Seaweed Industry from a Global Perspective

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World Bank

AquaInvest

SUSTAINABLE AQUACULTURE PLATFORM

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Food and Agriculture Organization of the United Nations

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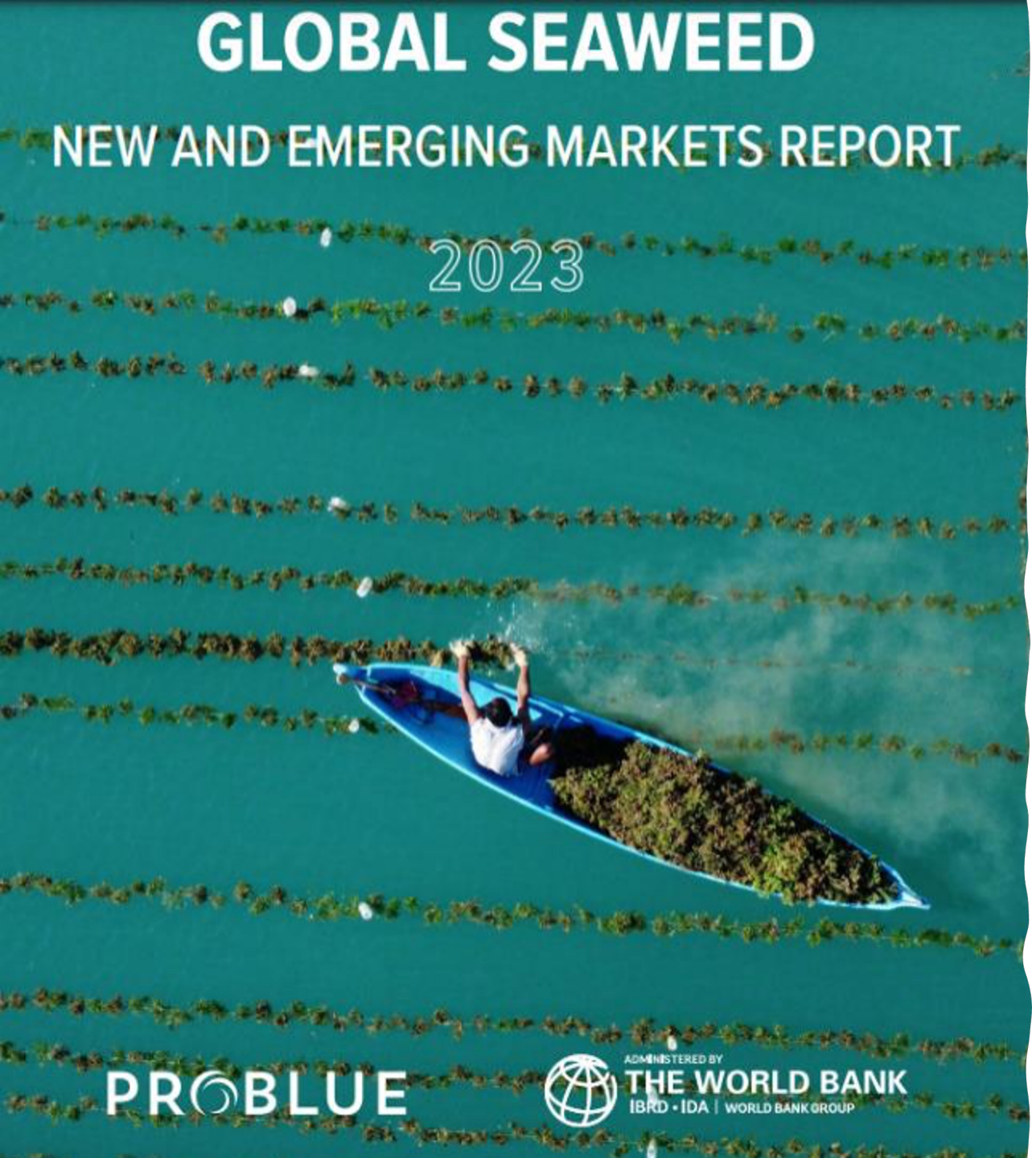

AquaInvest Platform

commissioned by The World Bank

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

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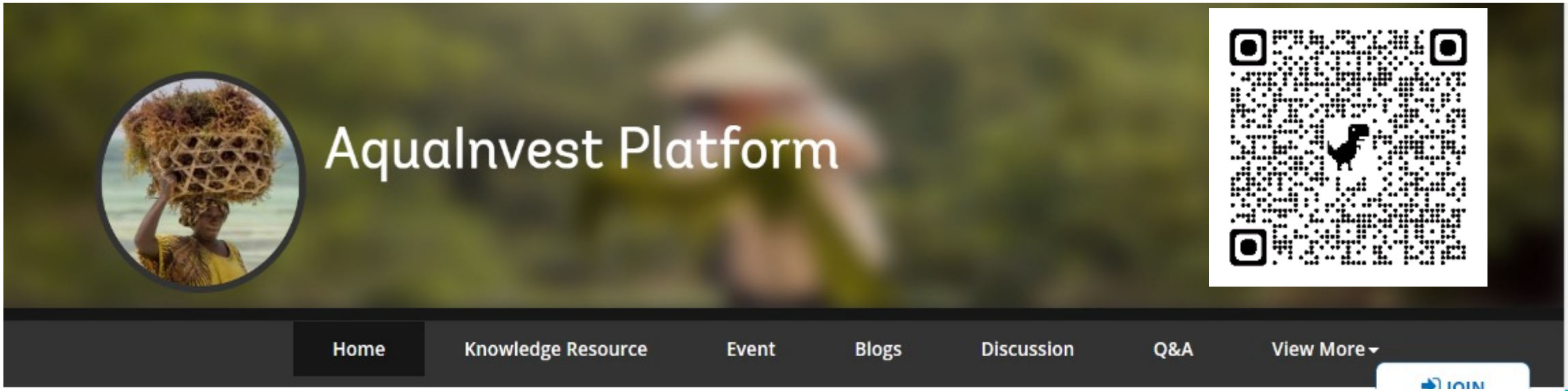
www.worldbank.org/aquainvest



