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# FY2020 2nd Quarter Progress of Business Strategy

President and Representative Director  
**Akira Nozaki**

 **SUMITOMO  
METAL MINING**



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# I. Summary

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# Summary① Review of up until recent FY2020 (Production / Sales)

- Giving priority to employees' safety, we continue operation and stable supply to the extent possible at each production site while implementing measures to prevent infection of COVID-19.
- The Cerro Verde Copper Mine, which had a temporary reduction in operation rate due to the impact of the spread of COVID-19, has resumed normal operation. Additionally, there was an extension of the planned shut-down period for THPAL, but operation has been resumed.
- The materials business saw a decrease in sales of products such as battery materials aimed mainly at the automobile industry, with sluggish demand due to the stagnation of economic activities due to the impact of COVID-19. This bottomed out in the summer and is recovering overall.

## Summary② Review of up until recent FY2020 (Capital expenditure / Project / Result forecasts)

- The impact of the spread of COVID-19 on capital expenditures looks quite large, with overall delays to investment plans.
- Progress was also affected for large-scale projects such as the QB2 Project (temporary construction suspension) and the Pomalaa project (delays in obtaining permits). Meanwhile, the Cote Gold Project had its construction determination settled in July. Partial expansion of battery materials business determination settled.
- In the revised results forecast we disclosed in November, the presupposition for metal prices and the foreign exchange from the third quarter onward was set based on trends in world-wide supply and demand. Consolidated profit before tax has increased +19 billion yen when compared to the previous August forecast, due to improvement in cost difference and recovery of materials businesses.

# Summary③ Recent management challenges

- 1) Evolving of strategies with a sense of speed
- 2) Strengthening competitiveness  
at each stage of business process

## **II. FY2020 Results Forecast**

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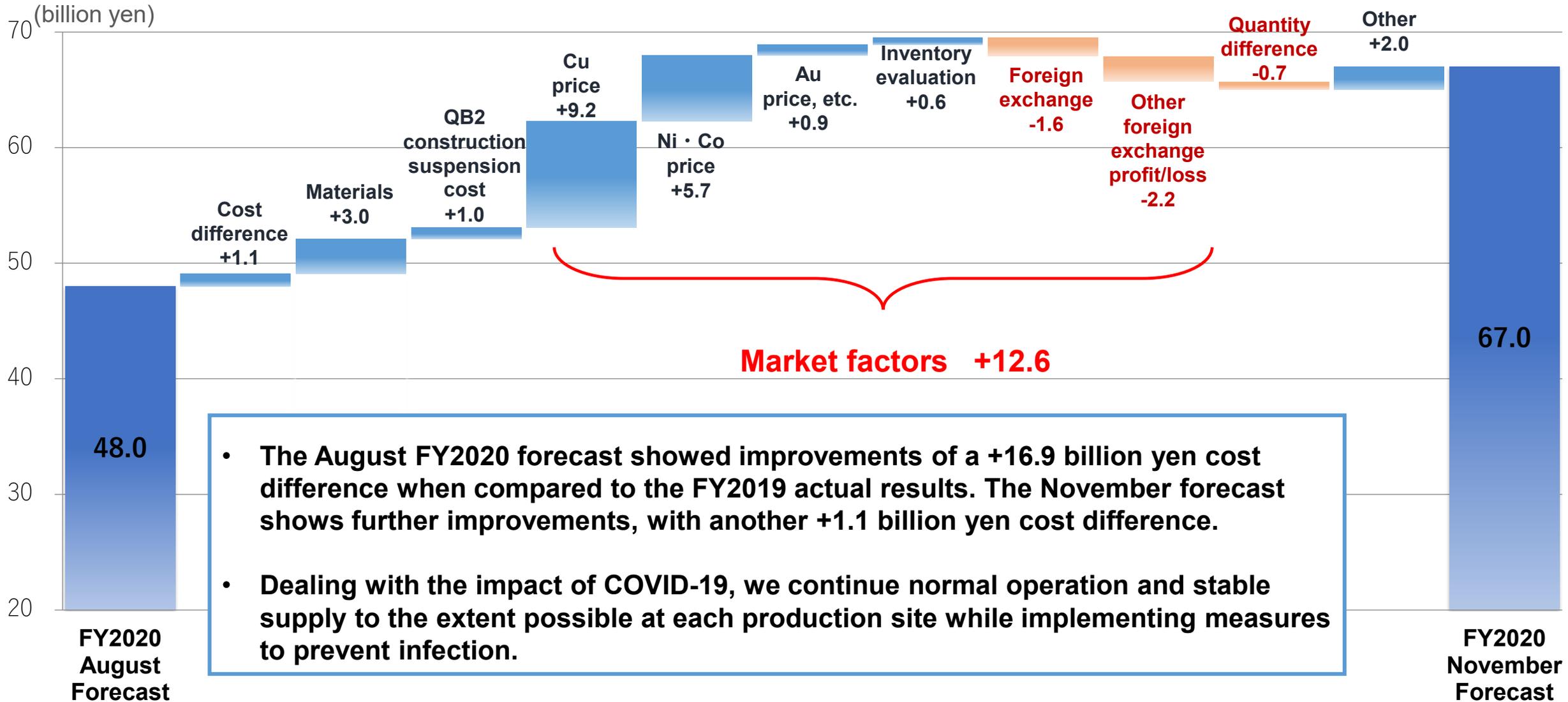
# 1) Change in actual results (FY2014-FY2020)

(JPY 100 million)		Japanese Standards [J-GAAP]				International Financial Reporting Standards [IFRS]			
		2014	2015	2016	2017	2017	2018	2019	2020 Forecast
Net sales		9,213	8,554	7,861	9,335	9,297	9,122	8,726	8,580
Operating profit		1,258	597	764	1,102	—	—	—	—
Recurring profit/loss		1,742	-128	-16	1,249	—	—	—	—
Profit/loss before tax		1,233	6	-60	1,058	1,083	894	790	670
Equity method profit/loss		239	-732	-860	114	123	-49	62	-40
Segment Profit	Mineral resources	538	-443	-536	560	580	473	379	430
	Smelting & refining	813	253	333	515	478	409	482	340
	Materials	129	60	121	153	71	138	53	50
	Other	-1	-8	-1	2	-74	-20	-9	-20
	Diff. Adjustment	263	10	67	19	28	-106	-115	-130
Net profit/loss*		911	-3	-185	916	902	668	606	460
Copper (\$/t)		6,554	5,215	5,154	6,444	6,444	6,341	5,860	6,116
Nickel (\$/lb)		7.62	4.71	4.56	5.06	5.06	5.85	6.35	6.12
Gold (\$/Toz)		1,248	1,150	1,258	1,285	1,285	1,263	1,462	1,856
Cobalt (\$/lb)		13.69	11.73	13.67	30.64	30.64	31.64	15.76	14.67
Exchange (¥/\$)		109.93	120.15	108.40	110.86	110.86	110.92	108.74	105.46

## 2) FY2020 results forecast (November forecast vs August forecast)

(JPY 100 million)		2020/1H Results (A)	2020/2H Forecast (B)	November Forecast (C)	August Forecast (D)	Difference (C) - (D)
Net sales		4,191	4,389	8,580	8,350	+230
Sales total profit		562	648	1,210	1,060	+150
Profit/loss before tax		259	411	670	480	+190
Equity method profit/loss		-44	4	-40	-40	±0
Segment Profit	Mineral resources	134	296	430	310	+120
	Smelting & refining	170	170	340	320	+20
	Materials	25	25	50	20	+30
	Other	-3	-17	-20	-20	±0
	Diff. Adjustment	-67	-63	-130	-150	+20
Net income (Profit attributable to owners of parent)		175	285	460	320	+140
Copper (\$/t)		5,931	6,300	6,116	5,835	+281
Nickel (\$/lb)		5.99	6.25	6.12	5.88	+0.24
Gold (\$/Toz)		1,811	1,900	1,856	1,778	+78
Cobalt (\$/lb)		14.84	14.50	14.67	13.87	+0.80
Exchange (¥/\$)		106.92	104.00	105.46	107.16	-1.70

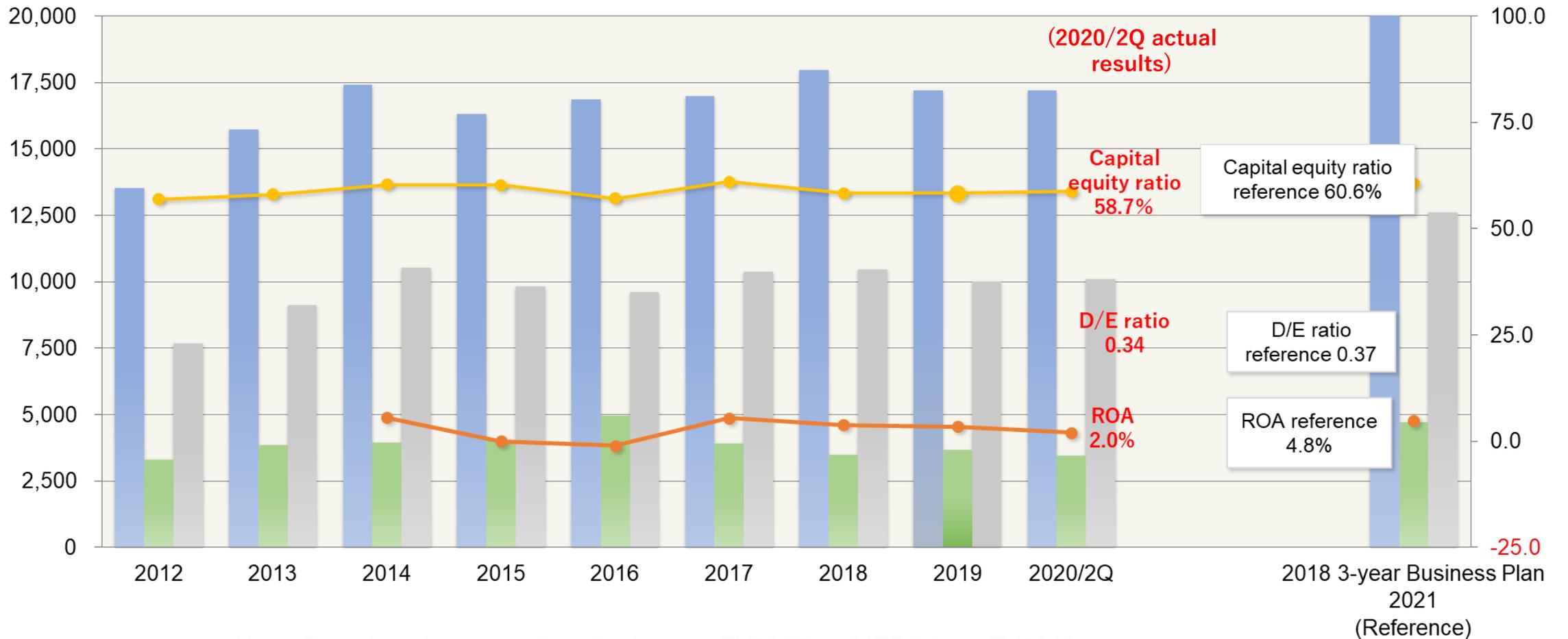
# 3) Profit before tax analysis November forecast vs August forecast



# 4) Financial position changes

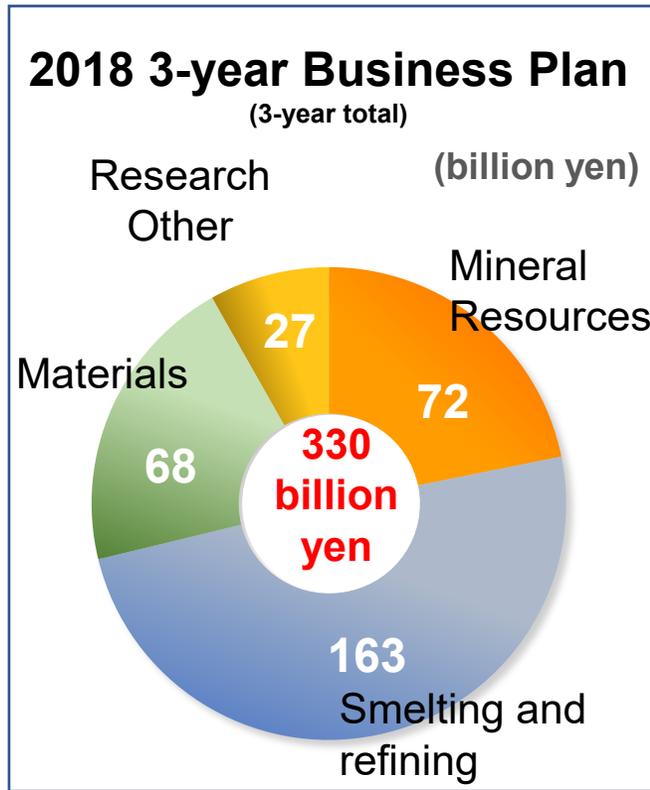
(JPY 100 million)

