

IPBC Dialogue **Session 7 National Actions**

October 2nd, 2024



Local Blue Carbon Actions in Japan

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Seaweed and Seaweed in Japan

- Traditionally consumed as food
- Decreasing size due to environmental change, expansions of seaweed eaters etc.
- Conservation/recovery of seagrass meadows and seaweed beds are being implemented by local people/business/fishermen.

Seaweed with its zoospore

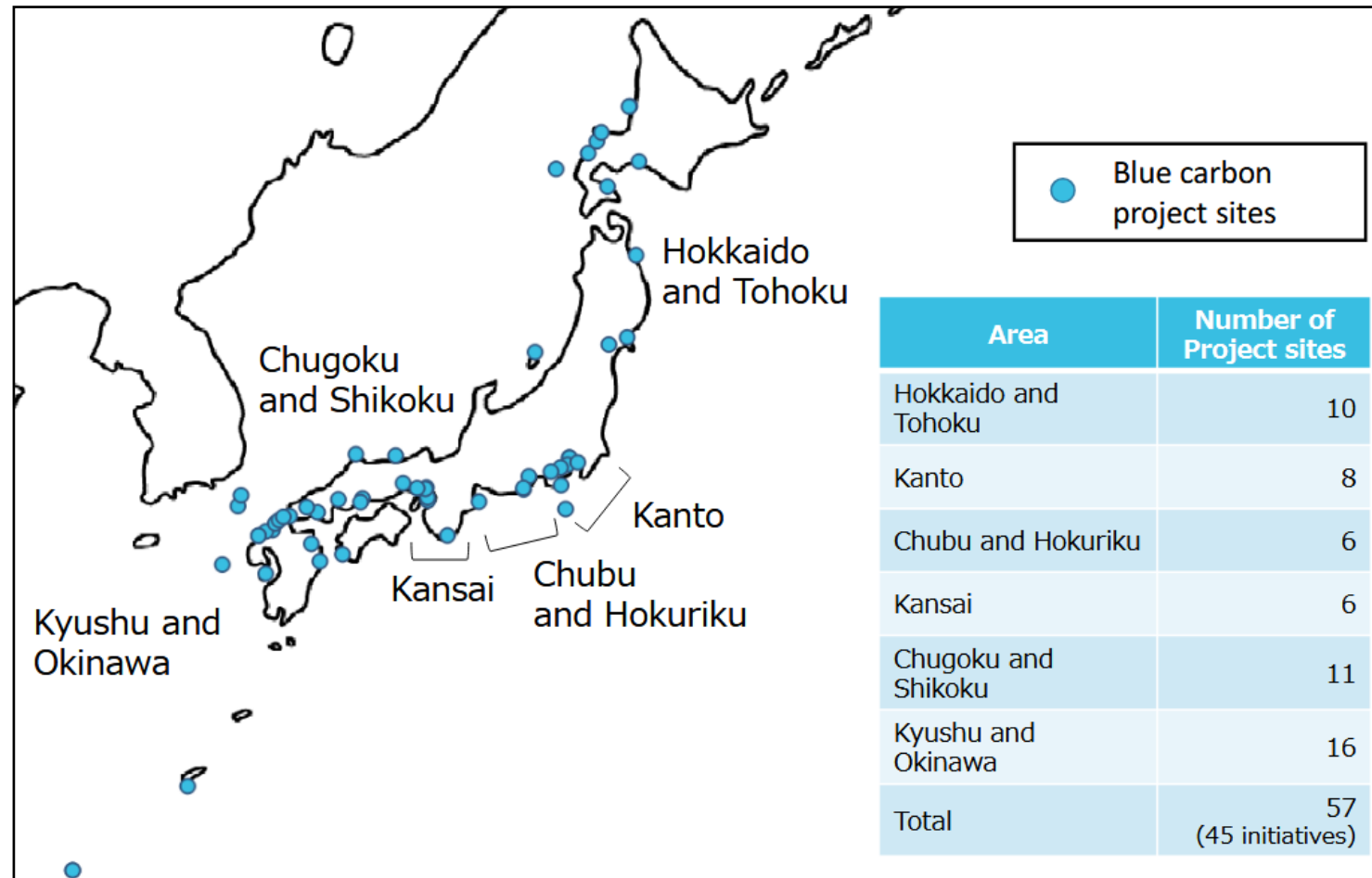


Pictures: "Traditional food in Japan", website of Ministry Agriculture, Forestry and Fishery (MAFF) of Japan



Preservation of seaweed beds (removal of sea urchins)

Source: Fishery annual report 2021, Ministry Agriculture, Forestry and Fishery



Source: Case Study on Blue Carbon Initiatives in Japan, MOEJ

Case Study on Blue Carbon Initiatives in Japan

<https://www.env.go.jp/en/earth/ondanka/blue-carbon-en.html#index>

Case Study on Blue Carbon Initiatives in Japan

Conserving and Restoring Coastal Ecosystems
as a Solution to Climate Change

December 2023

Blue Carbon Liaison Council
(Ministry of the Environment)



45 local initiatives

- Improvement of water bottom quality
- Cultivation
- Seaweed bed creation
- Environmental education
- Restoration of fishing grounds etc.

Sharing knowledge and experience on local initiatives

⇒ What kind of activities?

Where is your base of activity?

Who participates in the activity?

Multi-benefits Multi-stakeholders around Bluecarbon

Multibenefits

Environment

Climate Change mitigation

- carbon storage
- carbon cycle

Biodiversity Conservation

- marine environment
- fisheries environment

Economy

Regional Development

- maintaining local industry
- community revitalization

Society

Fostering Environmental Awareness

- environmental education
- Environmental Training

Multi Stakeholders

Governments

- Local
- Environment
- Land, Infrastructure, Transport, Tourism
- Fisheries

NGOs

Fishery Cooperative Association

Companies

Community

Education/ Research Institutes

Overview of Blue Carbon Activities in Japan

- Local action is supported by various organizations, because it has **multiple benefits** such as biodiversity conservation, regional development, and environmental education.
- **GHG Inventory** gives those action **scientific basis**.

Financial/Tech Support

■ "Creating Satoumi* Model Project":
MOEJ has selected **41 projects** and financially supported since 2022.

*Marine and coastal environment along with human settlements

■ **MAFF*** supports local actions. In FY2021, **>400 organizations**, **>58 kha** seaweed beds or tidal flats.

Law/Vision

■ **Law** for the Promotion of Activities to Enhance Biodiversity in Local Communities.(in 2024)

■ **Future Vision** of Seaweed Beds and Tidal Flats (Fisheries Agency, revised in 2023)

Carbon Credit

■ **J Blue Credit®**: operated by Japan Blue Economy association (**JBE**), which was authorized by **MLIT**.

Local Action

- **Conservation** activities
- **Creating** seaweed
- **Environmental education**

■ **Mangroves** are Reported in April 2023
■ **Seagrasses/Seaweeds** are Reported in April 2024

GHG Inventory

Inter-Ministry / International Cooperation

■ **Blue Carbon Liaison Council** with relevant ministries to share information on initiatives by private sector and ministries.
■ MOEJ became a member of **International Partnership for Blue Carbon (IPBC)**.

Multiple Benefits

- Biodiversity ■ Water Quality ■ Tourism ■ Landscape
- Fisheries ■ Education ■ Food ■ Biofuel and ■ Climate Change Mitigation...etc.

