

Nagasaki University

# Island SDGs Project

Goto City / Photography by HAMAMOTO Sho, Local Vitalization Cooperator

## Activity Report 2019



Japan. Committed to SDGs



Goto City / Photography by HAMAMOTO Sho, Local Vitalization Cooperator

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# 1. Introduction

The United Nations SDGs (Sustainable Development Goals) launched in 2016, address various goals globally, advocating a 'Leave No One Behind' policy. The statement 'Leave No One Behind' means that, in order to achieve the sustainable developments that the SDGs aim for, ultimately to achieve true world peace and stability, there must not be any people 'Left Behind' either socially or locally.

Nagasaki is a prefecture that has longed for peace since losing everything after the atomic bombing in 1945, but it also has the advancing social problems that are within Japan, and the world, today. That is, an aging society and population outflow. The table 1-1 shows the advancement of the world's aging populations but whilst Japan currently has the most advanced aging population, most regions in the world are expected to be in a similar situation as Japan within the next 30 to 60 years. Within Japan, the world's most aging society, Nagasaki has many islands with an aging rate of around 10% higher than the national average (see the next diagram), and the outflow of the population on these islands is serious. Geographically, Nagasaki is the prefecture with the largest number of islands in Japan, and also has many remote areas on the mainland, so it can be said that Nagasaki is the most 'Easily Left Behind' area in Japan.

**Table 6.2. Demographic old-age to working-age ratio: Historical and projected values, 1950-2080**

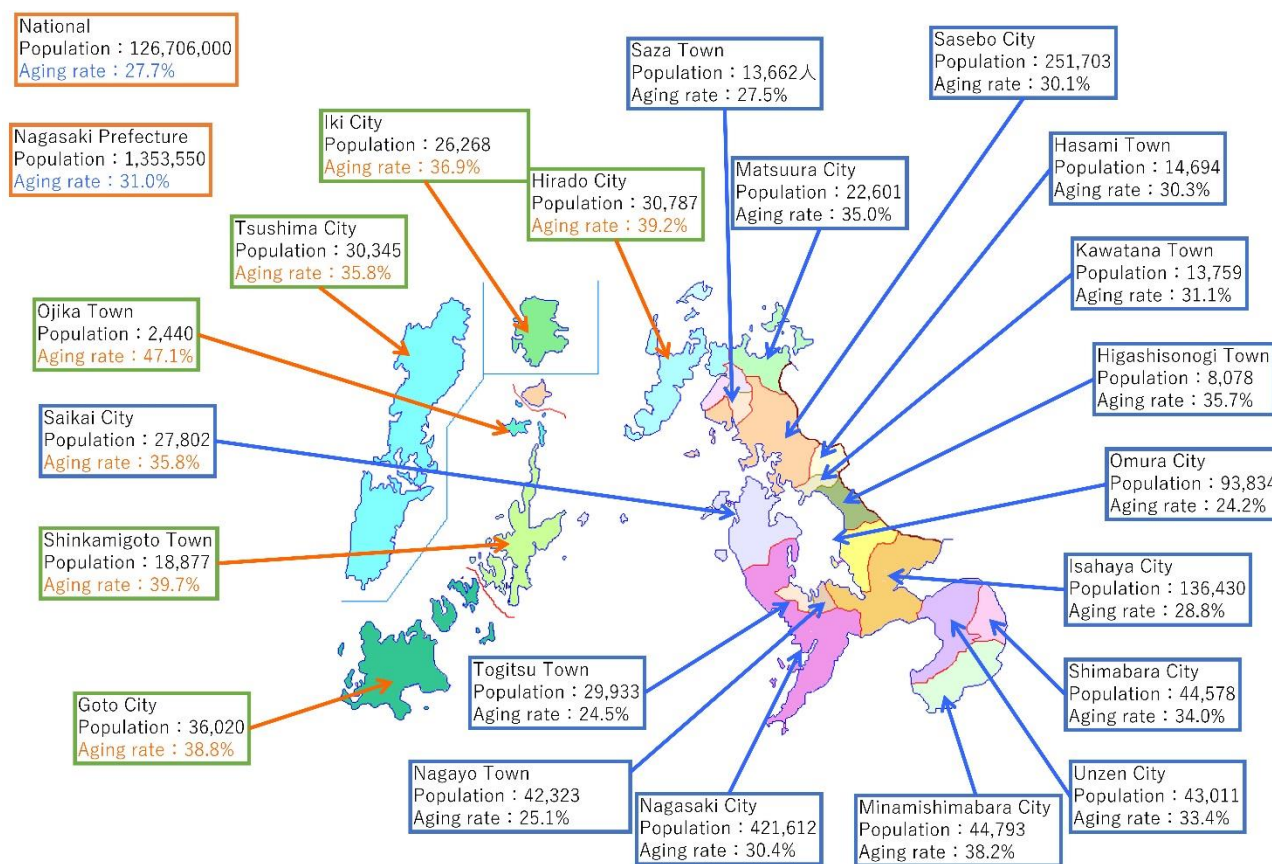
	1950	1960	1990	2020	2050	2080		1950	1960	1990	2020	2050	2080
<b>OECD members</b>													
Australia	14.0	16.0	18.8	27.7	41.6	49.4	New Zealand	16.3	17.0	19.5	28.3	43.8	57.5
Austria	17.3	21.0	24.3	31.3	56.0	60.2	Norway	16.0	19.8	28.5	29.6	43.4	53.4
Belgium	18.1	20.3	24.8	33.1	51.3	56.8	Poland	9.4	10.5	17.3	30.5	60.3	68.6
Canada	14.0	15.1	18.4	29.8	44.9	54.0	Portugal	13.0	14.8	23.9	38.6	71.4	72.3
Chile	7.2	7.9	10.9	19.7	44.6	67.5	Slovak Republic	11.9	12.6	18.2	26.5	54.6	58.1
Czech Republic	13.9	16.3	22.0	33.8	55.9	52.8	Slovenia	12.5	13.7	17.3	34.7	65.0	60.7
Denmark	15.6	19.0	25.9	34.9	44.6	52.4	Spain	12.8	14.6	23.1	32.8	78.4	74.4
Estonia	19.3	17.7	19.7	34.9	54.9	63.2	Sweden	16.8	20.2	30.9	35.9	45.5	53.4
Finland	11.9	13.5	22.0	40.1	51.4	65.0	Switzerland	15.8	17.6	23.6	31.3	54.4	56.7
France	19.5	20.8	24.0	37.3	54.5	62.2	Turkey	6.5	7.0	9.4	15.2	37.0	58.2
Germany	16.2	19.1	23.5	36.5	58.1	59.5	United Kingdom	17.9	20.2	26.9	32.0	47.1	55.1
Greece	12.4	12.2	22.9	37.8	75.0	79.7	United States	14.2	17.3	21.6	28.4	40.4	51.1
Hungary	13.2	15.5	22.9	33.4	52.6	55.4	<b>OECD</b>	<b>13.9</b>	<b>15.5</b>	<b>20.6</b>	<b>31.2</b>	<b>53.4</b>	<b>60.8</b>
Iceland	14.1	16.4	19.0	26.6	46.2	64.5							
Ireland	20.9	22.8	21.6	25.0	50.6	60.0							
Israel	7.1	9.1	17.8	23.9	31.3	39.9	Argentina	7.5	10.1	17.3	20.2	30.3	45.5
Italy	14.3	16.4	24.3	39.5	74.4	79.6	Brazil	6.5	7.1	8.4	15.5	39.5	63.7
<b>Japan</b>	<b>9.9</b>	<b>10.4</b>	<b>19.3</b>	<b>52.0</b>	<b>80.7</b>	<b>82.9</b>	China	8.5	7.6	10.2	18.5	47.5	60.6
Korea	6.3	7.6	8.9	23.6	78.8	94.6	India	6.4	6.4	7.9	11.3	22.5	40.8
Latvia	18.1	17.7	19.9	35.5	53.0	49.9	Indonesia	8.6	7.6	7.7	10.6	27.3	41.0
Lithuania	17.5	14.0	18.4	34.7	55.7	55.7	Russian Federation	8.7	10.5	17.2	25.3	41.7	41.9
Luxembourg	15.8	17.6	21.1	22.3	43.8	50.1	Saudi Arabia	7.5	8.4	6.1	5.3	28.2	44.8
Mexico	8.0	8.3	9.6	13.2	28.9	50.9	South Africa	8.5	8.4	8.7	9.6	17.4	26.8
Netherlands	13.9	16.8	20.6	34.3	53.3	62.2	EU28	14.7	16.2	21.8	33.5	56.3	61.7

Note: The demographic old age to working age ratio is defined as the number of individuals aged 65 and over per 100 people of working age defined as those aged between 20 and 64.  
Source: United Nations, Department of Economic and Social Affairs (2019), World Population Prospects 2019, Online Edition (for future periods: medium-variant forecast).

**Table1-1** The ratio of old-age to working age (the ratio of the population aged 65 and over to the population between the ages of 20 and 64) according to the OECD (Organization for Economic Co-operation and Development). The figures for Japan and each country in 2020 are highlighted in yellow. The red figures are the countries where the ratio of old-age to working age is more than 50%. Japan is the only country in 2020, but it is predicted that by 2050 and 2080 many countries will be more than 50%.

See <https://www.oecd.org/publications/oecd-pensions-at-a-glance-19991363.htm> PDF, page 174 for the original text.

Nagasaki University, based in Nagasaki, is a comprehensive university with fields such as Medicine, Education, Engineering, Fisheries, Environment, Economics and Global Humanities, and has the philosophy of ‘Creating science that supports the peace of the earth, thereby contributing to the harmonious development of society’. Prior to the SDGs, as a local university, each field had separately been conducting research and educational activities on islands and in remote areas, but in November 2018 the university became aware of the SDGs and the university as a whole launched partnerships with local governments, corporations, NPOs and citizens groups, leading to the start of the ‘Island SDGs Project’ to tackle the issue of island sustainability comprehensively. In this project, based on dialogue with the islands and remote areas we will gather knowledge for maintaining the local community, and share and comment on problem solutions in collaboration with overseas island and remote areas. This report summarizes the activities of the Island SDGs Project so far and future activities.



**Table 1-2** Population and aging ratio of Nagasaki Prefecture, cities and towns as of October 2017 (ratio of population aged 65 or over to population). Nagasaki Prefecture has a higher aging rate than the national average, but it can be seen that the aging rate of the islands in Nagasaki Prefecture is about 10% higher. This diagram is taken from Professor Takahiro Maeda’s presentation in the first Nagasaki University Islands and SDGs Symposium (the data is based on Nagasaki Prefecture’s Transferred Population Survey published by Nagasaki Prefecture, estimated population by age, city and town).

## 1-1. Organizational Structure of the Island SDGs Project

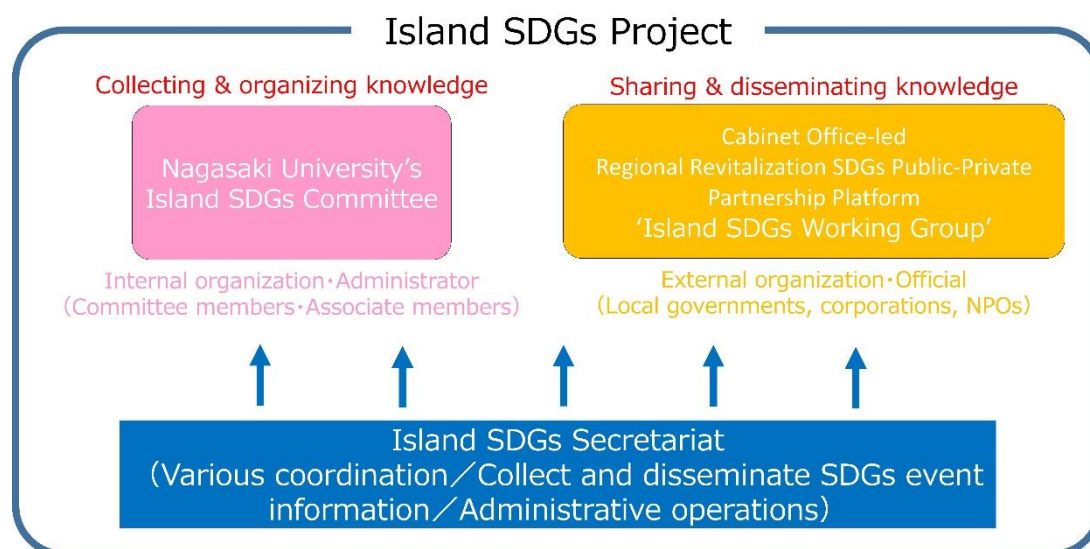


Table 1-3 Organizational structure of the Island SDGs Project

The Island SDGs Project is managed by the 'Island SDGs Committee' established within Nagasaki University and the 'Island SDGs Working Group' of the Cabinet Office's Regional Revitalization SDGs Public-Private Partnership Platform (Diagram 1-3). The Island SDGs Committee is made up of committee members involved in decision-making and associate members who are actually engaged in activities on remote islands and in remote areas, whilst collaborating with overseas collecting and organizing knowledge (see 4-2). The Island SDGs Working Group is the forum where the Island SDGs Project collaborates with local governments, corporations, NPOs, etc., on islands and in remote areas to share and disseminate the knowledge collected and organized by the Island SDGs Committee. Various coordination and administrative operations related to the Island SDGs Committee and the Island SDGs Working Group are performed by the Island SDGs Secretariat at Nagasaki University. As of February 2020, the members of each organization are as follows (honorifics omitted).

