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INDUSTRIAL DEVELOPMENT ORGANIZATION

Progress by innovation



Sustainable Seaweed Value Chains

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UNIDO



...And a powerful ally to address the SDGs

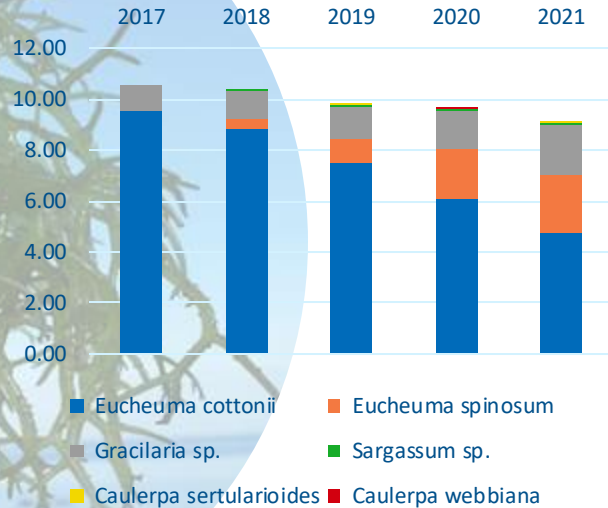
A thriving and sustainable seaweed industry could result in...





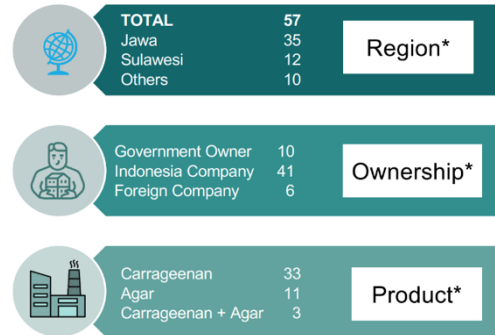
Indonesian Seaweed Production Trends

Seaweed Production Indonesia



- Official stats 9.2 m tons ~ 45% global output
- Industry estimate 4-5 million tons

Processed seaweed Indonesia



22 UPRL ASTRULI
27 UPRL NON ASTRULI
Estimated installed Capacity 197.650
Ton / year of dried seaweed raw
material

9 of 10 Government factory
unutilized more than 5 years

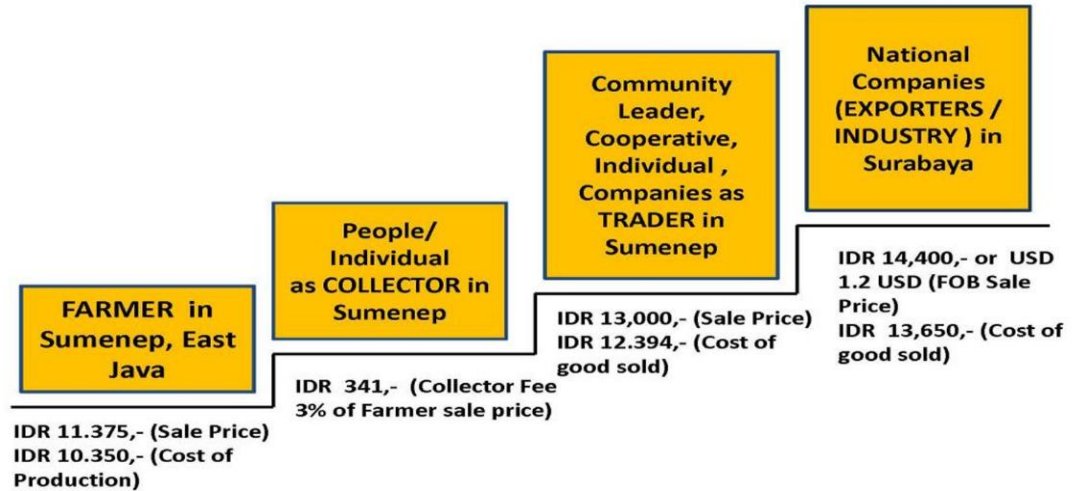
*80% of carrageenan factories
produce semi finished products

