

National stakeholder consultation on
transforming Indonesia's seaweed sector

Global trend of seaweed- derived products and how to seize opportunities for Indonesia

12 October 2026, Jakarta

Content

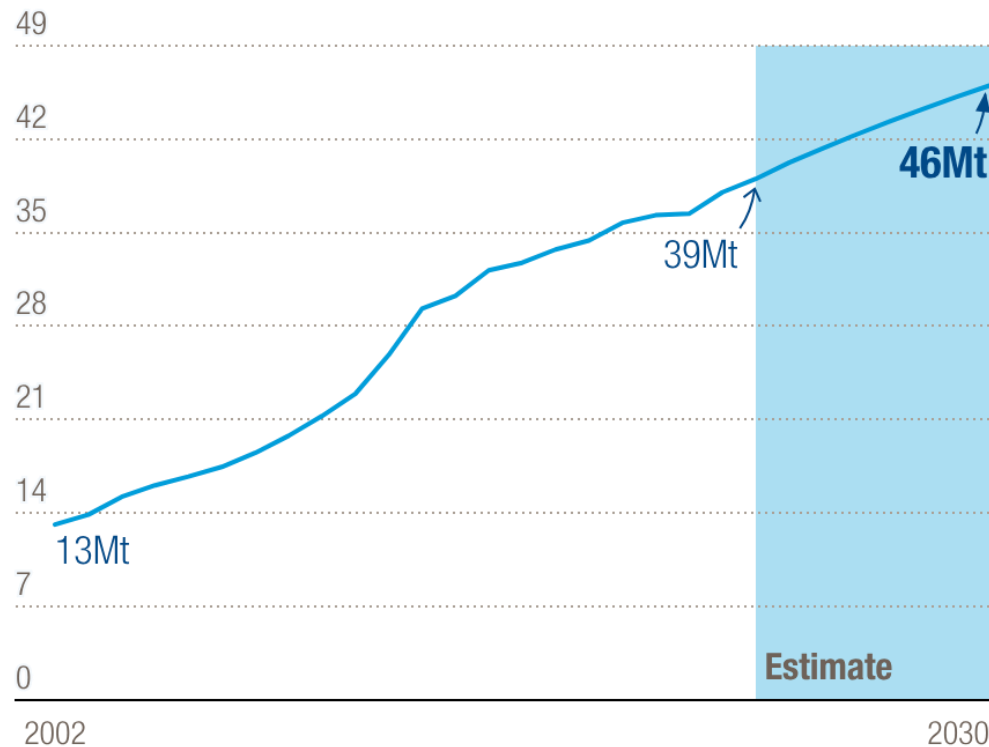
- 1. Global trend and market potential of seaweed-derived products**
- 2. Trade challenges for Indonesia's seaweed-derived products**
- 3. The “Transforming Indonesia's Seaweed Sector” a quick assesment project for trade solutions**
- 4. An opportunity to showcase Indonesia's seaweed sector to the world: the UN Global Seaweed Initiative (UNGSI) in 2027**

➤ Global seaweed trade is growing rapidly

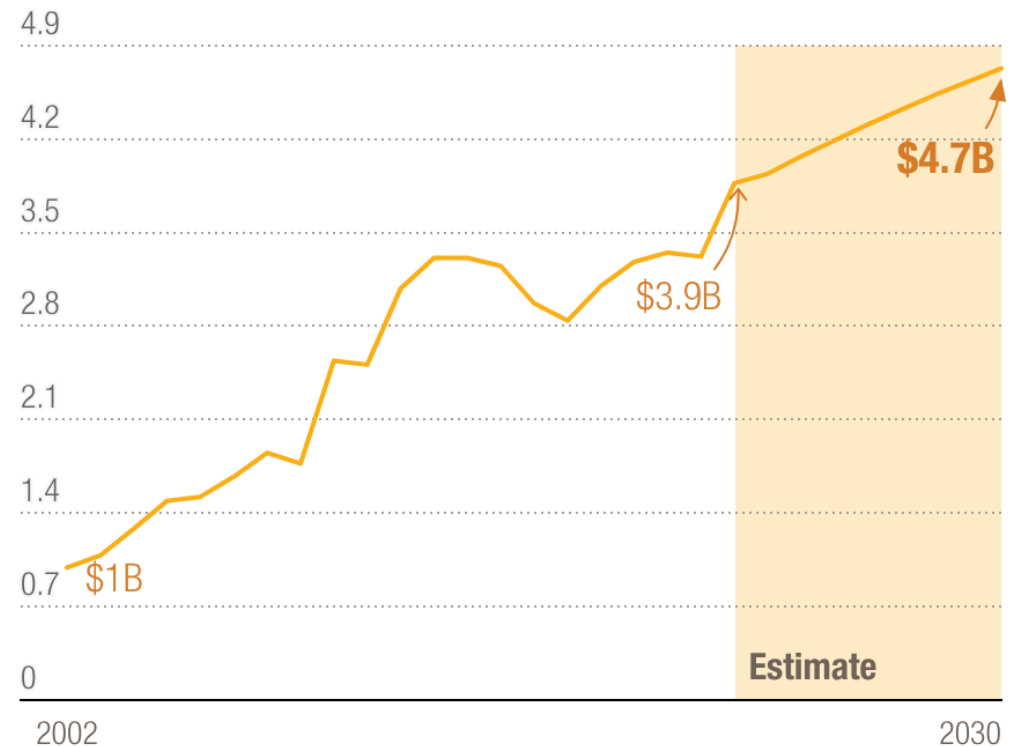
Global seaweed trade set to increase nearly fivefold between 2002 and 2030, while production is expected to reach 46 million tonnes

