THE LATEST DEVELOPMENT OF SEAWEED INDUSTRY IN INDONESIA

SAFARI AZIS | Chairman of Indonesian Seaweed Association

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Established on : May 25th 1989
Validated based on the Regulation of the Minister of Law and Human Rights of the Republic of Indonesia Number 6 of 2014
Extraordinary Member of the Indonesian Chamber of Commerce and Industry (KADIN Indonesia)

THE 15th MEETING OF THE ASEAN SEAWEED INDUSTRY CLUB (ASIC) ON ASEAN COOPERATION IN AGRICULTURE AND FOREST PRODUCTS PTOMOTION SCHEME

10-11 September 2025
Tawau, Sabah, Malaysia


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
17 PARTNERSHIPS FOR THE GOALS

Since 1967 of the first research and testing seaweed development conducted by the late Mr. Soerjodinoto and Mr. Hariadi Adnan in Tikus Island, Jakarta, seaweed cultivation has been growing rapidly in Indonesia with the involvement by government and private sectors as well as women.

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Cultivation

With its ability to sink carbon, sustain marine biodiversity, employ women, and unlock value chains, seaweed farming demonstrates how development, climate, and nature work together to generate value and uplift communities. *(World Bank)*

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Indonesian Seaweed Cultivation

- Seaweed cultivation plays a role in improving the welfare of cultivars. The role of **women** is important to the smooth development of seaweed cultivation.
- Seaweed cultivation has many challenges, from climate change to **price fluctuations**. Seaweed farmers must be able to adapt if they want to survive. The role of experience and knowledge exchange is important.
- **Local knowledge** is the foundation of adaptation, addressing climate change without relying on modern technology or government intervention.
- Strategies such as **sinking seaweed ropes** and **selecting seeds** according to the season are born from collective experience, not from formal training.
- **Falling prices** mean farmers have to rely on savings, economize, or adjust work patterns. On the other hand, social networks, mutual cooperation, and community information are the last protection from unstable market pressures.

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Indonesian Seaweed Cultivation

- Seaweed cultivation plays a role in improving the welfare of cultivars. The role of **women** is important to the smooth development of seaweed cultivation. In seaweed cultivation, women are usually involved in seeding, drying and sometimes even marketing. While the husband's job is to go down to the sea to stretch the rope and pull the rope during harvest time.

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Indonesian Seaweed Cultivation Challenges

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Indonesian Seaweed Cultivation Challenges

- **Local knowledge** is the foundation of adaptation, addressing climate change without relying on modern technology or government intervention. Heavy rain, strong winds, even tidal floods can damage or wash away seaweed along with the ropes where they grow. The farmers do not give up. Local knowledge, the result of long experience and exchanges between farmers, becomes a shield in facing the unpredictable climate.

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Indonesian Seaweed Cultivation Challenges

- Strategies such as **sinking seaweed ropes** according to the season are born from collective experience. If the water is too fresh because of rain, the seaweed can be damaged. So it must be sunk deeper with used plastic bottles filled with water tied every meter as a weight on the rope span.

- Another adaptation strategy is the **selection of seeds** according to the season. Brown Eucheuma Cottonii or Tambalang is planted during the rainy season because it is more resistant to fresh water, while the green variety or Sacol is used in the dry season because it grows better.

- Farmers also have a philosophy in maintaining their ropes so that they are not easily washed away. They often **tie two rope spans together** to make them stronger.

- Another form of adaptation is when the surrounding waters are full of waste or algae, seaweed farmers pull the ropes out to sea, **looking for cleaner waters**. If that is not enough, they move to another location, even crossing village boundaries.

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Indonesian Seaweed Cultivation Challenges

- **Falling prices** mean farmers have to rely on savings, economize, or adjust work patterns. On the other hand, social networks, mutual cooperation, and community information are the last protection from unstable market pressures. Another challenge is the fluctuating price and in the last 2 years it has been at its lowest level. To survive, some farmers set aside their harvest as savings. If the price drops, they make efficiencies by reducing wages for binding seedlings or changing the work system. It's a matter of local knowledge, strong social relations, and determination to survive because in Indonesia seaweed is the main source of income for coastal communities.

