

# Factors of Change in the Global Aquaculture Industry

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- 🌐 Since joining Rabobank in 2005, Gorjan Nikolik has focused on the global seafood sector, including aquaculture, wild-catch fisheries, seafood trade and processing.
- 🌐 Nikolik is a regular speaker at global seafood and aquaculture conferences and has published numerous research reports on the industry.
- 🌐 Holds a masters degree in finance and business administration from the University of Maastricht and an MBA from Maastricht School of Management.





# Supply side factors of change in the aquaculture industry

- *Rabobank Group Food & Agribusiness Research*

- Gorjan Nikolik,
- Dublin, Ireland 2017



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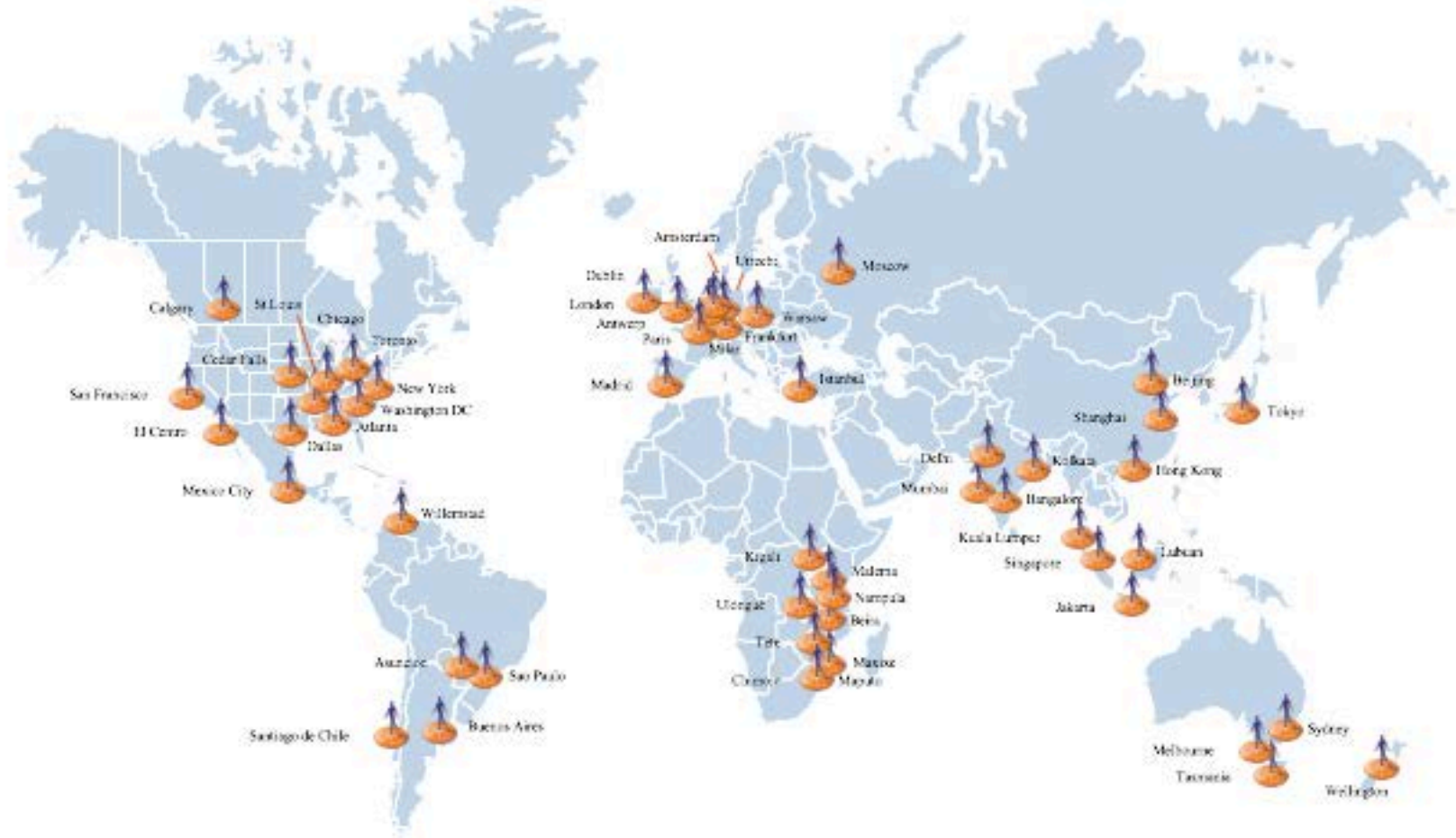
# Rabobank: Globally leading food and agribusiness lender and financial services provider



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If farmed fish have a much better FCR then terrestrial animals, why are animal proteins cheaper per kilogram of meat?

							
FCR	1/8	1/5	1/4	1/1.8	1/1.4	1/1.3	1/1.2

A number of reasons account for the price difference

1. Scale
2. Maturity
3. Logistics / distance to market
4. S/D balance
- 5. Feed price is high**
- 6. High mortality / biological cost**



