

Proposal for the development of OIST

~OIST is driving the development of science and technology in the world,
the promotion of Okinawa, and the development of Japan~

March 2025

Okinawa Association of Corporate Executives

Table of contents

1. Survey overview

- (1) Purpose of the survey
- (2) OIST philosophy
- (3) Structure of this report

2. About basic research at OIST

- (1) Research system
- (2) Features
- (3) Achievements
- (4) Challenges

3. OIST's contribution and expectations for OIST confirmed through interviews etc.

- (1) OIST's contribution
- (2) Expectations for OIST

4. OIST's vision and recommendations for achieving it

- (1) OIST's vision
- (2) Efforts necessary to achieve OIST's vision
- (3) Individual and specific initiatives to achieve OIST's vision

5. Reference materials

Outline of the Cabinet Office "Final Report by the Study Group on Future Issues of Okinawa Institute of Science and Technology Graduate University "

Explanation of key terms

List of "OIST Development Project Team"

1 . Survey overview

(1) Purpose of the survey

The Okinawa Economic Association conducted a survey to raise awareness of the research activities of the Okinawa Institute of Science and Technology Graduate University (OIST), a world-class graduate school of natural sciences representing Japan, both within and outside the prefecture and to the world, and to consider mechanisms for connecting OIST's advanced research results and intellectual property to commercialization and startups in the private sector.

In conducting the survey, we will not place too much emphasis on research themes in which we can easily see results in a short period of time and will aim to ensure that OIST can continue to conduct basic research that has the potential to bring great value to society in the long term. We decided to proceed with the survey keeping this value in mind.

Figure 1 Purpose of the investigation

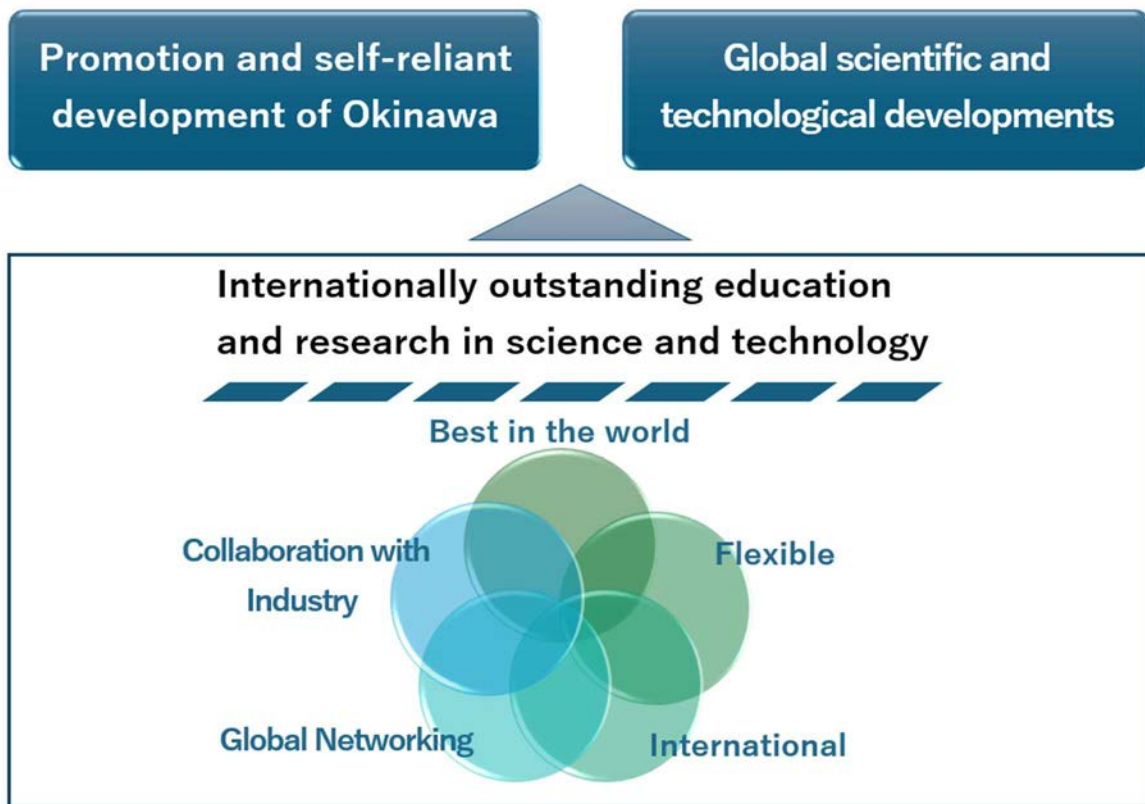


(2) OIST philosophy

OIST was established with the aim of conducting internationally outstanding science and technology education and research based in Okinawa, and contributing to the promotion and sustainable development of Okinawa as well as the development of science and technology around the world.

We hope that this report will lead to efforts by the public and private sectors to support and promote the OIST philosophy (Figure 2).

Figure 2 OIST's Basic Concept



Note1: The Figure2, outlining OIST's basic concept was prepared with reference to information provided on the official OIST website

(3) Structure of this report

First, we examined the status of basic research at OIST. Next, we summarized the relationship between OIST and Okinawa's economy and society. Based on this, we proposed what OIST should aim to be and what would be necessary to achieve it.

In addition, as reference materials, we have included specific initiatives that are considered effective for OIST to achieve its goals, as well as information from the "Study Committee on Future Issues of the Okinawa Institute of Science and Technology Graduate University" compiled by the Cabinet Office in 2021. A summary of the final report is attached.

2 . About basic research at OIST

In this section, we would like to confirm the basic research structure and challenges of OIST, which has achieved internationally outstanding scientific and technological results.¹

(1) Research system

As of September 2024, OIST's research structure has 87 faculty members responsible for basic research, 550 "research unit staff" and "research support staff" who support research, and 295 enrolled doctoral students working under them.²

OIST also recruits talented scientists from around the world. The recruitment criteria are strict: applicants must be in the top 10% or better in their field of expertise (top 5%), and in addition to internal screening, they are also evaluated by external evaluators selected by OIST. Recruitment decisions are made after multiple processes including screening and voting by faculty members.

Faculty members' research activities are evaluated every five years, and the results of a research review by an external panel of prominent experts are reflected in their compensation and the allocation of research funds. Reviews by external review committee members include: ① research presentations and discussions by faculty members, ② presentations by young research unit staff and interviews with unit members, ③ report preparation and discussion by external review committee members, and ④ presentations of the results from external review committee members to OIST officers. In addition to research results, budget and human resources management, quality of management, and future plans will be judged.

In research activities, "research unit staff" and "research support staff" manage research equipment, facilities, etc. and support faculty members' research.

