

Astellas Environmental Report

2012



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1. Editorial Policy

In publishing this "Astellas Environmental Report 2012," Astellas Pharma Inc. has worked to create a detailed report that is easy to understand, with the aim of helping people affected by its environmental initiatives and the various stakeholders interested in such initiatives become familiar with Astellas' activities in this area. The environment is one of the CSR fields in which Astellas actively tackles issues, sets targets, and undertakes initiatives. When preparing this report, we made every effort to include easy-to-understand explanations using specific examples, numerical data, and graphs and charts. It should be noted that due to the rounding up of figures used in numerical data on environmental performance, there may be cases where the total figure given does not tally precisely with the aggregated values.

An overall picture of CSR-based management at Astellas and activities in the five fields of compliance, employees, the economy, society, and the environment is contained in the Astellas Annual Report 2012, a printed publication that is scheduled for release in September 2012. Accordingly, excerpts from the Astellas Environmental Report 2012 are to be found in the Environment Section of the Annual Report 2012.

1.1 Scope of this Report

This report covers the operations of all domestic facilities and overseas production facilities included in the Company's consolidated financial statements. However, the scope covered may differ depending on the item. Accordingly, each instance where the scope exceeds this parameter is clearly identified.

Furthermore, because the environment and society can be affected not only by the Company's own activities but also via the supply chain, some environmental data includes the results of activities by subcontractors.

1.2 Reporting Period

As a general rule, this report covers the activities of domestic facilities from April 1, 2011 through March 31, 2012, and the activities of overseas facilities from January 1 through December 31, 2011. (Certain sections of this report contain details of activities and initiatives both prior to and after these identified reporting periods.)

1.3 Important Organizational Changes during the Reporting Period

In April 2011, the Company established Astellas Pharma Tech Co., Ltd. following the merger of Astellas Tokai Co., Ltd., Astellas Toyama Co., Ltd., and Astellas Pharma Chemicals Co., Ltd., three domestic production subsidiaries. The establishment of the new company integrated the management of six plants in Japan. Also, the downsizing of the Kiyosu Research Office resulted in the transfer of most of its researchers to the Tsukuba Biotechnology Research Center in April 2012. The effect of these changes on the Company's environmental performance in fiscal 2011 was minimal.

1.4 Guidelines

The Astellas Environmental Report 2012 has been prepared with reference to the Environmental Reporting Guidelines (2012 edition) issued by Japan's Ministry of the Environment.

Date of issue	: June 2012 (available on the Company's website)
Next scheduled issue	: June 2013 (on the Company's website)
Please note there is no printed version of the Astellas Environmental Report 2012.	

2. Environmental Initiatives

Recognizing that maintaining a healthy global environment is essential for the creation of a sustainable society, Astellas strives to attain harmony between its business activities and the environment.

Economic growth in the 20th century could not have been achieved without increased consumption of natural resources centering on fossil fuels, which in turn increased the burden placed on the environment. This has led to the depletion of natural resources, greenhouse gas (GHG) emissions caused by the mass consumption of fossil fuels, and the destruction of the natural environment, owing to the excessive extraction of resources. As a result, today we face the worldwide environmental problems of global warming and threats to the world's ecosystems. The problems of climate change and the loss of biodiversity in particular are recognized as serious issues that threaten the very survival of the human race.

For the continuous growth of the Astellas group as well, we are actively working to achieve medium- to long-term targets that we have set ourselves, taking into account the current status of environmental issues that society as a whole must address.

In preventing contamination of local communities caused by environmental pollution, Astellas keeps a close watch on legislative changes and strives to ensure full compliance with laws and regulations when implementing the obvious necessary countermeasures.

Going forward, Astellas will continue working to attain harmony between its business activities and the global environment. For the benefit of future generations as well, we will continue initiatives aimed at resolving issues facing local communities and achieving a symbiotic co-existence and cooperation with society, while aspiring to be a responsible corporate entity from a long-term global perspective.

Main Environmental Targets Achieved in Fiscal 2011 (Summary)

Astellas sets numerical targets covering a range of environmental issues, including those that society considers important and issues that are closely related to its business activities. By working toward achieving these targets, we aim to make continuous improvements in our environmental performance.

A summary of Astellas' environmental performance in fiscal 2011 is shown below.

In fiscal 2011, we achieved some targets in the Environmental Action Plan because of factors related to the Great East Japan Earthquake. We reported a decline in both GHG emissions and water consumption owing to reduced operations at the Takahagi Facilities, the termination of the synthetic process at the Takaoka Plant, and restrictions on electricity use.

In fiscal 2012, steady recovery from the disaster should see an increase in GHG emissions generated by energy consumption, and a rise in water consumption. Consequently, we will continue our implementation of initiatives, with no change to our Environmental Action Plan for fiscal 2012.

Environmental Action Plan Targets	Fiscal 2011 Performance
【Fiscal 2005 as base year】	
1. Measures to address global warming	
1) Reduce GHG emissions by 35% or more compared with fiscal 2005 levels by fiscal 2020 (Global)	1) Ratio to FY2005 level -24.3% Japan: -24.2% Overseas: -24.6%
Japan : Reduce by 30% or more	
Overseas production facilities : Reduce by 45% or more	
2) Reduce CO ₂ emissions generated through sales activities by 30% or more compared with fiscal 2005 levels by the end of fiscal 2015 (Japan)	2) Ratio to FY2005 level -17.7%
3) Reduce CO ₂ emissions caused by office electricity consumption by 20% or more compared with fiscal 2005 levels by the end of fiscal 2015 (Japan)	3) Ratio to FY2005 level -30.5%
【Fiscal 2005 as base year】	
2. Reduce water consumption by 20% or more compared with fiscal 2005 levels by fiscal 2015 (Global)	2. Ratio to FY2005 level -27.2%
3. Final volume of waste for disposal in landfill (Japan)	3. Ratio to total volume of waste generated : 1.0%
Reduce the final volume of waste for disposal to less than 1% of volume generated or less than 2% of volume discharged	Ratio to total volume of waste discharged : 1.1%
【Fiscal 2006 as base year】	
4. Reduce the amount of volatile organic compounds (VOCs) discharged by 25% or more compared with fiscal 2006 levels by fiscal 2015 (Japan)	4. Ratio to FY2006 level -13.0%
【Fiscal 2005 as base year】	
5. Raise the biodiversity index to double the fiscal 2005 level by fiscal 2020 (Global)	5. Ratio to FY2005 level 1.91 times

3. Environmental Management

The Astellas group's basic stance toward the environment and employee health and safety is encapsulated in its Environmental and Safety Policy, based on the Astellas Charter of Corporate Conduct. We work systematically and continuously toward achieving the fiscal 2015 targets set out in our Environmental and Safety Guidelines. We have also established medium-term targets for priority issues to be tackled in the Environmental Action Plan.

3.1 Environmental Management Framework

Environmental initiatives are a key component of CSR-based management. Accordingly, the CSR Committee discusses and decides Astellas' basic policy on the environment and the Environmental Action Plan. This policy and plan are commonly shared among all business facilities, and each work site uses the plan as a basis for formulating its own policies and action plans in keeping with their specific business activities, which they follow with the objective of achieving the targets. As part of organizational changes implemented in October 2011, responsibility for CSR activities was transferred from the General Affairs & CSR to the Corporate Planning. We did this to ensure that CSR-related issues are better reflected in corporate strategy and to strengthen collaboration with our overseas operations.

3.2 Environmental Management System

To achieve the action plans, group-wide initiatives as well as more specific programs developed by each facility are implemented. Once group-wide audits have been held to check on the implementation of action plans at each facility, initiatives are reviewed and new challenges are set. The application of this kind of group-wide PDCA (Plan-Do-Check-Act) cycle, coupled with the application of the PDCA cycle at each facility, leads to reductions in environmental loads and safety risks.

In response to internationally accepted standards for environmental management systems, Astellas has obtained ISO14001 certification for all domestic and overseas manufacturing plants, except the Norman Plant in the United States. Regarding our research centers, we have established a management system that addresses both environmental and safety issues, and we are working to continue improvements in environmental and safety activities. Also, in our offices and the sales & marketing departments, we will continue enhancing our organizational structure, with the aim of raising the level of activities.

3.3 Environmental Audits

To identify issues at group facilities and ascertain the status of environmental and safety activities, we conduct group-wide audits of environmental and safety activities using the Environmental and Safety Guidelines. Where an issue has been identified, improvements made to rectify the situation are verified by means of a written follow-up evaluation, as well as an audit conducted in the subsequent fiscal year. The headquarter departments responsible for environmental and safety issues and individual facilities hold discussions in which they share information on various issues, developing a common understanding of social requirements and a heightened awareness of issues at the workplace level. One of the objectives of these audits is to ensure that all members of the Astellas group work constantly toward the same goals.

Astellas has introduced an environmental and safety assessment system requiring that environmental load and safety risks covering production, distribution, and waste disposal are known in advance and minimized at the research and development stage and when facilities are built or installed.

We use this assessment system because it helps these initiatives become a routine part of our daily business activities. They include complying in advance with new pharmaceutical laws and regulations, addressing global warming, reducing the volume of solvents used, reducing the discharge of harmful chemical substances, and evaluating the hazardous nature of chemical raw materials from the research and development stage. Assessment results are an important consideration when deciding whether to advance product development to the next stage, establish a facility, or purchase land.

3.4 Education and Training

In order to carry out business activities in an environmentally friendly manner, it is necessary for all employees to have a sound understanding and be aware of their individual roles and responsibilities. To this end, we are working to improve our skill base through a wide variety of training programs. We provide specialized education for employees engaged in roles requiring specialist knowledge and skills in areas such as environmental protection or hazardous operations, and for employees to acquire official environmental qualifications.

We also explain our policies and site rules to construction workers at our plants, raw materials suppliers, and waste disposal contractors, and we seek their collaboration on our environmental and safety programs.

3.5 Response to Accidents and Emergencies

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

The discharge of harmful substances could lead to the pollution of rivers and seas and cause problems at sewage treatment plants. This in turn could have a serious impact on local communities. We endeavor to reduce the risk of pollution and prepare for accidents and emergency situations by systematically implementing measures for the prevention of environmental pollution, including the installation of backup equipment. In addition, to avoid accidents, we ensure that wastewater treatment plants is working properly, and we are reinforcing the monitoring and measuring of the quality of water discharged from our plants to check compliance with the relevant effluent standards.

3.6 Compliance with Environmental Laws and Regulations

In fiscal 2011, the Yaizu Facilities exceeded effluent standards (suspended substances) as a result of a mud inflow caused by heavy rain, and the Tsukuba Biotechnology Research Center exceeded pH levels for water discharge at the time of the cleaning of its effluent neutralizing tank. Although we were not required by the authorities to take specific action in either instance, we improved the effluent neutralizing tank at the Tsukuba Biotechnology Research Center to prevent a recurrence. In the past five years, Astellas' facilities exceeded effluent standards once in fiscal 2007 and fiscal 2008, and three times in fiscal 2009 and fiscal 2010. On each occasion, the measures we took proved effective. During the same period, Astellas has not been subject to any lawsuits or fines related to environmental matters.

3.7 Environment-Related Accidents and Complaints

In fiscal 2011, there were no environment-related accidents, continuing our accident-free record for the past five years.