Global seaweed production and export value, 2002–2030, with projections from 2023 onward

Seaweed production (million tonnes, live weight)



Global exports (USD billion)

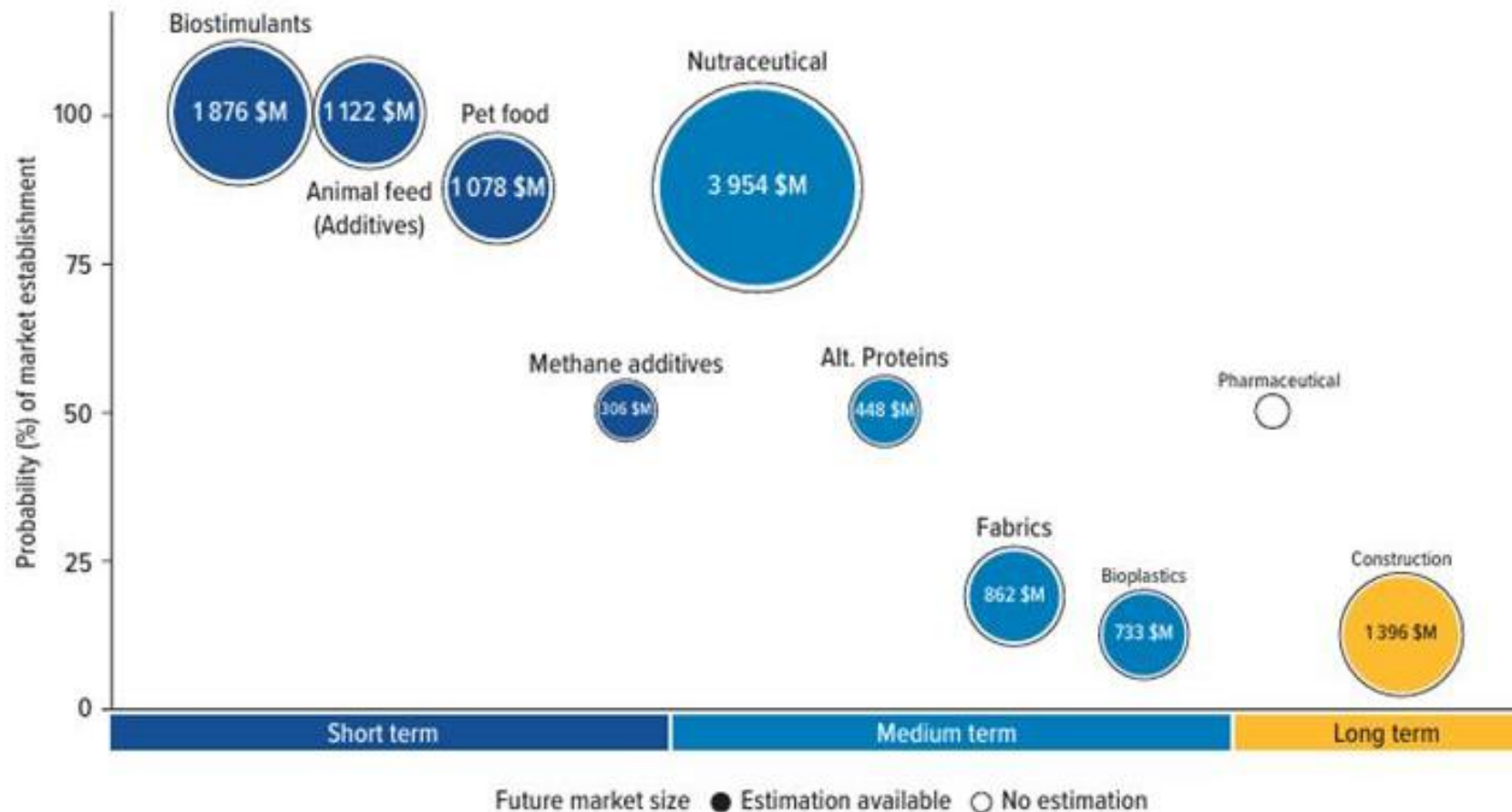


Source: UNCTAD analysis based on FAO fishstat and UN Comtrade

Note: Production forecast uses damped Holt trend / ETS(A,Ad,N). Trade estimates use $\log(\text{exports}) = -2.714 + 1.115 \times \log(\text{production})$, estimated from 2002-2022 data. Export value = sum of export value of Agar-agar, Alginic acid, Carrageenan, Raw seaweed (for food) and Raw seaweed (non-food).