Blue Carbon Initiatives in Japan

Highlights

1. Creation

2. Utilization

3. Finance

Blue Carbon Initiatives in Japan

Highlights

1. Creation

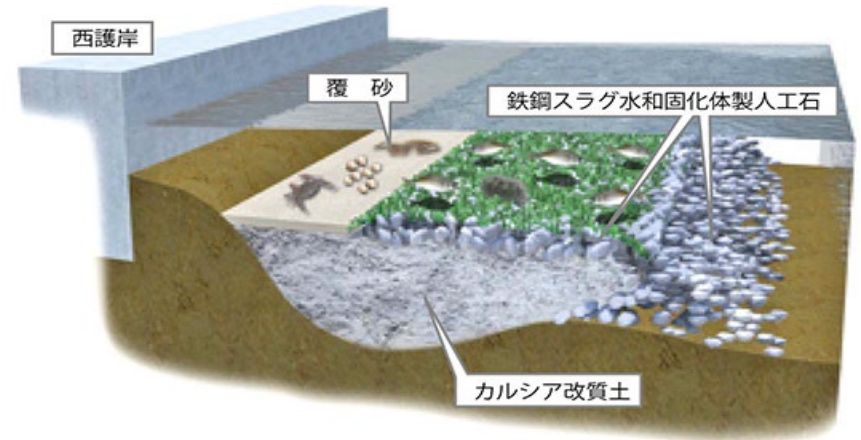
2. Utilization

3. Finance

Creation of shallow and seagrass beds in front of the Kimitsu West Seawall (Nippon Steel Corporation)



Create Shallow Water



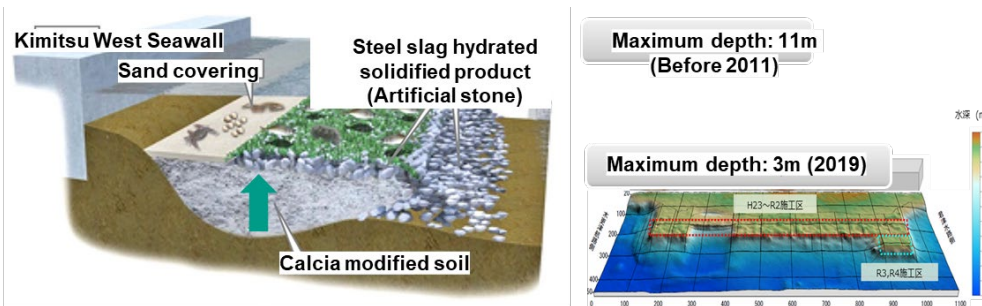
Fish and Seaweeds back



Efforts to improve the marine environment together with the government and fishermen.

Overview

- Challenge: Around 2010, the biological environment of the seafloor changed due to insufficient light caused by the depth of the seafloor depression (-11m) and the retention of hypoxic seawater around the depression.
- Since 2011, the biological environment has been improved by raising the seafloor with improved soil (from -11m to -3m) and by installing artificial stones for seaweed reefs.
- Efforts to improve the marine environment are being made in collaboration with the Chiba Prefecture Federation of Fishery Cooperative Associations and Kimitsu City.



Basic Information

Region	Kimitsu City
Participating organizations	Nippon Steel Corporation, Chiba Prefecture Federation of Fishery Cooperative Associations, Kimitsu City
Start year	2011
Contents of activities	<ul style="list-style-type: none"> • Installation of rock/block substrate (installation of seaweed bedding material) • Sand covering • Adjustment of water depth
Site area	Approx. 12ha (Seaweed bed area, 2022)
Amount of CO2 absorption	— ※Currently being calculated

Effects of Improving the Marine Environment by Creating Shallow Areas

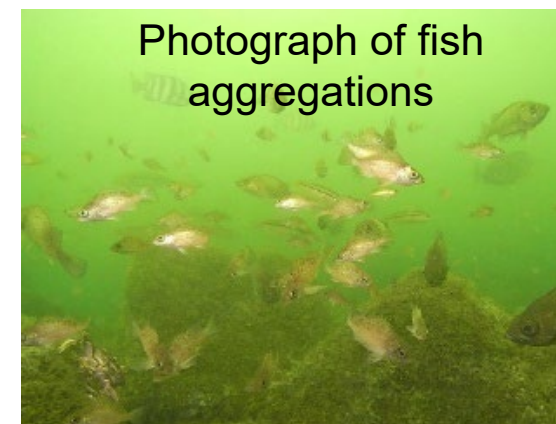
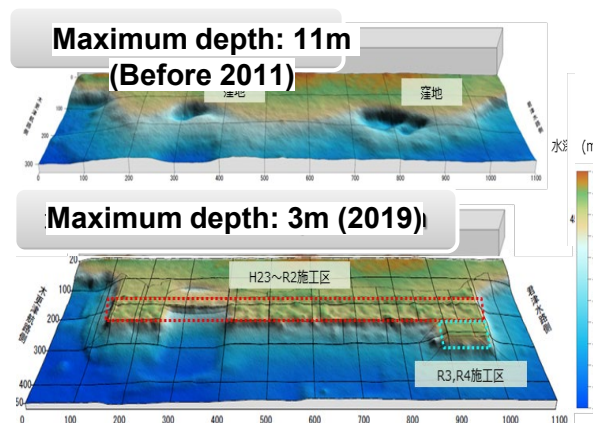
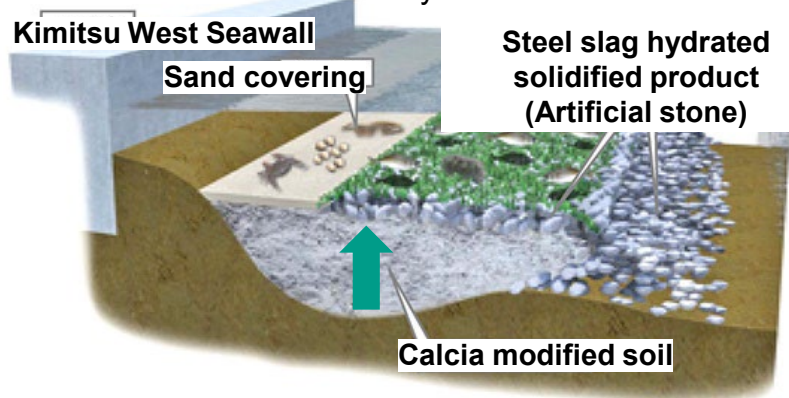
~Efforts to improve the marine environment together with the government and fishermen~

1. Project Overview

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Photograph of fish aggregations

2. Main Initiatives and Results (Outstanding Points)

	Details
Improvement of the sea area environment	As of 2022, approx. 12 hectares of seaweed beds will be created to improve the marine environment. ⇒ Shallow water was created to eliminate the stagnation of anoxic seawater. Fish are flocking to the area and seaweed is thriving.
Credit acquisition	In cooperation with Chiba Prefecture Federation of Fishermen's Cooperative Associations and Kimitsu City ⇒ J Blue Credit™ is scheduled to be applied for in 2023.
Societal awareness	Environmental education for junior high school students in Kimitsu City (scheduled for July)

