Environment

Overview

Basic Approach

Sony has pursued environmental initiatives since the 1970s, and began setting environmental principles and targets in the early 1990s. In April 2010, Sony established the "Road to Zero," a plan to realize a sustainable society by achieving a zero environmental footprint throughout the life cycle of its products and business activities by 2050. In May 2022, Sony made the decision to bring forward the target year of achieving a zero environmental footprint in the climate change area by ten years from 2050 to 2040.
Working toward a zero environmental footprint, once every five years Sony sets concrete medium-term environmental targets for each stage of the life cycle for its products with respect to climate change, resources, chemical substances, and biodiversity.

Organizational Structure

Sony is implementing and continually improving its globally integrated environmental management system with the aim of realizing the Sony Group Environmental Vision, achieving its medium-term environmental targets and complying fully with legal requirements, regulatory demands and internal policies established for the group.
In addition, Sony has set up specialized functions to handle individual areas of activity within headquarters environmental functions. Corporate Executive Officers oversee these functions as Sony Group Corporation senior management.

Looking to the Future

Under the targets set to achieve from fiscal years 2021 to 2025 in Green Management 2025, Sony prioritizes both encouraging business partners, consumers, and other stakeholders to take action and work together to build a sustainable world, as well as its own environmental activities. By 2030, we also intend to switch to 100% renewable energy for electricity used at our business sites and aim to make direct and indirect greenhouse gas (GHG) emissions (scopes 1 and 2) of our business operations net-zero. Then, by 2035, we are aiming to reduce scope 3 GHG emissions during product use by 45% (compared to fiscal year 2018), achieving net-zero targets in all scopes by 2040. Moving forward, Sony will continue to strengthen our efforts to achieve a zero environmental footprint.

■ Milestones

1976:	Company-wide Sony Environmental Conference established
1993:	Sony Global Environmental Policy and Environmental Action Program developed
1995:	Began to acquire ISO14001 certification at manufacturing sites in Japan
2002:	Green Partner Environmental Quality Approval Program introduced
2006:	Integration of environmental management systems at sites around the world completed
2009:	100% renewable electricity use achieved at all European sites
2010:	"Road to Zero," Sony's Global Environmental Plan announced
2015:	Approved as Science Based Targets (SBT)
2018:	Sony joins RE100 global initiative
2022:	Sony announced the bringing forward of the target year of achieving a zero environmental footprint in the climate change area and "RE100"
	Approved as a Science Based Targets (SBT) net zero target

Environmental Data
"Road to Zero," Sony's Global Environmental Plan
Green Management 2025
Sony Group Portal Website "Environment"

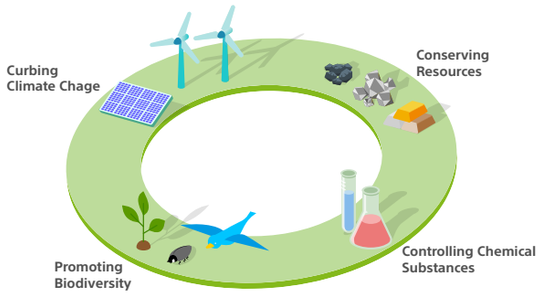
Environmental Policies and Targets

Sony Group Environmental Vision

The Sony Group Environmental Vision presents a philosophy and principles for environmental management activities throughout the global Sony Group with the aim of contributing to the realization of a sustainable society. Since enacting the Sony Global Environmental Policy which is a predecessor of the Sony Group Environmental Vision and the Environmental Action Program, in 1993, Sony has pursued a broad range of environmental initiatives. In 2010, we updated our Environmental Vision along with the formulation of the Road to Zero environmental plan.

Philosophy

Sony recognizes the importance of preserving the natural environment that sustains all life on the earth for future generations and thereby ensuring that all humanity can attain a healthy and enriched life. In order to realize such a sustainable society, Sony strives to achieve a zero environmental footprint throughout the lifecycle of our products and business activities.



Sony focuses on four environmental perspectives

Basic Policy

Sony reduces our environmental footprint and prevents environmental pollution throughout the lifecycle of our products and business activities by complying with all applicable environmental regulations and also by continually improving our global environmental management systems. Sony formulates the following goals in four key environmental perspectives and takes proactive actions to achieve those goals.

Climate Change

Sony reduces energy consumption and is striving to achieve zero GHG emissions* throughout the lifecycle of its products, service and business activities.

* Gases that raise the temperature of the earth's surface by absorbing infrared radiation from reflected sunlight. Carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbon (HFC), perfluorocarbon (PFC), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) are seven typical examples.

Resources

In order to minimize resource inputs for our business activities, Sony identifies "Key Resources" and strives to achieve zero usage of those virgin materials. Sony also uses water efficiently, minimizes waste from sites and maximizes our effort for take back and recycling products from markets.

Chemical Substances

Sony minimizes the risk of chemical substances that we use causing serious harm to human health and the environment. Sony maintains strict control over the chemical substances we use, while, in line with the precautionary approach, taking steps whenever possible to reduce, substitute and eliminate the use of substances that have potentially significant impacts on the environment even in the cases where scientific evidence is not fully proven.

Biodiversity

Sony protects and utilizes ecosystem services in a sustainable manner, while actively promoting maintenance and recovery of biodiversity through our business and local contribution activities.

In order to realize the Environmental Vision, Sony formulates targets and concrete plans and initiates actions to implement, while contributing to a better society through partnerships and communication with internal and external stakeholders.

Environmental Plan

"Road to Zero," Sony's Global Environmental Plan

As stated in the Sony Group Environmental Vision, Sony strives to realize a sustainable society by achieving a zero environmental footprint throughout the life cycle of its products and business activities. It is this long-term goal that prompted Sony to name its new global environmental plan, Road to Zero. Under this plan, Sony aims to bring its environmental footprint to zero by 2050 and works to achieve medium-term environmental targets toward this end. In May 2022, Sony made the decision to bring forward the target year of achieving a zero environmental footprint in the climate change area by ten years from 2050 to 2040.

"Road to Zero," Sony's Global Environmental Plan

Four Focus Points for a Zero Environmental Footprint

Sony's efforts to achieve a zero environmental footprint focus on four important environmental perspectives: climate change, resources, chemical substances, and biodiversity.

Focus on Climate Change

Sony aims to achieve zero GHG emissions in its business activities, as well as throughout the entire life cycle of its products and services. In order to reduce emissions, we conduct scenario analysis* in accordance with TCFD Recommendations, analyze and ascertain climate-related risks and opportunities, and review the countermeasures. To achieve zero GHG emissions, Sony works to maximize energy-saving measures and introduce as much renewable energy as possible.

In addition to such measures as reducing the amount of electricity used at business sites, promoting the installation of solar power generation equipment, and maximizing energy efficiency in Sony products and services, Sony also encourages similar measures in the supply chain, including at contract manufacturers and suppliers of raw materials and components, to reduce direct and indirect GHG emissions. Sony also investigates ways to offset any emissions that might remain through efforts such as carbon removal.

* See below for more information on scenario analysis in accordance with TCFD Recommendations.

→ Disclosure of Climate and Natural Capital-related Information in Accordance with TCFD and TNFD

Focus on Resources

Sony seeks to minimize the consumption of resources and maximize resource recycling in order to use resources effectively in its business activities and throughout the life cycle of its products and services, based on the globally prescribed promotion of a circular economy. Sony minimizes resource consumption by reducing the weight of products, minimizing the use of packaging materials, and utilizing resources more efficiently in its internal operations. Concurrently, Sony also works to extend the life of products through quality and durability enhancements, while undertaking environmentally conscious design, such as making products easier to repair, in order to indirectly reduce resource consumption. Additionally, as part of its efforts to respond to the growing global problem of plastic pollution in the ocean, Sony continues to work toward reducing the amount of single-use plastic product packaging. Sony aims to reduce the number of parts derived from virgin resources to zero by identifying certain key resources* in terms of environmental impact due to the depletion, uneven distribution and mining of resources, loss of biodiversity due to mining, and the effects of these impacts on local communities.

In terms of waste, Sony recycles waste generated from internal operations, with the goal of eliminating landfilled waste. Additionally, Sony designs products to facilitate recycling and implements ongoing programs to collect and recycle end-of-life products according to the needs of local communities, while also promoting advanced recycling with recycling companies.

* At Sony, "key resources" are designated by taking the following factors into account: resource depletion, resource availability, environment impact of resource extraction, and loss of biodiversity and community impacts from resource extraction.

Focus on Water Use

Although water circulates around the earth continuously through the water cycle, the amount of water available for use by the planet's inhabitants is limited. With population growth and other issues putting further pressure on water supplies, the importance of conserving this resource will increase in the years ahead. Taking into account the locations of its sites, as well as regional differences, Sony will continue taking steps to minimize its withdrawal of water and to ensure the water discharges that return to water sources is of a quality that does not negatively impact the environment.

Focus on Paper Resources

Recognizing that paper resources are limited, under the Sony Group Paper / Printed Material Purchasing Policy, Sony constantly works to reduce paper consumption while prioritizing the procurement of environmentally preferable paper, such as paper made from resources sourced from FSC-certified and recycled paper.

Sony Group Paper / Printed Material Purchasing Policy [PDF: 417KB]

Focus on Chemical Substances

Sony endeavors to minimize the risk that chemical substances it uses might cause serious harm to human health and the environment. Chemical substances used in Sony products are suitably managed based on available data including national regulations, toxicity, environmental impacts, applications, and content level in components and products. Sony adopts a precautionary approach and takes steps to identify and strive to eliminate substances considered to be high-risk, even in cases where scientific evidence is insufficient, thereby reducing potential impact on the environment. Sony manages the type and application of chemical substances used at business sites, and for high risk substances sets criteria for managing each substance to either prohibit their use or reduce emissions or amounts transferred. Sony also prohibits the use of certain substances in manufacturing processes in the supply chain which are restricted under international frameworks because of environmental impacts throughout the life cycle.

Focus on Biodiversity

Recognizing the importance of natural capital, as the very foundation of human life, and the ecosystem services it supplies, Sony endeavors to maintain and recover biodiversity, both in its business activities and through community initiatives. In order to promote these initiatives, we conduct scenario analysis in accordance with TNFD Recommendations, perform scenario analysis* and ascertain risks and opportunities for natural capital and biodiversity, then review the countermeasures.

At each stage of the product lifecycle, Sony business activities are either dependent on or related to natural capital and biodiversity. We set and work toward goals with this in mind, especially at stages where this link is particularly prominent. For example, Sony aims to eliminate parts derived from virgin resources and prevent the loss of biodiversity due to mining in our procurement of raw materials and parts. For paper resources closely tied to biodiversity, we are continuing efforts to reduce the amount of paper used, and prioritize the purchase of environmentally conscious paper.

Land use is another factor causing the loss and deterioration of biodiversity. In response, Sony promotes nature restoration and biodiversity conservation efforts that meet regional needs for the green areas on the premises of Sony sites as well as the surrounding area. Sony takes seriously the issue of plastic pollution in the oceans, which has become a worldwide crisis in recent years. We promote activities to reduce the amount of plastics used in products and in manufacturing sites, as well as the collection of plastic waste and cleanup activities at sites.

Sony also recognizes that food is essential to the lives of all our employees and humanity as a whole. This is also linked to environmental issues such as soil pollution, deforestation, food loss

and global warming. We work to communicate these issues to our employees and encourage them to have an environmentally conscious diet.

* See below for more information on scenario analysis in accordance with TNFD Recommendations.

→ Disclosure of Climate and Natural Capital-related Information in Accordance with TCFD and TNFD

Medium-Term Environmental Targets

Sony is working toward its goal of having a "zero environmental footprint," setting medium-term (five-year) environmental targets progressively backcasted from targets based on current achievement levels. This approach will enable Sony to work steadily toward achieving the zero environmental footprint goal, while making ongoing adjustments based on current progress. In 2011, Sony established the Green Management 2015 medium-term environmental targets (fiscal years 2011 to 2015), which was the first step on the road to a zero environmental footprint, and took the second step in 2016 with the Green Management 2020 medium-term environmental targets (fiscal years 2016 to 2020). Sony is currently implementing initiatives to achieve the goals it has set under the Green Management 2025 medium-term environmental targets (fiscal years 2021 to 2025).

Green Management 2025

Sony Moves Even Closer to Zero with 2025 Targets

Since April 2021, Sony has been working to achieve the goals it has set under the Green Management 2025 medium-term environmental targets (fiscal years 2021 to 2025). Sony continues to accelerate its environmental activities in order to move even closer to a zero environmental footprint.

Green Management 2025 in Context

In light of the urgent environmental issue of climate change, GHG emissions must be reduced to virtually zero by 2050 in order to keep the global average temperature increase below 1.5°C (compared to preindustrial levels) as recommended in the Special Report on Global Warming of 1.5°C approved by the Intergovernmental Panel on Climate Change (IPCC)* in 2018. In order to realize a decarbonized world with virtually zero GHG emissions, companies will need to develop energy saving products, introduce renewable energy, and reduce emissions throughout their supply chains. At the same time, in order to achieve sustainable use of resources, economic growth must be balanced with environmental impact; societies must shift to circular economies; and the recent problem of ocean plastic pollution must be addressed.

* IPCC: Intergovernmental Panel on Climate Change

Formulating Green Management 2025

Sony believes that encouraging business partners, consumers, and other stakeholders to take action and work together to build a sustainable world is equally as important as its own environmental activities. When formulating Green Management 2025, Sony examined its past environmental activities and conducted a group-wide materiality analysis focused on what is important to Sony, its stakeholders and society at large. Based on these results and the wider social context, Sony reaffirmed the importance of the four environmental perspectives that it has been working to address: climate change, resources, chemical substances, and biodiversity. The following three areas are particular key priorities.

Focus Point 1: Improve Energy- and Resource-Efficiency of Products

Sony continues to pursue energy efficiency during product use, which accounts for the majority of GHG emissions throughout the life cycle of its products. In addition to minimizing the consumption of resources, Sony takes action to reduce the amount of plastic used in products and packaging in order to address the growing problem of ocean plastic pollution.

Focus Point 2: Expand Renewable Energy Use

Sony is a member of RE100 and aims to achieve 100% renewable electricity utilization at all Sony Group sites by 2030.* Sony will further accelerate efforts to achieve this goal by expanding the use of renewable electricity to at least 35%* of the total amount of electricity used at all Sony sites around the world by 2025.

* Revised May 2022

→ RE100 Membership

Focus Point 3: Enhance Supply Chain Engagement to Reduce Environmental Impact

Sony has been working to reduce the environmental impact of the entire supply chain by working even more closely with raw material and component suppliers and contractors to which it outsources manufacturing. Sony endeavors to further enhance its engagement with these partners, encouraging them to set targets for reducing GHG emissions and water consumption and managing their progress.

In addition, Sony has helped raise awareness of the Sustainable Development Goals (SDGs), including those in relation to the environment, through its entertainment content reaching more than 2 billion people around the world. Green Management 2025 also focuses on promoting these activities and encouraging engagement in environmental activities with the aim of getting over 2.5 million people to take action.

Specific Green Management 2025 Targets

For a list of Green Management 2025 targets, see the following website.

Green Management 2025

Green Management 2025 Targets and Progress

Under the Green Management 2025 (GM2025) medium-term environmental targets, which spanned from fiscal year 2021 through fiscal year 2025, Sony set targets for each stage of the product lifecycle and took action accordingly. The targets and fiscal year 2023 progress of activities for each stage are outlined below.

Product/Service Planning and Design

Sony provides products and services with low environmental impact in all business areas. We are promoting electronic products with designs that reduce environmental burden throughout their lifecycle, and promoting the use of recycled plastics in our products alongside the reduction of plastic packaging. Particularly in its entertainment business, Sony also makes the most of the content it creates to develop and implement environmental campaigns.

Items	Targets (base year: 2018)	Fiscal year 2023 Progress
Overall	Centering around the entertainment business, raise the awareness of more than 2 billion people on sustainability issues and engage more than 2.5 million people by the entire Sony Group	Utilized entertainment content to raise the awareness of more than 0.54 billion people across the entire group, and promoted participation to a total of 49 million people through events and social media
Climate Change	Reduce annual energy consumption per product unit by 5%	Approx. 0.7% decrease
Resources	Reduce the amount of virgin oil-based plastics per product unit (excluding packaging materials) by 10%	Approx. 16.1% decrease
	Reduce the amount of plastics packaging per product unit by 10%	Approx. 25.1% decrease
	Eliminate plastic packaging for newly-designed small products	Released in 2023, the WF-1000XM5 headphones, Xperia 1 V and 5 V Smartphone, Vlog camera ZV-1 II, etc., realize zero plastic*2 in individual packaging.*1
Chemical Substances	Eliminate high-risk applications of "Controlled Substances"*3 that are of high concern and use alternative substances	Promoted use of alternative substances based on Sony standards for management of chemical substances. For more information on alternatives for polyvinyl chloride (PVC) and brominated flame retardants (BFR), please see below. → Replacement of Polyvinyl Chloride (PVC) → Replacement of Brominated Flame Retardants (BFRs)

*1 Individual packaging refers to the individual product box and packaging inside the box.
*2 Coating and adhesive materials excluded.
*3 "Controlled Substances" is an abbreviation for "Environment-related Substances to be Controlled," and it refers to substances contained in parts and devices that the Sony Group considers to have significant environmental impact on both humans and the global environment.

Operations

Sony has adopted renewable energy at worksites throughout the Sony Group as part of its focus on reducing its environmental impact. Sony has been accelerating the adoption of renewable energy since 2021, and in May 2022, we moved our target year for using 100% renewable energy up from 2040 to 2030. Our GM2025 goal for renewable energy-derived electricity in 2025 was also increased from 15% to 35%.

Items	Targets (base year: 2020)	Fiscal year 2023 Progress
Climate Change	Reduce absolute GHG*1 emissions from Sony's sites by 5%	Approx. 3.2% decrease
	Utilize renewable electricity by 35%*2 or more (Renewable electricity rate)	Approx. 35.3%
Resources	Improve waste generation intensity value by 5%	Worsened by 50.9%
	Reduce landfilled waste rate to 1% or less	Approx. 0.9%
	- Sites that use a large volume of water: improve water usage intensity value by 5% - Sites located in high water-risk areas: implement water risk reduction activities corresponding to the water risk of the area	Worsened by 11.6% Risk reduction efforts underway, such as reduction of pollution of water discharges
	Promote the use of certified and recycled paper	Promoted the use of recycled paper and certified paper based on our purchasing policy for paper and printed media
Chemical Substances	Take actions for the specified chemical substances, as outlined below Class 1 substances: Prohibit use Class 2 substances: Prohibit use (Exemptions granted for certain applications) Class 3 substances: Reduce the total amount of VOCs*3 released into the air to below FY2010 level or less	Class 1 substances: No use of prohibited substances Class 2 substances: No use of prohibited substances Class 3 substances: Emissions of VOC into the air: Approx. 53.0% reduction
Biodiversity*4	Continually promote biodiversity conservation activities respecting the needs of local communities	Implemented activities to preserve biodiversity at 29 sites according to local needs
	In employee cafeterias, promote the serving of environmentally conscious food	Provided meals using environmentally conscious ingredients at 40 sites and raised employee awareness through employee workshops at 47 sites
	Implement initiatives to reduce ocean plastic pollution	Reduced providing single-use plastics and promoted the use of reusable water bottles at 41 sites Conducted cleanup activities at 45 sites

*1 GHG: Greenhouse gases. *2 Increased from 15% to 35% in May 2022.
*3 VOC: Volatile organic compounds. *4 Biodiversity data includes non-ISO14001 certified sites.

Supply Chain

Sony requests its raw materials and component suppliers as well as subcontractors to strengthen their efforts to reduce environmental burden, set targets, manage progress and achieve results in order to meet reduction targets across the entire product lifecycle.

Items	Targets	Fiscal year 2023 Progress
Climate Change	Request suppliers of raw materials and components and contract manufacturers to monitor their GHG emissions, set medium- and long-term targets for emissions reduction, and perform progress management	Requested relevant suppliers to calculate actual emissions, set medium and long-term reduction targets and implement reduction measures. Surveyed supplier progress. Valid response rate: approx. 80% (transaction amount basis)
Resources	Request suppliers of raw materials and components and contract manufacturers to set water consumption reduction targets and perform progress management, while taking into consideration the water depletion risk in the areas where each site is located	Requested relevant suppliers to calculate actual emissions and water risk, set reduction targets and implement reduction measures. Valid response rate: approx. 80% (transaction amount basis)
Chemical Substances	Request and manage the response of suppliers of raw materials and components and contract manufacturers to Sony Group's unified standard, for raw materials, components and products supplied to Sony Group, as well as products/semi-products to be delivered from an outsourcing contractor	Requested response based on Sony standards for the management of chemical substances.
	Request suppliers of raw materials and components and contract manufacturers to eliminate the use of substances specified by Sony Group in their manufacturing processes and perform appropriate management	Requested manufacturing outsourcing contractors to ban the use of substances specified by Sony from manufacturing processes and surveyed status of the use of these substances.
Biodiversity	Request suppliers of raw materials and components and contract manufacturers to take initiatives giving consideration to biodiversity	Requested relevant major suppliers take biodiversity into consideration. Surveyed supplier biodiversity activities.

Logistics

Sony is taking steps to reduce shipping weight by making products smaller and lighter, and pursuing alternative shipping methods (modal shift, etc.) by identifying and employing methods that are most efficient and have less impact on the environment in order to reduce CO_2 emissions due to distribution.

Items	Targets (base year: 2018)	Fiscal year 2023 Progress
Climate Change	Reduce absolute CO_2 emissions related to logistics between nations and within regions by 10%	Approx. 25% decrease

Take Back and Recycling

Sony focuses on recycling-oriented product design and promotes take back and recycling processing for end-of-life products. Meanwhile, Sony seeks to ensure that even items which the company itself is unable to recycle at the present time are recycled, and is collaborating with recyclers to clarify the extent to which key resources are being recycled.

Items	Targets	Fiscal year 2023 Progress
Resources	Establish and maintain recycling schemes suitable for the needs of local communities.	Complied with all legal requirements in all areas where laws and regulations on take back and recycling are established. Implemented voluntary collection and recycling activities in areas where laws and regulations are not yet established.
	When recycling a key mineral resource (tantalum), improve sorting efficiency 1.5 times (vs fiscal year 2020)	At specific recycling plants in Japan, we adjusted our sorting process for the recovery of parts containing tantalum from used products from fiscal year 2021 to 2022, improving the efficiency of this process by about 44 times that of fiscal year 2020, when the equipment was first introduced.

Global Environmental Initiatives

Approval for 1.5°C Science Based Targets

When formulating Green Management 2025 Medium-Term Environmental Targets, we took a longer-term perspective and set its climate change targets to be achieved by fiscal year 2035. These targets are listed below and have been approved by the Science Based Targets (SBT)* initiative as consistent with a 1.5°C goal. In May 2022, the target year was moved up to 2040, and our goal of achieving net-zero targets in scopes 1 to 3 across the entire value chain was approved as an SBT net-zero target in August 2022.

* SBT is an international initiative to encourage companies to set science-based GHG reduction targets in order to limit the increase in the average global temperature due to climate change to 1.5 degrees Celsius above preindustrial levels.

- Set SBT-consistent reduction targets for raw material and component suppliers and outsourced manufacturers equivalent to 10% of supply chain GHG emissions by fiscal year 2025
- Reduce GHG emissions at Sony sites globally by 72% relative to fiscal year 2018 levels by fiscal year 2035
- Reduce GHG emissions during product use by 45% relative to fiscal year 2018 levels by fiscal year 2035

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Science Based Targets logo

RE100 Membership

In 2018, Sony joined RE100* and itself is working toward sourcing 100% renewable electricity for the worldwide operations of the Sony Group by 2040. This target was moved up to 2030 in May 2022. Sony has already switched to 100% renewable electricity in Europe and China. In Pan Asia, North America and Japan, we are increasing renewable energy use using various strategies including deploying solar energy systems. In Pan Asia, our manufacturing sites are now 100% renewable energy. Particularly, to address its energy-intensive operations in Japan, Sony has installed solar power generation equipment, is engaging in Japan's first virtual PPA (power purchase agreement) based on a feed-in premium (FIP) scheme, and is implementing intracompany transfers of surplus power generated by off-site solar power systems to supply power to group sites.

* RE100 is a global initiative led by the non-profit The Climate Group in partnership with CDP in which participating companies set a goal of procuring 100% renewable electricity for power used in their global business operations.