### Nagasaki University SDGs Committee/Committee Members (Decision makers: 6)

- NAGAYASU Takeshi (Trustee in charge of Research and International Affairs)
- MATSUDA Hiroshi (Director of the Infrastructure Lifetime-Extending Maintenance Research Center, Dean of the School of Engineering and the Graduate School of Engineering)
- NAGATA Yasuhiro (Director of the Comprehensive Community Care Education Center)
- NAKAMURA Norio (Vice-President in charge of Regional Education Collaboration)
- SOYANO Kiyoshi (Deputy Director of the Organization for Marine Science and Technology)
- AKAISHI Takatsugu (Trustee in charge of Social Collaboration and Student Affairs)

### Nagasaki University SDGs Committee/Associate Members (Participants, Island Activities: 10)

- NISHIHARA Gregory Naoki (East China Sea Environmental Resources Research Center)
- IKEDA Ko (General Support Center for Regional Education)
- KAGABU Makoto (Faculty of Environmental Science)
- YAMAMOTO Ikuo (Vice-President in Charge of Industry University Collaboration)
- SAITSU Yumiko (School of Global Humanities and Social Sciences)
- YASUTAKE Atsuko (School of Engineering)
- NISHIKAWA Takafumi (School of Engineering)

- MAEDA Takahiro (Director of the Collaboration Center for Community Medicine)
- SHIMOKAWA Isao (School of Medicine)
- FUJIKI Takashi (Faculty of Education)

Island SDGs Working Group Members (4 Municipalities)

- NAKAMURA Masashi (Nagasaki Prefecture, Planning Promotion Division, Community Development Promotion Section, Remote Island Promotion Group)
- NAKASHIMA Yasunori (Goto City, General Affairs Planning Division, Policy Planning Section, Policy Planning Group)
- IGA Tsuyoshi (Shinkamigoto Town, General Policy Division, Policy Promotion Group)
- SHINOZAKI Michihiro (Iki City, General Affairs Division, SDGs Future Section, SDGs Future Group)

Island SDGs Secretariat

(Various coordination, information gathering and dissemination, administrative operations: 2)

- FUJINO Tadanori (Office for Global Relations)
- YAMAURA Kimiyo (Office for Global Relations)



Naru Island, Senjojiki

## 2. Activities in Each Field of Nagasaki University's Island SDGs Project

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Nagasaki University is engaged in the following activities with regard to medical care, education, infrastructure, regional promotion, and fisheries, on islands and in remote areas, with a focus on maintaining the local community.

### 2-1. Medical Care

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#### How to Protect the Health of People on the Islands? (Related to SDGs 3)

##### ~ Activities Involving Society ~

The relationship between Nagasaki University and the medical care on remote islands is deep and since its opening the University has had a long history of involvement. Over the years it has been producing human resources that support remote island medical care, such as more than 50 years ago it conducted a filariasis survey in Matsushima, Sakai City. In fiscal 2004, Nagasaki Prefecture and Goto City launched the first local government donation course 'Remote Islands and Remote Areas Medical Science Course' at Nagasaki University, in order to enhance research and education on regional medicine and support for medical treatment. The 'Remote Islands Medical Research Institute' was opened at the same time as the start of the course in Goto Central Hospital, Nagasaki Prefecture, supporting various activities as an important activity foothold on remote islands.

As part of these activities, special medical examinations are conducted along with health checkups (Basic Health Survey for Residents), sponsored by the local governments to protect the health of the people on the islands. If the patient wishes, they can undergo special checkups for diseases such as dental disease, osteoporosis, rheumatoid arthritis, frail or hardening of the arteries (arteriosclerosis). For 3 years special medical examinations have been carried out in all districts of Goto City.



*Faculty members and students participating in Goto City health checkups and special medical examinations.*



## ~ Research Activities ~

In order to protect the health of the people of the islands, not just for now but also in the future, it is important to nurture future medical professionals. On remote islands in Nagasaki Prefecture, practical community medicine education is being conducted with the cooperation of many facilities and organizations related to the local health care system, such as hospitals, clinics, social welfare facilities, home-visit nursing stations and the government.

Nagasaki University Faculty of Medicine has been providing community medicine education (medical and health training for remote islands) for all medical students since fiscal 2004 as part of clinical training on remote islands in Nagasaki Prefecture. Staying for a week in Tsushima, Iki, Kamigoto and Shimogoto, students learn comprehensive community medicine and care for facilities and professional organizations involved in community health, medical care, welfare and nursing care. Since fiscal 2006, medical students from other universities have been accepted for this training, and in addition co-training with the Faculty of Pharmaceutical Sciences and the Faculty of Dentistry was introduced, which has now evolved into a comprehensive community health professional education program that transcends universities and faculties and is still developing. Furthermore, a joint educational program with Nagasaki Junshin Catholic University, which trains welfare human resources, was added, in order to enhance the quality of specializes fields and deepen the understanding of comprehensive community care systems through hands-on experience in remote island and remote area medical treatment, and to deepen understanding of nursing care and welfare, we aim to nurture medical professionals with nursing and welfare perspectives.

Also, every August the 'Nagasaki Community Medicine Seminar' is held in Goto City. Continuing from its predecessor, the 'Nagasaki Family Medical Intensive Seminar', which began in 2006, in 2019 it reached its 13th year. Students from Nagasaki Junshin Catholic University have also participated since 2016, while conducting fieldwork and group discussions with perspectives different from medical care and welfare, they competitively aim to be active in the fields of future comprehensive community care, primary care, homecare and general medical care.

As a research activity, based on data obtained from specific medical examinations, cohort studies are conducted to track specific diseases such as fractures, myocardial infarction, stroke and uveitis. Long-term tracking of those who cooperated with the research is conducted, also epidemiological research on whether-or-not mainly lifestyle-related diseases develop, and what the factors related to the development are. If common characteristics and risk factors are found in people who develop the disease, it may be used to prevent future cases.



*Under faculty member guidance, medical students participate in the program.*



*International students also learn about the field of community medicine.*

~ As a University, for Society ~

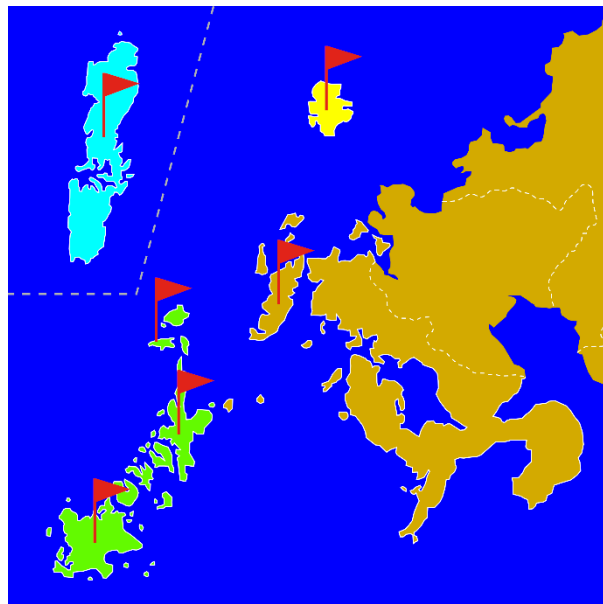
In Goto City, Goto City, Goto Pharmacists Association and Nagasaki University Remote Islands and Remote Areas Medical Research Institute collaborated and introduced an electronic system, 'Okusuri Net' (Pharmaceutical Network), in 2013 to share the dispensing information of its citizens. With the usual medicine handbooks, patients can forget to put the drug information stickers in them, and when not carrying them at the time of an emergency, it has been pointed out that prescription dispensing information is not accurately conveyed to medical personnel.

All drug dispensing pharmacies in Goto City participate in the 'Okusuri Net' (Pharmaceutical Network), which has made the network accessible to all citizens. The information is automatically registered from each dispensing pharmacy, so there is no need for the patient to manage it. Even when not carrying one's medical handbook, as long as consent to share information has been given, Goto City can check the dispensing history at any pharmacy. Since accurate medication information can be given to medical professionals, safe and secure medication instruction can be received. In addition, the network also integrates local monitoring information (emergency contacts, family structure, hospital visits, shopping, etc.), which can be useful in emergencies. Also, the network data is converted to cloud computing and remote backup is performed, making it easy to recover in a disaster.

The data accumulated on the 'Okusuri Net' (Pharmaceutical Network) is also used for influenza prevention measures. Specifically, by extracting patients who have been prescribed anti-influenza drugs based on the dispensing information on the Pharmaceutical Network, it is possible to grasp the influenza outbreak status in real time by region and age group. During the influenza season, physicians and pharmacists, as well as schools and facilities where outbreaks are likely to occur, are promptly given daily dispensing information to promote care support and awareness of prevention.

The Pharmaceutical Network system was developed by Medical-i Inc., which provides the Cloud type electronic medical service 'ippo Dispensing Chart'.

~ Location / Base ~



Base: Goto City – Remote Island Medical Research Institute (2 resident faculty members),  
Institute of Preventive Medicine Science (2 resident faculty members)

Activity Area: Goto City, Shinkamigoto Town, Ojika Town, Iki City, Tsushima City, Hirado City

~ **Central People / Structure** ~

- MAEDA Takahiro, Professor (Graduate School of Biomedical Science, Remote Islands and Remote Areas Medical Science Course)
- NAGATA Yasuhiro, Professor (Graduate School of Biomedical Science, Center for Comprehensive Community Care Education)

~ **Number of Participants / Period** ~

Medical staff from Nagasaki University constantly visit the remote islands (Goto City, Shinkamigoto Town, Iki City, Tsushima City), and together with faculty and students, around 200 people visit the remote islands every year.

~ **Partnership or Funding** ~

- Goto City, National Health Insurance Section
- Shinkamigoto Town, Health Insurance Section
- Iki City, Health Section / Health Promotion Section
- Tsushima City, Health Promotion Department Health Promotion Section
- Hirado City, Civil Life Department Health Insurance Section
- Nagasaki Prefecture, Health and Welfare Department
- Medical-I, Inc.



Shinkamigoto Town, Yoneyama Observation Deck

## 2-2. Education

### Providing High-Quality Education Suited to Local Characteristics (Related to SDGs 4)

#### ～ Activities Involving Society ～

The General Support Center for Regional Education dispatches faculty members using mobile science cars, as requested and desired, so that the university faculty members can contribute in various places in Nagasaki and in the remote areas. Faculty members from each faculty and graduate school at Nagasaki University conduct experiments and lectures, such as advanced science, that cannot be experienced in everyday classes. Starting from 2011 and up until 2019, it was implemented in various places including Kamigoto Town, Ojika Town, Hirado City, Saikai City and Minamishimabara City.



*The science car of Nagasaki University.  
Almost continuously in operation!*



*Goto City Board of Education consultation on its satellite office. From the left: Mr. Ikeda, Deputy Head of the General Support Center for Regional Education; Mr. Miyamoto, Director of Goto City Board of Education; Prof. Nakamura, Head of the General Support Center for Regional Education*

In addition, as part of regional career selection support, the 'Rikejo Seminar (Seminar for female science students)' has been held for the past 7 years with the support of Japan Science and Technology (JST).

Science students on the islands are unable to hear about seniors, who are their role models and active members of society, which is an obstacle to making concrete plans for their futures. At the General Support Center for Regional Education, lectures were invited utilizing the University's network, and an opportunity for female science students to learn about potential careers was also held at Goto High School.



*Rikejo Seminar (Seminar for female science students) held at Nagasaki Prefectural Goto High School  
(August 1<sup>st</sup>, 2018)*

In 2019, Goto City and Matuura City, the Board of Education set up local coordinators (satellite Offices) to collaborate with the General Support Center for Regional Education, and providing antennas for educational support systems with awareness of local issues.

### ~ Educational Activities ~

At the Nagasaki University Faculty of Education, having had a strong interest in remote island education since 2016 and to develop human resources to support future education on remote islands and in remote areas, a remote island education recommendation frame has been established for those who strongly wish to take a teaching job at a remote island elementary school in Nagasaki after graduating. In addition, for students enrolled in the remote island recommendation frame (those who wish to take the following programs in elementary school education courses), we have launched the 'Remote Island Education Program' with the aim of training teachers with the qualities of remote island rearing. In this program students will gain a broad knowledge on remote island education in the first year, and in the second and third years students will learn about the knowledge of effective lesson development utilizing ICT, necessary for remote islands and remote areas. In the third year, a 4-week educational training session is held in a compound class at an elementary school attached to Nagasaki University. Students conclude this program in the fourth year, in addition to the subjects related to the making of compound classes, to experience education on remote islands and in remote areas for actual connection with the schools, 'Remote Island and Remote Area Training' is carried out. In this way, the learning at university is a foundation, and with practical training at attached elementary schools on remote islands and in remote areas, the aim is to train teachers for remote islands to a higher standard of excellence.

of cumulative experiential learning in the Faculty of Education, and is currently being conducted in cooperation with elementary and junior high schools in Goto City, Shinkamigoto Town, Minamishimabara City and Hirado City. These educational efforts on remote islands and in remote areas have led to collaboration with the Board of Education and educational sites, and to an understanding of remote island education recommendation frames and remote island education programs.



*Remote island and remote area training held at Hamanoura Elementary School in Shinkamigoto Town in October, 2019. Hamanoura Elementary School has been accepting internships from Nagasaki University Faculty of Education since 2004.*



*Observing the guidance of the 5<sup>th</sup> and 6<sup>th</sup> grade compound class*



Teaching practice of a compound class held at an elementary school attached to Nagasaki University (1st and 2nd grade class)



5<sup>th</sup> and 6<sup>th</sup> grade class

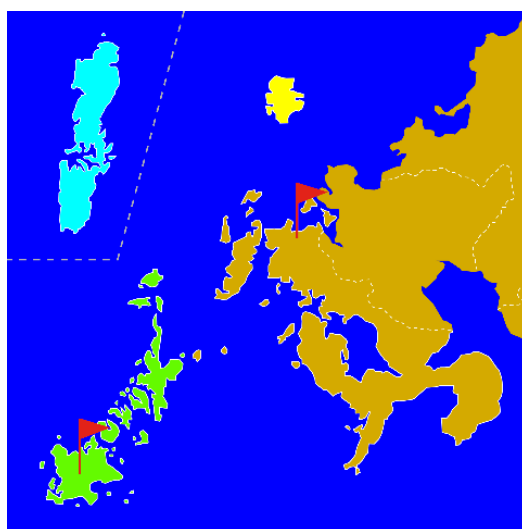
~ As a University, for Society ~

The aforesaid remote island education program had its fourth year in the fiscal 2019, and all fourth year students who entered the remote island recommendation frame found employment in the educational field. It is highly expected that one will become a key person supporting future island education by making use of what one learned on this program. While making efforts for this future, the Faculty of Education focuses on developing teachers who can succeed on remote islands and in remote areas, and the General Support Center for Regional Education, through support with attention to every detail\*\*, engages in fostering leaders who enrich the area, while in addition to the above we are conducting various other projects.

\* Introduced in the Ministry of Education, Culture, Sports, Science and Technology's 'Good Practice in Reformation of Teacher Training', PDF 8th page.

\*\* In 2019, the Center Head, Mr. Nakamura gave advice on foreign language education at elementary schools on remote islands and in remote areas, held in Matsuura City (October) and Shinkamigoto Town (November). Professor Matsumoto, of the Faculty of Education, also provided support for Science education in Matsuura City (November).

