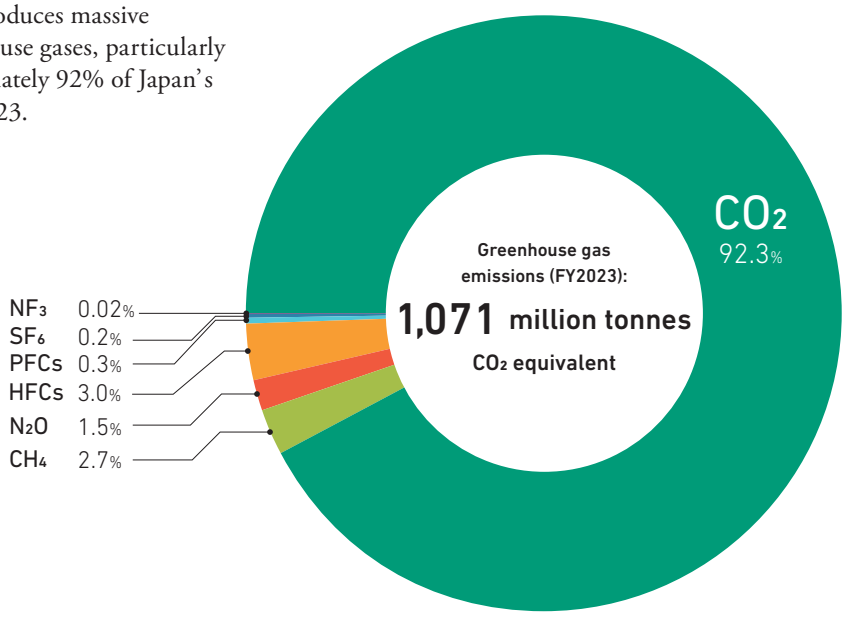
ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2025

Breakdown of Japan's Greenhouse Gas Emissions (FY2023)

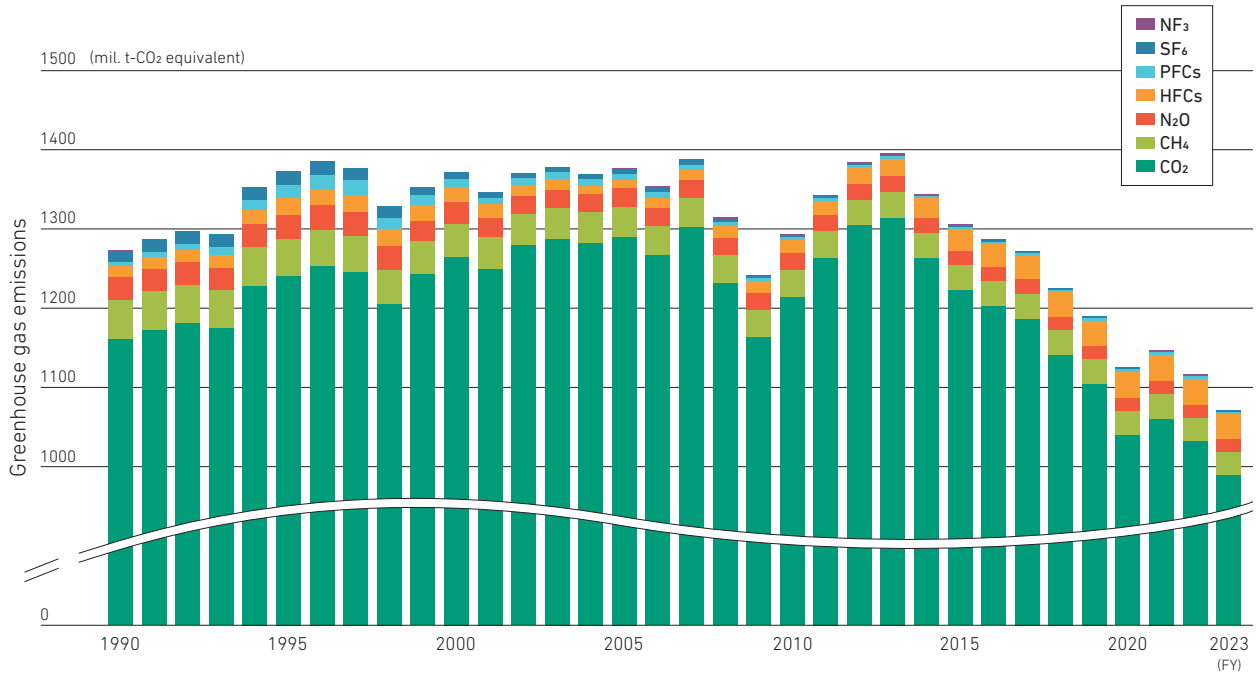
Globally, fossil fuel combustion produces massive amounts of anthropogenic greenhouse gases, particularly CO_2, which accounts for approximately 92% of Japan's greenhouse gas emissions in FY 2023.



Source: Ministry of the Environment

Japan's Greenhouse Gas Emissions

In Japan, the greenhouse gas emissions in FY 2023 were equivalent to 1,071 million tonnes of CO_2.
The decarbonization of power sources (the combined share of renewable energy and nuclear power in the power source mix exceeds 30%) and a reduction in energy consumption due to decreased domestic production activity in the manufacturing sector, contributed to a 4.0% decrease compared to FY2022.



