

# Market tendencies – Algae positioning

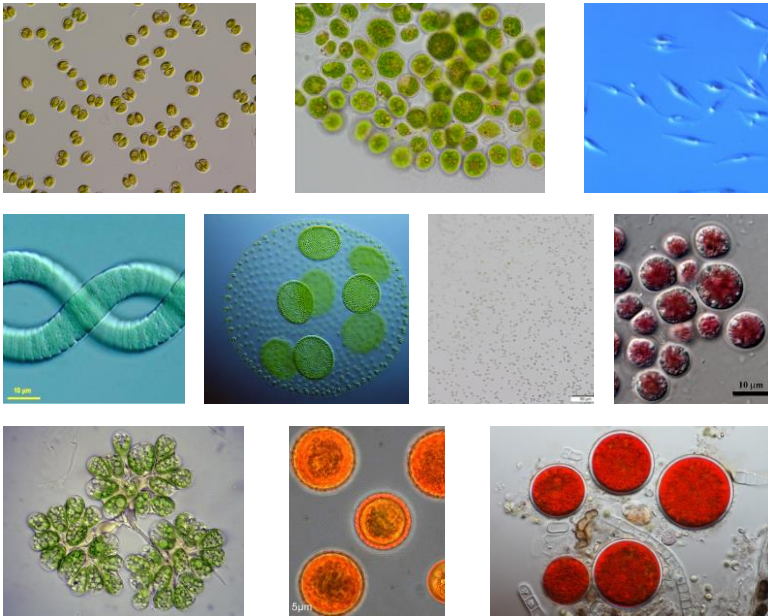
July, 2020

Margarida Costa

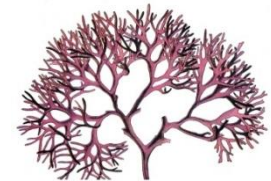


# Algae - classification

## Microalgae



## Macroalgae - Seaweed





# Historical algal products

**Food/pharma** – Asia, America, Africa and recently Europe



**Chemicals** –  $\text{Na}_2\text{CO}_3$ , Kieselguhr



**Medical and research**

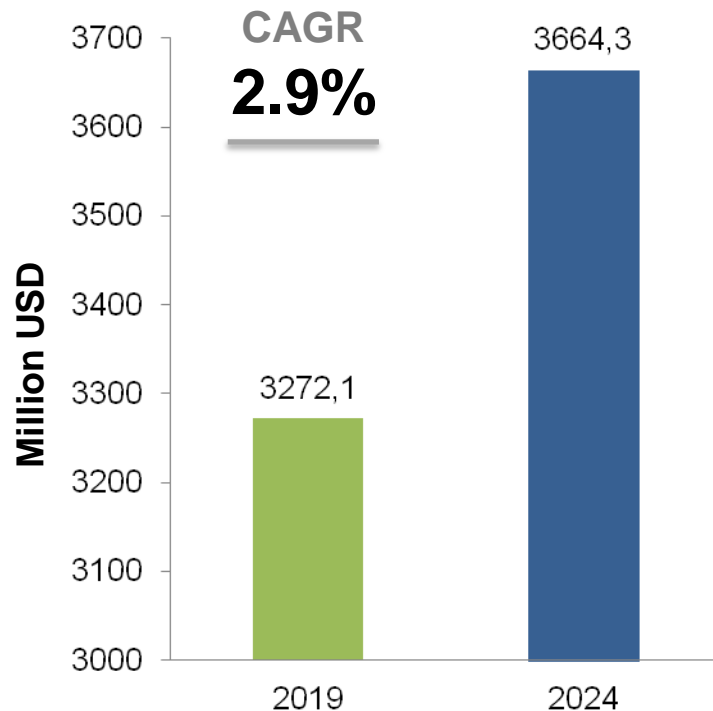


**Fertilizer** – coastal communities



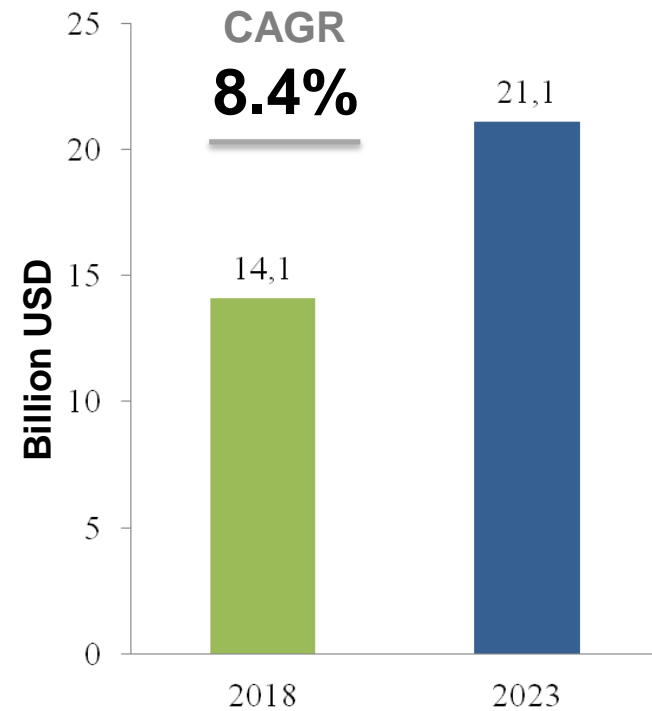
# Algae Products Market (USD Million)