■ Overall Assets      ■ Interest-bearing debt      ■ Capital equity  
● Capital equity ratio      ● ROA



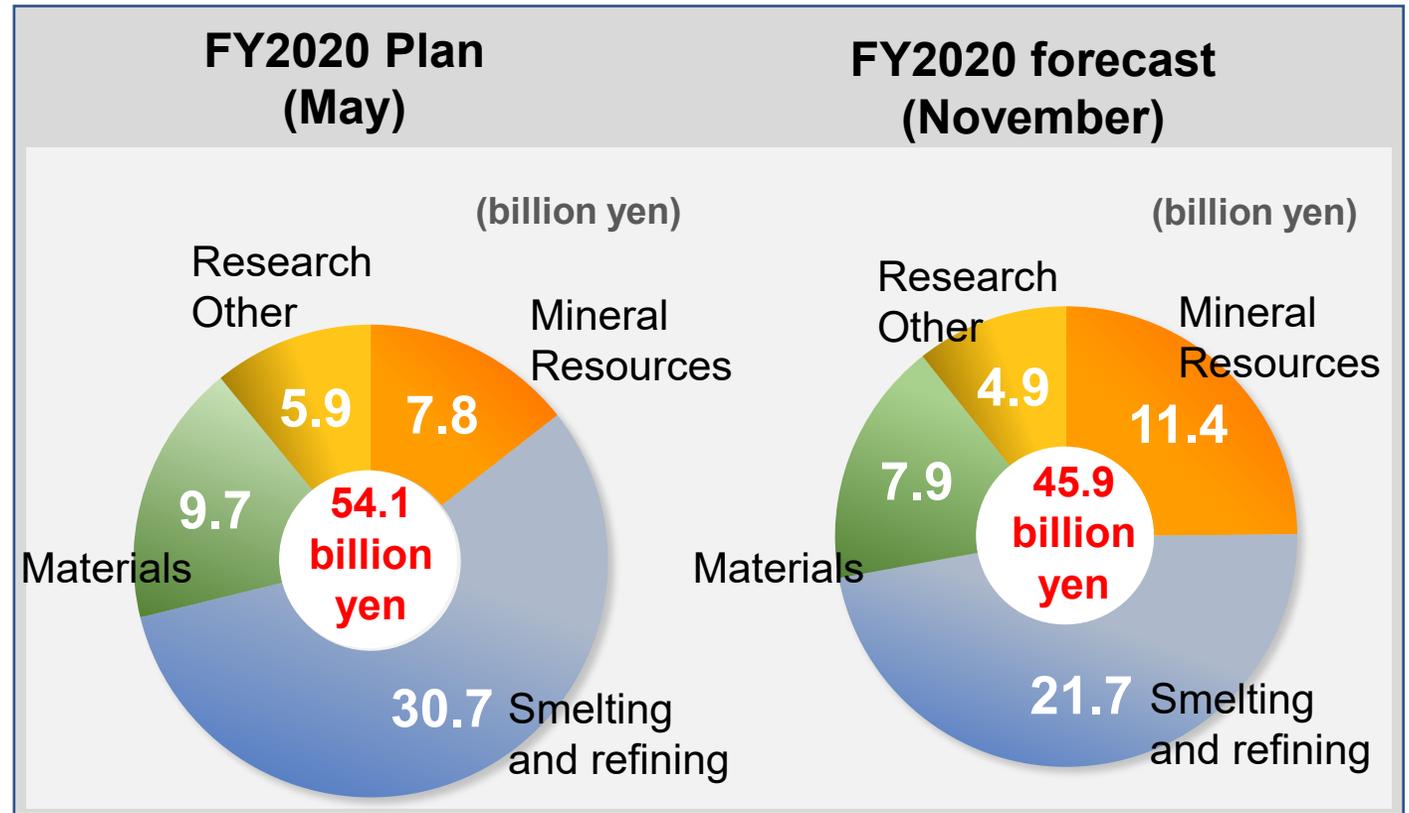
Note: Based on Japanese Standards up to FY2017 and IFRS from FY2018.  
 FY2020 2Q cumulative total is calculated with profit/loss simply doubled

# 5) Capital expenditure (FY2020 results/plan)



+

**Investment and financing**  
(QB2, etc. 160 billion yen)



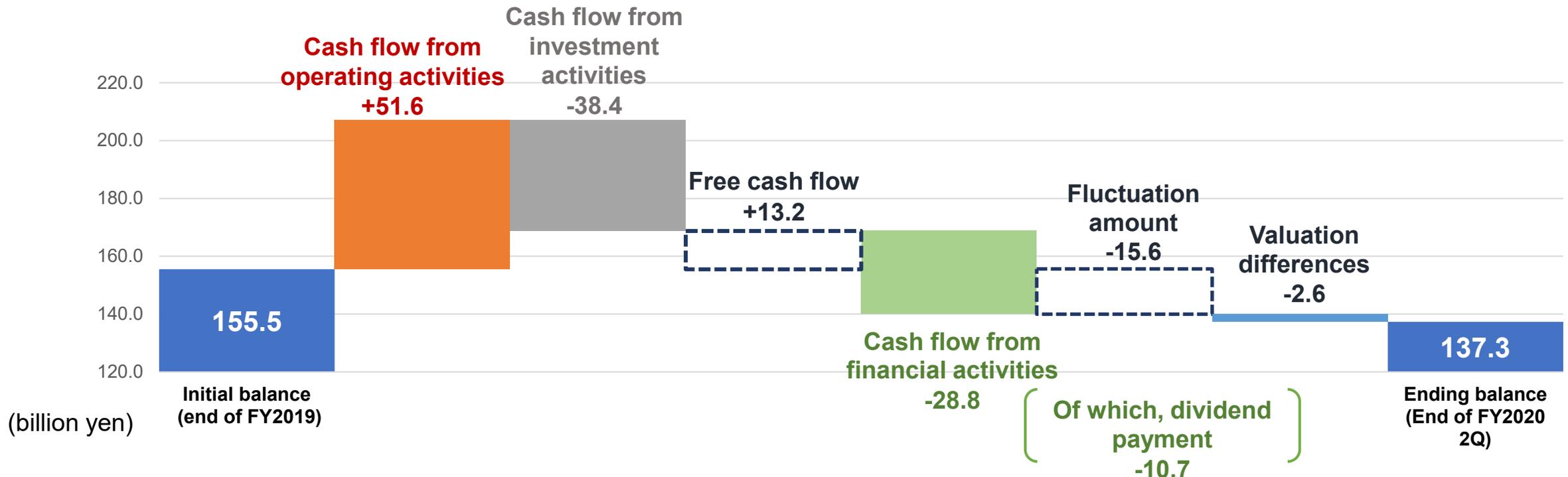
**FY2020 May forecast vs November forecast: Main reasons for -8.2 billion yen**  
+5.1 billion yen relating to Cote Gold Project as we determined to start construction in July. Additionally, delays in capital expenditure plans due to the impact of the spread of COVID-19.

At present, no major changes will be made to growth strategies and capital expenditures as set in the 2018 3-year business plan. We will keep an eye on the situation and will look into investing at the appropriate time.

# 6) Cashflow

At the end of second quarter, cash and cash equivalents were 137.3 billion yen, a 18.2 billion yen reduction from the beginning of the quarter. Operating activity cash flow was 51.6 billion yen in revenue, investment activity cash flow was 38.4 billion yen in expenditures, and financial activity cash flow was 28.8 billion yen in expenditures due to debt repayments and dividend payouts.

The investment activity cash flow expenditures estimated in the 2018 3-year business plan are 490 billion yen(\*1). Combining recent progress with the FY2019 investment activity cash flow expenditures of 70.3 billion yen(\*2), expenditures are currently at 108.7 billion yen. We will follow the capital expenditure plan and will look into investing at the appropriate time.



(\*1) From an implementation perspective, the 490 billion yen includes sourced project finance. (\*2) Including income from sale of fixed asset, etc.

# 8) Shareholder return (Dividend forecast)

<2018 3-year plan>  
Dividend payout ratio 35% or higher

## Dividend forecast

FY2020	(August Forecast)	(November Forecast)
Interim dividend	10 yen/share	22 yen/share <b>+12 yen</b>
Year-end dividend forecast	31 yen/share	37 yen/share <b>+6 yen</b>
Yearly dividend forecast	41 yen/share	59 yen/share <b>+18 yen</b>

**increased dividend forecast**  
(Dividend payout ratio: 35.2 %)

# III. Recent Issues and Priority Measures

## I. Summary

## II. FY2020 Results Forecast

## III. Recent Issues and Priority Measures

Hiroshi Asahi

Director, Senior Managing Executive Officer, General Manager of Mineral Resources Div.

Nobuhiro Matsumoto

Director, Managing Executive Officer, General Manager, Non-Ferrous Metals Div.

Isao Abe

Executive Officer, General Manager of Battery Materials Div.

Kazunori Takizawa

Executive Officer, General Manager of Advanced Materials Div.

## IV. Progress of Vision for 2030

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# 1) Shared Issues Across the Company: Safety initiatives

**2018 3-year business plan targets not achieved for second consecutive year.**

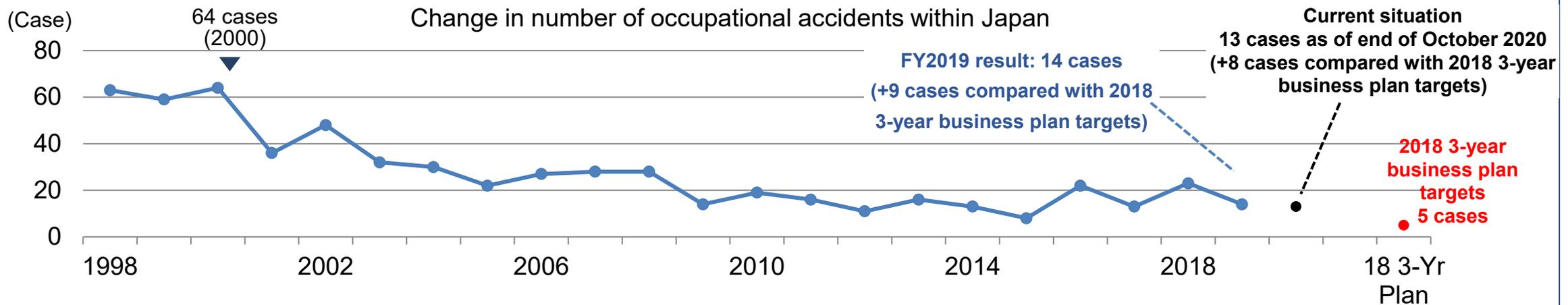
- There has been no significant improvement seen in occupational accidents resulting in work absences / overall occupational accidents.
- Facility improvements are progressing. Occupational accidents due to unsafe practices are frequent in occurrence.
- Observation of operations will give insight into on-site realities, and it will be possible to move forward with measures.

## Safety Vision to be achieved in FY2021

- Workplaces that prevent serious accidents by clearly defining priority issues needing improvement and implementing PDCA cycles while promoting safety activities
- Workplaces that ensure that top management and supervisors communicate with workers, grasp actual conditions at sites and promote facility improvements based on the three realities principle (real places, real facts, real things), and work using procedures that naturally take safety into sufficient consideration.