Last updated 2022

- Carrageenan (SRC,RC); mainly for export
- Agar-agar: mainly for local market
- Average seaweed processing plant work under its installed capacity (<60%)
- Carrageenan and agar has become a commodity market
- Strong competition from China, Philippines and from other hydrocolloids (plants)



Seaweed (*Eucheema cottoni*) value chain at Sumenep, East Java (estimated price)

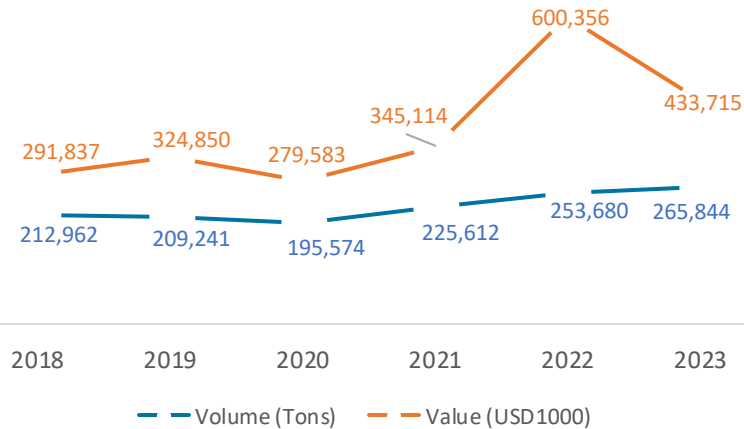


- Seaweed supply chain is fragmented mainly carried out by small holders
- Long supply chains with limited connection/linkages with processors, less control on quality
- Limited value addition and low margin – driven by volume and price
- Income margin is lower for all VCOs (Exporters 5%, Trader 5%, Collector 3% and Farmer 10%)
- Normal margins for trade in goods is 15 – 20%

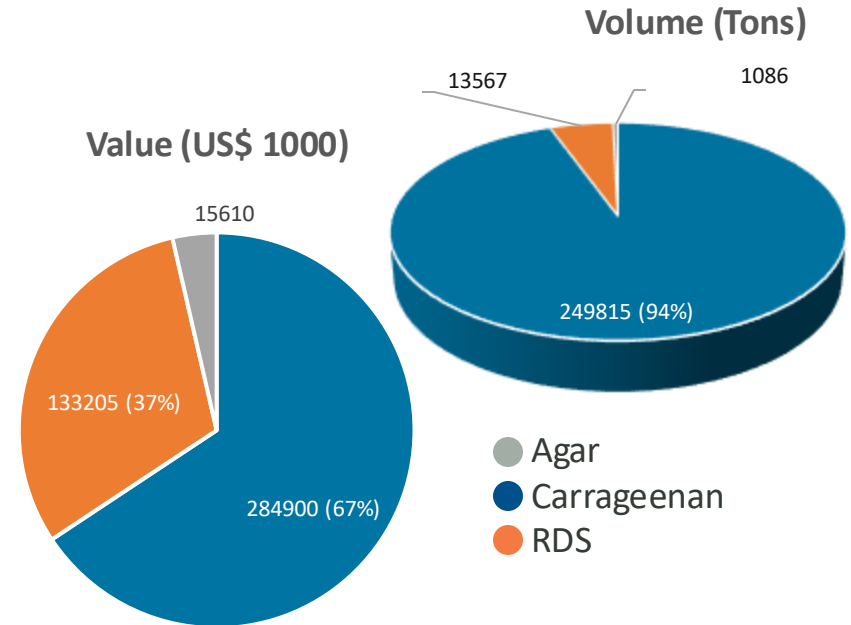


Indonesian Seaweed Export Trends

Export trend by volume and value



Export composition by products



- Export growing, but value dropped in 2023 due to weakening price (post covid, competition from other sources)
- 94% of export quantity in RDS (fit and not fit for human)
- Export of agar (and dried gracilaria) is small, mainly for local market