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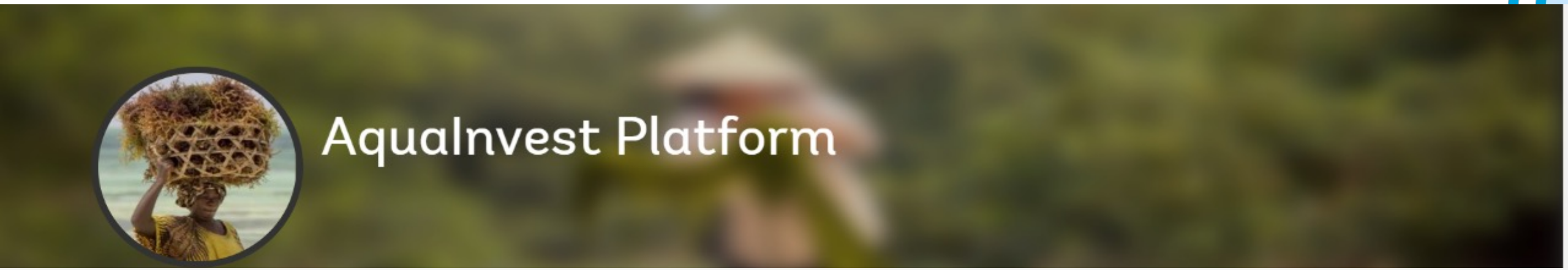
Welcome to AquaInvest Platform: A Knowledge & Learning Platform

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*



- World Map

Unique Visitors

Aims of the report

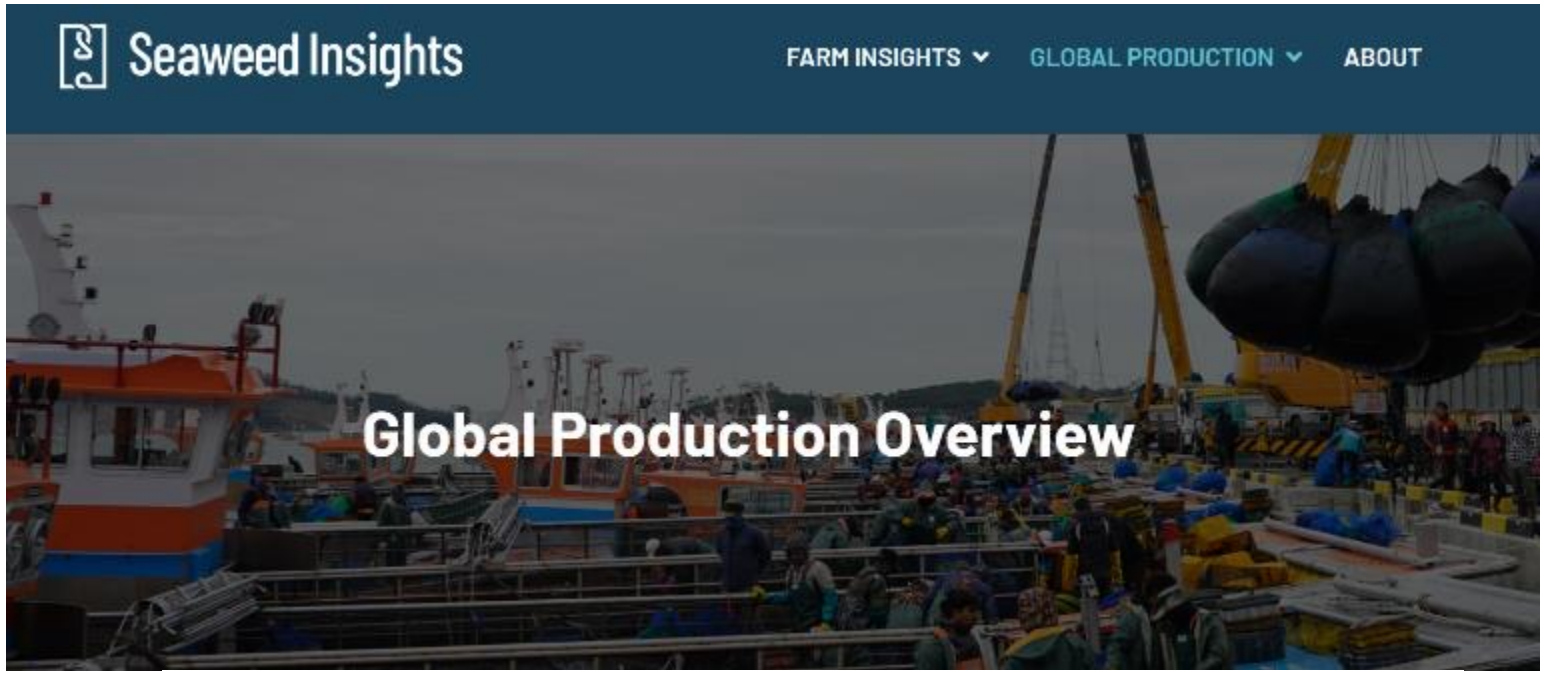
Analyze the **commercial opportunity** for new high-growth market applications to increase scale of seaweed cultivation and **value-added seaweed** processing.

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.

Seaweed Insight – seaweed farming datahub

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



Explore Farm Design by Species

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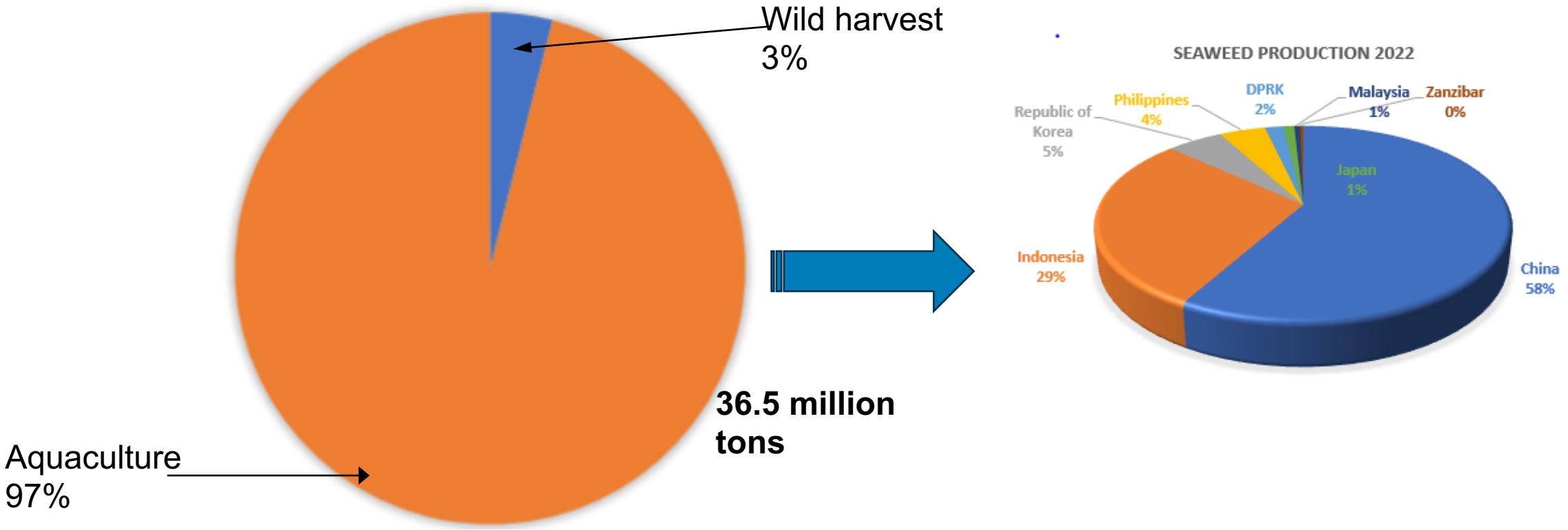
The Global Seaweed Sector Today

