



Sustainability Report

2024

Japan Aerospace Exploration Agency
(JAXA)

本報告書は日本語版が正本であり、英文版は参考として作成されます。これら両言語版の間に矛盾抵触がある場合、日本語版が優先します。

This report was originally written in Japanese and translated into English. The Japanese text serves as the original, and the English text is provided for reference. If there is any conflict or inconsistency between these two texts, the Japanese text shall prevail.

Introduction

JAXA publishes its Sustainability Report in accordance with the “Law Concerning the Promotion of Environmental Consideration”.

In addition to information on JAXA’s commitment to environmental load and social responsibility, this report also provides information on our overall business activities.

We hope that this report will help many of our readers better understand JAXA.

We also hope that this report will spark interest in aerospace and JAXA, especially among those who are interested in the various issues in our environment and society in which we live.

*Official name: “Law Concerning the Promotion of Business Activities with Environmental Consideration by Specified Corporations, etc., by Facilitating Access to Environmental Information, and Other Measures”

In order to realize our vision, plans, and projects, the following are JAXA’s philosophy and management policies, as well as the code of conduct for JAXA employees.

Management Philosophy

To realize a safe and affluent society using space and the sky.

By utilizing leading technological developments, we will succeed and deliver our achievements along with broader wisdom to society.

[Details](#)

Action Declaration

Jubilation for human society

We will provide enjoyment and surprise to people by evolving our lives.

Aspiration for creation

We will always aim for higher goals and continue to aspire to create by facing up to and overcoming any difficulties.

Responsibility and pride

We will faithfully act with responsibility and pride to confidently meet the expectations of society.

Table of Contents

02 Top Management Commitment

03 Overview of Phase 4 Medium/Long-Term Plan Based on Medium/Long-Term Goals

04 Major Projects under the Phase 4 Medium/Long-Term Plan

06 Highlights of 2023

08 Management Reform Review Committee

10 Introduction of JAXA Projects

14 Involvement in the Environment

25 Social Involvement

35 Initiatives to Achieve SDGs

37 Space Strategy Fund Projects

39 Third-Party Opinions

41 Review Results / Information about organization

Reaching Space Frontiers



Five Slogans to Keep Us Challenging

Make the space and aeronautics field the ideal workplace

As individuals and members of society, each of us aims for a workplace that is filled with greetings and consideration for others and contributes to mutual success by respecting each other's individuality and sharing the same feelings.

Revitalize Japan through space and aeronautics

By being conscious of the connection between work and society, we will foster the sense to contribute to our country and people as well as the international community through space and aeronautics.

"Improve our ability to execute in space and aeronautics"

As professionals in space and aeronautics, we will acquire the ability to create new ideas and strive to improve our planning ability, research and development ability, project execution ability, and organizational management ability to realize these ideas.

"Be proud of being involved in space and aeronautics"

We will take on challenges for space and aeronautics and act sincerely with responsibility and pride to contribute to society. We also value small daily advances while maintaining a panoramic, long-term perspective.

"Increase the number of our companions in the space and aeronautic field"

We will spread the wisdom and results obtained through the activities of space and aeronautics throughout society and, in cooperation with other activities, contribute to the lives, economy, and safety of people, as well as to the resolution of international issues.

To the citizens of Japan

The Japan Aerospace Exploration Agency (JAXA) has investigated the causes of the failure to launch Epsilon Rocket No. 6 and the first H3 rocket test vehicle, as well as the case of non-compliance with the ethical guidelines for medical research, and has taken measures to prevent recurrence. Under these circumstances, JAXA was pointed out in the competent minister's evaluation in FY2022 that "a change in awareness and other improvements are needed." This prompted us to look back to see if there were any issues that could not be identified from past investigation of individual cases, or if there were broader organizational or management challenges. Then, in September 2023, we established the "Management Reform Review Committee" under the leadership of the JAXA President. Based on the discussions at the Committee, as well as organization-wide discussions at SNS and Town Hall Meetings within JAXA, we have prepared the "Management Reform Review Committee's Report: Maximizing the Value of People and Making the Organization Evolve Even Stronger." We are currently in the process of sequentially implementing the initiatives described in the report. In October 2023, unauthorized access to several of JAXA's business intranet servers was discovered, and it was confirmed that some of the information managed by JAXA had been leaked. We deeply apologize for the significant impact and distress caused to all those affected. JAXA takes this particular case very seriously as it could damage the trust of the parties involved, and we will strengthen our measures to prevent a recurrence.

Along with these measures, we have been dedicated to thoroughly identifying the technical causes behind the launch failure of the initial H3 rocket test vehicle and have taken prompt, comprehensive actions to prevent any recurrence. This commitment led to the successful launch of the second H3 rocket test vehicle in February 2024, marking a new beginning for H3 rocket flights. We will continue our efforts to expand Japan's independent launch capabilities and strengthen the international competitiveness of our launch services.

In January 2024, we achieved Japan's first successful soft landing on the Moon with the Smart Lander for Investigating Moon (SLIM), which deployed LEV-1, the ultra-small lunar excursion vehicle, and LEV-2 (SORA-Q), the shift type surface robot—both of which completed successful landings. SLIM has achieved the world's first pinpoint landing on the lunar surface. This success is expected to significantly enhance Japan's presence in future international lunar exploration programs and expand opportunities for new lunar exploration missions.

As part of the U.S.-led international lunar exploration program, the Artemis Program, Japan is playing a pioneering role in developing manned pressurized rovers that integrate residential and mobile functions. Providing these rovers has opened the possibility for the first lunar landing by a Japanese astronaut.

In the field of aviation technology, we conducted a demonstration flight of sonic boom reduction technology for a supersonic aircraft, which garnered a significant competitive grant in recognition of our concept to facilitate Japanese industry's entry into the supersonic aircraft market. We expanded these efforts to achieve tangible results and promote social implementation through the acquisition of such large-scale external funding.

In response to the Basic Plan on Space Policy, which emphasizes JAXA's role in strategically and flexibly providing funding to private companies and universities, JAXA has taken steps to function as a key hub connecting industry, academia, and government through the Space Strategy Fund as a new business field.

Meanwhile, regarding the sustainability (social and environmental) aspect, we are making steady efforts to improve the work environment, including taking environmental considerations such as rationalizing energy use and improving work-life balance. Based on the basic action policy on SDGs, the entire organization is working to promote SDGs.

Japan is one of the few countries in the world that can conduct autonomous and wide-ranging space activities. In fiscal year 2024, JAXA, as the core implementing organization that technically supports the development and utilization of Japan's aerospace industry, will continue to unite its executives and employees to create results toward the completion of the fourth fiscal year, and will strive to give back to society while considering the environment.

September 2024

President

Hiroshi Yamakawa

We, JAXA, effectively and efficiently engage in our work to maximize the fruits of R&D in Japan, while reforming our management system and mindset of executives and employees, at the same time emphasizing our public nature, transparency and autonomy as a national research and development agency. Based on the Basic Plan on Space Policy, etc., the competent minister instructs JAXA on the Medium/Long-Term Goals for the next seven years, which specifies the goals for business operations and business efficiency improvement. We prepare a Medium/Long-Term Plan and an Annual Plan based on the Medium/Long-Term Goals to steadily proceed with operations and achieve goals.

We prepared a Medium/Long-Term Plan for the seven years from April 1, 2018, to March 31, 2025. Based on the Basic Plan on Space Policy and R&D Plan in the aeronautics field, we will reliably implement projects and promote fundamental R&D. In addition, we will strengthen cooperation with industry, academia, and government, keeping an eye on the accelerating progress of advanced technologies and will focus on giving back the achievements to the public. Thus, we aim to create outcomes in line with the following five action policies outlined in the Medium/Long-Term Goals.

Priorities for Phase 4 Medium/Long-Term Goals

(1) Ensuring space security

- ▶ Technical support for government studies on functional assurance of the entire space system in cooperation with security organizations
- ▶ R&D to meet the needs of space utilization in the security field, such as space debris
- ▶ Advanced R&D to improve technologies to support Japan's positioning system, and continuous R&D for optical satellite communication technologies, etc.
- ▶ Continuous operation of core launch vehicles and development of H3 and Epsilon S Launch Vehicles to secure and improve independent space transportation capabilities
- ▶ Demonstration of world-leading technologies to remove space debris at low cost in cooperation with private companies, and contribution to early establishment of international rules

(2) Realization of national land resilience, solutions for global issues, and innovation

- ▶ R&D on improving the frequency, accuracy, and speed of satellite observation in cooperation with disaster prevention organizations, aiming at the widespread use of satellite data as decision-making information for disaster countermeasures
- ▶ Promoting utilization of satellite data for national land management and oceanographic observation, including application to maintenance and management of aging infrastructure
- ▶ Providing satellite data and promoting international cooperation to promote the use of satellite data as an indicator for decision-making and evaluation of actions on climate change
- ▶ Advanced R&D on earth observation satellites and upgrading of core technologies for satellites to provide satellite data continuously and stably and promote its utilization
- ▶ Efficient processing of satellite data and creating new businesses through multidisciplinary utilization of satellite data in collaboration with private companies that have strength in advanced technologies in different fields such as AI
- ▶ Business planning and technology development/demonstration through partnerships with private companies to create businesses utilizing space with new ideas by the private sector. Strengthening the human resource base through personnel interchange with external parties

(3) Creation of new wisdom and industry through space science and exploration

- ▶ Strengthening cooperation with research institutions, etc., in Japan and overseas. Formulating and implementing long-term, strategic scenarios with the aim of creating world-class research achievements, as well as promoting efficient and effective space exploration, etc., with programming
- ▶ Strategic development of technologies that can contribute to Japan's superiority in international space exploration and/or that have a significant ripple effect on other fields
- ▶ Promoting the creation of new wisdom and international contributions through the utilization of the space environment in low-Earth orbit activities including the International Space Station (ISS)
- ▶ Utilizing the ISS as a technical demonstration site for international space exploration and promoting open innovation and other systems for collaboration with private companies and universities, including those in non-aerospace industries
- ▶ Realizing a wide range of uses for the Japanese Experiment Module "Kibo," and launching self-sustaining businesses by private companies, etc. Promoting the participation of private companies in international space exploration

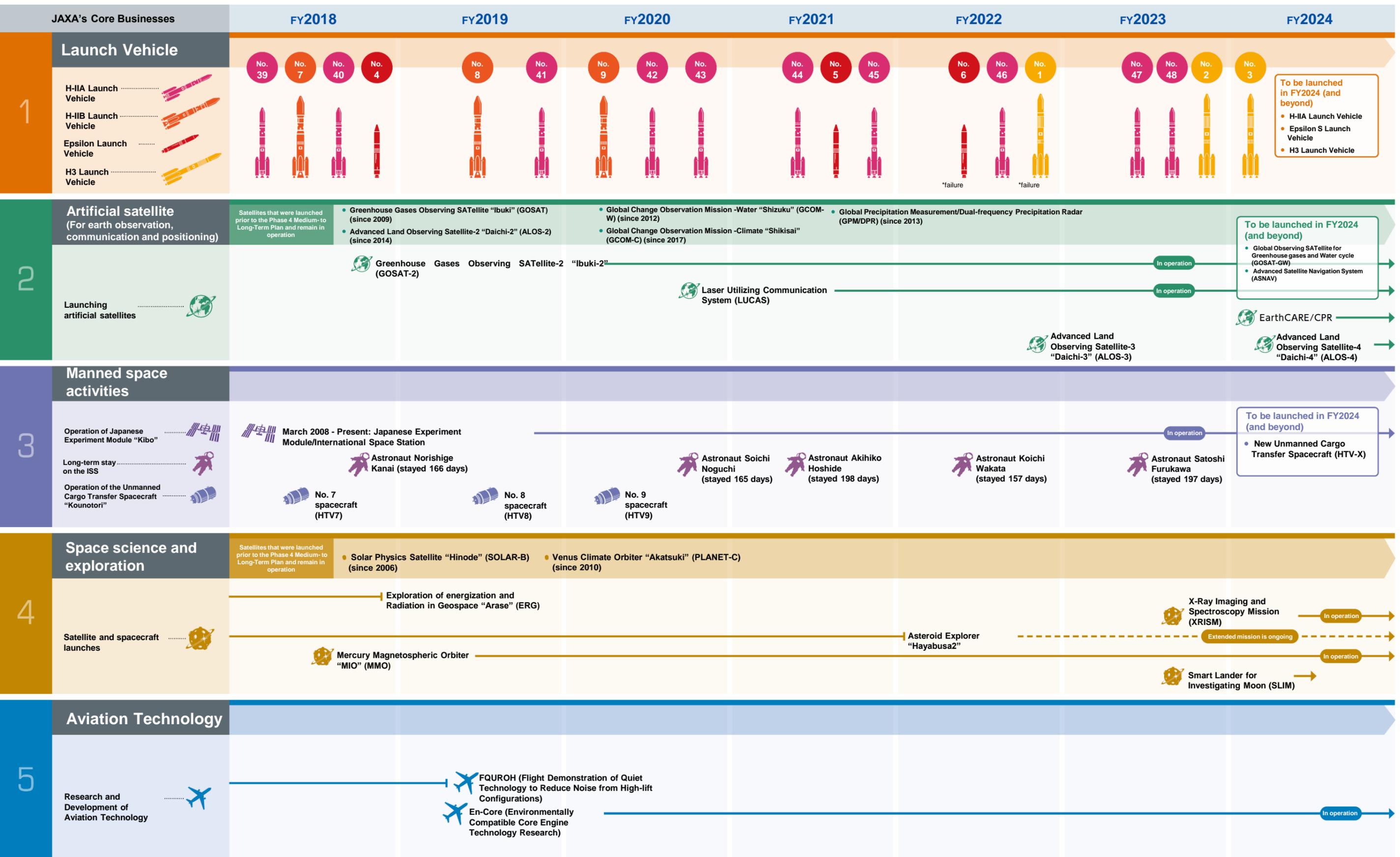
(4) Strengthening the overall infrastructure to support space activities

- ▶ R&D with private companies that commit to commercialization aiming to increase market share
- ▶ Innovative R&D for future business creation, such as flight demonstration using technologies for the reuse of space transportation systems
- ▶ R&D on advanced and innovative technologies related to future satellites, such as optical and digital technologies for low-cost, high-capacity, high-speed satellite communication networks, and high-precision large optical sensor technologies
- ▶ Personnel interchange with private companies to strengthen the human resources base of the aerospace industry, and incorporation of diverse human resources into the aerospace field to enhance the functions of JAXA
- ▶ Support for government's investigations on the ISS as well as low-Earth orbit activities and manned space activities in international space exploration after the ISS project
- ▶ Developing the open innovation system to promote entry of different industries and venture businesses and to expand opportunities for R&D and demonstration of technologies useful for business. Promoting activities related to intellectual properties
- ▶ Establishing a fund through a subsidy from the government based on Article 21, Paragraph 1 of the Act on the Japan Aerospace Exploration Agency, and strengthening strategic and flexible funding functions for private companies and universities, based on the space technology strategy formulated and rolled out under the Basic Plan on Space Policy

(5) Enhancing the aeronautics industry and strengthening its international competitiveness

- ▶ Putting priority on R&D to improve environmental compatibility, economic efficiency, and safety of aircraft in cooperation with the private sector, etc., such as technology development for international joint development of next-generation engines
- ▶ Advanced R&D on noise reduction for supersonic aircraft to contribute to improvement of the international competitiveness of Japan's aeronautics technologies and establishment of international standards

Major Projects under the Phase 4 Medium/Long-Term Plan (April 1, 2018 to March 31, 2025)



01 > Ensuring space security

We enhanced collaboration with national security-related organizations, conducted research on space debris and the use of satellites for ocean monitoring, advanced research and development in optical inter-satellite communication technology, provided technical support for government studies on ensuring the functionality of the entire space system, and undertook government-commissioned projects involving information-gathering satellites and space situational awareness satellites. In addition, we operated the Space Situational Awareness (SSA) system in partnership with the Ministry of Defense to support the sustainable and stable use of space for both Japanese national security and civilian applications.

Regarding positioning satellites, we have made steady progress in developing a high-precision positioning system as planned. In collaboration with the Geospatial Information Authority of Japan and utilizing the MADOCA¹ system, we have begun regularly providing precise ephemeris data for the international GNSS² project. Due to the system's high level of accuracy, the international GNSS project certified JAXA as Japan's first "Analysis Center" for the initiative. This achievement enables Japan to stably maintain and manage its positional reference system independently, without reliance on overseas organizations.