There was two complaints received in fiscal 2011 concerning the Yaizu Facilities. The first complaint was about the noise made during the dismantling of scaffolding on a construction site. We responded to the complaint by altering the order of procedures at the site. The second complaint was concerning the noise caused by the activation of a relief valve as a result of improper control of an air compressor. In response, we replaced the pressure sensor and controller, fitted a muffler, and installed an alarm system. We will continue endeavoring to prevent the occurrence of loud noise, foul odors, vibration, and other irregularities. We also intend to maintain appropriate levels of communication with local communities even when there is no violation of regulatory standards.

3.8 Soil Contamination Assessment

Under the Japan's Soil Contamination Countermeasures Act and prefectural ordinances, soil contamination surveys are mandatory where projects for additional facilities exceed a certain scale or demolition is accompanied by a change to the character of the land. To date, Astellas has undertaken soil contamination surveys based on relevant laws and ordinances, as well as related voluntary evaluation, to determine whether soil has been contaminated. In cases when contamination was identified, the Company has taken purification and other remedial measures.

In fiscal 2011, Astellas did not conduct any surveys at its facilities. The results of surveys conducted over the past five years and cases where contamination was detected are outlined below.

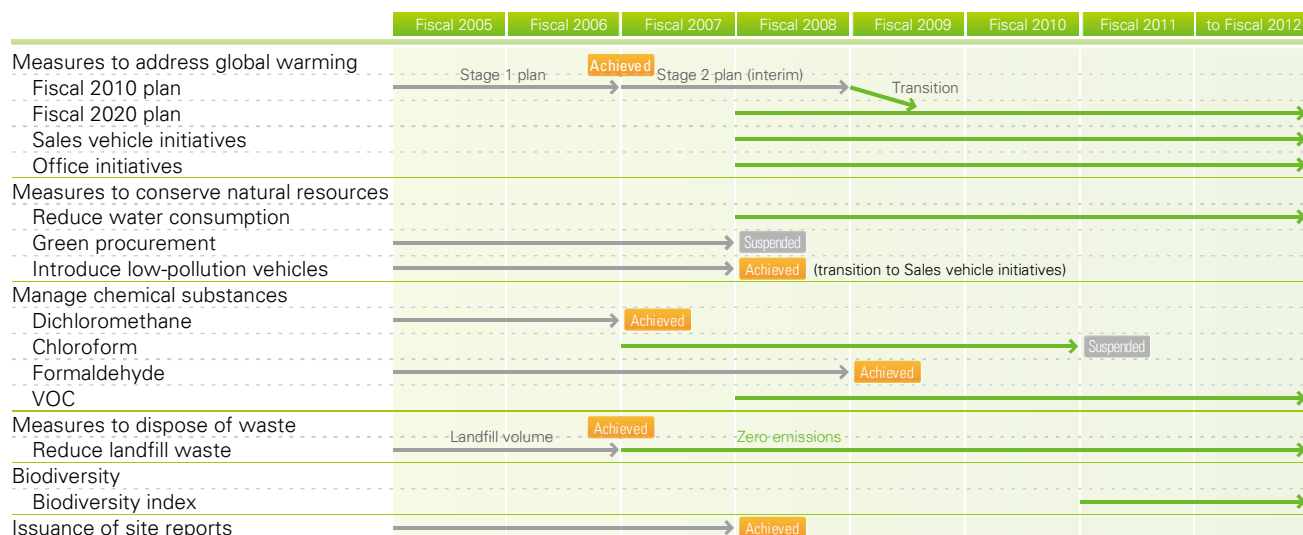
- [1] Voluntary survey at the Kashima R&D Center (Fiscal 2007)
Contamination caused by benzene, mercury, lead, arsenic, and fluorine was detected. Excavation and removal work and purification of underground water were completed in fiscal 2009.
- [2] Soil contamination survey upon the closure and demolition of the former Tokyo Research Center (Fiscal 2009 and 2010)
Due to contamination caused by total mercury (elution, content), lead (content), and fluorine the site was designated a contaminated site. The contaminated soil was excavated and removed, and by May 2011 all designations at the site had been rescinded.
- [3] Soil contamination survey at the Kashima R&D Center (Fiscal 2010)
As a result of contamination caused by arsenic, fluorine, and boron and their chemical compounds, the site of the former R&D building was designated a contaminated site. However, because a new staff building covered the contaminated site and there were no contaminants on the soil surface, no remedial action, such as excavation or removal, was undertaken.

4. Environmental Action Plan

In addition to setting guidelines that clearly outline its environmental vision, Astellas drew up an Environmental Action Plan to specify short and medium-term targets for key environmental items. The group works continuously to achieve the numerical targets contained in the plan. The Environmental Action Plan is renewed on a rolling basis. Accordingly, targets are raised and new items are added to the plan as a result of regular reviews that take into account progress achieved in the previous fiscal year and social conditions.

The current plan uses fiscal 2005—the year that Astellas came into being—as its base year, and contains targets to be reached by either fiscal 2015 or fiscal 2020. Revisions to the Environmental Action Plan since Astellas' founding are outlined below.

Environmental Action Plans since Fiscal 2005 and Their Implementation Status



The Environmental Action Plan for fiscal 2012 is outlined below. The plan contains some targets that have already been achieved in fiscal 2011. However, because it includes targets that were achieved because of certain factors, such as the effects of the Great East Japan Earthquake, all items in the fiscal 2012 plan, excluding items concerning waste management, are unchanged from fiscal 2011. With respect to the target for waste management, the huge reduction in waste volume at the Takaoka Plant due to the termination of the synthetic process has resulted in a smaller difference between generated waste and disposed waste. Consequently, from now on only a numerical target for the ratio of the final volume of waste for disposal (landfill volume) to the volume of total discharge (waste handled by outside contractors) is included in the plan.

Astellas' Environmental Action Plan

Item	Environmental Action Plan
Measures for Global Warming Prevention	<ul style="list-style-type: none"> ■ Reduce GHG emissions by 35% or more compared with fiscal 2005 levels by the end of fiscal 2020 (Global). <ul style="list-style-type: none"> ● Reduce GHG emissions in Japan by 30% or more compared with fiscal 2005 levels by the end of fiscal 2020. ● Reduce GHG emissions at overseas production facilities by 45% or more compared with fiscal 2005 levels by the end of fiscal 2020.
	<ul style="list-style-type: none"> ■ Reduce CO2 emissions generated through sales activities by 30% or more compared with fiscal 2005 levels by the end of fiscal 2015 (Japan).
	<ul style="list-style-type: none"> ■ Reduce CO2 emissions caused by office electricity consumption by 20% or more compared with fiscal 2005 levels by the end of fiscal 2015 (Japan).
Measures for the Conservation of Resources (Global)	<ul style="list-style-type: none"> ■ Reduce water consumption by 20% or more compared with fiscal 2005 levels by the end of fiscal 2015.
Management of Chemical Substances (Japan)	<ul style="list-style-type: none"> ■ Reduce the amount of volatile organic compounds (VOCs) discharged by 25% or more compared with fiscal 2006 levels by the end of fiscal 2015.
Waste Management (Japan)	<ul style="list-style-type: none"> ■ Reduce the final volume of waste for disposal to less than 2% of total discharged.
Biodiversity (Global)	<ul style="list-style-type: none"> ■ Raise the biodiversity index to double the fiscal 2005 level by fiscal 2020.

5. Interaction between Astellas and the Environment

Interaction between Astellas and the Environment

Japan

INPUT

Energy	Electricity	203,533MWh
	City gas	24,134thousand m ³
	LPG	2,056tons
	LNG	1,618tons
	Fuel oil	840kL
	Kerosene	428kL
	Diesel oil	19kL
	Gasoline	3,106kL
	Purchased heat energy	2,183GJ
	Resources	Water
Raw materials		1,324tons
Solvents		4,229kL
Copier paper		234tons



OUTPUT

GHGs	CO ₂	147 thousand tons
Pollutants	SO _x	1 ton
	NO _x	31 tons
	VOC	94 tons
	BOD	14 tons
	Chemical substances*	16 tons
Water discharge	Drainage into rivers	10,198 thousand m ³
	Drainage into sewerage system	460 thousand m ³
Waste materials	Volume of waste generated	13,422 tons
	Volume of waste discharged	13,069 tons
	Landfill volume	149 tons

* Substances specified under the PRTR Act (the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to Management)

Overseas

INPUT

Energy	Electricity	50,383MWh
	City gas	5,303thousand m ³
	LPG	3 tons
	Diesel oil	831 kL
	(steam) Purchased heat energy	17,392GJ
Resources	Water	334thousand m ³

OUTPUT

GHGs	CO ₂	42 thousand tons
Pollutants	SO _x	3 tons
	NO _x	13 tons
	VOC	25 tons
	BOD	14 tons
	Water discharge	Drainage into rivers
Waste materials	Volume of waste generated	1,286 tons
	Recycled volume	675 tons

SO_x : sulfur oxides
 NO_x : nitrogen oxides
 VOCs : volatile organic compounds
 BOD : the biochemical oxygen demand

GHG Emissions (Scope 3*)

	Unit: tons	
Commuting	4,629	
Overseas business trip	8,384	
Product shipments	Plant to Warehouse	334
	Distribution warehouse	643
	Warehouse to Wholesaler	1,732
Waste shipments	162	
Total	15,883	

* Scope 3: Indirect GHG emissions by companies resulting from supply chain activities (manufacturing, shipping, business trips, commuting, etc.)

6. Measures to Address Global Warming

Global warming is regarded as one of the environmental problems that could threaten the very survival of the human race. Mitigating and adapting to the threat posed by global warming requires active involvement on all levels including national governments, local governments, corporations and citizens. Astellas understands that global warming could become a major constraint on the continuation of corporate activity, and considers it one of management's most important problems to address.

Tackling the problem of global warming will require a prolonged and sustained effort. The international community has agreed that industrialized countries should target a reduction in GHGs of at least 80% compared with current levels by the year 2050. As stepping stones toward achieving these targets, the Astellas group has set medium-term targets for the reduction of GHGs in its Environmental Action Plan. Under the plan, existing facilities are to reduce CO₂ emissions generated through energy consumption by 1% or more compared with the previous fiscal year and to achieve a reduction of 5 kilotons of GHGs on a fiscal year basis through strategic investments.