~ Location / Base ~



Goto City, Shinkamigoto Town\*, Minamishimabara City, Hirado City, Matsuura City\*  
(\*Satellite Office installation)

~ Structure ~

- Remote Island Education Program Support Section
- Cumulative Experiential Learning Implementation Section
- Cumulative Experiential Learning Student Section
- NAKAMURA Norio, Professor (General Support Center for Regional Education)
- IKEDA Koh, Professor (General Support Center for Regional Education)

~ Participant numbers / Period ~

**Remote island and remote area training (cumulative experiential learning)**

Currently about 50-70 students participate each year in a total of 15-20 elementary and junior high schools in Goto, Shinkamigoto, Minamishimabara and Hirado.

**Satellite office**

1 person each from the Board of Education in Matsuura City and Goto City.

**Science Car Lab**

Ongoing plans for around 60 plans each year since 2011 (around 8 of these are conducted on remote islands and in remote areas). Every year around 20 Nagasaki University faculty members collaborate. The aim is for around 4,000 people (of which 400 people are intended for remote islands and remote areas).

**Rikejo Seminar (Seminar for female science students)**

Implemented around 7 projects every year since 2013 (2019 was the final year). Each year, around 30 people from within and without the University collaborated.

~ Partnership / Funding ~

- Japan Science and Technology Agency (JST): Support program for Science course selection for female junior and senior high school students.
- Shinkamigoto Town Board of Education
- Goto City Board of Education
- Hirado City Board of Education
- Minamishimabara City Board of Education
- Matsuura City Board of Education

## 2-3. Infrastructure

### Supporting the Basis of Local Life by Extending the Life of Infrastructure (Related to SDGs 11)

#### ~ Activities Involving Society ~

Despite many technology innovations and telecommunications, the devastation of infrastructure that is the foundation of human life is steadily progressing in Japan. In Nagasaki Prefecture, churches and many tourist resources are scattered on remote islands and in remote areas, but bridges and harbors that connect them are aging. There are many challenges, such as the aging of technicians and the severe financing of the prefecture's construction and maintenance costs.

In January 2007, Nagasaki University's School of Engineering established the 'Infrastructures Lifetime-Extending Maintenance Research Center' in collaboration with Nagasaki Prefecture, municipalities within the prefecture, and local corporations. This center conducts a training project, called 'Michimori (Road Guardian)', to foster human resources for community regeneration. 'Michimori' is aimed at local government officials, private corporations, NPOs, and local residents in the prefecture, and develops human resources who are involved in the regeneration and longevity of the infrastructure that is the foundation of 'Machi-okoshi (Community Revitalization)'. People with public qualifications related to infrastructure can acquire basic and applied knowledge according to their level, and ordinary citizens (such as volunteers and protection organizations) can acquire knowledge and skills such as routinely observing and inspecting roads and bridges.

The maintenance and management of infrastructure requires various technologies, such as surveys, diagnostics, and specific advanced technologies. However, there are limitations for the specialists who keep constant vigil over a large prefecture, checking the condition of the infrastructure. Therefore, if the status of the infrastructure seen in everyday life is checked for cracks and crevices, and when there is something wrong the university or prefectural government is contacted, then the experts can rush to the scene and check. Students who take this course will be able to detect such anomalies in the infrastructure. The sooner an anomaly is detected, the lower the maintenance costs will be.

#### ~ History of the 'Infrastructures Lifetime-Expanding Maintenance Research Center' ~

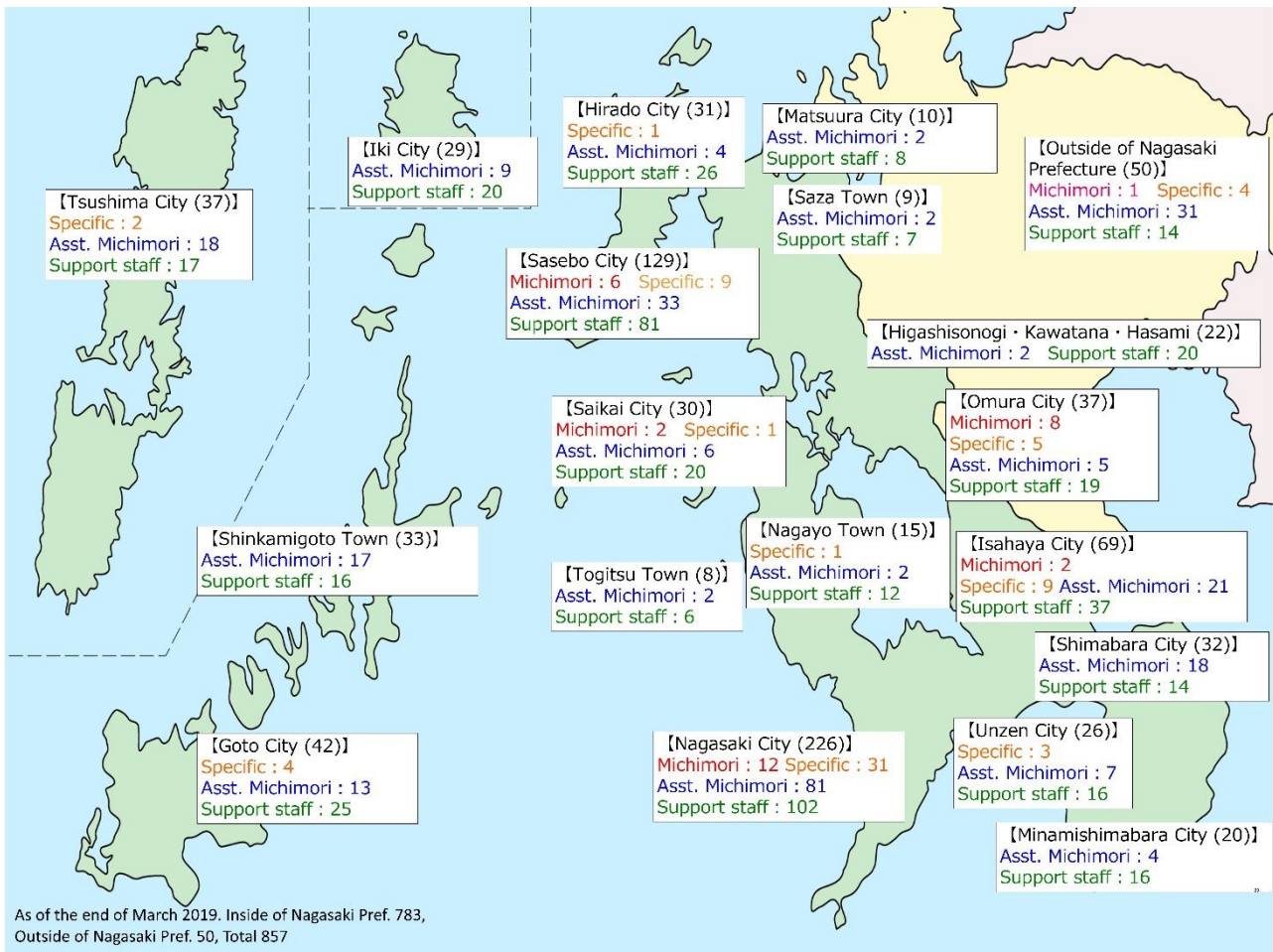
These efforts are also being used to maintain the infrastructures on remote islands and in remote areas. The 'Michimori (Road Guardian)' training project has also been implemented on remote islands such as Goto City, Shinkamigoto Town, Tsushima City and Iki City, where people from many districts have been certified as Road Guardians, and maintenance is being carried out in accordance with the geographical conditions.

In Iki City and Shinkamigoto Town, certified Road Guardians are doing volunteer activities through the subcommittee of the 'Michimori Training Unit Association', such as road monitoring (road abnormality inspections and cleaning activities) and cleaning curve mirrors. In Goto City, they participate in direct inspections of the bridges and tunnels of Nagasaki Prefecture.

The efforts of the 'Infrastructures Lifetime-Extending Maintenance Research Center' are also reflected in the policies of local governments and the Japanese government. In January 2015, 'Michimori (Road Guardian)' was registered with the Ministry of Land, Infrastructure, Transport and Tourism as 'a private qualification to ensure the maintenance and renewal of social capital', and in a bid conducted by Nagasaki Prefecture and the Ministry of Land Infrastructure, Transport and Tourism Kyushu Regional Development Bureau, it became a qualification for evaluating technicians. Also, in 2014, the development and implementation of cutting-edge technologies such as infrastructure inspection, diagnosis, repair, information and communications, and robots began under the Cross-ministerial Strategic Innovation Promotion Program (SIP) 'Infrastructure Maintenance Management, Renovation and Management' project of the Japan Science and Technology Agency (JST). Since 2016, community demonstration experiments have been carried out



in order to utilize these research results locally. Even in Nagasaki Prefecture, together with the Road Guardians, we are conducting demonstration tests of infrastructure inspection technology (11 university research groups in the Kyushu and Yamaguchi regions are participating).



**Table 2-1** Prefectural distribution of the number of certified Michimori (Road Guardians) by district as of the end of March 2019



**Left** Road monitoring activities in Shinkamigoto Town



**Right** Curve mirror cleaning activity in Iki City



‘Michimori Training Course’ in Tsushima City. It includes lectures, seminars and practical training courses.

Furthermore in 2018, utilizing the SIP’s research results and to further expand public and private research development, the Cabinet Office started the ‘Public/Private R&D Investment Strategy Expansion Program (PRISM)’. As one of the themes in the first fiscal year of Reiwa ‘Innovative Construction and Infrastructure Maintenance, Disaster Prevention and Mitigation Technology’ was established, and Nagasaki University, Tohoku University, and Akita University are conducting joint research in order to consider the construction and cooperation of databases in infrastructure and management. This integrates local governments and national databases and aims to build a platform for sharing infrastructure maintenance data among stakeholders. Nagasaki University collaborates with Nagasaki Prefectural Government, Tohoku University with Shimane Prefectural Government, and Akita University with Akita Prefectural Government, and requests data provision and makes adjustments.

Within Nagasaki Prefecture, Nagasaki University and the Public Works Department of Nagasaki Prefectural Government are working on building a platform that integrates data on roads, tunnels, slopes, ports and rivers, etc., using data from the government of Nagasaki City, Goto City and Shinkamigoto Town. Not only infrastructure maintenance but also data such as disaster prevention information will be used.

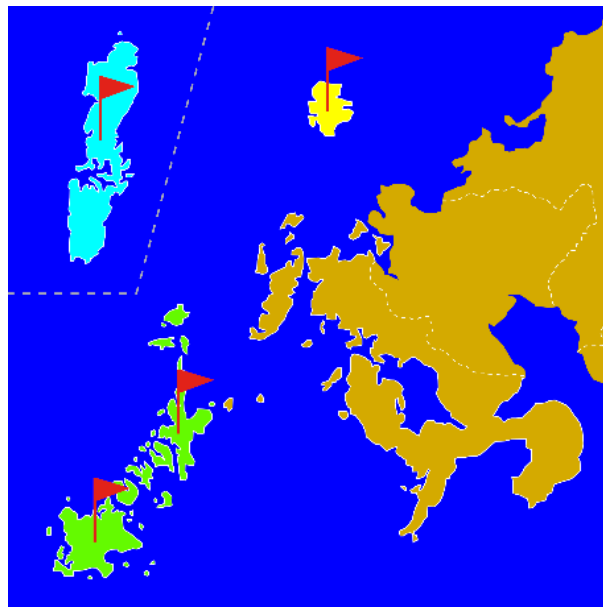
~ As a University, for Society ~

There are these statements, ‘Infrastructure is “A big business necessary for humans to live a human life” (Nanami Shiono, ‘The Story Of The Roman People, Volume 10’, Shinchosha Publishing Co., Ltd., and “Mobility is a matter of personal freedom, social participation, and richness. It is an important prerequisite for economic growth. The infrastructure required for this is high-quality transportation infrastructure.” (Hisakazu Oishi, former Chief Technology Officer of the Ministry of Land, Infrastructure, Transport and Tourism, ACE (Architecture & Civil Engineering Journal), Column ‘Kagen Jouyo’, 2013 German Three-Party Agreement document)’. While this awareness of infrastructure is common throughout the world, efforts are being made to extend Japan’s knowledge of infrastructure maintenance and management to developing countries. In particular, a ‘Bridge Maintenance Training Course’ for learning about bridge maintenance is held at Nagasaki University through Japan International Cooperation Agency (JICA) . The Infrastructures Lifetime-Extending Maintenance Research Center is working with people both in Japan and overseas to develop human resources who can work together to solve issues.



Assoc. Prof. Takafumi Nishikawa discusses with participants from around the world during the Japan International Cooperation Agency's (JICA's) 'Bridge Maintenance Training Course'

~ Place / Base ~



Goto City, Shinkamigoto Town, Tsushima City, Iki City

~ Central People / Structure ~

- MATSUDA Hiroshi, Professor (School of Engineering, Director of the Infrastructures Lifetime-Extending maintenance Research Center)
- YAMASHITA Takahiko, Professor (School of Engineering, Vice-Director of the Infrastructures Lifetime-Extending Maintenance Research Center)
- NAKAMURA Shozo, Professor (School of Engineering, Vice-Director of the Infrastructures Lifetime-Extending Maintenance Research Center)

~ Participant Scale / Period ~

Michimori (Road Guardian) Training Course participants: 158 participants in 2019, 128 participants certified.

