

OFFICIAL FEEDBACK FORM

DIALOGUE DATE	Wednesday, 28 April 2021 12:00 GMT -04:00
DIALOGUE TITLE	Powering the Seaweed Revolution for Transformational Change in our Food System
CONVENED BY	Vincent Doumeizel / Senior Advisor Ocean / United Nations Global Compact
DIALOGUE EVENT PAGE	https://summitdialogues.org/dialogue/7002/
DIALOGUE TYPE	Independent
GEOGRAPHICAL FOCUS	No borders

The outcomes from a Food Systems Summit Dialogue will be of use in developing the pathway to sustainable food systems within the locality in which they take place. They will be a valuable contribution to the national pathways and also of interest to the different workstreams preparing for the Summit: the Action Tracks, Scientific Groups and Champions as well as for other Dialogues.

1. PARTICIPATION

TOTAL NUMBER OF PARTICIPANTS

118

PARTICIPATION BY AGE RANGE

0 0-18

5 19-30

36 31-50

25 51-65

6 66-80

0 80+

PARTICIPATION BY GENDER

39 Male

29 Female

1 Prefer not to say or Other

NUMBER OF PARTICIPANTS IN EACH SECTOR

1 Agriculture/crops

18 Fish and aquaculture

Livestock

Agro-forestry

16 Environment and ecology

1 Trade and commerce

Education

1 Communication

1 Food processing

Food retail, markets

12 Food industry

Financial Services

1 Health care

Nutrition

1 National or local government

Utilities

Industrial

17 Other

NUMBER OF PARTICIPANTS FROM EACH STAKEHOLDER GROUP

6 Small/medium enterprise/artisan

1 Large national business

1 Multi-national corporation

4 Small-scale farmer

Medium-scale farmer

1 Large-scale farmer

1 Local Non-Governmental Organization

9 International Non-Governmental Organization

Indigenous People

12 Science and academia

Workers and trade union

Member of Parliament

Local authority

3 Government and national institution

Regional economic community

9 United Nations

3 International financial institution

9 Private Foundation / Partnership / Alliance

3 Consumer group

7 Other

2. PRINCIPLES OF ENGAGEMENT

HOW DID YOU ORGANIZE THE DIALOGUE SO THAT THE PRINCIPLES WERE INCORPORATED, REINFORCED AND ENHANCED?

All 7 Principles of Engagement were used to design and implement this dialogue. They were largely incorporated into the structure of the dialogue itself. The topics that were selected represent the complexity of our food system and a commitment to the systemic approach that the UNFSS emphasizes. The dialogue was structured to allow participants to understand the landscape of the seaweed industry and then identify actions that can build it into a global but socially inclusive market that uplifts every stakeholder along the value chain. These principles were reinforced by our moderator, keynote speakers, and facilitators. Our moderator and facilitators created an inclusive space that lent itself to democratic debate and keynote speakers reiterated the importance of global food systems thinking and seaweed's application.

HOW DID YOUR DIALOGUE REFLECT SPECIFIC ASPECTS OF THE PRINCIPLES?

- Act with Urgency: Participants were asked to envision a future where seaweed has been fully integrated into our food system and identify short-term actions that should be taken in the next 2-3 years. Commit to the Summit: Important UNFSS stakeholders were included as keynote speakers, such as Dr. Martin Frick and Daniel Gustafson. These speakers reiterated the importance of holistic thinking and the ways seaweed can contribute to UNFSS goals. - Be Respectful: Topics such as social inclusion were chosen based on respect for marginalized communities. Facilitators maintained confidentiality and created an inclusive space. - Recognize Complexity: The diversity of topics reflected complexity and systems thinking. Topics were: Seaweed's impact on the environment; social inclusion; nutrition and diet; economic development; innovation and financing innovation; seaweed on the farm; indigenous knowledge and culture; standards, policies, and institutions; value chain; production and scaling up; building a responsible and ethical seaweed industry; and production and consumption in Africa. - Embrace Multi-Stakeholder Inclusivity: Careful attention was paid to the invitee list and the demographic breakdowns in each breakout room. Small-holder farmers and women leaders were prominent voices. - Complement the Work of Others: This Dialogue was original in that it brought food system and seaweed stakeholders together to discuss and engage substantively. By its very nature it complemented the work of other actors in this space. - Build Trust: By first introducing food system stakeholders to seaweed stakeholders, the Dialogue provided an opportunity to build trust by exchanging information and answering questions. The second round of breakout rooms allowed for working together on a task, envisioning the future with seaweed fully integrated into the food system. Chatham House Rules guided breakout sessions and these were not recorded.

DO YOU HAVE ADVICE FOR OTHER DIALOGUE CONVENORS ABOUT APPRECIATING THE PRINCIPLES OF ENGAGEMENT?

