

Seaweed Economics

Nichola J. Dyer

Senior Advisor

Partnerships, Communication & Engagement

Safe Seaweed Coalition

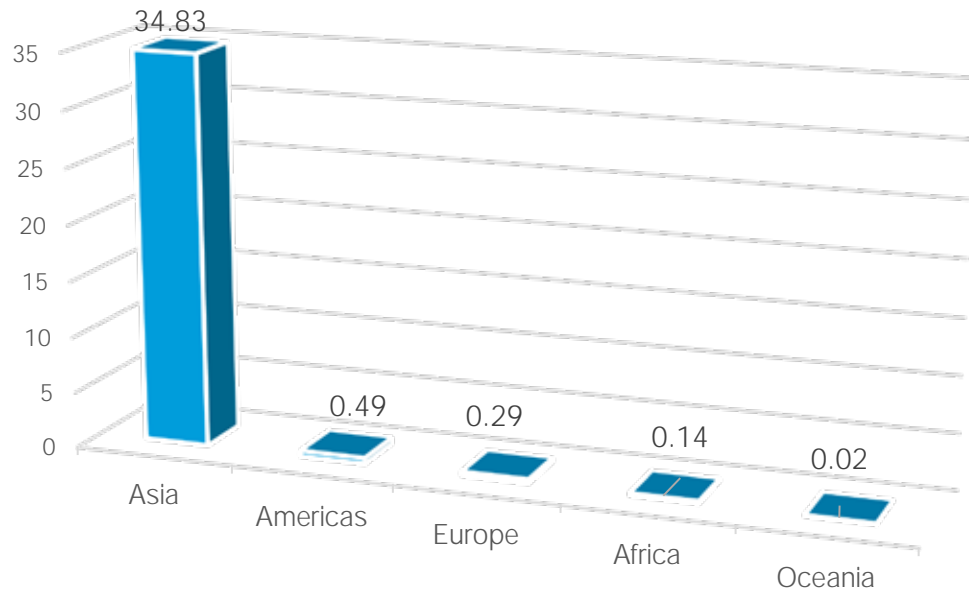


Production and market trends in the emerging seaweed market



Global Seaweed Production

Total Seaweed Production
2019 (million tonnes, wet weight)



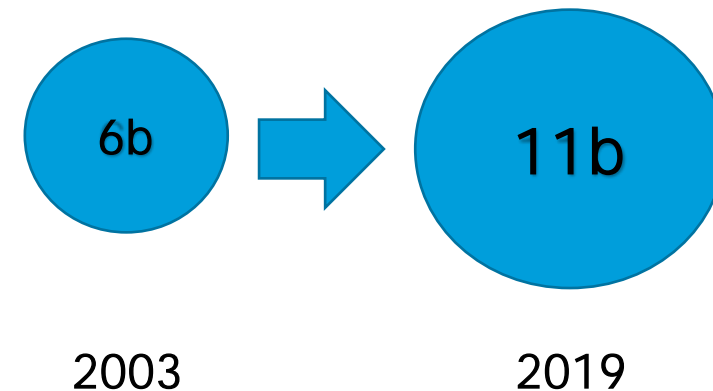
Cultivation accounted for **97%** of world seaweed production in 2019, at 34.7m t
Wild collection 1.1m t in 2019

(FAO 2021)

