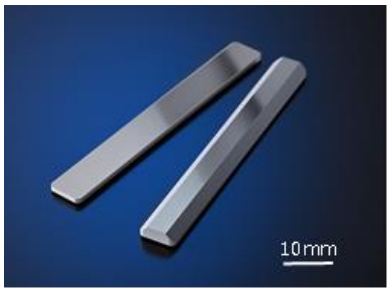
reducing the cobalt content constitutes a substantial contribution to reduced GHG emissions from the manufacturing of cathode materials and LIBs.

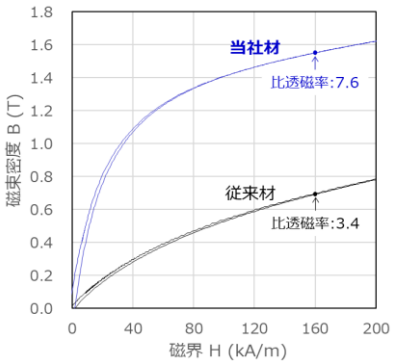
■Magnetic materials for motors 楔 (development technology)

Global Research & Innovative Technology Center
Power Electronics Materials Business Unit, Advanced Components & Materials Division

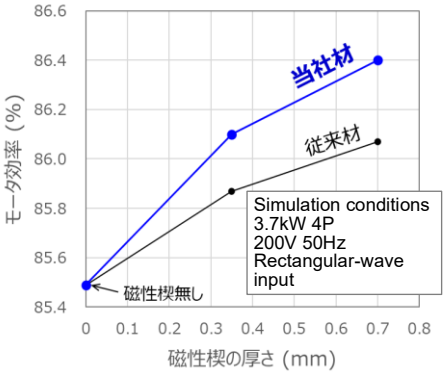
It is said that motors consume nearly 50% of the global supply of electric power, and as such, improving the efficiency of this mechanism is one of the most overriding issues of energy-conserving and CO_2 emissions reducing technologies. Against this background, we have developed new high-performance magnetic slot wedges. This represents the technology that is often used to increase motor efficiency, specifically by improving the magnetic flux distribution within the motor. With previous products, however, the improvement effect was limited due to the inadequate density of magnetic particles and magnetic permeability. In comparison, our recent development technology, an application of our proprietary powder metallurgy technique, provides a higher density of magnetic particles, and achieves permeability that is about double the level of the previous products. A computer simulation suggests that use of the new high-permeability magnetic slot wedges is expected to increase the motor efficiency by about 0.9% compared to no technology of this kind being used and about 0.3% compared to use of previous products. We plan to mass-produce this magnetic slot wedge technology, looking to contribute to a low-carbon society.



Magnetic slot wedges
(external view)



Comparison of magnetic properties



Comparison of motor efficiency

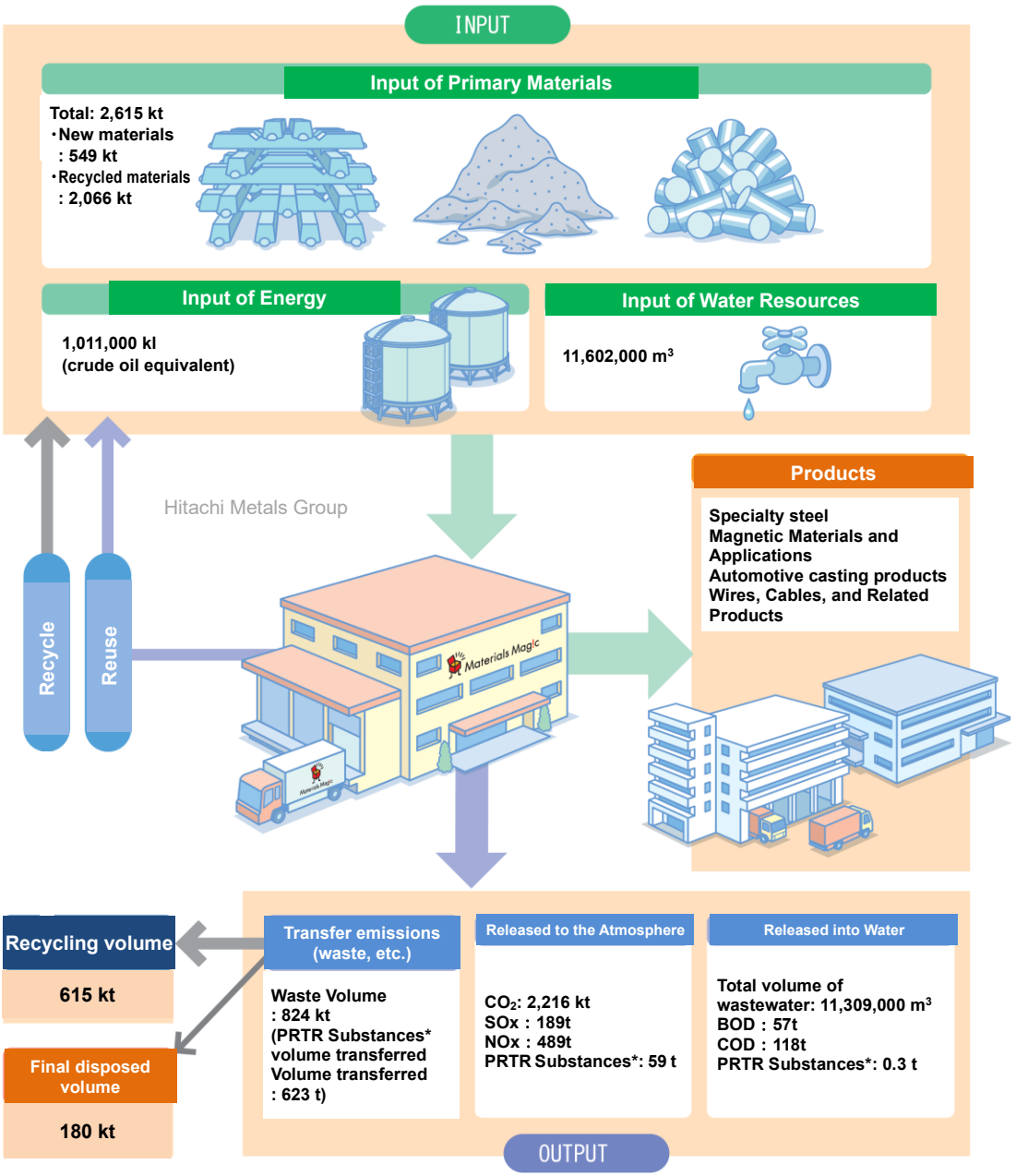
3. Environmental Consideration in Manufacturing

This is a graphical representation of the balance of materials in manufacturing processes at the Hitachi Metals Group for fiscal 2021.

The Hitachi Metals Group is promoting the reduction of the environmental burden in two directions: reducing the volume of input through the efficient use of resources and energy, and reducing the volume of output by controlling atmospheric releases and wastewater discharges, reducing and recycling waste, and so on.

(1) Material Balance

The Hitachi Metals Group's Material Balance for Fiscal 2021 (Global)



* PRTR emission quantities are totals of those released by domestic companies in the Hitachi Metals Group

(2) Climate Change Prevention

The Hitachi Metals Group is a materials manufacturer and uses significant amounts of energy in its manufacturing processes. For this reason, the Group positions the prevention of climate change as a management priority. The Group has established medium- to long-term targets and is now working on energy conservation measures to reduce its energy consumption rate and CO_2 emissions.

(a) Addressing Climate Change

1. Disclosure in accordance with TCFD Recommendations

As countries around the world intensify their efforts to address climate change in accordance with the Paris Agreement, the Japanese government announced in October 2020 its policy goal of reducing emissions of greenhouse gases, as typified by carbon dioxide (CO_2), to virtually zero by 2050. Accordingly, companies are expected to be more proactive than ever in their efforts to transition to a decarbonized society.

Hitachi Metals Group considers the impact of climate change on its business as one of our most important management issues, and we believe that enhanced disclosure of climate change-related information is a key factor in building a relationship of trust with our stakeholders. Accordingly, in June 2021, we registered our support for the TCFD* Recommendations. We will continue to enhance our disclosure of information on the impact of climate change on our business activities in accordance with the TCFD Recommendations.