- Train facilitators as early as possible so that they have a nuanced understanding of UNFSS goals and Principles of Engagement and so that they are comfortable using the prompting questions supplied. - Selecting and assigning the invitees to the discussion topics play an important role in engagement. For example, we were mindful of keeping the gender and industry ratios in the breakout rooms even, so that discussions would not be dominated by one group. Having women as facilitators can also help foster inclusivity. - Note-takers are crucial to the recording of the discussions. Having more than one note-taker in each room, with one focused on verbatim note-taking and the other focused specifically on overarching messages to report out, can help to capture the full conversation. - Not being attached to the outcome of the discussion allows for the participants in a room to feel more at ease expressing their views. - Allow for rich conversations in the chat--they can be taken to the rooms as well. - Structure the dialogue as a dialogue--allow people to have rich conversations. - embrace the breakout room format. - Source help outside of your organization, collaborate, and seek opportunities for partnership. Working with graduate students significantly enhanced the quality of this Dialogue.

3. METHOD

The outcomes of a Dialogue are influenced by the method that is used.

DID YOU USE THE SAME METHOD AS RECOMMENDED BY THE CONVENORS REFERENCE MANUAL?

Yes

No

4. DIALOGUE FOCUS & OUTCOMES

MAJOR FOCUS

This Dialogue had three aims:

1. Introduce seaweed to a variety of food system actors
2. Explore its potential to help address global food system and development challenges, along with barriers to that potential.
3. Visualize a food system in 2050 with seaweed fully integrated.

This Dialogue was about how the food system can harness the power of seaweed to contribute to the sustainability of our food system, now and in the future. Participants, drawn from both seaweed and food system stakeholders, explored how seaweed can be a new foundation of ecosystem restoration through aquaculture and equitable blue food systems. The Dialogue highlighted the untapped potential of seaweed to contribute, through regenerative aquaculture, to restoring ocean health while helping ease hunger, malnutrition, and other global challenges. It also brought to light obstacles to achieving that vision.

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- ✓ Action Track 2: Shift to sustainable consumption patterns
- ✓ Action Track 3: Boost nature-positive production
- ✓ Action Track 4: Advance equitable livelihoods
- ✓ Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- ✓ Finance
- ✓ Innovation
- ✓ Human rights
- ✓ Women & Youth Empowerment
- ✓ Policy
- ✓ Data & Evidence
- ✓ Governance
- ✓ Trade-offs
- ✓ Environment and Climate

MAIN FINDINGS

This Dialogue was conducted using a mix of plenary discussions and breakout rooms. There were two rounds of breakout discussions.

In the first round, participants discussed the current state of play of seaweed and the food system. Breakout rooms covered social inclusion, environmental impact, nutrition, economic development, innovation, agricultural development, indigenous knowledge and culture, policy and regulations, and the value chain. Among the many rich themes that emerged from this first round of discussions, a few highlights were:

- the potential of seaweed on multiple fronts, including as a feed source for fish and livestock and as a carbon sequestration vehicle;
- the need for international standards and regulations, and more generally for global collaboration, especially given that seaweed often does not have a clear institutional “home”;
- the importance of ensuring secure tenure for smallholders;
- creating a platform for sharing best practices among producers;
- exploring integrating seaweed into children’s diets;
- seaweed and the economic empowerment of women and youth;
- the lack of financing for seaweed enterprises and a need for more investment in small scale farmers and advocacy along the value chain; and
- the key role of stakeholders like chefs in communicating broadly about seaweed.

In the second round, participants visualized themselves in 2050 and envisioned the pathway to achieving a future food system with seaweed fully integrated. Key points emerging from those sessions:

- Production and scaling up: Better capture the ecosystem services seaweed provides; manage tensions between scaling up and challenges such as environmental and food safety; and involve producers more equitably.
- Financing innovation: Rebrand and repackage seaweed projects to better appeal to blue investors; protect the intellectual property of coastal communities; better understand market signs and production costs; and collaborate across stakeholders.
- Nutrition and diet: Recognize its nutritional value and its potential as a fortifying agent, acknowledging the cultural dimensions of taste and flavor; Asian youth and chefs could be key communicators.
- Building the industry responsibly and ethically: Develop globally harmonized health and safety standards, with farmers at the heart of plans; invest inclusively to assure tenure rights and ownership protections for producers, especially family farmers and co-ops, so they have secure access to markets and value chains; focus on women, indigenous people, and youth; and set up training and knowledge hubs. European stakeholders emphasized regulation of larger companies and space for smaller farmers to collaborate and have negotiating power.
- Production and consumption in Africa: A collaborative, demand-driven, farmer/producer-oriented approach is called for, that identifies the continent’s assets – including a long coastline and relatively cheap labor – together with better communication of the science and of the social benefits of seaweed, including employment opportunities for women and improved nutrition for all.

These outcomes are discussed in greater depth below. Since the feedback report limits the number of outcome topics to ten, attached is a document that covers the additional four topics discussed during this Dialogue.

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- ✓ Action Track 2: Shift to sustainable consumption patterns
- ✓ Action Track 3: Boost nature-positive production
- ✓ Action Track 4: Advance equitable livelihoods
- ✓ Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- ✓ Finance
- ✓ Innovation
- ✓ Human rights
- ✓ Women & Youth Empowerment
- ✓ Policy
- ✓ Data & Evidence
- ✓ Governance
- ✓ Trade-offs
- ✓ Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 1/10

Round 1: Environment

Key Takeaways

- The need for more data and evidence to better understand the risks of mass cultivation for carbon sequestration
- The importance of the role of government and policy
- Seaweed as a climate friendly alternative ruminant livestock feed source

In this session, participants discussed the need to be aware of the risks involved in scaling up production and the importance of data, the role of government policy, and potential of seaweed as a livestock feed. They shared their unique perspectives and various suggestions for ways to manage risk, areas of the world to look towards for examples, and next steps to take in regards to seaweed and the environment.