~ Partnership / Funding ~

<Government>

- Road Maintenance Department, Civil Engineering Division, Nagasaki Prefecture

- Road Conservation Department, Land Development Division, Miyazaki Prefecture
- Goto City
- Shinkamigoto Town
- Tsushima City
- Iki City

<Academia>

- Gifu University
- Niigata University
- Ehime University
- Yamaguchi University
- National Institute of Technology, Maizuru College
- University of Miyazaki
- Kansai University

<Industry>

- Yoshikawa Civil Engineering Consultants Ltd.
- Jotaki Corporation
- Asahi Consultant Co., Ltd.
- Aso Corporation
- Mitsubishi Hitachi Power Systems Inspection Technologies, Ltd.
- Kiso-Jiban Consultants Co., Ltd.
- Repair One-Stop Sytem
- Nippon Koei Co., Ltd.
- Zenken Co., Ltd.
- Chuo Consultants Co., Ltd.
- Ueno Planning Ltd.
- BMC Co., Ltd.
- West Nippon Expressway Co., Ltd.
- Japan Prestressed Concrete Contractors Association
- Oshima Shipbuilding Co., Ltd.
- Japan Bridge Association
- Ueda Memorial Foundation



High-speed ferry to Fukue Island (Nagasaki Port)

## 2-4. Regional Promotion

### Creating Projects That Rejuvenate Local Communities

#### ~ Activities Involving Society ~

In 2018 Nagasaki University started an ‘Entrepreneur Development Project’ with remote islands and remote areas as the fields. This project aimed to start a new business in two years, considering projects to help volunteer students from Nagasaki University solve local issues, where the participating students work with local businesses and act while receiving advice from consultation experts and financial institutions related to regional revitalization. The first year, fiscal 2018\*, was spent on opening community cafes using vacant houses in Goto City, conducting tours of Narushima Island, watching over the elderly, and starting a business by developing Dressing for Goto Udon noodle, and in the second year 2019\*\*, conducting activities for entrepreneurship in Higashisonogi Town, based on roadside rest area, whale meat, and Edo Period style post stations (Shukuba).

\* *Goto Entrepreneur Development Project: 15 students (Faculties of: Medicine, Economics, Environmental Science, and Engineering)*

\*\* *Higashisonogi Entrepreneur Development Project: 12 students (Faculties of: Global Humanities and Social Sciences, Education, Economics, Environmental Science, and Fisheries)*



*2019 team. Interview on current and future plans with the manager at the roadside rest area ‘Sonogi-no-sho’.*



*One of the activities of the 2018 project team. A meeting with the Goto City Chamber of Commerce to utilize vacant houses in the Miraku Settlement in Goto City.*

#### ~ Educational Activities ~

The General Support Center for Regional Education conducts a Glocal Human Resource Development Program, and the students who participate in the program also produce ideas for community development. In 2019, the project presented a poster at the JTB ‘University Student Tourism Community Development Contest’ and proposed an event of ‘matchmaking’ for the promotion of sightseeing in Shinkamigoto Town. In addition, to contribute to community development, Nagasaki University students provided opinions as external participants in response to Nagasaki Prefecture’s ‘Challenge 2020’ (a prefectural government comprehensive plan formulated every 5 years).

Also, the ‘Future Creation Center’ was established in 2015 in the Faculty of Economics in order to promote regional revitalization, social contribution, and the development of practical business skills. Here, business- architect and practical seminar courses are held. Business-architects learn about local businesses and local issues from the 2nd year, and from the 3rd year there is a program of specialized seminars that demonstrate solutions, held in Goto City in 2017 and Iki City in 2018. Some of the Faculty of Economics seminars are also on the theme of the issues of remote islands, and there are students conducting research related to promoting the use of clean energy generated

by offshore wind power in Goto City and activities to promote the branding of the Black Long Spine Urchin (*Diadema setosum*) in Iki City. In addition, some students plan to hold a health festival to raise the health awareness of citizens with lifestyle-related diseases.



*Nagasaki University students' presentation at the 2019 JTB 'University Student Tourism Community Development Contest'*

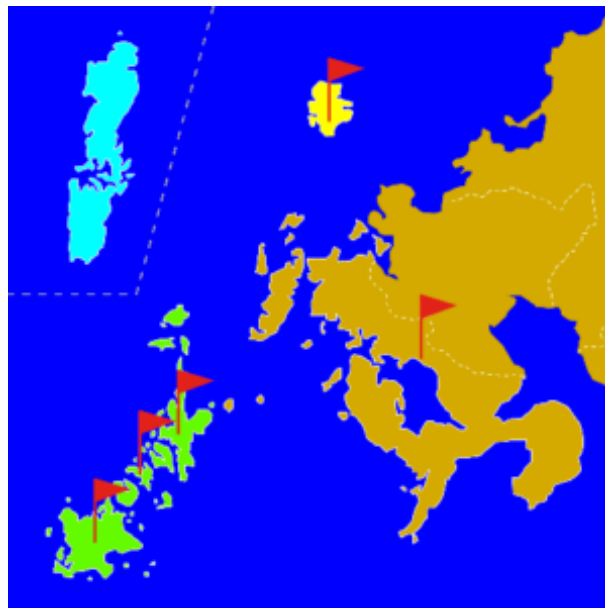


*A scene at Goto Citizen Electric Power. In the center is Professor Nishimura (Faculty of Economics), who conducts the seminar.*

~ As a University, for Society ~

We collaborate closely with private companies that are the leaders of local industries, to try to solve real issues so that the people can continue to live rich lives in the community. Through these activities, we connect with the local people, and are also involved in developing human resources who can work to solve issues.

~ Place / Base ~



Goto City, Shinkamigoto Town, Narushima, Iki City, Higashisonogi Town

~ **Central People / Structure** ~

- AKAISHI Takatsugu, Trustee (Faculty of Economics)
- NISHIMURA Nomuhiko, Professor (Faculty of Economics)
- TSURUSAKI Kasuyoshi, Associate Professor (Faculty of Economics)
- NAKAMURA Norio, Professor (General Support Center for Regional Education)
- IKEDA Ko, Professor (General Support Center for Regional Education)

~ **Participant Scale / Period** ~

Entrepreneur Development Program: 15 participants in 2018, 12 participants in 2019

~ **Partnership / Funding** ~

< Business >

- Ikiiki Goto Co. Ltd. (2018 - )
- MEDIAWEB Co., Ltd. (2018 - )
- narushi...plus-one (2018 - )
- Sonogi Geiniku (whalemeat) Co. Ltd. (2019 - )
- Sonogi-no-shou Co. Ltd. (2019 - )
- Saito Shukuba (2019 - )
- BOLBOP Inc.
- Omura-wan Corporation
- matataki Co., Ltd.
- Nippon Biodiesel Fuel co., ltd.
- Lequio Power Technology Corp.

< Government >

- Goto City Office (2018 - )
- Mr. NAKAYAMA Yuichi, Higashisonogi Town Office (2019 - )
- Miiraku Wakkamon Kai (Young Men's Association) (2018 - )
- Mr. HAYASHIDA Ryuji, Nagasaki Prefectural Planning Promotion Department, Community Improvement Promotion Division
- Nagasaki Prefectural Planning Promotion Department, Policy Planning Division
- Industrial Labor Department, Youth Retention Division

< Finance >

- Japan Finance Corporation
- 18th Bank
- Shinwa Bank
- Nishi-Nippon City Bank

## 2-5. Fisheries

### How to Protect the Richness of the Islands' Sea. (Related to SDGs 14)

#### ~ Activities Involving Society ~

In order to regenerate the seaweed beds, with the idea that it is important to create seaweed beds with citizen participation so that not only the fishermen but also the locals know about rocky-shore denudation, Associate Professor Nishihara of the Organization for Marine Science and Technology together with the cooperation of Shinkamigoto Town introduced the importance of the seaweed bed ecosystem to Arikawa Junior High School students, having them culture juvenile seaweeds and make plantations in the sea as an activity of their laboratory.



*Associate Professor NISHIHARA introduces the importance of seaweed beds*



*Seaweed (*Sargassum macrocarpum*) culture set*

#### ~ Research activities ~

What should we do to prevent the rocky-shore denudation from spreading any further? Associate Professor Nishihara's Laboratory of Aquatic Plant Ecology is conducting research to ascertain the difference between places where rocky-shore denudation is advancing and the seaweed beds are thriving and where seaweed beds do not regenerate, even on the same island. In addition, with the cooperation of the Ojika Island town office, a method for more effectively planting the juvenile seaweeds to regenerate and conserve the seaweed beds is being inspected at Mushima, a secondary remote island. A part of the materials used for the research (Moasis) is provided by Kyowa Concrete Industry Co. Ltd.



*Environmental observation equipment installed underwater. What is the difference between where algae thrive and where they don't?!*



*Data collection on Mushima, a secondary remote island of Ojika Town*





*Kyowa Concrete Industry Co. Ltd. Provides the foundation (Moasis) used in conducting experiments in the sea*

~ As a university, for society ~

Not only diving to do research, but also doing what we can as divers. Besides research, the Laboratory of Aquatic Plant Ecology conducts underwater cleaning activities at Arikawa Bay in Shinkamigoto Town, bringing up the sunken garbage.

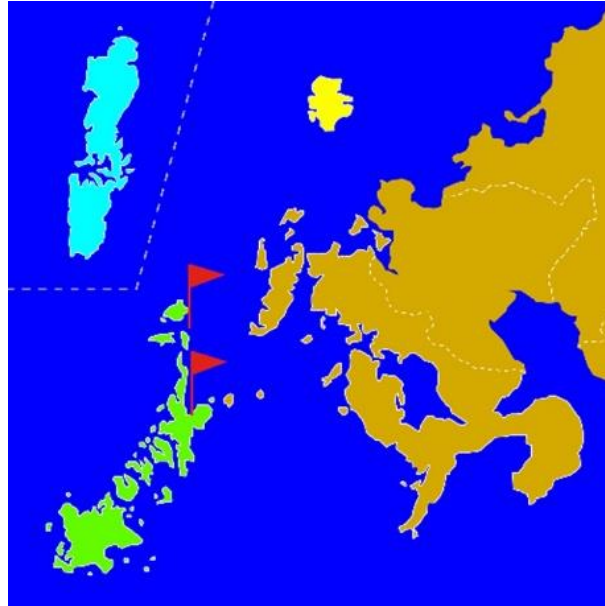


*Some of the garbage raised in the August, 2018 cleaning activity*



*Students from the Laboratory of Aquatic Plant Ecology performing cleaning activities*

~ **Location / Base** ~



Ojika Town, Mushima / Shinkamigoto Town, Arikawa (with bases)

~ **Central People / Structure** ~

Associate Professor NISHIHARA Naoki (Organization for Marine Science and Technology)

~ **Participant Scale / Period** ~

Research activities are conducted by around 10 people, and basically, they go to Shinkamigoto and Ojika (Mushima) every month for a survey.

Approximately 50 junior high school students participate in culturing juvenile seaweed.

~ **Partnership / Funding** ~

- Pew Marine Fellow  
A fellowship awarded by Pew Charitable Trusts of the United States of America. This fellowship is awarded to individuals and organizations that conduct outstanding research and educational activities to protect and conserve the marine environment and marine life. To date, 164 people from 38 countries, mainly marine ecosystem experts, have been chosen. In 2018, Associate Professor Nishihara was the third Japanese person to be selected (the support system is for 3 years, until 2021).
- Shinkamigoto Town, Comprehensive Policy Division
- Ojika Town Office, Industrial Promotion Division
- Kyowa Concrete Industry Co. Ltd.
- Nagasaki Prefectural Fisheries Department, Resource management Division (Seaweed bed recovery comprehensive promotion project in 2018)

### 3. SDGs Promotion Activities by the Island SDGs

In the fiscal 2019, the following SDGs promotion activities were carried out by the Island SDGs.

**Propagation** ‘What are SDGs? ~The background, the essence and the current situation~’

On June 26th, 2019, Assistant Professor Fujino of the Island SDGs Secretariat introduced SDGs to government officials under the above title at Shinkamigoto Town Office.

**Deployment** Participated in a working group organized by the Japan Science and Technology Agency (JST) for the collaboration of local industries, academia, governments and society.

In July 2019, the Japan Science and Technology Agency (JST) has connected regional issues and solutions based on science and technology (seeds) toward the development of comprehensive and sustainable regional development using the SDGs as the common language. In July 2019, the Island SDGs participated in a working group that was established to build opportunities for stakeholders to co-create solutions to the issues.

**Deployment** Participated in the General Assembly of the Regional Revitalization SDGs Public-Private Partnership Platform

On August 26th, 2019, staff member Ms. Yamaura of the Island SDGs Secretariat introduced Nagasaki University’s ‘Island SDGs Working Group’ at the above event.

**Deployment** Participated in the working group of the ALL Kyushu SDGs Network

In October 2019, Kitakyushu City, Iki City, and Oguni Town of Kumamoto Prefecture, which were each selected as future cities for SDGs in Kyushu, participated in a working group which was established with the aim of revitalizing SDGs initiatives in Kyushu.

**Propagation** ‘Corporate Management and Local Government Management Driven by SDGs’

On November 6th, 2019, under the above title sponsored by the Kyushu Bureau of Economy, Trade and Industry, Assistant Professor Fujino of the Island SDGs Secretariat served as a panelist for SDGs at Universities at the Kyushu SDGs Management Promotion Forum\*, and a discussion was held with participants on Nagasaki University’s Island SDGs Project. On the same day, a collection of examples of Kyushu SDGs initiatives were distributed, and the Island SDGs of Nagasaki University were also posted in it.

([https://www.kyushu.meti.go.jp/seisaku/kyosoryoku/sdgs/2019jirei\\_24\\_nagasakiuniv.pdf](https://www.kyushu.meti.go.jp/seisaku/kyosoryoku/sdgs/2019jirei_24_nagasakiuniv.pdf))

\* <http://www.kerc.or.jp/seminar/2019/10/116sdgs.html>

**Propagation** Commentary on SDGs published in Nagasaki Shimbun (Newspaper)

On page 14 of the Nagasaki Shimbun on February 20th, 2020, Assistant Professor Fujino of the Island SDGs Secretariat posted an article aimed at elementary and junior high school students explaining about the SDGs.



**Left** SDGs Introduction presentation at Shinkamigoto Town Office on June 26th, 2019.



**Right** Introduction of the Island SDGs at the Kyushu SDGs Management Promotion Forum on November 26th, 2019.



ORC's DHC-8-201 landed at Tsushima (Bombardier Inc.)

## 4. Partnerships and Projects Towards Solving Problems

### 4-1. Domestic

Nagasaki University, which implements the Island SDGs, signed agreements on cooperation with Nagasaki Prefecture in 2009, and with Goto City, Shinkamigoto Town, Ojika Town, Hirado City and Tsushima City in 2010. The agreement states that the University agrees to connect and cooperate with the Island Municipalities in (1) Promotion of remote island areas and community development, (2) Development of human resources that generate vitality in remote island areas, (3) Childcare and education in remote island areas, (4) Improvement of medical care and living in remote island areas, and (5) Other matters necessary to achieve the purpose of the agreement.

In 2018, we reconfirmed with these municipalities about the above-mentioned connection and cooperation in the Island SDGs Project with a focus on SDGs, and shared this with the Planning and Promotion Department of the Nagasaki Prefectural Government (Community Development Promotion Division, Remote Island Promotion Group). Currently, Nagasaki Prefecture, Iki City, Goto City, and Shinkamigoto Town are participating in the Island SDGs Working Group set up by the Cabinet Office's Regional Revitalization SDGs Public-Private Partnership Platform.

