

A vibrant underwater photograph showing a healthy kelp forest. Tall, brown kelp stalks rise from a rocky seabed covered in colorful coral and sea anemones. Numerous fish, including silver snappers and a few larger species, are swimming throughout the water column. The scene is illuminated by bright sunlight filtering down from the surface, creating a clear and lively environment.

# Kelp Forests

*for a resilient blue planet*

At Kelp Forest Foundation, we build the science, standards, projects and stories to scale kelp as a nature-based solution

18 June 2026

Seagriculture EU 2026 - J-Blue Credits: Case studies from the world's first state-backed, stackable, blue carbon credits for wild and farmed seaweeds.

**Xu Ben Zhang**  
Managing Director



# How we turn kelp potential into scalable impact

Kelp forests deliver critical benefits to our planet through its ecosystem services, supporting biodiversity, enhancing water quality, and protecting coastlines.

KFF aims to establish kelp ecosystem services as a mainstream nature-based solution.

1

## Demonstration Projects

Proving kelp's measurable impact in real settings with ports, fisheries and coastal managers to create replicable models others can adopt at scale.

2

## Research & Standards

Translating research into open-access standards and frameworks, so kelp's ecosystem services can be quantified, valued and financed.

3

## Advocacy & Activation

We make kelp impossible to ignore - through films, campaigns and advocacy that move corporates, governments and the public to act.

# Research & Standards



## Gold Standard

Developing First carbon  
credit methodology for wild  
and cultivated kelp

Exp. 2027



## Japan Blue Economy

Incentivizing restoration and  
economic development  
through J-Blue Credits

[WWW.BLUEECONOMY.JP](http://WWW.BLUEECONOMY.JP)

# J-Blue Credits

Voluntary, ecosystem services-based  
blue carbon credit



PRESENTATION

[WWW.BLUEECONOMY.JP](http://WWW.BLUEECONOMY.JP)



国土交通省

Ministry of Land, Infrastructure, Transport and Tourism approved

**Independent Research Cooperative**



Founded in 2020



# Team

**Dr. Tomohiro Kuwae**

President, JBE



**Dr. Masato Nobutoki**

Director



**Dr. Atsushi Watanabe**

Director



**Brian Tsuyoshi Takeda**

Secretariat of  
International Affairs



## Objective

“... to empower conservation, restoration and **creation...**”  
for our ocean...

In other words... conservation and restoration is not enough.  
We need to rebuild nature where we can



## Philosophy

The costs associated with doing nothing is too high, given  
where the science is today



## Philosophy

Use the best science we have today to advance restoration  
and manage uncertainties

Allow science and action to improve over time, rather than  
wait and aim for perfection



# J-Blue Credits



## Jブルークレジット購入証書 Certificate of J-Blue Credit Purchase

殿

以下のとおり、クレジットを購入したことを証明します。  
This is to certify that you purchased the following credits.

### Jブルークレジット購入量

Amount of J-Blue Credits purchased

t - CO<sub>2</sub>

プロジェクトの名称：多様な主体が連携した横浜港における藻場づくり活動  
Project name Seagrass and macroalgal beds creation activities at the Port of Yokohama through cooperation among various entities

プロジェクトの種類：自然系炭素除去  
Type of the project Nature-based carbon removal

クレジットの発行番号：202112JBCT00001- ~ 202112JBCT00001-  
Credit issue number

クレジット購入年月日：令和4年2月1日  
Date of purchase February 1, 2022

国土交通大臣認可法人 ジャパンブルーエコノミー技術研究組合  
Japan Blue Economy Association  
(The Japanese Ministry of Land, Infrastructure, Transport and Tourism-approved Collaborative Innovation Partnership)





## World's First:

State-sponsored, **blue carbon** and **nature credit** that includes

- wild seaweeds
- farmed seaweeds
- seagrasses
- tidal flats
- mangroves



Carbon is just the plate that carries co-benefits

## Stackable:

Ocean-based credit with carbon at its foundation, but designed to allow the **stacking** of other ecosystem services, such as:

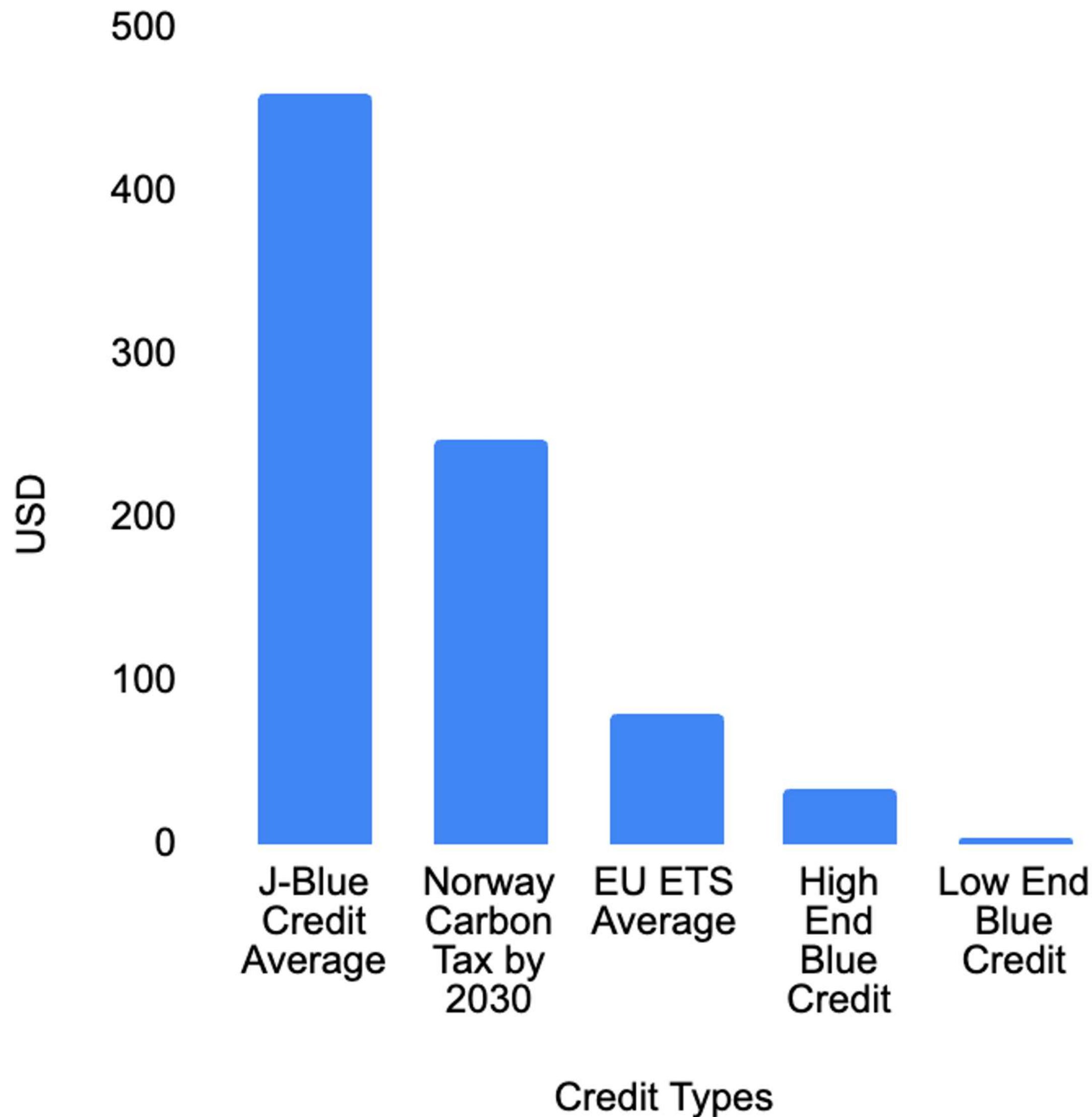
- Biodiversity
- Community benefits
- Excess nutrient absorption
- Wave attenuation
- etc...