The participants agreed that there is a need to better understand the potential risks involved in scaling up the production of seaweed to sequester large quantities of carbon. Questions such as, "what is the planet's production capacity for seaweed?", "how much seaweed is being produced currently?", and "what is the sustainable limit - to avoid over harvesting and bringing harm to existing ecosystems?" were settled on as the most important questions to be answered before we can take big steps toward large-scale seaweed production for climate resilience. In order to answer these questions, all agreed that the currently disjointed seaweed industry and scientific communities needed to come together and pool their research. The role of governments was also an important topic in this breakout room, one which led to some divergence in opinion. Some participants felt that too much "red tape" was stifling the seaweed industry and making it unnecessarily hard for small producers to compete. They felt that unfair regulations in the industry resulted in the success of only big businesses, leaving little room for innovation or scientific discoveries. Others felt that the issue of government regulations and policies was a delicate one with much complexity. While they agreed that too many harsh regulations could stifle a fairly new industry, they felt that some regulation was needed, for example to avoid possible environmental harm on ocean ecosystems. They cited cautionary tales from other aquaculture industries and shared lessons learned, and ultimately circled back to the need for more data to overcome fear and uncertainty in the industry.

The participants also discussed seaweed as a potential feed source for livestock, one that could possibly reduce methane emissions. All agreed that this was a fascinating and potentially win-win usage for seaweed globally. Not only does just a small amount of seaweed, particularly asparagopsis, significantly cut methane emissions from ruminant livestock but some participants pointed out that the production of seaweed does not require fresh water or fertilizer, compared to traditional feed sources. Therefore, not only would seaweed cut down on GHG emissions, but it would also reduce the use of resources and harmful run-off if widely used in the livestock industry.

The session concluded with all of the participants agreeing that seaweed has many uses that make it a potentially powerful tool in climate mitigation. The only obstacle to this in their view was the need to overcome uncertainty in the industry with data and evidence. To accomplish this, the participants agreed the Western world needed to look to Asia as an example of how to cultivate seaweed successfully and learn from those who have been involved in the industry for decades.

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- Action Track 2: Shift to sustainable consumption patterns
- ✓ Action Track 3: Boost nature-positive production
- Action Track 4: Advance equitable livelihoods
- ✓ Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- Finance
- Innovation
- Human rights
- Women & Youth Empowerment
- Policy
- Data & Evidence
- Governance
- Trade-offs
- Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 2/10

Round 1: Social Inclusion

Key Takeaways:

- Empower women
- Diversify livelihood opportunities for coastal communities
- Increase support for smallholder farms, including to help balance power relationships
- Foster stronger institutional support.

Participants shared their experiences with the seaweed industry and the extent it provides livelihood opportunities to coastal communities and marginalized groups. They then offered suggestions to make the industry more inclusive.

The discussion on women's empowerment focused on the need for gender-specific training and protective gear. For example, women in Tanzania are pushed to farm seaweed in ever deeper waters due to ocean warming, leading to a number of unsafe conditions. In the Tanzanian context, women are not taught to swim so additional training and gear is needed to ensure their safety. Local governments and multilateral institutions must provide these resources to create a socially inclusive industry.

The lack of investment in smallholder farms is a primary challenge to social inclusion. A few participants noted that institutions in the Global North are uncomfortable working at the local level. Joint marketing and direct investments can go a long way in supporting small scale farmers. This would bring them closer to consumers in the value chain, promote technical innovation, and create a market that can sustain these farmers and their families. Participants agreed that institutions need to understand how seaweed benefits the families and small operations who produce it. Political will is an important component to ensure advocacy along the entirety of the value chain. This requires the buy-in of policy makers.

Diversifying livelihood opportunities for coastal communities and bringing them into the global market requires accountability and knowledge transfer. A number of participants indicated that large scale seaweed farms hold the power despite an industry that consists primarily of small scale operations. These farms often resort to "ocean grabbing" which lowers the price of seaweed and makes it difficult for coastal communities to compete. All the participants agreed that a knowledge sharing platform amongst small scale farmers is necessary. This would allow them to share best practices and understand the value chain. Lastly, a global market for seaweed cannot be achieved without changing consumer preferences. It is important to invest in marketing that increases demand for seaweed where it is not normally part of the diet.

The seaweed industry is on the precipice of expansion and it is necessary to set the tone now in order to ensure social inclusion. Multilateral institutions and local governments must work closely with smallholder farmers to provide necessary resources and investments. These public-private partnerships will be the foundation for global standards and producer rights as the industry grows.