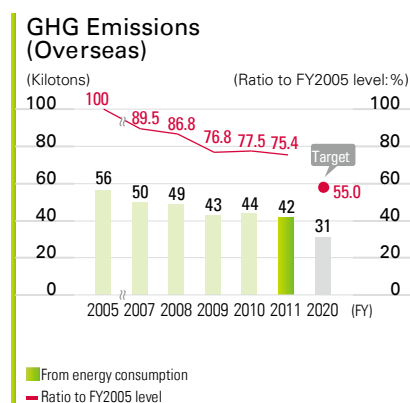
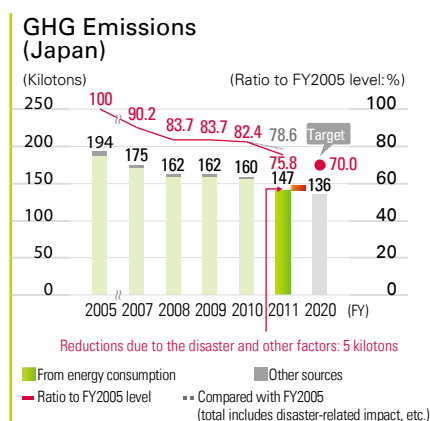
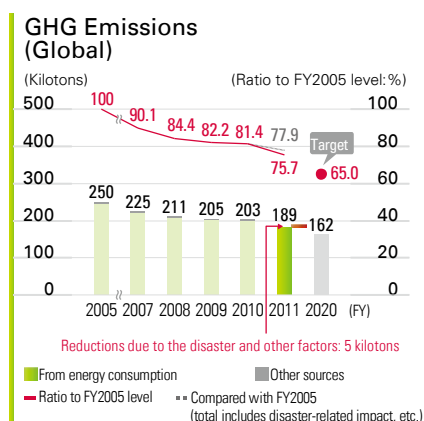
6.1 Reducing GHG Emissions

Environmental Action Plan (Measures to Address Global Warming)

- Reduce GHG emissions by 35% or more compared with fiscal 2005 levels by the end of fiscal 2020 (Global).
 - Reduce GHG emissions in Japan by 30% or more compared with fiscal 2005 levels by the end of fiscal 2020.
 - Reduce GHG emissions at overseas production facilities by 45% or more compared with fiscal 2005 levels by the end of fiscal 2020.

In fiscal 2011, the Astellas group's GHG emissions amounted to 189 kilotons on a global basis, down 6.9% year on year. In Japan, emissions totaled 147 kilotons, down 8.1% from the previous fiscal year, while overseas emissions totaled 42 kilotons, down 2.7%. In Japan, the cutback of operations at the Takahagi Facilities and lower electricity consumption as a result of the Great East Japan Earthquake are estimated to have resulted in a GHG emission reduction of around 5 kilotons. The suspension of the incinerator and the termination of the synthetic process at the Takaoka Plant in Toyama Prefecture also are estimated to have contributed to a reduction for approximately 5 kilotons. The conversion to alternative fuels at the Tsukuba Biotechnology Research Center, the Nishine Plant, and the Takahagi Facilities also are thought to have reduced emissions by approximately 2 kilotons.

In fiscal 2012, we expect to continue reducing emissions through conversion to alternative energy sources and the shutdown of incinerators. However, the anticipated increase in energy consumption accompanying the restoration of the Takahagi Facilities will result in an increase in GHG emissions.



6.2. Breakdown of GHG Emission

The tables below contain data on the GHG emitted directly from group facilities as a result of the combustion of fuels (city gas, fuel oil, kerosene, diesel oil, LPG & LNG) etc. used at those facilities (Scope 1), and as a result of the use of electricity and heat supplied from external sources (Scope 2).

GHG Emissions (Global)					Unit: kilotons-CO ₂	
Fiscal year	Total emissions	Scope 1 (Direct emissions)			Scope 2 (Indirect emissions)	
		Direct emissions	Breakdown		Indirect emissions	Of which, from use of renewable sources
			From energy consumption	From other GHG sources		
2005	249.8	118.2	110.9	7.2	131.6	—
2007	225.0	98.6	94.7	3.9	126.4	—
2008	210.8	98.7	94.7	3.9	112.2	—
2009	205.3	96.3	92.1	4.2	109.0	—
2010	203.3	97.3	94.1	3.3	105.9	—
2011	189.1	89.4	89.2	0.2	99.7	11.9

GHG Emissions (Japan)					Unit: kilotons-CO ₂	
Fiscal year	Total emissions	Scope 1 (Direct emissions)			Scope 2 (Indirect emissions)	
		Direct emissions	Breakdown		Indirect emissions	Of which, from use of renewable sources
			From energy consumption	From other GHG sources		
2005	193.5	102.6	95.4	7.2	90.9	—
2007	174.6	83.2	79.3	3.9	91.4	—
2008	162.0	83.2	79.3	3.9	78.8	—
2009	162.1	82.7	78.5	4.2	79.3	—
2010	159.7	82.9	79.7	3.3	76.7	—
2011	146.7	75.4	75.2	0.2	71.3	—

GHG emissions (Overseas)					Unit: kilotons- CO ₂	
Fiscal year	Total emissions	Scope 1 (Direct emissions)			Scope 2 (Indirect emissions)	
		Direct emissions	Breakdown		Indirect emissions	Of which, from use of renewable sources
			From energy consumption	From other GHG sources		
2005	56.3	15.6	15.6	—	40.7	—
2007	50.4	15.4	15.4	—	35.0	—
2008	48.9	15.5	15.5	—	33.4	—
2009	43.2	13.6	13.6	—	29.6	—
2010	43.6	14.4	14.4	—	29.2	—
2011	42.4	14.0	14.0	—	28.4	11.9

Scope 2 : Emissions from the use of renewable sources refers to electricity generated by wind turbines purchased by the Norman Plant.

From other GHG emissions : This refers to CO₂ derived from the burning of oil waste by incinerators at the Takaoka Plant and the Takahagi Facilities.

6.3. Energy Consumption

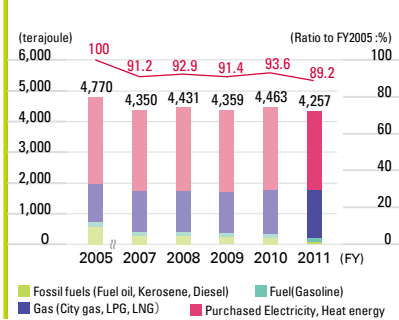
In fiscal 2011, the Astellas group used 4,257 terajoule (TJ) of energy on a global basis, down 4.6% compared with the previous fiscal year. In Japan, energy use amounted to 3,467 terajoule (TJ), down 5.0% year on year, and overseas use totaled 790-terajoule (TJ), down 2.8%. As for the type of energy used, purchased electricity accounted for 58.5% of energy used in Japan, and 63.6% overseas.

In Japan, in response to the government ordinance restricting electricity consumption over the summer period, we succeeded in meeting a group-wide target of lowering electricity consumption by 15% or more compared with peak consumption recorded the previous year. Even though we applied for and received exemptions (zero reductions) for the Nishine and Fuji plants, voluntary reductions in demand for energy consumption by both plants were contributing factors in achieving the group-wide target. Efforts to reduce electricity consumption included operating emergency power generators, consolidating the space used for experiments, controlling air conditioner temperatures (28°C), shutting down some air conditioners, turning off or reducing lighting, and taking some elevators out of service. Each facility in the Tokyo Electric Power Company service area implemented a rotational schedule for extended summer holidays. Although these efforts contributed to lower energy electricity consumption, the suspension of some operations at the Takahagi Facilities due to damage caused by the Great East Japan Earthquake and the termination of the synthetic process at the Takaoka Plant played a large part in achieving the group's target.

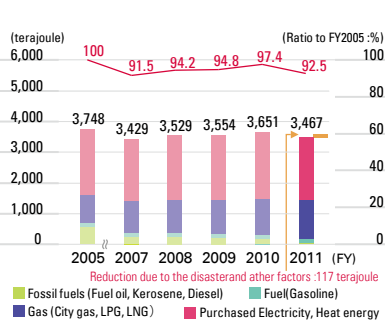
Conversion from fuel oil to LNG at the Nishine Plant and the Takahagi Facilities, coupled with the suspension of incinerators at the Takahagi Facilities and the Takaoka Plant, contributed significantly to the drop in the consumption of fuel oil.

In fiscal 2012, the recovery from the Great East Japan Earthquake is expected to lead to an increase in energy consumption. The graph on energy consumption in Japan shows the estimated reductions stemming from the disaster and electricity-saving activities, as well as the ratio to the base year level after adding these estimated amounts. The emergency power generators used as a result of the government ordinance on electricity use generated 1,183 MWh of electricity. The amount of kerosene used to power these generators has been included under fuel, but this electricity is not included under electricity consumption.

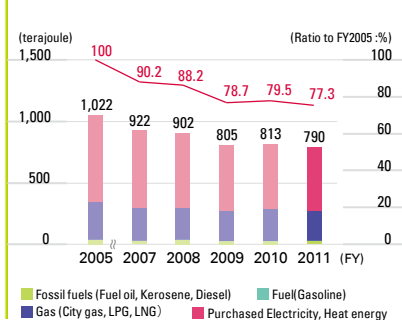
Energy consumption (Global)



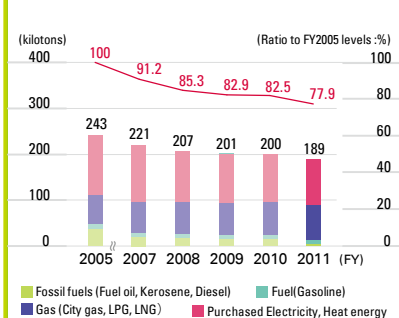
Energy consumption (Japan)



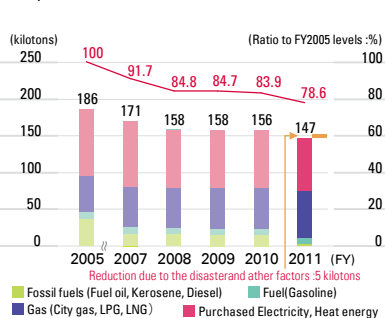
Energy consumption (Overseas)



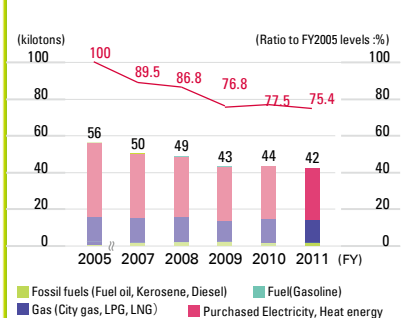
CO2 emission due to energy consumption (Global)



CO2 emission due to energy consumption (Japan)



CO2 emission due to energy consumption (Overseas)

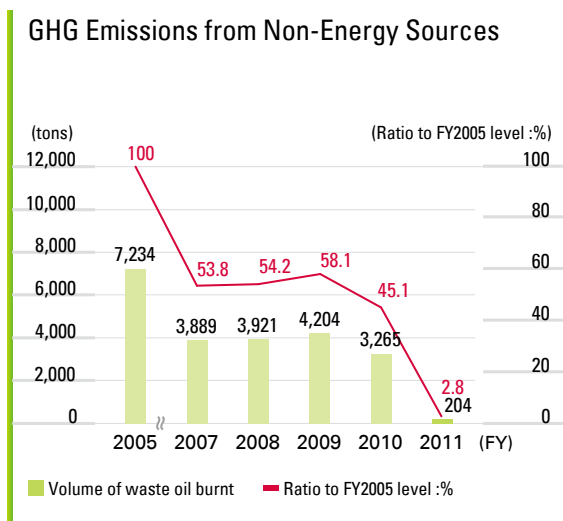


6.4 GHG Emissions from Non-Energy Sources

GHG emissions due to causes other than energy consumption are CO₂ emissions from waste oil burnt in incinerators.

In fiscal 2011, operation of the waste oil incinerators at the Takahagi Facilities was suspended due to damage caused by the March 2011 disaster. The termination of the synthetic process at the Takaoka Plant resulted in the suspension of the plant's waste oil incinerator.

