

SHIONOGI
Environment Report
2023

January 2024

Building Innovation Platforms to Shape the **Future** of Healthcare



SHIONOGI

Shionogi & Co.,Ltd.

SHIONOGI Environment Report 2023

Contents

Management Commitment

Message from the Representative Director, President and CEO	4
and the Corporate Officer in charge of EHS	

Topics

Recognized by CDP as an “A List Company,” the highest rating, in both the	7
fields of “Climate Change” and “Water Security,” and selected for inclusion on	
the “Supplier Engagement Leaderboard,” the highest rating in the “Supplier	
Engagement Rating”	
Certified as the First Eco-First Company in the Pharmaceutical Industry as an	8
Environmentally Advanced Company	
First application of a horizontal recycling scheme for label mounts to labels	9
for ampoule injections	

Climate Change Strategies

SHIONOGI Group’s Climate Change Strategies	10
--	----

Environmental management

Governance	17
Risk Management	20

Environmental Materiality 22

Action Targets 25

Results

AMR	30
Climate Change	34
Water	40
Resource Conservation and Circulation	44
Chemical Substances	51
Pollution Prevention	54
Biodiversity	56

Editorial Policy 60

The URLs listed in this report are as of October 2023.
The linked information may be updated in the future.

Environment

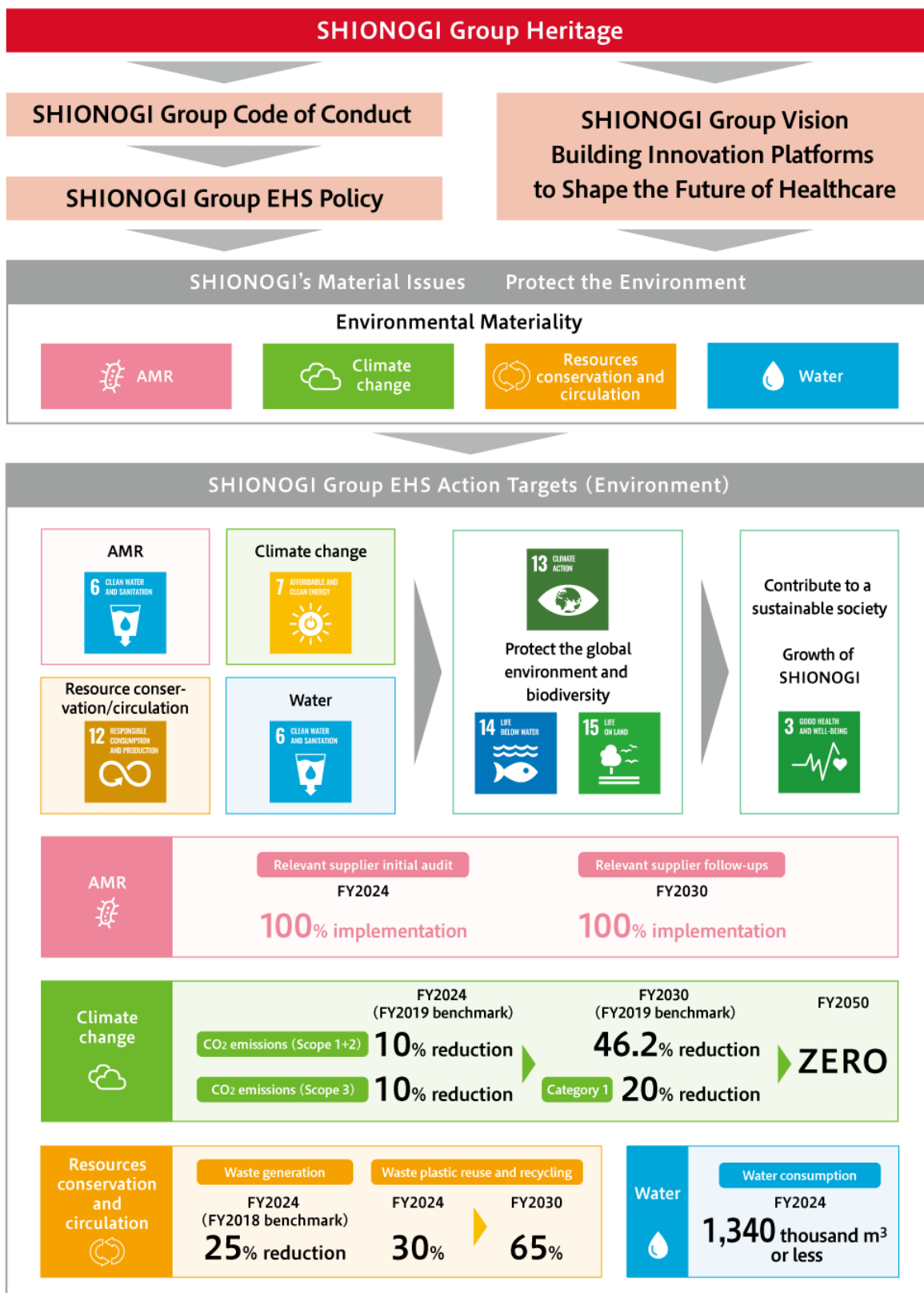


SHIONOGI Group's Environmental Initiatives

Under the Company Policy (SHIONOGI Group Heritage) of “SHIONOGI strives constantly to supply the best possible medicine to protect the health and wellbeing of the patients we serve,” we have formulated the SHIONOGI Group EHS Policy and the SHIONOGI Group EHS Code of Conduct. Our belief is that we should conduct business activities in a manner that gives consideration to protection of the global environment as well as the health of all people working with us and the health and safety of local communities in order to realize “Engagement in environmental issues” and “Optimization of work practices and enhancement of the workplace environment” in the SHIONOGI Group Code of Conduct.

In addition, we have identified “Protect the environment” as one of the SHIONOGI Group's material issues (materiality), which support the realization of a sustainable society and the growth of the SHIONOGI Group. We have also identified the four material issues of “AMR,” “climate change,” “resource conservation and circulation,” and “water” as our Environmental Materiality, within which we have extracted environmental issues to be prioritized. We aim to realize a sustainable society through all business activities, including our supply chain, by reflecting the above-mentioned four material issues in the environmental category of the SHIONOGI Group EHS Action Targets, which are medium- and long-term targets for EHS, and working to implement them.

- > SHIONOGI Group Heritage / SHIONOGI Group Code of Conduct
- > Material Issues (Materiality)
- > SHIONOGI Group EHS Policy
- > SHIONOGI Group EHS Code of Conduct
- > Supply Chain Management



Management Commitment



Representative Director,
President and CEO

Isao Teshirogi, Ph.D.

– SHIONOGI’s commitment to realizing a sustainable society

Considering the opening sentence of the SHIONOGI Group Heritage (The Company Policy of SHIONOGI) of “SHIONOGI strives constantly to supply the best possible medicine (healthcare solutions) to protect the health and wellbeing of the patients we serve” to be the purpose of the group, SHIONOGI works to resolve health and medical problems for patients, their families, everyone involved in medical care, and society as a whole. As the SHIONOGI Group Vision for what we want to be in 2030 (2030 Vision), we have set the goal of “building innovation platforms to shape the future of healthcare.” We formulated the medium-term business plan STS2030 in June 2020 as a concrete strategy for realizing this goal, and have promoted company-wide efforts to achieve the vision. Three years have passed since the formulation of STS2030, and concrete results have been produced, such as the provision of new therapeutic drugs for COVID-19, which has been a major social problem, and the submission of manufacturing and marketing approval for a COVID-19 vaccine. Since the path to realizing the 2030 Vision has become clearer, we updated STS2030 and re-formulated it as STS2030 Revision in June of this year. To ensure SHIONOGI’s sustainable growth, we will continue to create new value that resolves social issues surrounding healthcare and to promote initiatives to deliver it to everyone around the world.

“Contributing to a sustainable society” is an important theme that we must fulfill with responsibility as a company, along with “sustainable corporate growth.” Regarding the environment in particular, we are deeply aware of the importance of minimizing the negative impacts (resource depletion, environmental pollution, etc.) caused by the group’s business activities as a corporate group that employs natural capital to operate its business. SHIONOGI has identified “Protect the environment” as one of its material issues (materiality). Based on this, we are sincerely facing various environmental issues and taking responsible measures to address them, including tackling climate change, which is an urgent global issue, reducing the release of chemical substances into the environment during the pharmaceutical manufacturing process, which is a unique issue for pharmaceutical companies, and promoting resource conservation/recycling and biodiversity conservation, including marine plastic pollution reduction. SHIONOGI has also made group-wide efforts to address environmental issues, such as ongoing initiatives to reduce the release of antimicrobials into the environment from our manufacturing facilities, the implementation of measures to achieve our greenhouse gas emission reduction targets, and response to information disclosure based on the TCFD^{*1} recommendations. In recognition of these efforts, in FY2022, we were the first pharmaceutical company to be certified as an Eco-First Company by the Minister of the Environment. In addition, we received the highest rating of A from CDP^{*2} in both the fields of “Climate Change” and “Water Security.” We are extremely honored that the group’s initiatives have been highly praised by our external stakeholders. We will continue to strengthen engagement with our stakeholders and fulfill our social responsibilities by addressing climate change and other environmental issues in order to become a company that will be needed in the future.

^{*1} Task Force on Climate-related Financial Disclosures (TCFD)

^{*2} A non-profit organization whose main activities involve requesting companies and local governments to disclose information on their actions for climate change control, water resources protection, forest conservation, and other environmental issues based on the request of institutional investors and major corporate clients around the world with a strong interest in environmental issues, thereby promoting actions to tackle environmental issues



Senior Executive Officer,
Senior Vice President,
Administration Division

Kazuhiro Hatanaka

– SHIONOGI’s EHS^{*3} activities toward realizing a sustainable society

SHIONOGI has identified “Protect the environment” as one of its material issues (materiality) to be addressed to reduce the negative impacts on customers and society. In the medium-term business plan STS2030 Revision, we also focus on the environment as a response to sustainability issues. Furthermore, through the analysis of SHIONOGI’s business characteristics and changes in the external environment, as well as dialogue with external stakeholders and related parties within the group, we have identified the four material issues of “AMR,”^{*4} “climate change,” “resource conservation and circulation,” and “water” as our Environmental Materiality, which should be more prioritized among environmental issues, to promote activities to resolve the issues.

In FY2022, we revised SHIONOGI EHS Policy to further clarify the purpose and significance, management’s commitment, promotion structure, and compliance with related laws and regulations regarding SHIONOGI’s EHS activities that deal with the environment and occupational health and safety.

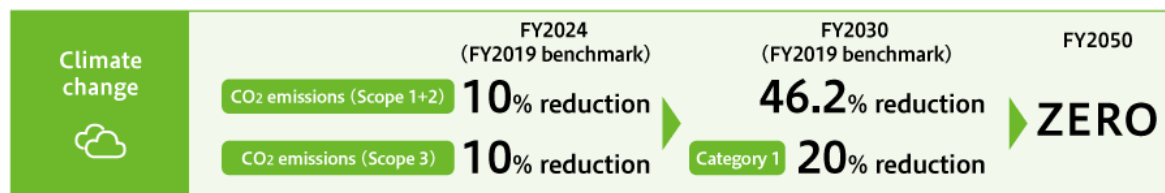
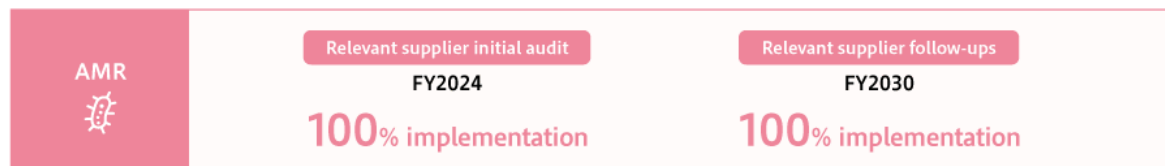
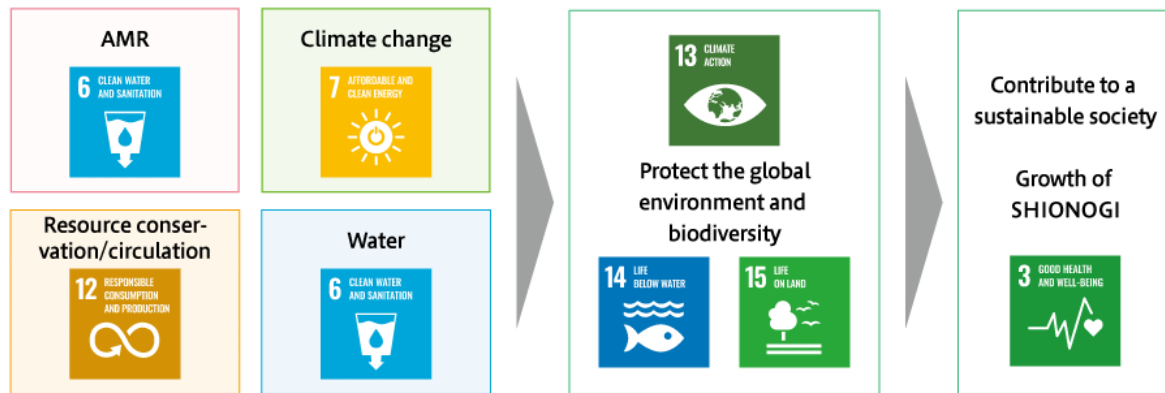
We also established the SHIONOGI Group EHS Code of Conduct, which specifies concrete actions for employees to promote EHS activities. Thus, we have developed the foundation for EHS, including the identification of material issues, the formulation of the EHS policy and code of conduct, and the setting of specific EHS action targets (single-year, medium- to long-term), in addition to the formulation of the SHIONOGI Group Heritage, which is our management philosophy. Furthermore, based on the recommendations of the TCFD, for which we expressed support in FY2021, related organizations of SHIONOGI collaborated to conduct a detailed assessment of the impact of climate change on the group’s business with reference to the TCFD framework and consider strategies and specific countermeasures against it. We also focused on responding to the demands of society by disclosing the results of our assessment. We believe that by taking these responses, we have strengthened the foundation for SHIONOGI to responsibly deal with environmental issues, which are common global issues that transcend generations and cannot be reversed. Meanwhile, in FY2022, COVID-19-related R&D and manufacturing activities increased more than expected. As a result, we were unable to achieve the target values for several environment-related items set as FY2022[A1] EHS action targets, such as energy and water consumption and waste generation. As the Corporate Officer in charge of EHS, I take seriously the fact that last year’s targets were not achieved. In FY2023, we will once again consider how to reduce environmental impact and efficiently use natural capital. We will continue to implement initiatives such as switching to electricity derived from renewable energy, optimizing manufacturing processes, increasing the efficiency of cleaning methods for manufacturing equipment, and promoting the horizontal recycling of label mounts, which is Shionogi Pharma’s initiative, to further strengthen our activities to minimize our impact on the environment as much as possible. In addition, given that the global trend surrounding environmental issues is extremely rapid and that the business environment surrounding SHIONOGI is changing significantly, we plan to review and update the EHS Action Targets, which were formulated in 2020, to more strategically promote SHIONOGI’s environmental initiatives. In this context, we intend to incorporate biodiversity, which has received increasing attention in recent years, as one of the targets, and consider how to respond to biodiversity as a strategic initiative that contributes to the realization of Nature Positive.

SHIONOGI contributes to the health of people and the maintenance of the global environment through its business activities, thereby achieving both the realization of a sustainable society and the growth of the company. Furthermore, we will continue to take responsible action and enhance our information disclosure to strengthen our engagement with all of our stakeholders. We will also work to continue to improve corporate value so that we can become a company that is needed in the future.

*3 EHS: Environment, Health and Safety

*4 AMR: Antimicrobial Resistance

SHIONOGI Group EHS Action Targets (Environment)



Topics

- Recognized by CDP as an “A List Company,” the highest rating, in both the fields of “Climate Change” and “Water Security,” and selected for inclusion on the “Supplier Engagement Leaderboard,” the highest rating in the “Supplier Engagement Rating”

We continued to be praised for its efforts to address climate change and water security, and received the highest rating of “A” in both categories of “Climate Change” and “Water Security” from CDP,^{*1} an international NPO promoting environmental information disclosure. In addition, we were selected for the third consecutive year for inclusion on the “Supplier Engagement Leaderboard,” which is the highest rating in the CDP’s Supplier Engagement Rating (SER), in the category of “Climate Change.”

Under its Company Policy and its Code of Conduct, the SHIONOGI Group has identified “Protect the environment” as one of its material issues (materiality) to be addressed, and promotes environmental initiatives in all business activities. We have also established the SHIONOGI Group Business Partner Code of Conduct and have promoted activities that encourage our business partners in the supply chain to comply with it. We believe that these continuous efforts were highly evaluated, as was the case last year.



^{*1} CDP

CDP is a non-profit organization whose main activities involve requesting companies and local governments to disclose information on their actions for climate change control, water resource protection, forest conservation, and other environmental issues based on the request of institutional investors and major corporate clients around the world with a strong interest in environmental issues, thereby promoting actions to tackle environmental issues. CDP is now one of the world’s most useful information disclosure platforms on environmental issues.

See this [website](#)  for details. (External website)

- Certified as the First Eco-First Company in the Pharmaceutical Industry as an Environmentally Advanced Company

Under the Eco-First Program^{*2} promoted by the Ministry of the Environment, we submitted the Eco-First Promise that summarizes its environmental conservation initiative goals to the Minister of the Environment, and on April 5, 2023, it became the first pharmaceutical company to be certified as an Eco-First Company.



This Eco-First Company certification means that the SHIONOGI Group's environmental initiatives, such as those described below, and its commitment to the future were evaluated as “advanced, unique, and industry-leading,” which is a requirement for certification:

- Proper management of the release of antimicrobials into the environment, which we have worked on responsibly as a company that handles infectious disease drugs
- Actions against climate change
- “Resource Recycling Project (horizontal recycling of label mounts)” of Shionogi Pharma Co., Ltd.
- “Reforestation Kombu Project (conservation of natural Gagome kombu)” of Shionogi Healthcare Co., Ltd.

See the [website](https://env.go.jp) of the Ministry of the Environment (Eco-First Program > Promise of Each Company [in Japanese]) (env.go.jp) for more information on the Eco-First Promise we submitted. (External website)

*2 Eco-First Program

A program under which the Minister of the Environment certifies companies that pledge to the minister their own environmental conservation initiatives, such as global warming countermeasures and waste/recycling countermeasures, and conduct advanced, unique, and industry-leading business activities in the field of the environment (environmentally advanced companies in the industry) as Eco-First Companies

— First application of a horizontal recycling scheme for label mounts to labels for ampoule injections

In March 2023, Shionogi Pharma Co., Ltd. applied the horizontal recycling^{*3} scheme for recyclable label mounts^{*4} to labels for commercially produced ampoule injections for the first time, and began collecting used label mounts. This is the result of Shionogi Pharma's participation in the Resource Recycling Project^{*5} aimed at horizontally recycling label mounts and in demonstration experiments.

By gradually expanding the application of this scheme to labels for nine types of ampule injections of the SHIONOGI Group, Shionogi Pharma is expected to contribute to the reduction of waste generated (about 0.5 tons/year), the improvement of the reuse/recycling rate of waste plastic, and the reduction of CO₂ emissions (about 0.5 tons/year). In addition, we will make further contributions by expanding the horizontal recycling scheme to labels for other medical drugs, including vials and packaging boxes.



[Collection box installed in the facility]



[Indication on an applicable product to be shipped (outer box)]

*3 Recycling whereby used products are processed into raw materials to recreate the same type of products. It is generally difficult to recycle label mounts because they are coated with a resin material to prevent them from adhering to the label glue.

*4 Label mounts (release paper, separator) to protect the adhesive side of the label.

*5 A cross-industry collaboration project that considers and promotes environmentally friendly initiatives to eliminate label mount waste by replacing label mounts, which have previously been discarded or incinerated without being collected or reused as resources, with "recycle-specific mounts" made from recycled PET.