Hydrocolloids Market Trends

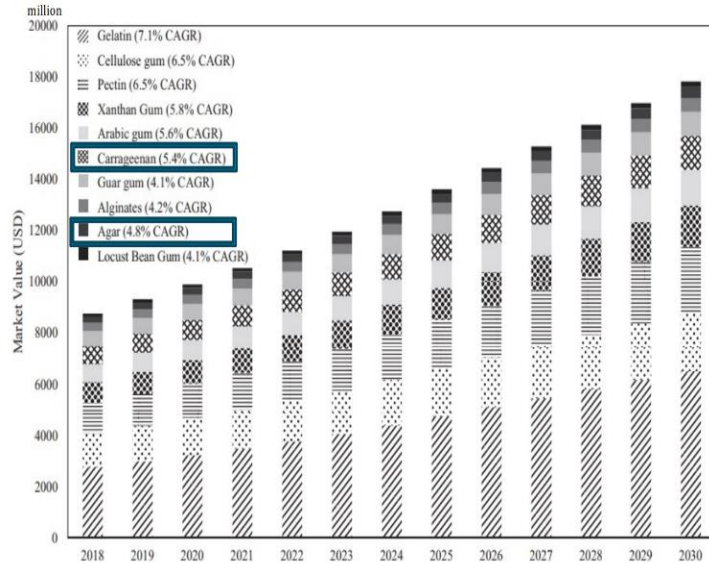


Figure market value

Source: The Global Carrageenan Industry, Grand view research 2023b
<https://www.researchgate.net/publication/376363497>

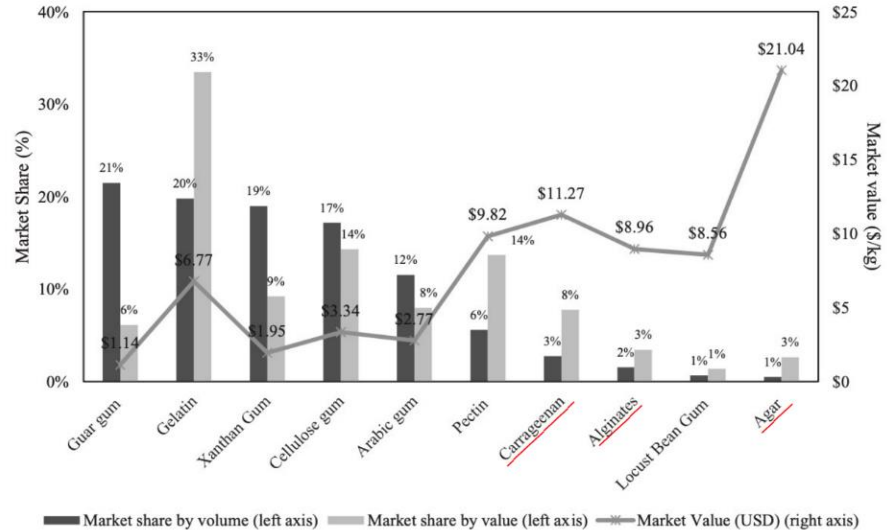


Figure major hydrocolloids by market share & market value

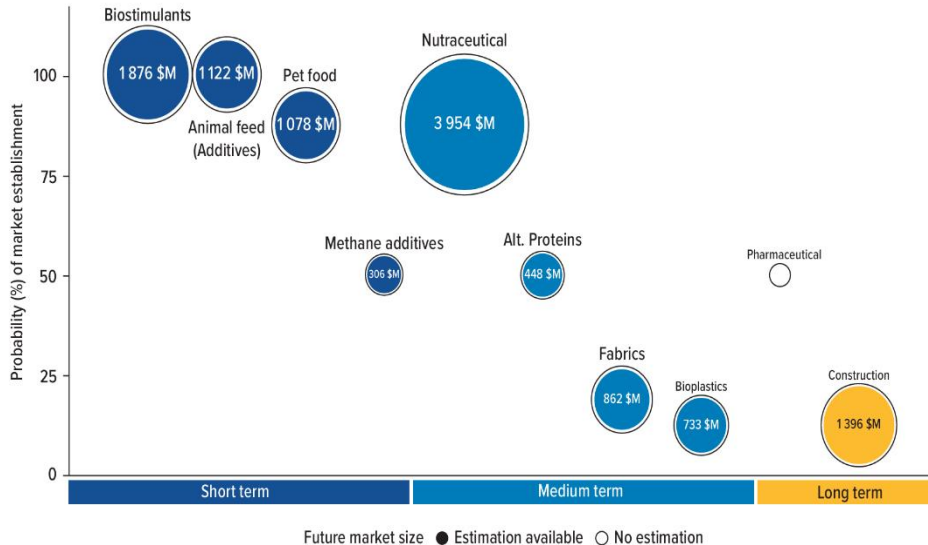
Source: The Global Carrageenan Industry, Grand view research 2023b