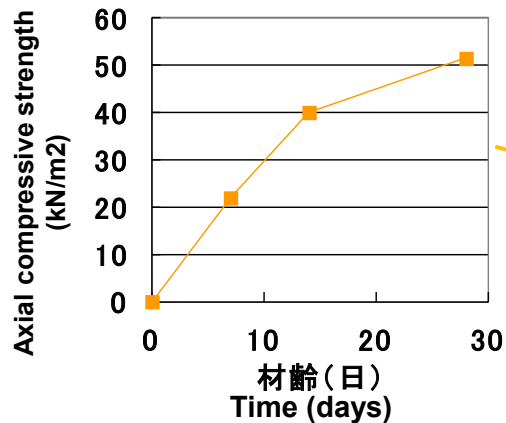


Photograph of seaweed (Wakame)

Effects of Improving the Marine Environment by Creating Shallow Areas 12

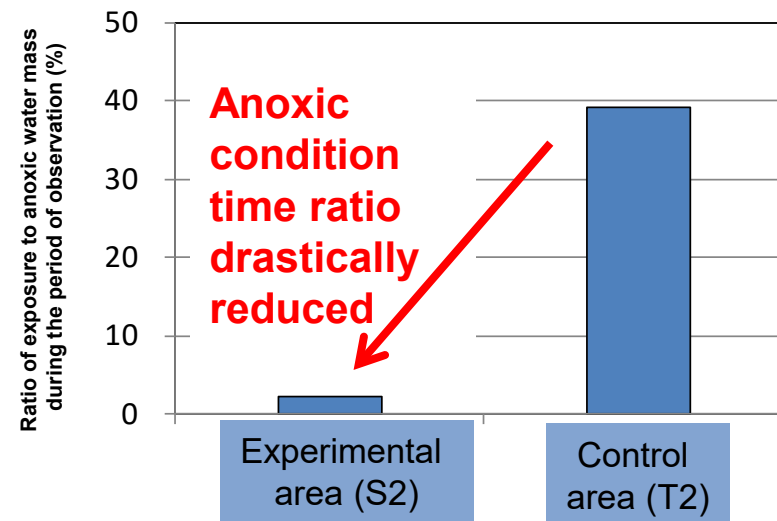
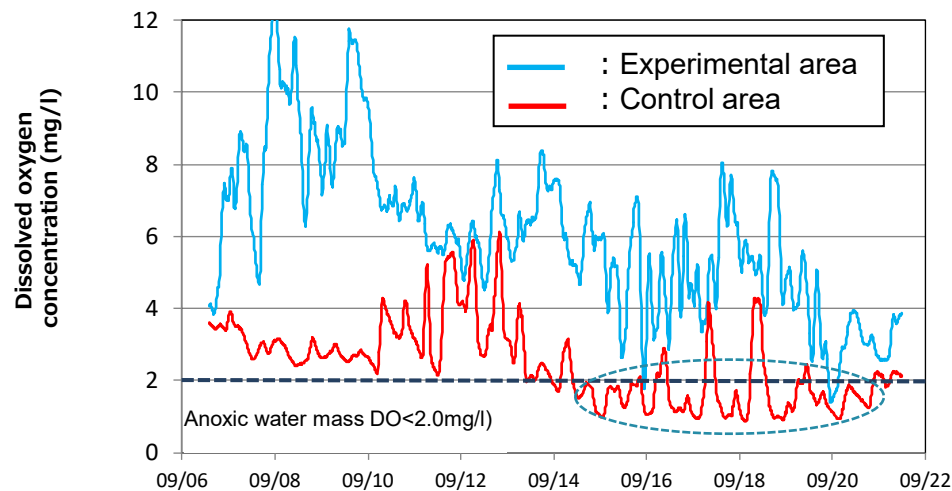
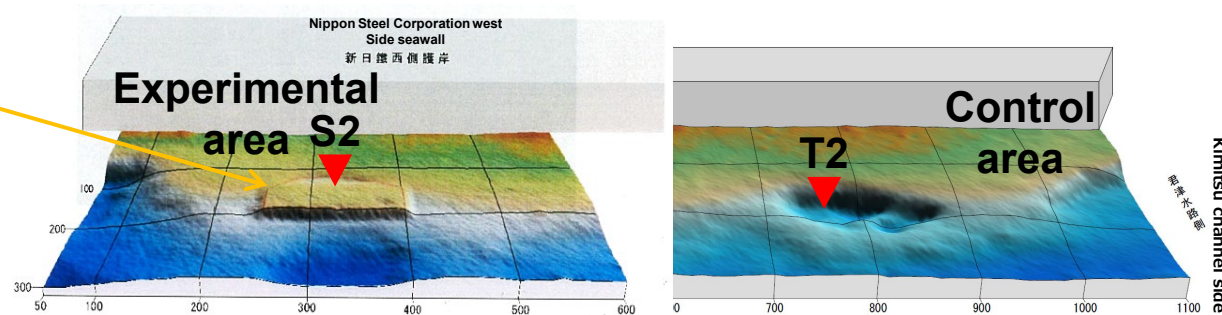
[Stability of shallow structure]

Calcia modified soil: strength development



[Preservation of Biological Habitat]

- Focusing on dissolved oxygen concentration as a habitat indicator
- Dissolved oxygen concentrations were continuously measured for 15 days in the experimental (S2) and control (T2) areas.



Topographic stability greatly reduces the retention of anoxic seawater during the summer months

Note: Frequency of occurrence is defined as the frequency of dissolved oxygen falling below 2.0 mg/l during approximately one month of summer observations.

Creation of Seaweed Beds, Tidal Flats and Habitats for Living Organisms in Hyogo Canal (Hyogo Fishery Cooperative Association)



1960's: Polluted





Establishment of a shallow area in Hyogo Canal, creation of eelgrass beds through regional cooperation, and implementation of environmental beautification activities.

Overview

- Creating seaweed beds by seeding and transplanting eelgrass on the Hyogo Canal tidal flat created by using stones and sand generated from the removal of the fifth breakwater at the Port of Kobe.
- Fishermen and university students cooperated to conduct periodic monitoring surveys of the tidal flat's water purification and CO₂ fixation capabilities.
- The tidal flats are used by local elementary schools for environmental education, while environmental beautification activities are conducted in cooperation with local organizations to raise awareness of environmental beautification.



Basic Information

Region	Kobe City
Participating organizations	Hyogo Fishery Cooperative Association, Hyogo Canal Beautification Association, Hamayama Elementary School, Hyogo Waterside Network, Hyogo Canal Pearl Shell Project
Start year	2019
Contents of activities	<ul style="list-style-type: none"> • Seeding of seaweeds and transplanting of sporophyte • Sand covering and water depth adjustment • Environmental education and public awareness (exchange with other organizations, incorporation into elementary school curriculum)
Site area	34ha
Amount of CO₂ absorption	2.1t-CO ₂ (J Blue Credit, 2 years from FY2021 to FY2022: 2.1t-CO ₂)

About Hyogo Canal

- The Hyogo Canal was completed in 1899 and used as a storage area for imported lumber after the war.
- Many lumber companies and other businesses were located near the canal, and during the period of rapid economic growth, the water was polluted by wastewater from the factories.
- The environment has been greatly improved through sewage maintenance and cleanup activities by the Hyogo Canal Beautification Association*.

