

Global Seaweed New and Emerging Markets Report: What Next?



GLOBAL SEAWEED

NEW AND EMERGING MARKETS REPORT

2023



PROBLUE



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URL

<https://openknowledge.worldbank.org/handle/10986/40187>

AquaInvest Platform Strategy

Advisory Services and Analytics (ASA):
Key examples

Technical Manuals

Sustainable Practice Notes

Trainings/
Workshops/
Webinars

Conferences

Blogs/op-ed

Social Media
(LinkedIn, twitter)



Newsletter
(e.g., AGF weekly Newsletter)

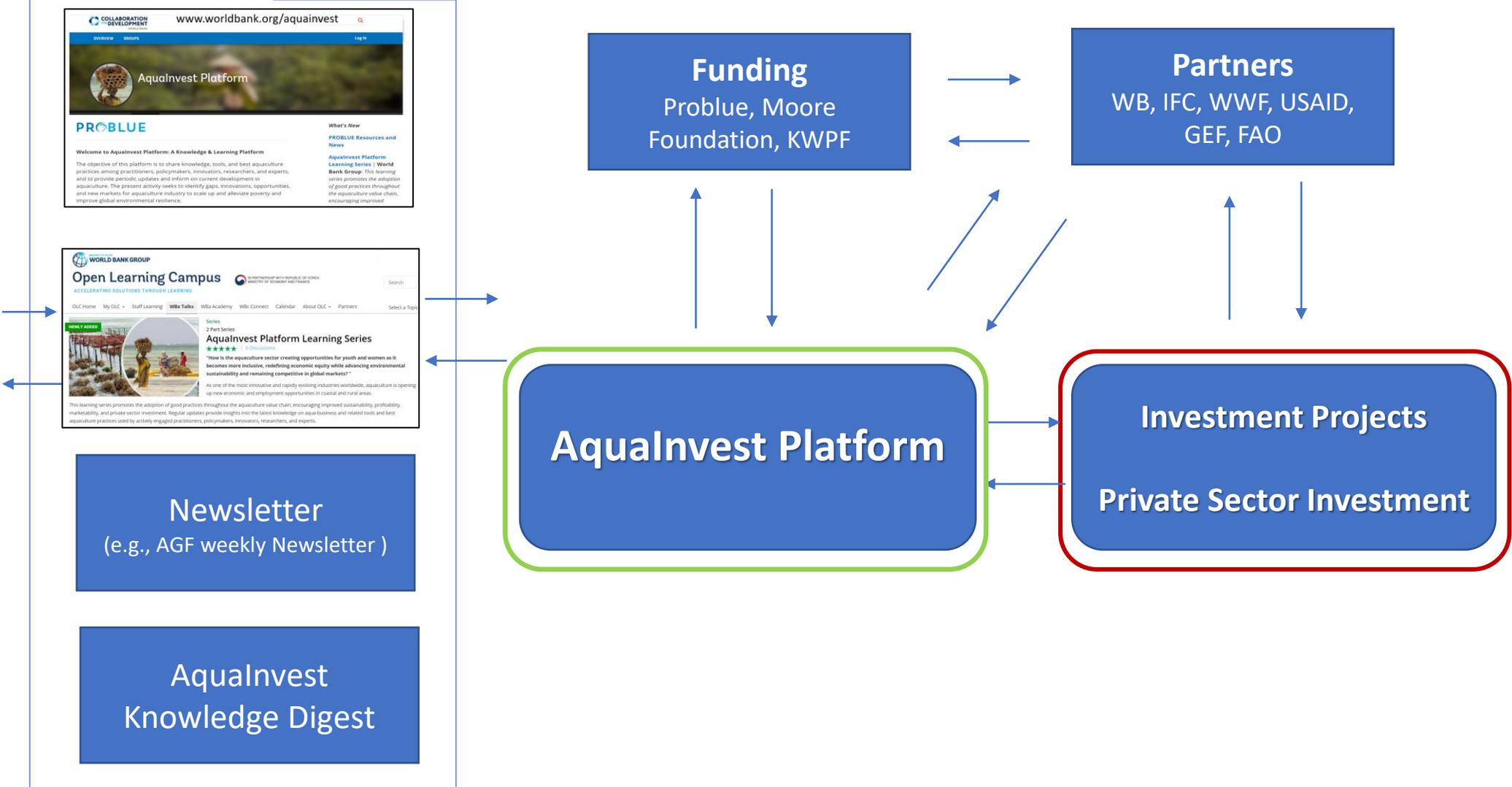
AquaInvest Knowledge Digest

Funding
Problue, Moore Foundation, KWPF

Partners
WB, IFC, WWF, USAID, GEF, FAO

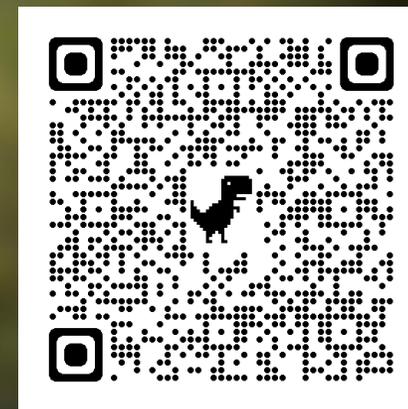
AquaInvest Platform

Investment Projects
Private Sector Investment





AquaInvest Platform



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Welcome to AquaInvest Platform: A Knowledge & Learning Platform

The objective of this platform is to share knowledge, tools, and best aquaculture practices among practitioners, policymakers, innovators, researchers, and experts, and to provide periodic updates and inform on current development in aquaculture. The present activity seeks to identify gaps, innovations, opportunities, and new markets for aquaculture industry to scale up and alleviate poverty and improve global environmental resilience.