➤ Non-food applications are emerging market opportunities for seaweed, at different stages of maturity

According to the World Bank (2023) estimation, biostimulants are among the most promising short-term markets for seaweed, while bioplastics are a medium-term market opportunity with a lower probability of market establishment (2024-2028)



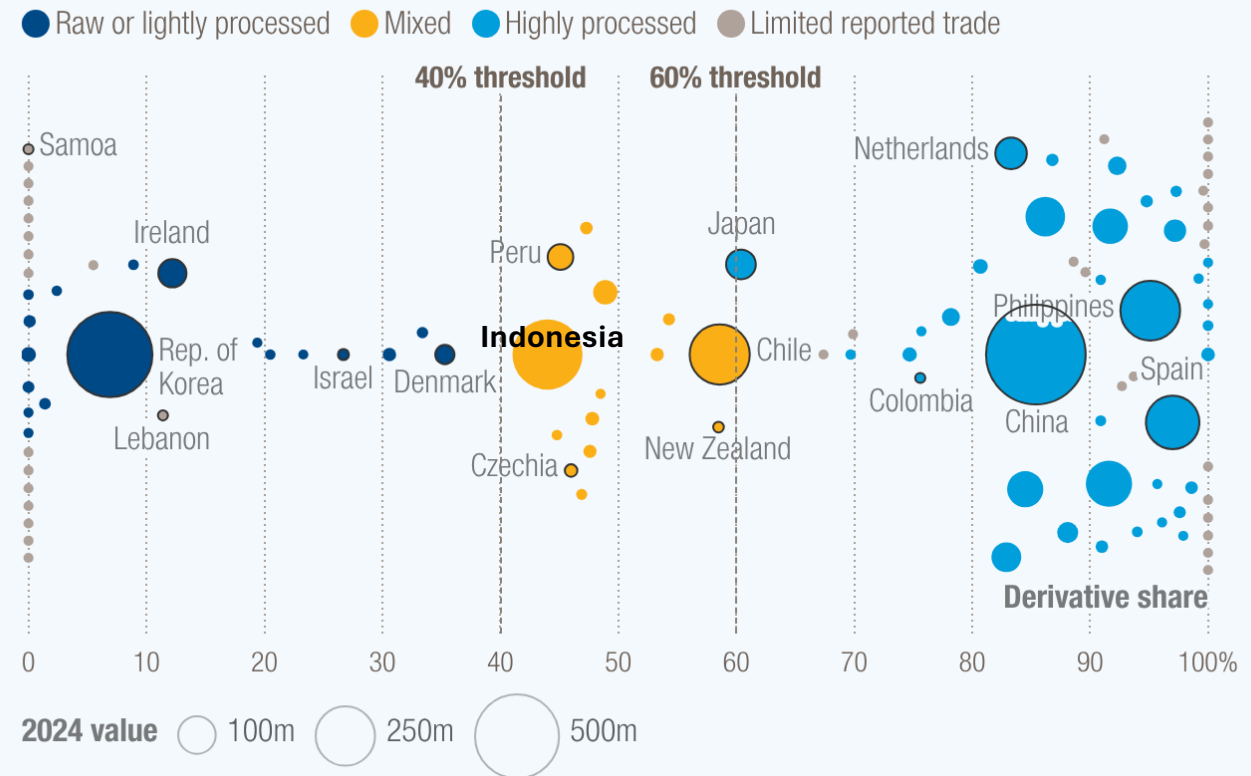
Predicted seaweed market size by 2030 (USD millions) with chance of market establishment indicated by color on a high-level market horizon timeline (World Bank, 2023).

Indonesia plays a central role in the global seaweed economy, but more than half of its seaweed exports it raw or lightly processed seaweed.

Addressing bottlenecks and barriers towards higher-value production, processing and trade is critical for Indonesia to increase domestic value creation.