SHIONOGI Group's Climate Change Strategies

Climate Change Countermeasures as Part of Management Strategy

In March 2022, the SHIONOGI Group announced its support for the TCFD^{*1} recommendations and participated in the TCFD Consortium, in which companies and financial institutions in Japan that support the TCFD recommendations work together to promote initiatives.

In FY2022, we launched a project that involved organizations related to management strategy and procurement, and analyzed the scenarios using two levels of temperature increase, 1.5°C and 4°C, based on social trends toward decarbonization with reference to the TCFD framework. We also discussed climate change strategies, which included identifying and assessing climate change risks and opportunities, evaluating financial impact, and formulating policies on how to respond to the risks.



^{*1} Task Force on Climate-related Financial Disclosures: An organization established by the Financial Stability Board (FSB) in response to a request from the G20 to discuss how climate-related information should be disclosed and how financial institutions should respond.

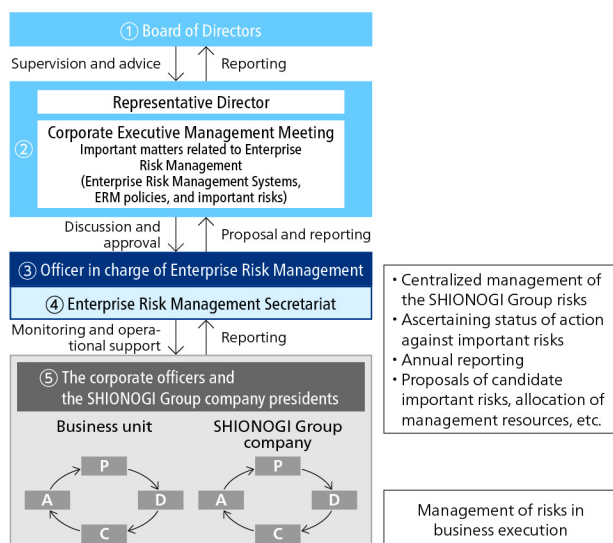
The SHIONOGI Group also promotes appropriate information disclosure in accordance with the TCFD recommendations, and for reference, the number of the disclosure items recommended by the TCFD is listed in parentheses at the end of each item.

[Recommendations | Task Force on Climate-Related Financial Disclosures \(fsb-tcfd.org\)](https://www.fsb-tcfd.org/) □ (External website)

SHIONOGI Group Governance System and Risk Management

As a mechanism to bolster management strategy and business foundation, the SHIONOGI Group has established an Enterprise Risk Management (ERM) system, which oversees the risks across the entire group. Regarding risks and opportunities, including climate change, that may have a significant impact on the future business environment of the SHIONOGI Group, we assess them in the ERM system in terms of importance, likelihood, and other factors. We ensure that measures for such risks and opportunities are implemented, and the progress of such measures is reported to the Board of Directors after deliberation at the Corporate Executive Management Meeting.

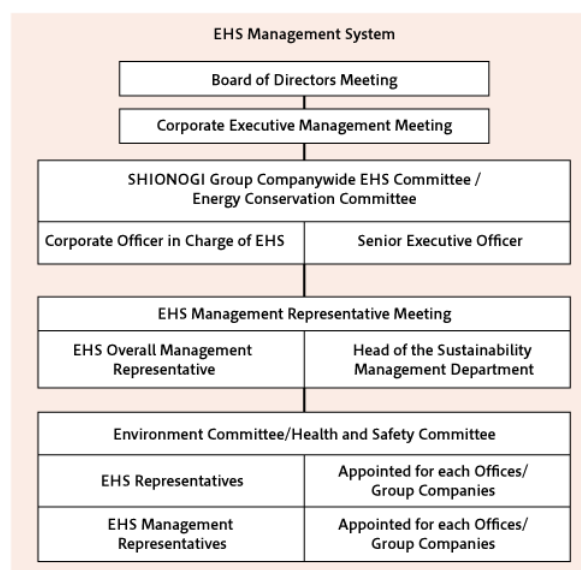
Risk management structure



Role

① Board of Directors	Provides supervision, advice, etc. on the planning, progress, and results of ERM promotion activities
② Representative Director, Corporate Executive Meeting	The Corporate Executive Meeting, chaired by the Representative Director, discusses important matters concerning SHIONOGI's ERM, which are approved by the Representative Director
③ Officer in charge of Enterprise Risk Management	The Corporate Supervisor is Chief Risk Management Officer (CRO), overseeing SHIONOGI's risk management and assuming responsibility for the promotion and operation of the ERM system.
④ Enterprise Risk Management Secretariat	The enterprise risk management secretariat consists of the Sustainability Management Department, the General Administration Department, and the Corporate Planning Department.
⑤ The corporate officers and the SHIONOGI Group company presidents	Each business unit and Group company is responsible for the execution of risk management in the execution of its operations

In addition, we have established an integrated EHS management function that unifies and manages various activities related to the environment, health, and safety ("EHS"). The progress of specific measures against climate change risks is managed by this EHS function. The Senior Executive Officer and Senior Vice President, Administration Division is appointed as the Corporate Officer in Charge of EHS, who also heads the SHIONOGI Group Companywide EHS Committee^{*2} and the Energy Conservation Committee^{*3}. We have a system in place to ensure thorough and in-depth discussions. Decisions made by each of these committees, which are held at least four times a year in total, are reported to the CEO. Matters required for deliberation at an upper-level meeting are presented at the Corporate Executive Management Meeting.



See the sections [Risk management](#) and [Governance](#) for more information on the ERM system.

(Governance: Recommended disclosures a and b)

(Risk management: Recommended disclosure c)

^{*2} SHIONOGI Group Companywide EHS Committee: An organization that deliberates on and approves important EHS matters across the whole group, which include environmental policies, medium- and long-term targets, performance review, identification of environmental issues, and environmental risk assessment

^{*3} Energy Conservation Committee: An organization that is placed under the SHIONOGI Group Companywide EHS Committee and deliberates on matters concerning climate change and energy conservation

Consideration of the SHIONOGI Group's Climate Change Strategies

Process to identify and assess risks and opportunities and to develop countermeasures

In our climate change scenario analysis, we thoroughly identify transition risks, physical risks, and opportunities that climate change may bring to our business activities. After evaluating the financial impact and business resilience regarding each identified item in the 1.5°C and 4°C scenarios, we assessed the priority of response to such risks and opportunities and developed response policies and countermeasures. The process from identifying these risks and opportunities to formulating countermeasures as well as other important matters are reported to and approved by the Corporate Executive Management Meeting and the Board of Directors.

(Risk management: Recommended disclosures a and b)

Details on how to proceed with scenario analysis

We conducted a scenario analysis to understand risks and opportunities for the future business of the SHIONOGI Group. We have assessed the impact on our business as of the year 2030 with reference to the following reference sources.

• **1.5°C scenario: The average temperature increase is kept below 1.5°C in 2100 compared to the pre-industrial level.**

- Reference climate scenarios: IEA^{*4}-NZE, IPCC^{*5}-1.5, and IPCC AR6 SSP^{*6}1-1.9, and the like
- More rigorous measures (including carbon tax and environmental regulations) are introduced, and the society as a whole proactively works on measures to tackle climate change.

• **4°C scenario: The average temperature rises by 4°C in 2100 compared to the pre-industrial level.**

- Reference climate scenarios: IPCC AR6 SSP3-7.0/SSP5-8.5 and the like
- Stricter measures (including carbon tax and environmental regulations) are not introduced, resulting in more severe and frequent natural disasters (a world of "Take it as it comes")

*4 IEA: International Energy Agency

*5 IPCC: Intergovernmental Panel on Climate Change

*6 SSP: Shared Socioeconomic Pathway

Table 1 : Anticipated changes in the external environment under the 1.5°C and 4°C scenarios

External environment surrounding the SHIONOGI Group	1.5°C scenario	4°C scenario
Policies and regulations	Stronger policies to achieve carbon neutrality by 2050 (such as introducing carbon tax, increasing the renewable energy ratio, and stepping up energy conservation efforts)	More powerful policies to deal with catastrophic disasters (regulations, subsidies, and other policy support)
Investment/lending institutions	Requests more demanding than policies toward carbon neutrality	Although there is pressure to respond to the deteriorating natural environment as climate change advances, the pressure is not strong enough to affect investment and lending decisions.
Society	Changes in values (consumption propensity) brought by a decarbonized society	The same situation as the current one
Natural environment	Gradual changes in climate	More severe and frequent natural disasters and changes in precipitation patterns

Targets of scenario analysis

Our analysis covers each plant of the SHIONOGI Group in Japan and overseas as well as the supply chains related to the group's key products.

Assessing and Identifying risks and opportunities

Table 2 below shows the results of our assessment of risks and opportunities related to climate change using the 1.5°C and 4°C scenarios. We have identified three items as risks and opportunities stemming from climate change with relatively large financial impact: 1) introduction of carbon pricing, 2) impact of locally abnormal weather and temperature rise on raw material procurement, and 3) rising sea levels. If all the identified risks and opportunities materialize, the financial impact on the core operating profit targeted for 2030, the final fiscal year of the SHIONOGI Group's medium-term business plan STS2030, was estimated to be just around 10%. The STS2030 Revision, which was revised in June 2023, aims to further expand earnings compared to STS2030. Therefore, we judge that the resilience of our business against the climate change scenarios that can be expected in the future is sufficiently secured.

(Strategy: Recommended disclosures a, b, and c)

Table 2 : Overview of assessment of risks and opportunities related to climate change

Classi- fication		Main risks and opportunities	Details of anticipated risks and opportunities	Single-year financial impact for FY2030 ^{*7}		
				1.5°C scenario	4°C scenario	Remarks
T r a n s i t i o n r i s k s	P o l i c y	Introduction of carbon pricing	New regulations put in place on manufacturing, procurement, and other business activities, such as introducing and expanding carbon taxes, emissions regulations, and emissions trading systems	Medium	Small	Approximatel y 5.5 billion yen ^{*8} in the anticipated worst case scenario for Scopes 1-3 of the SHIONOGI Group (in the 1.5°C scenario)
		Tougher energy- saving regulations	Energy-saving regulations for production facilities becoming tougher than the annual average reduction of 1% or more in energy consumption per unit required by the current Act on Promotion of Global Warming Countermeasures, resulting in additional capital investment	Small	Small	

Table 2 : Overview of assessment of risks and opportunities related to climate change

Classification		Main risks and opportunities	Details of anticipated risks and opportunities	Single-year financial impact for FY2030 ¹⁷		
				1.5°C scenario	4°C scenario	Remarks
Physical risks	Acute	Impact on raw material procurement due to locally abnormal weather and rising temperatures	Procurement of biological raw materials becoming difficult because of the adverse effects of rising temperatures on growth and yield, quality, price, and other factors	Medium	Medium	The identified risk is based on the assumption that lysate reagents used in quality testing are unavailable.
		Damage to supply chain facilities due to intensifying storm and flood damage	Disruption or suspension of supply chain operations caused by locally abnormal weather (such as typhoons and sudden downpours) and associated disasters (equipment damage, flooding, power outages, and other damage)	Small	Small	
	Chronic	Rising sea levels	Plants or other operating sites becoming inoperable due to rising sea levels	Large	Large	The identified risk is based on the worst case scenario in which an operating site, such as a plant, must be relocated.
Opportunities	Market	Cultivation of new markets and regions through research and development of new medicinal products	Application of the technologies and know-how that the SHIONOGI Group has cultivated to treatment of other diseases	Small	Small	The identified opportunity is based on the assumption that drugs to treat NTDs (Neglected Tropical Diseases) will be developed and launched.
		Switching to ecofriendly low-carbon containers and packaging	Cost reduction resulting from replacement with environmentally friendly packaging materials	Small	Small	

*7 Financial impact: Large: 10 billion yen or more; Medium: 1 billion yen to less than 10 billion yen; Small: less than 1 billion yen

*8 The estimated figure is based on a carbon tax internally calculated as 16,523 yen/t-CO₂ with reference to the IPCC Special Report on Global Warming of 1.5°C.

Table 3 below describes the SHIONOGI Group's response policy regarding the three items that have a relatively large financial impact: 1) introduction of carbon pricing, 2) impact of locally abnormal weather and temperature rise on raw material procurement, and 3) rising sea levels.

Table 3: SHIONOGI Group's policy on how to respond to identified risks

Identified risk	Classification of risk response policy	Remarks on established policies
Introduction of carbon pricing	Risk reduction	The possibility of the identified risks becoming real in the medium term is relatively high, since carbon pricing has already been introduced in some countries and is under consideration in Japan. Therefore, we will mitigate the risks by implementing medium- to long-term activities to reduce our greenhouse gas (GHG) emissions.
Impact on raw material procurement due to locally abnormal weather and temperature rise	Risk retention	We have defined the worst case scenario as the situation where quality testing cannot be conducted because lysate reagents made from the blood components of horseshoe crabs cannot be procured due to their decreasing population caused by climate change, leading to the suspension of shipments of some of our main medicinal products. However, reagent manufacturers are engaged in activities to preserve horseshoe crabs. Also, even if procurement of lysate reagents becomes difficult, alternative reagents using genetically modified proteins exist. Therefore, although the long-term possibility cannot be ruled out, we will retain the risk, judging that the probability of the risk manifesting by 2030 is extremely low at this point.
Rising sea levels	Risk retention	There is no doubt about the long-term trend of rising sea levels caused by climate change, and we have set the worst case scenario as the situation where sea level rise may adversely affects operations at some of our key manufacturing sites located in particularly low-lying areas above sea level. However, the average sea level rise along the coasts of Japan over the period from 2031 to 2050 is projected to be less than 0.2 m. Therefore, although the long-term possibility cannot be ruled out, we will retain the risk, judging that the probability of the risk manifesting by 2030 is extremely low at this point.

Carbon tax (carbon pricing)

We have internally estimated the carbon tax for 2030 to be 135 USD/t-CO₂ with reference to the IPCC Special Report on Global Warming of 1.5°C. The estimated carbon tax of 18,162 yen/t-CO₂ is based on an exchange rate of 134.53 yen/USD as of the end of March 2023. This value was used to estimate the financial impact associated with carbon tax.

Metrics and Targets for the SHIONOGI Group Climate Change Countermeasures

As mentioned above, we conducted a detailed assessment of the impact of climate change on the SHIONOGI Group's business using the TCFD framework as a reference. As a result of considering strategies and specific countermeasures, we have set "reduction of GHG (CO₂) emissions" as a metric for reducing risks related to climate change. In addition, in response to the Japanese government's declaration of "Carbon Neutrality by 2050" and the worldwide movement toward reducing CO₂ emissions, we believe that the SHIONOGI Group also needs to aim for carbon neutrality by 2050.

- **Metric:**

- GHG (CO₂) emissions reduction (FY2019 benchmark)

- **Targets:**

- Reduce GHG emissions (Scopes 1 and 2) by 46.2% by FY2030 compared to FY2019.
- Cut down GHG emissions (Scope 3, Category 1: Purchased products and services) by 20% by FY2030 compared to FY2019.

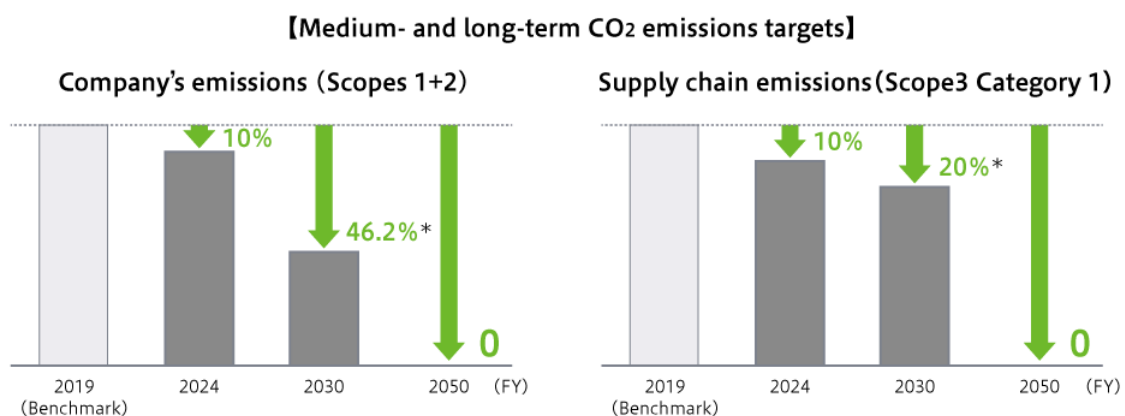
To improve energy efficiency, we also aim to improve energy intensity by 1% per year and to introduce equipment with high energy consumption efficiency. Please see the section "[Climate Change](#)" for yearly activity progress.

- **Other targets regarding climate change countermeasures:**

- Reduce energy consumption and improve energy efficiency.
 - Promotion of energy conservation efforts to reduce energy intensity by 1% per year
 - Promotion of the introduction of high-efficiency equipment
- Reduce GHG emissions.
 - Promotion of the introduction of renewable energy
 - Promotion of the introduction of high-efficiency equipment

(Metrics and Targets: Recommended disclosures a, b, and c)

*9 SBTs (Science Based Targets): CO₂ emissions reduction targets based on scientific data



* Targets approved by the SBT initiative

Related Press Releases

[SHIONOGI's Greenhouse Gas Reduction Target Approved by "Science Based Targets \(SBT\) Initiative"](#) (January 4, 2021)

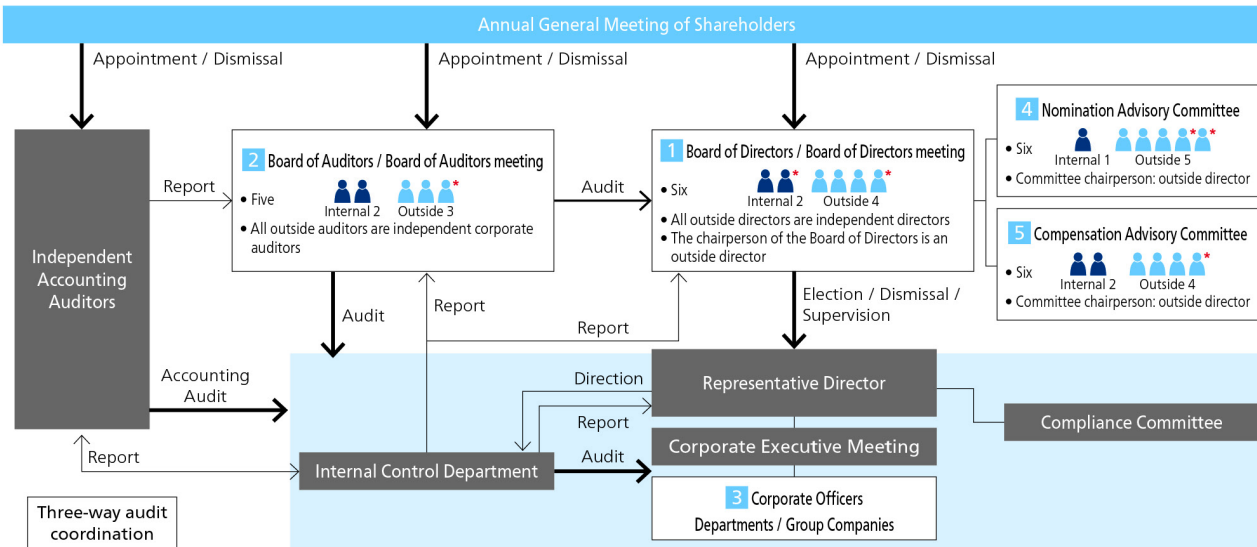
[Shionogi expresses its support for the recommendations of Task Force on Climate-related Financial Disclosures \(TCFD\) and its participation in the TCFD Consortium](#) (April 11, 2022)

Governance

Governance Structure

Corporate governance structure (As of July1,2023)

* female

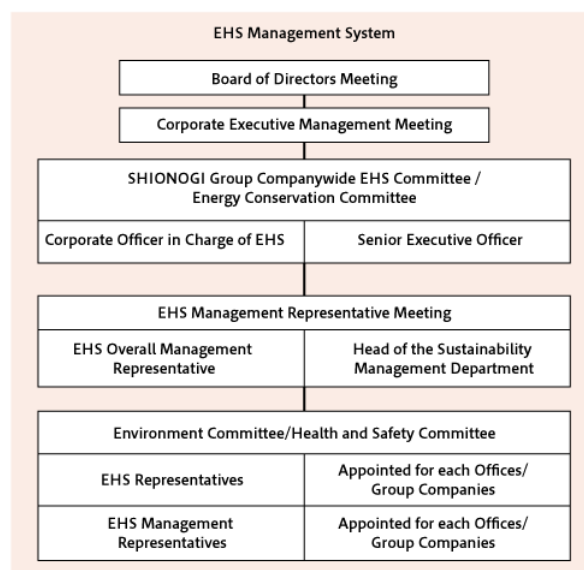


To ensure business execution based on appropriate management judgment, Shionogi has chosen to establish a company with a Board of Corporate Auditors. This is because it will enhance the auditing function of the corporate auditors and the monitoring function of the Internal Control Department, which has an internal auditing function, and promote the smooth functioning of the management monitoring system through cooperation between them.