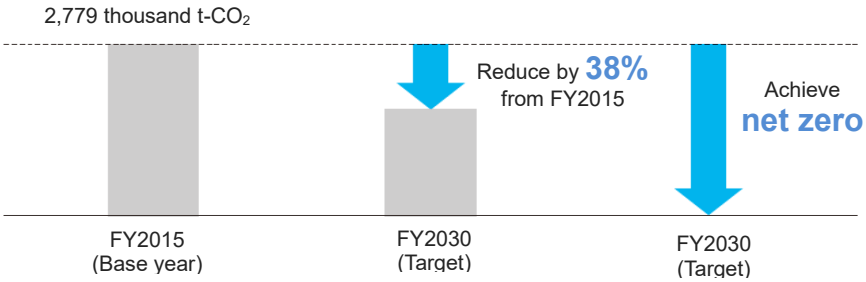
*TCFD (Task Force on Climate-related Financial Disclosures):

Created in 2015 by the Financial Stability Board (FSB) in response to the related request from the G20 summit meeting. In June 2017, the TCFD published the final recommendations, specifying items for business and other organizations to deal with when disclosing information on climate-related risks and opportunities.

2. Indicators and Targets

The Hitachi Metals Group has set targets for reducing CO_2 emissions* as shown in the illustration below. In promoting carbon neutrality, we will implement various measures, such as process improvement particularly through facility investment, fuel conversion for melting and heating furnaces and other equipment, technology development for expanding usage of carbon-free fuels, and introducing renewable energy in addition to continuing with previous energy-conserving activities.

CO_2 emissions reduction targets



*Scope 1: direct CO_2 emissions by the Company

Scope 2: indirect emissions associated with the use of electricity, heat, and steam supplied by other companies (absolute value)

Actual achievements for Scopes 1 and 2 (1000t-CO_2)

Item	FY2019	FY2020	FY2021
Scope1	927	777	876
Scope2	1,392	1,218	1,340
Scope1+Scope2	2,319	1,995	2,216

*Executive Compensation

Executive compensation in the Hitachi Metals Group is determined on the basis of the achievement of annual targets. Starting in fiscal 2022, the extent to which the CO_2 emissions reduction targets have been achieved will be added to the index as an evaluation item for our climate change response.

*Internal carbon price

To promote CO_2 emissions reduction, we have added the concept of “internal carbon pricing” to our internal regulations related to capital investment. In detail, we set a carbon price (8,000 yen/t CO_2) based on the total amount of CO_2 emissions after capital investment, and the effect of the CO_2 reduction of the capital investment is calculated as profit. (October 2021)

3. Strategy (Scenario Analysis)

The Hitachi Metals Group has begun “scenario analysis” to clarify the risks and opportunities posed by future climate change and to develop business strategies to reduce risks and expand opportunities. While we recognize that scenario analysis should cover the entire group, including the supply chain, in fiscal year 2021, we limited our analysis to a limited number of scenarios and scope of coverage. In fiscal year 2022, we plan to complete the analysis regarding domestic business, and
from fiscal year 2023 onward, we will promote scenario analysis including overseas operations.

• Scenario-analysis Process

Scenario analysis—consisting of the four steps shown in Figure 1—aims to assess (i) financial and business impacts under different scenarios and (ii) resilience of the Hitachi Metals Group strategy in regard to climate-related risks and opportunities.

• Assumptions for scenario analysis

Scenario: Refer to “Below-2°C scenario” for risks and opportunities excluding physical risks, and refer to “4°C scenario” for physical risks.

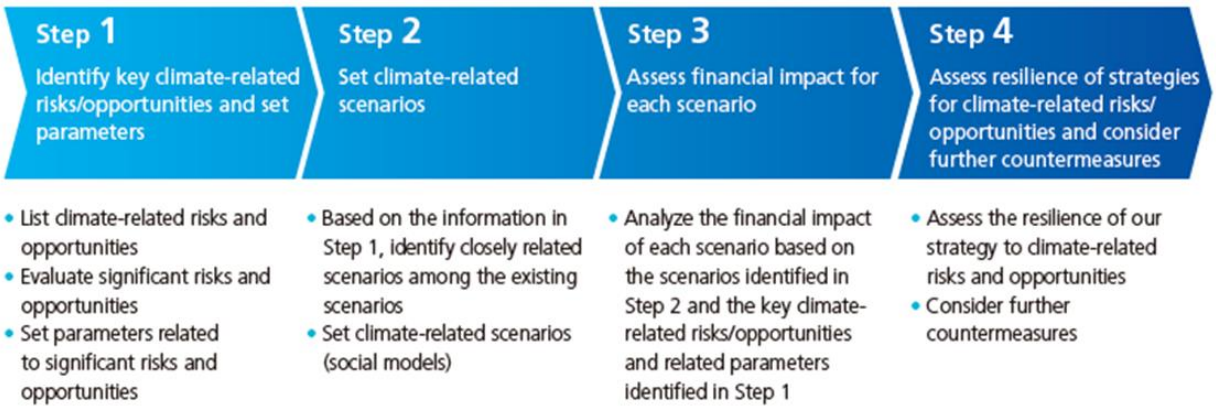
Target businesses: (FY2021) Advanced Metals Division (domestic sites)
(FY2022) Advanced Components and Materials Division (domestic sites); Advanced metals Division (domestic sites)

Target year: Impact as of 2030

・ Reference scenario

Classification	Main reference scenario
Less-than 2°C scenario	・IEA World Energy Outlook 2020. Sustainable Development Scenario ・IPCC RCP2.6
4°C scenario	・IEA World Energy Outlook 2020. Stated Policy Scenario ・IPCC RCP8.5

・Steps of scenario analysis



The following table summarizes the results of examinations on risks and opportunities posed by climate change.

■ Business and financial impacts and responses under the assumption of the year 2030 (Advanced Metals Division [domestic sites])

Classification		Type	Content	Business/ financial impact	Our response
Risk	Transition	Policy/regulations	Increased production and operating costs owing to stricter regulations, such as the introduction of carbon pricing (CP), which includes carbon taxes, taxes on fuel and energy consumption, and emissions trading.	Medium	Currently, we are working to reduce CO_2 emissions by promoting various energy-saving measures (e.g., LED lighting and introduction of or switch to high-efficiency equipment) and activities to improve productivity. From now onwards, we will actively promote fuel conversion and the introduction of renewable energy (i.e., installation of solar panels) so as to achieve our CO_2 reduction target for 2030.

			Higher procurement costs for raw materials (including rare metals and auxiliary materials such as direct complementary materials) due to stricter CP and other regulations.	Medium	As for principle raw materials, we will work to strengthen surcharges (price sliding-scale system) and consider and implement plans to find new suppliers. From the perspective of life-cycle assessment (LCA), we will increase the utilization ratio of scrap generating low CO_2 emissions and find new suppliers.
		Technology	Increased operating costs associated with the introduction of manufacturing processes (based on electrification and alternative fuels) to meet decarbonization requirements.	Medium	When introducing new manufacturing processes, we will examine equipment specifications with the aim of reducing its impact on operating costs.
		Market	Decreased sales of peripheral components of internal combustion engines owing to the expansion of xEVs.	Medium	As for capturing demand for components of automotive internal combustion engines, we will target the commercial vehicle and agricultural/construction equipment fields.
			Decreased sales due to changes in customer procurement standards (RE100 and other compliance requirements) in accordance with decarbonization.	Small	As for reducing CO_2 emissions from manufacturing processes, we will continue to promote both energy conservation and renewable energy, and we will focus on how to respond to customer requests for decarbonization.
			Increased costs of developing new products for a decarbonized society.	Small	We will develop environmentally conscious products and launch them onto the market sequentially while not being restricted to our conventional business areas.
			Increased procurement risk due to increased demand for raw materials.	Small	We will develop processes that utilize overseas scrap alloys and low-grade raw materials as well as processes for reducing the use of rare metals.
		Reputation	Decreased sales due to lower customer evaluations resulting from delays in the development and launch of environmentally	Medium	We will strengthen cooperation between sales departments and research and development departments with the aim of developing environmentally conscious products, and address the issue as a company-wide top priority.

			conscious products onto the market.		
	Physical risk	Acute and chronic	Orders and sales decreased as a result of delays in delivery owing to operations suspended due to abnormal weather-induced natural disasters.	Large	We will systematically improve our production systems in anticipation of extreme weather events. We will expand the BCP system and refine the action manual for emergencies.
			Increased business costs due to rising insurance costs	Small	In areas where disasters such as tidal waves and floods are anticipated based on the local history of disasters, we will systematically implement disaster preparedness measures such as relocation of factories and product warehouses, protection of production lines, etc.