## Microalgae



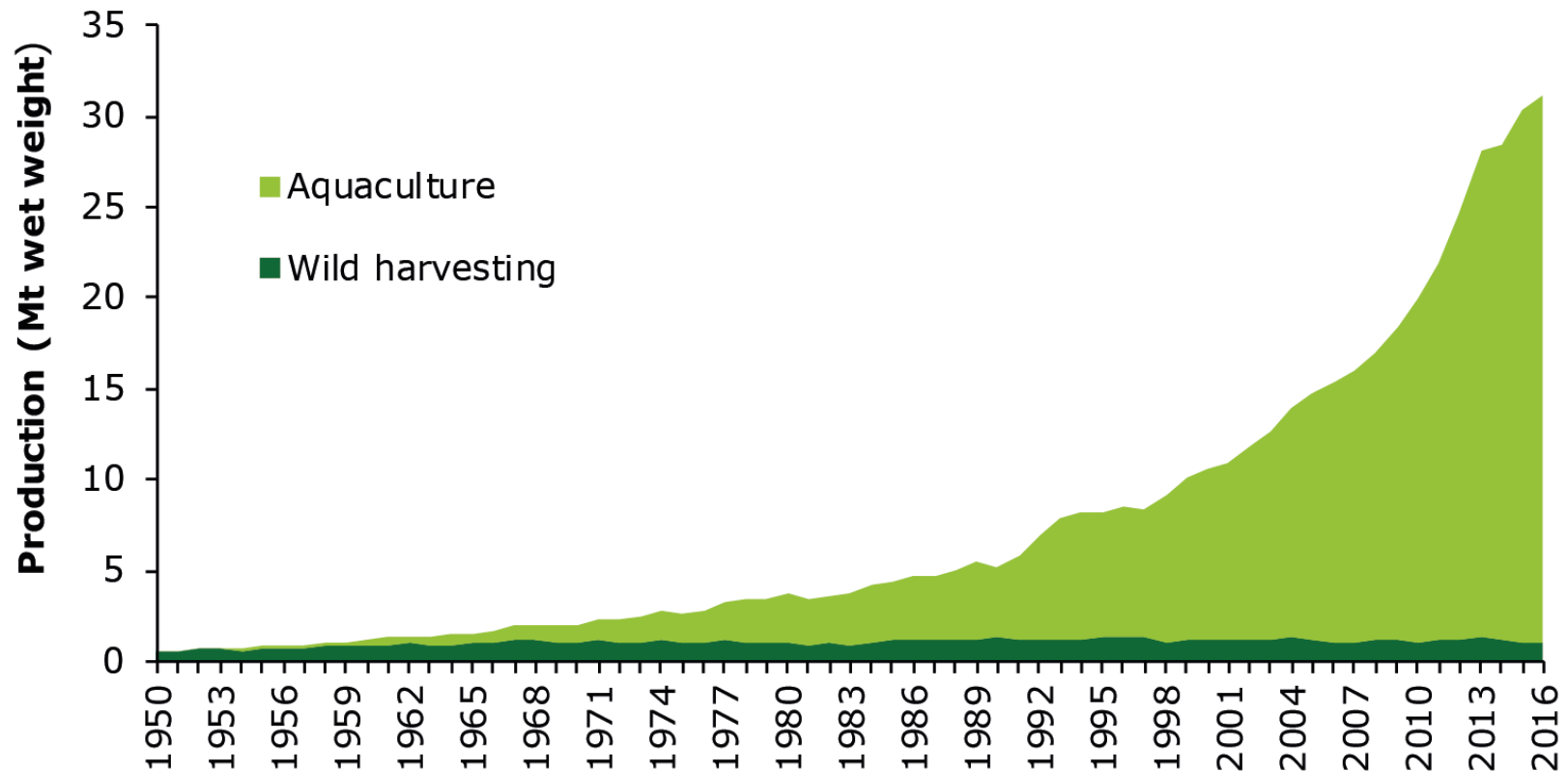
GlobalInfoResearch, 2020

## Macroalgae