ACTION TRACKS

<input type="checkbox"/>	Action Track 1: Ensure access to safe and nutritious food for all
<input type="checkbox"/>	Action Track 2: Shift to sustainable consumption patterns
<input type="checkbox"/>	Action Track 3: Boost nature-positive production
<input checked="" type="checkbox"/>	Action Track 4: Advance equitable livelihoods
<input type="checkbox"/>	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

<input checked="" type="checkbox"/>	Finance	<input checked="" type="checkbox"/>	Policy
<input type="checkbox"/>	Innovation	<input checked="" type="checkbox"/>	Data & Evidence
<input checked="" type="checkbox"/>	Human rights	<input checked="" type="checkbox"/>	Governance
<input checked="" type="checkbox"/>	Women & Youth Empowerment	<input type="checkbox"/>	Trade-offs
<input type="checkbox"/>		<input type="checkbox"/>	Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 3/10

Round 1: Nutrition

Key Takeaways:

- Seaweed's many nutritional benefits
- Opportunities to integrate seaweed as a sustainable and nutritious food globally
- Barriers to introducing seaweed into Western diets

Participants brought experience in innovation, research, food security, cooking and consumption, and policy-making. Combining their unique perspectives, they were tasked with discussing the nutritional benefits of seaweed and how to leverage those benefits to more fully integrate seaweed into the food system.

The participants considered the nutritional benefits and opportunities for seaweed as a tool to fight global hunger and malnutrition. Seaweed is a source of natural iodine, B12, protein, iron, and other micronutrients. One participant mentioned that the naturally occurring iodine in seaweed is a transformative mineral, but there is a need to educate the market to debunk the misconception that the danger of overdosing on iodine outweighs the gains.

Participants stressed that the opportunities for seaweed as a sustainable and nutritious food and alternative protein, the participants stressed. It can be substituted for harmful ingredients and chemicals that are used in processed food since it can be used as a stabilizer and thickening agent. By scaling up seaweed production for nutritious consumption, the industry also creates jobs for women and smallholder farmers which can be beneficial in diversifying income sources.

The group also focused on barriers to integrating seaweed into Western diets and consumption patterns, as well as places in the eastern hemisphere where seaweed is not typically consumed, but could be a beneficial tool to fight malnutrition.

Participants came up with three concrete suggestions to break down these barriers: (i) public education, (ii) marketing and media that highlight the nutritional benefits of seaweed, and (iii) creating a centralized institution that can implement an international coordinated effort to increase knowledge and demand. One participant talked about how current economic forces push products like soy since there is a large market for meat alternatives now. They then articulated how if done responsibly, products created from certain seaweed species could enter the meat alternative market and provide key micronutrients, similar to those gained from eating meat, like Vitamin B12 and protein.

This breakout group concluded their discussion on seaweed and nutrition by brainstorming next steps to follow-up on efforts to more fully integrate seaweed into diets. Participants suggested the following ideas: increase institutional financing to increase downstream demand, improve the messaging around the nutritional benefits of seaweed through media and education, incorporate seaweed into processed foods and culturally specific diets, create school lunch programs that test school children's nutrition and look at gaps that seaweed could fill, and lastly eat more seaweed!

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- ✓ Action Track 2: Shift to sustainable consumption patterns
- Action Track 3: Boost nature-positive production
- Action Track 4: Advance equitable livelihoods
- Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- Finance
- ✓ Innovation
- ✓ Human rights
- ✓ Women & Youth Empowerment
- Policy
- Data & Evidence
- Governance
- Trade-offs
- Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 4/10

Round 1: Economic Development

Key Takeaways:

- Integrate seaweed into the food system from early childhood
- Support local seaweed products, encourage variety of seaweed consumption and use at restaurants
- Governments need to pay attention to regulations and innovation of seaweed industry

At the beginning of the discussion, many participants expressed their thoughts on how we can better integrate seaweed into the food system. Many said that modernization of seaweed is important; for example, it should be integrated as part of normal diets from early childhood. It is a common food in East Asia, but not as much in other parts of the world. There is a unique culture around the sushi industry, where seaweed is in common use, but other potential seaweed products would also support seaweed consumption. Seaweed snacks are one example of such a product. In addition to encouraging more consumption, there is a need to focus on supply-side challenges. It is important to understand if there is enough supply and labor to fuel our desired level of consumption in the food system.

Participants talked about the unlimited potential of seaweed including as animal feed, a contributor to regenerating ocean ecosystems, food, and a sustainable alternative to plastic. One concern is that seaweed's price may not be accessible to a full range of consumers, therefore participants discussed possibilities of fair price ranges for different types of seaweed, which would allow for more restaurants to use it as a central ingredient within their menus. In order for smallholder farmers to gain a fair profit, they have to triple their current price and have to develop different varieties of seaweed products. There are quality differences between local (North American) and Japanese seaweed. "If you want to support local, local is good, but if you want the best, restaurants go for the Japanese seaweed," as one of the participants told the group. Participants expressed concern that it is hard to change habits, so it is going to be hard to bring about large scale change. The group concluded by discussing the need for the government to pay attention to regulation and innovation of the seaweed industry.