See the section “[Corporate Governance](#)” for details.

In the SHIONOGI Group, a system is in place that allows the Corporate Executive Management Meeting to deliberate on its initiatives for the environment, health, and safety (“EHS”) before the Board of Directors makes final decisions on them. We have appointed the Senior Executive Officer in charge of EHS as a Corporate Officer who supervises overall EHS management in an integrated manner.

The Corporate Officer in charge of EHS heads the SHIONOGI Group Companywide EHS Committee, which comprises representatives from the group’s respective operating sites, who are appointed as personnel in charge of EHS, and presidents from Group companies. The SHIONOGI Group Companywide EHS Committee sets targets for EHS, identifies Environmental Materiality, and conducts management reviews, thereby promoting EHS activities.



In addition, the Energy Conservation Committee, chaired by the Corporate Officer in charge of EHS and placed under the SHIONOGI Group Companywide EHS Committee, assumes duties such as setting medium- and long-term targets, managing progress, and assessing the status of legal and regulatory compliance regarding measures for energy conservation and global warming control. The operation of these two committees is under the jurisdiction of the Sustainability Management Department, which promotes the SHIONOGI Group's ESG initiatives and strengthens its EHS management system.

The results of deliberations by the above committees and matters related to EHS that have a large impact on management are reported to the Corporate Executive Management Meeting or the Board of Directors by the Senior Executive Officer in charge of EHS and the Head of the Sustainability Management Department, who is an EHS overall management representative.

Environmental / Occupational Safety and Health Management Systems

The SHIONOGI Group uses ISO 14001, ISO 45001, and in-house environmental management systems established in conformity with them. The SHIONOGI Group's EHS activities, including risk management, are reviewed as a whole once a year by the SHIONOGI Group Companywide EHS Committee to verify the efficacy and suitability of the EHS initiatives. Matters that have a major impact on management are deliberated by the Corporate Executive Management Meeting before final decisions are made by the Board of Directors.

The acquisition status of certification of our management systems is summarized in the table below.

	Settsu Plant	Kanegasaki Plant	Tokushima Plant	Itami Plant
ISO 14001	○	○	○	○
ISO 45001	○	○	○	—

○ : Acquired

Audits

The SHIONOGI Group conducts audits of each operating site of the group and its suppliers using multiple approaches to check their EHS promotion status, as shown in the table below.

External audits	Conducted by external accreditation organizations to verify that the group's ISO 14001- and ISO 45001-certified management systems are operated in conformity with the standards
Internal audits	In-house self-inspection required under ISO 14001 and ISO 45001 conducted to confirm system suitability and the status of conformity
EHS audits	Conducted by the division that supervises the SHIONOGI Group's EHS initiatives, as directed by the management team, separately from internal audits, to check whether EHS activities in the SHIONOGI Group are appropriately implemented and maintained in compliance with the management systems while pursuing continuous improvement
EHS audits of suppliers	Audits of the SHIONOGI Group's suppliers of raw materials, intermediates, APIs, products, etc. conducted in compliance with the PSCI Principles

In addition, as part of AMR Industry Alliance activities, we inspect our antimicrobial release control and management. See the section "AMR" for details.

To enable a fairer and more objective CSR assessment, we implement “EcoVadis,” a rating platform for assessing corporate social responsibility and sustainable procurement, and sequentially make assessment of our business partners in order of priority. See the section “[Supply Chain Management](#)” for details.

Emergency Preparedness

The SHIONOGI Group Risk Management Policy stipulates that in the event of a crisis, we should place top priority on protecting human life and ensuring safety, promptly take measures to minimize damage and prevent recurrence, and continue business operations as principles of action. To respond to emergencies, such as earthquakes, pandemics, and corporate scandals, we have established emergency response guidelines and manuals with a focus on respect for human life, consideration for and contribution to the local communities, and business continuity. In anticipation of emergencies, we have established communication and reporting systems. We regularly carry out emergency responsiveness training and review response procedures. In FY2022, disaster drills were conducted at each operating site, following a simulated scenario of an earthquake-triggered tsunami or fire.



Comprehensive disaster drill (Shionogi Pharma Kanegasaki Plant)

Education

In order to promote EHS activities, we believe it is essential that individual employees be fully aware of environmental, health, and safety issues in connection with their own work, and actively address them. We provide environmental education and preliminary education related to operations with high environmental impact, such as waste management and the handling of chemical substances, at plants and research facilities with a large environmental impact. We clearly inform employees of the targets and actual figures of CO₂ emissions and waste generation so as to effectively motivate their involvement in EHS activities.

Risk Management

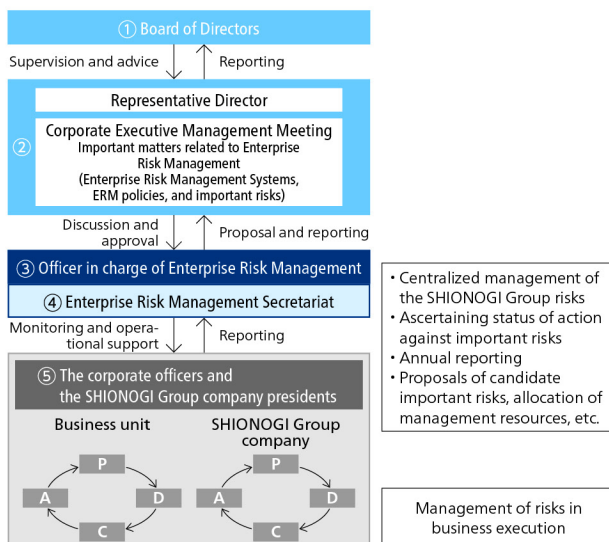
In this era, called the “age of VUCA,” business uncertainty is increasing amid accelerating social change. From the perspective of sustainability, the SHIONOGI Group appropriately manages business risks, including creating new business opportunities and taking risk avoidance and reduction measures. We have built and promoted an enterprise risk management (ERM) system, which manages the risks of the entire group, as an important system for our management strategy and management foundation.

Environmental risks are identified and placed on the agenda (setting targets for climate change-related issues, checking progress in achieving the targets, assessing compliance with laws and regulations, etc.) of the SHIONOGI Group Companywide EHS Committee and the Energy Conservation Committee, a subsidiary committee. These committees assess the timing of emergence, probability of occurrence, financial impact, and other factors of these risks, formulate measures to respond to them in order of priority, and check the implementation status of the measures. In particular, significant risks that could have a major impact on management are reported through the Enterprise Risk Management Secretariat to the Corporate Executive Management Meeting and the Board of Directors, which deliberate and make decisions on how to respond to them.

See the section “[Risk Management](#)” for more information on risk management.

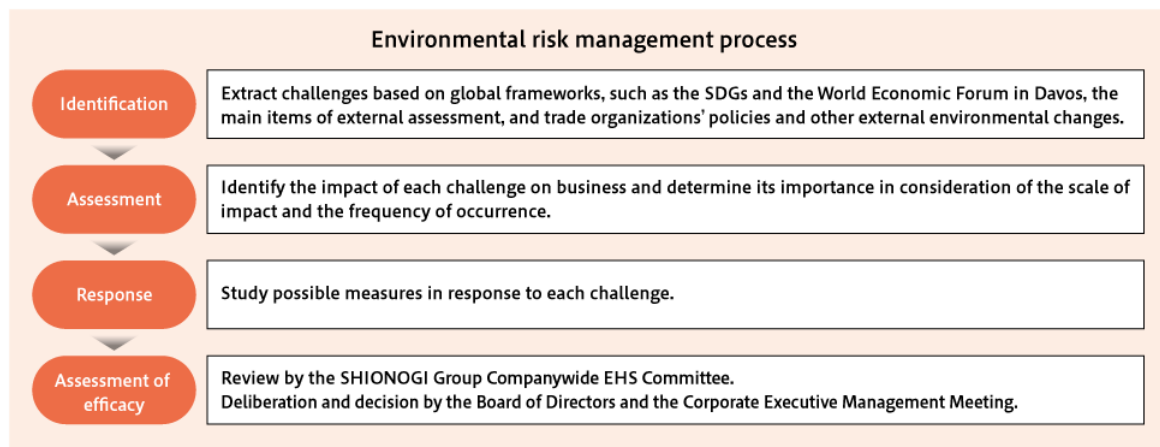
Enterprise Risk Management (ERM) System

Risk management structure



Role

① Board of Directors	Provides supervision, advice, etc. on the planning, progress, and results of ERM promotion activities
② Representative Director, Corporate Executive Meeting	The Corporate Executive Meeting, chaired by the Representative Director, discusses important matters concerning SHIONOGI's ERM, which are approved by the Representative Director
③ Officer in charge of Enterprise Risk Management	The Corporate Supervisor is Chief Risk Management Officer (CRO), overseeing SHIONOGI's risk management and assuming responsibility for the promotion and operation of the ERM system.
④ Enterprise Risk Management Secretariat	The enterprise risk management secretariat consists of the Sustainability Management Department, the General Administration Department, and the Corporate Planning Department.
⑤ The corporate officers and the SHIONOGI Group company presidents	Each business unit and Group company is responsible for the execution of risk management in the execution of its operations



Identification, assessment results, and responses

Materiality (risks and opportunities)	Impact	Frequency of occurrence		Assessment	Measures
	On the Company	Actual	Predicted		
AMR • Lowered reputation due to pollution caused by wastewater	Large	Small	Large	◎	• Pollution control during production at SHIONOGI and suppliers • Publication of AMR actions and measures
Climate change • Discontinued operation due to extreme meteorological phenomena • Increased capital investment in response to regulatory reinforcement • Change in the market for tropical-infectious-disease-related products	Large	Small	Medium	○	• Information gathering from governmental agencies, trade organizations, etc. • Setting of CO ₂ emission reduction plans by the Energy Conservation Committee • Setting of measures for stable supply
Resources conservation and circulation • Lowered reputation due to increased plastic waste • Elevated reputation due to resources conservation initiatives	Medium	Small	Medium	△	• Promotion of 3R initiatives • Restricted use for products
Water • Discontinued operation due to droughts, floods, and water quality deterioration	Large	Small	Medium	○	• Information gathering from governmental agencies, trade organizations, etc. • Monitoring of waste water • Water consumption control

Assessment criteria

Assessment criteria are provided in the table below. Assessment is finalized after detailed discussions by the SHIONOGI Group Companywide EHS Committee.

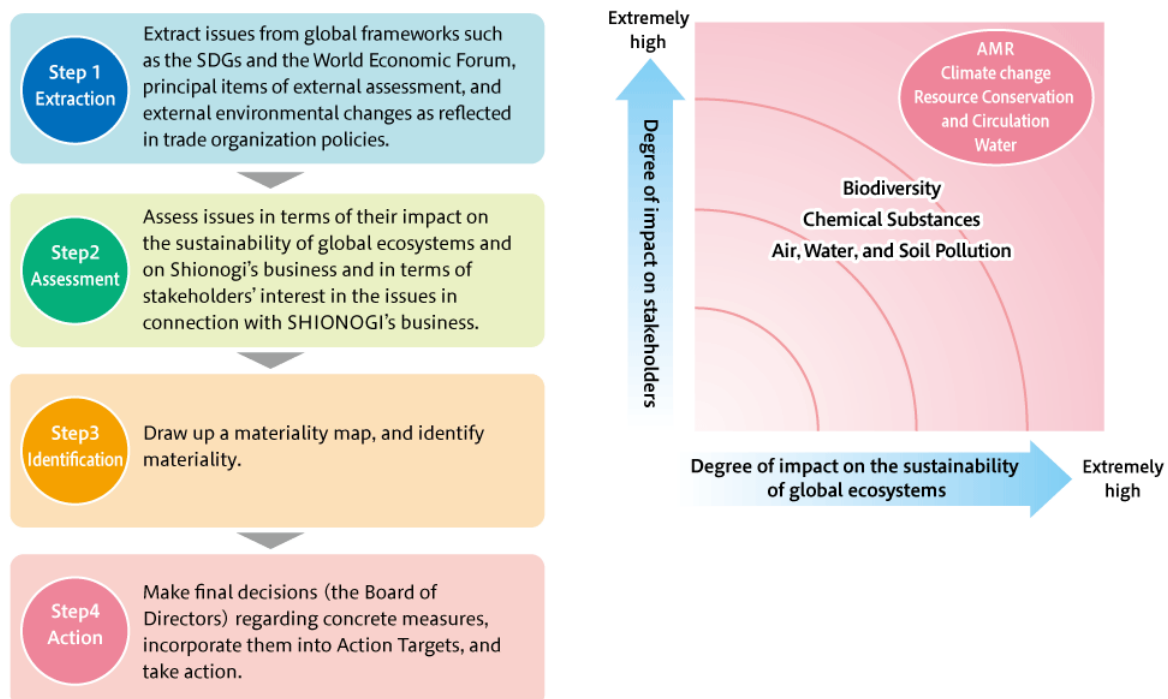
Level	Impact	Frequency of occurrence
Large	Discontinued operation	Frequent in the area/industry
Medium	Capital investment	Past incidents
Small	—	No past incidents

Environmental Materiality







In updating its medium-term business plan STS2030 to STS2030 Revision, the SHIONOGI Group analyzed and assessed its risks and opportunities and their time frame based on changes in the internal and external environment, and reviewed the material issues (materiality) that must be addressed. As a result, we have continued to identify “Protect the environment” as one of the SHIONOGI Group’s material issues (materiality).

> Material issues

In addition, we have listed environmental issues to be addressed through more detailed analysis of changes in the external business environment and dialogue with external stakeholders, such as ESG investment institutions and external experts, and related organizations within the company. We have identified these issues as “Environmental Materiality” by assessing their impact on the sustainability of global ecosystems and on stakeholders based on the Environmental Reporting Guidelines published by Ministry of the Environment, Japan. In response to Environmental Materiality, we have formulated specific medium- to long-term targets for resolving the issues as the SHIONOGI Group EHS Action Targets, under which we create and implement a single-year EHS Action Plan. The SHIONOGI Group EHS Action Targets are determined through deliberation by the SHIONOGI Group Companywide EHS Committee, the Corporate Executive Management Meeting, and the Board of Directors. Meanwhile, the EHS Action Plan is determined under the responsibility of the Senior Executive Officer and Senior Vice President of the Administration Division, who serves as the Corporate Officer in charge of EHS, after deliberation by the SHIONOGI Group Companywide EHS Committee.



Summary of identification of Environmental Materiality

Material issues	Summary of identification
AMR 	<p>This is a global issue that a pharmaceutical company manufacturing antimicrobials cannot ignore. The emergence of AMR impacts global ecosystems enormously.</p>
Climate change  	<p>Responding to climate change is essential for the sustainability of global ecosystems. Meanwhile, stakeholders' demand for action in this regard is growing increasingly strong.</p>
Resources conservation and circulation  	<p>Reducing waste and circulating resources mean effectively utilizing limited resources and are essential for the sustainability of global ecosystems.</p> <p>This is a part of the problem of marine plastic, and stakeholders' interest in this international issue has been growing in recent years.</p>
Water 	<p>With the growing probability of occurrence of torrential rainfalls and floods, water risks (particularly physical risks) must be closely watched from the perspective of BCP.</p> <p>Water is an indispensable factor for the business continuity of pharmaceutical companies and essential for the sustainability of global ecosystems.</p>

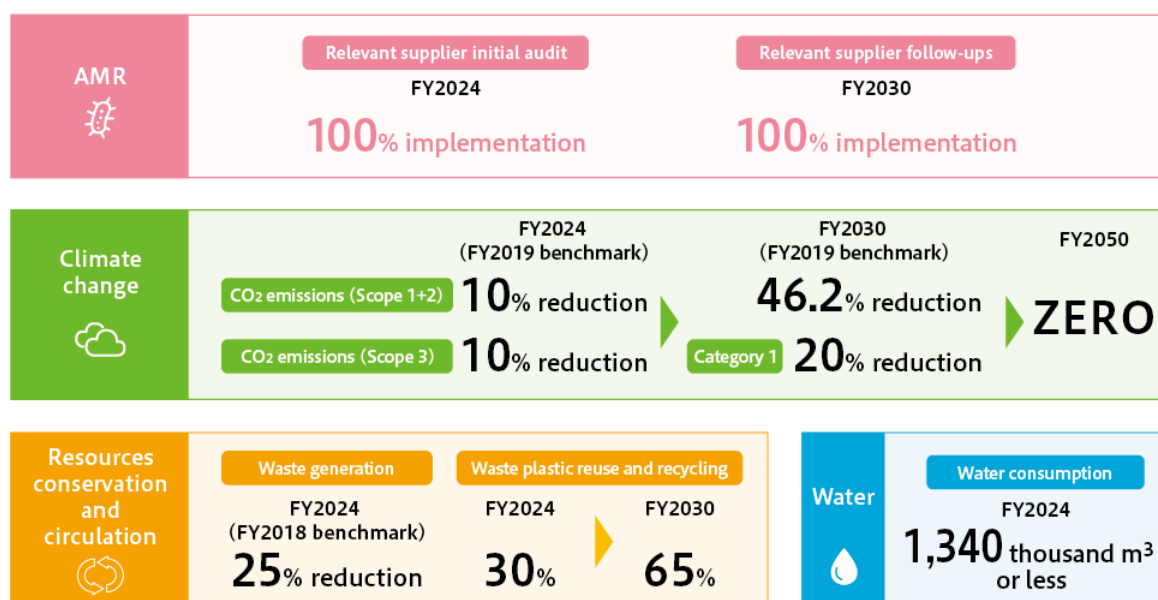
We apply the identified Environmental Materiality to the value chain and consider what countermeasures are required for each material issue in each process. The countermeasures are reflected in the SHIONOGI Group EHS Action Targets.

To offer value to society and meet our stakeholders' expectations, the SHIONOGI Group hopes to further deepen its activities by clarifying concrete steps toward handling material issues in the future and key performance indicators (KPIs).

Environmental Materiality and the value chain

	Purchase	R&D	Manufacturing	Distribution and sales	Use and disposal
AMR	Antimicrobial release management		Antimicrobial release management		Promotion of responsible antimicrobial use
Climate change	Introduction of energy-saving equipment Introduction of renewable energy	Introduction of energy-saving equipment Introduction of renewable energy	Introduction of energy-saving equipment Introduction of renewable energy	Introduction of hybrid vehicles Improvement of transportation efficiency	Change in or recycling of containers and packaging materials
Resource conservation and circulation	Green purchasing	Design of environmentally responsible products	3Rs of waste materials		Reuse and recycling of containers and packaging materials Responsible disposal
Water and water risks	Water risk assessment	Water risk assessment, water conservation, wastewater management	Water risk assessment, water conservation, wastewater management		

Environmental Materiality and the SHIONOGI Group EHS Action Targets (Environment)



See the sections “Action Targets” and “Results” for more information on the targets and activities.