What's New

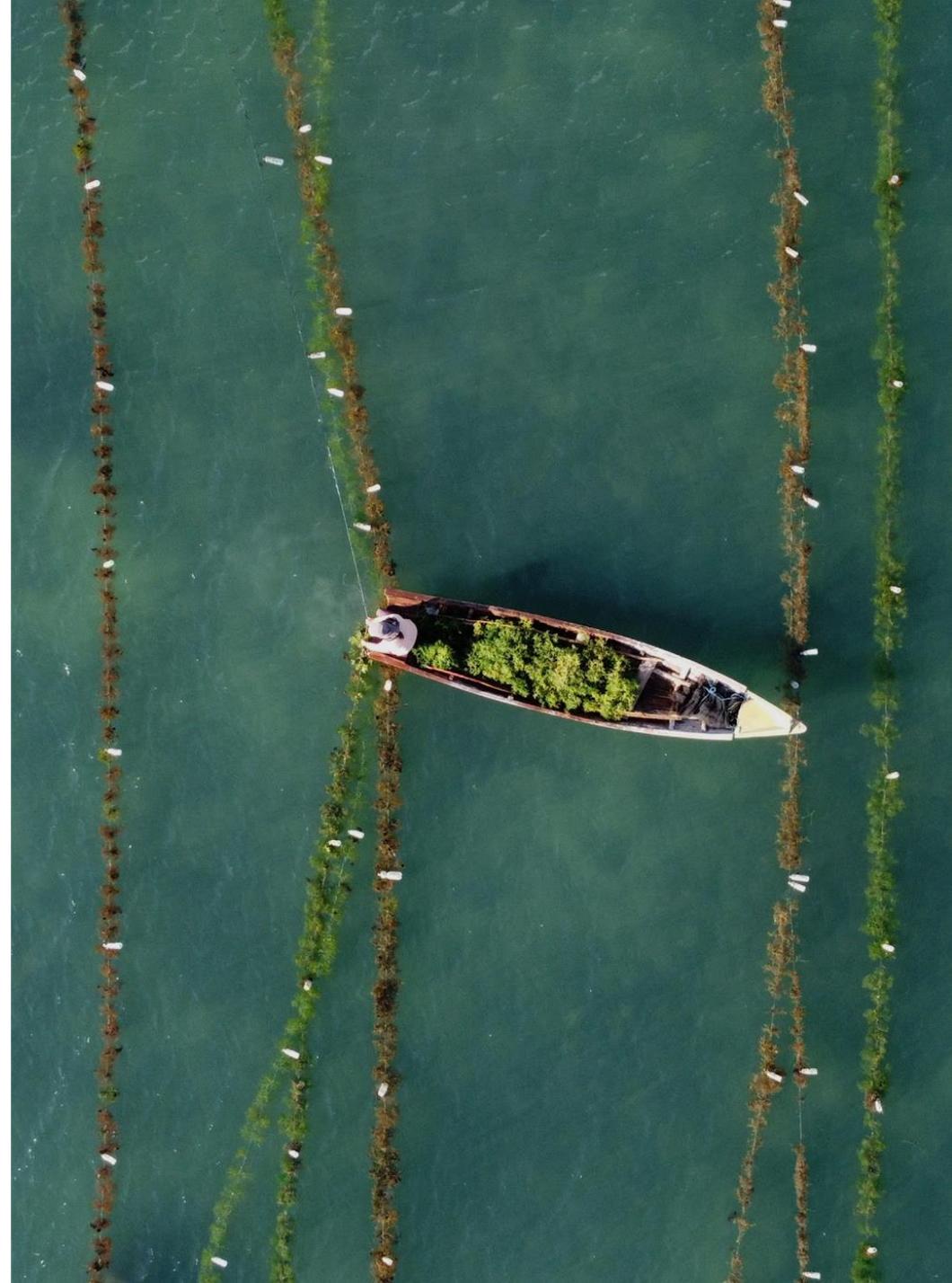
PROBLUE Resources and News

AquaInvest Platform Learning Series | World Bank Group:

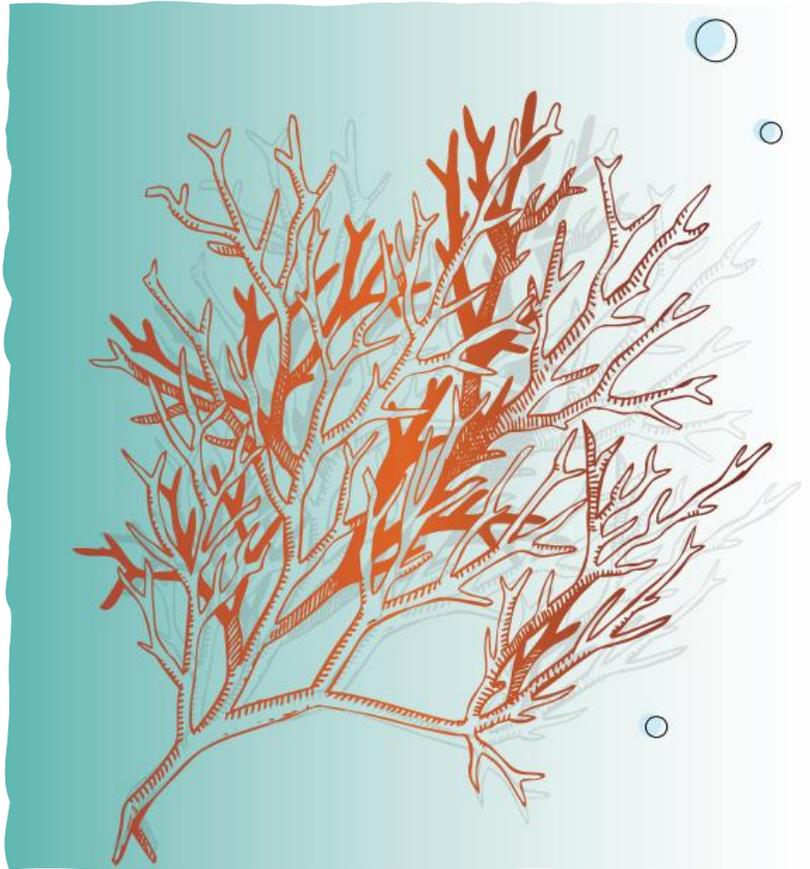
This learning series promotes the adoption of good practices throughout the aquaculture value chain, encouraging improved

Content

1. Aims of the report
2. Relevant context on global seaweed sector
3. Ten new and emerging seaweed applications
4. Key findings of this study
5. Conclusion



Aims of the report



Analyze the **commercial opportunity** for new high-growth market applications to increase scale of seaweed cultivation and **value-added seaweed** processing.

Ensure increased provision of **industrial, socioeconomic** and **environmental benefits**.