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- ✓ Action Track 2: Shift to sustainable consumption patterns
- Action Track 3: Boost nature-positive production
- ✓ Action Track 4: Advance equitable livelihoods
- Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- ✓ Finance
- Innovation
- Human rights
- Women & Youth Empowerment
- ✓ Policy
- Data & Evidence
- ✓ Governance
- Trade-offs
- ✓ Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 5/10

Round 1: Innovations

Key Takeaways:

- The need for the diversification of seaweed's usages
- How to popularize seaweed as a food source to a Western consumer base
- A lack of seaweed-centric institutions results in lack of collaboration, research, and funding

The participants all agreed that a primary issue the seaweed industry faces is under exploration of the various ways in which seaweed can be used in the food industry. In order to overcome this challenge, participants suggested the creation of institutions which would support innovations and exploration of seaweed food applications. Participants also agreed that seaweed diversity is underexplored. They expressed the need to explore the use of species other than kelp, especially varieties native to their respective production zones. Some participants expressed the opinion that seaweed as an additive to foods for nutritional purposes needed to be further investigated, as it could lead to a popular and lucrative market.

The primary concern that participants expressed when discussing the consumer perspective was the challenge of popularizing seaweed as a food source to a Western audience. They cited the lack of familiarity and understanding as a challenge that marketing and PR would need to overcome with an awareness campaign about the benefits of eating seaweed. They also agreed that seaweed could slowly be introduced to the market as an additive to foods, such as an alternative protein source or as an iodine supplement. Participants all voiced that they believed seaweed has many applications and opportunities for incorporation into Western diets, it just needs marketable appeal. In the end, the participants agreed that focusing on innovations in seaweed as an additive was a more achievable short-term goal, whereas popularizing seaweed in the west as a staple would be a more long-term goal.

When discussing how to finance innovations, the participants noted that a lack of seaweed institutions meant a lack of support to the industry. This lack of funding is what keeps the costs of producing and processing seaweed high, which hurts its market potential. All felt that the creation of seaweed research and funding institutions could provide financial support to the industry, bring costs down, and make scaling-up production a more achievable goal. Some participants also noted that lack of utilization of all parts of the plant keeps costs high. They urged innovation in utilizing all parts of seaweed, as they believed this would bring production costs down as well. They felt this would not only expand the market for seaweed, but also lower threshold costs for producers.

Lastly, the participants touched on the environmental concerns surrounding seaweed production. They agreed that as the market is currently underdeveloped, there are not adequate regulatory tools to measure and monitor food quality across producers. This, they felt, was a challenge to overcome and cited the important role seaweed institutions and governments could play in creating a universal standard. Additionally, they circled back to the need for a wider variety of seaweed species to be used for food, as kelp being a dominant species could lead to a monoculture issue in the oceans.

Overall, the participants had a lively and engaging discussion surrounding the possibilities for innovation and finance in the seaweed industry and how to better popularize seaweed in the food world. They all agreed that smart marketing of seaweed, the creation of seaweed research and financing institutions, and uniform standards were actionable areas for next steps towards integration to be made.

ACTION TRACKS

	Action Track 1: Ensure access to safe and nutritious food for all
✓	Action Track 2: Shift to sustainable consumption patterns
✓	Action Track 3: Boost nature-positive production
	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

✓	Finance	✓	Policy
✓	Innovation		Data & Evidence
	Human rights	✓	Governance
	Women & Youth Empowerment		Trade-offs
			Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 6/10

Round 1: Seaweed on the Farm

Key Takeaways:

- Need to sustainably scale up seaweed production to provide for agricultural purposes
- Integrating seaweed into agricultural practices and the Western hemisphere requires industry regulations, educational resources, and standardized practices for farmers

Throughout this breakout session, the participants had a highly engaging discussion about seaweed's potential uses and benefits in agriculture. The group began the discussion by focusing on the challenges behind integrating the seaweed industry into Western production and consumption. They articulated that one of the main challenges behind this was the current (lack of) regulations and standards as the industry moves from the Eastern hemisphere.

An animated discussion began around the potential uses of seaweed within traditional agriculture. The participants highlighted that it can be used as fertilizer additions and as feed alternatives to the standard animal diets of soy and corn. Using seaweed as feed may lower methane production from livestock, especially cattle, the largest GHG source attributed to the agriculture sector. The group noted the need for both regulation and education within this area so those that produce seaweed for agriculture do it in a sustainable and regenerative manner.

The discussion then pivoted to integrating seaweed into farming culture and agricultural practices in general. Many farmers may never have heard about the benefits of seaweed for livestock production and as a fertilizer for cultivation. A participant suggested creating a central resource to educate farmers looking to use seaweed where they can learn about good practices and where to responsibly source their seaweed additives from. All participants agreed that there needs to be further research conducted in a centralized manner around seaweed production for the specific use of it as feed, fertilizer, and in biorefinery.

Lastly, the participants discussed how to scale up seaweed production to provide adequate sourcing for agricultural uses since one of the challenges at the moment is the small amounts of seaweed for use in agriculture. One participant felt it would be difficult to grow one aquatic product on a massive scale without having large environmental impacts. This led the group to agree that seaweed production has to be diversified and done sustainably by adding to aquatic ecosystems in a regenerative way rather than growing, harvesting, and polluting ecosystems. They concluded that integrated multi-trophic aquaculture is a solution to this problem and will allow the industry to scale up in a sustainable manner. The discussion concluded with remarks on the potential of seaweed to have remarkable, positive impacts on agriculture and through it to translate to beneficial impacts for the environment.

