

Proposal of Hybrid Carbon[®] Application for "Blue Carbon Regeneration"



Cabinet Secretariat Japan National Land Toughening Award 2024
Grand Prize Awarded

Blue Carbon Regeneration by End-of-Life Vehicle and Home Appliance Carbide + Hybrid Carbon[®]

Carbonizes home appliances and scrap cars that contain iron to provide "iron + bio-resource carbon" = Iron-humic (fulvic acid), which is essential for the growth of algae, which are in short supply in the sea.

Scrapped car and Out of service electric appliances



Post-compression carbonization treatment

Iron-Providing Carbides+ Hybrid carbon[®]



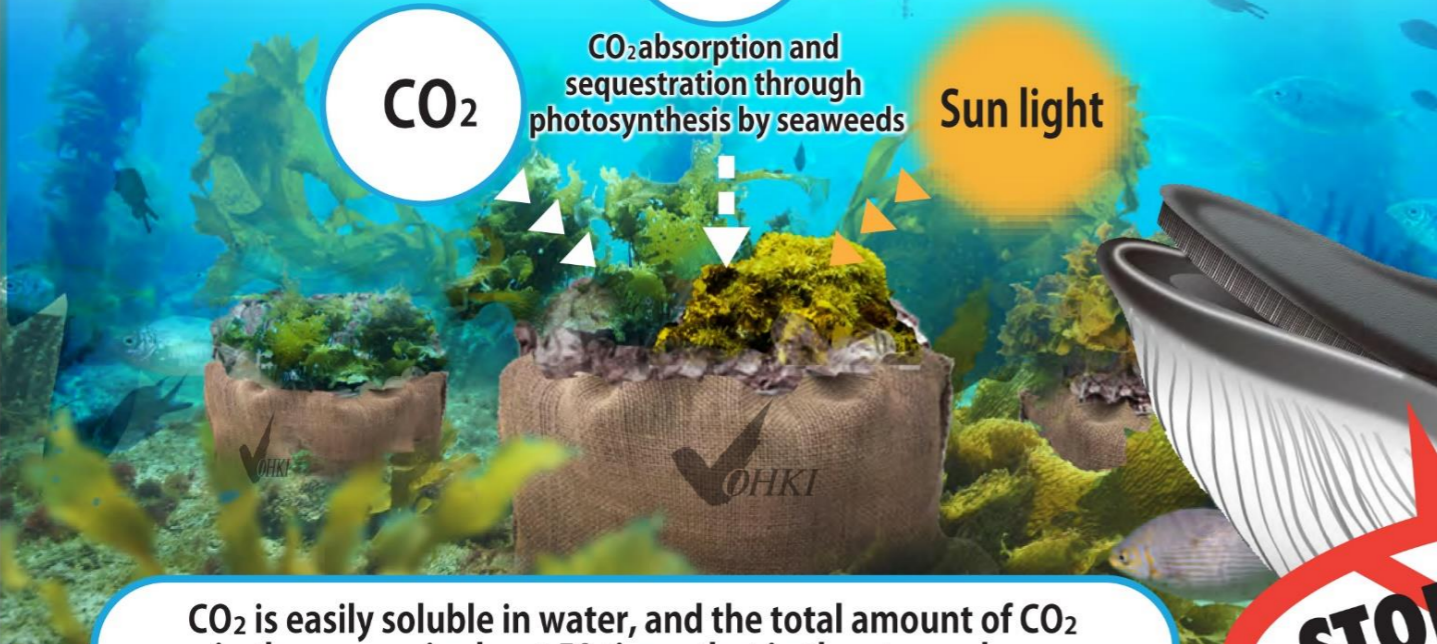
Compressed carbide from scrap cars is packed with hybrid carbon[®] in waste jute bags such as coffee beans, and connected and bound with wire

Ocean floor laying

CO₂

CO₂ absorption and sequestration through photosynthesis by seaweeds

Sun light



CO₂ is easily soluble in water, and the total amount of CO₂ in the oceans is about 50 times that in the atmosphere.

