Environmental Initiatives

Basic Concept

The UACJ Group is thankful for the earth and the abundance of life it supports. That feeling underlies our basic stance on the environment, and we have publicly declared our aim to reduce our environmental burden in all aspects of our business activities.

The economic activities of humankind are now of such a scale that they are having enormous impacts on the global environment and giving rise to various problems, including extreme weather, imbalances in ecosystems, and depletion of natural resources. These are sustainability risks for the UACJ Group and ultimately for the earth. Our basic stance on the environment, therefore, is to ascertain what we can do to lower our environmental burden and then work steadily to achieve what is possible.

Fiscal 2018 Key Objectives and Results

	Fiscal 2018 Objective	Fiscal 2018 Performance	Assessment	Fiscal 2019 Objective
Elimination of Serious Environmental Accidents	Zero accidents	1 accident	×	Zero accidents
Measures to Fight Global Warming	Reduction of energy used per unit of production	1.6% increase per unit of production compared to fiscal 2017	×	Reduction of energy used per unit of production (Compared to fiscal 2017)
Realization of a Recycling-Oriented Society	Reduction of waste generated per unit of production	13.6% increase per unit of production compared to fiscal 2017	×	Reduction of waste generated per unit of production (Compared to fiscal 2017)
	Continuation of zero emissions*	Direct landfill rate: 0.25%	○	(No objective set)
	-	-	-	(New objective) Increasing the recyclability of product elements
Chemical Substance Control	Reduction of controlled chemical substances	5.7% increase in transfers and releases of controlled chemical substances compared to fiscal 2017	×	Reduction of controlled chemical substances

* Within the UACJ Group, “zero emissions” is defined as direct landfill disposal of less than 1% of all industrial waste generated.

Looking to the Future

In 2018, production volume declined, but, with irregular operating circumstances due to the impacts of typhoons and other weather events, and equipment troubles and other negative factors, energy usage per unit of production, industrial waste per unit of production, and transfers and releases of controlled chemical substances all increased, and objectives were not achieved in these areas. The objective of zero emissions, however, was again achieved at all business locations.

In fiscal 2019, we will again strive to operate with zero serious accidents and will work to achieve decreases in energy usage per unit of production and industrial waste per unit of production, compared to fiscal 2017. Zero emissions will no longer be treated as a daily management item among management objectives. Increasing the recyclability of product elements will be added as a management item for individual business locations.

Environmental Management

UACJ Group Basic Environmental Policies

Corporate Philosophy

The UACJ Group is thankful for the earth and the abundance of life it supports, and recognizes that the fate of all living things hangs on the condition of the earth's environment. Therefore, we see protection of the global environment and the promotion of a recycling-oriented society as one of our highest priorities and are committed to reducing environmental impact in all aspects of our business activities.

Guidelines

1. We will make the necessary organizational arrangements and allocate the required management resources to advance activities that are cognizant of the need to protect the global environment.
2. We will work to continuously improve the quality of our environmental protection activities by assessing the environmental impacts of our present and future business activities and using the results to establish technologically and economically practical environmental improvement measures and specific objectives.
3. We will abide by environmental laws, regulations, and agreements, and formulate our own standards in actively working to protect the environment. At the same time, we will advance activities cognizant of the need to improve work environments, as well.
4. We will work to reduce our resource and energy usage, promote recycling, reduce waste, and properly manage chemical substances in all aspects of our business activities, which extend to the environmental impacts of the products we handle.
5. We will work to maintain or improve the environment by conducting environmental audits and constantly revising environmental management items and standards.
6. We will work to raise environmental awareness among all of our employees by using internal Group-wide communications activities and other measures to promote understanding of our basic stance on the environment.
7. We will contribute to and develop ties with local communities.

Given our basic stance on the environment, as set forth above, we are pursuing the following activities.

1. Measures to fight global warming and reduce CO_2
   （1）Advancement of energy-saving measures
   （2）Advancement of fuel conversion
2. Development of a recycling-oriented society
   （1）Advancement of the 3R[*1] resource conservation measures
   （2）Increasing our scrap usage ratio
   （3）Reduction of industrial waste generated
   （4）Reduction of landfill waste generated
3. Proper control of chemical substances
   （1）Proper control of chemical substances in products
   （2）Reduction of volatile organic compounds (VOCs)
   （3）Reduction of PRTR[*2] substances
   （4）Establishment of an environmental quality management system that is trusted by customers

4. Compliance with laws and ordinances
   Compliance with domestic and overseas laws and ordinances
5. Establishment of an environmental management system
   Continuous improvement and enhancement of our environmental stewardship through the application of an environmental management system
6. Promotion of environmental education
   Steps to enlighten all employees and raise their awareness on environmental matters.
7. Improvement of the environmental performance of aluminum products
   Contributions to the improvement of the environmental performance of our customers' products by developing and providing materials that make the most of aluminum's beauty and its environmentally harmonious characteristics of being light-weight and rustproof
8. Contributions to and ties with local communities

*1 3Rs: Reduce, Reuse, Recycle

*2 The PRTR (Pollutant Release and Transfer Register) Law promotes improvement in the determination and control of amounts of designated chemical substances released into the environment.

UACJ Group Environmental Management Direction

Fiscal 2018 UACJ Group Environmental Management Direction

Item	Objective
Elimination of environmental accidents	Zero accidents
Advancement of measures to fight global warming	Reduction of energy usage per unit production
Building of a recycling-oriented society	Reduction of industrial waste per unit production
	Objective Continuation of zero emissions
Proper control of chemical substances	Per-unit-production reduction of controlled chemical substances

Environmental Management Direction for Fiscal 2019

Item	Objective
Elimination of environmental accidents	Zero accidents
Advancement of measures to stop global warming	Reduction of energy usage per unit production
Creation of a recycling-oriented society	Reduction of industrial waste per unit production
	Increasing the recyclability of product elements
Proper management of chemical substances	Reduction of controlled chemical substance usage

Approach to Environmental Management

To advance environmental activities and raise the environmental awareness of employees, the UACJ Group has established the Environmental Committee as a body that represents the entirety of the Group.

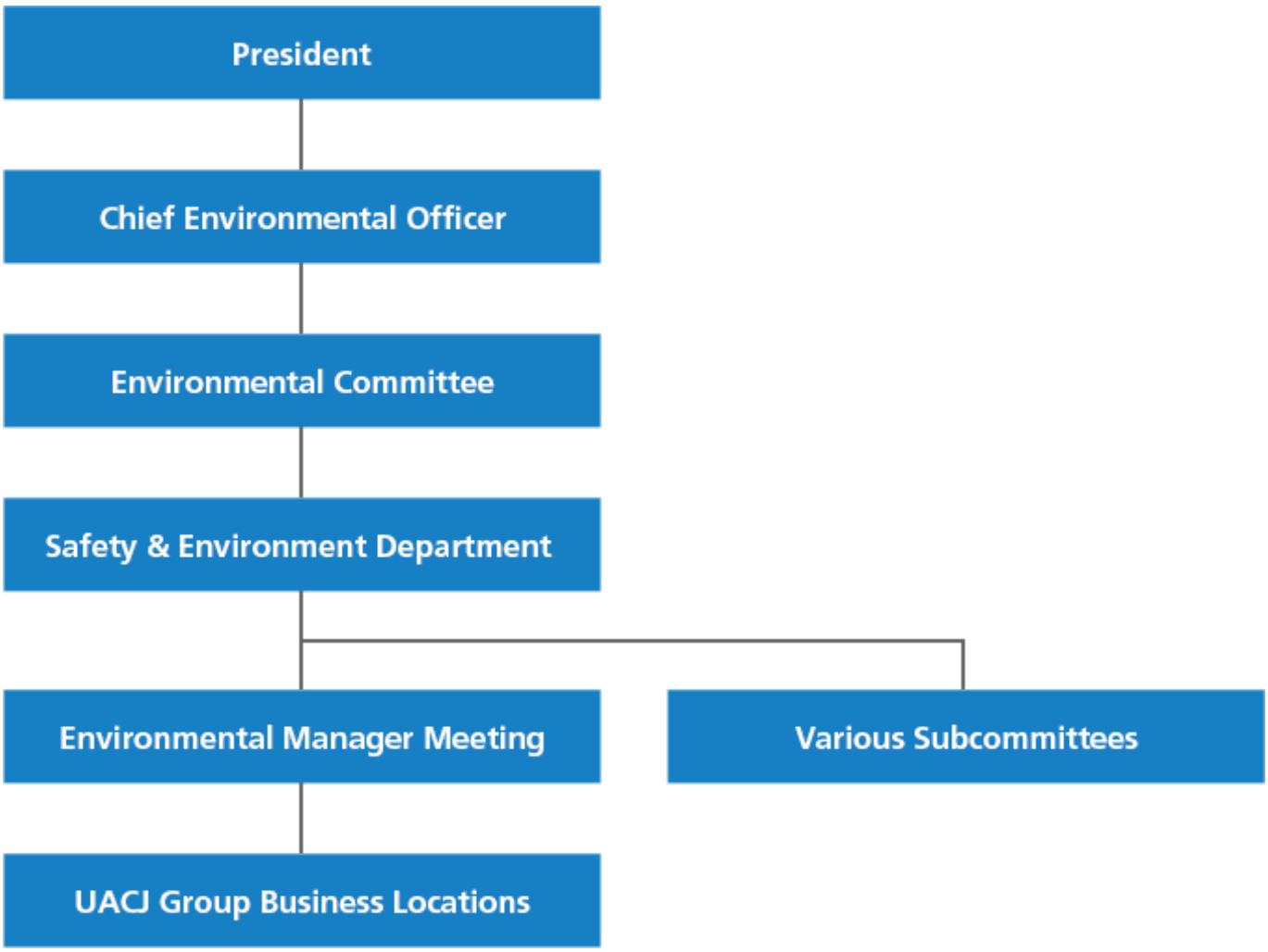
The Environmental Committee, chaired by the Chief Environmental Officer, has a membership consisting of UACJ executives, plant managers, and presidents of principal Group companies . The committee meets once a year, in principle, to be updated on the status of environmental activities, and discuss aims and objectives for the following fiscal year’s environmental activities.