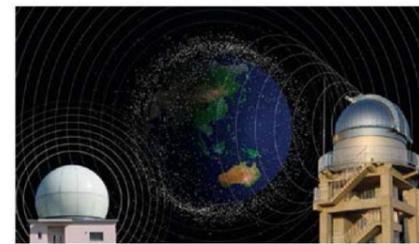


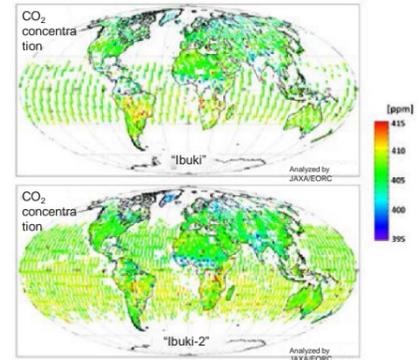
Illustration of Space Situation Awareness (SSA)

- *1 Multi-GNSS Advanced Demonstration tool for Orbit and Clock Analysis
- *2 Global Navigation Satellite System

02 > Realization of national land resilience, solutions for global issues, and innovation

Launched in 2018, "Ibuki-2 (GOSAT-2)" has been collecting high-precision observation data over five years of steady operation. Ibuki-2 and its predecessor, "Ibuki (GOSAT)," launched in 2009, have continued to observe the Earth on a global scale for over a decade. One significant achievement of these missions includes the international recognition of the effectiveness of observing greenhouse gases (carbon dioxide (CO₂) and methane (CH₄) from space. The observation data provide objective evidence of the rising concentrations of greenhouse gases in the Earth's atmosphere and fluctuations in their growth rates, contributing to the estimation of greenhouse gas emissions by various countries. Additionally, the Global Satellite Mapping of Precipitation (GSMaP) data has been utilized by meteorological and hydrological agencies in the Asia-Pacific region. For the first time, it has been used in the cockpit of commercial aircraft, contributing to safe operations and reducing the burden on pilots.

In disaster prevention and response, "Daichi-2 (ALOS-2)" continuously observed the Noto Peninsula after the earthquake that occurred on January 1, 2024. The satellite's observations contributed to assessing the conditions of ports and roads, supporting recovery efforts in the area. Additionally, "Daichi-2" and "Shikisai (GCOM-C)" provided observation data on the increased ground activity at Nishinoshima Island and Iwo-to Island, contributing to the Japan Coast Guard's decision-making for conducting aerial observations of volcanic activity in these maritime areas.



Global carbon dioxide concentration observed by Ibuki and Ibuki-2 (September 2019)

03 > Creation of new wisdom and industry through space science and exploration

Our Smart Lander for Investigating Moon (SLIM) successfully achieved a pinpoint landing on the Moon, demonstrating precision control that far surpassed our target of less than 100 meters accuracy, marking a world first. Additionally, our X-Ray Imaging and Spectroscopy Mission (XRISM) Satellite has released its first light (initial observation image), demonstrating the world's highest X-ray spectroscopy capabilities. Furthermore, the Asteroid Explorer "Hayabusa2" has brought multiple world-class results, including a paper published in "Science" that demonstrates the presence of polycyclic aromatic hydrocarbons (PAHs) formed in interstellar molecular clouds within the Ryugu parent body, based on the samples returned from asteroid Ryugu.

In lunar exploration, Japan's manned pressurized rover, developed for the United States-led "Artemis Program," has been recognized as a key component of the Moon to Mars Architecture. In collaboration with NASA and other partners, Japan is enhancing its international presence and promoting global cooperation in space exploration.

JAXA has begun expanding the Noshiro Rocket Testing Center. This expansion aims to actively support industrial development and societal benefits by providing a field for establishing safety standards in hydrogen management technology, thus advancing efforts toward realizing a "hydrogen society." Another initiative includes collaborative research and development of diamond semiconductor devices for space applications, conducted in partnership with Saga University and the National Institute of Technology, Kure College. This project has been selected for the Cabinet Office's Stardust Program.

Japanese Experiment Module "Kibo" on the ISS has yielded numerous achievements, including contributions to pharmaceutical research and development. Satoshi Furukawa became the first Japanese astronaut to board the Crew Dragon for four consecutive years, where he conducted experiments aimed at developing elemental technologies for human organ creation, contributing to regenerative medicine. He also actively engaged in outreach and educational activities to enhance public understanding.



A photograph of the SLIM landing on the Moon surface, taken and transmitted by the transformable lunar surface robot (LEV-2) "SORA-Q"



Astronaut Satoshi Furukawa and other SpaceX Crew-7 crew members checking that their spacesuits fit their bodies
 ©JAXA/NASA

04 > Strengthening the overall infrastructure to support Japan's space activities, including the foundations of industrial, scientific, and technological infrastructure

In the field of transportation, we collaboratively investigated the causes of the failures in launching Epsilon Rocket No. 6 and the first H3 rocket test vehicle, implemented countermeasures, and enhanced preventive maintenance measures at the launch sites. As a result, we successfully launched all missions of No. 47 and No. 48 H-IIA launch vehicles and the second H3 rocket test vehicle. We will persist in steadily advancing the development of the Epsilon S launch vehicle to ensure its high reliability.

In the JAXA Space Innovation through Partnership and Co-creation (J-SPARC), a co-creation type R&D program, we have initiated two new related private sector projects. Through J-SPARC, we attracted self-investment from partners, drew in new investments and collaborations from external sources, encouraged the entry of large corporations from sectors beyond space, and motivated some private companies to actively expand their operations overseas.

In February 2024, the flight demonstration of the non-explosive low-impact separation mechanism for small satellites, known as Simple Payload Attach Fitting (Simple PAF), was successfully conducted using the second H3 rocket test vehicle. Furthermore, we achieved social implementation through the commercialization of Simple PAF by private companies and its sale to commercial rocket operators.

Additionally, we have domestically developed a new FPGA (NB-FPGA) that incorporates a novel radiation-resistant technology conceived by JAXA and a domestic new semiconductor technology known as atomic switch (nano-bridge) technology. This new FPGA combines high radiation resistance with ultra-low power consumption characteristics. This FPGA has attracted interest from small satellite applications and automotive semiconductor manufacturers. Furthermore, a proposal that combines the next-generation MPU (SOI-SOC MPU), which is currently under development by JAXA, with the NB-FPGA has been adopted by the Cabinet Office's Stardust Program, paving the way for the creation of new technologies.

JAXA has successfully demonstrated an onboard processing technology for Earth observation data, known as FLIP, which significantly reduces the time required to obtain SAR observation images on the ground. This technology is realized through high-speed imaging and image compression of SAR observation data in orbit, thereby reducing the amount of data downlinked to the ground by approximately 1/1000. Plans for future deployment to private companies are underway.

At the Space Exploration Innovation Hub Center, JAXA and partner private companies collaboratively developed the world's smallest and lightest lunar exploration robot, LEV-2 (SORA-Q), which, together with LEV-1, became Japan's first lunar exploration robots. LEV-1 and LEV-2 were deployed to the lunar surface just before the landing of the Smart Lander for Investigating Moon (SLIM). After landing, LEV-2 successfully powered on autonomously and captured images of SLIM using its onboard cameras.

As part of the Innovative Satellite Technology Demonstration Research and Development Program, we have completed the detailed design of the Rapid Innovative payload demonstration SatellitE-4 (RAISE-4). RAISE-4 includes a re-challenge demonstration theme for the small demonstration satellite RAISE-3, which was lost due to the failure of the No. 6 Epsilon launch vehicle.



Launch of the second H3 rocket test vehicle

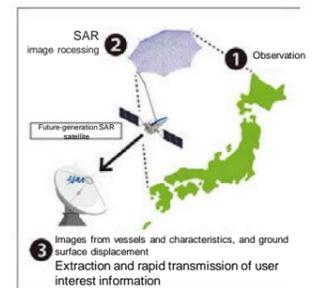
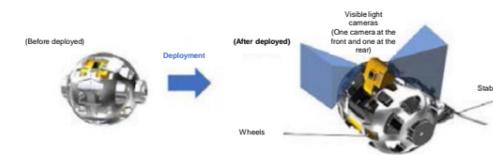


Illustration of use of Synthetic Aperture Radar (SAR) data



Overview of the transformable lunar surface robot LEV-2
 ©JAXA/TOMY Company/Sony Group/Doshisha University

05 > Enhancing the aeronautics industry and strengthening its international competitiveness

In the field of aviation, we are working to strengthen industrial competitiveness, address economic and social challenges, and create a people and environment-friendly sustainable aviation society, based on the "Research and Development Vision for the Aviation Science and Technology Sector." Our efforts focus on three main areas: (1) research and development necessary for advancing air transport and aircraft utilization within existing frameworks; (2) research and development to expand airspace use through next-generation mobility systems; and (3) development of foundational technologies that support the sustainable growth of the aviation industry. Among these achievements, the En-Core Project's high-temperature, high-efficiency turbine in category (1) has demonstrated exceptional durability and set a new world record for efficiency. We have also developed the world's first aircraft-mounted detection LIDAR, which, through demonstration testing, has established the capability to detect volcanic ash and ice crystals—an essential technology for mitigating weather-related impacts on aviation.

In foundational technology for the sustainable development of the aviation industry, we have pioneered the world's first method for measuring galvanic corrosion between metal and CFRP, contributing to the standardization of testing methods. In response to societal needs for our wind tunnel testing facility, we have developed a world-class high-precision balance. Additionally, we have implemented automated control technologies and anomaly detection systems utilizing digital twin technology to enhance the smart capabilities of the testing facility.

We have made proposals to Key and Advanced Technology R&D through Cross Community Collaboration Program, resulting in the acquisition of six large external funding sources.



Digitalization of the aircraft life cycle

Management Reform

Maximizing the Value of People and Making the Organization Evolve Even Stronger

JAXA has investigated the causes of the failure to launch the first H3 rocket test vehicle and Epsilon Rocket No. 6, as well as the case of non-compliance with the ethical guidelines for medical research, which have occurred by FY2022, and has taken measures to prevent recurrence.

On September 28, 2023, JAXA established the "Management Reform Review Committee," with the aim of sincerely reflecting on these recurring problems and evolving into a stronger organization, driving organization-wide reform under the leadership of the President, and clearly identifying challenges within JAXA's management and internal controls, and considering improvement measures that include a shift in organizational mindset.

With three mission statements—"We will sincerely engage in self-reflection based on critical feedback from the external evaluation," "We will actively explore constructive discussions in order to evolve into a stronger organization," and "We will make this activity a catalyst for changing our mindset by fostering open discussions to the greatest extent possible"—discussions were held for approximately six months within the committee and subcommittees, as well as through JAXA's internal SNS and town hall meetings for Agency-wide communication. These discussions led to our recognition that the common factor in the challenges related to

'management/governance,' 'human resources,' 'organization,' 'technology,' and 'industrial infrastructure for aerospace' is that 'top management has not strengthened human resources in line with the expansion of roles and projects.'

Through discussions within the Management Reform Review Committee, JAXA compiled an action plan for future measures, proposals from the front line, and countermeasures to challenges, which were reported at the 86th Space Development and Utilization Subcommittee meeting held on April 23, 2024.

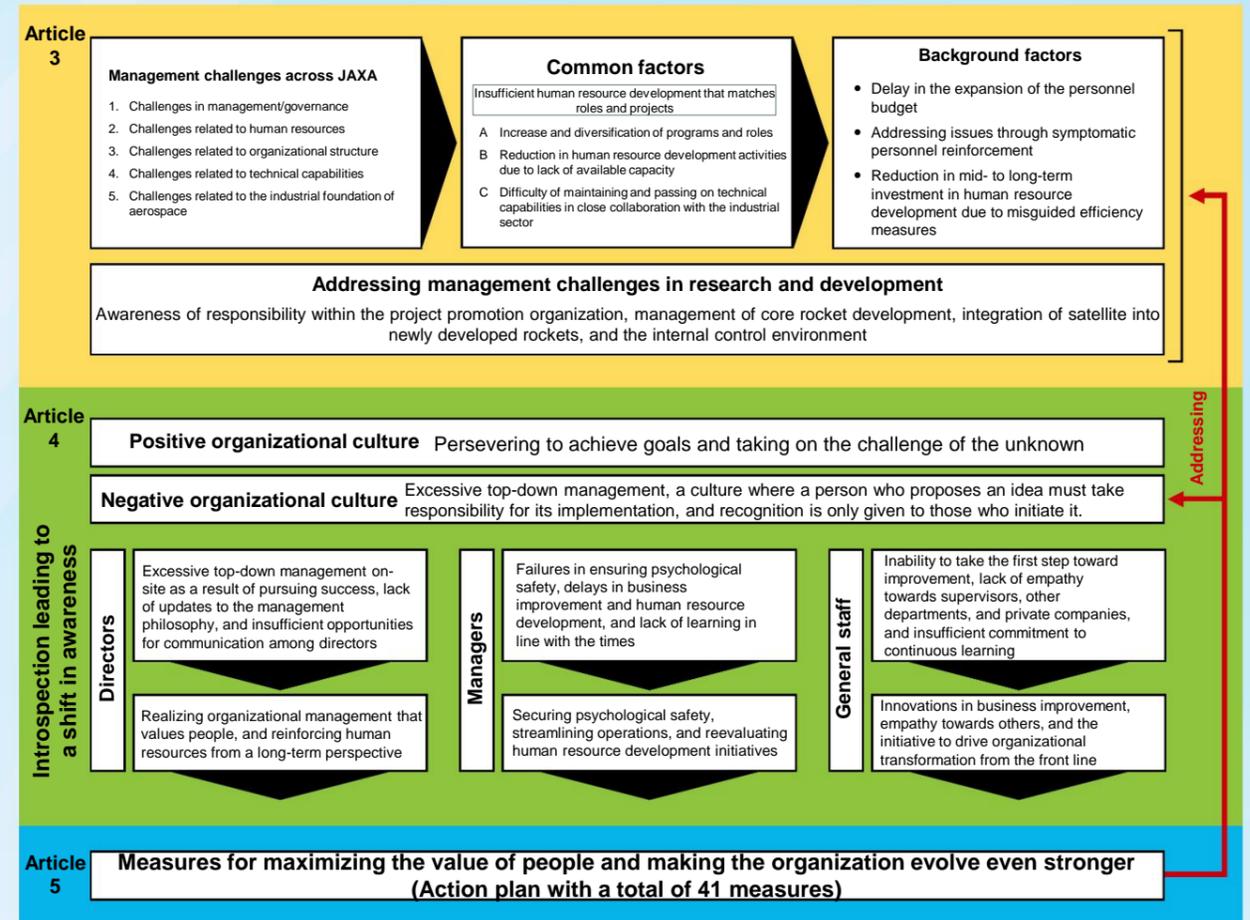
Looking toward a future in which Japan's space development and the space industry continue to evolve, JAXA is committed to steadily fulfilling its increasingly diverse roles, striving for the sustainable development of both people and organizations, and continuously evolving to realize organizational management suited to the new era. We hope that the citizens of Japan will continue to watch over JAXA's progress in the future.

POINT

Key points of discussions in the Management Reform Review Committee

- The management challenges have been categorized into the following groups: "management/governance," "human resources," "organization," "technology," and "industrial infrastructure for aerospace." It was recognized that the common underlying factor in these challenges is that top management has not strengthened human resources in line with the expansion of roles and projects.
- Forty-one action plans have been created, including the establishment of the Human Resource and Organizational Development Steering Committee (chaired by the Senior Vice President), which quickly addresses organization-wide challenges by incorporating the concept of human capital management and aligning business strategy with talent strategy.
- In response to the competent minister's evaluation, which identified research and development management challenges, we analyzed challenges around "Awareness of responsibility within the project promotion organization," "management of core rocket development," "integration of satellites into newly developed rockets" and "internal control environment," and reflected these in the action plans.
- Through dialogue and analysis of organizational culture and mindset, directors, managers, and frontline employees will each engage in self-reflection and work to transform their mindsets.