As a result, GHG generated due to causes other than energy consumption plummeted, and from fiscal 2012 there will be no emissions caused by sources other than energy consumption.



6.5 Reduction of CO₂ Emissions from Sales Activities and Offices

In response to the problem of increasing GHG emissions by the commercial, residential, and transportation sectors in Japan, Astellas has set specific targets. In addition to the Action Plan, which specifies reduction targets covering all of the group's activities, Astellas has set separate numerical targets for CO₂ emission reductions by its domestic sales vehicles and its offices.

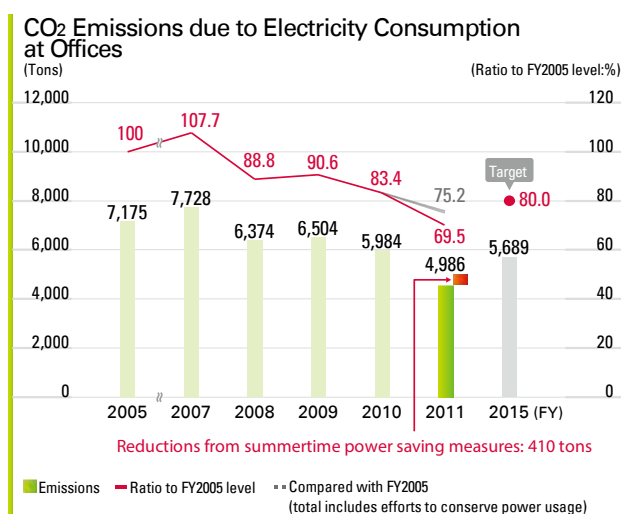
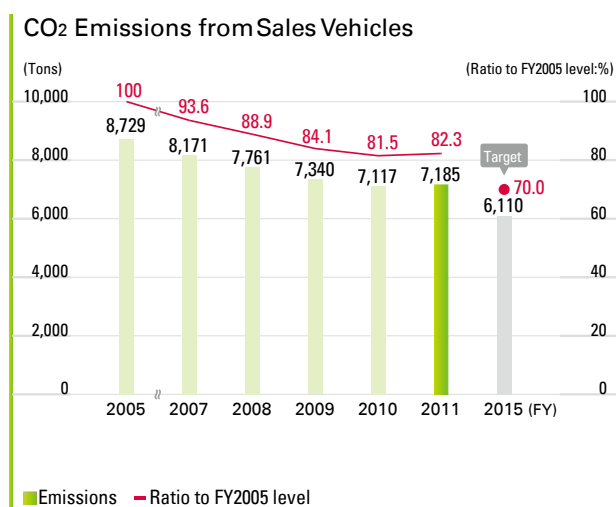
Environmental Action Plan (Measures to address global warming)

- Reduce CO₂ emissions generated through sales activities by 30% or more by the end of fiscal 2015 compared with fiscal 2005 levels.
- Reduce CO₂ emissions caused by office electricity consumption by 20% or more by the end of fiscal 2015 compared with fiscal 2005 levels.

Astellas has been steadily converting its fleet of sales vehicles to hybrid vehicles since fiscal 2008. At the end of fiscal 2011, some 1,833 vehicles, or 68.9%, of our 2,659 sales vehicle fleet were hybrid vehicles, up 213 compared with the previous fiscal year. In fiscal 2011, CO₂ emissions from gasoline used in our sales vehicles amounted to 7,185 tons, and although this was a 17.7% decrease versus fiscal 2005, it was 67 tons, or 0.9%, higher than the previous fiscal year. To reach our target, we need to reduce CO₂ emissions by a further 1,075 tons, and we believe this will be achievable by continuing the conversion to hybrid vehicles in line with our plan.

In fiscal 2010, Astellas introduced five electric vehicles on a trial basis and used them for sales activities to ascertain the implications of their full-scale adoption in the future. The trial identified a number of problems, including restrictions on travelling distance when air conditioners are used, and problems related to recharging vehicles when visiting clients and rescheduling. As a result, we decided that in fiscal 2012 we will continue using two electric vehicles, but will replace the remaining three with hybrid vehicles.

In fiscal 2011, total electricity consumption by the group's offices, which included Astellas' Tokyo headquarters and approximately 160 sales offices throughout Japan, amounted to 14,245 MWh. When converted to CO₂ emissions, this becomes 4,986 tons, a 30.5% reduction compared with fiscal 2005, which meets the target in the Environmental Action Plan. The graph of CO₂ emissions due to electricity consumption at offices includes the amount thought to have been saved by summertime power saving measures, and a fiscal 2005 comparison adjusted to add in the estimated amount of power savings. The group's response to government-imposed restrictions on electricity consumption over the summer period, as well as efforts throughout the year to conserve power usage, contributed to a year-on-year reduction of approximately 410 tons. It is conceivable that we might not have achieved the Action Plan's target without these savings. We will continue working to save electricity, although we anticipate an increase in office electricity consumption in fiscal 2012. Consequently, the target is unchanged from fiscal 2011.

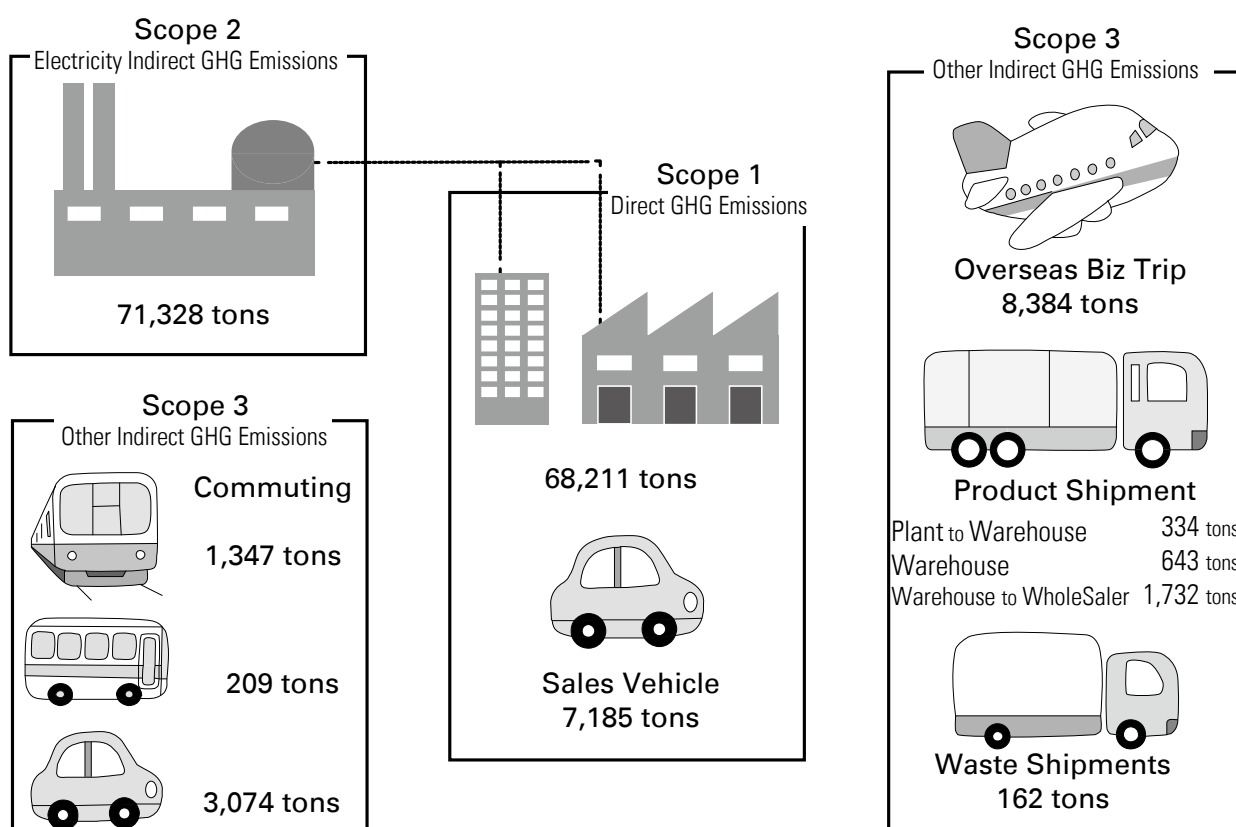


6.6 GHG Emissions Resulting from Supply Chain Activities

The Environmental Action Plan contains targets that have been set to address the issue of global warming. It focuses on GHG emissions generated by the group's facilities and CO₂ emissions from energy sources through the use of electricity and heat supplied from outside sources.

In addition to knowing and publicizing their own GHG emissions, in recent years there has been more and more emphasis on emissions produced along the entire supply chain—including raw materials procurement, product distribution, employee commuting and business trips, and waste treatment. Following this trend, standards are being reviewed and reformulated to reflect this broader scope, including GHG protocols, ISO standards, and guidance issued by Japan's Ministry of the Environment.

Recognizing these social implications, we included some supply chain GHG emissions for the first time when ascertaining our environmental performance in fiscal 2011. Specifically, we included transportation use for employee commuting and overseas business trips, as well as shipments of product and waste.

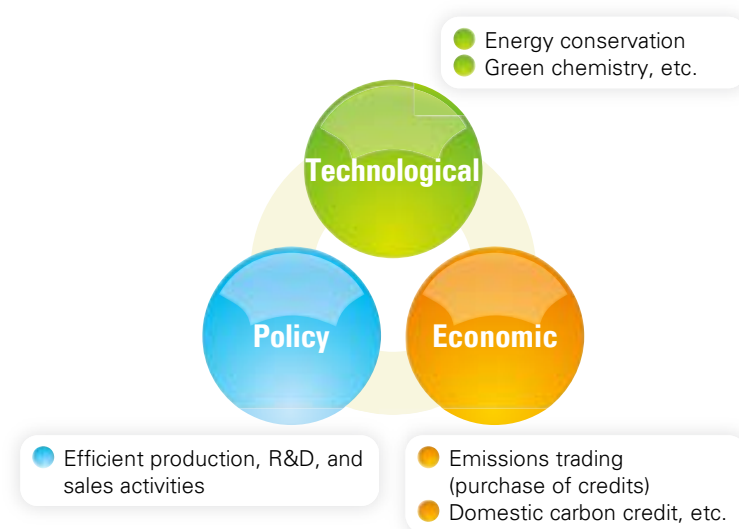


Category		Assumptions used to estimate CO ₂ emissions	
Commuting	Railway		57,056
	Bus	Travel distance (thousand passenger-km)	2,496
	Private vehicle		12,043
Overseas business trips		Travel distance (thousand passenger-km)	35,854
Product shipments	Plant → Warehouse	Fuel consumption (kL)	126
	Distribution warehouse	Energy consumption (MWh)	1,838
	Warehouse → Wholesaler	Fuel consumption (kL)	671
Waste shipments		Shipment weight x distance (ton-km)	742,251

6.7 Global Warming Prevention Framework and Initiatives

Astellas believes that it will not be possible to achieve the level of GHG emission reductions demanded of private enterprises by simply continuing with existing energy conservation measures implemented independently by each facility. Consequently, in fiscal 2009, Astellas established the Global Warming Prevention Committee as a special task force under the CSR Committee, which is chaired by a member of top management.