Action Targets

SHIONOGI Group EHS Action Targets (Environment) (2020–2024/2030/2050)

Based on the SHIONOGI Group EHS Policy and the SHIONOGI Group EHS Code of Conduct, we have set the SHIONOGI Group EHS Action Targets (single year and medium- to long-term) regarding “AMR,” “climate change,” “resource conservation and circulation,” and “water,” which have been identified as Environmental Materiality, to proceed with initiatives. For other items, the SHIONOGI Group and each operating site/Group company have set single-year targets and have promoted activities to achieve these targets.

Scope:

SHIONOGI Group companies in Japan (Global SHIONOGI Group for [GHG (CO₂) emissions reduction] and [Water risk mitigation])

Since FY2022, global targets have been set for [Waste and plastics] and [Water consumption reduction].

Item	Medium- and long-term targets (2020–2024/2030/2050)	FY2022 targets	FY2022 results	Achievement	FY2023 targets
AMR	[AMR control] • Maintain the management system at the Kanegasaki Plant.	[AMR control] Maintain the management system at the Kanegasaki Plant and the Tokushima Plant.	[AMR control] The management system was maintained.	○	[AMR control] Maintain the management system at the Kanegasaki Plant and the Tokushima Plant.
	• Complete initial audits of 100% of relevant suppliers. • <u>By 2030, establish a responsible AMR management system, including the supply chain (complete post-audit follow-up).</u>	Complete initial audits of 100% of relevant suppliers.	Initial audits of 86% of relevant suppliers were completed (The audit of a supplier could not be conducted because the schedules of the audit vendor and the suppliers did not match).	×	Complete initial audits of 100% of relevant suppliers.

Item	Medium- and long-term targets (2020–2024/2030/2050)	FY2022 targets	FY2022 results	Achievement	FY2023 targets
Climate change	[GHG (CO ₂) emissions reduction] (FY2019 benchmark)*1 • Reduce Scopes 1+2 by 10%. • Scope 3: Reduce Category 1 by 10%. <u>• By 2030, reduce Scopes 1+2 by 46.2% and Scope 3 (Category 1) by 20%*1.</u> <u>• By 2050, achieve zero emissions.</u>	[GHG (CO ₂) emissions reduction] (FY2019 benchmark) • Reduce Scope 1+2 emissions to the FY2019 level or less.	[GHG (CO ₂) emissions reduction] (FY2019 benchmark) • Scopes 1+2 emissions were reduced by 0.3% from the FY2019 level.	○	[GHG (CO ₂) emissions reduction] (FY2019 benchmark) Reduce Scope 1+2 emissions by 15%. (FY2019 benchmark)
		Reduce Scope 3 Category 1 emissions by 5%. (FY2019 benchmark)	Scope 3 Category 1 emissions were reduced by 22.4% from the FY2019 level.	○	Reduce Scope 3 Category 1 emissions by 9%. (FY2019 benchmark)
	• Improve energy intensity by an annual average of 1%.	Improve energy intensity by an annual average of 1%.	Energy intensity fell by an annual average of 6.0% (because energy consumption increased due to factors such as COVID-19-related R&D and the manufacture of COVID-19 therapeutic drugs).	×	Improve energy intensity by an annual average of 1%.
	• Promote the introduction of highly energy-efficient equipment and the electrification of equipment.	Promote the introduction of highly energy-efficient equipment and the electrification of equipment.	Highly energy-efficient equipment was introduced at the CMC Research Innovation Center, the Kanegasaki Plant, and the Tokushima Plant.	○	Promote the introduction of highly energy-efficient equipment and the electrification of equipment.

Item	Medium- and long-term targets (2020–2024/2030/2050)	FY2022 targets	FY2022 results	Achievement	FY2023 targets
Resources conservation and circulation	[Waste and plastics] • Reduce the amount of waste generated by 25%. (FY2018 benchmark)	[Waste and plastics] • Reduce the amount of waste generated to the FY2021 level (5,169 tons) or less. <Global> • Reduce the amount of waste disposal to the FY2021 level (4,793 tons) or less. • Reduce the amount of hazardous waste disposal to the FY2021 level (1,434 tons) or less.	[Waste and plastics] • Waste generated: 5,766 tons (increased by 50.8% from the FY 2018 level) (due to an increase in production volume) <Global> • Waste disposal: 5,232 tons (including hazardous waste) (increased due to an increase in production volume) • Hazardous waste disposal: 810 tons (overachieved due to a decline in the operating rate of production equipment due to changes in manufacturing method at the Tokushima Plant)	×	[Waste and plastics] • Reduce the amount of waste generated to the FY2022 level (5,766 tons) or less. <Global> • Reduce the amount of waste disposal (excluding hazardous waste) to the FY2022 level (4,422 tons) or less. • Reduce the amount of hazardous waste disposal to the FY2021 level (1,434 tons) or less.
	• Reuse/recycle 80% of waste generated.	• Reuse/recycle at least 80% of waste generated.	• Reuse/recycle of waste generated: 89%	○	• Reuse/recycle at least 80% of waste generated.
	• Reuse/recycle 30% of waste plastics. • <u>By 2030, reuse/recycle 65% of waste plastics.</u>	• Reuse/recycle 30% of waste plastics.	• Reuse/recycle of waste plastics: 25% (because we were unable to request recycling due to the recycling company's circumstances)	×	• Reuse/recycle 30% of waste plastics.

Item	Medium- and long-term targets (2020–2024/2030/2050)	FY2022 targets	FY2022 results	Achievement	FY2023 targets
Resources conservation and circulation	<ul style="list-style-type: none"> Restrict plastic use in products. 	<ul style="list-style-type: none"> Restrict plastic use in products. 	The adoption of biomass plastic for PTP sheets and thinner sheets was examined at Shionogi Pharma.	○	<ul style="list-style-type: none"> Restrict plastic use in products.
Water	[Water risk mitigation] <ul style="list-style-type: none"> Complete thorough assessment of water risks at research laboratories, plants, and other major operating sites. 	[Water risk mitigation] <ul style="list-style-type: none"> Conduct water risk assessment using WRI Aqueduct, WWF Water Risk Filter, and in-house assessment at major operating sites in Japan. 	[Water risk mitigation] <ul style="list-style-type: none"> Water risk assessment using WRI Aqueduct, WWF Water Risk Filter, and in-house assessment was conducted at major operating sites in Japan. 	○	[Water risk mitigation] <ul style="list-style-type: none"> Conduct water risk assessment using WRI Aqueduct, and in-house assessment at major operating sites in Japan.
	[Water consumption reduction] <ul style="list-style-type: none"> Keep water withdrawal at or less than 1,340 thousand m³ (around the FY2018 level). 	[Water consumption reduction] <ul style="list-style-type: none"> Keep water withdrawal at the FY2021 level (1,366 thousand m³) or less. <Global> <ul style="list-style-type: none"> Keep water withdrawal at the FY2021 level (1,517 thousand m³) or less. 	[Water consumption reduction] <ul style="list-style-type: none"> Water withdrawal: 1,425 thousand m³ (increased due to an increase in production volume) <Global> <ul style="list-style-type: none"> Water withdrawal: 1,550 thousand m³ (increased due to an increase in production volume) 	×	[Water consumption reduction] <ul style="list-style-type: none"> Keep water withdrawal at the FY2022 level (1,425 thousand m³) or less. <Global> <ul style="list-style-type: none"> Keep water withdrawal at the FY2022 level (1,550 thousand m³) or less.

Item	Medium- and long-term targets (2020–2024/2030/2050)	FY2022 targets	FY2022 results	Achievement	FY2023 targets
Chemical substances	[Appropriate management of chemical substances] There are no medium-term targets because issues identified in FY2020 should be addressed.	[Appropriate management of chemical substances] Recheck the handling of chemical substances (risk assessment, legal compliance status), regarding their storage (including temporary storage and storage before disposal), transfer, and use.	[Appropriate management of chemical substances] A re-check was not conducted at some operating sites. (Operating sites where a re-check was not conducted: UMN Pharma Akita Plant, UMN Pharma Yokohama Research Center)	△	[Appropriate management of chemical substances] Recheck the handling of chemical substances (risk assessment, legal compliance status), regarding their storage (including temporary storage and storage before disposal), transfer, and use at UMN Pharma.
	[Responsible management of PCB and fluorocarbons] • Reinvestigate PCB-containing waste, and complete responsible disposal/treatment (FY2022).	[Responsible management of PCB and fluorocarbons] • Execute 100% disposal/treatment of currently known PCB-containing equipment.	[Responsible management of PCB and fluorocarbons] Disposal/treatment of high-concentration PCB waste was 100% completed.	○	— (Targets not set because the response has been completed)
	• Fluorocarbons: Manage equipment using fluorocarbons responsibly, and promote the introduction of fluorocarbon-free or low-GWP ^{*2} equipment.	• Fluorocarbons: Manage equipment using fluorocarbons responsibly, and promote the introduction of fluorocarbon-free or low-GWP equipment.	• Although no fluorocarbon-free or low-GWP equipment was introduced this fiscal year, equipment using fluorocarbons was properly managed.	○	• Fluorocarbons: Manage equipment using fluorocarbons responsibly, and promote the introduction of fluorocarbon-free or low-GWP equipment.

The underlined targets are long-term targets for FY2030 and FY2050.

*1 Since we obtained SBTi certification in June 2021, the FY2024 and FY2030 targets were modified to aim for science-based targets.

*2 GWP: Global Warming Potential

AMR

Approach to AMR

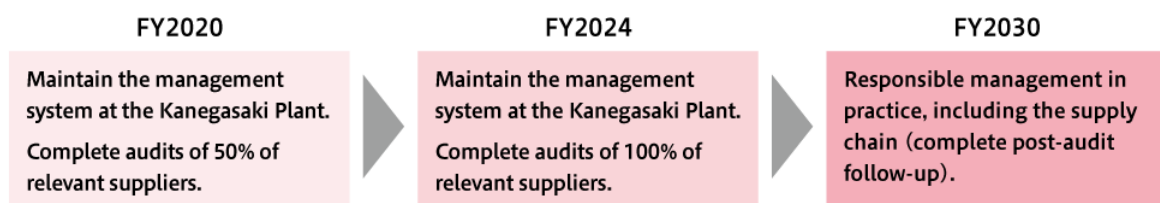
AMR (antimicrobial resistance) refers to the phenomenon whereby pathogenic microorganisms, such as bacteria, acquire drug resistance to antimicrobials and become immune to them. An increase in AMR has become a major social issue in recent years. The main reason for the increase in AMR is inappropriate use of antimicrobials, including excessive administration. Meanwhile, it is also attributed to release from antimicrobial-manufacturing plants as another factor. Therefore, approaches from various aspects are essential for effective AMR control. The SHIONOGI Group has provided antimicrobials to society for many years. As a natural responsibility of a company that handles antimicrobials, we strictly control the release of antimicrobials into the environment during the manufacturing process. Since AMR is considered to be a global threat, the SHIONOGI Group believes that it is necessary to manage the release of antimicrobials into the environment not only within the group but throughout the supply chain.

Medium- and Long-term Targets and Response

To reduce the environmental impact of antimicrobials during the manufacturing process, the SHIONOGI Group plans to achieve proper management of the release of antimicrobials into the environment throughout the supply chain by 2030 through audits of and feedback from its plants and suppliers. To this end, we aim to maintain and improve the antimicrobial discharge management system at the SHIONOGI Group's plants and to complete the first AMR audits of all related suppliers by FY2024.

To control and manage the release of antimicrobials into the environment, we will proceed with AMR audits based on the Antibiotic Manufacturing Standard^{*1} ("Standard") stipulated by the AMR Industry Alliance^{*2} ("AMRIA").

SHIONOGI's medium- and long-term AMR control targets



^{*1} [AMR Industry Alliance](#) (External website)

We signed the AMR Industry Roadmap with 12 other leading companies and organizations at the World Economic Forum in Davos held in September 2016, thereby taking the lead in fighting AMR. The signatory companies and organizations commit themselves to the strict management of antimicrobial release both by themselves and throughout their supply chains, through such measures as specifying their release management techniques in the form of a roadmap to be offered to all antimicrobial manufacturers so that they will also join in this worldwide effort to combat AMR. This movement has now developed into a major campaign called the "AMR Industry Alliance," involving an increasing number of companies handling antimicrobials.



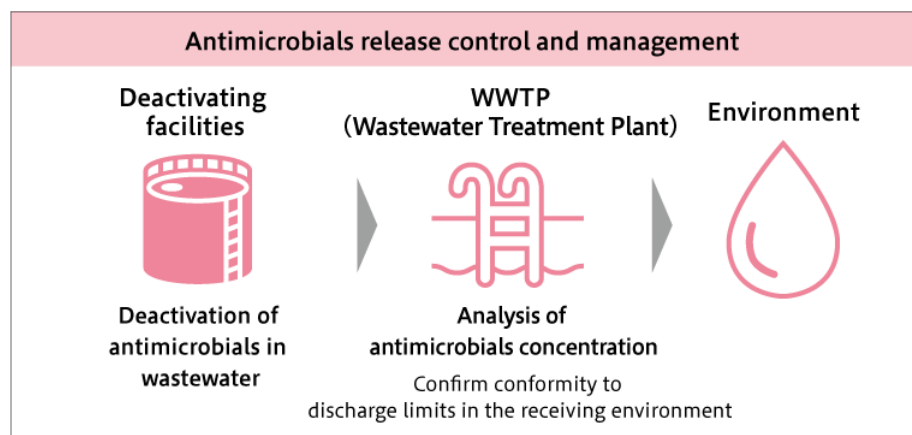
^{*2} [Antibiotic Manufacturing Standard](#) (External website)



AMR Benchmark*³ 2021



We have been selected for AMR Benchmark 2021 in recognition of its excellent overall AMR control activities in the SHIONOGI Group. In the manufacturing category, in particular, we have obtained 93, the highest score.

*³ AMR Benchmark is the world's first report in which companies' AMR control efforts are analyzed and evaluated by the NGO Access to Medicine Foundation, based in the Netherlands.

See [this website](#)  for details. (External website)



SHIONOGI Group	Kanegasaki Plant*⁴  Audit: 2018 2019	All antimicrobial products (five) Conformity to discharge limits in the receiving environment was confirmed.
	Tokushima Plant*⁴  Audit: 2021	One product EHS audit confirms conformity to discharge limits in the receiving environment.

Suppliers	In Japan  Audit: 2018	The status of conformity was checked at four companies. ► Conformity was confirmed at three companies. ► Remedial measures are currently being implemented at one company.
	Outside Japan  Audit: 2019 Audit: 2023	The status of conformity was checked at three companies. ► Remedial measures are currently being implemented at one company. Confirmation of conformity will be continued in the future.

*⁴ The Kanegasaki Plant and the Tokushima Plant are the only sites that manufacture antimicrobials within the SHIONOGI Group.

The SHIONOGI Group controls and manages the release of antimicrobials in compliance with the Standard stipulated by AMRIA, and conducts audits of all antimicrobial-manufacturing plants of the SHIONOGI Group as well as all of its suppliers in Japan. Since FY2019, we have conducted audits of our suppliers outside Japan (see tables 1 and 2).

As an antimicrobial release control and management initiative at the Kanegasaki Plant, a SHIONOGI Group flagship plant that manufactures antimicrobials, antimicrobials contained in wastewater are deactivated in each manufacturing building before the wastewater is discharged outside via in-house treatment facilities. According to the Standard, we analyze the concentration of antimicrobials in actual wastewater from the plant to confirm whether the wastewater is harmless when it is discharged into the natural environment. Recently, it has been confirmed that wastewater from the manufacturing process of all five items at the Kanegasaki Plant complies with the discharge limits in the receiving environment.*⁵ Solid waste materials, generated from antimicrobial manufacturing at the Kanegasaki Plant, are entirely entrusted to an external service provider (Eco-system Akita Co., Ltd.) for disposal by incineration, with no antimicrobial release into the environment via solid waste materials. At the Tokushima Plant, we also analyze the concentration of antimicrobials in wastewater from the plant for contracted items to confirm that the wastewater complies with the discharge limits in the receiving environment.

As for suppliers, we have confirmed that three of the four drug products, whose manufacture is commissioned to four suppliers in Japan (one drug product per supplier), conform to the discharge limits in the receiving environment. For the remaining drug product for which conformity has not been confirmed, we are currently taking corrective measures. We also commission the manufacture of three drug products to three suppliers outside Japan, and we have confirmed that two of them comply with the discharge limits in the receiving environment. For the remaining supplier for which compliance with the discharge limits in the receiving environment has not been confirmed, we continue to conduct surveillance and take necessary remedial measures. Although there has recently been a delay in the progress of our audit plans as a result of travel restrictions due to the COVID-19 pandemic, we completed the initial audit of our suppliers that we currently have contracts with, both in Japan and overseas, by July 2023. We intend to conduct audits of our suppliers with regard to compliance with the discharge limits in the receiving environment, each year choosing around two to three suppliers within Japan and one to two suppliers outside Japan.

*⁵ As discharge limits in the receiving environment, the SHIONOGI Group adopts “Predicted No-Effect Concentrations (PNECs)” mentioned in the document published by AMRIA or the limit value of 0.05 µg/L, which is the recommended value for drugs not on the list.

See [this website](#)  for details. (External website)

Table 1: Discharge limits in the receiving environment for active pharmaceutical ingredients (APIs)*⁶ of antimicrobials handled by the SHIONOGI Group and audited items (those in color were subject to audit until FY2022)*⁷

APIs of antimicrobials handled by SHIONOGI	Discharge limits in the receiving environment (µg/L)	SHIONOGI Group		Suppliers		
		Drug products	APIs	Drug products	APIs	
Flomoxef	0.05	○	○	Company A		
Cefcapene pivoxil hydrochloride	0.05	○	○			
Latamoxef	0.05	○	○			
Doripenem	0.11	○	○	Company B		
Cefiderocol	0.05	○	○			
Sulfamethoxazole/trimethoprim	0.60/0.50			Company C	Company F	Company G
Metronidazole	0.13			Company D	Company H	

Companies F, G, and H: Suppliers outside Japan.

*⁶ Although contract manufacturing products are not listed, they conform to the discharge limits in the receiving environment.

*⁷ Due to the transfer of vancomycin hydrochloride operations in April 2020, the relevant suppliers were excluded from the audits.

Table 2: Supplier auditing results (by FY2022)

Supplier	Country of location	Management system	Wastewater management	Solid waste material management	Conformity to discharge limits
Company A	Japan	○	○	○	○
Company B	Japan	○	○	○	○
Company C	Japan	○	○	○	○
Company D	Japan	△	○	○	△
Company F	India	○	○	△	○
Company G	India	○	△	○	△
Company H	Italy	○	○	○	○

○ : Conforming to the criteria of the Common Antibiotic Manufacturing Framework

△ : Conforming to the criteria of the Common Antibiotic Manufacturing Framework, except in a small number of aspects; remedial measures being implemented

× : Not fully conforming to the criteria of the Common Antibiotic Manufacturing Framework; remedial measures being implemented

Climate Change

Approach to Climate Change

In October 2020, the Japanese government declared its goal to achieve carbon neutrality by 2050. With this as a starting point, the transition to a carbon-free society is accelerating in Japan. Companies are required to incorporate environmental factors, such as climate change, into their business strategies, aiming for decarbonization. This is essential for companies to contribute to the achievement of the SDGs and continue to grow together with society. Based on the TCFD^{*1} recommendations, the SHIONOGI Group has built a company-wide governance system, considering climate change countermeasures as part of its management strategy. After identifying and assessing risks and opportunities in the medium- to long-term business environment, we will promote efforts to reduce risks and create business opportunities.

^{*1} Task Force on Climate-related Financial Disclosures: An organization established by the Financial Stability Board (FSB) in response to a request from the G20 to discuss how climate-related information should be disclosed and how financial institutions should respond.