Cultivation trends, 1950-2019

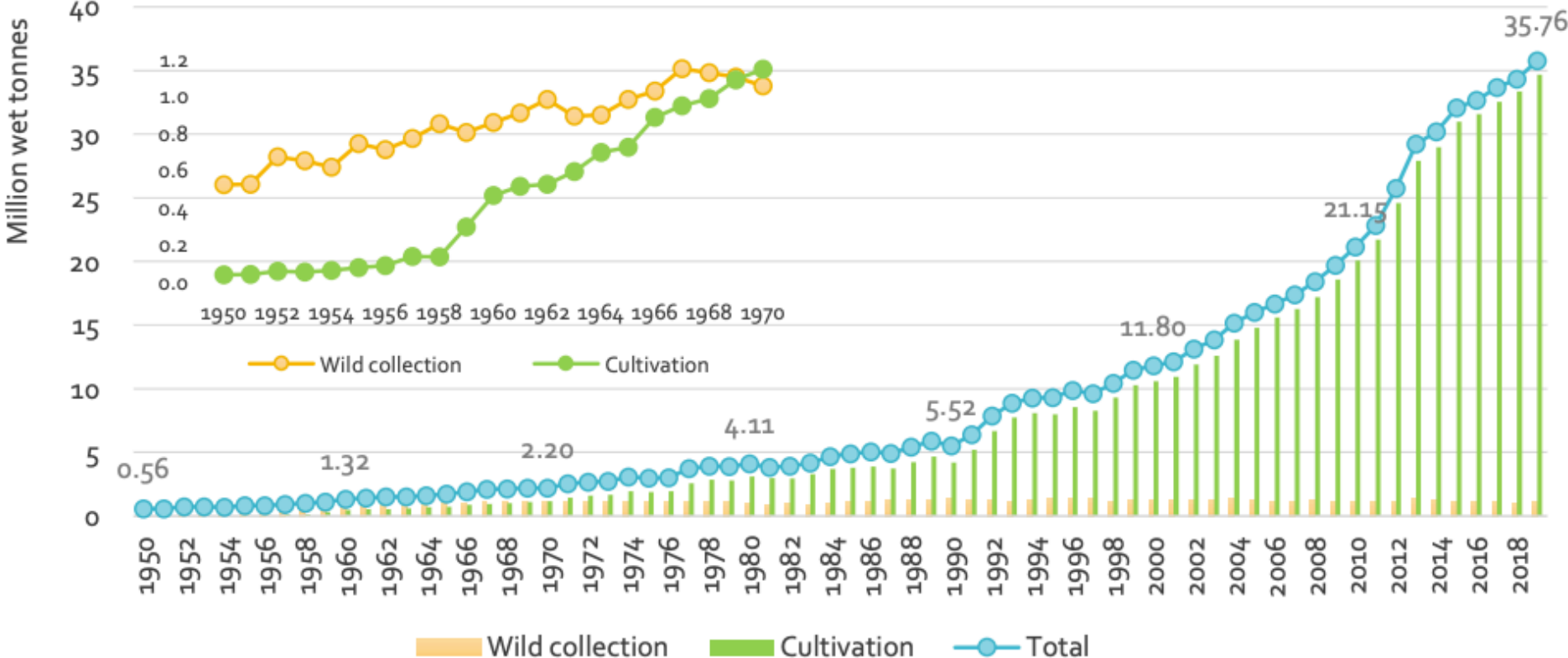
- World : 34,700 t è 34.7m t
 - Brown : 13,000 t è 16.4m t
 - Red : 21,000 t è 18.3m t
 - Green : 16,696 t (2019), declining

Industry value (USD)



Production & Market Trends: Global Production

Status and trends of global seaweed production, 1950 – 2019



Data source: FAO 2021. FAO Global Fishery and Aquaculture Production Statistics (FishStatJ); March 2021; www.fao.org/fishery/statistics/software/fishstatj/en.