- **Good seaweed trade governance** plays an important role in maintaining the sustainability of the seaweed industry from upstream to downstream in Indonesia. Therefore, it is important to note that the need of joint efforts and cooperation to all players regarding to this issue.

Processing

Today, most farmed seaweed is used for direct human consumption, as fresh feed in aquaculture, or as hydrocolloids. However, seaweed-farmed products may be able to displace fossil fuels in sectors such as fabrics and plastics; can provide ecosystem services, such as carbon sequestration and nitrogen cycling; and can generate socioeconomic benefits in fragile coastal communities. *(World Bank)*

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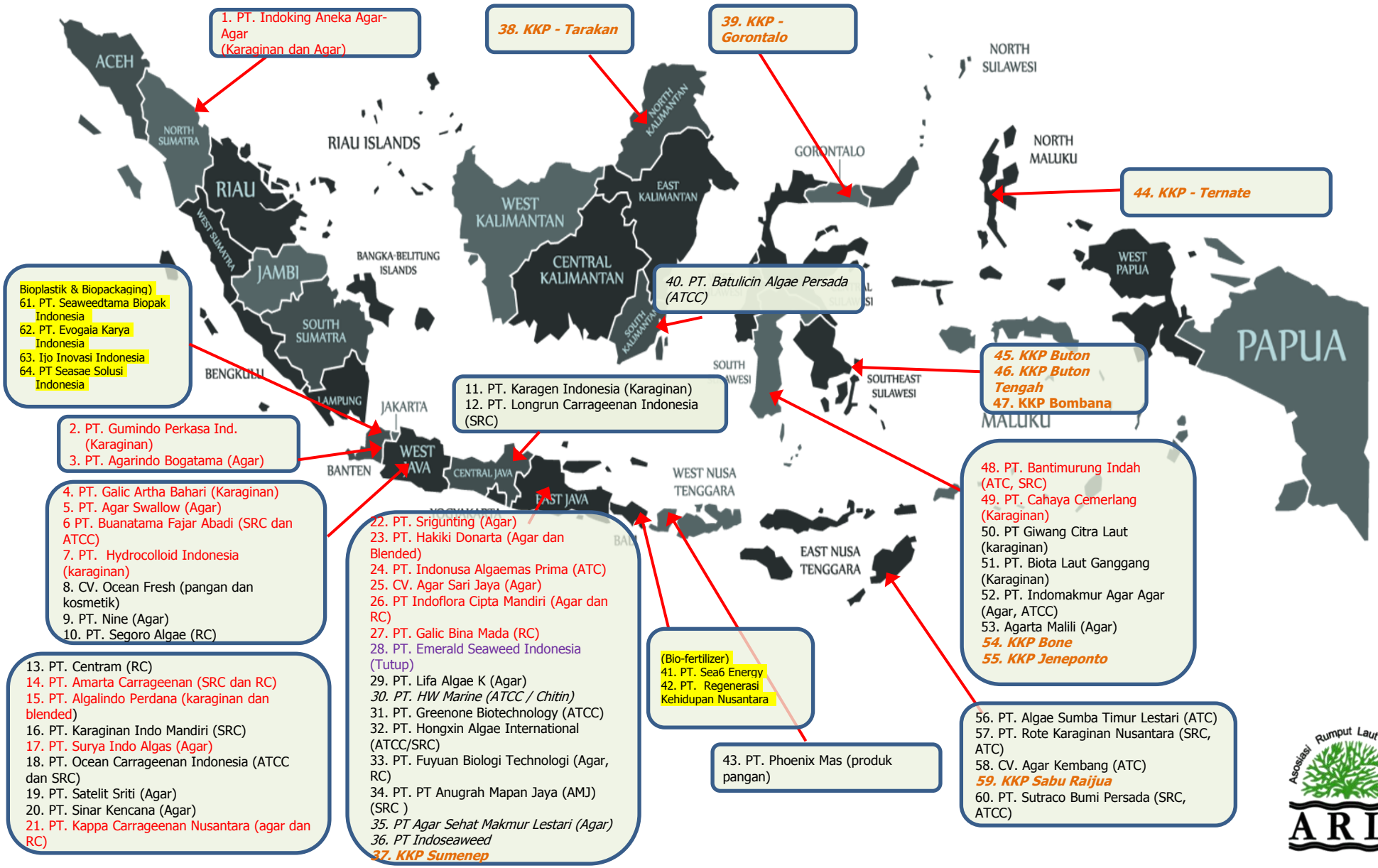
Indonesia Seaweed Processors Distribution Map



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Indonesia Seaweed Processors in General

❑ LOCATION

Currently, there are 64 seaweed processor spread across Indonesia: 40 in Java, 12 in Sulawesi, and 12 elsewhere.

