EHS Report 2024

www.astellas.com/en/sustainability/environment

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Contents, Abbreviation list

Abbreviation list

Abbreviation	Explanation
EHS	Abbreviation for “Environment, Health & Safety”
GHG	Greenhouse gases. There are seven categories of greenhouse gases: carbon dioxide, methane, nitrous oxide, hydro fluorocarbons, per fluorocarbons, sulfur hexafluoride and nitrogen trifluoride. Non-energy related GHG emissions are not included. In this report, the term GHG is used for all types of gas.
CO_2	Abbreviation for carbon dioxide.
Scope 1	GHGs emitted directly from Company premises as a result of the burning of fuels (city gas, kerosene, diesel oil, gasoline, LPG, LNG)
Scope 2	GHGs emitted indirectly in the use of electric power or heat supplied to the Company from outside
Scope 3	GHGs emitted indirectly at some point on the Company's value chain (production, transportation, business trips, commuting, etc.)
SBT	Science Based Targets
SOx	Sulfur oxides-emitted by the burning of fossil fuels containing sulfur
NOx	Nitrogen oxides-formed through the combination of nitrogen and oxygen in the atmosphere during the combustion of substances
BOD	Biochemical oxygen demand. Used as a benchmark for indicating extent of water pollution by organic matter in rivers.
COD	Chemical oxygen demand-indicates the amount of water pollution due to the presence of organic compounds in seas or lakes
VOC	Volatile organic compounds-organic chemical compounds that are volatile in the atmosphere at standard ambient temperatures and pressures
Frequency rate of work-related injuries	This rate shows the number of employee deaths or injuries resulting from work-related accidents causing leave of absence per million hours of work. The larger the number, the more frequently work-related injuries occur.
Severity rate of work-related injuries	This rate shows the number of lost work days due to work-related injuries per thousand hours worked. The higher the number, the more serious the injury.

Corporate Data, Editorial Policy

Corporate Data

Company Name	Astellas Pharma Inc.
Headquarters	2-5-1, Nihonbashi-Honcho, Chuo-ku, Tokyo 103-8411, Japan
Capital	¥103,001million (As of March 31, 2024)
Representative Director	Naoki Okamura (President and CEO)
Foundation	1923
Revenue	¥1,603,672 million (consolidated basis, as of March 31, 2024)
Employees	14,754 (consolidated basis, as of March31, 2024)
Professional institution affiliation	• Japan Business Federation • The Federation of Pharmaceutical Manufacturers' Association of Japan • Japan Pharmaceutical Manufacturers association, etc.

Editorial Policy

In publishing this "EHS Report", Astellas has worked to provide a more detailed account of its activities in an easy-to-understand manner to all those who are affected by its environmental initiatives and the various stakeholders.

Among the Astellas' sustainability, the report specifically introduces issues, goals, and activities that Astellas actively implements in the environment and employee initiatives, and explains them using figures and tables.

Reporting Period

As a general rule, this Report covers the activities of business sites in Japan from April 1, 2023 to March 31, 2024, and the activities of overseas business sites from January 1, 2023 to December 31, 2023. (Certain sections of this Report contain details of activities and initiatives both prior to and after these identified reporting periods.)

Reporting Coverage

This report covers the following companies, including head office functions, plants, research functions, and sales affiliates. Moreover, the report also covers the activities of Astellas subsidiaries that are included in these companies

Japan
- Astellas Pharma Inc.

United States
- Astellas US LLC
- Astellas Pharma Global Development, Inc
- Astellas US Technologies, Inc.
- Astellas Research Institute of America LLC
- Astellas Institute for Regenerative Medicine
- Astellas Innovation Management LLC
- Astellas Venture Management LLC
- Mitobridge Inc.
- Universal Cells Inc.
- Xyphos Biosciences Inc.
- Astellas Gene Therapies
- Iota Biosciences, Inc.
- Iveric Bio Inc.
- Sales affiliate

Established Markets
- Astellas Pharma Europe Ltd.
- Astellas Pharma Europe B.V.
- Astellas Ireland Co., Limited
- Nanna Therapeutics Limited
- Various sales affiliates

Greater China
- Astellas China Investment Co.,Ltd
- Astellas Pharma China, Inc.
- Various sales affiliates

International Markets
- Astellas Pharma Singapore Pte. Ltd.
- Various sales affiliates

Certain EHS data includes the results of activities of contractors because the environment and society are affected not only by the Company's own activities but also via the value chain.

Important Changes in Organization during the Reporting Period

Astellas has acquired IVERIC bio, Inc. (effective July 11, 2023) and Propella Therapeutics, Inc. (effective December 22, 2023). Propella Therapeutics, Inc. is not included in the calculations of this report.

Guidelines

The Environmental Reporting Guidelines (2018 edition) issued by Japan's Ministry of the Environment.

Presentation of various quantitative data

Quantitative EHS performance data has been rounded to the figures shown. Accordingly, the data may not match with total amounts or ratios calculated using the figures shown.

Information regarding Publication

Date of issue: July 2024
(Scope 3 will be added and revised in August 2024)
Next scheduled issue: July 2025
There is no printed version of the EHS report.

Cover page illustration by Masaya Ohara
(English version edited: July 9th, Japanese original version issued on June 12th, 2024)

In Search of EHS EXCELLENCE

Astellas has embraced the sustainable enhancement of enterprise value as its corporate mission. To fulfill this mission, Astellas seeks to be a chosen and trusted enterprise by all stakeholders, including customers, shareholders, employees, and the global community. The Astellas Charter of Corporate Conduct contains the following principles on Environment, Health and Safety (EHS): "We shall respect our employees' human rights, individuality, and differences, promote diversity in the workplace, and provide a safe and rewarding work environment," and "Recognizing that harmony between the global environment and our business activities is a prerequisite to our corporate existence, we shall take proactive measures to conserve the global environment." These principles require employees to conduct themselves based on high ethical standards in EHS fields, among other areas. In the environment and employees (occupational health and safety), Astellas will disclose information on its measures to sustainably enhance enterprise value through EHS.

Top Message

Astellas contributes to the sustainability of society through its business activities. Since our efforts to strengthen our engagement in sustainability was one of Astellas' strategic goals established in the Corporate Strategic Plan 2021 (CSP2021), each department has been working cross-functionally to think about and implement themes.

As part of our climate change initiatives, Astellas announced a 2030 target for the reduction of greenhouse gas Scope 1+2 emissions (direct and indirect emissions associated with its own operations) in line with the Paris Agreement's 1.5°C goal in 2023, as well as a policy to aim for Net Zero by 2050. Over the past year, we have been working on specific measures to reduce greenhouse gas emissions, and, as part of our efforts to utilize renewable energy, we have promoted the installation of solar panels at our research facilities and overseen the conversion of some of our purchased electricity to renewable energy.

Although Astellas has set a 2030 target for Scope 3 emissions (emissions from value chain) that is in line with the well-below 2°C goal of the Paris Agreement, we recognize that Scope 3 is the largest source of greenhouse gas emissions for Astellas and that by its nature, achieving reductions is more difficult than that for Scope 1+2. It is therefore necessary to strengthen our efforts in this area. Reducing emissions from Category 1 (purchased goods and services), which accounts for the largest portion of Scope 3 emissions, requires collaboration with value chain partners and we have established the Sustainable Procurement Pledge to work in partnership with our suppliers to address this. We are also promoting resource circulation and waste management efforts and have completed the treatment of all high-concentrate PCB-contaminated waste in 2023. We will further deliver high-quality disclosure of hazardous waste management.

As a member of society, Astellas will continue to reduce greenhouse gas emissions, improve environmental sustainability and transparently disclose information in order to realize a sustainable society.

Chief Strategy Officer,
Adam Pearson

EHS Management

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Astellas' basic stance toward the environment as well as the health and safety of its employees is outlined under the Astellas EHS Policy. Moreover, Astellas is working organizationally and continuously toward achieving this stance as described in the Astellas EHS Guidelines. In addition, Astellas has set medium-term targets for its key priorities in its EHS Action Plan and is working to achieve those targets.

Promotion of Environmental Sustainability Risk Management and Governance

Fundamental policies and action plans relating to the environment are positioned as an important issue in sustainability in which Astellas is engaged. Responses to various environmental issues, including climate change, and the formulation of action plans are discussed by the Sustainability Committee. Committee members are at the level of the head of functional units[*1] across departments, and the details of discussions are reported to the Chief Strategy Officer (CStO) who oversees matters concerning sustainability. Climate change initiatives and more transparent disclosure are a regular agenda item for the Board of Directors as a strategic target, and the Committee reports to the Board of Directors on disclosure in line with TCFD recommendations, including assessments of climate change risks and opportunities, as one aspect of its sustainability activities.

The system works by having the management of risks related to the environment monitored in terms of sustainability by functional units and reports periodically made to CStO who issues instructions as necessary. The Executive Committee[*2] chaired by the President and Chief Executive Officer or the Board of Directors discusses and determines how identified risks are to be addressed in accordance with the importance of the issue in question.

*1 Organizational units that are constituted to execute business and that directly report to top management

*2 The organization discusses material matters concerning business strategies, product strategies, corporate management, and personnel of the Company and Astellas Group companies

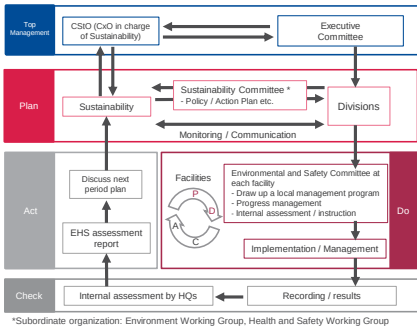
Astellas EHS Guidelines

The Astellas EHS Guidelines set forth unified standards that identify Astellas' aspirations in its EHS activities.

The guidelines qualitatively describe our aims, and concrete numerical targets, including their deadlines, will be stipulated through short- and medium-term action plans that will be updated every fiscal year. We ask outsourced manufacturers to cooperate in implementing the guidelines through assessments and other actions.

EHS Assessments

Astellas conducts a companywide EHS assessment every fiscal year, in line with the Astellas EHS Guidelines, in order to evaluate the progress of EHS activities throughout the Astellas Group. In fiscal 2023, EHS assessments were conducted at 2 facilities of production and research sites. The status of actions taken to resolve the issues identified in the assessments are confirmed through follow-up assessments in writing and the assessments in the following fiscal year. Societal demands and problem awareness at each site are shared through an exchange of opinions between the EHS Management Department and each site. In this manner, one objective of assessments is to ensure that Astellas' aspirations are aligned in the same direction. In addition, Astellas conducts assessments of Contracted Manufacturing Organizations (CMOs) in the value chain based on the same guidelines. In fiscal 2023, Astellas conducted on-site assessments of four suppliers, and carried out risk assessments related to such matters as the operational status of wastewater treatment plants and waste storage facilities, employees' working environments



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and initiatives to prevent employees from being exposed to chemical substances. In cases where items were pointed out, Astellas indicated an improvement proposal, requested a plan for corrective measures to be drawn up, and is currently following up on progress of the improvements based on the corrective measures plan. Astellas continues risk management in the value chain through assessments to maintain an environment that ensures the stable supply of pharmaceuticals.

Product Assessment System

The total environmental load resulting from the production, sale, distribution and disposal of products is determined almost entirely at the research and development stages. With regard to the production and sales of pharmaceutical products, it is necessary to obtain government approval for each product. Since government approval also covers production methods and packaging specifications, when there are changes in either approved production methods or packaging, new approval must be obtained even if the changes are related to work safety or reducing the environmental impact. Therefore, these changes are very time consuming and costly. Astellas has introduced a product assessment system as a tool that requires efforts to minimize the environmental load at every stage, particularly research and development, production, distribution, and disposal.