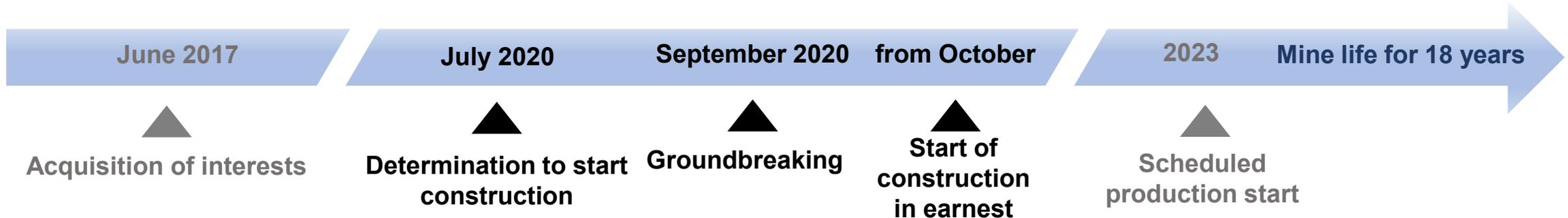
**2018 3-Yr Business Plan Targets**

Limit domestic occupational accidents to **5** or less  
 Limit overseas occupational accidents to **3** or less



## 2) Mineral Resources Business ① Gold mine and project

- **Hishikari Mine** had a gold production of 3.1 t in the first half of the year. We estimate that the amount for the year will be according to plan at 6 t. Lower orebody development is moving forward.
- Construction facilities such as the camp are being established for the **Cote Gold Project** after the construction transition decision in July 2020. Groundbreaking was on September 11. Construction will begin in earnest from 4Q (October - December). Canada is seeing another outbreak of COVID-19, but this has no impact on the construction.



## 2) Mineral Resources Business ② Overseas copper mines

- **Morenci Copper Mine** is operating favorably especially in leaching operation, with FY2020 production estimated to be on par with last fiscal year at 451 kt and cost improvements estimated. There is no impact on operation from COVID-19.
- **Cerro Verde Copper Mine** was under care and maintenance from March 16 to May 21 due to the declaration of a state of emergency in Peru due to the spread of COVID-19. Production was ramped up after operation was resumed, and recent average ore processing volumes are at approximately 90% of FY2019 average. Year-round production is estimated to see a 87 kt reduction when compared to FY2019, at 368 kt.
- **Candelaria Copper Mine** saw no impact from the spread of COVID-19, but there was a union strike from October 8, and operation has been paused since October 20. We estimate a certain impact on SMM's copper production and business results.

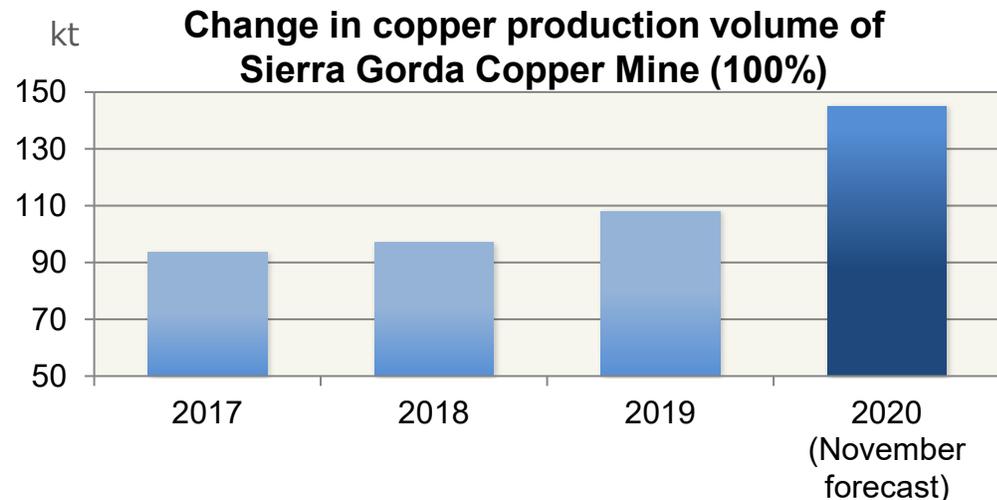
## 2) Mineral Resources Business ③QB2 project

- Project construction that had been temporarily suspended in March of this year is progressing with re-mobilization of personnel in each area (mineral processing, harbor, pipeline, etc.) according to plan with measures in place to prevent spread of infection from COVID-19.
- By year end, we are aiming to have the number of mobilized personnel outstrip the pre-suspension number by 9,000 and to have overall progress at 40%.
- The schedule delay by COVID-19 is assumed to be 5 - 6 months, and first production is expected in the second half of 2022. COVID-19 impact on construction costs is approximately \$400 million (includes suspension costs, which are costs incurred during this period).



## 2) Mineral Resources Business ④Sierra Gorda Copper Mine

- Copper production volume is expanding favorably, and the FY2020 production volume is estimated to increase 33% over the previous year, to 145 kt.
- Establishment of estimated 130 kt/day mineral ore processing volume due to debottlenecking.
- Start of consideration of strategic options that include potential sale of our equity of interests.



### 3) Smelting & refining business ① Impact of COVID-19

- Due to the impact of the COVID-19, there was a lengthening of the scheduled March-April operation shut-down period in THPAL, electrolytic nickel had reduced sales and the export ratio increased.
- Thorough infection countermeasures were implemented at domestic and overseas smelting and refining plants and operation continued.
- This fiscal year, production volume for electrolytic copper is estimated as being according to plan at 444 kt and production volume for nickel in the smelting and refining business is estimated as being comparable to last year at 89 kt.



### 3) Smelting & Refining Business ②Pomalaa project

#### Our third HPAL project following CBNC and THPAL in the Philippines

- Production estimated at 40 kt-Ni / year.
- Milestone for nickel production target of 150 kt laid out in the long-term vision. Supply of raw materials for Class 1 nickel smelting and refining, which is anticipated to expand due to demand for xEV.
- It is taking some time to obtain the necessary permits and consult with partners due to the impact of COVID-19. Future schedule is being ascertained at present.



# 3) Smelting & Refining Business ③ Strengthening manufacturing

## Improvements to operating rate in THPAL



<Countermeasures for facility trouble that has occurred in the past>

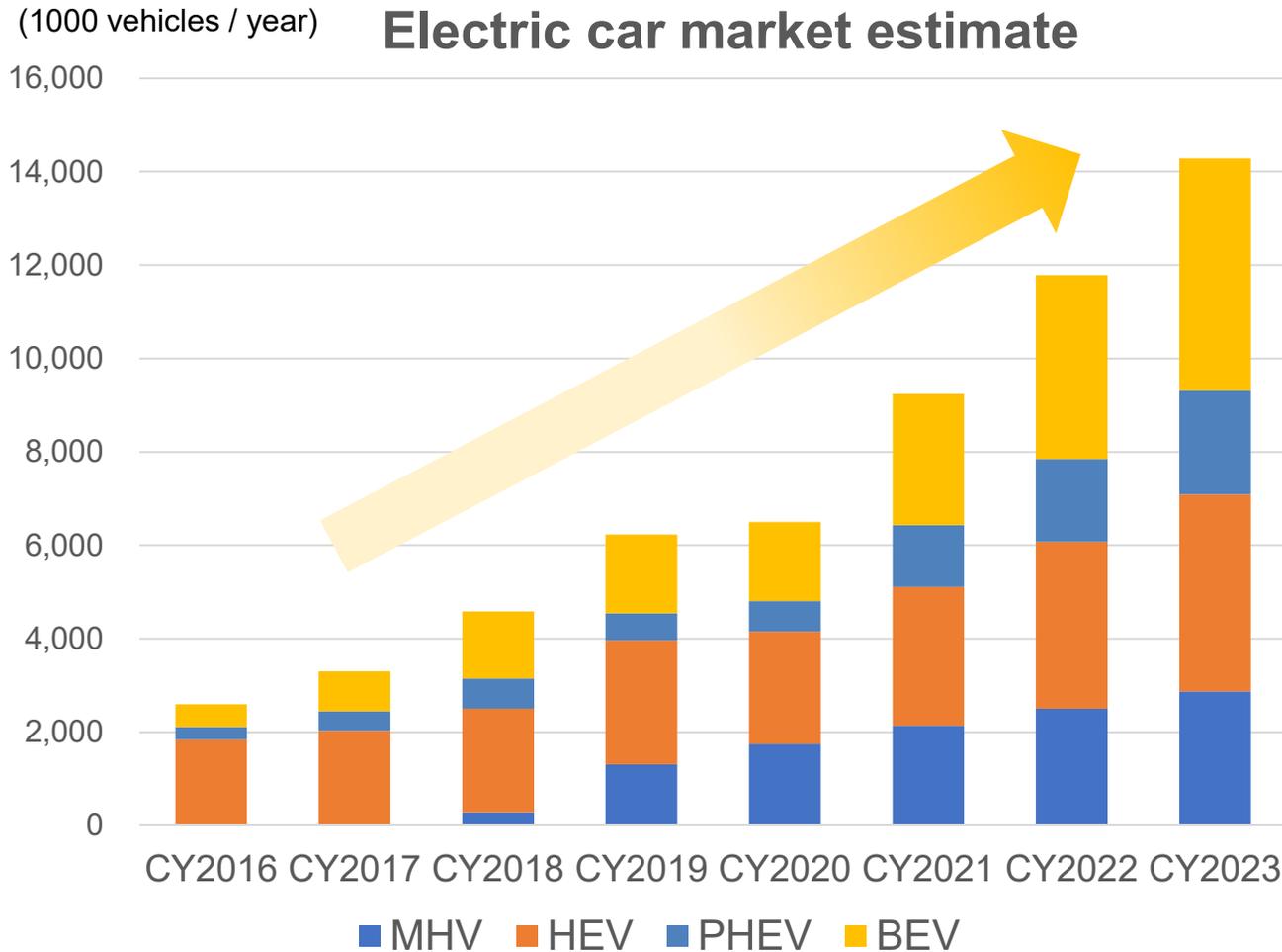
- Continuation of employee education
- Enrichment of inspection checklists
- Securement of replacement parts

<Prevention of unexperienced significant trouble>

- Strengthening of information sharing with CBNC and involvement with similar troubles

**Compared to 2018, planned shut-down periods have been shortened (through improvements to operational efficiency) and number of sudden shut-down days have been greatly reduced.**

# 4) Battery Materials Business ① Recent situation and future estimates



(Quote: B3 report 20-21/May)

- The impact of COVID-19 has led to an overall slump in the automobile market, which lead to decreased sales in the first half of the year, but the second half is recovering.
- Restrictions are being strengthened in Europe and China, and it's estimated that the market will continue to grow. However, the continued push towards low-cost materials is strong.

# 4) Battery Materials Business

② Battery materials business  
expansion strategy, reinforcement

During 2024 3-year business plan (until FY2027), we aim to establish a system for cathode material (NCA + NMC + nickel hydroxide) production totaling 10,000 t/month

- Lithium nickel-cobalt-aluminum oxide (NCA) will increase production mid-2022 from 4,550t/month to 4,850 kt/month.
- Expansion and enrichment of battery research laboratories implemented to develop next-generation high-performance nickel cathode materials and solid-state battery cathode materials. Prospective completion in July 2022.
- In the future, we are looking not just at expanding existing plants, but constructing a new plant with smart technology (remote operability / automation) and we will invest at the appropriate time.



