



A Brighter Future Through a Better Environment

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Overview



Our commitment to the health of patients includes taking actions that contribute to the health of our planet.

Today, pressure on environmental health, as evidenced by degrading air quality, increasing scarcity of clean water and other natural resources, waning biodiversity, and impacts of climate change, increasingly poses threats to human health. Because of this connection between the health of the planet and our patients, we have made environmental stewardship and resource conservation inherent to our business operations and practices. Moreover, our employees, future employees, customers, investors, and other stakeholders expect us to set a high standard in this respect — to care for the environment and take actions that reduce our environmental impact throughout the entire life cycle of our products. This obligation to environmental stewardship and sustainable business directly aligns with our values of Takeda-ism and our priorities of patient, trust, reputation, and business. In this way, environmental stewardship becomes one more way that we work to fulfill our mission of better health and a brighter future for patients everywhere.



Environmental Management



Takeda has actively engaged in environmental stewardship initiatives for almost 50 years, since establishing an Environmental Protection Committee in 1970.

We marked another milestone in 2019 when we updated our Global Environment, Health & Safety (EHS) Policy to reflect the evolution of our business and to meet the expectations of stakeholders. The manner in which we go about protecting the environment — namely by conserving natural resources and reducing the environmental impact of our products and operations — will shape our reputation with employees, patients, regulators, and society for years to come.

The new EHS policy provides for the following:

- Strong alignment with our values of Takeda-ism and our priorities.
- A clear foundation for our EHS programs that sets out our aspiration for world-class EHS performance as we integrate the acquisition of Shire.
- Alignment with international standards for EHS management systems such as ISO 14001 for environment and ISO 45001 for health and safety.
- Our commitment to proactively minimize negative environmental impact throughout the entire product life cycle.
- Our dedication to advancing environmental sustainability in our operations and reducing our impact on climate change, e.g., by minimizing waste and reducing energy use, water consumption, and CO₂ emissions.



We are proud of the strides made in EHS management, but we have much more to do. Twenty of our manufacturing sites have achieved certification to the International Standards Organization (ISO) 14001 standard. Our intent is to have all 34 manufacturing sites certified within three years.

EHS strategies and activities are overseen by our Corporate EHS Council and chaired by our Global Manufacturing and Supply Officer, who is also a member of the Takeda Executive Team (TET). The Council, which approves company-wide EHS strategy and targets and monitors progress against it, includes members from all Takeda business functions. Council activities are reported to Takeda's Business Review

Committee, which is chaired by our President and CEO. Our governance structure also includes site-level sustainability teams, and specifically energy and water conservation global working groups.

All of our manufacturing, research, and BioLife sites are required to establish and operate an EHS management system based on our Global EHS standards. Each Takeda site assesses its risks and opportunities, then prioritizes actions to

mitigate them by aligning with a Plan-Do-Check-Act cycle. This process involves establishing goals based on risks and opportunities, developing and executing action plans to attain them, monitoring performance, and reviewing the outcomes for continuous improvement opportunities. The corporate EHS team continues to enhance EHS standards and the technical guidance to further reduce risk and improve EHS performance under the framework of the global EHS management system.

Manufacturing EHS Certifications¹

	Country	City	ISO 14001 Environmental Management Systems	ISO 50001 Energy Management Systems	OHSAS 18001 or ISO 45001 Occupational Health and Safety Management Systems ²
1	Austria	Linz	X		
2	Austria	Orth an der Donau	X		X
3	Austria	Vienna	X		X
4	Belgium	Lessines	X		X
5	Brazil	Jaguariúna	X		
6	China	Tianjin	X		
7	Germany	Oranienburg	X		X
8	Germany	Singen	X		
9	India	Vashi, Navi Mumbai	X		X
10	Ireland	Grange Castle		X	
11	Italy	Pisa	X		X
12	Italy	Rieti	X		X
13	Japan	Fukuchiyama	X		
14	Japan	Hikari	X		
15	Japan	Osaka	X		
16	Singapore	Singapore	X		X
17	Switzerland	Neuchatel	X		X
18	United States	Los Angeles, CA	X		X
19	United States	Round Lake, IL	X		
20	United States	Social Circle, GA	X		X
21	United States	Thousand Oaks, CA	X		X

¹ LIST IS INCLUSIVE OF LEGACY SHIRE AND LEGACY TAKEDA MANUFACTURING LOCATIONS.