❑ CAPACITY

Estimated installed capacity 320.000 - 340.000 ton per year of dried seaweed material for Hydrocolloid production only, but with estimated utilization of 60%.

❑ OWNERSHIP

Of the 64 seaweed processor, 45 are domestically owned, 10 are government owned and 9 are foreign investment.

❑ PRODUCTS

Of the 64 seaweed processor, 38 produce carrageenan, 11 produce Agar, 8 produce both Carrageenan and Agar, and 7 produce others (feed, fertilizer, bio stimulant, bio plastic and bio packaging) .

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Trade

Seaweed farming can help build a world free of poverty on a livable planet and has enormous growth potential. World Bank has identified ten global seaweed markets with the potential to grow by an additional USD 11.8 billion by 2030. *(World Bank)*

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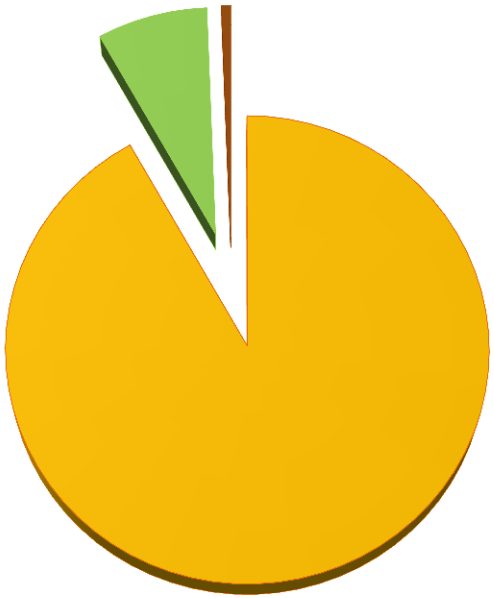
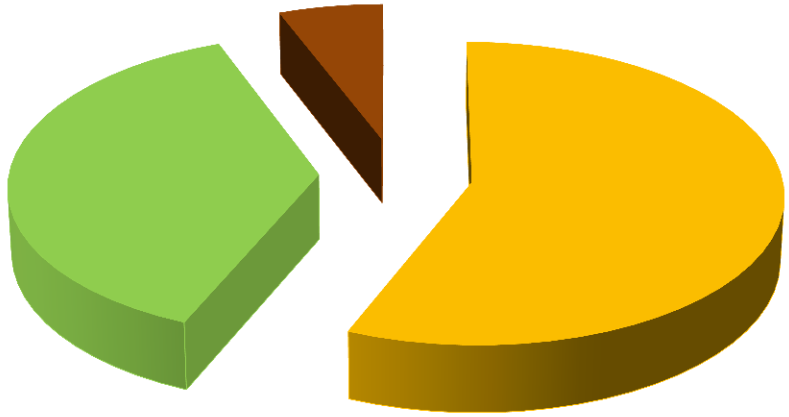
Indonesian Seaweed Export 2024 in total

Total VOLUME : 262,555,441 kgs



- **Dried Seaweed 241,073,693 kgs**
- **Carrageenan 19,873,223 kgs**
- **Agar 1,608,414 kgs**