To link environmental activity objectives with business activities and reliably work for their achievement, we have established the Safety & Environment Department as a unit responsible for implementation. The Safety & Environment Department holds meetings for Environmental Managers, conducts Executive Environmental Inspections, and organizes subcommittees on topics such as industrial waste and energy saving in performing the function of implementing and refining environmental activities.

Environmental Manager Meetings

The Environmental Managers of UACJ’s four main works, and principal extrusion, foil manufacturing, copper tube, and precision-machined components plants come together in meetings where they review progress in achieving the UACJ Group’s environmental objectives, and share information on matters like changes in relevant laws.

Environmental Management Organization



Environmental Management System

Environmental management systems are in place at each of the UACJ Group's business locations, and nearly all of our plants have obtained the ISO14001 certification. Some of our smaller business locations have obtained the Eco-Action 21 certification by following the guidelines formulated by Japan's Ministry of the Environment.

Following the September 2015 issuance of the updated ISO14001 standard, each business location worked to achieve compliance with the new standard. All locations successfully updated their certifications as of the July 2018 deadline for doing so.

ISO14001:2015 Certifications (as of August 31, 2019)

Business Location	Certifying Institution	Certification Number	Date Obtained
Nagoya Works	JIC Quality Assurance Ltd. (JICQA)	E440	2002.4
Fukui Works	Det Norske Veritas (DNV)	00484-2002-AE-KOB-RvA	2002.4
Fukaya Works	Japan Standards Association	JSAE545	2002.7
Nikko Works	Det Norske Veritas (DNV)	1851-2002-AE-KOB-RvA/JAB	2002.3
UACJ Extrusion Oyama Corporation	Det Norske Veritas (DNV)	00583-2002-AE-KOB-RvA	2002.9
UACJ Extrusion Nagoya Corporation, Nagoya Works, Anjo Works	JIC Quality Assurance Ltd. (JICQA)	E440	2002.4
UACJ Extrusion Shiga Corporation	Det Norske Veritas (DNV)	00583-2002-AE-KOB-RvA	2002.9
UACJ Extrusion Gunma Corporation	JIC Quality Assurance Ltd. (JICQA)	E773	2004.1
UACJ Foil Corporation, Isesaki Works, Shiga Works, Nogi Works	JIC Quality Assurance Ltd. (JICQA)	E2442	2017.3
Nikkin Co., Ltd.	JIC Quality Assurance Ltd. (JICQA)	E2442	2018.6
UACJ Foundry & Forging Corporation	Det Norske Veritas (DNV)	00583-2002-AE-KOB-RvA	2002.9
HIGASHI NIHON TANZO CO., LTD.	Det Norske Veritas (DNV)	00583-2002-AE-KOB-RvA	2002.9
UACJ Copper Tube Corporation	JIC Quality Assurance Ltd. (JICQA)	E281	2001.5
Toyo Fitting Co., Ltd.	JIC Quality Assurance Ltd. (JICQA)	E1610	2006.3
UACJ Metal Components Corporation, Ena Works	The High Pressure Gas Safety Institute of Japan	04ER-420	2004.3
UACJ Metal Components Corporation, Shiga Works	Japan Quality Assurance Organization	JQA-EM6018	2007.12
NALCO Koriyama Co., Ltd.	JIC Quality Assurance Ltd. (JICQA)	E1711	2007.2

Eco-Action 21 (as of August 31, 2019)

Business Location	Certifying Institution	Certification Number	Date Obtained
UACJ Metal Components Corporation, Narita Works	Chibaken Kankyo Zaidan	0000341	2005.5
UACJ　Color Aluminum Corporation	Institute for Promoting Sustainable Societies	12021	2017.10
UACJ Metal Components Corporation, Osaka Works	Institute for Promoting Sustainable Societies	0012506	2018.8
UACJ Metal Components Corporation, Hiroshima Works	Institute for Promoting Sustainable Societies	0012626	2018.12
UACJ Metal Components Corporation, Sendai Works	Institute for Promoting Sustainable Societies	0012744	2019.4

Executive Environmental Inspections

Executive Environmental Inspections are carried out at Group business locations in Japan to prevent environmental problems, propose and advance implementation of measures for eliminating or mitigating risk, and ensure thorough compliance with environmental laws and regulations.

The inspection team, consisting of the Chief Environmental Officer and representatives from the Safety & Environment Department, visits business locations, receives reports on local environmental management, and checks local conditions in gathering information on matters such as legal and regulatory compliance, and the status of improvement activities. When matters requiring improvement are identified, the Safety & Environment Department provides guidance and support in taking the necessary corrective action. Through this approach, the quality of environmental management throughout the Group is being raised from the bottom up.

In fiscal 2018, Executive Environmental Inspections were conducted at a total of 17 business locations.

Status of Compliance with Environmental Laws and Regulations

In fiscal 2018, there was one accident, in which environmental standards for wastewater were exceeded. As a result of heavy rain from a typhoon that strucked on October 22, 2017, the Nagoya Works released wastewater exceeding the overall standard for chemical oxygen demand (COD) into a river. However, because the person in charge misunderstood the standard, this irregularity was not reported to local government authorities. On June 25, 2018, local government authorities informed us of the standard violation and directed us to report on the cause and measures for avoiding a recurrence. To avoid future violations, we improved the system for confirming overall standards and took steps to prevent water pollution incidents and strengthen our monitoring and notification systems.

Environment-Related Investment

In fiscal 2018, the UACJ Group made environment-related investments of approximately 1.1 billion yen. These funds were used for purposes such as updating and switching fuel for a heat treating furnace at UACJ Copper Tube, updating and switching fuel for a boiler at the Fukui Works, and updating air conditioning equipment and converting to LED lighting at various business locations.

Environmental Education

We conduct environmental education for all employees as another measure for fulfilling our social responsibility to protect the global environment.

The Safety & Environment Department and the environment units of individual business locations lead environmental education initiatives. The Safety & Environment Department conducts fundamental environmental education activities, the purposes of which are to enlighten and raise awareness of environmental protection, and promote understanding of the UACJ Group's Basic Environmental Policies. Meanwhile, the environment units of individual business locations carry out environmental education initiatives to foster the skills and numbers of internal auditors needed to ensure that each business location conducts its daily activities with sensitivity toward the environment.

We encourage employees to obtain public qualifications in environmental fields and are developing a workforce that is capable of appropriately responding to trends in environmental regulation. Individual business locations conduct general environmental education programs and special education programs for employees engaged in work that could have significant environmental impacts.

