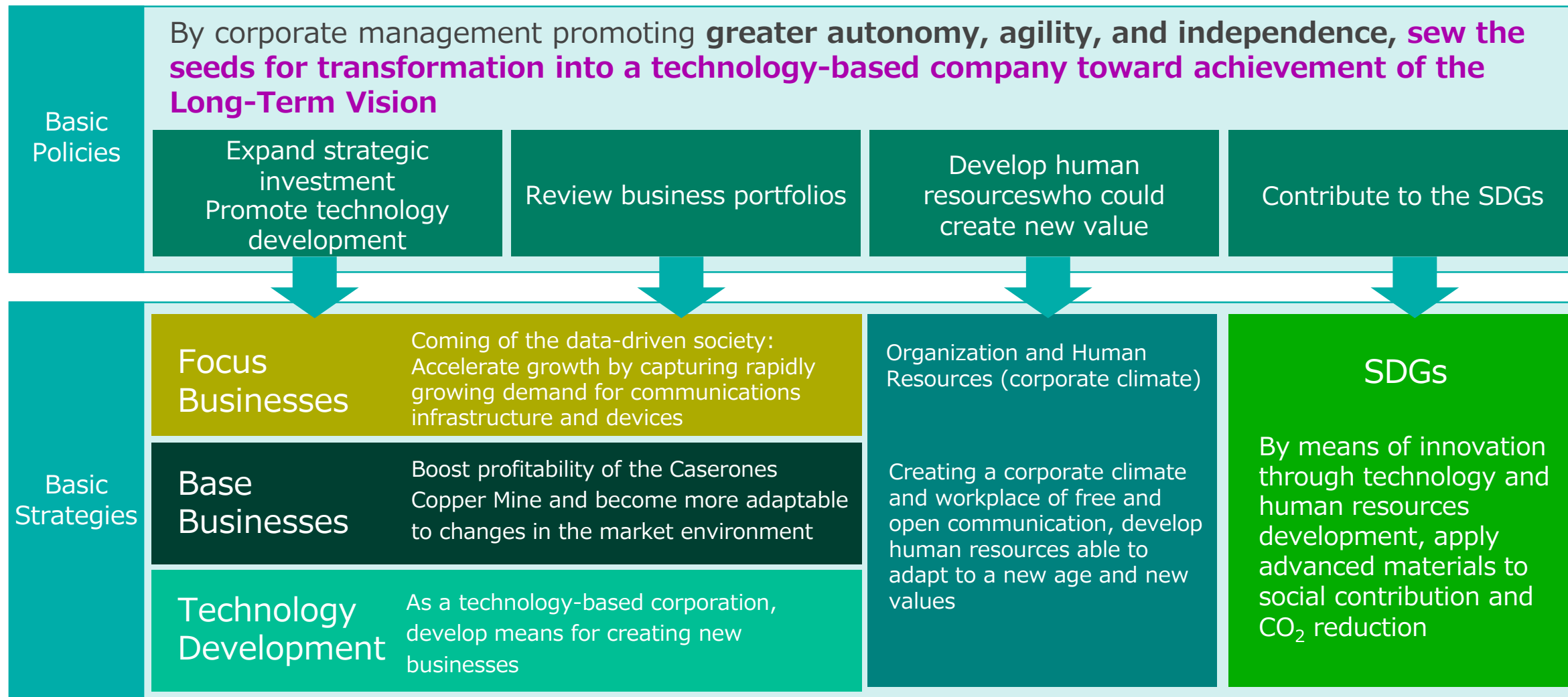
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Looking at Performance