Leading seaweed exporters differ sharply in their reliance on raw, lightly processed and highly processed products

Share of exports of seaweed derivatives (agar-agar, carrageenan and alginic acid) versus raw or lightly processed seaweed for food and non-food use, 2024



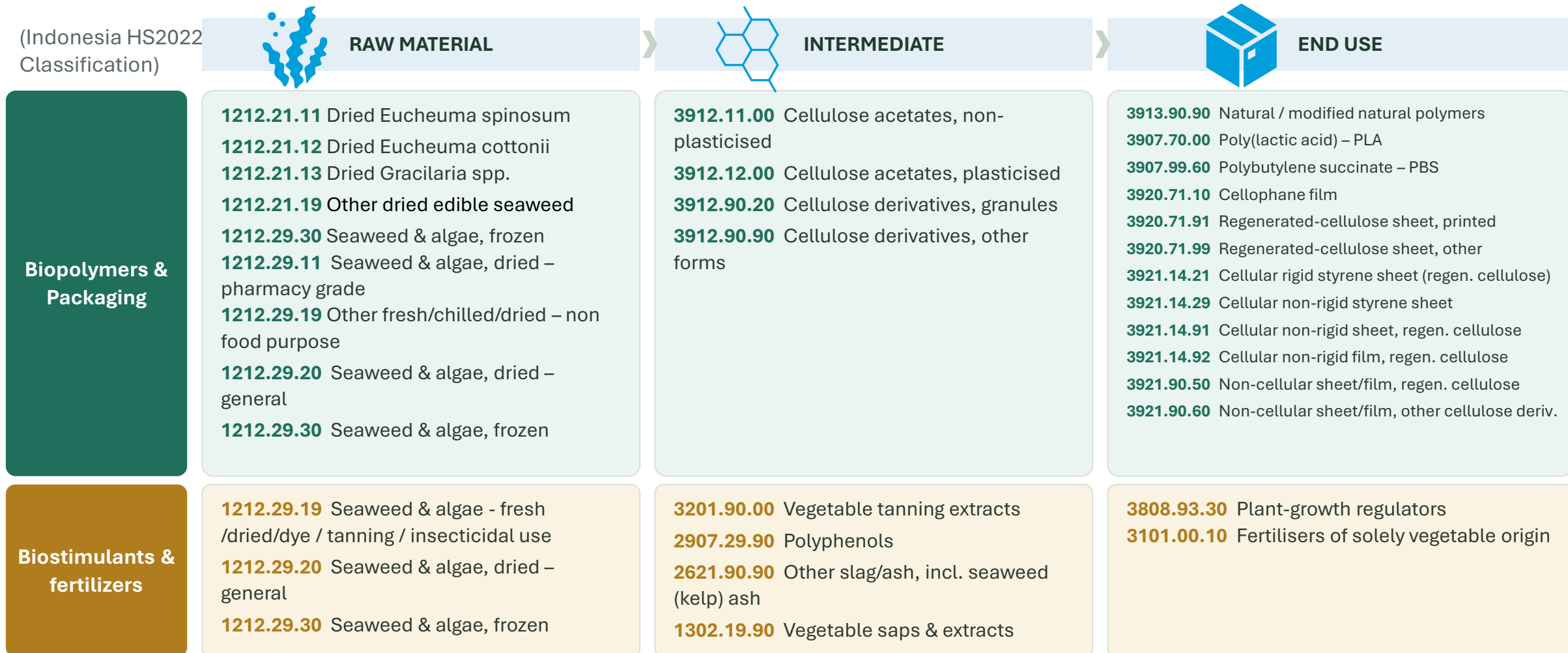
Source: UN Trade and Development (UNCTAD) calculations based on UN COMTRADE.

Note: Export values reported to the World, 2024. Economies reporting less than \$100,000 in total 2024 seaweed exports are shown as limited reported trade. The figure includes HS121221 (food-grade seaweed), HS121229 (non-food grade seaweed), HS130231 (agar-agar), HS130239 (carrageenan) and HS391310 (alginic acid). HS130239 includes non-seaweed mucilages and thickeners such as tara gum, xanthan and konjac but was included given the importance of carrageenan exports in total seaweed exports. Vertical position carries no meaning; it separates overlapping economies.

➤ Challenge 1: Current HS code system and product classification hinder trade opportunities

- HS codes for seaweed do not differentiate between raw and processed seaweed
- HS codes for downstream products do not differentiate between seaweed- or non-seaweed based

(Indonesia HS2022 Classification)



➤ Challenge 2: Indonesia's seaweed sector needs to move up the value chain and retain more domestic value