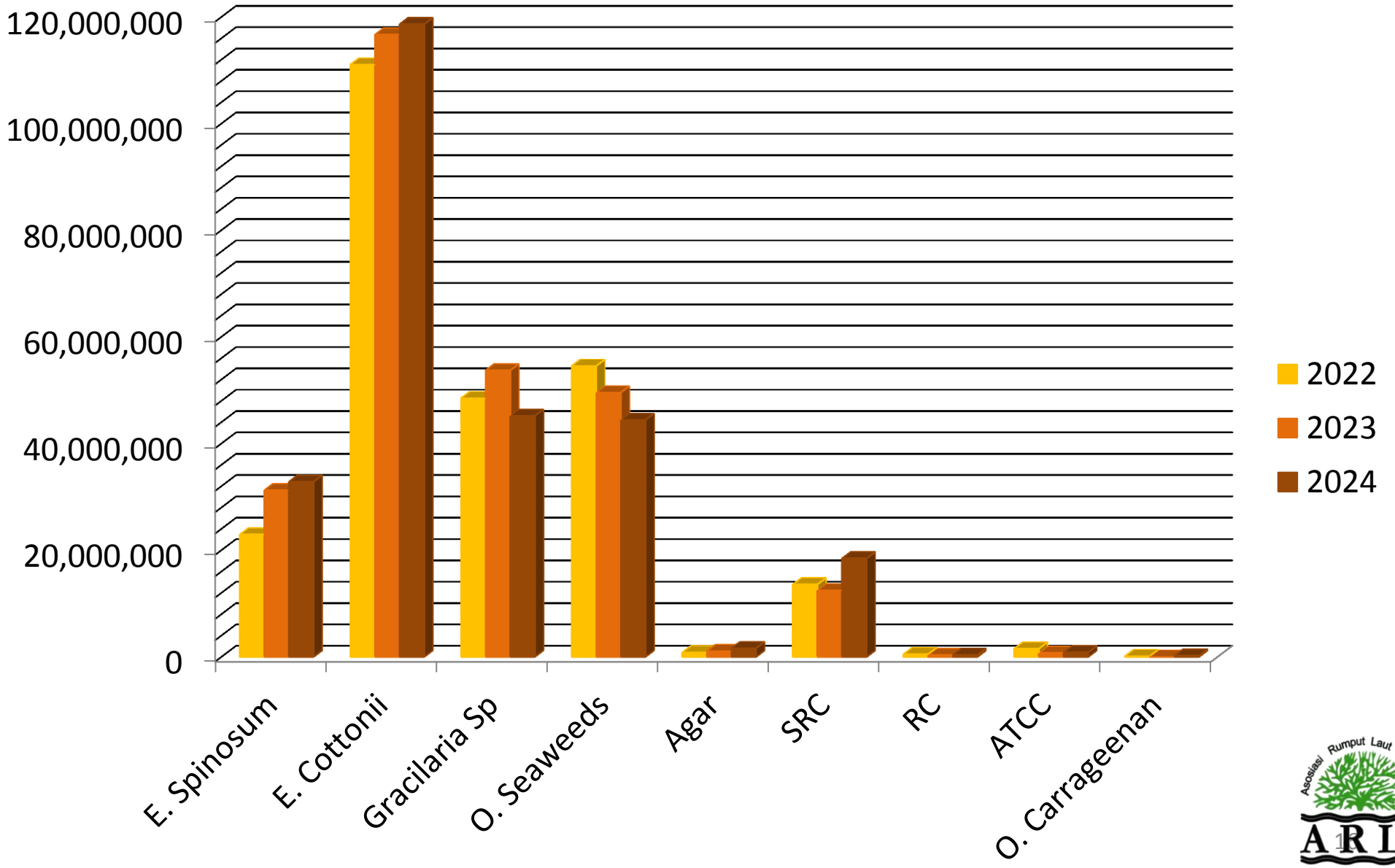
Total VALUE : USD 342,158,132



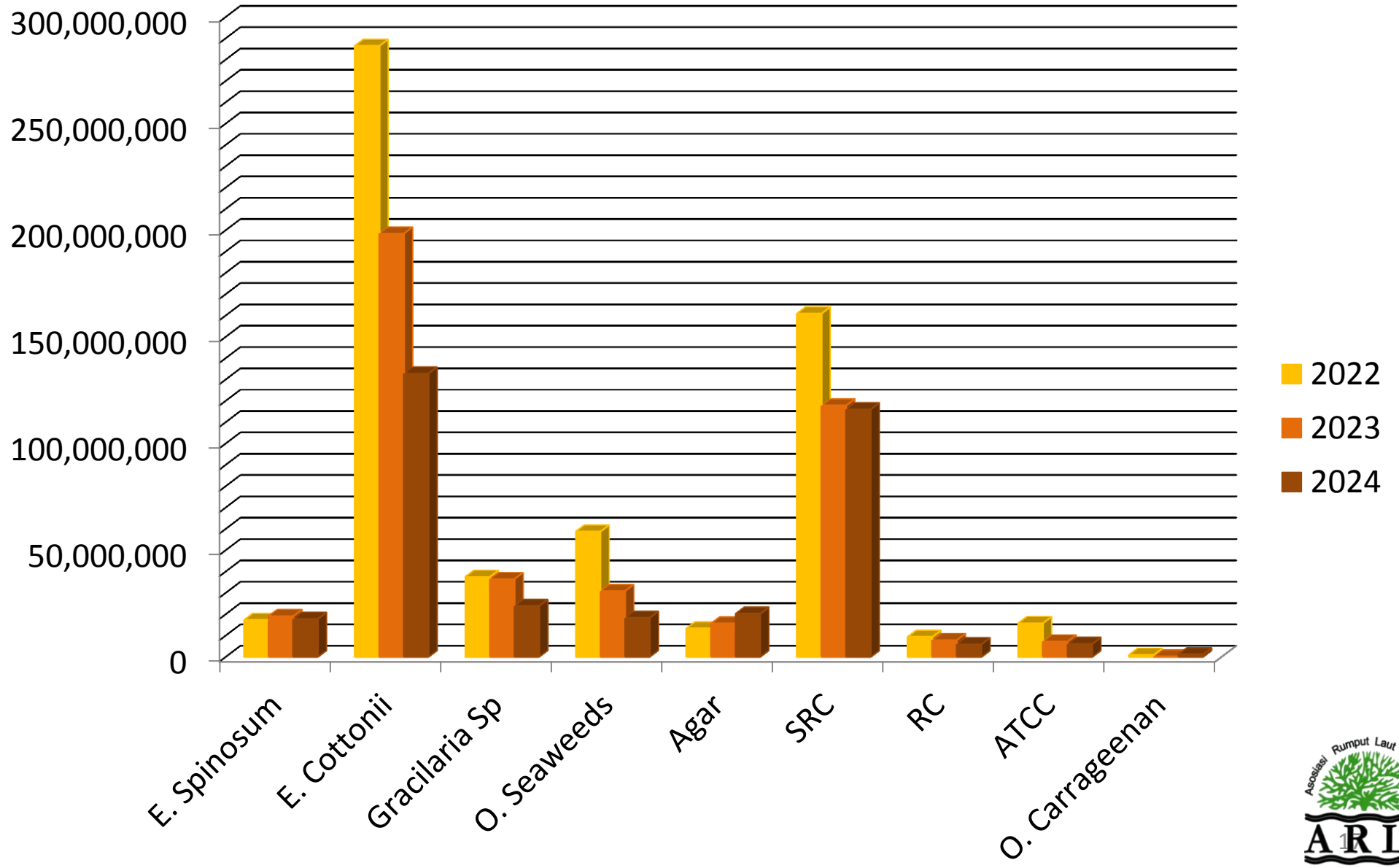
- **Dried Seaweed USD 192,767,414**
- **Carrageenan USD 129,202,297**
- **Agar USD 20,188,421**

Source : BPS – Statistics Indonesia

Indonesian Seaweed Export 2022-2024 Volume (kgs)



Indonesian Seaweed Export 2022-2024 Value (USD)