On February 6th, 2020, Iki City and Goto City officials held the first Island SDGs Working Group meeting with WEB participation. Although many people on remote islands and in remote areas wish to reside as long as possible in the areas they are accustomed to, considering that there are many cases where immigration has been forced because various needs such as medical care are not met, the Island SDGs Committee stated that setting up 'Support for the Desire to Continue Residing' was a major goal of the Island SDGs Project toward 2030, and after discussion with local government officials, it was determined.



Cape Sakyobana, Iki

## 4-2. Overseas (Scotland)

As a country working on solving similar issues on remote islands and in remote areas as in Japan, in November 2019, we visited Scotland and observed their current state to the solution.

In the visit to Scotland in November 2019, we visited The University of Highlands and Islands, a university that is central to the islands and the Highlands (name of the northern area of Scotland where there is a lot of high ground), at the same university, the Centre for Health Science (the Division of Rural Health and Wellbeing, which deals with medical care in remote areas), the Centre for Remote & Rural Studies (which conducts cultural and sociological studies of local and remote areas), the Royal College of Physicians of Edinburgh, and the Scottish Government's Cabinet Secretary for Culture, Tourism and External Affairs. At each place we visited, we introduced the challenges of Nagasaki's Island SDGs Project, confirming the similarity of geographical and social conditions with Scotland, and agreed to exchange information in the future.



Left Arctic Policy Officer Mr. Francesco Bertold.



Right Immigration Policy Officer Ms. Rachel Sunderland.

Then in February 2020, we received contact from Mr. Francesco Bertold, Arctic Policy Officer, who was interviewed in November 2019, and Ms. Erica Clarkson, Scottish Island Policy Officer, and additional information on the questions requested by the island municipality was provided.

Mr. Francesco Bertold proposed that, as the Arctic Circle Forum, which is held annually in Iceland, will this year be held in Tokyo (November 21st to 23rd, 2020), 1-2 themes each be presented by the Scottish Government and Nagasaki University's Island SDGs Project, to present the islands of Scotland and Japan's best practice, and the islanders' empowerment. It is planned to be held as an Island SDGs Project, regulating the themes and presenters with the cooperation of the Scottish Government.

## 4-3. New Projects in Collaboration with the Islands (Adopted Project)

### ■ Construction of Remote Island and Remote Area Medical Support Model Supporting the Desire to Continue Residing

Japan Science and Technology Agency (JST) announced in 2019 that the SDGs-aware ‘Co-creative R&D Program for Achieving SDGs’ would be launched. In response, Professor Takahiro Maeda, a member of the Island SDGs Committee, used drones and applied for a program under the above theme that solves the problem of medical services, concentrating on the transfer of medicine to remote islands and remote areas, and it was adopted. This program is conducted by public institutions such as Goto Medical Association, Goto Pharmacists Association, Goto Central Hospital, Goto Public Health Center, and Nagasaki Prefecture’s Pharmaceutical Administration Office, and private companies such as IBM Japan Ltd., ANA Holdings Inc., Medical-i Inc., Yamashita Medical Instruments Co., Ltd, and Nagasaki Medical Central Laboratory Ltd., working together to achieve the project goals.

### ■ Construction of a Garbage Drifting Diagnostic System Using Satellites and Drones

In 2019, the Nippon Foundation, Japan Advanced Science and Technology Organization for education, human-resource and research (JASTO), and Leave a Nest Co., Ltd. launched ‘Project Ikkaku’, which creates the flow of socially implementing the ‘Business of Reducing Marine Garbage’. Regarding the distribution and type information of the sea garbage, and using satellites, drones and fixed point observation devices, Professor Ikuo Yamamoto, an Associate Member of the Island SDGs Project, participated in the team that developed the marine garbage diagnostic system, which is capable of long-term and comprehensive observation and detailed analysis. In 2020, Tsushima City plans to start developing a marine garbage diagnostic system.



Jihongai Monument, Fukue Island

## 5. SDGs Achievements Towards 2030

As described in 4-1., as an Island SDGs Project, the Island SDGs Working Group, established on February 6th, 2020 within the Cabinet Office's Regional Revitalization SDGs Public-Private Partnership Platform, has decided that the main goal of the Island SDGs Project is 'Support for the Desire to Continue Residing'. In response to this goal, we want to contribute to solving the issues and sustainable development (SDGs) of the world's islands and remote areas facing aging and declining birthrates by modeling the best practices while incorporating world knowledge and transmitting this information to the world.

### Scheduled Measures in 2020

#### ■ Gathering and Analyzing Information on Solving Issues on Islands and in Remote Areas Around the World

As mentioned in 4-2. we collected and analyzed information on efforts to solve issues on islands and in remote areas in Scotland, which have the same issues as those on remote islands and in remote areas in Japan. We will continue to collaborate with Scotland, collect relevant information from around the world, and provide feedback to Japanese remote islands and remote areas.

International events focusing on remote islands and remote areas are as follows:

##### RETHINKING REMOTE 2020 CONFERENCE (Scotland)

To be held from April 30th to May 1st, 2020. This symposium focuses on introducing innovative and practical technologies for medical care in remote and rural areas.

##### The 9th Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR, Australia)

To be held from June 29th to July 2nd, 2020. This is an annual conference on discussing disaster prevention, but this year's event will be held in Australia and the issue of disaster prevention on SIDS (Small Islands Developing States) in the Pacific Ocean will be highlighted.

##### Arctic Circle Japan Forum (Tokyo)

To be held from November 21st to 23rd, 2020. The Arctic Circle Forum will be held in Tokyo where all organizations (governments, organizations, companies, universities, think tanks, citizens) will participate and discuss the future of the Arctic Circle, which has many remote islands and remote areas. A request from the Scottish government for a joint presentation was made and the content is currently under consideration.

##### Mountains 2020 (Cabo Verde)

To be held from November 23rd to 27th, 2020. A comprehensive discussion between academia, government, industry and NGO participants on how to address threats and challenges for sustainable development in mountainous areas and islands with poor access to traffic. The themes to be covered are as follows.

- Climate risks assessment and responses
- Biodiversity



- Geodiversity
- Protected areas
- Demographic changes
- Farming and forestry
- Nature-based solutions
- Energy efficiency and sustainability
- Sustainable processes and products
- Inter and transdisciplinary research
- Socio-ecological systems
- Governance systems
- Sustainable tourism
- Effective transport systems
- Achieving the Sustainable Development Goals
- Development Goals

■ **Application for Solving Community Issues Through Science Technology Innovation (DESIGN-i) (Ministry of Education, Culture, Sports, Science and Technology (MEXT))**

In order to build a new base for residing in Shinkamigoto Town of the Goto Islands and achieve stable and sustainable development for the residents, it is planned to apply to the above project under the theme ‘Residing with the Blessing of the Island ~ An Attempt to Revitalize the Area Through Ocean Ecotourism ~’. As the title suggests, this is a project of Nagasaki University and Shinkamigoto Town, where the local people and the young people are engaged in ocean ecotourism with a background of fishery industries, nature and world cultural heritage (hidden Christian-related heritage), which are the strengths of Shnkamigoto Town. The aim is to establish a system within 3 years. Although our application in 2019 was not chosen, we aim to be chosen in 2020.

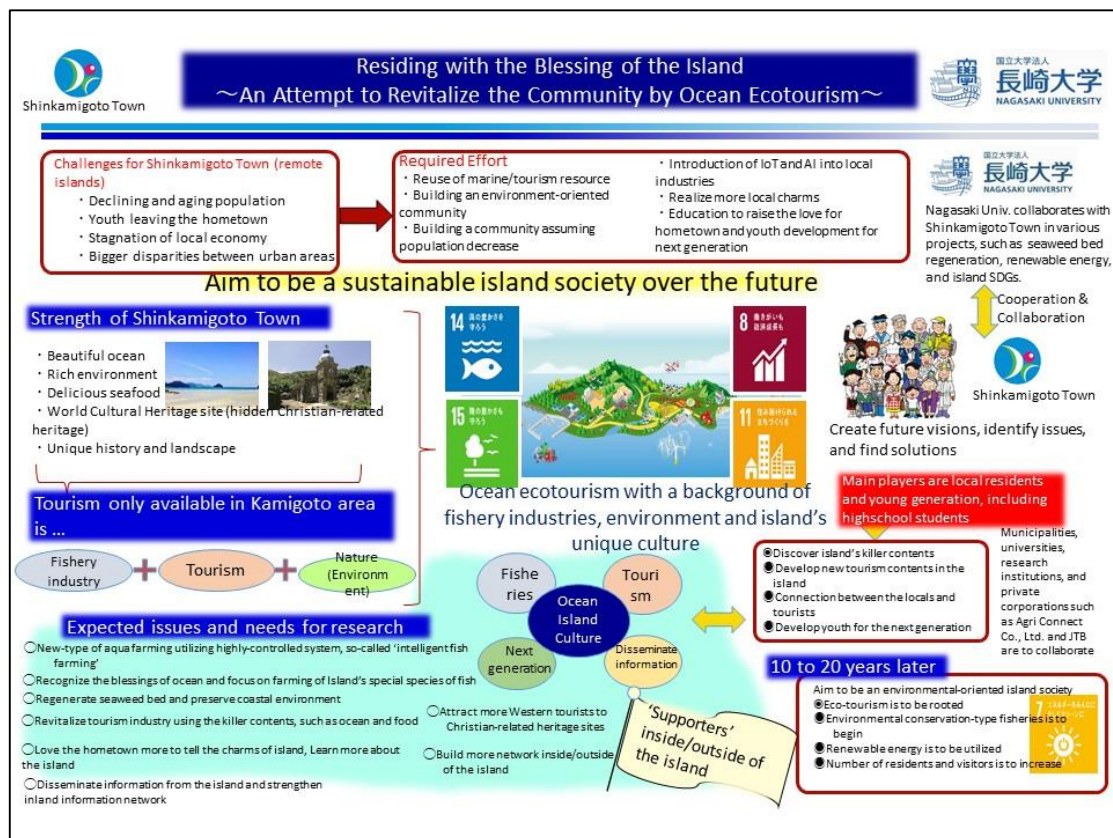


Table 5-1 Project concept formulated in 2019

## ■ Professor Hiroshi Matsuda's Application for a Successive PRISM Project (Public/Private R&D Investment Strategic Expansion Program)

In the fiscal 2019 Cabinet Office's Public/Private R&D Investment Strategic Expansion Program, Professor Matsuda, a member of the Island SDGs Project Committee, was involved in innovative construction and infrastructure maintenance and management technology. In the fiscal 2020, he plans to apply for a remote island promotion x social infrastructure project that links data between Goto City and Shinkamigoto Town.

## ■ Holding of the 2nd 'Island and SDGs Symposium'

The 1st Nagasaki University 'Island and SDGs Symposium' was held in November 2018, to discuss Nagasaki University's island-related issues and initiatives with local government officials. With the theme narrowed in 2020, a symposium will be held in the autumn to discuss the vision and modeling for 'Building a Sustainable Future for the Islands' which is important for achieving the SDGs.



A ferry 'Taiko' heading for Ojika Island

## 6. Related Documents

### 6-1. Basic Information on Scotland, the Highlands and Islands Region

According to statistics from 2011, Scotland's total population is approx. 5.3 million, of which about 2% reside on 96 inhabited remote islands.

In the southern region of Scotland, there are large cities such as Edinburgh (482,000 people, 2011), Glasgow (598,000 people, 2011), and Aberdeen (207,000 people, 2011). The northern region, on the other hand, occupies half the area of Scotland but has many hills, highlands and islands and according to 2018 statistics, the population is 469,000 making it the least densely populated region in Europe.

The region in the north with many hills and highlands is called the Highlands and Islands. From 2011 to 2018, Scotland's total population growth rate was 2.6%, while the Highlands and Islands was 0.5%. The population of the Highlands and Islands over the age of 65 was 23% in 2018 (19% whole of Scotland), up by 19% from 2008 (16% whole of Scotland), and is expected to be 31% in 2040 (25% whole of Scotland).



Table 6-1 England and Scotland

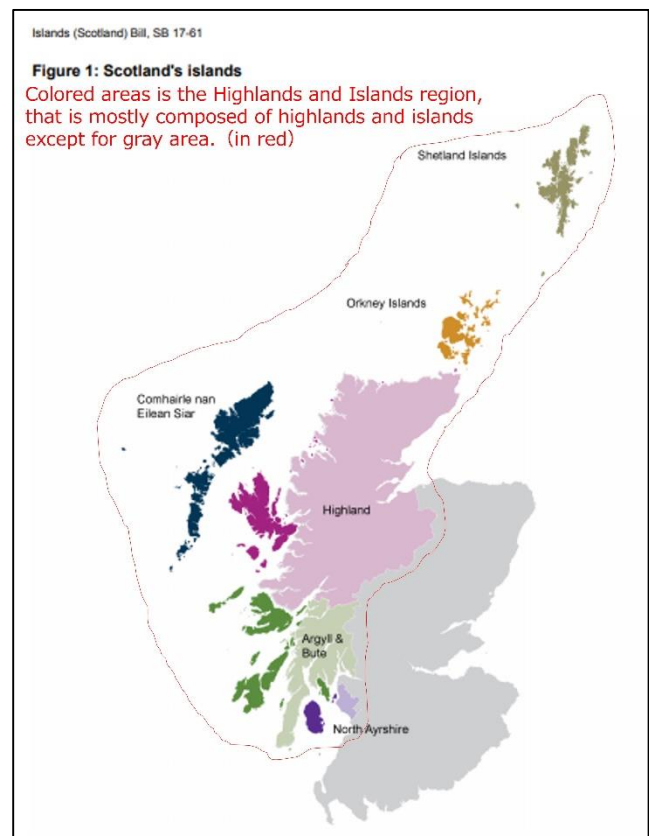


Table 6-2 Scotland and the Highlands and Islands region

The outflow of youth in the Highlands and Islands is a significant issue, but the Scottish Government’s development agency Highlands and Islands Enterprise (HIE)’s survey of the behavior and attitude (aspirations) of young people between the ages of 15 and 30 showed that the percentage of young people determined to continue residing in the region was 55%, up from 43% in the 2015 survey. 3 out of 5 (59%) of the young people who leave the region also think that they will make a U-turn to the region at some point in time. 2 out of 3 (64%), who think they want to work in the Highlands and Islands in the future, say that some economic and social conditions need to be in place to be able to do so. The top 4 economic conditions are good income, quality work, low living expenses, and career development opportunities. The top 3 social conditions are quality of life, affordable housing, and access to quality healthcare\*.