*I*

*Novel feed ingredients*

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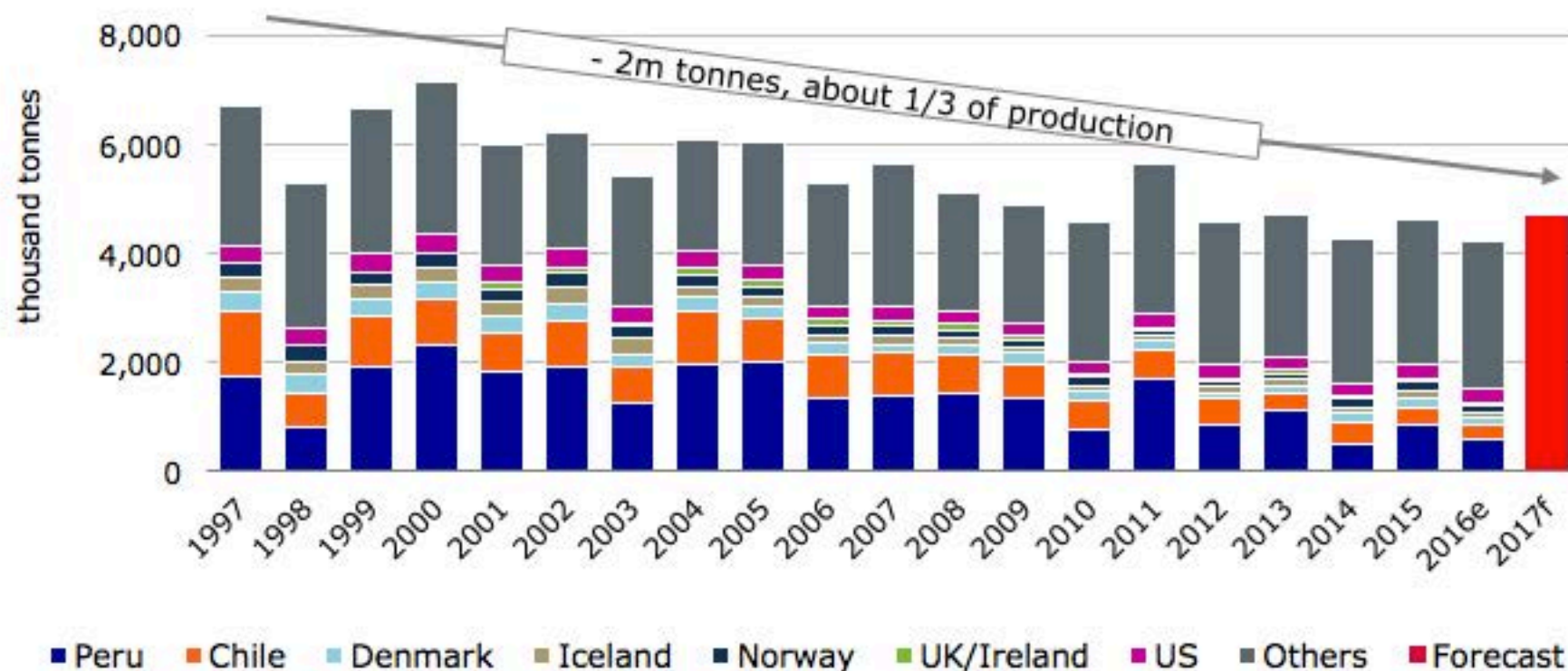


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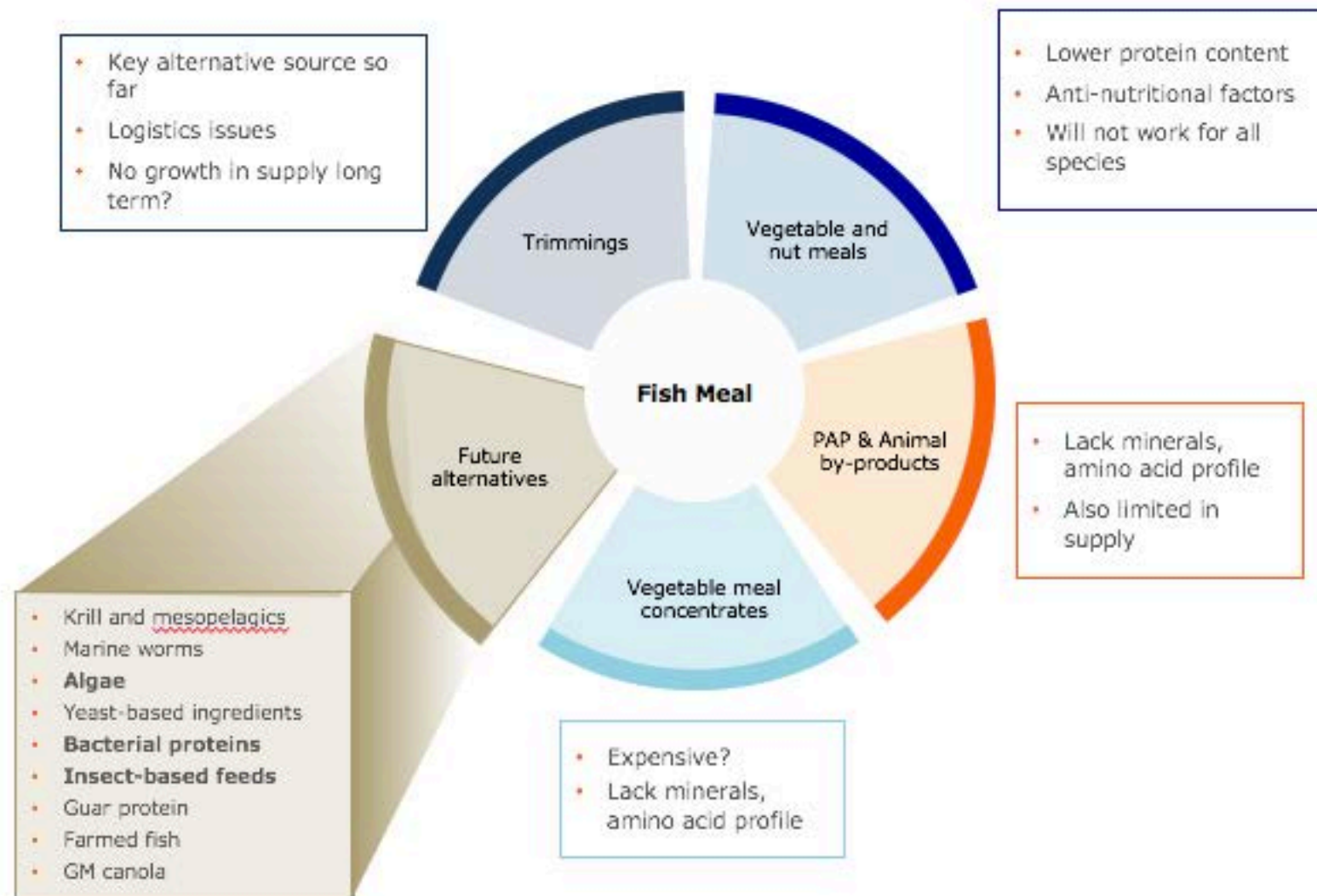
# After a two decades of decline Fishmeal supply bottomed out in 2016 due to El Niño