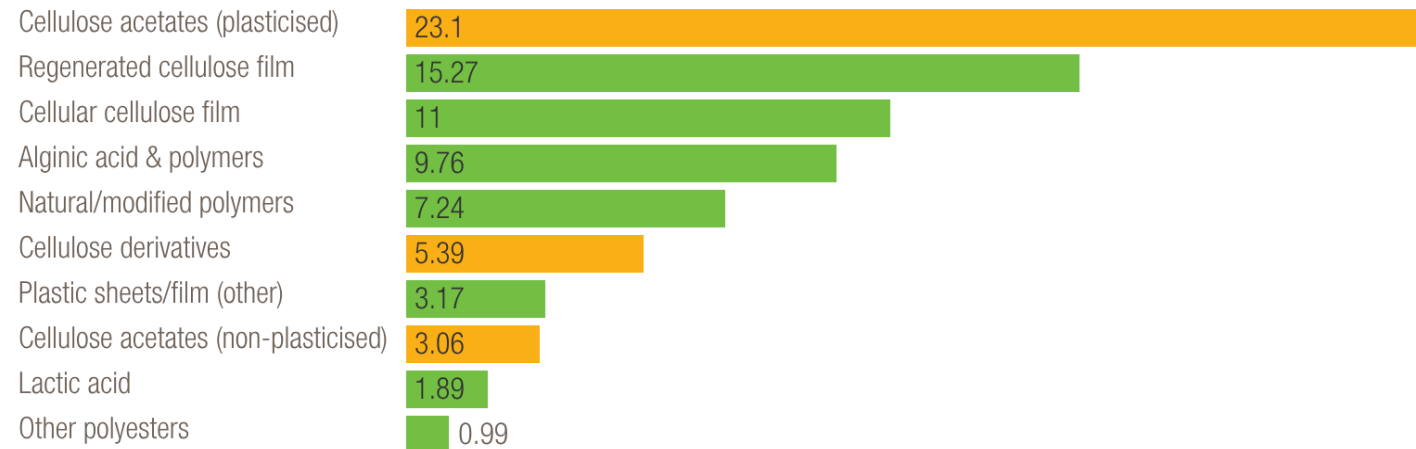
- At the global level, seaweed derivatives account for 30% of export volume but 68% of export value. *
- For Indonesia, most downstream product categories show higher unit prices than raw seaweed.

* [Seaweed for development: Trade, regulations and standards for inclusive growth | UN Trade and Development \(UNCTAD\)](#)

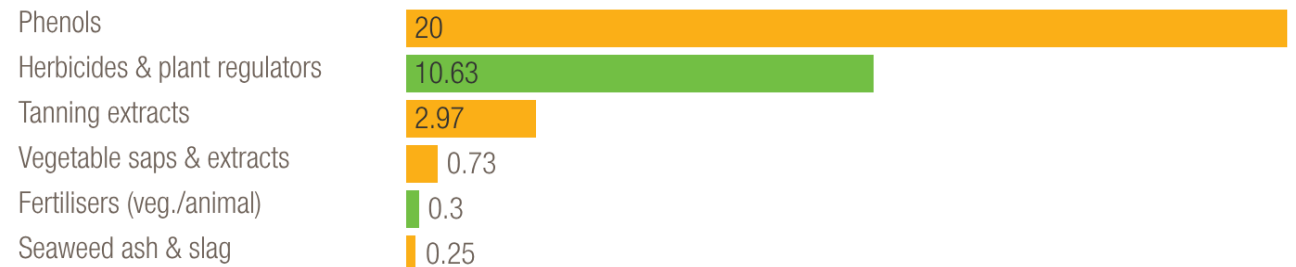
Average unit price of seaweed and related derivatives exported from Indonesia, USD, 2020–2024

■ Raw or lightly processed ■ Intermediate ■ End use

Biopolymers & Packaging



Biostimulants & fertilizers



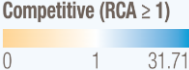
Multiple (relevant to bioplastics & biostimulants)



Source: UNCTAD analysis 2026. Data based on UN COMTRADE

➤ However, Indonesia has not yet fully developed a comparative advantage in downstream non-food products

Indonesia's global export ranking for all 18 HS codes of seaweed and related derivatives, 2020–2024 total export value, revealed comparative advantage (RCA)