*The association aims to contribute to the local community by purifying the water quality of the Hyogo Canal and beautifying the surrounding landscape, and its members include companies and organizations in the area around the canal.

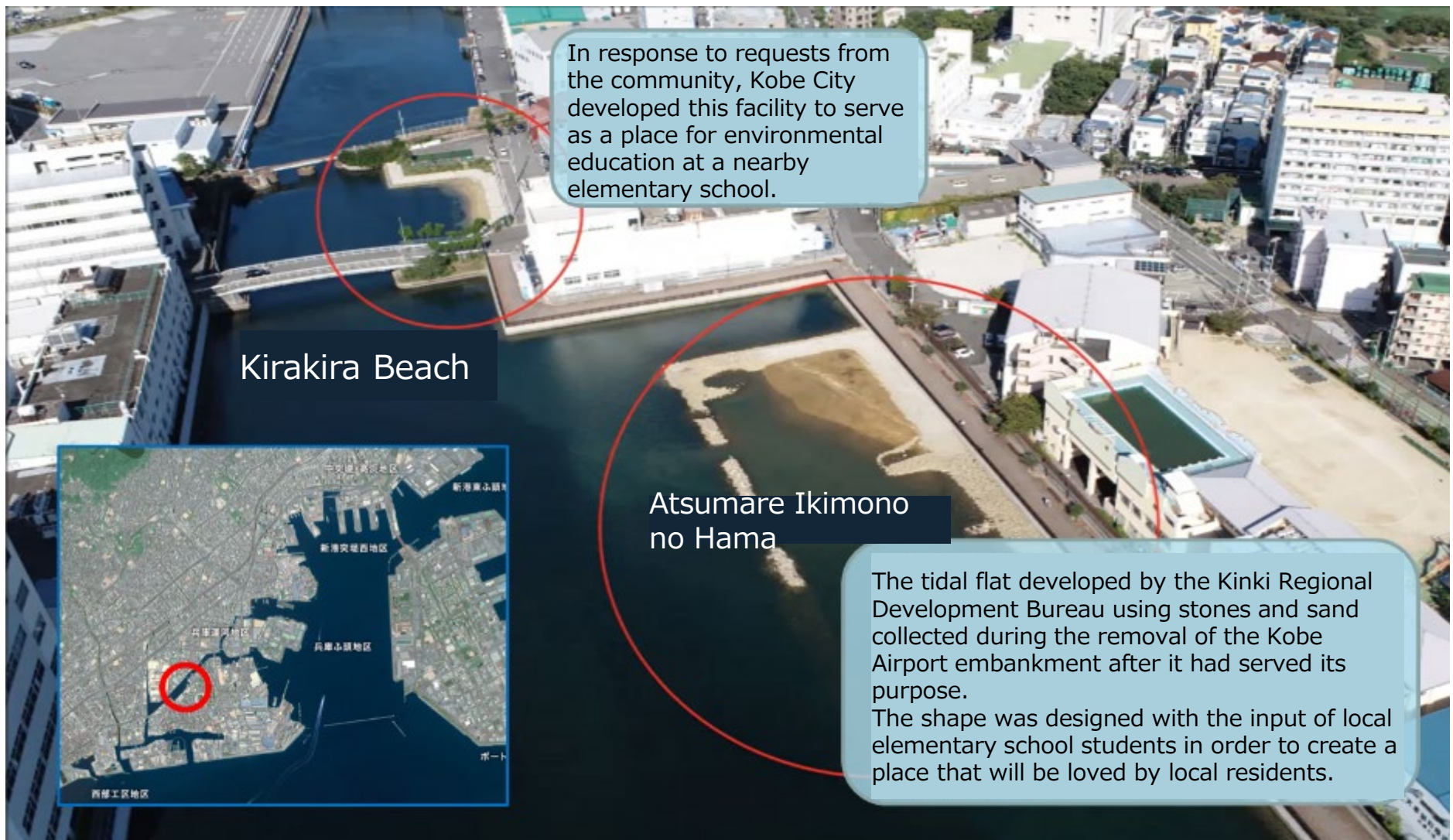


Hyogo Canal Beautification Association

Hyogo Canal during the period of rapid economic growth

Motivation for Initiatives

- To further enhance the environment, the City of Kobe and the Kinki Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism have constructed a shallow area in the Hyogo Canal (Kirakira Beach: 2019, Atsumare Ikimono no Hama: 2020).
- Local elementary school students, the community, and the government worked together to determine the shape and other details.



- Blue Carbon initiatives are having various ripple effects such as creating interactions with other regions.

Interactions with other local organizations



Eelgrass summit

Interaction through the collection of flowering stems of eelgrass



Interregional interactions of elementary school children

Media coverage



- Covered by TV news repeatedly.
- Articles also published in newspapers "Hyogo's Canals, Now a Fish Paradise Locals cleanup the canal known to be dirty and smelly in the 60s"

As a curriculum for elementary school classes



Clam project (3rd grade)



Eelgrass transplantation class (4th grade)



Learning about the fishing industry (5th grade)

Bringing liveliness to the Hyogo Canal



Interview with Nagoya's Nakagawa Canal Boat Navigation aiming to operate Hyogo Canal Cruise.



Fish touch pool at the canal event

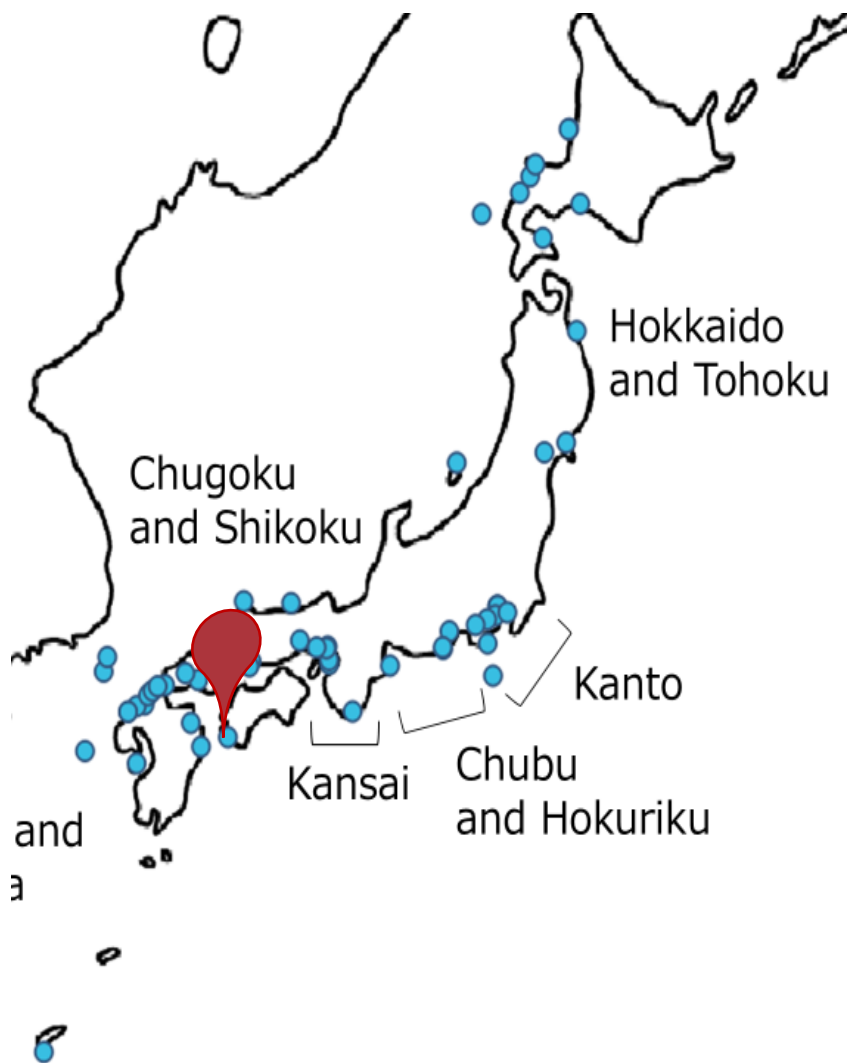
Blue Carbon Initiatives in Japan

Highlights

1. Creation

2. Utilization

3. Finance



Catch

feed



Improving fishing environment by restoring seaweed beds by effectively using unused resources of the town's specialties and conducting educational activities for students to learn about the fishing industry and provide practical training.