Long-term decline in FM production halts in 2017 but still far below historical levels





# Due to the scarcity of fishmeal and fish oil, alternatives have attracted attention and investors



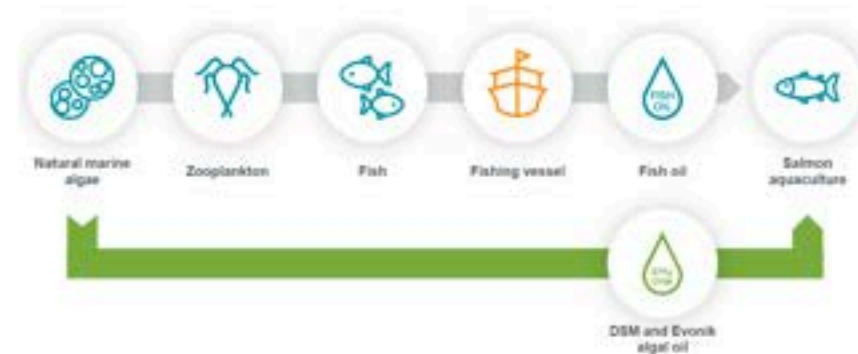


# Major aquaculture industry participants focus on algae, primarily for the algae oil

Algae



Companies investing in micro algae based ingredients



Sustainability



- Bottom of the food chain organism
- Algae production uses only 3% of the land and 2% of the water that other land crops use

Cost efficiency



- The current price of algae oil is considerably higher than that of FO
- But due to a very scalable production process, algae oil costs can decline once scale is reached

Reliability



- Due to a highly controlled, closed system—such as a heterotrophic production system—supply should be reliable and have a stable cost
- Prices and supply are likely to remain stable in the future

Taste



- The flesh will have a more 'natural, fish-like' taste, equal to fish/shrimp caught in the wild
- Fish fed with corn/soybean has a milder, less natural taste

Consumer health



- Algae-based food would present a better ratio of omega-3/omega-6 oils in fish flesh vs. vegetable sources
- More health benefits than in fish fed with soy and corn-based foods

Animal health



- Although there are variations across different algal species, all generally contain all essential amino acids and high levels of protein
- Better digestibility and better growth rates