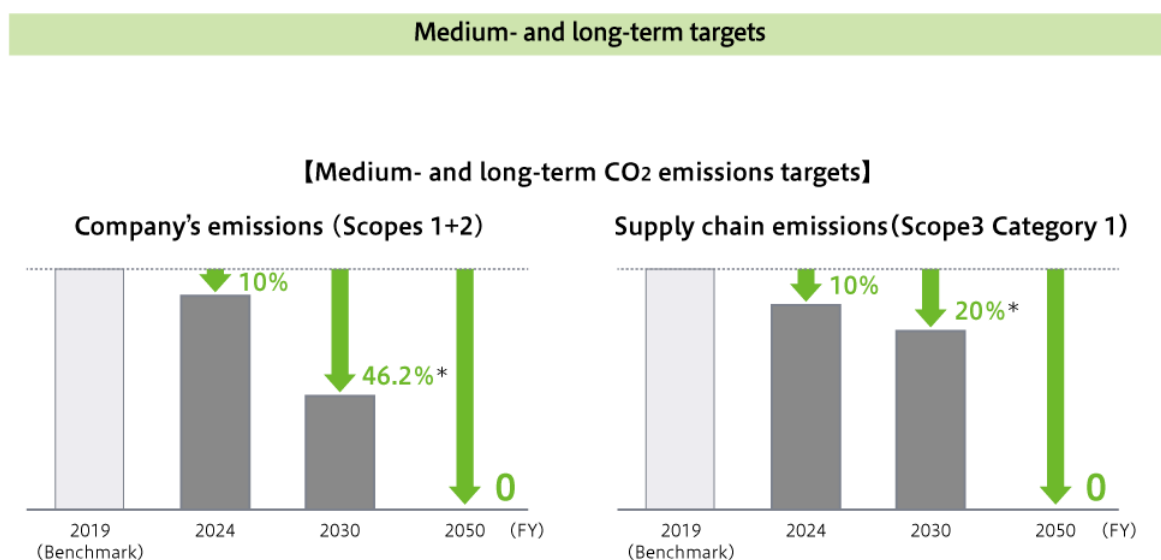
SHIONOGI Group Climate Change Countermeasure Targets

We conducted a detailed assessment of the impact of climate change on the SHIONOGI Group's business, using the TCFD framework as a reference, and considered strategies and specific countermeasures. Consequently, we have set "GHG (CO₂) emissions reduction" as a metric for reducing risks related to climate change. In response to this, we have also set targets in our medium- to long-term action targets "SHIONOGI Group EHS^{*2} Action Targets."

In addition, to respond to the Japanese government's declaration of "Carbon Neutrality by 2050" and the worldwide movement toward reducing CO₂ emissions, the SHIONOGI Group has established SBTs^{*3} as the FY2030 GHG emissions reduction targets, aiming to achieve carbon neutrality by 2050. These targets were approved by the SBT Initiative in June 2021 (see [this page](#) for details).

^{*2} EHS: Environment, Health and Safety

^{*3} SBTs (Science Based Targets): CO₂ emissions reduction targets based on scientific data



* Targets approved by the SBT initiative

Results of Major Initiatives Related to Climate Change

Reducing our Scope 1 and 2 emissions

To achieve our FY2030 targets, we worked to reduce CO₂ emissions by gradually introducing electricity derived from renewable energy mainly to the SHIONOGI Group's major sites, such as plants and research laboratories. As a result, we achieved our CO₂ emissions reduction target for FY2022. We also completed the introduction of renewable energy-derived electricity to the head office building in FY2021 and to the Aburahi Research Center in FY2022 based on a plan to switch to renewable energy-derived electricity for the SHIONOGI Group's major sites. In FY2023, in response to an increase in electricity consumption due to business growth, which led to a tendency for CO₂ emissions to exceed our plan, we not only introduced renewable energy-derived electricity to the Shionogi CMC Research Innovation Center (CRIC), as originally planned, but also brought forward its introduction to the Shionogi Pharmaceutical Research Center (SPRC). With this, we have completed the introduction of renewable energy-derived electricity to Shionogi's major sites. Going forward, we will promote the introduction of renewable energy-derived electricity to the plants of Shionogi Pharma, which is responsible for the production-related functions of the SHIONOGI Group. We plan to complete its introduction to all major sites of the SHIONOGI Group by 2030.

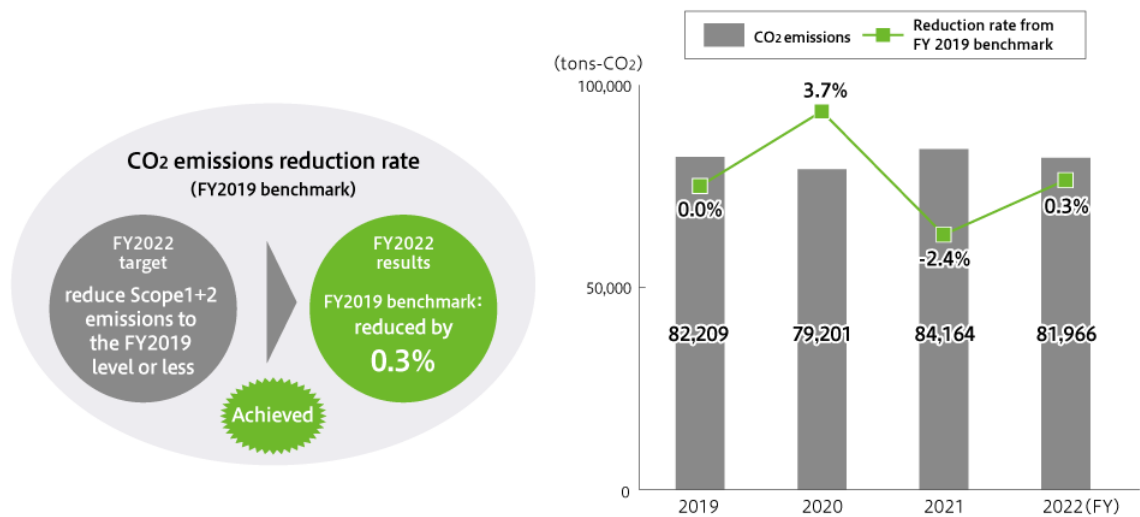
Plan for introducing electricity derived from renewable energy

Switching fiscal year	2021	2022	2023	2024	2025
Site	Head Office	Aburahi	CRIC SPRC	Settsu	-

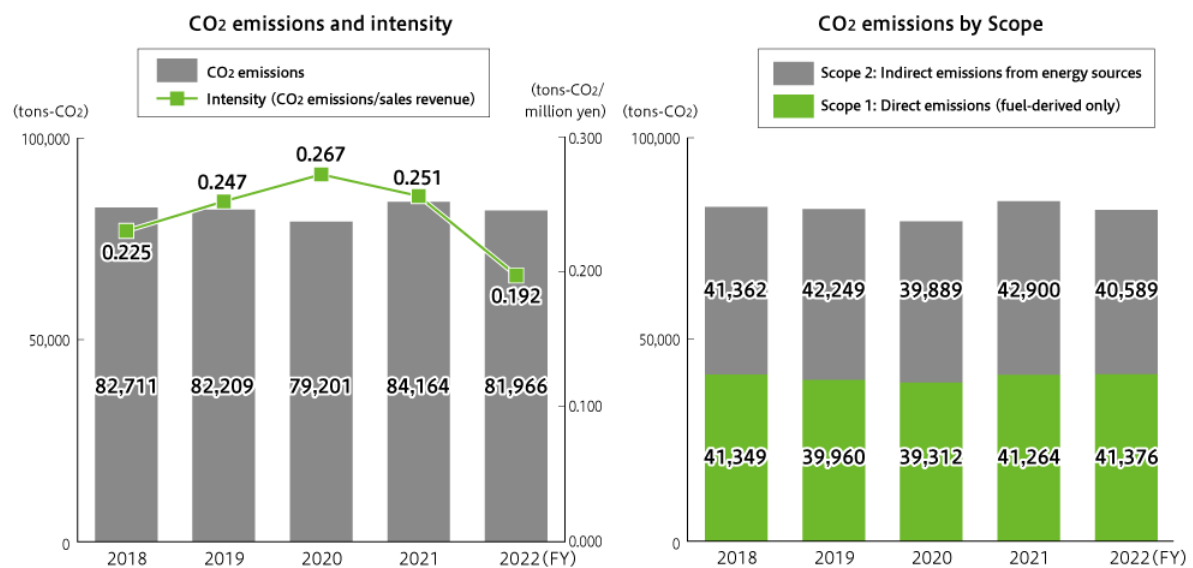
Switching fiscal year	2026	2027	2028	2029	2030
Site	Tokushima	Kanegasaki	UMN Pharma	Itami	Nanjing

Moreover, to improve energy efficiency, we have set targets for improving energy intensity by 1% per year and introducing equipment with high energy consumption efficiency. In addition to promoting the introduction of high energy-efficient equipment, we promote initiatives, such as continuously reviewing equipment operation modes, to reduce energy consumption. However, in FY2022, we were unable to achieve our FY2022 targets due to an increase in energy consumption, because continuing from FY2021, we not only actively worked on COVID-19-related research and development, but also implemented the manufacture of COVID-19 therapeutic drugs with the aim of promptly supplying them after approval.

FY2022 target and result

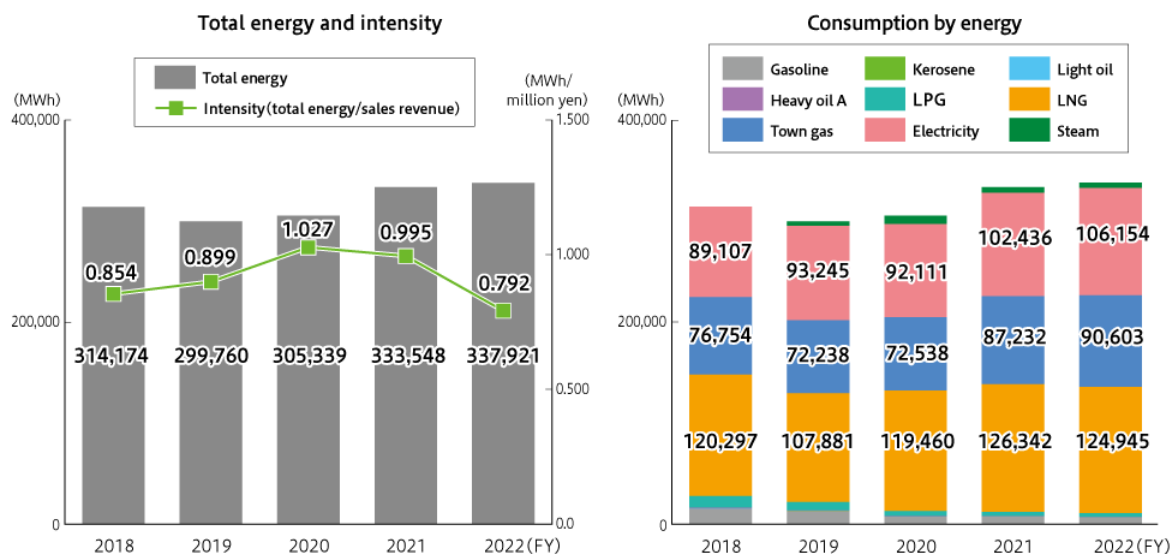


Emissions from UMN Pharma, Inc. and Nagase Medicals Co., Ltd. (currently Shionogi Pharma Co., Ltd., Itami Plant), which constitute the boundary for SBT targets, included as of FY2019



Calculated based on the International Financial Reporting Standards (IFRS) from FY2018

Emissions from UMN Pharma, Inc. and Nagase Medicals Co., Ltd. (currently Shionogi Pharma Co., Ltd., Itami Plant), which constitute the boundary for SBT targets, included as of FY2019



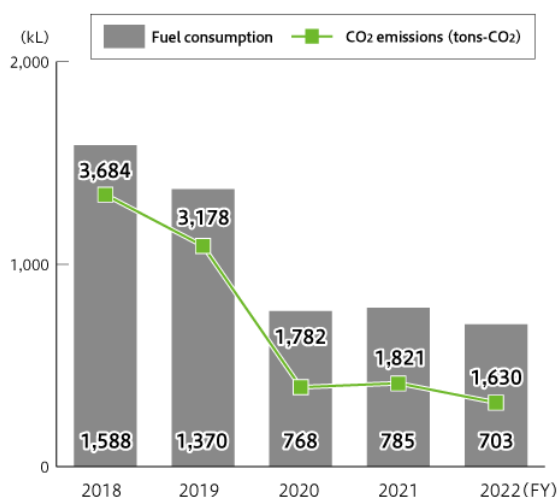
Calculated based on the International Financial Reporting Standards (IFRS) from FY2018

Vehicles for sales activities

To reduce CO₂ and exhaust gas emissions by improving fuel efficiency, Shionogi has promoted the introduction of hybrid vehicles (HVs) to be rented for our medical representatives (MRs), and has completed their introduction in areas other than snowy cold regions. As a result of progressively introducing HVs in snowy cold regions, we have completed their introduction in all regions of Japan during FY2022.

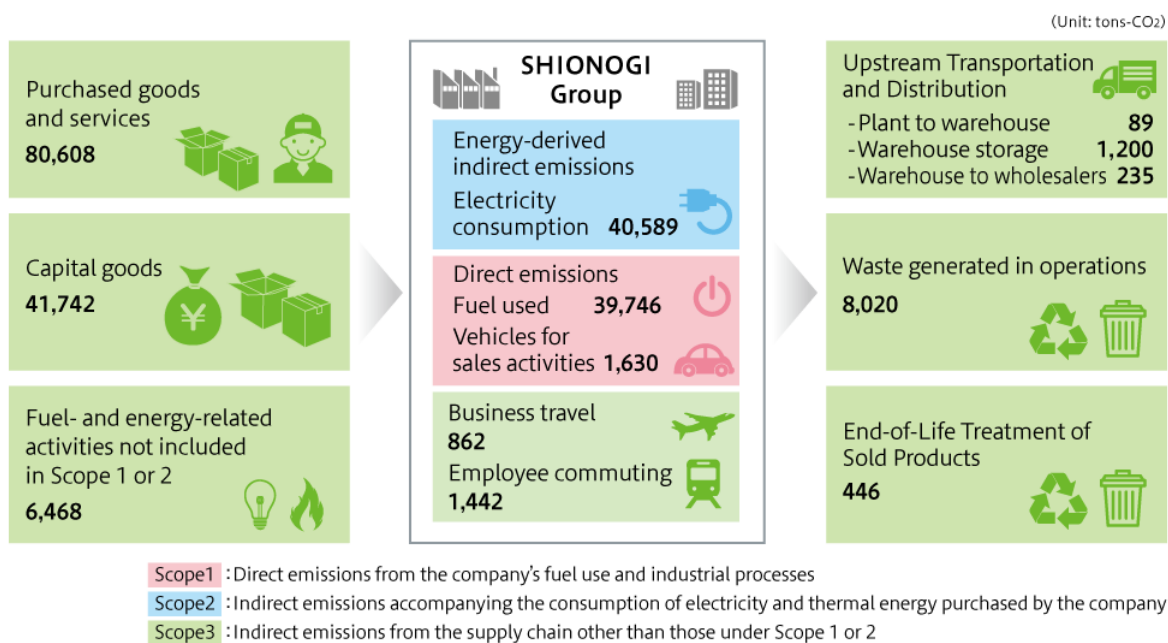
Moreover, due to the spread of the COVID-19 pandemic and the promotion of DX in medical information provision activities, we have shifted from face-to-face to online approaches. Consequently, fuel consumption remained lower in FY2022 than in FY2019, before the spread of COVID-19.

Fuel consumption by and CO₂ emissions from vehicles for sales activities



Reducing our Scope 3 emissions

Scope 3 emissions of the SHIONOGI Group account for about 60% of total emissions. It is essential to work with suppliers to reduce CO₂ emissions throughout the supply chain in order to achieve its SBTs. Among our Scope 3 emissions, Category 1 (purchased goods and services) emissions account for more than 50%. To reduce CO₂ emissions in this category, we have set a medium-term target on a priority basis to consider and implement countermeasures.



(Unit: tons-CO₂)

	Category	Emissions subject to accounting	FY2020 results	FY2021 results	FY2022 results	Calculation methods (based on the Guidelines)
Scope1	Fuel used	Direct emissions from the use of fuel and industrial processes by the reporting company	35,755	39,443	39,746	Amount of fuel used as defined under the Energy Conservation Act
	Direct emissions		1,782	1,821	1,630	Amount of fuel used for vehicles for sales activities
Scope2	Energy-derived indirect emissions	Indirect emissions from the use of electricity and heat purchased by the reporting company	37,802	42,900	40,598	Amount of electricity purchased as defined under the Energy Conservation Act
Scope3	Purchased goods and services	Emissions from activities up to manufacturing of raw materials, parts, purchased goods, sales-related materials, etc.	90,753	71,462	80,608	Purchase price of raw materials and merchandise purchased
	Capital goods	Emissions from construction and manufacturing of the reporting company's capital goods	22,047	53,847	41,742	Acquisition price of fixed assets newly acquired in the year
	Fuel- and energy-related activities not included in Scope 1 or 2	Emissions from procurement of fuel used in power generation, etc., for electricity and heat procured from other entities	5,710	6,424	6,468	Amount of electricity purchased
	Upstream Transportation and Distribution	Emissions from distribution services (transport, cargo handling, and storage) purchased by the reporting company	96	81	89	<ul style="list-style-type: none"> Upstream Transportation and Distribution of raw materials not included Downstream transportation and delivery of products (weight and distance) Plant to warehouse
	- Plant to warehouse		512	545	1,200	- Warehouse storage
	- Warehouse storage		348	322	235	- Warehouse to wholesalers
	- Warehouse to wholesalers					
	Waste generated in operations	Emissions from transportation and processing of waste generated by the reporting company	5,468	6,962	8,020	Weight of waste materials classified by type
	Business travel	Emissions from business travel by employees	820	823	862	Number of employees
	Employee commuting	Emissions from transportation of employees when commuting to and from the place of business	1,449	1,177	1,442	Travel expenses calculated for each means of transportation
	End-of-Life Treatment of Sold Products	Emissions from transportation and processing of products upon disposal by users (consumers and companies)	507	556	446	Amount used by type as classified under the Containers and Packaging Recycling Act

The calculation methods are as indicated in the “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver. 2.5)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan.

*Since FY2022, CO₂ emissions in Categories 1 and 2 of Scope 3 have been calculated using the emission intensity based on prices including consumption tax. In line with this, GHG emissions in or before FY2021 have been recalculated using the emission intensity based on prices including consumption tax.

The SHIONOGI Group has participated in the Fiscal Year 2021 Model Project for Supporting Achievement of the Decarbonization Targets of the Entire Supply Chain, which is a project of the Ministry of the Environment aimed at helping companies achieve their GHG emissions reduction targets for the entire supply chain, and has formulated measures to reduce CO₂ emissions throughout the supply chain. We have built a collaborative system, including Group companies, to promote supplier engagement, and have implemented the supply chain engagement process^{*6} formulated in this project in order to achieve our SBTs.

In FY2022, we conducted supplier engagement activities for our top 21 suppliers by purchase amount, including checking the status of their efforts to reduce CO₂ emissions and holding briefing sessions to promote their understanding of the SHIONOGI Group's policy on climate change. In the future, we will select important suppliers for CO₂ emissions reduction to ask them to reduce their CO₂ emissions, and support their efforts on a priority basis.

Supplier engagement implementation process

STEP1


Understand suppliers' CO₂ emissions and the current status of their reduction efforts (the setting of reduction targets, implementation of reduction activities, etc.) through interviews, etc.

STEP2

Hold briefing sessions to share the SHIONOGI Group's policies and useful information for CO₂ reduction.

STEP3

Conduct individual negotiations with important suppliers (CO₂ emissions reduction request, individual support).

*6 See the [Guidebook for Formulating a GHG Emissions Reduction Plan to Achieve the SBTs](#)  for more information on the supplier engagement process created under this project. (Japanese version only) (External website)

External Activities for Addressing Climate Change

Selected as an A List Company in CDP Climate Change 2022

In the Climate Change Report 2022 published by CDP, an international non-profit organization that works on environmental information disclosure, we received the highest rating of A. Representative Director, President and CEO Isao Teshirogi delivered a speech on the SHIONOGI Group's initiatives for environmental protection as a representative of the company that had achieved a double A rating in "Water Security 2022" and "Climate Change 2022."