## Services Flow vs Capital:

Monetizes the ecosystem services **FLOW** generated from the Natural Capital, and does not monetize the Natural Capital itself

State retains sovereignty, and allocates flow (ex fish, carbon)



## Highest Value:

Currently trading at over **USD 400**/t CO<sub>2</sub>e, or 10x higher than other credits globally

The record for highest J-Blue Credit was over 500,000 JPY, or over **USD 3000**/t CO<sub>2</sub>e

## Actuals vs Projections:

Issue credits **annually** for documented CO2 removal, and not future promises or avoidance.

This means credit issuance only after evaluation!

**No evidence, no credit!**



## No re-selling allowed:

Credit developer can sell to a buyer just once.

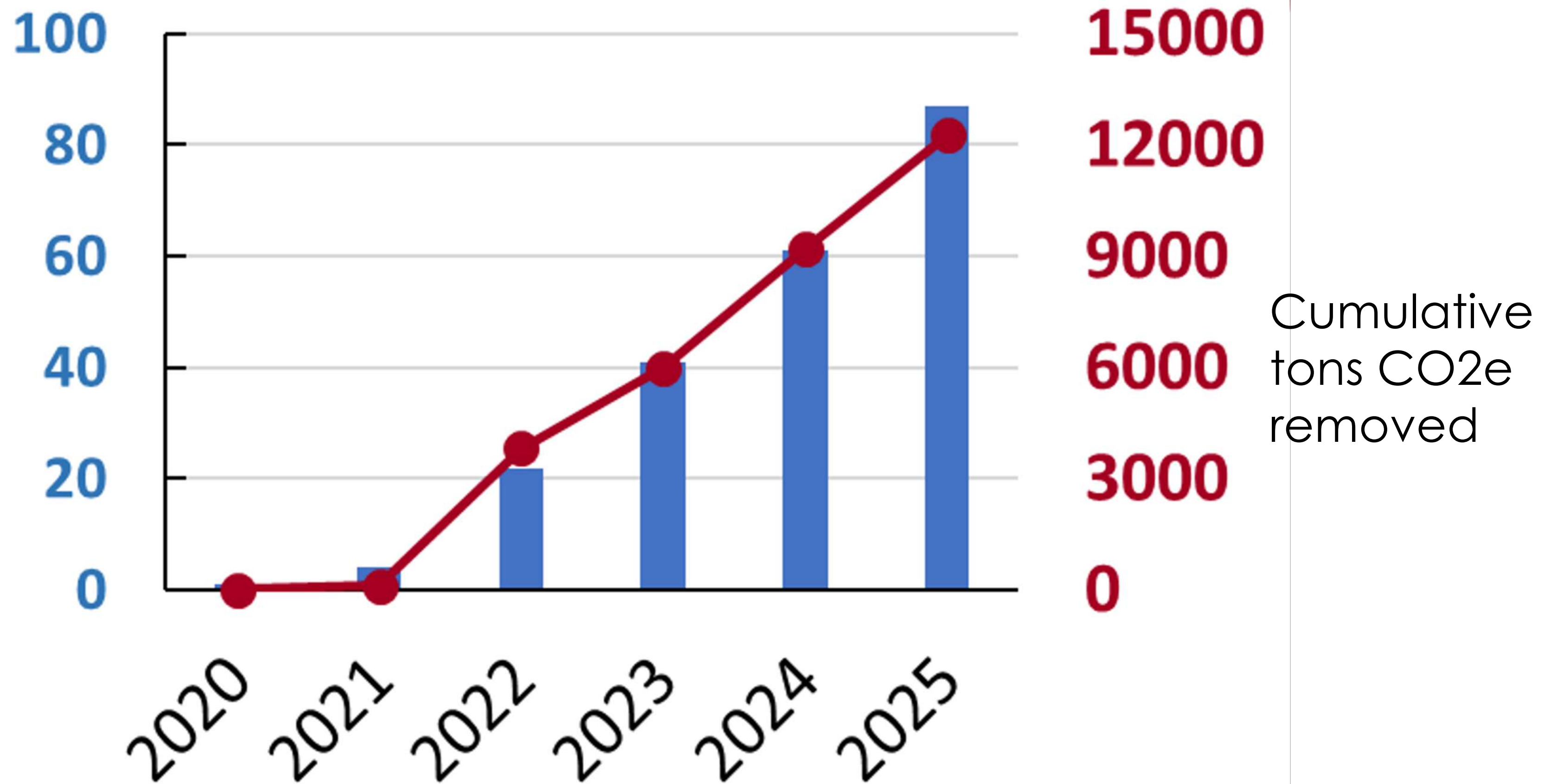
The aim is to restrict the effects of hoarding, manipulation, and financial “gaming”