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



Source: FAO Fisheries and Aquaculture (2024)

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

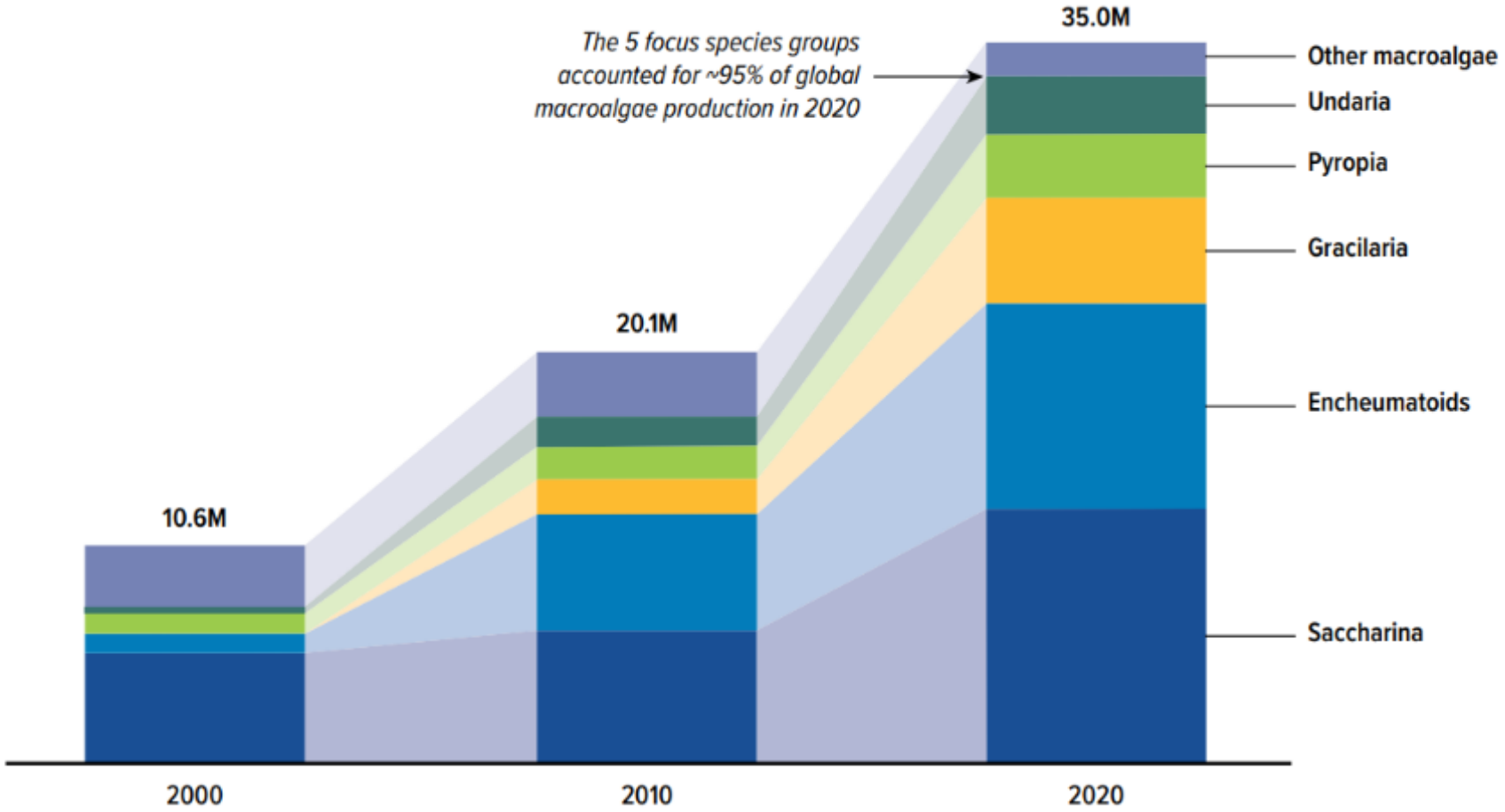
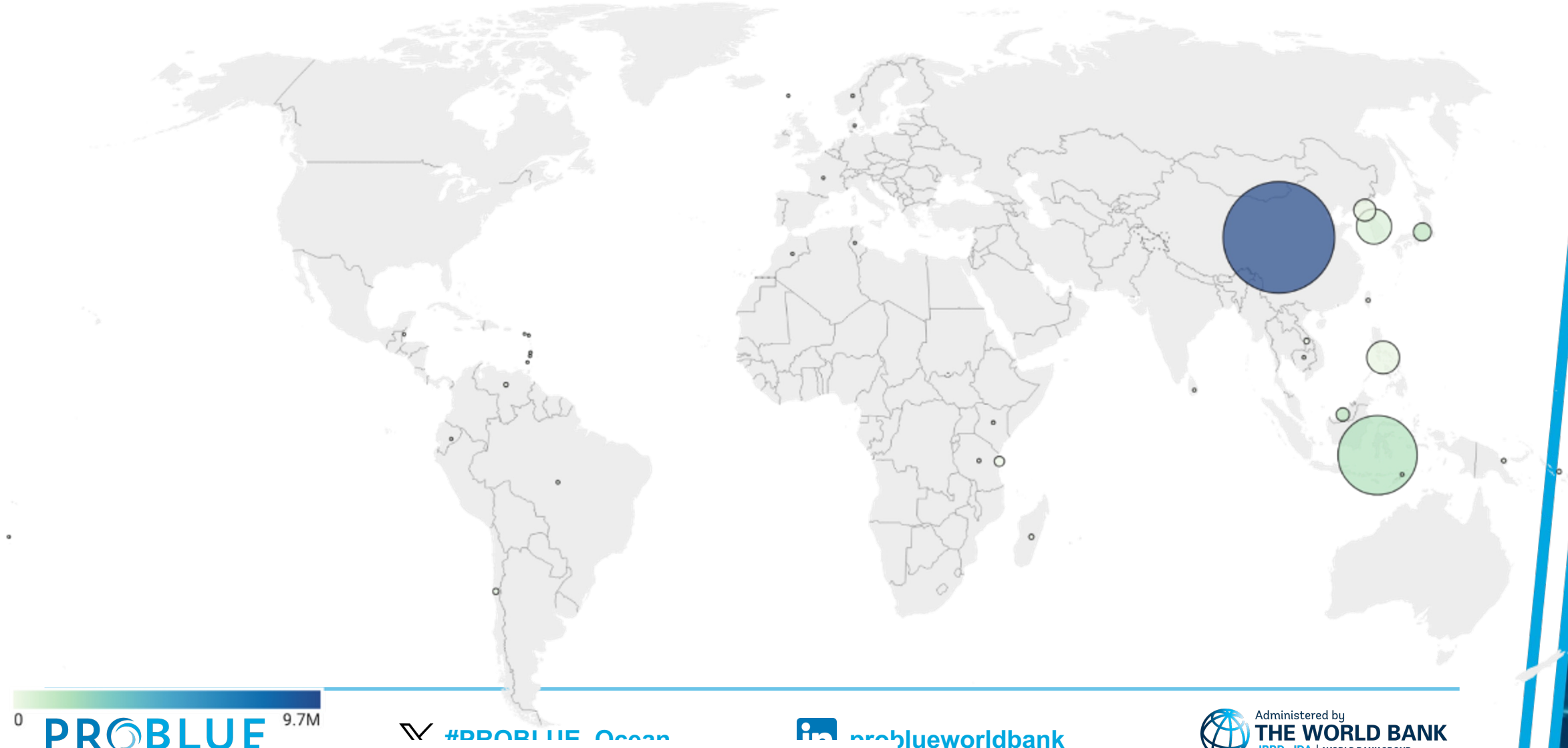