In the speech, he expressed the SHIONOGI Group's intention to promote business transformation to create new healthcare solutions and deliver them globally, and at the same time to grow as a company needed by society while realizing a sustainable society through efforts to preserve the global environment.

[Speech video](#)  (Message from the manager of an A List Company) (External website)

Support for the messages from the Japan Climate Initiative (JCI)

The Japan Climate Initiative (JCI) is a network aimed at realizing a decarbonized society by enhancing information dissemination from and exchange of views between companies, local governments, and NGOs that are actively involved in climate change initiatives in Japan. The SHIONOGI Group participated in the JCI in April 2021. As a member company, SHIONOGI expressed its support for the messages published by the JCI to the Japanese government in April 2021, June 2022 and April 2023.


["JCI's Message : Overcoming Two Crises with Renewable Energy and Carbon Pricing"](#)  (External website)

The SHIONOGI Group has set its SBTs as medium- and long-term targets and is working daily to reduce its CO₂ emissions. Believing that expanding access to renewable energy will be an effective means of achieving the targets, we strongly support the JCI messages.

Our efforts to combat AMR, which could spread further due to climate change

The SHIONOGI Group's efforts against AMR (antimicrobial resistance) are presented on the website "Climate Change Adaptation Information Platform (A-PLAT)" operated by the National Institute for Environmental Studies, Japan.

See the section "[AMR](#)" for more information on the SHIONOGI Group's AMR initiatives.

[Shionogi & Co., Ltd. | Examples of adaptation business | Adaptation for Private Sector | Climate Change Adaptation Information Platform \(A-PLAT\) \(nies.go.jp\)](#)  (External website)

Water

Approach to Water

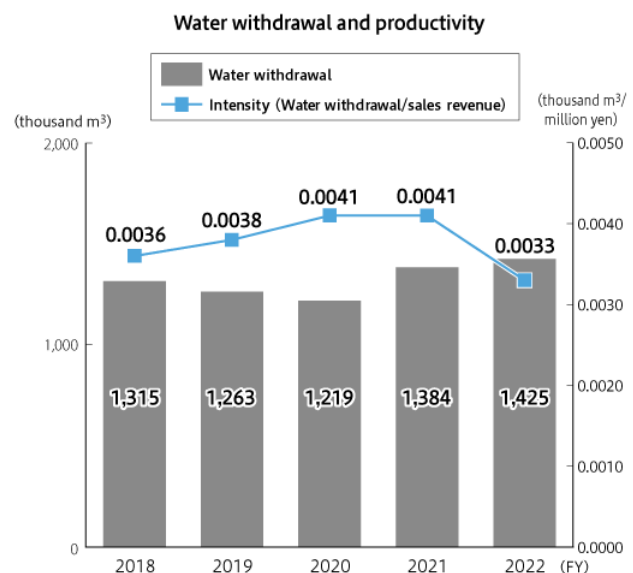
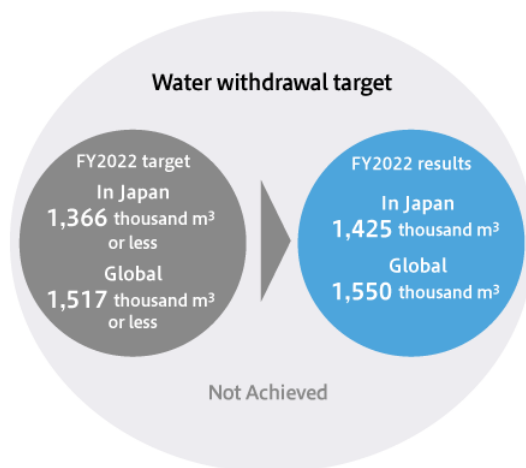
Water is the source of life, which nurtures diverse ecosystems while circulating and interacting with the atmosphere, soil, oceans, and rivers on the earth, and is also an important resource indispensable for people's lives and economic activities. Water shortages, water pollution, and the rising risk of flooding, which are caused by global population growth, economic development, and climate change, have become social issues, raising concerns about their serious impact on ecosystems and people's lives.

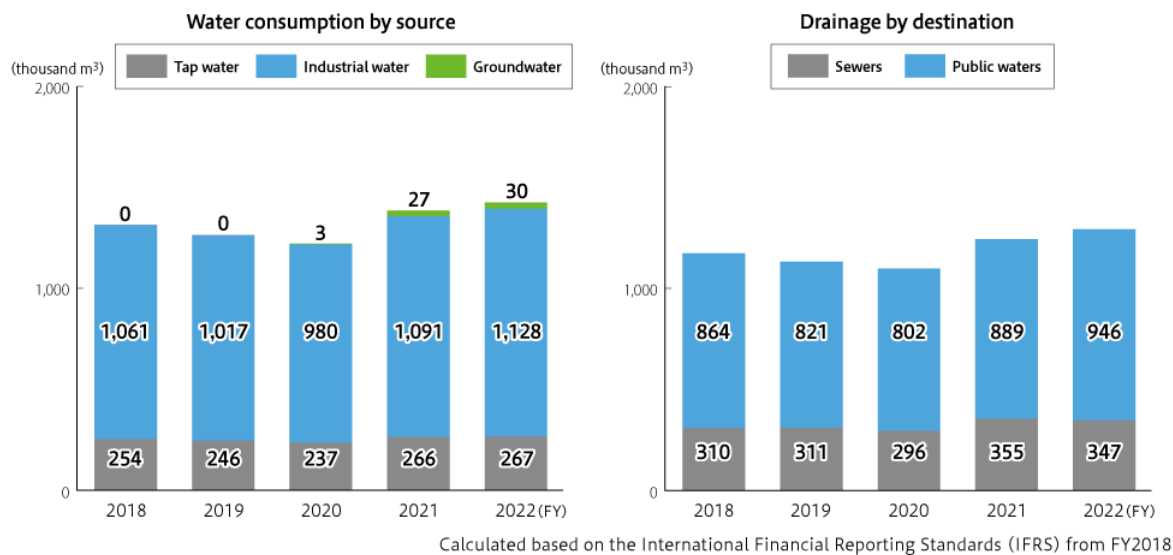
For the SHIONOGI Group, water is an essential resource for business continuity, and we have identified water risks, such as water stress^{*1} and flooding, as one of the environmental material issues. We not only assess the impact of water risks on our business and work to reduce them, but also promote appropriate management of the impact of our business activities on the environment.

^{*1} Condition of strained water supply and demand

Targets and results

FY2022 target and result





Water Withdrawal

To protect water resources, the SHIONOGI Group strives to control water withdrawal at each operating site by working to raise employee awareness of water conservation, thoroughly managing the withdrawal of tap water, industrial water, and groundwater, and reviewing manufacturing equipment operation and cleaning plans. Most of our water resources are obtained through government water supply facilities, and we do not take water directly from rivers or the sea. We also do not obtain water from areas where the level of water stress is found to be high in risk assessments.

We release most of our wastewater into sewers or rivers, not into the sea. Regarding the quality of wastewater at each operating site engaged in manufacturing and research, we thoroughly manage chemical substances in wastewater and constantly monitor wastewater for any abnormalities at in-house treatment facilities in line with our voluntary criteria, which are stricter than those imposed by related laws and regulations.

The quantity of actual water consumption at the operating sites corresponds to about 10% of the quantity of water taken in, with a large part of the water used for our activities eventually returned to the aquatic environment. We will continue to strive to reduce water withdrawal at each operating site, with our medium-term target aiming to keep water consumption at or less than 1,340 thousand m³ (the FY2018 consumption level) in FY2024.

Pharmaceuticals in the Environment

Pharmaceuticals released into the environment are drawing an increasing amount of attention worldwide, as attested to by the report^{*2} published by the Organization for Economic Cooperation and Development (OECD) regarding pharmaceuticals in the environment (PiE). To responsibly handle pharmaceuticals during release from its plants as well as during manufacturing processes, when starting new product manufacturing processes, the SHIONOGI Group confirms that drug concentration in wastewater is designed to be at a level that does not have any impact on the natural environment. Moreover, as the responsibility of a company that handles antimicrobials, we inactivate antimicrobials in wastewater at each manufacturing building and confirm that their content is at a level that does not affect the natural environment before discharging the wastewater outside via in-house treatment facilities. Thus, we are striving to control the emergence of new antimicrobial resistance (AMR).

See the section “AMR” for more information on the environmental release management of antimicrobials.

^{*2} [OECD Pharmaceutical Residues in Freshwater](#) (External website)

Water Risk Assessment

Quality water is essential for the manufacturing of pharmaceutical products. Water depletion or flooding in the catchment areas where we operate can seriously impact our business continuity. Therefore, to understand water risks, such as water stress and increased probability of flooding, and formulate preventive measures, we have assessed water risks facing each operating site involved in manufacturing and research in the SHIONOGI Group, using the internationally recognized WRI Aqueduct^{*3} and WWF Water Risk Filter.^{*4}

In-house deliberations based on the risk assessment results and past experience and knowledge have led us to conclude that the SHIONOGI Group is exposed to relatively low water risks for the moment compared to other environmental risks. Meanwhile, since the risk level of future floods has been on the rise, we are considering consulting with experts in the future to prepare for future flood risks by understanding the flood risks specific to the catchment area of each operating site and identifying water issues.

We have also incorporated risk assessment based on the WRI Aqueduct into the selection of our suppliers to clarify and minimize their latent risks.

^{*3} Water risk assessment tool developed and published by the World Resources Institute (WRI)

[Aqueduct | World Resources Institute \(wri.org\)](https://www.wri.org/aqueduct)  (External website)

^{*4} Water risk assessment tool developed and published by the World Wide Fund for Nature (WWF)

[WWF Water Risk Filter](https://www.wwf.org/ja/water-risk-filter)  (External website)

WRI Aqueduct assessment results (water stress)

Country (operating site location)	No. of operating sites	Risk level/No. of operating sites					Future water stress change
		High	High to medium	Medium	Medium to low	Low	
Japan (Iwate, Shiga, Osaka, Hyogo, Tokushima, Akita, and Kanagawa)	9	—	1	—	7	1	Change to medium to very high levels by 2040
China (Jiangsu)	1	—	—	—	—	1	No major change until 2040

WRI Aqueduct assessment results (water depletion)

Country (operating site location)	No. of operating sites	Risk level/No. of operating sites				
		High	High to medium	Medium	Medium to low	Low
Japan (Iwate, Shiga, Osaka, Hyogo, Tokushima, Akita, and Kanagawa)	9	—	—	—	6	3
China (Jiangsu)	1	—	—	—	—	1

WWF Water Risk Filter assessment (baseline water scarcity)

Country (operating site location)	No. of operating sites	Risk level/No. of operating sites				
		High	High to medium	Medium	Low	Extremely low
Japan (Iwate, Shiga, Osaka, Hyogo, Tokushima, Akita, and Kanagawa)	9	—	—	—	1	8
China (Jiangsu)	1	—	—	—	—	1

Selected as an A List Company in CDP Water Security 2022

In the Water Security Report 2022 published by CDP, an international non-profit organization that works on environmental information disclosure, we received the highest rating of A. Representative Director, President and CEO Isao Teshirogi delivered a speech on the SHIONOGI Group's initiatives for environmental protection as a representative of the company that achieved a double A rating in "Water Security 2022" and "Climate Change 2022."

In the speech, he expressed the SHIONOGI Group's intention to promote business transformation to create new healthcare solutions and deliver them globally, and at the same time to grow as a company needed by society while realizing a sustainable society through efforts to preserve the global environment.

[Speech Video](#)  (Message from the executives of A List Companies) (External website)

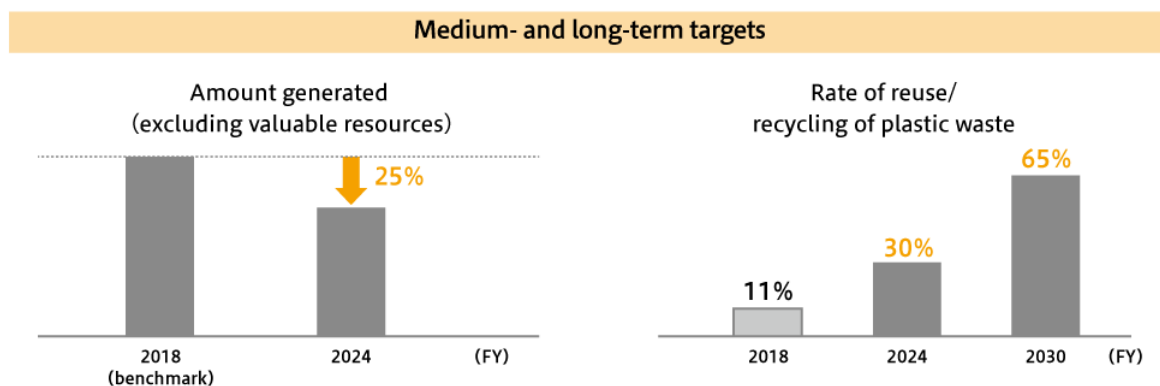
Resource Conservation and Circulation

Approach to Resource Conservation and Circulation

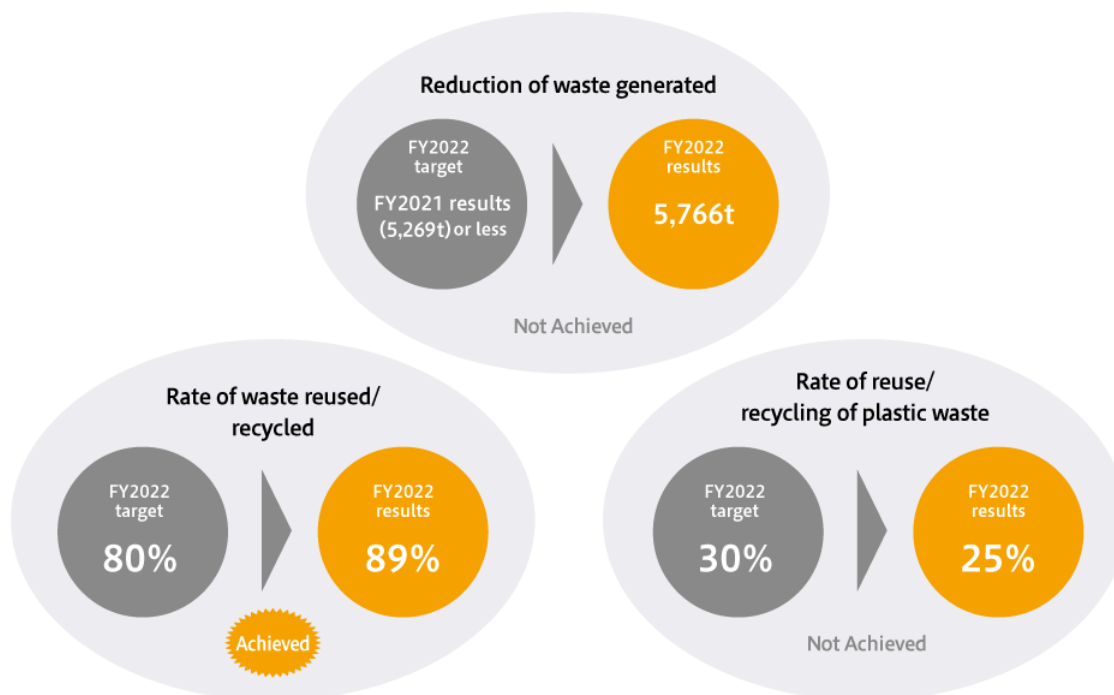
The problem of environmental pollution has been growing on a global scale. A report by the World Economic Forum stated that by 2050 there could be more plastic in the ocean than fish by weight. Under these circumstances, companies are strongly required to address the issue of plastic waste. The SHIONOGI Group promotes the reduction, reuse, and recycling of waste in corporate activities.

We also work to ensure the responsible disposal of plastics and implement measures to reduce the amount of plastics used in product manufacturing processes and packaging. In addition to modifying container and packaging materials and reducing the volume of containers and packaging (“reduce”), we promote a switch to biomass plastics with less environmental impact and the adoption of high-quality recycled plastics (“reuse/recycling”) while considering product quality and stable supply.

Targets and Results



FY2022 target and result

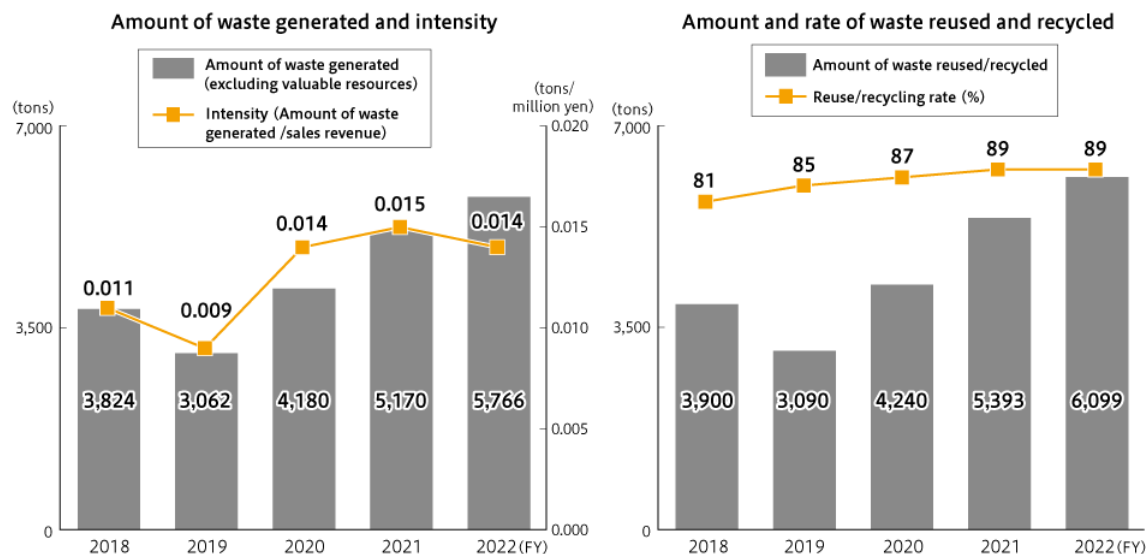


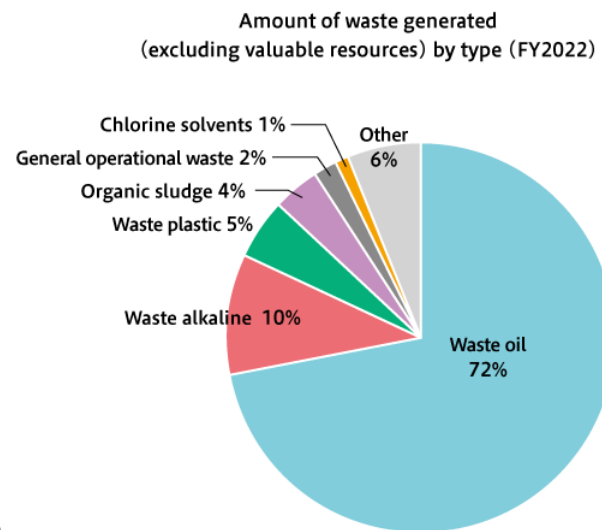
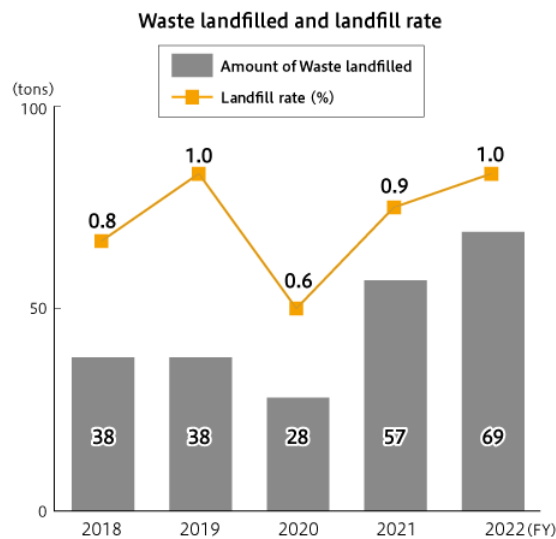
Waste Generation, Reuse and Recycling, and Disposal by Landfill

As part of its voluntary action plan to realize a reuse- and recycling-oriented society, the Federation of Pharmaceutical Manufacturers Associations of Japan (FPMJA) has adopted the goals of reducing the amount of industrial waste disposed of as landfill by about 75% from the FY2000 level by FY2025, of reusing or recycling at least 60% of waste by FY2025, and of reusing or recycling at least 65% of plastic waste by FY2030. As an FPMJA member, the SHIONOGI Group has also set the same or higher level targets for waste reduction, reuse, and recycling. The SHIONOGI Group obtains its rate of reuse and recycling by taking the amount of waste sold plus the amount reused/recycled and dividing it by the amount of waste generated. The landfill rate is defined as the amount disposed of as landfill divided by the amount of waste generated.