# Bacterial proteins are one of the other novel alternatives which are expected to grow

Bacterial proteins



Companies investing in microbial based ingredients



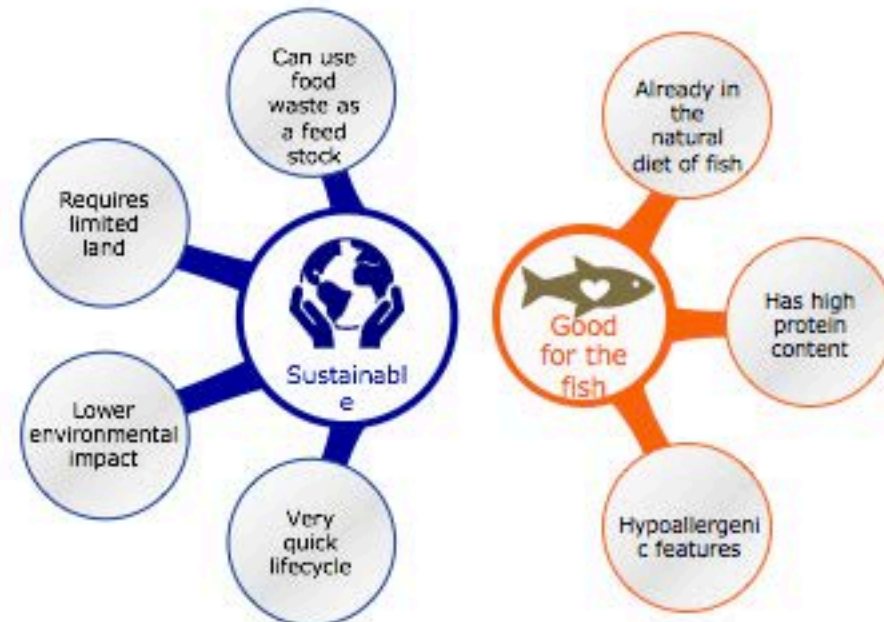


# Insects look promising, and can be a source of meals and oils but lack large investors

Insect-based feeds



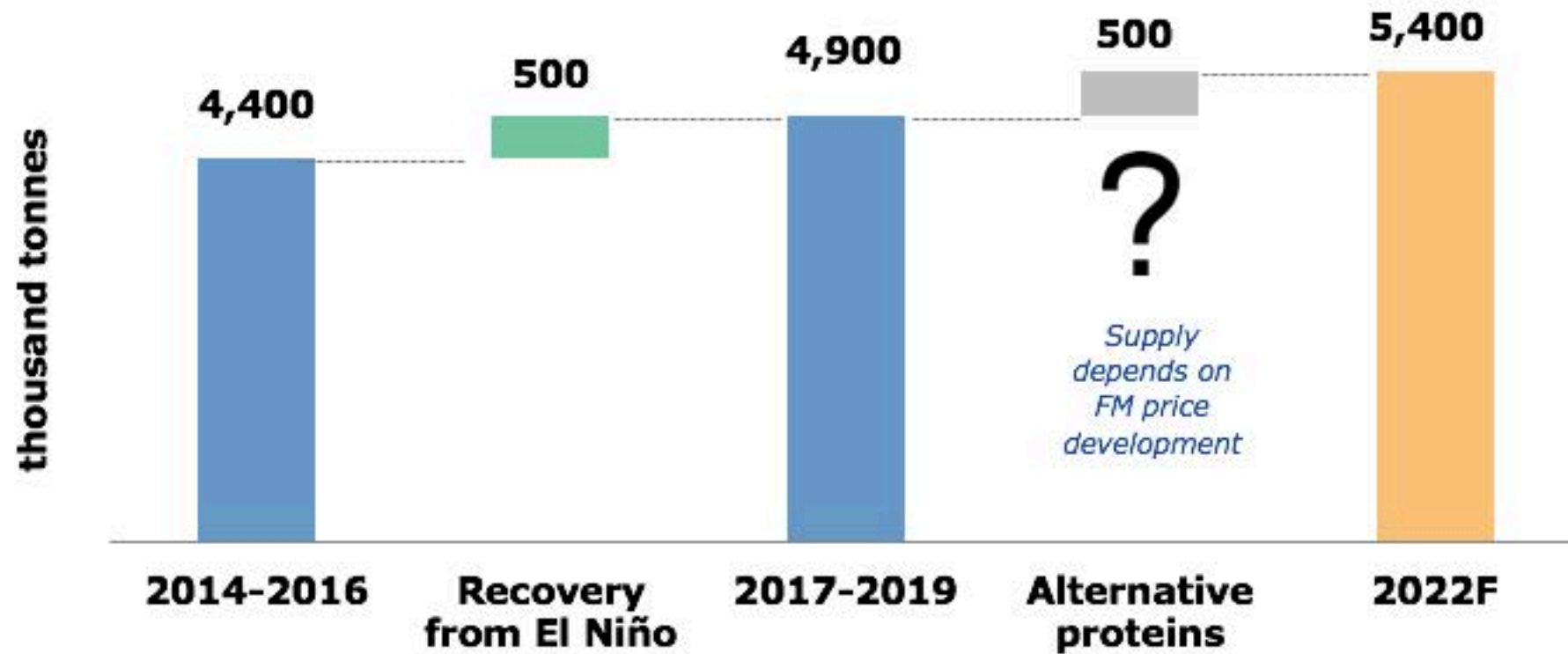
Companies investing in insect based ingredients





# Outlook: good fishmeal / alternative protein supply in near and mid term

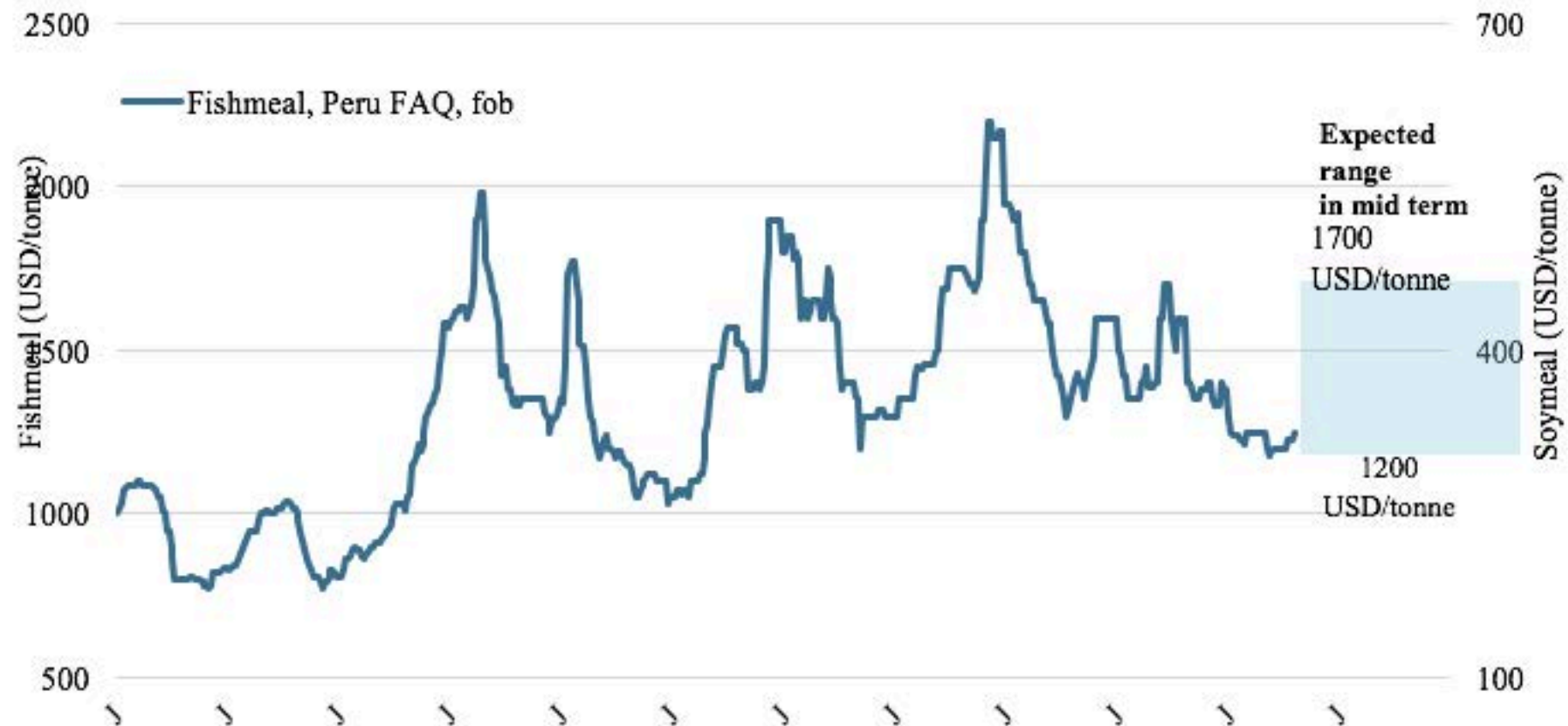
*Rough estimate of total FM supply and alternative proteins*