- Hydrocolloids market is expected to grow in moderate rate globally
- Hydrocolloids from seaweed (agar and carrageenan) are expensive compared with other sources



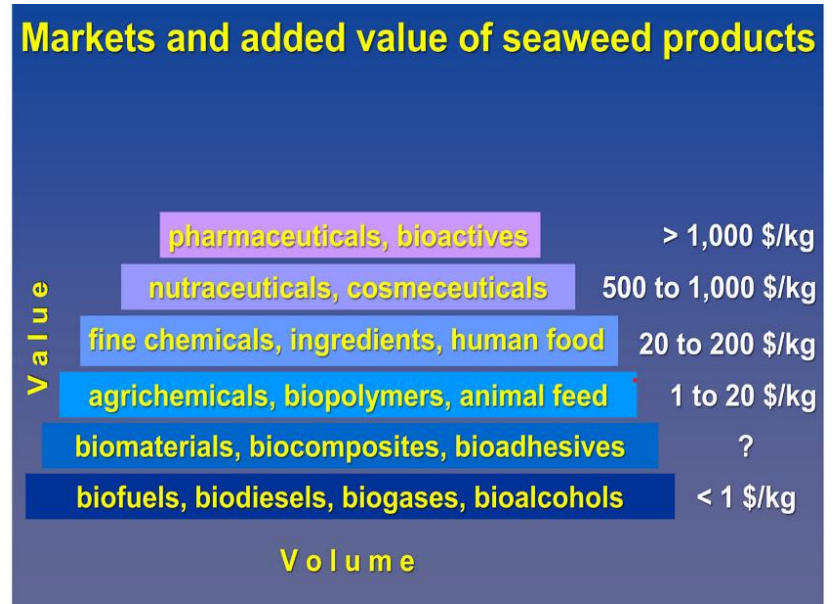
New Market Opportunities

Predicted seaweed market size by 2030 (\$ millions)



Source: The World Bank: Global Seaweed, New and Emerging Market, 2023

Markets and added value of seaweed products



Source: Thierry Chopin and Alber G Tacon-Importance of Seaweed, 2023



Indonesian Seaweed Industry: Three pathways to development

**Mainstream
species and
existing industry**

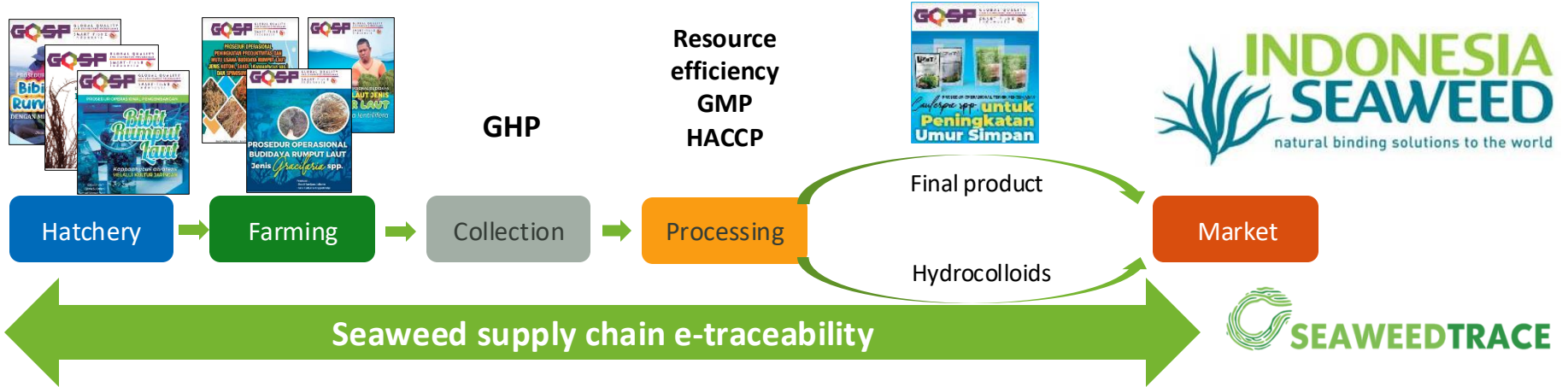
**Mainstream
species and new
industries**