² TAKEDA IS CURRENTLY TRANSITIONING SITES CERTIFIED UNDER THE OHSAS 18001 TO THE EQUIVALENT ISO 45001 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM STANDARD.



A Conversation with Thomas Wozniewski

Global Manufacturing & Supply Officer

WHAT MOST EXCITES YOU ABOUT THE WORK YOU ARE DOING TO CREATE SUSTAINABLE VALUE AT TAKEDA?

I am proud that Takeda actively pursues ambitious environmental, health, and safety targets, and the steps we have taken to position the company for success. Throughout our global manufacturing operation and supply chain, we have strong levers to reduce the environmental impact of our production. In addition, all of our employees are very much motivated to significantly contribute to the sustainable growth of Takeda.



WHAT DO YOU SEE AS YOUR MOST SIGNIFICANT CHALLENGE AND OPPORTUNITY TO CREATING THAT VALUE?

There are growing expectations from external stakeholders about how companies like Takeda can better manage their environmental and social impacts. To do so, we have a significant opportunity to foster the use of new technologies across Takeda. Digitalization, for example, enables us to better analyze and optimize the environmental impact of our production facilities. We also have programs in place to realize improvements in process safety, waste generation, and water consumption in our plants.

HOW DOES YOUR WORK HELP TAKEDA BETTER SERVE PATIENTS?

It's not enough just to keep patients healthy; we also have to keep our planet healthy. By working to decrease our environmental footprint, we're contributing to a world that has cleaner air, cleaner water, and a more sustainable future.



Goals and Progress

The Takeda Environmental Action Plan specifies environmental issues and targets for the medium- and long-term to combat global warming and promote responsible use of natural resources. We review targets annually and continuously promote activities to achieve them, such as the CO₂ roadmap created by our Energy Saving Working Group to increase sharing of environmental best practices among sites. Goals and progress against them for our business, excluding the recent acquisition of Shire, are set out below. Our intent is to set new goals by the end of FY2019 that reflect the integration of Takeda and Shire and our ambition to lead a world-class environmental sustainability strategy.



Environmental Reduction Goals

Impact Area	Reduction Goal	Baseline Year	Reduction Through End of FY2018 ²	Target Fiscal Year
CO ₂ Emissions	30%	2015	7.8%	2030
CO ₂ Emissions	25%	2005	33.7%	2020
NO _x Emissions ¹	20%	2005	59%	2020
SO _x Emissions ¹	75%	2005	99.1%	2020
Fresh Water Use	30%	2005	48%	2020
Waste Sent to Landfill (Japan only)	60%	2005	68.3%	2020

¹ SULFUR OXIDES (SO_x) AND NITROGEN OXIDES (NO_x) RESULTING FROM VARIOUS ON-SITE COMBUSTION PROCESSES.

² PERFORMANCE AGAINST GOALS EXCLUDES CONTRIBUTION FROM SHIRE ACQUISITION.



Another way we monitor our progress is through environmental protection investments and expenditures. Environmental protection investments refer to the costs of installation of new, and upgrading of existing, environmental equipment such as wastewater treatment solutions. Environmental expenditures refer to the purchase of goods and services for the maintenance of existing environmental equipment as well as materials used for environmental protection. In FY2018, environmental protection investments totaled JPY 1,956 million, and expenditures totaled JPY 5,086 million. The economic benefits of energy-saving measures for Takeda totaled approximately JPY 99 million.



Environmental Protection Investments¹

Category		Investments (million ¥)	Expenditures (million ¥)
Business area costs	Pollution prevention	855	3,863
	Environmental protection	920	208
Resources recycling		150	813
Administrative costs		31	202
Total		1,956	5,086

¹ ENVIRONMENTAL INVESTMENTS AND EXPENDITURES DATA EXCLUDES CONTRIBUTION FROM SHIRE ACQUISITION.