Numbers of Employees with Environmental Management Qualifications (As of March 31, 2019)

Qualification	Qualified Employees
Pollution Control Manager - Air	41
Pollution Control Manager - Water	61
Pollution Control Manager - Noise	25
Pollution Control Manager - Vibration	27
Pollution Control Manager - Noise & Vibration	15
Pollution Control Manager - Dioxins	27
Energy Manager	60
Certified Environmental Measurer	3
Manager Responsible for Industrial Waste Requiring Special Controls	81
ISO14001 Internal Auditor	509

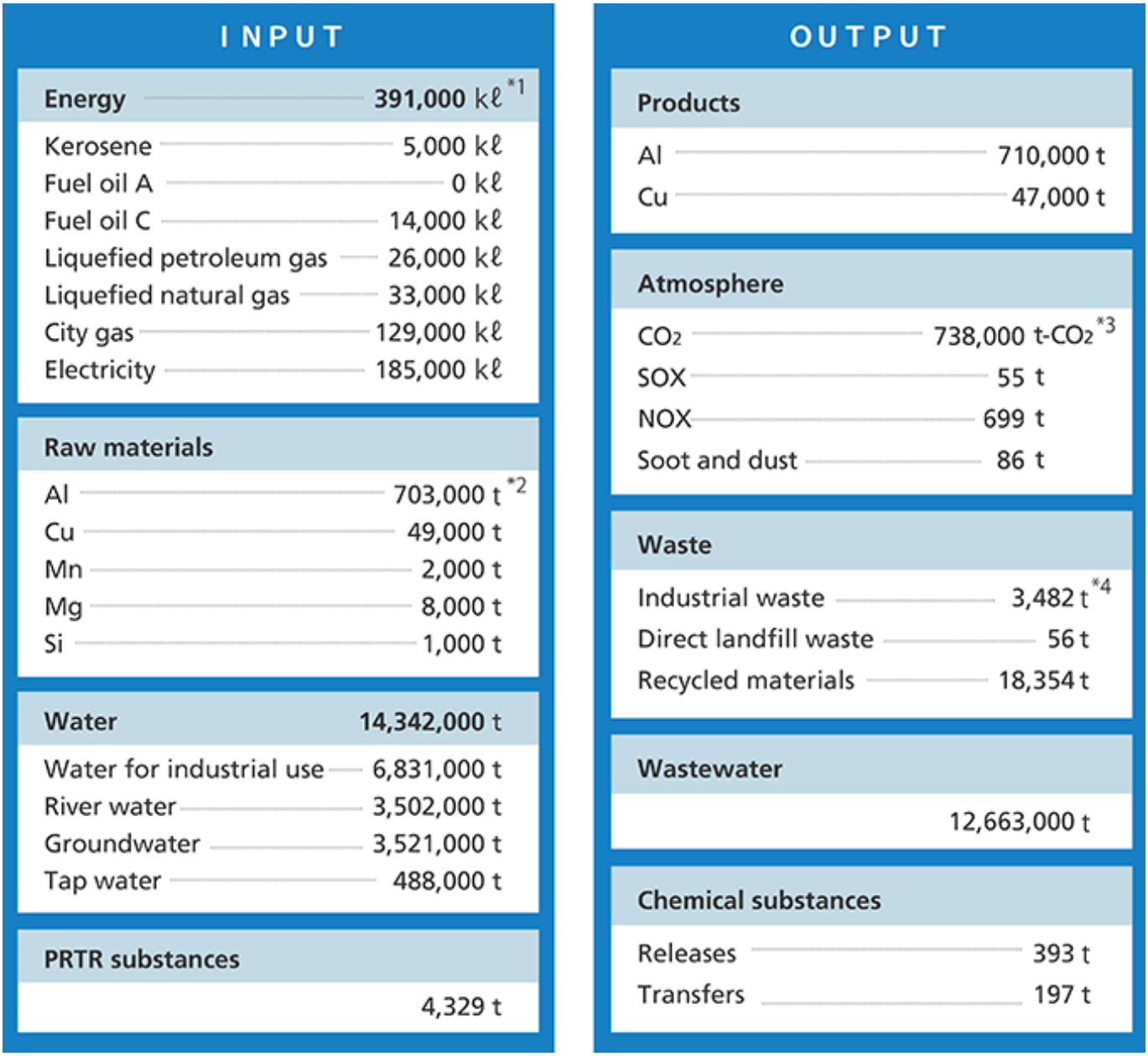
* Data are for UACJ and Group companies in Japan.

Business Activities and Environmental Impacts

Fiscal 2018 Material Balance

To support efforts to reduce industrial waste and substances of environmental concern, the UACJ Group works to accurately determine conditions with regard to the environmental impacts of its business activities. For fiscal 2018, data on substances of environmental concern and industrial waste were collected for the principal business locations, which comprise more than 95% of the UACJ Group's total energy usage.

Fiscal 2018 Material Balance



* Measurement Scope: 15 locations, including UACJ (Nagoya, Fukui, Fukaya, Nikko), UACJ Color Aluminum Corporation, UACJ Extrusion Nagoya Corporation (Nagoya, Anjo), UACJ Extrusion Oyama Corporation, UACJ Extrusion Gunma Corporation, UACJ Extrusion Shiga Corporation, UACJ Foil Corporation (Isesaki, Shiga, Nogi), UACJ Foundry & Forging Corporation, and UACJ Copper Tube Corporation.

*1 Crude oil equivalent.

*2 Total of new and recycled metal, scrap, ingots, etc.

*3 Based on an electric power generation CO_2 emissions factor of 0.378kg-CO_2/kWh.

*4 The amount of industrial waste consigned to outside parties for processing, less the amount recycled.

Fighting Global Warming

Basic Stance

In light of the need to fight global warming, the pursuit of energy-saving activities is one of the UACJ Group's most important management concerns. Under the leadership of the executive officer in charge of energy management, we are focusing on what we can do in the present to achieve annual decreases in the amount of energy we use per unit of production. Over the medium-to-long term, our aim is to achieve 1% average annual improvements in our energy usage per unit of production, the target set forth in Japan's Energy Saving Law*.

* The Energy Saving Law is more formally known as the Act on the Rational Use of Energy.

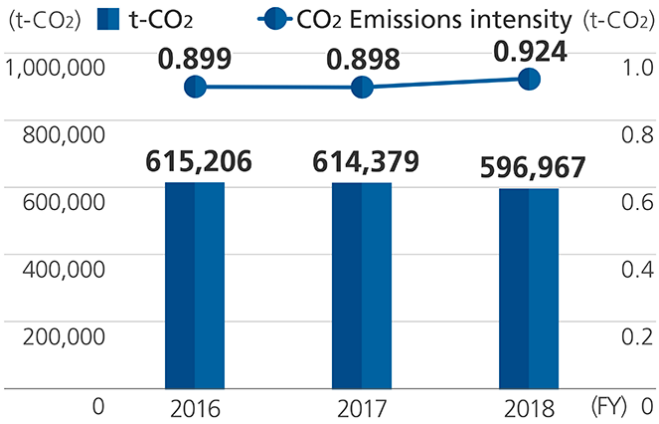
Fiscal 2018 Results

In fiscal 2018, the Group used a total of 15,328,726GJ of energy (15,291,594GJ of energy from fossil fuels and 37,132GJ of renewable energy), 1.8% less than the total energy used in fiscal 2017.
The Group's CO_2 emissions came to 738,015t-CO_2 (432,824t-CO_2 of direct emissions and 305,191t-CO_2 of indirect emissions), about 21,000 tons less than the figure for fiscal 2017. Group CO_2 emissions per product ton came to 0.978t-CO_2, 1.6% higher than the figure for fiscal 2017 (assuming a fixed emissions factor for electric power).

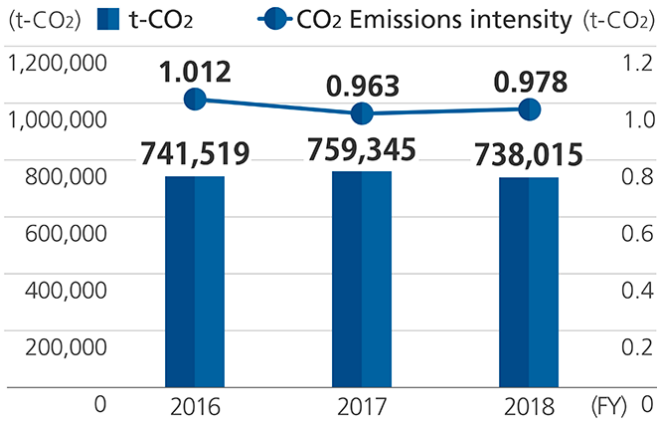
This increase resulted from lower production and a consequent relative increase in the fixed component of energy usage, a change in the composition of products made, and the need to operate under irregular circumstances due to natural disasters and other causes.

* Beginning with fiscal 2018, reporting of energy usage is no longer being based on the crude oil (1,000 kl) equivalent but on GJ (gigajoules), as recommended in the GRI guidelines.