Overview of Discussions in the Management Reform Review Committee



Discussions at the town hall meeting



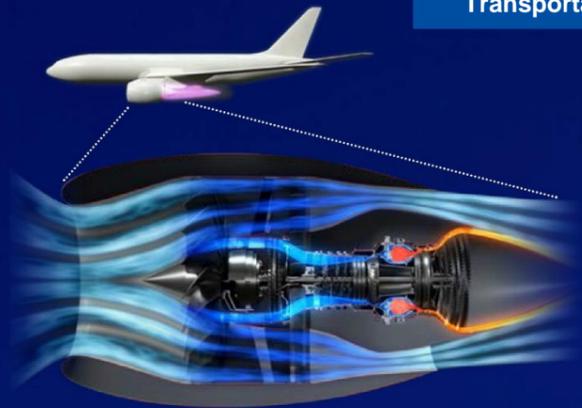
Tsukuba Space Center



Chofu Aerospace Center

JAXA PROJECT

Transportation and Aviation



En-core

This is a project aimed at acquiring the core engine technology for environmentally conscious aircrafts. We are working with domestic manufacturers to strengthen our international competitiveness in the aircraft engine industry.

[Details](#)

We will develop engines with low emissions of nitrogen oxides and carbon dioxide by addressing technical issues in combustors and turbines.

Epsilon S Launch Vehicle

It is a solid fuel rocket aimed at realizing an era where everyone can use space. We aim to strengthen our international competitiveness and to enter the launch market in earnest.

[Details](#)



H3 Launch Vehicle

A next-generation, large-scale core launch vehicle that integrates Japan's cutting-edge technology. As of September 2024, three vehicles have been launched. We continue development with the aim of creating a world-leading, user-friendly launch vehicle.

[Details](#)



CALLISTO

CALLISTO is a flight experiment aimed at reusing the first stage of rockets, which is one of the measures to effectively reduce transportation costs to space. In cooperation with the French and German Space Agencies, we will develop small reusable experimental aircraft and conduct flight experiments.

[Details](#)



JAXA PROJECT

Manned space exploration/ Lunar exploration



HTV-X

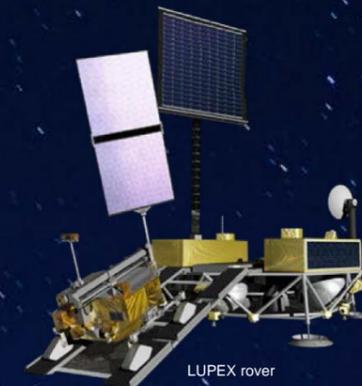
This is a next-generation unmanned cargo transfer spacecraft that inherits "Kounotori," which resupplied the International Space Station (ISS). In addition to supplying the ISS, it is also used for on-orbit technology demonstrations and experiments.

[Details](#)

Technical verification of automated docking

This is an automated docking technology necessary for international space exploration missions and free space activities. To obtain this, we will conduct on-orbit demonstrations utilizing HTV-X.

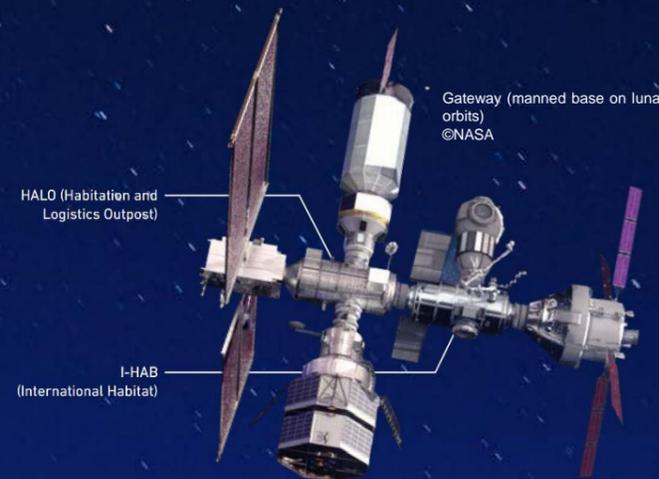
[Details](#)



LUPEX

This is an exploration mission to confirm the abundance and availability of water as a resource in the lunar polar region. This will be implemented through international cooperation with India, etc.

[Details](#)



HALO (Habitation and Logistics Outpost)

I-HAB (International Habitat)

Gateway (manned base on lunar orbits)
©NASA

Gateway's habitation module

This is a transit station for the lunar surface and Mars that is being studied by the space agencies of respective countries participating in the International Space Station. JAXA envisions residential functions in the Mini Habitation Modules HALO and International Habitation Modules I-HAB, as well as contributions to supplying.

[Details](#)



International Space Station
©JAXA/NASA

JAXA PROJECT

Earth observation, communication and positioning

GOSAT-GW
A satellite that observes changes in the water cycle and greenhouse gases. We observe sea surface temperature, water vapor, soil moisture, ice and snow, and observe greenhouse gases such as CO₂, CH₄, and NO₂.
[Details](#)

ASNAV
Successor of First Michibiki
Source: qzss.go.jp
Aiming to improve the performance of Units 5, 6, and 7 of the "Quasi-Zenith Satellite System Michibiki," which is maintained and operated by the Cabinet Office, we will develop and demonstrate a high-precision positioning system with additional satellite-to-satellite and satellite-to-ground ranging functions. This greatly improves the accuracy of positioning signals delivered to users and contributes to the realization of a seven-satellite system.
[Details](#)

PMM
A project to measure global rainfall and snowfall using a precipitation radar satellite. A project to measure global rainfall and snowfall using a precipitation radar satellite. By leveraging Japan's advanced observational technology and collaborating with the countries including U.S., Canada, and France, this project contributes to addressing global climate challenges and water-related disaster prevention, including mitigating the societal impacts of such disasters.
[Details](#)

ETS-9
An engineering test satellite aimed at enhancing competitiveness in the communications satellite market. We will demonstrate the communication technology and the satellite bus technology to meet needs.
[Details](#)

JAXA PROJECT

Solar System and Astronomy

MMX
This is Martian Moons eXploration (MMX) that explores the origins of two Martian moons and the evolution process of the Martian sphere. We aim to observe both satellites and confirm the presence of water and organic matter by returning samples from Phobos.
[Details](#)

DESTINY+
This is a flyby probe for the active asteroid Phaethon, the parent celestial body of the Geminids. It aims to unravel the mystery of Phaethon and acquire high-speed flyby exploration technologies.
[Details](#)

SOLAR-C
A satellite that conducts precise spectroscopic observations of ultraviolet rays from the Sun using the most sensitive telescope ever developed. It aims to uncover the mechanisms behind high-temperature plasma generation in the Sun and its effects on Earth and other planets. In this mission, Japan is leading the development, with the cooperation of the United States and European countries.
[Details](#)



Top Management
Commitment

Summary of Phase 4
Medium/Long-Term
Plan

Highlights of 2023

Management Reform
Review Committee

JAXA
Introduction of JAXA
Projects

**Involvement in the
Environment**

Social Involvement

Initiatives to Achieve
SDGs

Space Strategy Fund
Projects

Third-Party Opinions

Review Results /
Information about
organization

Involvement in the Environment

15	Initiatives to Preserve the Global Environment
15	Disaster Situation Assessment from Space
16	Three-dimensional Observation of Forests from Space for High-precision Topographic Data
17	Streamlined Forest Management Administration with Earth Observation Satellites
17	Pioneering the Megawatt Power Era with Jet Passenger Aircraft to Reduce CO ₂ Emissions
18	Initiatives to Reduce Environmental Load
18	Promotion of Green Management
19	Report on Environmentally Friendly Operation
20	Environmental Performance Data
22	Trends in the Primary Material Balance
23	Initiatives to Create a Recycling-Oriented Society
24	Main environment-friendly activities at business sites

Global Environmental Preservation



Disaster Situation Assessment from Space

Details

JAXA's response to the 2024 Noto Peninsula Earthquake

*Map and the image are from the Geospatial Information Authority of Japan (GSI) Tile Pale Map © JAXA

On January 1, 2024, at 16:10 Japan Standard Time, an earthquake with a magnitude of 7.6 (according to the Japan Meteorological Agency, JMA) struck the Noto Peninsula. Our thoughts are with the people affected by the disaster, and we sincerely hope for their safety and the earliest possible recovery. JAXA responded to requests from domestic disaster management agencies by conducting emergency observations using the Advanced Land Observing Satellite "Daichi-2" (ALOS-2) and providing the data to the relevant organizations.

Example of crust/ground deformation analysis results using "Daichi-2"

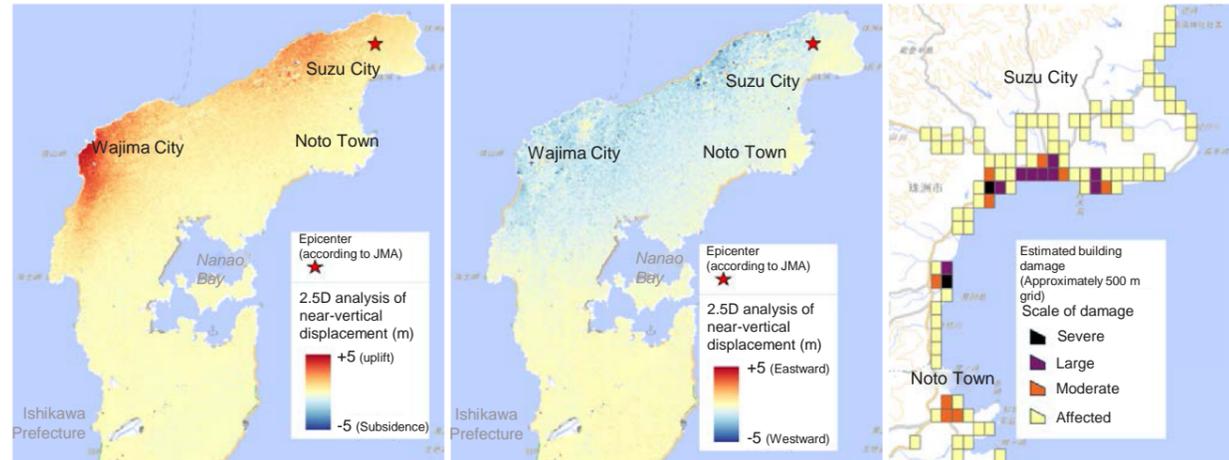


Figure 1: Vertical displacement

Figure 2: East-West directional displacement

Figure 3: Damage to buildings

By analyzing observational data from "Daichi-2" before and after the earthquake, crustal and ground displacement can be measured. In the analysis results shown in Figure 1, "uplift" is indicated in red and "subsidence" in blue. Areas with darker colors represent greater displacement. In particular, the northwestern part of the Noto Peninsula shows significant displacement, with a maximum uplift of approximately 4 meters detected. Figure 2 shows another analysis result, where red areas indicate "eastward" displacement and blue areas indicate "westward" displacement, revealing that the overall trend of displacement is toward the west.

*Although the analysis results in Figures 1 and 2 represent vertical and east-west directional displacements (quasi-vertical/quasi-east-west), respectively, they differ slightly from the true vertical/east-west directions due to the characteristics of the observation directions.

Figure 3 shows estimated building damage, extracted through automated analysis of "Daichi-2" satellite data before and after the earthquake. As the color changes from yellow to orange to purple to black, the estimated number of damaged buildings increases. JAXA is developing technologies with the aim of providing such building damage data within two and a half hours after observation.

The image on the right is an "RGB composite image" created by assigning colors to two satellite images taken before and after the earthquake and overlaying them to extract areas of change. The red and blue areas represent locations where changes are estimated to have occurred. The coastal areas are predominantly marked in blue. In the coastal areas affected by the earthquake-induced uplift, extensive regions have become land, indicating a major change in the coastline.



Coastal areas in Wajima City and Minazuki Bay

Expectations for "Daichi-4" (ALOS-4)

Details

Advanced Land Observing Satellite-4 (ALOS-4) "Daichi-4" is a world-class Earth observation satellite that achieves the highest level of resolution and coverage by integrating new technologies with the capabilities of "Daichi-2." With an increased observation width of 200 km (up from 50 km on "Daichi-2") and a resolution of 3 m, "Daichi-4" offers significantly broader observation coverage. "Daichi-4" is expected to cover a larger area with fewer observation passes, even during disaster events.

Moreover, using optical data relay satellites allows us to communicate with "Daichi-4" over extended periods, enabling timely responses to emergency observation requests during disasters and facilitating the transmission of more data to the ground.

By regularly observing the entire Earth, "Daichi-4" is expected to contribute not only to disaster monitoring but also to various fields, including crustal movement, global environmental changes, and ocean studies.

Three-dimensional Observation of Forests from Space for High-precision Topographic Data — Demonstration of LiDAR on the ISS (MOLI)



MOLI (Multi-sensing Observation Lidar and Imager demonstration), is Japan's first laser-based forest observation mission. It involves equipping the International Space Station (ISS) with a LiDAR device* to conduct three-dimensional observations of forests across the entire globe. The development is progressing with the aim of contributing to climate change mitigation, biodiversity research, and improving the accuracy of digital elevation data.

* LiDAR (Light Detection And Ranging) is a surveying method that measures the distance to a target by emitting laser light (ultraviolet, visible, or near-infrared) and determining the time it takes for the light to return from the target.

Contribution to climate change mitigation

There is an ongoing global climate mitigation initiative called "REDD+," which requires the monitoring of carbon accumulation in forests.

LiDAR is capable of observing the three-dimensional structure of forests, specifically the reflectance intensity from each canopy layer. This allows not only the measurement of forest height but also the assessment of forest degradation based on carbon accumulation. Therefore, the results of the MOLI project are expected to serve as a means of verifying the average carbon storage per unit area, which is required for the implementation of REDD+.

* A framework that helps developing countries reduce greenhouse gas emissions from deforestation and forest degradation, conserve forests, manage them sustainably, and support carbon accumulation in forests.

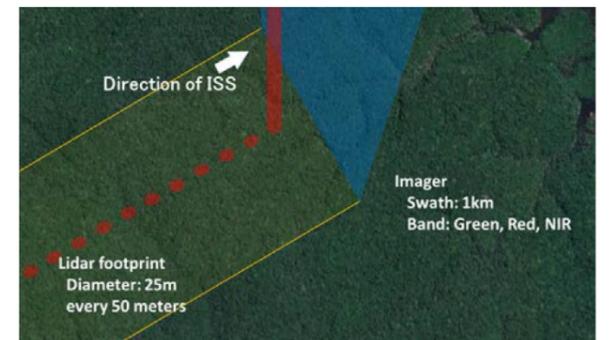


Demonstration of LiDAR on the ISS (Illustration)

Research on biodiversity

Generally speaking, forests are considered the ecosystems with the highest biodiversity in a given area. To quantitatively and efficiently assess biodiversity over large areas, research is progressing on the observation of alternative biodiversity parameters (i.e. canopy height, forest structure, and plant biomass) at three levels: ecosystem, species, and genetic, using remote sensing technology from space.

If the quantitative indicators of biodiversity derived from LiDAR waveforms and multi-band image data obtained from the MOLI project are proven to be usable over large areas, equipping low Earth orbit satellites with LiDAR for observation may provide valuable information for identifying global hotspots, including forests in urgent need of protection, in the future.



Demonstration of LiDAR on the ISS (Illustration)

Contribution to DEM*

By observing forest areas with a waveform recording LiDAR, MOLI is capable of acquiring not only tree data but also ground elevation information. This contributes to obtaining Digital Elevation Model (DEM) data, which cannot be acquired through the surface-level data from typical observation satellites' photogrammetry.

* Digital Elevation Model (DEM): A general term for the digital representation of the Earth's surface that depicts terrain elevation in three dimensions.

Global Environmental Preservation

Streamlined Forest Management Administration with Earth Observation Satellites

JAXA, Ibaraki Prefecture, and the Forestry and Forest Products Research Institute have published a handbook for “Forest logging detection and its administrative use”

In forest management administration, local government staff are required to conduct on-site logging inspections, which can be burdensome. In recent years, several prefectures have been adopting an administrative system referred to as the ‘Forest Cloud.’ By integrating satellite-detected logging site data into the Forest Cloud, the system enables more efficient cross-referencing with administrative information, such as logging applications, thus alleviating the burden of on-site inspections. The Forest Cloud is also expected to facilitate the early identification of unreported logging areas.

In May 2018, JAXA and the Forestry and Forest Products Research Institute (FFPRI) signed a basic agreement. In January 2021, a collaborative cooperation agreement was established among the three parties, including Ibaraki Prefecture. This partnership has focused on the development and accuracy verification of logging detection technology using the “Daichi-2” satellite, as well as practical demonstrations to facilitate administrative applications. This initiative, undertaken through the partnership, demonstrated that logging site data detected from the ‘Daichi-2’ satellite can be effectively utilized in local forest administration. We have compiled these findings into a document titled “Recommended Procedures for Forest Logging Detection Using ALOS-2/PALSAR-2 Data and Guidelines for Administrative Applications.”