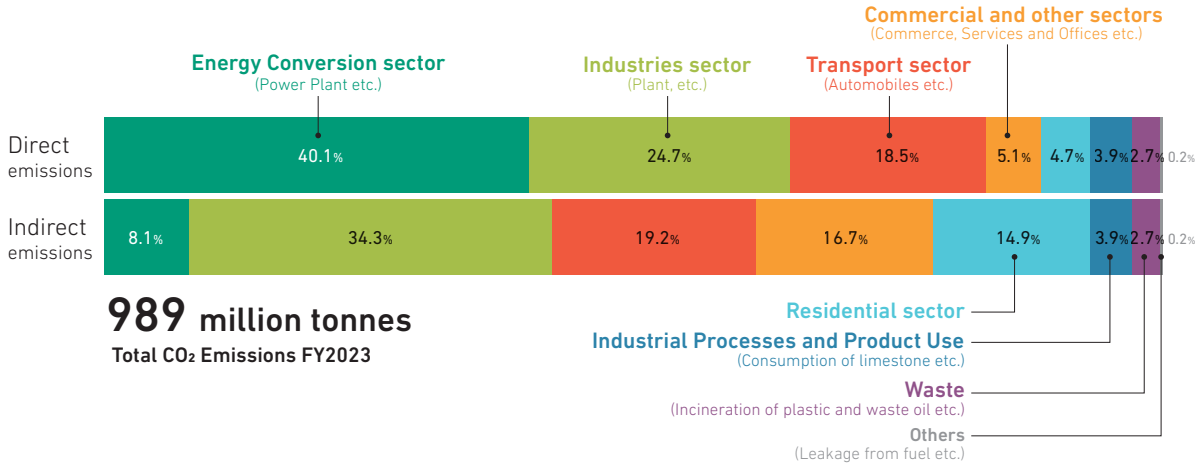
Source: Ministry of the Environment

Japan's GHG Emissions

Additional materials provide more details about the Japan's GHG Emissions

Breakdown of CO_2 Emissions by Sector

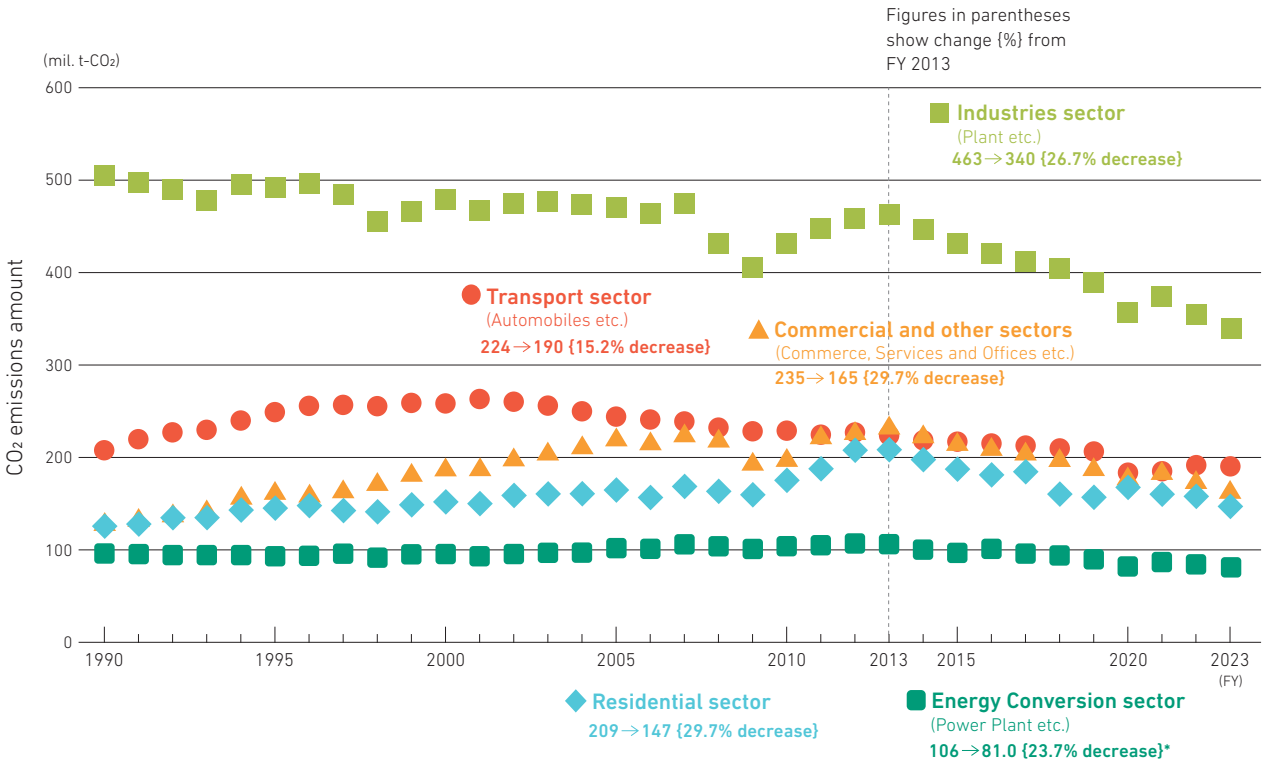
The sector with the largest CO_2 emissions in indirect emissions in FY 2023 was industries sector, accounting for approximately 34.3% of Japan's total.



Source: Ministry of the Environment

Energy-related CO_2 Emissions by Sector (Indirect Emissions)

Plotting energy-related CO_2 emissions by sector reveals that emissions in every sector decreased from FY 2013.



* Excluding statistical discrepancy from power and heat allocation.

Source: Ministry of the Environment

ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2025

Threatened Species in Japan

With an increasing number of species being put on the Red List, which publicizes threatened species, it is clear that the circumstances of wild fauna, flora and marine species in Japan continue to be severe.

(Reported in March 2025)