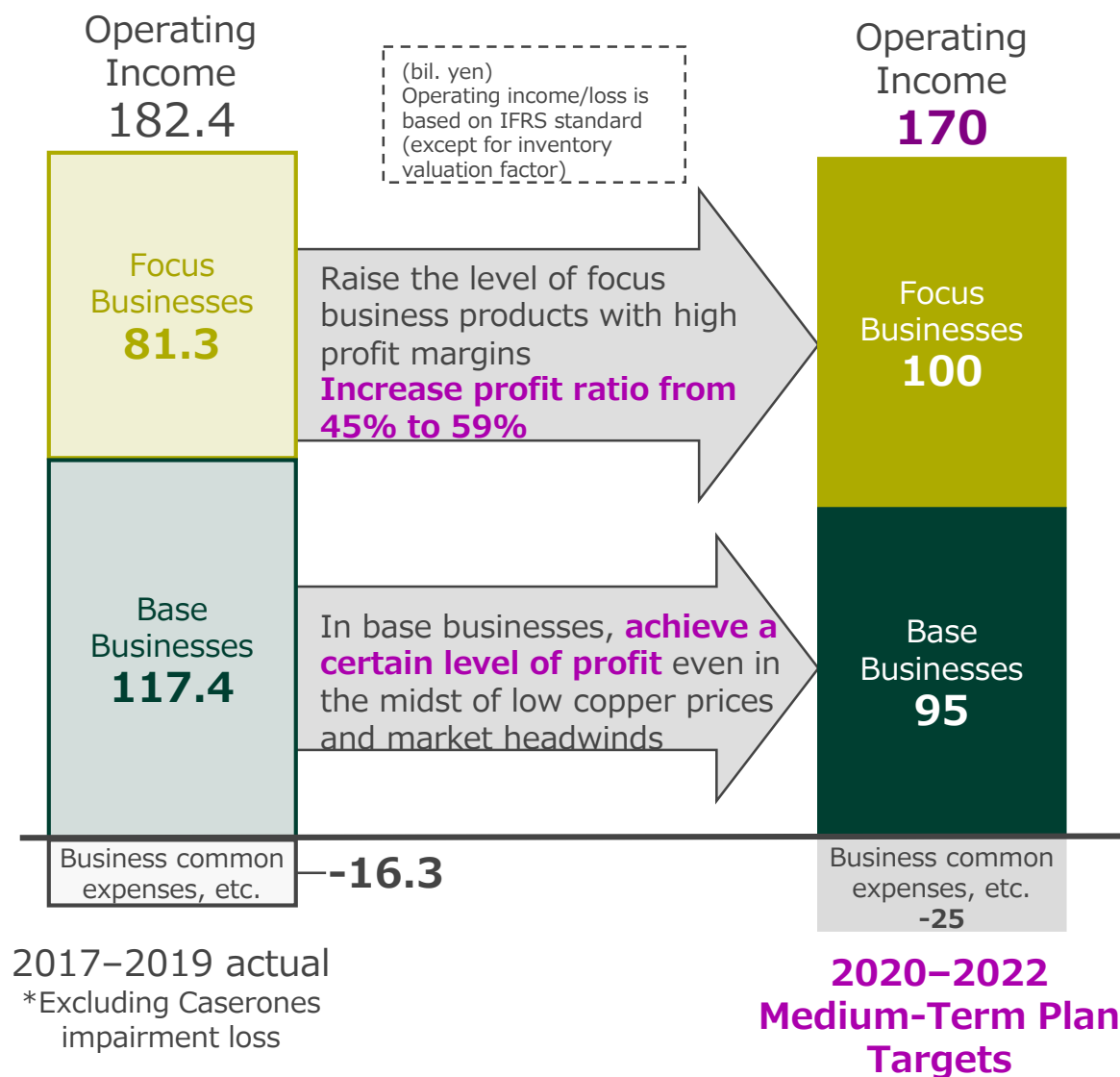
3. Role of the Current Medium-Term Plan



3. Current Medium-Term Plan: Basic Policies and Strategies



3. Current Medium-Term Plan: Operating Income Targets



Overall business climate assumed

- Impact of COVID-19: Factored into fiscal 2020
 - Low copper prices^(*1)
 - Demand adjustment for each product
- Copper prices and electronic device-related markets to recover from fiscal 2021

Operating income target

The starting business environment is a difficult one, impacted by COVID-19 and inventory adjustment in the electronic devices market.^(*2) Applying the following measures, however, we will **achieve operating income in line with that during the previous medium-term plan**.

Focus Businesses	Expand sales as markets recover Flexibly increase production capacity
Base Businesses	Make ongoing operation improvements and cost reductions Strengthen competitiveness through integrated management of Metals and Recycling

(*1) Assumed copper prices (¢/lb) 2020: 250, 2021: 270, 2022: 270

(*2) Fiscal 2020 operating profit outlook in metals segment: 29 bil. yen (announced 5/20)

3. Current Medium-Term Plan: Environmental Awareness

Focus Businesses (Advanced Materials)

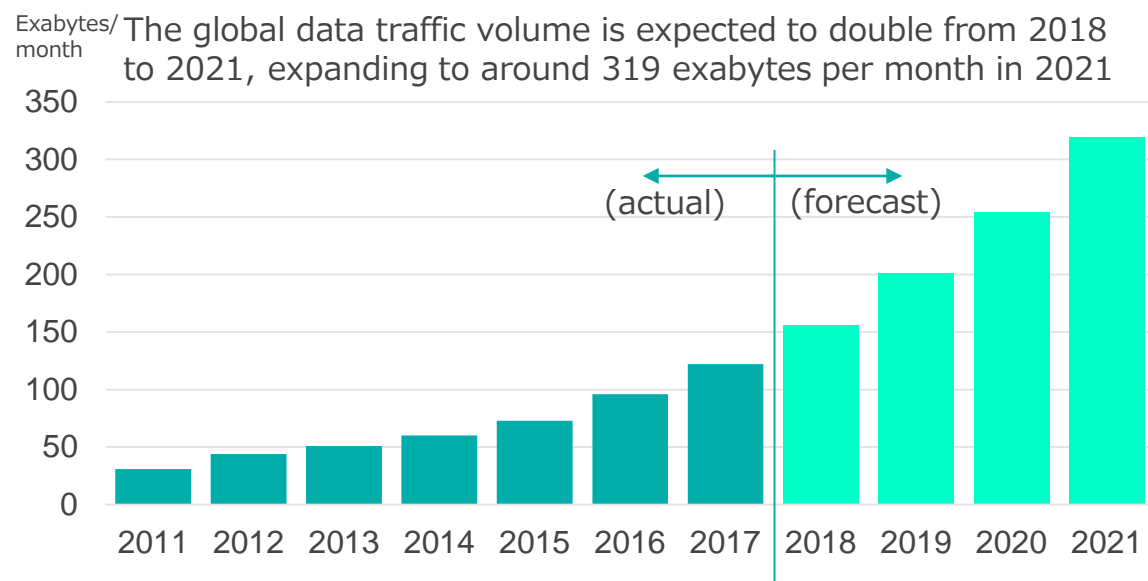
The arrival of the data-driven society brings expectations for **demand growth in advanced materials**, both for infrastructure and devices