Example of detected logging area data on the Forest Cloud. The detected logging areas (indicated by red) added to the Forest Cloud are overlaid with aerial photographs and administrative data. Local government staff can easily verify the status of logging and the existence of reports by comparing these data.

Details



Pioneering the Megawatt Power Era with Jet Passenger Aircraft to Reduce CO₂ Emissions

Demonstration of Massive Electric Generation for Aircraft and Wake Adaptive Thruster Technologies (MEGAWATT)

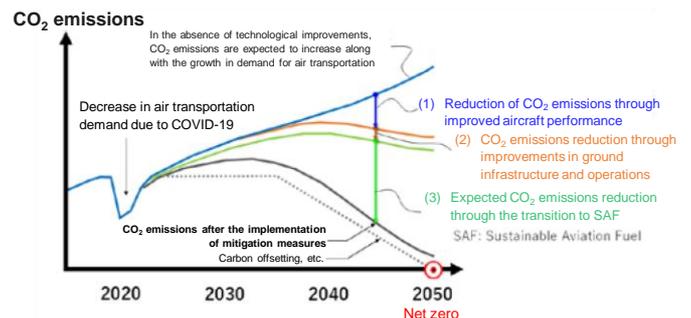
As the demand for CO₂ emission reductions in the aviation sector rises globally, the transition to new energy sources, such as Sustainable Aviation Fuel (SAF) and hydrogen, is gaining attention. In this context, electrification technology emerges as a strong candidate for next-generation solutions.

Aiming to become a pioneer in the era of megawatt-class electric jet passenger aircraft, JAXA has been collaborating with domestic companies to integrate key technologies and advance research and development in Massive Electric Generation for Aircraft and Wake Adaptive Thruster Technologies (MEGAWATT) since FY2023.

The MEGAWATT Project aims to demonstrate the technology for the propulsion system of an electric hybrid aircraft as a mature, high-power integrated system at an early stage, enabling Japanese companies to pioneer their electrification product businesses on a global scale by leveraging their respective strengths. In addition, the results of the technological development will be used for technology transfer to domestic companies and international standardization, and are expected to contribute to the electrification of next-generation passenger aircraft.



Illustration of CO₂ reduction targets and scenarios* for the aviation industry



*Document re-created by JAXA based on the report from ATAG (Air Transport Action Group)
Source: <https://aviationbenefits.org/environmental-efficiency/climate-action/waypoint-2050/>

Details



Promotion of Green Management

We contribute to global environmental issues and promote steady and daily environmentally friendly operations.

JAXA Basic Environmental Policy

JAXA will conduct activities to maintain the environment on Earth and in space to enable sustainable development of society.

To achieve this, we will:

- ▶ Work to solve global environmental issues and reduce environmental load through research, development, and utilization.
- ▶ Promote environmentally friendly operations and make continuous improvements.
- ▶ Disclose information on our efforts to solve environmental issues and value communication with all stakeholders.

Chairman of Green Management Committee (Senior Vice President)

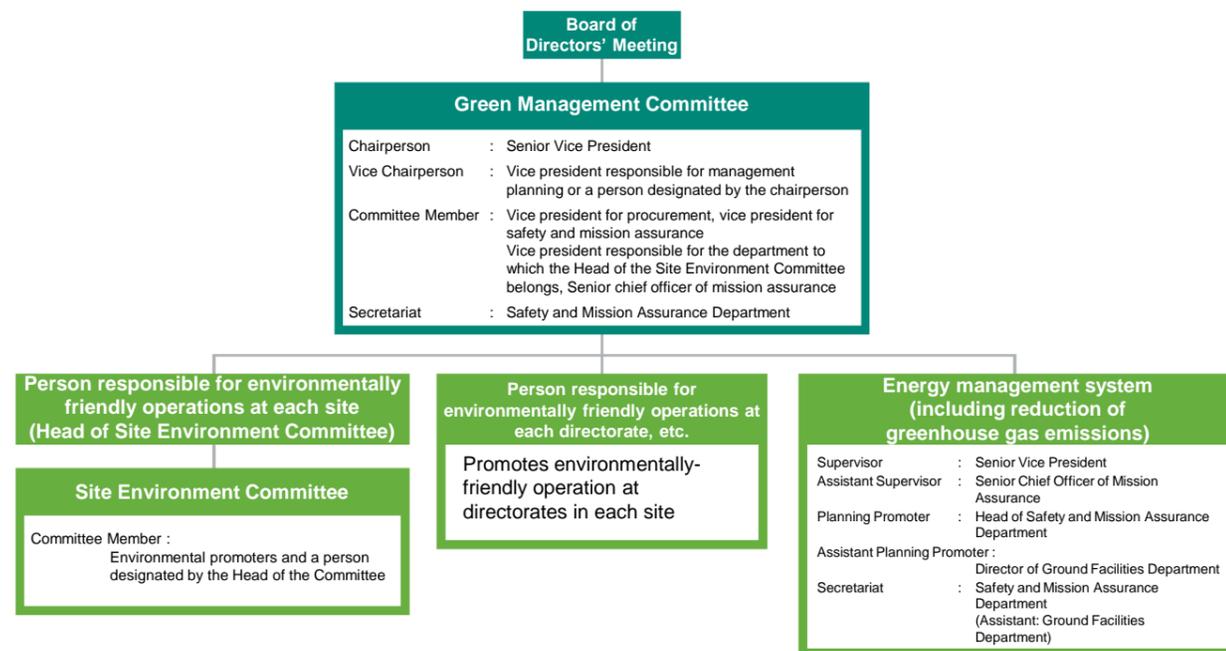
Yasuo Ishii



At JAXA, we are promoting research and development in areas such as Earth observation satellites and environmentally friendly aircraft. By applying the results of this research to various societal activities, we will contribute to solving environmental and social challenges.

We will take even greater consideration of the environment and steadily promote energy-saving activities and reduction of environmental impact, while continuing to eliminate environmental accidents, based on our basic policy on SDGs.

Green Management System



Report on Environmentally Friendly Operation

Environmentally Friendly Operation

Environmental Policy at Each Site

JAXA performs environmentally friendly operations to contribute to global environment preservation and sustainable development. We established the Green Management Committee chaired by the Senior Vice President to set our goals and implementation plans for the environment such as rationalization of energy use and proper waste disposal. Based on them, plans for each site are prepared and implemented.

The results of activities are properly evaluated and reflected in next year's plan.

We also appoint a responsible person at each site and directorate and clarify the roles and responsibilities to implement environmentally friendly operations.

Targets and Results for Promoting Green Management

Based on JAXA's Basic Environmental Policy, we set the targets for promoting green management in FY2023. The details of the targets and results are shown below.

Item	Setting the targets and KPI ¹ in FY2023	Achievement status in FY2023	Reference	
Initiatives to Save Energy	Target specified in the Energy Conservation Act: To reduce the energy consumption intensity by 1.0% or more (annually) on average for five years.	KPI	We achieved a reduction of 3.3% on average for five years.	
	Reduce greenhouse gas emissions through compliance with the Energy Conservation Act.	KPI	Increased by 3.3% from the previous FY. After investigating the cause of increase, appropriate measures have been planned.	
	Compliance with the Tokyo Metropolitan Environmental Ordinance. The Chofu Aerospace Center (CAC) (main office) will reduce its CO ₂ emissions by 25% of the base emissions.	KPI	Reduced by 45% compared to the base emissions. (Preliminary figure before notification to the Tokyo Metropolitan Government ²)	P.20-21
Initiatives to Create a Recycling-Oriented Society	Continue to have zero violations of laws and regulations regarding waste disposal.	KPI	There were no violations of laws and regulations.	
	Give consideration to the reduction of environmental load in goods procurement.		In accordance with the JAXA Green Procurement Policy and Green Contract Policy 2023, we conducted procurement with consideration of the reduction of environmental load.	P.23
Actions for environmental risks	Continue to have zero environmental incidents.	KPI	There were no environmental incidents.	P.19
Creation of new value: Contributing to solution of social issues through business	Research, development, and utilization contributing to solution of global environmental issues.		To solve global environmental issues, in collaboration with other organizations, we developed and utilized satellites and other instruments that contribute to the elucidation of climate change and monitoring of disasters and conducted R&D in the aeronautic field that contributes to aircraft noise reduction and environmental compatibility.	P.15-17
Communication with society	Communication with stakeholders on environmental issues. (Public relations and collection of opinions)		<ul style="list-style-type: none"> • We held the "CONsortium for Satellite Earth Observation (CONSEO) Symposium 2023," where the consortium reported on its climate mitigation activities and encouraged the addition of new members. • We held the "JAXA SDGs Symposium," featuring lectures by academic experts and presentations on SDG initiatives by JAXA and private companies in the aerospace sector. 	

¹ KPI (Key Performance Indicators): Main job performance evaluation indicators (Indicators that can be used to evaluate the action status and achievements for targets)
² The figure (45%) will be confirmed after verification by a registered verification organization under the Tokyo Metropolitan Ordinance on Environmental Preservation.

Prevention of Environmental Incidents and Legal Violations

In order to prevent environmental pollution, we ascertain the risks that may lead to environmental accidents in advance, prepare a visualized environmental risk map and a list of measures against environmental accidents, and post them in each building at business sites for ready reference.

We utilize them to set evacuation routes in disaster drills and to check actions in case of incidents and update them if revised. As a result of these efforts, no environmental incidents occurred in FY2023.

Environmental Performance Data

JAXA continuously monitors the resources and energy used in its businesses, along with their environmental impact, and strives to reduce them.

INPUT

Resources and energy	Unit	FY2023	
Electricity purchased	K kWh	123,116	
Water resources	K m ³	428	
(Breakdown)	Water supply	K m ³	175
	Groundwater	K m ³	65
	Rainwater	K m ³	2
	Others*	K m ³	187
Gasoline (including for vehicles)	kℓ	22	
Kerosene	kℓ	30	
Light oil (including for vehicles)	kℓ	46	
Heavy oil	kℓ	8,461	
City gas	K m ³	612	
Propane gas	t	41	
Petroleum hydrocarbons	K m ³	0	
Liquefied natural gas	t	25	
Other combustible natural gases	K m ³	0	
Jet fuel (including fuel for flight)	kℓ	27	
Aviation gasoline	kℓ	0	
Liquid nitrogen	t	2,371	
Paper	t	19	

● The data shown here represents the aggregated resources and energy purchased by JAXA. The data does not include fuel and other resources purchased by service providers due to the transfer of launch services to the private sector.
* Intake weirs and rivers




OUTPUT

Environmental loads	Unit	FY2023	
CO ₂ emissions	Energy related	t-CO ₂	65,414
	Non-energy related	t-CO ₂	255
Calculated amount of leaked CFCs	t-CO ₂	613	
NOx emissions ^{*1}	t	307	
SOx emissions ^{*1}	t	59	
Soot emissions ^{*1}	t	0	
Amount of wastewater ^{*2}	K m ³	428	
Biochemical Oxygen Demand (BOD) ^{*3}	mg/ℓ	25	
Chemical Oxygen Demand (COD) ^{*3}	mg/ℓ	3	
General waste	T	132	
Industrial waste	t	1,117	
Specially-controlled industrial waste	t	38	
Class I designated chemical substances	t	64	

*1 NOx, SOx, and soot emissions are measured from units generating soot or smoke regulated by the Air Pollution Control Act.
*2 In cases where the amount of wastewater is not measured, it is calculated based on the assumption that the amount of used water is the amount of wastewater.
*3 BOD and COD are calculated based on the measured values at business sites having specified facilities under the Water Pollution Prevention Act, and the total amount of wastewater at the business sites (per year).



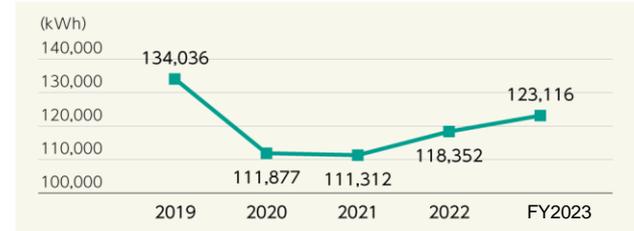
Trends in the Primary Material Balance

Amount of Electricity Consumption

In FY2020, electricity consumption decreased by 16.5% compared to the previous year due to reduction of operating rates of major facilities and equipment caused by the COVID-19 pandemic. However, it subsequently shifted to an increasing trend, with a 6.3% increase in FY2022 compared to the previous year, followed by a 4.0% increase in FY2023.

We will strive to enhance electricity use efficiency to mitigate the upward trend in consumption.

Electricity



Amount of Fuel Consumption

Similar to electricity, fuel consumption also decreased by 14.8% in FY2020 compared to the previous year due to the impact of the pandemic, followed by a 17.1% decrease in FY2021. However, it has shifted to an increasing trend since FY2022.

Fuel consumption in FY2023 remained at the same level as in FY2022 due to the switch of boiler fuel at the Kakuda Space Center from heavy oil (JIS grade A) to LP gas.

Fuels (gasoline, kerosene, diesel, heavy oil (JIS grade A), and city gas)



Calculated amount of leaked CFCs

In accordance with the Act on Rational Use and Proper Management of Fluorocarbons, JAXA regularly monitors the calculated amount of leaked fluorocarbons from air conditioning units and other sources, ensuring it remains below the legally established limit (1,000t-CO₂). We ensure that inspections are conducted at the legally required frequency and replace any equipment showing signs of corrosion as soon as possible, especially at the Tanegashima Space Center and other facilities in coastal areas where salt air can cause corrosion of outdoor air conditioning units and piping.

Calculated amount of leaked CFCs

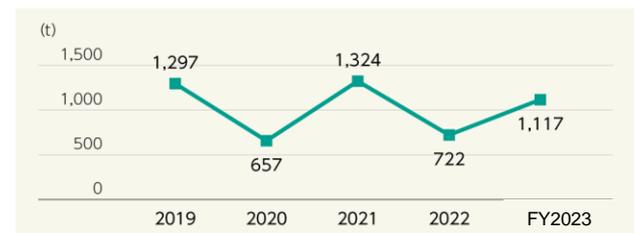


Amount of Industrial Waste

JAXA disposes of waste appropriately in accordance with the Act on Waste Management and Public Cleaning. In determining whether materials are classified as waste and the methods for outsourcing waste disposal, we adhere to the "JAXA Waste Disposal Guidelines" or follow the direction of local municipal governments. In FY2023, the amount of industrial waste increased by 54.7% compared to the previous year. The primary contributing factor was the increase in debris (587 t) associated with renovation work at the Tanegashima Space Center.

Additionally, the amount of specially-controlled industrial waste in FY2023 increased by approximately 200% compared to the previous year. The main reasons for this increase include the disposal of low-concentration PCB oil from special high-voltage power substation equipment (i.e. transformer) at the Chofu Aerospace Center, as well as the disposal of strong acids (approximately 3.5 t) and strong alkalis (approximately 5.5 t) from the Boiler House East and the related wastewater treatment building in the Kakuda Space Center.

Industrial waste



Specially-controlled industrial waste



Initiatives to Create a Recycling-Oriented Society



Promotion of Green Procurement and Green Contracts



Of the 153 items procured in accordance with the JAXA Green Procurement Policy in FY2023, we achieved 100% procurement of specified procurement items for 136 items. Regarding the remaining 17 items, supervisors checked that there were no substitutes, and we made every effort to procure items that are as environmentally friendly as possible. In addition to these items, 3 items classified as public works were procured.

Among the 6 types of contracts covered by the Green Contract Law, there was one contract for supply of electricity (contract amount: 315 K kWh), two contracts for purchase and lease of automobiles, and 6 contracts for disposal of industrial waste.

JAXA's Green Procurement Policy and Green Contract, and the procurement/contract results

Results of procurement of goods that do not meet the criteria (unit: items)

	FY2021	FY2022	FY2023
Procurement of goods that do not meet the criteria	12	14	17

Results of green contract (unit: cases)

	FY2021	FY2022	FY2023
Contracts for supply of electricity	6	3	1
Contracts for purchase and lease of automobiles	1	1	2
Contracts for energy saving renovation projects	0	0	0
Contracts for design and maintenance of buildings	0	1	1
Contracts for disposal of industrial waste	7	8	6



Actions in the Value Chain

For goods other than those specified in the JAXA Green Procurement Policy, we select goods that have the least environmental load possible while ensuring appropriate price, function, and quality. In addition, we encourage contractors (including subcontractors) for delivery of goods, provision of services, and construction to promote green procurement as much as possible.