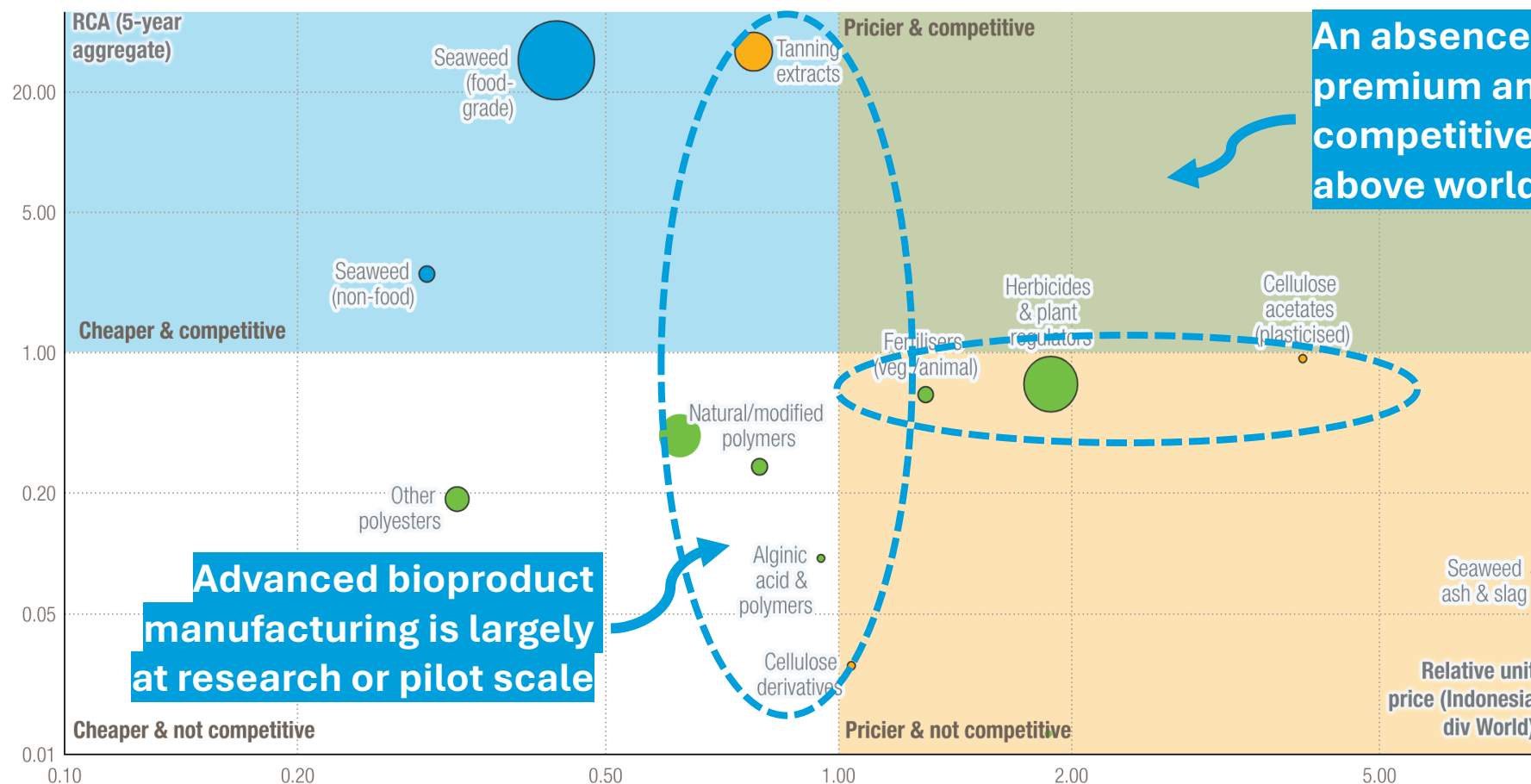


Product	Stage	Application Category	RCA (5-yr aggregate)	World export rank	Export value, 5-yr total (USD)	Share of world export (%)
Tanning extracts	Intermediate	Biostimulants & fertilizers	31.7	1	292.9M	36
Seaweed (food-grade)	Raw or lightly processed	Multiple (relevant to bioplastics & biostimulants)	28.7	2	1.2B	32
Seaweed (non-food)	Raw or lightly processed	Multiple (relevant to bioplastics & biostimulants)	2.5	5	41.2M	3
Cellulose acetates (plasticised)	Intermediate	Biopolymers & Packaging	0.9	10	1.7M	1
Herbicides & plant regulators	End use	Biostimulants & fertilizers	0.7	17	613.1M	1
Natural/modified polymers	End use	Biopolymers & Packaging	0.3	22	43.7M	0
Fertilisers (veg./animal)	End use	Biostimulants & fertilizers	0.6	23	39.4M	1
Alginic acid & polymers	End use	Biopolymers & Packaging	0.1	34	966.1K	0
Seaweed ash & slag	Intermediate	Biostimulants & fertilizers	0.1	36	1.9M	0
Other polyesters	End use	Biopolymers & Packaging	0.2	36	109.5M	0
Plastic sheets/film (other)	End use	Biopolymers & Packaging	0.4	36	371.1M	0
Cellulose acetates (non-plasticised)	Intermediate	Biopolymers & Packaging	0.0	37	37.8K	0
Cellulose derivatives	Intermediate	Biopolymers & Packaging	0.0	41	2.1M	0
Phenols	Intermediate	Biostimulants & fertilizers	0.0	45	276.6K	0
Cellular cellulose film	End use	Biopolymers & Packaging	0.0	46	119.9K	0
Regenerated cellulose film	End use	Biopolymers & Packaging	0.0	51	87.3K	0
Vegetable saps & extracts	Intermediate	Biostimulants & fertilizers	0.0	57	7.2M	0
Lactic acid	End use	Biopolymers & Packaging	0.0	62	31.5K	0

6 Source: UNCTAD analysis 2026. Data based on UN COMTRADE
Note: RCA ≥ 1 = Indonesia exports proportionally more of this product than the world average (competitive advantage); RCA < 1 = below average. Based on 2020–2024 total trade value (UN Comtrade, 175 countries).

Revealed comparative advantage (RCA) versus export price relative to the world average for seaweed and related derivatives in Indonesia's seaweed value chain from 2020 to 2024 (five-year aggregate).