	Taxon	Species Targeted for Evaluation	Extinct	Extinct in the Wild	Threatened Species			Near Threatened	Data Deficient	Total of listed species	Endangered Local Population
					Endangered Class I		Endangered Class II				
					Class IA	Class IB					
			EX	EW	CR	EN	VU	NT	DD		LP
Fauna	Mammals	160 (160)	7 (7)	0 (0)	**34(33)**			17 (18)	5 (5)	63 (63)	26 (23)
					25(24)		9(9)				
					12(12)	13(12)					
	Birds	Approx. 700 (Approx. 700)	15 (15)	0 (0)	**98(98)**			22 (21)	17 (17)	152 (151)	2 (2)
					55(55)		43(43)				
					24(24)	31(31)					
	Reptiles	100 (100)	0 (0)	0 (0)	**37(37)**			17 (17)	3 (4)	57 (58)	5 (5)
					14(14)		23(23)				
					5(5)	9(9)					
	Amphibians	91 (76)	0 (0)	0 (0)	**47(29)**			19 (22)	1 (1)	67 (52)	0 (0)
					25(17)		22(12)				
					5(4)	20(13)					
	Brackish water and freshwater fish	Approx. 400 (Approx. 400)	3 (3)	1 (1)	**169(169)**			35 (35)	37 (37)	245 (245)	15 (15)
					125(125)		44(44)				
					71(71)	54(54)					
	Insects	Approx. 32,000 (Approx. 32,000)	4 (4)	0 (0)	**367(363)**			351 (350)	153 (153)	875 (870)	2 (2)
					182(177)		185(186)				
					75(71)	107(106)					
	Shellfish	Approx. 3,200 (Approx. 3,200)	19 (19)	0 (0)	**629(616)**			440 (445)	89 (89)	1177 (1169)	13 (13)
					301(288)		327(328)				
					39(33)	28(16)					
	Other invertebrates	Approx. 5,300 (Approx. 5,300)	1 (0)	0 (0)	**65(65)**			42 (42)	44 (44)	152 (151)	0 (0)
					22(22)		43(43)				
					0(0)	2(2)					
	Subtotal of Fauna		49 (48)	1 (1)	**1446(1410)**			943 (950)	348 (350)	2787 (2759)	63 (60)
					749(722)		697(688)				
Flora	Vascular plants	Approx. 7,000 (Approx. 7,000)	26 (28)	10 (11)	**1765(1790)**			377 (297)	44 (37)	2222 (2163)	0 (0)
					1065(1049)		700(741)				
					539(529)	526(520)					
	Bryophytes	Approx. 1,800 (Approx. 1,800)	4 (0)	0 (0)	**169(240)**			41 (21)	75 (21)	289 (282)	0 (0)
					98(137)		71(103)				
	Algae	Approx. 3,000 (Approx. 3,000)	4 (4)	1 (1)	**79(116)**			26 (41)	68 (40)	178 (202)	0 (0)
					62(95)		17(21)				
	Lichens	Approx. 1,600 (Approx. 1,600)	3 (4)	0 (0)	**37(63)**			14 (41)	99 (46)	153 (154)	0 (0)
					34(43)		20(20)				
	Fungi	Approx. 3,000 (Approx. 3,000)	20 (25)	0 (1)	**13(61)**			8 (21)	69 (51)	110 (159)	0 (0)
					10(37)		3(24)				
	Subtotal of Flora		57 (61)	11 (13)	**2063(2270)**			466 (421)	355 (195)	2952 (2960)	0 (0)
					1269(1361)		794(909)				
Marine Species	Fishes	Approx. 3,900	0	0	**16**			89	112	217	2
					8	6	2				
	Hermatypic corals	Approx. 690	1	0	**6**			7	1	15	0
					0	1	5				
	Crustaceans	Approx. 3,000	0	0	**30**			43	98	171	2
					8	11	11				
	Cephalopoda	Approx. 230	0	0	**0**			3	0	3	0
					0	0	0				
	Other invertebrates	Approx. 2,300	0	0	**4**			20	13	37	1
					1	2	1				
	Subtotal of Marine Species		1	0	**56**			162	224	443	5
					17	20	19				

Biodiversity

Additional materials provide more details about biodiversity in Japan.

Taxon	Species Targeted for Evaluation	Extinct	Extinct in the Wild	Threatened Species		Near Threatened	Data Deficient	Total of listed species	Endangered Local Population
				Endangered Class I	Endangered Class II				
Total of thirteen taxonomic groups		107	12	3565		1571	927	6182	68
				2055	1510				

* The number of species excluding those that cannot be evaluated by the naked eye.
- The numbers in parentheses for animals indicate the respective numbers of species (including subspecies) listed in the Red List 2019.
- The numbers in parentheses for plants and fungi indicate the respective numbers of species (including subspecies and varieties, and in algae, also form) listed in the Red List 2020.
- The numbers in the LP column indicate the respective numbers of target groups. For vascular plants, LP is not treated as an evaluation target.
- This table presents number of species listed in the most recent Red Lists by taxonomic group, based on a combination of the Marine Species Red List (published on March 21, 2017), the Red List 2020 (published on March 27, 2020), and the Fifth Red List (published on March 18, 2025).

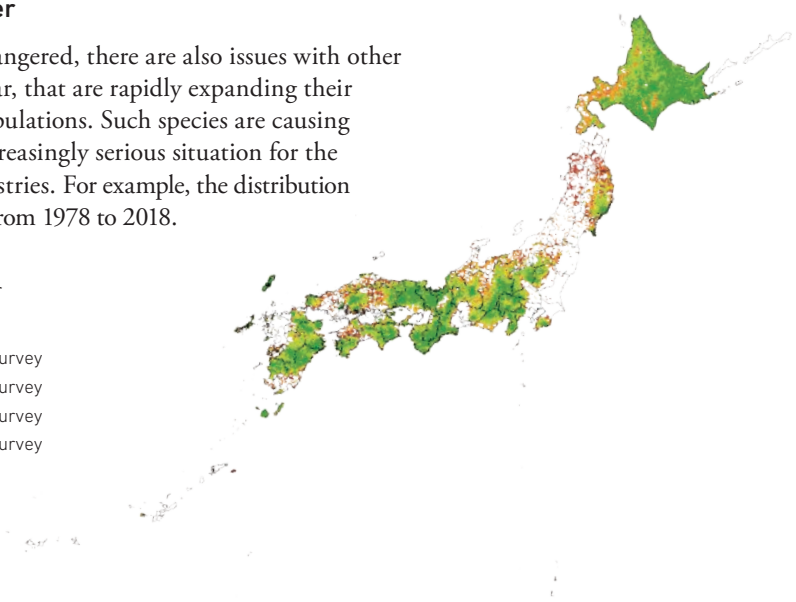
The categories are considered as follows:

Extinct [EX]: Species that are likely to already be extinct / Extinct in the Wild [EW]: Species that exist only in captivity or as a naturalized population outside its natural habitat / Endangered Class I (Critically Endangered + Endangered) [CR+EN]: Species that are threatened to extinction / Endangered Class I A (Critically Endangered) [CR]: Species that are facing an extremely high risk of extinction in the wild in the near future / Endangered Class I B (Endangered) [EN]: Species that are facing a high risk of extinction in the wild in the near future / Endangered Class II (Vulnerable) [VU]: Species with and increasing risk of extinction / Near Threatened [NT]: Species that are not currently endangered, but may possibly qualify for "endangered" status with changes in their habitat conditions / Data Deficient [DD]: Species with data insufficient for adequate evaluation / Endangered Local Population [LP]: Species with a population isolated regionally, and face a high risk of extinction