Production & Market Trends: Trade

Exports 2019

Seaweeds and seaweed-based hydrocolloids		
Exporter	Million USD	Share of world (%)
1. China	578	21.79
2. Indonesia	329	12.39
3. Rep. of Korea	320	12.08
4. Philippines	252	9.52
5. Chile	209	7.87
6. Spain	145	5.48
7. France	124	4.68
8. USA	102	3.85
9. Germany	82	3.11
10. UK	78	2.93
<i>Rest of the world</i>	<i>432</i>	<i>16.30</i>
World	2 652	100.00

Imports 2019

Seaweeds and seaweed-based hydrocolloids		
Importer	Million USD	Share of world (%)
1. China	445	15.34
2. Japan	341	11.76
3. United States of America	320	11.04
4. Germany	124	4.27
5. Spain	120	4.15
6. Russian Federation	116	3.99
7. Thailand	112	3.86
8. France	86	2.97
9. United Kingdom	80	2.76
10. Denmark	67	2.32
<i>Rest of the world</i>	<i>1 088</i>	<i>37.54</i>
World	2 899	100.00

Source: FAO (2021)

Production & Market Trends: Downstream Products

- Human foods
- Hydrocolloids
- Feed
 - Abalone
 - Livestock
 - Fish
- Biofertilizers-biostimulants
- Others :
 - Cosmetics; nutraceuticals; pharmaceuticals
 - Textile fibres; biopackaging
 - Waste treatment
 - Carbon capture/sequestration
 - Bioenergy
 - ...

(FAO 2021)

Production & Market Trends

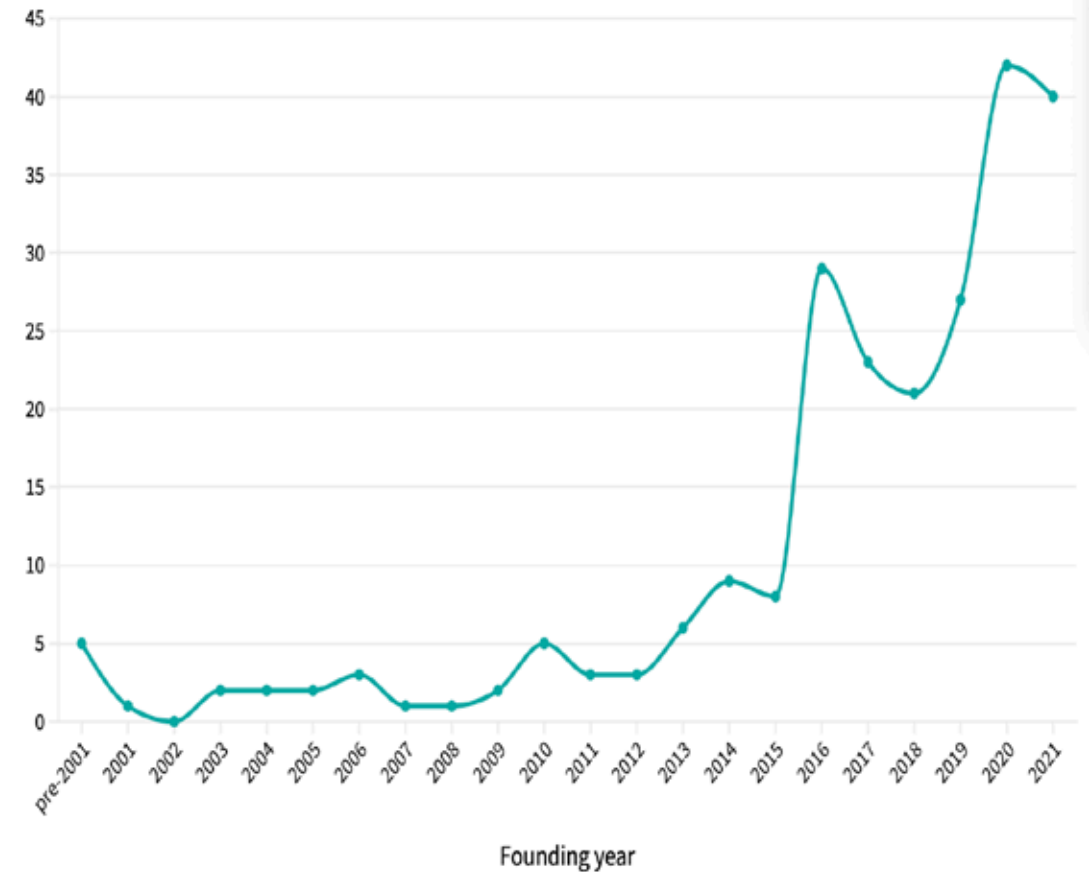
Startups (beyond Asia)