● Raw ● Intermediate ● End use Indonesia export value, 5yr (USD) ○ 100M ○ 400M ○ 1B



Competitive where prices are low, but not yet in premium segments

Source: UNCTAD analysis 2026

Note: Relative = Indonesia's export price ÷ the world average price for that same HS code. Normalizing this way removes each product's inherent price level, isolating whether Indonesia prices at a discount or premium within that product's own global market — which is what makes prices comparable across 18 structurally different products.

➤ Where is Indonesia's trade advantage?

➤ Challenge 3: Indonesian seaweed exports are concentrated in Asian markets, and access to premium markets needs to be strengthened

- Around 80% of exports go to developing economies
- Asia has accounted for 80–89% each year since 2020

Key constraints to premium markets include:

- Limited certification and traceability,
- Inconsistent raw-material quality,
- The need to meet packaging and agricultural standards

(UNIDO, 2025; World Bank, 2023; Ross et al., 2026).

Total export value of seaweed and related derivatives by destination's, 2020–2024 (Aggregated)

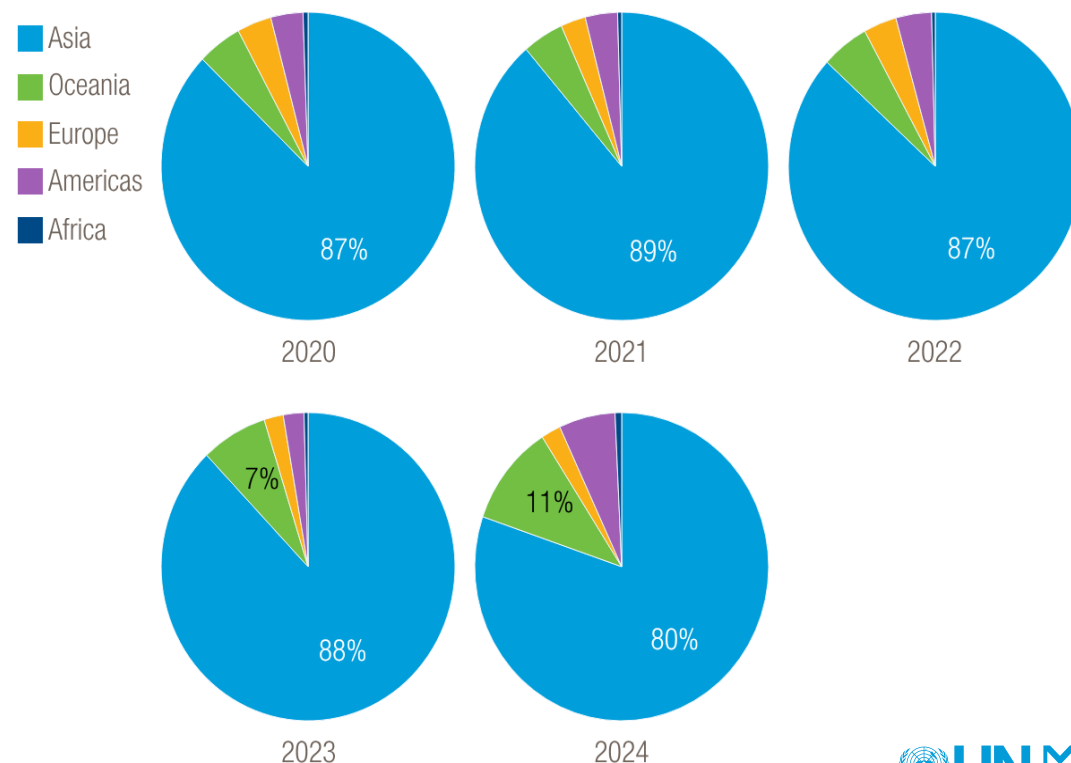
■ Developing economies ■ Developed economies ■ Not classified

Export value, 5-yr total (USD) **2.8B** 79% 21%

Source: UNCTAD analysis 2026, data based on UN COMTRADE

Note: "Not classified" (0.5% of export value) consists entirely of "Other Asia, nes". Figures combine all 18 HS codes in this project's seaweed and related derivatives basket.

Export value by destination region, 2020–2024, all 18 HS codes of seaweed and related derivatives combined.



Source: UNCTAD analysis 2026, data based on UN COMTRADE

Note: Figures combine all 18 HS codes in this project's seaweed basket

➤ With its main trading partners, Indonesia tends to import more downstream products than it exports

- Indonesia runs a surplus in raw or lightly processed seaweed with 8 of its top 10 partners, led by China (\$1.1 billion, 2020–2024).
- However, It runs deficits in end-use categories with 6 of its top 10 partners (e.g. China: –\$1.3 billion), pointing to demand for downstream products that domestic processing could address.

Indonesia's trade balance with its top 10 partners, split by value-chain stage Intermediate → End use), 2020–2024 total (Aggregated).