# 5) Advanced Materials Business ①Recent situation and future estimates

## Impact of COVID-19 on the electric parts market

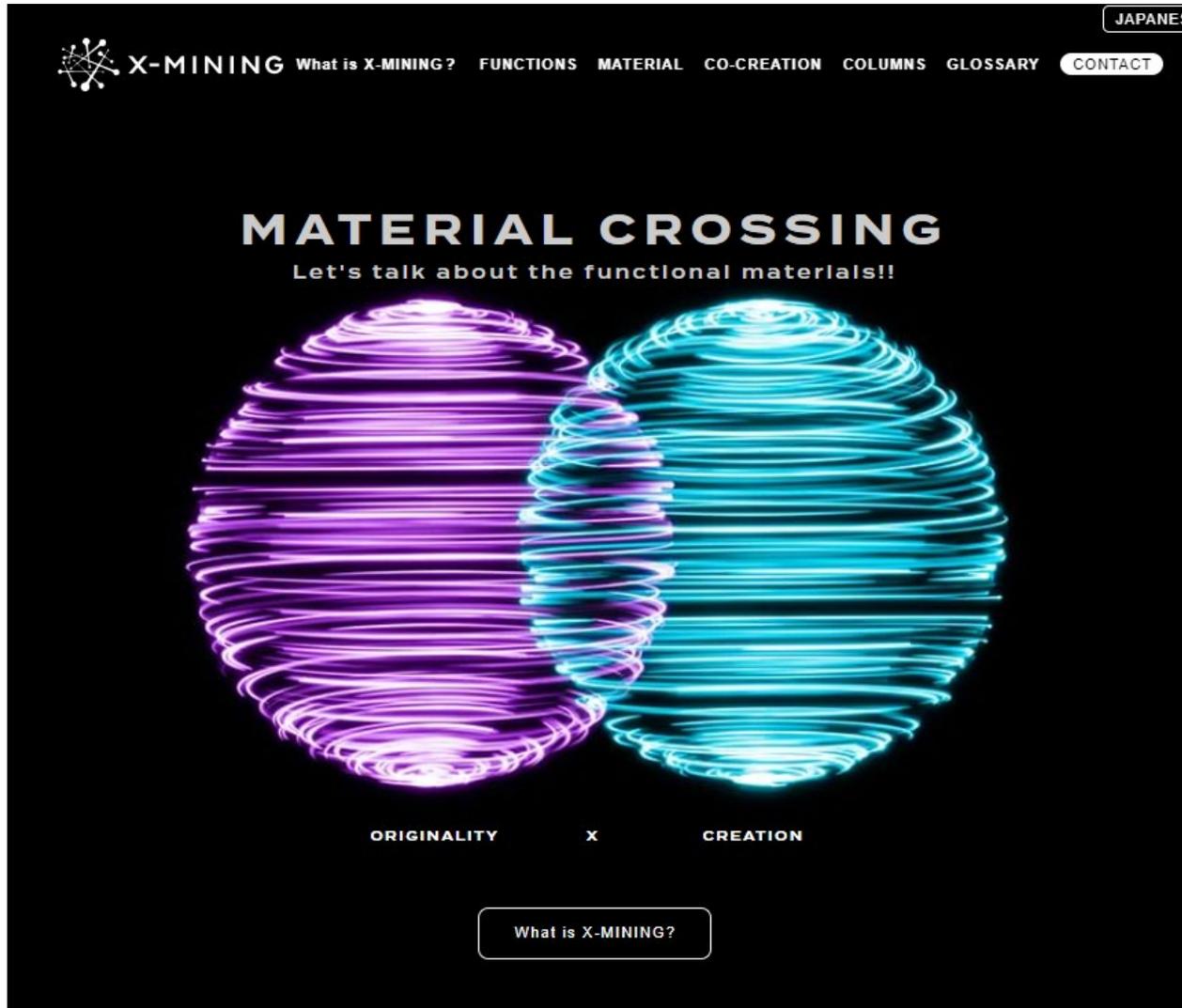
- ✓ Sluggish demand for parts for use in vehicles and parts related to smartphones bottomed out in August and is gradually recovering.
- ✓ Teleworking demand and the increased volume of data has led to a high level of infrastructure (data centers / 5G infrastructure) and consumer (PC / game) demand and is supporting the demand for parts.
- ✓ Smartphone demand was sluggish, but has recently been showing signs of moderate recovery.

**Powder materials business** has not seen a large slump overall. Increased income is anticipated compared to last fiscal year, which had inventory adjustment.

**Crystal materials business** was impacted by sluggish smartphone demand, however an increase in demand for 5G compatible smartphones is anticipated with the coming preparation of 5G infrastructure.

**Package materials business** was impacted by sluggish smartphone demand, however an increase in demand is anticipated with the formalization of 5G. Recovery for in-vehicle and industrial machinery products is slow.

# 5) Advanced Materials Business ②X-Mining (Cross Mining)



Information communication website for  
powder materials business products  
**X-MINING (Cross-Mining)**  
Grand opening on **October 20**

Aimed at a new form of co-creation,  
using SMM's materials and ideas  
from a wide variety of people,  
from researchers imagining  
the future of the environment,  
energy and telecommunications,  
to marketers.

# IV. Progress of Vision for 2030

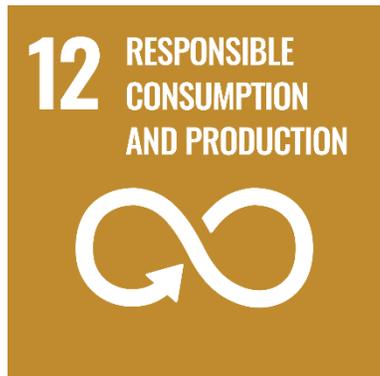
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# 1) The 11 material issues identified in our Vision for 2030

## Material issues and the SDGs

- After identifying nine SDGs strongly connected to our material issues, we set “Responsible consumption and production,” which is directly connected to our management vision, as the most important goal directly connected to our management vision.

### The most important SDG



	Material issues	SDGs		Material issues	SDGs
1	Effective Use of Non-Ferrous Metal Resources		5	Employees' Occupational Health and Safety	
2	Climate Change	 	6	Diverse Human Resources	
			7	Development and Participation of Human Resources	
			8	Engagement with Stakeholders	
3	Significant Environmental Accidents		9	Co-Existence and Mutual Prosperity with Local Communities	
4	Biodiversity		10	Rights of Indigenous Peoples	
			11	Human Rights in the Supply Chain	

## 2) Progress of key measures and future schedule

### Climate Change Internal Carbon Pricing

We decided to introduce an internal carbon pricing system in September.  
Consideration of investment projects with this system starts from the FY2021 budget making.

### Effective Use of Non-Ferrous Metal Resources

### Employees' Occupational Health and Safety

#### Formulation of smart factory models

Considered from both productivity and facility management.

- Productivity: Data analysis for the optimization of smelting and refining plant control, remote engineering so that overseas plant operation data can be viewed in Japan, etc.
- Facility Management: Development of an app that can share on-site situational data with those in remote locations, etc.

# V. Q&A

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We collected questions from investors beforehand, from the period of after the announcement of financial results on November 9 until 12:00 on November 10.

We will respond to common questions.

# Q&A①

## <Question>

What is the current state of the Pomalaa project?

Additionally, with nickel production increasing mainly Class 2 nickel in countries like Indonesia, it doesn't seem supply and demand is at a desirable level for investing with market conditions trending towards over supply. However, in this environment (sluggish market conditions), is there a chance that investments will be made in anticipation of future growth?

## <Answer>

- Currently, with the Pomalaa project, it is taking some time to obtain the necessary permits and consult with partners due to the impact of COVID-19, so we are working to ascertain the future schedule.
- At present, there is a surplus of nickel with regard to supply and demand, however, long-term increase in worldwide demand is a sure thing, particularly for use in in-vehicle secondary batteries, so we estimate large growth. We are assuming that the MS (Mixed Sulfide) scheduled to be produced with the SMM Pomalaa project will not be aimed at Class 2, but instead Class 1, mainly for use in our electrolytic nickel and battery cathode materials, and we have determined that it will contribute to improvements in our corporate value in the long term.

## <Question>

What was behind the decision to consider strategic options that include potential sale related to the Sierra Gorda copper mine and what was the reason?

## <Answer>

- We are considering large-scale and strategic investments such as Quebrada Blanca and Pomalaa, and it is one of the options for Sierra Gorda copper mine from the viewpoint of active reforming of asset portfolio.
- On the other hand, with regard to operational improvements for the Sierra Gorda copper mine, we are working as a partner company to both continue to contribute as much as possible from aspects like engineering and to maximize corporate value.

## Q&A③

<Question>

Electric vehicle makers have announced plans to internalize production not just of batteries, but of cathode materials, and have shown their intention to simplify the manufacturing process. How realistic do you think this is, and what effect do you see it having on your battery materials business?

<Answer>

While we are not able to comment on individual techniques, it is necessary to continually engage with expanding the xEV market to lower cost through a simplified manufacturing process, and we are also engaging with this issue.

Regarding vertical integration of the supply chain, we try to raise our competitive edge by improving total ability including resource securement and recycling into a differentiation.

## <Question>

There is a spread of use of iron phosphate in EV batteries in China, what effect do you think this will have going forward? Please answer from both the perspectives of (1) competition for cathode materials and (2) the effect on nickel demand. Additionally, there has been talk about South Korean makers putting their energy into NCMA, but what initiatives does the company have regarding NCMA and how do you regard it in contrast to NCA and NCM (from cost, safety and battery volume perspectives)?

## <Answer>

- As batteries using iron phosphate cathode material are comparatively both low in cost and performance, we think that bipolarization using low-cost iron phosphate and high-performance nickel will progress. However, we estimate high growth in both markets, and we don't think things will get competitive in the near future. Additionally, as the metal used will be split, we anticipate that the supply and demand balance for nickel will be optimized and that the promulgation of xEV will progress.
- Regarding NCMA, it's a High-Ni material, and SMM is engaging in research and development. High-Ni is beneficial in terms of cost and volume at a cell level, but we believe that ensuring safety is a concern.

# Q&A⑤

## <Question>

It's forecast that the coming climate change countermeasures in the US are going to be strengthened along with the Japanese government's goal of having greenhouse gas emissions essentially zero by the year 2050. Amid this, the company has "Keep total GHG emissions below that of FY2013 and formulate a plan to reduce our emissions to zero in the second half of the century" as the Company's Climate Change material issue, but I would like to hear what you have for a concrete schedule.

## <Answer>

- The largest point in question in SMM's business is how the promotion of growth strategy is compatible with a reduction in emissions.
- First, we set a goal of reducing our output level of greenhouse gas emission intensity by over 26% by 2030 when compared to FY2013.
- Additionally, through the FY2021 budget, we will introduce an internal carbon pricing system, and have scheduled the start of more active consideration of investment projects related to the reduction of greenhouse gas emissions. Through utilization of this system, we will engage in technical innovation and the development and supply of products with a low carbon footprint while visualizing the effects of emission reductions, scale of the cost, and forming concrete plans, in future business investments.

# VI. Supplementary Materials

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**VI. Supplementary Materials**

# 1) Trends in supply and demand (copper and nickel)

## Copper

[ISCG forecast of October 2020]

(kt)