Seaweed absorbs CO₂ and fixes it on the seafloor for 3,000 years

STOP CO₂

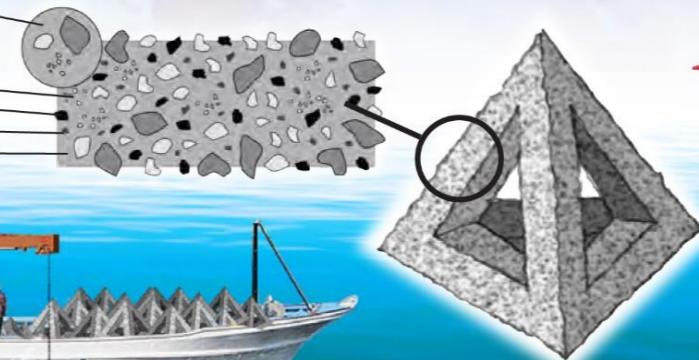
Blue Carbon Regeneration by Hybrid Carbon[®] Fish Reef

"Hybrid Carbon[®] fish reefs", in which steel slag and Hybrid Carbon[®] are mixed with concrete, are placed in the open sea. Seaweeds adhere to the surface, and the entire reef is expected to absorb nutrients and grow fish reefs.

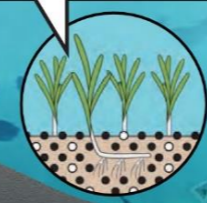
Pyramid-shaped (hollow and lightweight) hybrid carbon[®] concrete fish reef

Used for seaweeds with temporary roots (adherents) attached to rocks, such as wakame seaweeds, swordfish, arame seaweeds, and hondawara seaweeds.

- Coarse aggregate (steel slag + waste plastic charcoal)
- Fine aggregate (steel slag + waste plastic charcoal)
- Granular steel slag (sand)
- Carbide powder of shells and crustaceans
- Sewage sludge charcoal (manufactured by Ohki Kogei)
- Dried sewage sludge
- Cement paste (cement, water)



Eelgrass and other seagrasses that take nourishment from the roots on the seafloor are grown by directly spraying steel slag and biochar.



Small types (approx. 30 cm on a side - weight: approx. 15-20 kg) are placed on the seafloor by hand, while large types (approx. 1 m on a side - weight: approx. 0.5 t) are efficiently placed on the seafloor by crane.

Molded and reinforced with hybrid carbon[®] concrete at the base of offshore wind turbine-tower

- Advantages of the pyramid shape:
- Less susceptible to tidal load
 - Less accumulation of floating mud
 - Shape does not change even when inverted

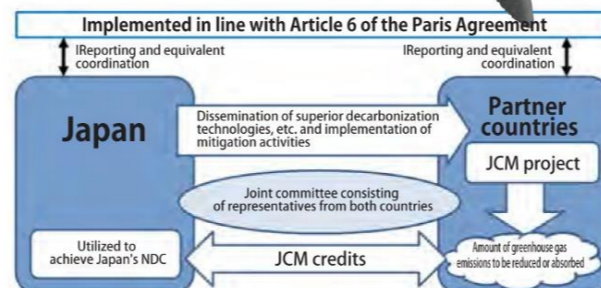
The blue carbon ecosystem continues to decline at a rate of about 2-7% per year.

Topics!

Project for Promotion of Low Carbon Technology Utilizing Bilateral Crediting Mechanisms (JCM), etc. (NEDO)

To support the development of JCM projects by the private sector, the Ministry of Economy, Trade and Industry (METI) and the New Energy and Industrial Technology Development Organization (NEDO) are implementing financial support projects (feasibility studies (FS), NEDO verification, etc.) for the implementation of JCM projects. With the aim of expanding the use of Japan's excellent low-carbon technologies and systems and reducing greenhouse gas emissions on a global scale, we will conduct overseas demonstrations using JCM, etc., quantify the amount of greenhouse gas emission reductions and absorption achieved through these technologies and systems, and disseminate this information as an international contribution. The GHG emission reductions achieved through the demonstration will be quantified and issued as JCM credits.

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Topics!

Glasgow Financial Alliance (GFANZ) is established.

Prior to the 2021 UN Climate Change Summit, the Glasgow Alliance of Financial Institutions for a Decarbonized World (GFANZ), the world's largest voluntary alliance of financial investment institutions, was established, bringing together more than 575 financial institutions from 50 countries with total assets of \$150 trillion (approximately K2,000 trillion). In response, ESG investment has been expanding in Japan as well, with the total investment balance now amounting to approximately 500 trillion yen. While "technology that contributes to the environment" is underwater as a condition for investment, according to the Japan Long-Term Investment Finance Corporation, long-term investment of 10 to 20 years without collateral, regardless of the current financial situation, has become the most important factor. Currently, approximately 90% of the world's total GDP has declared a carbon neutral goal.