# Market Participants



# of Credit  
generating  
sites



Pilot

Initial Scale Up

Growth Phase



## Credit Creators

- 85% fishers
- 69% municipalities
- 52% private companies
- 30% NGOs
- 10% Academia

## Habitats restored/created

- 62% macroalgal beds
- 33% seagrass meadows
- 20% macroalgae farming
- 8% tidal flats

Figures sum to more than 100% because projects often include more than one credit creator and habitat





**ENEOS**



**TOKIO MARINE  
INSURANCE GROUP**



**POWER**



**商船三井**



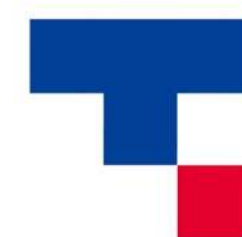
**NISSAY**

**日本生命**

**Kubota®**



**丸紅株式会社  
Marubeni**



**TOKYO GAS**

# Expectations

J-Blue Credits and its potential  
to drive meaningful change



[WWW.BLUEECONOMY.JP](http://WWW.BLUEECONOMY.JP)

>12,000 †  
cumulative CO2e by 2026



Source: Nikkei GX 9.30.2025

500,000 †  
CO2e/year by 2050



Source: Nikkei GX 9.30.2025

# The importance of the J-Blue Credit

How it has been

## Coastal Communities

have access to the coast and a  
desire to restore ecosystems, but  
do not have scalable  
technologies or funding

## Corporates

Want to help, and have exciting  
technologies and funding but  
do not have access to the coast

# The importance of the J-Blue Credit

## How it now works

### Coastal Communities

have access to the coast and a desire to restore ecosystems, but do not have scalable technologies or funding

### JBE

Facilitates exchange via credible markets and scientific guidance

### Corporates

Want to help, and have exciting technologies and funding but do not have access to the coast

# Why J-Blue Credit was needed

## Ecological pressures:

### Kelp beds

- rising sea temperatures
- storm damage
- urchin overgrazing due to predator population collapse

### Seagrass

- typhoon damage
- Invasive and opportunistic algae
- genetic narrowing
- coastal land reclamation

## Threats to economy & livelihoods

### Fisheries

- fish catch fell to one third of its 1948 peak
- kelp landings dropped after wipe-out of wild beds

### Communities

- population decline
- increasing fuel and material costs
- young people leaving coastal towns

## What the JBE enabled

### Coastal restoration

- credits sustain local conservation activities
- communities depend on healthy ecosystems

**Common standard across all actors to align action and facilitate exchange**

# How it works

## From restoration/aquaculture efforts to credit



### PROJECT INITIATION

- Degraded ecosystem
- Pre-intervention conversation JBE + applicant:
- Assess credit potential
  - Clarify additionality
  - Clarify ownership



### RESTORE & GROW

- Transplant seeds, clear urchins, protect beds
- Fishers, municipalities, NGOs, private companies