In FY2022, we were unable to achieve the fiscal year target for the amount of waste generated due to an increase in production activities, such as the manufacture of COVID-19 therapeutic drugs with the aim of promptly supplying them.

Waste materials generated within the SHIONOGI Group mainly include waste oils resulting from the various manufacturing processes, sludge from wastewater treatment, and plastics used in product containers. We will work to achieve our medium- and long-term targets by continuing to promote various measures, such as improving the manufacturing processes, selling waste liquids, plastics, and metals, and reducing the amount of waste liquids generated.





Reuse and Recycling of Product Containers and Packaging Materials

In compliance with the Containers and Packaging Recycling Act, a certain portion of the containers and packaging materials used for the products we sell are reused and recycled. We are also striving to reduce our environmental impact by modifying container materials and packaging forms while making sure to maintain and improve product quality.

Containers and packaging materials used and amount consigned for reuse/recycling (FY2022 results) (tons)

	Containers and packaging materials used	Amount consigned for reuse/recycling
Plastic	503	173
Paper	449	9
Glass (transparent)	36	12
Glass (brown)	19	8

Reuse/recycling consignment fee: 10,370 thousand yen

Strategies for Controlling Plastic Waste

■ 3R (Reduce, Reuse, and Recycle) + Renewable initiative concerning containers and packaging materials

As a result of the following efforts in FY2022, we reduced the amount of plastic used by 2.1 tons compared to the conventional methods.

Measures	Item	Products concerned
Reduce	Change of packaging materials used for the delivery of products by mail order (from plastic to paper)	All healthcare goods through Shionogi Healthcare mail order service
	Change of material for trays (from plastic to paper)	All drugs provided in ampoules, vials, and tubes
	Change of thickness of eye drop containers (made thinner)	All eye drops
	Change of thickness of PTP packaging materials (made thinner)	<i>Flomox</i> , etc.
	Discontinuation of use of plastic cushioning materials for bottles	<i>Irbetan</i> , etc.
Reuse Recycle	Inscription of plastic container/packaging material identification marks	All products
	Adoption of mechanically recycled PET film	<i>Symproic</i> , etc.
Renewable	Adoption of biomass bottles (plant-derived polyethylene bottles)	<i>Cymbalta</i> , <i>Irbetan</i> , <i>Pirespa</i> , <i>Cinal EX Pro</i> chewable tablets, etc.

■ Initiatives by Shionogi Healthcare Co., Ltd.

For its mail order service “Shionogi Healthcare ONLINE,” Shionogi Healthcare Co., Ltd. has changed all of the plastic materials used for product delivery to paper-based packaging since FY2019. Through this initiative, we have realized packaging that is not only environmentally friendly but also helps eliminate the need for customers to separate waste.



■ Mechanically recycled PET film

The SHIONOGI Group uses mechanically recycled PET (polyethylene terephthalate) film in the packaging (aluminum bags) of *Symproic*.


Mechanically recycled PET film derives from used PET bottles that undergo several steps: selection, crushing, cleansing, and high-temperature decompression.

The replacement of virgin PET film in the outermost layer of the aluminum bags with mechanically recycled PET film results in reduced CO₂ emissions and fossil fuel conservation while maintaining the quality of the packaged products. This contributed to reducing CO₂ emissions by 0.36 tons compared to conventional film in FY2022. We are currently conducting a technical study to gradually expand the use of mechanically recycled PET film to other product packaging materials.



“FUROSHIKI” garbage bag made from 99% recycled materials

The SHIONOGI Group uses “FUROSHIKI,” a garbage bag made from used stretch film as a raw material. Since FUROSHIKI is made using plastic used and discarded in Japan as a raw material, the use of FUROSHIKI contributes to the control of domestic waste generation.

See the [website of K.K. Satisfactory](#)  for details. (Japanese version only)(External website)



■ Biomass bottles

The SHIONOGI Group uses biomass bottles for *Cinal EX Pro* chewable tablets, *Cymbalta*, *Irbetan*, *Pirespa*, *Baktar Mini*, and *Almeta*. Biomass bottles (plant-derived polyethylene bottles) are packaging containers made of polyethylene derived from materials left over from sugarcane processing. Renewable polyethylene derived from sugarcane accounts for more than 90% of the raw material of our biomass bottles, which conform to the standards established by the Japan BioPlastics Association for biomass plastic identification labeling. (The biomass plastic symbol mark is displayed on the product containers.)*¹ By switching from conventional petroleum-derived polyethylene bottles to biomass bottles, we can reduce CO₂ emissions and conserve fossil fuel resources. This contributed to reducing CO₂ emissions by 1.7 tons compared to conventional bottles in FY2022. We are currently conducting a technical study to gradually expand the use of biomass polyethylene to other product packaging.



*1 Biomass plastic identification labeling: Biomass plastic products (biomass plastics) are those that contain organic (such as plant-derived) materials in excess of a specified percentage as their plastic component. The Japan BioPlastics Association certifies products that meet its criteria and permits the use of its symbol mark on them so that consumers can easily identify biomass plastics.

In-house Reuse/Recycling of Resources

■ Reuse of organic solvents

We collect organic solvents used during the manufacturing process of active pharmaceutical ingredients (APIs) at the Kanegasaki Plant, such as dichloromethane, ethyl acetate, and methanol, in-house for reuse, thereby effectively using resources and controlling waste generation.

■ Horizontal recycling of label mounts

In March 2023, Shionogi Pharma Co., Ltd. applied the horizontal recycling*² scheme for recyclable label mounts*³ to labels for ampoule injections for the first time in commercial production, and began collecting used label mounts.

See the section “Topics” for details.

*2 Recycling where used products are processed into raw materials to recreate the same type of products

*3 Label mounts (release paper, separator) to protect the adhesive side of the label.

Reduction of Paper Resources

The SHIONOGI Group's administrative offices, Shionogi Business Partner Co., Ltd., and the labor union of Shionogi & Co., Ltd. are working to conserve paper resources.

For products, in line with the revision of the Pharmaceuticals and Medical Devices Act^{*4} (for digitization of package inserts), we have abolished paper package inserts enclosed with products (the response has been completed for 164 out of 170 products). Furthermore, for *Linderon* (three types of products), by changing from individual packaging boxes to shrink packaging,^{*5} we contributed to a reduction of 0.47 tons of CO₂ emissions compared to conventional products in FY2022.

^{*4} Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices

^{*5} Packaging that uses the property of film that shrinks when heated to conform to the shape of the container



Individual packaging boxes abolished and changed to shrink packaging

Prevention of Illegal Dumping

To prevent illegal dumping of industrial waste, the SHIONOGI Group takes great care in selecting business operators to whom we consign waste transportation and treatment/disposal, giving priority to those who are certified by the Ministry of the Environment's Excellent Industrial Waste Disposal Operator Certification System for their quality services. For other business operators, we verify the quality of their operation by checking their business licenses, treatment/disposal facilities, operational status, document management status, and implementation of emergency drills, using our contractor evaluation sheet. After selecting business operators, we ensure the appropriate management of contractual documents, licenses, and manifests (waste management sheets) and conduct at least one on-site inspection per year for each operator.

Clean-up Activities

Environmental pollution caused by marine plastic waste has become a major global issue. Marine plastic waste can partly be traced back to plastic waste generated overland and carried into the sea by rain and wind via rivers. Employees at the SHIONOGI Group's respective operating sites participate in clean-ups along the surrounding roads and other such initiatives organized in the local communities. Thus, we are working to contribute to the beautification of local areas and raise employee awareness of the environment and resource circulation.



Cleanup activities around the plant

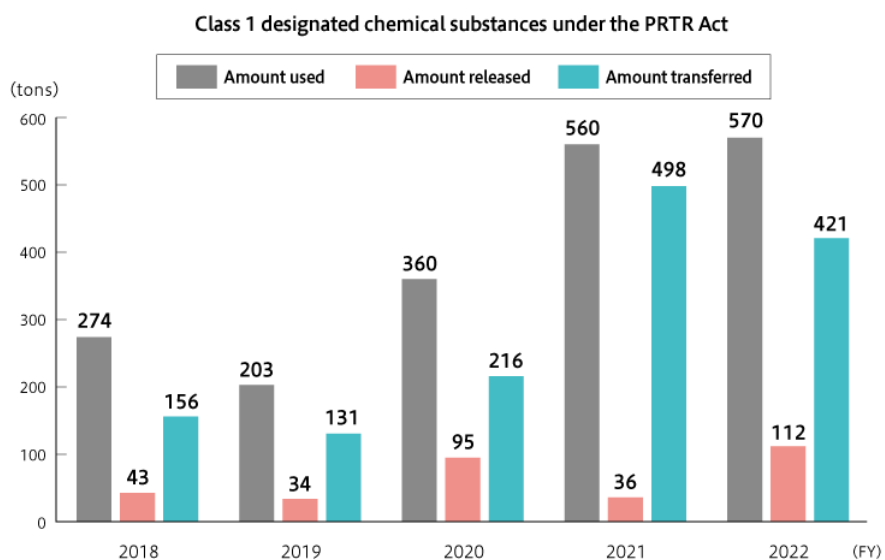
Chemical Substances

Approach to Chemical Substances

The research, development, and manufacturing of pharmaceutical products involve the use of numerous types of chemical substances. Some of them can adversely impact human health, ecosystems, and the global environment. There are various laws and regulations related to chemical substances, including the Pollutant Release and Transfer Register (PRTR) Act, which require strict management. We recognize that it is a very important responsibility of a company that handles chemical substances to properly manage chemical substances and control their release into the atmosphere, sewers, and public waters. In addition to complying with the relevant laws and regulations, the SHIONOGI Group strives to control the release of chemical substances into the environment by setting its voluntary control criteria, which are stricter than those imposed by these laws and regulations.

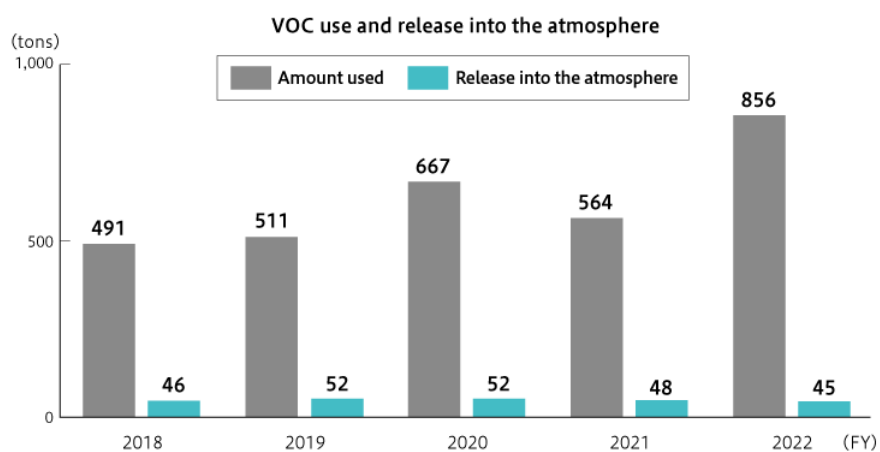
PRTR

In compliance with the PRTR Act, under which it is mandatory to record, calculate, and publish the status of release of chemical substances into the environment, the SHIONOGI Group submits relevant data to the authorities regarding the designated chemical substances it handles, and also manages the amounts of volatile organic compounds (VOCs) it uses, releases, and transfers. Under the PRTR Act, business operators are required to record and report to the authorities the amounts of designated chemical substances that are released into the atmosphere and rivers, disposed of, and recycled in their operations. The table below lists the headings under which this reporting is made. The *amount transferred to outside operating sites* refers to the amount handled as waste.



Substances to be registered under the PRTR Act (Unit: kg)

Substance name	Amount used	Amount released			Amount transferred	
		Atmosphere	Drainage (public waters)	Soil	Outside operating sites	Sewers
N,N-Dimethylacetamide	5,646	0	0	0	5,646	0
N,N-Dimethylformamide	8,673	46	0	0	3,586	0
Acetonitrile	336,795	722	0	0	335,255	0
Chloroform	6,687	134	0	0	6,552	0
Dichloromethane (methylene chloride)	181,430	110,551	2	0	52,889	0
Tributylamine	4,640	0	0	0	0	0
n-Hexane	6,122	0	0	0	5,798	0
Pyridine	19,570	0	0	0	11,362	0



Although the amount of VOCs handled by us increased due to an increase in plant production, the amount released into the atmosphere was below the FY2021 level due to appropriate management. We will continue our responsible management of the use, release, and transfer of chemical substances, controlling their release into the atmosphere, sewers, and public waters, to reduce the impact that our operations may have on the environment.

PCB

Polychlorinated biphenyls (PCBs) are mainly oily chemical substances made artificially. It has been reported that when they accumulate in the bodies of living organisms, they cause various symptoms. PCBs released into the environment are a cause of great concern in terms of global-scale contamination because they are resistant to decomposition in the environment but soluble in fat, resulting in their tendency to accumulate in the bodies of living organisms through the food chain. In the past, PCBs were used in numerous items, such as condensers, transformers, and fluorescent light ballasts. It is therefore imperative that all equipment containing PCBs, whether being replaced or still in use, be appropriately managed to contain the impact of these substances.

In the SHIONOGI Group, appropriate management of PCB-containing equipment is assured by personnel specifically appointed for this task. At the same time, the treatment and disposal of PCB-containing equipment are proceeding. As of FY2022, we have completed the disposal of all equipment containing high concentrations of PCBs installed in the buildings and premises we own.

Fluorocarbons

In compliance with the Act on Rational Use and Proper Management of Fluorocarbons, the SHIONOGI Group identifies the relevant refrigeration, air-conditioning, and other types of applicable equipment that it possesses and operates, carries out simplified and periodic inspections, keeps related records, and calculates the amount of leakage. In FY2022, the SHIONOGI Group's calculated fluorocarbons leakage was 630 tons-CO₂. In compliance with the Kigali Amendment to the Montreal Protocol,^{*1} we are promoting a switch to fluorocarbon-free or low-GWP^{*2} equipment at the time of renewal.

^{*1} The Montreal Protocol on Substances that Deplete the Ozone Layer, based on the Vienna Convention for the Protection of the Ozone Layer, restricts substances likely to destroy the ozone layer, namely chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). The Kigali Amendment to the Montreal Protocol includes the restriction of production and consumption of hydrofluorocarbons (HFCs), a non-ozone-depleting fluorocarbon alternative with a high greenhouse effect.

^{*2} GWP: Global Warming Potential

Environmental and Safety Consideration of Chemical Processes

The SHIONOGI Group performs preliminary assessments of the safety of chemical substances and the danger of reactions and incompatibilities in the development stage of manufacturing and testing methods for pharmaceutical compounds and candidate compounds, and in the design stage of related equipment. We also examine production processes so as to enhance efficiency in terms of waste reduction, energy conservation, and the like in the manufacturing stage.

See the section "[AMR](#)" for more information on environmental release management of antimicrobials.

Pollution Prevention

Approach to Pollution Prevention

Waste, exhaust gas, and wastewater containing toxic substances resulting from business activities pollute the environment and have a major impact on the human body and ecosystems. Pollution can also be caused by the use of products and by the disposal of products that are no longer needed. In Japan, the discharge of waste and toxic substances increased during its high economic growth period due to the country's industrialization and economic development, which led to the contamination of the atmosphere, aquatic areas, soil, and underground water, resulting in various problems that impaired the health of the people. Environmental pollution, once it occurs, has a serious impact on local communities and biodiversity, which can only be restored to their original state—if at all—by spending a great deal of time and money. We recognize that preventing pollution is an important issue for a company to protect the health and living environment of people.

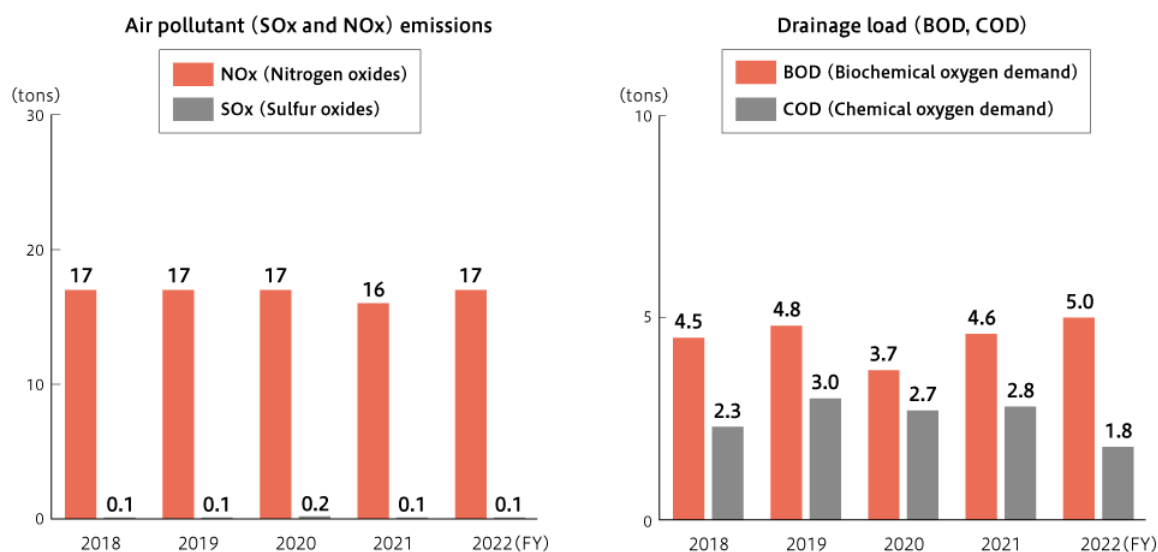
The SHIONOGI Group stipulates in the SHIONOGI Group EHS Policy and the SHIONOGI Group EHS Code of Conduct that we will comply with laws and regulations related to the environment and occupational health and safety, and strive to maintain and improve EHS standards. We have established an EHS management system, in which we thoroughly comply with laws and regulations related to air, water, and soil pollution and assess the status of compliance, thereby working to prevent pollution throughout the group.

Prevention of Air, Water, and Soil Pollution

To prevent air pollution, the SHIONOGI Group strictly observes the regulatory values for NO_x, SO_x, and particulate matter while reducing SO_x generation through fuel conversion from heavy oil, which contains many impurities, to liquefied natural gas. To prevent contamination in sewers and public waters by wastewater, we set voluntary criteria for pollutants, which are stricter than those imposed by related laws and regulations, and carry out round-the-clock monitoring with the use of TOC^{*1} meters and oil content monitoring devices. In particular, at the Kanegasaki Plant, the Tokushima Plant, and the Aburahi Research Center, where wastewater is released into rivers, which are public waters, from operating sites, wastewater is treated and purified at the facilities on their premises before it is released into nearby rivers.

The Kanegasaki Plant, which handles large quantities of chemical substances, sets voluntary criteria for soil and takes measurements periodically. It is confirmed that the measurements have constantly been below the applicable environmental criteria.

^{*1} TOC: Total Organic Carbon



Compliance with Related Laws and Regulations

Environment-related laws and regulations cover a wide range of issues, including waste and energy management, the prevention of air and water pollution, and the management of chemical substances. To ensure thorough compliance, we share information on legal and regulatory revisions with each operating site, organize educational programs, and compile relevant information and knowledge in manuals. We also conduct a periodic assessment of the status of legal and regulatory compliance. As with environmental matters, we also ensure legal and regulatory compliance and assessment with regard to health and safety affairs.