Celebrating World Environment Day

For a week in 2019, Takeda employees around the world came together to collectively care for the planet in celebration of World Environment Day (WED) with the goal of raising awareness for the environment, as well as our obligation to protect it, while underscoring the connection to global health. Facilities around the world held activities supporting this goal, which became a top trending topic on our in-house message board. Based on employee participation in WED events, Takeda partnered with the Arbor Day Foundation to plant 40,000 trees. WED is one of the ways we engage our employees on the importance of Takeda’s environmental work and our progress toward goals.

Centralized EHS Auditing

EHS audits serve as an important governance and oversight mechanism to assure that our EHS management systems are effective. A centralized global EHS audit function leads the program, which includes management systems and compliance audits. We engage independent external auditors who have expertise in the relevant national and regional regulations to work with internal auditors for the EHS legal-compliance audits. Through these audits, we verify each site has internal controls in place to meet Takeda management's expectations, Takeda standards and operating procedures, as well as regulatory requirements.



Based on the results of the audits, sites develop Corrective and Preventive Action (CAPA) plans, which the audit leader and regional EHS teams approve and track to completion. We also analyze audit trends and review them to identify areas of focus for the coming year and required support as a part of our EHS governance process. The Corporate Head of EHS, along with the Head of EHS Audit, reports audit results and CAPA progress to the Risk, Ethics, and Compliance Committee.

The EHS audit function determines audit frequency based on the level of EHS risk inherent in each operation, with manufacturing and research facilities typically audited every two to three years. Site EHS risk often depends on the type of operations, the complexity and size of the operation, past EHS performance, and other factors. In FY2018, we performed 27 EHS audits.



Working Greener

Environmental sustainability efforts extend beyond our manufacturing operations to office buildings around the world. Recent initiatives include:

- Launching Takeda Goes Green, an initiative for sharing best practices in office settings. This program resulted in an 8.2 percent reduction in CO₂ emissions at our Osaka office and a 16.3 percent year-over-year reduction at our Takeda-operated office facilities in Japan.
- Instituting a new waste management concept at our building in Zurich to strengthen recycling habits. The building replaced individual wastebaskets at desks with centralized recycling stations on each floor with separate sections for general waste, aluminum, polyethylene terephthalate (PET), and mixed plastics. The new system is expected to save more than 90,000 plastic bin bags per year.
- Certifying our Takeda laboratory and office space on Binney Street in Cambridge, Massachusetts, to Leadership in Energy and Environmental Design (LEED) Gold by the U.S. Green Building Council.
- Forming green teams at many office locations to address sustainability goals for the coming year.

Climate Change



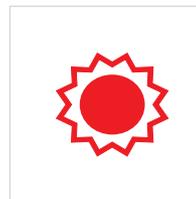
The impacts of climate change and associated global warming continue to become increasingly visible and, if unabated, will have profound impacts on the health and well-being of people across the globe.

That's why climate change has been a priority of our agenda since 1974, when we established an Energy Conservation Committee. Today, we continue to implement countermeasures globally to help mitigate the effects of our business activities on the natural environment, especially with respect to energy use and greenhouse gas emissions.

Takeda recognizes the importance of working with the international community on this global issue and is responding to global calls for action. We have joined the Paris Pledge for Action and the Science Based Targets Initiative, committing to doing our part in keeping the climate safe and stable in alignment with climate science. We also participate in Caring for Climate, the world's largest corporate-led initiative on climate change and publicly disclose our climate change strategy, initiatives, and impacts through annual participation in CDP.

Governance

Oversight for climate change initiatives is managed at the highest levels of our company. Currently, the Global Manufacturing & Supply Officer (GMSO) — appointed by the president and CEO and a member of the TET — has ultimate responsibility. The GMSO chairs a cross-departmental committee, the Corporate EHS Council. This council approves corporate strategies and activities, as well as enterprise-wide targets. The GMSO also controls a fund for capital



expenditures directed at energy-saving projects. Sites can apply to the fund for projects, such as renewable-energy installations. In addition, a Global Energy-Saving Working Group, which includes members of all manufacturing and R&D sites, accelerates energy-saving activities by sharing best practices and undertaking initiatives to raise employee awareness.