Our contract selection process includes a framework that prioritizes bidders who actively engage in environmental conservation through the publication of environmental accounting, ISO 14001 certification, or environmental activity evaluation programs, as well as those who produce and disclose environmental reports.

Enhancement of Environmental Education



● Enhancement of Environmental Education

We provide environmental education not only to our employees but also to people belonging to other companies who work within JAXA, and the importance of environmentally friendly activities is recognized.

It is an e-learning system that allows students to take courses at any time.

Main environment-friendly activities at business sites



01 Utilization of renewable energy (CO₂ emission reduction through wind power generation)

The JAXA Tracking and Communications Center has installed wind power generation equipment at the Misasa Deep Space Station (MDSS) in Usuda Deep Space Center, reducing its reliance on commercial power sources and contributing to CO₂ emission reduction efforts. We introduced wind power generation at MDSS, located in a mountainous area characterized by 1.2 meters of snowfall in winter, making it unsuitable for solar power generation, as well as by strong winds.

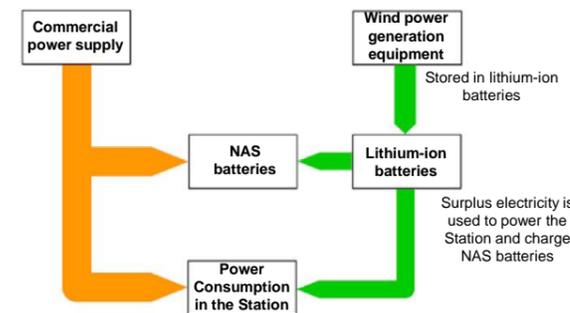


Wind power generation facility at JAXA MDSS

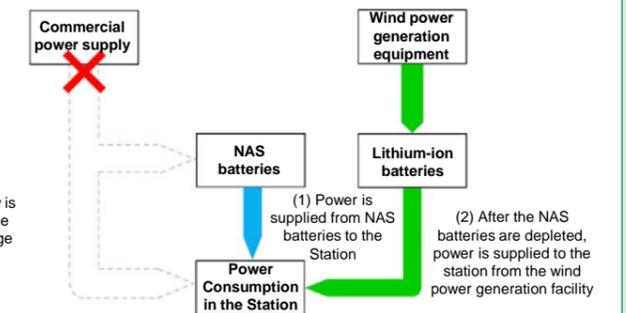
The generated electricity is stored in lithium-ion batteries, and any surplus is used to power on-site operation such as facility equipment, lighting, air conditioning, and to charge NAS batteries*. In the event of an extended power outage, if the power in the NAS batteries is depleted, electricity will be supplied to on-site facilities from the lithium-ion batteries charged by wind power generation.

* NAS batteries are high-temperature secondary batteries used for large-scale energy storage. They are named "NAS batteries" because they use sodium (Na) for the negative electrode and sulfur (S) for the positive electrode.

Power supply under normal conditions



Power supply during a power outage



02 Coexistence with Local Nature

At the Kakuda Space Center (KSPC), we collect garbage twice a year in collaboration with our cooperative firms. In FY2023, we collected a total of 46.7 kg of waste such as bottles, cans, and PET bottles.

The Katsuura Tracking and Communications Station has been collecting garbage since FY2001 in support of the annual Zero Waste Movement conducted in Katsuura City. In FY2023, we collected a total of 13 bags including combustible garbage, bottles, cans, and PET bottles.

A clean-up activity was held at Takezaki Beach in Tanegashima on June 24, 2023, organized by the Minamitan Branch of the Tane-Yaku Corporation Association and the NPO Corporation Spacecraft Tanegashima. Another clean-up event took place on November 23, organized by a volunteer group. Staff members from the Tanegashima Space Center and employees from related companies participated in both activities.



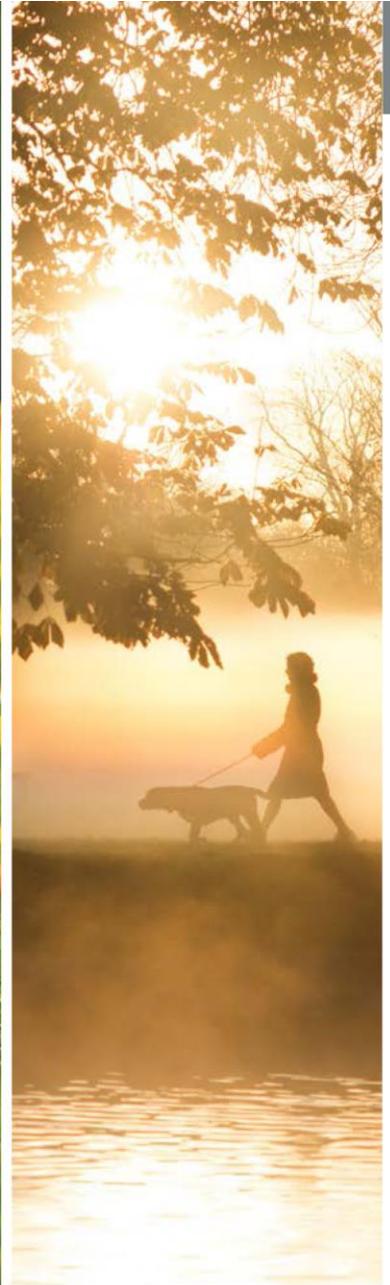
Cleaning around Kakuda Space Center (KSPC) twice a year



Participating in the Katsuura City's Zero Waste Movement



After cleaning of Takezaki Beach in Tanegashima



Top Management
Commitment

Summary of Phase 4
Medium/Long-Term
Plan

Highlights of 2023

Management Reform
Review Committee

JAXA
Introduction of JAXA
Projects

Involvement in the
Environment

Social Involvement

Initiatives to Achieve
SDGs

Space Strategy Fund
Projects

Third-Party Opinions

Review Results /
Information about
organization

Social Involvement

- 26 Commitment to Social Responsibility
- 26 Organizational Governance
- 27 Consumer Issues
- 28 Fair Operating Practices
- 29 Labour Practices
- 32 Human Rights
- 33 Community Involvement and Development

Organizational Governance

Internal Control

Since becoming a national research and development agency in April 2015, we have been working to strengthen internal control. Specifically, in response to the revised Act on General Rules for Incorporated Administrative Agencies, we specified the internal control system in our business procedures and established the “Internal Control Implementation Guideline” to strengthen internal governance.

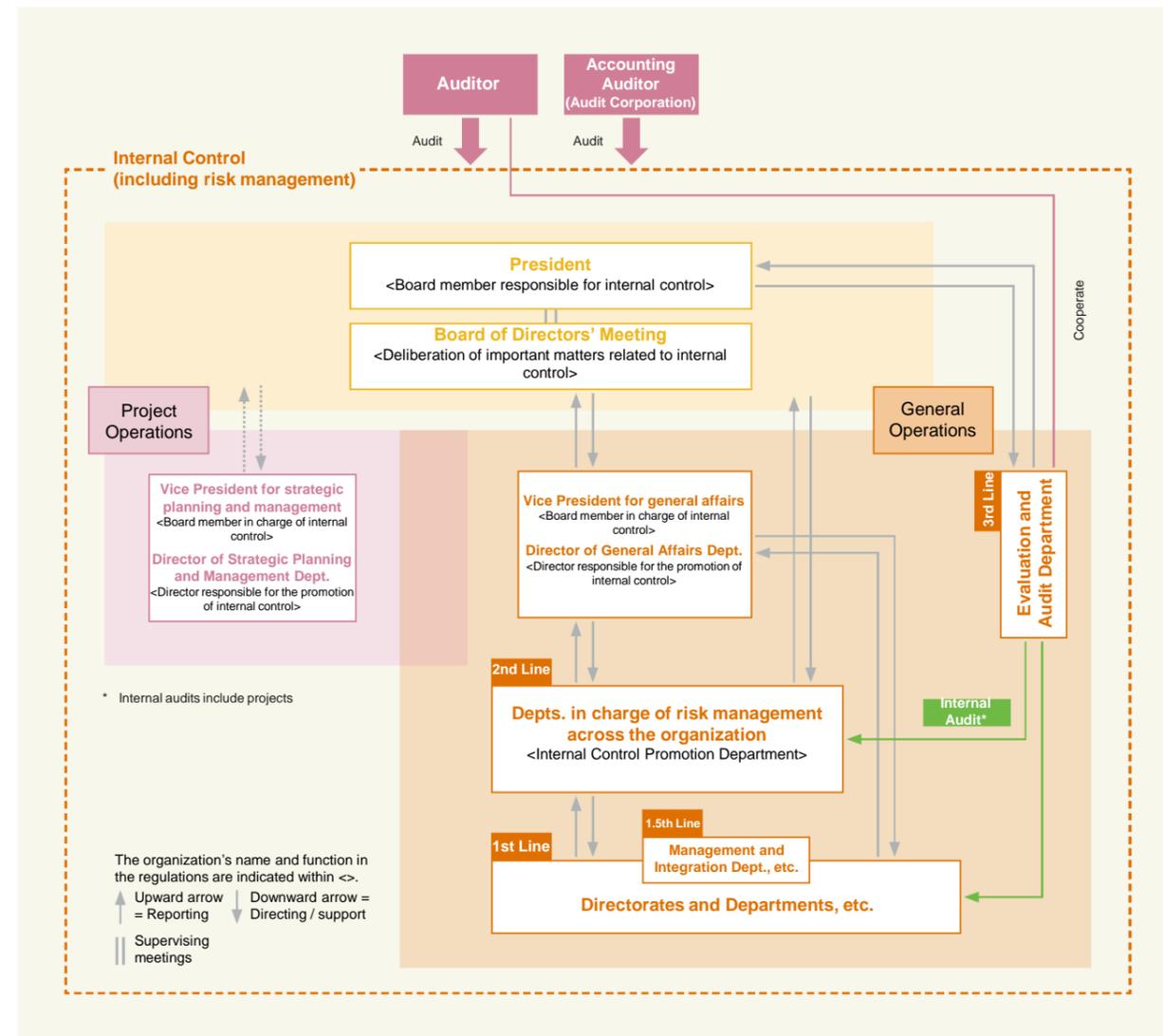
In September 2023, we established the “Management Reform Review Committee” under the leadership of the President in response to the recommendations from the Evaluation of Independent Administrative Agencies. Additionally, we examined the structure of internal control, including risk management, and prepared a report.

Based on the discussions in the Committee, we have formulated the “Internal Control Promotion Regulation” to replace the “Internal Control Implementation Guideline” starting in FY2024. This new regulation aims to raise awareness of risks, identify risks early, and implement necessary actions. With this new regulation, we have clarified the responsibilities of each organization and transitioned to a system that integrates internal control with risk management.

We will continue to fulfill our missions as a national research and development agency in an effective and efficient manner while complying with laws and regulations and implementing internal control.

[JAXA Internal Control Implementation Guideline](#)

New organizational structure for the promotion of internal control (including risk management) (since FY2024)



Audit System

We established a system to check that internal control is functioning well by combining the audits conducted by the auditors and accounting auditors based on the Act on General Rules for Incorporated Administrative Agencies and the internal audits conducted by the Evaluation and Audit Department independent of the business execution departments. Audits are conducted for the purpose of ensuring appropriate and efficient business execution and contributing to the improvement of business operations, and audit results are reported to the President as needed and shared at board meetings, etc.

In addition, information regarding the audits is described on our website in accordance with Article 22 of the “Act on Access to Information Held by Independent Administrative Agencies.”

[Audits in JAXA](#)

Promotion of Risk Management

JAXA identifies risks in each project and implements risk reduction activities.

We have also established a Comprehensive Risk Response Team to promote comprehensive risk management for risks in general operations other than projects and other businesses. Specifically, we have identified risks that should be intensively managed, such as ICT and security risks related to information systems, compliance risks, and risks associated with research misconduct and the misuse of research funds. Each division and department has set activity targets to reduce these prioritized risks in their respective business plans, addressing risk reduction as part of their daily operations.

Starting from FY2024, we have transitioned to a system that integrates risk management and internal control. For details on our risk management starting in FY2024, please refer to the “Internal Control” section.

Consumer Issues

Disclosure and Provision of Information

Under the “Act on Access to Information Held by Independent Administrative Agencies,” anyone can request JAXA to disclose corporate documents. We follow the procedures for information disclosure in response to requests for disclosure in accordance with this law.

[Request for Information Disclosure and Various Public Information](#)

Preparing for Large-Scale Disasters, etc.

We established the Business Continuity Plan at each site to prepare for disasters. The Business Continuity Plan defines the operations that we should prioritize to ensure the safety of executives and our employees, as well as the continuation and prompt recovery of operations, daily preparation for disasters, and initial response in the event of a disaster.

Based on the plan, we are striving to improve our business continuity capability by establishing communication systems including a safety confirmation system, stockpiling spare equipment and supplies necessary for initial response, maintenance, and recovery, and conducting large-scale earthquake drills.

Ensuring information security

[Promoted by Training](#)

With cyberattacks becoming increasingly sophisticated, some of the information managed by JAXA was compromised due to unauthorized external access in FY2023. We deeply apologize for the significant impact and distress caused to all those affected.

To prevent recurrence, JAXA implemented short-term measures and considered long-term solutions. These include strengthened monitoring across the entire network, including endpoints, improved external connection methods, more efficient and transparent operational management, and enhanced anti-spoofing measures. We are currently working to implement these measures and solutions to further strengthen our information security.

We also contribute to nationwide initiatives to mitigate the threat of cyberattacks that go beyond the activities of a single organization. These include preparing industry-specific security guidelines with related organizations, discussing and sharing overseas initiatives, and sharing the threats identified by JAXA with security specialized companies and relevant organizations.

Protection of Personal Information

[Promoted by Training](#)

In FY2023, we discovered that some information managed by JAXA had been compromised due to unauthorized external access. We contacted and apologized individually to the affected parties and reported the incident to the Personal Information Protection Commission. To protect the rights and interests of individuals while ensuring the appropriate and smooth operation of our business, we will continually specify matters concerning the protection of personal information in our Personal Information Protection Regulations to protect personal information.

[Regulations to Protect Personal Information and Request for Information Disclosure](#)

Fair Operating Practices

Promotion of Compliance



To ensure the proper execution of our business in accordance with laws and regulations, we established a whistleblowing hotline to receive reports of violations of laws and regulations.

In addition, in order to receive consultations widely on issues that do not fall under the above whistleblowing, we have established a compliance hotline, and receive consultations on JAXA's compliance from both inside and outside of JAXA. Furthermore, we educate and train our directors and employees on a regular basis to raise awareness.

System to Manage Conflict of Interest



We have introduced a system to manage conflict of interest to promote collaborative activities with universities and industries. We require self-assessment of our directors and employees and established a Conflict-of-Interest Management Committee and a Conflict-of-Interest Management Advisor (external lawyer) to provide advice and check to ensure that our directors and employees appropriately conduct industrial collaboration activities.

[Actions for Compliance & Conflict of Interest](#)

Export Control



In response to the global consensus on preventing the proliferation of weapons of mass destruction, Japan established laws and regulations such as the Foreign Exchange Act and Export Trade Control Order that specify regulate export items and export license systems.

We established internal regulations based on these laws and regulations and are working to ensure the implementation of export control by examining export cargo, educating staff, and conducting audits.

In accordance with the revision to the statutes pertaining to the Foreign Exchange Law that came into effect in May 2022, we are also reviewing the operation for "deemed exports" and taking appropriate measures such as checking whether they fall under a specific category.

Management of Intellectual Property



Based on the intellectual property policy, JAXA is striving toward the creation of businesses that utilize the results of R&D and the promotion of efforts to stimulate open innovation by identifying and protecting the technological results it has created as intellectual property, and by appropriately transferring them to the Japanese industry, etc.

In addition, we are working to respond appropriately to the non-disclosure system of patent applications under the Economic and Security Promotion Act that came into effect in May 2024.

[Intellectual Property Policy](#)

Fair Execution of Research and Appropriate Use of Research Funds



In order to thoroughly enforce the rules and raise employee awareness, we have established the "Code of Conduct for Researchers" (for fair execution of research) and the "Basic Policy and Code of Conduct" (for appropriate use of research funds). Under the Research Ethics Committee and the Office for Prevention of Misconduct in Competitive Research Funds, we are working to prevent misconduct and ensure proper operational management.