UACJ CO_2 Emissions



UACJ Group CO_2 Emissions



Energy Usage

(GJ heat equivalent)

	Fiscal 2016	Fiscal 2017	Fiscal 2018
Fossil fuels	15,485,465	15,509,302	15,291,594
Renewable energy	45,543	41,667	37,132
Total	15,531,008	15,550,969	15,328,726

* Energy usage and CO_2 emissions per unit production are based on the volume of products shipped.
* The CO_2 emissions factor is the one used for electricity generation, 0.378kg-CO_2/kWh.
* Measurement Scope: UACJ (Nagoya, Fukui, Fukaya, Nikko), UACJ Color Aluminum Corporation, UACJ Extrusion Nagoya Corporation (Nagoya, Anjo), UACJ Extrusion Oyama Corporation, UACJ Extrusion Gunma Corporation, UACJ Extrusion Shiga Corporation, UACJ Foil Corporation (Isezaki,Shiga,Nogi), UACJ Foundry & Forging Corporation, UACJ Copper Tube Corporation.

Main Initiatives in Production Processes

Energy Saving Subcommittee

At the UACJ Group, meetings of the Energy Saving Subcommittee are held on a regular basis. These meetings serve as opportunities for key participants - representatives of the facilities departments at multiple business locations - to share information, consider differences in facility performance, and hear best-practices examples presentations, all to achieve further improvements in energy saving endeavors.

Examples of Energy-Saving Activities

The UACJ Group's principal energy-saving activities for fiscal 2018 are given in the table below. In addition to those initiatives, we made adjustments to combustion facilities, updated compressors, replaced deteriorated insulation, applied insulating coatings to reduce heat losses, fixed steam and air leaks, and installed solar panels on plant roofs to save energy at business locations throughout the Group.

Examples of CO_2 Emissions Reductions (New for fiscal 2018)

Business Location	Theme	CO_2Emissions Reduction Impact (t-CO_2/yr.)
Fukui Works	Upgrade to once-through boiler	2,200
All business locations	Conversion to LED ceiling light fixtures	1,200
Copper Tube	Billet heating furnace upgrade	800
Nagoya Works	Replacement of electrical components for hot-rolling line	700
All business locations	Upgrades, installation of energy-saving equipment, and other air-conditioning improvements	200

Switching to LNG as a Heat Source for Production Processes

LNG results in 30% lower CO_2 emissions than does heavy oil to generate the same amount of heat. UACJ, therefore, is systematically switching to LNG to provide heat for its production processes.

As of the end of fiscal 2018, LNG (including city gas) accounted for approximately 79% of fuel usage at UACJ's four works, in terms of heat generated.

Making Effective Use of Steam Turbine Compressor Exhaust Steam

The Nagoya Works uses a waste-heat boiler to generate over half of the steam it needs for its operations. In the past, a pressure control valve vented steam to the atmosphere, but now some of that steam is being recovered and re-used as feed water by condensing it and draining it into the feed-water preheater. This improvement has resulted in an equivalent 90-ton reduction in annual CO_2 emissions.

Replacement of Hot Rolling Line Electrical Components

Due to aging, maintaining the principal electrical components of the Nagoya Works' hot rolling line was becoming more difficult. Therefore, the mill drive was upgraded to a high-efficiency model in fiscal 2017 and this resulted in an approximate 700-ton reduction in CO_2 emissions in fiscal 2018.

Use of Renewable Energy

Nikko City, Tochigi Prefecture, the location of UACJ's Nikko Works, has taken advantage of its mountainous terrain and abundant rainfall to generate a significant amount of hydroelectric power, a renewable energy that does not add CO_2 to the atmosphere. The Nikko Works, which has been in operation since 1933, is UACJ's oldest manufacturing location, and, true to its location, fulfills a portion of its electricity needs with hydroelectric power.

In fiscal 2018, the Nikko Works used 37,132GJ of renewable energy in the form of hydroelectric power. This amounted to 0.24% of the total energy used by the UACJ Group for the fiscal year.

Main Initiatives in Logistics

UACJ is working to save energy in its logistics processes. Considered a Specified Consignor[*2] under the Energy Saving Law[*1], UACJ has established the goal of a 1% improvement in the 5-year average amount of energy used per ton-kilometer of shipments and is taking steps toward achieving it.

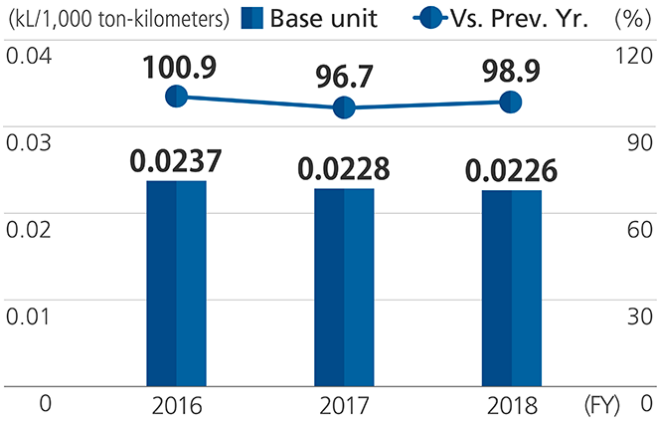
In fiscal 2018, the impacts of measures such as loading factor improvements and use of ship transport resulted in a 1.1% improvement in the amount of energy used for shipping, per unit of sales, compared to fiscal 2017.

To address another concern, CO_2 emissions, we and business partners in the same industry have been cooperating since 2001 to improve shipping efficiency by jointly transporting certain extruded aluminum products.

*1 Energy Saving Law: Under an ordinance established by the Ministry of Economy, Trade and Industry under the Act on the Rational Use of Energy, a consignor, who is in the position of requesting services from a freight carrier, is required to develop an energy-saving plan, and work to reduce energy consumption.

*2 Specified Consignor: A consignor whose annual shipments of its own freight equals or exceeds 30 million ton-kilometers.

Amount of Energy Used for Shipping, per Unit of Sales



* Figure submitted in regular reports.

Main Initiatives in Offices

Energy-Saving Activities in Offices

UACJ's offices are actively working to cut electricity usage by implementing the Japanese government's "cool biz" and "super-cool biz" hot-weather measures, raising thermostats in the summer and lowering them in the winter, and systematically turning off lighting, electronic devices, and other electricity-consuming items when not in use.

Office-Based Environmental Protection Measures

For office supplies, items complying with the Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities and eco-mark items are purchased to the extent possible.

Response to Climate Change Risk

Identifying Business Risks and Opportunities of Climate Change

With global warming driving a rise in natural disasters, climate change has become a global social and economic concern demanding urgent responses by both the public and private sector. At the G20 summit held in 2017, a report on a framework for financial disclosures related to climate change was presented by the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD). In that report, it was recommended that companies disclose information on medium-to-long-term climate-change-related risks and opportunities, and related financial matters.

In consideration of such developments in recent years, the UACJ Group began in fiscal 2019 to collect and summarize information for ascertaining current conditions and making forecasts for the purpose of identifying business risks and opportunities wrought by climate change and resulting social changes. Looking to the future, we plan to conduct group-wide discussions to identify climate change risks and opportunities for the UACJ Group, and will report our findings starting with the 2020 Sustainability Report.

Chemical Substance Management and Pollution Prevention

Basic Stance

The UACJ Group strives to properly manage chemical substances and control emissions while also switching to chemicals with low impacts on the environment and human health. We do this out of concern not only for effects on the natural environment but also for safety - for employees engaged in manufacturing our products and customers when they use our products. In our efforts to control emissions, we have established and abide by our own standards, which are stricter than those set forth in Japan's Air Pollution Control Law, Water Pollution Control Law, local government ordinances, and conventions.

Fiscal 2018 Results

As a result of heavy rain from a typhoon that strucked on October 22, 2017, the Nagoya Works released wastewater exceeding the overall standard for chemical oxygen demand (COD) into a river. However, because the person in charge misunderstood the standard, this irregularity was not reported to local government authorities. On June 25, 2018, local government authorities informed us of the standard violation and directed us to report on the cause and measures for avoiding a recurrence. To avoid future violations, we improved the system for confirming overall standards and took steps to prevent water pollution incidents and strengthen our monitoring and notification systems.