Responding to Climate Risks

Takeda recognizes that climate-related risks may have a major impact on our business activities. We manage this risk by establishing reporting lines to the Business Review Committee, made up of the President and CEO and the TET. Using internally developed guidelines, we have also worked to assess climate-related risks at manufacturing and R&D locations globally. When audits and other activities identify any new significant climate-related risks, these are reported to the Risk, Ethics, and Compliance Committee, which centralizes company-wide risk management. Takeda continues to enhance its disclosure in line with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations.

Takeda is also developing vaccines and medicines for diseases likely to be exacerbated by climate change, such as dengue, a serious viral disease transmitted by mosquitos. About 50 percent of the global population is at risk for dengue, which is estimated to cause 390 million infections each year. We also participate in the World Intellectual Property Organization (WIPO) Research Consortium, a joint enterprise hosted by WIPO for promoting R&D on treatments and vaccines for Neglected Tropical Diseases (NTDs), malaria, and tuberculosis. As part of the consortium, we are taking steps to strengthen our healthcare platforms in developing countries. See the [Health](#) section for more information beginning on page 17.

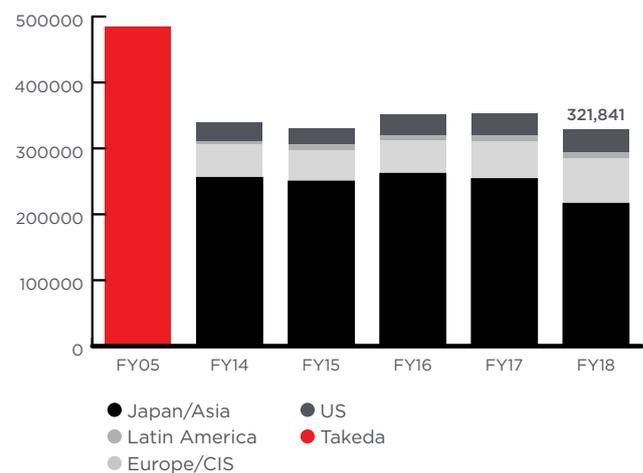
Strategy and Performance

Responding to climate change — especially for a global enterprise — is a complex issue. Takeda’s strategy for managing it consists of multiple elements to reduce our carbon footprint and operate in a sustainable manner across our operations and throughout our supply chain.

Under the Takeda Environmental Action Plan (EAP) formulated in 2015, we have set a goal to reduce CO₂ emissions from energy sources by 25 percent by 2020. We met this target ahead of schedule, in 2017, and subsequently set a new goal, aligned with climate science, to reduce emissions by 30 percent from 2015 levels by 2030.

CO₂ Emissions^{1,2}

(Metric Tonnes CO₂)



¹ DATA COLLECTION SITES: ALL PRODUCTION AND RESEARCH SITES (TAKEDA PHARMACEUTICAL COMPANY LIMITED INCLUDES ITS HEADQUARTERS AND SALES OFFICES). CONTRIBUTIONS FROM SHIRE ACQUISITION EXCLUDED.

² DUE TO DIVESTMENTS, PAST DATA HAS BEEN RESTATED.

CALCULATION METHOD

EMISSIONS INCLUDED IN THE CALCULATION CO₂ EMISSIONS REFER TO DIRECT EMISSIONS GENERATED BY COMBUSTION OF FOSSIL FUELS AND INDIRECT EMISSIONS FROM ENERGY SOURCES.