### SURVEY & MEASURE

- Map area for coverage and density
- Use drones, diving, on-site mapping



### VERIFY & CERTIFY

- Independent body validates the data
- JBE issues carbon credits + co-benefits



### SELL & REINVEST

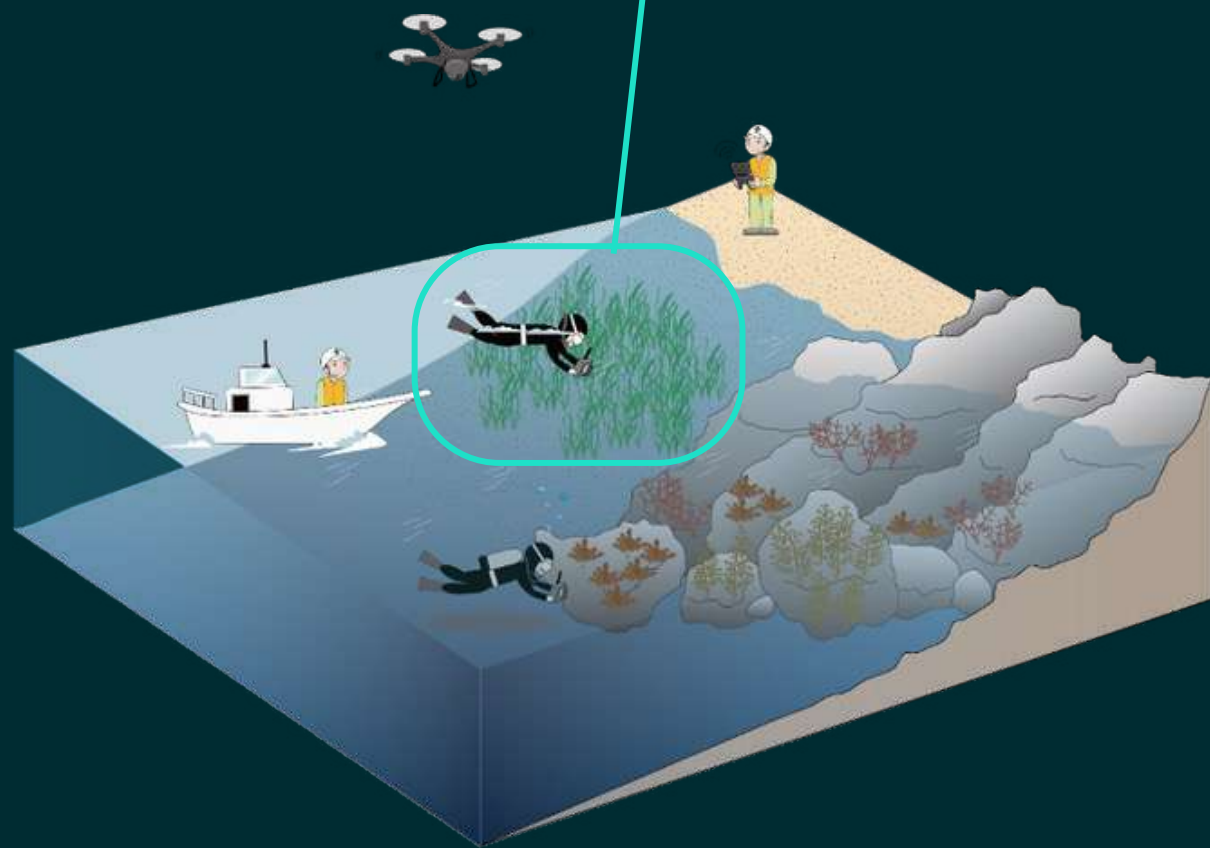
- Corporate buys credit and retires it
- Revenue funds further restoration



# Hayama Seaweed Restoration

## Case Study

# How to calculate carbon sequestration



**subtract  
uncertainty  
deductions**

## Area certainty

|          |                            |
|----------|----------------------------|
| 100-80%  | drone + transects          |
| 90 - 70% | photography + transects    |
| 80 - 60% | outer boundary, no density |
| <60%     | insufficient               |

x

## Removal coefficient

|         |                                         |
|---------|-----------------------------------------|
| 100-80% | on-site dw, regional + species specific |
| 90-70%  | on-site ww, region-specific             |
| 80-60%  | coverage-based biomass + literature     |
| <60%    | national averages                       |