Classification	Type	Content	Business/ financial impact	Our response
Opportunity	Resource efficiency	Sales increased by raising product value through efficient production and effective use of materials and energy.	Medium	To achieve the 2030 CO_2 emissions reduction target, we will promote various energy-saving measures (e.g., LED lighting and introduction of or switch to high-efficiency equipment) and productivity-improvement measures while promoting fuel conversion and introduction of renewable energy (i.e., installation of solar panels) in a proactive manner. Naturally, we will publicize our efforts and achievements.
	Source of energy	Sales increased through an improvement in the customer's evaluation for supplier selection by working on decarbonization.	Medium	We will actively promote CO_2 reduction by introducing renewable energy and switching to carbon-neutral fuels.
	Products/Services	Sales increased by developing and launching environmentally conscious products onto the market.	Large	We will receive new orders and increase market share of target products by shortening the development lead time and reducing the costs of environmentally conscious products. We will continue to

				expand sales of environmentally conscious products, which are expected to be in more demand in the future. Examples: ・Mold materials that provide longer service life ・Materials for various industrial machinery, undercarriage parts, and exhaust-gas filters that contribute to improved fuel efficiency and reduced emissions by cars ・Aerospace products that are expected to improve the fuel efficiency of airplanes ・Battery materials (clad products) and power-semiconductor materials for use in batteries and other products ・Mass-flow controllers that enable semiconductor manufacturing equipment to save energy
	Market	Sales increased by expanding sales of environmentally conscious products into new global markets in response to increased demand.	Medium	As decarbonization progresses, products are expected to become smaller, more powerful, and lighter; accordingly, we will develop new applications with various alloys that can take advantage of different material properties.
		Sales increased by expanding into the xEV market.	Medium	Many of our products, including clad metals, are used in lithium-ion rechargeable batteries, for which demand is increasing with the expanding xEV market, so we expect sales to increase.

Business and financial impacts and responses under the assumption of the year 2030 (Advanced Components & Materials Division [domestic sites])

Classification		Type	Content	Business/ financial impact	Our response
Risk	Transition	Policy/regulations	Increased production and operating costs owing to stricter regulations, such as the introduction of carbon pricing (CP), which includes carbon	Medium	Currently, we are working to reduce CO_2 emissions by promoting various energy-saving measures (e.g., LED lighting and introduction of or switch to high-efficiency equipment) and activities to improve productivity.

			taxes, taxes on fuel and energy consumption, and emissions trading.		From now onwards, we will actively promote fuel conversion, purchase of renewable energy, and introduction of related equipment (i.e., installation of solar panels) so as to achieve our CO_2 reduction target for 2030.
			Higher procurement costs for raw materials (including rare metals and auxiliary materials such as direct complementary materials) due to stricter CP and other regulations.	Large	As for principle raw materials, we will work to strengthen surcharges and consider and implement plans to find new suppliers. From the perspective of life-cycle assessment, we will increase the utilization ratio of scrap generating low CO_2 emissions, and develop and market materials with low heavy rare earth content in a bid to reduce the usage amount and procurement costs of such elements in the magnet business.
		Technology	Increased operating costs associated with facility investment for introducing manufacturing processes (based on electrification and alternative fuels) to meet decarbonization requirements.	Small	When introducing new manufacturing processes, we will examine equipment specifications, such as introducing the latest energy-saving technologies, with the aim of reducing its impact on operating costs. Also, we will pass increased costs on to sales prices.
		Market	Sales decreased due to lowered prices and lost orders as a result of intensifying competition with xEV suppliers.	Small	We will promote cost reduction plans, such as introducing high-efficiency equipment, increasing productivity, and facilitating local procurement of parts.
			Sales decreased due to operations reduced as a result of rising copper demand causing tight supply of main materials.	Medium	We will work to increase productivity to reduce copper usage and find new suppliers to diversify procurement channels.
			Sales decreased as a result of existing products failing to respond to decarbonation requirements (RE100, etc.) in a timely manner or losing new marketing opportunities.	Medium	We will increase the renewable energy usage rate by promoting the introduction of renewable energy and choosing electricity companies that supply power with a higher percentage of renewable energy sources.

	Physical risk	Acute and chronic	Orders and sales decreased owing to operations suspended as a result of abnormal weather-induced natural disasters.	Medium	We will systematically improve our production systems in anticipation of extreme weather events. We will expand the BCP system and refine the action manual for emergencies.

Classification	Type	Content	Business/ financial impact	Our response
Opportunity	Resource efficiency	Sales increased by raising product value through efficient production and effective use of materials and energy.	Small	To achieve the 2030 CO_2 emissions reduction target, we will promote various energy-saving measures (e.g., LED lighting and introduction of or switch to high-efficiency equipment) and productivity-improvement measures while promoting fuel conversion and introduction of renewable energy (i.e., installation of solar panels) in a proactive manner.
	Source of energy	Sales increased through an improvement in the customer's evaluation for supplier selection by working on decarbonization.	Small	We will work to increase productivity to reduce electricity usage and raise the renewable energy usage rate.
	Products/Services	Sales increased by developing and launching environmentally conscious products onto the market.	Large	We will develop and expand sales of environmentally conscious products that contribute to a low-carbon society. ■ Products that contribute to improving the efficiency of xEVs ・Motor-related materials (rare earth magnets, ferrite magnets, magnet wires, power feeders) ・Power semiconductor-related materials (silicon nitride, silicon carbon) ・Automotive electronic components, such as harnesses ■ Amorphous alloys that contribute to the higher efficiency of transformers
	Market	Increased sales of low-heavy rare earth	Large	Targeting customers considering a switch from magnets with a

		magnets and ferrite magnets against the background of rising prices of heavy rare earth and increasing risks of procurement.		high heavy rare earth content, we will develop and market low-heavy rare earth magnets and high-performance ferrite magnets, aiming to expand sales.

xEV: A generic term for electric vehicles (EVs), hybrid electric vehicles (HEVs), and plug-in hybrid electric vehicles (PHEVs)

RE100: Global corporate initiative of businesses committed to 100% renewable energy

Definition for assessment of business/financial impact (*1 Net sales of target businesses)

- Large: cost or effect equal to or greater than 5% of sales*1
- Medium: cost or effect equal to at least 1% but less than 5% of sales*1
- Small: cost or effect equal to less than 1% of sales*1

As described above, the scenario analysis of the business areas of Advanced Components and Materials Division (domestic sites), in addition to that for the Advanced Metals Division (domestic sites) with the results disclosed on May 26, 2022, verified the response to each risk and opportunity with respect to the strategy for each business, and the analysis results confirmed that our strategy is resilient.

(b) Vision for Preventing Climate Change

The following presents the targets of the Hitachi Metals Group's three-year plan covering fiscal 2019 to fiscal 2021 and the results of fiscal 2021.

- **Targets for Fiscal 2021 in the Medium-Term Environmental Action Plan**
  Reduction of per unit of CO_2 emitted*1 in manufacturing processes by 7% from that in FY2010 (global)
  *1. (CO_2 emissions) / (amount of activity*2)
  *2: A figure representing the scale of business activities such as sales or production weight
- **Fiscal 2021 Results**
  Improvement ratio of CO_2 emissions per unit: 2.2%

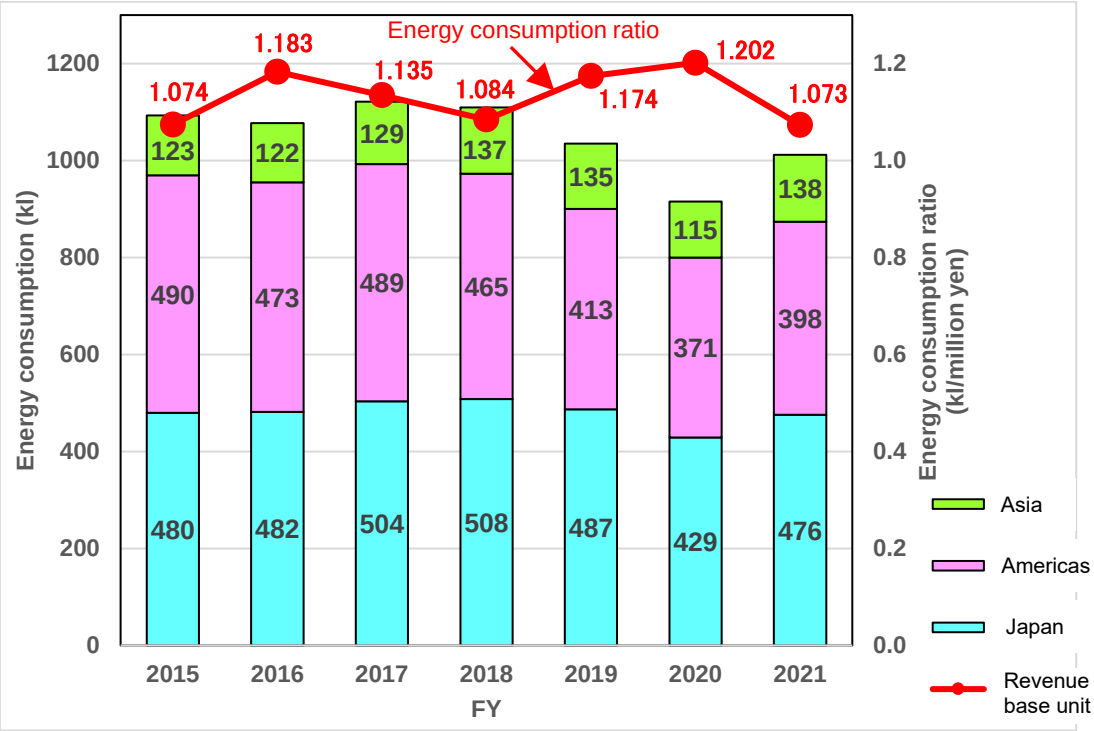
(c) Trends in Energy Consumption and Sales Energy Consumption Ratio

The Hitachi Metals Group's global energy consumption in fiscal 2021 was equivalent to 1,012 thousand kl of crude oil, up 97 thousand kl (10.6%) from fiscal 2020. This was down 23 thousand kl (2.3%) from fiscal 2019 before the outbreak of the COVID-19 pandemic.