Source: Red List by the Ministry of the Environment

Expanding Distribution of Sika Deer

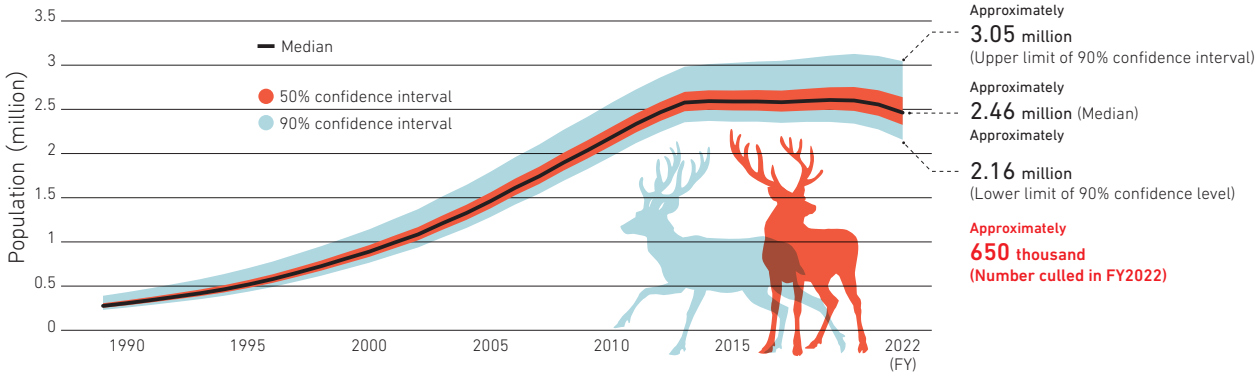
While certain flora and fauna are endangered, there are also issues with other species, such as Sika deer and wild boar, that are rapidly expanding their range of habitat and growing their populations. Such species are causing increasing damage, resulting in an increasingly serious situation for the agricultural, forestry, and fishery industries. For example, the distribution of Sika deer expanded approx. 2.7 fold from 1978 to 2018.



Source: Ministry of the Environment

Estimated Number of Sika Deer in Japan (excluding Hokkaido prefecture*)

Various efforts have increased the number of Sika deer captured, but the estimated population remains high.



*: In FY 2022, estimated number in Hokkaido was approx. 670,000, and number culled was approx. 107,000 (Hokkaido data).

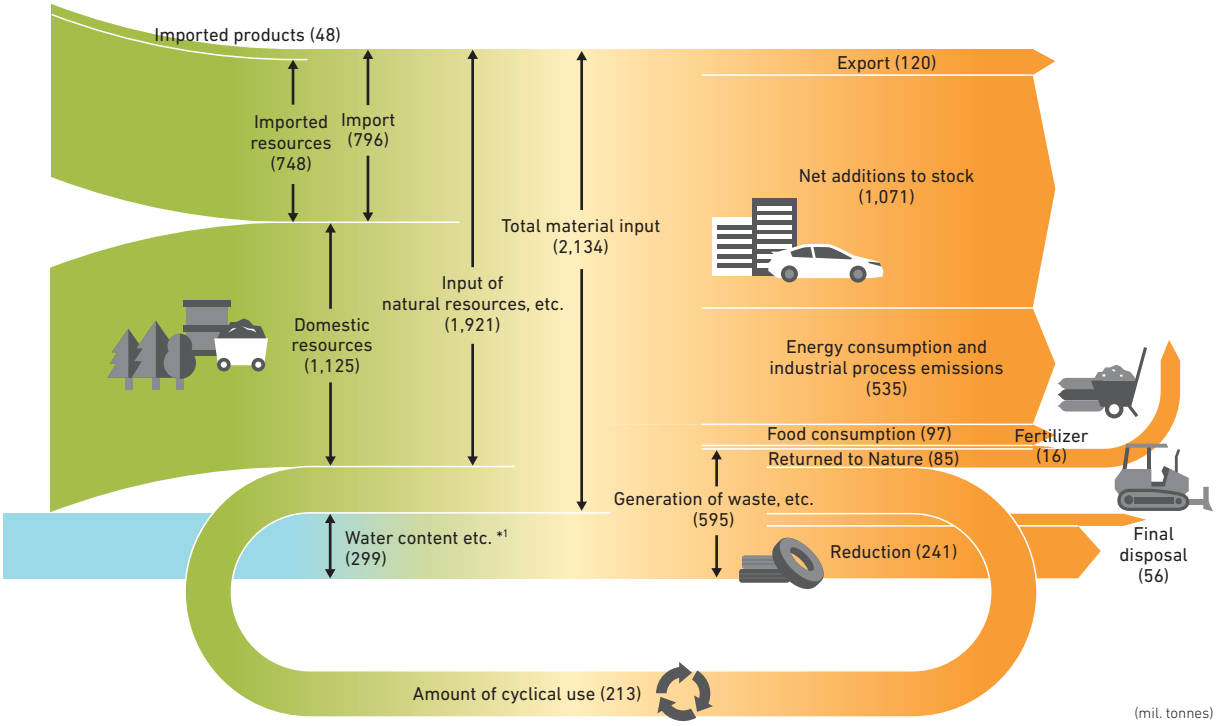
Source: Ministry of the Environment

ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2025

Material Flow in Japan

In order to establish a sound material-cycle society, it is necessary to comprehend material flows (or substance flows) to understand the extent of material extraction, consumption, and disposal in Japan. Japan uses material flows to determine targets for the six indicators of resource productivity, material footprint per capita, input rate of renewable and cyclical resources, cyclical use rate(resource base), cyclical use rate(waste base), and final disposal amount.

FY2000 (for reference)