In FY2022, through the research on stress accumulation assessment in a long-term closed environment (simulated space habitation environment), non-conformity to the government's medical guidelines was confirmed. Based on this incident, we have conducted factor analysis, including background factors, and are strengthening our efforts to prevent research misconduct. In 2023, we restructured our medical research management under the leadership of the department head to improve internal control and oversight. As part of this initiative, we enhanced awareness-raising efforts, promoted adherence to our rules, and fostered active communication within the organization.

[Prevention of Misconduct in Research and Appropriate Management of Research Funds](#)

Appropriate Contracts



As an agency that uses the national budget, JAXA strives to fairly conduct projects by attaching importance to transparency and fairness in contracts. As an example, discretionary contracts that exceed the criteria for the small-amount discretionary contract are reviewed by the Contract Review Committee to check that competition is promoted and that the contract processes are in accordance with the regulations. The concluded contracts are announced on our website.

In recent years, the scope of procurement management has been expanded for project operations, and the Procurement Department has been involved from the stage of selecting companies in charge of development to promote dialogue with those companies. Thus, we promote actions to ensure fairness and rational procurement.

[JAXA Procurement Policy](#)

Labour Practices

Efforts to Utilize Human Resources

We are working to develop human resources throughout the organization by establishing the “Phase 4 Human Resources Development Implementation Policy” as the priority in medium to long-term human resources development, aiming to both realize the career design of each employee and maximize the results of the organization.

The ideal talent JAXA aims to cultivate

Human resources who have the motivation and ability to propose and create new value for society through aerospace based on their specialized skills and continue to take on challenges

Phase 4 Human Resources Development Policy

Actions	Results of actions related to human resources in FY2023
Strengthen the human resource base in the aerospace field by enhancing the mobility of human resources	We are continuously focusing on increasing the recruitment of experienced personnel (i.e. mid-career recruitment) in order to secure industry-ready personnel with diverse backgrounds and careers. The number of newly hired experienced personnel in FY2023 was 28, thanks to efforts such as the year-round hiring schedule and the introduction of Web interviews, etc.
Exchange of human resources with the private sector and promotion of new aerospace business	Under the cross-appointment system, 11 new employees were accepted and one JAXA employee was newly sent out to external organizations. We strengthened the human resource base through human resource exchanges with external organizations, such as promoting space utilization/development with JAXA's knowledge and expertise. In FY2023, including the cases that continued since the previous fiscal year, a total of 37 employees were accepted from external organizations, and 5 employees were sent out from JAXA.
Operation of work systems that enable diverse and flexible working styles	By creating an environment in which employees can choose diverse and flexible ways of working by combining working in the office, telework, and flextime systems in accordance with the job type and life stage of individual employees, we have established a “new way of working” so that employees can demonstrate their abilities and work with new ideas.
Health management that enables employees to work in a physically and mentally healthy manner	Our health management goal is to establish a workplace where everyone tries to understand one another, ensuring psychological safety, while maintaining mental and physical well-being and thriving in their own unique way. To achieve this goal, executive, management, general staff members are all working towards this vision from their respective positions.

Retention Rate of New Staff



The retention rate three years after joining is 97% (based on 36 new graduates hired in FY2021). We provide generous support, such as guidance through on-the-job training at the assigned department (OJT system) in the first year, and follow-up training and career counseling in the second year.

Number of new employees by gender in FY2023

	New graduates hired	Experienced employees hired
Male	27 people	21 people
Female	12 people	7 people

Reemployment after Retirement

In accordance with the revised Act on Stabilization of Employment of Elderly Persons, we established a system to rehire those who wish to work after retirement until the end of the fiscal year when they reach 65 years of age. Currently, about 110 rehired employees are working in various workplaces, while making use of their rich experience and specialized abilities.

We also have revised the current work regulations, setting the retirement age at 65. However, a transition period has been established, and the retirement age will be gradually increased over time. Additionally, we have introduced an age limit system for managerial personnel, where employees who reach the retirement age will have the opportunity to contribute as “Senior Advisors,” starting from FY2024.

Safety Management

In FY2023, we continued to foster safety awareness through e-learning based safety education reflecting past accidents and other incidents, and conducted activities such as identifying dangerous areas and implementing countermeasures through safety patrols, near-miss reporting, and sharing information that contributes to preventive safety.

Based on the results of analysis of past accidents, we will continue to conduct safety management tailored to the circumstances at each site, and implement measures to achieve “zero” work-related accidents resulting in injury leave.

Labor-Management Relations



In accordance with the Labor Standards Act, we respect labor management autonomy and make decisions on matters related to working conditions (wages, working hours, benefits, etc.) through consultations with the labor union.

Health Management



In response to “Health Management Policy” introduced in 2020, we started the “Fit motto project” which aimed to create more comfortable workplaces where employees can work actively and healthier (fit) with “health” as a motto. [Fit motto is a coined term from “fit” and the Japanese word “motto (more).”] In FY2023, we implemented various initiatives aimed at achieving our health management goals, focusing on two main objectives: 1) increasing individual physical activity (addressing lack of exercise), and 2) revitalizing communication in the workplace. Specifically, our health promotion campaign, which included walking, health activities, and team-based radio gymnastic exercises, attracted 627 participants in the spring session and 683 in the autumn session. Employees showed great enthusiasm for the campaign, with the average number of steps walked exceeding 8,000, leading to improvements in both physical and mental well-being. Additionally, participating in teams led to increased interaction across departments and offices, contributing to the revitalization of communication.

JAXA is committed to respecting each employee and strives to create a healthy workplace where everyone feels safe. Through these initiatives, we aim to increase active exchanges of ideas within JAXA, promote innovation, and further enhance employee motivation.

Actions for a better Work-Life Balance (WLB)

In April 2023, we formulated a new action plan with the aim of verifying further measures to promote women's active engagement and resolving the issues that arose while promoting the working system “New way of working.”



Unified Action Plan of the Act for Measures to Support the Development of the Next Generation and the Act on the Promotion of Women's Active Engagement in Professional Life

(April 1, 2023 - March 31, 2025)

(1) Targets and Measures for Supporting the Development of the Next Generation

Target	<ul style="list-style-type: none"> Creating a totally comfortable working environment for employees at various life stages, through review of the leave system from the user's perspective, such as making it easy to understand and to use. Regarding the balance between childbirth, child rearing and work, JAXA's work system in general is to obtain satisfaction by 80% or more of those who have a right to use the maternity/paternity (childcare) leave system.
Actions for FY2023	<ul style="list-style-type: none"> Continuing from the previous year, we designated recommended days for taking leave and introduced a recommended week for extended leave with a high rejuvenation effect, aiming to create an environment where employees can more easily take time off. Additionally, we reviewed the conditions for taking WLB leave to further facilitate its use. We promote male participation in childcare by sharing information on procedures and examples of men taking childcare leave. As part of this effort, we conducted interviews with male employees who have taken such leave and featured these interviews on our website. To assess the usability of the maternity/paternity (childcare) system, we conducted a satisfaction survey following the end of each childcare leave period. Over 90% of users responded that they were glad to have taken the leave.

(2) Goals and Measures for Promoting Women's Active Engagement

Target	<ul style="list-style-type: none"> Reducing the annual total number of overtime workers who work more than 80 hours per month (including managers, and employees in discretionary work systems) by 20% from the average for the past 3 years (FY2020 to FY2022). Maintaining and improving the ratio of female managers to 10% or more, continually. From a long-term perspective, we will support female schoolers and students from junior high schools, high schools, and universities to enter science universities and graduate schools in the future, and to help choosing the career paths to researchers, etc.
Actions for FY2023	<ul style="list-style-type: none"> Regarding overtime management, we regularly reported overtime hours and trends by department and period at meetings attended by the management team, ensuring that management stayed informed of the current situation. To foster female leadership and develop a leadership pipeline, we held a discussion session called “Career Terakoya” with managers, providing employees with an opportunity to better visualize their future careers. Additionally, we conducted unconscious bias training for all employees to raise awareness and drive continuous mindset change. Leveraging special exhibition events held at our Tsukuba, Chofu, and Sagami-hara sites, we provided career support by presenting female role models who are excelling in their fields and offering career counseling sessions, primarily for female students. We promoted the development of networks between students and researchers through various initiatives, including hosting a networking event between incoming students and JAXA staff, creating the “ISAS NAVI” platform to help users find details of research and researchers based on their areas of interest (keywords), and supporting student community-led events. We further enhanced our web content “ISAS GATE,” which widely disseminates the latest research outcomes and researcher information, making it a platform for students to share their paper abstracts and other related information. We conducted a pilot workshop for incoming students, teaching basic research activities and paper writing, while providing information on pursuing a career as a researcher. At the special exhibition event at the Sagami-hara site, we introduced JAXA's student acceptance program to visitors and offered career counseling to middle and high school students at the booth. We started a consultation service for researchers at various life stages and, based on feedback from staff, developed concrete measures to improve the work environment. These efforts were aimed at creating an environment that supports the success of diverse talent.

Labour Practices



Systems that support a better work-life balance

	Actions	Description
Career Advice	Career advice for next generation	Opening the facilities to the public, and dissemination of information at online events, etc.
	Career Terakoya (discussion meeting), mentor system	Supporting the growth of employees by holding discussion meetings, etc.
Support for Childcare and Nursing Care	JAXA Hoshinoko Nursery School / JAXA Soranoko Nursery School	Tsukuba Space Center / Chofu Aerospace Center
	Subsidized childcare (babysitter) programs for sick and post-sick children	
	Work system supporting childcare and nursing care	Paternity leave (for men), shorter working hours for child rearing, shorter working hours for nursing care, etc.
	Lunch networking event for childcare	A place to exchange information
Work Style Reform	Nursing care seminar	Provision of information
	Review of flexitime/intermission system, etc.	Flexible working system, reduction of overtime, and management of working hours according to working conditions
	Teleworking	Promoting new ways of working by easing conditions
	Use of IT tools	Utilizing information systems and web conferences
	Measures against harassment	Establishing the Harassment Committee and upgrading the Counselor System in order to create a harassment-free work environment in which each employee can work comfortably
	Paperless	Streamlining meetings, etc., and abolishing the use of signatures and seals
	Consciousness raising	Conducting unconsciousness bias training

Career Advice

● Career advice for next generation

During a special office opening event, we hosted a talk session introducing female employees' career choices, insights into their actual work, and a male employee's experiences balancing work and child-rearing—all presented as role models for career development. As a new initiative in FY2023, we also organized a workplace tour on the special open day at the Sagami-hara Campus, giving visitors an opportunity to observe female employees actively engaged in their work.

JAXA is actively engaged in international networking activities. Through participation in the Diversity and Inclusion for Space Education session at the 29th Asia-Pacific Regional Space Agency Forum (APRSF-29) and hosting an official side event, we facilitated discussions on women's empowerment and the promotion of diversity within space agencies and across the Asia-Pacific region.

● Mentoring and other programs

Experienced mentors (senior employees), separate from direct supervisors in the workplace, interact with the mentees (junior employees) to help them solve their problems and concerns in career formation, and support their personal growth. Additionally, we continued to hold the "Career Terakoya" discussion sessions with managers, which were launched in FY2022, aiming to provide opportunities for employees to visualize their future careers. Additionally, as part of our ongoing efforts to foster awareness and address unconscious biases (stemming from assumptions) about social gender roles and past experiences, we have implemented annual unconscious bias training for all employees since FY2021.

Support for Childcare and Nursing Care

● Various leave systems

JAXA has established various leave systems such as annual paid leave, special leave, nursing leave for children and nursing care leave.

Special leave includes leave given for volunteer work and for donating bone marrow for bone marrow transplantation. We also have the leave systems such as family care leave, childcare leave, and leave with spouse.

● Promotion of use of various programs

JAXA has set up an internal website within the organization that provides an overview of various programs designed to support employees in balancing work and private life, including procedures for utilizing programs related to childbirth, childcare, caregiving, and more. For employees with a new child, we encourage program utilization by offering individualized explanations of available support options.

● On-site nurseries

We operate on-site nurseries at two sites, the Tsukuba Space Center and Chofu Aerospace Center, to provide a comfortable working environment where employees can balance work and childcare.

● Work system supporting childcare and nursing care

We allow employees to limit overtime and late-night work and to work shorter hours for childcare until their children reach the third grade. In addition, subsidized childcare (babysitter) programs for sick and post-sick children are available until their children reach the sixth grade. In September 2019, we were certified by the Minister of Health, Labor and Welfare as a "childcare supporting company" (Kurumin certification) based on the Act on Advancement of Measures to Support Raising Next-Generation Children.

For nursing care, in addition to leave and vacation, employees can limit overtime and late-night work and work shorter hours while caring for a family member in need of constant nursing care. In addition, we hold nursing care seminars and briefing sessions describing our support systems to provide information to our staff.

● Lunch networking event for childcare

Our offices in Chofu, Tokyo, Tsukuba, and Sagami-hara hold monthly lunch networking events for childcare during lunch breaks. In this event, anyone, regardless of gender, can participate in exchanging information, including employees who are raising children, who have subordinates raising children, and who want to gather information for their future child rearing.

Work Style Reform

● New way of working

With the aim of transforming work and life, JAXA has been promoting diverse and highly productive working styles of respective employees by preparing a healthy and vibrant work environment. In addition, in response to COVID-19, we are actively working for expansion of the telework system, adoption of a new flexitime work system by eliminating the restrictions on core hours, etc., review of the break time system such as eliminating simultaneous breaks at lunch time, introduction of a break system that allows employees to divide their daily working hours into multiple portions, and utilization of online meetings, etc.

Starting from FY2023, we reviewed the conditions for taking certain types of leave to make it easier for employees to use them. Through initiatives such as designating recommended days for taking leave, a recommended week for extended leave, and avoiding the scheduling of regular meetings during these periods, we are working to create a workplace environment that makes it easier for employees to take leaves.

● Use of IT tools

We have introduced secure IT tools to support various ways of working. All employees are provided with a lightweight mobile laptop equipped with a webcam as standard, and participation in meetings and other discussions via web conferencing has become the norm. In addition to the introduction of tools, we are also working to improve the literacy of our employees to use them.

Additionally, as part of our DX initiatives aimed at creating an environment where each employee can choose their preferred work style and demonstrate their best performance, we are introducing business smart devices (smartphones).

Human Rights

Efforts to Prevent Harassment



● Establishment of Training and Hotlines for harassment prevention

In order to raise awareness of harassment and prevent its occurrence, we have issued a harassment prevention declaration from the President as a message from the top. In addition, we conduct training on compliance and harassment-related issues. To ensure that employees do not take on their concerns about harassment and the work environment alone, we have established consultation channels both internally within the organization and externally.

● Establishment of the Harassment Committee

In October 2021, we established the Harassment Committee, chaired by the Vice President responsible for personnel affairs, based on the results of a study by the Harassment Countermeasures Study Team (composed of labor and management), which was established to study new measures against harassment based on the "Act on Comprehensive Promotion of Labor Measures, Stabilization of Employment of Employees, and Enrichment of Their Working Lives" (Act No.132 of 1966) and other related laws and regulations.

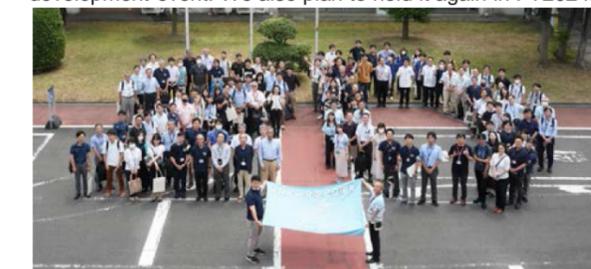
Upon introduction, we will ensure strict measures are in place to prevent unauthorized access and loss of devices.

Furthermore, we reviewed and abolished the use of seals and signatures in line with the government's Regulatory Reform Implementation Plan.

Activities to Improve Employee Engagement

Continuing from FY2022, we held the JAXA FESTIVAL 2023 under the theme of "a networking festival that fosters new connections, sparks discoveries, and instills the courage and pride needed to embrace challenges within JAXA." The festival attracted over 300 participants, exceeding the previous event, and fostered lively interactions. Post-event survey results showed an increase in participant satisfaction from the previous year, rising from 89% to 95%. Additionally, 83% of participants reported achieving one of the key objectives for FY2023: fostering a sense of shared purpose with their peers.