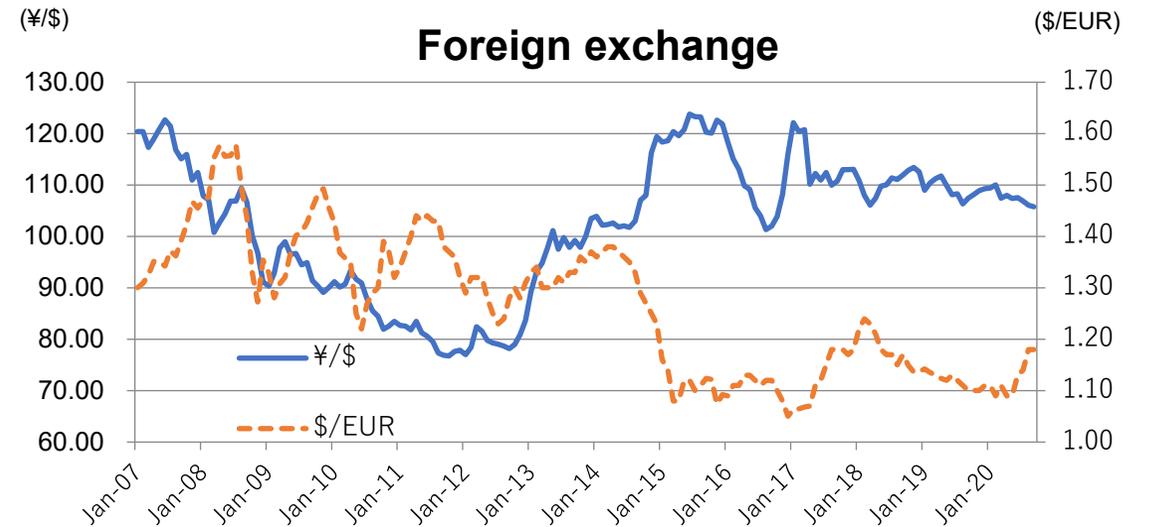
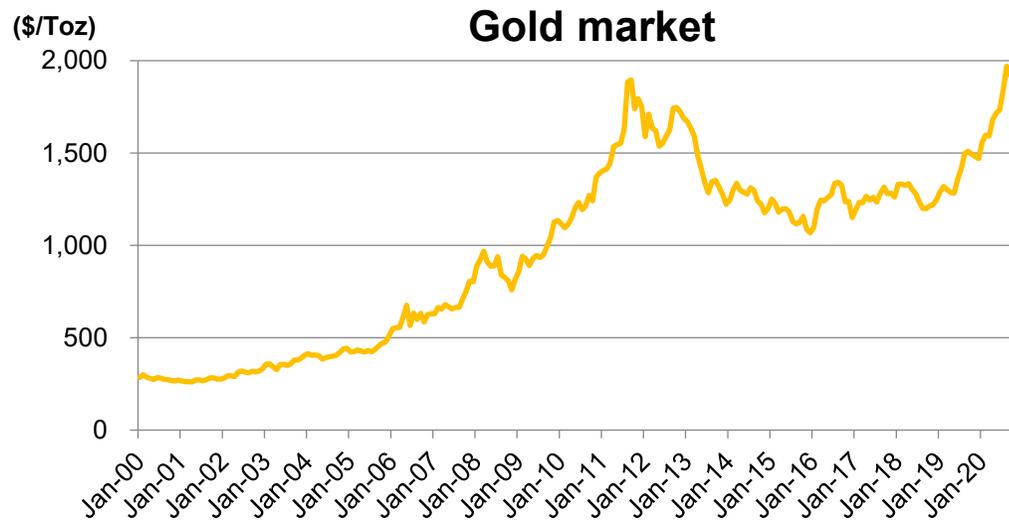
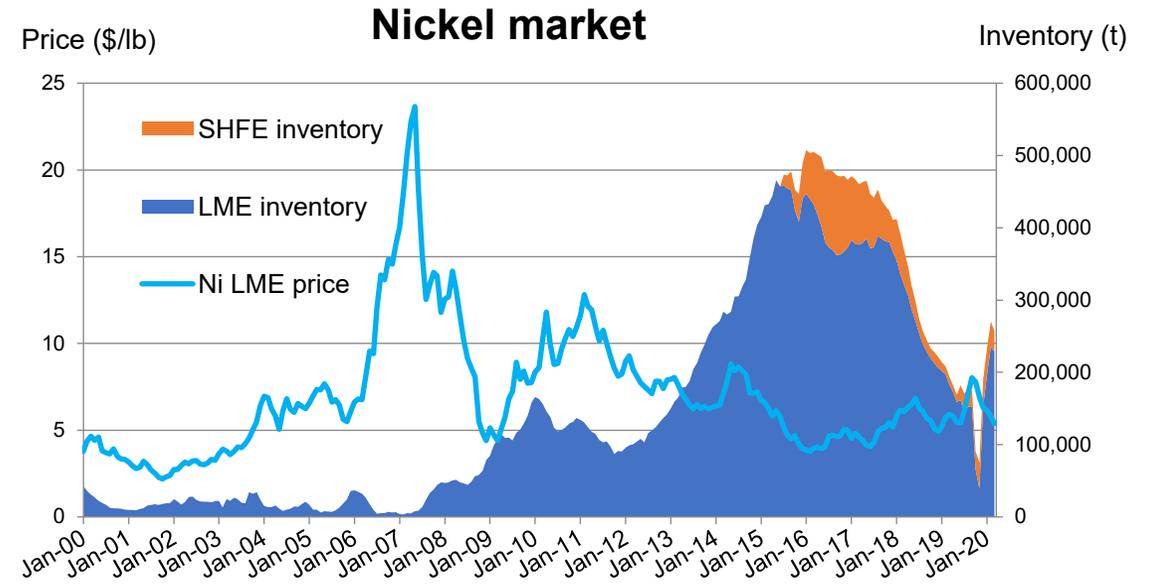
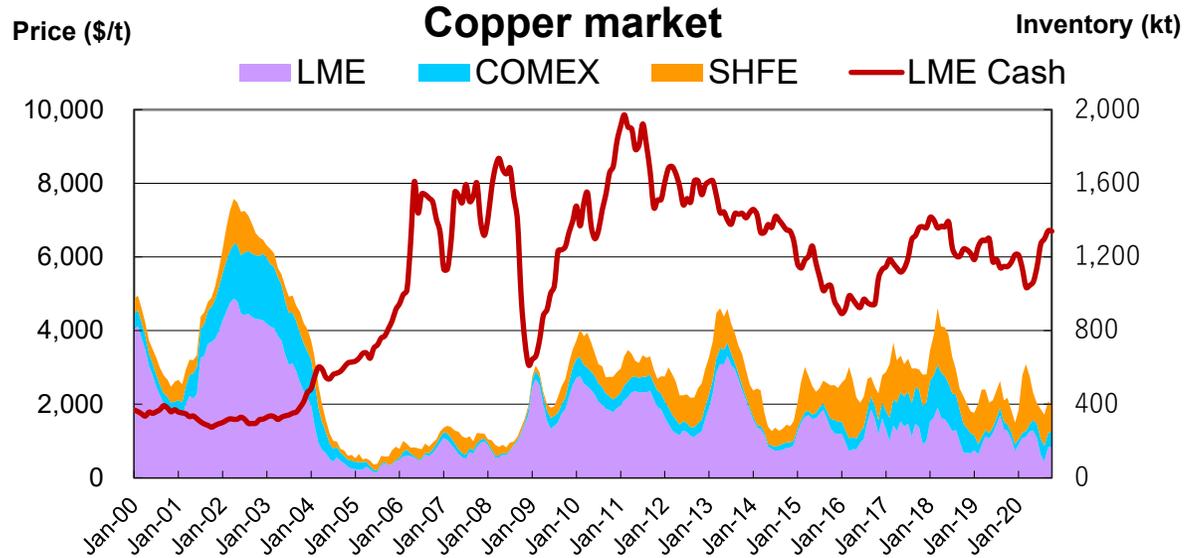
	2019	2020 (forecast)	2021 (forecast)
Production	24,045	24,434	24,815
Usage	24,427	24,486	24,745
Balance	-382	-52	+70

## Nickel

(kt)

	INSG forecast in October 2020			SMM forecast in August 2020		
	2019	2020 (forecast)	2021 (forecast)	2019	2020 (forecast)	2021 (forecast)
Production	2,382	2,436	2,586	2,380	2,369	TBA
Usage	2,403	2,318	2,518	2,381	2,294	
Balance	-21	+118	+68	-1	+75	

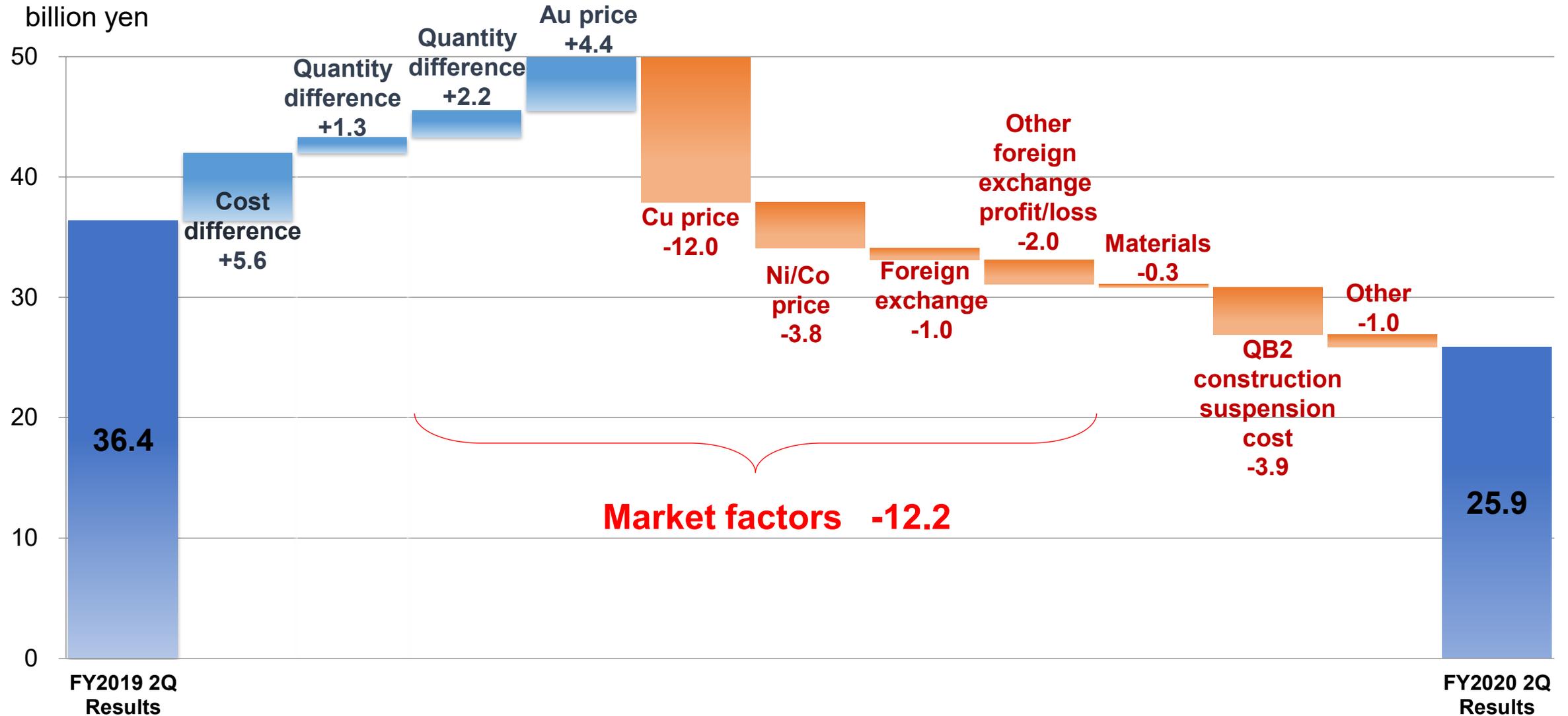
# 2) Metal price and foreign exchange



### 3) Overview of FY2020 2Q results (compared to FY2019/2Q)

(JPY 100 million)		2020/2Q(A) [IFRS]	2019/2Q(B) [IFRS]	Fluctuation (A) - (B)
Net sales		4,191	4,224	-33
Sales total profit		562	548	+14
Profit/loss before tax		259	364	-105
Equity method profit/loss		-44	45	-89
Segment Profit	Mineral resources	134	195	-31
	Smelting & refining	170	177	-7
	Materials	25	28	-3
	Other	-3	1	-4
	Diff. Adjustment	-67	-37	-60
Net income (Profit attributable to shareholder owners of parent)		175	294	-119
Copper (\$/t)		5,931	5,956	-25
Nickel (\$/lb)		5.99	6.32	-0.33
Gold (\$/Toz)		1,811	1,392	+419
Cobalt (\$/lb)		14.84	15.02	-0.18
Exchange (¥/\$)		106.92	108.63	-1.71

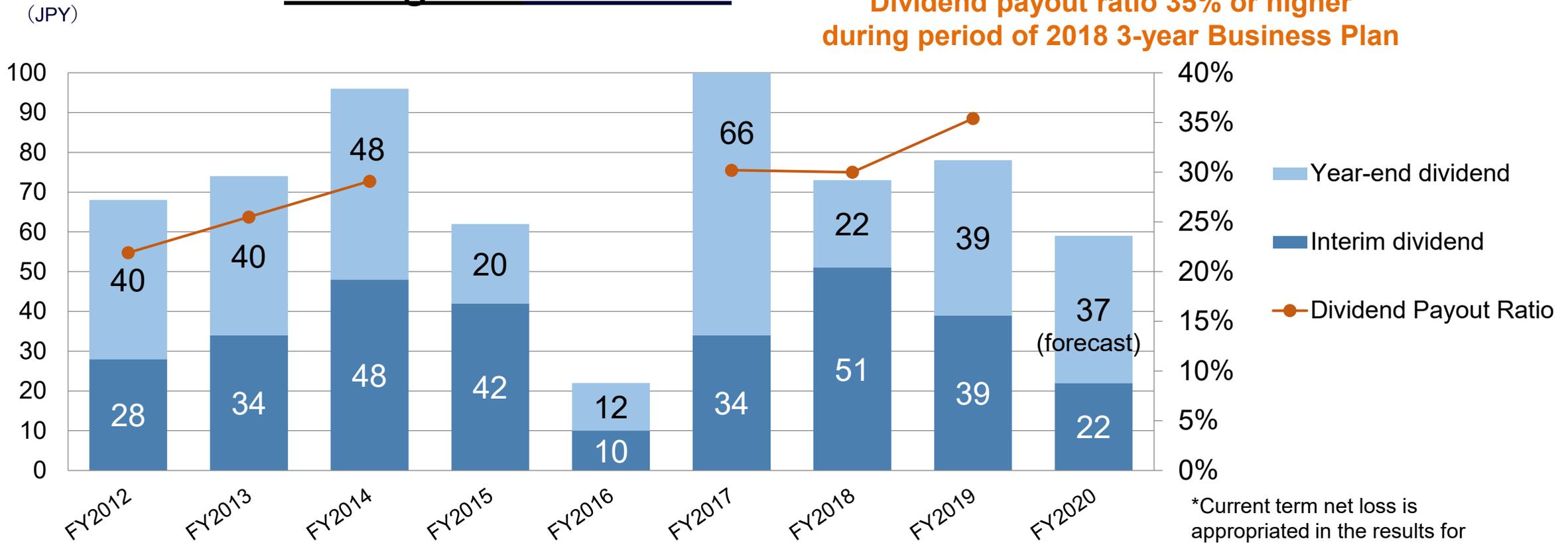
# 4) Profit/loss before tax analysis(FY2020 2Q results vs FY2019 results)



# 5) Change in dividends

## Change in dividends

Dividend payout ratio 35% or higher during period of 2018 3-year Business Plan



**Note: Due to stock consolidation (ratio 2:1) as of October 1, 2017, the dividend per share before that date is calculated and presented based on the standard after stock consolidation.**

\*Current term net loss is appropriated in the results for FY2015 and FY2016, so the dividend payout ratio cannot be calculated.