CO₂ EMISSIONS FACTOR EMISSIONS OF TAKEDA IN JAPAN ARE CALCULATED BASED ON THE “LAW CONCERNING THE RATIONAL USE OF ENERGY,” AND THE CO₂ EMISSION FACTOR FOR PURCHASED ELECTRICITY IS THE EMISSION FACTOR FOR EACH ELECTRIC POWER PROVIDER IN FISCAL FY2005. THE CO₂ EMISSION FACTORS FOR ELECTRICITY PURCHASED OUTSIDE JAPAN ARE BASED ON THE EMISSION FACTORS FOR EACH ELECTRIC POWER PROVIDER, OR THE EMISSION FACTORS PROVIDED BY THE INTERNATIONAL ENERGY AGENCY (IEA) FOR EACH COUNTRY.



Managing Greenhouse Gas (GHG) Emissions From Our Operations

To promote energy conservation and CO₂ emissions reductions globally, we have begun to implement a company-wide standard on energy management systems that fulfills the requirements of the ISO 50001 standard. The Global Energy Saving Working Group will lead the implementation of this standard. Our Global Engineering team will support sites as they implement the new energy management system with the intent to reduce energy usage, improve energy efficiency, reduce CO₂ emissions, and optimize processes. All sites are required to establish an Energy Management Team as they implement the new system.

Sharing best practices can be a powerful tool in promoting sustainability and combating climate change. Even when a successful strategy is already based upon a common technology, seeing the evidence of its success can encourage others to adopt it. For example, a successful energy assessment project in Singen, Germany, has now been shared across our global manufacturing network. The plan resulting from the energy assessment includes 19 quick wins and projects that can lead to reductions in energy use, operating costs, and CO₂ emissions. We strongly encourage sites to engage in this way, and we have captured more than 75 such tips in a Best Practice booklet.

Increasing renewable energy use is also an important strategy in the pursuit of our long-term goals. Takeda promotes the use of low-carbon energy sources and continues to explore options for introducing on-site

solar power generation capacity when constructing new facilities. We have installed photovoltaic systems at several facilities, including our manufacturing facilities in China, Germany, Indonesia, and Japan, and we plan to introduce renewable energy at several more of our European manufacturing facilities in the future. At our Asker, Norway, manufacturing facility, we have successfully switched from fossil fuels to bio-fuels, thereby reducing CO₂ emissions and achieving zero SO_x emissions.

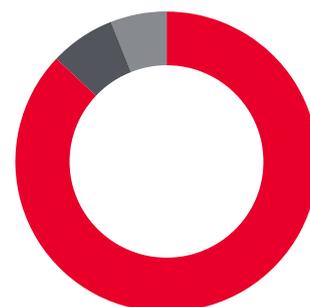
FY2018 CO₂ Emission Summary¹ ✓

6% Scope 1 Direct emissions (resulting from fossil fuel burned at Takeda facilities)
157,958 t-CO₂

7% Scope 2 Indirect emissions (resulting from the consumption of purchased electricity and steam)
163,883 t-CO₂

87% Scope 3 Indirect emissions (not including Scope 2, that occur in Takeda's value chain)
2,224,643 t-CO₂

- Scope 1 Direct emissions
- Scope 2 Indirect emissions
- Scope 3 Indirect emissions



Scope 3 Emissions detail

83%	Purchased goods and services
6%	Fuel and energy-related activities not included in Scope 1 and 2
4%	Upstream transportation & distribution
3%	Employee commuting
2%	Upstream leased assets

¹GHG EMISSION GRAPHIC EXCLUDES CONTRIBUTION FROM SHIRE ACQUISITION.

Working With Our Partners to Curb Climate Change

Beginning in 2018, we began to estimate global Scope 3 emissions for our entire value chain, which includes the activities of suppliers, customers, and others. The goal is to improve our understanding of our GHG emissions at each step in the value chain. To do so, we have partnered with Trucost, which has led to improved Scope 3 emissions data for FY2018. This detailed analysis of our downstream and upstream activities will help us assess the most significant GHG emissions sources, allowing us to establish targets for our Scope 3 emissions.