Under this assessment system, we examine issues such as the reduction of air pollutant emissions and the excessive use of packaging, safety measures at production sites, and the prevention of exposure of employees to hazardous substances prior to the commencement of mass production, including development based on green chemistry, and response to law and regulation requirements.

When conducting product assessments, an assessment team conducts EHS assessments in stages for the development of products. The results determine whether development of the product can move on to the next stage. Specifically, the assessment must identify raw materials or processes that might have a negative impact on the environment and/or employee health and safety. The progress on remedial measures must be assessed, and action plans evaluated. Countermeasures being considered are evaluated in the subsequent stages of the assessment.

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Environment Initiatives

Astellas believes that maintaining a healthy global environment is an essential theme for building a sustainable society, and it is also an important element in ensuring the continuation of business activities. In order for Astellas to achieve sustainable growth, Astellas must fulfill its corporate social responsibilities regarding issues that impact on the local environment, including climate change problems, environmental pollution, and waste disposal. Astellas will strive to develop its aspirations for the company based on a long-term timeframe and global perspective. At the same time, we will continue efforts to address regional social issues and pursue corporate activities in harmony with the global environment.

■ Interaction between Astellas and the Environment

INPUT		
Energy *1	Electricity	228,688 MWh
	(Renewable sourced	90,527 MWh)
	City gas	18,362 thousand m^3
	LPG	933 tons
	LNG	617 tons
	Kerosene	6 kiloliters
	Diesel oil	1,350 kiloliters
	Gasoline	4,356 kiloliters
	Purchased heat (hot/cold water)	3,595 GJ
	Purchased heat (steam)	21,187 GJ
	Other renewable energy	46,716 GJ
Resources	Water *2	6,501 thousand m^3
	Raw materials and consumables (by weight) *3	3,535 tons
	Raw materials and consumables (by volume) *3	356,024 kiloliters

OUTPUT		
GHGs *1	Scope 1 *4	59,203 tons
	Scope 2	63,047 tons
	(Sales fleets *5	13,380 Tons)
Pollutants *6 (atmosphere)	NOx	15 tons
	VOC	22 tons
Pollutants *6 (water bodies) *5	BOD	7 tons
	COD	20 tons
Discharge *2	Water discharge	6,217 thousand m^3
Waste material	Waste generated *2	13,041 tons
	Landfill volume *3	99 tons

*1 All Astellas business facilities
*2 All Japanese business facilities (excluding sales offices) and all production sites and R&D sites outside of Japan. The volume of water discharge from non-Japanese sites was equivalent to that of withdrawal.
*3 Items that are used at commercial production sites in Japan and for which information regarding their weight or volume data can be obtained.
*4 Non-energy related GHG emissions are not included. The CO_2 equivalent of fluorinated gases from production sites (global) and R&D sites (Japan) was 1,083 tons-CO_2.
*5 Sum of Scope 1 GHG emissions and Scope 2 GHG emissions.
*6 Japanese production sites and R&D sites.
*7 All Japanese business facilities (excluding sales offices).

■ GHG emissions from an indirect involvement (Scope 3) and GHG emissions throughout the entire value chain

Currently being calculated. (Slated to be disclosed in late August. See the EHS Report 2023 for prior-year data.)

Environment Initiatives

Environmental Action Plan

Our Environmental Action Plan sets out short-term and medium-term targets for our activities regarding the key points of the Astellas Environment, Health & Safety Guidelines. We renew our action plans on a rolling basis, by reviewing progress and conditions during the previous year and incorporating our findings into our action plan for the following year.

In November 2018, the Environmental Action Plan involving Climate-Related Measures obtained Science Based Target (SBT) certification from the SBT Initiative, which recommends that private companies set reduction targets aligned with the Paris Agreement, which entered into force in 2016, and Astellas operated under that, but reviewed GHG emission targets towards achieving the targets of 1.5°C (Scope 1 and 2) and well-below 2°C (Scope 3). In January 2023 , the SBT Initiative approved the targets as a science-based initiative, and Astellas has moved forward on a new environmental action plan (Climate Change Mitigation Measures).. Our environmental action plans for natural resource conservation measures and waste management have been consistently managed well, and even higher targets have been set from fiscal 2021. We are continuously implementing measures eyeing the target fiscal years of each plan. Results for fiscal 2023 are as follows:

Results of fiscal 2023 (summary)

Goal of Environmental Action Plan	Fiscal 2023 Results
1. Measures to Address Climate Change [Base year: fiscal 2015] - Reduce GHG emissions (Scope 1 + 2) by 63% by fiscal 2030 [1.5°C target] (Emissions in the base year: 202 kilotons) - Reduce GHG emissions (Scope 3) by 20% per unit of revenue by fiscal 2030 [well-below 2°C target]	Ratio to base year 40% decrease (Emissions: 122 kilotons) (Under calculation)
2. Measures for the Conservation of Natural Resources [Base year: fiscal 2016] - Enhance approx. 20% water resource productivity based on fiscal 2016 by the end of fiscal 2025 (For research and production sites in Japan and overseas) Indicator: Revenue (billions of yen)/Water resources withdrawn (1,000 m^3)	Ratio to base year 65% improvement
3. Waste management [Base year: fiscal 2016] - Improve approx. 10% waste generated per unit of revenue based on fiscal 2016 by the end of fiscal 2025 (For research and production sites in Japan and overseas) Indicator: Volume of waste generated (tons)/Revenue (billions of yen)	Ratio to base year 23% deterioration
4. Biodiversity [Base year: fiscal 2005] - Quadruple the biodiversity index by fiscal 2025 from the fiscal 2005 level	Ratio to base year 4.9 times

Data related to Scope 3 GHG emissions is slated to be disclosed in late August.

Response to Accidents and Emergencies

Being prepared for emergency situations caused by an accident or natural disaster can help to prevent an environmental catastrophe and minimize damage. Accordingly, we have developed specific measures and procedures. Moreover, we conduct regular education sessions and training drills, and reconfirm and test the validity of our procedures, communication networks and the division of roles focusing on risks that are recognized as a high priority. In this manner, we continue to work diligently to reduce environmental risk.

In particular, the discharge of harmful substances could lead to the pollution of rivers as well as cause problems at public sewage treatment plants. This in turn could have a grave impact on regional communities. In preparation for accidents and emergency situations, we are therefore systematically implementing measures for the prevention of environmental pollution, including the installation of backup equipment, while working to reduce the risk of pollution. In addition, in order to avoid accidents and other problems, we are bolstering efforts to optimize the operation and management of wastewater treatment systems, and to monitor and measure the quality of water draining out of our plants to confirm compliance with relevant effluent standards.

Compliance with Environmental Laws and Regulations

In fiscal 2023, heavy rainfall during construction work being carried out at the Takahagi Technical Center caused an incident in which Astellas exceeded standard values as provided for in an ordinance setting forth effluent standards in accordance with the Water Pollution Control Act. The company promptly reported to the government and worked to take action. Over the past five years, there was an incident in which Astellas exceeded the upper limit of agreed values specified in a pollution prevention agreement with a local government. Astellas reported the incident to the local government and is implementing response measures based on its instructions.

- Tsukuba Research Center: Water (fiscal 2022)

Environment-Related Accidents and Complaints

Astellas had no environment-related accident over the past five years, including fiscal 2023.

Regarding environment-related complaints, a resident adjacent to the Yaizu Technical Center consulted with Astellas about noise from construction vehicles. An appropriate measure was later taken with the equipment.

Soil Contamination Assessments

In fiscal 2019, a limited part of the Toyama Technology Center was designated as a contaminated area on the basis of the Soil Contamination Countermeasures Act. In the construction of new facilities, Astellas has taken appropriate action to prevent the spread of pollution in consultation with the governmental authorities.

The substances that were discovered to be present in levels that exceeded the standards are as follows:

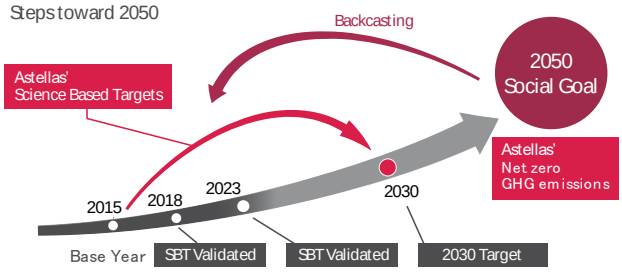
- Lead and its compounds
- Arsenic and its compounds
- Fluorine and its compounds

Climate Change measures

Mitigating and adapting to the threat posed by climate change requires active involvement by national governments, local governments, corporations, citizens, and others. Astellas recognizes that climate change will become a constraint on conducting sustained corporate activity, and considers it an important management issue to address.

Astellas has made a long-term commitment to taking measures against climate change and decided to aim for achieving a 90% reduction in GHG emissions and a 10% neutralization of residual emissions to achieve Net Zero by 2050, based on 2015, for Scope 1 and 2 and Scope 3, respectively. In addition, the Science Based Targets (SBT) initiative approved Astellas' GHG emissions reduction targets through 2030.

To address climate change as a management issue, we have adopted as targets, the 1.5°C (Scope 1 and 2) and well-below 2°C (Scope 3) targets of the Paris Climate Agreement.

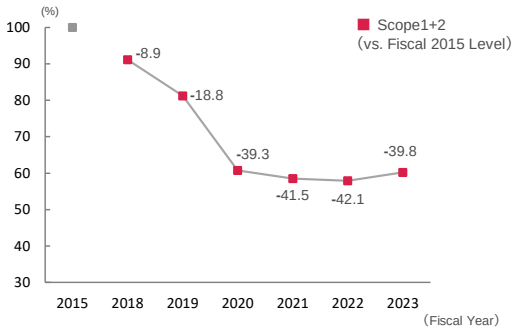


Environmental Action Plan (Climate Change Mitigation Measures) (SBT re-certified in January 2023)

- **Reduce GHG emissions (Scope 1 + Scope 2) by 63% by fiscal 2030 (1.5℃ target) (Base year: fiscal 2015)**
- **Reduce GHG emissions (Scope 3) by 37.5% by fiscal 2030 (well-below 2℃ target) (Base year: fiscal 2015)**

■ Progress on Action Plan (SBT)

Our results calculated based on the GHG Protocol are as follows:



Progress on Environmental Action Plan (Scope 3)

Currently being calculated. (Slated to be disclosed in late August. See the EHS Report 2023 for prior-year data.)

■ Changes in Actual GHG Emissions Volume

The actual volume of GHG emissions in fiscal 2023 was 122 kilotons (Scope 1: 59 kilotons, Scope 2: 63 kilotons).