Assess the **technologies** needed to grow more seaweed, extract increasingly valuable compounds, and create ready to scale **quality products** for a range of markets.

Methodology



1. Identification of relevant industry stakeholders: 133 interviews conducted covering 300 sources



3. Market forecast exercise for targeted applications



2. Deep dive into selected seaweed application areas: 11 new and emergent areas were selected



4. Identification major limitations and gaps within the study

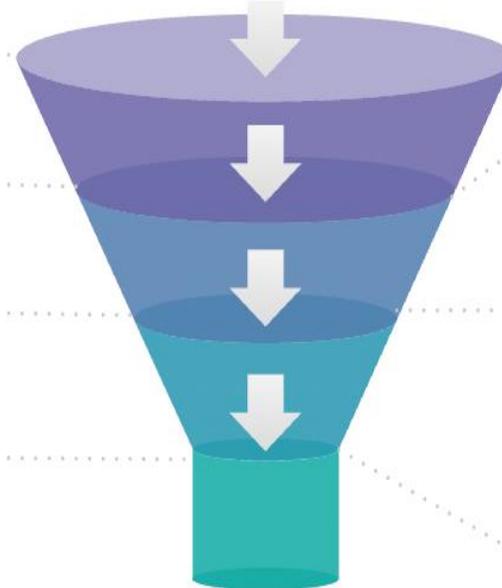
SELECTION OF NEW AND EMERGENT APPLICATIONS

We took **±120 applications** of seaweed

Ran a **prioritization screen** to find our shortlist

Decided on **10 sectors** for further evaluation

That we will use to develop the **Global Seaweed Report**



Based on:

- Market Growth Data
- Environmental impact
- Socio-economic impact
- Expert input

Including:

- Animal Feed
- Methane Reducing Feed Additives
- Alternative Proteins
- Biostimulants
- Bioplastics
- Fabric
- Construction
- Nutraceuticals
- Pharmaceutical

- Ecosystem Services

Using:

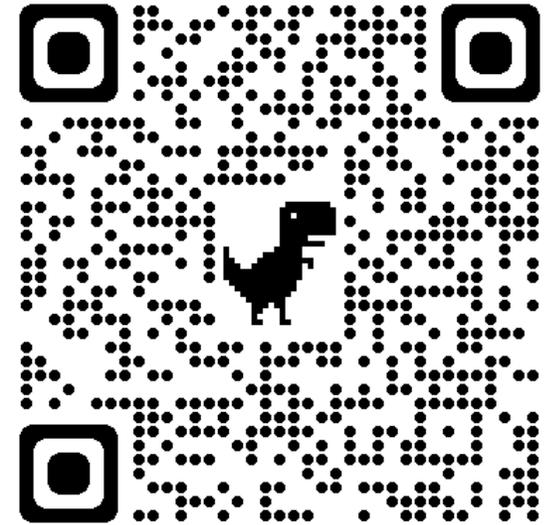
- Market data
- Grey literature
- Scientific literature
- Stakeholder interviews with:
 - Innovators
 - Corporations
 - Experts

<https://wbg.edcast.com/channel/23627>



Open Learning Campus

ACCELERATING SOLUTIONS THROUGH LEARNING



AquaInvest Platform Learning Series

The screenshot displays a social media feed with four video posts. Each post includes a title, a video thumbnail, a duration, and engagement metrics. The first post is titled "Highlights from the WBG Global Seaweed New and Emerging M..." with a duration of 1h 25m and 0 likes. The second post is "World Bank Guidelines for Sustainable Aquabusiness Develo..." with a duration of 1h 28m and 1 like. The third post is "Catalyzing the Seaweed Revolution: Lessons and Opportunit..." with a duration of 1h 30m and 2 likes. The fourth post is "Catalyzing Green, Resilient and Inclusive Development (GR..." with a duration of 1h 10m and 2 likes. Each post has a "Journey" label and a "Be the first to react" prompt. The interface includes standard social media icons for liking, sharing, and bookmarking.

- Post 1:** Highlights from the WBG Global Seaweed New and Emerging M... (1h 25m, 0 likes)
- Post 2:** World Bank Guidelines for Sustainable Aquabusiness Develo... (1h 28m, 1 like)
- Post 3:** Catalyzing the Seaweed Revolution: Lessons and Opportunit... (1h 30m, 2 likes)
- Post 4:** Catalyzing Green, Resilient and Inclusive Development (GR... (1h 10m, 2 likes)