Overview

- Improvement of the fishing environment through introduction of seaweed seeds and seedlings, installation of seaweed bed reefs, extermination of sea urchins, which are harmful species, and monitoring surveys to restore seaweed beds and purify the water quality
- Selling the removed sea urchins that are cultivated after removal and fed discards of town grown broccoli and kawachi-bankan citrus, effectively utilizing the town's resources.
- Providing schools in the town with "fishery education" and field training to learn about the local fishery industry in general and developing human resources with a high awareness of environmental issues.



Basic Information

Region	Ainan Town
Participating organizations	Ainan Town, Ehime University, Fishermen, Fishery cooperative, Diving shops, Educational institution
Start year	2018
Contents of activities	<ul style="list-style-type: none"> • Seeding of seaweeds and transplanting of mother algae • Installation of blocks and other substrates • Removal of pests (sea urchins) • Environmental education and public awareness
Site area	3ha
Amount of CO2 absorption	—

Efforts to Revitalize Local Communities (Effective Utilization of Unused Resources)

- Although Ainan Town has a thriving fishing and aquaculture industry, the town is facing issues such as declining catches and reduced income due to red tide outbreaks and mass mortality of fishery resources caused by pathogens.
- To effectively use existing facilities and unused resources, and to achieve not only a short-term source of income but also a sustainable fishing industry, the town is taking on the challenge of commercializing new marine products that have less impact on the fishing environment during the production process.

● Actions related to blue carbon

- Making long-spined urchin edible
The exterminated long-spined urchin is fed with disposed parts of broccoli and kawachi-bankan, a specialty of the town
- Aquaculture of hirome

● Bodies involved

- Fishermen
- Fishery cooperative
- Diving shops
- Ainan town
- Ehime Univ.



Long-spined sea urchin



Product development
(Long-spined sea urchin)



Aquaculture of hirome



Commercialized by private company

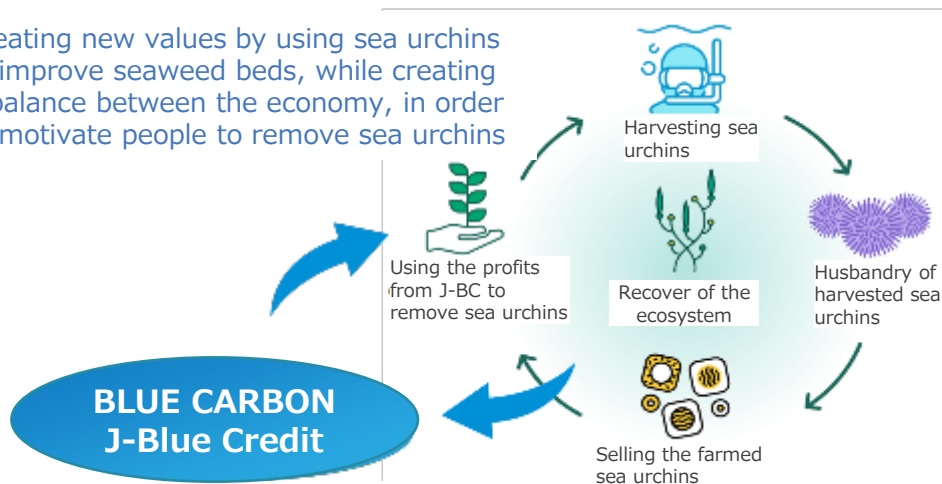


Sea urchin ranching to combat isoyake (urchin barrens) and create a circular economy, conserve seaweed beds, and contribute to local fisheries and restaurants.

Overview

- With the goal of protecting seaweed beds from overgrazing urchins, the company is engaged in continuous seaweed bed preservation activities while maintaining economic independence through the cultivation and sale of removed sea urchins.
- By protecting and restoring the seaweed beds, the project will increase the abundance of fish and abalone, which are feared to be in decline, and contribute to increased sales and profits for the local fishing industry and restaurants.
- Contributing to environmental improvement by returning a portion of profits from the sale of ranched sea urchins to sea urchin removal

Creating new values by using sea urchins to improve seaweed beds, while creating a balance between the economy, in order to motivate people to remove sea urchins



Basic Information

Region	Shimonoseki City(Yamaguchi Prefecture),Oita Prefecture
Participating organizations	Uninomics K.K., Maruyama Suisan Ltd., Yamaguchi Prefecture Fisheries Cooperative Association, K.K. Oita Uni Farm, Nagoya Yutakana Umituskurinokai Association, General Incorporated Non-Profit Association Mobile Sea Otters, ENEOS Holdings, Inc.
Start year	2021
Contents of activities	<ul style="list-style-type: none"> • Removal of pests(sea urchins)
Site area	3.8ha(Shimonoseki City) 8.9ha(Oita Prefecture)
Amount of CO2 absorption	Shimonoseki City,Yamaguchi Prefecture 2.0t-CO2 (J Blue Credit,2years from FY2021 to FY2022:2.0t-CO2) Oita Prefecture 0.6t-CO2 (J Blue Credit,2years from FY2021 to FY2022:0.6t-CO2)

Removed sea urchins are ranched on land and commercialized as local specialty sea urchins