# 6) Individual business overview Mineral Resource ① Copper (oversea copper mines)

## Morenci Copper Mine (US)

Interest ratio

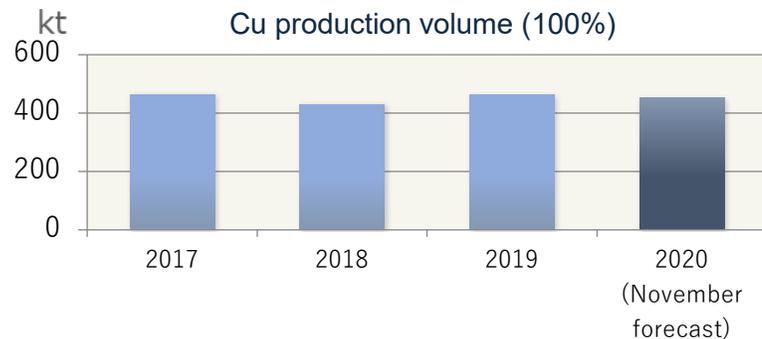
FCX	72%
SMM	25%
Sumitomo Corporation	3%



• Production volume

FY2019 461 kt (results)

FY2020 451 kt (November forecast)



## Cerro Verde Copper Mine (Peru)

Interest ratio

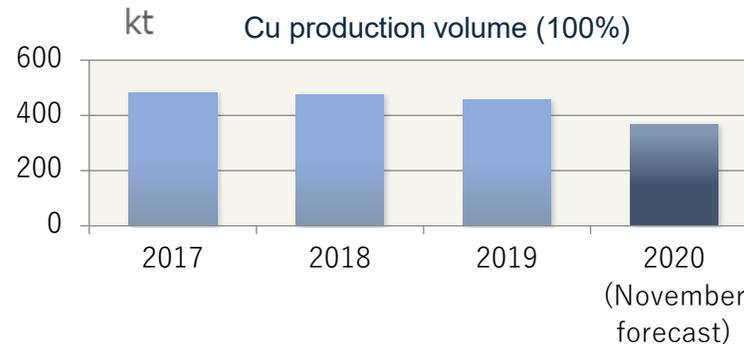
FCX	53.56%
SMM	16.80%
Sumitomo Corporation	4.20%
Other	25.44%



• Production volume

FY2019 455 kt (results)

FY2020 368 kt (November forecast)



## Candelaria Copper Mine (Chile)

Interest ratio

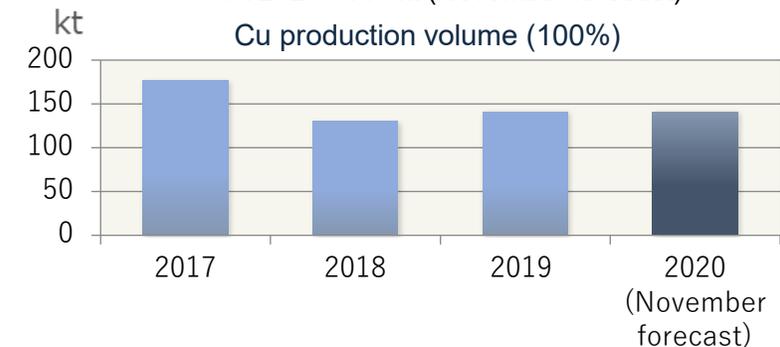
Lundin	80%
SMM	16%
Sumitomo Corporation	4%



• Production volume

FY2019 141 kt (results)

FY2020 141 kt (November forecast)



\*Production volume reflects the total combined with that of Ojos del Salado. Provisional value where impact of strike is not estimated.

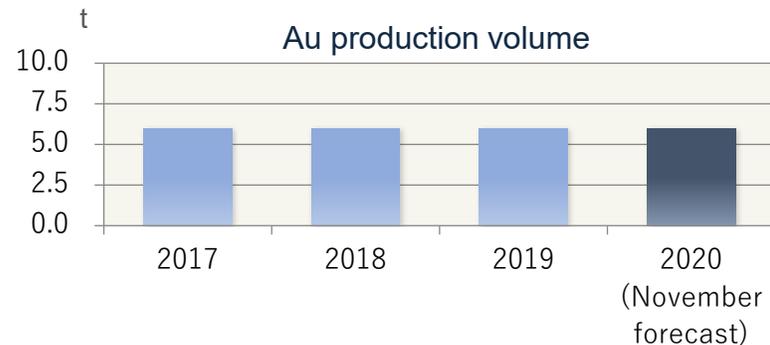
# 6) Individual business overview Mineral Resources ② Gold (Hishikari/Cote)

## Hishikari Mine (Kagoshima Prefecture)

Interest ratio SMM 100%



- Lower orebody development: Continued with safety-first policy
- Reserve: 163t (based on JIS) at the end of 2019
- Production volume FY2020 6.0t (November forecast)



## Cote Gold Development Project (Canada)

Interest ratio  
 IAMGOLD 64.75%  
 SMM 27.75%  
 Other 7.50%

Acquisition amount: 195 million \$US (approx. 21.5 billion yen)  
 Location: Ontario

- F/S completed in November 2018
- Construction started September 2020
- Production start scheduled from 2023



Initial construction project costs	US \$1,423M
Mine life	18 years
Overall gold production volume	205t
Reserve	233Mt
Reserve grade	0.96g/t

(from a July 21, 2020 press release)

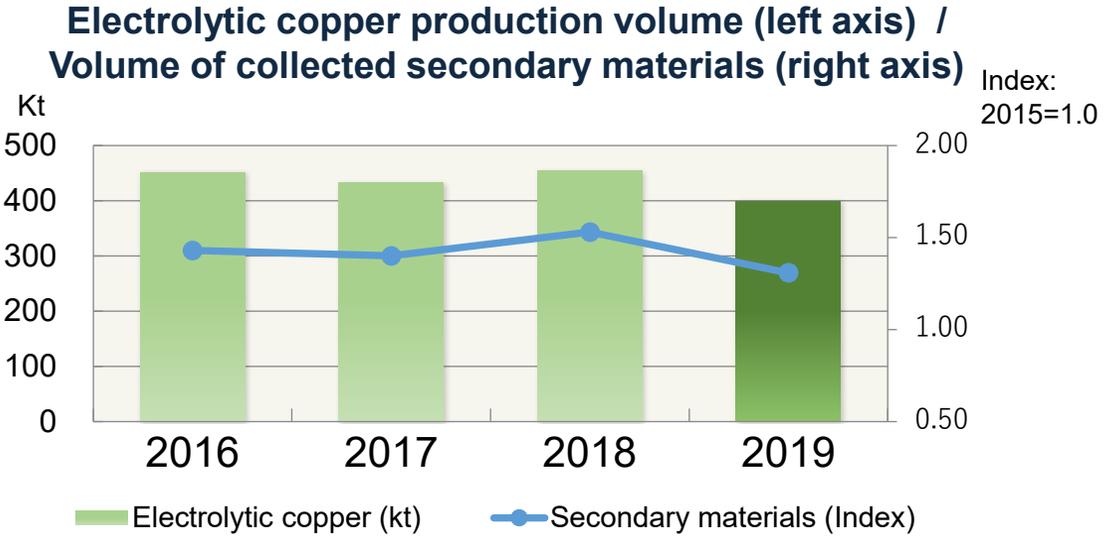
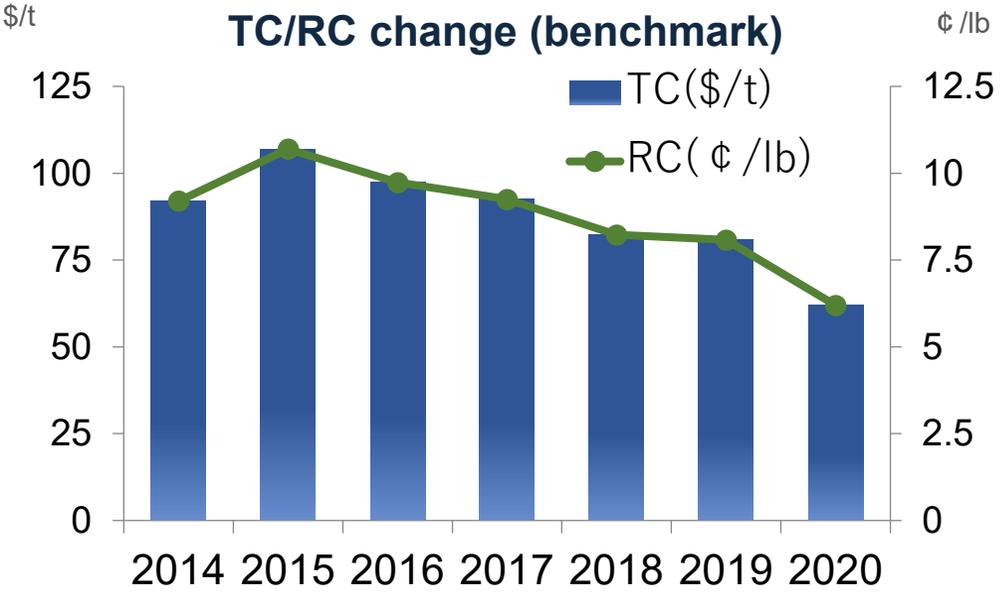
# Toyo Smelter & Refinery

## Production volume

FY2019 399 kt (results)

FY2020 444 kt (November forecast)