ACTION TRACKS

- Action Track 1: Ensure access to safe and nutritious food for all
- Action Track 2: Shift to sustainable consumption patterns
- Action Track 3: Boost nature-positive production
- Action Track 4: Advance equitable livelihoods
- Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- | | | | |
|-------------------------------------|---------------------------|-------------------------------------|-------------------------|
| <input type="checkbox"/> | Finance | <input checked="" type="checkbox"/> | Policy |
| <input checked="" type="checkbox"/> | Innovation | <input checked="" type="checkbox"/> | Data & Evidence |
| <input type="checkbox"/> | Human rights | <input checked="" type="checkbox"/> | Governance |
| <input type="checkbox"/> | Women & Youth Empowerment | <input type="checkbox"/> | Trade-offs |
| <input type="checkbox"/> | | <input checked="" type="checkbox"/> | Environment and Climate |

OUTCOMES FOR EACH DISCUSSION TOPIC - 7/10

Round 1: Indigenous Knowledge and Culture

Key Takeaways:

- Elevation of Indigenous and traditional seaweed farmer voices
- The need for advocacy, education, and promotion around the consumption of diversified food resources, including seaweed

The first topic this room dealt with was how to better integrate seaweed into the food system. Several of the participants noted that seaweed has not been enjoyed at home or as a food product for the majority of the world so far, and that needs to change for successful food system integration. One participant stated that especially in the United States, it is a challenge for people to use seaweed in their homes and consume it regularly. As such, they said, the growth of the seaweed industry should focus largely on creating products that are accessible and easy to use in regular meals. One proposed solution was to develop a powdered form of seaweed that can be incorporated into flour for higher health benefits.

The topic of industry growth took off for this group. A participant brought up the issue of marine tenure. Farmers need relatively exclusive access to the area they farm, which is not always possible or easily navigable for the farmers. On the other hand, there could be complementarities, as highlighted by a participant who shared the experience of Maine, which has more coastline than California and a rich history of shellfish farming, such as lobsters; the infrastructure needed for kelp farming and lobster farming is the same; and its lobster and kelp industries are actually co-synchronous, meaning that these farmers could have employment opportunities all year round by alternating between the two, especially given their expertise in lobster farming. The conversation then shifted to the changes needed in the current industry and institutions. One of the participants noted that although seaweed is a relatively new player in Western industry, there is a rich base of Indigenous knowledge and history. Seaweed is the largest part of aquaculture globally, but is mainly produced at a small-scale by family businesses. Another participant expressed concern that the voices of Indigenous cultures and traditional producers are not well-represented in this burgeoning industry, making it more difficult for aquatic foods to get the prominence they need in spaces such as the Food Systems Summit.

The participants concluded with a discussion about how to get these important voices heard and elevate the growth of the seaweed industry. One participant stressed that people should be in conversation with the member state representatives to the Food Systems Summit to stress the importance of Indigenous knowledge and aquatic foods for our collective food system. Another participant spoke of the need to create a strong coalition between powerful international organizations such as the FAO, the UN Environment Programme, the World Bank, and others. Together, they said, these organizations can send a strong signal as to the importance of this industry. All of the participants in this room agreed that there is a need for advocacy, education, and promotion around the consumption of diversified food resources, including seaweed.

ACTION TRACKS

	Action Track 1: Ensure access to safe and nutritious food for all
✓	Action Track 2: Shift to sustainable consumption patterns
✓	Action Track 3: Boost nature-positive production
✓	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

	Finance		Policy
	Innovation		Data & Evidence
✓	Human rights		Governance
	Women & Youth Empowerment		Trade-offs
		✓	Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 8/10

Round 1: Standards, Policies, and Institutions

Key Takeaways:

- Standardize global regulations on seaweed
- Encourage best practices and advocacy for smallholder producers
- Increase data collection efforts

The participants discussed a number of challenges related to the regulatory landscape of the seaweed industry. The primary issue is the lack of standardized regulations on seaweed's food safety and nutritional content. For example, iodine standards in Europe limit some species of seaweed but these standards vary greatly across regions. While a number of participants mentioned that there is very low risk of nutritional contamination of seaweed, they also highlighted the need to harmonize global standards to ensure a safe market for consumers. This harmonization is a challenge to seaweed's integration since an overarching, international regulating body does not exist. While participants noted the preeminence of Codex International as a food standard setting organization, they also noted that a number of countries still utilize their own standards. While one participant advocated for creation of a global seaweed association, others suggested instead that dialogue with policymakers is necessary in addition to advocacy for farmers.

The participants noted that an ideal regulatory environment for seaweed would encourage best practices and advocacy for smallholder producers. A couple of participants cited the importance of family-centric approaches and effectiveness of the farmer field school approach, emphasizing the importance of government investment in family farmer organizations and cooperatives. Policies that protect these farmers and encourage their participation will be important for growing the industry in an inclusive manner. Furthermore, national authorities must commit to joint data collection efforts that can inform standards and policies. In addition, a farmer field school approach raises the capacity for producers to innovate, create solutions, and standardize practices.