Note: Registration required

Seaweed Insight – seaweed farming datahub

<https://seaweedinsights.com/global-production/>



Explore Farm Design by Species



EUCHEUMATOIDS



SACCHARINA



UNDARIA



PYROPIA

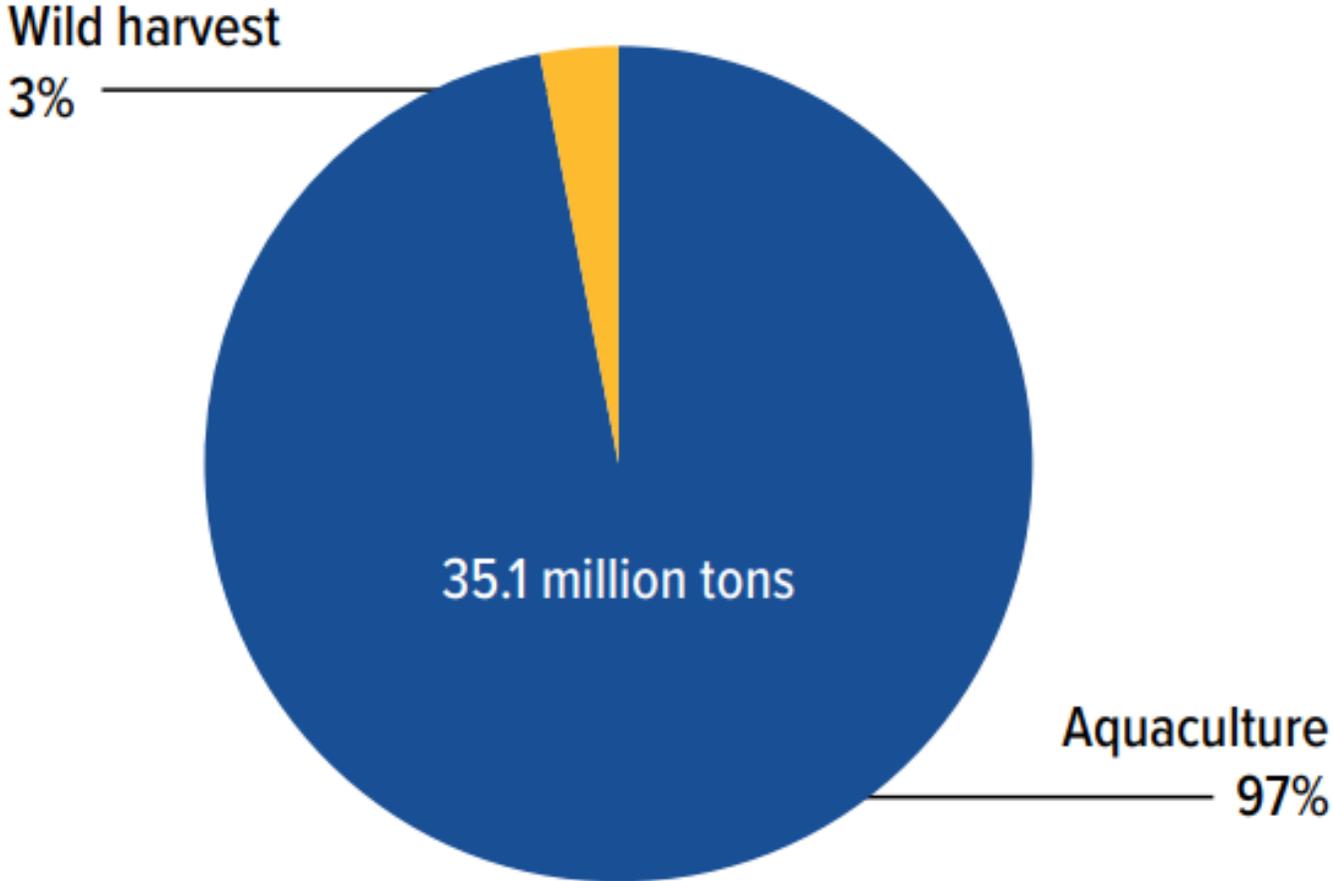


GRACILARIA

The global seaweed sector today

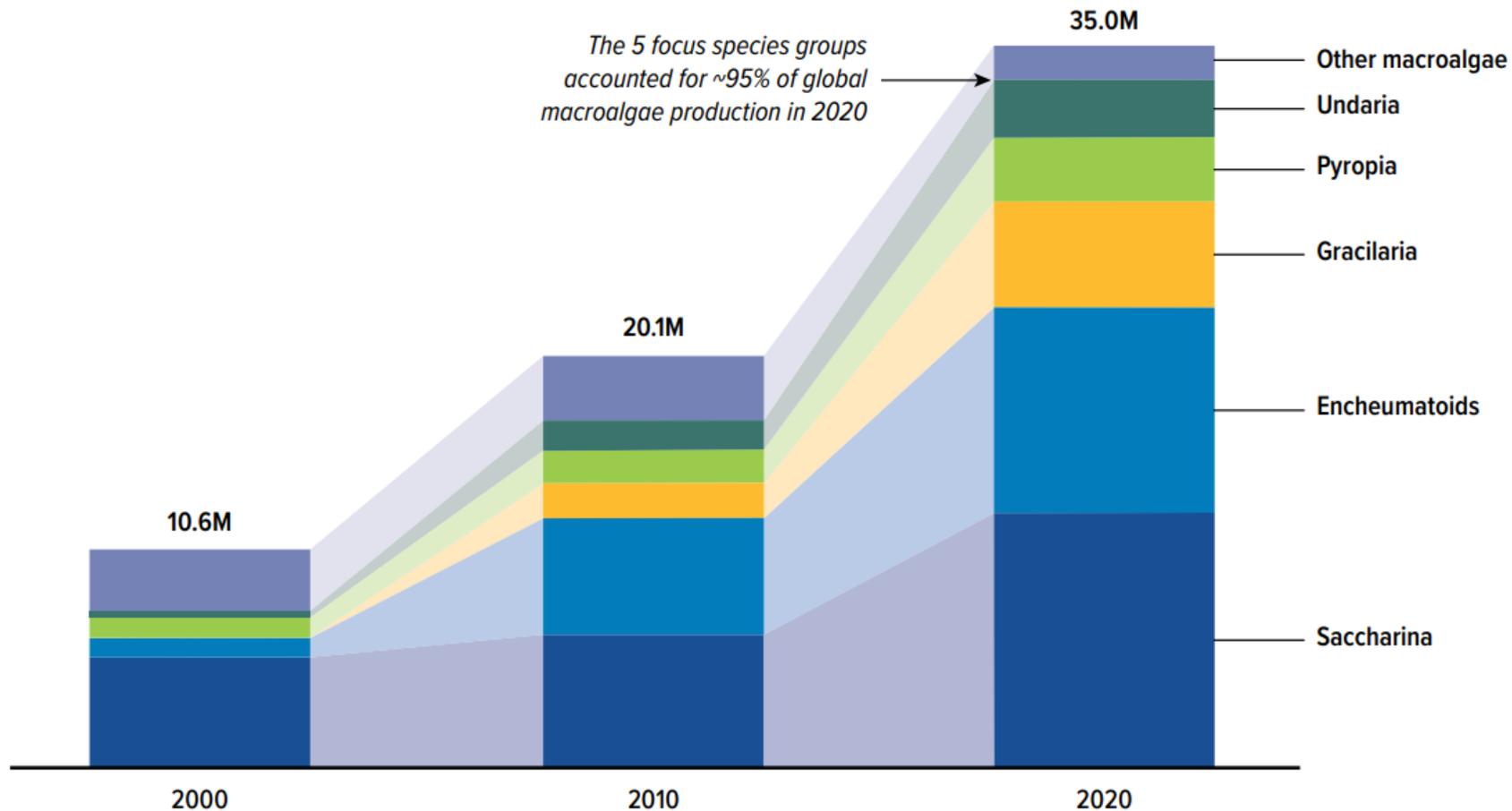


Almost all seaweed supply comes from aquaculture - cultivated in land-based pond and near shore systems



Source: FAO Fisheries and Aquaculture (2022)