In fiscal 2021, production recovered from a fall posted in the previous year, recording a revenue increase of 23.8% from fiscal 2020 and 7.0% from fiscal 2019. On the other hand, the basic unit for revenue was 1.073, down about 10.7% from fiscal 2020, and down 8.6% from fiscal 2019. Major factors contributing to the improved per unit value were various energy-saving measures (improved productivity, more efficient operation of facilities, introduction of high-efficiency equipment, and reduced consumption of fuels particularly by using alternative coke) and facility utilization increased by expanded production.

To reduce energy consumption even further, we will continue to pursue energy-saving activities linked to *monozukuri* (manufacturing). The emphasis is on eliminating excess processes, improving efficiency, boosting the yield rate, curtailing fixed energy, installing energy-saving equipment, fuel conversion and introducing renewable energy.

Trends in Energy Consumption and Sales Energy Consumption Ratio



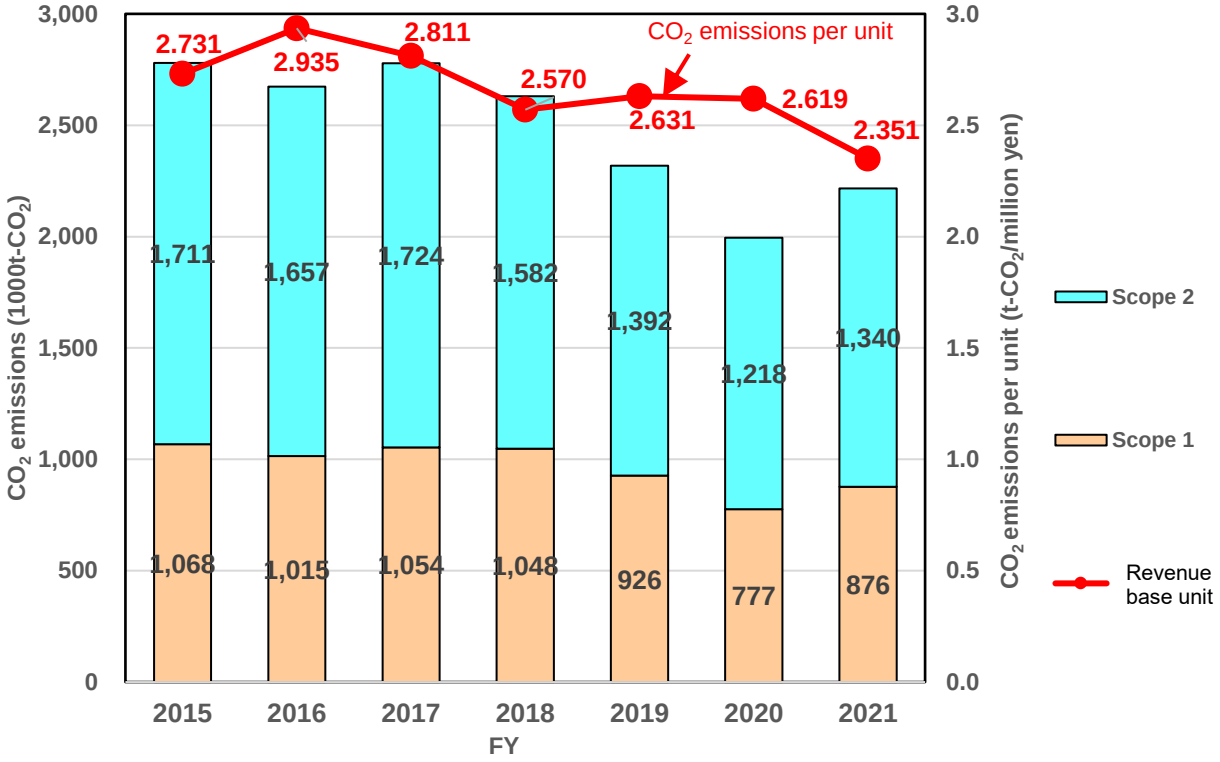
(d) Trends in CO_2 Emissions from Energy Usage and CO_2 Emissions per Unit

The Hitachi Metals Group's global CO_2 emissions from energy usage in fiscal 2021 were 2,216 thousand tons, up 221 thousand tons (11.1%) from fiscal 2020. This was down 103 thousand tons (4.4%) from fiscal 2019 before the outbreak of the COVID-19 pandemic.

In fiscal 2021, production recovered from a fall posted in the previous year, recording a revenue increase of 23.8% from fiscal 2020 and 7.0% from fiscal 2019. On the other hand, the basic unit for revenue was 2.351, down about 10.3% from fiscal 2020, and down 10.6% from fiscal 2019. Major factors contributing to the improved per unit value were various energy-saving measures (improved productivity, more efficient operation of facilities, introduction of high-efficiency equipment, and reduced consumption of fuels particularly by using alternative coke), facility utilization increased by expanded production, and introduction of carbon-free natural gas.

Going forward, we will step up our efforts to reduce CO_2 emissions, setting medium- to long-term targets aimed at achieving carbon neutrality in 2050, with a focus on introducing renewable energy while continuing with our energy-saving activities.

Trends in CO_2 Emissions from Energy Usage and CO_2 Emissions per Unit



Note: Approximately 60% of the Hitachi Metals Group's CO_2 emissions are attributable to Scope 2 (electricity). Within Scope 1 (fossil fuels), the largest emitter is coke, followed by city gas.
We use CO_2 emission factors of electric power on a regional basis: in Japan, emission factor for each electric power company published by the Ministry of the Environment; and in the Americas and Asian countries, the country-specific conversion factor issued in 2021 by the International Energy Agency (IEA).

(3) Effective Use of Resources

(a) Vision for Effective Use of Resources

The Hitachi Metals Group is using in-house reuse and recycling by way of intermediate processing to create a resource-efficient society and achieve the "thorough circulation of resources throughout the life cycle of goods and services," as stated in the 4th Fundamental Plan for Establishing a Sound Material-Cycle Society.

- **Targets for Fiscal 2021 in the Medium-Term Environmental Action Plan**
  - Reduction of waste generation per production unit[*1] by at least 14% compared to fiscal 2010 (global)
  - Waste landfill rate: 12% or less (global)

  *1. (Waste and valuables generation) / (amount of activity[*2])
  *2: A figure representing the scale of business activities such as sales or production weight
- **Fiscal 2021 Results**
  Rate of reduction of waste generation per production unit: 18.9%
  Waste landfill rate: 11.7%

We are working to reduce waste/valuables generation ("waste"), which is measured using the indicator of generation of waste per production unit. We are promoting efforts to reduce waste output, focusing on process innovation such as kaizen (improvement) of production processes. Furthermore, in response to

tight conditions in the final disposal site and requirements to respond to social demands regarding the effective use of resources,
we are working to improve the waste landfill rate to attain the targets set in fiscal 2019, chiefly by promoting recycling and reducing the final disposal volume.