Astellas is pursuing measures to achieve medium to long-term numerical targets set in accordance with a group-wide strategy formulated by the Global Warming Prevention Committee. In addition to considering technological means to lower energy consumption, the Committee is also tasked with examining policy measures, such as efficient production and research systems, and utilizing economic measures, including emissions trading and a carbon credit system.



Measures for preventing global warming are a key management priority under the new Mid-Term Management Plan that covers the period through the end of fiscal 2014. Accordingly, it was decided that the Global Warming Prevention Committee would be responsible for formulating medium to long-term action plans and investment plans for the entire Astellas group, and advancing strategic measures driven by Astellas' Tokyo headquarters. In fiscal 2011, Astellas invested a total of approximately ¥0.7 billion in initiatives instigated by the Global Warming Prevention Committee over and above the amount spent on energy-saving activities by group facilities. As a result, the group expects to reduce the amount of GHGs it generates by 10,312 tons. The decision to invest approximately ¥0.4 billion in fiscal 2012 is expected to lower GHG emission by 1,502 tons.

Investment Plan for Preventing Global Warming

Investments	Fiscal 2011		Fiscal 2012	
	Investment Amount (¥ million)	Reduction (projection) (tons of CO ₂)	Amount of fixed investment (¥ million)	Reduction (projection) (tons of CO ₂)
Energy sources conversion	200	2,005	-	-
Introduction of advanced technologies, including heat pumps and LEDs	199	616	40	115
Introduction of wind turbine and photovoltaic generation	160	2,580	-	-
Introduction of energy monitoring systems	74	-	-	-
Investment in improved operational efficiency	23	5,111	358	1,387
Total	656	10,312	398	1,502

6.8 Our Efforts to Reduce GHG Emissions

Astellas' manufacturing plants, research centers, and offices are implementing a variety of initiatives with the aim of reducing GHG emissions. 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 CO₂ emissions generated by energy sources. Measures as part of everyday activities and energy-saving activities by all employees are also important. To this end, each facility adopts a two-pronged approach, comprising measures related to equipment and energy-saving activities.

Fuel Conversion

The amount of CO₂ generated in order to obtain the same level of heating value reached by boilers and other equipment varies depending on whether fuel oil, city gas, or LPG is used as the energy source. Therefore, switching to a fuel that generates less CO₂ helps prevent global warming. Since city gas generates less CO₂ than fossil fuels generally, Astellas is actively converting its boilers so that they run on city gas instead of fuel oil and kerosene. To date, facilities where the use of city gas is possible have already finished their conversion to this fuel source.

In fiscal 2011, the Takahagi Facilities and the Nishine Plant, which had installed LNG tanks in the previous fiscal year due to the unavailability of city gas, began using LNG to operate their boilers. As a result, the conversion to alternative fuels for boilers has been completed, except for the fuel oil and kerosene used in winter at Astellas' Tokyo headquarters.

Installation of Heat Pump Devices

Astellas has actively introduced heat pump technology that makes effective use of heat in the air when upgrading existing air conditioning equipment or installing new equipment. In fiscal 2011, Astellas began using heat pumps at the Takahagi Facilities and the Tsukuba Biotechnology Research Center upon the completion of a heat pump conversion program at these facilities.

Going forward, while ensuring a stable supply of electricity in the wake of the Great East Japan Earthquake, we will continue introducing heat pump technology.

Introduction of an Energy Monitoring System

Knowing exactly how much energy we use does not directly lead to lower energy consumption. However, the ability to confirm the status of energy usage can assist the elimination of wasteful practices and the formulation of new strategies.

For these reasons, we have instituted a program to introduce energy monitoring systems at our facilities.

Using Renewable Energy

The direct use of renewable energy sources, such as sun and wind, is the most effective method of addressing the issue of global warming. Accordingly, Astellas hopes to actively introduce renewable energy technology where feasible.

In March 2012, the Kerry Plant in Ireland began operating a wind turbine power generation station with a maximum output of 800 kW and a wood chip biomass boiler system. In Japan, the Kashima R&D Center installed a photovoltaic generation with a maximum output of 30 kW in its new staff building.

The Norman Plant in the United States purchases electricity generated by wind turbines. In fiscal 2011, wind power accounted for 20,930 MWh of the plant's overall electricity purchased, which totaled 21,602 MWh.

7. Initiatives for Sustainable Biodiversity

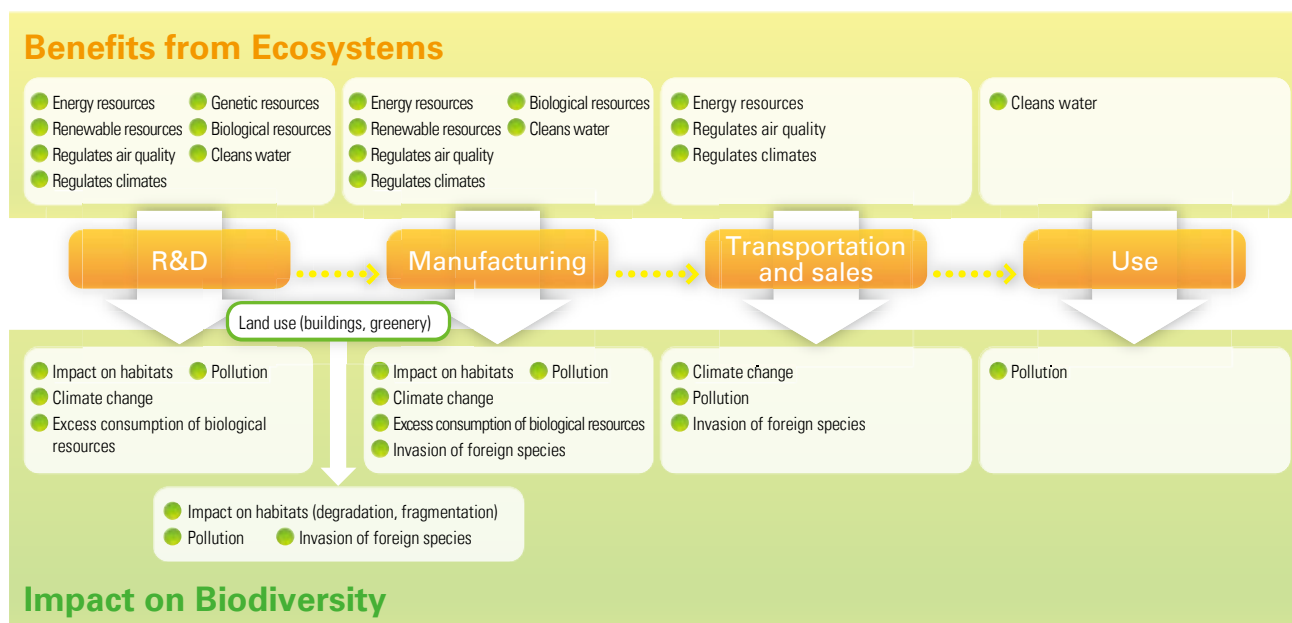
Global warming and the loss of biodiversity are two of the most serious environmental problems that mankind must address in order to ensure its survival. Countries around the world agreed to address these two issues in 1992 at the Earth Summit held in Rio de Janeiro in Brazil, where they adopted the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. In June 2012—twenty years on from the first historic summit—a United Nations Conference on Sustainable Development (Rio+20) was again held in Rio de Janeiro. At the conference, representatives discussed an organizational framework for the implementation of the green economy and sustainable development. Active international discussion on these issues continues, with the Eleventh Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 11) scheduled for October 2012 in Hyderabad, India.

Many countries have responded to this movement by drawing up national strategies on biodiversity. Moreover, society is increasingly demanding that companies make greater efforts to preserve biodiversity.

7.1 Basic Policy on Biodiversity

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.

- We will endeavor to lessen our overall environmental impact on biodiversity by working to prevent global warming, minimize 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 ecosystems.



7.2 Biodiversity Index

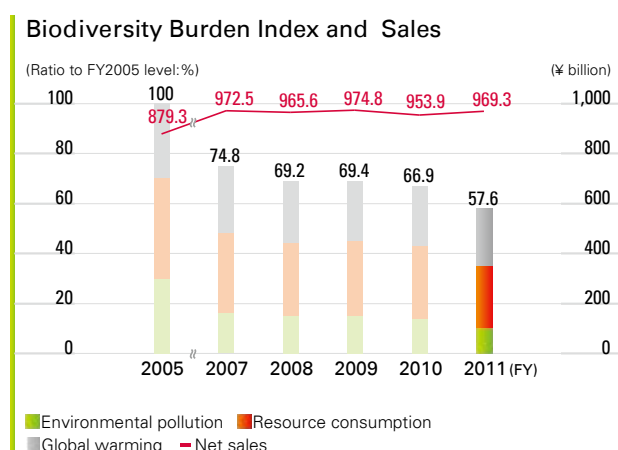
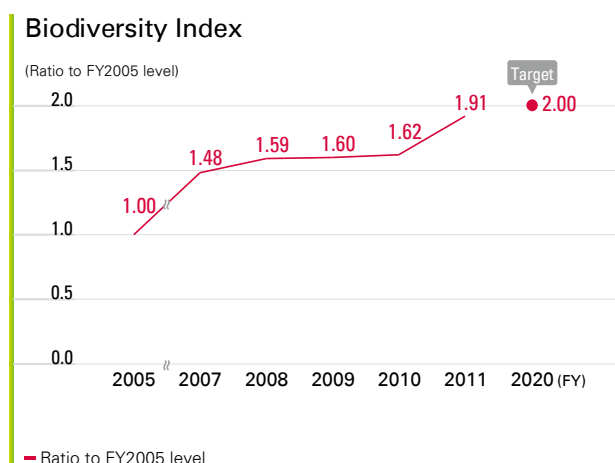
The government's National Biodiversity Strategy of Japan 2010 identified the challenges the country faces due to four crises affecting biodiversity. They are (1) species and habitat degeneration due to excessive human activities and development; (2) degradation of *satochi-satoyama* natural rural areas due to insufficient management; (3) ecosystem disturbances caused by the introduction of alien species by human activity and chemical contamination; and (4) global warming.

We believe that it is difficult for Astellas to participate directly in the prevention of *satochi-satoyama* degradation in the course of its business activities. Accordingly, we have excluded this crisis from our biodiversity strategy. We have created an index by reclassifying the main factors responsible for the other three crises into the categories of environmental pollution, resource consumption, and global warming.

We have established a biodiversity index target to be achieved by fiscal 2020 that is double the value of the base year of fiscal 2005. We use the index to quantify improvements that reduce our impact on biodiversity and the progress made on related initiatives.

In fiscal 2011, Astellas' biodiversity index was approximately 1.9 times the value calculated for fiscal 2005. In fiscal 2012, we anticipate that the value will decline slightly due to increased energy and water usage stemming from the restoration of activities at the Takahagi Facilities following the repair of damage caused by the Great East Japan Earthquake. Despite this temporary setback, we will continue making improvements in each category while working to achieve the targets established for fiscal 2020.

It should be noted that as a result of a revision of the sub-category "biological raw material usage," there is a slight discrepancy between the values stated below and the values previously reported in our fiscal 2010 CSR report.



(Biodiversity Index Calculation Method)

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 sales 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.