Changes in Actual GHG Emissions Volume by Area (Tons)

	Fiscal 2015	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Japan	**166,857**	75	**89,725**	76	**89,709**	76	**93,325**	75
Scope 1	61,036		46,662		44,253		40,601	
Scope 2	105,821		43,063		45,456		51,724	
US	**31,185**	14	**12,448**	10	**12,673**	11	**14,826**	11
Scope 1	20,742		5,686		6,418		8,245	
Scope 2	10,443		6,762		6,256		6,580	
Established Markets	**16,725**	8	**9,913**	8	**8,917**	8	**8,392**	7
Scope 1	13,073		9,115		8,324		7,919	
Scope 2	3,652		798		593		473	
Greater China	**3,349**	2	**3,956**	3	**3,697**	3	**3,535**	3
Scope 1	14		47		29		6	
Scope 2	3,335		3,909		3,668		3,529	
International Markets	**4,628**	2	**2,636**	2	**2,647**	2	**3,172**	2
Scope 1	3,635		2,181		2,147		2,431	
Scope 2	994		455		499		741	
Total	**222,744**		**118,679**		**117,644**		**122,250**	
Scope 1	98,500		63,691	-	61,171	-	59,203	-
Scope 2	124,244		54,988		56,473		63,047	

Non-energy GHG emissions are less than 5% of total emissions and therefore not included in the disclosed data.

Our efforts to reduce GHG emissions

In order to reduce GHG emissions, Astellas must implement management practices that involve the entire Group from a medium-term perspective. Astellas' manufacturing plants, research centers, sales and marketing divisions, and offices are implementing a variety of initiatives with the aim of mitigating climate change.

Regarding tangible elements, efforts to improve facilities, which include the introduction of high-efficiency equipment and the conversion to alternative fuels, are expected to make a significant contribution to reducing the level of GHG emissions generated by energy sources. Regarding intangible aspects, employees' participation in energy saving through improvements of daily work is also important. To this end, each facility adopts a two-pronged approach, comprising measures related to both tangible and intangible elements.

Investment Plan for Climate Change Mitigation Measures

In fiscal 2023, Astellas completed approximately 600 million yen in investments with a focus on the promotion of renewable energy use at each facility (including the installation of solar panels) and energy-saving measures (such as upgrading to air conditioning-related energy-saving equipment and the introducing LED lighting, resulting in a reduction of GHG emissions of 4,825 tons.

Astellas will keep on conducting continuous reviews of investment plans related to matters such as introducing renewable energy.

Understanding GHG Emissions in the Supply Chain

Although the Environmental Action Plan concerning climate change is targeting emissions directly generated by business activities (Scope 1 and Scope 2), Astellas is also striving to assess emissions produced throughout the entire supply chain (Scope 3). We have also set SBTs for GHG emissions from major categories within Scope 3, and are striving to reduce them. In addition, we encourage support and cooperation with our measures to reduce GHG emissions, including transactions among our production contractors. Scope 3 GHG emissions are currently being calculated. (Slated to be disclosed in late August, See the EHS report 2003 for prior-year data.)

Priority Use of Gaseous Fuel

At Astellas' research and production sites, we use boilers fueled by city gas, LPG and LNG (liquefied natural gas), all of which generate low GHG emissions during combustion. These boilers not only contribute to reducing GHG emissions but also to reducing SOx emissions, another air pollutant.

Introduction of Energy Monitoring Systems

Knowing exactly how much energy we use is useful for the formulation of new strategies. We have introduced energy monitoring systems that can visually monitor energy usage at our facilities.

Reduction of GHG Emissions Generated by Sales Activities

Since fiscal 2008, Astellas has been striving to reduce GHG emissions associated with the use of sales fleets. In each region, we are continuously switching over to vehicles with low environmental impact (e.g., hybrid cars, electric vehicles). In Japan and the US, where the rate of introducing hybrid vehicles is high, the volume of GHG emissions relative to the number of vehicles has been reduced more than in other regions.

GHG emissions associated with the use of sales fleets are reported under Scope 1 (fuel usage) and Scope 2 (electricity usage by electric vehicles).

(Unit: Tons)

	Fiscal 2021	Fiscal 2022	Fiscal 2023
Total emissions of sales fleets	**12,697**	**12,378**	**13,380**

When it cannot be directly measured CO_2 emissions are estimated based on fuel purchase costs, annual average fuel usage by company vehicles or private vehicles (if used in sales activities) and other factors. Figures do not include data from the Asia/Oceania region (with partial exception).

Incorporating Sustainability Indicators into Executive's incentive-based Renumeration

Starting from the 19th term business year (fiscal 2023), Astellas has incorporated a new key performance indicator by setting sustainability performance targets for bonus (short-term incentive remuneration) for Directors who are not the Audit & Supervisory Committee Members (and excluding Outside Directors). By linking management strategies with incentive compensation, Astellas aims to steadily promote environmental initiatives.

For details of remuneration for Directors, please refer to page 74 of the Notice of Convocation of the 19th Term Annual Shareholders Meeting.

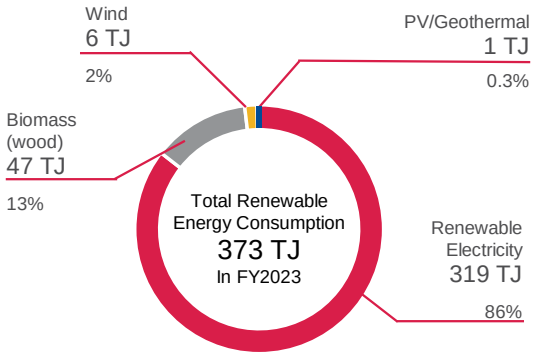
Using Renewable Energy

The use of renewable energy is one of the most effective climate change countermeasures. Astellas is introducing photovoltaic panels and wind power generation, and such equipment as biomass boilers, and purchases electricity derived from renewable energy sources to reduce GHG emissions. We will continue to strive expanding the use of renewable energies to help achieve Net Zero.

Starting in April 2020, Astellas switched all electricity purchased by its three business sites in Ibaraki Prefecture (Tsukuba business site, Tokodai business site and Takahagi business site) to an electricity rate plan deemed to be 100% hydroelectric(*). This enabled a reduction of emissions equivalent to about 24,000 tons of GHG emissions in fiscal 2023. Moreover, we are also moving ahead on switching to electricity generated by renewable energy sources in areas outside of Japan.

Looking ahead, Astellas will continue to explore opportunities for using renewable energy, and it will also consider formulating targets for the use of renewable energy. ((*)The Aqua Premium plan provided by TEPCO Energy Partner, Inc.)

Usage of renewable energy (fiscal 2023)



Our efforts to reduce GHG emissions

Changes in use of renewable energy

	Fiscal 2015	Fiscal 2021	Fiscal 2022	Fiscal 2023
Total energy used (TJ)	3,010	2,089	2,048	2,005
Energy derived from renewable energy sources (TJ)	210	392	387	373
Renewable energy rate (%)	7	19	19	19
Total electricity (GWh)	279	226	227	229
Electricity derived from renewable energy sources (GWh)	48	98	95	91
Renewable energy rate (%)	17	43	42	40

Breakdown of Energy Consumption

Global energy usage in fiscal 2023 by the Astellas Group amounted to 2,005 terajoules (TJ) for a decrease of 2.1% (42 TJ) over the previous year. The percentage of total energy consumption accounted for by electricity is high because in each region a large amount of electricity is consumed by the operation of air conditioning equipment.

Astellas strives to reduce its energy consumption, including through the continued implementation of energy-saving measures and the introduction of highly efficient equipment.

(Unit: TJ)

Global	Fiscal 2020	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Liquid fuel	**201**	10	**201**	10	**194**	9	**202**	10
Gaseous fuel	**992**	48	**1,001**	48	**962**	47	**908**	45
Heat purchased	**27**	1	**33**	2	**28**	1	**26**	1
Electricity purchased	**812**	39	**807**	39	**812**	40	**816**	41
Renewable energy sourced	343		345		335		320	
Natural energy	**54**	3	**47**	2	**53**	2	**54**	3
Wind	7		5		6		6	
Wood chip biomass	45		41		45		47	
Geothermal heat	2		0.6		0.0		-	
Photovoltaics	0.6		0.6		0.6		1.0	
Total	**2,087**		**2,089**		**2,048**		**2,005**	

Japan	Fiscal 2020	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Liquid fuel	**39**	3	**44**	3	**46**	3	**40**	3
Gaseous fuel	**866**	57	**869**	57	**817**	54	**754**	49
Heat purchased	**2**	0.1	**1**	0.1	**0.3**	0.0	**0.2**	0.0
Electricity purchased	**618**	40	**604**	41	**603**	40	**601**	43
Renewable energy sourced	242		241		231		218	
Natural energy	**0.2**	0	**0.2**	0	**0.2**	0	**0.6**	0
Photovoltaic	0.2		0.2		0.2		0.6	
Total	**1,524**		**1,518**		**1,467**		**1,395**	

US	Fiscal 2020	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Liquid fuel	**68**	35	**52**	27	**51**	26	**68**	29
Gaseous fuel	**52**	27	**45**	23	**61**	31	**74**	31
Heat purchased	**-**	-	**-**	-	**-**	-	-	-
Electricity purchased	**74**	38	**82**	42	**88**	45	**97**	41
Renewable energy sourced	3		3		4		4	
Natural energy	**0.0**	0	**0.0**	0	**0.0**	0	**0.0**	0
Geothermal heat	0.0		0.0		0.0		0.0	
Total	**194**		**178**		**200**		**239**	

Our efforts to reduce GHG emissions

(Unit: TJ)

Established Markets	Fiscal 2020	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Liquid fuel	**61**	21	**70**	24	**61**	21	**58**	20
Gaseous fuel	**73**	25	87	29	84	28	**80**	27
Heat purchased	**1**	0.4	**4**	1	**2**	0.6	**0.8**	0.3
Electricity purchased	**106**	36	**108**	37	**107**	36	**103**	35
Renewable energy sourced	98		101		101		96	
Natural energy	**54**	15	**47**	18	**52**	15	**53**	18
Wind	7		5		6		6	
Wood chip biomass	45		41		45		47	
Geothermal heat	2		0.6		-		-	
Photovoltaics	0.4		0.4		0.4		0.4	
Total	**296**		**316**		**306**		**295**	

Greater China	Fiscal 2020	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Liquid fuel	**0.3**	0.9	**0.6**	1	**0.3**	0.8	**0.1**	0.2
Gaseous fuel	**0.2**	0.4	**0.2**	0.4	**0.1**	0.4	**0.0**	0.1
Heat purchased	**25**	72	**27**	72	**25**	73	**25**	74
Electricity purchased	**10**	30	**9**	26	**10**	26	**9**	26
Natural energy	-	-	-	-	-	-	-	-
Total	**34**		**37**		**35**		**34**	

International Markets	Fiscal 2020	(%)	Fiscal 2021	(%)	Fiscal 2022	(%)	Fiscal 2023	(%)
Liquid fuel	**33**	89	**35**	89	**36**	91	**36**	84
Renewable energy sourced								
Gaseous fuel	**0.6**	1	**-**	-	**-**	-	**-**	-
Heat purchased	**-**	-	**1**	3	**0.3**	0.7	**0.2**	0.5
Electricity purchased	**5**	14	**3**	8	**5**	12	**7**	15
Natural energy	**-**	-	**-**	-	**-**	-	**-**	-
Total	**39**		**40**		**41**		**43**	

Participation in the Federation of Economic Organizations' Commitment to a Low-Carbon Society

Astellas is participating in the Carbon Neutrality Action Plan* formulated by the Federation of Pharmaceutical Manufacturers' Associations of Japan, which is based on requests from the Federation of Economic Organizations. In February 2023, Astellas committed to a policy of reducing GHG emissions from operations to Net Zero by 2050.

* With a long-term vision of Net Zero CO2 emissions by 2050, the Phase II target (2030 target) is to reduce CO2 emissions in fiscal 2030 by 46% (from laboratories, plants, offices and vehicles used in sales) from the fiscal 2013 level.