Finding ways to reduce the carbon footprint of product transportation is an important aspect of our GHG reduction efforts. Through several initiatives, Takeda has reduced CO₂ emissions from product transport by 14 percent in FY2018. For example, combining multiple transportation modes for a single shipment has decreased costs and overall GHG emissions. Takeda is advancing measures to achieve a modal shift in transportation from CO₂-intensive transport modes, such as air freight, to lower CO₂ modes, such as sea freight. We have also optimized our regional distribution network in several ways, including load consolidation and better utilization of truck capacity. This work has reduced 100 tonnes of CO₂ emissions, equivalent to removing 21 passenger vehicles from the road for one year. We have also implemented the use of several innovative technologies, such as hybrid shipping containers that are lighter and keep a consistent temperature without a power source. These innovative technologies save time and money while improving environmental performance. We also work to reduce the weight and size of shipping containers and invest in reusable shipping solutions. As Takeda continues its integration with Shire, we expect greater synergies that will reduce costs and GHG emissions.

As we work to reduce our carbon footprint, we face several challenges, which we are working to overcome:

- Increasing energy usage and CO₂ emissions as a result of increased production demand, as well as acquisitions.
- Good Manufacturing Processes (GMPs) that impose limitations on process optimization opportunities, for example, cleaning operations and ventilation.
- The scarcity of green electricity for purchase in countries with low penetration and promotion of renewable energy.
- Incineration of high potent Active Pharmaceutical Ingredients (APIs) and other toxic substance wastewater streams rather than relying upon biodegradation or other low-energy alternatives.
- Challenges associated with reducing Scope 3 emissions and engaging our suppliers to set their own emissions reductions targets, which fall outside of our direct control.

FY2018 Takeda Scope 3 Emissions^{1,2}

	Value Chain (Scope 3) Category	Total GHG (tCO ₂ e)	Scope 3 Share (%)
Upstream	1. Purchased goods and services	1,850,033	83%
	2. Capital goods	16,115	<1%
	3. Fuel- and energy-related activities	138,710	6%
	4. Upstream transportation and distribution	81,425	4%
	5. Waste generated in operations	1,155	<1%
	6. Business travel	17,613	<1%
	7. Employee commuting	61,385	3%
	8. Upstream leased assets	43,526	2%
Downstream	9. Downstream transportation and distribution	N/A	N/A
	10. Processing of sold products	7,464	<1%
	11. Use of sold products	N/A	N/A
	12. End-of-life treatment of sold products	6,123	<1%
	13. Downstream leased assets	N/A	N/A
	14. Franchises	N/A	N/A
	15. Investment	1,094	<1%
	TOTAL ✓	2,224,643	

¹ SCOPE 3 GHG EMISSIONS TABLE EXCLUDES CONTRIBUTION FROM SHIRE ACQUISITION.

² SEE APPENDIX PAGE 92 FOR THE METHODOLOGY WE USE TO CALCULATE SCOPE 3 EMISSIONS.

Environmental Impacts Beyond Emissions



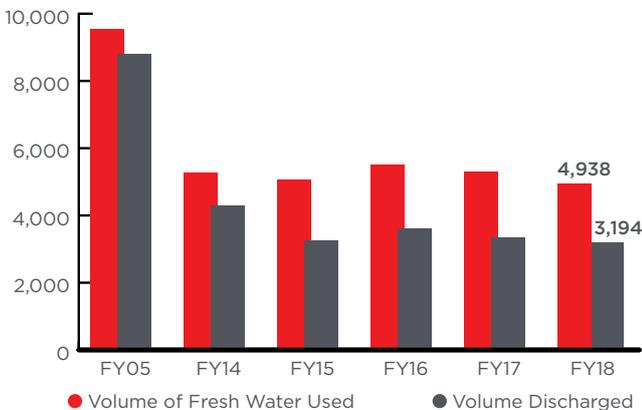
Water

As water scarcity becomes a threat for more of the world’s population, Takeda has taken steps to better understand and reduce water usage at each of our manufacturing and research sites. Using the Global Water Tool¹ developed by the World Business Council for Sustainable Development, we have found that 45 percent of our manufacturing sites are located in areas considered to have “low” water risk; 28 percent of our manufacturing sites are located in areas considered to have “medium” water risk; and 27 percent of our manufacturing sites are located in areas considered to have “high or extremely high” water risk.