Categories	Sub-categories	Weight (%)
Environmental pollution	NOx, SOx emissions	10
	Chemical substance emissions	10
	BOD load	10
	(Subtotal)	(30)
Resource consumption	Water usage	20
	Biological raw material usage	10
	Landfill waste volume	10
	(Subtotal)	(40)
Global warming	Greenhouse gas emissions	30
(Subtotal)	(30)	
Total		100

Feature: Forest Regeneration on Mount Tsukuba

Tacrolimus, the main ingredient in the immunosuppressant *Prograf* produced by Astellas, was discovered in the genetic resources of a microorganism found in the soil on the foothills of Mount Tsukuba. Today, organizations such as the Mount Tsukuba Shrine and the NPO Association for Fostering a Green Globe have held tree-planting events repeatedly since 2006 to regenerate the forests on Mount Tsukuba that have long been laid to waste.

Grateful for this blessing from Mount Tsukuba's healthy ecosystem, in October 2010 Astellas began a forest regeneration program. We first decided that the most suitable trees to plant are those that are native to the area. Consequently, we collected acorns from trees growing on the grounds of the Tsukuba R&D Center, which is located near Mount Tsukuba. If all goes well, we expect the seedlings to be ready for planting sometime in 2012. Going forward, we will repay our debt to the mountain by continuing this program. At the same time, we will also continue fostering a corporate culture that is constantly mindful of the importance of attaining harmony between business activities and the environment.



8. Initiatives for Resource Recycling

Resolving the serious global issues of climate change and biodiversity requires changing the existing style of economic development. Namely, the whole of society must pursue a sustainable society and economy while reducing the volume of resources it consumes.

Astellas too recognizes that since the use of sustainable resources is essential for continuing its business activities, it must play an active role toward the creation of a recycling-oriented society.

Astellas is 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.

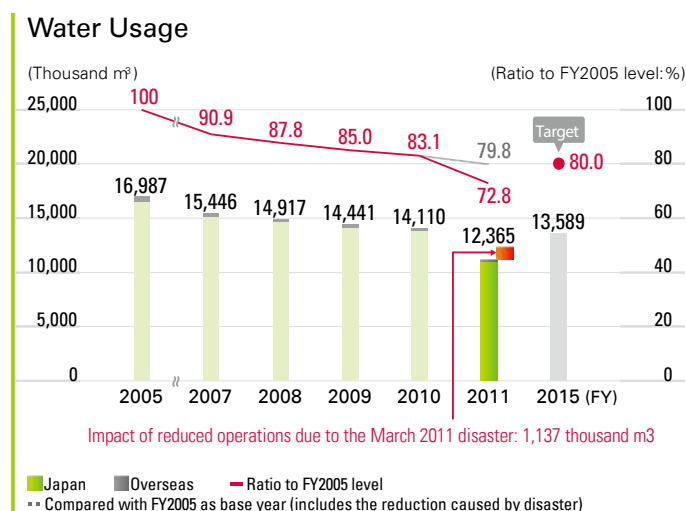
8.1 Effective Use of Water Resources

Environmental Action Plan (Measures for the Conservation of Resources)

- Reduce water consumption by 20% or more compared with fiscal 2005 levels by the end of fiscal 2015.

Since the effective use of water resources serves as a useful indicator for gauging society's impact on biodiversity, Astellas has set numerical targets for reducing water usage. Water is primarily used for cooling, with activities in Japan accounting for 97.5% of the group's water usage given the availability of industrial water in Japan.

In fiscal 2011, the Astellas group used 12,365 thousand m³ of water on a global basis, down 12.4%, or 1,745 thousand m³ from the previous fiscal year, and down 27.2% from fiscal 2005, thus achieving the numerical target set in the Environmental Action Plan. The two main contributing factors to this decrease were a 618 thousand m³ decrease versus the prior fiscal year in industrial water usage at the Takaoka Plant accompanying the termination of a synthetic process, and a 1,137 thousand m³ reduction due to lower capacity utilization at the Takahagi Facilities stemming from the impact of the Great East Japan Earthquake. As a result, it is possible that without the impact of the March 2011 earthquake we might not have achieved the fiscal 2011 target in the Environmental Action Plan. In fiscal 2012, we expect water usage to increase due to the resumption of operations at the Takahagi Facilities. We will, therefore, continue reducing water usage while retaining the same numerical targets.



8.2 Waste Management

Environmental Action Plan (Waste Management)

Reduce the final volume of waste for disposal to less than 2% of total discharged.

(Environmental Action Plan Prior to Revision)

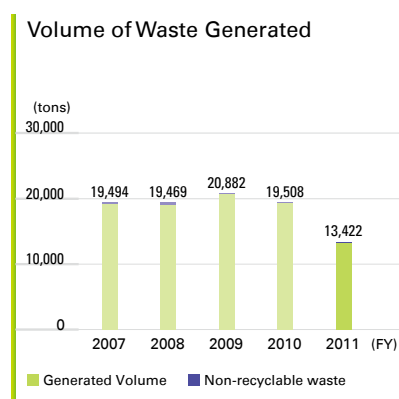
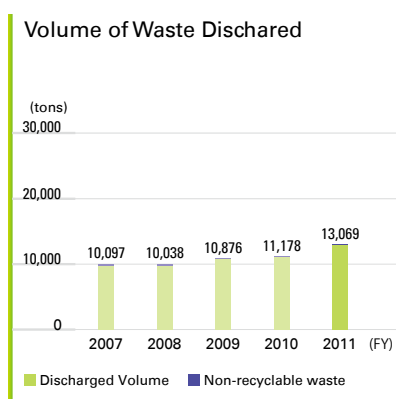
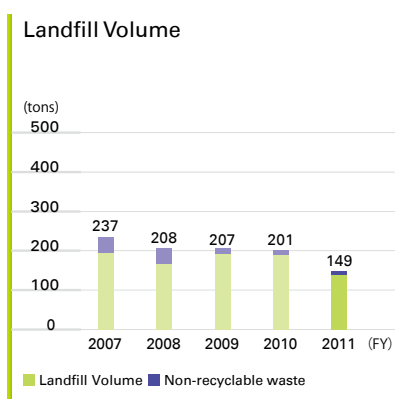
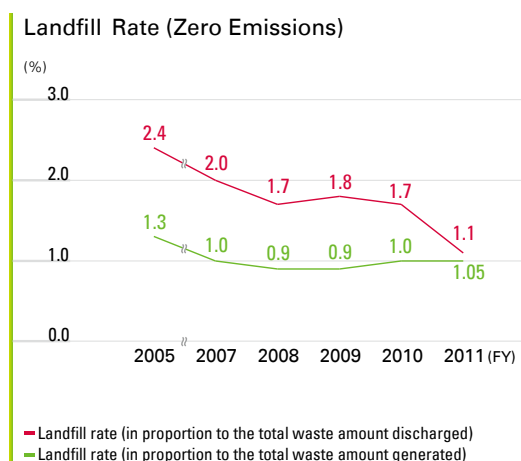
Reduce the final volume of waste for disposal to less than 1% of the total waste amount generated, or less than 2% of the total discharged.

Astellas believes that efforts to reduce waste landfill volume to as close to zero as possible will encourage the recycling and reuse of waste materials. To realize this goal, we set targets for the zero emission* of waste at our domestic business facilities. In waste management, it is also important to prevent the illegal disposal of waste and environmental pollution caused by hazardous waste generated by research centers and plants. To prevent this from happening, we first examine appropriate methods of waste disposal, and check regularly that waste disposers we chose use appropriate waste disposal methods.

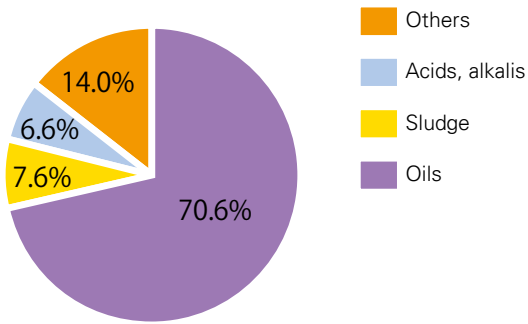
In fiscal 2011, the volume of landfill waste amounted to 1.0% of total waste generated, and 1.1% of total waste discharged. As we were able to again meet the target for discharged waste in fiscal 2011, we have achieved zero waste emissions continuously since fiscal 2008.

Because the Takaoka Plant will no longer use synthetic raw materials starting in fiscal 2012, there will be a significant decrease in waste generated from synthetic raw materials such as waste solvents. Therefore, the amount of waste generated will be roughly the same as the amount of discharged waste handled by outside contractors. As a result, beginning with the fiscal 2012 Action Plan, there will be no target for the proportion of generated waste subject to final disposal, leaving only a proportional target for volume versus total discharged waste.

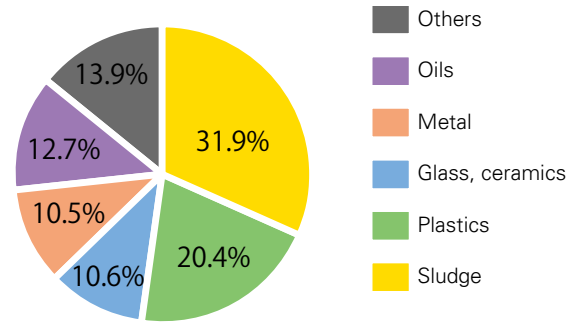
* Our zero emissions do not include animal carcasses that cannot be readily recycled, and other waste that is difficult to recycle, such as pharmaceutical waste from our distribution centers.



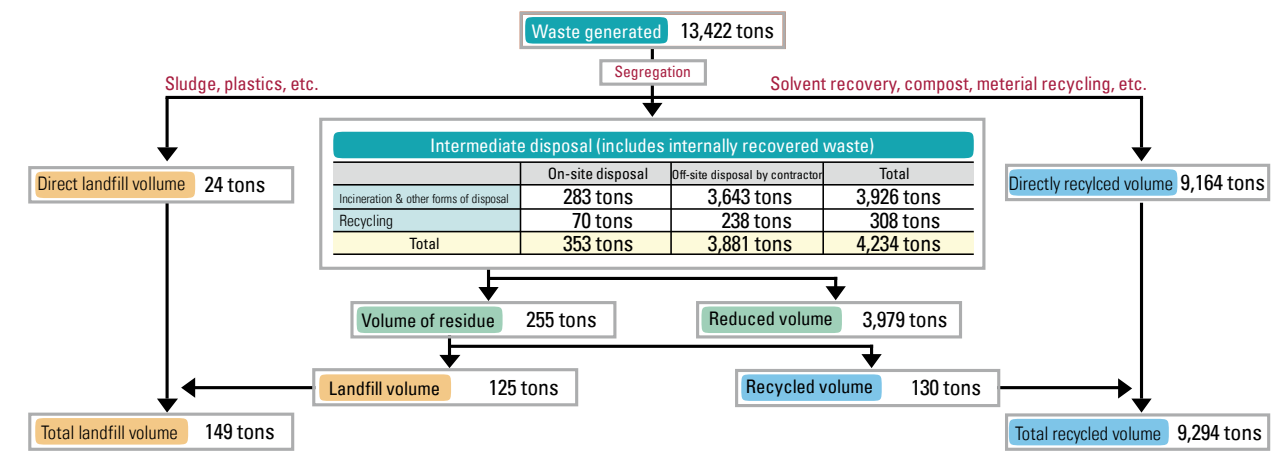
Breakdown of waste discharged



Breakdown of landfill waste



Waste Processing Flow Chart



8.3 State of PCB-contaminated Waste Storage (Japan)

Astellas registered at an early stage with the Japan Environmental Safety Corporation (JESCO) for the treatment of devices we have in storage containing PCBs. In fiscal 2011, JESCO treated the six capacitors that had been stored at the Takahagi Facilities. In fiscal 2012, we intend to have JESCO treat the 16 capacitors stored at the Hasune Office.

