# The Future of Marine Ingredients



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14th June 2016

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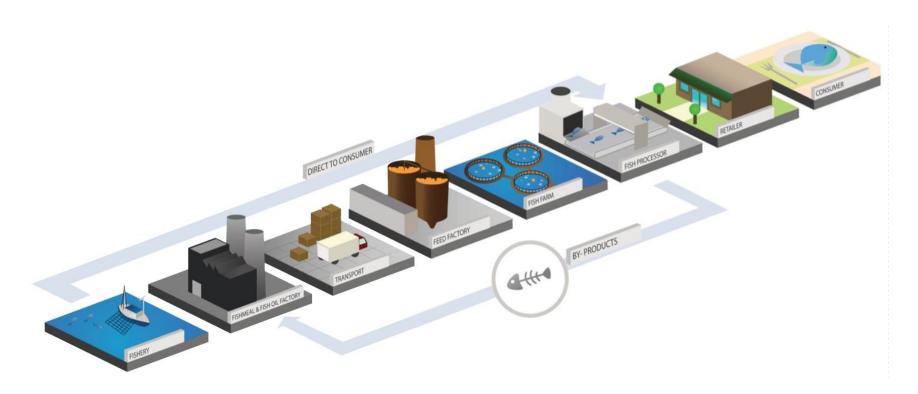
Your narrator







### **The Value Chain**





#### Weaknesses in the chain

- Some links wider than others (gaps in understanding)
- Cost inefficiency (low cost feed = slow growth fish + increased antibiotic use)
- Farmed before sold production led.



### **Misinformation**



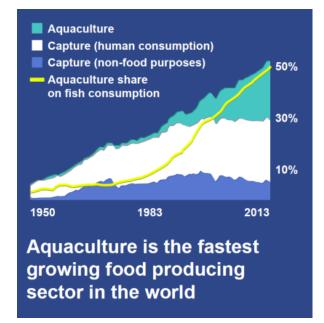
Managing a crucial link in ocean food webs

A report from the Lenfest Forage Fish Task Force





- The best ingredients available
- Without FM, no Omega 3
- No other outlet for byproduct



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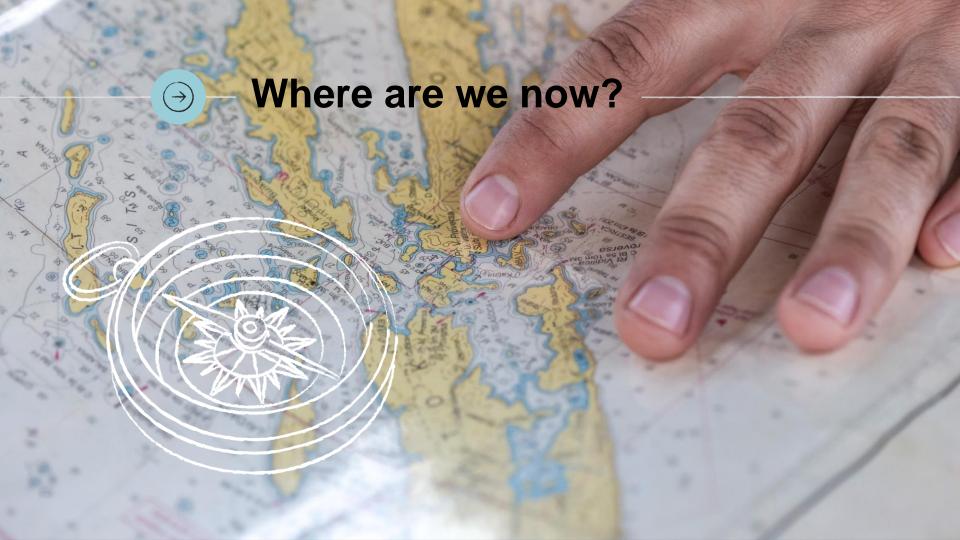








This is not just salmon...





### **Commodity to Speciality**







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### Placing an order for Fishmeal

#### Then

"100 Tons FAQ – I'll Confirm by telex"

#### Now

"100 Tons steam dried, 68% protein, <500ppm histamine, <100ppn TVN,<7.5% FFA, IFFO RS certified – confirming by email now."