Commercialization in 8-12 weeks

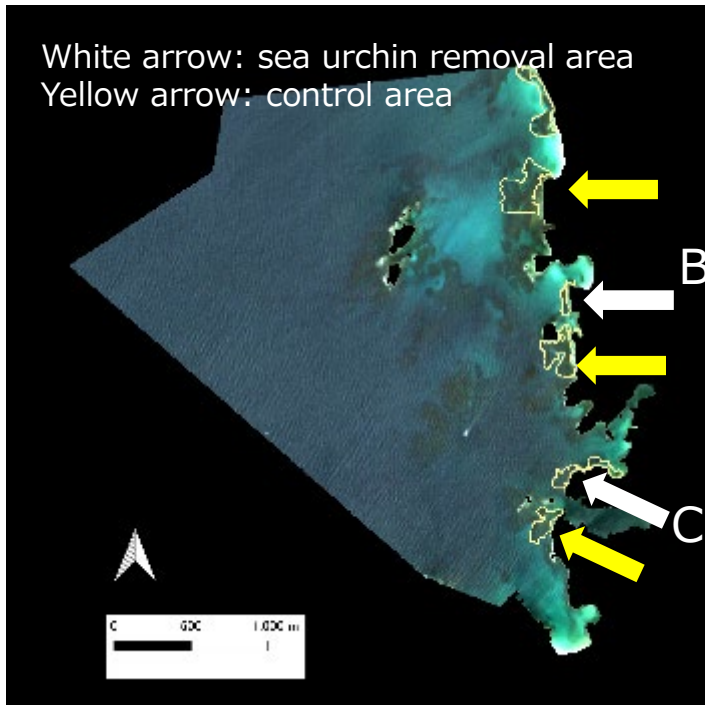
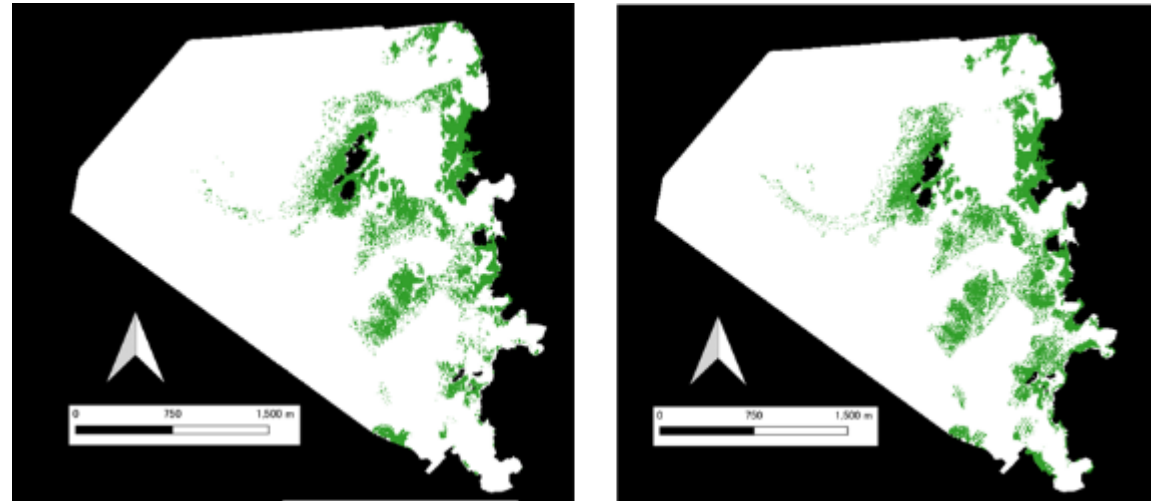
- We collaborate with research institutions, equipment manufacturers, feed manufacturers, and developed specialized feed and equipment for sea urchin ranching.
- The optimal environment for sea urchins is created, allowing for year-round production and shipping, regardless of the season.
- Recirculating aquaculture systems (RAS) is adopted on land to avoid polluting the sea and preventing further proliferation of sea urchins through egg release.



Increase in the growth rate of seaweed bed distribution area due to sea urchin removal activities

- The percentage increase in area of seaweed bed distribution in Block 1, where sea urchin removal activities were conducted in 2021, was greater than in the target area where no removal activities were conducted.

Increase in the area of seaweed beds resulting from sea urchin removal activities = Blue Carbon



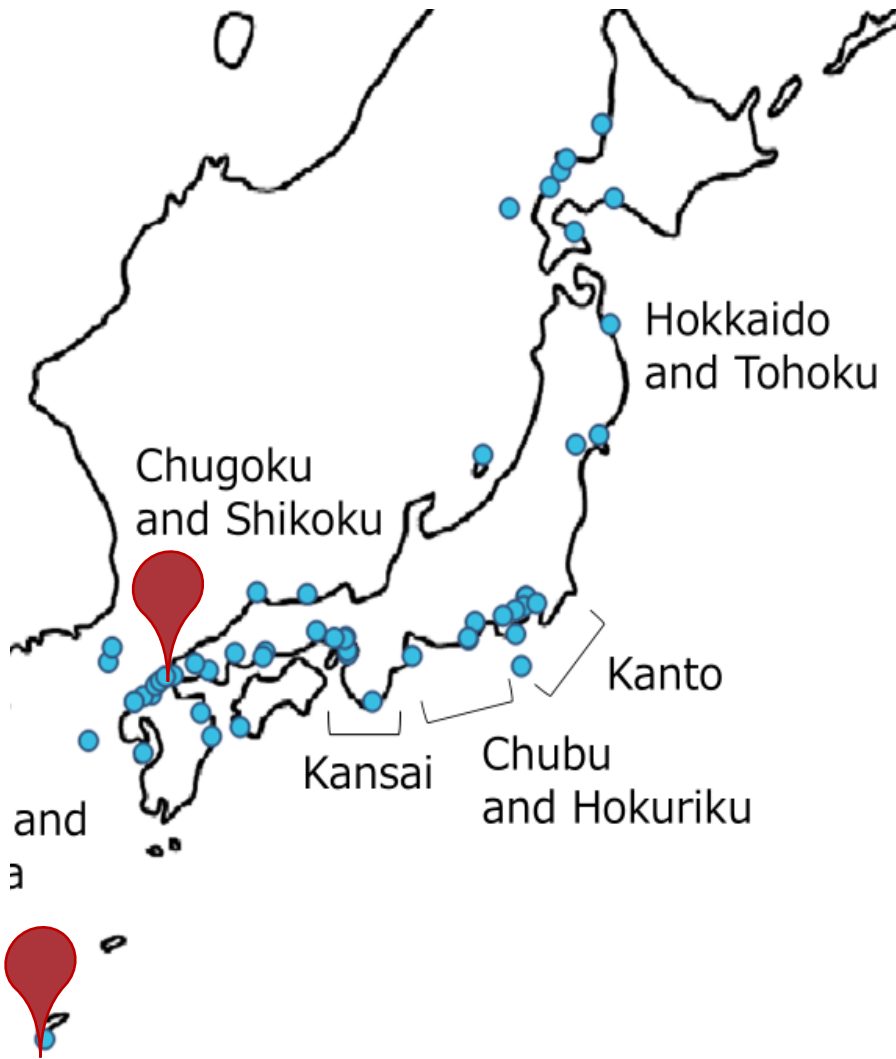
Comparison of seaweed bed area between 2021 and 2022

	Area of seaweed bed distribution(m2)		Percentage increase or decrease	Area of seaweed bed distribution(m2)	
	May,2021	May,2022		Target area (no removal activities were conducted)	Block 1 (sea urchin removal activities were conducted)
Area A	17677	18577	1.050914	15697	2880
Control area	48531	43094	0.887969		
Area B	1944	5256	2.703704	1857	3399
Control area	27433	26209	0.955382		
Area C	7668	14221	1.854591	7316	6905
Control area	13321	12709	0.954058		

The increase in the growth rate of eelgrass bed distribution in the areas where sea urchins were removed in 2021 was greater than that in the areas where no removal activities were conducted.

The sea urchin removal activities have been successful.

Initiatives for Marine Environment Conservation Using Seaweeds by Signing the Blue Carbon Agreement (VENTUNO Co.,Ltd.)



Source : PRITIMES



5-year contract to buy seaweed



Deveoped cosmetics



Blue carbon agreement signed between cosmetics manufacturer and fishery cooperative. Promoting product development using partly disposed mekabu and contributing to the conservation of the local marine environment and industrial promotion.