\*There are 3 Island Government Councils, ①Shetland ②Orkney and ③Comhairle nan Eilean Siar (Western Islands). The 3 councils agreed to launch a campaign for the future of the islands in 2013, entitled ‘Our Islands Our Future Campaign’ , and took it to the central government. This led to the approval of The Island Act, which reflects the voices of residents, in 2018, and the setup of The National Island Plan in 2019. The implementation of these backed policies appears to be behind the high percentage of young people who ae determined to stay in the region, and the Island SDGs Committee is currently compiling information.



**Table 6-3** Comparison of the Orkney, Shetland, and Goto Islands to the same scale

## 6-2. Public Transportation in Remote Areas – New Initiatives in Japan and Overseas

### ~ Overview ~

With a request from Shinkamigoto Town for a survey on new initiatives to public transportation in depopulated remote areas overseas, we made a summary of the situation of public transportation in remote areas with small populations, mainly through a survey of initiatives in Scandinavia. As an attempt to replace (or supplement) conventional public transportation such as route buses, we introduce a new style Demand-responsive Transport system. The examples of recent initiatives in remote areas of Japan we pick up on are, ① 'Community Car Sharing' with donated vehicles from the Japan Car Sharing Association (NPO) in Ishinomaki City, Iwate Prefecture (activity that uses cars together within the same neighborhood), ② 'Yakuburu' (NPO), a private car transport network in Yabu City, Hyogo Prefecture, and ③ a courier service that uses route buses (Yamato Transport Co., Ltd.)

### ~ Traffic Situation in Kamigoto Town ~

According to 'The Plan for Maintaining Local Communities in Specified Remote Inhabited Regions of Nagasaki Prefecture' (Nagasaki Prefecture, 2017; revised in 2019) 'II By Region 3 Goto Islands Region', one of the transportation problems in the Goto Islands, where Kamigoto Town is located, is that gasoline prices are higher than the mainland and that public transportation such as route buses, with a lack of routes and services, means that activities that involve travel, even commuting to work and school, have to rely on private cars that consume gasoline. [Nagasaki Prefecture 2019]

### ~ Public Transportation Situation in Remote Areas (OECD Countries) ~

According to a survey on public transportation compiled by the Organization for Economic Cooperation and Development (OECD), the characteristics of public transportation in remote areas are, ① It is expensive due to the long travel distance and few passengers, and ② It is a transportation system used by people without access to a private car. (Leiren and Skollerud 2015) This is very different from the role of public transportation in cities, where people use public transportation instead of private cars to reduce traffic congestion, environmental pollution and greenhouse gas emissions.

The most notable findings from the Norwegian Government's public transportation survey were that, [Leiren Skollerud, 2015, p.66]

- ✓ Elderly people living in remote areas are worried about how to maintain the activities they used to do when they can't drive any more.
- ✓ There are two types of travel opportunities that should be secured by public transportation, a) morning services to the city center (trade route) and b) evening services to get to evening meetings and events in town.
- ✓ The amount of subsidies granted to the elderly by the Norwegian Government as part of the 'Transfer Services for the Disabled' is small compared to the actual needs of the elderly to travel. For this reason, the elderly must make use of taxis and rely on transportation by family and friends to compensate for the lack of transportation.

### ~ Costs of Providing and Maintaining Public Transportation ~

According to a study of public transportation in Finland, a common problem of remote areas in OECD

countries is that the cost of providing public transportation is high. The main reasons for the high cost are the following 7 points. [Kauppila, 2015] p.28

- ① The total amount of money for transportation services provided has become large.
- ② Population declines have caused school closures and reduced the number of institutions providing services to the elderly, and the need to travel longer distances to receive school education and welfare services has increased the costs associated with school buses and welfare services.
- ③ Due to the reduced level of public transportation provided by the competitive market, both in rural and urban areas, the government and municipalities have had to buy transport services (generally provide by taxis), which is a service that the government and municipalities should provide to citizens by law. In addition, there is a decrease in public transportation subsidies.
- ④ There is either no, or insufficient, cooperation between municipalities and local governments, or within municipalities, in providing transportation services.
- ⑤ Transportation services are not planned in a comprehensive manner and each department operates without coordination with other departments.
- ⑥ Due to lack of know-how and information in government offices, transportation services, including taxis, cannot be operated properly.
- ⑦ (In the case of Norway) Taxi licenses are limited by a quota system (the number of taxis in each municipality is determined by the governmental office), and fares are controlled, so there is no competitive market between taxi service providers.

### ~ Problems that Cannot be Solved Simply by Maintaining Existing Public Transportation ~

There are many problems that cannot be solved simply by reducing the cost of providing public transportation services and maintaining the conventional service provision. For example, the following problems have been pointed out by the UK, one of the Arctic regions.

In the UK, services that local governments are required to provide to residents free-of-charge include the following. ① For children between the ages of 8 and 16, when the distance from home to the nearest school is 3 miles or more, travel to school is free-of-charge. ② Public transportation is provided free-of-charge to people with disabilities and residents over the age of 60 except during the commuting rush hours on weekdays. (As per national regulations, local governments refund the service providers)

The question is whether the full exemption of the elderly for using public transport is wise. Even with free buses, the result is there is no service they can use. In addition, some free-pass holders have requested that bus services be provided at half the cost, rather than free-of-charge. (White 2015) p.57

### ~ A New 'Demand-responsive Transport' System in Remote Areas ~

Under these circumstances, the UK has taken the following measures to maintain and improve public transportation in remote areas. (White 2015)

- A) Improve the services of conventional route buses
- B) Carsharing
  - An attempt to match the needs of people who do not have a vehicle for transportation with the willingness of car owners to allow people to ride together. In remote areas, this mode of travel offers a fairly comprehensive service for various purposes.
  - Carsharing is roughly classified into 2 types:

- ① Providing seats that are vacant for people without cars or driving licenses.
- ② Carsharing among car owners. To reduce the number of vacant seats in the vehicle by carrying passengers when commuting.

C) Minibus operation by volunteers

Approved in the UK by the Transportation Act 1985, Article 19-20. When this method is used (as in the case of carsharing described above), securing and maintaining a sufficient number of volunteers will be an issue.

There are 2 ways to do this. ① Adults use the same minibus used by the children during their commute to school at other times for shopping or traveling to hospitals or pharmacies. ② Children and adults use the same minibus for commuting to school and shopping at the same time\*.

- \* An example of the integration of school buses and welfare-related transportation services in Japan is the 'Fureai Shuttle' in Niseko Town, Hokkaido. The 'Fureai Shuttle' is a circulation bus in Niseko Town that integrates and reorganizes the 'School Bus', 'Welfare Bus', and 'some route buses' and operated from April 2002 to 2012 as a means of transport that anyone could use for 100 yen (one coin). The service ended on September 30th, 2012, and has since been operated by school buses and demand buses.  
[https://web.archive.org/web/20130127122736/http://www.tb.mlit.go.jp/hokkaido/bunyabetsu/tiikikoukyoukoutsuu/kakuhoujikaizen/sonota/jinzaiikusei/H23/shiryuu\\_niseko.pdf](https://web.archive.org/web/20130127122736/http://www.tb.mlit.go.jp/hokkaido/bunyabetsu/tiikikoukyoukoutsuu/kakuhoujikaizen/sonota/jinzaiikusei/H23/shiryuu_niseko.pdf)

B) Carsharing and C) Minibus operation by volunteers, with demand-based transportation, are different from private cars and ordinary public transportation services (operated on designated routes at specific times). Users request the service over the phone at least 2 hours before use, and can request the service as needed. This is an approach that has emerged in remote areas where conventional public transportation is limited.

When considering the introduction of Demand-responsive Transport (DRT), consulting with residents who will be the actual users will be more important than when providing conventional services. In order for DRT to come up with ideas and achieve long-term success, it must be a service that involves the participation of the local people. [Leiren Skollerud, 2015]

The following are examples of successful Demand-responsive Transport in remote areas.

## ■ Overseas Cases

**The Village Bus in Kolsillre Village, Sweden.** <https://youtu.be/ekkHhkxuDhc>

The European Government's Northern Periphery Program which began as 'Regional Transportation Solutions' (2007~2013). Introduced in September, 2010\*.

- \* A similar approach has recently been made in Finland.  
<https://www.raseborg.fi/boende-och-miljo/trafik-och-batliv/byabussen>

Kolsillre Village in northern Sweden is a locality of the village plus neighboring areas with a combined population of only 100 people. Before the introduction of the Village Bus, there was only 1 route bus service per day to the nearest town, Ange. What the villagers wanted was flexible public transportation that could be used when and where needed.

The "Village Bus" is specifically as follows:

- ✓ The villagers operate 1 minibus that carries 9 people themselves. The villagers drive it themselves.
- ✓ There is no fixed route or arrival/departure time. The minibus goes mainly to the nearest town of Ange, 45 km away from the village. The fee is free for everyone, not just the villagers. (The operation is funded by EU Government subsidies. The hope of the villagers is to maintain a fare-paying "Village Bus" after the subsidies cease. For this purpose, it is

necessary to revise the regulations of Swedish Traffic Laws.)

- ✓ In a village with a population of 100, 4,100 people used it in 2011.

With the introduction of the minibus,

- ✓ Residents without driving licenses and villagers without private cars, can now continue residing in remote areas. Villagers without cars (mostly the elderly) can now go where and when they want. It has become easier to get to banks, pharmacies and shops in the town.
- ✓ Villagers who have their own car also use the minibus instead of their private cars and in so doing choose an environmentally friendly means of transportation leading to a reduction in their transport costs. They can commute to work without using their own car.
- ✓ The community spirit was cultivated because the villagers operate it. The distance between the villagers has decreased. They have started talking to people with whom they don't usually have the opportunity to talk with.
- ✓ They can now invite guests from cities such as Stockholm and guide them around the countryside where they live.

## ■ Japanese Cases

### **'Community Car Sharing' in Ishinomaki City, Iwate Prefecture, with donated cars from the Japan Car Sharing Association** <https://www.japan-csa.org/action/>

【Goal】 To create supportive regions

Local circle activities where cars are used together within the neighborhood. Unlike general carsharing, the local community operates and uses cars flexibly for the purpose of creating a supportive community. While gathering for 'Ochakko※' every month, they check the usage status, decide the rules, plan the next trips, and operate whilst playing whichever role each they can. (※ Ochakko: A unique Tohoku dialect word meaning an occasion where local people can meet, have tea, eat sweets and pickles, and chat)

The expenses are settled at cost. Members equally share expenses for car maintenance, fuel, parking, officer's allowance, etc. according to the frequency of use. Rules are decided and deposits are made, and they are settled at the time of the Annual General Meeting.

There are 4 other activities by the Japan Car Sharing Association in addition to 'Community Car Sharing' (Activity 1).

【Activity 2】 Social rent-a-car and social car lease that rejuvenates the people and the community.

'Social rent-a-car'

A loan help program for volunteers and those involved in NPO activities who are in trouble without a car.

After the Great East Japan Earthquake, the local rent-a-car project, 'Regional Revitalization Rent-A-Car', started with the aim of encouraging the coastal area to become more vibrant in the Ishinomaki's Oshika, Ogatsu and Kitakami areas, where the number of tourists dropped dramatically\*. Maintain the car with revenue from the rent-a-car business. Prepare for disaster.

\* Reference : ' Regional Revitalization Rent-A-Car ' <https://www.japan-csa.org/action/rent.php> If you visit a lot of shops, the region will be healthy! The rent-a-car fee is also great value! When you visit a cooperating shop operating in the Oshika, Ogatsu, Kitakami areas with the association's rental car and spend more than 1,000 yen, you can get one stamp that will give you a 500 yen cashback for your rental car. (One stamp per store) Up to 4 stamps can be collected per rental. When you hand in the stamp card on returning the rental car, you can receive a cashback of up to 2,000 yen.



### ‘Social Car Lease’

A long-term car lending program utilizing vehicles that have completed their role at the disaster site. Leasing cars to people who will be the power of the area, such as non-profit organizations, people who have moved to the area, and new businesses in the area.

【Activity 3】 ‘Mobility Resilience’, to create an area where there is no shortage of cars in a disaster. Collect donated cars from all over the country and deliver them to the affected area to support the recovery of the affected area.

### 【Activity 4】 ‘Community Car Sharing’ Introduction Support Program

Support for people and organizations who have the desire to practice community car sharing in their area. - Japan Car Sharing Association (Person in charge, Mr. Yoshizawa) Tel: +81-(0)225-22-1453 FAX: +81-(0)225-24-8601 E-mail : [info@japan-csa.org](mailto:info@japan-csa.org)

### 【Activity 5】 Collaboration <https://www.japan-csa.org/action/collaboration.php>

- ✓ Collaboration with Corporations  
A collaboration that can make an impact on society and create new added value, with corporations utilizing the know-how and sites of the Japan Car Sharing Association.
- ✓ Collaboration with Universities  
A collaboration that leads to students’ growth using the Association’s sites.
- ✓ Collaboration with Industry, Government, Academia and Citizens  
In order to collect and examine various knowledge for sustainable and high-quality modeling and effective policy coordination of ‘Community Car Sharing’ in Ishinomaki City, the City’s Relations Department together with universities, resident’s associations and consulting companies formed the ‘Ishinomaki Eco EV Car Sharing Study Committee’ in November 2015, and regular discussions are ongoing. Through consultations with the committee, policy training and coordination such as a model independent solar power generator system installed in reconstructed public housing that can charge cars, improvement and organization of initiatives, projects to seek out transportation for depopulated areas, and disaster prevention for the above mentioned, have been realized.

### ~ Yabu City, Hyogo Prefecture Yabu City My Car Transportation Network ~

Got the 6th Platinum Award, Minister of Internal Affairs and Communications Award 2018

<http://yabu-mycar-unsounet.com/>

【Goal】 For citizens and tourists who have difficulty moving around using public transport, doing business related to mobile services, maintaining a healthy life for users contributing to the realization of a local community where everyone can live safely and with peace of mind, and to the revitalization of the local economy.

It is made up of city taxi operators, bus operators, tourism related organizations, local autonomous organizations etc., and provides short-distance transportation by registered drivers in the Oya and Sekinomiya areas where it is difficult for taxi operators to respond. Corporations, organizations, citizens and governments work together to build sustainable and safe individual transportation system.