- Most are pre-revenue (research or pilot stage) rather than scale-ups (validation and scale-up stage)
- Europe so far has the most startups, followed by the US and Australia
- Over half of all startups and scale-ups are transforming seaweed biomass into higher-value products



Source : Phyconomy Report 2022

Number of startups by founding year



Zone : Europe, Americas and Oceania

Assessing potential for seaweed farming, acquiring know-how and technology



Assessing potential for seaweed farming, acquiring know-how and technology

Geography

- From an international development and poverty alleviation perspective, Panama, Brazil, India and Indonesia seem most suitable
- Identify high-priority zones for seaweed aquaculture by overlaying continental shelves, currents and tidal flow areas

Seaweed type

- Red seaweeds
 - SE Africa, Southern India, Central Indonesia, Panama, Northern Brazil and NW Australia
- Brown seaweeds
 - Southern South America, the NE and NW coasts of North America, NW Europe, Southern Australia and New Zealand.

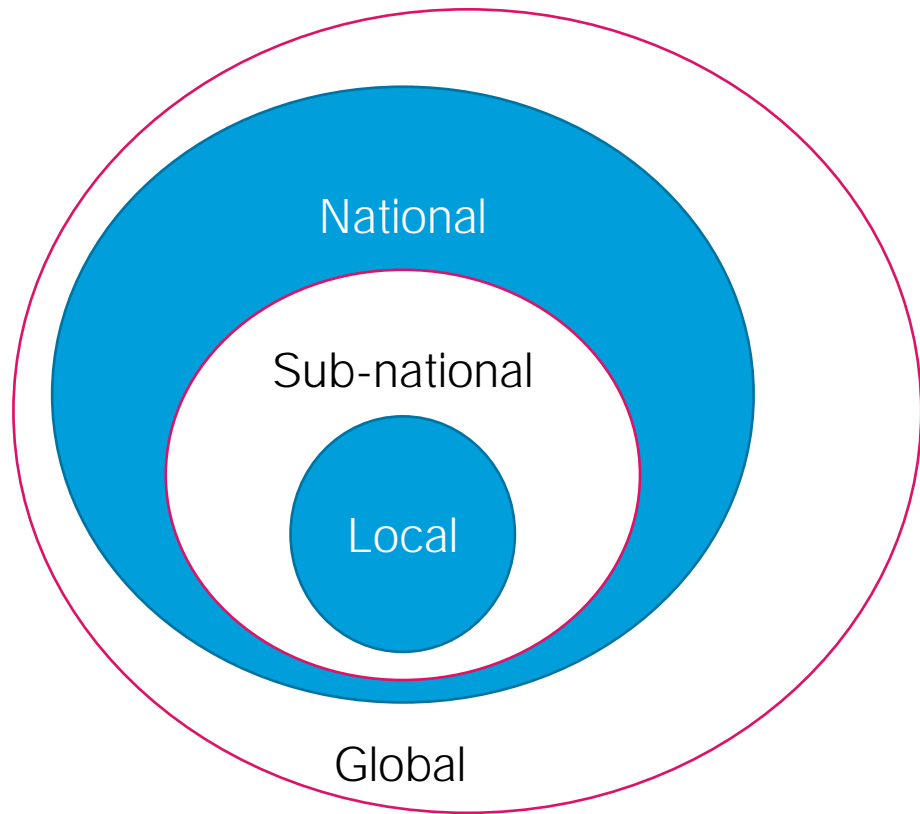
Location: Close to shore or open seas

- Different skillsets required

World Bank, 2016



Assessing potential for seaweed farming, acquiring know-how and technology



- National development planning
 - Marine Spatial Planning
 - NDCs
 - NAPs

- Building/strengthening capacity
 - Ø Stakeholder Consultations
 - Ø Partnerships