→ Use of Renewable Energy
Japan's First Virtual PPA Utilizing FIP Scheme

RE100 | CLIMATE GROUP | CDP

RE100 logo

Tackling Ocean Plastic Pollution with the One Blue Ocean Project

Sony takes seriously the issue of plastic pollution in the oceans, which has become a worldwide crisis in recent years. Since 2019, Sony has continued to work on the One Blue Ocean Project, an initiative to help reduce ocean plastic pollution. It involves promoting even more activities to reduce the amount of plastics used in products and in workplaces, as well as the collection of plastic waste and cleanup activities at each Sony site.
Sony is promoting One Blue Ocean activities for products and sites based on the following four initiatives. The main achievements of fiscal year 2023 are also outlined below.

One Blue Ocean Project

Logo of the One Blue Ocean Project

Reducing Plastic and Utilizing Recycled Materials

For a wide range of products, Sony is reducing the size and weight of plastic parts, minimizing plastic packaging, and expanding the use of recycled plastic.
See below for fiscal 2023 results.

→ Reducing Use of Virgin Plastics Product Bodies
→ Reducing Plastic Packaging

Reducing Plastic Use in Production

Sony is further reducing the amount of plastic used at production sites. The amount of plastic waste generated from Sony production sites in fiscal year 2023 was increased by 566 metric tons over fiscal year 2022. This represents a 1,516 metric tons reduction over plastic waste generated in fiscal year 2018.

Reducing or Eliminating Single-use Plastics in Conference Rooms and Shops

Sony aims to eliminate the use of single-use plastics such as plastic bottles, straws, and cups in conference rooms and reception rooms. In addition, plastic bags will no longer be provided at in-company shops and cafes, and the use of single-use plastics such as straws and cups will be reduced and gradually phased out. At the same time, Sony is working to cultivate awareness among employees about the use of reusable shopping bags and personal cups.
In fiscal year 2023, we stopped providing bottles and other single-use plastics in conference rooms at 41 sites. We also stopped providing plastic bags at shops and convenience stores at 22 sites, as well as plastic straws at 21 sites.

Expanding Local Cleanup of Riverbanks and Shorelines

Sony employees at certain sites and group companies all over the world have been carrying out community cleanup activities along rivers and seashores, and these activities are being steadily expanded to even more sites. Employee awareness of measures to combat ocean plastic pollution will also be further enhanced.
In fiscal year 2023, 9,272 Sony Group employees and their families worked together to clean up 532 45-liter trash bags and 8 metric tons of trash during a total of 286 cleanup activities at 45 sites.

One Blue Ocean Project

Environmental Management Structure

Sony is implementing and continually improving its globally integrated environmental management system with the aim of realizing the Sony Group Environmental Vision, achieving its medium-term environmental targets and complying fully with legal requirements, regulatory demands and internal policies established for the Group.

Integrated ISO 14001 Certification for the Entire Sony Group

Since the 1990s, Sony sites*1 throughout the world have sought certification under ISO 14001, the international standard for environmental management systems. Acquisition of ISO 14001 certification at all sites was completed in fiscal year 2000. Since then, Sony has expanded this effort, establishing a group-wide environmental management system integrating its headquarters with Environmental departments, business units and sites globally, while taking advantage of the management systems already operational at each business site, and acquiring integrated ISO 14001 certification for the entire Sony Group in fiscal year 2005. As of March 31, 2024, integrated ISO 14001 certification had been obtained by 86 of the Sony Group's business units and sites around the world.*2

*1 "Sites" refers to manufacturing and non-manufacturing sites.

*2 The scope of integrated ISO 14001 certification is all manufacturing, distribution centers with 100 or more employees and non-manufacturing sites with 1,000 or more employees.

Specialized Functions for Environmental Management

In order to promote a wide range of measures, such as manufacturing and sales of environmentally conscious products, recycling of its products and environmental management at its sites, Sony has a dedicated headquarters that oversees environmental management for the entire Group based on the Sony Group Environmental Vision. It sets goals and rules and monitors performance. There are also specialized functions at this environmental headquarters, specifically in the areas related to energy consumed at sites and by products; resource conservation, including recycling; chemical substance management; biodiversity conservation; procurement and communications. Each specialized function is integrated and linked with related fields and internal organizations such as quality assurance, customer service, occupational health and safety, and disaster prevention, to create an even more effective management system.
The environmental headquarters is overseen by Sony's management, which is the top management, and a Sony Group Corporation corporate executive officer assumes ultimate responsibility. Management including the president of Sony Group Corporation share information on environmental issues of importance to the Sony Group in regularly-held executive meetings. Additionally, to promote integrated environmental management globally, Sony has established six regional environmental offices to facilitate region-wide environmental management activities, such as a better understanding of local legal and regulatory trends, effective communication of standards and instructions set forth by headquarters to the regional divisions and sites, and effective performance of audits at all regional business divisions and sites. These are the North America environmental office, Latin America environmental office, Europe environmental office,*1 Japan/ East Asia environmental office,*2 China environmental office,*3 and Pan Asia environmental office.*4

*1 The Europe environmental office supervises divisions/sites in Europe, Israel, Turkey, and former Soviet Union (except for Azerbaijan, Tajikistan, Turkmenistan, and Uzbekistan).

*2 The Japan/East Asia environmental office supervises divisions/sites in Japan, South Korea and the Taiwan Region.

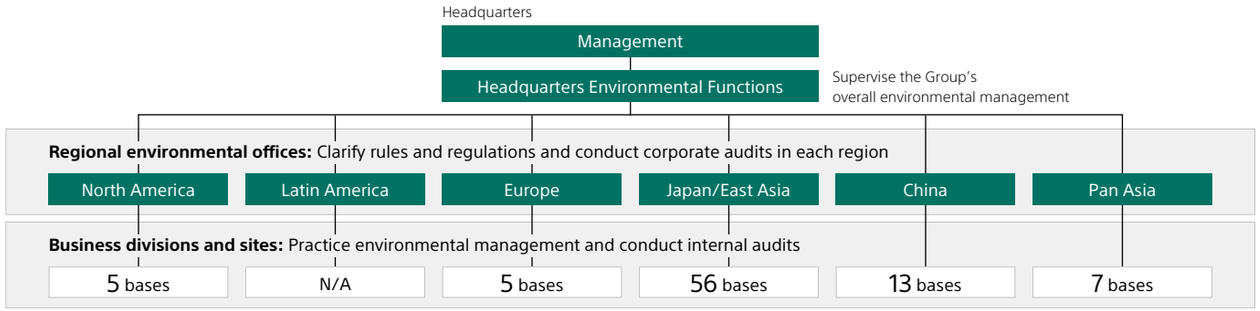
*3 The China environmental office supervises divisions/sites in mainland China and the Hong Kong Region.

*4 The Pan Asia environmental office supervises divisions/sites in Mongolia and other parts of Asia (except for divisions/sites supervised by the Europe environmental office, the Japan/East Asia environmental office, and the China environmental office), Africa, Middle East, Oceania, Azerbaijan, Tajikistan, Turkmenistan, and Uzbekistan.

Continual Improvement by Using the PDCA Cycle

In compliance with ISO 14001, the global standard for environmental management systems that is based on the rationale of the Plan-Do-Check-Act (PDCA) cycle, Sony's corporate headquarters conducts annual assessments of the environmental impact of the entire Sony Group and, after identifying risks and opportunities, incorporates its findings into medium-term environmental targets and annual plans. In line with these plans, individual business units and sites establish and implement their own annual plans, incorporating essential elements of guiding principles established by the headquarters. Progress on the implementation of these business plans is reviewed regularly by a committee that is headed by the officer in charge of environmental affairs at headquarters, contributing to ongoing improvement efforts.
To gauge the progress of these environmental activities, Sony has developed an online data system for periodically collecting performance for, among others, energy consumption by products, energy used by sites, and volume of waste generated. To ensure the effective functioning of the PDCA cycle, Sony has created an

The Sony Group Global Environmental Management System (As of Sunday, March 31, 2024)



Integrated ISO 14001 certification for 86 Sony Group sites worldwide

environmental document structure in line with the requirements of ISO 14001. The structure covers overall elements of environmental management such as management procedures on site and in the business groups, internal environmental communications, efforts to make products more environmentally conscious, and internal audits. Another means by which the Sony Group facilitates environmental action is to provide broad environmental education for employees that is tailored to specific objectives or the type of work they perform.

The Sony Group Environmental Management System PDCA Cycle

Connecting Environmental Initiatives with Remuneration

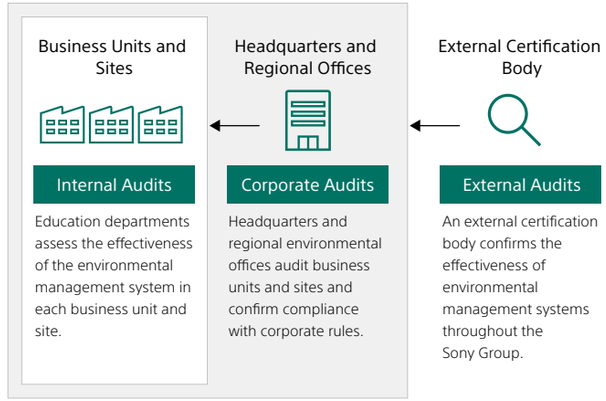
For all businesses of the Sony Group (except for certain operations such as the financial services), the results of environmental initiatives are assessed as part of the annual review of business results, and the assessment is used to determine bonuses for employees of Sony's main business units. Additionally, environment-related matters are taken into account as a factor in evaluating the remuneration linked to business results of Senior Executives and Senior Vice Presidents in charge of each business unit. Awards are given annually at the global level to recognize outstanding achievements in raising awareness and expanding initiatives.

→ Basic Policy Regarding Senior Executive Remuneration

Environmental Audits

Sony has established an integrated environmental audit system that combines three kinds of audits—internal, corporate and external—and aims to facilitate continual improvements to the Sony Group's environmental management system, prevent environmental accidents at sites, and ensure the reliability of environmental data. In internal audits, business units and sites independently confirm the effectiveness of their own organization's environmental management system. In corporate audits, headquarters or regional environmental offices conduct audits of business units and sites in order to verify compliance with corporate rules. In external audits, an external certification body conducts audits to determine the effectiveness of environmental management systems throughout the Sony Group.

Sony Group Environmental Audit System



Overview of Sony's Environmental Impact

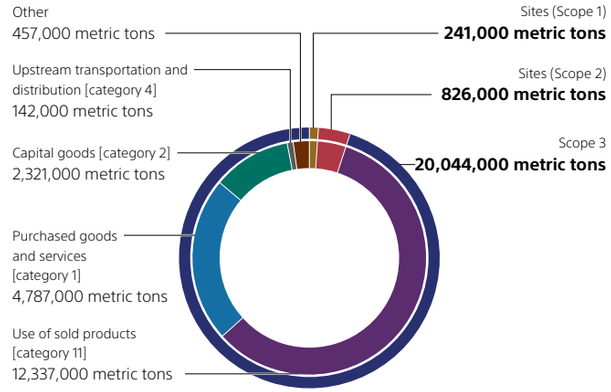
Assessing GHG Emissions over the Entire Value Chain

The recent escalation of climate change issues has prompted corporations to broaden the scope of efforts to ascertain the GHG emissions not just of their own operations but also those throughout their entire value chain.*1 Sony has determined emissions from its major component suppliers and manufacturing contractors. Furthermore, based on the level of emissions identified, Sony has calculated emissions for its entire value chain.*2 The amount of emissions from Sony's overall value chain in fiscal year 2023 is estimated to be approximately 21.111 million metric tons. The largest volume of emissions, approximately 12.337 million metric tons, was from "energy consumed during product use." The next largest category was "goods and services procured," which includes raw materials and components, at approximately 4.787 million metric tons. Sony will continue to strive to identify and manage emissions over the entire value chain.

*1 Value chain refers to the entire product life cycle process, from procurement of materials through to manufacturing, use and disposal. It includes upstream and downstream manufacturing processes.

*2 GHG emissions are calculated in accordance with the GHG Protocol's scope 3 accounting and reporting standard and guidelines published by Japan's Ministry of the Environment.

GHG Emissions from the Value Chain



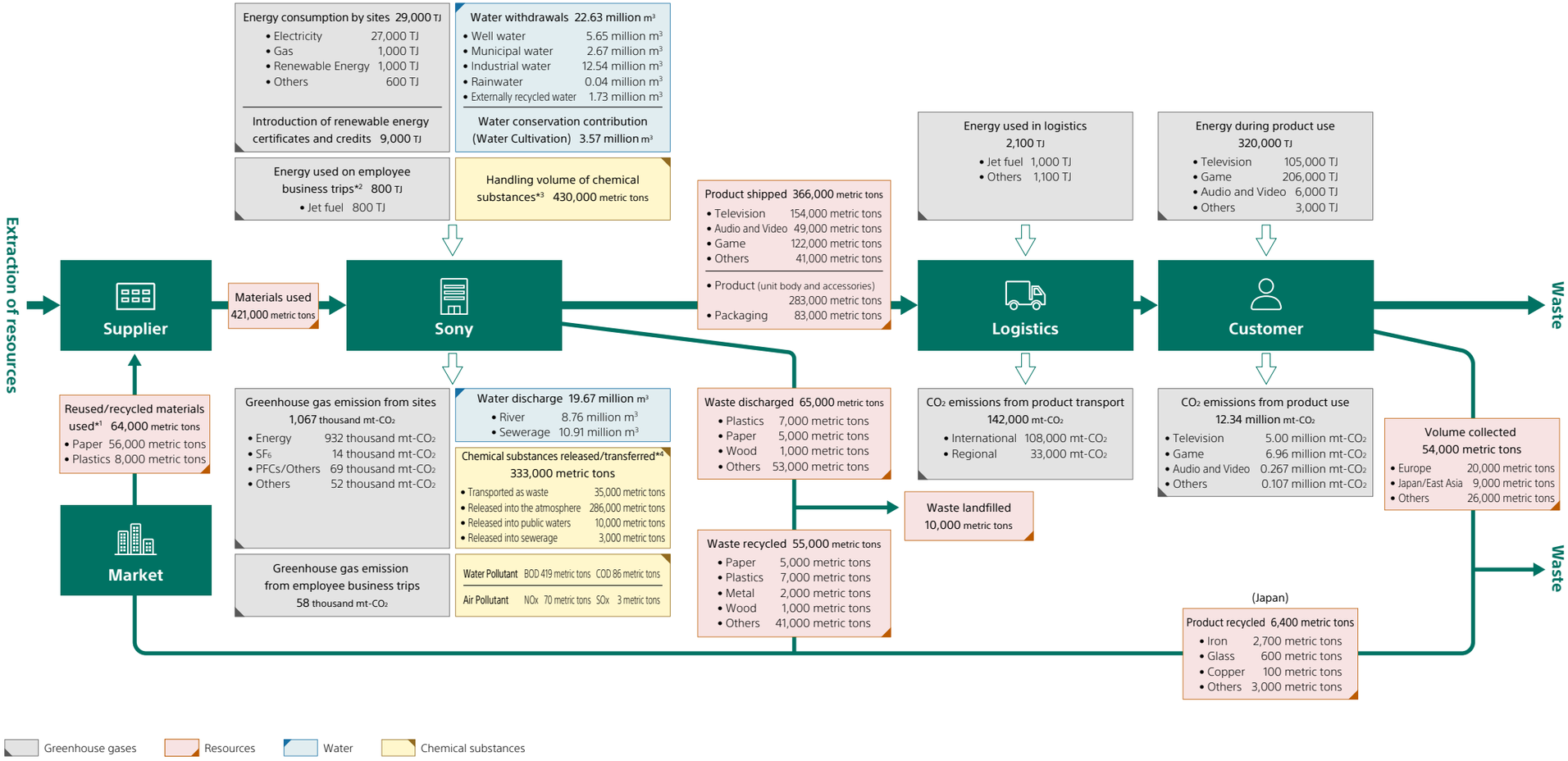
Environmental Data

Overview of Environmental Impact

The chart below shows Sony's impact on the environment over the entire life cycle of its business activities, including energy and resources used in business activities, energy consumed by Sony products when used by customers, and the recycling and disposal of products after use. The chart shows the principal environmental impact during fiscal year 2023 for items that Sony can recognize and manage directly.

Environmental Data Collection Methods and Rationale

Overview of Sony's Environmental Impact



*1 Total volume of reused/recycled materials used in products *2 Relevant primarily to Sony Group companies in Japan, Europe and North America *3 Volume of Class 1-4 chemical substances handled *4 Chemical substances subject to PRTR (Pollutant Release and Transfer Register) in Japan
Note: Business processes other than those shown in this chart—including the production of purchased materials used and the recycling of products—may also have an impact on the environment.

Disclosure of Climate and Natural Capital-related Information in Accordance with TCFD and TNFD

Sony Group Corporation recognizes that its business depends upon a healthy global environment, so it strives to achieve a zero environmental footprint throughout the life cycle of products and business activities. Medium-term environmental targets to achieve these ends include responding to climate change as well as tackling issues from the perspectives of natural capital and biodiversity. Business activities both depend on and impact water, minerals, energy and other natural capital resources at every stage of the product life cycle. We also consider our efforts toward curbing climate change and transitioning to a decarbonized society to be key issues we must take on. Natural capital and climate change are directly connected to each other, so we address responses related to these themes in accordance with the TCFD recommendations (hereinafter, TCFD) and the TNFD framework (hereinafter, TNFD).

Climate Change, Natural Capital and Biodiversity Policy

Climate Change

Sony reduces energy consumption and is striving to achieve zero GHG emissions throughout the life cycle of its products, service and business activities.
Specifically, Sony has designated the following initiatives to achieve its medium-term environmental targets, and is working to reduce direct and indirect emissions.

On-Site

- Promoting efficient energy use
- Switching to energy sources with lower GHG emissions
- Promoting use of renewable energy
- Reducing GHG emissions from non-energy related sources

Off-Site

- Developing and providing energy-efficient, environmentally conscious products and services
- Working with contract manufacturers and suppliers of raw materials and components

Natural Capital and Biodiversity

Sony protects and utilizes ecosystem services in a sustainable manner, while actively promoting maintenance and recovery of biodiversity through business activities and local contribution. We set and work toward goals with particular focus on stages of the product life cycle where Sony is particularly dependent on or more likely to impact natural capital and biodiversity. We actively work to maintain and restore biodiversity through environmentally conscious procurement of raw materials and parts, while also working to conserve resources in the manufacture of both products and their packaging.

→ Sony Group Environmental Vision
→ Environmental Plan
→ Medium-Term Environmental Targets

Governance

Under the Companies Act of Japan, Sony Group Corporation has adopted the “Company with Three Committees” corporate governance system as the most appropriate system for the company. Under this system, the Board of Directors (the “Board”) determines Sony’s fundamental management policies and other material matters, while broadly delegating the decision-making authority to conduct Sony’s business operation to Senior Executives including CEO and Corporate Executive Officers in line with their respective responsibilities as defined by the Board, with a view to promoting timely and efficient decision-making within Sony.
The Board regularly deliberates and decides upon the mid-term management plan and annual business plan, taking into account various risks and opportunities, including climate change, natural capital and biodiversity, in its deliberations and decisions. Senior Executives implement strategies according to the management plans and the business plan while carrying out business execution, and the Board receives and discusses reports on the status of business execution as needed.
With authority delegated by the Board, the CEO of Sony Group Corporation, who is a member of the Board has responsibility and authority to establish and determine the Sony Group Environmental Vision, which stipulates the corporate philosophy on the global environment and corporate principles including efforts to curb climate change, protect natural capital and promote biodiversity, and medium-term environmental targets (Green Management 20XX) which are applicable to the entire group. The Corporate Executive Officer in charge of sustainability including environmental matters is appointed by the Board, then established the Sony Group Environmental Management Structure, which consists of internal regulations that stipulate the basic framework for global environmental management at Sony. Through the Environmental department, this Corporate Executive Officer supervises the initiatives implemented by each business unit and business site to achieve the Sony Group Environmental Vision, and also supervises their operation of and adherence to the Sony Group Environmental Management Structure. In order to address TCFD and TNFD, the Environmental department leads the analysis and identification of climate-related risks and opportunities through scenario analysis and reviews the countermeasures (For more details, see “Climate Strategy” and “Natural Capital and Biodiversity Strategy”). The progress on initiatives implemented under this environmental execution framework are regularly reported to and reviewed by the Board. The primary roles of the Compensation Committee are to: (a) set policy on the content of individual compensation for Directors, Corporate Executive Officers and other officers and (b) determine the amount and content of individual compensation of Directors and Corporate Executive Officers in accordance with the policy, and oversee the determination regarding the amount and content of individual compensation of Senior Executives other than Corporate Executive Officers. Sustainability including environmental matters is taken into account as a factor in evaluating remuneration linked to business results of Senior Executives. Furthermore, KPIs for initiatives to address sustainability issues that each business emphasizes are set and incorporated into the performance evaluation of each business.

→ Sony Group Environmental Vision
→ Environmental Management Structure
→ Climate Strategy
→ Natural Capital and Biodiversity Strategy

Risk Management

Each business unit, subsidiary/affiliated company and corporate division of Sony periodically reviews and assesses risks for the area of which it is in charge and works on finding, reporting, reviewing and

responding to the risks. In addition, Senior Executives have established and maintain a system to identify and control risks that may cause losses to Sony, in the areas of which they are in charge. The Corporate Executive Officer in charge of group risk control comprehensively promotes and manages the establishment and maintenance of the systems as stated above through the activities with related departments. The Board of Directors receives regular reports on the framework and its operational status, to confirm the validity of the framework.
Under the framework, each business unit, subsidiary/affiliated company and corporate division also assesses and analyzes risks related to climate change, natural capital and biodiversity when assembling business strategies and business plans.

Disclosure of Climate-related Information in Accordance with the TCFD Recommendations

In May 2019, Sony announced its endorsement of the final report published by the Task Force on Climate-related Financial Disclosures (the "TCFD Recommendations") established by the Financial Stability Board. Sony Group Corporation also participates in the TCFD Consortium, which was established to facilitate implementation and discussion among companies and financial institutions that endorse the TCFD Recommendations in Japan. Sony Group Corporation will continue its climate-related information disclosure in accordance with the TCFD Recommendations.

Climate Strategy

Identifying and Addressing Business Risks

Tackling environmental issues is consistent with Sony's commitment to build a sustainable world and is important in terms of ensuring business continuity. Sony seeks to identify various environment-related risks and address foreseeable risks. This applies to transition risks such as adoption of carbon taxes, regional expansion of emissions trading schemes, stronger regulation of energy efficiency standards for products, and market changes driven by shifting consumer attitudes. It also applies to physical risks such as abnormal weather events and sea level rise due to climate change.

Creating and Expanding Business Opportunities

Sony believes that tackling environmental issues also leads to business opportunities. For example, the Paris Agreement*1 that emerged from the COP 21*2 meeting in December 2015 addressed climate change issues, and with increasing public awareness, consumer demand is shifting toward energy-efficient products. Sony has already increased the energy efficiency of many of its products. In light of these social trends, demand for energy-efficient products may continue to grow. One example of this is the development of IMX500, an intelligent vision sensor with AI processing functionality in its image sensor logic chip. We expect it to be used in IoT fields. Processing information through the sensor on its edge enables the transmission of metadata only (semantic information). This reduces the amount of data transmitted to the cloud as well as the amount of data to be processed, which we believe will reduce energy consumption.

*1 The Paris Agreement was adopted at COP 21 held in Paris, France and serves as an international framework for climate change action starting from 2020.
*2 COP 21 refers to the 21st session of the Conference of the Parties (COP) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC).

