

Seaweed Value Addition Training Manual

Seaweed Value Addition Training Manual is a practical guide developed to support communities, entrepreneurs and practitioners in unlocking the economic potential of seaweed.

The manual provides step-by-step guidance on processing and transforming seaweed into a range of products, including food, cosmetic and other marketable goods. It covers essential areas such as handling and post-harvest management, basic processing techniques, quality control and product development using locally available resources.

It also introduces simple business concepts, including pricing, packaging, and market access, to help users move from production to income generation. With a strong focus on usability, the manual presents approaches that can be applied in community settings with limited resources.

Designed with women and coastal communities in mind, this manual aims to strengthen skills, improve product quality, and support sustainable livelihoods within the blue economy.



Seaweed Value Addition Training Manual

SEAWEED VALUE ADDITION TRAINING MANUAL

Authors: Julia M. Kyalo, Josephine Obondo, Joel Onyango

Published by

ACTS Press

African Centre for Technology Studies (ACTS)

2nd floor, Konza Complex

Nairobi-Mombasa Road

Tel: +254710607210

Email: info@acts-net.org

© ACTS Press, 2026

Title: SEAWEED VALUE ADDITION TRAINING MANUAL

Authors: Julia M. Kyalo, Josephine Obondo, Joel Onyango

Citation:

Kyalo, J. M., Obondo, J., & Onyango, J. (2026). Seaweed value addition training manual.
ACTS Press, African Centre for Technology Studies.

Cover Design and Illustrations: Subcity

Disclaimer

This manual is intended for training and educational purposes only. The views expressed are those of the authors and do not necessarily reflect those of the African Centre for Technology Studies (ACTS) or its partners. While every effort has been made to ensure the accuracy of the information presented, it should be used as a general guide.

Contents

Foreword.....	v
1. Introduction.....	1
2 Harvesting and Post-harvest Handling	2
2.1 Harvesting	2
2.2 Cleaning.....	3
2.3 Drying	3
2.4 Storage	3
3. Seaweed Fertilizer Production	4
3.1 Types of seaweed fertilizers.	4
3.2 How to make liquid seaweed extract (LSE).....	5
3.3 Application Guidelines.....	6
4. Seaweed Powder.....	7
4.1 Applications of Seaweed Powder	7
4.2 Production process of seaweed powder.	7
4.3 Quality and Hygiene Considerations.....	8
4.4 Cost and Pricing Tips.....	9
5 Seaweed Capsules	10
5.1 Benefits of Seaweed capsules	10
5.2 Production Process	11
5.3 Safety and Compliance	12
5.4 Marketing Tips	12

6. Seaweed Cosmetics	13
6.1. Seaweed Shampoo	13
6.2. Seaweed Hair Food.....	15
6.3. Seaweed Lotion	16
6.4. Seaweed Soap	19
7. Packaging and Branding	23
7.1 Packaging Functions	23
7.2 Packaging by Product.....	23
7.3 Labelling Requirements	24
7.4 Branding Tips.....	24
7.5 Cost-Effective Packaging Opinions.....	25
8. Market Linkages and Business Models.....	26
8.1 Identifying Your Target Market	26
8.2 Market Linkage Strategies.....	27
8.3 Business Models to Consider.....	27
8.4 Pricing Your Products.....	27
8.5 Scaling Up.....	28
8.6 Record Keeping and Business Tools	28
9. Challenges and Solutions.....	29
10. Conclusion	31

Foreword

Seaweed is rapidly emerging as a cornerstone of the sustainable blue economy, offering a versatile, nutrient-dense, and eco-friendly resource. As a 'zero-input' crop, seaweed requires no freshwater, fertilizers or land to grow, absorbing carbon and nitrogen while thriving in coastal ecosystems.

Despite being a nutritional powerhouse, and highly productive, a significant portion of seaweed in many regions is sold as raw, sun-dried material. This commodity-level approach limits the economic return for farmers.

Value addition – the process of changing raw materials into new products like food, cosmetics, fertilizers and pharmaceuticals – transforms this primary product into higher-priced, processed goods. Value addition is critical for; increasing income, empowering coastal communities and sustainability.

This manual is designed to equip seaweed farmers, processors, cooperatives, communities and individuals with knowledge and technical skills necessary to transition from raw material production to value added processing.