Base Businesses (Mineral Resources, Metals and Recycling)

As rising costs and worsening of the market environment are foreseen, **the business climate will continue to be challenging**

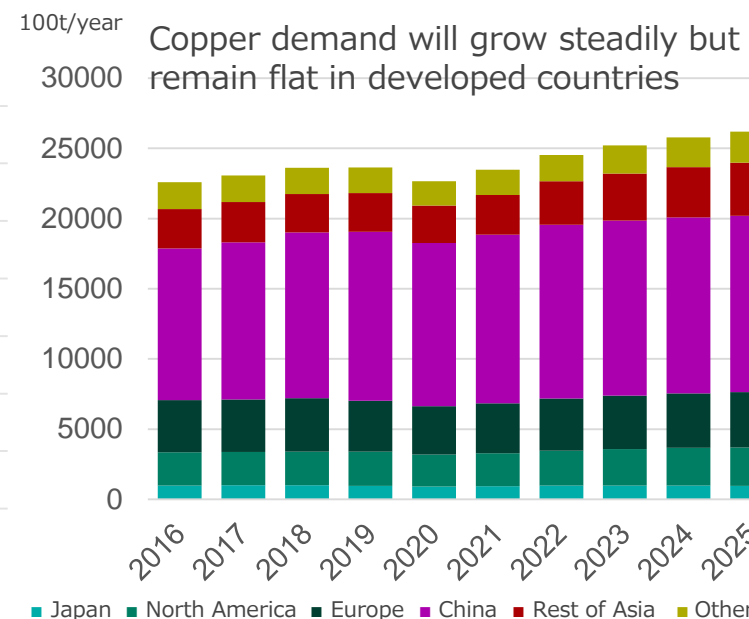
Forecast growth in data traffic

(Source) Created by the Company based on a Ministry of Internal Affairs and Communications White Paper, "Information and Communications in Japan" (2019)



Worldwide copper demand (est.)

(Source) Created by the Company based on Wood Mackenzie global_copper_long-term_outlook_q2_2020



Mineral Resources

- Increase in environmental measures costs and operation costs

Metals

- Supply/demand tightness for concentrate = continued downward trend in smelting margin TC/RC
- Intensifying competition for refined copper as Chinese smelting and refining capacity grows
- Sluggish market for sulfuric acid

Recycling

- Rising treatment costs due to decreased metal grade of raw materials as increase in waste plastic, etc.

3. Current Medium-Term Plan Business Strategy: Focus Business Initiatives

Main Policy Measures in the Current Medium-Term Plan

Be sure to capture demand growth from the arrival of the data-driven society

- Dynamic increases in production capacity with eye on market trends
 - Sputtering targets for semiconductors
 - Treated rolled copper foils, high-functionality copper alloys (thin)
- A more robust supply chain
 - Strengthen overseas sites in readiness for disasters and geopolitical risks
 - Collaborate with other firms in obtaining raw materials