<https://www.city.yabu.hyogo.jp/material/files/group/5/85532032.pdf>

【Background】 Yabu City is located in the center of the Tajima area in the northern part of Hyogo Prefecture. In the big merger during the Heisei Era (April, 2004), the former 4 towns (Yoka Town, Yabu Town, Oya Town and Sekinomiya Town) gave birth to the present Yabu City, now in its 14th

year. Being far from the city center, the door-to-door public transportation system is insufficient in the Oya and Sekinomiya regions. It is difficult for existing taxi operators to handle short-distance transportation in the area. This makes it difficult for residents to use taxis.

Also, the tourism resources are abundant, but difficult to access. (Modern heritage sites such as Mt. Hyono-sen, the highest mountain in the Prefecture, and 4 ski resorts located near it, the famous waterfall Tendaki, the Japanese heritage Akenobe and Nakase Mines which have been certified as part of 'The Ore Road', and the Osugi area designated as a preservation area for important traditional buildings.) There was a need to revitalize the local economy by constructing transportation means to effectively link the tourism resources of the 4 seasons and thus entice the tourists in.

Establishment process : To build a sustainable and safe individual transportation system for the citizens and tourists in the area, a 'New Private Passenger Paid Transportation Preparation Study Meeting in Yabu City' was established. The government and general passenger car carriers examined ideas repeatedly. As a result of the participation of local autonomous organizations and tourism-related organizations, a certain degree of agreement was reached, and the government will work together with the private sector on the private passenger paid transportation business, utilizing the National Strategic Special Zone. It was established as a means of lifestyle support for citizens such as the elderly who have limited access to transportation, and as a means of transportation for tourists. It contributes to local communities by promoting cooperation among tourist spots in the region and strengthening the system for accepting foreign tourists. It received NPO status due to the viewpoint of safety and reliability, being a business established within the region, and because the business is not for profit.

<https://www.city.yabu.hyogo.jp/material/files/group/5/85532032.pdf>

#### ~ **Transportation of *Takkyubin* Courier Service Using Route Buses (Yamato Transport Co., Ltd.)** ~

To cut costs and develop new markets for Yamato Transport Co., Ltd. (shopping and watching over). To maintain the traditional route buses for the municipality. There are several examples.

<http://www.kuronekoyamato.co.jp/ytc/government/case/desc/G00054.html>

#### ~ **Example of Nishimera Village, Miyazaki Prefecture** ~

Miyazaki Kotsu Co., Ltd., Miyazaki Prefecture, Saito City, Nishimera Village, and Yamato Transport Co., Ltd. commenced consolidation of passenger cargo transporting courier services by route buses. The company will develop vehicles with some of the seats used as luggage space, and transport express package (*Takkyubin*) via the route buses that connect Saito City and Nishimera Village. The launch of this initiative has enabled sales drivers (SD) to spend more time within the community and watch over and support the elderly with shopping. (Yamato Transport Co., Ltd.)

[http://www.kuronekoyamato.co.jp/ytc/corporate/pdf/ad/poster\\_2016.pdf](http://www.kuronekoyamato.co.jp/ytc/corporate/pdf/ad/poster_2016.pdf)

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Nagasaki Prefecture. 'Plan for the maintenance of local communities in remote island areas with specified manned borders in Nagasaki Prefecture' Nagasaki Prefecture, April 2019

## 6-3. About Geoparks

### ~ Overview ~

Goto City requested a survey of reference information for accreditation of UNESCO Global Geoparks. We surveyed ‘What are the priorities for UNESCO’s Geopark initiatives?’ and ‘What initiatives are valued round the world?’ The following sections include ideas from the Scottish Islands, including the Shetland Islands, that Goto City can refer to in moving forward with its Geopark plan.

### ~ Sustainable Population and Regional Development in the Scottish Islands ~

Like Nagasaki, Scotland has many remote islands. 2% of the population (about 100,000 people) live on remote islands away from mainland Scotland. Interestingly, Scotland’s remote islands have a slight trend to a growing population. Especially in the Shetland Islands and the Orkney Islands, the population is not decreasing. Conversely, more than half the young people residing on the islands say they want to work on the islands in the future\*.

(Highlands and Islands Enterprise (Scotland), 2018.11)

\* In 2018, a poll was conducted by the Scottish Highlands and Islands Development Authority (HIE) on young people between the ages of 15 and 30. It showed that the percentage of young people who ‘Want to work on the island in the future’, 63% in Shetland, 50% in the Western Islands, has become much higher than the average (40%) in the entire region (Highlands and Islands).

<https://www.hie.co.uk/research-and-reports/our-reports/2018/may/31/yp-research/>

In September 2019, the ‘Island Revival Declaration’ was announced by the residents of the Scottish Islands. The Declaration states that it is important that the islands maintain a sustainable population, and that it is important for the citizens to actively participate in the islands’ politics in order to further promote the sustainable development of the islands’ populations. One of the reasons behind the islands’ revival is that young people have come to appreciate the value of the good things of life on the islands. This is because the islands are the places most susceptible to global environmental issues such as climate change, and the number of young people who want to take initiatives on climate change from the islands has increased, and the rediscovery that the richness of island culture being closely connected with the island, living in abundant nature leads to mental and physical health (well-being), and the goodness of living in a small community, etc., cannot be obtained in urban life. There was a movement among young people who reaffirmed the goodness of remote islands. Also, in Scotland, the government was able to provide fiber-optic high-speed internet to almost all households, increasing the number of jobs that can be done from remote areas. In Scotland, where medical treatment in remote areas is progressing, it is possible to receive medical treatment even if you are on an island.

Also, in recent years, Scotland’s islands are being developed with island development programs that fully respect the citizen’s decision-making rights. The program emphasizes the abolition of the way the central government had introduced policies to the islands without really knowing the situation on the islands, and encourages local residents to promote autonomy (local democracy) and community leadership. There are goals to aim for (the 6 elements of good governance), establish good leadership, accountability, integrity, efficiency, transparency, and sustainability through local management of local resources (such as land and sea) with implementation of community-based island plans.

Referring to the example of Scotland that has succeeded in recovering a sustainable population, the Goto City Geopark Initiative aims to develop the following areas through the Geopark.

- ✓ Through the experience of living in and learning from a Geopark, children on the island can see that the island’s environmental resources and geological natural heritage are closely linked to

island-life, culture and well-being and are able to discover and appreciate the value of the good things about living on the island, such as the strength of living in a small community. Being proud of the island and wanting to work there in the future. And to be a leader in the future of sustainable islands.

Goto City Geopark can contribute to local communities, by

- ✓ Managing regional resources (such as land and sea) locally. Through this activity, tackle island politics with good leadership, accountability, integrity, efficiency, transparency and sustainability (the 6 elements of good governance). Strengthen community leadership.
- ✓ Increasing understanding and confidence that the community can accomplish much through collaboration among citizens and among citizens' groups.
- ✓ Increasing youth on the island in pursuit of an 'enterprising way of life' that finds new possibilities in everything.
- ✓ Raising interest in issues related to climate change and sustainability, and lead those efforts in Japan from the island.

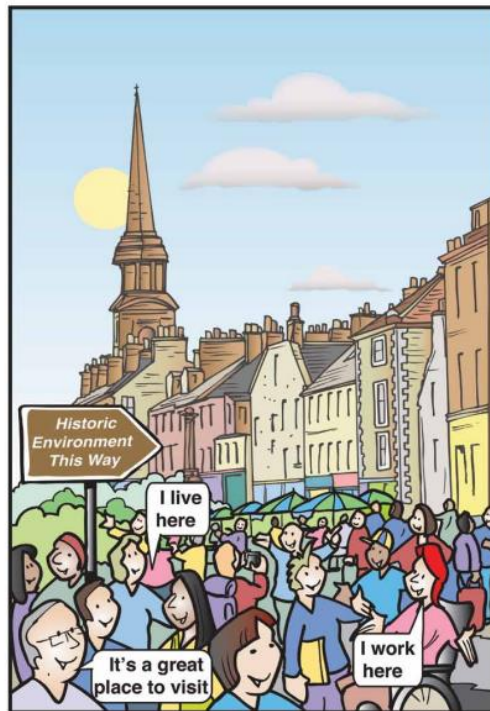


Illustration expressing the importance of the Scottish Government's Historic Heritage.  
Source : Our Place in Time: The Historic Environment Strategy for Scotland (2014)  
<https://www.gov.scot/publications/place-time-historic-environment-strategy-scotland/>

~ What are the priorities in UNESCO's Geopark initiatives? What initiatives are valued round the world? ~

### ■ 'Education for Sustainable Development (ESD for 2030)'

According to the British newspaper The Guardian, dated January 30th, 2020, the New Zealand Government has decided to incorporate climate change education into its schooling curriculum. The article also introduces the latest initiative (video) of climate change education in Dubai, a crude

oil production country in the Middle East. Now, a major global concern is ‘Climate Change’. And the United Nations’ Sustainable Development Goals are attracting attention as a countermeasure. In addition, movements to educate on climate change and Sustainable Development Goals are developing worldwide, starting with the United Nations.

\* New Zealand is rolling out a climate crisis curriculum in schools. The government is providing a teaching plan covering topics from how to plan your activism to ways to process “eco-anxiety.” THE GUARDIAN

\*\* In addition, a dedicated site developed by the United Nations to train educators on climate change (subsidized by the Swiss Government <https://unccelearn.org/> and education and human resource development for climate change education are also actively pursued. <https://www.unccelearn.org/about-unccelearn>

In December 2019, the resolution of a new international framework ‘Education for Sustainable Development: Towards achieving the SDGs (ESD for 2030)’ was adopted at the 74th UN General Assembly, on Thursday, December 19th\*. The Ministry of Education, Culture, Sports, Science and Technology (Japan) has stated that the year 2030, which is the year of achieving the United Nations’ Sustainable Development Goals (SDGs) is being followed, and that it has great interest in the field of ‘ESD: Education for Sustainable Development’ because it was initiated by Japan.

\* [https://www.mext.go.jp/unesco/001/2019/1421939\\_00001.htm](https://www.mext.go.jp/unesco/001/2019/1421939_00001.htm)

### < Explanation of Terms >

#### ✓ **ESD (Education for Sustainable Development)**

Education for Sustainable Development (ESD) has been proposed with the aim of transforming the values of social development thus far through education into the global issue of unsustainability. The promotion of ESD was adopted by the United Nations in 2005, and UNESCO is leading it. The education that ESD requires is, flexible and comprehensive learning that solves global and social problems totally, focusing on issues such as climate change and environmental issues. ‘Yokohama Steiner Gakuen, 2019’, an important player in ESD in Japan, is a UNESCO School\*. In the Kyushu district, 68 schools are registered as UNESCO Schools, and only 3 schools are in Nagasaki (all are High Schools, there are not yet any Elementary or Junior High Schools)\*\*.

\* An international network of educational institutions that realizes UNESCO’s ideals through education, recognized by the United Nations’ Educational, Scientific and Cultural Organization (UNESCO). UNESCO School is the popular name in Japan, the official name is UNESCO ASPnet(UNESCO Associated Schools Network).

\*\* Nagasaki Prefecture, Nagasaki Prefectural Kunimi High School, Nagasaki Prefectural Sasebo Minami High School, Nagasaki Prefectural Tsushima High School  
<http://www.unesco-school.mext.go.jp/schoolslist/>

#### ✓ **SDGs (Sustainable Development Goals)**

SDGs refer to the Sustainable Development Goals adopted by the United Nations that should be achieved by 2030. 1. No Poverty, 2. Zero Hunger, 3. Good Health and Well-being, 4. Quality Education, 5. Gender Equality, 6. Clean Water and Sanitation, 7. Affordable and Clean Energy, 8. Decent Work and Economic Growth, 9. Industry, Innovation and Infrastructure, 10. Reducing Inequality, 11. Sustainable Cities and Communities, 12. Responsible Consumption and Production, 13. Climate Action, 14. Life Below Water, 15. Life on Land, 16. Peace, Justice and Strong Institutions, 17. Partnerships for the Goals. The world is working on these 17 goals.

#### ✓ **Sustainable Schools**

The role of education is particularly important in SDGs initiatives. Sustainable Schools have been positioned as ‘Projects to Promote Regional SDGs by Deepening ESD’ since 2018. In order to further enhance the quality of UNESCO Schools spread throughout Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) recruited high-quality ESD practice schools from all over the country. Sustainable Schools are the 24 schools selected for the purpose of promoting the 3-year ESD priority school formation project. ‘It is ESD that rebuilds the world in order to create a sustainable future.’ said Mr. Yoshiyuki Nagata, Chairman of the

Sustainable Project Promotion Committee. [Yoshiyuki Nagata, 2019] Kyushu has only one Sustainable School, Yoshino Elementary School in Omuta City, Fukuoka Prefecture. The network between UNESCO schools is also active, and schools across the country are connected through exchanges between schools, etc. There are also world conferences.  
<http://www.unesco-school.mext.go.jp/startexchange.j/>

✓ **New Course of Study and ESD**

In March 2008, kindergarten, elementary school and junior high school education guidelines were announced, and in March 2009, high school learning guidelines were announced. The new curriculum includes a perspective on building a sustainable society. By implementing education based on the Basic Education Law, we can provide education in accordance with ESD.  
[http://www.unesco-school.mext.go.jp/?page\\_id=637](http://www.unesco-school.mext.go.jp/?page_id=637)

In reality, at Sustainable Schools, Climate Change, Disaster Prevention Study, Biodiversity, Environmental Study, World Heritage and Local Cultural Property Study, Energy Study, International Understanding Study, Human Rights Study, and Climate Change and Sustainable Development themes are incorporated into the school education\*. In addition, rather than incorporating them into specific classes, they conduct Education for Sustainable Development (ESD) that involves the entire school curriculum and the community. This is called Whole School Approach.