Introduction

This manual provides practical guidance on how seaweed can be processed and used to produce various value-added products. It focuses on four key value-added products;

1. Seaweed fertilizer – an organic, eco-friendly solution for improving crop health.
2. Seaweed powder – used in food, cosmetics, and health supplements.
3. Seaweed capsules – a healthy product, rich in minerals, particularly iodine.
4. Seaweed cosmetics – for general skin and hair health

The manual provides step-by-step guides for processing, quality control, packaging, and market access, tailored for small-scale processors, cooperatives, and trainers.



Harvesting and Post-harvest Handling

Proper harvesting and handling are critical to the quality of value-added products.

2.1 Harvesting

- Timing: harvest mature seaweed (usually 45 days or 6 weeks after planting) when it is firm and full bodied.
- Tools: use clean knives or scissors to cut seaweed without uprooting the entire plant.
- Hygiene: harvest with clean hands and tools to prevent contamination.



Image of women farming seaweed

2.2 Cleaning

- Rinse seaweed in clean sea water to remove sand, epiphytes and debris (sea grass).
- Rinse again in fresh water to remove the excess salt (especially for food or health products).

2.3 Drying

- Spread seaweed on clean raised racks.
- Dry under the sun for 2-3 days, turning regularly.
- Avoid drying on bare soil to prevent contamination.



2.4 Storage

- Store dried seaweed in airtight, moisture-free sacks or containers.
- Keep a cool, dry, and shaded area.
- Label the batches by harvested dates for traceability.



Seaweed Fertilizer Production

Seaweed fertilizer is a natural alternative to chemical fertilizers. It improves soil structure, enhances plant resistance to pests and diseases, and boosts crop yields. Seaweed is rich in micronutrients, growth hormones (cytokinin's and auxins), and trace elements.



3.1 Types of seaweed fertilizers.

- Liquid seaweed extract (LSE): used as a foliar spray or soil drench to stimulate plant growth.

- Solid/composted seaweed fertilizer: used like manure- mixed into soil to improve fertility.
- Seaweed biofertilizer: combined with cow dung, compost, or other organic matters.

3.2 How to make liquid seaweed extract (LSE)

Materials needed:

- 1 kg dried seaweed
- 10 liters of clean water
- Large bucket or container
- Strainer or cloth filter
- Optional: molasses (for fermentation), EM (effective microorganisms)

Step-by-step process

1. *Chop seaweed.*

Cut the dried seaweed into small pieces to increase surface area.

2. *Soak in water.*

Add seaweed to 10 liters of water and let soak for 24-48 hours.

3. *Fermentation (optional).*

Add 200 ml of molasses and a spoon of effective microorganisms. Let it ferment in a sealed container for 5/7 days, stirring daily.

4. *Filter the extract.*

Use a cloth or a sieve to remove solids.

5. *Packaging and storage.*

Store in clean plastic bottles, tightly sealed. Label with date and dilution instructions.

3.3 Application Guidelines

Crop type	Dilution ratio (extract: water)	Application frequency
Vegetables	1: 20	Every 2 weeks
Fruit trees	1: 15	Once a month
Maize/ cereals	1: 25	During early growth
Seeds treatment	1: 10 (soak for 1 hour)	Before planting

Apply early morning or late afternoon to avoid leaf burn.



Seaweed Powder

Seaweed powder is a versatile product used in health supplements, cosmetics, food products, and animal feed. It is valued for its high content of iodine, calcium, magnesium, vitamins, and antioxidants.

4.1 Applications of Seaweed Powder

- Health: Boosts immunity, supports thyroid function, and provides dietary minerals.
- Cosmetics: Used in facial masks, soaps, scrubs, and lotions for its skin-soothing and anti-aging properties.
- Food: Can be used as a seasoning or thickener, particularly in vegan and gluten-free products.
- Agriculture & animal feed: Used as a supplement for livestock and poultry nutrition.

4.2 Production process of seaweed powder.

Materials needed

- Dried seaweed
- Food-grade grinder or mill
- Fine sieve (mesh size: 80- 100)
- Airtight containers
- Labels

Step-by-step Guide

1. *Sorting and inspection:*

- Select only clean, dried seaweed, clean from debris or any sign of mold or contamination.

2. *Grinding:*

- Use a food grade grinder to grind seaweed into powder. Avoid overheating during grinding to preserve nutrients.

3. *Sieving:*

- Use fine mesh to ensure consistent, smooth powder.
- Regrind larger particles if necessary.