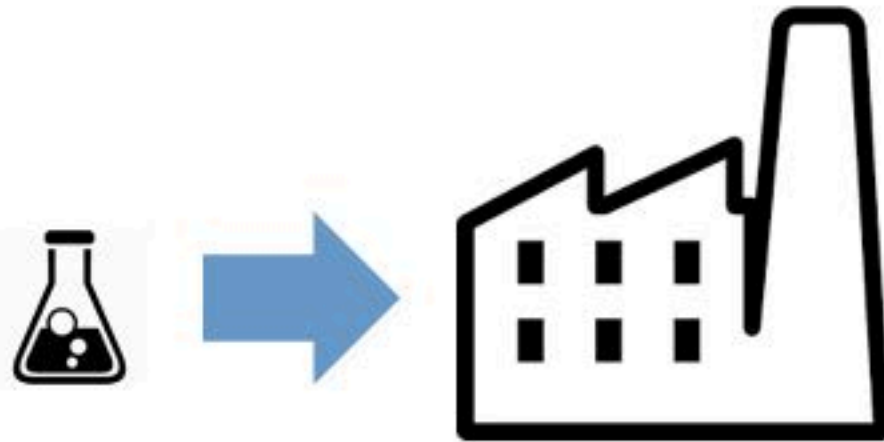
.....Consequently we expect a price range to be formed for the near and medium term

*After the correction in 2016 FM prices likely to move sideways as long as no new El Nino arrives*





## Huge possible impact on the aquaculture sector, but how to get to scale in the current low price environment?



### Winning strategies for alternative protein producers

#### **Be ahead of the rest**

Those who will reach scale, lower costs, and achieve commercial acceptance will have a strong advantage

#### **Follow a niche strategy**

Do not compete with FM or SMB on price, but have additional functionality. Sustainable, organic, natural, hypoallergenic, marine ingredients free.... etc.