As part of our Management Reform, we regard this festival, conducted under the newly established Talent and Organizational Development Council, as a key organizational development event. We also plan to hold it again in FY2024.



In celebration of JAXA's 20th anniversary

The Harassment Committee, which is composed of not only members from JAXA such as the Human Resources Department but also representatives of workers and external lawyers, performs harassment recognition for individual consultations, and promotes measures based on the analysis of JAXA's current situation to realize harassment-free workplaces.

Elimination of Discrimination against the Disabled



In response to the enactment of the "Act for Eliminating Discrimination against Persons with Disabilities" on April 1, 2016, we established internal regulations on what kind of recognition our executives and employees should have regarding the Act, etc., and have been implementing various activities. In addition, the Compliance Hotline provides consultation on discrimination against persons with disabilities as a part of its wide range of services.

Community Involvement and Development

Public Relations and Events

In FY2023, our public relations activities focused on the launch of the X-Ray Imaging and Spectroscopy Mission (XRISM) and the Smart Lander for Investigating Moon (SLIM) aboard the No. 47 H-IIA launch vehicle, as well as astronaut Satoshi Furukawa's long-term stay at the International Space Station (ISS). Additionally, considering the failures and other significant issues that occurred since 2022, we worked to restore public trust by providing timely, transparent, and interactive information.

The results of our public relations activities include the numerous messages of support we received following the successful pinpoint lunar landing of SLIM in January 2024, as well as the successful launch of the second H3 rocket test vehicle in February of the same year. Leveraging the experience gained during the COVID-19 pandemic, we disseminated information through a hybrid format combining both in-person and online methods.

Results of implementation in FY2023

	FY2022	FY2023
Number of visitors to the exhibition hall	401,000 people*	555,000 people*
Press release	168 times	120 cases
Press conferences and briefings	53 times	47 cases
Number of staff dispatched for lectures/Number of audience members	354 times/ 98,388 people	335 times/ 97,026 people

*Including visitors to the exhibition of the facilities



JAXA Symposium 2023 (virtual event)

Exhibition facilities and open day to the public



We operate 14 exhibition facilities nationwide. In-person special exhibition events at each site were resumed with measures to prevent overcrowding, such as requiring advance reservations, resulting in a total of over 500,000 visitors over the year.



Usuda Deep Space Center special exhibition



A special exhibition venue "Planet Cube" at Tsukuba Space Center

Website, SNS, live streaming



We actively provide highly transparent information through JAXA's official website, concierge and community site "Fan! Fun! JAXA," SNS, and YouTube.

In order to appeal to young people who are relatively uninterested in space, we created and distributed promotional videos introducing our projects, incorporating original music by popular composers and animations by video artists, while striving to cultivate a new audience.

We broadcasted rocket launch events live in both Japanese and English, and during the SLIM lunar landing, the total number of views across both languages reached 3 million. Just after the successful launch of the second H3 rocket test vehicle, we released a 2.5-minute highlight video of the development. The video was shown at science museums and on digital signage at subway stations, among other places, and received a significant response.

Bulletin JAXA's

It is available in two media types: an easy-to-read tabloid (paper) version and a web version.



The web version includes all the contents that were not included in the tabloid version due to limited space. We have invited people from different fields to appear in the paper, as a part of our efforts to spread our message to various fields beyond the aerospace field.

Press conferences and press releases

To provide information on the significance and achievements of JAXA projects in a timely manner, we provide a wide range of opportunities for thorough explanation and dialogue to the press and media, such as press releases, press conferences and press briefings.

In FY2023, following the Japanese government's decision in May to downgrade COVID-19 to the less severe Category 5, we began holding press conferences in a hybrid format, combining both on-site and online participation. This approach enables us to reach media representatives who may face difficulties attending in person due to distance or time constraints. Additionally, we broadcasted press conferences and other events live on YouTube, allowing the general public to watch them with minimal delay.



Information provision through press conferences, live streaming, and other channels

Support to Space Education for the Next Generation

Using space as material, we will raise children with curiosity, spirit of adventure, and craftsmanship, based on the preciousness of life.

In 2005, under the motto "Space ignites children's minds," the Space Education Center started with the aim of "fostering young people with broad insights and fertile minds" making use of knowledge and technologies gained through space exploration and space development. In collaboration with educators who are directly responsible for the development of children, we have been developing projects that utilize our various achievements in the aerospace field. We will continue to contribute to the development of human resources who will pave the way for the future.

Activities by Space Education Center - Program Map

Support for school education	Training for teachers	Class collaboration	Production of educational materials on space	Educational information magazine "Sora no Tobira" (Portal to Space)
Support for social education	Cosmic College	Space School®	Space Education Leaders Seminar	Space Education Symposium
Provision of experience-based learning opportunities	JAXA academy	Aerospace School	ISEB Student Dispatch Program	Regional Forum on Space Education APRSAF Subcommittee of Space Education for All
	APRSAF Poster contest			



Major Space Educational Support Activities in FY2023

We increased opportunities for learning about space across various educational settings by offering online educational activities, actively holding web-based courses, and producing digital teaching materials.

Hands-on programs

We held an online program "JAXA Academy," where high school and university students had the opportunity to learn directly from JAXA staff, astronauts, and other professionals. As the chair country of the ISEB*, we implemented the "ISEB Student Dispatch" program to offer Japanese students opportunities for international learning experience. Additionally, we produced educational materials for the Artemis Project and created a website introducing teaching resources from space agencies around the world.



Educational support and teaching material development

We developed the "Space education materials package" series, which can be downloaded and used directly in lessons by elementary and junior high school teachers. As part of this initiative, we conducted a trial lesson using the moral education material "Hayabusa2." We also offer training programs for teachers and collaborative lessons.

In response to the GIGA School Initiative (i.e. MEXT's initiative aimed at digitalizing education by providing every student with a digital device), JAXA has developed and released digital learning materials that enable students to study space while playing, anytime and anywhere with a PC. These include the "SLIM Game," which challenges players to land on the moon, and the "LUNARCRAFT" moon-themed metaverse space that can be imported into Minecraft.



Community Engagement Support

The Cosmic College and Space Education Leaders Seminar, implemented in cooperation with space education instructors and educators from all over the country, was actively held online and in hybrid form (face-to-face and online), which contributed to educational activities in communities.



*ISEB: International Space Education Board

Basic Action Policies on the Sustainable Development Goals (SDGs)

[Details](#)

With the revision of the Basic Plan on Space Policy in June 2020 clarifying the contribution to SDGs as one of the space policy goals, the environment surrounding SDGs and the aerospace sector has changed significantly. In light of these environmental changes, JAXA formulated the basic policies on SDGs in March 2022, and newly appointed a Vice President responsible for SDGs promotion since April 2022, to further accelerate initiatives to achieve SDGs and raise employee awareness.

JAXA's SDGs Mission Statement

(Corporate philosophies and social missions related to SDGs concretized into action guidelines)

Utilizing the SDGs as a global common language for solving social issues and as an opportunity for innovation, JAXA will work with various partners to realize a sustainable, safe, and prosperous society by conducting pioneering R&D and developing findings.

Action Guidelines

(The above statement is presented from three perspectives of business, individual, and outside the organization, so that it can be more easily understood and lead to action and initiatives)

Business perspective

Leading R&D

We solve earth and space issues through leading R&D and development of the results.

Individual perspective

Bringing out the creativity of each individual

In addition to utilizing JAXA's organization, capabilities, and assets, each of us will exercise our creativity, sympathize with the principles of the SDGs, and take action to realize them.

Perspective outside the organization

Working with partners around the world

By collaborating with diverse stakeholders around the world, we will create synergies in our projects and maximize the return of results to society.

High-priority fields for JAXA

Efforts for the Global environment

- Protecting the rich and beautiful global environment -

[Priority fields]

- Contributing to a decarbonized and recycling-oriented society
- Engaging in research and development of green aerospace systems
- Providing scientific evidence for promoting climate change measures, global environmental preservation, SDGs, and ESGs

Efforts for Society

- Supporting a sustainable and safe society -

[Priority fields]

- Management/toughening, and disaster prevention of national land, infrastructure
- Building the infrastructure to support Society 5.0
- Solving global issues, and achieving economic growth and innovation

Efforts for Space

- Expanding areas of human activities sustainably -

[Priority fields]

- Taking on challenges in the space frontier and returning findings to Earth
- Construction of space infrastructure/institutions and rules for sustainable space activities

Efforts for Governance

- Organizations that sustainably contribute to society -

[Priority fields]

- Promoting fair and responsible organizational management and diverse partnerships
- Creating joy and wonder and developing human resources

Efforts to achieve SDGs

As a core implementing agency that supports aerospace development and utilization through technology, JAXA is promoting various initiatives that contribute to the achievement of SDGs toward realization of a sustainable, safe, and prosperous society by conducting the pioneering R&D and developing the results, in cooperation with various partners. Some of these initiatives are as follows:

Research and development of technologies to improve aircraft fuel efficiency [Details](#)



(Aviation Environmental Sustainability Innovation Hub, Aviation Technology Directorate)

The Aviation Environmental Sustainability Innovation Hub focuses on the research and development of riblet technology, aimed at improving environmental performance by reducing aircraft aerodynamic drag. Riblets are an aerodynamic technology that involves applying microscopic grooves along the surface of an aircraft. By deliberately creating microscopic grooves on the surface of the aircraft, riblets reduce the surface area exposed to faster airflow, thereby decreasing surface friction drag and improving fuel efficiency. In collaboration with Japan Airlines, O-Well, and Nikon, JAXA is conducting flight tests, wind tunnel experiments, and computer simulations to evaluate riblet technology.

The practical application of riblet technology is expected to lead to improved fuel efficiency and a reduction in CO₂ emissions. JAXA will continue to contribute to the advancement of environmentally friendly aviation technology by applying the outcomes of its research and development to real-world use.

Creation and expansion of space education opportunities through the JAXA Academy and digital educational materials [Details](#)



The Space Education Office has established the "JAXA Academy" to provide opportunities for people of all ages to learn about JAXA's initiatives and advancements in science and technology. At the JAXA Academy, experts offer lectures and Q&A sessions on missions and research topics as part of a new STEAM education program, fostering the development of the next generation of talent and providing a broader perspective on space.

We also have developed "LUNACRAFT," a digital educational tool that can be imported into the metaverse game Minecraft. LUNACRAFT incorporates JAXA's lunar terrain data, allowing users to recreate the lunar environment within the game. With the significant attention LUNACRAFT has garnered both domestically and internationally, we plan to conduct demonstrations and assess its effectiveness in educational settings in 2024.

JAXA SDGs Symposium [Details](#)

In December 2023, we held the JAXA SDGs Symposium. Professor Norichika Kanie from Keio University, a prominent authority on the SDGs, delivered a keynote speech titled "Aerospace and the SDGs: Aerospace's Role in Achieving SDGs." JAXA shared a comprehensive overview of its efforts to contribute to the SDGs, featuring initiatives such as Earth observation satellites for SDG applications, technologies to reduce surface friction drag in passenger aircraft, debris mitigation measures at our Tracking and Communications Center, and sustainability initiatives across its directorates. Private sector participants highlighted their contributions, including sustainable practices in small satellite businesses, the development of eco-friendly space mobility using water as a propellant, and contribution to SDGs through wood utilization, including applications in space. JAXA remains committed to working closely with industry, government, and academic institutions to further its contributions toward achieving the SDGs in the aerospace field.



From the director responsible for promoting SDGs



Director responsible for SDGs Promotion
Toshiaki Sato

In March 2022, JAXA formulated a new basic policy on the SDGs in order to further accelerate its efforts toward the SDGs and raise the awareness of its employees. Based on this policy, we are strengthening the dissemination of information through our website, sustainability reports, various media and the holding of the "JAXA SDGs Symposium."

In addition, we are advancing various initiatives for each of the priority areas (society, global environment, space, and governance) set out in the policy. In particular, in the field of earth observation using artificial satellites, JAXA's data has been adopted as an SDG indicator (official data) by the United Nations Environment Programme (UNEP), and is playing a major role in solving global issues such as disaster prevention and climate change. Regarding activities in space, we aim to challenge the space frontier and bring the results back to our society, while promoting the establishment of space infrastructure/systems and rules for sustainable space activities.

Going forward, JAXA will continue to promote SDG initiatives in space, including the sky, as a priority area, and by collaborating with a variety of partners from industry, government and academia, we will create new value for a sustainable society that goes beyond the SDGs.

[Details](#)

SPACE STRATEGY FUND

The Basic Plan on Space Policy (approved by the Cabinet on June 13, 2023) calls for strengthening JAXA's strategic and flexible funding functions. Additionally, the Comprehensive Economic Measures for Overcoming Deflation (approved by the Cabinet on November 2 of the same year) mandates the establishment of the Space Strategy Fund at JAXA for a 10-year period, aimed at swiftly providing a total of 1 trillion yen to support the development of advanced space technologies, technical verification, and commercialization by private companies, universities, and other organizations over multiple years.

The Space Strategy Fund was established at JAXA on March 28, 2024, following the passage of necessary related laws and the supplementary budget draft for the fiscal year 2023 by the Diet. Subsequently, the government announced the Basic Policy and Implementation Policy for the Space Strategy Fund* on April 26, 2024. Based on these policies, JAXA prepared for the implementation by establishing a business management system and developing relevant regulations. Following the launch of the Space Strategy Fund Department on July 1 of the same year, JAXA began receiving applications for technology development themes funded by the fiscal 2023 supplementary budget.

JAXA ensures rigorous and fair evaluations by establishing a third-party review organization composed of external experts. Additionally, we leverage our own advanced expertise and specialized experience in technology development management, including the exploration of new technology development elements. As an organization that allocates funds in the space sector, JAXA will serve as a central hub for technology development and verification, human resources, and technical information both domestically and internationally, and manage this project by leveraging the combined strengths of Japan's industry, academia, and government.

* The Basic Policy outlines the institutional design for the overall fund project, stating that "by having private companies and universities, rather than JAXA, take the lead, more effective promotion of technological development can be achieved." Meanwhile, the Implementation Policy specifies the objectives and concrete details of each technological development theme.



Program Director (PD)
Masayasu Ishida

As the global space industry undergoes a period of significant transformation, it is crucial for diverse communities from industry, academia, and government to collaborate in order to lead the way into the future. In this context, the Space Strategy Fund is a groundbreaking program that accelerates technology development by private companies and universities, paving the way for commercialization and the formation of new markets.

Through this fund, we expect the entire industry to become more vibrant, with standout players leading the way into a new era. As the Project Director, I will oversee the entire program based on the fund's overall goals, basic policies, and implementation strategies, bringing together the wisdom and passion of many people. We eagerly await your passionate applications.



Director of Space Strategy Fund Department
Satoru Naiki

For JAXA, implementing the government's critical policy, the Space Strategy Fund, in its new role as a funding allocation agency represents a significant challenge. Since the announcement of the Basic Policy and Implementation Policy, JAXA has been working diligently to prepare for the new scheme by establishing an operational framework and developing relevant regulations, with the support of a wide range of stakeholders. As we reach this starting point, we would like to once again express our sincere gratitude to everyone involved.

We believe that the Space Strategy Fund represents a groundbreaking initiative with the potential to be a game-changer for Japan's space development, and are committed to fulfilling our role in making it a success. We sincerely hope that many entities will consider applying for and utilizing this fund.

The Space Strategy Fund program has begun.

Reshaping the future of the next decade with technology, ideas, and ambition

We are eager to discover those raw gems who share this vision.