Scenario Analysis

Analysis Methodology and Assumptions

We conducted scenario analysis in accordance with the requirements of the TCFD Recommendations and advice from external experts.
To assess the impact of climate change across the Sony Group, each business segment (except Financial Services) assessed the degree to which climate change impacts its industry on a four-point scale of "Very Significant," "Significant," "Moderate," and "Minor." The rating was based on how often climate change impacts were mentioned in the guidelines and assessment methodologies for investors, ESG assessment institutions, and investor initiatives. We discovered that the impact of Imaging & Sensing Solutions (I&SS), Entertainment, Technology & Services (ET&S) and Game & Network Services (G&NS) was medium, while Music and Pictures was low.
Sony Group Corporation conducted scenario analyses*1 using multiple scenarios for I&SS (which has the highest GHG emissions) and ET&S (one of three segments with medium impact).
We also targeted the Financial Services segment, a key sector in TCFD Recommendations. In order to evaluate impact across the entire Financial Services segment, we conducted scenario analysis*1 on Sony Life Insurance, Sony Assurance and Sony Bank based on individual business characteristics and the exposure of assets held. As prerequisite scenarios, we used the 1.5°C scenario, the 2°C scenario and the 4°C scenario.*2

*1 Assuming no major changes in business content between the time of analysis and fiscal year 2030.
*2 Main scenario used: World Energy Outlook (published by IEA), water risk assessment tool Aqueduct and Resource Watch (Published by WRI), the Flood Control Economic Survey Manual (published by the Ministry of Land, Infrastructure, Transport and Tourism)

Analysis Results and Countermeasures

As a result of analyses based on the above prerequisites, recognized risks and opportunities and countermeasures which are unique to the I&SS segment, ET&S segment and Financial Services segment are as shown in the table on the following page.
Based on the results of the above scenario analysis, the entire Sony Group is working toward using 100% renewable electricity in its own operations by 2030 to achieve its RE100* target. Specifically, Sony Group Corporation is examining measures such as directly purchasing renewable electricity from power utilities and purchasing renewable electricity certificates.
Along with these efforts, in each business segment, Sony develops and enhances risk management and business continuity plans (BCPs) from the perspective of improving risk management across supply chains, through the identification, analysis, and assessment of business continuity risks. Flood damage has grown in recent years due to the impact of climate change, prompting Sony to reassess the flood risk at its manufacturing sites in Japan and implement preventative measures that will mitigate flood damage and facilitate rapid recovery.
Sony is collaborating with relevant companies and organizations, and conducts hands-on drills to address foreseeable risks, in an effort to enhance business continuity and accelerate flood recovery.
Sony will continue to increase its resilience to climate change, based on its analyses and initiatives.

* A global initiative in which participating corporations aim to operate on 100% renewable electricity. It is headed by an international non-governmental organization, the Climate Group, in partnership with the CDP.

Climate Change Risks, Opportunities, Countermeasures and Metrics

I&SS Segment

Assumed Scenario	Recognized Risks and Opportunities	Countermeasures
2°C Scenario	• Strengthening regulations due to decarbonization polices of each jurisdiction, and the subsequent introduction of carbon pricing and subsequent increases in carbon price will lead to an increase in crude oil and fossil fuel prices. As a result, manufacturing costs for semiconductors, which require large amounts of electricity to produce, will increase. • Strengthening carbon emission targets/policies in every jurisdiction increase the costs related to better efficiency of in-house equipment, and purchase of renewable energy power certificates, etc.	• Manufacturing sites outside Japan: Achieved 100% renewable electricity in fiscal year 2021. • Manufacturing sites in Japan: Promote achieving 100% renewable electricity in the medium to long-term, including installing solar panels, procuring environmental value from off-site renewable energy power equipment, and purchasing renewable electricity certificates.
2°C and 4°C Scenarios	• Expected utilization of AI in IoT space increases demand/sales for products and services contributing to power reduction in cloud, data centers and networks. • Progressive temperature rise increases the severity and frequency of abnormal weather, damaging Sony's manufacturing sites and suppliers and reducing demand due to the disruption of the supply chain.	• Development of IMX500 and other products that help reduce the amount of data transmitted to the cloud as well as the amount of data to be processed. • Building and provision of edge AI sensing platform (AITRIOS), which enables AI processing in the edge (to reduce power consumption) through technologies such as IMX500. • Regular on-site surveys dispatched from headquarters to establish a Plan-Do-Check-Act cycle to identify issues and establish improvement plans to achieve reduction of risk.

ET&S Segment

Assumed Scenario	Recognized Risks and Opportunities	Countermeasures
1.5°C and 2°C Scenarios	• Taxation on non-recyclable plastics increases the cost of manufacturing products made with plastic.	• Reducing the weight of products as well as the size and weight of packaging, and using plastic alternatives for packaging reduces the amount of plastics used (including our Original Blended Material paper). • Use of recyclable plastics in products (including our SORPLAS recycled plastic). • Promotion of resource recovery from end-of-life products.
1.5°C, 2°C and 4°C Scenarios	• Strengthening regulations due to decarbonization polices of each jurisdiction, the subsequent introduction of carbon pricing and increasing carbon price will lead to an increase in crude oil and fossil fuel prices. Costs increases due to carbon tax on own emissions and impact of carbon pricing affecting logistics and purchase price. • Progressive temperature rise increases the severity and frequency of abnormal weather, damaging Sony's manufacturing sites and suppliers and reducing demand due to the disruption of the supply chain. • Decline of competitive edge and sales if products are not designed with energy saving and other environmental features in mind. • Droughts caused by rising average temperatures reduce availability of water for manufacturing, leading to a decrease in production. In addition, quality of procured products reduce due to lack of high-quality pure water.	• Promotion of energy conservation, improvement of energy efficiency and introduction of solar power at our sites. • Optimization of transportation efficiency and modal shifts to switch to low-carbon means of transport. • Periodic risk assessment for floods and other natural disasters at our production sites. • Increased product life span due to improved quality and durability of such products. • Development of automatic sensing and other functionality that contributes to reduction of energy consumption during product use. • Promotion of measures to reduce the amount of water used and requiring suppliers manage reduction targets for the amount of water used, taking into account the risk of water depletion.

Financial Services Segment

Assumed Scenario	Recognized Risks and Opportunities	Countermeasures
1.5°C and 2°C Scenarios	• Increasing demands for loans to purchase the low-carbon vehicles and housing that contribute to creating a low carbon society increase profit opportunities. • Value of securities issued by companies taking insufficient low-carbon action declines, increasing investment opportunities for companies that contribute to a transition to a low-carbon society.	• Development of products/services and procurement of funds in consideration of climate change. • Establishment of a system for ESG investment at Sony Financial Group companies based on Sony Financial Group's ESG investment policy.
4°C Scenario	• Increase in insurance and benefits payments due to climate change-related disasters such as typhoons and floods, and increase in infectious disease and heat stroke due to rising average temperatures. • Increase in credit costs due to the loss of value of security real estate granted to home loans due to the effects of climate change-related disasters. • Impact on operations and increase in costs due to climate change-related disasters affecting our offices and human resources.	• Continue collecting information on climate change-related disasters, infectious diseases and heat stroke (including impact on collateral value). • Continued risk segmentation and setting of appropriate insurance premium rates in consideration of the impact of climate change-related disasters. • Continued utilization of reinsurance. • Examination of impact assessment for collateral real estate for instances connected to climate change-related disasters. • Continued consideration of BCP advancement in the event of a natural disaster.

Note: The above scenario analysis was conducted using IEA's scenarios for 1.5°C, 2°C and 4°C temperature rise and based on multiple assumptions.

Metrics and Targets

Climate Change Metrics and Targets

In 2010, Sony formulated the Road to Zero global environmental plan, which aims to reduce its environmental footprint to zero by 2050. The target year for our goal of achieving carbon net zero group-wide was moved up from 2050 to 2040 in May 2022. For climate change action, Sony is developing and supplying environmentally conscious products and services in order to reduce GHG emissions not only from manufacturing at its sites, but also throughout the life cycle of its products. Sony is also making energy-efficiency improvements at its business sites and shifting to renewable energy, while encouraging contract manufacturers and component suppliers to reduce their emissions.

In September 2020, Sony Group Corporation announced its Green Management 2025 medium-term environmental targets to achieve by the end of fiscal year 2025 and has been implementing initiatives to meet these targets since April 2021. At each stage, Sony has set specific targets from the four perspectives of climate change, resources, chemical substances, and biodiversity, and implemented initiatives to achieve these targets. Climate change targets include a 5% reduction in annual energy consumption per Sony product (compared to fiscal year 2018). Along with moving up the year to meet our climate change targets, we have also changed the target rate for renewable electricity used in our facilities from 15% or more to 35% or more.

Both our 1.5°C target to be achieved by 2035 and our net zero target to be achieved by 2040 are approved by the Science Based Targets (SBT)* initiative as climate change targets based on scientific grounds.

In the Financial Services segment, we invest in green bonds, social bonds, sustainability bonds and other ESG-related investments. We established the Sony Financial Group ESG Investment Policy in April 2022, and our financial group companies are now proceeding to establish systems for ESG investment in accordance with this policy. We also set medium to long-term goals for the cumulative amount of ESG investments and loans as a financial group in March 2024.

* An international initiative to encourage companies to set science-based GHG reduction targets in order to limit the increase in the average global temperature due to climate change to 1.5 degrees Celsius above preindustrial levels.

→ Green Management 2025
→ Green Management 2025 Targets and Progress
Sony Financial Group ESG Investment Policy

Disclosure of Natural Capital-related Information in Accordance with TNFD

Natural Capital and Biodiversity Strategy

Disclosure of Natural Capital and Biodiversity Efforts in Accordance with TNFD Recommendations

Recognizing the importance of natural capital as the very foundation of human life and the ecosystem services it supplies, Sony continues to pursue long-term efforts according to its Environmental Vision.
The Recommendations of the Taskforce on Nature-related Financial Disclosures (TNFD) was released in September 2023. Affirming our commitment to disclosure in accordance with this framework, we have become a registered TNFD Adopter, and once more evaluated the relationship between our business and the natural environment.
Based on TNFD recommendations, we screened the value chain of major businesses based on their degree of dependence and impact on natural capital, then implemented a LEAP (locate, evaluate, assess prepare) approach to conduct analysis of nature-related issues, specifically targeting I&SS, ET&S and G&NS segments as well as our mineral resource extraction operations in the upstream value chain, and have disclosed the results below.

Screening Analysis Scope (ENCORE Mapping)

We utilized ENCORE and the Biodiversity Risk Filter (tools recommended by TNFD) to visualize the relationship between Sony Group businesses overall and nature, then quantified dependence and impact related to natural capital for our main businesses. We discovered that our I&SS, ET&S and G&NS segments have a relatively high level of dependence and impact, leading us to set these segments as targets for LEAP analysis in our first year of TNFD analysis.
Additionally, many of our electronics contain mineral resources that have become a point of environmental concern for stakeholders. With this in mind, we have decided to make the contracted manufacturer sites and mineral resource extraction processes a target in addition to direct operation processes at our own production.

Locate: Identifying Priority Areas

Following TNFD guidelines for determining sensitive locations, we identified all our manufacturing sites and major contracted manufacturer sites in our I&SS ET&S and G&NS segments, as well as 898 mines*1 for extraction of mineral resources in the upstream supply chain, and made them priority areas. We then conducted analysis through tools and databases*2 suggested by TNFD to locate and score these areas based on five criteria: areas important for biodiversity, areas of high ecosystem integrity, areas of rapid decline in ecosystem integrity, areas of high physical water risks and areas of importance for ecosystem service provision, including benefits to indigenous peoples, local communities and stakeholders. Our results indicate that 58% of production sites and 32% of mines are in areas important for biodiversity (within a 5 km radius of a site in the World Database on Protected Areas (WDPA)), and 23% of production sites and 41% of mines are in areas of high physical water risk.

*1 Mining site information includes mineral resources likely contained in our products to the extent that such information is generally available.
*2 IBAT (World Database on Protected Areas (WDPA), Key Biodiversity Area (KBA), Species Threat Abatement and Restoration (STAR)), Biodiversity Intactness Index, Ecoregion Intactness Index, WRI Aqueduct, Critical Natural Asset Layers

Evaluate: Identifying and Evaluating Dependency and Impact on Natural Capital

Once located, we then identified and evaluated dependence and impact on nature for our I&SS, ET&S and G&NS segments. We found major dependency and impact as follows.

- I&SS: Relies heavily on water due to pure water used in semiconductor manufacturing (cleaning, processing, etc.). While these manufacturing sites are built in areas with abundant water, and all chemicals generated during manufacture are properly disposed of, potential impact on groundwater due to excessive water intake or pollution from chemical substances remains.
- ET&S, G&NS: While less severe than that of I&SS, there is potential impact due to factors common across electronics manufacturing sites, including water use, water discharges, general waste, pollution and GHG emissions from manufacturing processes.
- Extraction of mineral resources upstream in the value chain: Similar to the three segments above. Additionally, products contain a variety of mineral resources (including rare metals), making them directly dependent on mineral resources. Mining development also has the potential to impact the ecosystem.

These discoveries allowed us to understand dependency and impact related to risk and opportunity in respective business segments.
Once we located sensitive areas, we mark them as priority areas where critical dependency, impact, risk and opportunity exist.

Assess: Scenario Analysis for Determining Risk and Opportunity

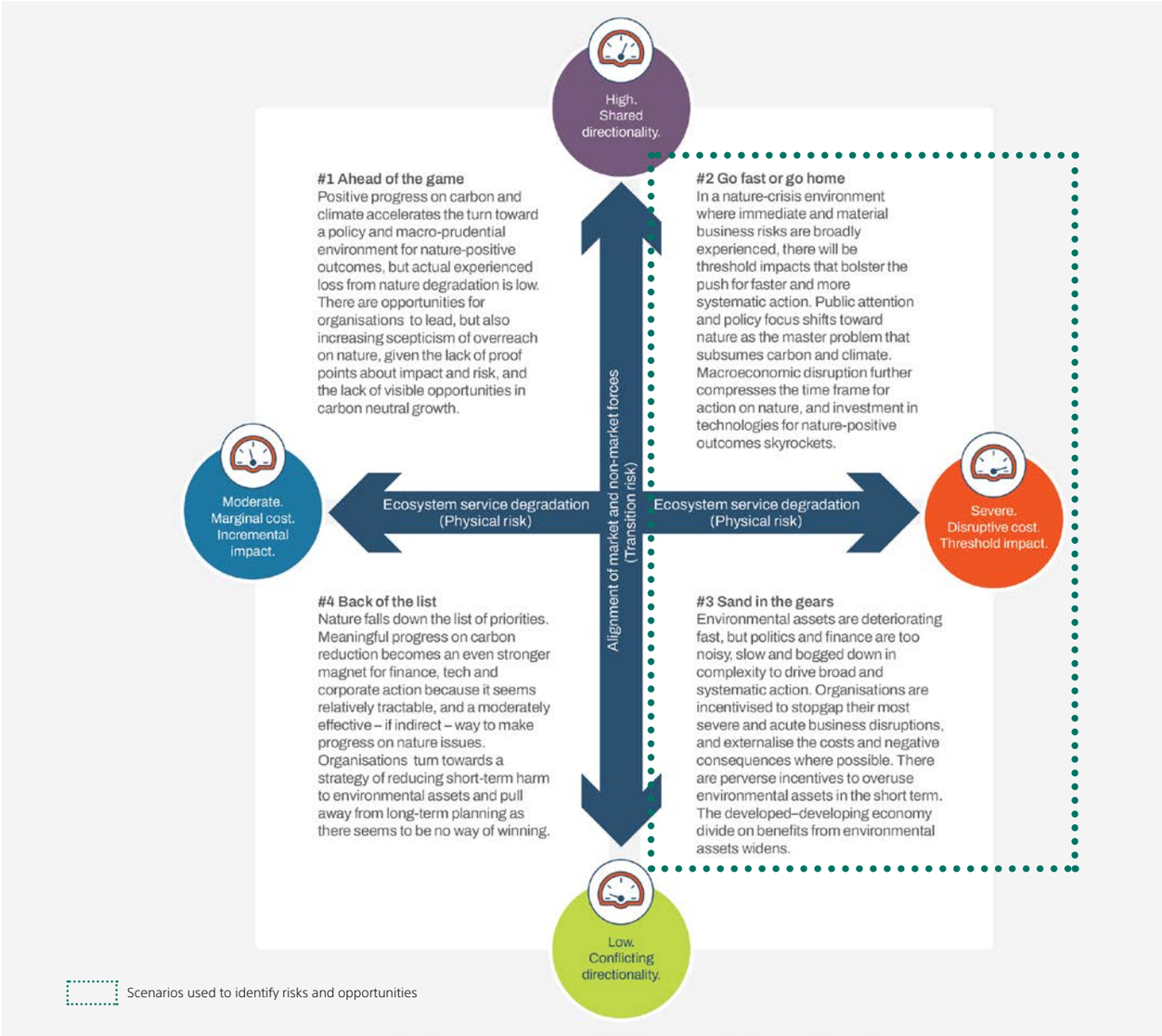
After determining dependence and impact on nature for the I&SS, ET&S and G&NS segments, as well as for mineral resource extraction, in the Evaluate phase, we created a long list of nature-related risks and opportunities based on the categorization in TNFD recommendations. Then, we conducted scenario analysis of these to determine the importance of individual risks.
Our scenario analysis assumes 2030 for time, using ecosystem service degradation and alignment of market/non-market forces, as proposed within TNFD guidelines, as axes, and of four scenarios, we have adopted two in terms of risk and likelihood of occurrence.

- Scenario 2 assumes high level of both physical risk due to degradation of nature and transitional risk due to nature-positive policy, law and regulation, and that nature-related risk for Sony will be high.
- Scenario 3 assumes high physical risk due to degradation of nature, but low transitional risk due to lower interest in natural capital from government, consumers and other stakeholders. Transition to a nature-positive economy has only just begun, so we should also consider the possibility of transitioning to this scenario further in the future.

We prioritized risk based on each of these scenarios. We conducted risk evaluations to identify critical risk from two perspectives: intensity of financial impact and likelihood of occurrence. Opportunities were considered based on the idea that reducing risk leads to such opportunities, using the AR3T (avoidance, reduction recovery/revitalization, transformation) framework to develop countermeasures for critical risk identified, which we recognize as nature-related opportunity.

The table on the following pages shows the risks, opportunities and measures to be taken as a result of the aforementioned analysis of I&SS, ET&S and G&NS segments as well as mineral resource extraction. For scenario 2, both physical and transitional risks were rated critical. Physical risks include direct damage to buildings and increased restoration costs as a result of ecosystem degradation attributed to increased operating costs at manufacturing sites from changes to land and both water pollution and shortages. Transitional risks include increased response time to allow for more stringent nature-related law and regulation, as well as damage to reputation as a result of impact on the natural environment. While physical risk for scenario 3 did not vary much from that of scenario 2, the importance of transitional risks was rated lower since the scenario assumes lower stakeholder concern regarding natural capital.
Additionally, similar nature-related risks and opportunities were identified for I&SS, ET&S and G&NS segments under the assumption that all are directly operated manufacturing processes, but the I&SS segment is expected to require greater water consumption, making relevant risk greater than that of ET&S and G&NS.

Exemplary Scenarios by TNFD and Scenarios Used



Source: TNFD 2023 – The TNFD's default nature – risk scenarios

Risks and Opportunities Related to Natural Capital: Countermeasures

I&SS, G&NS, ET&S Segments (Manufacturing Sites including Contracted Manufacturer Sites)

Risk Category	Recognized Risks and Opportunities	Main Dependence	Main Impact	Countermeasures
Physical Risks	• Excessive water consumption, salinization, lack of water resources due to climate change and water pollution from chemicals increase operating costs associated with review of product processes and timing at production sites, and decrease profits as a result of operational stagnation (particularly costly in I&SS).	Water Supply	Water Use & Pollution	• Improvement of water usage intensity by 5% at sites with high water consumption, and implementation of risk reduction measures at sites located in water risk areas. • Promotion of wastewater recycling and reduced water usage at domestic and overseas sites related to manufacture of semiconductors and electronics. Kumamoto Technology Center of Sony Semiconductor Manufacturing Corporation is also implementing groundwater recharge measures that resulted in approx. 3.57 million m^3 in fiscal year 2023, which is more than intake.
	• Direct damage to buildings and increased recovery costs due to construction and other land changes, deterioration of ecosystems from water discharges, and weakened natural disaster prevention functions.	Storm and Flood Mitigation	Terrestrial & Freshwater Ecosystem Use	• Periodic risk assessment for floods and other natural disasters at our production sites. • Nature restoration and biodiversity conservation efforts that meet regional needs for the green areas on the premises of Sony sites and surrounding areas.
	• Decreased productivity and increased recovery costs due to factory shutdowns and road closures from landslides caused by climate change-induced heavy rains and other weather events.	Climate Change Regulation, Soil & Sediment Retention	Greenhouse Gas Emissions, Terrestrial Ecosystem Use	• Periodic risk assessment for floods and other natural disasters at our production sites. • For further information on climate change adaptation and mitigation efforts. → Climate Strategy
Transitional Risks	• Increased response costs as a result of more stringent natural capital law and regulation (water resource conservation, marine and soil pollution, ecosystem conservation).	–	Water Use, Water & Soil Pollution, Ecosystem Use	• Establishment and regular improvement of globally unified environmental management system. • Continued efforts to minimize withdrawal of water and to ensure the water discharges that return to water sources is of a quality that does not negatively impact the environment, taking into account site locations and regional differences. • Nature restoration and biodiversity conservation efforts that meet regional needs for the green areas on the premises of Sony sites and surrounding areas.
	• Decline in corporate value and decrease in profits due to deterioration of reputation with surrounding communities and stakeholders, as well as increase in response costs due to litigation issues as a result of deterioration of surrounding natural environment, including water pollution and soil contamination from water use and water discharges from production processes, waste, pollution and GHG emissions.	–	Water Use, Water, Soil & Air Pollution, Solid Waste	• Reduction and replacement of chemical substances of very high concern. • Adherence to water quality law and regulation, water discharges management exceeding regulatory levels. • Continued efforts to minimize withdrawal of water and to ensure the water discharges that return to water sources is of a quality that does not negatively impact the environment, taking into account site locations and regional differences. • Nature restoration and biodiversity conservation efforts that meet regional needs for the green areas on the premises of Sony sites and surrounding areas.

Mineral Resource Procurement (Upstream Supply Chain)

Risk Category	Recognized Risks and Opportunities	Main Dependence	Main Impact	Countermeasures
Physical Risks	• Increased mineral resource procurement costs due to decrease in available mineral resources as a result of large-scale extraction and intensified competition over limited resources.	Mineral Resource Supply	Mineral Resource Use	• Reduction of parts derived from virgin resources to zero by identifying key resources in terms of environmental impact due to the depletion, uneven distribution and mining of resources, loss of biodiversity due to mining, and the effects of these on local communities. • Improvement of recovery efficiency in recycling of key mineral resources (tantalum). • Active participation in and support of industry groups and alliances (Responsible Minerals Initiative of the Responsible Business Alliance (RBA), Japan Electronics and Information Technology Industries Association (JEITA)) that identify the negative effects of mineral extraction in high-risk areas, and mitigation or prevention of these effects for high-risk minerals. • For further information on climate change adaptation and mitigation efforts. → Climate Strategy
	• Stagnation or curtailment of mineral resource supply, decrease in product sales and increased procurement costs due to depletion of water resources caused by climate change-induced drought, deterioration of water quality from mining and ground destabilization that results in stagnation of mining and decline in mineral resources.	Climate Change Regulation, Water Supply, Soil Retention	Terrestrial & Freshwater Ecosystem Use, Water Use	
	• Stagnation or curtailment of mineral resource supply, decrease in product sales and increase in procurement costs due to supply chain disruption and suspension of mining activities as a result of landslides caused by climate change-induced heavy rains.	Climate Change Regulation, Soil Retention	Greenhouse Gas Emissions, Terrestrial Ecosystem Use	• For further information on climate change adaptation and mitigation efforts. → Climate Strategy
Transitional Risks	• Decrease in sales due to increased costs associated with due diligence and other responsible procurement, and increased difficulty procuring raw materials due to suspension of operations for non-compliant suppliers accompanying more stringent environmental law and regulation governing mine operating suppliers.	–	Terrestrial & Freshwater Ecosystem Use, Water Use	• Active participation in and support of industry groups and alliances (RMI of RBA, JEITA) that identify the negative effects of mineral mining in high-risk areas, and mitigation or prevention of these effects for high-risk minerals. • Expanded assessment of our sites and suppliers, such as by having primary suppliers request secondary suppliers comply with the Sony Supply Chain Code of Conduct, in order to further strengthen efforts to establish a responsible supply chain. • Due diligence in accordance with OECD guidance and other internationally recognized frameworks.
	• Loss of brand value and decreased profits due to deterioration of reputation with stakeholders as a result of use of mineral resources procured from mining sites that pollute terrestrial and freshwater ecosystems, discharge pollutants in their mining activities, or otherwise cause negative environmental impact.	–	Terrestrial & Freshwater Ecosystem Use, Water, Soil & Air Pollution	

Metrics and Targets

Nature-related Metrics and Targets: Prepare

Sony formulated the Road to Zero environmental plan in 2010, setting medium-term environmental targets in five year increments that are then progressively backcasted based on current achievement levels in consideration of expected and intended impact levels. This approach enables Sony to work steadily toward achieving our zero environmental footprint goal, while making ongoing adjustments based on current progress.