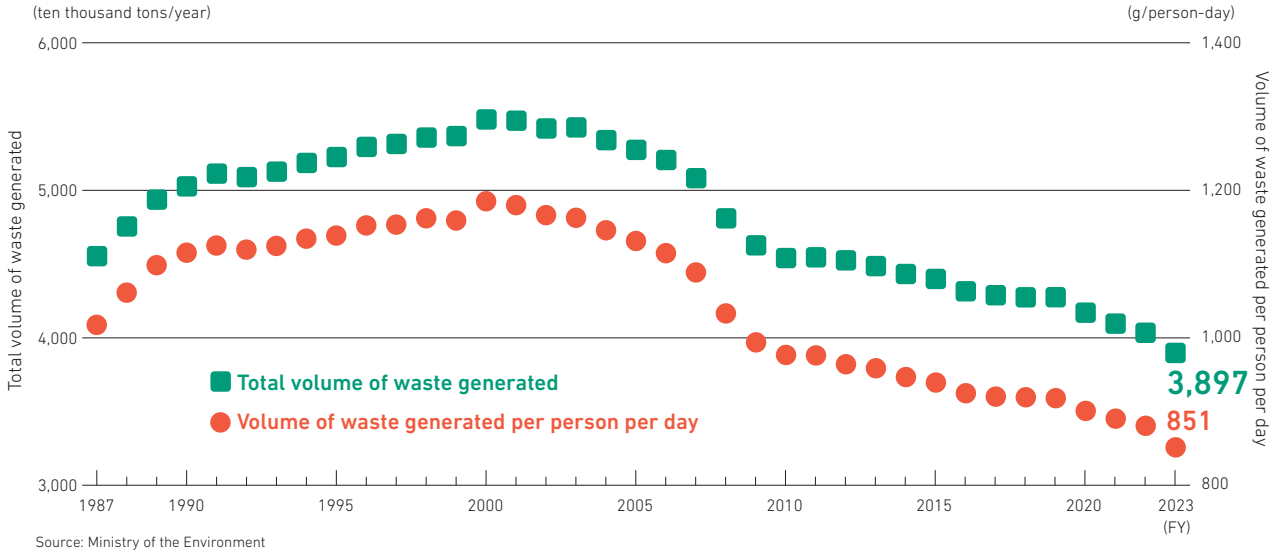


(mil. tonnes)

Source: Ministry of the Environment

Total Volume of Waste Generation and Waste Volume Per Person Per Day

Total generated waste and waste generated per person per day are declining year by year.



Source: Ministry of the Environment

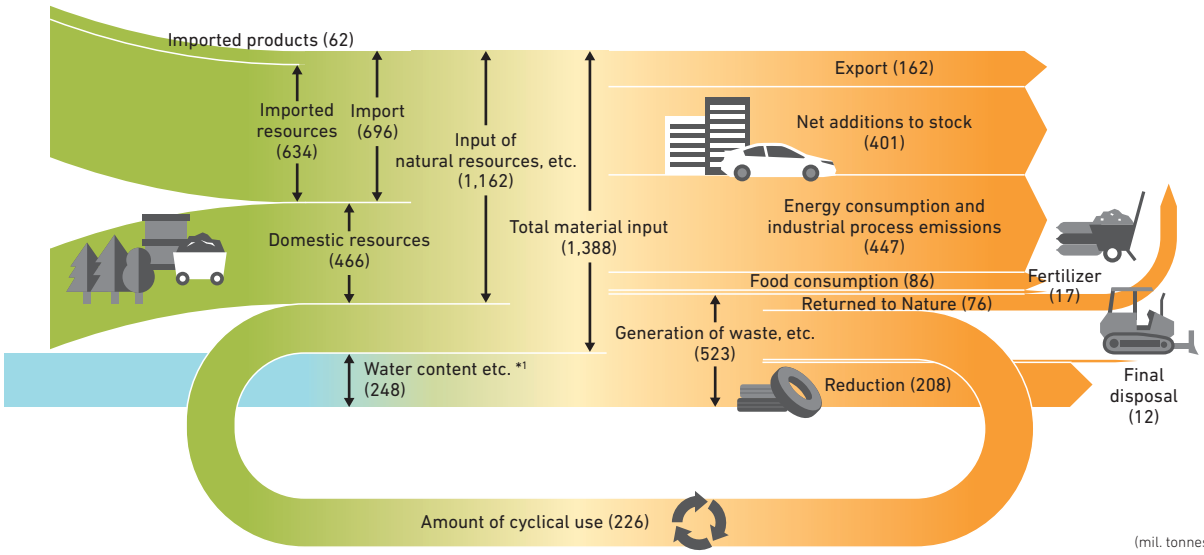
Sound material-cycle society

Additional materials provide more information about current efforts to form a sound material-cycle society.

*1 Water content: water contents of wastes (sludge, livestock waste, night soil, waste acid, waste alkali) and sediments dumped in association with the process of economic activities (sludge in mining, construction and in waterworks as well as slag)

Source: Ministry of the Environment

FY2022

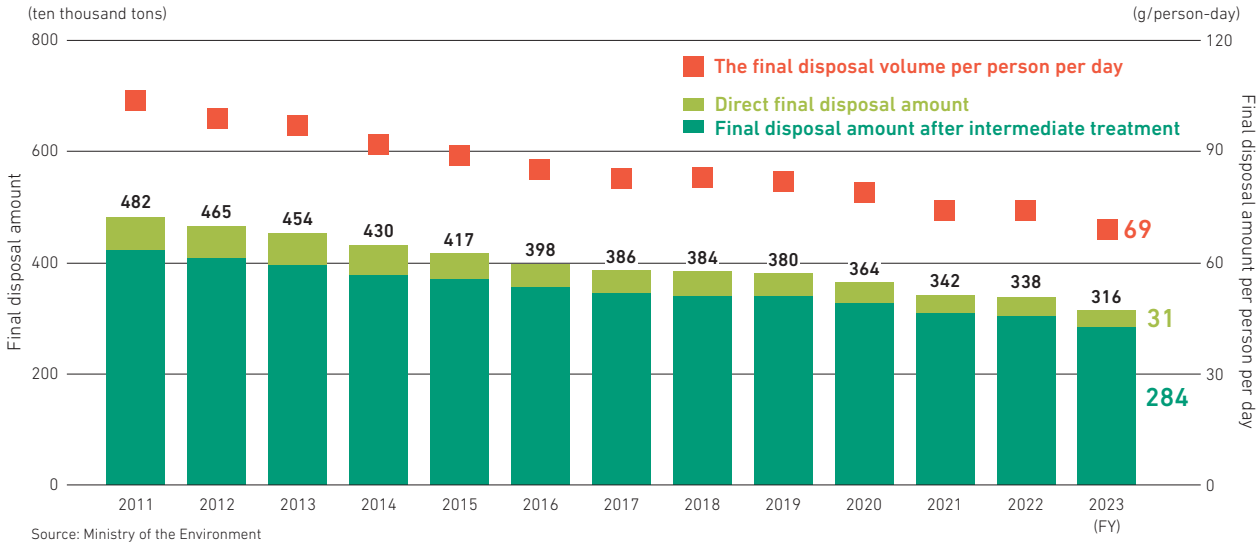


(mil. tonnes)

Source: Ministry of the Environment

Final Disposal Amount and Final Disposal Amount Per Person

Final disposal amount of waste and final disposal amount per person per day are trending downwards.