Trade Balance



Country	Raw or lightly processed	Intermediate	End use
China	1.1B	-60.8M	-1.3B
India	2.7M	238.2M	-208.8M
Japan	9.8M	-10.9M	24.5M
Thailand	-5.5M	-94.2M	18.4M
Malaysia	19.7K	-700.4K	-74.7M
Rep. of Korea	-20.5M	-11.1M	-103.5M
USA	18.3M	-33.1M	-74.4M
Australia	7.7K	-1.7M	156M
Philippines	14.2M	51.9K	145.4M
Viet Nam	27.3M	1.7M	-47.7M

Source: UNCTAD analysis 2026, data based on UN COMTRADE

Note: Balance = Indonesia's export value minus import value, based on Indonesia's own trade reporting; Import values follow UN Comtrade's standard CIF (cost, insurance, freight) convention while export values are FOB (free on board). The IMF/OECD's trade-weighted global average CIF/FOB margin is approximately 6%.

64 of 83 product-market combinations with data show a 0% applied tariff for Indonesia

Applied tariff on imports from Indonesia, by product and market, AVE applied, %

Stage	Product	Indonesia exports 2020-24 (USD million)	China	India	Japan	EU	United States	Republic of Korea
Raw	Seaweed, food-grade	1244.4	0.00%	0.00%	15.75%	0.00%	0.00%	2.87%
Raw	Seaweed, non-food	41.2	0.00%	0.00%	0.50%	0.00%	0.00%	2.86%
Intermediate	Tanning extracts	292.9	0.00%	0.00%	0.00%	2.90%	0.00%	0.00%
Intermediate	Vegetable saps & extracts	7.2	0.00%	0.00%	2.69%	0.00%	0.00%	96.38%
Intermediate	Cellulose derivatives	2.1	0.00%	0.00%		0.00%	0.00%	0.00%
Intermediate	Seaweed ash & slag	1.9			0.00%	0.00%		0.00%
Intermediate	Cellulose acetates, plasticised	1.7	0.00%			0.00%		
Intermediate	Polyphenols	0.3	0.00%	5.00%	0.00%	0.00%		0.00%
Intermediate	Cellulose acetates, non-plasticised	0.0	0.00%			0.00%		
End use	Herbicides & plant-growth regulators	613.1	0.00%	10.00%	0.00%	0.00%	1.25%	0.00%
End use	Other plates, sheets & film	371.1	0.00%	10.00%	0.00%	0.38%	3.65%	0.00%
End use	Other polyesters (incl. PBS)	109.5	0.00%	0.00%	0.00%	1.00%	3.25%	0.00%
End use	Natural/modified polymers	43.7	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
End use	Fertilisers (veg./animal)	39.4	0.00%	5.00%	0.00%	0.00%	0.00%	0.00%
End use	Alginic acid & polymers	1.0	0.00%	0.00%		0.00%	0.00%	0.00%
End use	Regenerated-cellulose film (cellophane)	0.1	0.00%	5.00%		3.00%	6.20%	
End use	Cellular regenerated-cellulose sheet	0.1				0.00%		
End use	Poly(lactic acid) - PLA	0.0				0.00%		0.00%

Source: UNCTAD 2026 based on WITS database

Note: AHS = lowest available tariff (preferential rate if one exists, otherwise MFN); it does not identify the agreement used, rules of origin or utilisation. empty box = no AHS/MFN observation in the WITS extract between 2015-2023. Exports = Indonesia's exports to the world, sum of available years (390770: 2 of 5 years; 392114: 4 of 5).

➤ To seize the value-adding opportunity for Indonesia: The “**Transforming Indonesia’s Seaweed Sector**” project

Objective

Identify and assess policy and regulatory options to increase domestic value addition, promote downstream processing, improve market access and strengthen SME competitiveness.

Priority products

- Biopolymers, bioplastics, biopackaging
- Biostimulants and fertilizers

Activities and outputs

Field mission and consultations

Mid-October, consult government, producers, associations and other stakeholders in Indonesia.

Assessment

Oct-Nov., produce 1) value chain diagnostic, 2) policy & regulatory study.

Validation webinar

Nov., producers, cooperatives, processors, exporters and government refine findings

Policy memo

Informs future programming, policy dialogue and investment discussions.



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➤ Moving forward, the United Nations Global Seaweed Initiative in 2027

United Nations Global Seaweed Initiative (UNGSI)

A global platform where trade, environment, development, science and finance come together to advance sustainable seaweed value chains.

Major events in 2027 to showcase Indonesia's seaweed sector (tentative)

January

High Seas Treaty COP (BBNJ COP1) in New York City, United States of America

FAO Sub-Committee on Aquaculture (Yogyakarta Indonesia, 27 May)

March-June

UNGSI 2nd Annual meeting

INC on plastic pollution, fourth part of the fifth session (INC-5.4)

6th UN Ocean Forum (End 2027 or beginning of 2028)

Onwards

UN Ocean Conference (June 2028)

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