95% of the farmed global seaweed production is based on five species groups

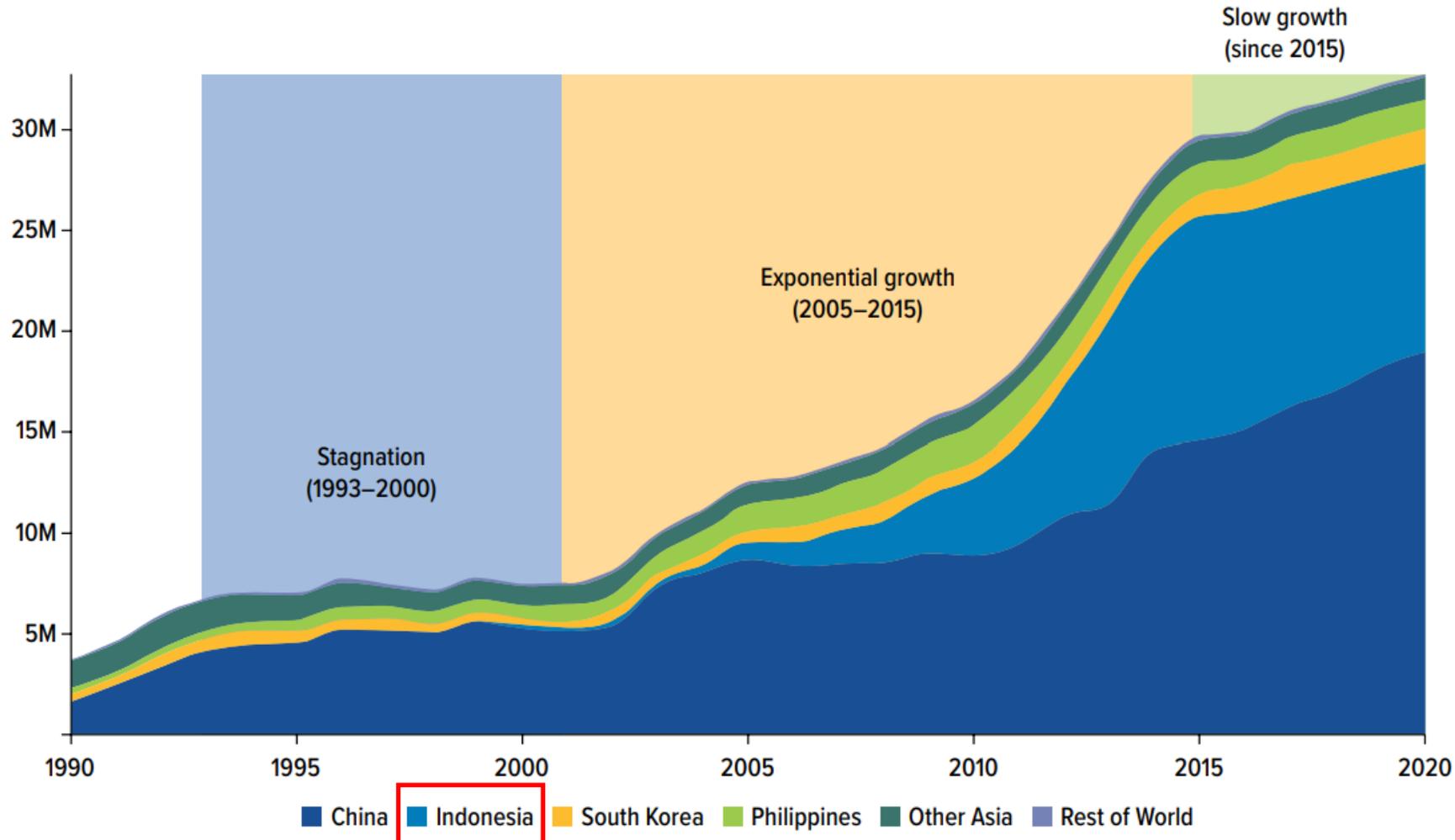


98% of farmed seaweed is produced in a handful of countries in East and Southeast Asia



Map: Hatch Innovation Services • Source: in tonnes wet weight and provided by FAO Fisheries and Aquaculture

Production in established seaweed regions faces major challenges and is slowing down



Key challenges:

Climate change effects on crops

- Shorter cycles
- Lower yields
- Increased disease
- Extreme weather events

Lack of technology advancement

- Farming in deeper waters
- Automation in farm processes

Lack of human capital

- Aging population
- Rural depopulation



Seaweed farming is for millions of people the primary source of livelihood

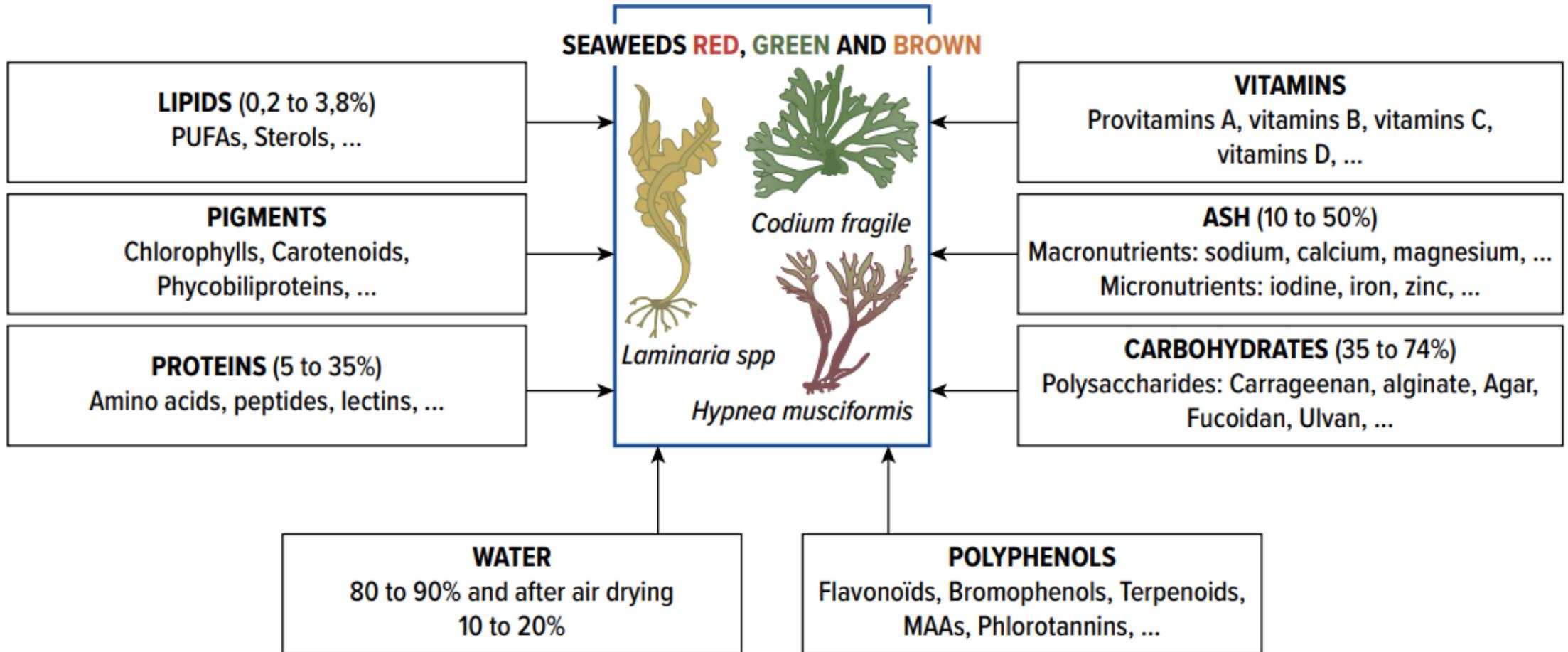


..and many more coastal communities could be growing seaweed - and benefit in numerous ways.

New and Emerging Application of Seaweed



General composition of red, green, and brown seaweed



Source: Based on Ito and Hori, 1989; Kim, 2011; Peng et al., 2015.

New and emerging application of seaweed investigated in this report

Pharmaceuticals

Nutraceuticals

Biostimulants

Alternative proteins

Animal feed

Methane reducing
feed supplements

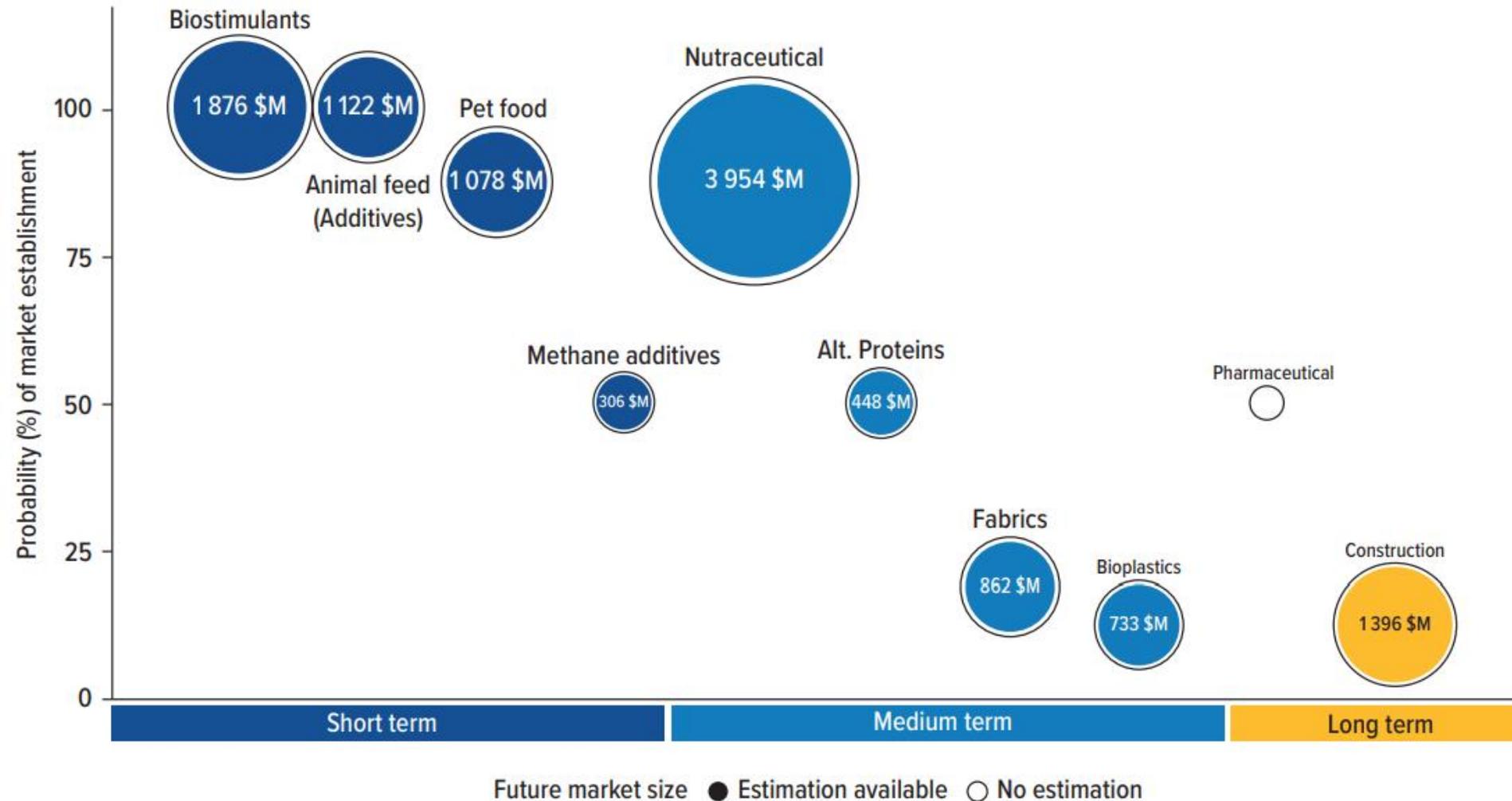
Pet food

Bioplastics

Fabric

Construction

This report has identified ten global seaweed markets with the potential to grow by an additional USD 11.8 billion by 2030



Market development for Ecosystem Services:

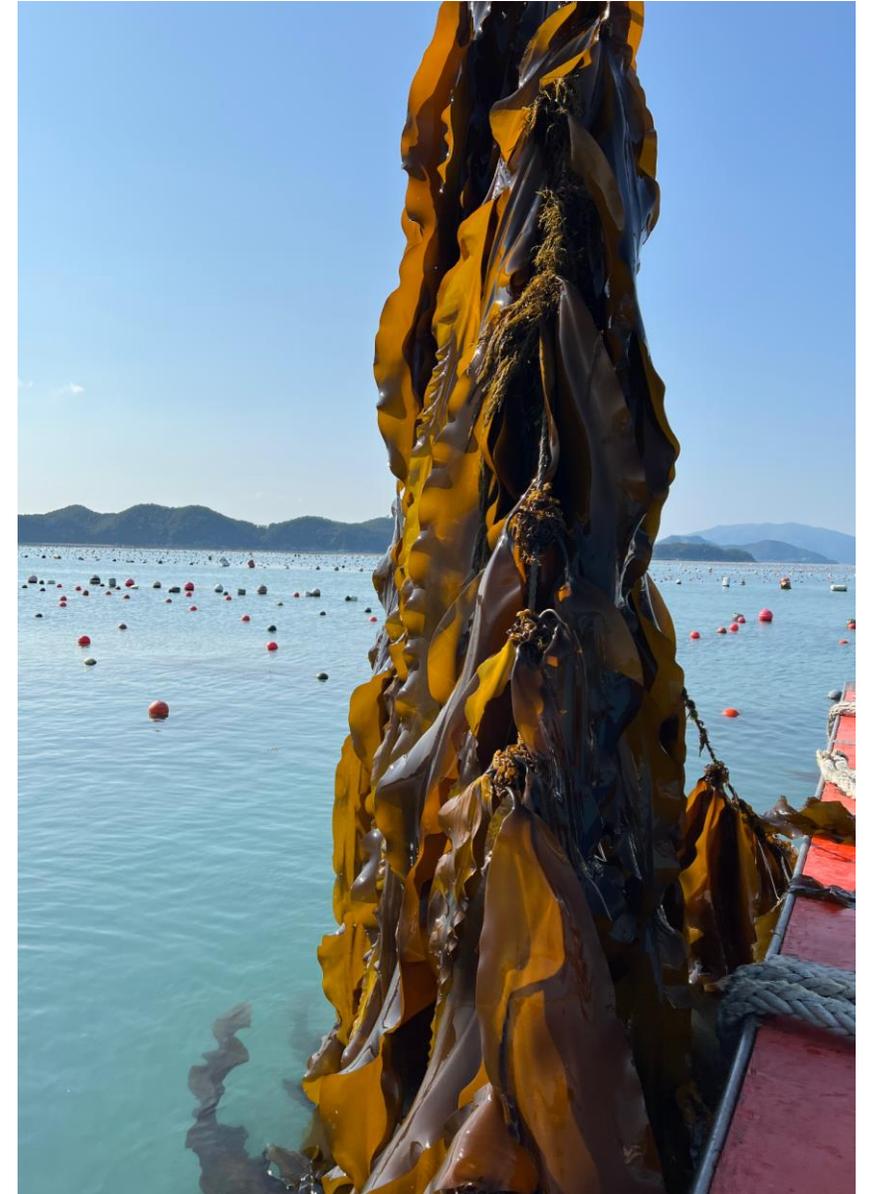
Blue Carbon - Internationally recognized credit certifications for blue carbon seaweed projects are likely to be available by 2025.

Bioremediation - Scale-up of land-based bioremediation operations is expected over the next 12 months, while more attention is shifting towards the bioremediation potential of ocean farming and macroalgae-based integrated multi-trophic aquaculture (IMTA).

Biodiversity enhancement - could become one of the more important ecosystem service attributes of seaweed farming and restoration over the next decade.



Key findings of this study



Main challenges for new and emerging markets



Availability of raw material (seaweed)



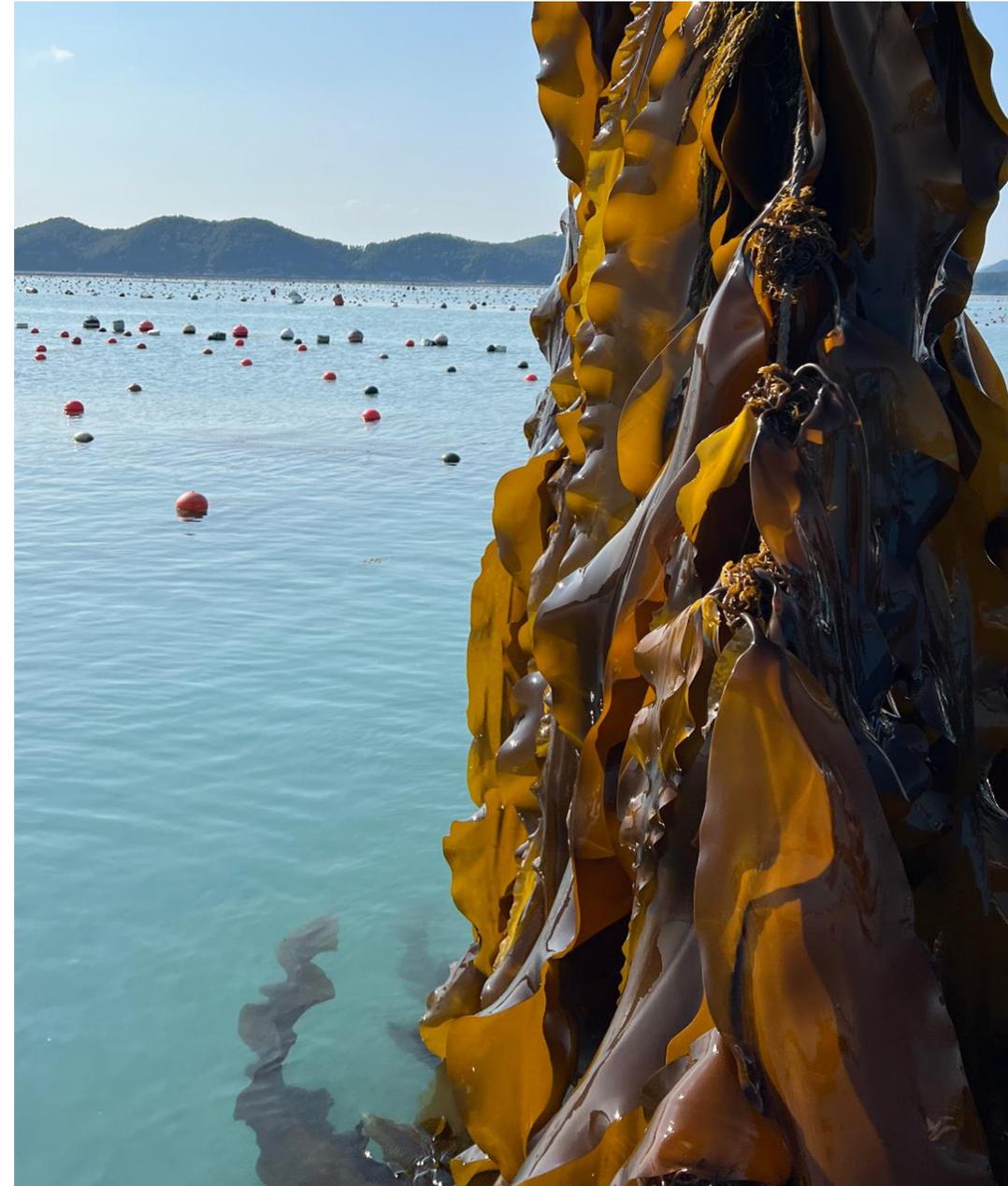
Standardized environmental impact assessments