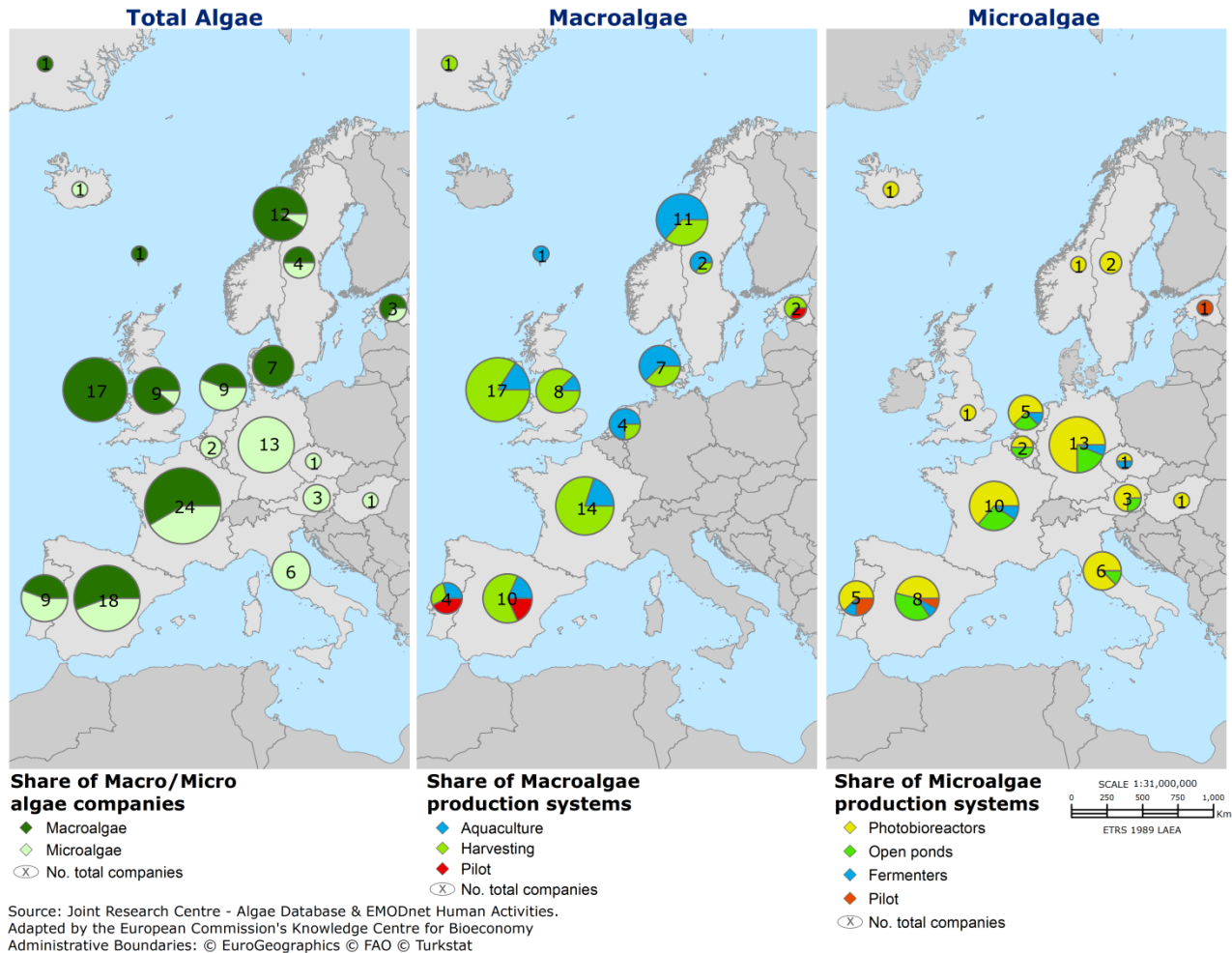
Markets and Markets, 2020

# Global macroalgae biomass