(2) Features

There are several characteristics behind OIST's world-class research results. We would like to introduce three of these: "Interdisciplinary Approach," "High Trust Funding," and "Core

¹ The following descriptions include "OIST Strategic Plan 2020-2030", "OIST Five Year Plan", "OIST President's Goals 2029", OIST "Reiwa 5th Business Report", Cabinet Office "Okinawa Institute of Science and Technology Graduate University Future Plan" Based on the Final Report by the Study Group on Various Issues (hereinafter referred to as the Study Group; see reference materials for an overview).

² OIST HP <https://www.oist.jp/ja/about/facts-and-figures#toc1>. (Accessed on November 14, 2024)

Facilities."

OIST has eight main research fields (physics, chemistry, environment/ecology, marine science, mathematics/computational science, molecular/cellular developmental biology, neuroscience, engineering/applied science), and "Academic departments" as such do not exist. Each research unit emphasizes an "interdisciplinary approach," encouraging students to explore areas where different fields of science and technology intersect. It is hoped that the depth and breadth of research will be ensured through exchange and collaboration between researchers, leading to further research results.

The second mechanism is "high trust funding." This is a funding model that "trusts and verifies," and rather than being project-based, it provides faculty members with the necessary research resources (funds) and allows them to demonstrate their creativity. In addition, faculty members' research results are rigorously reviewed. The system guarantees research funds for five years and undergoes rigorous external review after five years.

High Trust Funding is a system that is possible because of the government's budgetary measures and is an essential system for attracting excellent researchers from all over the world to Okinawa Prefecture. Although this system is not common, it has been adopted by the world-famous research institutes Max Planck Society for the Promotion of Science and its affiliated research institutes (Germany) and the Institute for Science and Technology Austria. The third feature is the enrichment of "core facilities," which play an important role in OIST research. OIST is fully equipped with shared research infrastructure facilities (core facilities) that provide cutting-edge research equipment and technology, and highly specialized research support staff to support faculty members' research.

It is impossible for researchers to master all cutting-edge technologies and equipment on their own, and it is costly to secure equipment and equipment operators for their own units. Core facilities solve this problem.

(3) Achievements

Regarding OIST's research performance, we are 9th in the world and 1st in Japan in terms of the number of papers published in Nature Index selected academic journals to the total number of peer-reviewed papers published per faculty member (2019 results, the 2020 scale leveled ranking has not been announced).

In addition, according to an analysis of papers included in "Web of Science" (a database of paper citations) from 2012 to 2020, OIST (2.07%) is the only university in Japan where the proportion of the top 1% of papers in each field in terms of number of citations exceeds 2%. The percentage of the top 10% of papers was 14.7%, which also ranks first in Japan.

In 2020, Dr. Svante Pääbo, an adjunct professor at OIST, was awarded the Nobel Prize in Physiology or Medicine, and OIST has achieved remarkable results in a short period of time, as judged by the Study Group.

(4) Challenges

In the "OIST Five-Year Plan" by President Karin Markides, the period up to 2029 is defined as a period of transformation for further expansion. The aim is to increase the number of faculty units to 101 by 2029.

OIST has already reached the highest level in the world in terms of the quality of its research papers, but in terms of the number of papers it produces, there is a significant difference from the world's top universities and research institutes such as Stanford University, Oxford University, and the Max Planck Institute.

In order for OIST to be on par with the world's top research universities, the university aims to increase the number of faculty members to 300 faculty units, which is said to be a critical mass (a level at which research can rapidly develop through faculty collaboration). While aiming for 300 faculty units, it seems necessary to expand sequentially from 100 faculty units → 125 faculty units → 150 faculty units for the time being.

Regarding this point, the Study Group stated, "In order to take on the challenge of interdisciplinary, cutting-edge research that will trigger the creation of innovation, and to make a presence in the world, we need to expand our research fields more than we currently do. Recognizing that research fields need to be broader and more diverse than they currently are, the Study Group agreed that an expansion in scale is necessary."

In order to expand the scale of OIST, it will be necessary to increase the number of faculty members, build additional research buildings, and provide research equipment and facilities, all of which will require considerable budgetary measures. Strong support from the government is required, including an increase in the overall Okinawa promotion budget.

The following is stated in the "Blueprint of the New Graduate University, July 30, 2008" when the Okinawa Science and Technology Research Infrastructure Development Organization conceptualized the establishment of OIST. We would like to reaffirm the philosophy adopted at the time of the establishment of OIST.

- *The ideal size ultimately pursued by the university in the long term is around 300 PIs³ , with graduate schools and majors to be determined.*
- *High-level of government funding will be indispensable for a long period of time to support the graduate university to become one of the best-in-the-world, which contributes to promotion of Okinawa and academic advancement of science and technology in the world. It is requested to the Government, therefore, to consider a special mechanism under which substantial government subsidies will be provided.*

OIST is fully committed to fulfilling the long-term vision outlined in the OIST Strategic Plan 2020-2030, with a view to expanding to 300 faculty units (currently 90 faculty units) by the mid-2040s.

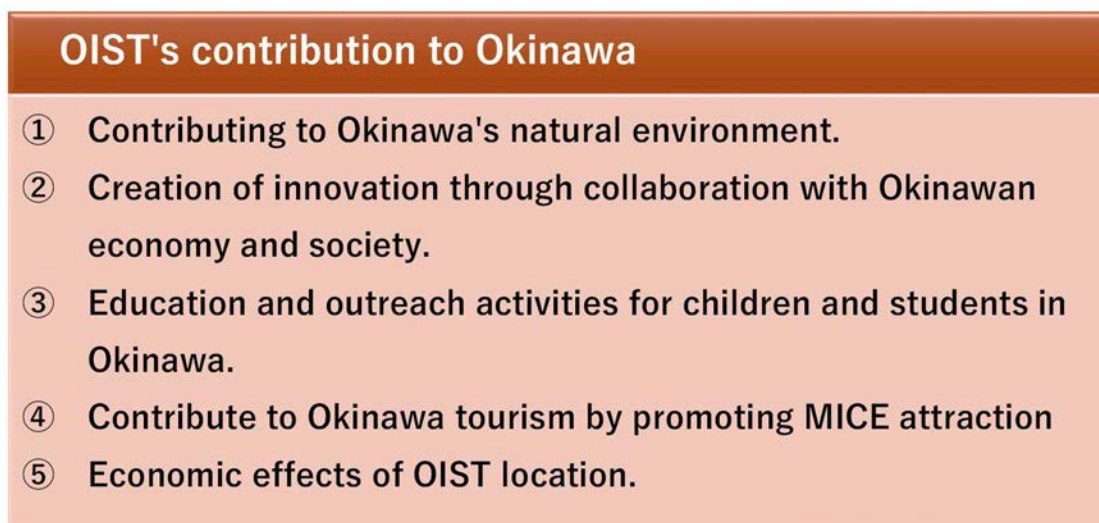
³ Abbreviation for Principal Investigator, which refers to a faculty member who is the head of a laboratory or a research director.