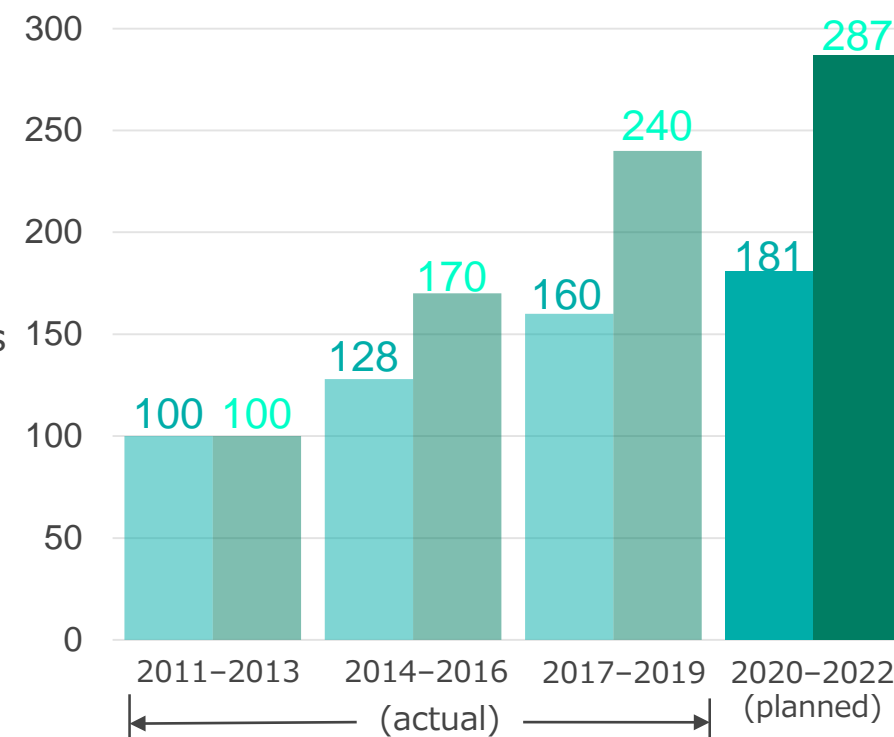
Markets expected to grow

- Data centers (servers)
- Communications infrastructure (4G→5G)
- Smart devices (smartphones, automobiles, industrial machinery, household appliances)

Our products aimed at these markets

- Sputtering targets for semiconductors
- InP wafers
- Treated rolled copper foils
- High-functionality copper alloys
- Metallic powder

- Sputtering targets for semiconductors: number sold (index*)
 - Treated rolled copper foils: length sold (index*)
- *: Relative to fiscal 2011–2013 sales volume as 100



By implementing the policy measures, maintain sustained growth also during this medium-term plan and seek to increase sales volumes

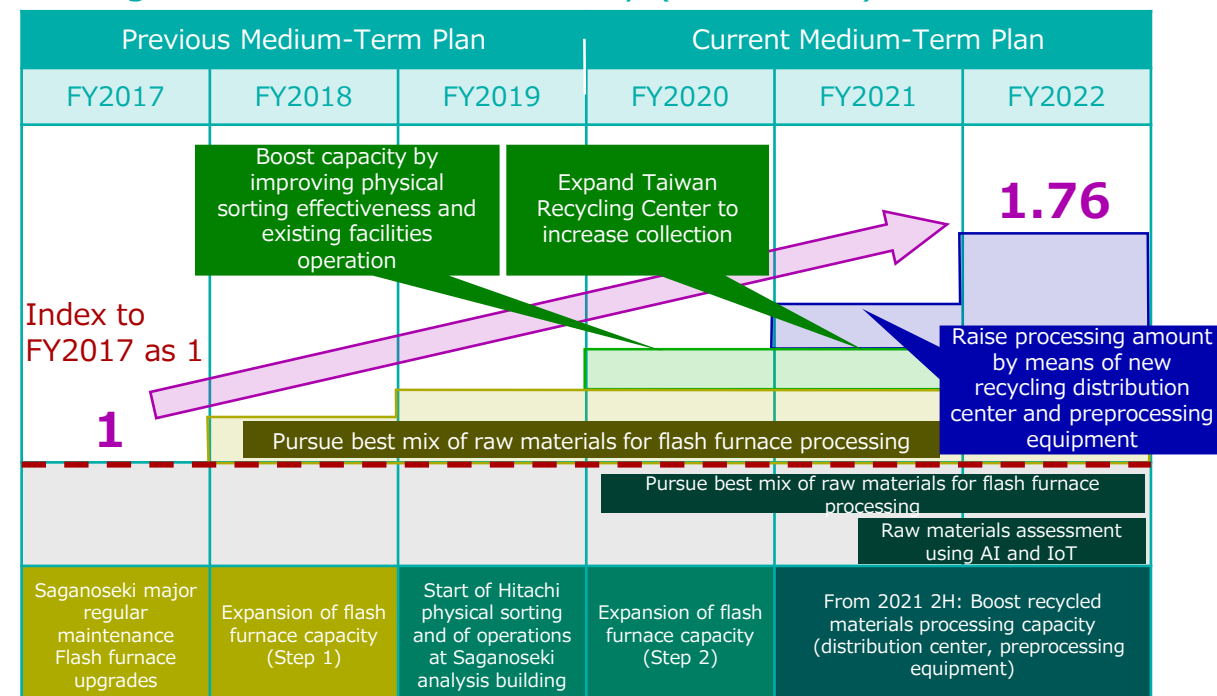
Main Policy Measures in the Current Medium-Term Plan

- Mineral Resources: Improvement of operations at the Caserones Copper Mine and ongoing cost reductions in all processes
 - Increase production from fiscal 2019 performance of 152,000t to 171,000t in fiscal 2022, aiming for final profitability
- Metals and Recycling: Strengthen competitiveness through integrated management of smelting & refining and recycling
 - Saganoseki Smelter & Refinery made wholly owned subsidiary in April 2020; Metals and Recycling businesses integrated

■ Trend in recycled materials processing volume at Saganoseki Smelter & Refinery (illustration)

- Improve physical sorting effectiveness and operations
- Besides increasing collection by strengthening overseas sites, implement plans for increasing recycled materials collection and processing amounts at Saganoseki