(Continued from page 5)

Education and Training

In order to promote further improvements in its EHS activities, the Company acknowledges the critical need to ensure that all employees have a correct understanding of their own roles and responsibilities. To this end, we are working to develop employees professionally qualified in EHS matters and improve our skill base through a wide variety of training programs, including specialized education for employees engaged in roles requiring specialist knowledge and skills in areas such as environmental conservation or hazardous operations.

We also explain our policies and site rules to construction workers at our business sites, raw materials suppliers and waste transport and disposal contractors, and request cooperation with our EHS activities.

Disclosure Based on TCFD Recommendations

Governance

Supervisory structure

The Board of Directors considers climate change countermeasures to be one of the sustainability issues and monitors the progress of initiatives every quarter. Astellas Sustainability submits annual reports to the Board of Directors each fiscal year to ensure that the progress of initiatives, including climate change counter measures can be monitored. The Board of Directors oversees the efficiency of management through this monitoring process.

Executive structure

Sustainability issues are identified as priority issues for Astellas and KPIs are set and tracked. For climate change, progress is evaluated by setting greenhouse gas emission reduction targets / KPIs, which are set to be achieved by 2030. The uptake of renewable energy is also a key metric to measure progress against. The Environmental Action Plan is managed by the Sustainability Committee, chaired by the Sustainability Department Head, who reports to the CStO. The Sustainability Committee reviews Astellas' Environmental Action Plan every five years to ensure its relevance and propose improvements as deemed necessary. The Sustainability Committee also reviews long-term plans for greenhouse gas reduction initiatives and the content of the Company's TCFD disclosure.
Please refer to the Integrated Report for the information on incorporating sustainability performance into performance evaluation indicators for Executive compensation.

Strategy

To identify and prioritize the issues that are most important to society and our business, Astellas carries out a materiality assessment and uses it to guide our sustainability efforts. Under the Astellas Materiality Matrix, reviewed in the fiscal year ended March 2022, climate change and energy are recognized as "very important" in their significance for both society and Astellas.
Astellas' Environmental Action Plan sets out short-term and medium-term targets for our activities regarding the key points of the company's Environment, Health & Safety Guidelines. Astellas renews action plans on a rolling basis, by reviewing progress and conditions during the previous year and incorporating findings into the action plan for the following year. The plans will outline efforts put in place to reduce the environmental burden and ensure the Company acts with integrity in reducing potential risks in order to protect enterprise value.
An in-house cross-functional team for disclosures was established to conduct a scenario analysis. The team analyzed Astellas' business and climate-related risks and opportunities, on the assumption that transition risks would materialize under a 1.5°C scenario for climate change and physical risks would materialize under a 4°C scenario. A qualitative risk/opportunity analysis was conducted in the FY2021 review. In FY2022, the team conducted a quantitative analysis on some items. As the GHG emission reduction action plan changed from a 2°C target to a 1.5°C target in terms of temperature increase the transition risk scenario was also changed to a scenario that assumes global temperatures rise by 1.5°C. In FY2023, we also conducted risk analysis by department. The results of the analysis were reviewed by the Sustainability Committee.

Risk Management

Processes for identifying and assessing climate-related risks

Risks within divisions, such as transition risk, physical risk, and reputational/legal risk related to climate change, are analyzed by Sustainability Committee (until March 2024, EHS Committee), which is comprised of members from Commercial, Technology & Manufacturing, Research, HR, and Sustainability. Risks are regularly monitored once a year. Once risks have been identified, their impact and probability of occurrence are analyzed.
Risks that affect the entire company, such as emerging regulatory risks, are analyzed by the TCFD cross-functional team, which is comprised of members from Finance, Technology & Manufacturing, Research, Procurement, Supply Chain Management, Internal Audit, and Sustainability. The cross-functional team conducts climate-change scenario analyses by utilizing scenarios provided by institutions such as the IPCC. The impacts of the transition to a low-carbon society, such as burden of carbon taxes are also analyzed.
As an internal expert of EHS, Sustainability regularly conducts EHS assessments of manufacturing sites and research facilities. The EHS assessment evaluates the environment, health and safety in general, and if risks are found, a plan for corrective and preventive action (CAPA) is requested. EHS assessments are also conducted for major suppliers as well as internal department.
Third Party Lifecycle Management (TPLM) is the risk mitigation framework covering all stages of the business partner relationship, which includes planning, due diligence, contracting, ongoing maintenance and transition. A global approach was established by Legal, Ethics & Compliance and Procurement to proactively address and mitigate supplier risk for multiple domains such as: EHS, which verifies that the practical aspects of environmental protection and safety have been implemented in the work environment.

Processes for managing climate-related risks

Regarding physical risks, typhoons, hurricanes, etc. may affect operations at business sites. The effects of past typhoons and hurricanes have been minor, and there have been no instances of any disruption to the product supply chain. In the manufacturing department, sufficient product stock is maintained to ensure product supply is not affected.
Regarding transition risks, although there is no need to dispose of any equipment due to climate change countermeasures, promoting energy efficiency improvements during future equipment upgrades may be a factor in increasing costs. The amount invested in climate change countermeasures is aggregated and published on the corporate website.

Reputational risk may arise if targets for reducing greenhouse gas emissions as a measure against climate change are not achieved. Sustainability monitors Astellas' performance in reducing greenhouse gas emissions.

If a risk is detected during an EHS assessment, Sustainability presents proposals of improvement and requests the development of a corrective plan. Sustainability follows up on the status of the corrective plan.

Integration into the overall risk management

Dysfunction of supply chain management is recognized as one of the most important risks in enterprise risk management and is managed by the Global Risk & Resilience Committee. Please refer to the corporate website.

The reputational risk of not achieving ESG goals is also monitored by the Enterprise Risk Management team.

■ Metrics and Targets

Metrics to assess climate-related risks and opportunities

We use GHG emissions (Scope 1, 2, 3), water resource productivity, waste generation amounts to measure the potential financial impact of climate-related risks and opportunities. GHG emissions are positioned as an important indicator because they are related to transition risks and failure to achieve GHG emission reduction targets will lead to increased carbon tax burdens and worsening reputational risks. On the other hand, reducing GHG emissions due to improvements in energy efficiency can be seen as an opportunity. Increasing water resource productivity is a countermeasure to increasing water stress due to climate change and is related to physical risks. Promoting waste management is also a measure against reputational risk.

Scope 1, 2, 3 emissions performance data

In fiscal 2023, GHG emissions (Scope 1+ Scope 2) associated with Astellas' business activities amounted to 122 kilotons globally. Please refer to "Environment Initiatives".

Targets to manage climate-related risks

GHG emissions (Scope 1+2, Scope 3)

- Reduce GHG emissions (Scope 1 + Scope 2) by 63% by fiscal 2030
  (Base year: 2015) (Emissions in the base year: 203 kilotons) [1.5℃ target]
- Reduce GHG emissions (Scope 3) by 37.5% by fiscal 2030
  (Base year: fiscal 2015) [well-below 2℃ target]

Astellas' GHG emission reduction action plan was approved by SBTi in 2018 based on the 2°C targets of the Paris Agreement. The SBT target, which is required to re-calculate every five years, was updated one year ahead of schedule and the new reduction targets were set to achieve the Paris Agreement's 1.5°C target (Scope 1+2) and well-below 2°C target (Scope 3). The new target was approved by the SBT initiative as a science-based target. In February 2023, we announced a new policy aiming to reduce greenhouse gas emissions through our business to achieve net zero by 2050.

Water resource productivity, waste generated per unit of revenue

We calculate and publish our water resource productivity and waste generated per unit of revenue every year and publish an analysis of our progress towards our goals. For both indicators, trends are shown for the Base Year and the past three years. Please refer to "Environmental Action Plan and Compliance".

Climate-Related Risks	Potential Impacts	Financial Impacts	Affected period	Astellas' Resilience
Transition Risks (risk materializing at 1.5ºC increase)				
Policy and Legal				
Increased pricing of GHG emissions (costs if paying a carbon tax)	Business sites that have not introduced renewable energy may have to include carbon tax payments to their costs.	1 billion yen in FY2030 assuming a carbon tax of $100 per ton	Medium to long-term	• Some of the electricity consumed at the business site is generated internally by using renewable energy sources such as wind power and solar power. • Switch to purchasing energy derived from renewable sources at business sites (part of manufacturing and research sites and sales offices in Europe and the United States. Some manufacturing and research sites in Japan started purchasing electricity derived from hydroelectric power in fiscal year 2020.) • Promote the purchase of renewable energy-derived electricity at other business sites in the future. • Purchase credits (CO_2 emission rights) to reduce Scope 1 emissions and measures to control costs associated with the purchase will be issues for consideration.
	Purchased goods and services (Scope 3 Category 1) may be subject to carbon tax, which increases the burden when added to the procurement price.	500 million – 2.3 billion yen in FY2030 assuming a carbon tax of $100 per ton	Medium to long-term	• Scope 3 Category 1: We will work on optimizing the use of raw materials. By formulating a supply chain sustainability roadmap, CO_2 emission data of purchased products will be analyzed and emission reduction will be promoted. • Scope 3 Category 3: We expect consumption to decrease due to proper use of energy and uptake of energy efficient equipment. • Scope 3 Category 6: The reduction of business travel, company-wide, as a measure against COVID-19, contributed to the reduction of Scope 3 in 2020 and 2021. We will continue this effort.
Obsolescence and impairment loss on existing facilities accompanying GHG emission regulations	Possibility of being asked to discard facilities due to strengthening of environmental regulations. Refrigeration equipment using freon gas. Vehicles that use fossil fuel may no longer be available in some countries after 2035.	No significant impact	Medium to long-term	• There are no existing facilities that we are required to dispose of at this moment. Regarding freon gas, we will take appropriate measures that comply with laws and regulations. • From 2030 onwards, we need to respond to a required change in automotive vehicles (shift from internal combustion engines to electric motors and fuel cells). Shift to EVs for sales fleets and trucks and modal shift of transportation will have an impact on business operations.
Technology				
Costs to transition to lower emissions technology	Costs rise when investing in low emission equipment.	600 million yen Based on past climate-change investment plan	Near to long-term	• Select and invest in efficient investment projects to reduce the carbon tax burden. • Consider non-investment options such as energy supply contracts for relatively large-scale investments such as solar panel installation.
Market				
Increased cost of energy and raw materials	Rising energy and raw material prices lead to higher costs exacerbated by inflation	An increase of 10 yen per 1 kWh of electricity charges will increase the cost burden by 2.2 billion yen.	Near to long-term	• Increase of electricity and energy costs consumed at business sites due to regulatory changes would be an issue in the future. However, we do not envisage a significant increase in the cost of raw materials for drug production due to climate change. • Reduce the impact of rising fossil fuel prices through the use of renewable energy-derived power.
Physical Risks (risk materializing at 4ºC increase)				
Acute				
Increased severity of extreme weather events such as floods	Operations halt at our business sites due to floods or other factors. Raw material and product supply is delayed due to damage in the supply chain caused by floods or other factors.	500 million yen Referred to the flood countermeasures of the Toyama Technical Center.	Near to long-term	The following investment was planned for the Toyama Technical Center flood response and the investment amount was estimated at 500 million yen. • Install a 3m waterproof wall around the power receiving building • Construction of substation equipment with a structure of 3m or more • Purchase of generators If similar measures are required, a similar amount of investment will be considered.
Chronic				
Changes in precipitation patterns Rising mean temperatures, and sea level	Droughts will affect the operations of our plants and supply chain, resulting in delays in product shipments. Rising average temperatures will have an impact on energy costs accompanying operation of air conditioners at business sites.	No significant impact	Near to long-term	• According to IPCC AR6 SPM SSP3-7.0 scenario, global sea level change in 2050 relative to 1900 is less than 0.5m. This level of change has no significant business impact. • Changes in precipitation patterns do not have a material impact on Astellas operations.