3 . OIST's contributions and expectations
for OIST confirmed through interviews etc.

(1) OIST's contribution

OIST is making significant contributions to Okinawa's economy and society not only through science and technology research and education, but also through external activities aimed at revitalizing the local economy and contributing to the region. Their contributions are wide-ranging, including Okinawa's natural environment, innovation, education, promoting MICE (Meetings, Incentives, conferences and Exhibitions), and inducing economic impact, which we would like to introduce below.

Figure 3 OIST's contribution to Okinawa



① Contribution to Okinawa's natural environment

While producing world-class research results, OIST is engaged in community-based research as Okinawa's innovation partner.

In addition to working to protect Okinawa's natural environment in a variety of ways, such as monitoring wildlife using cutting-edge technology and holding workshops to control invasive species, OIST also promotes Okinawa's specialty products such as Okinawa mozuku, kuruma shrimp, and sea grapes. By decoding the genomes of these products, OIST is contributing to the development of primary industries in the prefecture and the creation of high added value, including the development of aquaculture techniques that lead to stable production, quality improvements, and the development of new varieties. In the energy field, OIST is also working on the development of solar panel materials and technology for wave power generation, which is attracting attention as a renewable energy source.

In addition, with the aim of developing marine science based on the ocean which is the pride of Okinawa, Okinawa Marine Science Network was established (in 2017) through

collaboration among three institutions: OIST, the University of the Ryukyus, and Okinawa Prefecture. This initiative highlights OIST's central role in driving marine research in Okinawa.

② Creation of innovation through collaboration with the Okinawan economy and society

In order to achieve research partnerships that bring about innovation, OIST is focusing on collaboration with leading domestic and international universities such as the University of Tokyo and RIKEN, as well as major companies outside the prefecture, as well as collaboration with the Okinawan economy and society.

As an educational institution, OIST concluded a collaboration agreement with the University of the Ryukyus in 2012, and many joint research and exchanges have occurred between the two universities. The collaboration is not limited to researchers and students, but also includes joint research at the management level as well, as part of efforts to promote innovation.

In terms of collaboration with local companies, OIST has concluded a partnership agreement with Okinawa Electric Power Co., Ltd. that focuses on energy research aimed at achieving decarbonization, and they are working on the "joint development of new technologies" related to sustainable energy "in Okinawa. The aim is to spread the "Okinawa model" to island regions around the world. In addition, OIST is working on creating collaborations with the local community, such as a partnership agreement with Ryubo Shoji Co., Ltd. and the "Coral Project," which has the cooperation of 20 companies inside and outside the prefecture.

OIST also actively supports business start-ups, and through a wide range of support such as the OIST Innovation Accelerator ⁴(entrepreneur support program), a total of 26 startups and venture companies have been born at OIST, including EF Polymer Co., Ltd. The OIST Innovation Incubator (incubation facility) is scheduled to expand in spring 2025 and is expected to produce more startups and strengthen collaboration with Okinawa's industry.

③ Education and outreach activities for children and students in Okinawa

OIST places great emphasis on collaboration with the local community and is actively involved in education and outreach activities. Of particular note is the provision of science education programs aimed at a wide range of generations, with a focus on children and students within

⁴ OIST Innovation, a startup support program started in 2018, is subsidized by Okinawa Prefecture. Entrepreneurs from around the world will be selected and provided with the necessary funding, mentoring, and partnership to establish a company in Okinawa.

the prefecture.

For example, Koyo High School, a school designated as a Super Science School,⁵ not only conducts joint research with OIST and hosts on-site lectures by international researchers from OIST but also allows students to get a feel for OIST's worldview through visits to OIST. Koyo High School strives to draw out interest in OIST from various angles. In addition to this school, OIST hosts visits from over 5,000 students per year⁶ from many educational institutions inside and outside the prefecture, which demonstrates that OIST is an attractive place for strengthening public awareness of science for children and students. The need for inspection visits to OIST is attracting attention not only from Japan but also from overseas educational institutions, which shows that OIST is highly regarded internationally.

In addition, 2024 will be the 13th entrepreneurship contest "SCORE! (Science in Okinawa: Research for Enterprise)" sponsored by OIST for high school students. The contest is a program aimed at providing experiential science education to high school students in the prefecture, fostering an entrepreneurial spirit, as well as supporting English education and the development of global human resources, contributing to the development of human resources who will support Okinawa in the future.

By providing educational programs that take advantage of OIST's international character and through exchanges with world-class scientists, OIST is helping to stimulate Okinawan children's interest in science and increase their intellectual curiosity. OIST's education for children has an immeasurable contribution and is an investment in the future.

④ Contribute to Okinawa tourism by promoting MICE attractions

As Okinawa Prefecture is located at the gateway to a rapidly growing Asia, it is expected to play a role as a frontrunner driving the Japanese economy and is working to attract MICE by

⁵ Through advanced science, technology, science and mathematics education in high schools, we cultivate students' scientific abilities and skills as well as their scientific thinking, judgment and expression skills, and develop scientific and technological human resources who can play an active role internationally in the future. In order to achieve this goal, the government started an SSH project in 2002. In Okinawa Prefecture, two schools, "Kyuyo High School" (designated in 2013) and "Kouyo High School" (designated in 2019), have been designated by the government and are training advanced science personnel (Reiwa 3). (as of April). *Source: Koyo High School HP

⁶ OIST Strategic Plan 2020-2030

taking advantage of its geographical advantage. In this situation, the presence of OIST is helping to increase the appeal and attract more MICE events to Okinawa⁷.

In terms of human resources, OIST President Karin Markides has been appointed an advisor to the Okinawa MICE Network, whose secretariat is the Okinawa Convention and Visitors Bureau (OCVB). Mr. Yohei Morita⁸, Senior Manager of Academic Collaboration Promotion has been appointed secretary, and OIST is working to increase the number of international conferences and improve understanding of the significance of holding international conferences, while supporting the establishment of a prefecture-wide system for attracting and accepting MICE.

Additionally, according to a survey of domestic and international conference organizers conducted by OCVB in 2024, more than 40% of organizers cited "the presence of OIST" as one of the attractions of hosting a conference in Okinawa. Other comments include, "By setting up a place to interact with OIST researchers, communication became lively," "The campus tour was a very good experience for students and young researchers," and "At OIST, there is a person who is very active (in the field) and we were able to invite him."

In this way, OIST's internal human resources are actively involved in hosting and co-hosting international conferences, and OIST's presence is contributing to the achievement of high-quality MICE in Okinawa.