4. *Drying (if needed)*

- If powder feels moist, dry it under low heat (not above 40 degrees)

5. *Packaging*

- Pack in airtight, food-grade containers or pouches.
- Store in a cool, dry place away from light.

6. *Labelling*

- Include product name, ingredients, date of production, expiry date and usage instructions.

4.3 Quality and Hygiene Considerations

- Use stainless steel or food-safe plastic equipment.
- Maintain good personal hygiene during handling.
- Conduct periodic microbial and moisture testing (especially for edible or cosmetic use).
- Comply with national food safety or herbal product standards.

4.4 Cost and Pricing Tips

- Use affordable packaging to ensure its moisture proof.
- Highlight the natural origin and Nutritional benefits for branding.
- Consider bulk packaging for livestock feed vs. small packages for food/ cosmetic use.



Seaweed Capsules

Seaweed capsules are gaining popularity as natural dietary supplements. They are rich in iodine, calcium, potassium, antioxidants, and other essential minerals. These capsules support thyroid health, immunity, metabolism, and general wellness.



Image of Seaweed Capsules

5.1 Benefits of Seaweed capsules

- Thyroid support: iodine in seaweed helps regulate hormones.
- Antioxidant boost: contains fucoidan, vitamins A, C and E.
- Bone health: high in calcium and magnesium.
- Immunity and detox: support immune function and cleanse the body.

5.2 Production Process

Materials needed

- Fine seaweed powder
- Empty capsules (size 0 or 00)
- Capsule-filling machine (manual or semi-automatic)
- Weighing scale (milligram precision)
- Gloves and hygiene gear.
- Clean working area.

Steps:

1. Prepare powder
 - Ensure the seaweed powder is fine, dry, and free from clumps.
 - Optional: sieve again for consistency.
2. Weigh dosage.
 - Standard dosage: 300mg – 500mg per capsule.
 - Adjust based on regulatory guidance and intended use.
3. Fill the capsules.
 - Use a capsule-filling machine for speed and accuracy.
 - Fill lower halves with measured powder and seal with upper halves.
4. Seal and inspect.
 - Ensure that capsules are properly closed and uniform.
 - Remove any damaged or loosely packed capsules.
5. Packaging.
 - Pack capsules in amber bottles, blister packs, or sachets.
 - Include desiccants to control moisture.
 - Labell clearly.

6. Labelling.

- Product name
- Ingredients
- Dosage instructions
- Batch number, manufacture and expiry date.
- Caution and storage advice.

5.3 Safety and Compliance

- Follow GMP (good manufacturing practice) standards.
- Register product with national health or drug authority (e.g. PPB in Kenya).
- Maintain production and batch records for traceability.
- Periodic lab tests: heavy metals, microbial load, moisture, and iodine content.

5.4 Marketing Tips

- Position as a natural alternative to synthetic supplements.
- Emphasize traceability, sustainability, and local production.
- Target health stores, herbal clinics, pharmacies, and online platforms.
- Offer combo packs with other seaweed products (powder, tea, etc.)



Seaweed Cosmetics

Seaweed cosmetic products utilize nutrients from the seaweed to hydrate, detoxify, and firm the skin offering anti-aging and anti-inflammatory benefits. These products range from soaps, shampoo, hair food, and body lotion.

6.1. Seaweed Shampoo

Seaweed shampoo is a mineral-rich, often organic, hair cleanser designed to soothe, strengthen and moisturize the hair and scalp. It is suitable for all hair types, including sensitive or damaged and is free from sulfates and silicones.



A. *Benefits of seaweed shampoo*

- Intense hydration as seaweed acts as a humectant, trapping moisture to prevent dryness and brittle hair.

- Strengthens and repairs hair.
- Scalp nourishment.
- Promotes growth
 - Enhances shine and texture

B. Production Process

Materials needed

- Basin
- Weighing scale
- Water – 700 g
- Unga roll – 150 g
- C.D.E - 40 g
- Glycerin – 30 g
- Industrial salt – 20 g
- Seaweed gel – 50 g
- Whisk
- Gloves
- Fragrance
- Color

Steps;

1. Pour the Unga roll and CDE into a basin and stir slowly to avoid excessive foam.
2. Add glycerin and seaweed gel, stir gently until well blended.
3. Gradually add water while stirring gently. Do not rush this step, as rapid stirring creates bubbles that take days to settle.
4. Dissolve industrial salt in a small amount of warm water first (brine solution). Add the brine bit by bit, to the main mixture while stirring.

