Indonesia's Seaweed industry overview
Introduction

• **What on earth!**
  – Why is a small Irish research company involved in Indonesia?
    • Process and market support to Indonesian companies on carrageenan and agar.
    • Plant design and construction.
    • Work on the SIPPO programme; training for the Indonesian seaweed industry.
    • Working with CEVA on the UNIDO Smart-Fish project to improve the Indonesian seaweed sector.
Agenda

• Indonesia – a surprising place.
• Growing *Eucheuma* in Indonesia.
• Carrageenan processing in Indonesia.
• A quick tour of other methods and areas.
Indonesia

Population: 264 million
Size: 5,120km EW
1,760km NS
Islands: 13,466
6,000 (Inhabited)
Volcanoes: 150 active
By 2050 70% of the world's population will live within 5500km of Jakarta.
Indonesia

• Seaweed
  – A major focus of the MMAF (Ministry of marine affairs & fisheries).
    • A major employer in isolated, rural coastal areas.
    • Major policy document for future development currently being written.
    • The government wants to capture more of the value chain within the country by encouraging in country processing.
Some figures

• Carrageenan global market
  – Seaweed
    • 1.5 Million wet MT or 200,000 dry MT (Hotchkiss et al. 2016b)

• Indonesia
  – Seaweed
    • 825,000 wet MT or 110,000 dry MT
    • Does not include gracilaria for agar.
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Keeping taxonomists happy!

• Industry terms
  – Cottonii was Eucheuma cottonii now Kappaphycus alvarezii.
    • Tambalang is Kappaphycus alvarezii.
    • Sacol is Eucheuma striatum.
  – Spinosum was Eucheuma spinosum now Eucheuma denticulatum.
Sunemep

- On Madura island
- Demonstration farm set up to:
  - Exhibit best practice to farmers.
  - Train farmers.
  - Test new ideas
Green tambalang cutting ready for planting out.
Correct line spacing is important to maximise yield versus effort. Today they were testing 20cm spacing.
Tying cuttings to lines is a community job.
Cuttings going to the farm - some one as to do the carrying!
Washing weed in detergent to inhibit epiphyte growth.
The seaweed farm. Towing the bamboo frames out.
Lines deployed in bamboo frames. Frames anchored with rocks. Seaweed grows for 45 days optimally.
Dry the seaweed for three days to a typical moisture of 35%. At 35% moisture its stable for at least two years.
Bad practice... Salting weed. Common in Madura so prices from Madura are lower – a vicious circle.
Observations

• Almost zero capital required:
  – Bamboo frames, plastic bottle floats, detergent for reducing epiphytes, dry in the sun.

• Improvements simple and cheap:
  – Seaweed spacing on the line, line separation, noting the currents, cleaning weed with detergent.

• Not the sole employment
  – Seen as an extra, spreading the risk and earning some extra cash.
Problems

• Salting is wasteful and does not build trust between farmer and buyer.
• Tambalang prone to ice-ice, some areas use sacol but its lower quality.
• Weed quality variable across regions.
• Selling weed at 35 days – too young.
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Some figures

- **Carrageenan global market**
  - Carrageenan powder
    - 86,000 dry MT
- **Indonesia**
  - At least 15 processing factories, averaging 1000-1500tpa each
  - One new Chinese owned factory – 10,000tpa capacity.
  - The Indonesian government is encouraging in-country production and considering tax incentives.
Indonesian processing

• At least fifteen carrageenan factories operating:
  – 3 making gel press
  – 12 making semi refined food grade
  – 6 making technical grade
  – Obviously some make more than one grade.

• Problem
  – Over capacity – no more than 60% utilisation on average.
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Seaweed farming Asia – bottom line
Seaweed farming – Long line, surface

Picture from Colin Hepburn
Seaweed farming – Bali

Picture from Colin Hepburn
Seaweed farming – Other ways

• Cambodia
Seaweed farming – Other ways

• Hainan China

Picture from Colin Hepburn
Seaweed farming – Other ways

• Panama

Picture from Colin Hepburn
Seaweed farming – Other ways

• Madagascar

Picture from Colin Hepburn
Summary

• Indonesia
  – Huge consumer growth predicted.
  – Indonesia is a very large single market – easy access to 264 million people – not many countries have that.
  – Indonesia has the seaweed raw materials, the seaweed processors and the market.
SMART-FISH INDONESIA
Sustainable Market Access through Responsible Trading of Fish in Indonesia
Selamat tinggal – from Sumenep