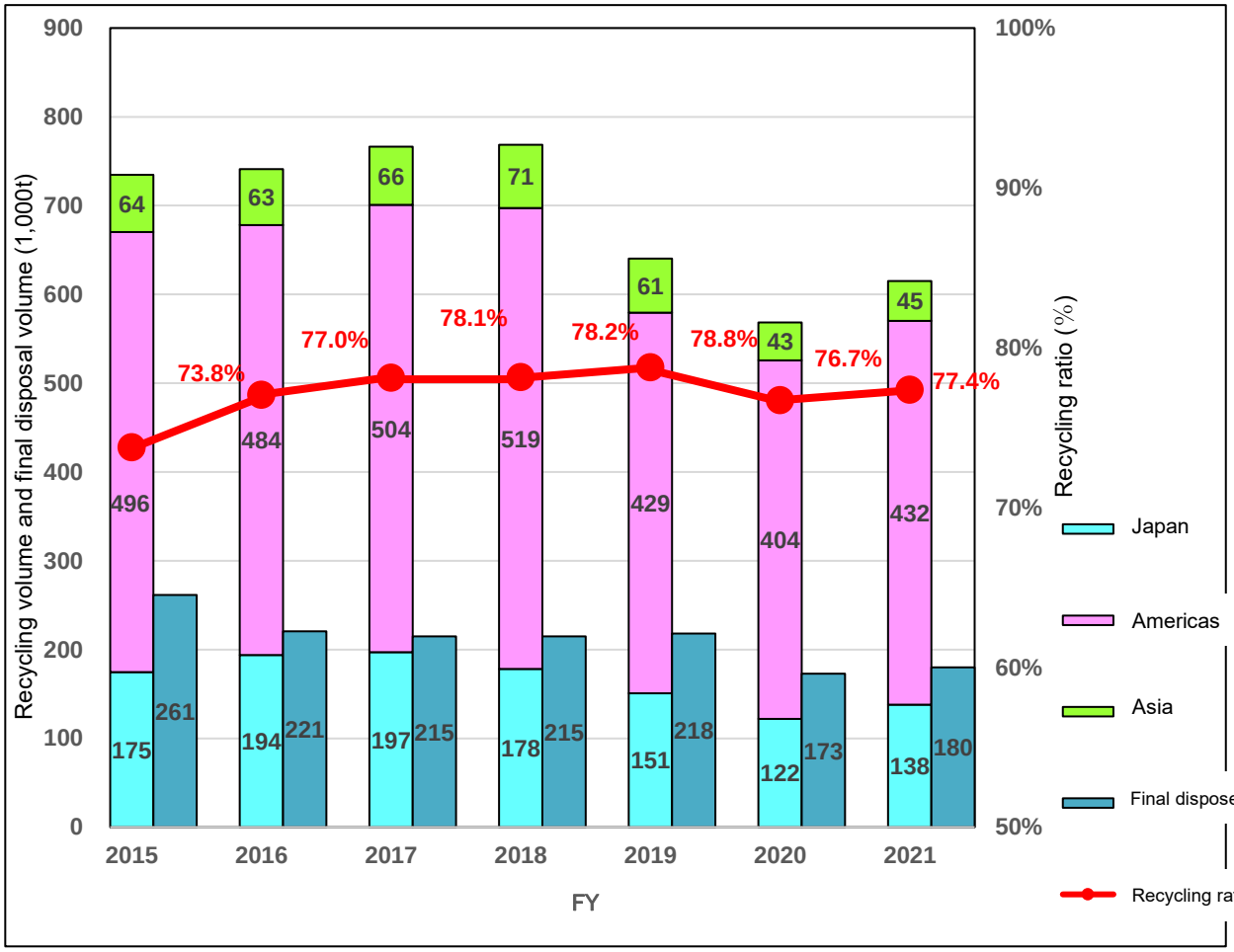
(b) Results of Waste Management

Total waste generated by the Hitachi Metals Group in fiscal 2021 reached about 824 thousand tons, up 63 thousand tons from 761 thousand tons in the previous fiscal year.
We achieved a 18.9% reduction from the base year in the generation of waste per production unit, a management indicator in our Environmental Action Plan, and exceeded our target. This was attributable to the launch of a sand recycling system at the U.S.-based Waupaca Foundry, Inc.
The amount of recycled resources was 138 thousand tons in Japan, 432 thousand tons in the Americas, and 45 thousand tons in Asia (total: 615 thousand tons). The final disposal amount was 15 thousand tons in Japan, 150 thousand tons in the Americas, and 15 thousand tons in Asia (total: 180 thousand tons). (The final disposal amount includes the amount of household waste, hazardous waste, and waste deposited on our premises.) The amount of recycled plastics waste was 0.5 thousand tons (0.2 thousand tons on a non-consolidated basis), and the recycling rate was 82.8% (82.7% on a non-consolidated basis). (Targets planned to be considered based on the results of fiscal 2022.)
There were many challenges to recycling waste in Japan, but thanks to recycling activities in the Americas and other factors, the waste landfill rate in fiscal 2021 was 11.7%, compared to the target value of 12%. Going forward, we plan to raise the bar overall through activities stepped up at overseas sites, where we believe that many recyclable items remain.

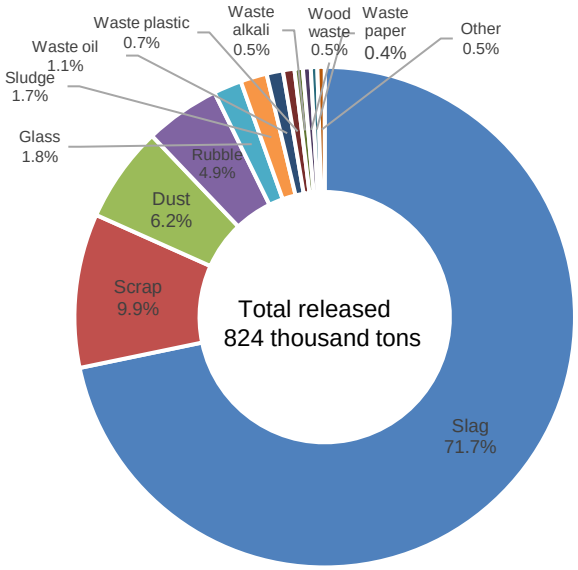
Also of note, we achieved zero emission status[*1] at 14 business offices.

*1. From fiscal 2011, deemed to be a final disposal volume of less than 0.5% of total emissions.

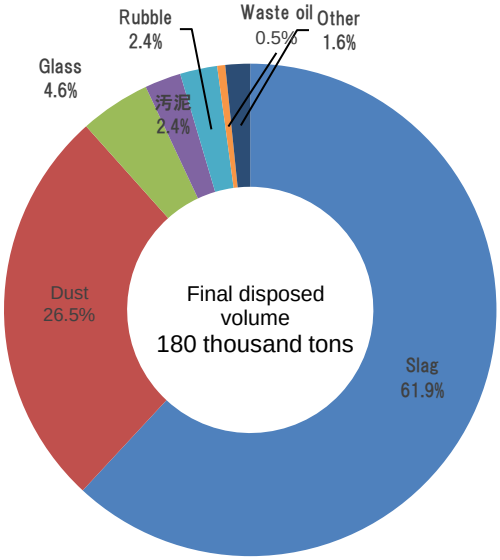
Trends in Recycling Volume, Final Disposal Volume, and Recycling Ratio



Breakdown of Waste Volume
(Hitachi Metals Group)



Breakdown of Final Disposal Volume
(Hitachi Metals Group)



Note: The final disposal amount includes household waste, hazardous waste, and in-house landfill.

(c) Reduction of Water Usage

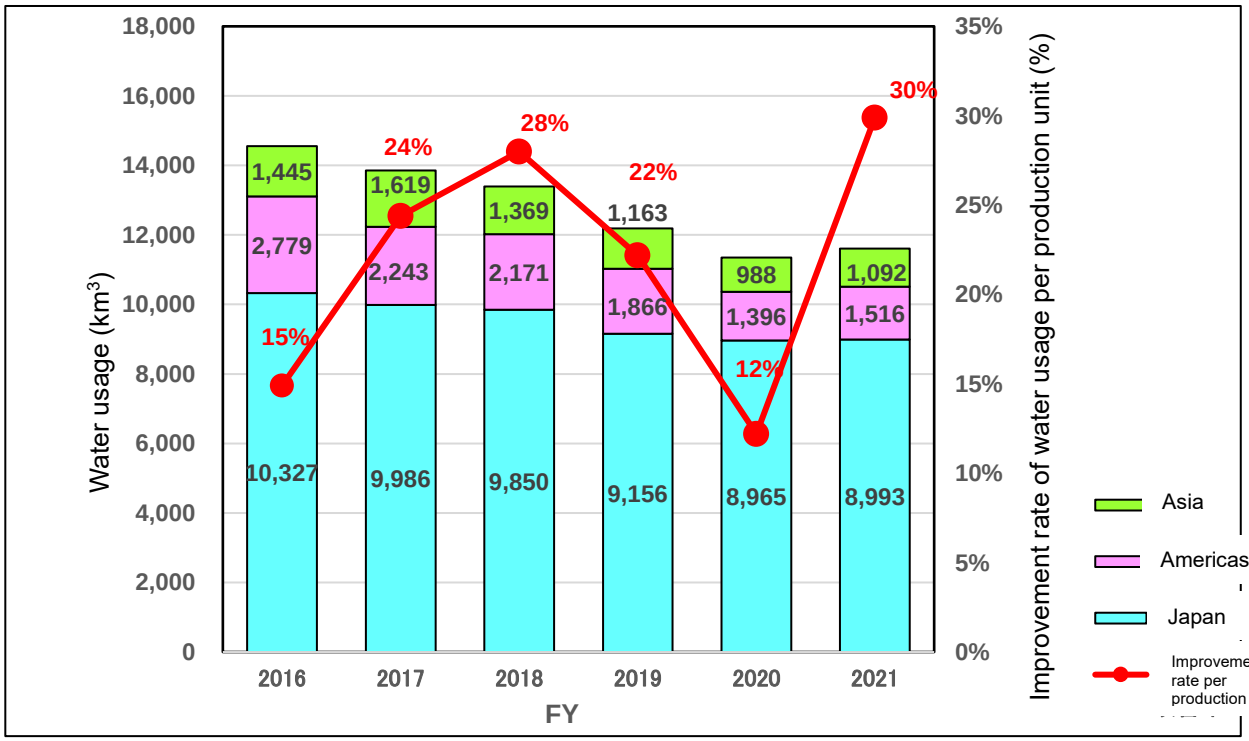
● **Targets for Fiscal 2021 in the Medium-Term Environmental Action Plan**
- Reduction of water usage per production unit[*1] by at least 26% compared to fiscal 2010 (global)