The mixture will begin to thicken. Stop adding once your desired viscosity is reached.

5. Add color, fragrance, and preservatives.
6. Let it settle and package.

6.2. Seaweed Hair Food

Seaweed hair food is a nutrient-rich, moisturizing treatment often packed with vitamins (A, B, C, E), minerals like iron and zinc, and amino acids to strengthen, hydrate and promote hair growth.



A. Benefits of Seaweed Hair Food

- Nourishes the scalp.
- Strengthens and reduces hair breakage.
- Intense hydration.
- Prevents premature graying.

B. Production Process

Materials needed.

- Sufuria

- Wooden stick
- Weighing scale
- Measuring containers
- Petroleum jelly – 500 g
- Mineral oil – 150 g
- Coconut oil – 150 g
- Shea butter – 200 g
- Seaweed gel
- Perfume
- Color
- Packaging containers

Steps:

1. Melt the solids – heat petroleum jelly and shea butter in a sufuria until fully melted.
2. Add oils – add coconut oil and mineral oil and stir well until the mixture is uniform.
3. Let the temperature drop to about 45°C.
4. Add seaweed gel/powder and mix thoroughly.
5. Pour into containers and allow to cool undisturbed.

This will give you very firm but scoopable hair food.

6.3. Seaweed Lotion

Seaweed lotion is a nutrient-rich moisturizer that uses marine derived seaweed extracts to deeply hydrate, soothe, and revitalize dry, sensitive, or irritated skin. Packed with antioxidants, minerals, and vitamins, these lotions help strengthen the skin barrier and improve skin vitality.



A. *Benefits of Seaweed Lotion*

- Deep hydration and skin barrier support.
- Helps reduce inflammation, calm irritated skin, making it useful for conditions like eczema.
- Rapid absorption, providing hydration without greasy residue.
- Enhances skin vitality and offers anti-aging properties, supporting collagen production.

B. *Production Process*

Material needed;

1. Two sufurias
2. Whisk
3. Wooden stick
4. Heat source
5. Weighing scale
6. Measuring containers
7. Packaging bottles

8. Stearic acid – 40 g
9. C.S.A - 25 g
10. G.M.S - 35 g
11. Mineral oil – 120 g
12. Shea butter – 80 g
13. Water – 640 g
14. Glycerin – 40 g
15. Tea acid – 5 g
16. Seaweed – 15 g

Steps;

1. Oil Phase:
 - Combine stearic acid, C.S.A, G.M.S, mineral oil, and shea butter in a sufuria.
 - Heat the mixture until everything melts completely.
 - Stir gently to avoid air bubbles.
2. Water Phase:
 - In another sufuria, mix water and glycerin.
 - Heat the mixture to 70°C.
3. Emulsification
 - Slowly pour the water phase into the oil phase while mixing using a wooden stick.
 - A white lotion will form.
 - When the temperature drops to 45°C, add tea acid and seaweed gel. Mix gently but thoroughly.
4. Final cooling;
 - Continue stirring until the lotion cools to room temperature.

- Lotion thickens as it cools.
- Fill the lotion into sterilized bottles or containers.

6.4. Seaweed Soap

Seaweed soap is a nutrient-rich, natural cleanser that uses algae to detoxify. It stimulates circulation, helps smooth cellulite, and provides antioxidants, making it suitable for all skin types.



A. *Benefits of Seaweed Soap*

- Detoxifying and purifying.
- Exfoliation and smoothing – remove dead skin cells and soften skin.
- Cellulite and toning making the skin firm.
- Hydrating and nutrient dense.
- Anti-inflammatory – helps reduce redness and soothe skin issues like eczema.

B. Production Process

Coconut base soap

Material needed:

- Coconut oil – 1000 g
- Water – 475 g
- Caustic soda – 180 g
- Silicate – 5 g
- Seaweed powder
- Weighing scale
- Molds
- Spatula
- Whisk
- Heat resistant bowl
- Thermometer
- PPEs
- Basin
- Measuring containers

Steps:

1. Put on your gloves, mask, head gare and safety goggles before measuring the ingredients. (Caustic soda can cause irritation on the skin if not handled properly).
2. In a heat-resistant bowl, put water and pour in caustic soda slowly while stirring. Stir the mixture until all of the caustic soda has dissolved. Let it cool to 40°C. This solution is called lye.
3. In a sufuria, heat the coconut oil to remove solid particles. (just enough heat to dissolve the coconut oil).