As a result of promoting these initiatives, the SHIONOGI Group has never been subject to litigation or penalties for EHS-related violations to date.

We received information from residents that radio interference was occurring due to the construction of a new building on the premises of the Shionogi CMC Research Innovation Center. By taking appropriate measures such as conducting radio wave situation surveys and holding information sessions, we gained the understanding of the local residents.

Number of incidents of excess emissions (exceeding legal restrictions) (cases)

FY	2018	2019	2020	2021	2022
Shionogi & Co., Ltd.	0	0	0	0	0
Group companies	0	0	0	0	0

Number of complaints relating to the environment (cases)

FY	2018	2019	2020	2021	2022
Shionogi & Co., Ltd.	1	0	0	2	1
Group companies	0	0	0	1	0

Biodiversity

Approach to Biodiversity

Based on the SHIONOGI Group EHS Policy and the SHIONOGI Group EHS Code of Conduct, the SHIONOGI Group will work together with business partners to promote initiatives aimed at preserving natural capital. We recognize that we benefit from biodiversity in all our value chain activities, including research, development, manufacturing, and marketing to create pharmaceuticals and other healthcare solutions and deliver them to society. Appreciating the benefits from diversity, we work to reduce the negative impacts these activities have on biodiversity. Specifically, we will contribute to the conservation of biodiversity by working with our suppliers to reduce the negative impacts of our business activities over the medium to long term, while taking into account the four material issues of "AMR," "climate change," "resource conservation and circulation," and "water," which have been identified as Environmental Materiality for our business.

Participation in Initiatives

The SHIONOGI Group has endorsed the Declaration of Biodiversity by Keidanren and Action Policy (Revised Edition) and has announced its environmental policy for the future and specific examples of environmental initiatives through the Keidanren Initiative for Biodiversity Conservation.

[Keidanren Initiative for Biodiversity Conservation](#)  (External website)

Furthermore, in September 2023, we joined the 30by30 Alliance for Biodiversity,^{*1} a platform that consists of volunteer companies, local governments, and organizations, supporting its founding purpose of promoting efforts to achieve the 30by30 target. The SHIONOGI Group will continue to strengthen its activities to conserve biodiversity, aiming for the international goal of Nature Positive to halt and reverse biodiversity loss by 2030.

[Ministry of the Environment: 30by30 Alliance for Biodiversity](#)  (External website)

^{*1} 30by30 Alliance for Biodiversity: A coalition of volunteers, including governments, companies, and NPOs, that was established to promote nation-wide efforts to achieve the 30by30 target, an international target of protecting or conserving at least 30% of land and sea areas by 2030



Visualization of Connection with Nature

As a social movement regarding biodiversity, the Kunming-Montreal Global Biodiversity Framework^{*2} was adopted at COP15 in December 2022, and the Task Force on Nature-related Financial Disclosures (TNFD)^{*3} framework was published in September 2023. In both frameworks, companies are required to identify and assess their dependence and impact on biodiversity and biodiversity risks and opportunities in business, and take the necessary measures for sustainable consumption (based on the LEAP approach).

To identify its dependence and impact on biodiversity, the SHIONOGI Group has begun efforts to visualize the connection between its business and nature, with a view to information disclosure based on the TNFD framework. Based on the results of the visualization analysis, we will continue to enhance our activities to conserve biodiversity.

^{*2} Kunming-Montreal Biodiversity Framework: A global goal for biodiversity to be achieved by 2030, following the Aichi Biodiversity Targets, a set of global targets by 2020 adopted at COP 10

^{*3} TNFD (Task Force on Nature-related Financial Disclosures): A framework for companies and financial institutions to assess their dependence on natural capital and impact on ecosystems and provide information to investors and other stakeholders based on their assessment results

Consideration for Ecosystem Diversity

Quality water brought about by the diversity of ecosystems is an important resource that is indispensable for pharmaceutical manufacturing. The SHIONOGI Group works to decrease the impact of soil contamination on the ecosystem by setting criteria for the quality of wastewater, which are stricter than those imposed by related laws and regulations, and to reduce the consumption of limited water resources by recycling most of the water it uses back into the environment.

See the section “[Water](#)” for details.

As a countermeasure against AMR, we inactivate antimicrobials in wastewater discharged from antimicrobial-manufacturing plants and confirm that their content in the wastewater is at a level that does not affect the natural environment. We require our suppliers both in Japan and overseas to thoroughly manage antimicrobials in wastewater to contribute to the resolution of AMR issues and the conservation of the ecosystem.

See the section “[AMR](#)” for details.

Initiatives at the Aburahi Botanical Gardens

There are many pharmaceuticals of plant origin. Even today, plants are important specimens for pharmaceutical research and are used as raw materials for pharmaceuticals. The Aburahi Botanical Gardens was established in 1947 within the Aburahi Research Center located in Koka City, Shiga Prefecture. Initially, plant cultivation was carried out for the purpose of cultivating origin plants for pharmaceuticals and searching drug discovery seeds from natural plants. However, it has now been refurbished as a facility for promoting environmental initiatives and conducting community and social contribution activities. At the Gardens, more than 1,000 species of plants, including threatened and rare species, are managed and maintained.

Contribution to the conservation of threatened species

At the Aburahi Botanical Gardens, we are involved in conserving threatened species and rare plants. We are also conducting ex-situ conservation of plants that are in danger of extinction in the area, breeding them at the Gardens and then returning them to their own habitat.



Dracocephalum argunense (Endangered Class II)

Conservation status of threatened species by category

Categories specified by the Ministry of the Environment (Endangered Class IA, Endangered Class IB, Endangered Class II, Near Threatened Class)	76 species
Categories specified by Shiga Prefecture (Endangered species, vulnerable species, rare species, species requiring attention, important species in terms of distribution, other important species)	70 species
Categories specified by Koka City (Endangered species, vulnerable species, species requiring attention, local species)	43 species

Environmental education for stakeholders

As part of our social contribution activities for the local community through the Aburahi Botanical Gardens, we invite the experts from Kyoto Pharmaceutical University and the former professor at Kobe Pharmaceutical University to provide educational support to local elementary and high school students, who will lead the next generation. We also provide opportunities to learn about the environment by holding garden tours, targeting those enrolled in a university for seniors and new employees of the SHIONOGI Group.

Results

Educational support (total number of participants)	274 people
Education for employees (total number of participants)	94 people
Number of educational support programs for the next generation / botanical garden tours	21 times



Educational support for local school children

– Aburahi Botanical Gardens receives three stars in the Shiga Prefecture Certificate of Biodiversity Initiatives

The Aburahi Botanical Gardens received three stars, the highest rank, in the 2021 Shiga Prefecture Certificate of Biodiversity Initiatives because its community and social contribution activities, stated above, were evaluated as effective initiatives for the conservation of biodiversity and the sustainable use of natural resources.



Reforeesting Kombu Project

Shionogi Healthcare Co., Ltd., our Group company, manufactures and markets health foods that use fucoidan, a component extracted from Gagome kombu (kelp). However, due to a combination of reasons, such as an imbalance of supply and demand in the sea caused by the recent increase in sea urchins and abalones, which feed on seaweed, and overfishing caused by the Gagome kombu boom, natural Gagome kombu, which mainly inhabits the waters near Hakodate, Hokkaido Prefecture, is facing a crisis of possible extinction in the area.

As a company that handles products using Gagome kombu, we have started the Reforesting Kombu Project to restore natural Gagome kombu to its former state in which it grew thickly like a forest. The purpose of the project is to switch its use from natural to farmed. To this end, we are collaborating with Hakodate City and local universities and companies to establish a stable supply system for farmed Gagome kombu, as well as a system to grow farmed Gagome kombu while improving its quality. By expanding our project to other areas, we aim to promote the spread of farmed Gagome kombu, and conserve and restore natural Gagome kombu. To achieve the goal of reducing the use of natural Gagome kombu to zero by 2024, Shionogi Healthcare has begun switching its product raw materials from natural to farmed Gagome kombu since 2019. The rate of switching to farmed Gagome kombu reached 50% in FY2022.

This project is conducted under the “Project for Promoting the Launch of Business Based on Local Community-Company Partnership” subsidized by the Ministry of Economy, Trade and Industry, and we intend not only to create a production system and improve work efficiency for the kombu farming business but also to contribute to the revitalization of the area by encouraging job creation there.

Moreover, as future challenges, we not only expect the biodiversity conservation effect of farmed kelp, but also are considering initiatives aimed at contributing to blue carbon^{*4} through the kelp. By increasing farmed kelp, which serves as a carbon sink, we will contribute to the realization of a carbon-neutral society and advance multifaceted efforts to preserve the global environment.



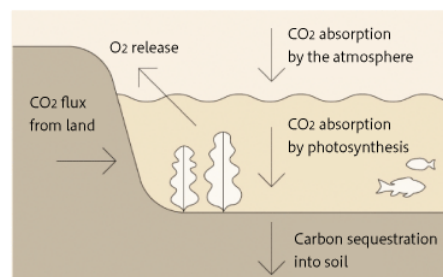
養殖中のガゴメ昆布



[Click the image to view the project website.](#)
(in Japanese) (External website)

*4 Blue carbon

Blue carbon refers to the carbon that is taken from the atmosphere into the ocean by marine ecosystems such as seaweed beds and shallow reefs. Blue carbon sinks include seagrass beds, seaweed beds, tidal flats, and mangrove forests, which are called “blue carbon ecosystems.” Carbon dioxide absorbed through photosynthesis in blue carbon ecosystems passes through the bodies of living organisms as organic carbon and is stored on the ocean floor for a long period of time.



Editorial Policy

Periods

The present Environment Report covers results achieved during the period of the fiscal year 2022 (from April 1, 2022 through March 31, 2023) in Japan and the calendar year 2022 (from January 1 through December 31, 2022) outside Japan. The report also covers our activities conducted immediately before or after these periods.

Organizations Covered

The report covers the environmental activities of Shionogi & Co., Ltd. and the SHIONOGI Group companies in the table below. Sections of the report that concern a different set of organizations are clearly indicated as such in each instance.

Category	Company / Operating site	
Shionogi & Co., Ltd.	Head Office	Shionogi CMC Research Innovation Center (Hyogo Prefecture)
	Tokyo Branch Office (Tokyo)	Shionogi Pharmaceutical Research Center (SPRC)
	Pharmaceutical Commercial Division (including its sales offices across Japan)	Aburahi Research Center (Shiga Prefecture)
Group companies	Shionogi Healthcare Co., Ltd.	
	Shionogi Pharma Co., Ltd. Settsu Plant, Kanegasaki Plant (Iwate Prefecture), Tokushima Plant (Tokushima Prefecture), Itami Plant (Hyogo Prefecture)	
	UMN Pharma Inc. Yokohama Research Center (Kanagawa Prefecture), Akita Plant (Akita Prefecture)	
	Shionogi Techno Advance Research Co., Ltd.* ¹	
	Shionogi Business Partner Co., Ltd.	
	Aburahi AgroResearch Co., Ltd. (Shiga Prefecture) * ¹	
	Shionogi Smile Heart Co., Ltd. * ¹	
	Nanjing Chang'ao Medicine Technology Co., Ltd. Nanjing Factory (China)	

Companies and operating sites with no location indicated are all situated in Osaka Prefecture.

*¹ Company on the premises of an operating site of Shionogi & Co., Ltd.

Numerical Data and Graphs

The numerical data provided in the report are rounded off to the nearest whole number. Accordingly, the totals in the graphs and charts do not necessarily correspond to the sum of the individual figures.

Environmental Performance Data Related to Energy and CO₂

The data is calculated based on the following calculation methods.

Calculation methods for environmental performance data

[Boundary of calculation]

Scope 1 and 2	SHIONOGI Group (excluding overseas Group companies [administrative offices]): SHIONOGI Group companies in Japan and Nanjing Plant (Nanjing Chang'ao Pharmaceutical Co., Ltd.)
Scope 3	
Category 1	Shionogi & Co., Ltd. and Shionogi Pharma Co., Ltd.
Category 2	SHIONOGI Group companies in Japan
Category 3	SHIONOGI Group companies in Japan
Other categories	SHIONOGI Group companies in Japan (UMN Pharma Inc. is not included in "Category 4" and "Category 12" among "Other categories.")
Energy consumption	SHIONOGI Group (excluding overseas Group companies [administrative offices]): SHIONOGI Group companies in Japan and Nanjing Plant (Nanjing Chang'ao Pharmaceutical Co., Ltd.)

[Calculation methods]

Indicator	Calculation methods
Scope 1	<p>CO₂ emissions resulting from fuel use</p> <p>Calculation methods:</p> <p>Based on the "Greenhouse Gas Emissions Accounting and Reporting Manual (Ver. 4.9)" of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan</p> <p>CO₂ emission factors:</p> <p>Based on the "Greenhouse Gas Emissions Accounting and Reporting Manual (Ver. 4.9)" of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan</p>

Indicator	Calculation methods
Scope 2	<p>CO₂ emissions resulting from purchase of electricity and steam</p> <p>Calculation methods:</p> <p>Based on the “Greenhouse Gas Emissions Accounting and Reporting Manual (Ver. 4.9)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan</p> <p>CO₂ emission factors:</p> <p>Electricity (Japan) (location-based): National average emission factors from “Emission Factors by Power Suppliers (for the calculation of GHG emissions by specified emitters) (FY2021 results)” published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan (January 24, 2023, partially revised on May 26)</p> <p>Electricity (Japan) (market-based): Adjusted emissions factors from “Emission Factors by Power Suppliers (for the calculation of GHG emissions by specified emitters) (FY 2021 results)” published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan (January 24, 2023, partially revised on May 26)</p> <p>Electricity (China) (both location-based and market-based): FY2022: No. 43 National Grid Average Emission Factor (2022) in Climate Letter [2023] No.43 of Office of the Ministry of Ecology and Environment of China /before FY2021: Emissions Factors (2019) of the International Energy Agency (IEA)</p> <p>Steam (both location-based and market-based): Emissions factors from the “Greenhouse Gas Emissions Accounting and Reporting Manual (Ver. 4.9)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan</p>
Scope 3	
Category 1	<p>CO₂ emissions from activities up to the manufacturing of raw materials, parts, purchased goods, and sales-related materials, etc. (hereafter goods purchased)</p> <p>Calculation methods:</p> <p>Based on the “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver. 2.5)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan, the emissions are calculated by multiplying the purchase price by the emission factor for “Pharmaceuticals” in “[5] Emission Factor Based on the Input-Output Table” in the “The Database on Emissions Unit Values for Calculation of Greenhouse Gas Emissions, etc., by Organizations Throughout the Supply Chain (Ver. 3.3)” of the Ministry of the Environment of Japan. (In addition, in response to the fact that “prices include consumption tax” was added as a point to note regarding emission intensity (in Japan) in the database (Ver. 3.3), CO₂ emissions have been calculated using the emission intensity based on prices including consumption tax since FY2022. In line with this, GHG emissions in or before FY2021 have been recalculated using the emission intensity based on prices including consumption tax.)</p> <p>The purchase price includes transportation costs associated with the purchase of purchased goods and does not include amounts related to the purchase of services other than the above.</p>
Category 2	<p>CO₂ emissions resulting from the construction and manufacturing of own capital goods</p> <p>Calculation methods:</p> <p>Based on the “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver. 2.5)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan, calculated by multiplying the acquisition cost of capital goods by the emissions factor for “pharmaceuticals” in “[6] Emissions factor per unit price of capital goods” in the “The Database on Emissions Unit Values for Calculation of Greenhouse Gas Emissions, etc., by Organizations Throughout the Supply Chain (Ver. 3.3)” of the Ministry of the Environment of Japan (In addition, in response to the fact that “prices include consumption tax” was added as a point to note regarding emission intensity (in Japan) in the database (Ver. 3.3), CO₂ emissions have been calculated using the emission intensity based on prices including consumption tax since FY2022. In line with this, GHG emissions in or before FY2021 have been recalculated using the emission intensity based on prices including consumption tax.)</p>

Indicator	Calculation methods
Scope 3	
Category 3	CO ₂ emissions resulting from procurement of fuels required for the generation of electricity purchased Calculation methods: Based on the “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver. 2.5)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan, calculated using “7. Emission Unit Values per Use of Electricity and Heat” in the “The Database on Emissions Unit Values for Calculation of Greenhouse Gas Emissions, etc., by Organizations Throughout the Supply Chain (Ver. 3.3)” of the Ministry of the Environment of Japan
Other categories	Total of Categories 4, 5, 6, 7 and 12, excluding Categories 8, 9, 10, 11, 13, 14 and 15 that are not included in our own corporate activities or are reported under other categories Calculation methods: Based on the “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver.2.5)” of the Ministry of the Environment and the Ministry of Economy, Trade and Industry of Japan
Energy consumption	
Total energy consumption	Total calorie-converted values for purchased energy (gasoline, other fuel oils, LPG, LNG, town gas, electricity, steam) Calculation method: Fuel is expressed as the sum of calories calculated using calorie conversion factors under the “Ordinance for Enforcement of the Act on Rationalizing etc. Energy Use” converted into MWh units with a rate of 3.6GJ per MWh. Note that calorie conversion factors disclosed by providers were used for town gas. Electricity is expressed as the sum of purchase volumes (MWh) without conversion to primary energy
Gasoline	Amount of gasoline purchased, including fuel for sales force vehicles
Other fuel oils	Amount of kerosene, light oil, and heavy oil A purchased
Liquefied petroleum gas (LPG)	Amount of LPG purchased from gas suppliers
Liquefied natural gas (LNG)	Amount of LNG purchased from gas suppliers
Town gas	Amount of town gas purchased from gas suppliers
Electricity	Amount of electricity purchased from power suppliers
Steam	Amount of steam purchased from steam suppliers

Reporting Guidelines

The Environmental Reporting Guidelines 2018 of the Ministry of the Environment of Japan are used as a reference.

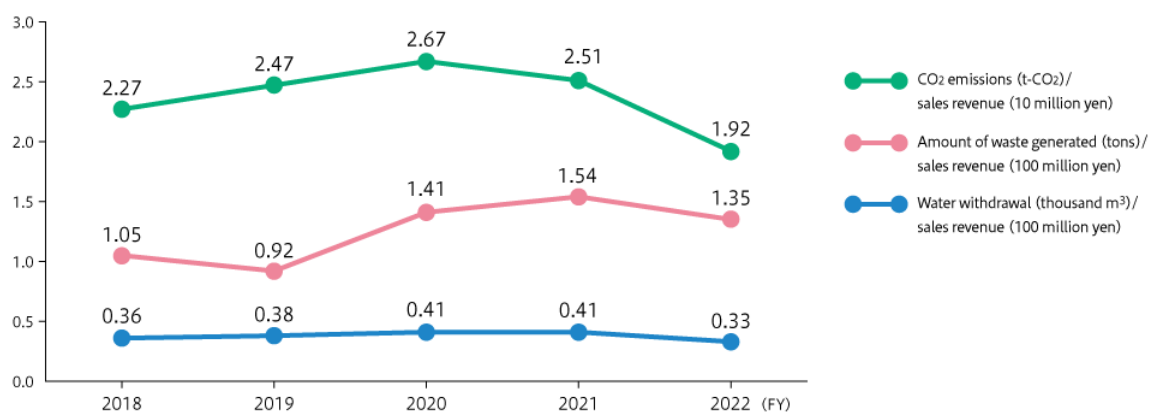
Overall Reporting View

A copy of this report is made available on SHIONOGI's official website, while excerpts from the report are included in the SHIONOGI Integrated Report.

The environmental data of FY2022 marked in red on page 116 of "SHIONOGI Integrated Report 2023," published separately from the present report, was subjected to third-party assurance by KPMG AZSA Sustainability Co., Ltd.



Trends of Major Performance Assessment Indicators





1-8, Doshomachi 3-chome, Chuo-ku, Osaka 541-0045, Japan
Tel : +81-6-6202-2161