*1. (Water usage) / (amount of activity[*2])
*2. A figure representing the scale of business activities such as sales or production weight

● **Fiscal 2021 Results**
Improvement rate of water usage per production unit: 29.9%

Since fiscal 2016, we have been working to achieve the targets for effective use of water resources set in the Environmental Action Plan through global efforts. Our water usage amounted to 11,602 thousand m^3, an increase of 253 thousand m^3 from fiscal 2020. We reduced water usage per production unit by 29.9% compared to the base year, achieving our target. Major factors contributing to achieved per unit value targets were: recovery of production volume from the decline caused by the spread of COVID-19; and reduction of water usage through measures such as installing water recycling systems in equipment with less impact on quality, adopting functions to reduce water discharge, and repair of water leakage. We plan to work on raising water use efficiency, in order to further reduce water usage.

Trends in Improvement Rate of Water Usage per Production Unit



(4) Chemical Substance Management

(a) Reduction of Substances of Environmental Concern

Of the substances handled by domestic companies in the Hitachi Metals Group that are subject to the PRTR Law,*1 six materials which are nickel (including compounds), chromium, molybdenum, manganese, phthalic acid (2-ethylhexyl), and cobalt are essential raw materials used in Hitachi Metals' products. These six substances constitute 96% of regulated materials and 80% of the total amount transferred.

Of the total amount released into the atmosphere, 46% is attributable to toluene and xylene, which are volatile organic compounds (VOCs).

*1. Law Concerning Reporting, etc., of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management

The State of PRTR Substance Handling in Fiscal 2021 (Domestic Group)

Fig. Breakdown of Volume Handled

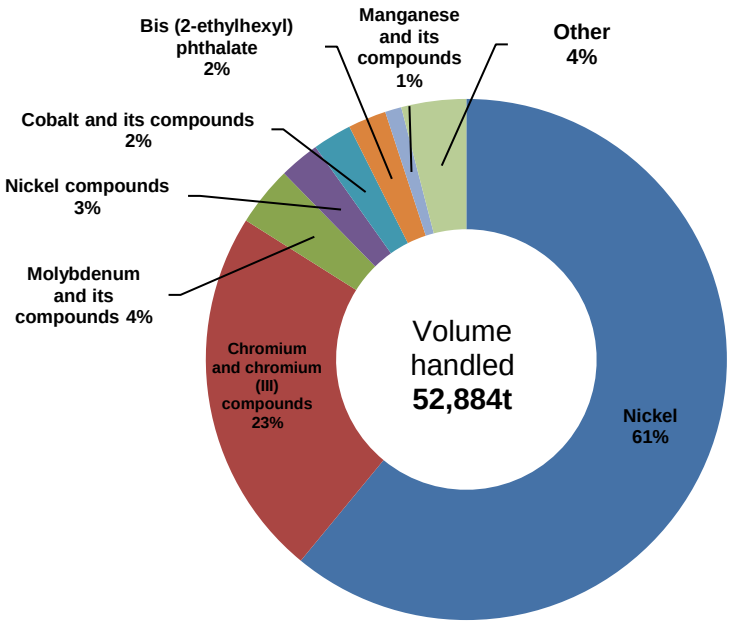


Fig. Volumes Consumed, Released, and Transferred, and Other Breakdowns

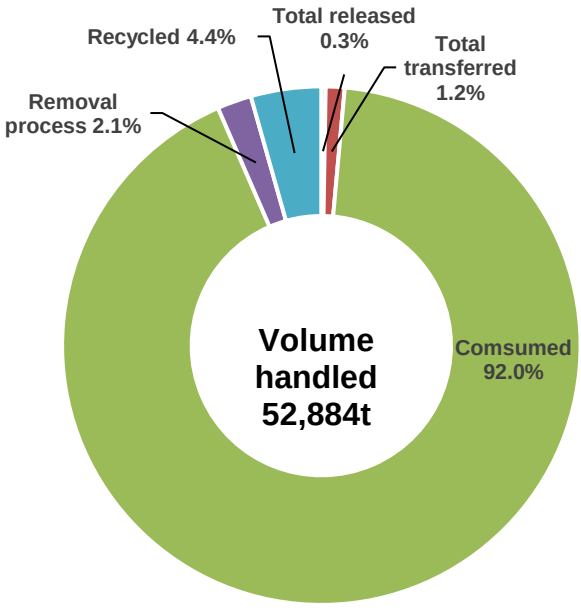


Fig. Breakdown of Release (atmosphere, water)

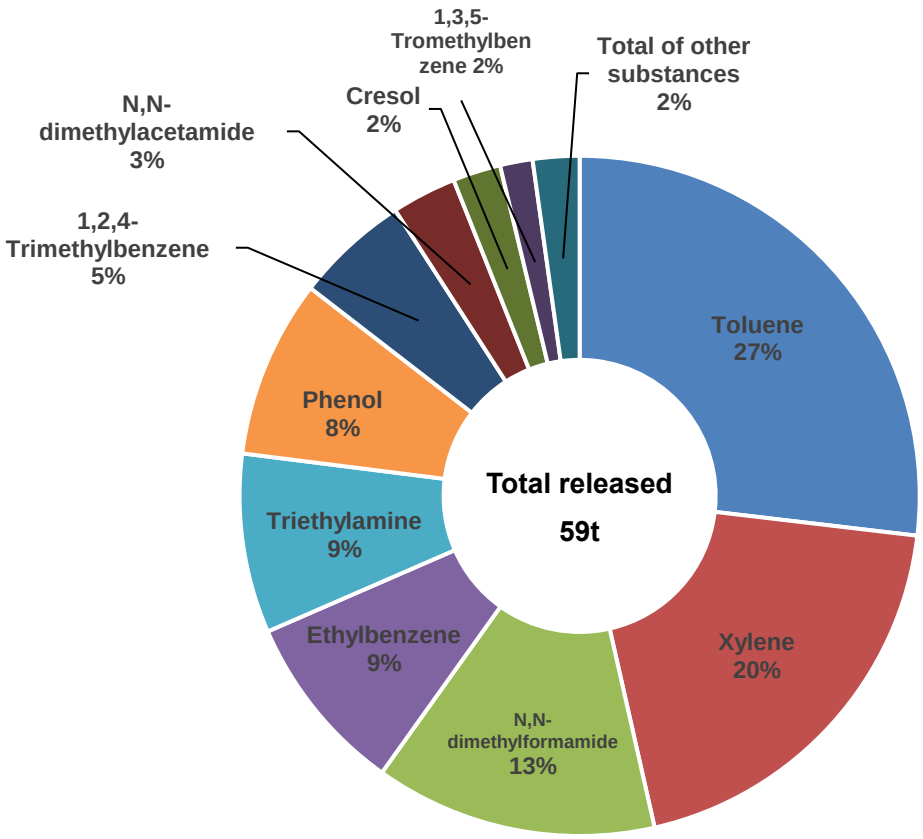
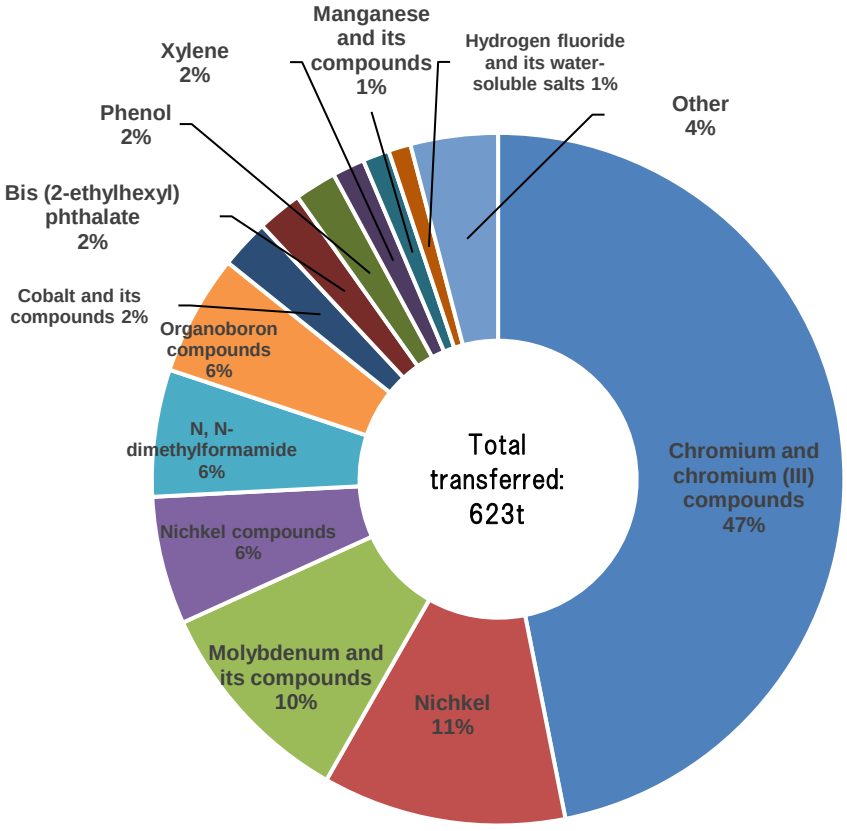