When hosting international conferences, OIST works closely with local communities, including OCVB, and together they work to improve satisfaction with hosting international conferences in Okinawa.

⑤ Economic effects of OIST location

OIST's location in Okinawa has had a significant effect on the Okinawan economy.

According to a 2019 study⁹, the economic ripple effect (total of production inducement effect and gross value added, 2017) due to demand generated by OIST-related economic activities is estimated to be 47.4 billion yen. Furthermore, the economic ripple effect on Okinawa when OIST has 100 faculty members is estimated to be 76.6 billion yen.

⁷ The following information is based on the results of an interview with OCVB conducted by the Okinawa Association of Corporate Executives.

⁸ Mr. Morita has also been appointed as a MICE attraction ambassador for the Japan National Tourism Organization (JNTO) on the recommendation of OCVB.

⁹ Okigin Economic Research Institute Co., Ltd. "Survey on the ripple effects of OIST location on Okinawa Prefecture and the Japanese economy" March 2019

It is important to note that these estimates are based on fiscal year 2017, but the fact remains that an annual budget of approximately 20 billion yen is invested, and the economic ripple effects from the establishment of OIST to the present are significant. It is estimated that the cumulative total of benefits such as employment creation, tax revenue, etc. will be enormous. OIST also receives many visitors every year, and their spending also contributes to creating an economic ripple effect. As mentioned above, OIST welcomes students from educational institutions both within and outside the prefecture and also attracts many visitors from outside the prefecture and overseas when it holds workshops, conferences, and other events. This makes OIST a leader in educational tourism in Okinawa and a major contributor to tourism in Okinawa.

In this way, the magnitude of the economic impact brought about by OIST has been shown quantitatively, and it is playing a major role in Okinawa's economic development.

However, awareness of OIST's contributions is low within the prefecture, and public relations efforts need to be strengthened to raise awareness. In the interview survey, we heard that only some research results were reported, and that the focus was not on OIST's community involvement and contribution activities, which are important to OIST. We hope that disseminating OIST's excellent achievements to the people of the prefecture will lead to strategically increasing its visibility, bringing OIST closer and closer to the local community, and creating further collaborations.

(2) Expectations for OIST

As mentioned above, OIST receives a large budget of over 20 billion yen annually. This abundant research funding supports OIST's world-class education and research. By conducting the world's highest level of education and research in Okinawa, OIST aims to contribute to (1) the promotion and sustainable development of Okinawa, and (2) the development of science and technology around the world¹⁰. When formulating a big vision for the future of Okinawa Prefecture, expectations are high for OIST.

¹⁰ Okinawa Promotion Special Measures Act (Act No. 14 of 2002), Okinawa Institute of Science and Technology Graduate University School Act (Act No. 76 of 2009)

Figure4 Expectations for OIST



① Leading the world in research fields that take advantage of Okinawa's rich natural environment

Basic research requires research that is rooted in the region, such as Okinawa's environment, economy, and education. We especially hope that OIST will lead the world in fields that take advantage of Okinawa's rich natural environment, such as marine science, sustainable energy, and research on ecosystems and biodiversity unique to subtropical regions.

As a result of this research, it is possible to make recommendations and solutions to environmental problems, propose new lifestyles that utilize local resources, and further develop the tourism industry, fisheries, and agriculture. This will also lead to contributing to the formation of a sustainable society that coexists with nature. Specifically, industrial development can be expected through the practical application of research results, such as the development of ecotourism that takes advantage of coral reef conservation techniques and the development of new crop varieties that take advantage of the subtropical climate.

② Strengthen collaboration with educational and research institutions within the prefecture

We also hope to strengthen collaboration with educational institutions and research institutes within the prefecture, such as the University of the Ryukyus and Okinawa National College of Technology. By combining OIST's world-class research facilities and outstanding researchers with the locally-based research infrastructure and expertise of educational and research institutions within the prefecture, we will be able to develop new research fields and

develop innovative technologies. These efforts have the potential to yield tangible outcomes. Specifically, we are considering launching joint projects between OIST and teachers and professors at educational and research institutions within the prefecture, exchanging personnel between researchers, and creating training opportunities for students. These cooperative efforts are expected to lead to the creation of various collaborations.

Furthermore, sharing and utilizing these research results with local industries will lead to the advancement of existing industries and the creation of new industries. For example, concrete economic revitalization is expected through industry-academia collaboration, such as the practical application of new technologies in the agriculture and fisheries industries and the development of new businesses in the biotechnology field. Through such a virtuous cycle, it will be possible to achieve both the development of academic research and industrial development in Okinawa.

③ Strengthening the economic foundation of Okinawa Prefecture

In order to strengthen Okinawa Prefecture's economic base, it is essential to form a research and development/industrial cluster centered on OIST. It is important to foster knowledge-intensive industries by leveraging OIST's world-class research results and promoting the establishment of venture companies and joint research with companies. This direction is also clearly indicated in the GW2050 PROJECTS being promoted by the Okinawa business community, Naha City, Urasoe City, and Ginowan City with the aim of achieving the integrated utilization of returned land and the reinforcement of the functions of Naha Airport in order to realize an economic model that can lead Japan. In these efforts, OIST is positioned as a knowledge hub that will form the core of Okinawa promotion, and there are high expectations for the role it will play.

Additionally, a new incubation facility is scheduled to be completed at OIST in the spring of 2025, and infrastructure construction is steadily progressing to accelerate the practical application and commercialization of research results. However, the physical space is not enough. In order for startups and venture companies to grow, it is essential to strengthen their intangible systems, such as providing research advice and mentorship. By providing technical advice and guidance to entrepreneurs and companies, OIST researchers and experts can increase the probability of commercialization success.

Furthermore, in order to support OIST's innovation ecosystem, it is important to collaborate with research institutes and financial institutions within the prefecture. If these institutions cooperate with OIST and provide intellectual and financial support to start-up companies, the possibility of commercialization will further increase. Possible examples include joint

research with universities and research institutes within the prefecture, and investments and loans from local financial institutions.

In addition, the government and Okinawa Prefecture are being called upon to develop an environment conducive to nurturing start-up companies, including tax breaks and infrastructure development.

Through this collaboration between industry, academia, government and finance, an innovation ecosystem centered on OIST will be established, and it is expected that innovations originating in Okinawa will be created one after another. It is believed that this will become a new growth engine for Okinawa's economy, further strengthening the prefecture's economic base, and greatly contributing to improving the lives of prefectural residents through job creation and income increases.

④ Attracting and promoting the use of international academic conferences and conventions, etc.

In addition, OIST is expected to take advantage of its international reputation and serve as a base for promoting Okinawa to the world. OIST has already hosted a number of international conferences in a variety of fields, including biotechnology, quantum physics, and marine science, attracting prominent researchers and experts from around the world.