Climate-Related opportunities		Potential financial Impacts	Affected period	Astellas' response
Resource efficiency	Use of more efficient production and distribution processes Use of recycling	Reduced operating costs	Near to long-term	• In order to maintain a stable supply of pharmaceuticals even during pandemic of infectious disease or natural disasters such as earthquakes, storms, and flooding, three logistics centers are operated in Japan. In European countries and the United States, warehouses shared by multiple pharmaceutical manufacturers are being used to streamline the distribution process. • We collect exhaust heat from air conditioning units at Japanese manufacturing plants and research sites and use it to pre-heat the air supply to improve heat efficiency.
Energy source	Use of lower-emission sources of energy	Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon	Near to long-term	• Shifted boiler fuel from liquid fuel to gaseous fuels. • We are moving ahead on introducing hybrid and electric vehicles in our sales fleet. • We are working on using wind power generation and biomass boiler system at Kerry Plant in Ireland.
Products and markets	Development and/or expansion of low emission goods new products and services Access to new markets	Increased revenues through access to new and emerging markets	Near to long-term	• For the spread of infectious disease in endemic areas due to temperature change and the need for new drugs for infectious disease treatment assumed by the problem of antimicrobial resistance, collaboration with the phage biologics researches Course at a university to create engineered bacteriophages, could be viable solution. • Climate change can change the geography of the morbidity associated with and severity of epidemics. Heart disease, respiratory disease, etc. may also increase.

[Note]
1.5°C scenario: Refer to IPCC 6th Assessment Report (AR6) Summary for Policymakers, "Global Warming of 1.5°C" (IPCC special report), "Net Zero by 2050" (IEA). To achieve significant reduction of greenhouse gas emissions, implementation of several measures such as carbon prices and the spread of EVs are assumed.
4 °C Scenario: Refer to SSP3-7.0 of IPCC 6th Assessment Report, Working Group I, Summary for Policymakers (SPM), released in August 2021. As extreme weather, we assumed an increase in the frequency of high temperatures, heavy rains, and droughts.

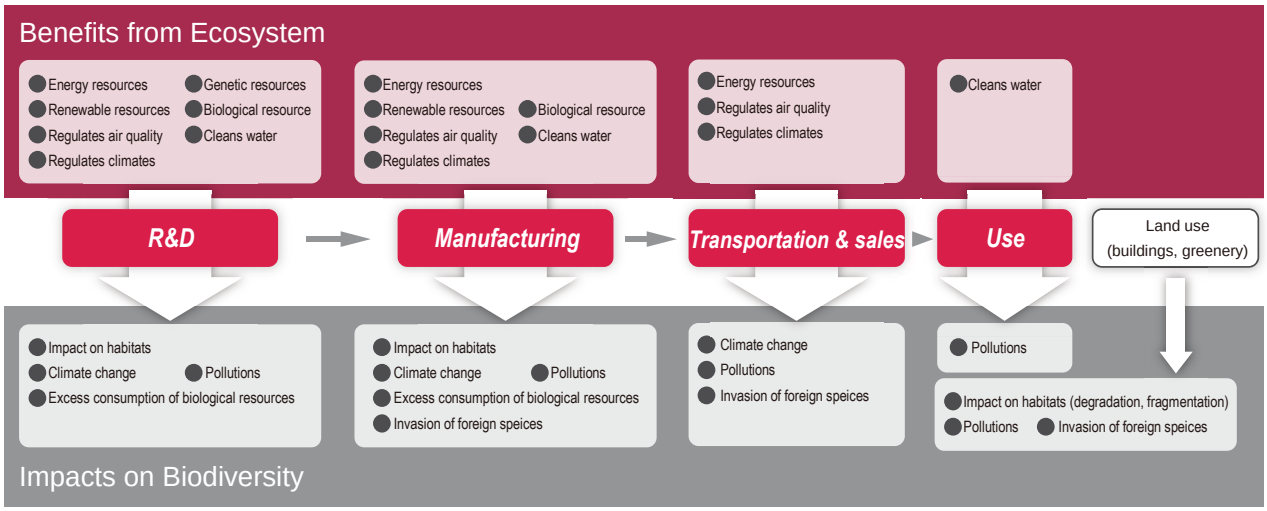
Sustainable biodiversity initiatives

Astellas is thankful for the benefits brought about by biological diversity, and understands its business activities in all fields have an impact on ecosystems. We will make a positive contribution to the preservation of biodiversity by working to lessen that impact. Furthermore, we will actively contribute to the creation of a society that coexists with the natural world, enabling the preservation of biodiversity and the sustainable use of the benefits of healthy ecosystems. Astellas has endorsed the Declaration of Biodiversity by Keidanren (Japan Business Federation) and makes donations to the Keidanren Nature Conservation Fund.

Basic Policy on Biodiversity

- We will endeavor to lessen our overall environmental impact on biodiversity by working to implement Climate Change Mitigation Measures, minimize environmental pollution, and promote resource recycling.
- We will endeavor to develop technologies that lessen the impact on ecosystems by lowering the burden we place on the environment and using as few natural resources as possible.
- We will endeavor to handle genetic resources in accordance with international standards and the regulations of producing nations.
- We will endeavor to broaden our efforts to preserve biodiversity with the aim of creating a sustainable society that coexists in harmony with nature. To this end, we will promote discussion within society and among affected parties, while reaching across national and geographical borders.
- We will endeavor to foster a corporate culture that will always act with respect for biodiversity and in a manner that is harmonious with our business activities, grateful for the benefits obtained from healthy

Biodiversity and Astellas



Biodiversity Index

Astellas assesses the three main factors that are causing the deterioration of biodiversity as being environmental pollution, resource consumption, and climate change, and has created a Biodiversity Index to evaluate the impact of its business activities on biodiversity.

The environmental burden for each sub-category in the assessment fiscal year is divided by the corresponding burden in the base-year and then multiplied by the weight to derive the "biodiversity burden index." The "biodiversity index" is calculated by dividing Astellas' consolidated revenue in the assessment fiscal year by the total of all the biodiversity burden index figures. Improvement can be determined by comparing this index to the base year.

$$\text{Biodiversity Index} = \frac{\text{Consolidated revenue in assessment fiscal year}}{\sum\left(\frac{\text{Burden in assessment fiscal year}}{\text{Burden in the base year}} \times \text{Weight}\right)}$$

Category	Sub-Categories	Weight (%)
Environmental pollution	NOx, SOx emissions	10
	Chemical substances emissions	10
	BOD load, COD load	10
	(subtotal)	(30)
Resource consumption	Water withdrawal (Global)	20
	Biological raw material usage	10
	Landfill waste volume	10
	(subtotal)	(40)
Climate change	GHG emissions (global)	30
	(subtotal)	(30)
Total		100

Environmental Action Plan (Biodiversity)

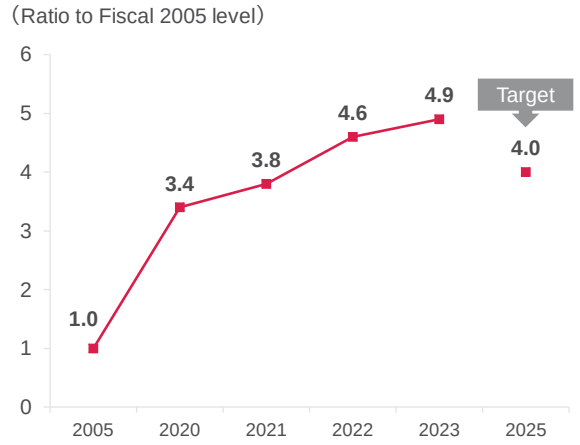
■ **Raise the Biodiversity Index to quadruple the fiscal 2005 level by fiscal 2025. (Global)**

■ Progress of Action Plan (Biodiversity)

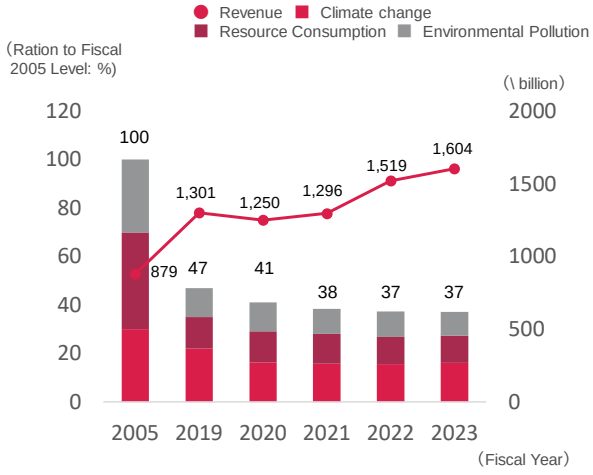
The Biodiversity Index for fiscal 2023 came in at 4.9 times the figure recorded in fiscal 2005. As the scope of the Environmental Action Plan has expanded regarding climate change, so has the scope of each index used to calculate the Biodiversity Index. The following graph has been recalculated from past indices. We will continue our current activities.

Beyond the region, Astellas believes that by minimizing the impact of its business activities on the environment, the Company will help suppress the deterioration of biodiversity and realize an environment in which sustainable business activities may be continued.

Biodiversity index



Biodiversity Burden Index and Revenue



Initiatives for Resource Recycling

Astellas recognizes that since the use of sustainable resources is essential for continuing its business activities, it must play an active role in the creation of a recycling-oriented society. We have established an Environmental Action Plan and are moving forward with steps to effectively use water resources and recycle waste materials (reuse, recycling, and use of all thermal energy) as initiatives contributing to a recycling-oriented society.

Environmental Action Plan (Measures for the Conservation of Resources)

■ **Improve water resource productivity by around 20% of the fiscal 2016 result by the end of fiscal 2025.**

Applicable area: Research and production site

Indicator : $\frac{\text{Revenue (billions of yen)}}{\text{Water resources withdrawn (thousand m}^3\text{)}}$

■ Effective Use of Water Resource

The effective use of water resources serves as a useful indicator for gauging society's impact on biodiversity. Astellas assesses the relationship between water resources and economic activity using a water resource productivity index, and has been striving to improve this index. Water resource productivity for fiscal 2023 improved significantly by 65% compared with the base year of fiscal 2016.

Changes in Water Resources Withdrawn and Revenue

		Fiscal 2016	Fiscal 2021	Fiscal 2022	Fiscal 2023
Water resource withdrawn (thousand m³)		**8,774**	**7,394**	**6,864**	**6,497**
Japan	Ser/Ind*	7,705	6,932	6,737	6,231
	Ground water	758	436	458	434
US	Ser/Ind*	146	24	53	55
	Ground water	-	-	-	-
Established Markets	Ser/Ind*	145	128	129	124
	Ground water	-	-	-	-
Greater China	Ser/Ind*	21	19	15	14
	Ground water	-	-	-	-
Inter-national	Ser/Ind*	-	-	-	-
	Ground water	-	-	-	-
Revenue (billions of yen)		**1,312**	**1,296**	**1,519**	**1,604**
Water resource productivity (billions of yen/thousand m³)		**0.15**	**0.18**	**0.22**	**0.25**
Ratio to Base-year		**-**	**17%**	**48%**	**65%**

*Service water and industrial water

No water was withdrawn from a source other than service water, industrial water, or groundwater.