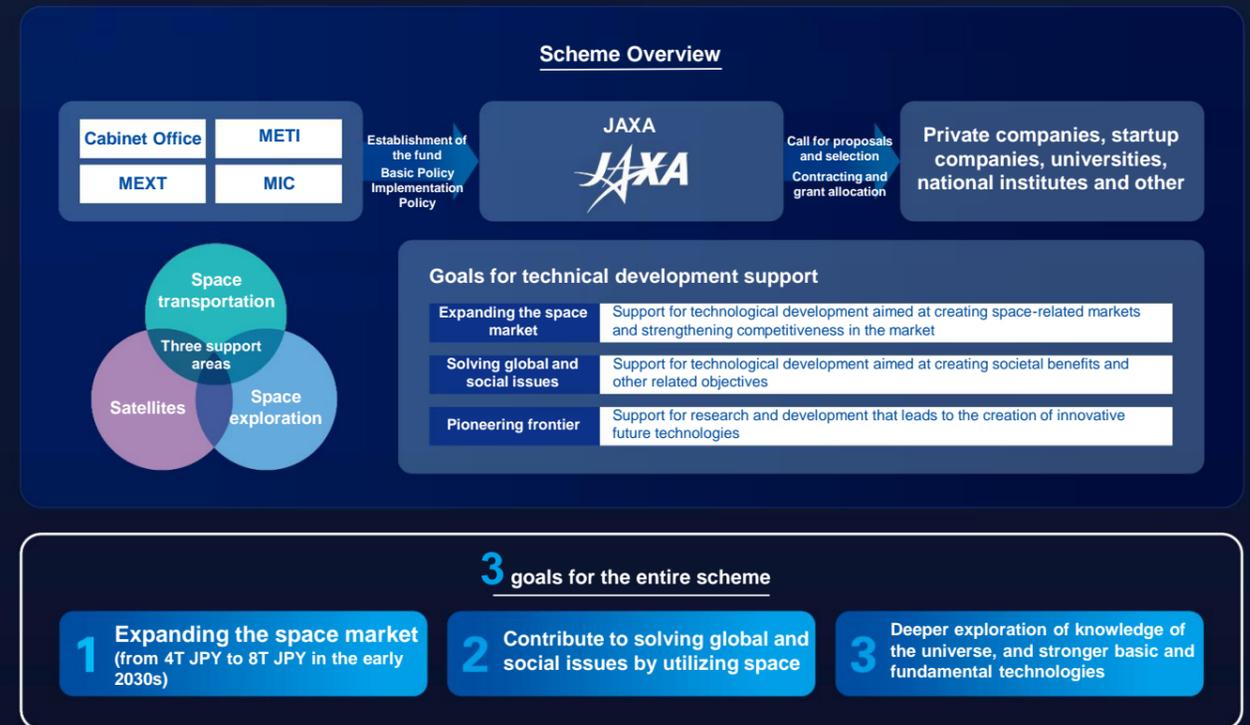
With JAXA's deep expertise in space development and a fund totaling over one trillion yen, let's work together to expand the space market, address societal challenges, and open new frontiers.

Space is evolving
—becoming a place where more players can join, and more opportunities arise.

By uniting industry, academia, and government, Japan's space industry can reach even greater heights.

JAXA wants to be a tailwind that drives this progress.

Let's take the leap into space.





Kimiharu Saita

[Short Biography]

He majored in marine meteorology at Hokkaido University and became a certified weather forecaster while a student there. After working as a journalist, he has worked as a weather forecaster for NHK since 2006. He currently appears on "News Watch 9." As the representative director of Himmel Consulting Co., Ltd., space weather project manager of ABLab General Incorporated Association, and chairman of the Outreach Subcommittee of the Space Weather Users Council, he is promoting efforts in preparing for new disasters.

The "Space Strategy Fund," with a total of 1 trillion yen over 10 years, has been established within JAXA. This fund supports private companies including startups and universities in their technology development efforts across three fields—"Space transportation," "Satellites" and "Space exploration"—with the aim of achieving three key goals: "Expanding the space market," "Solving global and social issues" and "Pioneering frontier." As a key funding allocation agency for space-related projects, JAXA's role is of great significance and is drawing increasing attention.

The "Highlights of 2023" section of this report showcases numerous achievements, including the successful pinpoint lunar landing of the Smart Lander for Investigating Moon (SLIM) with an unprecedented accuracy of under 100 meters. Following this, the report addresses the "Management Reform Review Committee," underscoring JAXA's commitment to organizational reform. The Committee was established in September 2023 as part of measures to prevent recurrence following the failure of the first H3 rocket test vehicle and Epsilon Rocket No. 6 launches in FY2022, as well as a case of non-compliance with ethical guidelines for medical research. This section includes key points of discussions in the Management Reform Review Committee. According to this, the management challenges have been categorized into the following groups: "management/governance," "human resources," "organization," "technology," and "industrial infrastructure for aerospace." It was recognized that the common underlying factor in these challenges is that top management has not strengthened human resources in line with the expansion of roles and projects. Forty-one action plans have been created, including the establishment of the Human Resource and Organizational Development Steering Committee, which quickly addresses organization-wide challenges by incorporating the concept of human capital management and aligning business strategy with talent strategy. These statements highlight the growing attention on the upcoming reforms.

In the "Involvement in the Environment" section, the response to the 2024 Noto Peninsula Earthquake stands out. By analyzing observational data from "Daichi-2" before and after the earthquake, crustal and ground displacement were measured for estimated building damage. In extreme situations where relief teams are unable to enter disaster-stricken areas, using space-based observations to assess damage and applying this information to support recovery efforts is expected to offer various benefits, including time saving. Another notable initiative involves deploying LiDAR equipment on the International Space Station (ISS). This enables 3D forest observation from space, capturing highly accurate topographical data, which is expected to contribute to climate change mitigation and biodiversity research, and deserves greater public recognition.

In the "Social Involvement" section, the report highlights measures to prevent misconduct in research and appropriate management of research funds providing links to related websites for further information. JAXA's efforts to improve work-life balance (WLB) are also noteworthy, as exemplified by the formulation of "Unified Action Plan of the Act for Measures to Support the Development of the Next Generation and the Act on the Promotion of Women's Active Engagement in Professional Life" in April 2023.

To enhance the international competitiveness of Japan's space industry, strengthening collaboration between industry, academia, and government is essential. There are high expectations for JAXA to play a central role as a hub in fostering this collaboration.



Setsuko Aoki

[Short Biography]

Professor, Keio University Law School Specialized in international and space laws. Deputy Director of Keio Advanced Research Center for Space Law. She is grateful every day that many of her students, who completed the specialized course in space law, are actively contributing space industry in Japan and globally.

FY2024 marks a significant milestone for JAXA. It is the final year of the Phase 4 Medium/Long-Term Plan, and the year when JAXA began its operations as an "organization that allocates funds in the space sector," aiming to swiftly provide support with a total fund of 1 trillion yen. This is in addition to its existing role as the "core implementing agency to support the Japanese government's overall aerospace development and utilization." As JAXA's social responsibilities continue to grow, the significance of the 19th Sustainability Report becomes even more pronounced.

To ensure stable progress in national space research and development, broad public understanding and support are essential. Therefore, this report itself is a valuable opportunity to gain public understanding. In fact, one can see various efforts toward that objective in this report. For example, the section "Involvement in the Environment" presents JAXA's satellite data analysis results contributing to global environmental protection and the improvement of local environments in Japan. This latest report adds an analysis result of crust/ground deformation caused by the Noto Peninsula Earthquake (p.15). Along with the achievements of "Daichi-2," this report presents information about the advanced radar satellite "Daichi-4," which was launched in July aboard the eagerly awaited third H3 rocket test vehicle, demonstrating how space technology is safeguarding the lives, safety, and security of the Japanese people. The table showing JAXA's energy consumption (input) and the volume of environmental loads generated (output) is particularly easy to understand this year, with a schematic diagram of JAXA's activities included in between (p.20-21). While it may be challenging to balance the enhancement of its activities with the reduction of environmental loads, JAXA has been making every effort, as evidenced by the emission trends for each category over the past five years, detailed on page 22. Looking at the long-term data, paper consumption has reduced by approximately 85%, from 121.1 tons in FY2005 (p.34 in the FY2007 report) to 19 tons in FY2023. This demonstrates JAXA's ongoing efforts to minimize its environmental loads as much as possible.

This report is highly effective with its clear numbers, tables, and graphs. Readers seeking detailed explanations can access further information on the relevant website. I found the "Details" linking guide in this year's report particularly helpful for understanding the premises, systems, and processes behind JAXA's efforts within Japan's ESG (Environmental, Social, and Governance) framework.

The actual numbers make it clear that JAXA is committed to fostering individual expertise and maintaining a fair and equitable work environment, as evidenced by the high employee retention rate of 97% three years after joining. The "Management Reform Review Committee's Report: Maximizing the Value of People and Making the Organization Evolve Even Stronger" mentioned in the top commitment is fully available on the website. The published report openly includes voices from the internal social media platform, highlighting concerns about a culture where the person suggested idea must take responsibility of its implementation, and recognition is given only to those who launch. I believe that the transparency and willingness to drive future action plans are the very qualities that strengthen an organization.

One area for improvement in this report includes the section "Introduction of JAXA Projects" (p.10-13). Perhaps reflecting the realism of "space being a realm of darkness," the background features dark colors, which made the descriptions of rockets and satellites somewhat difficult to read. Whether viewed on a screen or in print, the text appears faint, which is a challenge for those with presbyopia. Enhancing readability in this section would be greatly appreciated.

Finally, I look forward to seeing the section on "Involvement in the Environment" include the number of debris removed this year and information on JAXA satellites that achieved significant results.

To Enhance the Reliability of This Report

In order to enhance the reliability of the “Sustainability Report 2024” (hereinafter referred to as “this report”), the Japan Aerospace Exploration Agency (JAXA) utilized a checklist and an internal audit system to evaluate the activity reports of all divisions in accordance with the “Environmental Reporting Guidelines” issued by the Ministry of the Environment.

Using the Self-assessment Guide for Enhancing the Credibility of Environmental Reports as a reference, we used a checklist to check that the information (numerical data, etc.) and descriptions about environmental load contained in this report comply with the Environmental Reporting Guidelines.

September 2024
Head of Safety and Mission Assurance Department

Masaaki Mokuno

In order to ensure the reliability of the information (numerical data, excluding those on papers) about environmental load contained in this report, we conducted audits of the following business sites out of all JAXA’s business sites between May and June 2024 to verify the consistency of the source documents and business forms with the numerical data in this report, and checked that there were no problems.

- Earth Observation Center
- Sagamihara Campus (including Akiruno Branch)

September 2024
Head of Evaluation and Audit Department

Yasuhiko Ozeki

Details: Self-assessment Checklist

[Editor’s Note]

Thank you for reading “JAXA’s Sustainability Report 2024.” In creating the cover illustration for this report, we focused on the themes of “transformation” and “leap forward.” In response to repeated incidents, including the rocket launch failure and research non-compliance cases in FY2023, JAXA has engaged in earnest self-reflection. This effort led to the establishment of the Management Reform Review Committee, tasked with transforming the organization into a stronger entity. The committee has developed a comprehensive set of improvement measures, including initiatives aimed at reforming the organizational mindset. By steadily implementing these measures, JAXA strives to drive the evolution of its people and organization, paving the way for a future where Japan’s aerospace development achieves significant advancements.

This report describes how JAXA’s aerospace business contributes to various environmental and social issues. Further information is also posted on JAXA’s official website, so please take a look. We would greatly appreciate your cooperation in completing the survey.

[Scope of the Report, etc.]

Scope: All business sites except overseas
Period: April 1, 2023 to March 31, 2024 (including some data after this period)
Referenced guideline: “Environmental Reporting Guidelines 2018” issued by the Ministry of the Environment, “ISO 26000: 2010 Guidance on Social Responsibility” issued by the Japanese Standards Association (General Incorporated Foundation)
Improvement of reliability: Conducting an Internal Assessment to Improve the Reliability of this Report Rounding of numbers
Rounding of numerical figures: Decimal places are rounded to the nearest whole number

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[Publication]

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About JAXA

Japan Aerospace Exploration Agency (JAXA), a national research and development agency

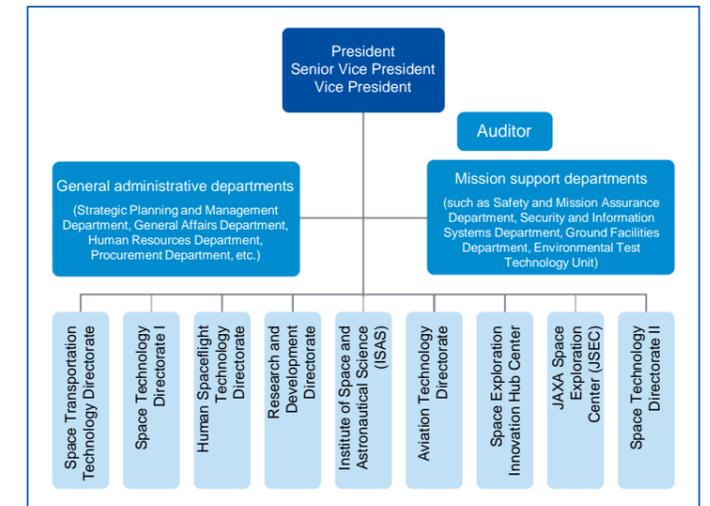
Japan Aerospace Exploration Agency

- **Headquarters** 7-44-1 Jindaiji-Higashimachi, Chofu City, Tokyo
Phone: +81-422-40-3000 FAX: +81-422-40-3281
- **Establishment (History)** An Incorporated Administrative Agency, the Japan Aerospace Exploration Agency (JAXA) was established in October 2003 in accordance with the Act on the Japan Aerospace Exploration Agency, Incorporated Administrative Agency (Act No.161 of December 13, 2002), merging three aerospace organizations, the MEXT Institute of Space and Astronautical Science (ISAS), the National Aerospace Laboratory (NAL), and the National Space Development Agency of Japan (NASDA). It became a National Research and Development Agency in April 2015.
- **President** Hiroshi Yamakawa
- **Number of directors** One senior vice president, seven vice presidents, two general auditors
- **Number of employees** 1,597 (as of March 31, 2024)
(Number of permanent employees)

Details

Organization Chart

As of March 31, 2024



Personnel-related data

	Unit	FY2019	FY2020	FY2021	FY2022	FY2023
Number of employees	people	1,554	1,562	1,589	1,586	1,597
Average number of days of paid leave taken	days	13.5	11.13	11.9	12.5	13.1
Number of employees taking childcare leave	people	56	59	53	63	75
Number of employees taking sick/injured childcare leave	people	190	135	167	133	214
Percentage of female managers	%	10.2	10.5	10.9	11.2	11.4
Percentage of disabled employees	%	2.65	2.66	2.52	2.4	2.6
Number of compliance hotline calls	cases	45	25	32	31	43
Use of the whistleblowing system	cases	1	0	0	1	0
Work-related accidents*	Accidents during work	cases	12	7	13	9
	Accidents during commuting	cases	2	3	1	2

*The number of work-related accidents occurring to employees of subcontractors is also included.

[Corporate Unit] Summary of Balance Sheet for FY2023

(Unit: million yen)

Assets		Liabilities	
I Current assets	694,118	I Current liabilities	374,466
II Fixed assets		II Fixed liabilities	618,108
1 Property, plant and equipment	372,449	Total liabilities	992,574
2 Intangible fixed assets	7,723		
3 Investments and other assets	21,831	Net assets	
Total fixed assets	402,003	I Capital	544,250
		II Capital surplus	(410,354)
		III Loss carried forward	30,347
		Total net assets	103,548
Sum of liabilities and net assets	1,096,122	Total liabilities and net assets	1,096,122

[Corporate Unit] Summary of Profit and Loss Statement for FY2023

(Unit: million yen)

Classification of profit and loss	
Ordinary expense	289,901
Ordinary income	267,181
Extraordinary loss	16,957
Extraordinary profit	17,151
net loss before tax	22,526
Corporate income tax, corporate residents' tax and enterprise tax	25
Net loss	22,551
Total loss	22,551

[Corporate Unit] Budget and Results for FY2023

Click here for financial statements, etc.

(Unit: million yen)

Classification	FY2023		FY2024
	Plan	Actual	Plan
Income			
Subsidy for operation	164,604	164,604	122,398
Subsidy for facility improvement	8,776	9,482	6,146
Subsidy for the ISS development	25,175	26,704	16,916
Subsidy for R&D on earth observation systems	5,891	5,887	6,075
Subsidy for promotion of advanced core rocket technology	11,006	9,370	3,242
Subsidy for space development support	300,000	300,000	—
Commission income	31,255	86,100	33,078
Other income	1,090	1,396	1,090
Total	547,797	603,543	188,945

Classification	FY2023		FY2024
	Plan	Actual	Plan
Expenses			
General and administrative expenses	4,976	4,980	6,087
Business expenses	160,727	153,214	147,397
Expended subsidy for facility improvement	8,776	9,366	6,146
Expended subsidy for the ISS development	25,175	26,645	16,916
Expended subsidy for R&D on earth observation systems	5,891	5,677	6,075
Expended subsidy for promotion of advanced core rocket technology	11,006	9,369	3,242
Commission expenses	31,255	80,658	33,078
Total	247,805	289,909	218,941

Sustainability Report 2024

Japan Aerospace Exploration Agency