\* As for examples in Japan, there are materials compiled by the Asia-Pacific Cultural Centre for UNESCO (ACCU).  
<http://www.unesco-school.mext.go.jp/materials.edu/>  
"Sustainable School – Future School using the Whole School Approach Vol.3"  
[http://www.unesco-school.mext.go.jp/materials.edu/?action=common\\_download\\_main&upload\\_id=22397](http://www.unesco-school.mext.go.jp/materials.edu/?action=common_download_main&upload_id=22397)  
"Guide for the Promotion of ESD"  
[http://www.unesco-school.mext.go.jp/materials.edu/?action=common\\_download\\_main&upload\\_id=18776](http://www.unesco-school.mext.go.jp/materials.edu/?action=common_download_main&upload_id=18776)

✓ **Whole School Approach**

Rather than working on ESD only in specific classes, we will implement ESD throughout the whole community, including the curriculum, the school organization, and the region, and transform the entire community. [Yokohama Steiner Gakuen, 2019]

~ **UNESCO Global Geoparks and ESD** ~

UNESCO adopted the 'Framework for Education for Sustainable Development (ESD for 2030)' at the 40th UNESCO General Assembly in November 2019, ahead of the UN General Assembly. UNESCO plays a leading role in implementing the ESD for 2030 initiative. For this reason, UNESCO is actively promoting efforts to include Education for Sustainable Development in the activities of geoparks. Specifically, it is creating a school education curriculum that combines the elements of Education for Sustainable Development (ESD) (Climate Change, Disaster Prevention Study, Biodiversity, Environment Study, World Heritage and Local Cultural Property Study, Energy Study, International Understanding Study, Human Rights Study, Disparity, Refugee Problem with Geological Natural Heritage and its Conservation (Geoconservation))

The 2018 Global Geopark Network Best Practice Award was awarded to the Education and School Cooperation Programme of Adamello-Brenta UNESCO Global Geopark in Italy.  
<https://www.pnab.it/en/at-school-in-the-park/>



1<sup>st</sup> Global Geopark Network 2018 Best Practice Award: Adamello-Brenta UNESCO Global Geopark

Adamello-Brenta Global Geopark collaborates with all schools in the region (kindergartens, elementary schools, junior high schools and high schools). The number of students who participated in the program in 2016 was about 10,000. Through collaboration with local schools, they successfully launched a long-term, effective and unique sustainable educational program. Throughout the 6 years of elementary school, the children were given special files containing worksheets, and learned about earth science fundamentals, wildlife, nature conservation and the principles of sustainability through Geopark lessons. The program includes outdoor learning using the nature of the Geopark and presentations by the children. In addition, the schoolteachers receive regular training from Geopark staff in implementing the program.

Adamello-Brenta Global Geopark has a scientific research and environment education area where educational activities are conducted for schools located within the Geopark. The lesson content is environment education (water resources, wildlife, the ecosystem, rocks and minerals, energy resources, etc.).

#### <Elementary School Curriculum>

- Water resources
- What if you encounter a carnivore?
- The Ecosystem? What's that?
- A plant a day keeps the doctor away.
- Adamello-Brenta Geopark's rocks and minerals
- At full energy

#### <Junior High School Curriculum>

- Adamello-Brenta Geopark's geoscience mosaic
- Let's look inside the Geopark: fauna and climate change

### ■ Top 10 Focus Areas of UNESCO Global Geoparks

According to UNESCO Global Geoparks, the top 10 Focus Areas of a UNESCO Global Geopark are the following 10 areas.\*

\* <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/top-10-focus-areas/>

#### ① Natural Resources

UNESCO Global Geoparks inform people about the importance of sustainable use and conservation of natural resources.

② Geological Hazards

UNESCO Global Geoparks promote awareness of geological hazards including volcanoes, earthquakes and tsunamis, and help prepare disaster mitigation strategies among local communities.

③ Climate Change

UNESCO Global Geoparks hold records of past climate change and are educators on current climate change as well as adopting a best practice approach to utilizing renewable energy and employing the best standards of “green tourism”. While some UNESCO Global Geoparks stimulate green growth in the region through innovative projects, others serve as outdoor museums on the effects of current climate change thus giving the opportunity to show visitors how climate change can affect our environment.

Such community and educational activities and projects are important in order to raise awareness on the potential impact of climate change on the region, and to provide the local communities with the knowledge to mitigate and adapt to the potential effects of climate change.

④ Education

It is a pre-requisite that all UNESCO Global Geoparks develop and operate educational activities for all ages to spread awareness of our geological heritage and its links to other aspects of our natural, cultural and intangible heritages.

⑤ Science

UNESCO Global Geoparks are special areas where the geological heritage, or geodiversity, is of international importance. UNESCO Global Geoparks are thus encouraged to work with academic institutions to engage in active scientific research in the Earth Sciences, and other disciplines as appropriate, to advance our knowledge about the Earth and its processes. A UNESCO Global Geopark is not a museum, it is an active laboratory where people can become engaged in science from the highest academic research level to the level of the curious visitor. A UNESCO Global Geopark must take great care not to alienate the public from science and absolutely must avoid the use of technical scientific language on information boards, signs, leaflets, maps and books which are aimed at the general public.

⑥ Culture

UNESCO Global Geoparks are fundamentally about people and about exploring and celebrating the links between our communities, our practices, and the Earth.

⑦ Women

UNESCO Global Geoparks have a strong emphasis on empowering women whether through focused education programs or through the development of women’s cooperatives.

⑧ Sustainable Development

Even if an area has world-famous geological heritage of outstanding universal value, it cannot be a UNESCO Global Geopark unless the area also has a plan for the sustainable development of the people who live there.

⑨ Local and indigenous Knowledge

UNESCO Global Geoparks actively involve local and indigenous peoples, preserving and celebrating their culture. By involving local and indigenous communities, UNESCO Global Geoparks recognize the importance of these communities, their culture and the link between these communities and their land. It is one of the criteria of UNESCO Global Geoparks that local and indigenous knowledge, practice and management systems, alongside science, are included in the planning and management of the area.



## ⑩ Geoconservation

UNESCO Global Geoparks are areas that use the concept of sustainability, value the heritage of Mother Earth and recognize the need to protect it.

### ~UNESCO Global Geoparks and their Contribution to the Sustainable Development Goals~

The official website of UNESCO Global Geoparks states which areas the parks should focus on towards achieving the SDGs\*.

\* <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/sustainable-development-goals/>

#### ■ Goal 1: End poverty in all its forms everywhere

Especially target 1.5: “By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.”

Disaster risk reduction is essential to ending poverty and fostering sustainable development. The bottom-up approach of the UNESCO Global Geoparks reduces the vulnerability of local communities to extreme events and other shocks and disasters through active risk awareness and resilience training.

#### ■ Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Especially target 4.7: “By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development.”

UNESCO Global Geoparks actively educate their local communities and their visitors of all ages. UNESCO Global Geoparks are outdoor classrooms and incubators for sustainable development, sustainable lifestyles, appreciation of cultural diversity and the promotion of peace.

#### ■ Goal 5: Achieve gender equality and empower all women and girls

Especially target 5.5: “Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.”

UNESCO Global Geoparks strongly emphasize the empowerment of women through educational programmes or the development of women’s cooperatives. Such cooperatives provide an opportunity for women to obtain an additional income in their own area and on their own terms.

## ■ Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Especially target 8.9: “By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and product.”

The promotion of sustainable local economic development through sustainable (geo)tourism is one of the key pillars of a UNESCO Global Geopark. This creates job opportunities for the local communities through tourism, but also through the promotion of local culture and products.

## ■ Goal 11: Make cities and human settlements inclusive, safe resilient and sustainable

Especially target 11.4: “Strengthen efforts to protect and safeguard the world’s cultural and natural heritage.”

Protection, safeguarding and celebrating our cultural and natural heritage are the foundation of the holistic approach of the UNESCO Global Geoparks. UNESCO Global Geoparks aim to give local people a sense of pride in their region and strengthen the identification with the area.

## ■ Goal 12: Ensure sustainable consumption and production patterns

Especially target 12.8: “By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.” and target 12.b: “Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.”

UNESCO Global Geoparks educate and create awareness on sustainable development and lifestyles. They teach the local communities and visitors to live in harmony with nature.

## ■ Goal 13: Take urgent action to combat climate change and its impacts

Especially target 13.3: “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.”

All UNESCO Global Geoparks hold records of past climate change and are educators on current climate change. Through educational activities awareness is raised on the issue and people are provided with knowledge to mitigate and adapt to the effects of climate change.

## ■ Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

Especially target 17.6: “Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.”, target 17.9: “Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals including through North-South, South-South and triangular cooperation.”, and target 17.16: “Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries.”

UNESCO Global Geoparks are all about partnership and cooperation, not only between local stakeholders, but also internationally through regional and global networks where knowledge, ideas and best practices are shared. Experienced geoparks guide aspiring geoparks to reach their full potential.

\* \* \*

The above is the description on the official website of UNESCO Global Geoparks. As can be seen from reading the text, UNESCO places importance on education for sustainable developments in Geopark activities, and picks up the UN Sustainable Development Goals, which are of particular importance in Geopark activities. It is important to include these points in the Goto City Geopark plan.

### ■ ‘ESD-SDGs Promotion Model Development Project’ by Japan Geopark Network (JGN)

In 2019, the Japan Geopark Network (JGN) started the ‘Project aimed at fostering leaders in the creation of a sustainable society by developing and disseminating ESD\_SDGs practice models using Geoparks’, utilizing the ‘fiscal 2018 Japan UNESCO National committee for UNESCO Activity Subsidies’.

<https://confit.atlas.jp/guide/event-img/jpgu2019/O08-P35/public/pdf?type=in&lang=ja>

The details of this activity are “We conducted a survey of educational contents using Geoparks in all Geoparks in Japan and solidified the foundation for using Geopark educational contents. In addition, an educational travel needs survey was conducted to utilize the survey results in order to promote educational travel.” We are also developing the following 5 Geopark ESD practice models.

- ① ESD model utilizing UNESCO School Geopark
- ② Elementary and junior high school Geopark ESD practice model
- ③ High school Geopark ESD practice model
- ④ Museum Geopark ESD model
- ⑤ Geopark ESD overseas statement model

With the world’s current interest in education for climate change and sustainable development, Goto City is also adding climate change education and education for sustainable development (ESD for 2030) to its activities, specifically the Goto Islands Geopark. In cooperation with local elementary and junior high schools, we aim to create a sustainable future incorporating the whole school approach at elementary and junior high schools located in the middle. Education on climate change using Goto’s land, and cooperation between Goto’s children and the world’s children through geoconservation, leads to networking with domestic and overseas Geoparks.

### ～ Where to raise funds ～

The Japanese government is making a public invitation for a ‘UNESCO Activity Funding Subsidy (Project to Promote Leaders (ESD) in Achieving the SDGs). (Will they recruit you in February this fiscal year?) <https://www.mext.go.jp/unesco/001/2019/1413440.htm> The purpose of this subsidy is, “Organizations that implement and support diverse educational activities (ESD) that fosters leaders in achieving sustainable development goals (SDGs) at educational sites in Japan, will be subsidized the costs required to carry out the project by ‘UNESCO Activity Funding Subsidy’ (Project to Promote Leaders (ESD) in Achieving the SDGs) .” Subsidized projects are, “Limited to projects that, by implementing and supporting diverse educational activities (ESD) at educational sites in Japan foster leaders in achieving SDGs, aim to improve the qualities and abilities required for the leaders, and are not directly or indirectly for profit.”

Below, from the official website of the Ministry of Education, Culture, Sports, Science and Technology

<https://www.mext.go.jp/unesco/001/2019/1413440.htm>

\* \* \*

### **About the public invitation for the UNESCO Activity Funding Subsidy for the fiscal 2019 (Project to Promote Leaders (ESD) in Achieving the SDGs).**

Subsidized projects come under the 3 following classifications.

- (1) Curriculum development and practice : Develop curriculum, teaching materials, projects, etc. that incorporate the perspective of achieving the SDGs, and practice teaching, and widely speak out of the results.
  - [1] Development and implementation of curriculum, teaching materials, projects, etc. that incorporate the perspective of achieving the SDGs, and nationwide remarks on the results.
  - [2] Project-based learning (PBL) in cooperation with private companies on the theme of SDGs, regional problem solving, and regional revitalization.
- (2) Evaluation and dissemination of educational (learning) effects : Improve the qualifications and abilities of teachers who will play a central role in achieving the SDGs, and widely speak out the results.
  - [1] In cooperation with the Board of Education and universities, conduct ESD training for schoolteachers, etc., and follow up and comment on the results.
  - [2] Conduct ESD training utilizing medium- and large-scale training for teacher training students and schoolteachers conducted by the Board of Education.
  - [3] Awareness of ESD, education and guidance, network construction, etc. for school boards and teacher training institutions (universities, etc.).
- (3) Evaluation and dissemination of educational (learning) effects : Develop evaluation methods to measure the effects of educating (learning) and changes in learners by ESD, practice (evaluate) in the educational setting, state the results, and model/package the developed evaluation methods to be more versatile and widely used by educators.

For implementation the understanding of, the basic concept of ESD and the promotion framework of Japan (“Global Action Program for ESD” implementation plan, etc.), international trends on ESD (promotion of ESD led by UNESCO and its relationship with SDGs), the position of ESD in the domestic education policy (new course of study, etc.), are all prerequisites.

In addition, in order to promote project activities and disseminate wide-ranging results, it is recommended to establish a cooperative system with various stakeholders inside and outside the region, including the ESD Activity Support Center (the national center or 8 regional centers).

\* \* \*

FY2019 Project to Promote Leaders (ESD) in Achieving the SDGs: According to the status of adoption, Shinshu University’s “Dissemination and Deepening of ESD/SDGs in School Education Utilizing UNESCO Eco Parks and Development of Practice Models” has been adopted in the past. <https://www.mext.go.jp/unesco/018/1416144.htm>

### **Reference List**

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Yoshiyuki Nagata (2019). Learning to Promote One's Existence. Publisher: Yokohama Steiner Gakuen (NPO), Sustainable School Report 2016.9 - 2019.1 (Page: 3).

Yokohama Steiner Gakuen (2019). Sustainable School Report 2016.9 - 2019.1. NPO Yokohama Steiner Gakuen

**References** (Please refer to the footnote in addition to the links below.)

“Textbook for Promoting ESD (Education for Sustainable Development)” (Japanese National Commission for UNESCO, revised in 2018)

[https://www.mext.go.jp/unesco/004/\\_\\_icsFiles/afieldfile/2018/07/05/1405507\\_01\\_2.pdf](https://www.mext.go.jp/unesco/004/__icsFiles/afieldfile/2018/07/05/1405507_01_2.pdf)

Education for sustainable development at UNESCO associated school

[http://www.unesco-school.mext.go.jp/TEMP?action=common\\_download\\_main&upload\\_id=21113](http://www.unesco-school.mext.go.jp/TEMP?action=common_download_main&upload_id=21113)



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**In cooperation with**

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