We announced GM2025 (Green Management 2025), which specifies medium-term environmental targets until fiscal year 2025, in September 2020, and at each stage, we have set specific targets from the four perspectives of climate change, resources, chemical substances, and biodiversity, and implemented initiatives to achieve these targets.

Targets from these four perspectives are closely tied to natural capital, and are further connected to measures to tackle nature-related risks and opportunities identified by the Sony Group.

- In consideration of resources, Sony set the goals of improving water usage intensity value on sites that use high volumes of water by 5% and implementing risk reduction measures at sites located in water risk areas. Further, we request that suppliers of raw materials and components and contract manufacturers set water consumption reduction targets and perform progress management, while taking into consideration the water depletion risk in site locations. All such goals are connected to water risks identified for I&SS, ET&S and G&NS segments. In mineral resource extraction in the upstream of the supply chain, the Sony Group works to reduce usage and increase recycling of important mineral resources, such as tantalum, with the goal of increasing collection efficiency by 1.5 times (compared to fiscal year 2020), thereby building and maintaining a recycling process that corresponds to the needs of the surrounding community. This is further connected to countering risk associated with decreases in mineral resources as a result of large-scale extraction and rises in mineral prices directly tied to increased competition for limited resources.
- Looking at chemical substances, the group is making efforts to replace environmentally controlled substances of high concern in high-risk applications, while prohibiting the use of some substances altogether. Across the supply chain, Sony Group further requests that suppliers of raw materials and components and contract manufacturers conduct management compliant with unified Sony Group standards. This is applicable to raw materials, parts and products delivered to the group, as well as semi-finished and finished products delivered to the group by contract manufacturers. We have also set targets for the appropriate management or prohibition of substances separately designated by the group, applicable to raw material and component suppliers and contract manufacturers.
- One of our goals is to continue to conduct biodiversity conservation activities that meet local needs, so we request suppliers of raw materials and components and contract manufacturers to take initiatives in consideration of this. All of these goals and targets are related to efforts to mitigate reputational risk associated with the increased environmental impact of pollutant emissions from production sites in the I&SS, ET&S and G&NS segments.
- Climate change is a major cause of water resource shortages and landslides that are critical risks in the I&SS, ET&S and G&NS segments. Countermeasures to curb or adapt to climate change will additionally lead to the reduction of nature-related risks. The promotion of efforts to achieve targets aimed at climate change are as described in relevant metrics and targets.

See our Environmental Data for further information related to core TNFD disclosure metrics on water usage, waste generated, etc.

→ Climate Change Metrics and Targets
→ Green Management 2025
→ Green Management 2025 Targets and Progress
Environmental Data

Contributions to Solving Environmental Issues

Development of Environmental Technologies

Sony regards working to realize a sustainable society as a key theme and is conducting technological development to solve both environmental and social issues in R&D departments of our companies, Sony Computer Science Laboratories, Inc. (Sony CSL), and other R&D organizations. This includes the promotion of next-generation development in projects like Sony's Earth MIMAMORI platform, which utilizes sensing on a global scale to help prevent environmental destruction, and Synecoculture™*, which creates a rich ecosystem through new farming methods.

There are a variety of departments responsible for the development and utilization of technologies that contribute to sustainability. Among these, we established the Sustainability Technology Liaison Meeting, which meets regularly to identify issues, search for, and share solutions. At meetings, information is actively exchanged by mapping activities pursued by each business as well as by sharing the issues faced and initiatives pursued by each department.

* Synecoculture is a trademark of Sony Group Corporation.

→ Technology for Sustainability

Environmentally and Socially Beneficial Products and Services

Sony works to create products, services and systems that solve environmental and social issues through a wide range of business areas. In terms of products, we supply image sensors equipped with Pregius™ global shutter technology for automatic plastic bottle collection equipment use by TORMA, a company that offers global collection, reuse and recycling solutions. In our materials business area, Sony provides licenses for Triporous™, an adsorbent material that purifies water we developed in-house, and also supply SORPLAS™, which enables up to 99% of recycled materials to be utilized.

In services and systems, we have made the Autonomous Power Interchange System that lies at the core of our Open Energy Systems™ open source and free of charge. This energy system facilitates the storage of renewable energy-derived power for flexible community interchange. In video production, we provide digital cinema systems that reduce environmental impact of movie productions and screenings, and virtual production technology that enables simultaneous shooting of virtual backgrounds and real subjects without being constrained by time or location. Aerosense Inc., an affiliate of Sony Group, utilizes drones in a wide range of endeavors, such as helping survey for damage after a natural disaster induced by abnormal weather, or aiding in the inspection of roadways and other infrastructure.

Further details on these products and services can be found in Technology for Sustainability.

→ Technology for Sustainability

Examples of products and services that contribute to the resolution of environmental and social issues (from top left): Logo for Triporous, a new material made from rice husks; Two types of recycled flame-retardant plastic SORPLAS pellets and a sulfur-based flame retardant; Demonstration test for our Open Energy Systems; BURANO digital cinema camera; Aerosense drone; Virtual production shooting.

Products and Services

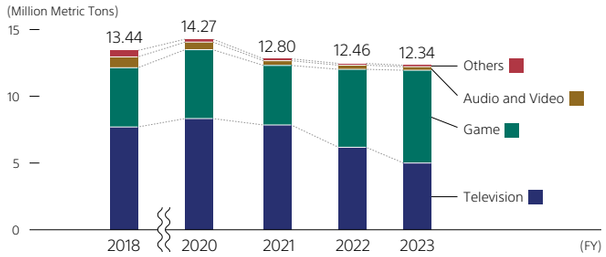
Reducing Greenhouse Gas Emissions

Sony products consume electrical power while used by their owners, resulting in indirect emissions of CO_2. Sony has adopted the target of reducing annual energy consumption per product*1 from product use by 5% by fiscal year 2025 compared to the fiscal year 2018 level. Sony sets specific fiscal year targets in every product category and is implementing diverse measures to reduce energy consumption. Fiscal year 2023 power consumption Sony-wide decreased approximately 0.7% over fiscal year 2018. Total CO_2 emissions in product use over the lifetime of all products sold in fiscal year 2023 were approximately 12.34 million metric tons*2. While emissions decreased across product categories such as televisions, they increased in games, resulting in a slight decrease over fiscal year 2022.

*1 Energy-using products which operate the intended main function with energy input from a commercial power supply.

*2 In theory, emissions during product use in fiscal year 2023 should be calculated from the total quantity of electrical power consumed by previously sold Sony products that are still in use by consumers in fiscal year 2023. However, given the difficulty of determining how many previously sold Sony products are still in use by consumers of the total number of Sony products sold to date, Sony uses the total quantity of electrical power consumed while in use over the lifetime of Sony products sold in fiscal year 2023 as an indicator for CO_2 emissions during use.

CO_2 Emissions from Product Use



Notes: • CO_2 conversion rate from fiscal years 2018 to 2020 uses the 2013 value of the relevant country.
• CO_2 conversion rate from fiscal year 2021 onward, as well as CO_2 conversion rate for games in fiscal year 2020, are used for each fiscal year
• Some figures were recalculated.

BRAVIA™ television models feature a new Eco Dashboard that consolidates power saving features in a single location. The menu is easily accessible from the home screen, making it simple to adjust power settings. They are also equipped with an Auto Power Saving Mode*3, *4 that detects user movement to automatically reduce screen brightness, reducing power consumption when no one is in front of the TV. This reduces energy consumption by 32%.*5

The X95L 4K LCD TV series

Additionally, subscribers to the NURO Hikari fiber-optic broadband service in Japan can lease a BRAVIA™ television and make use of the NURO Denki CO_2 Free Plan, which harnesses renewable energy. This energy plan combines electricity generated from natural gas, coal, oil and other fossil fuels with electricity generated from solar, wind and other renewable sources for increased environmental value (non-fossil fuel certified). This allows users to emit almost no CO_2 through home-use electricity, including that consumed by their BRAVIA™ television.
Our VPL-XW5000 video projector also boasts an energy-saving design that reduces power consumption by 30% per lumen (a unit for measuring the amount of light) compared to the previous model, VPL-VW775, while maintaining the same performance.
For the Crystal LED VERONA, which boasts a high quality LED display used for virtual production and other professional applications, we combined high luminosity-efficient LEDs and Sony's proprietary power supply design to improve energy efficiency by approximately 32%*6 over conventional LED models.

*3 The BRAVIA CAM accessory automatically detects movement.

*4 Depending on model, BRAVIA CAM is either included or sold separately.

*5 Figures may vary by model and region.

*6 Power efficiency improvement per unit of brightness calculated at max brightness. Power efficiency per unit of brightness indicates the amount of power required to produce the required level of brightness. VERONA ZRD-VP15EB (with calibration function on) was compared to the ZRD-B15A B series as the conventional LED model.

Reducing the Power Consumption of BRAVIA™

Conserving Resources

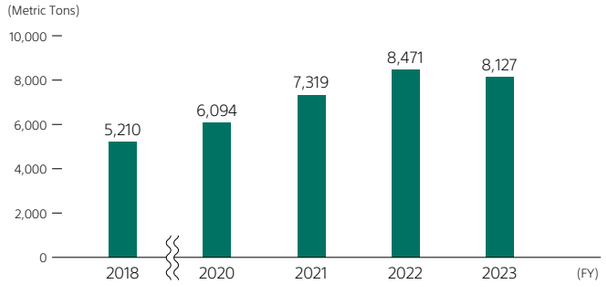
Total Volume of Resources Used in Products

Sony is working to reduce the average mass of products in order to minimize resource inputs. In fiscal year 2023, the total volume of resources used in products* was approximately 366 thousand metric tons, which was 28% lower than in fiscal year 2018. This is due to continuous efforts to reduce the size and weight of both products and packaging in a wide range of product categories, as well as a decrease in the number of units sold.

In fiscal year 2023, the Sony Group used approximately 8.1 thousand metric tons of recycled plastic in its products. This amount consisted of approximately 73% recycled plastic content from scraps and other waste materials generated from manufacturing by the Sony Group and other companies, and approximately 27% post-consumer recycled plastic content from used products, containers, and other sources. We have used approximately 67 thousand metric tons of recycled plastic from fiscal year 2014 through fiscal year 2023.

* Total volume of resources used is the total weight of resources used in products, accessories, instruction manuals and packaging materials. The weight of total products shipped is used to represent this value.

Amount of Recycled Plastic Used in Products



BRAVIA™ Environmental Initiatives

Sony Group Portal Website “Environment”

Reducing Use of Virgin Plastics Product Bodies

With the target of reducing virgin oil-based plastic used per product by 10% from the fiscal year 2018 level, by fiscal year 2025 (excluding packaging), Sony is working to expand its use of recycled plastics and make its product chassis more lightweight and compact while also minimizing plastic packaging. In fiscal year 2023, virgin oil-based plastic used per product was down approximately 16.1% from the fiscal year 2018 level. This is mainly due to the advancement of recycled plastics across a wide range of product categories, such as televisions, and the reduction of product size and weight. In the music segment, we developed an environmentally conscious disc tray for our music and video packaging that is made from our Original Blended Material and other paper to reduce virgin oil-based plastic by 97%,* and have further accelerated measures to reduce plastic group-wide.

* Compared to conventional plastic disc trays

Original Blended Material

Environmentally Conscious Disc Tray (in Japanese)

Incorporating Recycled Plastic

To reduce the consumption of virgin plastic, Sony has expanded the use of recycled plastics in a broad range of product categories by developing recycled plastics while elevating quality and reducing manufacturing costs.

Sony is using its original recycled plastic SORPLAS™ in the rear cover of select BRAVIA™ televisions, which is one of the largest plastic parts used in the product, and will continue to work on technology to support large-screen models. In 2023, we adopted this same technology for our 77-inch model.

In the audio product category, we developed a unique recycled plastic that ensures high-quality sound while also being environmentally conscious, and are working to adopt this technology in various models. 2023 results include using recycled plastic for approximately 90%* of the plastic parts in the HT-S2000 soundbar. In addition, in the HT-AX7 portable theater system, approximately 75%* of plastic parts are made with recycled plastic, and fabric used is approximately 100% made from recycled plastic bottles.

The average recycled Polypropylene plastics from post-industrial waste used in Sony Interactive Entertainment game disc cases has increased from 14% in fiscal year 2022, to 21% in fiscal year 2023 globally.

* Gross value includes virgin plastics and additives. Recycled plastics may not be usable depending on production schedule.

HT-AX7 portable theater system

Audio Product Initiatives

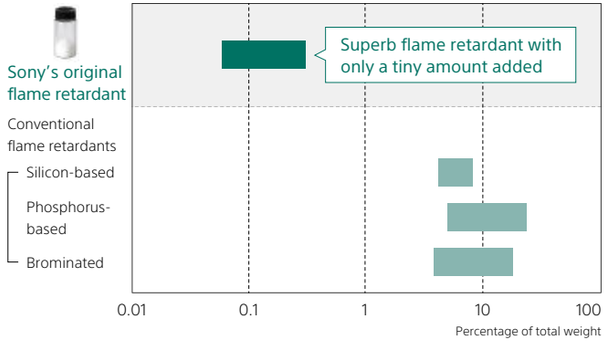
SORPLAS™, Sony's Original Flame-Retardant Recycled Plastic

Sony commenced external sales of SORPLAS (Sustainable Oriented Recycled Plastic), a flame-retardant recycled plastic, in 2011. This plastic is made possible by a proprietary compounding technology that combines an original, non-halogen and non-phosphorus flame retardant—itself produced using a Sony-developed process—and waste plastics (polycarbonate resin) from various sources in an optimal blend. Thanks to Sony's novel flame-retardant, which makes it possible to impart flame-retardancy by the addition of a very small amount of less than 1% of total content while conventional flame retardants require an addition amount of around 10%, SORPLAS not only surpasses conventional flame retardant plastics in terms of durability, heat resistance and recyclability, but also achieves an outstanding utilization rate of up to 99% waste plastics. The effective utilization of SORPLAS has been shown to reduce CO_2 emissions in product manufacturing by up to 72%.* Moreover, Sony's versatile waste-plastic compounding technology makes it possible to tailor SORPLAS to the needs of a variety of products.

Sony first used SORPLAS in its products in 2011 and has since incorporated it into a wide variety of Sony products such as select models of BRAVIA™, Xperia™ Smartphones, compact cameras and camcorders.

* Comparison of the CO_2 emitted from the production of SORPLAS to that of flame-retardant virgin plastic for the same application. Based on Sony calculations.

Volume of Additive Required for Material to Meet Flame-retardancy Standard (V-O rating at 1,5 mm)



→ External Sales of SORPLAS™ Recycled Plastic

Leading the development of recycled plastics

Reducing Plastic Packaging

Sony has adopted the targets of reducing plastic packaging used per product by 10% and eliminating plastic packaging from newly-designed small products, and is actively working to reduce the amount of single-use plastic packaging used in a range of product categories.

In fiscal year 2023, plastic packaging used per product was 25.1% lower than in fiscal year 2018. This was mainly due to the reduction in the amount of Polystyrene used in televisions and the shift from plastic to paper packaging materials in audio and other product categories.

Individual packaging*1 uses zero plastic*2 for the WF-1000XM5 headphones, the Xperia™ 1 V and 5 V Smartphone and the Vlog camera ZV-1 II released in 2023. Sony's Original Blended Material was used for individual product boxes for the WF-1000XM5, Xperia 1 V, Xperia 5 V, and Vlog camera ZV-1 II.

*1 Individual packaging refers to the individual product box and packaging inside the box.

*2 Coating and adhesive materials excluded.

Packaging made with our Original Blended Material is made from bamboo, sugar cane fiber and recycled paper.

Reducing plastic packaging for headphones

First Xperia™ Smartphone to Use No Plastic in the Individual Packaging

Original Blended Material

Previous iterations of BRAVIA™ packaging had cushioning on the top, bottom and sides of the product. However, upon testing, we arrived at a way to protect the product with only the top and bottom cushioning, reducing plastic cushioning in the 2023 model by approx. 48%*3 over the 2018 model.

For the packaging of our ELF-SR2 Spatial Reality Display, we used cardboard and other paper, as well as a pulp mold to reduce Styrofoam (a plastic material) to zero.*4 While the ELF-SR2 increased the screen size from 15.6 to 27 inches, the plastic packaging used was still reduced by approx. 60%.

With the release of the latest PlayStation®5 model (CFI-2000 model group – slim), the plastic carrying handle was removed and for our other products we have made efforts to find alternatives to using traditional plastic hanger tabs; all newly released smaller PlayStation products in fiscal year 2023 use paper-based hang tabs (where applicable).*5

*3 Comparison of the 2023 model (XR-85X95L) to 2018 model (KD-85X9000F)

*4 Styrofoam includes cushioning for individual packaging

*5 Newly released smaller PlayStation products with paper-based hanger tabs in fiscal year 2023 include: PlayStation Link™ USB adapter, PULSE Elite™ wireless headset, PULSE Explore™ wireless earbuds, Access™ controller, Disc Drive For PS5® Digital Edition Consoles and Vertical Stand for PS5® Consoles.

ELF-SR2 cushioning continues to effectively prevent impact damage thanks to its shape, despite being made of paper.

Taking on polystyrene foam alternatives, a Sony initiative to reduce plastic packaging for large products

Extending Product Life to Save Resources

Sony indirectly reduces resource consumption by extending product life. Xperia™ Smartphone models from fiscal year 2022 and after feature unique charging optimization technology that adjusts the amount of charge according to a user's individual usage habits, and a "careful charging" function that reduces load on the battery during charging. These features promote long-lasting batteries that don't deteriorate, even after three years* of use. This allows for a product to be used long-term, reducing battery and product waste.

* Based on a simulation that repeatedly charges and discharges with the same type of battery (for USB charging). Battery life varies by use.

Going Paperless

Sony is working to reduce paper use across a wide range of its businesses. For our electronics products, we continue to prioritize ease of customer understanding for instruction manuals, while moving online in a variety of product categories to reduce paper use. We had previously included instructions for multiple languages for overseas models of audio products such as Walkman® or headphones, but have now unified these after-purchase instructions by introducing the Textless Quick Start Guide (QSG), which uses illustrations that users can easily understand regardless of language since 2015.

For our LinkBuds, released in 2022, we removed after-purchase paper instructions entirely, instead providing a 2D code on the packaging to enable users to use their smartphone to access the online Help Guide. Further, we revised the precautions and specifications that must be provided in paper manuals to reduce paper included in packaging by 85%.* We then have expanded these measures to the WF-1000XM5, WF-C700N, WH-CH720N, WH-CH520, INZONE H5 and INZONE Buds headphones released from 2023. We have also employed this in the HT-S2000 soundbar and the HT-AX7 Portable Theater System.

The Sony Financial Group has been reducing the use of paper for contracts and transactions across companies group-wide, employing digital technology both to conserve paper resources and reduce mailing, which produces carbon emissions.

* Compared to WF-SP800N headphones

Sony Financial Group Paper Use Reduction Efforts

Resource Conservation in Sales and Repairs

Sony is working to reduce resource consumption in products and packaging as well as during sales and product repairs.

Previously, boxes containing promotional materials were discarded after delivery, but in fiscal year 2023 in Japan, we began planning, design and implementation of a new process where these boxes can be used as storefront signage as a part of efforts toward zero packaging waste. This has enabled us to reduce packaging box waste by a massive 34% in terms of cardboard used. We further conserve resources through reduced packaging for BRAVIA™ television promotional items through new standardization and downsizing.

In TV repair, we are working to reuse LCD panel packaging materials. Though the growing size of TV screens in recent years has required more packaging materials, we have reduced waste generated during repairs and reduced the use of new packaging materials.

Management of Chemical Substances

Sony's Proprietary Global Standards for the Management of Chemical Substances

Many of Sony's electronics products are made of between a few hundred and a few thousand parts and contain a variety of chemical substances, some of which may be classified as hazardous and may harm the environment if they are not properly treated prior to product disposal. Many countries and regions have introduced various laws and directives to prevent such environmental harm. In the European Union, certain chemical substances in products are restricted by RoHS Directive*1 and REACH*2 Regulation. In Japan, products that contain certain chemical substances are required to carry the J-Moss*3 mark, while in China it is required to disclose information on chemical substances contained in products in line with the Management Methods on the Pollution Control of Electronic Information Products, often referred to as China RoHS.*4

In light of the global nature of its markets and supply chains, Sony has established its own global standards for the management of chemical substances, titled "Management Regulations for the Environment-related Substances to be Controlled which are Included in Parts and Materials (SS-00259),"*5 taking into account the related laws and regulations around the world and simultaneously the opinions of various stakeholders. In line with these standards, Sony ensures globally consistent management of chemical substances in parts and materials that make up its products.

*1 Directive on the restriction of the use of certain hazardous substances in electric and electronic equipment (RoHS).

*2 REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) is a regulation for managing chemical substances whereby companies are required to, among others, register, apply for authorization, notify, restrict and communicate information on certain chemical substances.

*3 J-Moss refers to Japanese Industrial Standards (JIS) for marking the presence of certain chemical substances in electrical and electronic equipment.

*4 Management Methods on the Pollution Control of Electronic Information Products regulates the use of six substances, including lead and mercury, in electronic products and components sold in the Chinese market.

*5 Management Regulations for the Environment-related Substances to be Controlled which are Included in Parts and Materials (SS-00259) refers to Sony standards that are used for giving directions to suppliers on chemical substances for items procured by Sony. (For more information, please refer to "Management Regulations for Environment-related Substances to be Controlled which are Included in Parts and Materials" on the Sony website.)

Management Regulations for Environment-related Substances to be controlled which are Included in Parts and Materials (SS-00259)

Complying with Regulations Governing Chemical Substances in Products

Sony has set up necessary procedures to ensure compliance with the EU's RoHS Directive and REACH Regulation requirements. In response to the CE marking requirement under RoHS Directive and REACH Regulation to provide information to customers and to submit notification, Sony has adopted the chemSHERPA*1 scheme based on IEC 62474.*2 This enables Sony to collect data on specified chemical substances in parts and materials purchased from suppliers for management in an internal database.

*1 chemSHERPA is a scheme that facilitates sharing information throughout an entire supply chain on chemical substances used in products.

*2 IEC 62474 is a set of international standards regulating the procedures, content, format and other aspects of reporting within the supply chain regarding the presence of chemical substances and constituent materials in electrical and electronic products.

Three Core Principles for Managing Chemical Substances in Products

To guide its efforts to manage chemical substances in products in compliance with Sony's own global standards for management of chemical substances, titled "Management Regulations for Environment-related Substances to be Controlled which are Included in Parts and Materials (SS-00259)," Sony has established three core principles:

Upstream Management

Sony introduced the Green Partner Environmental Quality Approval Program in 2002. This program outlines Sony's Green Partner Standards for chemical substance management. Sony audits suppliers based on these standards. Sony purchases parts only from suppliers who have passed this audit and have been certified as Green Partners. Sony also applies the Green Partner Environmental Quality Approval Program to manufacturing partners. To further enhance the efficiency of the system to manage chemical substances, Sony also supplies our primary suppliers with a List of Specified Raw Material Suppliers (a list of recycled plastic and, coated wire suppliers list) through our electronic procurement system.

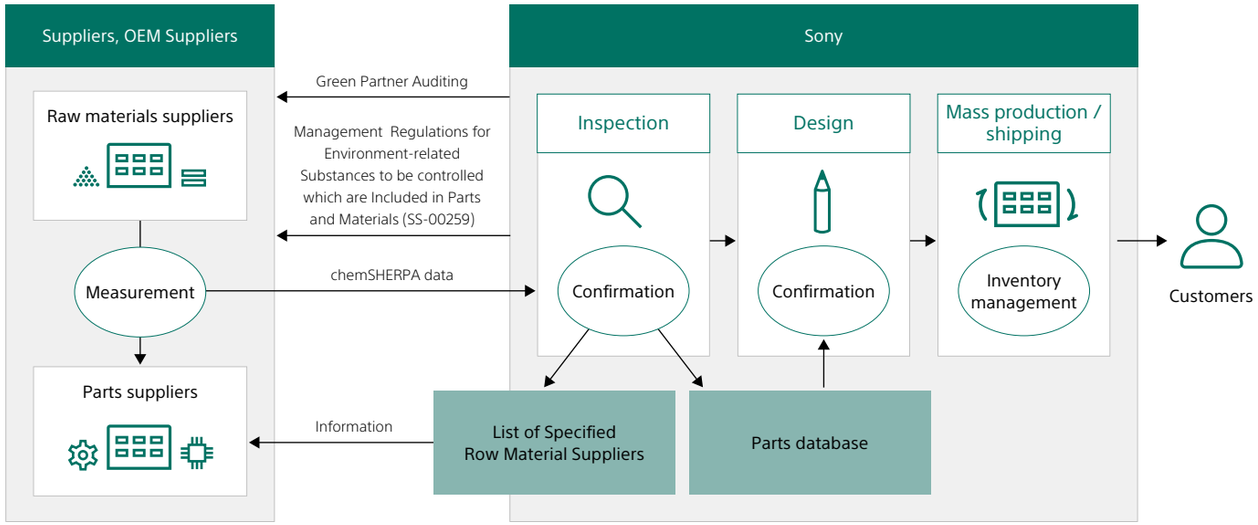
Management in Quality Control/Quality Assurance Processes

New parts and materials are tested to confirm whether they comply with "Management Regulations for Environment-related Substances to be controlled which are Included in Parts and Materials (SS-00259)," based on collected chemSHERPA data, in addition to conventional quality control standards. By implementing these strict management procedures worldwide, incompliant products are prevented from entering the market.