Chart: Hatch Innovation Services Source: FAO Fisheries and Aquaculture Created with Datawrapper

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



0 9.7M

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

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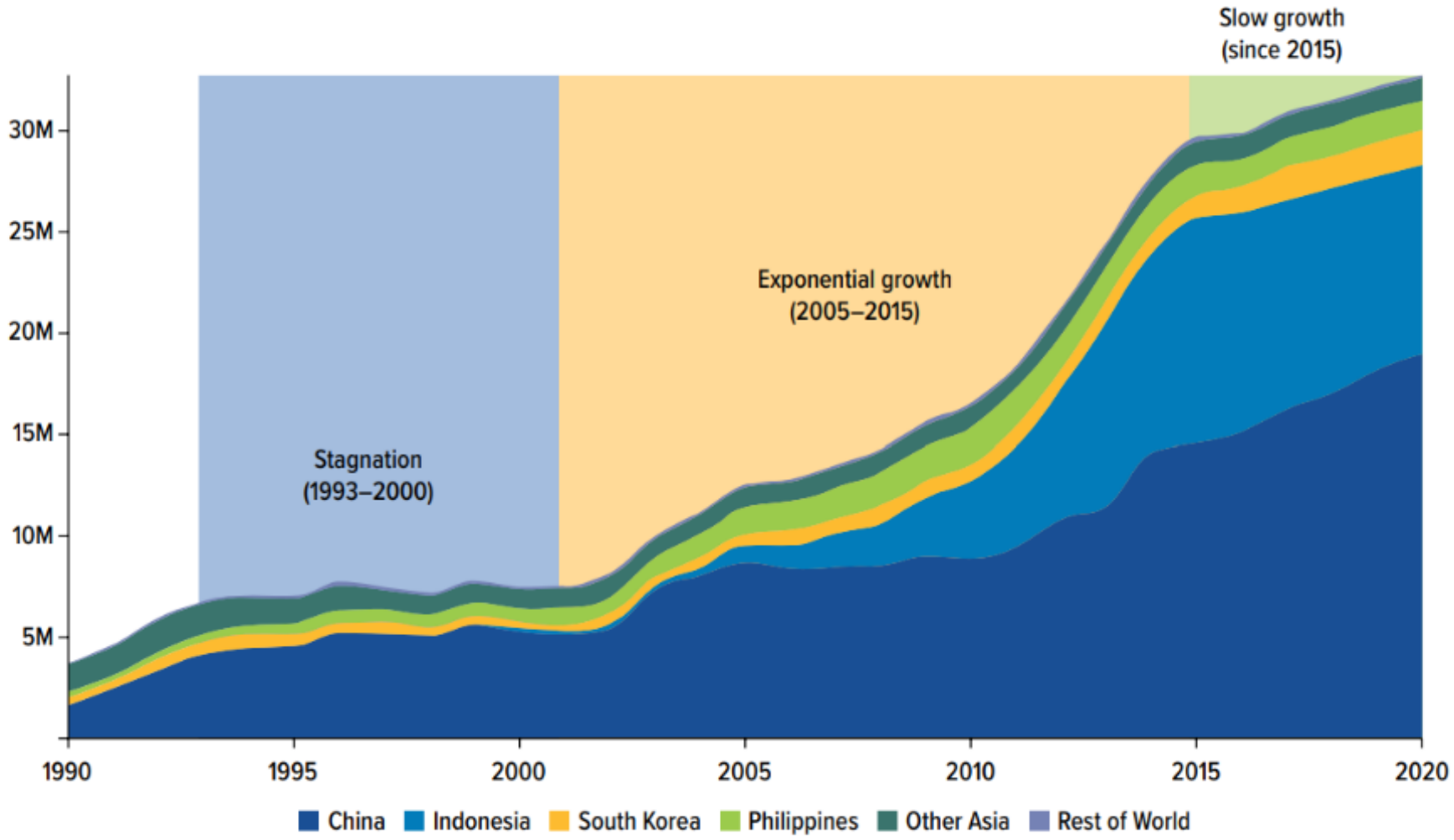
Production in established seaweed regions faces major challenges and is slowing down