Access to long-term, low-cost capital



Social awareness and acceptance



Global seaweed opportunities - key takeaways

Seaweed supply:

Significant progress towards:

- Breeding programs
 - Automation of farm processes
 - Legislative incentives
 - Access to financial services
 - Capacity building
-
- knowledge sharing.
 - Joint development.

**A clean,
resilient and
inclusive
seaweed
industry at
scale**

Potential markets:

Novel applications technically proven

Market needs:

- Consistent raw material supply
- Scale + price (and quality)
- Access to long-term, low-cost capital
- Standardized environmental impact assessments
- Legislative incentives
- Social awareness and acceptance
- Biorefinery technology

Conclusion

- The seaweed sector has clear **growth potential** beyond its current markets and can help shape a world free of poverty on a livable planet.
- Enhanced seaweed production and improved value chains can contribute to meeting at least **nine of the 17 U.N. Sustainable Development Goals (SDGs)**.
- Seaweed farming in new markets and with new applications can support development, **climate, and nature work to generate value and uplift communities**.
- Seaweed supply constraints affect all new and emerging market applications
- Monetization of seaweed's potential to provide ecosystem services requires **certification and credit schemes, and robust monitoring, reporting and verification (MRV)**.



Korean Technology and Knowledge Transfer to Transform the Seaweed Agribusiness in Africa and Southeast Asia



1. Landscape study of seaweed farming through the lens of agribusiness, environmental sustainability, and climate resilience.

2. Korea-WBG Open Flagship Course on seaweed farming technology and business for a global audience.

3. Knowledge exchange between African and Southeast-Asian country project partners to visit Korean seaweed research, production, and processing sites.

4. A global summit on research and development of seaweed by Korean, African, and Southeast Asian countries innovators and agribusiness companies



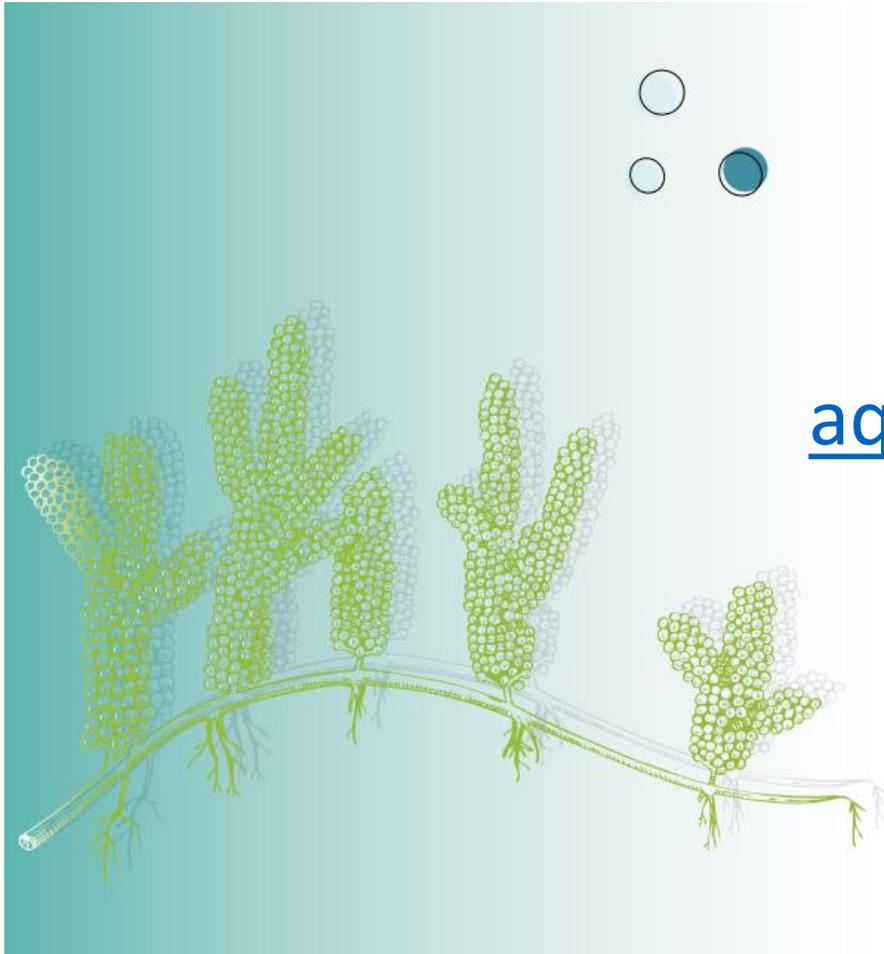
Next steps

World Bank will continue knowledge transfer through the Korea-World Bank Partnership Facility (KWPF)

Encouraged: Formation of a Global Consortium of Seaweed Research focusing on knowledge generation

Increased demand from countries to include seaweed in national development agenda

Needed: Agreement on Quality Assurance standards in production, handling and processing



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URI

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