Target: Production facilities and R&D sites in Japan and overseas (Note: The amount of water withdrawn as indicated in the Environmental Initiatives section includes the amount of water used at our head office.)

■Recycling of water and reducing water consumption

Astellas' operations use only water drawn from service water, industrial water and groundwater. Water used in work operations is treated in accordance with wastewater discharging standards and returned to an aquatic environment. Astellas is continuously working to reduce water consumption while minimizing process wastewater.

■ Risk Assessments

Water is indispensable for Astellas' research and production activities. Each business site obtains necessary government approval to use water, and wastewater is discharged after being treated to satisfy wastewater discharging standards. Moreover, Astellas uses Aqueduct provided by World Resources Institute to analyze water risks specific to the operating regions where its plants and other facilities are located.

The Astellas Group on a global basis does not currently withdraw water from water bodies in areas concerned with water resource depletion. As water risks may emerge in the future as a result of climate change, we are conducting risk analyses and taking steps to minimize our dependence on such resources, and also regard this as an effective means of ensuring business continuity.

Environmental Action Plan (Waste Management)

■ **Improve waste generated per unit of revenue by around 10% of fiscal 2016 result by the end of fiscal 2025**

Applicable area: Research and Production site

Indicator: $\frac{\text{Waste generated (tons)}}{\text{Revenue (billions of yen)}}$

■ Waste Management

Astellas is promoting efforts to reduce the waste landfill volume to as close to zero as possible through the proactive recycling and reuse of waste materials. Moreover, Astellas also evaluates the relationship between the waste generation volume and economic activities with the index known as the Waste generated per unit, and the Company is making efforts to improve it.

In fiscal 2023, the waste generated per unit improved 23% over the base year (fiscal 2016).

Changes in Waste Generation Volume and Revenue

	Fiscal 2016	Fiscal 2021	Fiscal 2022	Fiscal 2023
Waste generated (tons)	**13,899**	**13,882**	**13,544**	**13, 010**
Japan	11,836	10,158	9,787	9,354
US	54	576	783	921
Established Markets	1,956	3,043	2,866	2,655
Greater China	54	105	109	81
International Markets	-	-	-	-
Revenue (billions of yen)	**1,312**	**1,296**	**1,519**	**1,604**
Waste generated per unit (tons/billions of yen)	**10.6**	**10.7**	**8.9**	**8.1**
Ratio to Base-year (%)	**-**	**-1%**	**16%**	**23%**

Target: Production facilities and R&D sites in Japan and overseas (Note: The amount of water withdrawn as indicated in the Environmental Initiatives section includes the amount of water used at our head office.)

■ Waste management in the value chain

In waste management, it is also important to prevent environmental pollution being caused by hazardous waste generated by research centers and manufacturing plants and the illegal disposal of that waste. As a means of prevention, we first examine appropriate methods of waste disposal, and then conduct regular on-site assessment that waste treatment contractors are using appropriate waste treatment methods.

■ Handling status of High-concentrate PCB-contaminated waste storage

We have been systematically conducting detoxification of any high-concentrate PCB-contaminated equipment that is stored by Astellas. All PCB waste was treated during fiscal 2023.

Initiatives for Preventing Pollution

Astellas promotes activities to prevent global environmental pollution. For major environmental management indicators for air and water quality, we have set and managed stricter voluntary control values than the values stipulated by laws and regulations and agreed values. In addition, we are promoting voluntary activities to reduce atmospheric emissions of chemical substances.

Air Pollution—Reduction of VOC emissions

Astellas sets voluntary numerical targets for reducing the amount of volatile organic compounds (VOCs) that are emitted accompanying the use of solvents in production and research activities, and makes efforts to reduce emissions. Moreover, as a measure to prevent environmental pollution by chemical substances as well as occupational illnesses, we are taking steps to minimize the impact of our business operations on our employees, local communities, and the environment, such as development of new manufacturing processes that do not use highly hazardous chemical substances.

Air Pollution—Reduction of NOx emissions

To reduce the emission of NOx into the atmosphere, Astellas has installed boilers that use gaseous fuels (city gas, LNG, and LPG). The NOx emissions from all business facilities in Japan are as shown in the table below. The NOx emissions from non-Japanese production facilities in fiscal 2023 amounted to 9 tons.

Astellas does not use equipment that runs on fuel oil, which is a major source of SOx (sulfur oxide) emission.

Changes in Emission Volume (tons)

Substance	Fiscal 2019	Fiscal 2020	Fiscal 2021	Fiscal 2022	Fiscal 2023
VOC	**28**	**22**	**21**	**23**	**22**
NOx	**16**	**21**	**17**	**18**	**15**

VOC: Production sites and R&D sites in Japan
NOx: All business facilities in Japan

VOC emissions are tabulated based on 100 different VOCs as indicated in a notice issued by the Ministry of the Environment.*
Major substances subject to tabulation include isopropyl alcohol and ethanol.
*See Schedule 1 of "Concerning the Enforcement of the Act to Partially Amend the Air Pollution Control Act (Notice)" (June 17, 2005, EMB Daihatsu No. 050617001)

NOx emissions from production sites outside of Japan are not covered by the independent assurance because exhaust gas measurement methods differ from country to country.

Water Pollution

Astellas measures the extent of its impact on aquatic environments using the biochemical oxygen demand (BOD) load as an index in Japan and the chemical oxygen demand (COD) load as an index in other countries, and makes the data available to the public. In Japan, the BOD load was 7 tons, a 20% reduction from the previous fiscal year. Outside Japan, the COD in fiscal 2023 was 32 tons, an increase of 7% from the previous fiscal year.

Since the discharge into water of chemical substances used in manufacturing processes can have a negative impact on ecosystems, we are examining ways of reducing such discharges as much as possible at all stages from R&D onward. With respect to future drug candidate substances discovered and developed by Astellas, we are examining the impact pharmaceuticals would have on ecosystems through the evaluation of their biodegradability in the natural environment.

Changes in BOD Load (tons)

Substance	Fiscal 2019	Fiscal 2020	Fiscal 2021	Fiscal 2022	Fiscal 2023
BOD	**8**	**9**	**9**	**9**	**7**
Drainage into rivers	7	8	8	6	3
Drainage into sewer system	1	1	1	3	2

Target: Production sites and R&D sites in Japan

Changes in Drainage Volume (thousand m^3)

Destination	Fiscal 2019	Fiscal 2020	Fiscal 2021	Fiscal 2022	Fiscal 2023
Drainage Volume	**7,061**	**7,038**	**6,810**	**6,298**	**6,019**
Drainage into rivers	6,836	6,835	6,610	6,108	5,834
Drainage into sewer system	225	203	200	190	185

Target: All business facilities in Japan

Further Information on the PRTR System

Japan's PRTR Act designates substances harmful to human beings and recognized to widely exist in the environment. The main aim of the act is to confirm the nature of the releases and transfers of a company and link the results to independent assessments and improvement of voluntary chemical substance management. The table below shows the release and transfer of PRTR-designated substances that we identified and reported on in fiscal 2023. Our total amount of designated chemical substances released into the environment in fiscal 2023 was 1 tons. Astellas has kept low quantity emission since 2019.

Releases and transfers of PRTR chemical substances in fiscal 2023 (tons)

Substance name	Volume handled	Volume released			Volume transferred	
		Air	Water	Soil	Waste	Sewerage
Chloroform	10.770	0.538	0.000	0.000	10.231	0.000
N, *N*-dimethylformamide	1.906	0.000	0.000	0.000	1.894	0.000
Hexane	2.203	0.110	0.000	0.000	2.093	0.000
Heptane	13.806	0.155	0.000	0.000	13.651	0.000
N-methyl-2-pyrrolidone	21.200	0.000	0.000	0.000	21.200	0.000

Target: Production sites and R&D sites in Japan
Tabulated based on the target substances list as indicated in the Order for the Enforcement of the PRTR Act, which came into effect on April 1, 2023

PRTR: Refers to chemical substances designated under Japan's Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (Pollutant Release and Transfer

Environmental impact of products and countermeasures

Greenhouse Gases

Astellas does not handle or sell any product that uses hydrofluorocarbons (HFCs) as a filler agent.

Containers and Packaging Recycling

The products manufactured and marketed by the Company are administered to patients through medical institutions. After their use, packaging materials are disposed of by hospitals, pharmacies, and general households. The waste discarded by general households is mainly comprised of blister (plastic) packaging used for tablets and capsules. Hospitals and pharmacies discard blister packaging as well as various types of plastics including bottles and tubes, metals, glass materials used in injectable solutions products, and such paper items as individual packaging and cardboard boxes.

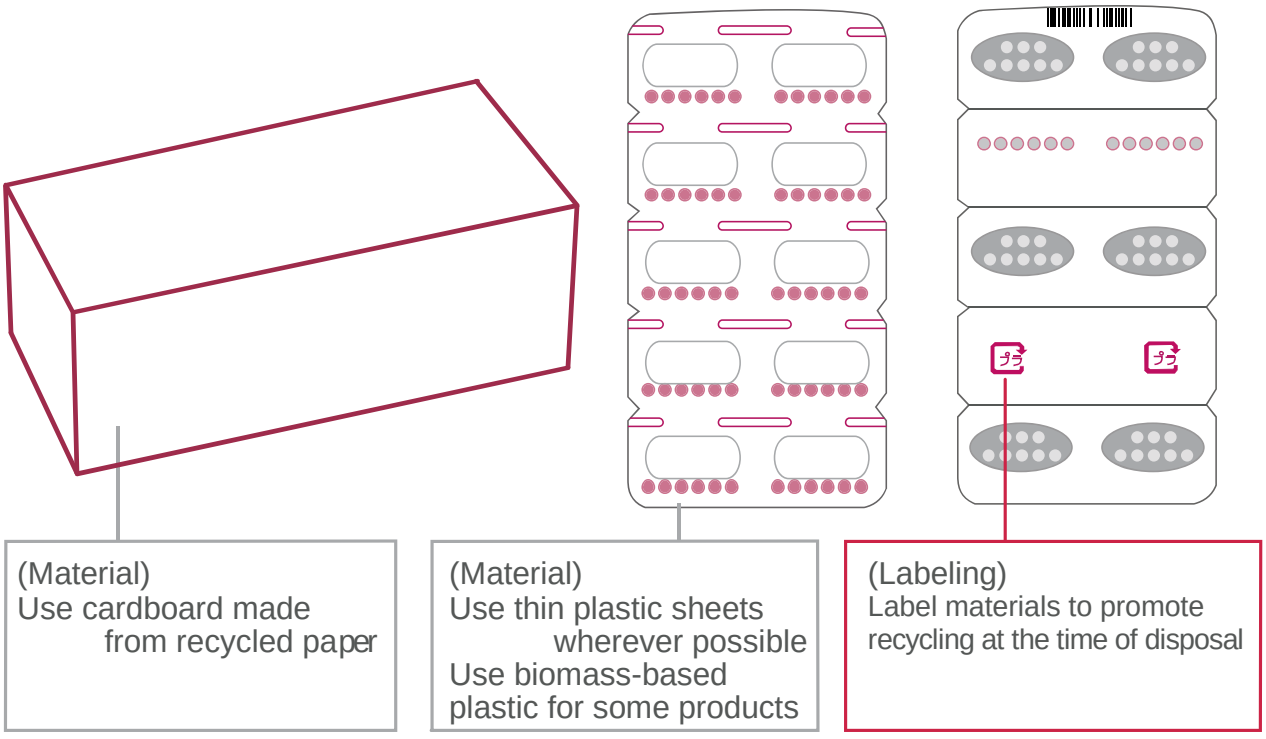
In the case of pharmaceutical packaging, certain functions remain essential to ensure the safe storage of products as well as compliance with the provisions stipulated under the Pharmaceutical and Medical Device Act of Japan and the laws and regulations of respective countries. In addition to these functions and requirements, Astellas selects environmentally friendly materials for use in its packaging while engaging in a variety of initiatives including the labeling of materials to promote recycling at the time of disposal.