production



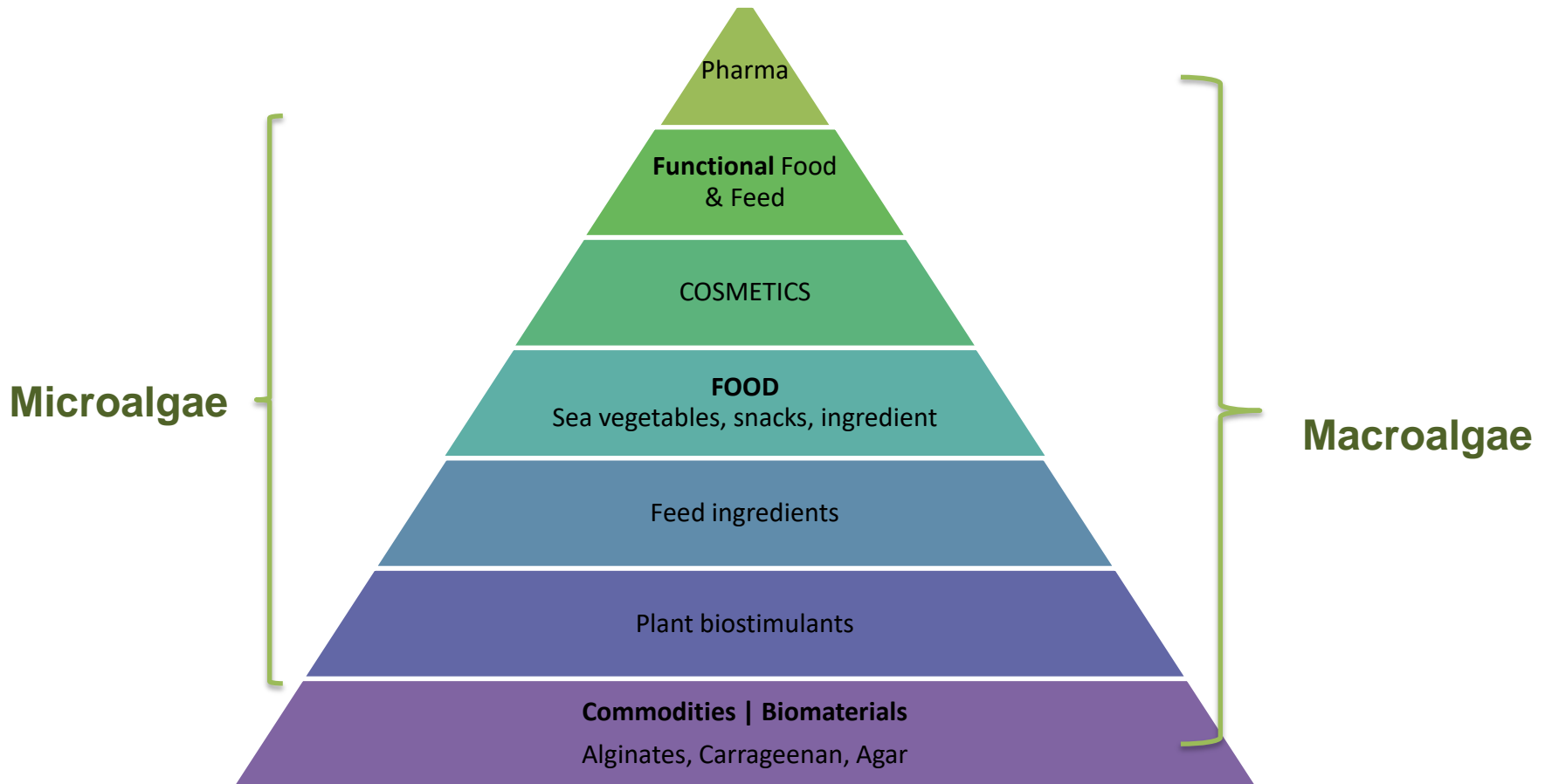
Algae biomass production for the bioeconomy, 2020

