Section 03

International Human Resource Development Project

To pass on a fertile sea to future generations, we are working together to address current challenges and are committed to fostering human resources who will lead marine conservation and environmental restoration. We are also dedicated to raising public awareness about environmental issues through several kinds of events aiming to know the value of coastal zone and enjoy it.

– Co-Hosted Event by CIFER Core –

Observation of Benthic Organisms at a Tidal Flat of Hannan Second District

Field observation of benthic organisms has been carried out at an artificial tidal flat off Kishiwada City. This man-made tidal flat was constructed over 20 years ago and currently functions as a habitat of a wide variety of coastal organisms including rare species. The tidal flat also plays as the stopover area for wild birds. Through these activities, we contribute to raising environmental awareness among local citizens.

Field Survey of Organisms at Fuke beach

Together with local junior high school students, CIFER Core surveys biodiversity at Fuke beach (known as a habitat of rare species). Results are submitted to the Ministry of Land, Infrastructure, Transport and Tourism. They are used as data for understanding the distribution and abundance of living things in coastal areas of Osaka Bay.

"Adopt Seaside Sakaiham," a civic activity for keeping the port and beach clean

Cleanup efforts are conducted at Sakaihama, located downstream of the Yamato River. They are sometimes held in conjunction with marine wildlife observation events organized by other NPOs. Citizens and their children take part in the activities in addition to member companies and port-related staff.

International and Local Student Resource Development

This program offers training sessions for international students, allowing them to visit and observe actual sites related to biodiversity conservation and environmentally friendly urban and port development. Some of the participants are from countries facing their own environmental challenges, therefore the program aims to gain new insights and perspectives through learning about Japan's current practices.
We also work to raise local people's awareness of environmental issues.

Regular members (total 32 companies)

GEOSTR Corporation / Nippon Steel Corporation / Kobe Steel, Ltd. / Nikken Sekkei Ltd. / Osaka Bentonite Industrial Cooperative / Hannan Warehouse Corporation / Osaka Gas Co., Ltd. / Osaka Prefecture Urban Development Promotion Center / Yokogawa NS Engineering Corp. / IDEA Consultants, Inc. / Kyowa Concrete Industry Co., Ltd. / Yano Construction Co., Ltd. / Newjec Co., Ltd. / Daiko Corporation / LINX Corporation / Daiyo Construction Co., Ltd. / Japan Ocean Resources Development Co., Ltd. / MIZUKEN Co., Ltd. / Yamazaki Gravel Inc. / TOA Corporation / Toyo Construction Co., Ltd. / Penta-Ocean Construction Co., Ltd. / Wakachiku Construction Co., Ltd. / FUKKEN Co., Ltd. / Fujino Kogyo Co., Ltd. / JFE Steel Corporation / Kasutani Fishing Net MFG. Co., Ltd. / Joto Construction Co., Ltd. / Seiho Kogyo Co., Ltd. / Showa Co., Ltd. / SAKAISEMBOKU WHARF Co., Ltd. / Daiei Kankyo Co., Ltd.

Supporting members (total 31 companies)

Osaka Tug Business Cooperative / SHIMANO INC. / BEACON INC. / Hazama Ando Corporation / Wanken Co., Ltd. / B-CRAFT SAKAI Co., Ltd. / Nippon Kaiko Co., Ltd. / OSAKA SAISEKI Co., Ltd. / DAITO Co., Ltd. / OSW Co., Ltd. / Izutani Electric Works Co., Ltd. / Dainetsu Co., Ltd. / Izumiotsu Shipbuilding Co., Ltd. / Yutaka Kogyosho Co., Ltd. / SENTO KOGYO Corporation / Hankyu Ferry Co., Ltd. / Sumitomo Heavy Industries Environment Co., Ltd. / Arc Geo Support Co., Ltd. / MAGUCHI GROUP CO., LTD. / Daishin Doboku Co., Ltd. / Mikioh Co., Ltd. / Sanyo Techno Marine Inc. / KANSO TECHNOS CO., LTD. / Chateau Marine Survey Co., Ltd. / SANSEI Co., Ltd. / HISATEC Co., Ltd. / Kudo Kohei Construction Design Office / Environmental Management and Technology Center (EMATEC) / Asunaro Aoki Construction Co., Ltd. / Yahatakane Inc. / Omae Technical and Safety Consultant Office

Consortium for International Fosterage and Environmental Research and Projects in Osaka Bay (CIFER Core)

Osaka Bay was once a fertile sea where lots of fish and shellfish were caught. However, accompanied by rapid economic growth after the mid-1950s, many coastal areas have been reclaimed, resulting in the loss of natural environments and the emergence of various environmental issues.Under these circumstances, CIFER Core aims to restore the water environments and biodiversity of Osaka Bay and passes it on to the future generations. For that reason, field surveys and experiments are conducting on technologies and methods for environmental restoration, as well as environmental learning for developing human resources.
These activities are carried out in collaboration with more than 60 organizations, including administrative agencies, academic institutions, companies, and civic groups. To address the issues, our initiative is focused on the following three sections:

Section 01

Natural Environment Restoration Project of Osaka Bay

We are developing technologies to improve water purification and seabed environments through the project of artificial tidal flats, shallow waters, and seaweed beds to restore biodiversity.

Section 02

Marine Industry Development and Fisheries Promotion

To promote the recovery of fishery resources, we are tackling the improvement of fishing ground environments and developing aquaculture techniques. We are also exploring regional revitalization through the fishing industry and coastal land use planning.

Section 03

International Human Resource Development Project

We are fostering practical and globally-minded professionals in the field of nature conservation and restoration. These activities contribute to the preservation of Japan and world's rich marine environments for future generations.