ACTION TRACKS

<input type="checkbox"/>	Action Track 1: Ensure access to safe and nutritious food for all
<input type="checkbox"/>	Action Track 2: Shift to sustainable consumption patterns
<input checked="" type="checkbox"/>	Action Track 3: Boost nature-positive production
<input type="checkbox"/>	Action Track 4: Advance equitable livelihoods
<input type="checkbox"/>	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

<input type="checkbox"/>	Finance	<input checked="" type="checkbox"/>	Policy
<input type="checkbox"/>	Innovation	<input checked="" type="checkbox"/>	Data & Evidence
<input type="checkbox"/>	Human rights	<input type="checkbox"/>	Governance
<input type="checkbox"/>	Women & Youth Empowerment	<input type="checkbox"/>	Trade-offs
<input type="checkbox"/>		<input type="checkbox"/>	Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC - 9/10

Round 1: Understanding the Seaweed Value Chain

Key Takeaways:

- Seaweed producers worldwide face issues of lack of regulation and seaweed-specific policies
- Address inefficiencies to biomass cultivation
- A need to re-brand seaweed
- Data collection & value chain mapping are priority actions in the short term

In this session, participants identified a number of key challenges facing the industry's integration into our food system. The group then offered a few short-term actions.

Many of these participants agreed that the inefficiencies on the producer side are often context-driven. Ocean warming has pushed farmers in Africa to cultivate seaweed in deeper, unsafe waters. More training and education on the cultivation process for these producers is a primary need. In India, on the other hand, inefficiencies arise from the seaweed industry's conflation with fisheries. Dedicated regulations for the seaweed industry, protections for seaweed producers, and a clearly laid out plan to get seaweed into the marketplace are necessary. These regulatory challenges are a problem facing producers around the globe.

At the consumer level, procuring locally sourced seaweed is still a problem facing many restaurants. This logistics challenge has raised the price of seaweed for consumers in the Global North, since it must be imported. There is a need for sustainably sourced seaweed in countries that are not traditional producers. This calls for stronger cross-country, collaborative efforts that raise the capacity of nascent seaweed producers through knowledge transfer and investment.

Seaweed also faces a branding challenge, primarily due to the name of the product itself. Changing the name to something more appealing, such as sea vegetable, could facilitate marketing and grow demand for the product. Efforts to address this branding challenge should also highlight food safety and occupational safety for producers.

Data collection and value chain mapping efforts were seen as priority actions. These could begin with a comprehensive mapping of edible seaweed species, the regions in which they are produced, how much is available, and how it can be used. This process can lead to accountability and help ensure that producers receive a fair price for their work.

In general, the participants cited a crucial need for stronger collaboration and exchange across the board. Whether this is through knowledge transfer to nascent producers, joint marketing projects, sharing of best practices, or increased investments in seaweed enterprise and research, stakeholders from across the globe must work together to advocate for seaweed along the value chain.

ACTION TRACKS

- | | |
|---|--|
| ✓ | Action Track 1: Ensure access to safe and nutritious food for all |
| | Action Track 2: Shift to sustainable consumption patterns |
| ✓ | Action Track 3: Boost nature-positive production |
| | Action Track 4: Advance equitable livelihoods |
| | Action Track 5: Build resilience to vulnerabilities, shocks and stress |

KEYWORDS

- | | | | |
|---|---------------------------|---|-------------------------|
| ✓ | Finance | ✓ | Policy |
| | Innovation | ✓ | Data & Evidence |
| | Human rights | | Governance |
| | Women & Youth Empowerment | | Trade-offs |
| | | | Environment and Climate |

OUTCOMES FOR EACH DISCUSSION TOPIC - 10/10

Round 2: Production and Scaling Up

Key Takeaways:

- Governments and private sector actors work together to create conducive regulatory environments, foster innovation, and raise awareness about seaweed's positive contributions to sustainability, especially nutrition and climate
- Early priorities include creating and growing high-value markets for seaweed, for instance as alternative proteins, livestock feed, and biodegradable packaging.
- Creating a viable blue carbon market is another priority area

Participants were asked to reflect on how seaweed was able to be scaled-up and meet production needs in a world in 2050 with seaweed fully integrated into the food system. All agreed that governments would need to play an important role, especially by creating a "kind" regulatory environment around seaweed, one that balanced risk but also left room for producers to explore and innovate. They also emphasized the need for governments to get involved in raising awareness around the potentials of seaweed as a carbon sink, a feed source, and a nutritious food source. Participants felt that if governments could pave the way in the awareness campaign on seaweed, then the private sector would be more successful in selling higher value seaweed products. Some participants suggested looking towards Japan and Korea as great examples of governments integrating seaweed into a multitude of industries and creating a balanced regulatory environment conducive to successful markets.

Developing markets and market avenues for seaweed products in the west was discussed as a key step in integrating seaweed into the food system. Most participants felt that producers would not scale-up production without high value markets for seaweed and scope for innovation. Such markets would include alternative proteins, clothing dye, and livestock feed.

Another topic was blue carbon. All agreed that governments had a crucial role to play in creating a blue carbon market for seaweed, to encourage its production around the world and strongly support climate change mitigation. Seaweed could help pioneer a fledgling market and set good standards for the blue carbon industry. They cited the important role government policy would play in creating and regulating this industry, and discussed how critical collaboration and cooperation would be in determining the success of seaweed in blue carbon.