Pollutant Control at Individual UACJ Works (Fiscal 2018)

○: Measurements fall within standards

	Measurement Item	Nagoya Works	Fukui Works	Fukaya Works	Nikko Works
Air	NOx, SOx, soot and dust	○	○	○	○
Water	pH, BOD	○	○	○	○
	n-H (mineral oil), SS	○	○	○	○

Control of PRTR Substances

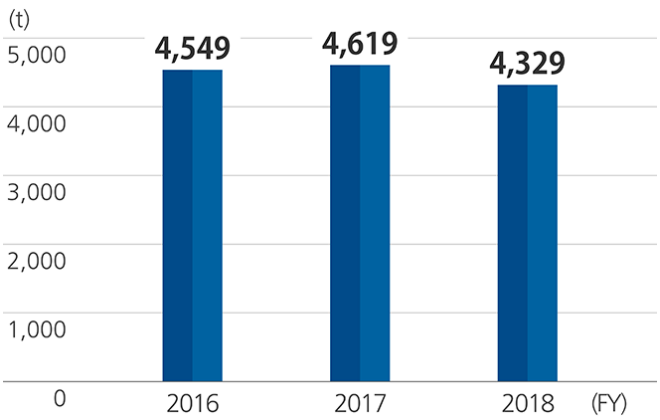
The UACJ Group, in accordance with the PRTR system*, which is based on the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof, identifies amounts of targeted substances handled, released, and transferred; and reports them as required; while also working to reduce these volumes.

In fiscal 2018, lower production meant that we handled a smaller amount of chemical substances than we did in fiscal 2017. Nevertheless, an increase in industrial waste generated, and other factors, caused the amounts of chemical substances the Group as a whole released and transferred to increase by 15 tons (4.0%) and 17 tons (9.4%), respectively.

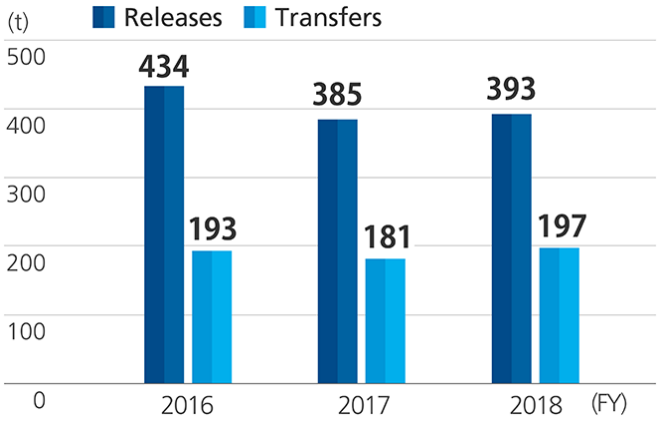
* PRTR system: This system is for the control of chemical substances that are harmful to human health or the ecosystem. Under this system, businesses ascertain the amounts of harmful chemical substances they have released into the atmosphere, water, or soil, or transferred to locations outside of their business facilities, and report this data to the national government. The national government then uses this data and estimates to summarize and disclose volumes of chemical substances released or transferred.

Amounts of PRTR Substances Handled

(Contain manganese, chromium, nickel, and lead as alloy substances)



Amounts of PRTR Substances Released or Transferred



* Measurement Scope: UACJ (Nagoya, Fukui, Fukaya, Nikko), UACJ Color Aluminum Corporation, UACJ Extrusion Nagoya Corporation (Nagoya, Anjo), UACJ Extrusion Oyama Corporation, UACJ Extrusion Gunma Corporation, UACJ Extrusion Shiga Corporation, UACJ Foil Corporation (Isezaki,Shiga,Nogi), UACJ Foundry & Forging Corporation, UACJ Copper Tube Corporation.

Handling, Releases, and Transfers of PRTR Substances (Fiscal 2018)

No.	Substance	Amount Used (kg)	Amount Released (kg)	Amount Transferred (kg)
412	Manganese and its inorganic compounds	2,535,608	0	21,200
300	Toluene	771,721	190,919	47,785
80	Xylene	203,756	18,742	1,899
87	Chromium and chromium(III) compounds	178,801	0	28,294
273	1-dodecanol	165,089	84,320	52,808
296	1,2,4-trimethyl benzene	159,894	66,436	23,955
53	Ethyl benzene	67,158	2,541	191
374	Hydrogen fluoride and its water-soluble salts	61,335	1,557	14,029
71	Ferric chlorides	49,985	0	0
297	1,3,5-trimethylbenzene	30,531	19,596	1,331
88	Hexavalent chromium and its compounds	29,814	0	124
308	Nickel	29,168	0	0
302	Naphthalin	7,948	195	52
407	Polyoxyethylene = alkylether	5,882	5,746	80

No.	Substance	Amount Used (kg)	Amount Released (kg)	Amount Transferred (kg)
392	n-hexane	4,676	1,859	661
438	Methylnaphthalene	4,604	23	0
321	Vanadium compounds	3,618	0	0
304	Lead	3,297	0	0
133	Ethylene glycol monoethyl ether acetate	3,245	26	0
207	2,6-Di-tert-butyl-4-cresol	2,598	833	1,765
245	Thiourea	2,125	0	2,125
411	Formaldehyde	1,118	26	5
277	Triethylamine	1,101	62	16
	Total	4,323,070	392,882	196,320

* Measurement Scope: UACJ (Nagoya, Fukui, Fukaya, Nikko), UACJ Color Aluminum Corporation, UACJ Extrusion Nagoya Corporation (Nagoya, Anjo), UACJ Extrusion Oyama Corporation, UACJ Extrusion Gunma Corporation, UACJ Extrusion Shiga Corporation, UACJ Foundry & Forging Corporation, UACJ Foil Corporation (Shiga, Nogi, Isezaki), UACJ Copper Tube Corporation.

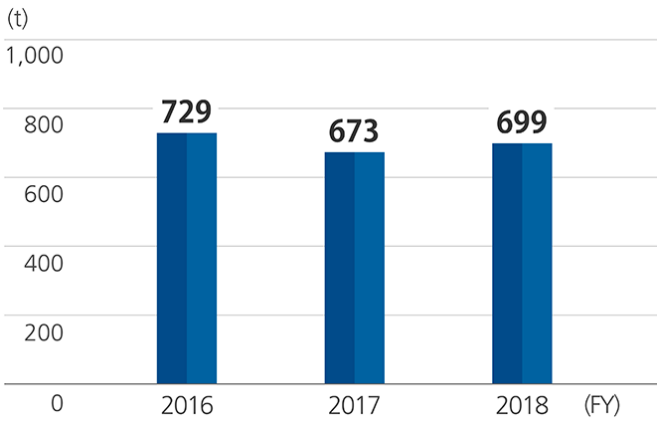
Reducing VOC Releases

Having targeted for reduction substances such as toluene, xylene, ethyl benzene, and 1,3,5-trimethylbenzene, the UACJ Group is cutting releases of these VOCs (Volatile Organic Compounds) into the air. In fiscal 2018, measures to reduce VOC emissions included switching to a thinner substitute, consideration of possibilities for installing exhaust gas treatment equipment, and advancement of fuel switching.

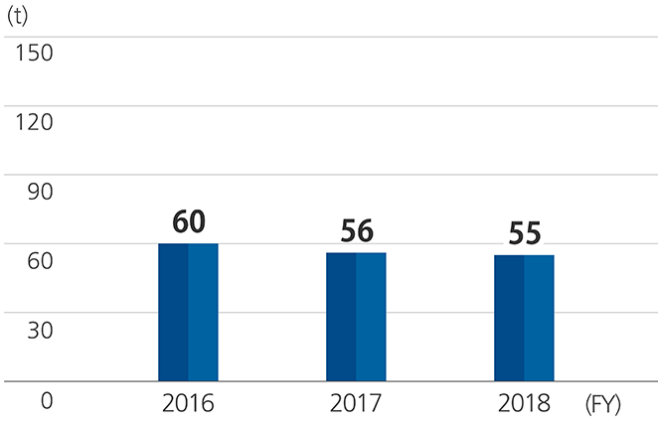
Prevention of Air Pollution

The UACJ Group is working to reduce its emissions of air pollutants by keeping plant facilities in top working condition and converting from heavy oil to LNG as a fuel. At present, our efforts are succeeding in keeping SOx and NOx emissions at low levels.

NOx Emissions



SOx Emissions



Measurement Scope: UACJ (Nagoya, Fukui, Fukaya, Nikko), UACJ Extrusion Oyama Corporation.

Control of PCBs

The UACJ Group, in accordance with the Law Concerning Special Measures Against PCB (Polychlorinated biphenyl) Waste, accounts for PCB-containing equipment for each of its plants, submits reports to supervisory authorities, and properly stores and manages these items. We also conduct surveys of fluorescent lamp ballasts and other small electrical devices and electrical devices suspected of containing small amounts of PCBs, and properly manage those exceeding standards.

To steadily and properly render PCB-containing equipment harmless, we have commissioned the Japan Environmental Safety Corporation to perform this work. We use certified processors as necessary to handle small amounts of PCB-contaminated oil. And we are working to complete the proper disposal of items with high concentrations of PCBs ahead of the deadline established by the amended Law Concerning Special Measures Against PCB Waste, which took effect in August 2016.