¹A TOOL FOR INDEXING WATER-RELATED RISKS, PROVIDED BY THE WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT.



Volume of Fresh Water Used and Discharged (1,000 m³)^{1,2} ✓



¹WATER CONSUMPTION AND DISCHARGE DATA INCLUDES ALL PRODUCTION AND RESEARCH SITES AND EXCLUDES CONTRIBUTION FROM SHIRE ACQUISITION. THE DATA DOES NOT INCLUDE NONCONTACT COOLING WATER.

²DUE TO DIVESTMENTS, PAST DATA HAS BEEN RESTATED.



Under the Takeda Environmental Action Plan, we have a target of reducing our fresh water usage by 30 percent from FY2005 levels by 2020. In FY2018, we used 4,938 thousand m³ of fresh water, a reduction of 48 percent from FY2005, exceeding our goal.

Takeda manages the quality of effluent wastewater in line with the following principles:

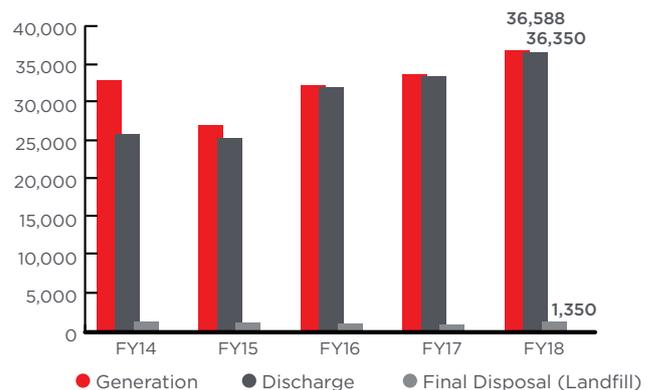
- Prevent negative effects on people and the ecosystem due to chemical substances in wastewater.
- Comply with relevant laws.
- Manage wastewater rationally based on scientific evidence, substance concentrations, and environmental toxicity.

We have programs and monitoring tools in place to ensure that these principles are upheld. For example, we collect and incinerate waste Active Pharmaceutical Ingredients (APIs) to prevent the release of harmful substances in wastewater and conduct Whole Effluent Toxicity testing at our facility in Hikari, Japan, to monitor the impact of treated wastewater released directly into the ocean. Takeda also works to prevent contamination of soil and groundwater through periodic groundwater monitoring at sites where this could be a concern.

Waste Reduction

Takeda strives to reduce the amount of waste sent to landfill, first by curtailing the amount of waste generated and then by promoting on-site reuse and waste reduction with off-site recycling. Under the Takeda Environmental Action Plan, we have set a target to reduce the volume of waste sent to landfill in

Trends in Waste Generation, Discharge, and Final Disposal (tonnes)^{1,2} ✓



¹ WASTE DATA INCLUDES ALL PRODUCTION AND RESEARCH SITES AND EXCLUDES CONTRIBUTION FROM OFFICES AND SHIRE ACQUISITION.

² DUE TO DIVESTMENT, PAST DATA HAS BEEN RESTATED.

Japan by 60 percent compared with FY2005 levels by 2020 and are conducting ongoing activities to achieve this goal. Takeda in Japan sent 124 tonnes of waste for final disposal in FY2018, a decrease of 68 percent compared with FY2005, thus exceeding our 2020 goal through the prioritization of waste minimization and recycling activities at these locations.

Chemical Substance Release Reduction

Takeda handles a wide variety of chemical substances, including our pharmaceutical products. We work to appropriately manage chemical substances in line with our policy of reducing environmental emissions of chemical substances by using risk assessments to prioritize emissions reduction efforts.

Takeda works to better understand and minimize the potential impact of APIs and the larger issue of pharmaceuticals in the environment (PiE) within our manufacturing and R&D operations.