- Knowledge
 - Research
 - Knowhow

- Finance
 - Public
 - Private

Identifying trade opportunities and financing initial investments in the seaweed industry



Identifying trade opportunities, financing initial investments

Comprehensive approach

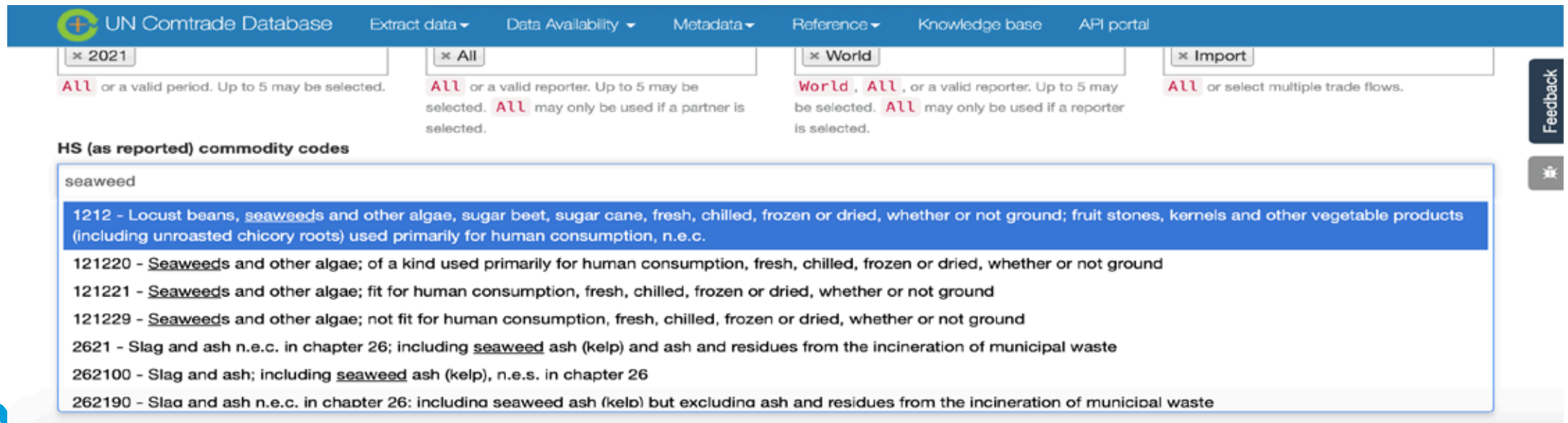
- Implement better protection and restoration of existing seaweed forests through **Marine Spatial Planning** (e.g. through Marine Protected Areas, laws on agricultural run-off from land that impedes seaweed growth, trawling through seaweed sites, etc.)
- **Create an enabling regulatory environment** to obtain licenses to operate and identify and allocate highly productive areas for seaweed cultivation in Marine Spatial Planning nearshore
- **Increase investment** and streamline regulations including for downstream seaweed-based products
 - Increase public investment into seaweed related research, particularly on its interaction with ocean ecosystems

Identifying trade opportunities, financing initial investments

- Monitor possible ecosystem effects in the ocean
 - Science-based risk assessment
- Public communication to build social acceptance, particularly among coastal communities
- International cooperation
 - Majority of cultivation experience is in Asia, while most initiatives to use seaweed for climate mitigation are in the Global North
- Accreditation of seaweed as a climate solution and source of blue carbon
- Improve regulation and governance
 - Reduce threats and better protect natural seaweed forests
 - Streamline regulation and permitting to facilitate a network of nearshore farms
 - Facilitate field trials to determine the full range of impacts of seaweed carbon sinking storage in the deep ocean
 - Agree on global policies and investment to support innovation for offshore cultivation