[Details]	Establish IoT-using distribution center at Ozai Port (Oita)
	Increase preprocessing equipment capacity at the smelter
[Scheduled startup]	2021 2H
[Planned increase]	Approx. 25%



3. Current Medium-Term Plan Business Strategies: Technology Development Strategy

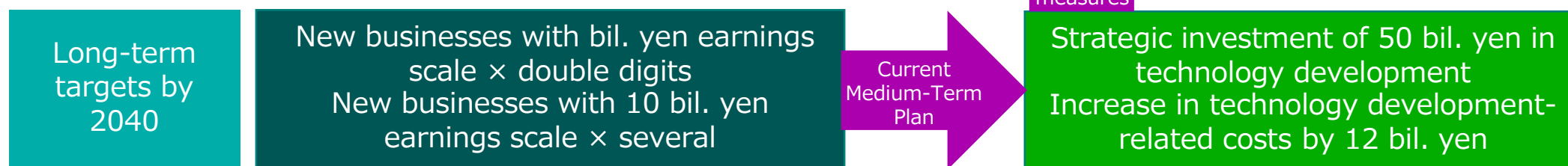
As a technology-based corporation, develop means
for creating new businesses

Main Policy
Measures in
the Current
Medium-Term
Plan

- Build an organization able to handle increase in cross-division projects
 - A structure more focused on function
- Promote development through co-creation between our core technologies and outside resources
(See next page)
- Discover and pursue new themes
 - OI (Open Innovation), cross-organizational marketing, industry-academia collaboration, Stage-Gate® process, etc.
- Promote use of IoT and AI
 - DX (Digital Transformation) support, implementation on production floor
- Develop human resources
 - Sending employees to universities and research institutions; AI support

Specific successes

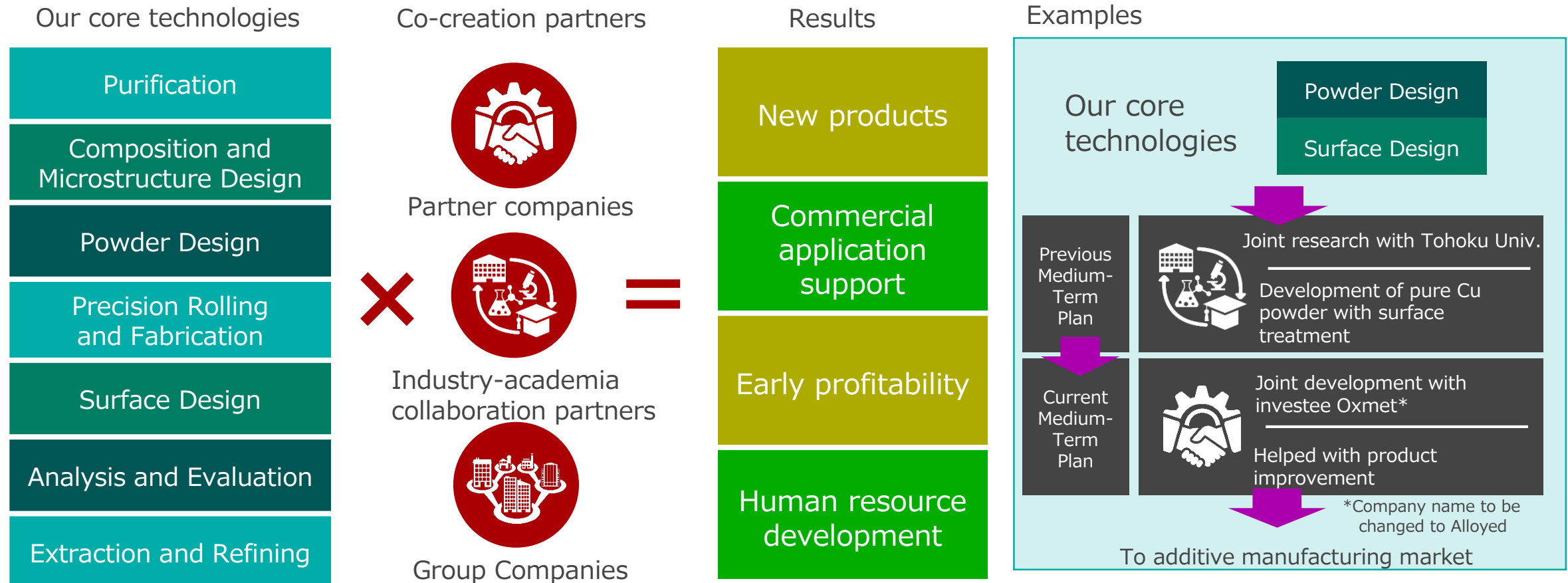
- Launch of new products (profitable in FY2023 or after)
 - Metal powders for additive manufacturing
 - CVD precursor base materials
 - Shielding materials, etc.
- Intensified cultivation of themes
 - Automotive lithium-ion battery recycling (ongoing)
 - Next-generation telecommunications materials (studying)