Fig. Breakdown of Transfer (waste, sewerage)



Fiscal 2021: PRTR Data (in Japan) (Unit: Tons/year)

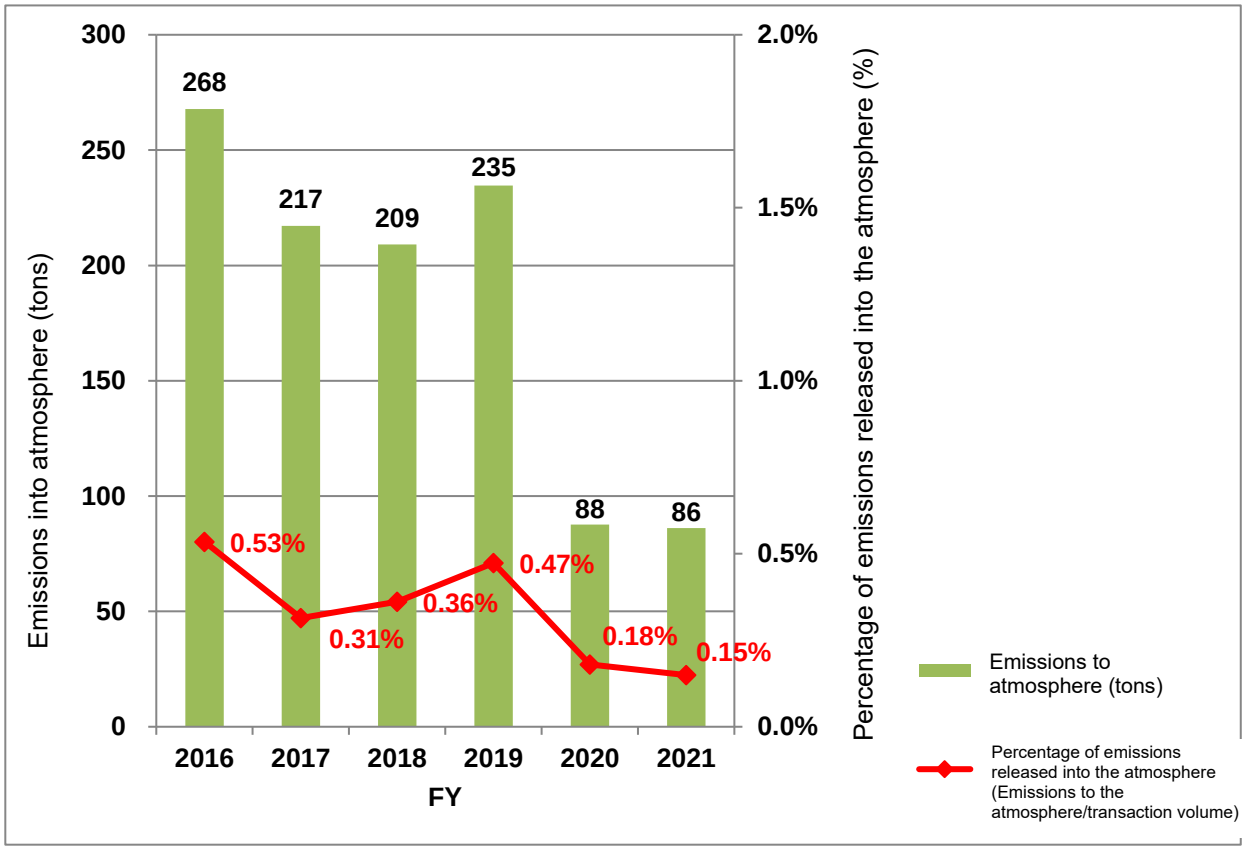
Number	Name	CAS Number	Volume handled	Volume released					Volume transferred		
				Atmosphere	Public water system	Soil	Landfill	Total	Sewerage	Waste	Total
31	Antimony and its compounds	-	95	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4
37	4,4'-Isopropylidenediphenol (alias: bisphenol A)	80-05-7	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	2-imidazolidinone	96-45-7	1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
44	Indium and its compounds	-	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	Ethylbenzene	100-41-4	32	5.1	0.0	0.0	0.0	5.1	0.0	4.6	4.6
71	Ferric chloride	7705-08-0	378	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80	Xylene	1330-20-7	93	11.5	0.0	0.0	0.0	11.5	0.0	9.4	9.4
82	Silver and its water-soluble compounds	-	22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86	Cresol	1319-77-3	221	1.3	0.0	0.0	0.0	1.3	0.0	5.2	5.2
87	Chromium and chromium (III) compounds	-	12,161	0.0	0.1	0.0	55.5	55.5	0.0	292.2	292.2
132	Cobalt and its compounds	-	1,278	0.0	0.0	0.0	0.0	0.0	1.4	13.0	14.4
188	N,N-dicyclohexylamine	101-83-7	1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
213	N,N-dimethylacetamide	127-19-5	79	1.8	0.0	0.0	0.0	1.8	0.0	2.4	2.4
230	N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine	793-24-8	3	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6
232	N, N-dimethylformamide	68-12-2	310	7.9	0.0	0.0	0.0	7.9	0.0	37.0	37.0
272	Water-soluble copper salts (excluding complex salts)	-	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
277	Triethylamine	121-44-8	90	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
296	1,2,4-Trimethylbenzene	95-63-6	40	3.2	0.0	0.0	0.0	3.2	0.0	3.0	3.0
297	1,3,5-Trimethylbenzene	108-67-8	12	0.9	0.0	0.0	0.0	0.9	0.0	0.4	0.4
300	Toluene	108-88-3	21	15.8	0.0	0.0	0.0	15.8	0.0	4.4	4.4
304	Lead	7439-92-1	26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	Lead compounds	-	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
308	Nickel	7440-02-0	32,238	0.0	0.0	0.0	0.0	0.0	0.0	70.9	70.9
309	Nickel compounds	-	1,326	0.0	0.2	0.0	23.2	23.5	0.0	37.3	37.3
330	Bis (1-methyl-1-phenylethyl) peroxide	80-43-3	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
349	Phenol	108-95-2	262	5.0	0.0	0.0	0.0	5.0	0.0	12.2	12.2
355	Manganese and its compounds	117-81-7	1,253	0.0	0.0	0.0	0.0	0.0	0.0	13.1	13.1
374	Hydrofluoric acid and its water-soluble salts	-	20	0.0	0.0	0.0	0.0	0.0	0.1	6.4	6.5
391	Hexamethylene = diisocyanate	822-06-0	47	0.0	0.0	0.0	0.9	0.9	0.0	0.0	0.0
392	Normal Hexane	110-54-3	2	0.8	0.0	0.0	0.0	0.8	0.0	0.8	0.8
405	Boron compounds	-	293	0.0	0.0	0.0	0.2	0.2	11.0	24.1	35.1
411	Formaldehyde	50-00-0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
412	Manganese and its compounds	-	539	0.0	0.0	0.0	2.6	2.6	0.0	7.7	7.8
438	Methylnaphthalene	1321-94-4	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(A total of 40 substances with handled volumes of less than one ton)			7	0.3	0.0	0.0	0.0	0.3	0.0	1.1	1.1

(b) Reduction of Chemical Substance Emissions

We have revised our chemical substance management system launched in fiscal 2016, which had previously targeted only volatile organic compounds (VOCs), based on risks such as acute toxicity and carcinogenesis, and have identified 50 new substances for management from among substances handled in large amounts. We are engaged in activities aimed at controlling the release of these substances into the environment. Most are emitted into the atmosphere, and VOCs account for over 90% of the total. We are therefore continuing improvement activities that focus on the treatment of solvent components used for product coating, as in the past, working to reduce emissions by conducting technological investigations and making changes in equipment to find substitutes for coating materials and improve processes.