By taking advantage of its privileged location, including views of subtropical nature and the blue ocean, a modern campus with state-of-the-art research facilities, and extensive conference facilities, OIST is able to host not only academic conferences but also business forums and cultural events. It is possible to hold conventions and events in a wide range of fields, such as exchange events and international symposiums.

In addition, OIST is expected to play a large role in attracting and accepting school excursions to Okinawa Prefecture. School excursions are important events that create a new customer base (repeat visitors) who are an important asset for Okinawa tourism. As the environment surrounding school education changes significantly, the needs for school excursions in Okinawa are diversifying, not only for peace studies and nature and cultural experiences, but also for "exploratory learning" and "SDGs learning" in line with the revised curriculum guidelines. These are becoming increasingly diverse, and a high level of acumen is required. By providing OIST's high-level educational programs to meet these needs, we will improve Okinawa's attractiveness as a school excursion destination, and in the medium to long term, improve the quality of tourists visiting Okinawa and increase the added value of tourism.

These activities are more than just one-off events; they help participants experience Okinawa's culture, promote tourism, increase the number of repeat visitors, and contribute to improving the quality of the tourism industry.

Furthermore, it will be an important opportunity to promote international exchange in Okinawa by building international human networks and deepening cross-cultural exchange. The accumulation of such efforts will establish a new image of Okinawa as an "island of intellectual creativity" and will greatly contribute to improving the brand power of the prefecture as a whole.

⑤ Utilizing OIST resources to enhance the intellectual curiosity of Okinawa residents in a wide range of fields

Finally, we hope that OIST will continue to contribute to education and human resource development in Okinawa. Improving the quality of education and developing human resources in Okinawa Prefecture are urgent issues and by collaborating with local educational institutions and governments, OIST will continue to provide high-quality educational programs and workshops that will not only improve the academic ability of the region but also foster interest in science and technology fields. OIST also hopes to develop human resources in the sciences while also contributing to their future career development and stimulate intellectual curiosity in a wide range of fields among the prefecture's residents.

In addition, by taking advantage of OIST's international environment where students and researchers from more than 50 countries come together, deepening their understanding of multiculturalism, and learning about diversity, OIST will contribute to the development of global human resources with an international mindset.

Furthermore, it is also important to strengthen cooperation not only with children and students, but also with educational institutions (education departments) and teachers. Through projects such as teacher training and joint research conducted by OIST, the quality of education in Okinawa Prefecture can be improved by incorporating cutting-edge educational methods and research into educational settings. It is hoped that this kind of initiative by OIST will improve the level of human resources being trained throughout the region.

By making the most of OIST's resources and collaborating with the local community, it is possible to contribute to the development of human resources who will carry the future of Okinawa Prefecture. We hope that the educational support that meets the needs of local communities will continue through various initiatives.

4 . OIST's vision and recommendations for achieving it

As we have confirmed so far, OIST is steadily producing results in basic research and in promoting and self-sustaining development of Okinawa. However, as stated in the final report by the Cabinet Office Study Group¹¹, OIST's efforts are only halfway complete, and it is necessary to clearly state what OIST should aim for and to work together as one to achieve it.

(1) OIST's vision

OIST aims to promote education and research related to internationally outstanding science and technology based in Okinawa and thereby contribute to the promotion and independent development of Okinawa as well as the development of science and technology around the world. We would like to advocate the following two ideas (Figure 5).

➤ **Vision 1: Making OIST a hub of knowledge for the world**

OIST will become a graduate school at the cutting edge of science and technology research in the world, producing a large number of Nobel Prize-winning papers. It should also become a graduate school that scientists and students from all over the world aspire to, and truly a hub of global knowledge.

In addition, Japan's leading companies will strengthen their collaboration with OIST and take full advantage of OIST's research results to expand their businesses around the world.

➤ **Vision 2: Making OIST an international hub for startups and ventures**

Start-up venture companies from OIST will contribute to the development of Okinawa, which will lead to the development of Japan. Venture capital funds from around the world are establishing bases around OIST, and OIST should become a graduate school for global entrepreneurs.

Figure5 OIST's vision

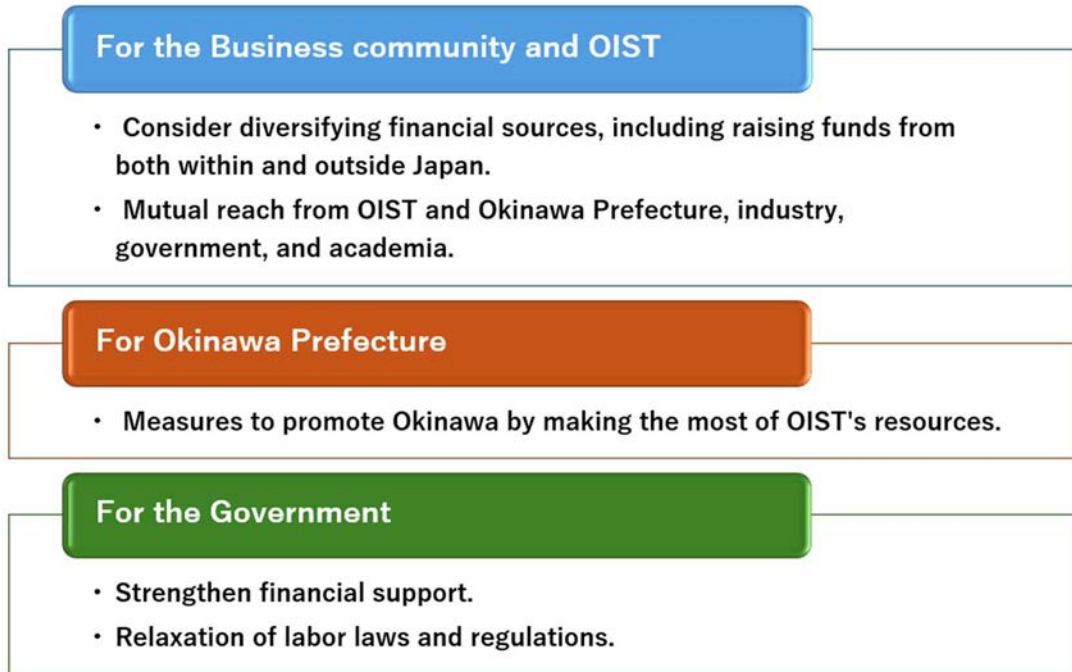


¹¹ See reference

(2) Efforts necessary to achieve OIST's vision

In order to achieve OIST's vision, we would like to request the following from the government, Okinawa Prefecture, Okinawa economy and society, and OIST.