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

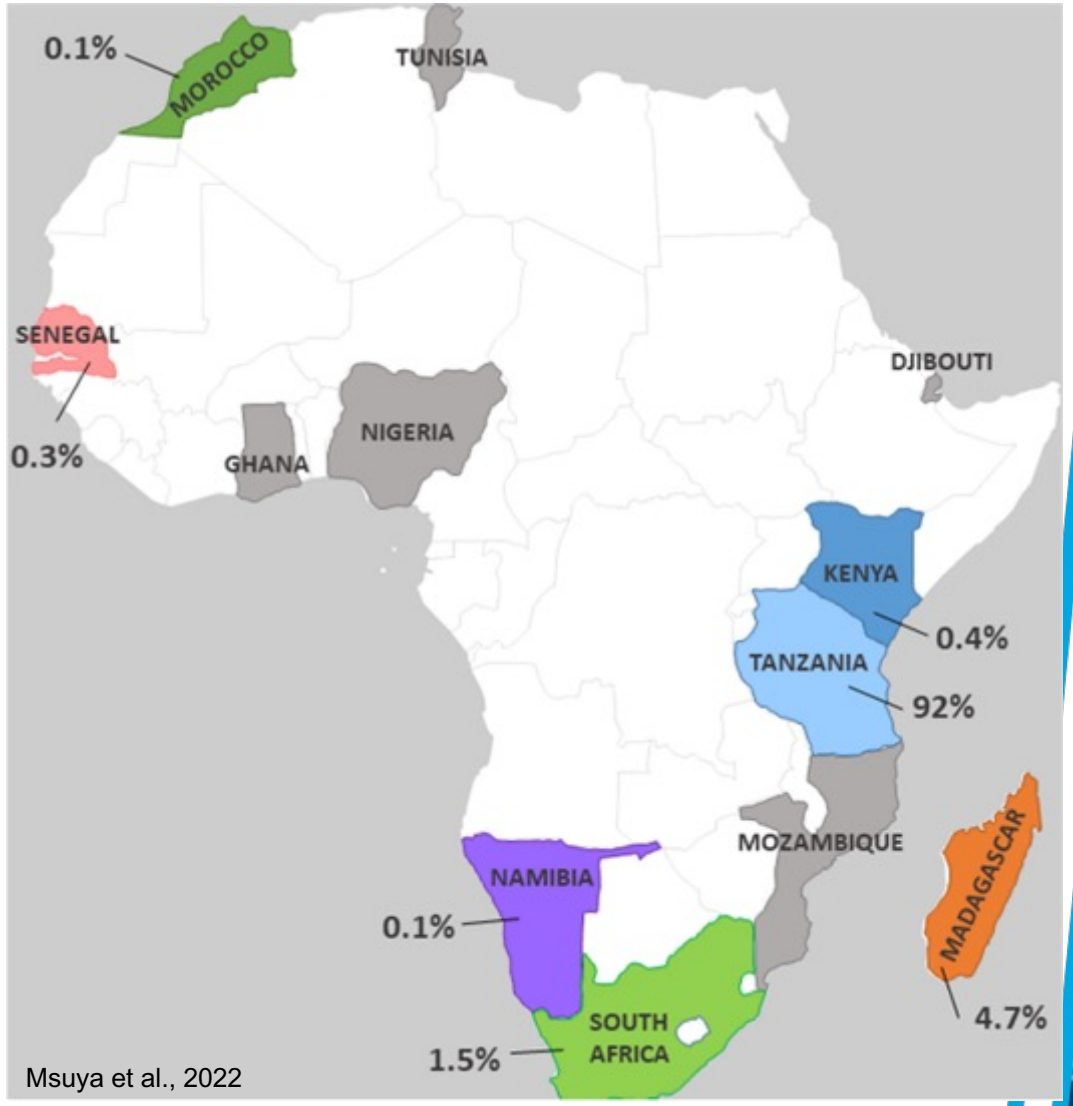
Lack of human capital

- Aging population
- Rural depopulation

Created with Datawrapper Source: FAO (2022)

Seaweed Africa

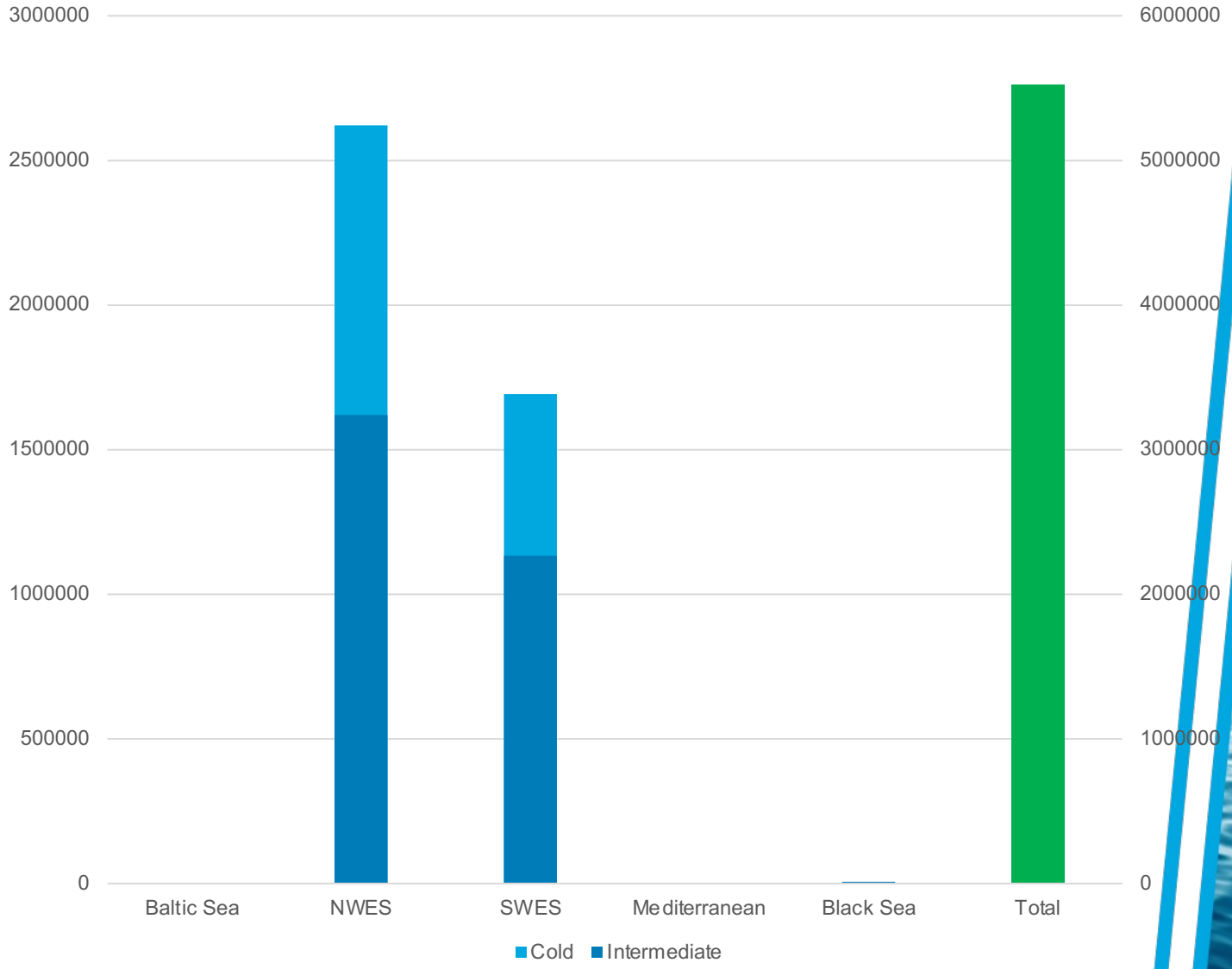
- African continent ranks second in global production led by Tanzania
- Over 55% countries bordering seas
- Diversity of climatic zones
  - northern cool,
  - warm tropical waters near equator
  - southern temperate environments
- Seaweed production peaked at 196,570 mt in 2015-18 but declined due to climate induced pest and disease outbreaks and price fluctuations
- Several countries are putting efforts to cultivate large quantities of seaweed