# Hayama Seagrass & Seaweed Restoration

**2006** Hayama Amamo Council founded to restore eelgrass beds (school, fishing cooperative and diving school)

**2020** Warming waters and urchin overgrazing cause collapse of seaweeds (arame and kajime), resulting in loss of fish, lobster and abalone fisheries → Isoyake

**2022-2023** First JBE credits issued (~50 tonnes per year)

**2025** Up to 68 t CO2 credited



Restoration activities of seaweed by divers



Source: Hayama Eelgrass Council

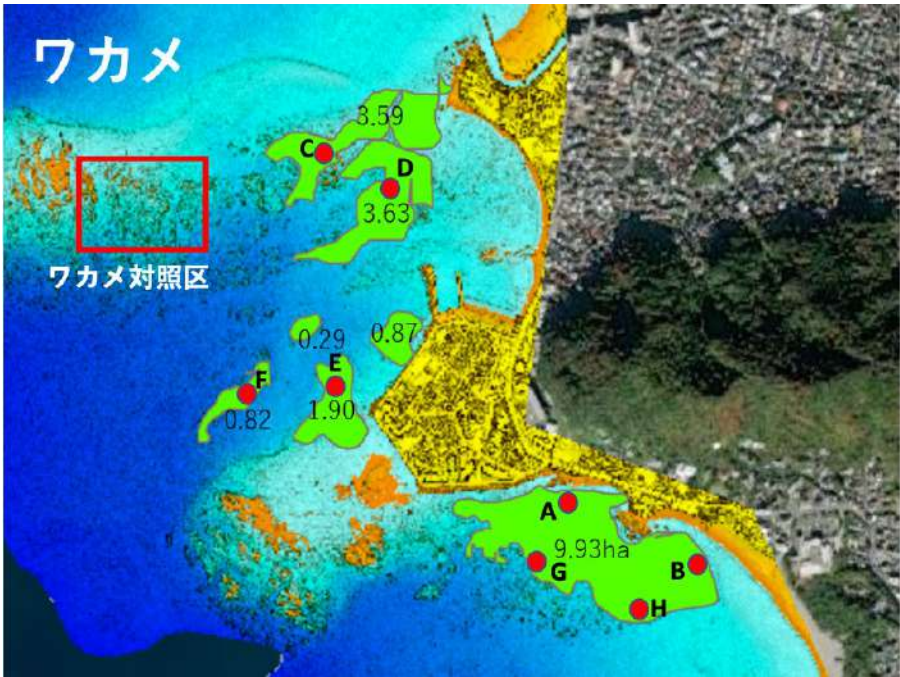
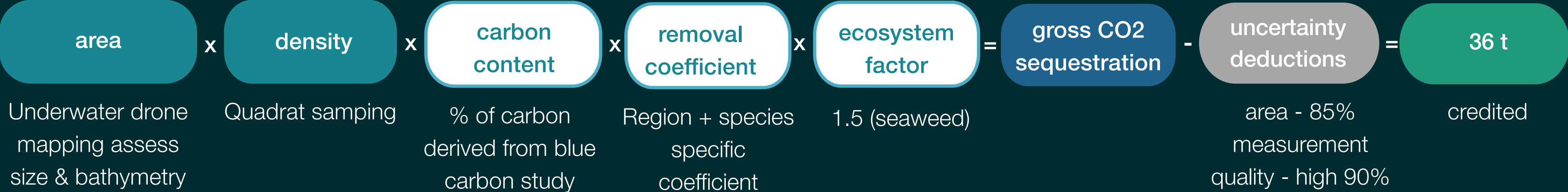