Source: Ministry of the Environment

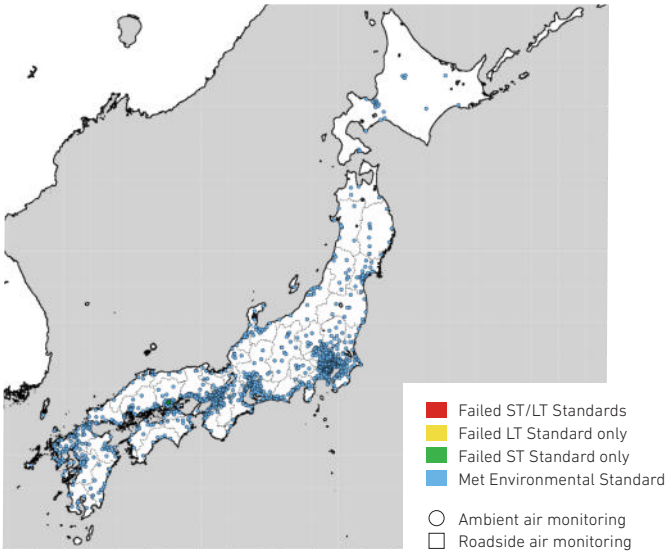
ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2025

Fine particulate matter (PM2.5)

In FY2023, the rate of compliance with ambient air quality standards for fine particulate matter (PM 2.5) was 100% for ambient air pollution monitoring stations and 100% for roadside air pollution monitoring stations throughout Japan. The annual average was 8.5 μg/m³ for ambient air pollution monitoring stations and 9.1 μg/m³ for roadside air pollution monitoring stations.

Fiscal year		2018	2019	2020	2021	2022	2023
No. of vaild stations							
	Ambient	818	835	844	858	855	867
	Roadside	232	238	237	240	236	233
No. of vaild stations compliant with ambient air quality standards							
	Ambient	765	824	830	858	854	867
		93.5%	98.7%	98.3%	100%	99.9%	100%
	Roadside	216	234	233	240	236	233
		93.1%	98.3%	98.3%	100%	100%	100%

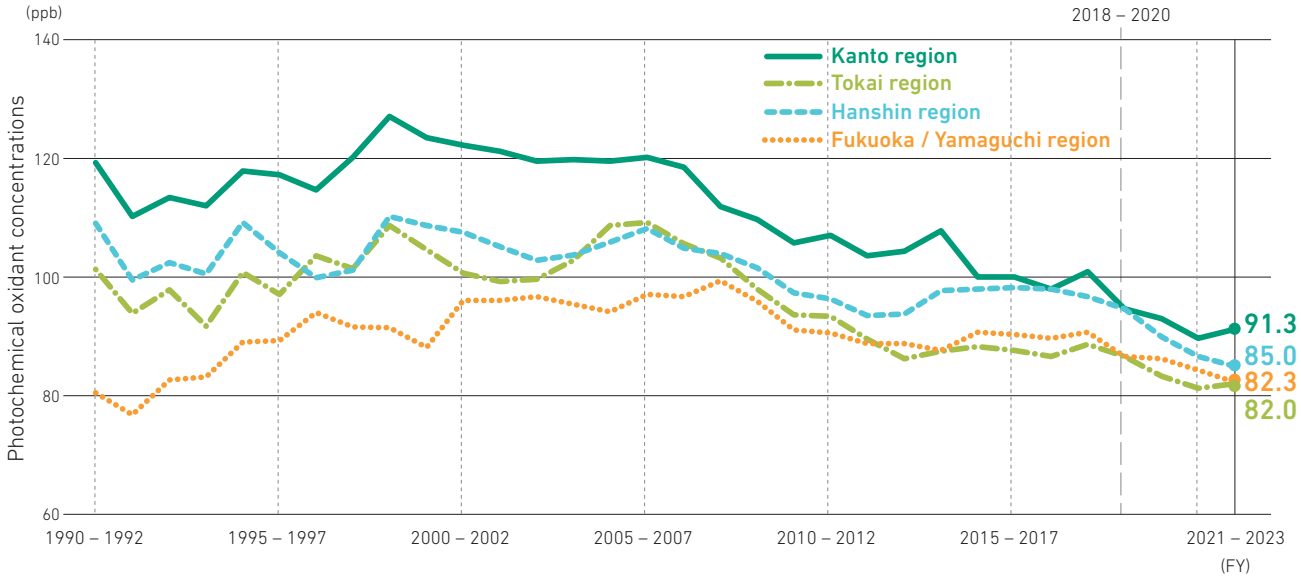
Source: Ministry of the Environment



Source: Ministry of the Environment

Photochemical oxidants

Photochemical oxidant concentrations (highest in the region for the 3-year average of the 99th percentile of the highest 8-hour day values) had been trending to decline compared FY 2018 to FY 2020.