Utilization of Chemical Analysis

To prevent prohibited substances from accidentally entering products, Sony requires suppliers to conduct precision analysis (10 substances) on the specific parts and raw materials. For some high-risk substances Sony has also implemented internal control systems where we perform analysis to help confirm that prohibited substances are kept out of products.

System for Managing Chemical Substances in Products



Management of Chemical Substances in Packaging Materials

Sony takes precautions to increase the safety of its packaging materials and ensure that hazardous substances, including heavy metals, are not mixed into packaging materials by managing materials in line with its proprietary "Management Regulations for Environment related Substances to be Controlled which are Included in Parts and Materials (SS-00259)." The packaging section of SS-00259 is based on, among others, EU Directive on packaging and packaging waste.

Organic Fluorine Compound Initiatives

Sony prohibits use of PFOA (perfluorooctanoic acid), PFOS (perfluorooctane sulfonic acid) and PFHxS (perfluorohexane-1-sulfonic acid), which are considered particularly harmful among PFAS (per- and polyfluoroalkyl substances), in our products.
PFAS in accessories, carrying cases and other textiles is prohibited as of January 2024. Currently, we are working to understand use of PFAS in electronics other than textiles to better understand usage amount and scope. Sony will continue to comply with individual national regulations and promote alternative options.

Reduction and Replacement of Chemical Substances of Very High Concern

Sony defines "Environment-related Substances to be Controlled" (hereafter "Controlled Substances") as certain chemicals that it has determined to have significant impact on both humans and the global environment, including substances that may not be controlled by laws (please refer to "Management Regulations for Environment-related Substances to be Controlled which are Included in Parts and Materials (SS-00259))." Sony either prohibits the use of these substances in parts or phases them out wherever a viable alternative that meets all product quality requirements and are technically and economically available. In addition, Sony specifies high-risk applications from collected application- and content-related information, considering the hazardous nature and extent of exposure (volume) as risk factors, and proceeds to prohibit the "Controlled Substances" in the specified use.

Management Regulations for Environment-related Substances to be controlled which are Included in Parts and Materials (SS-00259)

Replacement of Polyvinyl Chloride (PVC)

Improper disposal of PVCs poses a risk of generating hazardous substances. For example, Sony is concerned about the possibility that its small electronic products, in particular, could be collected to obtain valuable materials, and then the unwanted parts could be improperly incinerated and disposed of in landfills, thus causing adverse environmental impacts. In addition, there are also concerns about the environmental and health impact of some of the substances used as plasticizers and stabilizers in PVCs. Although PVCs are not currently regulated by any laws that apply to chemical substances used in electronic products, Sony works to reduce PVC content in individual components.
As a result, Sony does not use PVCs in product packaging materials (with the exception of some packing materials for devices, semiconductors, batteries, and similar items) or in sheets/laminates used for product housings, contactless IC cards, and carrying bags/cases for products (excluding those for professional use).
Sony has also successfully replaced PVCs by substitute materials for internal components that are difficult to remove prior to recycling, such as flexible flat cables, insulation plates, and heat-shrink tubes (excluding those for batteries). Also, Sony is working to end the use of PVCs in the housings and internal wiring of small electronic devices (the adoption of alternatives is subject to the ability to resolve issues relating to quality, technology, and supply).
As of the end of July 2024, Sony has replaced PVCs in new products and new models in the following products with alternative substances.

PVC-Free Product Categories*
Xperia™ Smartphone
WALKMAN® memory-type portable audio players
IC recorder / Sound Monitoring Receiver
Video Camera Handycam®
Digital Still Camera Cyber-shot™
Interchangeable lens camera α™
Memory Stick™
SxS™ memory card

* Parts in which PVC is eliminated are as below (excluding bundled/standalone accessories):
Xperia Smartphones: in all plastic components.
Products other than Xperia Smartphones: in casings and internal wiring.

Examples of Polyvinyl Chloride (PVC) -Free Products and Brominated Flame Retardant (BFR) -Free Products

Replacement of Brominated Flame Retardants (BFRs)

Some BFRs are harmful to human health and tend to remain in the environment and accumulate in living organisms. As is the case with PVC, improper incineration of BFRs carries a risk of releasing harmful substances into the environment. Sony has banned the use of components and materials containing any of three specified BFRs—polybrominated diphenyl ethers, polybrominated biphenyls, or hexabromocyclododecanes—and is working to phase out BFRs (the adoption of which is subject to the resolution of issues relating to quality, technology, and supply).
Also, Sony is working to use Sony developed environmentally sound, bromine-free flame retardant for the manufacture of a polycarbonate plastic flame retardant in some product categories such as LCD TV.
As of the end of July 2024, Sony has replaced BFRs in new products and new models in the following products with alternative substances.

BFR-Free Product Categories*
Xperia™ Smartphone
WALKMAN® memory-type portable audio players
IC recorder / Linear PCM Recorder / Sound Monitoring Receiver
Video Camera Handycam®
Digital Still Camera Cyber-shot™
Interchangeable lens camera α™
Memory Stick™
SxS™ memory card

* Parts in which BFR is eliminated are as below (excluding bundled/standalone accessories):
Xperia Smartphones: in all plastic components.
Products other than Xperia Smartphones: in casings and main PWBs.

Examples of Polyvinyl Chloride (PVC) -Free Products and Brominated Flame Retardant (BFR) -Free Products

Sony has banned the use of tris (2-chloroethyl) phosphate (TCEP), a chlorinated flame retardant identified as carrying risks similar to those associated with brominated flame retardants, as well as tris (1-chloro-2-propyl) phosphate (TCPP), tris (1,3-dichloro-2-propyl) phosphate (TDCPP) short chain chlorinated paraffins. As of January 2024, it has also banned the use of Dechlorane Plus™.

Substance Management in Xperia™ Smartphones

In the smartphone category, Sony began phasing out brominated flame retardants (BFRs) in circuit boards, casings, and cables starting in 2002, making it one of the first companies in the industry to phase out BFRs. Since then Sony has continued the journey and phased out BFRs in all parts, and also phased out chlorinated flame retardants (CFRs), polyvinyl chloride (PVC), as well as phthalates, beryllium, and antimony trioxide in plastic and resin.

Sony Mobile Critical Substances [PDF:151KB]

Creating Environmentally Conscious Products

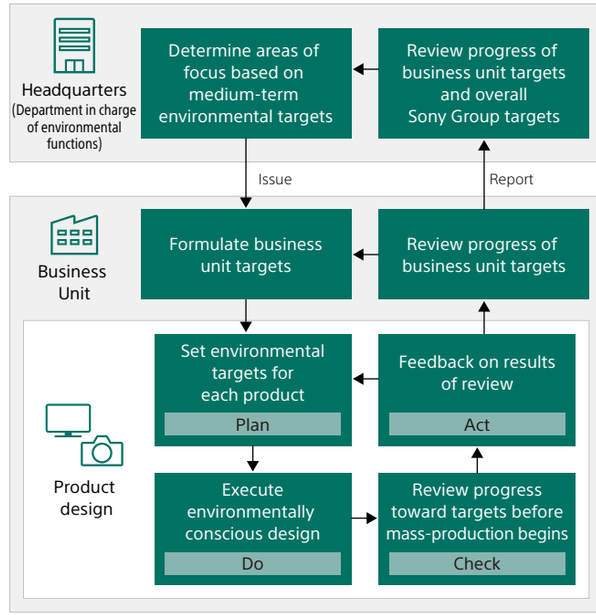
Promoting Environmentally Conscious Design

Sony has set medium-term environmental targets for products, including reducing annual power consumption, promoting resource conservation and managing chemical substances. Business units set areas of focus based on Sony medium-term environmental targets and targets based on the specific characteristics of the environmental impact throughout the lifecycle of targeted product categories.
In the course of product design, environmental targets are set for each product according to business unit targets and feedback about previous models to execute an environmentally conscious design. Environmental assessments are conducted and progress toward these targets is reviewed before mass-production of a product begins. Business units receive feedback on the results of this review, conduct their own review of progress with their medium-term environmental targets for each product, and report results to the department in charge of environmental functions at headquarters. In turn, this department evaluates the targets and progress of each business unit and conducts an overall review of the Sony Group's progress on achieving its medium-term environmental targets. Based on the results of this review, Sony determines areas of focus for the subsequent fiscal year. This method enables Sony to execute ongoing environmentally conscious processes for the department in charge of environmental functions at headquarters, as well as each business unit and product, which in turn ensure the development of environmentally conscious products.

Designing Environmentally Conscious Products: Key Considerations

Observe Relevant Laws in Individual Countries	• Product energy efficiency regulations • Regulations concerning chemical substances in products • Product recycling regulations
Reduction of Energy Consumption	• Aim for zero energy use in standby mode • Reduce power use in all modes • Enhance the efficiency of external power supply • Incorporate energy-saving features in products
Resource Conservation	• Ease of disassembly/reparability • Use recyclable materials • Reduce product weight • Extend product life
Management of Chemical Substances	• Controlled substances • Compliance with technical standards
Other	• Improve shipping efficiency by limiting weight of packaged products

Management Structure for Environmentally Conscious Product Development



Examples of Environmental Features in Sony Products

Sony is working on environmentally conscious and recycling-conscious designs and is improving environmental performance in terms of energy and resource conservation in a wide range of product categories. Signature products for these efforts are introduced on the following website.

Sony Corporation | Environment
ENVIRONMENT - Sony Interactive Entertainment Japan

Designing Recyclability and Reparability into Products

One initiative Sony is taking to ensure that its products are environmentally conscious involves designing them with recyclability and reparability in mind. This means, for example, labeling the material type of plastic used in parts to make it easier to extract resources from used products during recycling, and reducing the number of screws to make it easier to dismantle and repair the product. These specific environmental considerations are compiled and incorporated into the design of each product.

For example, Sony has issued Environmental Design Standards and Guidelines for TVs and Serviceability Standards, which are used when planning and designing new products, and monitors progress on meeting these standards. These design standards and guidelines reflect the trends in regulations inside and outside of Japan as well as Sony's medium-term environmental targets. Sony conducts an annual review and revision of these guidelines based on industry trends and the latest recycling information, which is gathered via regular sharing of information and opinions with the Green Cycle Corporation, an affiliate of Sony engaged in the recycling business. Additionally, in order to ensure compliance with the laws and regulations regarding circular economy in Europe, Sony provides information on repair and disassembly of the display products such as TVs and commercial monitors on the support page of the website for repair shops and recyclers, and provides dealers and retailers with reparability index information for TV and smartphone products sold in France.

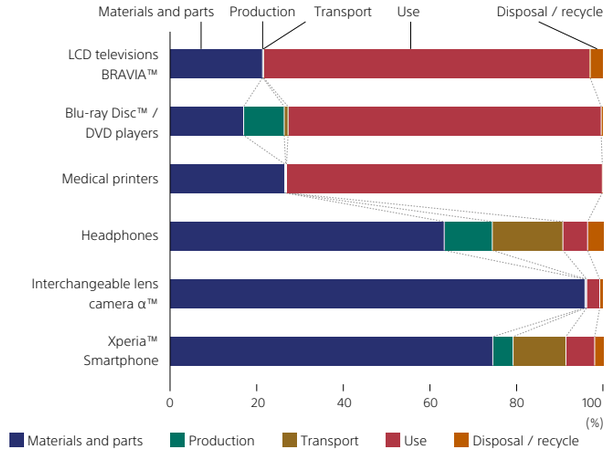
Utilizing Life Cycle Assessment (LCA)

Product life cycle assessment (LCA) is a means of identifying and quantifying the environmental impact of products at all stages of their life cycles, which include the manufacture of materials and parts used in products, the assembly and transport of products, product use and standby mode, and end of life (i.e., disposal and recycling). LCA of major products helps us to clarify priorities for product improvement for all product categories and reduce the environmental impact of Sony products.

As shown in the graph below titled "Breakdown of CO_2 Emissions Over the Life Cycle of Sony Products," we see that the life cycle stages responsible for generating a large portion of a product's CO_2 emissions differ depending on the product category. For example, for product categories such as LCD televisions, Blu-ray Disc™*/DVD players and medical printers, emissions during product use account for a large proportion of total emissions. For this reason, reducing the power consumption and emissions associated with consumables for these products during use is particularly important. Among product categories such as headphones, smartphones and interchangeable lens camera α™, a large portion of CO_2 emissions occur in the production of materials and parts, rather than during use. For these products, such measures as reducing product weight are crucial in lowering life cycle CO_2 emissions. LCA results are reflected in medium-term environmental targets and utilized in product design for the environment.

* The "Blu-ray Disc™" word mark is a trademark of the Blu-ray Disc Association.

Breakdown of CO_2 Emissions Over the Life Cycle of Sony Products



Sony calculated the emissions based on the following assumptions:
- Place of sale: Japan
- Product transportation: by truck in Japan, by ship or by air for international transport
- Years of use: BRAVIA™ LCD televisions, 10 years; Blu-ray Disc™ / DVD players, 7 years; Medical printers, 5 years; Headphones, 4 years; Interchangeable lens camera α™, 6 years; Xperia™ Smartphone, 3 years

Notes:
- This chart shows the proportion of CO_2 emissions at each stage of the life cycle. It does not indicate the degree of environmental impact of these products.
- The assumptions (usage assumptions, shipping distance, mode of shipping, manufacturing site assumptions, etc.) used for calculation of CO_2 emissions differ among products.

Supply Chain

Reducing Environmental Impact Across the Supply Chain

Working with Materials/Parts Suppliers and Subcontractors to Reduce Environmental Impact

As a part of its efforts to reduce environmental impact across the supply chain, we request that our materials and parts suppliers and subcontractors handle both greenhouse gas and water depletion issues. For GHG emissions, Sony requests them to monitor emission levels, set medium- and long-term targets for emissions reduction and perform progress management. For water depletion, Sony requests them to set targets for water consumption reduction in consideration of water depletion risk in the areas where the site is located. Sony conducts surveys on efforts to reduce environmental burden in order to understand the impact greenhouse gas emissions and water consumption, etc., by sites have on manufacturing materials, components and products, delivered to Sony.

In fiscal year 2023, Sony obtained answers about a variety of data from materials and parts suppliers which account for approximately 80% of the total transaction value and from subcontractors which account for approximately 90% of the total transaction value. We provided both tools and guidance to support GHG emissions calculation as well as instructional videos on how to use those tools. This enabled all suppliers surveyed to be able to calculate and monitor their emissions.

Our 1.5°C Science Based Target (SBT) stipulates materials and parts suppliers and subcontractors will set SBT-consistent reduction targets equivalent to 10% of supply chain GHG emissions by fiscal year 2025. To this end, Sony provides SBT guidance during surveys to them and supports target setting and certification acquisition of SBT-consistent targets for some suppliers. In September 2023, Sony announced its intention to reduce Scope 2 GHG emissions released during use of purchased electricity at the site of Sony's major suppliers to net zero by 2030.

With regard to chemical substances, Sony requires its materials and parts suppliers and subcontractors to comply with laws and regulations in each country restricting or banning the use of chemical substances in materials, parts, semi-finished goods and finished products delivered to Sony based on Sony's own chemical substance management standards. Sony requests that substances restricted under international frameworks and separately designated by Sony not be used in the manufacturing process and continues to investigate the use of these substances.

List of Chemical Substances Prohibited in the Manufacturing Process and Requiring Proper Management (for Sony Materials and Components Suppliers and Outsourcing Contractors) [PDF:425KB]

→ Distributing Videos and Providing Education for Raw Materials and Parts Suppliers

Sharing Expertise on Reduction of Energy Consumption and Promoting Renewable Energy Utilization

In fiscal year 2022, Sony began promoting the Partner Eco Challenge Program, which provides suppliers with expertise on the reduction of energy consumption as implemented at Sony sites globally. In this program, personnel who are familiar with environmental initiatives and energy management visit suppliers, identify areas for improvement at manufacturing sites and provide Sony expertise. Using this as a starting point, employees at supplier manufacturing sites proactively develop initiatives for improvement and verify the results of these initiatives during the half-year period set for the program. During this period, Sony regularly checks progress and provides support for initiatives by visiting the site, while also holding seminars on basic energy conservation and other endeavors that raise awareness throughout the site. Through this program, Sony accelerates the use of renewable energy as its power usage on the supplier site, setting goals equivalent to SBT and providing ongoing support for the acquisition of target certification.

In fiscal year 2023, Sony implemented the program in cooperation with suppliers in Japan and factories in China. Energy-saving initiatives led to improvements for all participants, and suppliers stated that the program provided an excellent opportunity to raise employee awareness concerning energy conservation.

Promoting Green Purchasing

Having set internal standards for green purchasing, Sony chooses environmentally conscious products when procuring nonproduction materials such as printing paper, stationery and office equipment in Japan. At the same time, in principle, Sony carefully examines needs, amounts to be used and stock levels to purchase appropriate quantities. In addition, when choosing products to be purchased, Sony prioritizes select recommended products in consideration of environmental impact at all stages of a product's life, from resource extraction through to production, distribution, use and disposal. Information on recommended products is included in Sony's purchasing system of nonproduction materials, making it possible for individuals in charge of purchasing decisions to give priority to environmentally conscious products.

Development and Introduction Support for Low VOC Paint

Sony has long supported the development and introduction of water-based paints and other low VOC paints in order for manufacturers to reduce the volatile organic compounds (VOC) generated in the product painting process.

It's technically more difficult to ensure the coating performance and aesthetic beauty used to evaluate overall performance with water-based paints than with conventional paints. To remedy these points, Sony worked with paint manufacturers to learn how to optimize paint components, repeatedly undergoing a verification process at our in-house laboratory that was used to improve coating performance and aesthetic appearance.

Through this, we succeeded in developing a low environmental impact water-based paint that more than halves the VOC generated*1 while still maintaining the same performance as conventional paint. We also provided support for introducing coating equipment that is optimal for using water-based paint at coating manufacturers.

Once we had ensured the paints met the high quality standards required of Sony products, we began using them for some products in 2020. Since then, we expanded use year after year, and in 2023, the paints were used for Vlog camera ZV-E1.*2

*1 Compared with individual parts.

*2 Water-based paint is used for the resin parts of the black model. Type of paint may be changed as needed for production time.

The black model of the Vlog camera ZV-E1 includes resin parts coated with water-based paint

Manufacturing Sites

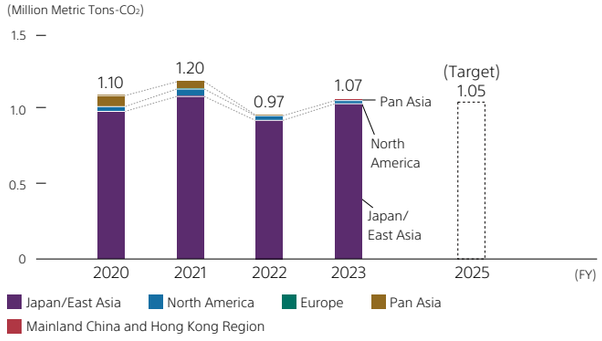
Reducing Greenhouse Gas Emissions

Greenhouse Gas Emissions at Sony Sites

With the target of reducing absolute greenhouse gas (GHG) emissions from Sony sites by 5% relative to fiscal year 2020 levels by fiscal year 2025, Sony has endeavored to reduce greenhouse gases such as CO_2 and perfluorocarbons (PFC) related to energy consumption. In fiscal year 2023, the total volume of GHG at manufacturing sites was approximately 1.067 million metric tons, which was approximately 3.2% lower than in fiscal year 2020. While there was an increase in the amount of energy used in semiconductor manufacturing, overall emissions decreased due to increased efforts to promote energy-saving, expansion of renewable energy* use and other GHG emission reduction measures.

* Renewable energy includes solar, wind, water, geothermal, and biomass. This is energy that comes from sustainable sources.

Greenhouse Gas Emissions at Sony Sites



Japan/East Asia: Japan, South Korea and Taiwan Region

CO_2 Emissions from Energy Use at Sites

In fiscal year 2023, emissions of CO_2 from energy use at Sony sites accounted for approximately 0.932 million metric tons, out of the approximately 1.067 million metric tons, of total greenhouse gas emissions at Sony, down by approximately 72,000 metric tons from fiscal year 2020. The above CO_2 emissions resulting from energy use at Sony sites include emissions from fuel used by Sony-owned business vehicles. In fiscal year 2023, CO_2 emissions resulting from fuel used in vehicles amounted to approximately 8,000 metric tons. Going forward, Sony will take efforts to restrict greenhouse gas emissions through infrastructure-related measures, including the installation of high-efficiency equipment and the promotion of energy recycling, and to enhance nonstructural measures, notably through training programs designed to foster energy-saving leaders.

Emissions of PFCs and Other Greenhouse Gases

PFCs and other greenhouse gases with high global warming potential are used in cleaning and etching processes during the manufacturing of semiconductors. Emissions of PFCs and other greenhouse gases in fiscal year 2023 (calculated in terms of CO_2) totaled approximately 135,000 metric tons, up about 37,000 metric tons from fiscal year 2020. Despite the introduction of PFC abatement equipment and other reduction initiatives, total emissions increased due to the growth in semiconductor device production.

Promoting Efficient Energy Use

To achieve its fiscal year 2025 reduction targets, Sony is working on various energy conservation activities at its sites around the world.

High Efficiency Energy Systems for Plants

Sony Semiconductor Manufacturing Corporation's Nagasaki Technology Center (Nagasaki TEC) aimed to be the most energy efficient plant in the semiconductor industry upon construction of the Fab 5 building. In the chillers and boilers that control the temperature and humidity of clean rooms used for semiconductor manufacturing, AI is utilized, and advanced control technology minimizes chiller operation, while another system reuses the production equipment exhaust heat to power the boiler. These innovations improved clean room energy efficiency by approximately 30% compared to fiscal year 2015.
Sony Device Technology (Thailand) Co., Ltd. installed an energy-efficient air conditioning system when it reconstructed its clean room for semiconductor production. The system requires less airflow than conventional air-conditioning systems to keep the work area clean, enabling it to reduce its annual CO_2 emissions by approximately 4,911 metric tons, a 75% reduction compared to the previous system. Additionally, the same system was installed in the new building where we have started a production line operation in fiscal year 2024, in order to further reduce electricity consumption.

Outside Nagasaki TEC where Fab 5 began operation

Sony Technology (Thailand) Co., Ltd. (STT) is working with Kansai Energy Solutions (Thailand) and TipTop Engineering to reduce greenhouse gas emissions in air conditioning. Design, operation and management of our highly efficient chiller system* reduces CO_2 emissions by approx. 2,500 metric tons per year.

* A chiller system that supplies chilled water to a plant.

Helping to Reduce our Plant's Footprint
Greenhouse Gas Emissions Reduction Project at STT

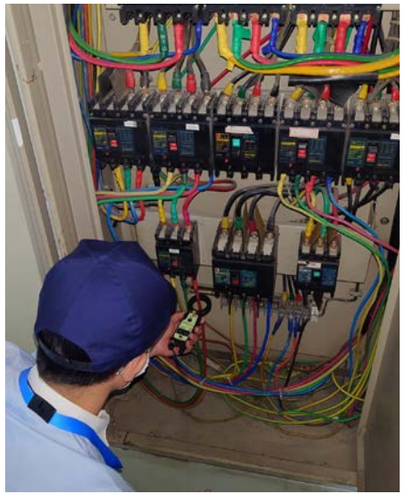
Chiller system installed at STT

Energy Conservation: Initiatives Driven by Plant Employees

Sony promotes a broad range of energy-saving efforts at its sites around the world. In addition to increasing the energy efficiency of buildings and equipment, in recent years Sony has actively implemented activities for reducing energy consumption suggested by manufacturing site employees.