#### **Have a long-term view**

Ensure good capital availability, and have investors with a long-term view



## *II*

## *Technology and new business models tackling biosecurity*

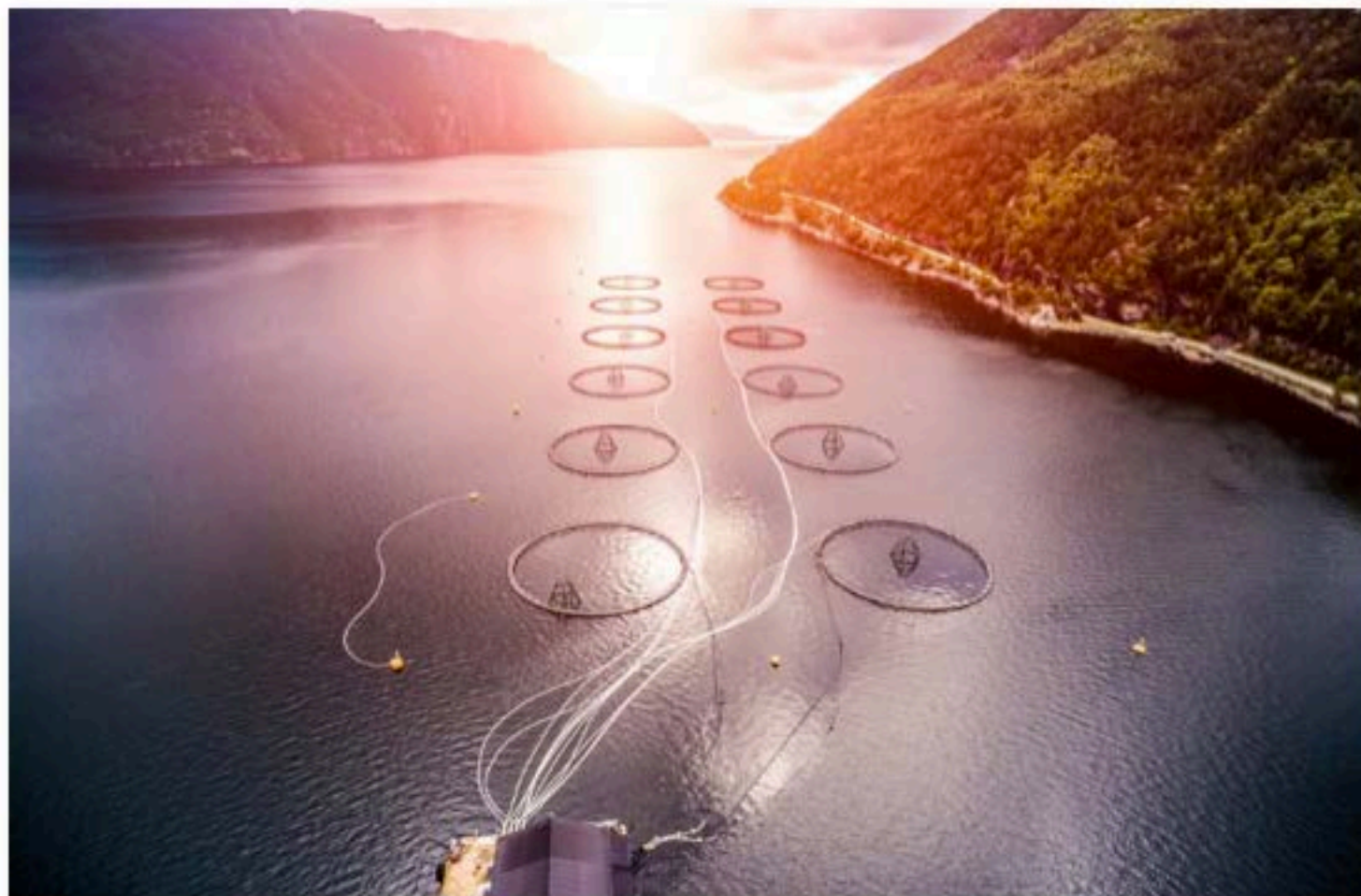
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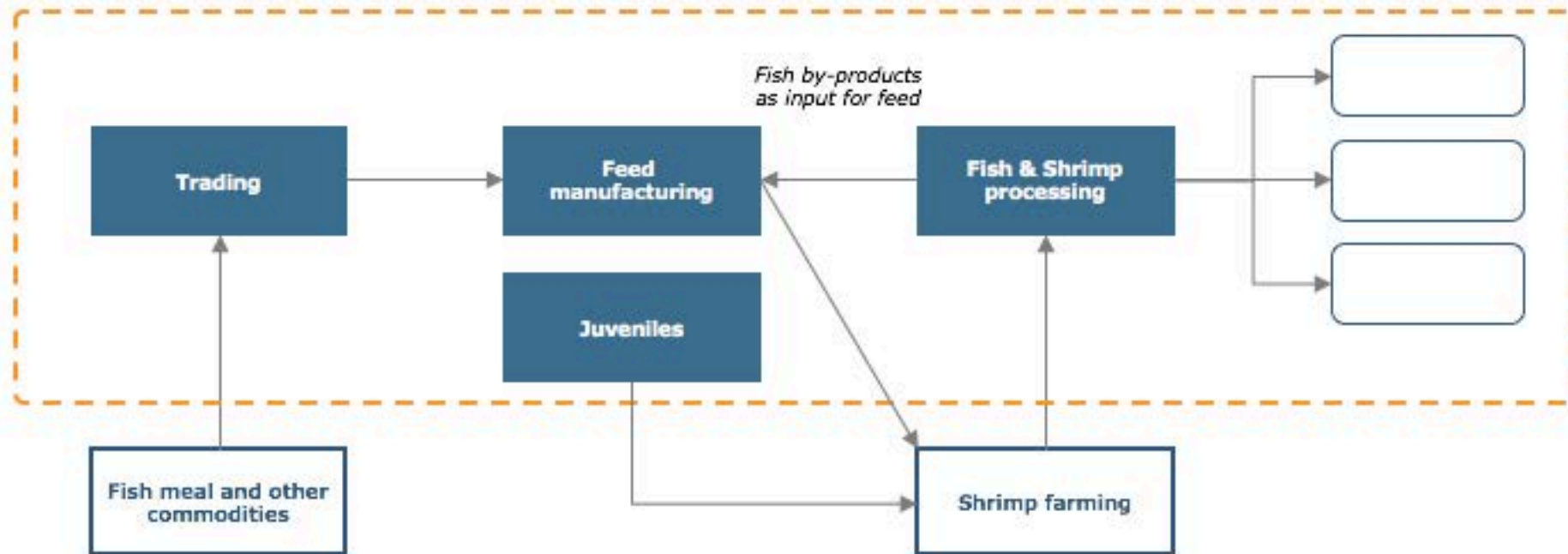
Aquaculture is open to the aquatic environment.....





.....and most aquaculture is performed by smallholders

*Typical Shrimp farming business model in Asia*



- Vertical Integrators: Capital-efficient model, suited to Asia and good for rapid growth
- But farming remains out of the vertical integration, very fragmented and difficult to control



## ...These and other features means biosecurity is an acute issue in aquaculture

- Farming in open environment
- Small holders
- Volumes growing rapidly mostly combined with increasing farming density
- Over 90% is in a tropical (high biodiversity) climate
- Mostly a developing country industry (grey sector / lack of legislation)
- Aquatic animals are recently domesticated– we do yet know what we lost while breeding for growth