### **Trends**

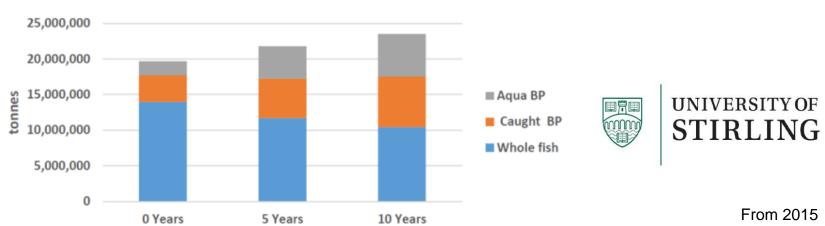
- Quality improving
- Retaining value at source





### **Increasing recovery of By-products**

#### **Estimated Raw Material Sources over time**





### The Consumer – emotion AND logic



Photo: Whole Foods

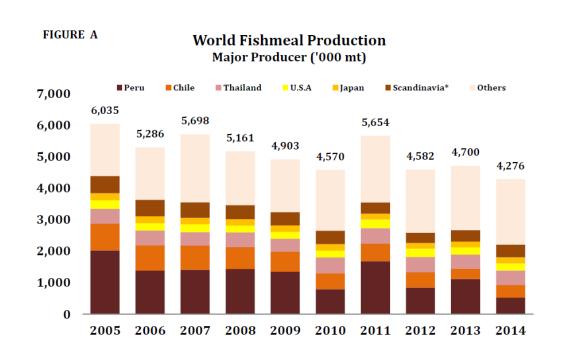
## Whole Foods, BioMar team to create new feed

The giants joined forces with Blue Circle Foods, and Norwegian farmers Kvaroy and Selsoyvik to create it.





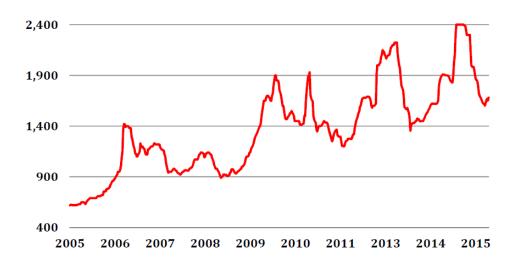
### **Volatility and Consistency**





### **Volatility and Consistency**

Weekly F.O.B. Peruvian Super Prime fishmeal prices
(US\$/MT) January 2005 -September 2015





### New Project 2016/17

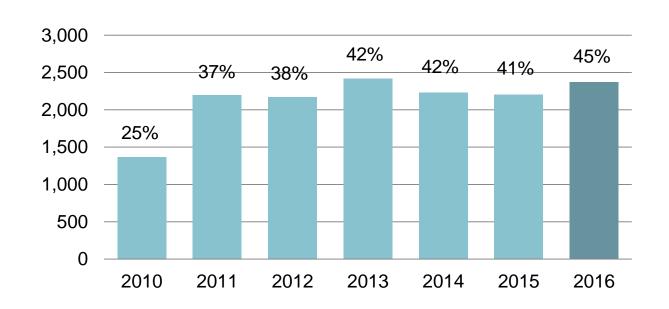
### Forage Fish Ecosystem Management

- Relationship between predator and prey abundance
- Relationship between biomass and recruitment





## IFFO RS compliant material – combined world production ('000 mt)



### Certification

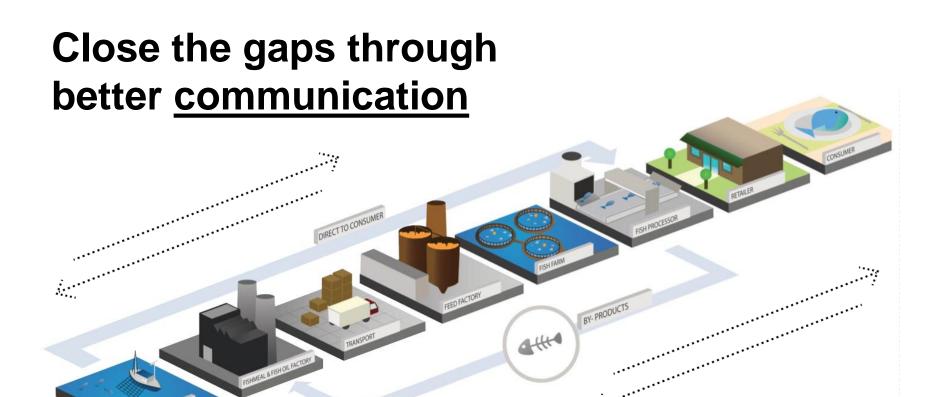


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# Move away from being production driven

Tier production into good value and customer orientated

## Cost reduction through vertical collaboration

Economic return per kg of marine ingredient by life stage?

Retain value at source

# Use Marine Ingredients to differentiate <u>quality</u>



## Thank you for listening

Any questions?