We specifically manage requirements for PiE in our manufacturing facilities through robust waste management and wastewater treatment processes, while continuing to comply with federal, state, and local discharge regulatory obligations. Takeda partners and communicates EHS requirements to our contract management organizations (CMOs) to prevent the release of hazardous substances and byproducts into the environment.

We comply with regulatory requirements to perform environmental risk assessments and toxicological

and safety assessments to evaluate and ensure environmental and patient safety as part of our marketing authorization applications in the U.S. and internationally. Takeda continually reviews product regulatory requirements and impact on commercial products and those in development through its stage gate development processes, for products we manufacture internally and through CMOs, to minimize the impact on the environment. And finally, Takeda is part of the European Federation of Pharmaceutical Industries and Associations (EFPIA) consortium that is involved in developing a position and roadmap for addressing PiE at the industry level.

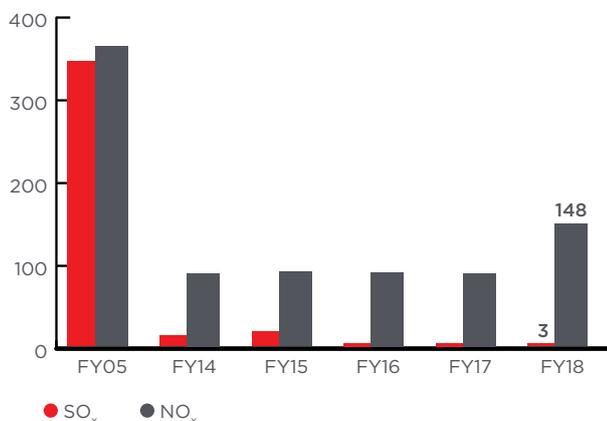
In FY2018, Takeda’s atmospheric volatile organic compounds (VOC) emissions were 104.8 tonnes ✓. Takeda in Japan handled 12 Pollution Release and Transfer Register (PRTR)-designated substances, of which 7 tonnes ✓ were released into the atmosphere.



Other Emissions

At each of our operating sites, Takeda has established a plan to reduce NO_x (nitrogen oxides), SO_x (sulfur oxides), dust emissions, and chemical oxygen demand (COD) load. Under the Takeda Group Environmental Action Plan, Takeda aims to reduce its NO_x emissions by 20 percent from FY2005 levels and SO_x emissions by 75 percent by FY2020. In FY2018, we reduced NO_x emissions by 59 percent from 2005 levels and SO_x emissions by 99 percent, well exceeding our 2020 goals.

NO_x and SO_x Emissions^{1,2} ✓ (tonnes)



¹ NO_x AND SO_x EMISSIONS DATA INCLUDES ALL PRODUCTION AND RESEARCH SITES AND EXCLUDES CONTRIBUTION FROM SHIRE ACQUISITION.

² DUE TO DIVESTMENTS, PAST DATA HAS BEEN RESTATED.

Biodiversity Conservation

Takeda recognizes the importance of biodiversity to the health of the planet. Our Global EHS Policy incorporates guidelines to protect biodiversity. Each of our business sites promotes initiatives that align with the objective of the Convention on Biological Diversity.

Takeda uses biological resources as ingredients for products and indirectly utilizes these resources in our R&D activities. These resources are used as ingredients in Chinese and other herbal medicines, which are over-the-counter drugs. Most ingredients are sourced from cultivated plants, but some are sourced from wild plants. We are studying the feasibility of switching to cultivated plants in order to ensure stable procurement, which should help conserve the biodiversity of natural habitats. When using genetic resources in R&D, we give consideration to the Convention on Biological Diversity.

Takeda was an early adopter of in-house cultivation of medicinal plants, putting less stress on plants in the wild. Licorice root, for example, is an important herbal medicine in Japan because it is present in many Japanese traditional herbal medicine formulas. As part of our efforts to ensure stable supplies of medicinal plants and to conserve the environment, Takeda has been conducting research into in-house cultivation of licorice since 1996. In 2014, we registered the first Japanese-produced variety. By 2020, we plan to start using Japanese-produced licorice in our products, eventually switching to Japanese-produced licorice in all Takeda products.