Msuya et al., 2022

Seaweed Europe

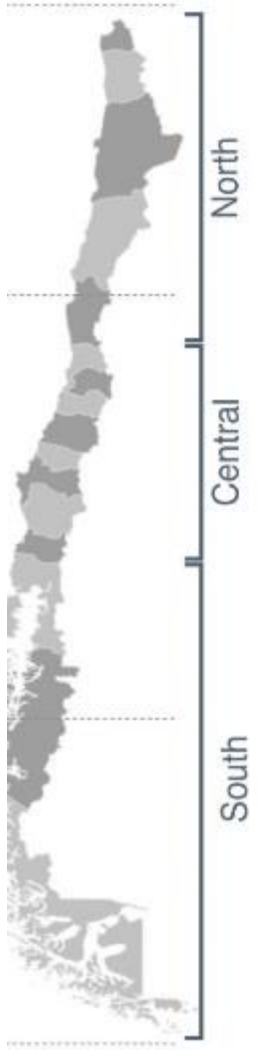
- The EC recognizes seaweed as a sustainable source of diverse ecosystems services, carbon neutrality, ecosystems restoration and products
- Large-scale industrial farming of seaweed planned
- Farming of 8 million metric tons (from current 3000 mt) annually by 2030
- Necessitates assessment of ecological impacts

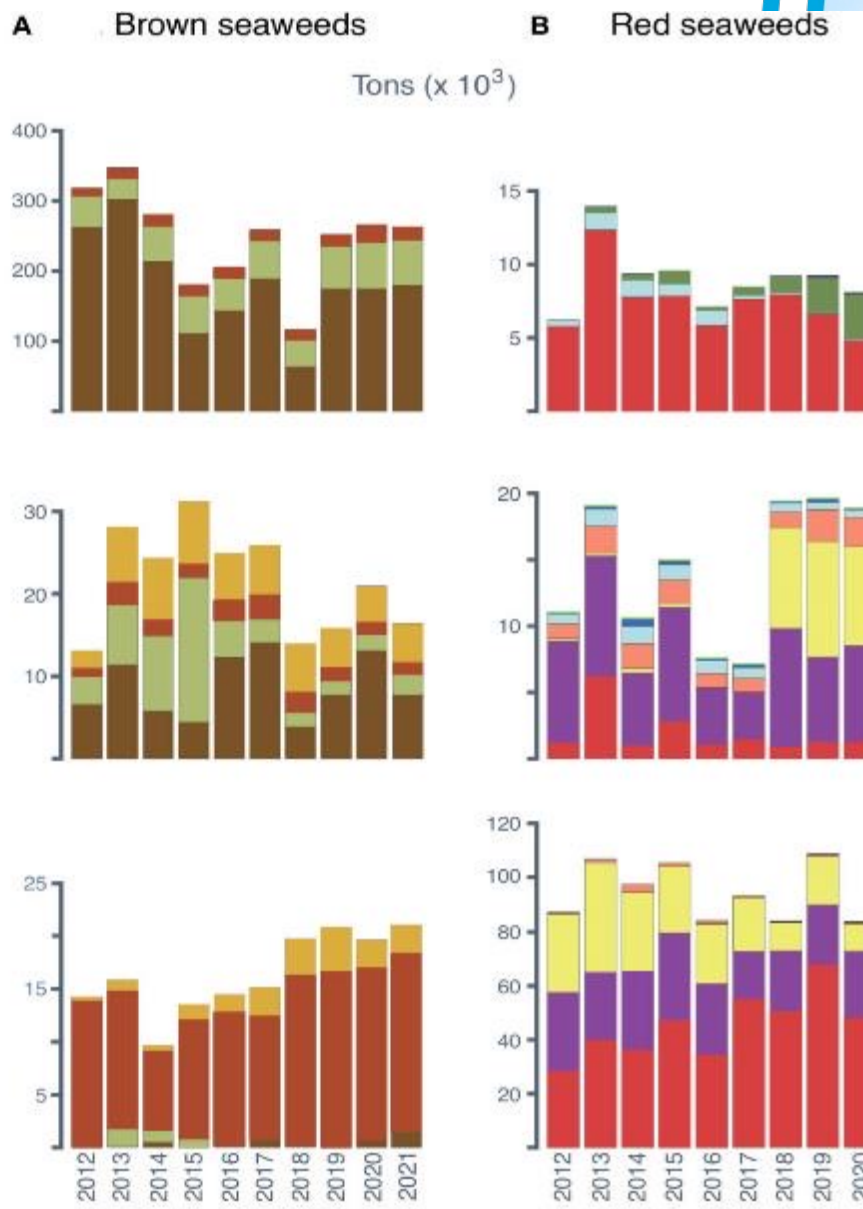


Macias et al., 2025

Seaweed Latin America

- Latin America contributed only 1.3% of world seaweed
- Chile responsible for 95% of seaweed production in the region followed by Brazil (4.68%) and Mexico (1.15%)
- However, only 4% of seaweed from aquaculture putting pressure on wild populations
- Improved seaweed harvest management measures and aquaculture needed