One initiative is to start using blister sheet biomass plastic made from plant-derived raw material. Blister packaging is eco-friendly packaging using 50% of raw materials from sugarcane-derived polyethylene, a biomass plastic. Blister packaging is required to have a high level of tablet protection and usability, and by using a packaging technology developed over many years, it meets these requirements and can be mass-produced. In fiscal 2021 Astellas started using blister packaging made from plant-derived raw materials for some products in Japan.

To encourage the recycling of containers and packaging for household use in Japan, in accordance with the Containers and Packaging Recycling Law (which mandates the sorted collection of containers and packaging, and promotes their reuse in commercial products) sellers of products are responsible for defraying the costs of recycling of such waste products. The estimated total amount of plastic and paper containers and packaging used in Astellas products in fiscal 2023 is 218 tons, and the Company was requested to pay ¥8.22 million in recycling costs.

Disclosing Information on Plastic Recycling Volume

Astellas uses plastics in various products, recognizes that handling plastic waste generated in its business activities is an environmental issue, and endeavors to recycle plastic resources. In Japan, a law was enforced in April 2022 to promote the recycling of resources related to plastic. The amount of plastic waste generated in Japan in fiscal 2023 was 230 tons. Astellas is working to limit the amount of plastic waste it generates within Japan to under 250 tons in such ways as by limiting the use of plastic resources and improving recycling rates.



Environmental Accounting

Astellas calculates the costs of investment and expenses related to environmental conservation for its facilities in Japan and their outcomes based on the Ministry of the Environment's "Environmental Accounting Guidelines."

Environmental conservation costs in fiscal 2023 comprised ¥3,203 million in investments and ¥2,242 million in expenses (including depreciation costs). The main investments for preventing pollution were in the maintenance of wastewater treatment plants and the repair of underground water-supply pipelines. Investments in global environmental conservation included the installation of solar panels at research centers and updating hot water systems to heat pump chillers. The economic benefits generated through environmental protection activities amounted to ¥215 million, which includes lower costs owing to energy savings, the sale of waste organic solvents and waste metals, lower costs of treating waste materials and the purchase of regenerated organic solvents. All high-concentration PCBs have been processed.

Total environmental conservation costs in fiscal 2023

(¥ million)

Category			Environmental Conservation Costs			
			Investments	Costs		
				Total	Expense	Depreciation
Business Area Cost			3,154	1,683	1,005	679
Breakdown	Pollution Prevention	Prevention of atmospheric pollution	109	338	277	61
		Prevention of water pollution	274	406	213	193
		Prevention of soil contamination	299	112	26	86
		Prevention of noise, bad odor and vibrations	7	18	16	1
		Other	0	9	9	0
		Subtotal	689	882	542	341
	Global Environmental Conservation	Mitigation of climate change	597	311	53	258
		Prevention of ozone layer depletion	1,852	812	120	693
		Management of chemical substances	0	15	14	1
		Other	0	8	0	7
		Subtotal	2,449	1,146	187	959
	Resource circulation	Efficient use of wastes	0	206	206	0
		Conservation of water	0	0	0	0
		Treatment of wastes	16	60	57	3
		Other	0	17	13	4
		Subtotal	16	284	276	8
Upstream/Downstream costs			0	13	13	0
Administration costs			0	203	203	0
R&D costs			50	50	26	24
Social activity costs			0	2	2	0
Environmental remediation costs			0	253	253	0
Total			3,203	2,242	1,539	703
Total environmental conservation costs, excluding environmental remediation costs			3,203	1,952	1,249	703

Economic Benefit Related to Environmental Conservation

(Quantifiable items only included in calculation)

Measures taken	Economic Benefit Related to Environmental Conservation
Cost reductions through energy conservation	213 million
Sludge drying, reduction in amount of waste liquid disposal contracted out (through increased disposal in-house)	0 million
Conservation of resources through reuse of solvents, and reduction in fuel purchases through conversion of solvents to fuel	0 million
Sale of waste solvents	2 million
Total	215 million

Changes in Environment-related Investment and Expensed

(¥ million)

Categories	Fiscal 2019		Fiscal 2020		Fiscal 2021		Fiscal 2022		Fiscal 2023	
	Investments	Expenses	Investments	Expenses	Investments	Expenses	Investments	Expenses	Investments	Expenses
Pollution Prevention	98	401	519	362	261	449	367	398	689	542
Global Environmental Conservation	375	237	246	237	353	256	380	321	2,449	187
Resource Circulation	0	278	0	293	0	300	17	323	16	276
Upstream/downstream costs	0	11	0	12	0	12	0	12	0	13
Administration costs	0	193	0	226	0	223	0	207	0	207
R&D costs	32	41	18	19	10	17	9	25	50	26
Social activity costs	0	4	0	3	0	3	0	2	0	2
Environmental remediation costs	0	256	0	251	0	251	0	253	0	253
Total	**505**	**4,420**	**782**	**1,401**	**624**	**1,511**	**773**	**1,541**	**3,203**	**1,249**

Occupational Health & Safety

Ensuring employee safety in the workplace is a crucial component of Astellas' management philosophy. Along with providing a pleasant workplace for its employees, who are key Company stakeholders, Astellas believes that one of its major responsibilities is to ensure employee safety.

Since its inception in 2005, Astellas has not experienced any accidents leading to the loss of life among employees (including contract employees and business contractors). However, there have been more than a few incidents with the potential to cause a major accident. In order to prevent such work-related accidents and minimize the impact when such accidents occur, Astellas is promoting initiatives to ensure the safety of its working environments. These initiatives include activities based on knowledge obtained from past experience and consideration of measures to identify and address work-related risks.

Occupational Health & Safety Action Plan

Astellas has drawn up an Occupational Health & Safety Action Plan for the purpose of maintaining and securing a safe work environment, preventing work-related accidents, and minimizing accidents caused by workplace mishaps. The Astellas Environment, Health & Safety (EHS) Policy and Guidelines set forth unified standards that identify Astellas' aspirations in its EHS activities. Based on this policy and guidelines, Astellas is building an EHS management system at each business site and promoting related activities.

Incidence of Work-Related Injuries

To prevent work-related accidents, we share information on work-related accidents and near-misses that have occurred at business sites in Japan and overseas, without identifying any individuals involved. We are striving from more diverse perspectives to ensure a safe work environment.

From January to December 2023, there were no work-related fatalities and 20 cases of injuries requiring leaves of absence. The largest number of work days lost was 26 days because of an injury from a fall sustained in transit. We will strive for risk reduction activities on a global scale through safety awareness-raising activities to maintain a work-related accident severity rate of 0.005 or less.

		2021	2022	2023
Global	Number of work-related injuries (leave of absence)	10	17	20
	Frequency rate of work-related injuries *	0.33	0.57	0.66
	Severity rate of work-related injuries *	**0.008**	**0.016**	**0.005**
Japan	Number of work-related injuries (leave of absence)	1	2	2
	Frequency rate of work-related injuries *	0.10	0.20	0.20
	Severity rate of work-related injuries *	**0.002**	**0.001**	**0.002**
US	Number of work-related injuries (leave of absence)	3	4	8
	Frequency rate of work-related injuries *	0.42	0.54	1.00
	Severity rate of work-related injuries *	**0.012**	**0.002**	**0.007**
Established Markets	Number of work-related injuries (leave of absence)	4	4	7
	Frequency rate of work-related injuries *	0.57	0.59	1.01
	Severity rate of work-related injuries *	**0.008**	**0.058**	**0.007**
Greater China	Number of work-related injuries (leave of absence)	2	0	0
	Frequency rate of work-related injuries *	0.82	0.00	0.00
	Severity rate of work-related injuries *	**0.036**	**0.000**	**0.000**
International Markets	Number of work-related injuries (leave of absence)	0	7	3
	Frequency rate of work-related injuries *	0.00	2.35	1.01
	Severity rate of work-related injuries *	**0.000**	**0.023**	**0.006**

* Please refer to the abbreviation table for details.

Severity Rate of Work-Related Injuries
Prevent the incidence of major occupational accidents while maintaining a severity rate of work-related injuries at or below 0.005 at all business sites

Risk Assessment
Assess all business operations to identify risks in all areas as well as establish self-regulations to reduce such risk

Safety Initiatives

Astellas is building management systems related to occupational health and safety, security, accident prevention and other priorities, and is making well-organized and systematic efforts to implement occupational health and safety management activities. Astellas employees are required to give top priority to safety in all business operations, as confirmed by both management and labor. Moreover, Astellas strives to ensure the safety of all of its workers. With regard to safety management of business contractors, regular safety education is regulated under the Astellas EHS Policy and Guidance and Astellas requires business contractors obtain permission to perform certain tasks, as necessary. Furthermore, Astellas has built a system to prevent accidents and other troubles in such ways as providing information on hazards and harmfulness related to outsourced operations to companies commissioned to conduct operations in Astellas business sites.

In addition, it will be crucial to continuously develop occupational health and safety managers with specialized skills, and provide the training needed to integrate the approved procedures into day-to-day activities. Accordingly, Astellas has been improving skills by fostering collaboration between business sites and divisions, along with enhancing various safety education initiatives.

At business sites that must be established under laws and regulations, Astellas has set up occupational health and safety committees led by the business site manager and attended by representatives of labor and management. These committees meet on a regular basis to hold discussions on maintaining occupational health and safety, and safe workplace environments. The committees conduct activities such as identifying hazards, performing risk assessments and sharing information on occupational health and safety.

Methods for calculating performance data

Methods for Calculating Energy Consumption and GHGs

Type	Conversion Coefficients			
	Calorific value		CO_2 emissions	
Electricity	3.6	GJ/MWh *2	-- *1	tons/MWh
Kerosene	36.7	GJ/kiloliter	2.49	tons/kiloliter
LPG	50.8	GJ/tons	3.00	tons/tons
LNG	54.6	GJ/tons	2.70	tons/tons
City gas	45.0	GJ/thousand m^3N	2.24	tons/thousand m^3N
Diesel	37.7	GJ/kiloliter	2.58	tons/kiloliter
Gasoline	34.6	GJ/kiloliter	2.32	tons/kiloliter
Purchased thermal energy	1.36	GJ/GJ	0.057	tons/GJ

Beginning with the disclosure of results for fiscal 2023, the amount of power associated with the use of electricity generated by the Company using purchased electricity and renewable energy sources (such as solar and wind) has been converted at a rate of 3.6 MJ per kWh. The amount of CO2 emissions attributed to the use of energy other than electricity is calculated based on the emission coefficient as provided for in the Act on the Promotion of Global Warming Countermeasures prior to its revision in 2023. (Note: Steam used at the Company's Shenyang Plant is converted using a unit calorific value of 2.8 GJ/ton and CO2 emissions of 0.091 t-CO2/GJ.)