3. Current Medium-Term Plan Business Strategies: Technology Development Strategy

- Examples of co-creation with core technologies -

A scheme for new business development: Advancing and utilizing core technologies while engaging in co-creation with outside resources



3. Current Medium-Term Plan: Initiatives for Achieving the SDGs



As a technology-based company, committed to achieving the SDGs through innovation and human resources development

Provision of advanced materials supporting daily life

Contribute to the advancement of the IoT/AI society through provision of advanced materials essential to game-changing electronic devices

Delivery by robots



Energy diversity



Online/remote



Remote medical care



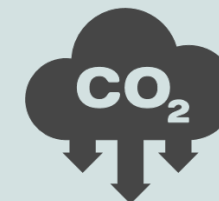
Contributions to global environmental conservation
(Helping to realize a carbon-free society)

Reduce the Group's total CO₂ emissions by **50%** by 2040
Aim for **net zero** by around 2050, including social contributions
Endorsed the Keidanren "Declaration on Challenge Zero"

Reduce CO₂ by the following technologies

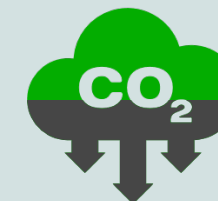
- Developing recycling technologies and increasing recycling rate
- Developing advanced functional materials contributing to reduction and utilization of CO₂
- Developing technology for recovering unused waste heat