**New species and
new products/new
industries**





UNIDO Support to Seaweed Sector in Indonesia (2014-2023)



Tropical Seaweed
Innovation Network

New standards on
farming & processing

Engaging farmers in
standard setting process

Introduction of Seaweed
in academic curriculum

Introducing Seaweed
in extension services

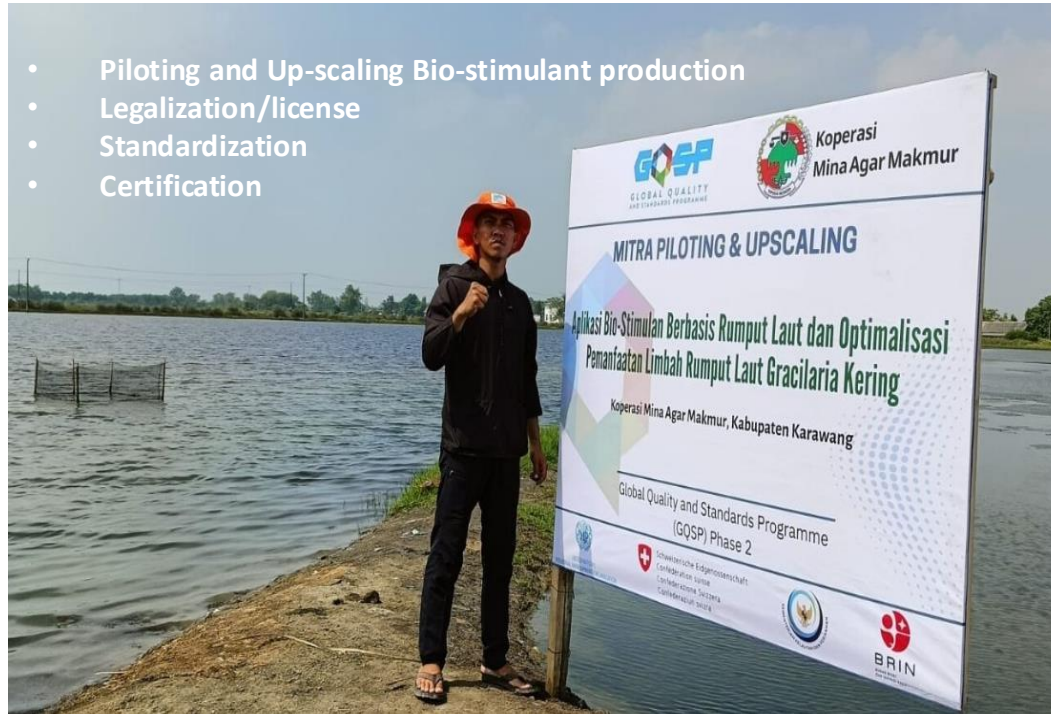
Institutionalizing
VC Roundtables

Industry catalyst: Research, Government, Promotion and Education



Since 2023 Focus on New Species and New Applications

- Piloting and Up-scaling Bio-stimulant production
- Legalization/license
- Standardization
- Certification





- **Piloting Ulva farming: food, feed, cosmetics**
- **6 private partners (IDR 1.2 billion investment for production facilities)**
- **Conservation of wild Ulva**
- **Livelihood**





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Family based Ulva processing industry





Theory of Change

Global Enablers

Partnerships for
knowledge and technology
exchange

Development and
harmonization of
standards

Technical Assistance

Public and private
investments

Key conditions for transformative change



Key transformations

Increasing demand for friendly
seaweed-based products among
down-stream industries, end users
and consumers

Conducive governance and
enabling environment fostering an
innovative and sustainable seaweed
sector

Diversified and innovative supply of
seaweed & seaweed value-added
products that meet the market
requirements

Goal

Competitive,
Equitable
Sustainable
Seaweed Sector



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**THANK
YOU**