*1 To calculate the CO_2 emissions resulting from electricity usage, Astellas uses CO_2 emission coefficients provided by the electric power companies that supply each business facility (market-based method). In the case of Japan, we use the most recent adjusted emission coefficient of each electric power company announced by the Ministry of the Environment and the Ministry of Economy, Trade and Industry. In other regions where individual coefficients cannot be obtained, we use the latest country-specific coefficients provided in IEA *Emissions Factors* (2022 edition) published by the International Energy Agency (IEA).

Calculation Method for Scope 3 Emissions

Categories	Basis for calculation and calculation method	Emission source unit
1 Purchased goods and services	**Based on: Purchase price (millions of yen)** Purchase monetary amount of raw material and consumables (excluding consumption tax) x (emission source unit of each raw material and consumable x 1.05) NOTE: VAT was not taken into account in GHG calculation for non-Japan Affiliates.	Target: (Global) production facilities receiving deliveries of raw materials Emission source unit: ・Source: The Ministry of the Environment's database*[5]; emission source units based on the industry-related table Emission source unit on monetary basis for each raw material (purchaser price basis) (=t-CO_2 equivalent / 2005 consumption tax inclusive amount) ・Foreign exchange: Foreign currencies are converted to yen using the annual average of monthly TTM rates.
2 Capital goods	**Based on: Capital expenditures, software purchases (millions of yen)** Facility investment amount (consolidated) x emission source unit per price of capital goods Software purchase amount (consolidated) x emission source unit per price of capital goods Construction in progress aggregation method has changed (amount reclassified from construction in progress to property, plant and equipment is the amount applied as the amount of activity). Acquisition values of land, right-of-use assets, intangible assets excluding software have been excluded. Capital expenditures in Japan has included consumption tax amount.	Target: Global Emission source unit: ・Source: The Ministry of the Environment's database*[6]; emission source units per price of capital goods (Secretariat) Pharmaceuticals 2.83 t-CO_2 equivalent / million yen
3 Fuel and energy related activities (not included in Scope 1 and Scope 2)	**Based on: Consumption of each type of energy (GJ)** Usage amount of purchased fuel, electricity, heat, etc. x emission source units per usage amount for each energy type	Target: Global Emission source unit: ・Source: The Ministry of the Environment's database*[7]; emission source units per usage amount of electricity and heat (Secretariat) ・Source: National Institute of Advanced Industrial Science and Technology (AIST), LCI Database IDEA version 2.3
4 Transportation and distribution (upstream)	**Based on: Shipping weight and distance (tons*kilometers), fuel usage (kiloliter), energy consumption (MWh)** CO_2 emissions during transportation: (transported weight x transported distance x emission source during transportation) CO_2 emissions at distribution warehouses: Electricity usage amount x emission source unit	Target: Global Emission source unit during transportation (transportation of products and other goods at overseas) ・Source: Calculation sheet published by Defra (The Department for Environment, Food and Rural Affairs, UK) Emission source unit by transport vehicle, payload, and well-to-tank emission source unit Emission source unit during transportation (transportation of products and other goods in Japan) ・Source: The Ministry of the Environment's database*[2]; Fuel consumption per ton*kilometer transported by loading rate by maximum loading capacity by fuel CO_2 emission by fuel consumption per fuel Target: Warehouses for product storage in Japan (outsourced) Electricity emission source unit: The latest adjusted emission factors by power supplier
5 Waste generated in operation	**Based on: Shipping weight and distance (tons*kilometers)** CO_2 emissions generated during industrial waste transportation: (transported weight x transported distance x fuel consumption per unit of transportation) CO_2 emissions generated during industrial waste treatment: Amounts of recycled industrial waste, incineration processing, and direct landfill processing x waster type/emission source unit by processing method	Target: Business facilities and R&D sites in Japan Emission source unit during industrial waste transportation: ・Source: The Ministry of the Environment's database*[2]; Fuel consumption per ton* kilometer transported by loading rate by maximum loading capacity by fuel Emission source unit during industrial waste treatment and landfill: ・Source: The Ministry of the Environment's database* [8] emission source units by waste type (Secretariat) (excluding waste transportation stage)
6 Business travel (by airplane)	**Based on: Distance traveled (1,000 people*kilometer)** Number of persons using airplanes x distance between airports for each flight x emission source unit	Target: Results compiled from airplane flights used worldwide Flight distance between airports: Calculated by assuming flight is a straight line connecting two points on the earth's surface Emission source unit: ・Source: A calculation sheet made public by Defra (The Department for Environment, Food and Rural Affairs, UK) Emission source unit by flight class and distance and well-to-tank emission source unit
7 Employee commuting	**Based on: Distance traveled (1,000 people/kilometer)** Number of persons commuting to a worksite x emissions intensity x number of work days, taking into account the typical attendance rate x emission source unit	Target: Global (Number of working days per year in each country) Attendance rate Office-based: calculated based on the attendance rate at the Head Office in Japan; factories and laboratories: calculated at 100%. Emission source unit per employee/per number of working days ・Source: The Ministry of the Environment's database*[14]; Employed persons by monthly days of work National Institute of Advanced Industrial Science and Technology (AIST), LCI Database IDEA version 2.3
12 End-of-life treatment of sold products	**Based on: Weight of containers and packaging (Tons)** Usage volume of sold products when end-of-life treatment is approached in line with the laws on recycling containers and packaging x emission source unit	Target: Japan Emission source unit: ・Source: The Ministry of the Environment's database*[9]; emission source units by waste type (Secretariat) (including waste transportation stage)
13 Leased assets (downstream)	**Based on: Energy consumption by type (GJ)** Amount of fuel, electricity, heat, etc. billed to the leasing company x emission source unit per unit of energy consumption by energy type	Target: Company facilities being leased to another company Emission source unit ・Source: The Ministry of the Environment's database*[7]; emission source units per usage amount of electricity and heat (Secretariat)

The Ministry of the Environment's database: The Ministry of the Environment's emission source unit database (ver. 3.3) for calculating greenhouse gas emissions through the supply chain (March 2023)

Site data (major facilities)

Takahagi Facilities

INPUT			
Energy	Electricity	18,552	MWh
	Kerosene	-	kiloliter
	LPG	0.0	tons
	LNG	617	tons
	City gas	-	thousand m^3
	Diesel	1	kiloliter
	Gasoline	-	kiloliter
Water	Surface water	2,131	thousand m^3
	Groundwater	-	thousand m^3
OUTPUT			
Air	GHG	2	kilotons
	NOx	2	tons
	VOC	0.2	tons
Water bodies	into rivers	2,017	thousand m^3
	Sewerage system	-	thousand m^3
	BOD load	2	tons
	COD load	6	tons
Waste	Generated	1,623	tons
	Landfill	65	tons

Yaizu Facilities

INPUT			
Energy	Electricity	48,158	MWh
	Kerosene	-	kiloliter
	LPG	0.0	tons
	LNG	-	tons
	City gas	4,719	thousand m^3
	Diesel	7	kiloliter
	Gasoline	2	kiloliter
Water	Surface water	244	thousand m^3
	Groundwater	405	thousand m^3
OUTPUT			
Air	GHG	33	kilotons
	NOx	4	tons
	VOC	3	tons
Water bodies	into rivers	481	thousand m^3
	Sewerage system	-	thousand m^3
	BOD load	0.2	tons
	COD load	1	tons
Waste	Generated	954	tons
	Landfill	0.5	tons

Toyama Technology Center

INPUT			
Energy	Electricity	44,993	MWh
	Kerosene	-	kiloliter
	LPG	0.0	tons
	LNG	-	tons
	City gas	4,654	thousand m^3
	Diesel	12	kiloliter
	Gasoline	1	kiloliter
Water	Surface water	2,182	thousand m^3
	Groundwater	0.5	thousand m^3
OUTPUT			
Air	GHG	34	kilotons
	NOx	3	tons
	VOC	12	tons
Water bodies	into rivers	2,108	thousand m^3
	Sewerage system	-	thousand m^3
	BOD load	2	tons
	COD load	5	tons
Waste	Generated	5,268	tons
	Landfill	15	tons

Takaoka Plant

INPUT			
Energy	Electricity	8,979	MWh
	Kerosene	-	kiloliter
	LPG	932	tons
	LNG	-	tons
	City gas	-	thousand m^3
	Diesel	0.5	kiloliter
	Gasoline	0.6	kiloliter
Water	Surface water	1,385	thousand m^3
	Groundwater	28	thousand m^3
OUTPUT			
Air	GHG	7	kilotons
	NOx	1	tons
	VOC	3	tons
Water bodies	into rivers	1,227	thousand m^3
	Sewerage system	-	thousand m^3
	BOD load	0.9	tons
	COD load	6	tons
Waste	Generated	67	tons
	Landfill	-	tons

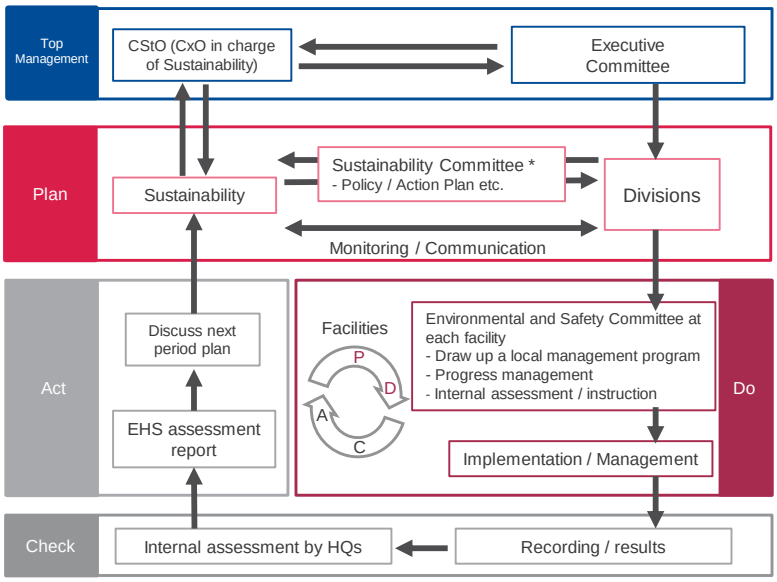
Tsukuba Research Center

INPUT			
Energy	Electricity	33,890	MWh
	Photovoltaics	168	MWh
	Kerosene	6	kiloliter
	LPG	-	tons
	LNG	-	tons
	City gas	5,216	thousand m^3
	Diesel	0.2	kiloliter
	Gasoline	1	kiloliter
Water	Surface water	258	thousand m^3
	Groundwater	.00	thousand m^3
OUTPUT			
Air	GHG	12	kilotons
	NOx	7	tons
	VOC	3	tons
Water bodies	into rivers	-	thousand m^3
	Sewerage system	152	thousand m^3
	BOD load	2	tons
	COD load	3	tons
Waste	Generated	642	tons
	Landfill	15	tons

Tsukuba Bio Research Center

INPUT			
Energy	Electricity	8,110	MWh
	Kerosene	-	kiloliter
	LPG	-	tons
	LNG	-	tons
	City gas	337	thousand m^3
	Diesel	0.2	kiloliter
	Gasoline	0.2	kiloliter
Water	Surface water	32	thousand m^3
	Groundwater	-	thousand m^3
OUTPUT			
Air	GHG	0.8	kilotons
	NOx	0.2	tons
	VOC	0.6	tons
Water bodies	into rivers	-	thousand m^3
	Sewerage system	29	thousand m^3
	BOD load	0.1	tons
	COD load	-	tons
Waste	Generated	799	tons
	Landfill	2	tons

EHS Management (page 5, enlarged version)



*Subordinate organization: Environment Working Group, Health and Safety Working Group