\*No scheduled shut-downs in FY2020



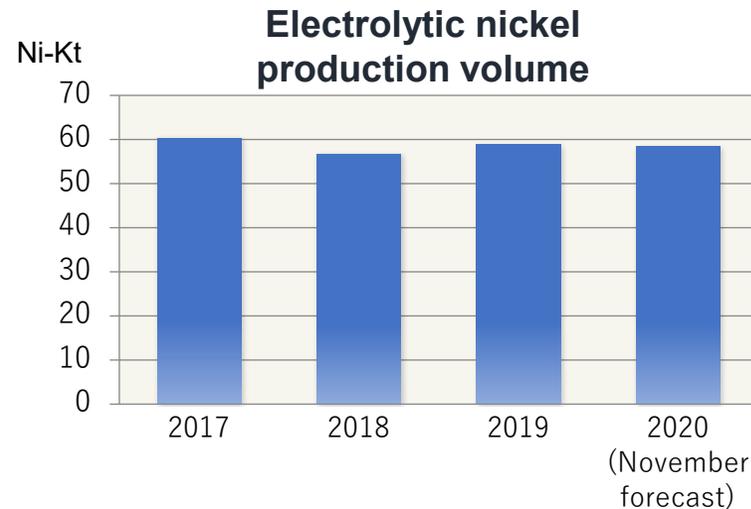
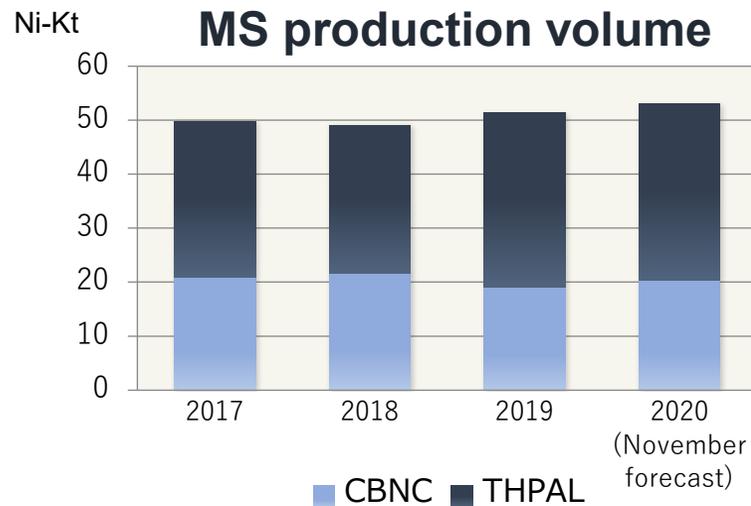
# 6) Individual business overview Smelting and refining ② Nickel

(CBNC, THPAL, Niihama Nickel Refinery)

## CBNC, THPAL, Niihama Nickel Refinery

Production volume (FY2019 results, FY2020 November forecast)

unit Ni-kt	FY2019 Actual results		FY2020 (August forecast)	Fluctuation	FY2020 (November forecast)		Fluctuation (vs August)	
	1H results	2H results			1H results	2H forecast		
CBNC	1H results	9.9	19.1	+2.4	1H results	10.0	20.3	-1.2
	2H results	9.2			2H forecast	10.3		
THPAL	1H results	15.9	32.3	-1.3	1H results	16.7	32.7	+1.7
	2H results	16.4			2H forecast	16.0		
Niihama Nickel Refinery	1H results	29.0	58.8	+0.7	1H results	28.5	57.5	-2.0
	2H results	29.8			2H forecast	29.0		



### Maximizing by-product recovery at HPAL

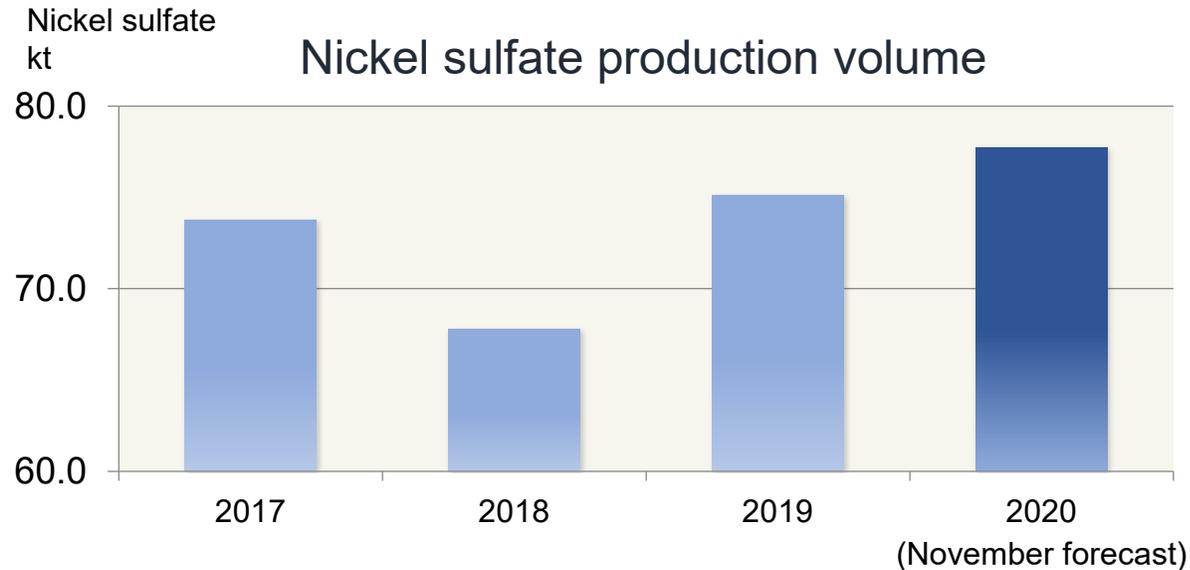
Scandium oxide:  
Started commercial production from January 2019.

Chromite:  
Commercial production was scheduled to start in 2020, but the impact of the spread of COVID-19 has led to a postponement.

# 6) Individual business overview Smelting and refining ③ Nickel sulfate (Niihama Nickel Refinery, Harima Refinery)

## Niihama Nickel Refinery, Harima Refinery

- In FY2019, total production volume at Niihama Nickel Refinery and Harima Refinery reached a record high of 75.1 kt.
- In FY2020, total production volume at Niihama Nickel Refinery and Harima Refinery is estimated to be 77.7 kt.



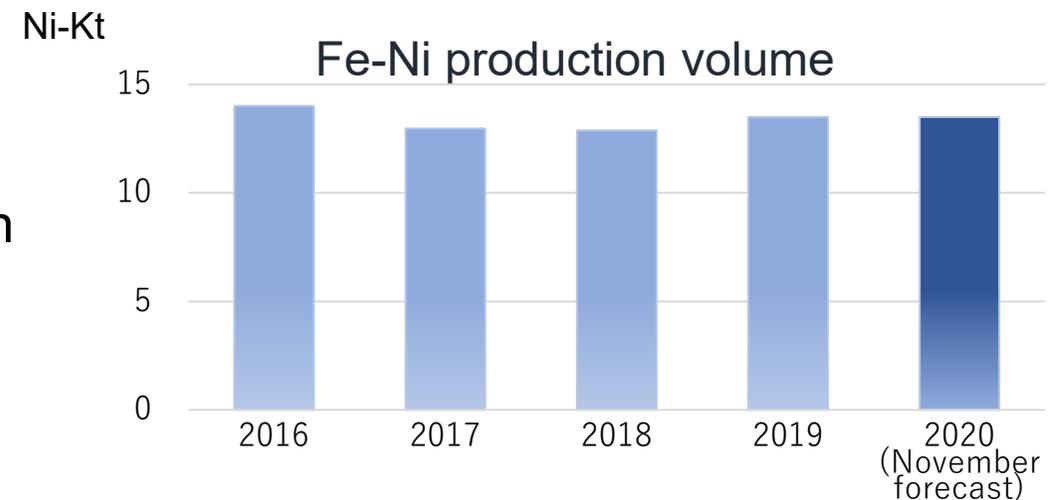
## Hyuga Smelting Co., Ltd

### Production volume

FY2019 13.5 Ni-Kt (results)

FY2020 13.5 Ni-Kt (November forecast)

- Using system of 2 kilns, 1 electric furnace  
Aim to maximize production volume
- Strive for cost reduction through stable production and efficient operation, and secure profits



# 6) Individual business overview Materials

## Battery materials

With production adjustments in the automobile industry due to the impact of COVID-19, the first half of the year saw reductions in production and sales. Recently, the automobile market has been slowly recovering, and battery material production and sales are estimated to recover.

## Crystal materials

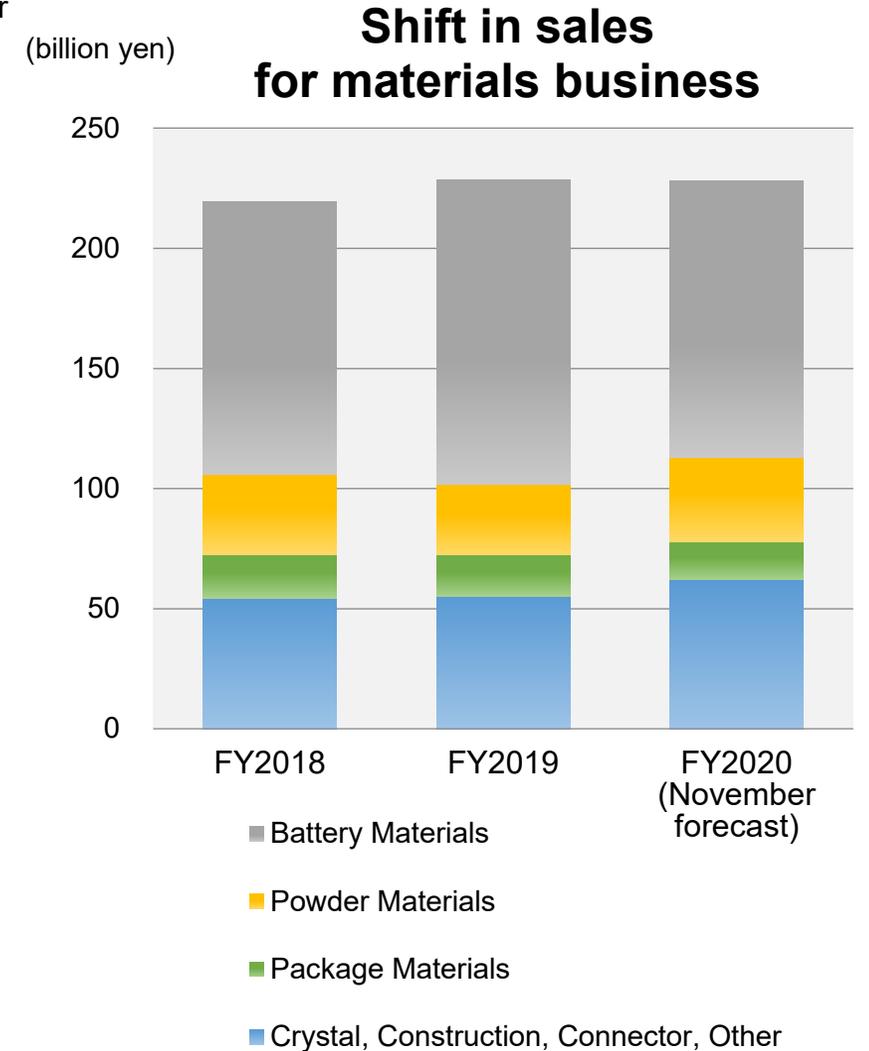
Smartphone demand was sluggish in the first half of the year due to the impact of COVID-19. Recently, there have been movements in the market with the arrival of 5G models, and there have been signs of a moderate recovery. The telecommunication infrastructure market has been moving in a favorable direction, and is estimated to continue going strong.

## Powder Materials

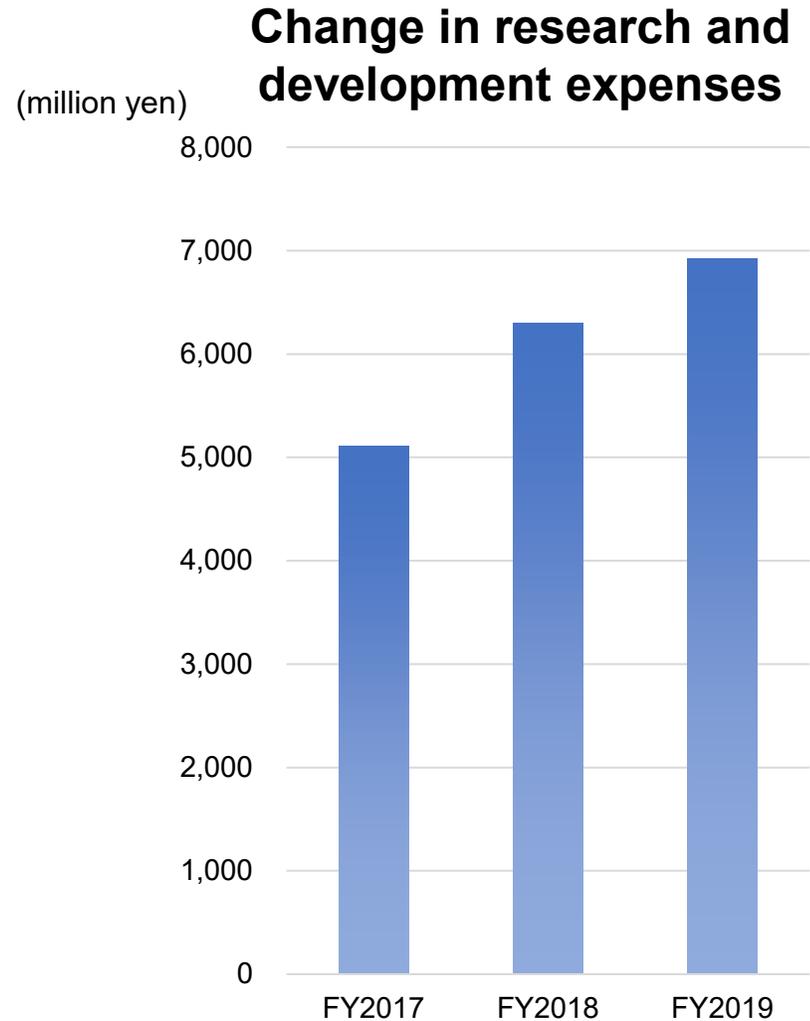
The impact of COVID-19 led to an overall slump in the in-vehicle market in the first half of the year, but it is slowly recovering. Demand for consumer products is going strong, and it's estimated that this will continue without a large slump. Estimations are strong when compared to the last fiscal year, which had inventory adjustment, but inventory stock-piling is being narrowed down due to apprehensions over a third wave.