2018 emissions as 100



2018

50% reduction



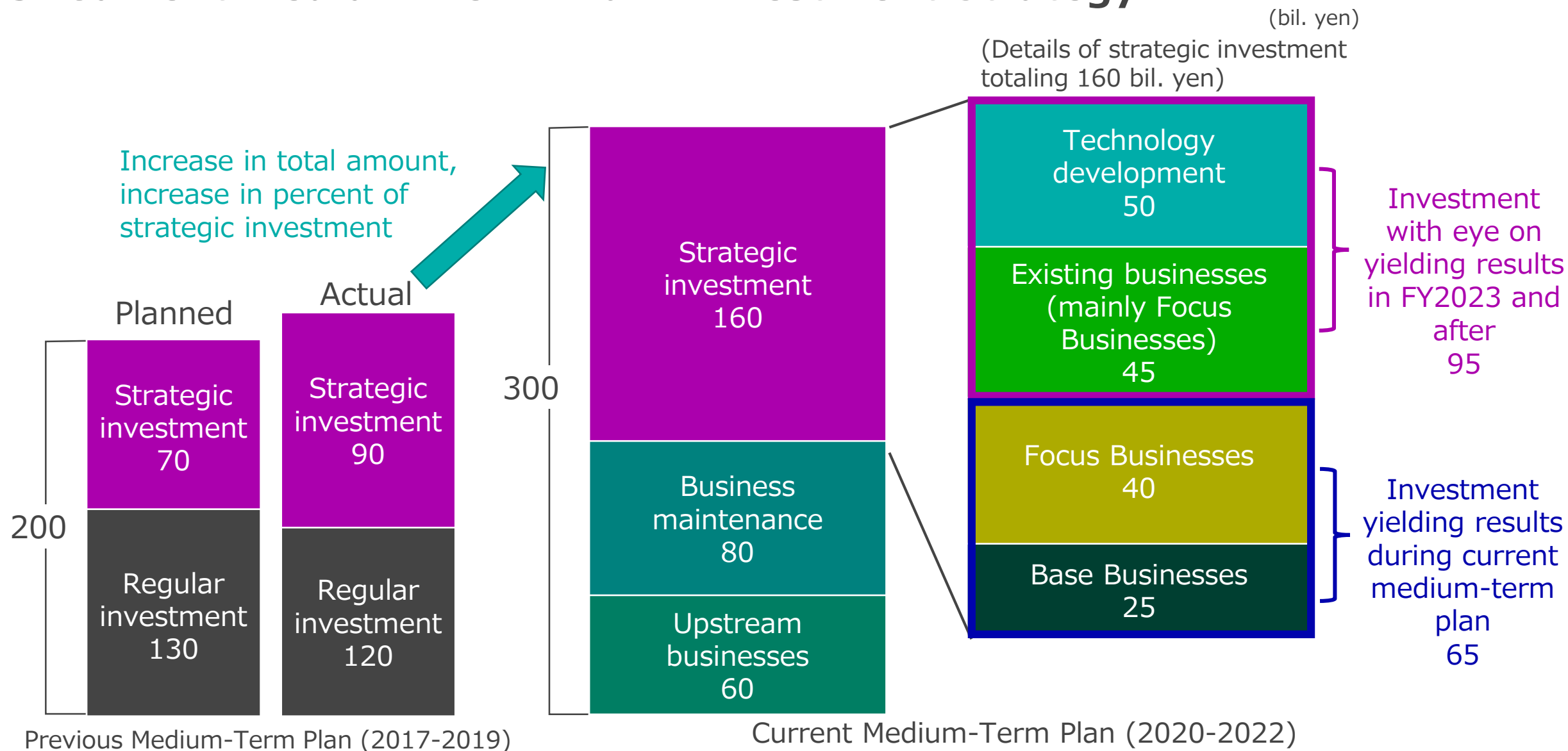
2040

Achieve net zero



2050

3. Current Medium-Term Plan: Investment Strategy



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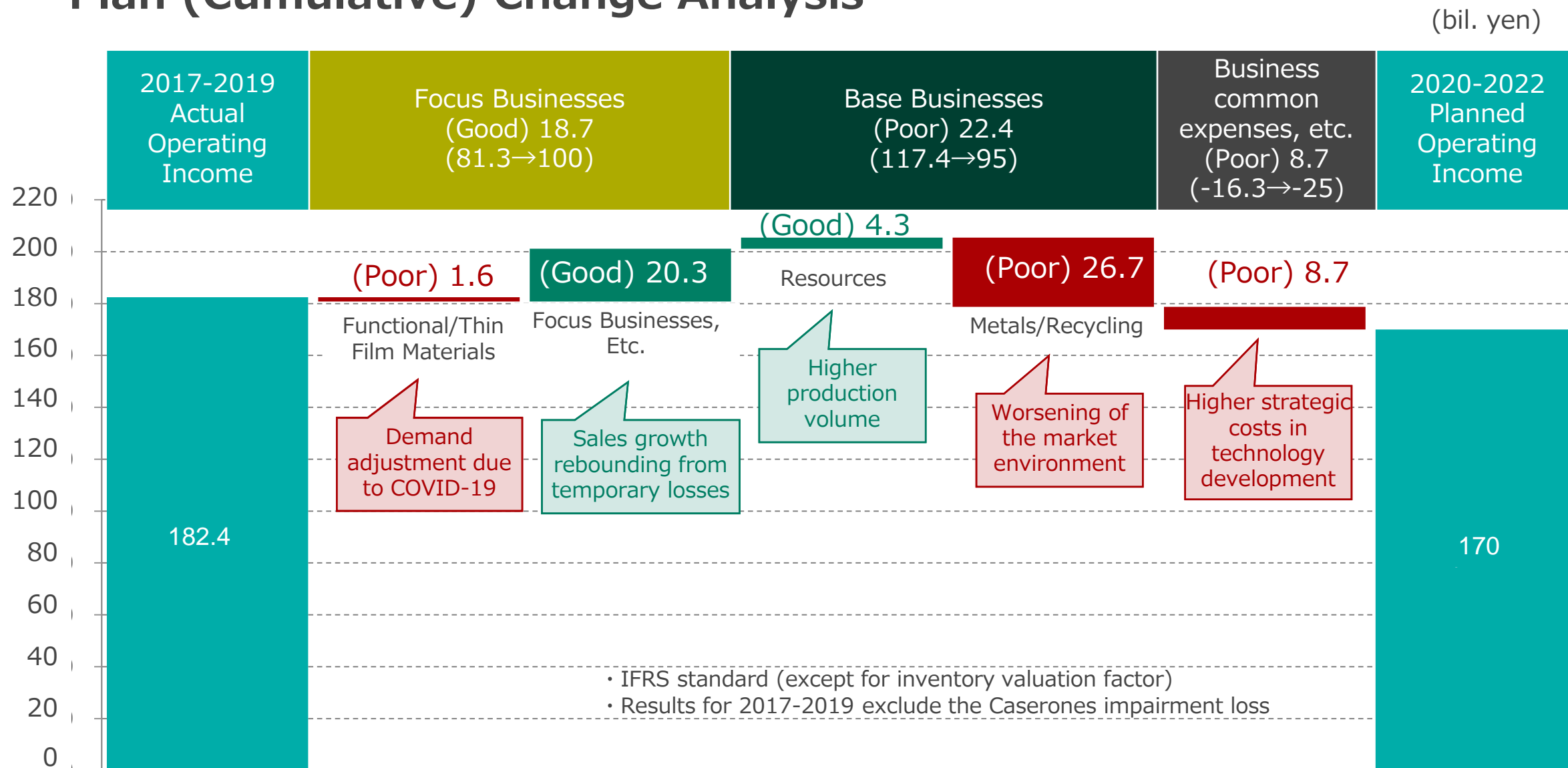
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Looking at Performance