Identifying trade opportunities, financing initial investments

- Designate specific public sector institutions for oversight and support
- Measure seaweed production and trade explicitly in system of national accounts



The screenshot displays the UN Comtrade Database interface. At the top, there is a navigation bar with the following elements: UN Comtrade Database logo, 'Extract data' dropdown, 'Data Availability' dropdown, 'Metadata' dropdown, 'Reference' dropdown, 'Knowledge base', and 'API portal'. Below the navigation bar, there are four filter boxes: '2021', 'All', 'World', and 'Import'. Each filter box has a small 'x' icon and a text description below it. The '2021' filter description is 'All or a valid period. Up to 5 may be selected.' The 'All' filter description is 'All or a valid reporter. Up to 5 may be selected. All may only be used if a partner is selected.' The 'World' filter description is 'World, All, or a valid reporter. Up to 5 may be selected. All may only be used if a reporter is selected.' The 'Import' filter description is 'All or select multiple trade flows.' Below the filters, there is a section titled 'HS (as reported) commodity codes'. A search box contains the text 'seaweed'. Below the search box, a list of HS codes is displayed, with the first code highlighted in blue. The highlighted code is '1212 - Locust beans, seaweeds and other algae, sugar beet, sugar cane, fresh, chilled, frozen or dried, whether or not ground; fruit stones, kernels and other vegetable products (including unroasted chicory roots) used primarily for human consumption, n.e.c.' The other codes in the list are: '121220 - Seaweeds and other algae; of a kind used primarily for human consumption, fresh, chilled, frozen or dried, whether or not ground', '121221 - Seaweeds and other algae; fit for human consumption, fresh, chilled, frozen or dried, whether or not ground', '121229 - Seaweeds and other algae; not fit for human consumption, fresh, chilled, frozen or dried, whether or not ground', '2621 - Slag and ash n.e.c. in chapter 26; including seaweed ash (kelp) and ash and residues from the incineration of municipal waste', '262100 - Slag and ash; including seaweed ash (kelp), n.e.s. in chapter 26', and '262190 - Slag and ash n.e.c. in chapter 26; including seaweed ash (kelp) but excluding ash and residues from the incineration of municipal waste'. On the right side of the interface, there is a vertical 'Feedback' button and a small icon.

Key entry factors and barriers in developing seaweed value chains in developing countries



Key Entry Factors / Barriers to Entry

- Highly **differentiated market** – East Asia / rest of world
- **Fragmentation** / lack of **cooperation and coordination**
- Lack of **harmonized standards**
 - Concerns about safety – operational, environmental, consumer
- **Demand & supply side**
 - Lack of demand outside of established markets for Asian production
 - Lack of product knowledge
 - Cost structure for new entrants – scale of production
- **Opportunity** for developing countries to produce and capture value-added through processing
 - Women's involvement & economic empowerment

Conclusions & Recommendations



Conclusions

- Seaweed offers many **sustainability solutions**
 - Tackling ocean warming and acidification, preserving & restoring marine ecosystems
 - Sequestering carbon, potentially reducing methane emissions
 - Supporting coastal communities' livelihoods and boosting resilience
 - Improving nutrition and food security outcomes
- Increasingly seen as a **blue food** that can significantly advance the sustainable shift of food systems

Ø It is time for the seaweed sector to play its full role in the implementation of the global Ocean Agenda

Recommendations

- Ø Incorporate seaweed into national development planning
 - ü Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs)
 - ü Expand seaweed cultivation, restoration of degraded kelp forests, establishment of new kelp forests
 - ü National, subnational, local levels

- Ø Harmonize standards globally

- Ø For more, visit [UNGC Ocean Stewardship Coalition, Seaweed as a Nature-Based Climate Solution: Vision Statement](#)



Thank you!



#OceansForum2022





**SUSTAINABLE
DEVELOPMENT
GOALS**