These activities focus on the formulation and implementation of energy-saving solutions for manufacturing sites, which consume more electricity than any other part of Sony's manufacturing operations. Employees set ambitious project targets and take steps to shed light on energy consumed in different manufacturing processes. This enables employees to identify unnecessary uses of energy in such processes, as well as to develop and test solutions and, having confirmed the effectiveness thereof, to effect ongoing improvements. Particularly outstanding solutions are subsequently expanded to other sites.

These activities were prompted by the effectiveness of the Eco Challenge Project implemented in 2009 at Sony Group Corporation's Sendai Technology Center and Sony Storage Media Manufacturing Corporation's Tagajo site. Similar energy conservation activities are now being implemented at Sony manufacturing sites around the world.



Power management project at Shanghai Suoguang Visual Products Co., Ltd.

One main example of this is at Shanghai Suoguang Visual Products Co., Ltd. (SSVE) in China, where employees from various departments all consider and implement measures together to reduce energy consumption based on their own perspectives. In the manufacturing division, for example, employees took the lead in fine tuning air condition operation, lighting management and turning power off during holidays according to production planning needs. Such efforts led to a more than 1,000 metric ton CO_2 reduction in fiscal year 2023, and an approximately 11% reduction in energy consumption compared to the previous year.

In addition, at Sony EMCS (Malaysia), employees led energy-saving initiatives to control air conditioning, lighting, compressed air leakage and ovens, reducing energy consumption by 198,085 kWh annually.

Use of Renewable Energy

Use of Renewable Energy and Renewable Electricity Rate

Sony's original goal to use renewable energy (renewable electricity rate) for 15% or more of the electricity used in operations at business sites by fiscal year 2025 was updated to 35% or more by 2025 in May 2022. Sony is working to adopt renewable energy in ways suited to the regional circumstances of its business locations worldwide, employing strategies such as installing solar power systems in site buildings, procuring renewable energy from power utilities, and utilizing renewable energy certificates. In fiscal year 2023, 967,268 MWh renewable electricity was used, which is approximately 35.3%, to achieve our target two years ahead of schedule.

Renewable Energy Procurement Policy

Sony has always considered the surrounding environment when introducing renewable energy, so we have updated our procurement policy in fiscal year 2022 with additional environmentally conscious items for the introduction and operation of power generation equipment.

Key Procurement Policy

Evaluate environmental impact when introducing or operating power generation equipment, taking care to prevent adverse effects on the environment.

Examples of Environmentally Conscious Items:

- Land stability (outflow of earth or equipment due to slope collapse, etc.)
- Noise generated from power conditioners, etc.
- Impact of reflected solar panel light on living environment
- Impact on landscape
- Impact on animals, plants and ecosystems
- Check laws and regulations, and communicate with the local community during off-premises installation.
- Hydroelectric power generation must be 25 MW or less (exemption possible due to the procurement environment of the country/region).
- Carry a sense of forward movement to promote proliferation of new renewable energy power generation as much as possible.
- Choose a renewable energy power source that already exists in the country or region of the site.

Major Sony Sites that have Installed Solar Power Equipment

Location	Sites	Capacity
Japan	Sony Music Solutions, JARED Oigawa Center	1.7MW
Japan	Sony Music Solutions, Oigawa Production Center	0.22MW
Japan	Sony Global Manufacturing & Operations Kohda Site	1.2MW
Japan	Sony Customer Service (Japan) Togane Technology Site	0.20MW
Japan	Sony Semiconductor Manufacturing Kumamoto Technology Center	2.9MW
Japan	Green Cycle	0.28MW
United States	Sony Pictures Entertainment Studio	1.8MW
UK	Sony UK Technology Centre	0.74MW
Austria	Sony DADC Europe Thalgau Plant	0.84MW
Thailand	Sony Technology (Thailand) Chonburi Plant	5.4MW
Thailand	Sony Device Technology (Thailand)	4.6MW
Malaysia	Sony EMCS (Malaysia)	0.83MW
South Korea	Sony Electronics of Korea Corporation	0.20MW

RE100 Membership

In 2018, Sony joined RE100,* a global initiative to use 100% renewable energy, in addition to internally set targets. Our goal of working toward sourcing 100% renewable electricity was originally 2040, but was moved up to 2030 in May 2022.

* RE100 is a global initiative led by the non-profit The Climate Group in partnership with CDP in which participating companies set a goal of procuring 100% renewable electricity for power used in their global business operations.

Sony accelerates target to achieve a zero environmental footprint by ten years

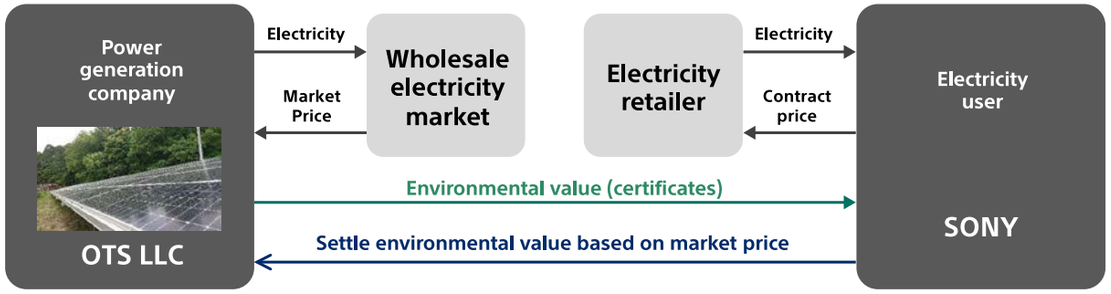
Regional Initiatives

Even before joining RE100, Sony had been taking action on renewable energy at sites around the world. It has already achieved 100% use of renewable energy in many regions. In fiscal year 2008, it was one of the first enterprises in Europe to make the switch to 100% renewable energy for the electricity consumed at its sites. Since then, it has also achieved 100% renewable energy in China (in fiscal year 2020) and at all manufacturing sites in the Pan Asia region (in fiscal year 2022). This success in the Pan Asia region is due to the installation of solar power systems at its sites and the active use of renewable energy certificates. In September 2023, the expansion of on-site solar power generation at the Sony Technology (Thailand) Co., Ltd. Chonburi Plant was implemented, increasing the ratio of solar power in electricity consumption from 8% (in the first half of fiscal year 2023) to 18% (in the second half of fiscal year 2023). In fiscal year 2024, at the Chonburi Plant, installation of additional on-site solar power panels on the roof of the cafeteria and the energy supply building is planned, and at Sony Device Technology (Thailand) Co., Ltd., there are plans to install additional solar power panels in the new building. Meanwhile, Sony is systematically increasing the amount of renewable energy it sources in North America, with the aim of achieving 100% in fiscal year 2030.

Similar introduction through a variety of initiatives is underway in Japan, as well. As the first such initiative in Japan, we began operating a virtual PPA using the feed-in premium (FIP) system in fiscal year 2022. With virtual PPA, power generated is then sold on the market, which means that market price fluctuations may cause a financial loss to Sony as the consumer, which we are then responsible for compensation for. Through the FIP system, government subsidies reduce risk associated with price fluctuations, making it possible to procure renewable energy that's sustainable from a management perspective. Through these endeavors, we expect the Sony Global Manufacturing & Operations Kohda Site, a production base of the Sony Group, to introduce environmental value of approximately 2.4 million kWh of electricity derived from renewable energy annually. Furthermore, Sony Semiconductor Manufacturing Corporation (SCK) also introduced the new virtual PPAs using the FIP system in fiscal year 2023.

On the other hand, Sony Electronics of Korea Corporation has achieved 100% renewable energy by introducing on-site solar power generation and procuring renewable energy certificates in fiscal year 2023.

Virtual PPA Mechanism (Figure Redrawn with Permission from Renewable Energy Institute)



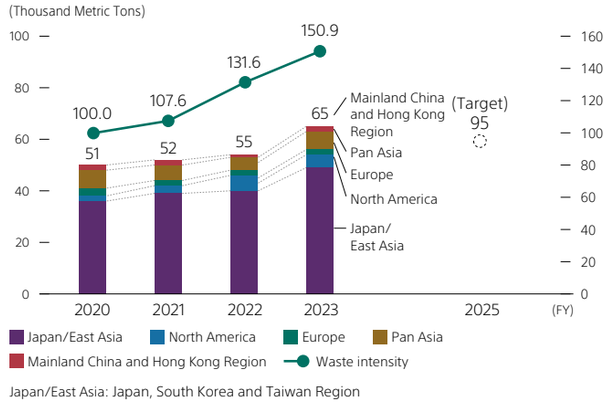
A virtual PPA (Power Purchase Agreement) is a system in which consumers (companies that wish to use electricity) conclude a long-term contract with a power generation company directly, trading the "environmental value" contained in renewable power rather than actual power. Sony has concluded a contract with OTS LLC, a power generation company, to utilize the platform provided by Digital Grid Corporation.

Reducing Waste Generation

Amount of waste generated at sites

With the target of reducing waste amount intensity value from Sony sites by 5% relative to fiscal year 2020 levels by fiscal year 2025, Sony has implemented a variety of measures to reduce waste and use resources more effectively. In fiscal year 2023, the amount of waste generated at sites worsened approximately 50.9% in waste intensity compared to fiscal year 2020. Sites generated approximately 65,000 metric tons of waste, which is up approximately 27.3% from fiscal year 2020. Although Sony is promoting reduction by continuously improving production site processes and reducing waste generated, the volume of waste increased, mainly due to the expansion of semiconductor plants and increased production. Furthermore, about 6,500 metric tons of industrial waste generated was plastic waste.

Amount of Waste Generated at Sites



Japan/East Asia: Japan, South Korea and Taiwan Region

Landfilled Waste Rate for Sony Sites

In fiscal year 2023, the landfilled waste rate for all Sony Group sites was approximately 0.9%. The rate for sites in Japan was approximately 0.2%. However, the landfilled waste rate for Sony sites became approximately 15.9% when the calculation includes waste that Sony is required by law or ordinance to dispose of by landfills. Sony strives to reduce the rate of waste disposed in landfills by recycling waste generated by sites.

Management of Industrial Waste

Sony takes precautions to ensure waste from its sites is not inappropriately disposed of. For example, in Japan Sony has set consistent internal standards for selecting waste disposal contractors and inspecting disposal sites on an ongoing basis. It has also established an internal system of accreditation for disposal site inspectors, and is stepping up efforts to minimize risks associated with contracting out waste disposal. To reinforce this system, Sony implements periodic on-site inspections in the waste disposal contractors, thereby ensuring rigorous management procedures.

Example of Waste Reduction

Sony is reducing waste at all its business sites. Sony Semiconductor Manufacturing Corporation (SCK) changed the flocculant used in the treatment of water discharges generated from production machinery to a biobased polymer flocculant that offers improved setting and flocculating performance, and this initiative is being optimized and employed at the technology centers that serve as production bases. This led to a reduction of sludge, which accounts for the majority of waste, as well as a reduction of both conventional primary flocculant (inorganic flocculant) and inorganic flocculant-derived sludge. Sludge was further reduced by processing excess sludge in a dehydrator. These, in addition to other measures, have reduced waste by about 1,300 metric tons annually.

In 2021, SCK's Kagoshima Technology Center worked with a subcontractor company to recycle sludge from on premises into a block to create a flowerbed. A signboard describes this recycled block, giving customers and locals an opportunity to learn about environmental activities while also raising the awareness of people on premises.

Flowerbed made from blocks of recycled sludge

Improving Component Packaging

At all of its sites, Sony works to reduce the amount of waste through overall reviews of the packaging used in components and the optimization of this packaging. For example, a range of measures are employed to reduce the amount of materials used in component packaging materials and hence curb the amount of waste. These include the complete elimination of protective bags for components, modifications to increase the capacity of containers used to store components, and the switch from disposable containers to multi-use returnable boxes. In particular, Sony is working to standardize the sizes of, and materials used in, returnable containers while aiming to expand the range of items for which such containers are used.

→ CO_2 Emissions from Product Transport

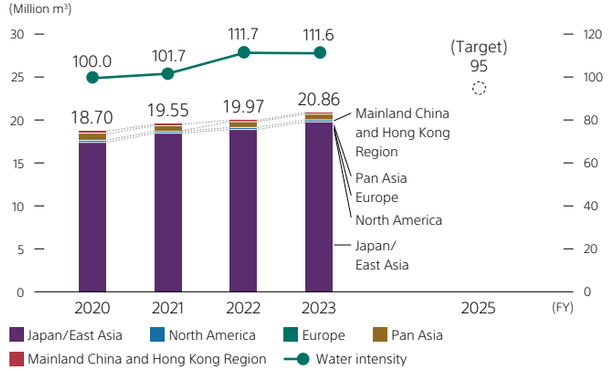
Returnable container used to transport components at Sony Global Manufacturing & Operations Corporation

Proper Water Management to Protect the Local Environment

Water Usage and Risk at Sony Sites

Water is a constantly circulating and unevenly distributed resource, which makes water issues very regional in nature. To tackle this issue, Sony set the goals of improving water usage intensity value on sites that use high volumes of water by 5% relative to fiscal year 2020 and implementing risk reduction measures at sites located in water risk areas. In fiscal year 2023, water usage at Sony sites worsened approximately 11.6% in water intensity relative to fiscal year 2020. Water usage was approximately 20.86 million metric tons, which is up approximately 6.3% from fiscal year 2020. Sony is making efforts to recycle water and save water on production sites, but the amount of water used has increased, mainly due to the expansion of semiconductor plants and increased production.

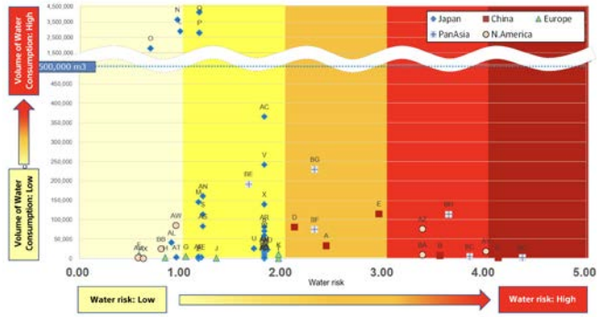
Water Usage at Sony Sites



Japan/East Asia: Japan, South Korea and Taiwan Region

Sony also takes steps to ensure the quality of water discharges at its sites. In addition to observing related laws and regulations in each of the countries and territories in which it operates, Sony manages water discharges quality criteria further than is required. For example, the introduction of sophisticated water treatment facilities has enabled it to reduce BOD and COD levels* in discharged water. Available water resources vary greatly in terms of quantity and quality, depending upon the region. In business, it is necessary to consider water resources from the perspective of securing enough water for production while maintaining good stakeholder relations. Sony uses water risk assessment tools provided by the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) to perform water risk assessments for the regions where Sony sites are located. Sony is working with local stakeholders to ensure proper use of water by promoting activities that reflect the water risks in each region.

* Biochemical oxygen demand (BOD) and chemical oxygen demand (COD) are indicators of water pollution.



Water Risk Analysis Chart for Sony Group sites

Environmental Data (Environmental Data file: Water Pollutants)

Efforts in Water Usage and Local Water Risk

- Sony's semiconductor manufacturing sites use the largest volumes of water and are located in areas where water risk is low, but we continue to promote wastewater recycling to reduce usage.
- We have set voluntary standards for environmental pollutants in water discharges, and are working to reduce the risk of water discharges pollution at Sony sites where water discharges pollution risk is high.
- We have mostly non-manufacturing sites located in areas with a high risk of water depletion and drought. The volume of water consumed at these sites is low, but we continue to work to reduce water usage.

One example of initiatives underway at areas of high water risk can be found at our non-manufacturing sites (offices, etc.) in India, where we have been employing a variety of methods to reduce water usage since fiscal year 2022. These include adjustments to shower faucets, adoption of sensor faucets in break rooms and cafeterias, awareness training, and display of Save Water posters at hand-washing stations, break rooms and cafeterias. Sony Technology (Thailand) Co., Ltd. Chonburi Plant works to reuse water employed within the plant.

Reducing Water Use at Manufacturing Sites

For semiconductors and electronic devices, vast amounts of water are needed not only in the manufacturing process but also in the recycling process. At its plants all over the world, Sony is taking a variety of measures to preserve local water resources, including wastewater recycling and initiatives for reducing water usage.

Increasing Semiconductor Production while Reducing Water Usage

Sony Semiconductor Manufacturing Corporation (SCK) is working toward reducing the amount of water it uses for the semiconductor production while increasing the production capacities.
SCK Nagasaki Technology Center (Nagasaki TEC) is working to reuse water discharges from gas detoxifying equipment used in the semiconductor manufacturing process and is reusing about 80% of the water discharges. In addition, Nagasaki TEC has been working on the reuse of treated sewage water in order to contribute to the recycling and effective use of resources (water). In collaboration with local authorities such as Nagasaki Prefecture and Isahaya City, Nagasaki TEC has established a system to further purify the local treated sewage water and was the first in the prefecture to reuse the treated sewage water for industrial use. This has reduced the extraction of local groundwater.
Kumamoto Technology Center (Kumamoto TEC) is aiming to reduce water used for combustion treatment to remove exhaust gas emitted from the semiconductor production lines. To do this, they have enhanced the equipment to increase the proportion of recycled water, thereby lowering the amount of fresh water needed by about 50%. In addition, in order to help preserve the abundant aquifer in the Kumamoto region, Kumamoto TEC has for many years been conducting "groundwater recharge" efforts. This involves flooding fields with river water that slowly permeates into the water table during times when no crops are being grown.
In fiscal year 2023, approximately 3.57 million m^3 water intake was recharged, a volume that exceeds that used by Kumamoto TEC. Kumamoto TEC has previously been recognized externally for its groundwater recharge efforts through a variety of awards. In fiscal year 2022, they received the 3rd Kumamoto Environmental Awards Special Award and the 2022 Local Environmental Conservation Merit Award. In fiscal year 2023, we received an award from the Foundation for the Preservation of Green and Water Resources of Higo.

Kumamoto TEC's facility for recovery of water used for gas combustion treatment

Reducing Water Usage in Various Ways

Green Cycle Corporation, an affiliate of Sony that engages in the recycling of home appliances, began harvesting rainwater in fiscal year 2014. Green Cycle uses the rainwater in recycling processes such as crushing machines. Via measures such as turning the entire 2,500 m^2 rooftop of Plant No. 2 into a rainwater collection area, Green Cycle Corporation was able to harvest 1,646.9 m^3 of rainwater in fiscal year 2023, which covered 44.2% of the plant's total water usage.
Water reduction activities in fiscal year 2023 continued to expand in the Pan Asia region. Sony Technology (Thailand) Co., Ltd. (STT) focuses on wastewater recycling to reduce public water usage. It has installed an on-site wastewater treatment plant to supply the recycled water to air conditioning cooling towers, which normally use large amounts of public water. By using the recycled water for the cooling towers, water consumption was reduced in fiscal year 2023 by 42,031 m^3.
Sony Device Technology (Thailand) Co., Ltd. also implemented a rainwater harvesting project by utilizing the rainwater for their operation and reduced the water withdrawal amount in fiscal year 2023 by 20,245 m^3. The harvested rainwater was utilized like a public water supply, including in common areas (cafeteria, restrooms), and as a supply for production areas by filtering through the deionized (DI) water system.

Wastewater treatment plant installed at STT

The Sony headquarters building uses treated wastewater to cool its heating equipment. By using water treated at the nearby Shibaura Water Reclamation Center to cool heating equipment, the amount of clean water normally used to replenish the water in the cooling towers has been reduced by approximately 30,000 m^3 per year.
In fiscal year 2023, Sony Electronics San Diego implemented a project to treat and use groundwater rather than sending it to the local wastewater treatment plant. Collected groundwater is treated through a filtration and dosing system, making the treated groundwater suitable for use as make-up water for cooling towers. The installed system can treat up to 2.5 m^3 per day (660 gallons per day), with an estimated incoming water reduction of 570 m^3 (150,000 gallons) annually.

Groundwater treatment system installed at Sony Electronics San Diego

Environmentally Preferable Paper Purchasing

Recognizing that paper resources are finite, Sony strives to use paper in an environmentally responsible manner, and it has established a related purchasing policy for paper and printed materials. We consistently strive to reduce paper use by purchasing paper that is environmentally conscious in terms of bleaching and printing, paper where the main raw material is recycled paper and paper that is sourced from properly managed forests as certified by relevant third party organizations. Particularly, we promote the use of FSC-certified paper,* which is evaluated for both its legality and for forest sustainability.
In fiscal year 2023, Sony used a total of approximately 246 metric tons of FSC-certified paper* for such items as corporation publications, including company brochures and notices of general meetings of shareholders, product catalogs, calendars, business cards, and envelopes.

* Paper certified as being produced from wood in consideration of conservation by the Forest Stewardship Council (FSC).

→ Focus on Paper Resources

Management of Chemical Substances

The Sony Group has developed a group-wide approach to the management of chemical substances used at sites where the use of these chemicals is controlled by legislation, designated as having a potentially harmful impact on the environment, or used in large quantities.

Reinforcing Standards for Managing Chemical Substances

Sony categorizes chemical substances into four classes and carefully manages and reduces the amounts of these chemical substances used, as well as the amount transferred as air, water, or soil emissions and waste. In countries where no legal reporting requirements exist for chemical management, Sony sites apply standards based on Japan's Pollutant Release and Transfer Register (PRTR) as internal rules. Chemical substances are classified as follows:

Class 1 substances: Prohibit use

- The substances regarded as having a serious impact on the human body or environment (carcinogenicity, mutagenicity, toxicity for reproduction, acute toxicity, ecotoxicity, etc.) which are prohibited to be produced or used under international treaties or individual countries' regulations
- The substances considered to have a high risk of environmental pollution such as soil contamination

List of Chemical Substances Registered as Class 1 (Prohibition of Use) in Site Operation by the Sony Group. [PDF: 132KB]

Class 2 substances: Prohibit use (Exemptions granted for certain applications)

- The substances regarded as having a serious impact on the human body or environment (carcinogenicity, mutagenicity, toxicity for reproduction, acute toxicity, ecotoxicity, etc.), which are subject to regulations that require their registration or to monitor the amounts released and transferred because they are of high risk.
- The substances recognized as needed to be eliminated because they are regarded as high risk in their management after considering regulatory trends or social circumstances

Class 3 substances: Reduce the amounts released and transferred

- The substances having a serious impact on the human body or environment, which are subject to regulations requiring monitoring of the amounts released and transferred.
- The substances which are recognized as needed to be reduced in the amount of release and transfer after considering the trend of regulations or the social circumstances.
- Volatile organic compounds (VOC) other than Classes 1 and 2

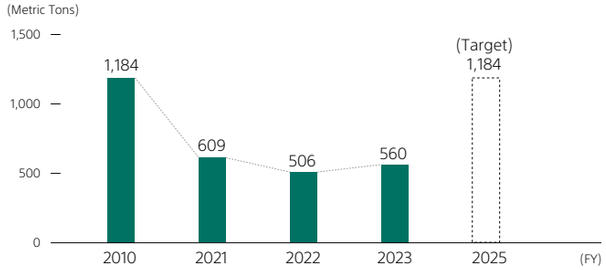
Class 4 substances: Comply with the relevant laws and regulations and use under appropriate control

- The substances not classified as Class 1, 2, or 3. Note that water and air are not required to be managed as chemical substances.

Efforts to Reduce VOC Emissions to Air

With the target of reducing volatile organic compounds (VOCs) released into the air to fiscal year 2010 levels or lower, Sony is working on a variety of initiatives, such as transitioning to VOC alternatives and reducing the amount of VOCs used in the manufacturing process. In fiscal year 2023, VOC emissions into the air were approximately 560 metric tons, down approximately 53% relative to fiscal year 2010. The decline was the result of a series of measures that include replacing VOCs with alternative substances and reducing VOC use in manufacturing processes.

Release of VOCs into the Air



Example of Reduction in Chemical Substance Usage

Sony Semiconductor Manufacturing Corporation (SCK) collaborated with an equipment manufacturer to develop a proprietary volatile organic compound (VOC) treatment system as part of ongoing efforts to reduce the amount of VOCs released. Conventional VOC treatment systems are installed near ventilation duct outlets. Since such equipment is designed to treat extremely rarefied organic substances, it is very large, making space and cost constraints an issue for semiconductor plants that want to install these types of systems. SCK responded by focusing on production equipment for highly concentrated organic substance and developed a small, fixed condensing-type VOC treatment system in conjunction with an equipment manufacturer. The newly developed system can be installed near production equipment and is able to treat VOCs efficiently.