Board Members

- President: Hideki Ueshima
  Guest Professor, Hiroshima Institute of Technology
- Vice President: Susumu Yamochi
  Professor Emeritus, Osaka City University
- Director: Koji Otsuka
  Professor, Graduate School, Osaka Metropolitan University
- Director: Takaaki Shigematsu
  Director, Public University Corporation Osaka
- Director: Takashi Yokoyama
  Former Director General, Osaka Prefectural Port and Harbor Bureau
- Inspector: Hiroyuki Takeuchi
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Section 01

Natural Environment Restoration Project of Osaka Bay

Regenerating Coastal Areas

Currently, most of the coastline of Osaka Bay is surrounded by concrete revetments, causing an unsuitable environment for marine organisms. CIFER Core establishes project working groups in collaboration with companies and universities and examines the method to regenerate the natural habitat along urban coastal areas.

– CIFER Core Initiatives –

Installation of Habitat Base for Marine Life

We are exploring the possibility of eco-friendly habitats for coastal organisms such as feeding grounds and shelters by installing bumpy structures to existing vertical seawalls. Currently, for example, we are conducting field experiments of “eco-panels” which provide shelters for shellfish and small crustaceans during poor water quality conditions, along with “mini eco-blocks” which contain refuge or survival spaces for fish.

Eelgrass Growth Experimentst

Eelgrass (Amamo) beds are thought to serve as breeding and/or spawning grounds for marine organisms. Unfortunately, some of the seabed of coastal areas of Osaka Bay are not suitable for eelgrass germination and growth due to poor substrate conditions. Therefore, eelgrass seedlings were planted in containers and were suspended from the raft. This new method was jointly patented with TOYO Construction Co., Ltd. in 2023.

Promoting Coastal Development Using Recycled Materials

Recycled materials made from construction or industrial by-products are widely used on land, particularly in construction sites, due to their lower cost compared to natural materials. Although their use in marine environments is still limited, demand is expected to grow because of the large volume of materials required for sea-wall and/or shallow water construction. CIFER Core is conducting safety tests to assess the use of such materials in marine environments. We are coordinating with local stakeholders to promote their understanding and cooperation. Examinations of construction method and suitable installation location are made as well.

– CIFER Core Initiatives –

Investigation of Recycled Material Applications

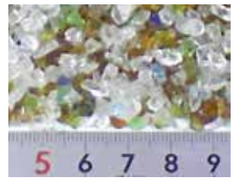
We are examining methods to utilize recycled materials for backfilling seabed depressions, creating shallow waters, and tsunami disaster prevention measures. To promote the commercialization, we have established a committee to study the development of production and storage sites and transportation routes for “Hybrid Soil (HBS),” a material made from construction sludge and concrete debris. We have also been collaborating with Osaka Metropolitan University for material tests.

Marine Deployment Tests of CaO-Improved Soil

“CaO-improved soil” is made by mixing dredged soil with steel slag, a by-product of steel production. The CaO-improved soil is thought to be a fascinating material that contributes to the marine environmental restoration together with the effective use of dredged soil. Since there is no example of use of CaO-improved soil in Osaka Bay, Cifer core conducted a field experiment along the artificial beach of Sakai City and examined its safety.

Environmental Safety Assessments of Crushed Glass Material (C.S.S.)

“Crystal Stone Sand,“ an Eco Mark-certified product made from recycled glass, is granular glass materials with smoothed edges. They are used as decorative gravel for potted plants and as fine aggregate for resin pavements. CIFER Core conducted safety tests in a tide pool at Sakai-hama and verified not only its safety but also its effectiveness in promoting the attachment of marine organisms.



Environmental Safety Assessments of Ashcrete

“Ashcrete” is a solidified material made primarily from coal ash, a by-product of coal-fired power plants. Coal ash, traditionally treated as industrial waste, is now being reused in blocks, embankment material, and roadbed material. A field test was carried out on the seabed off Kishiwada City, confirming its nitrogen and phosphorus absorption capacity. No leaching of heavy metals into the water was observed.

Section 02

Development of the Marine Industry, “Umi-Gyo” and Promotion of the Fishing Industry

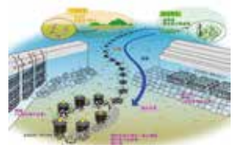
Promotion of Marine industry, “Umi-Gyo”

In many coastal communities of Japan, aging of the fishing population, together with declining catch volumes of fish and shellfish, are serious issues. Under a moto of “from catching fish to marine ranching,” CIFER Core is trying to develop sustainable aquaculture technologies and explore fishing practices adaptive to the characteristics of each region.

– CIFER Core Initiatives –

Revitalization of Fishing Ports and Grounds

Commissioned by Osaki-kamijima Town in Hiroshima Prefecture, we started a feasibility study of vitalization of a fishing port and ground, along with the restoration of offshore seaweed beds. By taking advantage of fish behavior and by creating a system to attract fish into the port area for nurturing and harvesting, the burden of fishermen on labor is reduced, enabling sustainable fishing activities.



Oyster Cultivation

Oyster cultivation has been conducted since 2015 in the inland water of Hannan 6th district, Kaizuka City. It is said that oysters grow faster and become high-quality and delicious in the nutrient-rich coastal area like Osaka Bay. CIFER Core supports the monitoring of seawater quality of the culture area, and as a result oysters are being sold as a branded product, “Senshu Flying Oyster.”

Aquaculture Experiment of marine bivalves using crushed glass material

We succeeded in cultivating ark shell (Akagai) and short-neck clam (Asari) using crushed glass materials (Crystal Stone Sand; CSS) as a base substrate at Kishiwada fishing port. This initiative aimed to revitalize local communities through food production as well as promoting the use of recycled materials.