Addressing the Problem of Asbestos

The UACJ Group has carried out a study of its historical and current usage of asbestos in products, plant buildings, equipment and fixtures. At present, we are not using asbestos in products and have never sold products containing asbestos.

As for our plant buildings, to a very limited extent, we have used spray-on asbestos, which entails a high risk of dispersion into the air, and have been working to remove it since fiscal 2004. For spray-on asbestos that was used at UACJ Foil Corporation's Nogi Mill and at UACJ Copper Tube Corporation and is still in place, we have completed containment work and confirmed that no asbestos is being dispersed into the air.

Regarding equipment and fixtures, we have already completed the replacement of items for which there was a risk of asbestos dispersion. Equipment and fixtures with a small risk of asbestos dispersion are being replaced when regular inspections are due and on other occasions, as well.

Measures to Control Dioxins

For its aluminum melting furnaces that qualify as designated dioxin-emitting facilities under the Law concerning Special Measures against Dioxins, the UACJ Group has implemented management that lowers dioxin concentrations in exhaust gases to levels below the regulatory standard.

More specifically, we prevent the development of dioxins by strictly managing the volume of combustion air for aluminum melting furnaces and closely controlling the materials put into them.

In addition, we annually measure levels of dioxins for aluminum melting furnaces, as required by law, and report results to the government. All of our measurements of dioxins for fiscal 2018 came in below regulatory standards for the 24 facilities covered by air pollution regulations and the 2 facilities covered by water pollution regulations.

Prevention of Water Pollution

With the partial revision of the Water Pollution Prevention Act, promulgated in June 2012, reporting of information on storage facilities, piping, etc. used for harmful substances and compliance with standards set for structures became mandatory.

At the UACJ Group, all necessary reports were prepared at individual business locations by the May 31, 2015 end of the deferment period.

Reuse of Wastewater from Our Works

The Nikko Works discharges its wastewater into the Otani River. Downstream from the works, a water treatment plant purifies river water for daily use by local communities. Understanding that, we have established pH, COD, SS, and other wastewater standards that are stricter than those mandated by law, and we rigorously monitor the quality of our water discharges 24 hours a day to ensure compliance with these strict standards.

* pH: Hydrogen ion concentration, COD: Chemical oxygen demand, SS: Suspended solids

Prevention of Soil and Groundwater Contamination

UACJ Extrusion Oyama Corporation, which has a history of using certain hazardous substances, and UACJ Color Aluminum Corporation have implemented continuous purification of contaminated groundwater as responses to past incidents of soil and groundwater contamination. Regular confirmations of the effectiveness of these measures have determined that contamination levels are falling.

At our other business locations, we conduct groundwater and soil contamination inspections when accidents occur but also when reconstructing buildings, performing large-scale maintenance, and on other occasions when it is deemed necessary.

Measures to Deal with Soil and Groundwater Contamination

Business Location	Period	Contaminant	Response
UACJ Extrusion Oyama Corporation	Since fiscal 1999	Tetrachloroethylene	Soil replacement, water extraction and purification
UACJ Color Aluminum Corporation	Since fiscal 2004	hexavalent chromium, fluorine	Soil replacement, water extraction and purification

For information on the management of chemical substances included in products, please refer to the section titled, “Environmental Consideration in Products.”

Resource Conservation and Waste Reduction

Reducing Waste

The recoverable reserves of aluminum, the primary raw material used by the UACJ Group, are in greater abundance, and will be recoverable for a longer period, than those of other metals. We still believe, however, that promoting recycling and reuse is important for passing resources on to future generations. In addition to conventional waste recycling, therefore, we are also vigorously supporting closed recycling* for items such as aluminum cans and printing plates, and striving to reduce waste. In pursuit of our environmental activity objective of realizing a recycling-oriented society, we will work continuously to reduce our generation of industrial waste per unit of production and achieve zero emissions.

* Closed recycling is the recycling of aluminum used in a specific type of product into raw material to produce the same type of product.

Fiscal 2018 Results

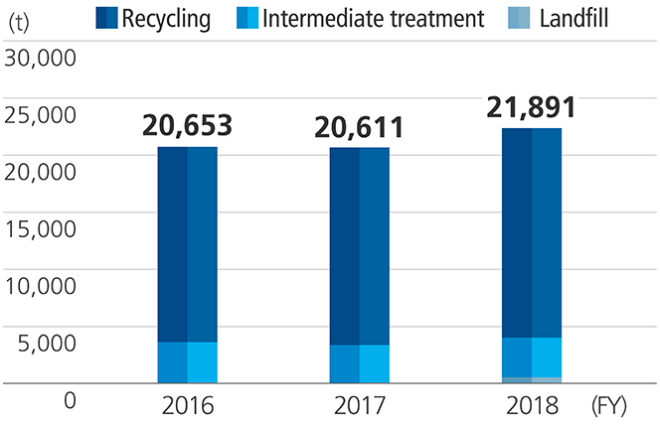
The UACJ Group is moving forward with efforts to reduce industrial waste and pursuing activities aimed at achieving zero emissions.

For us, “zero emissions” means that direct landfill waste comprises less than 1% of all industrial waste generated. For fiscal 2018, we achieved zero emissions with a direct landfill waste ratio of 0.25%.

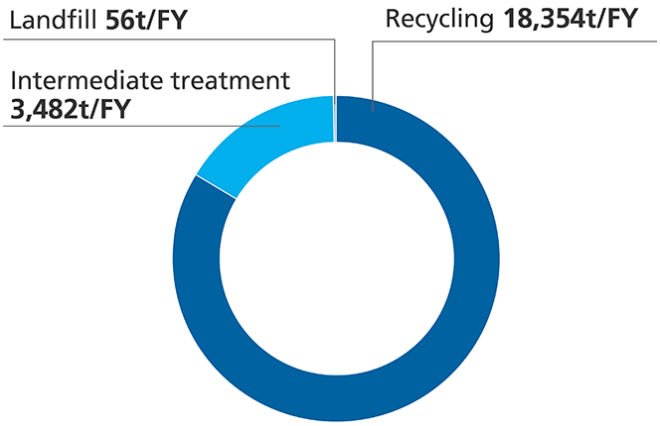
In fiscal 2018, the total amount of industrial waste generated at our principal business locations came to 21,891 tons, an increase of 6.2% compared to fiscal 2017. This increase resulted mainly because China’s new policy of forbidding the importation of waste materials made it necessary to process waste plastic, which had been a valuable commodity, as industrial waste, and because malfunctioning dehydrators in the wastewater treatment facilities of some business locations caused the temporary output of sludge with high water content.

Going forward, we will strive to maintain zero emissions by reducing industrial waste, recycling, and turning waste into substances of value.

Amounts of Industrial Waste Generated



Breakdown of Waste by Handling Approach (FY 2018)



Measurement Scope: UACJ Group business locations in Japan.

Waste Amounts by Type and Main Post-Recycling Application (FY 2018)

Waste Type	Tons Generated	Percent Recycled	Main Post-Recycling Application
Sludge	10,284	88	Raw material for cement
Waste oil	2,990	97	Fuel
Wood waste	2,582	95	Fuel, fertilizer
Slag	1,265	100	Roadbed material
Waste plastic	1,603	32	Fuel

Industrial Waste Reduction Examples (Fiscal 2018 Activities)

Business Location	Theme	Reduction (t/yr.)
Nagoya Works	Reducing the amount oil-contaminated wastewater in the underground pit	110
Fukui Works	Using different wastewater treatment chemicals to reduce the amount of sludge generated	70
Multiple business locations	Reusing batten cleats (cushioning materials)	60
	Reusing waste pallets	

Industrial Waste Subcommittee

At UACJ, the Industrial Waste Subcommittee has been established mainly with representatives of business locations generating significant amounts of industrial waste. The subcommittee meets regularly to promote reductions and proper processing of industrial waste by establishing a common understanding of separation and processing information, and by examining and promoting improvements in separation practices, and establishing a common understanding of reduction measures, at individual business locations.

Reuse of Cushioning Materials (Batten cleats)

In the past, batten cleats, which are used to cushion extruded products when they are shipped, were generally used only once before being discarded as industrial waste by the shipment receiver. Batten cleats, however, are very durable and show very little wear even after being used multiple times. Therefore, in fiscal 2018, we began to reuse these items as an effective application of resources. With cooperation among various works, batten cleats are now being returned to the places where they came from by means such as simply placing them back on the trucks in which they were used. Reuse reduced the amount of batten cleats discarded in fiscal 2018 by 13 tons compared to fiscal 2017 and accounted for a major decrease in the amount of industrial waste we generated.