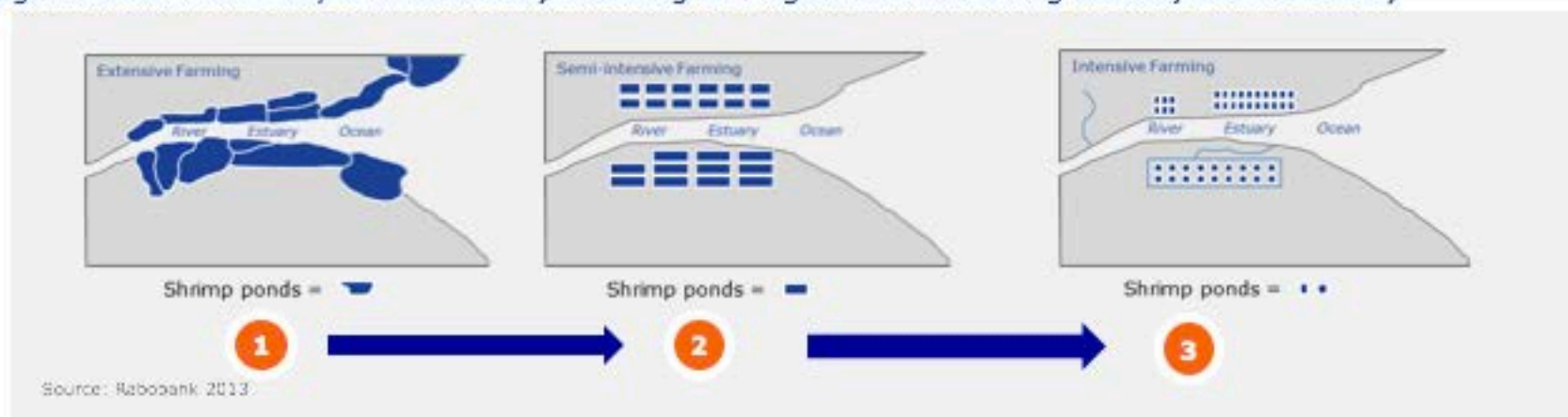


**High likelihood of  
disease /  
biosecurity issues**

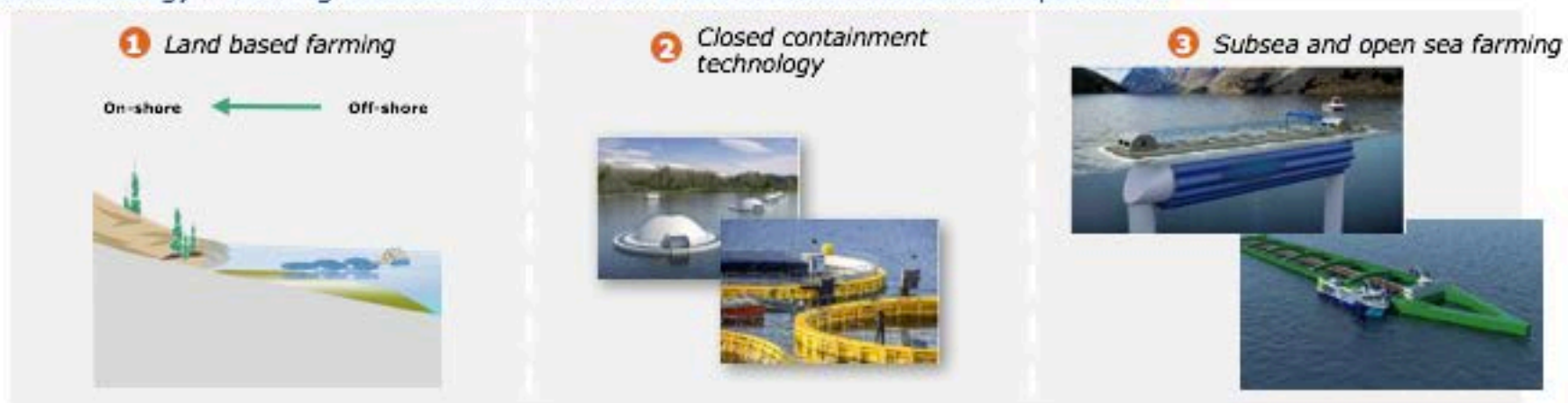


## Farm design: evolving to deal with the rising biological challenges, but this requires considerable capital

### 1. Shrimp farm design evolution: an example of an industry switching to a higher level of farming intensity and biosecurity