Figure 6 Efforts necessary to achieve OIST's vision



① Reach from both OIST and Okinawa Prefecture's industry, government, and academia is necessary

In an interview with the Okinawa Association of Corporate Executives, President Karin Markides said, "It is important for both OIST and the business community to reach out to each other, and we need a forum for discussion."

OIST conducts basic research at the highest level in the world while conducting outreach activities to the Okinawan economy and society.

Okinawa's industry, government, and academia must become more involved in OIST than ever before, and make efforts to maximize the results of OIST. Compromise from both OIST and Okinawa Prefecture's industry, government, and academia is necessary.

Okinawa Prefecture and the Okinawan economy and society are strongly urged to promote Okinawa by making maximum use of OIST's intellectual, physical, and human resources.

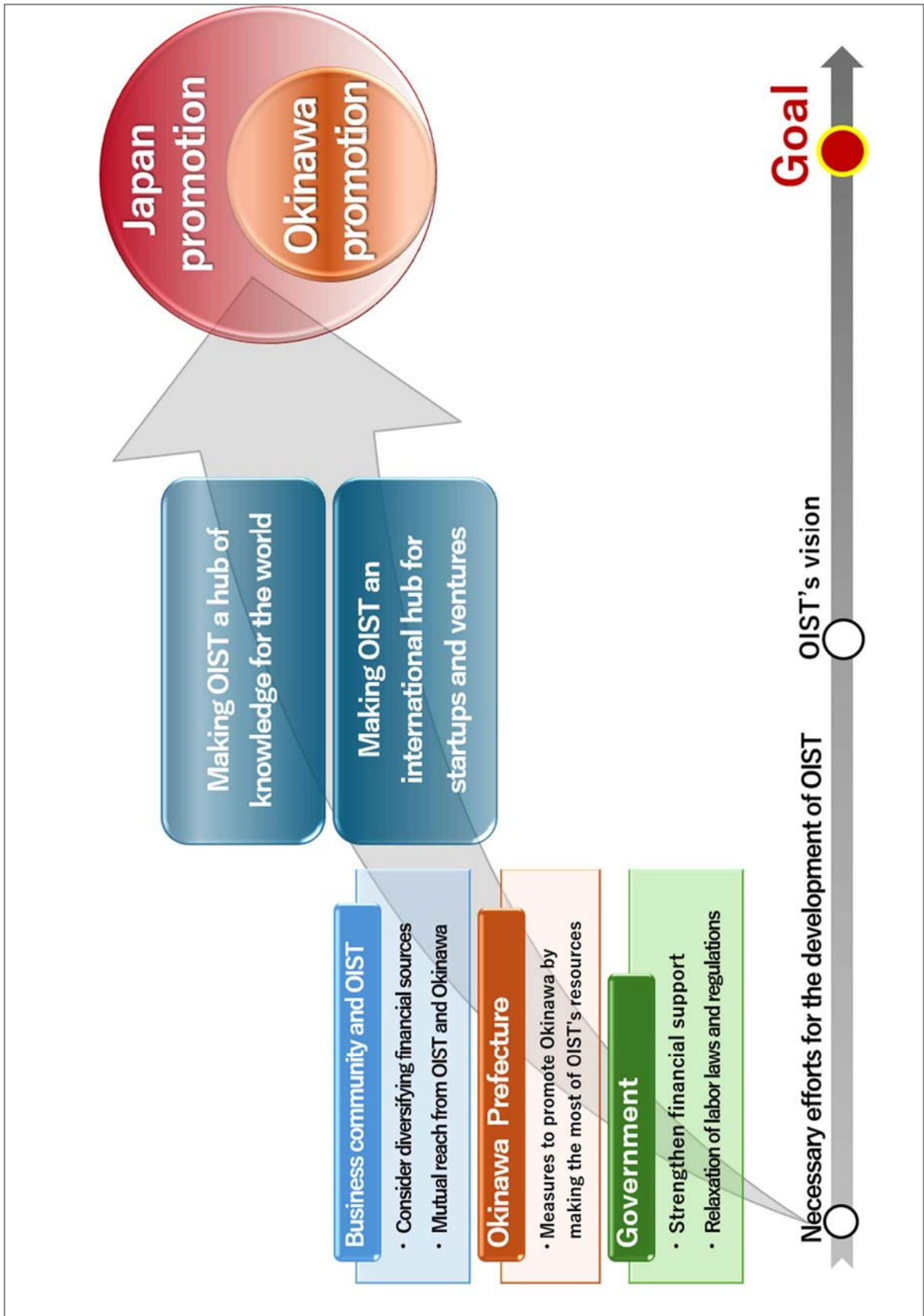
② Government financial support and deregulation

OIST is a knowledge hub that Okinawa Prefecture and Japan can be proud of. Based on the world's highest level of basic research, OIST conducts a variety of initiatives, including research rooted in Okinawa, support for startups and venture companies, and local community education and outreach activities.

According to an interview survey conducted by the Okinawa Association of Corporate Executives with various organizations, residents of the prefecture are proud of the existence of OIST and view it as an important institution that gives dreams and hopes to children and students and will drive the development of Okinawa in the future. Expectations for OIST are high, and the importance of government trust funding to support basic research, which is the basis of OIST's value, will remain unchanged.

OIST and the business community will consider ways to diversify OIST's financial resources and work toward their achievement. We would like to strongly urge the government to continue to provide stable financial support for OIST's basic research. It is also necessary to consider measures to ease labor laws and other regulations that may constrain OIST's research activities.

Figure 7 Summary of the Proposal



(3) Individual and specific initiatives to achieve OIST's vision

We have organized individual and specific initiatives to achieve OIST's vision.

We look forward to the collaborative efforts of not only OIST but also other related parties.