Overview

- The number of fishermen who grow seaweed has been decreasing year by year, and the scale of seaweed cultivation has also been shrinking. With the realization of the decline in seaweed beds, and the marine environment being affected by rocky-shore denudation, an agreement on “Regional Contribution in Promoting Blue Carbon” was signed between Ventuno co., Ltd. and Japan Fisheries Cooperatives Itoshima with the cooperation of Itoshima City in June 2021.
- Continuously purchasing partially discarded mekabu from Japan Fisheries Cooperatives Itoshima under a **five-year plan** to help stabilize the income of wakame seaweed farmers and improve the efficiency of wakame production.

Basic Information

Region	Itoshima City (Fukuoka Pref.), Ishigaki City (Okinawa Pref.)
Participating organizations	Ventuno Co., Ltd. Japan Fisheries Cooperatives Itoshima Itoshima City Kyusyu University
Start year	2021
Contents of activities	<ul style="list-style-type: none"> ● Okinawa mozuku cultivation ● Environmental education and public awareness (corporate education)
Site area	—
Amount of CO2 absorption	—

Organization Overview



Business concerning blue carbon

Partnership between Ventuno and Japan Fisheries Cooperatives Itoshima


- Regional Contribution Agreement signed to promote Blue Carbon (5 years from 2021)
- Ventuno signed an agreement with Japan Fisheries Cooperatives Itoshima as a partner to promote the development of cosmetics using local wakame seaweed
- Fishery cooperatives also intend to contribute to **countering global warming**.

Wakame seaweed aquaculture

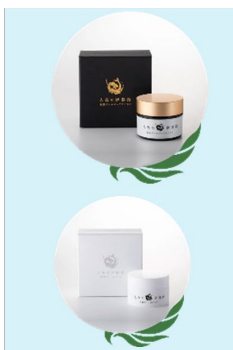
- Wakame aquaculture is in decline, and Fishery Cooperative aim to **increase unit prices and establish sales channels** through collaboration with Ventuno
- Expecting that this will lead to a recovery in catches and an increase in the number of producers
- There is also expect that Blue Carbon will **attract name recognition and improve the brand**.

Developed two cosmetics using wakame seaweed

- Developed two cosmetics using wakame seaweed supplied by Japan Fisheries Cooperatives Itoshima (Pics on the right)
- Offered as a return gift for Fukuoka City **Hometown Tax Donation Program**, contributing to the promotion of the region's attractiveness



Source : PRITIMES



(Source) Ventuno Website

Blue Carbon Agreement with Japan Fisheries Cooperatives Itoshima

05

Organization Overview



Japan Fisheries Cooperatives Itoshima
Fishery cooperative covering the whole Itoshima City Area famous for oysters



VENTUNO Co.,Ltd.
Based in Fukuoka City, selling cosmetics and health foods

Business concerning blue carbon



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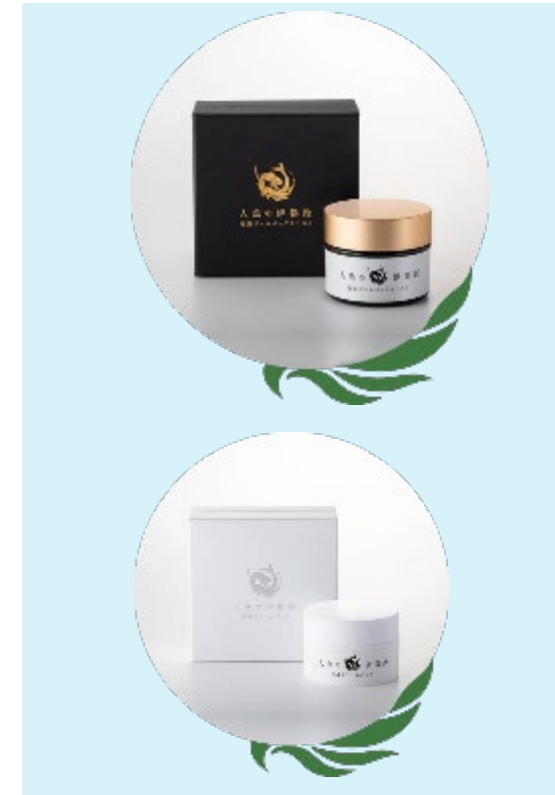
- Although production is expanding for use in cosmetics, wakame production volume is not as high as expected due to **weather and labor shortages**



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- Offered as a return gift for Fukuoka City **Hometown Tax Donation Program**, contributing to the promotion of the region's attractiveness

- Using seaweeds such as wakame to increase the area of wakame aquaculture trying to make a positive impact on fish and shellfish



(Source) Ventuno Website

Blue Carbon Initiatives in Japan

Highlights

1. Creation

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Creation and conservation of seaweed beds using propagation trenches in Hirono Town, Iwate Prefecture (Hirono Town)



Made Breeding Ditch



<3,000 tons Credit

Creating an environment conducive to the growth of seaweed, thereby creating and preserving seaweed beds.

Contributing to the fixation of CO₂ on the seafloor by flowing algae.

Overview

- In the town of Hirono, trenches have been dug in the flat bedrock of the coast to create an environment where seaweed can thrive unaffected by the tides, which has been used for sea urchin and abalone fishing.
- The seaweed that has grown in and around the trenches dug into the bedrock flows out to the sea as drift weed when the tide ebbs and flows, contributing to the fixation of CO₂ on the seafloor.
- The use of breeding trenches not only for seaweed bed conservation but also for sea urchin and abalone fishing has enabled the harvesting of high-quality sea urchins, achieving sustainable fisheries and climate change countermeasures.



Basic Information

Region	Hirono Town
Participating organizations	Hirono Town Blue Carbon Council
Start year	2017
Contents of activities	<ul style="list-style-type: none"> ● Creation of seaweed beds using propagation trenches and adjustment of external forces (waves and currents)
Site area	—
Amount of CO₂ absorption	3,106.5t-CO ₂ (J Blue Credit,5years from FY2017 to FY2021:3,106.5 t-CO ₂)

Project Features – Strengths

- The total distance of the 178 propagation trenches is approx. 17.5 km, with a width of approx. 4 m and a depth of approx. 1 m.
- The structure allows fresh seawater to flow in even at low tide, creating an environment conducive to the growth of large seaweeds such as wakame seaweed and kelp.
- The seaweed that has grown in and around the trenches dug into the bedrock flows out to the sea as drift weed when the tide ebbs and flows, contributing to the fixation of CO2 on the seafloor.
- The propagation ditch has led to an abundant harvest of high quality, well-filled northern sea urchins, and a sustainable fishery that combines sea urchin fishing and seaweed bed conservation, in other words, climate change countermeasures, has been passed down from generation to generation.
- Funds obtained from the sale of credits will be used for further efforts to combat climate change, mainly by the Hirono Town Blue Carbon Council.