# European algae biomass production

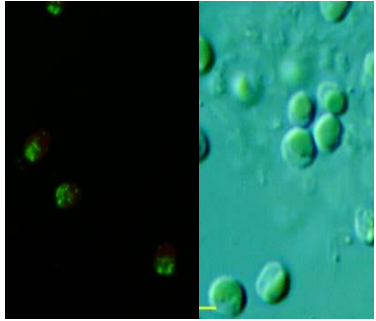


Algae biomass production for the bioeconomy, 2020

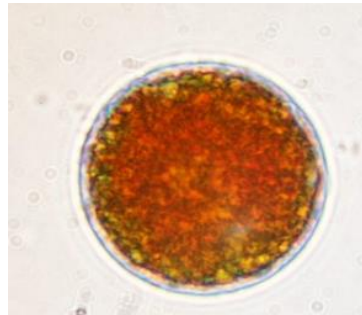
# Market distribution



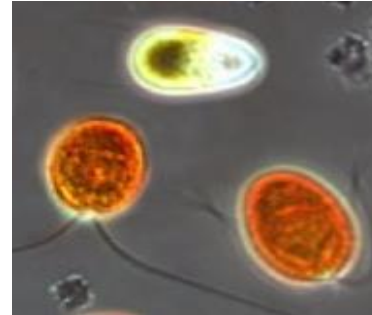
# Market - Food



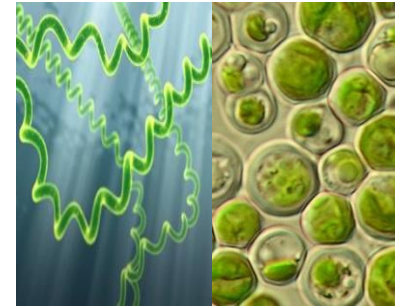
*Tetraselmis chui*



*Haematococcus pluvialis*



*Dunaliella salina*



*Spirulina. & Chlorella sp.*



DHA, EPA, ARA  
Among other PUFA  
Chlorophyll



ASTAXANTHIN



BETACAROTENE



PROTEIN  
Vit. B12  
Chlorophyll





# Market - Food

**Iodine\***

**Iron**

**Zinc**

**Magnesi  
um**

**Potassi  
um**

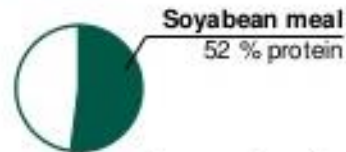
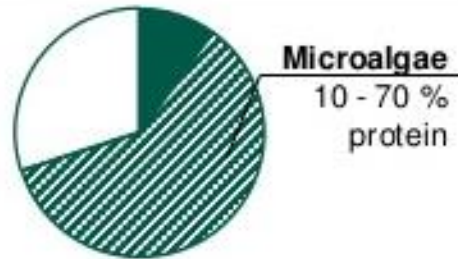
**Vitamins  
E, A and  
B12**