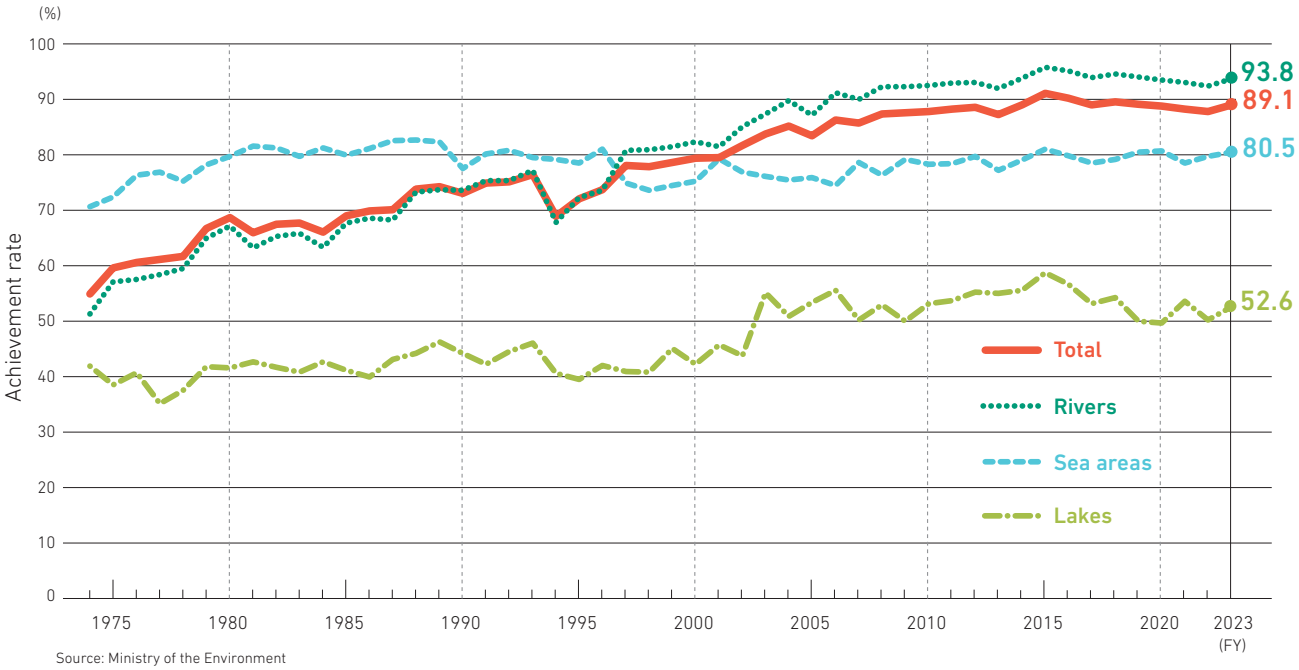
Source: Ministry of the Environment

Atmospheric and water environments

Additional materials provide more details about biodiversity in Japan.

Achievement of Environmental Standards (BOD or COD)

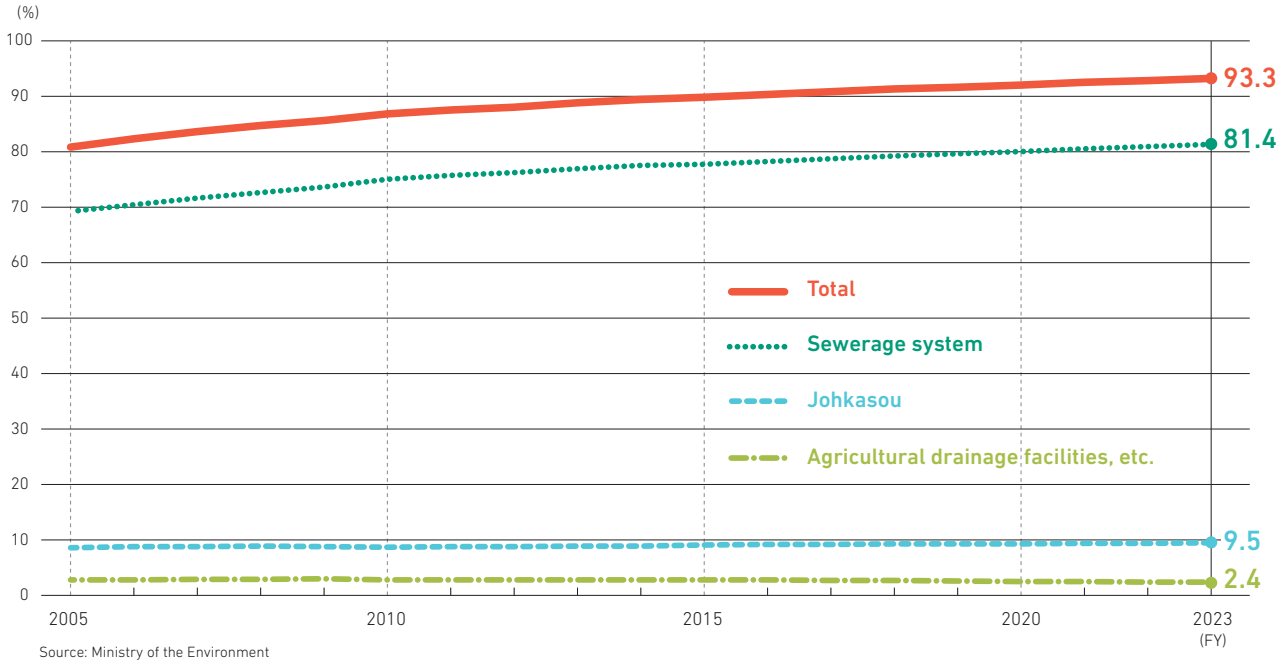
An overall level of 89.1% has been achieved for the biochemical oxygen demand (BOD) and chemical oxygen demand (COD) environmental standards relating to the maintenance of living environments. BOD and COD are leading indicators of water quality in respect of organic pollution.



Source: Ministry of the Environment

Coverage of Population Served by Wastewater Treatment System

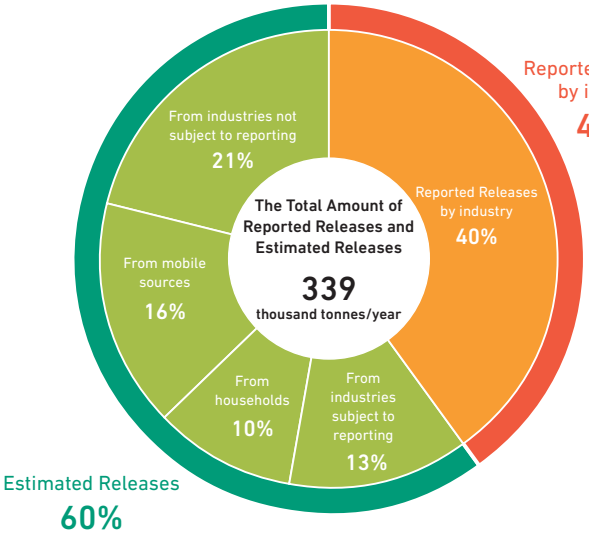
The population coverage of wastewater treatment systems in Japan is 93.3%. Wastewater treatment facilities are being installed to cover the population not yet served by the wastewater treatment systems.