4. Previous Medium-Term Plan vs. Current Medium-Term Plan (Cumulative) Change Analysis

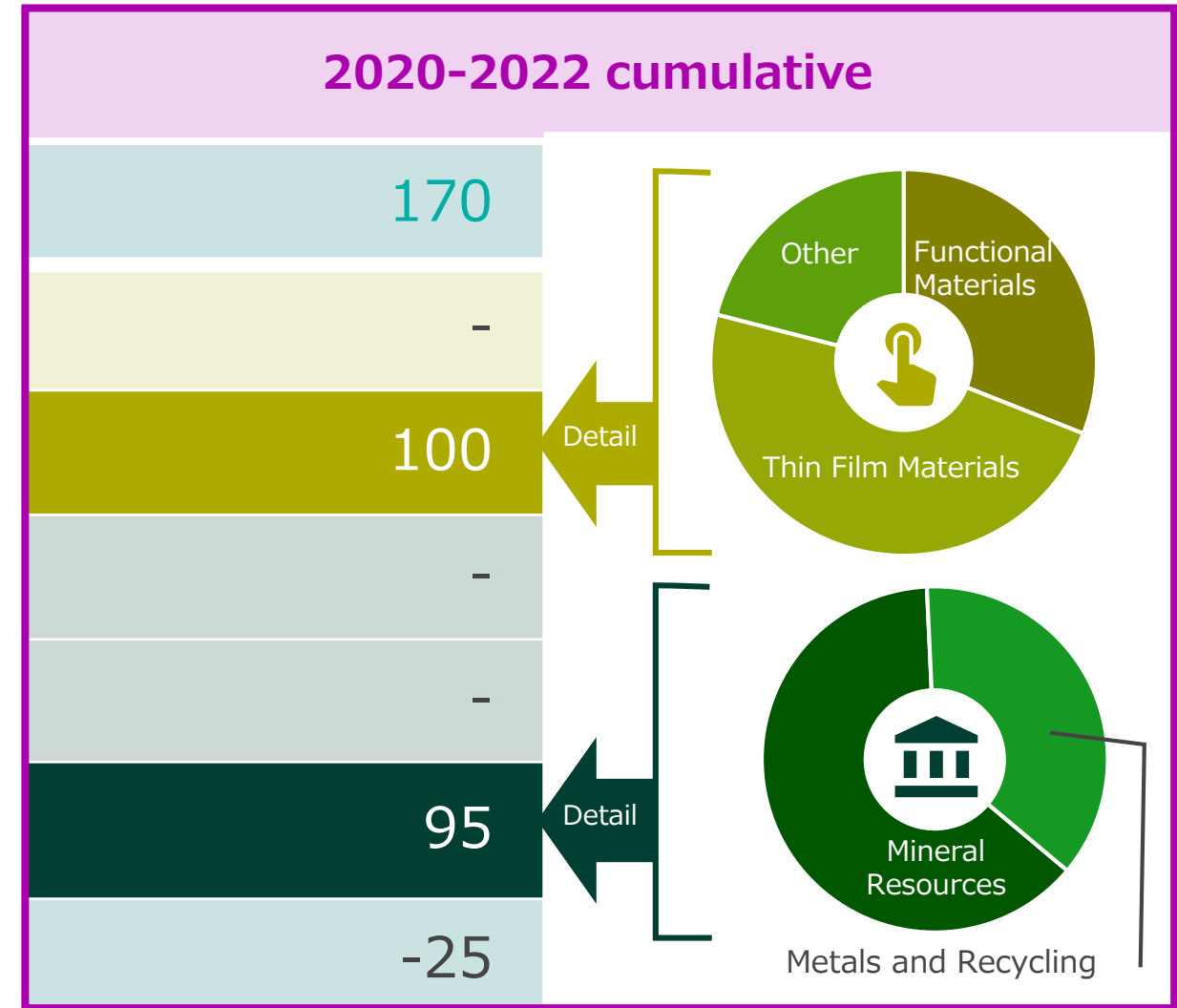


4. Looking at Performance: Segment Information

IFRS standard (except for inventory valuation factor)

(bil. yen)

	2019 actual	2020 outlook
Total operating income	47.9	29
Functional Materials, Thin Film Materials, etc.	14.5	21
Focus Businesses	14.5	21
Mineral Resources	14.7	10
Metals and Recycling	22.9	8
Base Businesses	37.6	18
Business common expenses	-4.2	-10



4. Looking at Performance: Main Factors and Sensitivity

■ Yellow highlighted data announced 5/20

■ Market factors

		2019	2020		2021		2022	
				Vs. FY2019		Vs. FY2019		Vs. FY2019
Exchange rate	Yen/\$	108.7	105	(-)3.7	105	(-)3.7	105	(-)3.7
Copper price	¢ /lb	266	250	(-)16	270	(+)4	270	(+)4
Sales volume of precision rolled products	1,000t/month	3.3	3.8	(+)0.5	4.2	(+)0.9	4.6	(+)1.3
Equity entitled copper mine production	1,000 cu-t	213	222	(+)9	227	(+)14	230	(+)17
Caserones copper production	1,000 cu-t	152	161	(+)9	170	(+)18	171	(+)19
PPC electrolytic copper sales	1,000t	630	624	(-)6	644	(+)14	646	(+)15

■ Sensitivity

(impact of variation on operating income)

		FY2022
Forex	±5 yen	7.5
Copper price	±10 ¢	5.6

(bil. yen)

Cautionary Note on Forward-Looking Statements

Note that data and future projections indicated in this material reflect judgments based on information available at the time of this presentation. There are many risk factors and uncertainties inherent in such projections, and no guarantee is made of achieving the forecasts or of future performance.

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JX Nippon Mining & Metals Corporation