## Package Materials

The smartphone market continued to be sluggish, but has recently begun to recover with demand through the formalization of 5G. In-vehicle and industrial machinery has bottomed out but the pace of recovery is slow.



# 6) Individual business overview Research & development ①Results



## Material Business (material development)

### [Battery materials]

- Research & development of higher performance battery cathode materials
- Customizing for solid state batteries

### [Crystal materials]

- Cost reduction ahead of commodification  
Achievement of improved productivity through crystal lengthening, larger bore, and improved crystal growing/production yield, etc.
- Meeting new user needs  
Large bore LT crystal growth technology established, now in user work

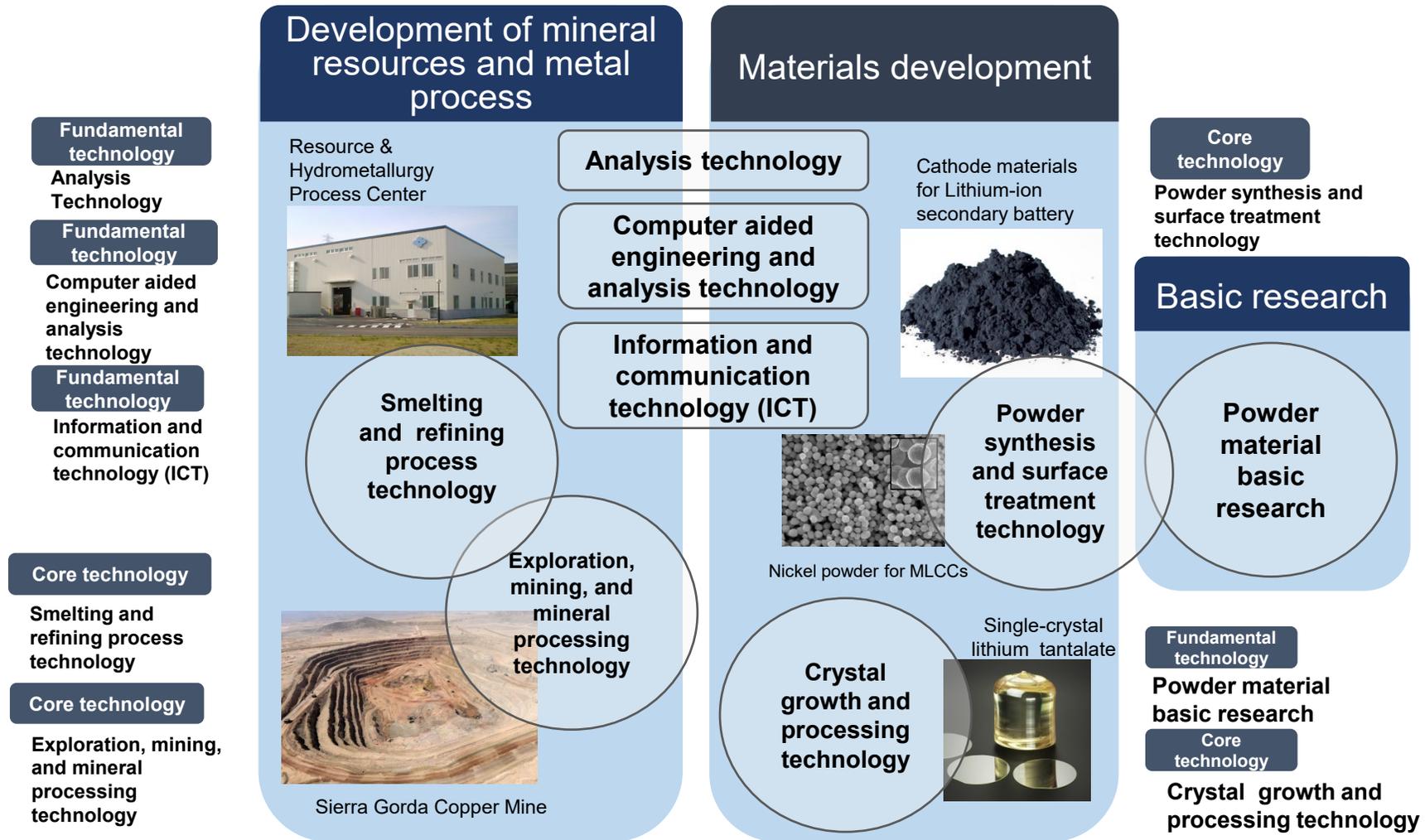
## Smelting & Refining Business (process development)

### [Lithium ion battery recycling]

- Develop cobalt recovery process which was the subject of recycling, and pilot test is under verification.

# 6) Individual business overview

# Research & development ②Area/field



Concentration on growth strategy fields, search for "seeds" of next-generation business

# 7) Sensitivity trial calculation

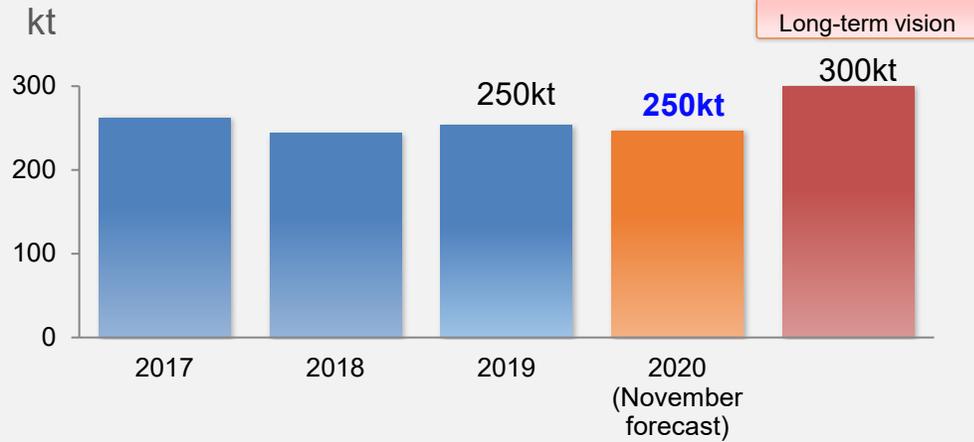
(billion yen)

	Change	Up / Down of profit before tax for FY2020
Cu	±100\$/t	2.6
Ni	±10 ¢ /lb	1.5
Au	±10\$/toz	0.2
JPY / US\$	±1 yen/\$	1.2

Note: US\$ /JPY translation include RC-related and conversion rate of overseas consolidated / equity- method affiliate companies' profit.

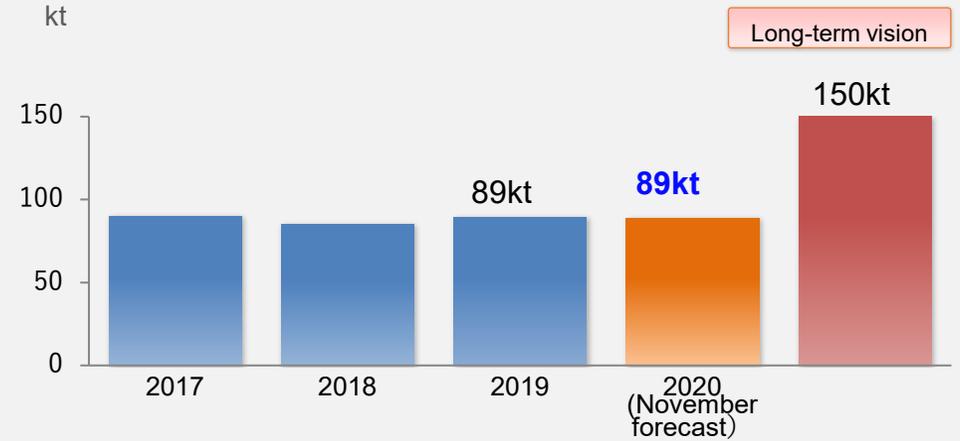
# 8) Targets and achievement of long-term vision

## Cu (attributable production volume)



## Ni (annual production volume)

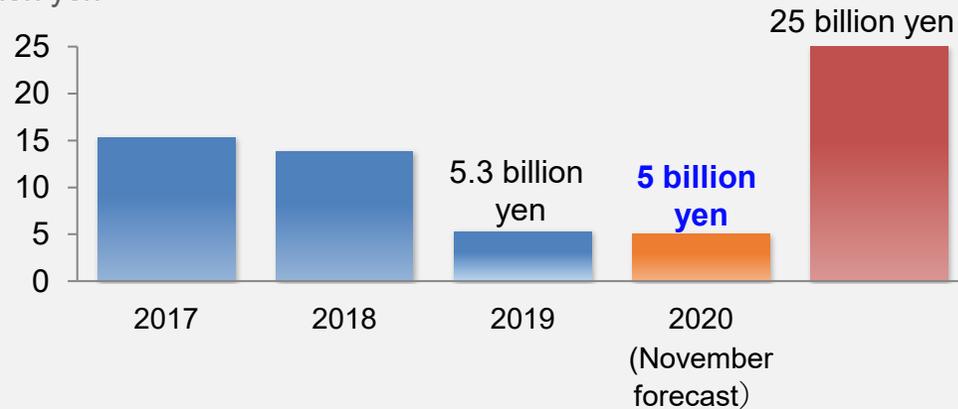
\* Quantity for long-term vision is production capacity



## Materials business (segment profit)

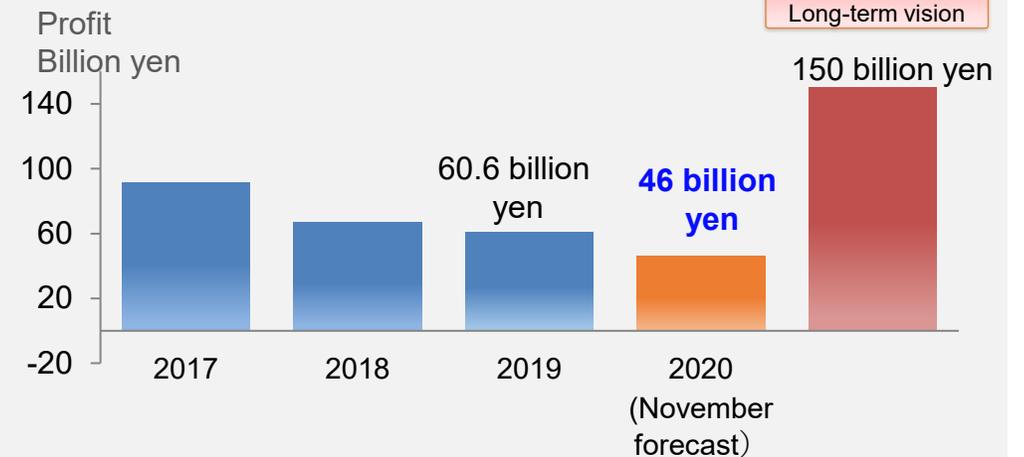
Profit  
Billion yen

\*Based on recurring profit/loss up to FY2017  
Based on profit/loss before tax from FY2018



## Net income

\*Based on Japanese Standards up to FY2017  
Based on IFRS from FY2018



# Note

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