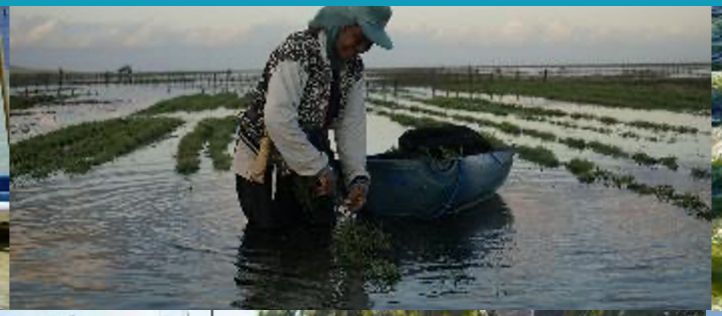




Oyarzo-Miranda et al., 2023




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

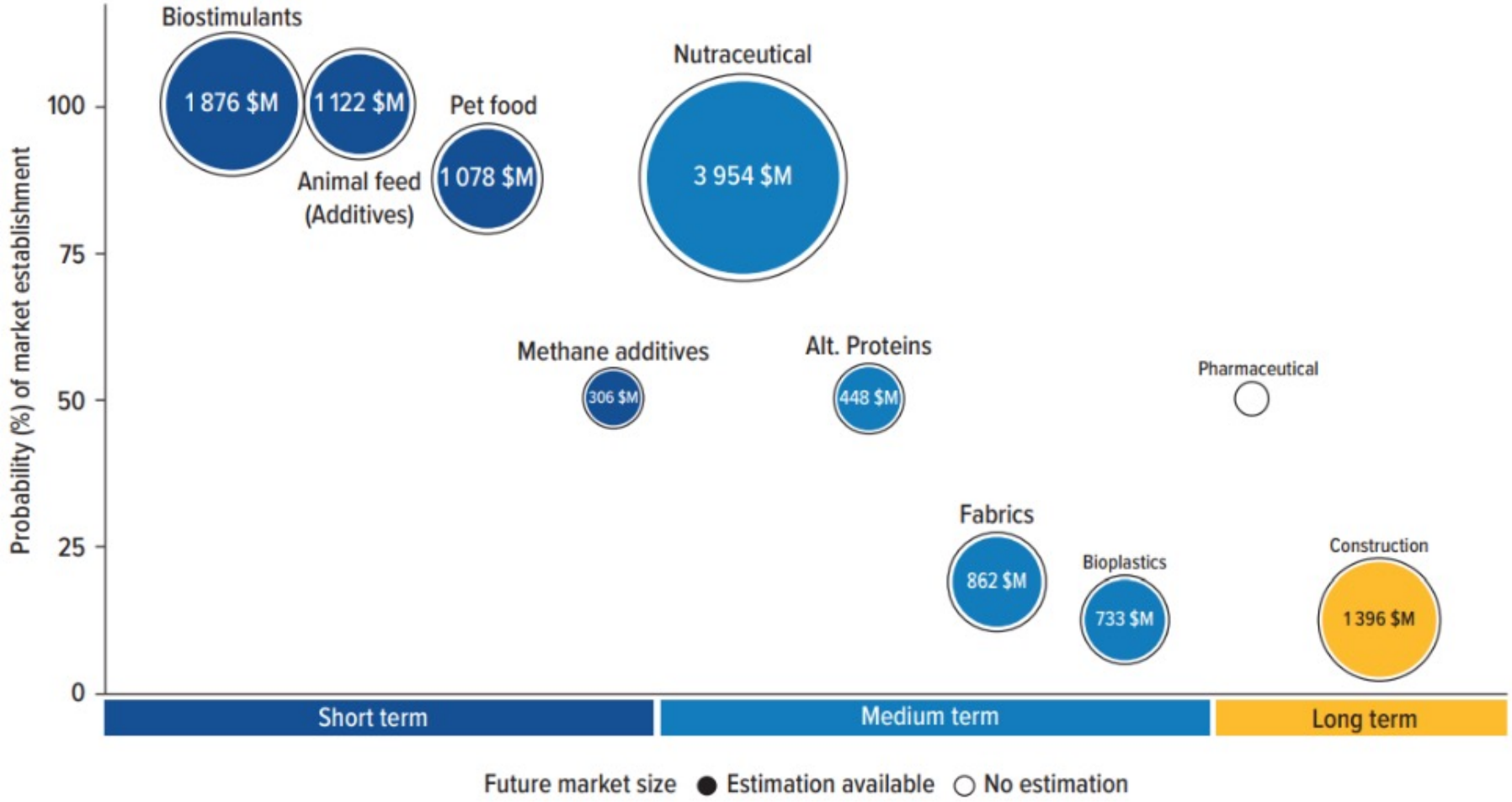




..and many more coastal communities could be growing seaweed - and benefit in numerous ways.

New and Emerging Applications

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.

Global seaweed opportunities - key takeaways

Seaweed supply:

Significant progress towards:

- Breeding programs
- Automation of farm processes
- Legislative incentives
- Access to financial services
- Capacity building
- Offshore farming