Source: Ministry of the Environment

ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2025

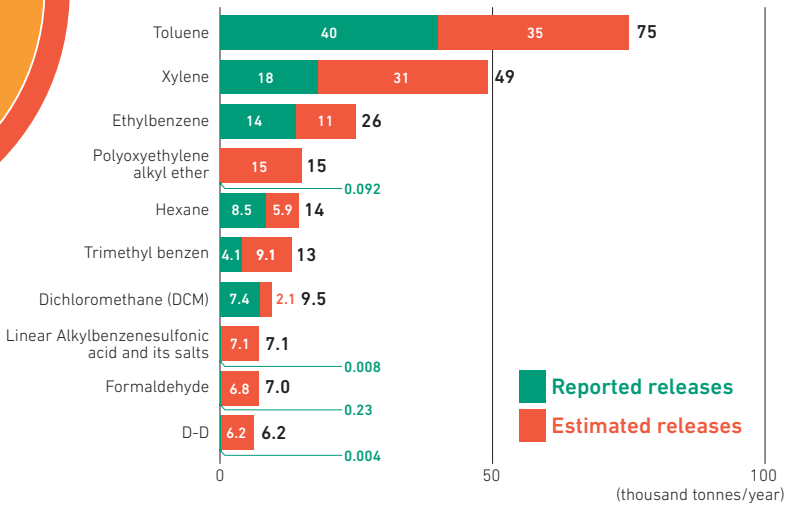
Breakdown of Reported Releases by Industry and Estimated Releases of Chemical Substances in FY 2023



Notes: The reported releases are from the business entities categorized as subjected to reporting. Releases are estimated for businesses that do not meet the reporting requirements, such as number of employees, annual handling quantity, etc., and are exempted from reporting.

Source: Ministry of Economy, Trade and Industry and Ministry of the Environment

Top 10 Chemicals with High-volume of Reported Releases and Estimated Releases (FY 2023)



Source: Ministry of Economy, Trade and Industry and Ministry of the Environment

In February 2025, the government compiled data reported from businesses concerned on release and transfer of chemical substances complying with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Law). Releases that were not subject to reporting were estimated.

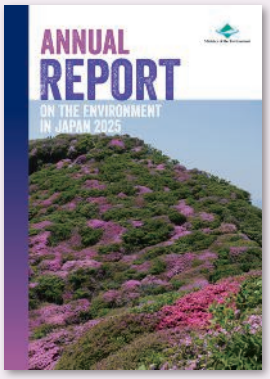


Photo: Miyama Kirishima azaleas in full bloom on Mt. Takadake in June, Aso-Kuju National Park

Aso-Kuju National Park showcases some of Japan's most iconic volcanic landscapes and lush grasslands. In the south, Mt. Aso, boasting a caldera of world-leading scale, towers overhead. Visitors can enjoy the fuming Nakadake crater, the beautiful cone-shaped Komezuka, and the vast Kusasenri grasslands. The Kuju Mountain Range and the Ramsar-listed Tadewara and Bogatsuru Marsh wetlands attract hikers with their seasonal flowers. In the north, the graceful peaks of Mt. Tsurumi and Mt. Yufudake rise above the hot spring resorts of Beppu and Yufuin. Here, visitors can experience majestic volcanoes, highlands, and hot spring culture all together— a true embodiment of Japan's natural beauty.

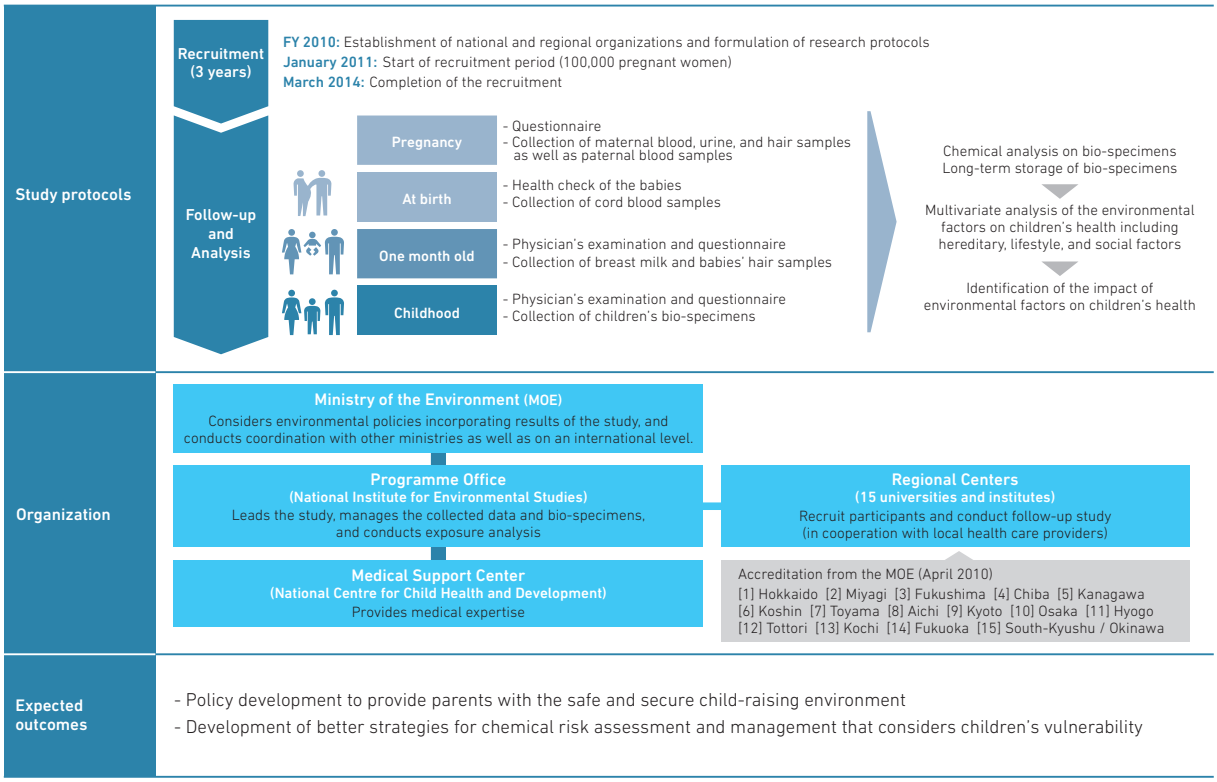
Environmental risks of chemicals

The following data provides information on action regarding chemical substance emissions into the environment and initiatives for children's environmental health.

The Japan Environment and Children's Study (JECS)

The Japan Environment and Children's Study (JECS), a large-scale, long-term national birth cohort study involving 100,000 mother-child pairs, was launched in FY 2010. The Sub-cohort study, which includes home visits for environmental measurements, medical examinations and children's bio-specimen collection, began in November 2014, involving 5,000 participants selected from the Main Study. In FY2022, a conceptual plan was formulated to conduct the follow-up study on the participants of ages 13 and higher in FY2024.

JECS is a large-scale, long-term prospective cohort study to examine the impact of the exposure to chemicals during pregnancy and childhood on children's health.



Source: Ministry of the Environment

Large Shijimi Blue
(Shijimiaeoides divinus)

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