Beach cleanup
(Extermination of whelks)



Forestation for sea urchins
Arbor Day



Breeding Ditch,
distant view



Hirono Town Blue Carbon Council



Expand eelgrass beds

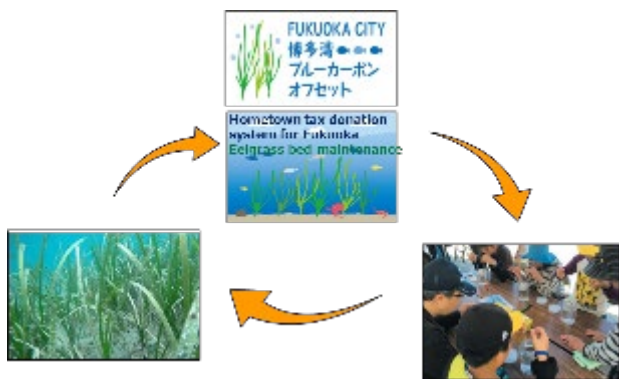


~ \$ 10,000 income from credit
~ \$ 30,000 donation received

**‘Fukuoka City Hakata Bay Blue Carbon Offset System’ in operation.
Collecting donations through the hometown tax donation program for environmental conservation activities in Hakata Bay.**

Overview

- A new network called the Hakata Bay NEXT Conference, which connects organizations that have been creating eelgrass beds in various areas of Hakata Bay, was established. Citizens, civic organizations, fishery organizations, businesses, schools, and government agencies collaborate to implement and publicize activities in Hakata Bay.
- The amount of CO₂ absorbed by eelgrass and other seaweed beds in Hakata Bay are is converted into credits and sold. Profits from the sale are used for environmental conservation and creation activities, such as eelgrass bed creation.
- From FY 2020, "Cradle of the Sea" Eelgrass bed creation activities were added to the menu of Fukuoka Support Donation, and donations for activities such as eelgrass bed creation were collected.



Basic Information

Region	Fukuoka City (Hakata Bay)
Participating organizations	Fukuoka City, Hakata Bay NEXT Conference
Start year	2020 Hakata Bay Blue Carbon Offset System, Hometown tax donation
Contents of activities	<ul style="list-style-type: none"> • Sowing eelgrass seeds and transplanting eelgrass sporophyte • Original credit system operation • Utilization of Fukuoka City hometown tax donation program • Environmental education and publicity
Site area	—
Amount of CO₂ absorption	45.9t-CO ₂ (Hakata Bay Blue Carbon Offset System, FY2022: 45.9t-CO ₂)

Eelgrass Bed Creation

Eelgrass bed creation events are carried out using various methods according to the characteristics of the sea area and the age of the participants.

■ Seeding sheets on the seafloor

Divers placing seeding sheets on the seafloor



■ Seedling transplantation

Clipping eelgrass seedlings to chopsticks and planting them on the seafloor



■ Spraying seeds

Spraying eelgrass seed dumplings into the ocean



■ Eelgrass seedlings in pots

Environmental education classes at local elementary schools including lessons on how to grow eelgrass seedlings in pots

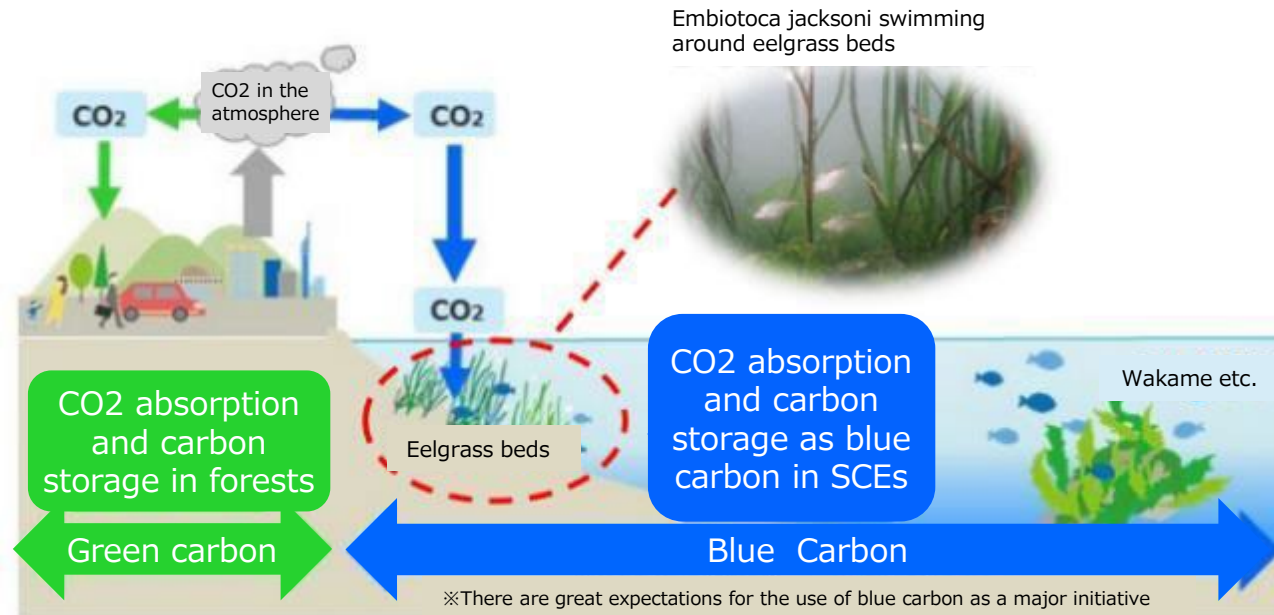


Hakata Bay Blue Carbon Offset System

Focusing on the value of eelgrass beds as a blue carbon ecosystem, the Fukuoka City Hakata Bay Blue Carbon Offset System was established in October 2020, allowing for the utilization of past initiatives to create eelgrass beds.

The amount of CO2 absorbed and fixed by eelgrass beds and other seaweed beds in Hakata Bay is converted into credits and sold as Hakata Bay Blue Carbon Credits.

Profits used to support the creation of eelgrass beds and other projects to preserve and create the environment of Hakata Bay.



■ Sales price

¥8,800/t-CO2 (incl. tax) Minimum sales quantity : 0.1t-CO2

■ Carbon Offset Certification Achievements

Sold out in CY2020~2022!

FY	Number of sales	Amount of credit issued (t-CO ₂)	Sales price (incl. tax) (¥)
2022	16	45.9	403,920
2021	21	48.5	426,800
2020	35	43.4	381,920



In 2020, “Cradle of the Sea” eelgrass bed creation activities were added to the menu of Fukuoka Support Donations, and donations were collected.

■ Donations

FY	Donation amounts(¥)
2022	2,419,507
2021	990,000
2020	359,999

29 「海のゆりかご」アマモ場づくり活動



豊富な博多湾の環境を未来の世代につなぐ「海のゆりかご」アマモ場づくり活動

「海のゆりかご」と呼ばれ、生きものを育むとともに、新たなCO2吸収源「ブルーカーボン」としても注目される海藻のアマモ。

寄付金はアマモ場づくりなど、博多湾の環境を保全創造する取組みに活用します。

アマモに産み付けられたイカの卵

■ Utilizing the donations

For projects to preserve the environment of Hakata Bay, such as eelgrass bed creation activities



Eelgrass beds on Nokonoshima Island photographed by drone



Expansion of eelgrass beds



Eelgrass bed creation (transplanting seedlings)

Promoting activities to create eelgrass beds in Hakata Bay in cooperation and collaboration with various entities to generate blue carbon and utilize the generated blue carbon as credits to further revitalize environmental conservation activities in Hakata Bay.