Figure 8 Matters that should be addressed early

1. Matters that should be addressed early
(1) Efforts to improve educational and research results
<ul style="list-style-type: none">① Strengthen the research system by securing and expanding financial resources<ul style="list-style-type: none">• Provide ongoing financial support from the Okinawan business community and encourage Okinawa residents to make small donations to support OIST throughout Okinawa Prefecture.• We strongly urge the government to continue to provide stable financial support.• Collect donations from companies nationwide in collaboration with economic organizations nationwide, such as the Japan Association of Corporate Executives.• OIST will leverage its international recognition to strengthen funding from overseas.• OIST will strengthen its efforts to obtain funding from other government budgets, such as Grants-in-Aid for Scientific Research.• OIST utilizes crowdfunding.② Promote joint research with major companies and others<ul style="list-style-type: none">• OIST will strengthen collaboration with economic organizations nationwide to strengthen joint research with major companies and research institutions in Japan and overseas• OIST will strengthen exchanges with researchers from companies in Japan and overseas.③ Improving the educational environment for children of international families<ul style="list-style-type: none">• In order to prevent researchers who have children from leaving the country, consider establishing high-level educational institutions such as international schools for children of international families
(2) Efforts to enhance contribution to the promotion and sustainable development of Okinawa
<ul style="list-style-type: none">① Strengthening the “Regional Cooperation Office”<ul style="list-style-type: none">• Dispatching human resources from the Okinawan business community to strengthen OIST's regional collaboration efforts.• The Regional Support Office is under the direct control of the president, and supports the commercialization and financing of OIST-originated innovations and startups, promotes collaboration with the government, prefectural research institutions, prefectural educational institutions, prefectural companies, local communities, etc., and supports public relations activities.② Establishment and strengthening of Business development advisors (coordinators)<ul style="list-style-type: none">• Establishment of a business development advisor who will match OIST's research results with the needs of companies in the prefecture.③ Strengthening support for startups and venture companies<ul style="list-style-type: none">• OIST will use new incubation facilities as a core to strengthen its support for startups and venture companies.④ Town development centered on OIST<ul style="list-style-type: none">• Establish a council to discuss urban development among OIST, Okinawa Prefecture, Onna Village, Yomitan Village, Uruma City, Nago City, and the business community.⑤ Planning and execution of public relations strategy<ul style="list-style-type: none">• Planning and implementing public relations strategies to disseminate OIST's activities within Okinawa Prefecture and across Japan.⑥ Cooperation or strengthening of cooperation with educational and research institutions in the prefecture<ul style="list-style-type: none">• OIST will begin or strengthen cooperation with the University of the Ryukyus and other universities in the prefecture, the National Institute of Technology Okinawa College, and research institutes in the prefecture.
(3) Efforts by the Okinawan business community to support OIST
<ul style="list-style-type: none">① Establishment of OIST contact points at economic organizations in Okinawa Prefecture<ul style="list-style-type: none">• The Okinawa Association of Corporate Executives will demonstrate leadership in collaboration between the business community and OIST by establishing the OIST Promotion Committee (tentative name).② Holding an exchange meeting between OIST and the Okinawan business community every year<ul style="list-style-type: none">• Exchange meetings between OIST and the Okinawan business community will be held alternately in Naha City and Onna Village.③ Strengthen OIST nationwide awareness activities<ul style="list-style-type: none">• Invite economic organizations from around the country to OIST to raise awareness.④ Establishment of OIST Collaboration Division in Okinawa Prefecture<ul style="list-style-type: none">• Establish the OIST Collaboration Division (tentative name) in Okinawa Prefecture to strengthen support for OIST by Okinawa Prefecture.
(4) Linking of GW2050 PROJECTS and OIST
<ul style="list-style-type: none">• Position OIST as a knowledge hub that will become key to the promotion of Okinawa, and link the promotion of Okinawa with the development of OIST.

Figure 9 Matters to consider in the medium term

2. Matters to consider in the medium term	
(1) Budget measures for OIST to expand its scale	<ul style="list-style-type: none"> When strengthening basic research at OIST, consider one indicator to be the vision outlined in the Strategic Plan 2020-2030 prepared and published by OIST, and consider the budgetary measures necessary to reliably promote an expansion of scale in the future.
(2) Making OIST an international high-level exchange hub	<ul style="list-style-type: none"> The business community, the Cabinet Office, the Ministry of Foreign Affairs, and the Ministry of Education, Culture, Sports, Science and Technology collaborate to hold regular international conferences at OIST. (Example) International conferences at the level of ministers in charge of science and technology, conferences for global business leaders (Okinawa version of Davos).
(3) Leading the world in ocean-themed research	<ul style="list-style-type: none"> Strengthen ocean-themed research and lead the world in solving ocean issues and achieving a blue economy.

Reference materials

For reference, we have attached the summary of the Cabinet Office's "Final Report by the Study Group on Future Issues of the Okinawa Institute of Science and Technology Graduate University" (2021).

Outline of the Cabinet Office “Final Report by the Study Group on Future Issues of Okinawa Institute of Science and Technology Graduate University”

(1) Evaluation of the current situation of OIST

Based on the Okinawa Institute of Science and Technology Graduate University School Act (hereinafter referred to as the School Act), the Cabinet Office has a "Study Group on Future Issues of the Okinawa Institute of Science and Technology Graduate University" (hereinafter referred to as the Study Group) was established, consisting of experts and sought advice from a professional perspective to discuss issues related to the future management of OIST and the state of financial support based on Article 14 of the Supplementary Provisions of the School Act..

The study committee has conducted a total of 23 discussions on the state of government financial support for OIST, from the 14th study session held in 2018 to the 36th study session held in 2021 and has issued a final report.

The final report covers the current state of OIST in five areas: "Organizational Management," "Education and Research," "Contribution to the Promotion and Independent Development of Okinawa," "Public Relations, Information Disclosure, Other Legal Compliance, etc.," and "Finance." The results are evaluated separately, and a comprehensive evaluation is performed as a summary.

The study committee's final evaluation was dated August 31, 2021, but the issues pointed out there are still issues that OIST faces today, and OIST is working to resolve them. We would like to introduce the review committee's overall evaluation below.

Overall evaluation

Based on the above, the Study Group makes an overall assessment that OIST's efforts and results in the 10 years since the enactment of the School Law have largely achieved the mission statement set forth by OIST, and that the implementation status of the School Law is generally good.

In particular, in terms of research results as a graduate university, it is noteworthy that OIST has achieved international excellence in science and technology, ranking 9th in the world and 1st in Japan in the scale-adjusted rankings of the "Nature Index 2019" in just less than 10 years.

In addition, OIST engages in educational activities with new ideas not found in traditional Japanese universities, such as the placement of laboratories that are not limited to research fields and the introduction of laboratory rotations to enhance interdisciplinary fusion. It is also highly praised for providing high-quality education by providing students with a global educational environment and an environment where they can concentrate on their studies and research under the guidance of excellent researchers.

In the future, it is hoped that OIST will take advantage of its research capabilities and high level of internationality to carry out initiatives that will contribute to the formation of networks between the academic world in Japan and the world.

In addition, in terms of organizational management, we commend OIST for building an organizational structure befitting a university that conducts education and research at the highest standards in the world, and for reviewing its operational structure in a timely and appropriate manner in line with the expansion of the university's scale.

Regarding contributions to the promotion and independent development of Okinawa, it can be praised for promoting research aimed at solving problems faced by Okinawa while making use of Okinawa's characteristics and

resources. In addition, it can be evaluated that the use of research results toward the formation of an innovation ecosystem is being promoted, such as industry-academia collaboration efforts and the creation of OIST-originated ventures and startup support.

However, although these efforts have achieved a certain level of recognition, they are still only halfway through achieving the purpose for which OIST was established. The challenge is to become even more rooted in the local community by communicating with Okinawa's industry and local government on a daily basis, striving to understand the issues Okinawa faces, and deepening collaboration.