Status	Category	Number/Volume
Stored	High-voltage transformers	27 units
	Capacitors	228 units
	Electric current breakers	1 unit
	Fluorescent lamp ballasts	7,385 units
	PCB-containing oil	16 liters
	PCB incrustation	23 kg
In use	Fluorescent lamp ballasts	5 units

9. Initiatives for Preventing Pollution

Among environmental initiatives, the prevention of environmental pollution in local communities is just as important as global environmental issues. The system for managing typical pollution problems in Japan has begun to fail, as illustrated by an increase in accidents involving water contamination in the past few years. Consequently, relevant laws and regulations have become increasingly severe, including the strengthening of measures to prevent the escalation of harm in the event of an accident. Meanwhile, the international community has reached an agreement on minimizing the adverse effects that the production and use of chemical substances have on human health and the environment by the year 2020. Each country is, therefore, implementing its own initiatives on the control of chemical substances.

Astellas sets its own levels—which are stricter than legal standards and pollution control agreements—for the major environmental management indicators used to measure air quality and water quality. In addition to reducing the discharge of contaminants, we also set voluntary targets for lowering the discharge of chemical substances into the atmosphere.

9.1 Air Pollution

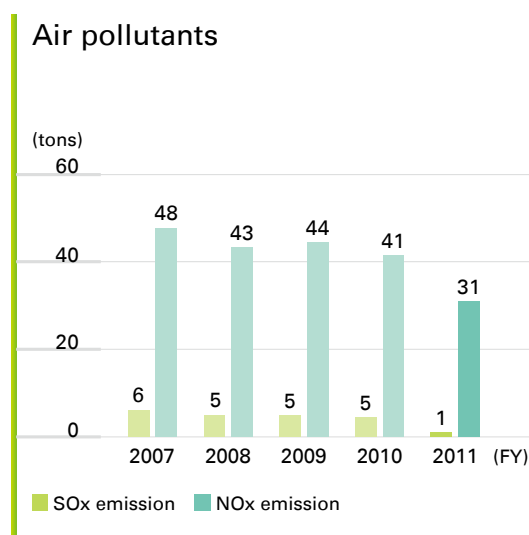
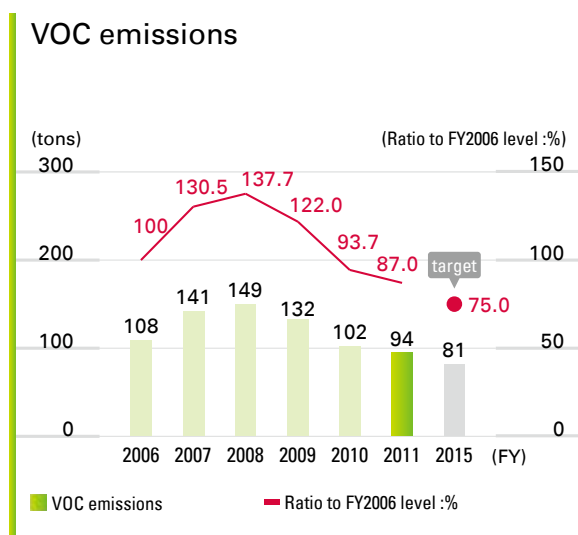
Environmental Action Plan (Management of Chemical Substances)

- Reduce the amount of VOCs discharged by 25% or more compared with fiscal 2006 levels by the end of fiscal 2015.

Astellas sets voluntary numerical targets for reducing the amount of volatile organic compounds (VOCs) it discharges accompanying the use of solvents in production and research activities, and is implementing measures to achieve these reduction targets.

In fiscal 2011, we discharged 94.3 tons of VOCs into the atmosphere, a year-on-year decrease of 7.9 tons. Since a main factor in this decrease was a reduction in solvents used as synthetic raw materials at the Takaoka Plant, we need to make further efforts to reduce usage in order to achieve our target. To this end, we will continue adopting necessary measures, including the installation of equipment that curbs the discharge of VOCs in processes that use large quantities of such substances. In addition to reducing emissions discharged into the air, we are taking measures to limit as much as possible the impact on employees, local communities, and the global environment. For example, we are developing manufacturing methods that do not use highly hazardous chemicals in order to prevent environmental pollution, occupational accidents, and health problems caused by chemical substances.

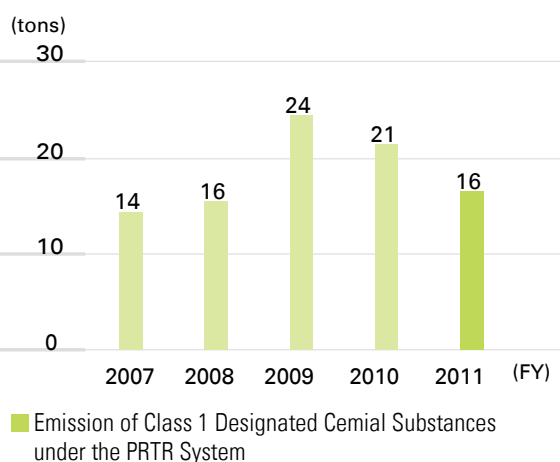
Astellas also strives to reduce the discharge into the atmosphere of sulfur oxides (SOx) and nitrogen oxides (NOx) generated through the operation of boilers and incinerators, despite the absence of numerical targets for these emissions. In fiscal 2011, SOx emissions amounted to 1.0 ton, down 3.5 tons, or 77.8%, compared with the previous year. NOx emissions totaled 31.0 tons, a year-on-year decrease of 10.4 tons, or 25.1%. Contributing factors to these decreases were the conversion of the fuel source for boilers at the Nishine Plant and the Takahagi Facilities from fuel oil to LNG, and the suspension of the operation of incinerators at the Takaoka Plant and the Takahagi Facilities. Since these factors will remain throughout fiscal 2012, we expect to achieve a further reduction in SOx and NOx emissions.



9.2 Chemical Substances Subject to PRTR* Surveys

Japan's PRTR Act designates substances widely found in the environment that have been identified as being harmful to human health. The primary objective of the Act is to assess and improve activities by business operators for the voluntary control of chemical substances through the monitoring of volumes released and volumes transferred in waste. The table below contains data on the release and transfer of chemicals requiring notification under the PRTR Act in fiscal 2011. In fiscal 2011, Astellas discharged a total of 17 tons of these notifiable chemicals.

Emission of Class 1 Designated Chemical Substances under the PRTR System



*PRTR: Pollutant Release and Transfer Register

The PRTR is a register of the amounts of potentially harmful chemicals released into the air, water, and soil, and the amounts transferred as waste material, which each business operator measures and collates independently. In Japan, business operators submit their registers to the government, which are then made available to the general public. The system began in 2001 with the enactment of the PRTR Act, which is officially titled the "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof." Since fiscal 2010, the register includes notifiable substances specified in the amended Act.

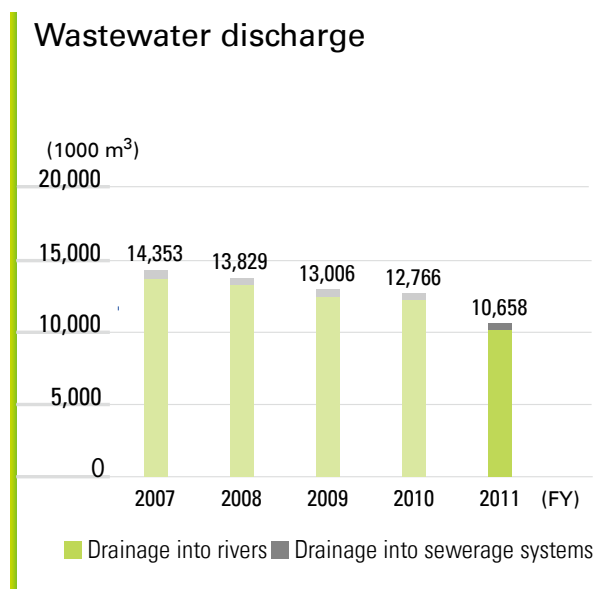
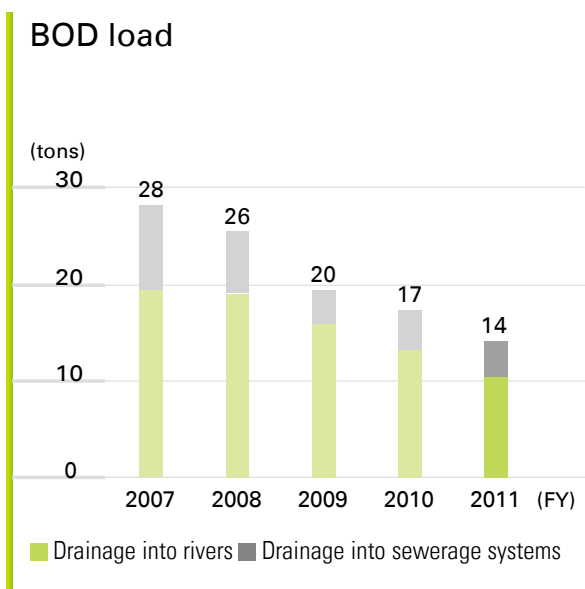
Releases and transfers of PRTR chemical substances in fiscal 2011

Substance name	Volume handled	Volume Released			Volume Transferred	
		Air	Water	Soil	Waste	Sewerage
Acetonitrile	26.434	0.136	0.000	0.000	23.698	0.000
Xylene	3.213	0.018	0.000	0.000	0.008	0.000
Chloroform	43.364	10.692	0.000	0.000	32.672	0.000
Dichloromethane (also known as methylene chloride)	95.028	3.473	0.000	0.000	48.394	0.000
<i>N,N</i> -dimethylacetamide	10.043	0.191	0.000	0.000	7.980	0.000
<i>N,N</i> -dimethylformamide	21.363	0.034	0.000	0.000	16.446	0.000
1, 2, 4-trimethylbenzene	4.368	0.022	0.000	0.000	0.000	0.000
Toluene	6.514	0.158	0.000	0.000	6.355	0.000
<i>n</i> -Hexane	16.052	1.328	0.000	0.000	14.724	0.000
Formaldehyde	8.703	0.011	0.000	0.000	8.693	0.000
Methylnaphthalene	9.598	0.048	0.000	0.000	0.000	0.000
Dioxins	0.000	0.077	0.001	0.000	0.001	0.000

Note: Unit is tons/year, except for dioxins, which are measured in mg-TEQ/year

9.3 Water Pollution

Astellas measures the extent of its impact on aquatic environments by adopting the biochemical oxygen demand (BOD) load as an index, and makes the data available to the public. In fiscal 2011, a reduction in the amount of wastewater discharged owing to reduced water usage resulted in a BOD load of 14.1 tons, down 3.3 tons, or 19.0%, from the previous year. In fiscal 2012, the Company's BOD load is expected to increase along with higher water usage. We will continue working to reduce the burden we place on water, including through the appropriate operation of wastewater treatment facilities. Meanwhile, because the discharge into water of chemical substances used in the manufacturing process can have a negative impact on ecosystems, we are examining ways to reduce their discharge into the environment wherever possible, from the R&D stage onward. With respect to future drug candidate substances, we are examining the impact pharmaceuticals would have on ecosystems through evaluation of biodegradability in the natural environment and other measures.