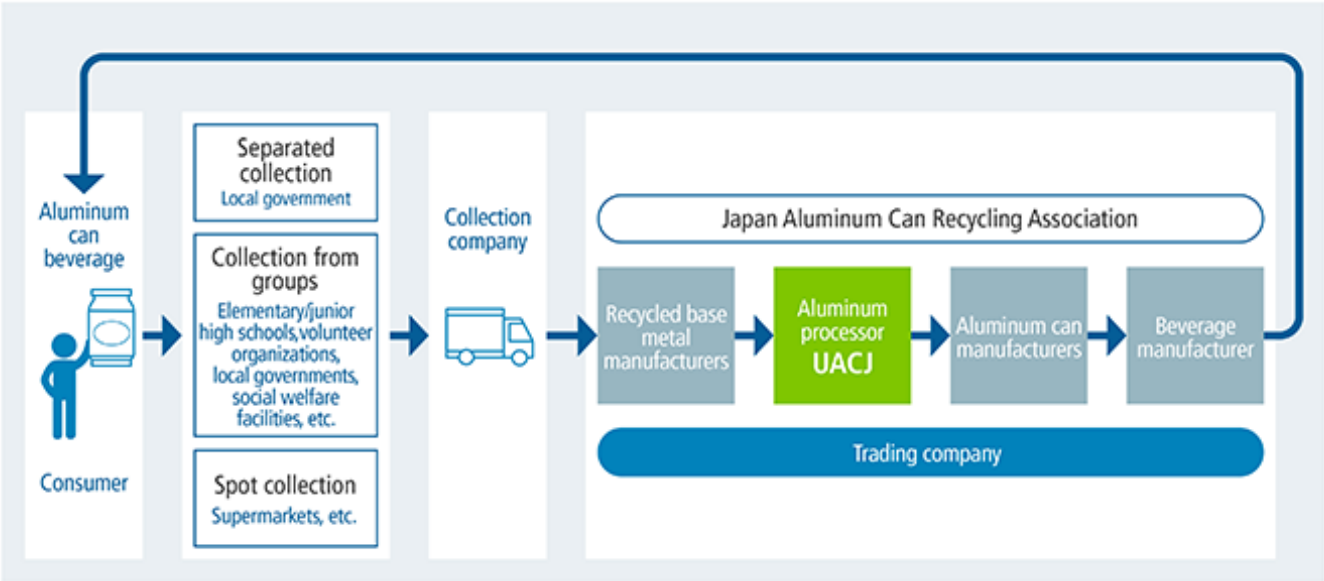
Promoting Recycling of Aluminum Cans

Aluminum is light-weight, does not rust, conveys heat well, and is highly recyclable*1. Given the outstanding qualities of the metal from which they are made, aluminum cans are recycled at a rate*2 of 93.6% (fiscal 2018). The UACJ Group is a member of the Japan Aluminum Association and is participating in that organization's efforts to recover aluminum beverage cans. Individual UACJ works purchase used aluminum cans for use as raw material - for example, in can-to-can recycling - thereby supporting aluminum can recycling activities and contributing to the creation of a recycling-oriented society.

*1 Recycling aluminum requires only about 3% of the amount of energy needed to produce new aluminum from bauxite.

*2 Aluminum cans collected and recycled in Japan (including for export purposes) as a percent of all aluminum cans purchased by consumers in Japan.

Illustration of Can-to-Can Recycling



Thermal Recycling of Packing Materials

The processing of waste plastic consisting of the protective sheeting, banding, and other materials used to pack products for shipment is entrusted to outside companies. Most of this material is used as a fuel in thermal recycling that turns waste into electricity.

Activities Aimed at Reducing Office Waste

At UACJ, individual offices act to protect the environment by separating their waste (separating paper from plastic) and segregating materials (newspapers, copier paper, magazines, and cardboard) for recycling.

Effective Use of Water Resources

Approximately 70% of the earth's surface is covered by water, but only about 0.01% of all of the earth's water is fresh water - water that can be easily used by humans.

From a global perspective, these precious freshwater resources are recyclable. With uneven distribution, however, there are already countries and regions facing serious risks of water shortages. Across the world, approximately 700 million people live with inadequate water supplies, and approximately 1.8 million children die every year because of a lack of clean water.

The UACJ Group strives to use and manage water resources effectively based on its keen awareness of these circumstances. Each of our business locations tracks its water usage by water source. Data on our water usage has been tallied and is included in the material balance information presented in the Business Activities and Environmental Impacts section.

Fiscal 2018 Performance

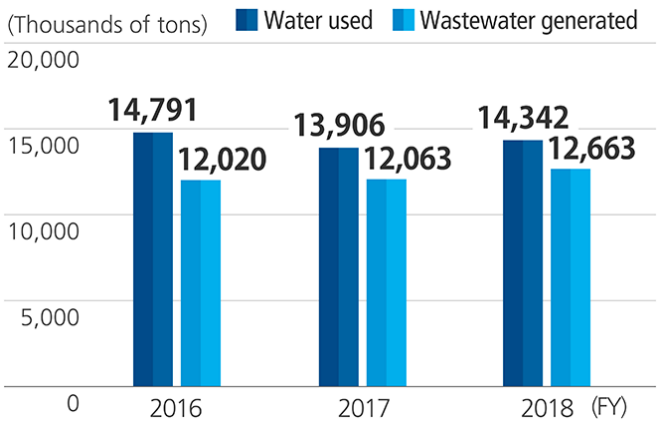
The UACJ Group obtains water for its business activities mainly from public water systems, groundwater sources, and rivers (including sources of industrial water) with the latter being the largest source.

Prior to release, wastewater undergoes neutralization and flocculation/sedimentation treatment and is tested to ensure that pH, COD, SS, and other regulatory water-quality standards* are met.

In fiscal 2018, the UACJ Group used a total of 14,342,000 tons of water, 436,000 tons more than it used in fiscal 2017. This increase in water usage, despite lower production volume, resulted mainly from a change in the makeup of products manufactured and the need to operate under irregular conditions on multiple occasions.

* pH: Hydrogen ion concentration, COD: Chemical oxygen demand, SS: Suspended solids

Volumes of Water Used and Wastewater Generated



Water Usage by Source

(Thousands of tons)

Source	Fiscal 2016	Fiscal 2017	Fiscal 2018
Public water system	538	482	488
Groundwater	3,318	3,444	3,521
Rivers (industrial water)	10,934	9,981	10,333
Total	14,791	13,906	14,342

Environmental Consideration in Products

Improvement Objectives

The UACJ Group, is contributing to the realization of a low-carbon, recycling-oriented society by working to improve the functionality of aluminum materials.

For example, providing customers with aluminum materials that offer similar functionality to earlier materials but weigh less helps to lighten the final shipping vehicles and container products our customers make, improve fuel efficiency, and, ultimately, reduce CO_2 emissions.

The UACJ Group will continue to help solve global environmental issues by developing and providing products with emphasis placed on environmental considerations.

Product Development and Improvement	Contributions that Benefit the Environment and Society
Development and application of aluminum can materials with outstanding recyclability	Making lighter-weight cans that save resources and reduce costs
Development and application of high-performance heat exchanger tubes	Improving performance of heat exchangers to reduce equipment sizes and save resources
Development and improvement of aluminum materials for car air conditioners compatible with the European requirement to use CO_2 as a refrigerant	Making lighter-weight vehicle bodies that save resources and improve fuel economy Fighting global warming by adopting CO_2 as a refrigerant
Development and improvement of aluminum materials for hybrid automobiles	Making lighter-weight vehicle bodies that save resources and improve fuel economy

Approximately two-thirds of the materials used to make aluminum cans in Japan (in fiscal 2018, 21.7 billion cans weighing approximately 330,000 tons) are made by UACJ. As the top manufacturer, we believe it is our responsibility to promote the recycling of aluminum cans, and we do so actively.

Furthermore, we are rationalizing our use of packing materials for the delivery of products, and recovering and reusing them in conjunction with our rationalization of our logistics.

Control of Chemical Substances included in Products

The UACJ Group is strict in its exercise of proper controls over designated chemical substances included in products. In response to changes in domestic and overseas environmental laws (e.g. The addition of the EU's REACH[*1] regulation), we revise our chemical substance management standards and common procurement documentation, and take other necessary steps.

We also devote significant effort to the registration of SDSs (Safety Data Sheets[*2]) and to the improvement of our browsing cabinet.

*1 REACH regulation: Registration, Evaluation, Authorization and Restriction of Chemicals.