Farming of seaweed by fishermen

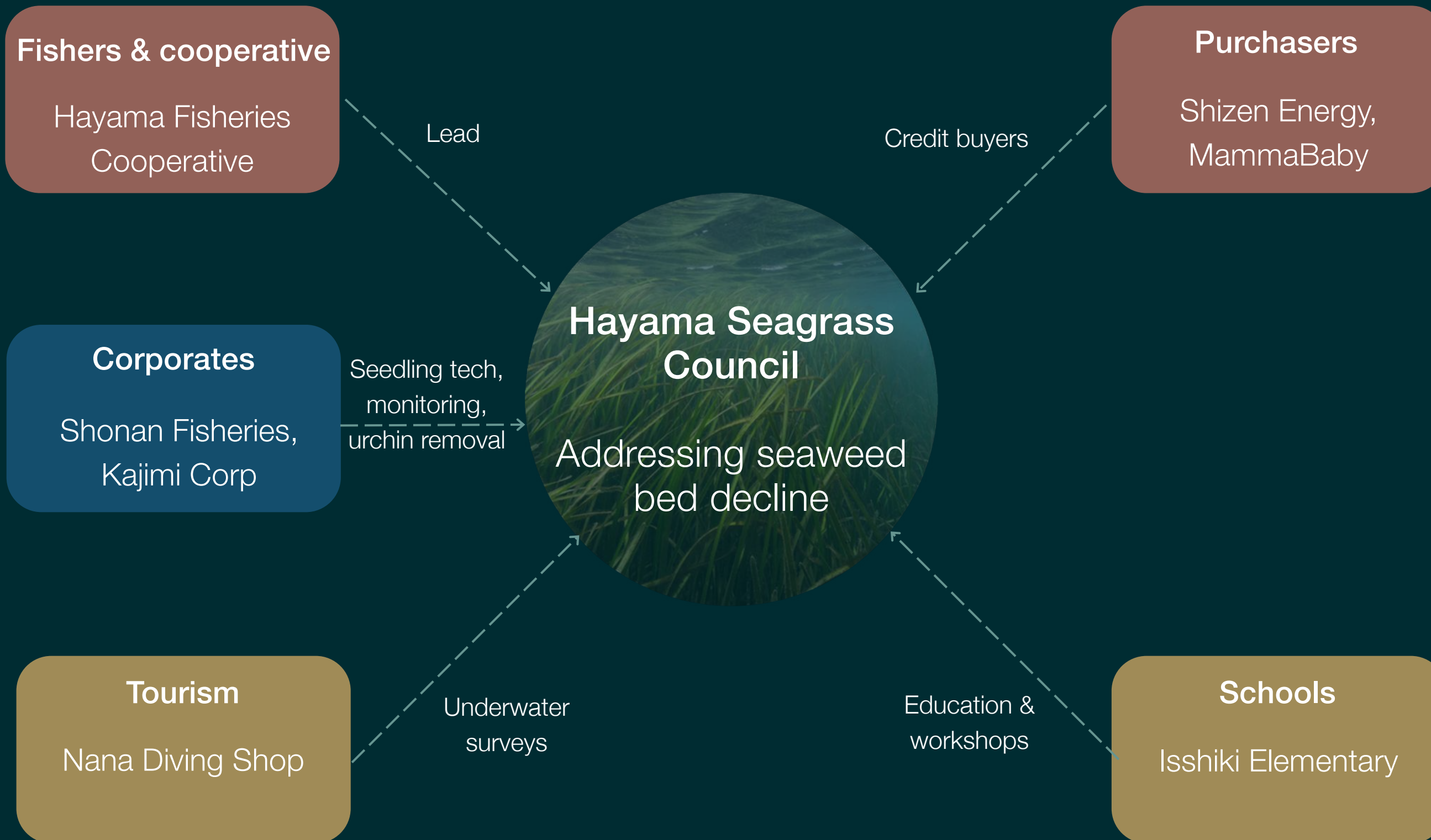
Seed production technology for seaweeds using free-living gametophytes



# Quantification of credits (wakame example)



# Who was involved and why



# JBE credits system design

- Involves local communities through tourism & excursions
- Designed for anyone to apply – not PhD level knowledge required
- Government-backed – creating trust and credibility
- Methodology meant for continuous iterations as science develops



# Thank you

Website: [kelpforestfoundation.org](http://kelpforestfoundation.org)

Email: [xuben.zhang@kelpforestfoundation.org](mailto:xuben.zhang@kelpforestfoundation.org)



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