The amount of emissions released into the atmosphere was 86 tons, or 0.15%, in fiscal 2021, almost the same as fiscal 2020.

Trends in Percentage of Chemical Substance Emissions Released into the Atmosphere



(5) Eco-Factory Case Study

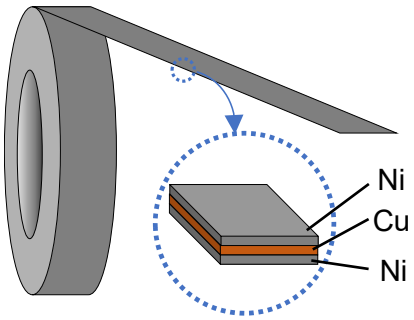
Reduction of CO_2 emissions by using alternative coke　　Waupaca Foundry, Inc.

Confirming the combustion condition in the cupola furnace

Waupaca Foundry, Inc. (hereinafter “WFI”) melts scrap metal, by primarily using cupola melting technology, to produce steel castings for fabricating various parts and components for automotive and other industries. Approximately 50% of WFI’s CO_2 emissions come from coke used as fuel and carbon additive in cupolas. To reduce CO_2 emissions, WFI adopted alternative coke as an additive in order to reduce coke usage. Alternative coke represents a method of reducing coke usage by replacing some of the coke with a calorie-free carbon additive, while adjusting the amount of carbon in the cast iron product. By implementing this measure, we reduced coke usage by 10,995 tons and CO_2 emissions by 31,616 tons in fiscal 2021. WFI also implemented CO_2 emissions reduction measures such as reducing coke consumption by dehumidifying the blast air of the cupola furnace and recovering waste heat from the furnace, resulting in a total reduction of 41,087 tons of CO_2 emissions in fiscal 2021.

In addition to the above-described measures, WFI is promoting various activities, such as introducing renewable energy, to reduce CO_2 emissions and eventually achieve carbon neutrality.

Clad metals for rechargeable batteries of xEVs　　Hitachi Metals Neomaterial, Ltd.



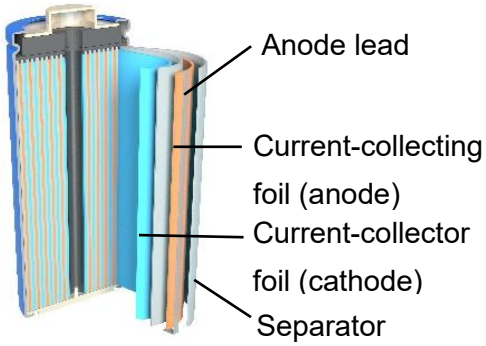
Clad metals for anode lead (Ni/Cu/Ni)

In recent years, demand for xEVs* has been increasing rapidly as people increasingly consider solving climate change issues. In line with this trend, demand for lithium-ion batteries, which are mainly used in xEVs, has also increased significantly.

Hitachi Metals Neomaterial, Ltd. (hereinafter “HMN”) provides materials for the anode leads used in lithium-ion batteries. The anode lead must have high electrical conductivity because it serves to extract electricity from the current-collecting foil. It must also have excellent weldability because it is incorporated into the battery after being welded to the current-collecting foil.

HMN has produced a number of clad metals that are made by joining two or more different metals, each with its own unique characteristics. To meet multiple requirements for anode leads, the Suita Works has developed a three-layer clad metal, consisting of nickel as the outer layers surface and copper as the inner layer, which is used in lithium-ion batteries for xEVs through various customers.

We have received many requests from customers to increase production, and we will strive to further improve production efficiency and contribute to solving environmental issues by providing materials for xEVs.



Anode lead for lithium-ion battery

* xEV is a generic term for electric vehicles (EV), hybrid electric vehicles (HEV), and plug-in electric vehicles (PHEV).

(6) Site Data

Materials Flow at Major Domestic Manufacturing Sites in the Hitachi Metals Group in Fiscal 2021

Classification	INPUT				OUTPUT									
	Raw materials, etc. (t / year)	Energy consumption (crude oil kl / year)	Water (thousand m³ / year)	PRTR chemical substances (t / year)	Emissions (t / year)	CO2*1 (t / year)	SOx*2 (t / year)	NOx*2 (t / year)	BOD*2 (t / year)	COD*2 (t / year)	PRTR emissions *3 (t / year)	Transferred amount of PRTR *3 (t / year)	Drainage (thousand m³ / year)	Main discharge destination
Kyushu Works	9,740	32,802	182	4,207	10,299	64,016	0.0	1.7	0.0	0.3	91.6	0.0	55	Seto Inland Sea
Moka Works	34,368	27,729	307	76	18,823	51,048	0.1	2.3	6.0	0.0	0.0	0.0	226	Kinugawa River
Kuwana Works	12,065	15,379	312	22	10,727	27,314	1.1	3.2	0.0	0.1	3.2	5.9	297	Inabegaw a River
Yasugi Works	######	158,667	5,262	18,748	61,079	352,665	21.2	155.0	0.8	12.8	0.3	424.5	5,125	Nakaumi Lake
Okegawa Works	52	14,724	311	696	505	27,731	0.2	9.8	3.4	3.2	0.0	7.2	306	Arakawa River
Kumagaya Magnetics Works	9,922	30,862	770	155	3,872	55,969	1.4	0.0	0.0	0.0	0.1	4.5	0	Arakawa River
Yamazaki Manufacturing Dept.	58	2,877	61	4	460	5,387	0.0	0.0	0.2	0.1	1.7	2.6	44	Sewerage
Metglas Yasugi Works	15,817	7,811	0	3	235	16,279	0.0	0.0	0.0	0.0	0.2	0.0	0	Nakaumi Lake
Saga Works	0	5,849	46	12	198	11,296	0.0	0.0	0.0	0.0	0.0	0.0	46	Rokkakugawa River
Ibaraki Plant	######	37,798	1,062	1,806	7,136	68,916	0.2	5.6	16.9	14.6	26.5	73.7	855	Pacific Ocean Kazu sawagawa River, Juo River
HMY, Ltd.	0	10,221	10	19,541	1,470	22,037	0.6	0.7	0.0	0.0	0.0	0.1	4	Nakaumi Lake
Hitachi Metals Precision, Ltd.	3,324	9,124	11	2,915	4,092	19,378	0.0	10.8	0.0	0.0	0.0	8.1	3	Nakaumi Lake
Hitachi Metals Neomaterial, Ltd.	53,075	41,616	481	2,856	13,522	78,424	0.9	3.2	2.4	1.1	1.0	1.1	437	Sewerage Yoneshirogawa River
Hitachi Metals Wakamatsu, Ltd.	42,216	27,080	145	731	38,894	48,002	0.0	8.2	0.0	0.0	0.4	49.2	78	Sewerage
Hitachi Metals Tool Steel, Ltd.	0	5,373	18	0	772	9,464	0.0	0.0	0.0	0.0	0.0	0.0	13	Sewerage
Hitachi Ferrite Electronics, Ltd.	1,702	6,615	73	132	1,558	13,812	0.0	0.0	2.5	0.0	0.0	2.2	71	Sewerage
NEOMAX KINKI Co.,Ltd.	2,893	16,650	186	0	1,412	34,294	0.1	1.1	0.3	0.4	0.0	0.0	186	Maruyamagawa River
NEOMAX KYUSHU Co., Ltd.	7,564	9,009	61	60	1,066	17,817	4.0	0.7	0.0	0.0	2.5	2.0	61	Rokkakugawa River
Tonichi Kyousan Cable, Ltd.	35,800	4,713	58	538	2,060	8,305	0.1	0.4	0.0	0.0	0.3	12.8	58	Kasumigaura
Tohoku Rubber Co.,Ltd.	1,217	1,514	74	30	422	3,244	0.7	0.6	0.4	0.6	13.7	4.1	66	Pacific Ocean
Santoku Corporation	8,816	5,397	184	350	2,020	10,105	0.0	0.0	0.0	0.0	0.0	25.2	184	Sewerage

*1. Calculations of CO_2 emissions for electric power use the adjusted emission coefficients for each power company.

*2. Atmospheric emission concentrations measured based upon the Air Pollution Control Law and Water Pollution Prevention Act.

*3. PRTR emission quantities are totals of emissions to the atmosphere, public waterways, and soil. PRTR transfers are totals of transfers to waste materials and to sewers.