- 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

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

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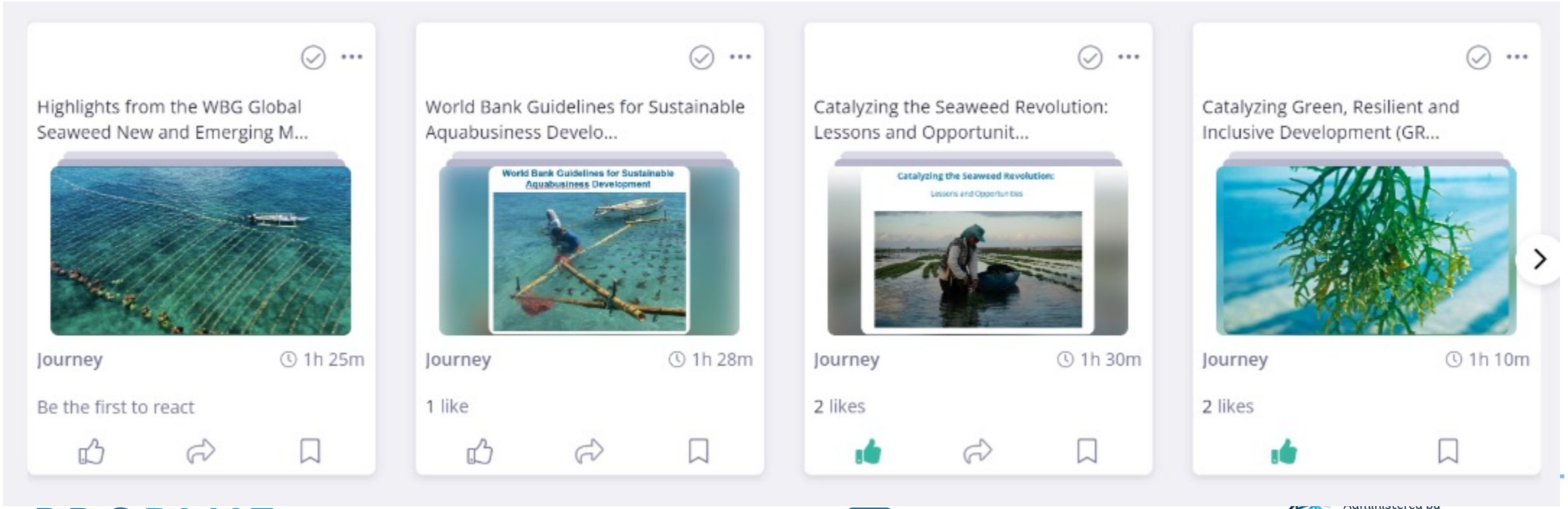

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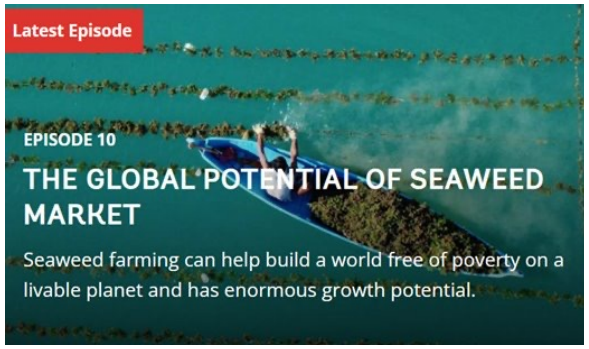
"Seaweed farming can help build a world free of poverty on a livable planet and has enormous growth potential" — The World Bank expert Harrison Karisa speaking at the #UN High-Level Political Forum 2024 side event "How ...more

Flagship e-Learning on Sustainable and Inclusive Seaweed Value Chain in New and Emerging Markets, *October 2024*



Knowledge Exchange visit to South Korea, November 2024

International Seaweed Summit, March 2025, Busan, South Korea

KWPF Korea-World Bank Partnership Facility

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World Bank growing partnerships…

Deeper engagement with Policymakers, value chain players, entrepreneurs, and farmers

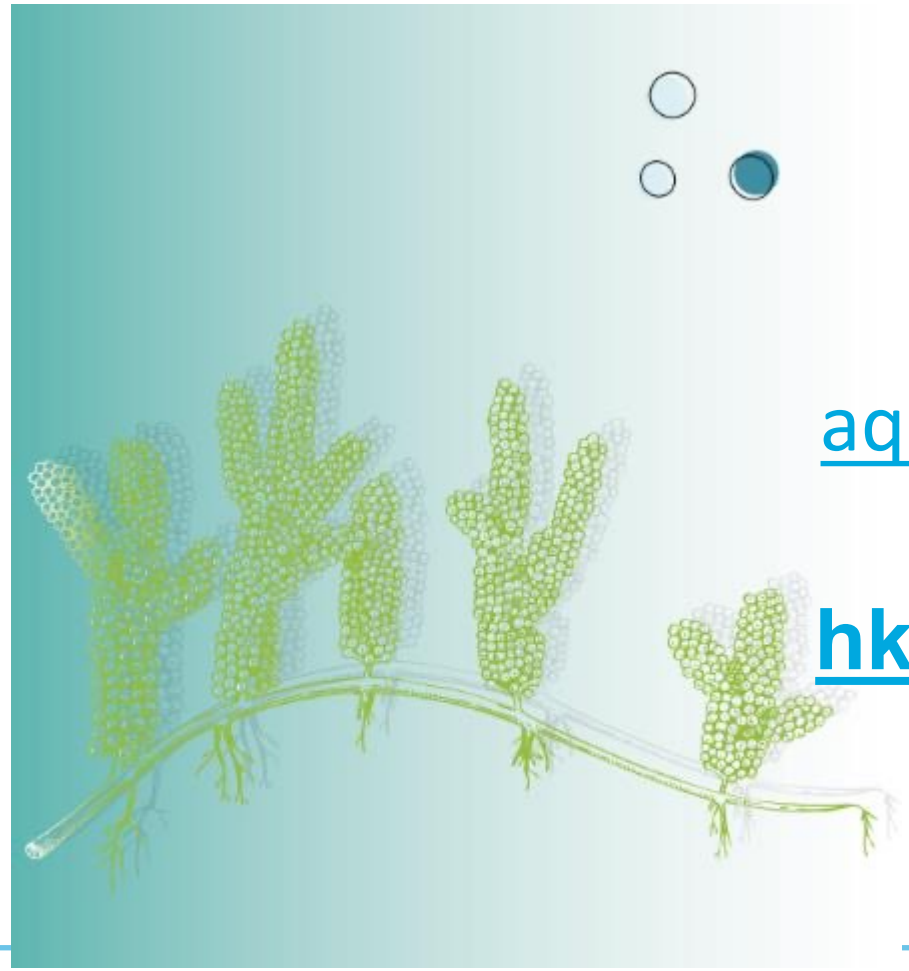
Conclusions

Growth potential in seaweed **supply faces constraints that** affect all new and emerging market applications

Increased seaweed farming needed to build **climate resilience and generate value and uplift communities**

Monetization of seaweed's ecosystem services on a livable planet requires dedicated **standards and certification and credit schemes**

A Global Consortium of Seaweed Research and Development needed to leave no one behind



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