4. Pour the lye solution into the coconut oil and stir. (over stirring will harden the solution fast, making it hard to pour into molds).
5. Add in seaweed and silicate while stirring.
6. Pour the mixture into clean molds and let it harden to form the perfect shape. Tap molds to remove air bubbles.
7. Remove the soaps from the molds and put them in a clean box and the soaps cure for 21 days to 28 days. (curing stage).

Olive Oil and Coconut Oil Base Soap

Materials needed;

- Coconut oil – 700 g
- Olive oil – 300 g
- Water – 380 g
- Caustic soda – 150 g
- Silicate – 5 g
- Seaweed powder - 20 g
- Weighing scale
- Molds
- Spatula
- Whisk
- Heat resistant bowl
- Thermometer
- PPEs
- Basin
- Measuring containers

Steps;

1. In a heat-resistant bowl, put water and pour in caustic soda slowly while stirring. Stir the mixture until all of the caustic soda has dissolved. Let it cool to 40°C. This solution is called lye.
2. In a sufuria, heat the coconut oil to remove solid particles and then add olive oil.
3. Pour the lye solution into the oils and stir. (over stirring will harden the solution fast, making it hard to pour into molds).
4. Add in seaweed and silicate while stirring.
5. Pour the mixture into clean molds and let it harden to form the perfect shape. Tap molds to remove air bubbles.
6. Remove the soaps from the molds and put them in a clean box and the soaps cure for 21 days to 28 days. (curing stage).



Packaging and Branding

Proper packaging and branding are essential for product shelf-life, customer appeal, and market access. Attractive, informative, and protective packaging helps build trust with consumers and opens opportunities in retail and export markets.

7.1 Packaging Functions

- Protection: Products safe from moisture, light, contamination, and physical damage.
- Preservation: extends shelf life by maintaining quality.
- Information: provides necessary product details (ingredients, use, expiry, etc.).
- Promotion: encourages customers to choose your product through appealing designs.

7.2 Packaging by Product

Product	Recommended packaging	Notes
Liquid fertilizer	Plastic bottles with screw caps (500 ml to 5L)	Use UV-resistant bottles if possible
Seaweed powder	Zip-lock pouches or PET jars	Use food-grade moisture-proof materials
Seaweed capsules	Amber glass/plastic bottles or blister packs	Include cotton or silica gel packets to absorb moisture

7.3 Labelling Requirements

Each product label should include:

- Product name
- Ingredients
- Net weight/volume
- Usage instructions
- Batch number
- Manufacture and expiry dates
- Warnings or cautions (e.g. not for pregnant women)
- Contact details (producer, phone, email, location)
- Certification/approval numbers (if applicable)

Tip: use both English and local language(s) if selling in rural or diverse

7.4 Branding Tips

Name and logo

- Use a memorable, meaningful name that reflects the product's natural or local origin.
- Keep the logo clean and professional; nature-based symbols work well.

Colors and design

- Green, brown, and blue are good choices for natural, organic themes
- Use minimalist, clean design to highlight product purity and professionalism.

Trust symbols

- If certified, add logos from regulatory bodies or standards (e.g. KEBS, organic certification).

- Use icons like “100% Natural”, “locally made”, “no additives”, if true.

7.5 Cost-Effective Packaging Opinions

- Buy packaging materials in bulk or through cooperatives.
- Source locally where possible to reduce costs.
- Consider eco-friendly options like biodegradable pouches or refillable bottles.



Market Linkages and Business Models

Creating value-added seaweed products is just one part of the journey_ connecting to buyers and building sustainable business models is key to profitability and long-term success.

8.1 Identifying Your Target Market

1. By product type

Product	Target customer
Liquid fertilizer	Organic farmers, agro-dealers, cooperatives
Seaweed powder	Health-conscious consumers, food processors, cosmetic producers
Seaweed capsules	Pharmacies, herbal shops, wellness centers, online markets
Cosmetic products (soap, lotion, shampoo, hair food)	Beauty shops, cosmetic shops, herbal/organic shops, retail shops, salons and spas

2. By channel

- Local markets: farmers` markets, village shops, agro-dealers.
- Urban retail: supermarkets, health stores.
- Online: Facebook, Jumia, Instagram shops.
- Bulk buyers: NGOs, schools, export agents.