Indonesian Seaweed Export 2022-2024 in details

Description	2022		2023		2024	
	Net Weight (kg)	FOB Value (USD)	Net Weight (kg)	FOB Value (USD)	Net Weight (kg)	FOB Value (USD)
National Total Export	**253,680,065**	**600,356,449**	**265,843,756**	**433,715,443**	**262,555,441**	**342,158,132**
Raw Material	**237,040,024**	**399,925,204**	**251,190,539**	**284,900,355**	**241,073,693**	**192,767,414**
12122111 Eucheuma Spinosum	22,927,124	17,273,321	31,240,607	19,116,422	32,833,520	17,814,220
12122112 Eucheuma Cottonii	111,067,458	286,401,440	116,683,571	198,426,292	118,638,657	132,792,912
12122113 Gracilaria Sp	48,498,721	37,508,691	53,710,103	36,494,336	45,183,774	23,870,663
Other Seaweeds (12122119, 12122190, 12122919, 12122920, 12122930)	54,546,721	58,741,752	49,556,258	30,863,305	44,417,742	18,289,619
Processed Products	**16,640,041**	**200,431,245**	**14,653,217**	**148,815,088**	**21,481,748**	**149,390,718**
13023100 Agar	833,123	13,324,129	1,085,741	15,609,680	1,608,414	20,188,421
13023911 Semirefined Carrageenan	13,584,623	160,944,830	12,484,594	117,812,062	18,455,513	116,049,344
13023912 Refined Carrageenan	519,243	9,344,519	337,636	7,912,153	376,642	5,957,660
13023913 Alkali Treated Carrageenan Chips	1,548,812	15,828,284	725,460	7,259,731	840,645	6,042,669
13023919 Other Carrageenan	154,240	989,483	19,786	221,462	200,534	1,152,624

Source : BPS – Statistics Indonesia

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Global Market Challenges

- A **5-year evaluation of carrageenan and agar from the National List of USDA** (United State Department of Agriculture) on seaweed-derived hydrocolloids (carrageenan and agar) as Organic Products
  - In April 2018 and April 2023, Carrageenan and Agar were re-listed in the National List of USDA as Organic Products)
  - Will be reviewed in 2028 (evaluation starts on 2026-2027
- A negative campaign against carrageenan on social media as a result of the issue of delisting carrageenan and agar-agar even though it has been declared organic by the USDA.

Carrageenan Controversy - Science vs Sentiment

Carrageenan Free = Free of Science

No Carrageenan = No Job = No Food
(About one MILLION seaweed farmers)

Massive (fake) news campaign

Consumer Carrageenan (mis) Perception

The consumer mis-perception of carrageenan as an unacceptable additive continues in the US. This mis-perception may even be spreading to Europe. The FDA, JECFA and EFSA see no scientific basis to remove carrageenan. It is even approved for baby food and in organic formulations. There are about one million hard working seaweed farmers developing economies in dire need of the income for survival. If only consumers could be made aware of the social impact of their anti-carrageenan stance.

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Global Market Challenges

- As of June 7, 2025, the European Union has started to implement a regulation that **Agar is not allowed to be used in Pet Food.**

Hydrocolloids Need Defending

Agar is not commonly used in European pet food, and the small amount that is currently used will be eliminated due to a lack of effort to advocate for its inclusion. As of June 7, 2025, agar will no longer be approved for use in pet food within the EU. This is unfortunate and highlights a lack of support from either suppliers or users, or possibly both. Interestingly, agar remains approved for human consumption in the EU. It is puzzling that it is deemed safe for us but not for our pets showcasing the contradictions within regulatory agencies.

- **Carrageenan has listed as a High Risk additive** by YUKA. The YUKA phone app is widely use by consumers (Yuka claims 67 million users) to evaluate food and food additives.

Sadly and unfortunately, Yuka has decided to list carrageenan as a "***High Risk***" additive when it is one of several additives on a food label. For example a Panna Cotta found at Monoprix supermarket in France scores very poorly at 7/100. Carrageenan is a "***Suspected Carcinogen," causes "Intestinal Inflamation," "Disturbance of the Microbiota," and "Degrades into toxic compounds".***

- **<u>Need more campaign on the positive aspects and the use of Carrageenan and Agar</u>**

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Recommendations

- All ASEAN countries must set national standards for the quality of cultivated raw dried seaweed (RDS), both for use as raw material for the domestic seaweed processing industry and for export.
- All ASEAN countries need to work together to conduct research and development, especially regarding cultivation methods to improve quality and climate change mitigation scientifically.
- All ASEAN countries need to discuss all possibilities for setting prices regionally, so that the sustainability of seaweed cultivation can be maintained.
- All ASEAN countries need to join hands to face and fight the negative issues and black campaigns against seaweed and its derivative products in the global market.
- All ASEAN countries need to strengthen regional cooperation regarding the development of the seaweed industry and its trade as a concrete manifestation of the establishment of ASIC, which has held 15 annual meetings.

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The 8th Meeting of The ASEAN Seaweed Industry Club

Nine years ago in Tawau - August 23, 2016

ARLI's Team

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Thank You!

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