The session concluded with an overall agreement that seaweed in 2021 was an industry replete with exciting opportunities. Capitalizing on these opportunities depended on the right players, like governments and the private sector, coming together to create a balanced regulatory environment.

ACTION TRACKS

	Action Track 1: Ensure access to safe and nutritious food for all
✓	Action Track 2: Shift to sustainable consumption patterns
✓	Action Track 3: Boost nature-positive production
	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

	Finance	✓	Policy
	Innovation	✓	Data & Evidence
	Human rights	✓	Governance
	Women & Youth Empowerment		Trade-offs
		✓	Environment and Climate

AREAS OF DIVERGENCE

The dialogue prompted lively discussions, especially during the breakout sessions and in the chat. One area of debate that brought diverse perspectives was centered on the topic of financing the seaweed movement and industry integration in non-producing countries, many of which are in the Western hemisphere. All participants acknowledged that there is a need for ambitious action in bringing seaweed to the forefront of food systems as a game changing solution to issue areas like climate change, malnutrition, women and youth empowerment, and more. Yet there were differing views on where the financing for the integration of scaled-up production of seaweed would come from and whether it should be allocated on the basis of issue area. For example, should seaweed be financed by global funds focused on climate finance and if so, what steps need to be taken to get to said point? Alternatively, is the best approach to decentralize financing and integrate the growing seaweed movement into the current industry, scaling up by getting more smallholder farmers introduced to seaweed and aquaculture?

Some divergence also came around the topic of regulations and the role of the private sector versus governments in creating these regulations. Some participants felt that governments needed to play a strong role in creating safe regulatory environments to prevent unintended harm to ecosystems and consumers from lack of information. Others felt that the current state of regulations, particularly in Europe, were already too restrictive and not conducive to small scale producers being able to compete. They also felt a strict regulatory environment stifled innovation, and that a kinder environment, led by the private sector, would encourage increased innovations in seaweed usage and applications.

There were mixed opinions when it came to integrating seaweed into diets globally. For example, some participants believed that although there are some paths to introducing seaweed to more regions that do not traditionally consume it, it will be difficult to change dietary norms on a large scale. Some felt that would be particularly challenging for Africa, despite its great potential, because it does not have the cultural or traditional background in seaweed farming or consumption to immediately become an industry leader.

Another area of divergence revolved around food safety. Some felt toxicants that can be found in seaweed present a serious issue for human consumption. On the other hand, it was noted that although seaweed does absorb substances from the sea, so does everything else that we consume from the ocean, including fish and other sea vegetables. Most participants in these discussions agreed that further research was necessary to truly understand this dimension of seaweed.

One group diverged in opinions on whether or not there were clear benefits for organic aquaculture and whether or not sustainability has to include organic. Views ranged from there being a need for certified organic and regenerative aquaculture to handling this issue via integrated multi-trophic aquaculture that doesn't necessarily need to be harvested in the ocean nor organic. By the end of the discussion the group agreed that there are clear benefits to both, but whether or not seaweed's form of sustainability should take on one or the other was left for further discussion.

An unresolved divergence of views concerned whether or not to create a new international agency focused on seaweed. I. Most participants expressed that there is no need to form a new organization, rather to strengthen existing UN organizations, especially FAO, to better incorporate seaweed into its work, through its clear linkages to multiple SDGs. Others noted the need for building strong cooperatives or federations to provide the full range of value chain services to members, especially smallholders, and represent the voices of seaweed family farmers in governance.

ACTION TRACKS

- ✓ Action Track 1: Ensure access to safe and nutritious food for all
- ✓ Action Track 2: Shift to sustainable consumption patterns
- ✓ Action Track 3: Boost nature-positive production
- ✓ Action Track 4: Advance equitable livelihoods
- ✓ Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

- ✓ Finance
- ✓ Innovation
- ✓ Human rights
- ✓ Women & Youth Empowerment
- ✓ Policy
- ✓ Data & Evidence
- ✓ Governance
- ✓ Trade-offs
- ✓ Environment and Climate

ATTACHMENTS AND RELEVANT LINKS

ATTACHMENTS

- **Additional Topics Covered**
<https://summitdialogues.org/wp-content/uploads/2021/03/Additional-Topics-Covered.pdf>
- **Keynote Speakers Graphic**
<https://summitdialogues.org/wp-content/uploads/2021/03/Keynote-Speakers-Graphic.jpg>
- **Round 1 Topic Outcomes Graphic**
<https://summitdialogues.org/wp-content/uploads/2021/03/Round-1-Discussion-Topics-Graphic-scaled.jpg>
- **Round 2 Topic Outcomes Graphic**
<https://summitdialogues.org/wp-content/uploads/2021/03/Round-2-Discussion-Topics-Graphic-scaled.jpg>
- **Closing Remarks Graphic**
<https://summitdialogues.org/wp-content/uploads/2021/03/Closing-Remarks-Graphic-scaled.jpg>

RELEVANT LINKS

- **Seaweed Manifesto**
<https://unglobalcompact.org/library/5743>