*2 SDS: Safety Data Sheet: Products containing chemical substances designated by the Poisonous and Deleterious Substances Control Act, Industrial Safety and Health Law, and the Pollutant Release and Transfer Register Law at percentages greater than specified in these laws must be accompanied by a Safety Data Sheet with the required information when they are transferred or provided from one commercial party to another.

REACH Regulation Initiatives

The UACJ Group, though it is not required to be registered under the REACH regulation, examines all of its products to determine whether they include an SVHC (Substance of Very High Concern) specified in the REACH regulation and informs customers of any products that do.

If substances are newly designated as SVHCs, and we determine that they are included in our products, we will swiftly provide customers with the relevant information.

Environmental Quality Management System Certifications by Customers

At its business locations required to have specified supplier certifications, the UACJ Group emphasizes the practice of chemical substance management that satisfies customer standards, and undergoes environmental quality management system certifications by customers. Going forward, we will continue to practice management that enables proper responses to customer demands.

Communicating Information on Chemical Substances in Products

Raw material manufacturers provide UACJ with information on the chemical substance content of their products, and UACJ has established a management system that allows it to properly communicate this information to its own customers.

Information on chemical substances is provided, with the cooperation of the Quality Assurance and Environmental Management departments, in industry-specific formats, depending on the customer request.

[Examples of Information Provision Formats]

- SDS (Safety Data Sheet) * Provision of GHS (Globally Harmonized System of Classification and Labeling of Chemicals)-compliant content
- JAMA (Japan Automobile Manufacturers Association) JAMA Sheet

UACJ also issues customer requested certifications that certain substances have not been used in production or are not contained in a product.

Conversion to Low-Environmental-Impact Raw Materials

The UACJ Group is striving to use low-environmental-impact raw materials. For the raw materials that, as in the case of free-cutting alloys, include lead or other metallic elements that are covered by EU directives, we are working with customers to switch to materials that do not include controlled substances. Switching to low-environmental-impact raw materials is important and we will continue with this effort going forward.

We have also taken action regarding cleaning solutions for the finishing of sheet and extruded products. In the past, we used chlorine-based organic solvents, which are designated substances under the PRTR Law. However, given multiple instances of groundwater contamination with these substances across Japan, we ceased using chlorine-based organic solvents in the final cleaning processes at all of our business locations.

The paints used on aluminum can materials and colored aluminum are another area in which we are taking action. Oil-based products had been the most commonly used paints for these products, but have now been largely replaced with water-based paints, which are said to have low environmental impact. The Group is promoting the use of water-based paints by recommending them to customers and working with customers to test their use.

Product Development that Helps to Lower Environmental Burden

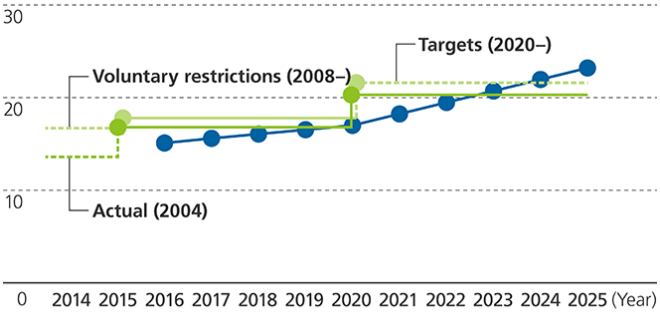
Promoting the Use of Aluminum in Automobile Manufacturing

Regulations on automobile exhaust gases are being tightened throughout the world in an effort to help rein in global warming. In response to these stricter regulations, automobile manufacturers in Japan and other countries are working to improve engine performance and lighten vehicle bodies, and aluminum is playing a key role in reducing weight.

Aluminum weighs only about 45% of an equivalent volume of steel, while offering high strength, excellent corrosion resistance, and ease of recyclability. The amount of aluminum used per vehicle has nearly doubled over the past 25 years, and this metal is expected to find even more uses in eco-friendly cars and various other types of vehicles going forward.

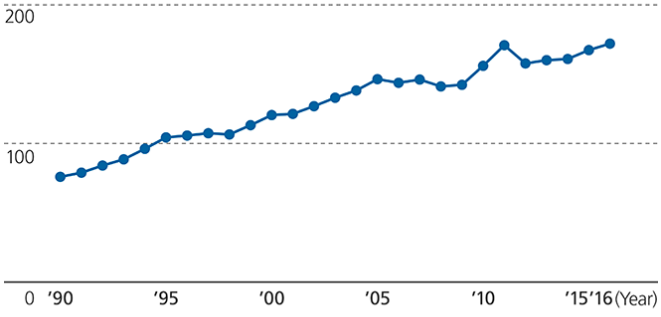
The UACJ Group, as a leading manufacturer of aluminum materials, makes the most its wealth of technology and know-how to provide a wide range of aluminum components for automobiles. Looking to the future, we will continue to help improve the environmental performance of automobiles by developing lightweight, high-strength aluminum components.

Fuel efficiency standards in Japan, US and Europe Unit: km/l



Source: Jidosha Alumika Iinkai (Automotive Aluminization Committee) of Japan Aluminum Association

Aluminum used per car Unit: kg



Source: Japan Aluminum Association website
Note: The amount of aluminum used per car denotes total automotive aluminum product volume divided by Japan's automotive production volume.

Product Development that Helps to Reduce Atmospheric Carbon

In Japan, rising numbers of extremely hot days and natural disasters have made the effects of global warming palpable, and measures to counter climate change have become matters of great urgency for companies and other organizations. CO_2 emissions, a cause of global warming, continue to rise and are said to be approximately 60% higher than they were 30 years ago. In response to such circumstances, the Paris Agreement adopted at the 21st Conference of the Parties to the United Nations Convention on Climate Change (COP21) held in December 2015 in Paris included the goal of creating a zero-carbon society and achieving effectively zero greenhouse gas emissions by the second half of the 21st century. The UACJ Group has taken up the challenge of developing products that will help to achieve this goal.

Manufacturing Foil for Lithium-ion Batteries for Automobiles

Zero greenhouse gas emissions means zero carbon and a complete halt to the use of oil, gas, and other fossil fuels. The automobile industry, therefore, is moving ahead with a shift to electric vehicles.

Lithium-ion batteries, which are essential for electric vehicles, use aluminum foil on the positive electrode and copper foil on the negative electrode. UACJ Foil Corporation, a member of the UACJ Group, is the only Japanese manufacturer capable of producing both aluminum and copper foil. Having excellent alloy and rolling technologies, UACJ Foil makes a unique contribution in improving the performance of lithium-ion batteries.

In China, public and private sectors are cooperating to promote the adoption of electric vehicles and this is expanding demand for lithium-ion batteries. Seizing on this opportunity, Ruyuan Dongyangguang UACJ Fine Aluminum Foil Co., Ltd., a company in which UACJ has invested, built a new battery foil production facility in fiscal 2018. The company aims to build a high-quality lithium-ion battery foil supply system including a production system integrating manufacturing of everything from foil base to collectors and foil for battery exteriors.

Biodiversity Initiatives

Improvement Objectives

The UACJ Group views the protection of biodiversity as one of the most important global environmental challenges, and we treat it as such within the UACJ Group Code of Conduct. We strive to ascertain the impacts of our businesses on biodiversity and aim to preserve biodiversity through various conservation activities related to our businesses.

Identifying Risks to Biodiversity

Considering all of the steps from the mining of product raw materials through product manufacturing, and the use and disposal of aluminum finished products, the possibility that UACJ's business activities and products have impacts on the natural environment and biodiversity cannot be denied. The UACJ Group strives to identify biodiversity risks associated with its business activities and believes that a particularly important risk may be impacts on aquatic life habitats by wastewater discharges from manufacturing locations. To minimize the possible impacts, we have set our own wastewater quality standards at levels stricter than regulatory standards and monitor our discharges 24 hours a day.

Regarding the UACJ Nikko Works, its location within Nikko National Park means that operations there are performed in strict compliance with Japan's Natural Park Law and other regulations. No UACJ business locations in Japan have been designated nature conservation areas by either the national or local governments.

Overview of the UACJ Nikko Works

- Location: Kiyotaki Sakuragaokamachi 1, Nikko-shi, Tochigi Prefecture
- Site area: 135,903 m^2
- Business activities: Manufacturing of aluminum sheet products

Making Packing Materials Recyclable

In the past, we used wood-based packing materials for some of the raw materials for our products. These wood-based materials, however, are not recyclable and must be disposed of as industrial waste. To improve upon this situation, we switched to cardboard packing materials, which are easily recyclable. By reducing our use of wood materials and producing less waste, the UACJ Group aims to help reduce the harvesting of trees, which provide habitats for various types of living organisms.

Greening Activities

We are adding plant life to our business sites to create habitats for local flora and fauna.