- ✓ They should be *a* part of the overall diet
  - High in **Fibre**
  - **Low calories**
  - 5-10g per day of dried seaweed
- ✓ Strong antioxidant effect:
  - Carotenoids, phenolic compounds, phycobilin pigments, polyphenols, sulphated polysaccharides and vitamins

# Market - Food

## PROTEIN CONTENT

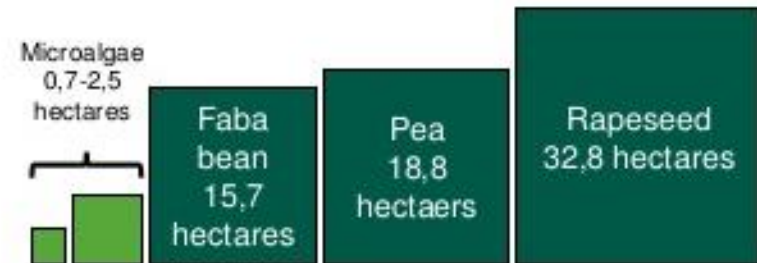
Large variation  
between different  
microalgal species!



<i>Spirulina platensis</i>	70 %
<i>Chlorella vulgaris</i>	58 %
<i>Scenedesmus obliquus</i>	56 %
<i>Nannochloropsis gaditana</i>	39 %
<i>Dunaliella bardawil</i>	10 %

## PROTEIN YIELD

Land area needed for producing  
**10 000 kg** of protein:



1 hectare = 10 000 m<sup>2</sup>

# Innovation in food products

## Targets

### Nutrition

- Less Salt
- Rich in macro and micronutrients

### Function

- Mechanic
- Colour
- Preservation

### Health

- Gut
- Cardiovascular

### Democratisation

- Taste
- Innovation in tradition
- Price



ValorMar

Valorização integral dos  
recursos marinhos

# Innovation in food products

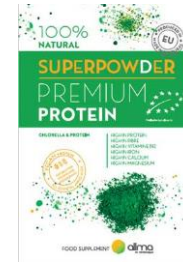
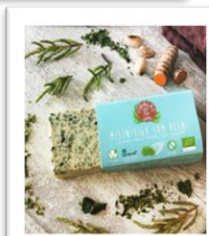


**BEST OF 2018: THIS EDIBLE PACKAGING MATERIAL IS BASED ON SEAWEED**





# Market - Food



# Other applications

- Health creams;
- Lotion additives;
- Toothpaste;
- Shampoo and conditioner;
- Facial masks;
- Clarifiers and Toners;
- Sunscreen.

Cosmetics and beauty products



- Anti-coagulants and coagulants;
- Sterilizing agents;
- Iodine;
- Laxative.

Pharma and medical applications



- Bioplastics and biopaper;
- Paper stabilizers;
- Paper adhesives and temporary glue;
- Textile fibers and additives.

Packaging and bioplastics



- Freshwater treatment;
- N and P removal;
- Soil amendment as fibrous material.

Soil and water treatment



- Bio-oil;
- Kerosene;
- Ethanol;
- Biodiesel;
- Biogasoline.

Biofuels



- Domestic animal food supplement;
- Protein additive;
- Fish feed and vitamins supplement;
- Flea and tick control.

Feed



- Germination stimulant;
- Leaf or team growth;
- Flowering promoters;
- Disease protection.

Fertilizers and biostimulants



# Conclusions

- Significant and growing markets and opportunities associated with:
  - 1) food security
  - 2) energy security
  - 3) lifestyle aspirations
- Requires co-ordination – R&D; screening; supply chains
- Algae companies have proven that with access to: 1) Quality biomass supply and 2) a targeted “niche” market, Algal products can provide a successful business opportunity.



# Questions?

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