Small, fixed, condensing-type VOC treatment system developed by SCK in conjunction with an equipment manufacturer

Ozone-Depleting Substances

Sony succeeded in completely eliminating first-generation chlorofluorocarbons (CFCs) from its manufacturing processes in 1993 and banned the use of second-generation hydrochlorofluorocarbons (HCFCs) at the end of fiscal year 2000. Sony business sites currently prohibit the use of ozone depleting substances stipulated under the Montreal Protocol. Sony uses CFCs as a refrigerant in some air-conditioning units only. Compliance with laws and regulations in each country is ensured, and strict care is taken to prevent leakage of CFCs from these units during maintenance.

Environmental Risk Management at Sony Sites

To carry out effective risk management of chemical substances and emergency responses, the Sony Group has enacted the Sony Group Standards for Site Environmental Risk Management, which set the management standard and give examples of improvement measures. Based on these standards, at each site Sony has implemented accident prevention measures, including prohibiting the burial of tanks for chemical substances and pipes, and various leak prevention measures. In addition, Sony rigorously works to prevent environmental accidents through ongoing improvements to its systems based on regular audits at each site, information sharing among sites and other initiatives. Sony has established a system whereby its sites are required to promptly report environmental accidents to the authorities and to take appropriate countermeasures. No accidents falling withing the scope of ISO 14001 certification were reported at any of Sony's sites in fiscal year 2023.

Response to Soil and Groundwater Contamination

In the event that an incident of soil or groundwater contamination is identified at a Sony site in a voluntary check or other assessment, remediation processes are implemented in compliance with pertinent local laws and ordinances. For example, Sony Group companies in Japan deal with the occurrence of contamination of soil and groundwater at Group sites by taking steps in line with the Sony Group Standard for Assessing Soil and Groundwater, an internal document that sets out procedures that comply with Japanese laws and ordinances. This manual stipulates that issues be addressed through the following three phases:

Phase 1

Investigate past and present chemical use and confirm the existence or otherwise of used or unused underground tanks, buried piping, other similar equipment, or previous incidents, at the site. Perform an inspection of the site to ascertain whether there is any residual soil or groundwater contamination.

Phase 2

Based on the investigations undertaken in Phase 1, carry out an assessment of the areas that are potentially contaminated. Undertake measurements at these locations in line with the Soil Contamination Countermeasures Act.

Phase 3

If any contamination is identified based on these results, carry out prevention and remediation procedures.

Incidents of soil and groundwater contamination resulting from operations have been confirmed at Sony Group sites as follows. In response, Sony has been remediating the contamination and submitting regular reports to authorities.

Progress of Soil and Groundwater Remediation (as of August 2024)

Site	Sony Global Manufacturing & Operations Corporation's Inazawa Site (Japan)	Sony Group Corporation Atsugi Technology Center (Japan)	Sony Group Corporation Atsugi Technology Center (Japan)
Date Contamination Confirmed	June 2001 (Result of voluntary assessment)	March 2022 (Result of voluntary assessment)	February 2023 (Investigation in accordance with the Soil Contamination Countermeasures Act)
Substance(s) Detected	Fluorine	Fluorine and its compounds	Fluorine and its compounds Lead and its compounds Arsenic and its compounds
Cause	Leak from crack in drainage pipe	Leak from loose drainage pipe fitting	Assumed to be the result of past business activities
Response / Current Status	The site has discontinued use of the equipment that caused the contamination and is remediating and monitoring groundwater. Analysis conducted in fiscal year 2023 found a groundwater concentration of 0.97mg per liter.	An administrative report indicated there was soil and groundwater pollution on site, but because there is no possibility of this pollution flowing outside the site, it was designated as an area without health risk in June 2022. Contaminated soil was removed from the site as of September 2022. We will continue to monitor groundwater contamination.	The administrative report in March 2023 indicated that the area presents no risk of health hazards, though there is soil contamination. Replacement of contaminated soil is underway.

Please see below for the latest information on site status.

Progress of Soil and Groundwater Remediation

Examples of Biodiversity Conservation Initiatives

Guiding Principles for Biodiversity Conservation Initiatives

Recognizing the importance of natural capital, as the very foundation of human life, and the ecosystem services it supplies, Sony endeavors to maintain and recover biodiversity, both in its business activities and through regional biodiversity conservation initiatives. Changes in land usage have been indicated as one of the causes of loss and deterioration of biodiversity. From a land use perspective on the site, we consider the impact of our business activities on neighboring ecosystems, carrying out biodiversity conservation and restoration initiatives in the green areas of our manufacturing sites, as well as in the ecosystems of the surrounding area according to the region's specific needs.

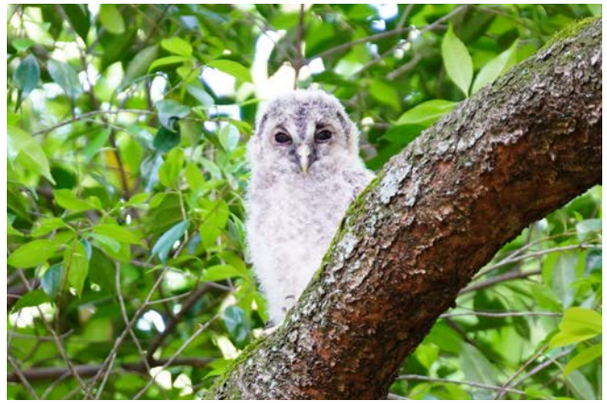
Conservation Initiatives

Conservation Activities in Sony Forest to Promote a Richer Ecosystem

Since its inception in 1972, the Kohda Site of Sony Global Manufacturing & Operations Corporation, a producer of products such as digital still cameras, has protected a natural woodland on its site, naming it Sony Forest. Sony Forest was designated as a wildlife sanctuary*1 (Kohda Northern Wildlife Sanctuary, Aichi Prefecture, Japan), and is vital to the neighboring ecosystem. Owls are at the top of the ecosystem pyramid, so in order to build a rich ecosystem inhabited by them, we continue activities at the Kohda Site such as building spaces for owls to fly and feed, as well as installing nest boxes. As a result of these efforts, inhabitation of endangered owls has been confirmed every year since 2016. In 2023, we began demonstration testing of owl monitoring harnessing an AI environmental sound recognition system equipped with internally developed advanced signal processing technology. Through this system, we extract owl sounds captured by on-site microphones, increasing the efficiency of monitoring and furthering the establishment of sustainable environment conservation initiatives.

Then, in 2011, the Kohda Site began carrying out activities to secure and share seedlings of native species, necessary for regeneration of the local ecosystem. It has been promoting this through collaboration with local government, residents, and companies. As Sony Forest initiatives continue, the Kohda Site was certified by the Japan Committee for the United Nations Decade on Biodiversity as the sixth exemplary project in 2015. In 2023, in acknowledgement of its value as a "secondary natural environment" and a "habitat for rare plants and animals," as well as an area where biodiversity conservation was implemented through private initiatives,*2 it was recognized by the Ministry of the Environment as Nationally Certified Sustainably Managed Natural Site. Along with certification, the forest has been registered in an international database as a part of Other Effective Area-based Conservation Measures, contributing to the 30by30 targets of the Kunming-Montreal Global Biodiversity Framework adopted at the 15th meeting of the Conference of the Parties (COP15).

*1 An area considered important for the protection of wild birds and mammals.
*2 Certification for sites in line with the 30by30 goal, where at least 30% of the land and sea is to be conserved as a healthy ecosystem by 2030 in order to halt biodiversity loss. Sony participates in the 30by30 Alliance for Biodiversity, as promoted by the Ministry of the Environment, Government of Japan

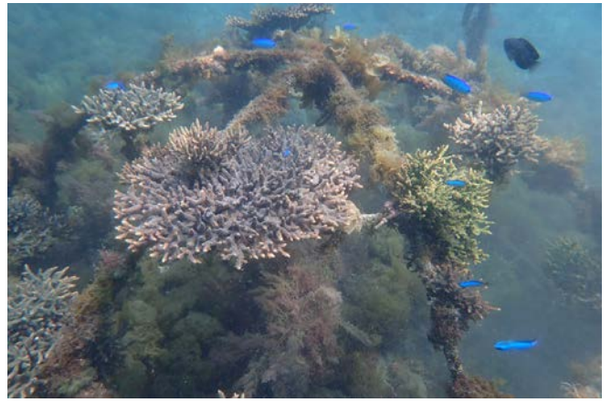


Owl chick born in the Sony Forest

Coral Conservation Efforts in Nagasaki Prefecture

Sony Semiconductor Manufacturing Corporation works to conserve the wild coral that grows around the beaches of Takashima off the southern coast of Nagasaki Prefecture and is important to the area's rich ecosystem. In 2019, we worked with the Yattaro de Takashima local preservation group, Associate Professor Yukio Koibuchi of the University of Tokyo, who develops coral cultivation shelves,* MM Bridge Co., Ltd., The Nippon Corrosion Engineering Co., Ltd., and CP Farm to build two coral cultivation shelves, and have continued to monitor their effects since installing them on the seabed of the area. In 2023, MM Bridge Co., Ltd. led a project to install five additional units. These devices help conserve the biodiversity of the sea area as a habitat, breeding ground and source of nutrition for wildlife.

* Currently affiliated with the National Institute of Standards and Technology (USA) as research scientist and a professor of the Chuo University Research and Development Initiative.



Growing coral

Monitoring Survey of the Recovering Gamo Tidal Flats

Sony Group Corporation's Sendai Technology Center (Sendai TEC) and Sony Storage Media Manufacturing Corporation's Tagajo site are conducting a biological monitoring survey of the Gamo Tidal Flats (Sendai City, Miyagi Prefecture, Japan), which is about 4 km from the manufacturing site. The Gamo Tidal Flats were damaged by the tsunami caused by the Great East Japan Earthquake, devastating the surrounding pine forest and reed fields, leading to a critical situation for the area's flora and fauna. This rich natural area was originally inhabited by a variety of worms and gobies, is a breeding ground for little terns and Kentish plovers, and is also the wintering ground for the brant goose, a natural monument of Japan, and has been designated as a national wildlife sanctuary special protection area. Since 2014, Sendai TEC and the Tagajo Site have been tracking the recovery of the Gamo Tidal Flats in collaboration with the Gamo Conservation Society environmental NGO. Over a decade has passed since the earthquake, and the environment of the Gamo Tidal Flats continues to recover. In a 2023 survey, 20 species of benthic life including Helice tridens, 14 species of birds including herons such as the striated heron and the great egret, five species of plants including the beach morning glory and Carex scabrifolia, and two species of fish, the stone flounder and the flathead grey mullet, were confirmed. Three rare species, the osprey and the Kentish plover (birds), and the Suaeda maritima (halophyte), were also observed.

Helice tridens is a dominant species found in large numbers in the Gamo Tidal Flats.

Biodiversity Conservation Activities in Austria

The Sony DADC Thalgau plant in Austria is actively promoting activities to conserve biodiversity in the nature-rich region of the Thalgau-Fuschlsee Nature Reserve, located in the greater Salzburg area. In recent years, the habitat of the wild bee, which plays an important role in the ecosystem as a pollinator in this area, has been deteriorating due to climate change and housing development. Sony DADC Austria is implementing activities to protect the bee, such as installing beehives on the plant grounds, housing approximately 800,000 bees. In addition, to protect the ecosystem that lives in the grassland on the plant grounds and as a way of landscape management, employees let sheep of local farmers graze the land instead of using tractors that strain the soil.

Beehive conservation activities

Biodiversity Conservation Activities in China

Sony Precision Devices (Huizhou) Co., Ltd. (SPDH) is located in a natural area close to a mangrove forest, and is actively working to remove alien species and promoting biodiversity conservation efforts in the region. Mangrove Forest Park is home to a wide variety of flora and fauna that inhabit the intertidal zone and brackish water, including storks, black-faced spoonbills (nationally protected species in China) and other endangered species. SPDH began planting mangrove trees in 2022, and had planted a total of 450 by 2023.

Activities at Mangrove Forest Park

Promoting Biodiversity through Synecoculture™*

Sony is promoting biodiversity conservation and extension activities on its sites through Synecoculture. Synecoculture is a farming method advocated by Masatoshi Funabashi, senior researcher at Sony Computer Science Laboratories, in which a wide variety of plants are mixed and densely grown on a single area of farmland to create an augmented ecosystem, thereby maximizing the circulation inherent in an ecosystem. The basic principles are "no tillage," "no use of fertilizers," and "no pesticides." By implementing Synecoculture, we aim to create a sustainable society, where human activities and the natural environment are compatible.

Sony Group Entities in China have been widely promoting/extending Synecoculture since fiscal year 2020 at sites across the country with coordinated efforts both internally and externally. Nine Synecoculture experimental farms have now been established, with over 3,000 kg of vegetables harvested in the last four years. The harvested vegetables were provided to employee cafeterias.

Sony China has also introduced Syneco Portal to corporate sites and external facilities. This is a small scale Synecoculture that serves as a learning tool to experience and learn about ecosystems.

In addition, the company has been conducting hands-on activities for employees to experience Synecoculture. Sony China's corporate efforts in deploying Synecoculture have been widely recognized. As a result, the company received seven awards in China in fiscal years 2022 to 2023.

Vegetables harvested from a Synecoculture farm

In Japan, Sony/Taiyo Corporation started a Synecoculture farm in fiscal year 2022 with the support of SynecO, Inc. (Syneco, Inc. is a company that promotes augmented ecosystems and Synecoculture), planting more than 140 species of plants. Plants on the farm have continued to grow steadily, creating a healthy ecosystem that provides vegetables served in the employee cafeteria. In fiscal year 2023, Synecoculture activities were expanded to Atsugi Technology Center (Atsugi TEC).

* Synecoculture is a trademark of Sony Group Corporation.

Other Initiatives

- Volunteering to Protect Nature Reserves in the UK
- Old Growth Conservation Efforts in Kunisaki City, Oita Prefecture
- Promoting Forest Management Activity at So-net Forest (in Japanese)
- Protecting Spawning Grounds of the Endangered Loggerhead Turtle in Japan
- Environmental Protection Activity in New York City
- Coral Conservation Efforts in Nagasaki Prefecture
- Participating in the Forest Conservation Project in Sumatra
- Participating in Panama's Biodiversity Event Festi Harpia 2019

Environmental Initiatives for Food

Sony has been working on environmental issues related to food in our Food for the Future project since 2021. We engage every employee in activities that encourage them to be aware of use of environmentally conscious food and take action in their daily lives through a variety of efforts, including distribution of a guidebook detailing environmentally conscious food, internal seminars and educational events, and providing meals that use environmentally conscious food in our employee cafeterias worldwide. October has been named Food for the Future Month, and in 2023, on-site cafeterias shared information about environmentally conscious food, provided meals that use them, and held seminars featuring expert keynote speakers from outside the company.

Environmentally-conscious menu served at employee cafeteria during Food for the Future Month

Reducing Food Loss in Singapore

In Singapore, Sony Electronics Asia Pacific and Sony Electronics Singapore held Ugly Food Day in 2023 to reduce food waste and educate employees. At the event, more than 250 pieces of over imported and "ugly" fruit were given out to employees to reduce food waste and create awareness on food sustainability issues in Singapore. Two online workshops were held in the Pan Asia region, where guest speakers shared tips on reducing food waste and explained what water footprint* in food is. The workshops were extended to Sony Pictures employees as well.

* Indicator of the amount of water consumed or contaminated both directly and indirectly through the life cycle of food and related products including production, processing and distribution.

Distributing fruit and vegetables on Ugly Food Day

Worldwide Cleanup Activities Catered to Regional Characteristics

Sony continues to conduct cleanup activities at its manufacturing sites around the world that are catered to the specific characteristics of the region. Sony also conducts the One Blue Ocean Project to tackle the issue of marine pollution by collecting plastic waste and reducing the use of single-use plastic at its business sites.

For example, Sony Device Technology (Thailand) Co., Ltd. has been planting mangroves since 1999 and is also engaged in cleanup activities to conserve these forests. In 2023, we cleaned up the mangrove area at Bang Pu Nature Education Centre, Samut Prakan, collecting about 129 kg of waste. Sony Technology (Thailand) Co., Ltd. (STT) has been planting mangroves and engaging in cleanup activities since 2010. In fiscal year 2023, STT employees planted 2,000 mangrove trees and cleaned up the landscape in Chonburi province. For non-manufacturing sites, in fiscal year 2023, Sony Philippines Inc. (SPH) conducted mangrove planting and beach cleanup, planting 3,125 propagules on the shoreline of Santiago Island, and collecting 465 kg of waste from the beach, while employees of Sony Malaysia Sdn. Bhd. (SOMAS) partnered with external organizations to conduct cleanup activities at Malaysia's National Zoo and Port Klang beach, collecting more than 300 kg of waste.

In fiscal year 2023, Sony Electronics participated in the community cleanup event "I Love a Clean San Diego's Kids Ocean Day" in Mission Beach, San Diego. The event educates students on pollution prevention and ocean conservation, and concludes with a visit to the beach. Volunteers supported around 1,000 students taking part in the beach cleanup and aerial art photograph. Additionally, Sony's staff provided photo and film footage on the ground by using the Airpeak S1.

Employees of Sony Middle East and Africa FZE together with their families participated in the Saih Al Salam (Al Qudra Desert) cleanup, collecting more than 170 kg of waste.

Sony Volunteers supporting Kids Ocean Day

→ Tackling Ocean Plastic Pollution with the One Blue Ocean Project

Other Initiatives

Cleaning Up Marine Plastic Waste Across China

Wow! Wow! Biodiversity Project

Together with the Nature Conservation Society of Japan, Sony launched the Wow! Wow! Biodiversity Project in fiscal year 2015, as a platform for organizing nature appreciation events, holding photo contests for the general public and spreading awareness of biodiversity through social media. In fiscal year 2016, Sony China joined this project and is conducting similar awareness-raising activities in various cities across China. The annual photo contests have become popular in both Japan and China. Through the submission of photos, the splendor of nature and the importance of biodiversity are conveyed to more and more people.

About 11,400 entries were submitted to the Chinese photo contests from 2016 to 2023, and they were introduced on social media by the employees of each site throughout China, with approximately 1,070,000 views in 2023. The 9th photo contest was held in Japan, boasting a record-breaking 2,166 entries from 1,156 people. In addition to holding exhibitions of the winning photo entries in Japan and China, the project has been providing other opportunities for the public to think about the importance of biodiversity, through activities such as biodiversity lectures and nature photographing workshops using Sony cameras.

Winning piece from the Chinese photo contest

Wow! Wow! Biodiversity Project (in Japanese)

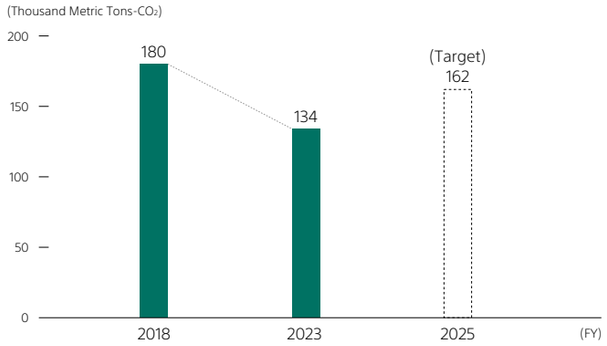
Logistics

CO_2 Emissions from Product Transport

With the target of reducing absolute CO_2 emissions related to international and inland logistics* by 10% (compared with fiscal year 2018) by fiscal year 2025, Sony has worked to reduce transport weight by making products and packaging smaller and lighter, while optimizing transportation efficiency and switching to transportation methods that have a low impact on the environment. In fiscal year 2023, the total CO_2 emissions from product transport (international and inland) was approximately 134 thousand metric tons, a decrease of 25% over fiscal year 2018. This was due to changes in the volume transported, adopting methods that emit less CO_2, shortening distances through more efficient routing and improving loading efficiency by downsizing product packaging and improving parts packaging.

* Some countries and regions are excluded from "inland transportation."

CO_2 Emissions from Product Transportation (International and Inland)



Reducing the Environmental Impact of Logistics

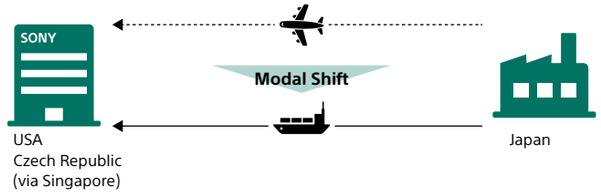
Promoting Modal Shift

As a part of its efforts to reduce environmental impact from the transport of finished goods, Sony promotes modal shift, switching the modes of transport it uses from air to sea and from truck to railroad.

Modal Shift for Tape Media

From fiscal year 2020, Sony Storage Media Solutions Corporation switched from air to sea transport for storage tape media that is manufactured in Japan and destined for distribution centers in the US, Singapore and Czech Republic. This led to a reduction of approximately 3,000 metric tons of CO_2 emissions in fiscal year 2023 compared to fiscal year 2020.

Modal shift from air to sea transport



Modal Shift in the US

Sony Electronics Inc. (SEL) in the United States continues to optimize the use of rail transport for product shipments from the West Coast to reduce CO_2 emissions generated during transport. SEL also focuses on increasing loading efficiency reducing number of shipments; focused on minimizing outbound air shipments; reducing small load shipments and working with carriers for shipment consolidation. Annually, SEL in conjunction with its logistics partner run a carrier nomination bid, strategically focused on reduction in environmental impact as a member of the SmartWay program operated by the United States Environmental Protection Agency (EPA). These efforts led to a 4.99% reduction in CO_2 emissions per ton mile shipped in fiscal year 2023 compared to fiscal year 2022.

Modal Shift in Japan

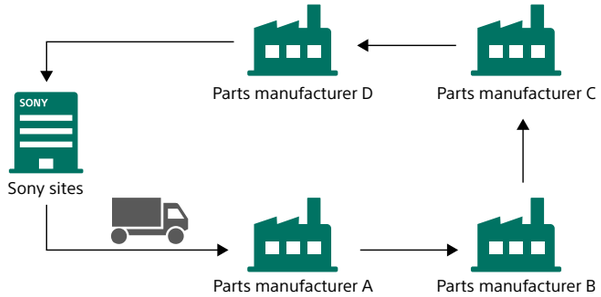
In Japan, Sony has promoted modal shift from truck to rail transport, which boasts lower CO_2 emissions. Recognizing our efforts to use rail transport, particularly for consumer electronics, Sony Corporation has been certified by the Japanese Ministry of Land, Infrastructure, Transport and Tourism as a certified company in the "Eco Rail Mark" system since 2011.
Sony also promotes domestic sea transport. In fiscal year 2023, CO_2 emissions attributable to the transport of products in Japan were approximately 123 metric tons lower than would have been the case if products had been transported by truck.

Logo indicating Eco Rail Mark certification for businesses

Improving Transport Efficiency with Milk Runs

Efficient transport realized by maximizing loading volume per truck reduces environmental impact. Sony seeks to improve transport efficiency by utilizing milk runs.* In China, Sony has been improving transport efficiency, which helps to reduce CO_2 emissions, using a combination of transport solutions such as milk runs and round trips for incoming parts and finished goods deliveries.

* In a milk run, a truck follows a route to collect parts from several suppliers, thereby improving transport efficiency compared with the routing method of separate runs to each supplier.



Sony trucks run loaded round-trip to increase transportation efficiency

Promoting the Use of Reusable Bands for Products and Parts Transport in Manufacturing Sites and Warehouses

To keep stacked cartons from collapsing during transport of products and parts in manufacturing sites and warehouses, Sony employs reusable bands as one of its materials. This has contributed to the reduction of use and disposal of packaging materials such as stretch films.

A reusable band in use

Optimizing Shipping Boxes for Improved Loading Efficiency

At Sony DADC US Inc., warehousing, packaging, returns processing and distribution of assorted media had previously used regulation size boxes. Space inside the boxes was often left unused depending on the shipment size and number of orders. Cushioning material was also needed inside the empty spaces to protect the goods during transport, which resulted in additional expenditures for materials. In response to these circumstances, improvements to the boxes at the Terre Haute plant have been made through redesign into a shape optimally suited for the size and amount of products to be shipped, expanding choice of boxes available and utilizing mailer envelopes for very small orders. Ultimately, the plant eliminated the wasted space in the boxes, increased the rate of products shipped, and substantially improved transport efficiency. The initiative also helped to reduce the amount of cushioning material used.