In addition to strengthening collaboration with the region, it is also necessary to strengthen international industry-academia collaboration by utilizing OIST's international network.

Based on the above evaluation, OIST will continue to promote the world's highest standards of education and research and will utilize its high research capabilities and OIST's international network to promote Okinawa and promote exchanges with academia and industry in Japan and around the world. The challenge is how to contribute to promoting collaboration.

(2) Recommendations

Based on the evaluation of OIST's current status, the committee stated, "We hope that OIST will achieve its desired goals by growing into a world-class research university that connects Japan and the world through science and technology, while remaining rooted in Okinawa." To this end, we propose four items.

As with the evaluation of the current situation, these recommendations also apply to OIST today, and we would like to introduce them below.

- OIST is required to work on solving social issues through the promotion of science and technology. In the process of innovation sprouting from research results originating from OIST and new industries being born and growing in Okinawa, OIST will become a node and contribute to the promotion of Okinawa and, ultimately, the development of Japan's economy and society.
- It is important that the financial base that supports the development of universities be sustainable. OIST needs to quickly break away from the current situation where government subsidies account for approximately 95% of its operating budget. (Omitted) We urge OIST to diversify its financial resources by acquiring private funds, etc., and establish an independent financial base.
- In order to achieve the purpose of establishing OIST, financial support from the government is still necessary, and we ask the government to provide appropriate support. (Omitted) In addition, the government should encourage OIST to establish an independent financial base by securing its own financial resources and executing them efficiently and to consider what kind of support should be provided at regular intervals, taking into account OIST's strategy and its achievements.
- Compared to the world's highest-level universities, the current OIST is small and its research fields are not sufficiently wide and diverse, which is a constraint on the ability to sustainably create internationally outstanding science and technology. (Omitted) It is necessary to expand the scale for the future.

(3) Current status evaluation and recommendations by the study group

The Okinawa Association of Corporate Executives conducted an interview survey with OIST officials, OIST's partner educational institutions, research institutes, economic organizations, local governments, etc., and found that many of them recognized the same issues as the study group.

As mentioned above, the review committee's current assessment and recommendations adequately represent the current situation at OIST.

-Explanation of key terms-

1. Okinawa Institute of Science and Technology (OIST)
A private graduate school that was established based on the Okinawa Institute of Science and Technology Graduate University Act (Act No. 76 of 2009). It opened in November 2011. Most of its operating funds are covered by financial support from the government (Okinawa promotion budget). It is located in Onna-son, Kunigami-gun, Okinawa Prefecture.
2. Interdisciplinary approach
OIST does not have academic departments. It encourages doctoral students to explore the areas where different fields of science and technology intersect.
3. High trust funding
A mechanism to trust the researchers and provide research resources (funds) that are not tied to any particular project.
4. Core facilities
A mechanism where researchers are supported by a group of experts with highly specialized technology and cutting-edge research equipment.
5. OIST Five-Year Plan
The five-year plan that was formulated in June 2024.
6. OIST Strategic Plan 2020-2030
The long-term plan formulated in July 2019.
7. GW2050 PROJECTS
A project being promoted by the Okinawa business community, Naha City, Urasoe City, and Ginowan City. It aims to achieve the integrated utilization of returned land and the reinforcement of the functions of Naha Airport in order to realize an economic model that can lead Japan.
8. Innovation ecosystem
This refers to an environment and state in which various players such as government, universities, research institutes, companies, and financial institutions are all involved with each other and create an ecosystem of continuous innovation. (Excerpt from the Ministry of Education, Culture, Sports, Science and Technology website.)
9. Reach from both sides
The situation where there is compromise from both OIST and Okinawa's industry, government, and academia.

List of "OIST Development Project Team"

Job title	Name	Company name/position
Chairperson	Miki Fuchibe	Representative Director, Chairperson, JCC Corporation
Chairperson	Masayasu Yamashiro	President, The Bank of Okinawa, Ltd
Chairperson	Hiroyuki Motonaga	Representative Director, President, The Okinawa Electric Power Company, Incorporated.
Vice-chairperson	Yoshikazu Higashi	Chairman and CEO, Okinawa Tourist Service inc.
Vice-chairperson	Haruo Tome	Representative Director, Chairperson, Ryuseki Co.,Ltd.
Vice-chairperson	Ken Shimabukuro	President, Bank of The Ryukyus, Ltd.
Vice-chairperson	Kazufumi Shinjo	President, The Okinawa Kaiho Bank, Ltd.
Vice-chairperson	Takako Maeda	President, Yugaf Holdings. Inc
Chairperson, Regional Economic Development Committee	Ryoji Toyoda	President, Ryugin Research Institute, Ltd. t
Chairperson, Administration Planning Committee	Hidekazu Tamaki	Executive Director, Nansei Shoto Industrial Advancement Center
Chairperson, Acquisition and Interchange Committee	Fumihiko Kobayashi	Senior Branch Executive, Kawasaki Heavy Industries, Ltd. Okinawa Office
Chairperson, International Committee	Hideki Kakihana	President, Okigin Economic Research Institute Co.,Ltd
Chairperson, Tourism Committee	Shinobu Kikuzato	President, Ryukyu Cement Co.,Ltd.
Chairperson, Information Technology Committee	Masato Urakami	General Manager Okinawa Branch, Tokio Marine & Nichido Fire Insurance Co., Ltd.
Chairperson, Environment and Energy Committee	Hiroyasu Kugai	President, Okinawa Plant Kogyo Company, Inc.
Chairperson, Military Bases and National Security Committee	Ikuo Idemura	President, Naha Airport Cargo Terminal Co.,Ltd
Chairperson, Future Creation Committee	Ken Agena	Representative Director, President, Ryuseki Construction Corp.
Chairperson, SDGs Committee	Hiroshi Tochino	Executive Officer and General Manager of the SDGs Mission Department, Okinawa Tourist Service inc.

Job title	Name	Company name/position
Secretariat	Takaaki Shimada	General Manager, Okinawa Association of Corporate Executives
Secretariat	Ryuta Uechi	Deputy General Manager, Okinawa Association of Corporate Executives
Secretariat	Nobuaki Arakaki	Researcher, Okinawa Association of Corporate Executives
Secretariat	Hiroo Matsushima	Researcher, Okinawa Association of Corporate Executives
PT Team Staff Member	Eriko Miyakuni	Managing Director and Head of Research Department, Ryugin Research Institute, Ltd.
PT Team Staff Member	Yui Komesu	Researcher, Ryugin Research Institute, Ltd.

In compiling this "Proposal," we received a wide range of opinions from many stakeholders. We would like to express our gratitude to everyone who cooperated with us.