8.2 Market Linkage Strategies

- Demonstrations and trials: offer free samples to farmers or wellness clinics for trials.
- Packaging and presentation: ensure professional, attractive branding to build trust.
- Certification & licensing: register your product to gain access to formal markets.
- Trade fairs and exhibitions: join local and regional trade shows to meet potential buyers.
- Partnerships: collaborate with cooperatives, women's groups, youth enterprises, or existing processors.

8.3 Business Models to Consider

- individual entrepreneurship:
Start small-scale production at home or rent shared processing space.
- Cooperatives or group models
Pool resources and labor to set up shared facilities and reduce production and marketing costs.
- Contract processing
Process seaweed on behalf of farmers or clients, charging per kilogram.
- Bulk supply to distributors
Focus on producing large volumes for wholesalers, reducing branding and packaging work.

8.4 Pricing Your Products

Use cost-plus pricing:

1. Add up all production costs (raw materials, labor, packaging).

2. Add profit margin (e.g. 30-50%)

Factor in:

- Packaging type and size.
- Market demand and competition.
- Customer willingness to pay.

8.5 Scaling Up

- Apply for grants or low-interest loans to expand.
- Invest in better equipment for efficiency.
- Develop contracts with consistent buyers (e.g. cooperatives, health shops).
- Consider certification for export (organic, fair trade, HACCP, etc.).

8.6 Record Keeping and Business Tools

Keep clear records of:

- Sales and expenses
- Inventory and production batches
- Customer feedback.

Use simple tools like notebooks, Excel sheets, or free mobile apps (bookkeeping)



Challenges and Solutions

Challenges	Explanation	Practical solutions
Limited access to equipment	Farmers lack grinders, capsule fillers, and packaging tools	Share equipment through cooperatives or apply for grants to acquire communal tools
Inadequate skills and knowledge	Farmers lack training in value addition techniques	Organize regular training and mentorship programs with local extension officers or NGOs
Poor product quality control	Inconsistent drying or powder quality	Establish basic SOPs and quality checks (e.g. moisture levels, cleanliness)
Limited market access	Few buyers for value-added products (limited branding)	Train farmers on marketing, branding and packaging; use local trade fairs and online platforms
Regulatory barriers	Difficult to meet food safety and certification standards	Collaborate with KEBS or county health officers early in the process to guide compliance
Financial constraints	Lack of funding to start or scale up production	Connect groups to microfinance, SACCOs, government youth and women enterprise funds

Case Study

- Kenya:
Seaweed fertilizer production in Kwale (Diani) and Mombasa (Morganics 001), Kibuyuni cooperative, Bahari CBO and Najma organics making seaweed cosmetic products.
- Philippines:
Women-led seaweed capsule enterprise
- Tanzania:
Community seaweed powder for local cosmetic producers. (Pemba, Afro Nature)

Conclusion

Seaweed is an incredibly valuable marine resource with vast potential for economic development, environmental sustainability, and livelihood improvement. Through value addition, seaweed can be transformed from a simple raw material into a wide range of high-value products such as organic fertilizer, nutritional capsules, seaweed powder and cosmetic products including soap, shampoo, lotions and hair food.

This manual has provided practical guidance on how seaweed can be processed into these products using accessible techniques and locally available ingredients. By adopting these value addition practices, farmers, entrepreneurs, and community groups can significantly increase the market value of seaweed while creating diverse income streams. In addition, seaweed-based products support healthier soils, natural personal care solutions, and sustainable agricultural practices.

Value addition also plays a critical role in strengthening the seaweed value chain by creating employment opportunities, encouraging innovation, and opening new markets both locally and internationally. For coastal communities, particularly in regions such as Kenya, seaweed processing offers a pathway to improved livelihoods and greater economic resilience.

Moving forward, it is important for stakeholders including farmers, processors, researchers, government agencies, and private sector actors to continue investing in training, product development, quality control, and market linkages. With the right knowledge, collaboration and commitment, seaweed value addition can become a powerful driver of sustainable blue economy growth.

Ultimately, the future of seaweed lies not only in farming but in transforming it into diverse, high-quality products that meet the growing global demand for natural, sustainable, and health-promoting solutions.