10. Environmental Accounting

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

In fiscal 2011, Astellas made investments of ¥963 million and incurred expenses, including depreciation and amortization, of ¥2,023 million. The main investments made to prevent pollution were maintenance of wastewater treatment facilities and the inspection and maintenance of underground water pipes. Investments made to help protect the global environment decided by the Global Warming Prevention Committee included conversion to alternative fuels and the introduction of energy monitoring systems. The economic benefits generated through environmental conservation activities amounted to ¥139 million, which includes lower costs owing to energy savings, the sale of waste organic solvents and metals, and a reduction in the cost of waste treatment. The tables below show Astellas' environment conservation investments and environmental performance for the past five years. It should be noted that fiscal 2011 environmental remediation costs amounted to ¥255 million, which included provision for the treatment of PCBs.

Environment-related Investments and Expenses

(¥ million)

Categories	FY2007		FY2008		FY2009		FY2010		FY2011	
	Investments	Expenses	Investments	Expenses	Investments	Expenses	Investments	Expenses	Investments	Expenses
Pollution prevention	190	662	211	614	161	461	177	687	225	489
Global environmental conservation	29	397	100	203	80	231	403	287	730	413
Resource recycling	0	416	2	411	1	340	6	344	0	432
Upstream/downstream costs	0	37	0	33	0	73	0	67	0	65
Administration costs	1	270	0	417	0	331	18	364	0	331
R&D costs	4	81	2	28	8	28	13	37	7	36
Social activity costs	0	8	0	7	0	6	0	3	0	2
Environmental remediation costs	0	21	0	21	0	141	0	76	0	255
Total	224	1,892	315	1,734	250	1,611	616	1,865	963	2,023

Environmental Performance Trends in Japan (Annual basis)

Items			FY2007	FY2008	FY2009	FY2010	FY2011	
INPUT	Energy	Electricity	MWh	201,662	211,001	212,472	218,364	203,533
		City gas	thousand m ³	20,721	21,401	21,982	23,813	24,134
		LPG	tons	2,258	2,255	2,301	2,118	2,056
		LNG	tons	-	-	-	-	1,618
		Fuel oil	kL	4,981	4,677	4,480	4,110	840
		Kerosene	kL	1,437	1,303	1,147	661	428
		Diesel oil	kL	10	9	16	17	19
		Gasoline	kL	3,528	3,353	3,171	3,077	3,106
	Purchased heat energy	GJ	2,225	2,225	2,225	2,225	2,183	
	Resources	Water	thousand m ³	15,080	14,579	14,105	13,760	12,031
Raw materials*		tons	11,261	10,481	12,630	2,000	1,324	
		kL	-	-	-	9,128	4,229	
OUTPUT	Global warming	CO ₂ emissions	thousand tons	175	162	162	161	147
		Air pollution	SO _x	tons	6	5	5	5
	NO _x		tons	48	43	44	41	31
	VOCs		tons	141	149	132	102	94
	Water pollution		BOD load	tons	28	26	20	17
		Drainage water	thousand m ³	14,353	13,829	13,006	12,766	10,658
	Waste	Volume generated	tons	19,494	19,469	20,882	19,508	13,422
		Volume discharged	tons	10,097	10,038	10,876	10,778	13,069
Landfill volume		tons	237	208	207	201	149	

* Raw materials and solvents have been tabulated separately from fiscal 2010

11. Methods for Calculating Performance Data

11.1 Methods for Calculating Energy Consumption and GHGs

Astellas' overseas facilities use the CO₂ emission coefficients in the Conversion Coefficients table below except for electricity and steam use of the overseas plants shown in the second table.

Type	Conversion Coefficients	
	Calorific value	CO ₂ emissions
Electricity	9.97 GJ/MWh	0.350 ton/MWh
Fuel oil	39.1 GJ/kL	2.71 tons/kL
Kerosene	36.7 GJ/kL	2.49 tons/kL
LPG	50.8 GJ/tons	3.00 tons/ ton
LNG	54.6 GJ/tons	2.70 tons/ ton
City gas	45.0 GJ/thousand m ³ N	2.24 tons/thousand m ³ N
Diesel oil	37.7 GJ/kL	2.58 tons/kL
Gasoline	34.6 GJ/kL	2.32 tons/kL
Purchased thermal energy	1.36 GJ/GJ	0.057 ton/GJ

	Electricity *	Steam
Norman Plant	0.570 ton/MWh	-
Dublin Plant Kerry Plant	0.582 ton/MWh	-
Meppel Plant	0.387 ton/MWh	-
Shenyang Plant	0.787 ton/MWh	0.091 ton/GJ

*1 For CO₂ emissions calculations in fiscal 2011, we have used figures for fiscal 2010, because at the time of the release (June 2012) of our Japanese Environmental Report, FEPC's latest CO₂ emission units were unavailable.

*2 We used CO₂ emission units by country for fiscal 2005, the base year for the Action Plan.

11.2 Methods for Calculating Scope 3 Emissions

- A) We assumed employees in Japan commuted to work on 230 days during fiscal 2011.
 B) Coefficients for GHG emissions generated from the commuting of domestic employees are shown below.

Train or Bus: For calculating GHG emissions generated from train or bus commuting, we used the emissions standard for passenger rail travel of 0.0236 kg-CO₂/passenger-km and the emissions standard for passenger bus travel of 0.0836 kg-CO₂/passenger-km contained in the guidelines (http://www.meti.go.jp/english/press/2012/0330_01.html) on supply chain GHG emissions accounting formulated by Japan's Ministry of Economy, Trade and Industry (METI) and the Ministry of the Environment (MOE) (March 2012)

Private vehicle: We used the private vehicle gasoline economy rate of 9.09 km per liter contained in MOE's guidelines (http://www.env.go.jp/earth/ondanka/mechanism/carbon_offset/guideline/guideline-cmqhg.pdf) for calculating GHG emissions of activities to be offset (April 2011).

- C) For GHG emissions generated by employees traveling overseas on business, we included only flights from or to Japan in the calculations. For the flight distances between airports, we mainly used international flight routes provided by CARBON OFFSET JAPAN, and calculated emission volumes using calculation sheets contained in "2010 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting," released by the Department for Environment, Food and Rural Affairs (Defra) of the United Kingdom.

11.3 Revision of Data from Past Fiscal Years

- A) We have previously included integrated values from the Company's measurement data for the volume of energy consumption and water usage by overseas facilities. However, following an extensive review, we now use suppliers' invoiced amounts as a basis for data. As a result, related data for fiscal 2005 through fiscal 2010 have been amended.
 B) We have corrected some duplication of data on expenses related to environmental accounting for fiscal 2010 reported in the previous fiscal year.
 C) The Tsukuba Biotechnology Research Center switched to city gas in August 2010. However, owing to the discovery of a fault in the meter installed by the gas company, we have revised the data since the time of conversion to city gas. Consequently, the actual amount of city gas used is more than the amount charged by the gas company.
 D) We have reviewed the items classified under biological raw material, and applied this retrospectively to previous fiscal years. As a result, from fiscal 2005 through fiscal 2010 we have revised the biodiversity index and the biodiversity burden index data used for calculating the biodiversity index.

12. Corporate Data

Major consolidated subsidiaries

Japan

Astellas Pharma Tech Co., Ltd.
 Astellas Business Service Co., Ltd.
 Astellas Learning Institute Co., Ltd.
 Astellas Research Technologies Co., Ltd.
 Astellas Marketing and Sales Support Co., Ltd.
 Lotus Estate Co., Ltd.
 Astellas Analytical Science Laboratories, Inc.

Asia and Oceania

Astellas Pharma China, Inc.
 Astellas Pharma Hong Kong Co., Ltd.
 Astellas Pharma Korea, Inc.
 Astellas Pharma Taiwan, Inc.
 Astellas Pharma (Thailand) Co., Ltd.
 Astellas Pharma Philippines, Inc.
 P.T. Astellas Pharma Indonesia
 Astellas Pharma India Private Limited
 Astellas Pharma Australia Pty Ltd

Americas

Astellas US Holding, Inc.
 Astellas US LLC (Regional headquarters)
 Astellas Pharma US, Inc.
 Astellas Pharma Global Development, Inc.
 Astellas US Technologies, Inc.
 Astellas Pharma Technologies, Inc.
 Astellas Research Institute of America LLC
 Urogenix, Inc.
 Astellas Venture Management LLC
 Astellas Pharma Canada, Inc.
 Astellas Farma Brasil Importação e Distribuição de Medicamentos Ltda.
 Agensys, Inc.
 OSI Pharmaceuticals LLC

Europe

Astellas Pharma Europe Ltd. (Regional headquarters)
 Astellas Pharma Europe B.V.
 Astellas Ireland Co., Limited

Scope of environmental information report

Company name	Facility	Location	Function
Astellas Pharma Inc.	Nihonbashi Office	Chuo-ku, Tokyo	Headquarters
	Hasune Office	Itabashi-ku, Tokyo	Development
	Takahagi Chemistry & Technology Development Center	Takahagi, Ibaraki	Research
	Tsukuba Research Center	Tsukuba, Ibaraki	
	Tsukuba Biotechnology Research Center	Tsukuba, Ibaraki	
	Yaizu Pharmaceutical Research Center	Yaizu, Shizuoka	
	Kiyosu Research Office	Kiyosu, Aichi	
	Kashima R&D Center	Yodogawa-ku, Osaka	Sales & marketing
Branches/Sales Offices	18 branches, 159 sales offices		
Astellas Pharma Tech Co., Ltd.	Nishine Plant	Hachimantai, Iwate	Manufacturing
	Takahagi Technology Center	Takahagi, Ibaraki	
	Yaizu Technology Center	Yaizu, Shizuoka	
	Fuji Plant	Fuji, Shizuoka	
	Toyama Technology Center	Toyama, Toyama	
Takaoka Plant	Takaoka, Toyama		
Astellas Pharma Technologies Inc.	Norman Plant	U.S.A.	
Astellas Ireland Co., Limited	Dublin Plant	Ireland	
	Kerry Plant		
Astellas Pharma Europe B.V.	Meppel Plant	Netherlands	
Astellas Pharma China, Inc.	Shenyang Plant	China	

Note: Operating sites throughout this report are in principle identified according to the name of each facility. In instances where there are multiple facilities on the same site, the following names may be applied.

Takahagi Facilities (Takahagi Chemistry & Technology Development Center and Takahagi Technology Center)
 Yaizu Facilities (Yaizu Pharmaceutical Research Center and Yaizu Technology Center)