The shape of the shipping boxes was changed to optimally suit the products being shipped

Improved Loading Efficiency in Container Transport

We are working to improve loading efficiency in the transportation of containers for BRAVIA™ large screen televisions by taking every route possible. Typically, containers are loaded on to a cardboard pallet that is over 10 cm thick, which takes up space and leads to unusable space at the top of the container since they cannot be stacked. To better utilize the entire space, we now use 0.5 mm slip sheets instead of the pallets, and looked into changing how we stacked items, which led to us being able to stack more items in a single container. We saved approximately 62 containers in the shipping of BRAVIA™ televisions in 2023.

A container loaded with televisions

Product Recycling

Product Recycling Policy and Performance

Sony's Product Recycling Policy

Sony subscribes to the principle of individual producer responsibility (IPR), that is, the idea that a producer bears responsibility for its products over their entire life cycle. Accordingly, Sony is focused on recycling-oriented product design, collection and recycling used products, and building global recycling systems that suit the needs of individual countries and regions. Sony recognizes its social responsibility as a manufacturer to deal with its used products and actively promotes product collection and recycling, and complies with recycling laws and regulations in countries and regions around the world.

Product Recycling Initiatives

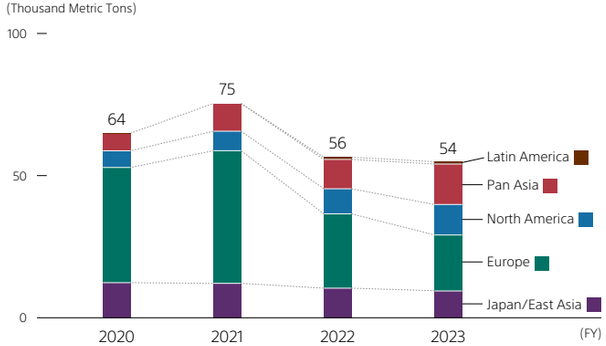
In the treatment of used products, Sony complies with recycling laws and regulations in countries and regions around the world, including Japan's Home Appliance Recycling Law, the EU's Waste Electrical and Electronic Equipment Directive (WEEE Directive), state recycling laws on waste electrical and electronic equipment in the US, China's Management Regulations for Recycling and Disposing of Consumer Electronics and Electronic Waste, and India's E-Waste Management Rules, 2022 and amendments.

Sony's Recycling Targets and Record

Sony promotes the collection of end-of-life products worldwide with our goal to establish and maintain recycling schemes suitable for the needs of local communities. In fiscal year 2023, Sony's Take-Back of End-of-Life Products Record was approximately 54 thousand metric tons of end-of-life products. The figures for fiscal year 2023 are aggregate figures current as of July 2024, and do not include some countries, namely France and Switzerland.

Sony has also been working on advanced recycling since 2021 with the goal to improve collection efficiency 1.5 times over fiscal year 2020 in regards to the recycling of key mineral resources (tantalum), further improving efficiency from fiscal year 2021 to 2022. We worked with specific recycling plants in Japan to adjust sorting equipment and improve the operation process used to collect parts containing tantalum from end-of-life products. These efforts led to 55% of the total weight of parts in end-of-life products containing tantalum being recoverable, approximately 44 times the efficiency of fiscal year 2020.

Take-back of End-of-Life Products Record



Notes:
- The figure for fiscal year 2023 is as of July 2024. The figures for fiscal years 2021 and 2022 were corrected from that of previous year's report.
- Japan/East Asia refers to the Japan, South Korea and Taiwan region.
- This includes the weight of batteries and packaging. End-of-life products collected and counted may vary by region.

Improving Product Recyclability

Working with the Sony Group's Specialized Recycling Company

As one of its strategies for resource efficiency, Sony works to increase the recyclability of its products. When examining various related measures, Sony receives feedback from Green Cycle Corporation, an affiliate of Sony specializing in the recycling business. Highly effective, practical measures incorporating these ideas and suggestions for easier disassembly and separation of materials obtained during the recycling process are then drawn up and submitted to Design departments for each product category. Meanwhile, Sony supports the efforts of Green Cycle Corporation to improve its recycling technologies by sharing the latest information on product dismantling.

Workshops on Television Recycling

Sony has been holding workshops on television recycling since 2006 at Green Cycle Corporation.* Attended by product designers, mechanical designers and a wide array of employees in other fields, we use these events to reaffirm the importance of recyclability considerations and recycling-oriented design for future product manufacture. Training begins with observation of television disassembly lines, followed by hands-on experience taking apart LCD televisions themselves. After, Green Cycle line managers hold discussions, explaining current challenges and needs. Participants then apply what they've learned to design products sold worldwide, better incorporating difficulties and improvement points for disassembly work, as well as their understanding of the importance of reusing materials gained in this way.

* These events weren't held from 2020 to 2022 due to COVID-19.

An LCD TV disassembly workshop at Green Cycle Corporation.

Recycling Activities in Japan

Sony recycles televisions and personal computers in line with applicable recycling-related laws in Japan. Sony also bears the cost of recycling lithium-ion batteries and other small rechargeable batteries, as well as packaging materials, as required by law. Sony works to improve recycling methodology for home appliances at its affiliated companies.

Recycling of Television Sets

Japan's Home Appliance Recycling Law, which came into effect in April 2001, initially covered four major home appliances: televisions, refrigerators, washing machines and air conditioners. In April 2009, the law was revised to also cover LCD and plasma televisions and clothes dryers, and in April 2024, extended to OLED televisions. Among applicable products, Sony manufactures televisions.* The Home Appliance Recycling Law requires consumers to pay collection, transport and recycling fees when disposing of applicable home appliances, retailers to take back such appliances and return them to manufacturers, and manufacturers to recycle these appliances. Sony has established a nationwide cooperative recycling network with four other manufacturers. As a consequence, Sony-manufactured televisions are now recycled at 15 recycling plants across Japan. One of these plants is operated by Green Cycle Corporation, which manages a recycling business as a Sony Group company.

TV being dismantled at Green Cycle Corporation

At these recycling plants, TVs are manually disassembled, and the parts are crushed and sorted using various equipment. Materials such as iron, copper, aluminum, and plastic are then separated out and sold to businesses that produce raw materials, making them available for reuse. In addition, certain harmful substances such as lead and mercury found in some older products and parts are removed and disposed of properly in accordance with the law.
In fiscal year 2023, Sony recycled approximately 82 thousand CRT televisions and 384 thousand flat-screen televisions. The Home Appliance Recycling Law obliges manufacturers to maintain recycling rates of at least 55% for CRT televisions and at least 74% for flat-screen televisions. Sony has consistently exceeded these rates since fiscal year 2001. In fiscal year 2023 the recycling rate for Sony-manufactured CRT televisions was 74%, while for Sony-manufactured flat-screen televisions it was 86%.

* Sony-manufactured televisions include products bearing the Aiwa brand manufactured in and before 2005.

Compliance with Japan's Home Appliance Recycling Law (in Japanese)
Sony's Recycling Record

Green Cycle Corporation has been working on high-purity sorting processes for used home appliance plastics. Products made from a mix of plastics are collected and disassembled, then the materials are crushed at recycling factories. Next, they are sorted by material in preparation for use. Polypropylene (PP) is used in variety of applications, however, even sorted and collected plastics contain a variety of other plastics with only a small ratio of PP, so these materials have conventionally been exported overseas.
Green Cycle Corporation developed a high-purity sorting process to enable collection of materials that are 98% or more PP. This enables the collected materials to be sold to domestic resin compounding facilities, increasing plastic resources recycled in the country.
The water used in this sorting process is rainwater and water generated during the dehydration process, making almost 100% of the water used recycled.

Equipment used for sink/float sorting, one part of the high purity sorting process at Green Cycle Corporation

Sony's Green Cycle Corporation Receives an award at the 2024 Aichi Environmental Award (in Japanese)

Recycling of Personal Computers

Although Sony sold off its personal computer business in July 2014, it is collecting and recycling its PC products in Japan that are no longer used by households and businesses, including long-time corporate users, in accordance with Japan's Act on the Promotion of Effective Utilization of Resources. Items being recycled are desktop PC units, notebook PCs, CRT displays, and LCDs.*
Sony is a member of the PC3R Promotion Association and collects and recycles used PC products under the industrywide collection and recycling scheme operated by the association. The results of the association's collection and recycling efforts are published on the association's website (link below).
In fiscal year 2023, Sony collected and recycled a total of approximately 12 thousand units, for a total weight of approximately 63.7 metric tons. From these items, about 45.4 metric tons of materials were reused, including metal, plastic, and glass parts.

* LCD displays include gaming monitors

Result of Collection and Recycling of Used PCs by the PC3R Promotion Association (in Japanese)
Information on Recycling Used Computers Made by Sony (in Japanese)

Recycling Activities in Europe

Take back legislation in Europe—in particular, the European Union (EU) Directives on Waste Electrical and Electronic Equipment (WEEE),*1 Batteries,*2 and Packaging*3—requires manufacturers to organize and finance the collection and recycling of end-of-life products and packaging.
Sony takes full responsibility for its take back obligations in all applicable European countries. With the aim of building a recycling market where the principle of competition works in Europe, Sony formed the European Recycling Platform (ERP) in cooperation with other companies in 2002, building efficient and cost-effective systems for the collection and recycling of end-of-life products that enable member companies to fulfill their obligations as manufacturers. Sony continuously strives to find the best recycling partners.

*1 Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)
*2 Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators (to be replaced by Regulation (EU) 2023/1542 on batteries and waste batteries published in July 2023)
*3 Directive 94/62/EC on packaging and packaging waste

Sony's Recycling Compliance Systems

Sony utilizes authorized collection schemes for the collection and recycling of WEEE, batteries, and packaging across Europe. These conduct regular on-site audits of all contracted recyclers to ensure compliance and prevent illegal shipments outside the EU. Sony engages authorized partners that undertake recycling on behalf of manufacturers to ensure our products are recycled in a compliant manner, in accordance with European Directives and country specific regulations.
In 2023, Sony financed the costs of recycling approximately 19,594 metric tons* of end-of-life products and packaging in Europe. In collaboration with other manufacturers, Sony discloses relevant information on components that require special treatment for product categories placed on the market in Europe for recyclers to facilitate safe recycling.

* End-of-life products in fiscal year 2023 does not include certain countries, such as France and Switzerland.

Recycling Activities in North America

Sony Electronics Inc. in the United States and Sony of Canada ULC continue to contribute to enhance recycling of electronics in North America. All recycling and support activities are committed to a responsible recycling process that supports state and provincial legislation and voluntary initiatives.

United States: Promoting of the Sony Take Back Recycling Program

Sony Electronics Inc. (SEL) continues to promote the Sony Take Back Recycling Program, which was put in place to increase recycling rates for used electronics in compliance with individual state laws and regulations. Through this program, SEL works with recycling companies across the United States to allow consumers to drop off Sony products at designated collection centers free of charge. In fiscal year 2023, these collection centers, mail back and through compliance channels collected approximately 8,027 metric tons (17.70 million pounds) of used consumer electronics. This equates to recycling 0.33 kg for every 1 kg of electronics sold.
SEL also manages a website that provides consumers with information about the program and the importance of recycling. The website provides consumers with useful recycling information that helps make recycling easy for used electronics through a variety of features, such as a search function to find nearby recycling centers.
As a member of the Call2Recycle Program,* SEL recycles rechargeable batteries free of charge in line with the program's recycling scheme.

* Call2Recycle is a nonprofit public service organization that conducts and manages rechargeable battery recycling programs and provides related consulting services in the United States and Canada.

Sony Take Back Recycling Program
Call2Recycle

Recycling Responsibly
In addition to conducting its own independent audits of recyclers and the downstream processing firms to which they subcontract, SEL has set forth a recycling policy whereby all recyclers it does business with must obtain Responsible Recycling (R2) or e-Stewards certification. R2 and e-Stewards are certification systems for recyclers that evaluate such factors as environmental management performance and workplace environment. In the effort to support responsible recycling of electronics, SEL has joined e-Stewards enterprise.

Canada: Working with Provincial Governments to Support Electronics Recycling Programs

Since the first provincial program was launched in 2004, Sony of Canada ULC (Sony Canada) has worked with provincial governments to set up recycling programs for end-of-life products. From 2008 through 2015, Sony Canada operated an expanded recycling program for small electronics equipment across Canada by enabling consumers to take such products to its retail partners across the country. More recently, compliance obligations with provincial programs matured to deliver appropriate collection opportunities for consumers through the Electronic Products Recycling Association (EPRA). Consumers and businesses can drop off their end-of-life electronics free of charge for responsible recycling at an EPRA-authorized drop-off location in 10 provinces and two territories. In addition, Sony Canada is a founding and current board member of Electronics Product Stewardship Canada (EPSC). EPSC is comprised of leading electronics manufacturers who work to design, promote and implement sustainable solutions for end-of-life electronics.

Recycling your Sony products
Electronic Products Recycling Association

Recycling Activities in Pan Asia

The operations of Sony in the Pan Asia region stretch from the Middle East to New Zealand. Throughout the region, Sony offices and manufacturing locations continually work to ensure that the recycling needs of the local community are met. In terms of national electronic waste recycling legislation, Sony actively works with local partners to ensure that local requirements are met.

India: Working with a Local Partner to Collect and Recycle E-Waste

In order to ensure compliance with E-Waste Management Rules, 2022 and amendments, Sony India has partnered with a leading third party company for channelization of e-waste which includes collection and recycling of e-waste. In fiscal year 2023, Sony India collected and recycled approximately 9,950 metric tons of e-waste internally and through the third party partner. Additionally, Sony India focused on raising awareness regarding environmentally safe disposal of E-waste and encouraged end-consumers to submit their end of life Sony Products to the broad network of e-waste collection points established by Sony India for their safe disposal. In fiscal year 2023, Sony India launched the awareness campaigns through newspapers, social media and organized seminars through its third party recyclers. Pan India circulation of newspapers reached more than 4.2 million readers, awareness video on social media received more than 6.6 million views in total and 23 seminars were conducted in schools and institutions. Sony India continues to review results and formulate future plans accordingly.

ELECTRONIC WASTE ("E-WASTE") MANAGEMENT

Australia: Participating in the "National Television and Computer Recycling Scheme" (NTCRS)

Since 2012, Sony Australia has been taking part in a recycling scheme with partners accredited by the Australian federal government under new home appliance recycling legislation, specifically the "National Television and Computer Recycling Scheme." Under the recycling system, Sony Australia has been making a concerted recycling effort over this period of time. From July 2023 through June 2024, approximately 3,292 metric tons of applicable e-waste had been recycled as Sony's share of the total amount recycled.

Korea: "ART" (Action Really Together) Campaign

In Korea, the recycling law has been in place since 2003 and covers electronics, batteries as well as packaging. Sony Korea has been working with related associations to collect the specific volume assigned by the government annually. In addition, to educate and encourage employees and local community to play their parts in e-waste recycling, Sony Korea has initiated the "Zero Waste Campaign" in Korea since 2012. This initiative has since been extended to Sony Group companies, neighbors and friends of Sony employees as well as other organizations. Hence, the campaign was renamed "Action Really Together (ART)" in 2016 to emphasize the importance of taking actions together for a good cause, regardless of brands. Besides collecting end-of-life products for recycling, Sony Korea also collects unwanted used products in good working condition and donates them to a local NGO.

"ART" campaign logo

Recycling Activities in Latin America

Sony has offices in a number of Central and South American countries, including Argentina, Bolivia, Chile, Colombia, Ecuador, Mexico, Panama and Peru. These offices operate recycling programs designed to meet the needs of their particular areas. Here we introduce a joint project operated throughout Latin America as well as representative examples of Sony commitment to recycling initiatives.

Sony Joint Project: Green Service Program

Since 2010, Sony sales companies in Latin America-including Sony Inter-American, Sony Chile, Sony Argentina and Sony Bolivia gradually launched the Green Service Program. Under this initiative, using participating companies' service networks, products and components that are under warranty but discarded during repair are appropriately treated. Also the e-waste generated by Sony sales companies facilities in Latin America are appropriately treated under this program as well. This program marks a shift in focus from simple disposal to the proper management and repair of products, helping Sony fulfill its responsibility to reduce the environmental impact of its products after they are sold and respond to the expectations of customers. In fiscal year 2023, approximately 26 metric tons of e-waste was collected and processed appropriately. Going forward, the companies will continue to implement the Green Service Program.

Recycling Programs in Latin America

Sony encourages customers to recycle their products under each recycling program in countries with existing take back and recycling regulations.
In Mexico, Sony handles the individual WEEE take back and recycling scheme through 6 collection points, and complies with the recycling regulation based on producer responsibility. In Colombia, Ecuador and Peru, Sony belongs to a collective scheme promoting WEEE take back and recycling, and complies with the recycling regulation.
Also, in Colombia and Chile, Sony is participating in the collective take back program for containers and packaging. These collective programs seek to continue the path to the recycling of containers and packaging within the framework of the existing regulation.

Environmental Communication

Worldwide Environmental Communication

Through hosting special events and supplying special content, Sony is helping to raise the environmental awareness of society. Sony provides a wide variety of stakeholders with environmental information in an accurate, timely and continuous manner.

Taking Advantage of Sony Events to Raise Environmental Awareness

Sony China held Sony Expo 2023 to showcase the latest information on Sony Group businesses in China. At the event, a sustainability session was held to introduce Sony's environmental initiatives. We shared our environmental vision and supporting initiatives of group companies in the region to an audience of over 7,000. We also featured environmental technologies*1 such as Synecoculture™, a farming method that aims to create an augmented ecosystem, Triporous™, a porous carbon material made from rice husks, and SORPLAS™, a flame-retardant recycled plastic. We also held a panel discussion with Sony employee representatives who promote sustainability initiatives, noted experts and university students, an exhibition of Sony's environmental technologies, and an event where we distributed vegetables harvested at the Synecoculture trial farm in China.

Sony China also exhibited on sustainability themes at the China International Import Expo, held in November 2023 to promote trade. In addition to the aforementioned technologies, we also shared local environmental initiatives. Sony's environmental efforts were shared with over 3,000 attendees, among which were government officials and media representatives, and response was favorable.

Since 2015, Sony Electronics Inc. (SEL) in the United States has worked with partners to conduct the Sony Open in Hawaii, a PGA Tour event*2 with an environmental focus. In 2024, we continued our sustainability initiatives at the tournament to reduce the overall environmental footprint of the event through continued energy and resource efficiency practices. The event has been recognized by the State of Hawaii Green Business Program since 2016. SEL continues to work with the Hawaii Bicycling League to provide a bike valet service to enable attendees to choose environmentally conscious transportation. To mitigate the impact of the 2024 event, SEL supported the Hawaiian Legacy Reforestation Initiative, who plant native and endemic trees to restore wildlife corridors and native habitat to preserve Hawaii's native environment.

*1 For further details on these environmental technologies, please refer to "Technology for Sustainability" on the link below.
*2 PGA Tour is the US men's professional golf tour.

Sharing environmental initiatives at the Sony Expo sustainability session

→ Technology for Sustainability

Environmental Activities Leveraging Entertainment Business

Sony capitalizes on its influential entertainment business to promote environmental activities.

Raising Awareness Using Gaming Technology

Sony Interactive Entertainment (SIE) and PlayStation Studios are developing Climate Station™, an application which uses virtual reality technology to allow people to view, interact with, and understand complex climate data to raise awareness about climate change. Climate Station™ is an immersive experience which maps 120 years of historic climate data across thousands of locations, allowing users to see how the climate has changed where they live. Cutting edge game technology is used to visualize the impact of different future scenarios on our planet. SIE showcased Climate Station™ at the 28th United Nations Climate Change Conference (COP28) and the sixth United Nations Environment Assembly (UNEA-6) to NGOs, governmental and educational stakeholders.

Exhibiting Climate Station™ at COP28

Environmental Initiatives in Television Content

In 2023, Sony Pictures Networks India (SPNI) supported the sustainable content initiative with numerous activations in television content to engage and inspire their audiences. For example, in a television quiz show, for every incorrect answer provided by a contestant, SPNI pledged to plant 100 trees. If a contestant answered incorrectly, the host commended their effort and redirected focus towards the positive impact on the environment. Seven thousand trees were planted throughout one season. Additionally, a cooking game show featured a zero-waste cooking challenge and a family TV show featured episodes with themes of adopting healthier lifestyles, sustainable food systems, and saving water and energy.

Participating in Initiatives of the Music Industry

Sony Music Group (SMG) is actively involved in environmental initiatives in the music industry. On behalf of Sony Music Entertainment (UK), SMG has been involved in the Music Climate Pact since 2021 to share insights on combating climate change and promote decarbonization efforts across the music industry. In 2023, SMG, Universal Music Group and Warner Music Group founded the Music Industry Climate Collective, an alliance that aims to work to address the challenges and changes in the global climate and how they relate to the music industry. SMG has been working with the alliance members to develop comprehensive sectoral guidance for measuring scope 3 GHG emissions in the music industry. SMG also enhanced its companywide environmental framework to develop policies and programs to meet Sony's environmental targets as well as shared visions within the music industry.

The Sony Music Group joins the Music Climate Pact

Initiatives Through Characters

Sony Creative Products Inc. (SCP) handles domestic marketing of the beloved global IP "Peanuts" in Japan. Under the theme "SNOOPY Loves NATURE" for activities in Japan in fiscal year 2023, SCP held SNOOPY Loves NATURE "Team UP!" cleanup events that were open to the public and further utilized the IP to support other cleanup activities across the country.

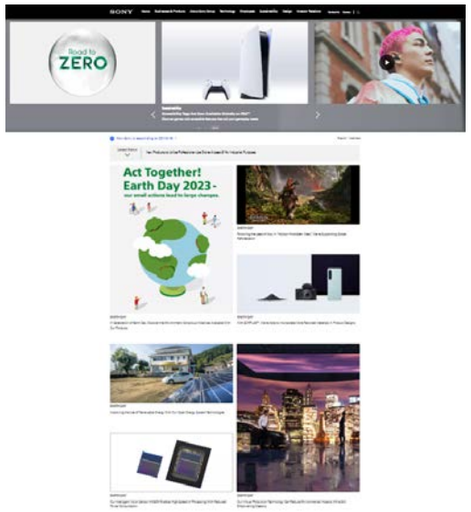
© 2024 Peanuts Worldwide LLC

Cleaning up with Snoopy

Events were held at five locations across Japan, including cleanup activities and workshops open to the public. Displaying Snoopy costumes encouraged people of all ages to both think about environmental action and enjoy cleanup. We also sold T-shirts and other merchandise featuring Peanuts characters to raise money for the cause, donating a portion of the proceeds to NPOs engaged in cleanup activities.

Environmental Communication Through the Corporate Websites

Sony regularly shares environmental information on the websites and social media of our group companies. To celebrate Earth Day on April 22, the perfect time to think about the global environment, we introduced a limited time Earth Day home screen for the website of our group headquarters, the Sony Group Corporation, along with a message from the CEO and information summarizing net zero and environmental measures taken by group companies. During that time, other group company websites and social media accounts also shared environmentally conscious products and initiatives.



The Earth Day home page of Sony Group Corporation's website

Raising the Environmental Awareness of Employees

Sony shares information on environmental issues with employees of the global Sony Group. All Group employees in Japan are required to take an environmental e-learning course, and the teaching materials from the course are being used to conduct environmental education at business sites outside of Japan. Sony is raising the environmental awareness of Group employees worldwide, using channels such as the corporate intranet to provide timely environmental information. Sony conducts events and educational activities for employees at its business sites around the world, to introduce environmental issues and Sony's environmental initiatives. For example, in 2023, Sony conducted online seminars on green washing and issues of environmentally conscious food for all employees in Japan.

Management of Risks Related to Chemical Substances

As a company that uses chemical substances, Sony discloses information on emissions of such substances and exchanges views on safety and environmental issues with residents in the vicinity of its sites, as well as with local authorities, with the aim of reinforcing mutual understanding.
For instance, Sony Semiconductor Manufacturing Corporation actively participates in local community events and organizes its own interactive events. The company also holds tours of its manufacturing plants, during which it explains to visitors how wastewater is processed by environmental-related equipment.

Stakeholder Engagement

Sony is active in a wide range of fields, and its stakeholders have diverse expectations. In order to promote a healthy, spiritually abundant, sustainable society, Sony is deeply committed to stakeholder engagement, a process whereby it seeks to earn greater trust from stakeholders and cooperate with them to achieve common aims.

→ Partnership and Participation in Multi-Stakeholder Frameworks