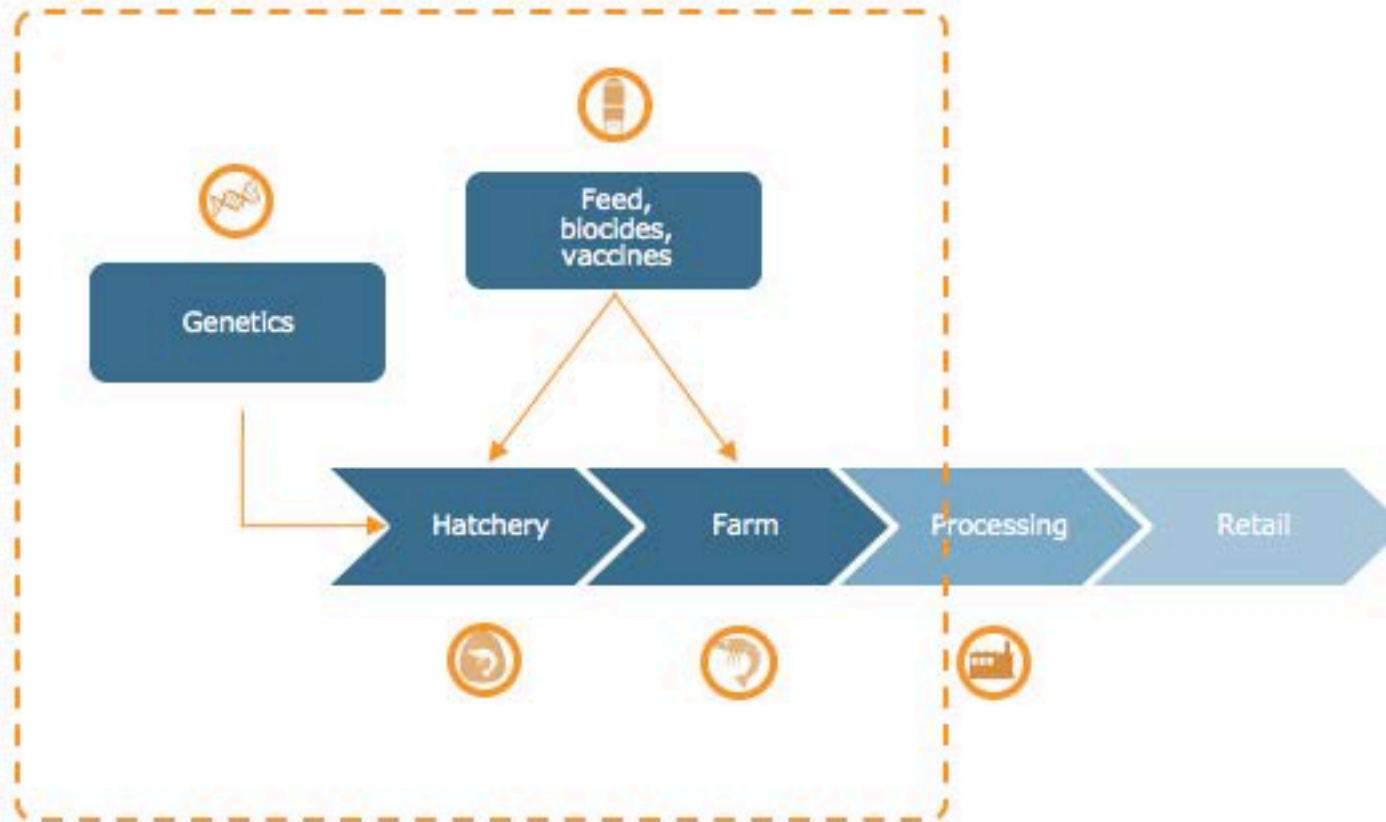


### 2. Introduction of new technology in farming to isolate the farm from the environment in salmon aquaculture





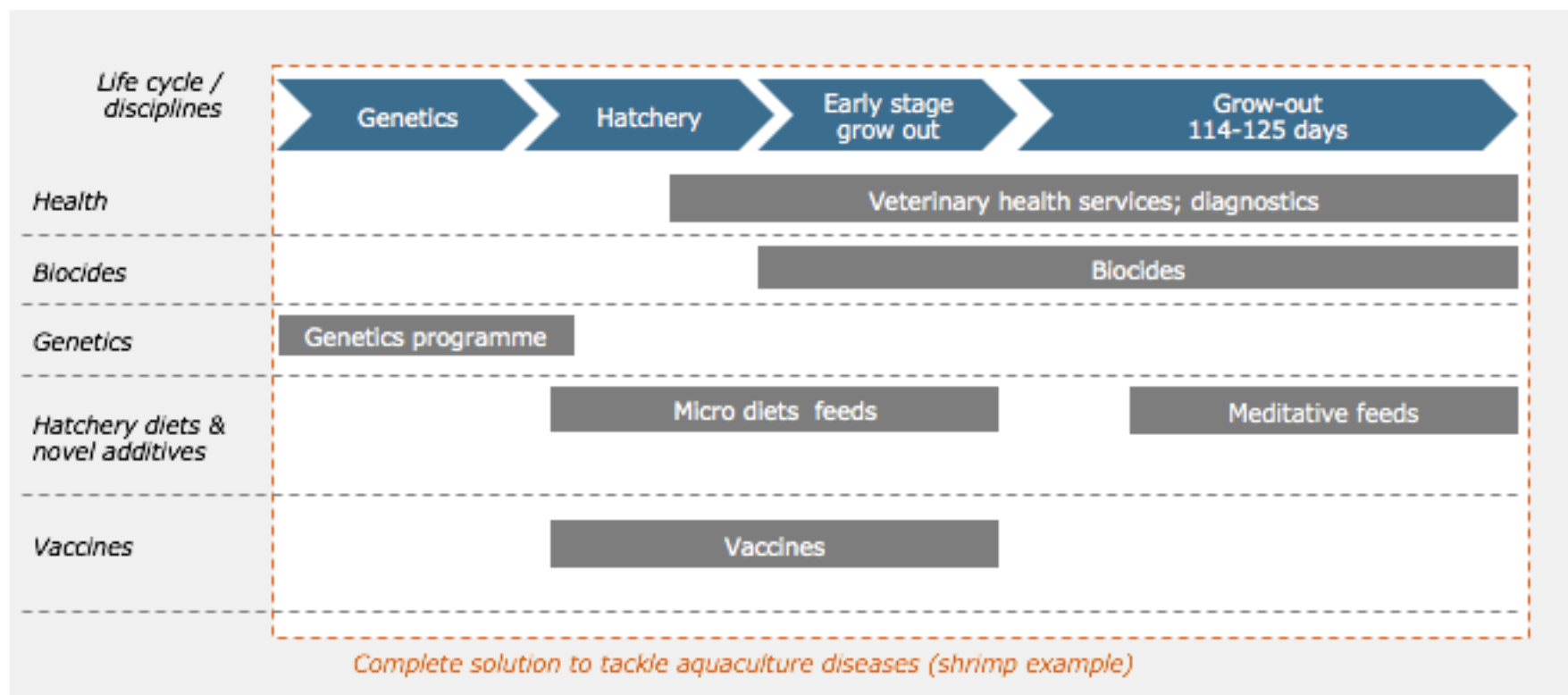
## Cooperation through the value chain, across regions and across species to combat diseases and pathogens





## New business models emerging to tackle the biosecurity challenges of the sector

*Multi-disciplinary approach not just for cross-sell but also aiming to do multi disciplinary research*





### *III*

*Growth and technological innovation  
attracts investors*

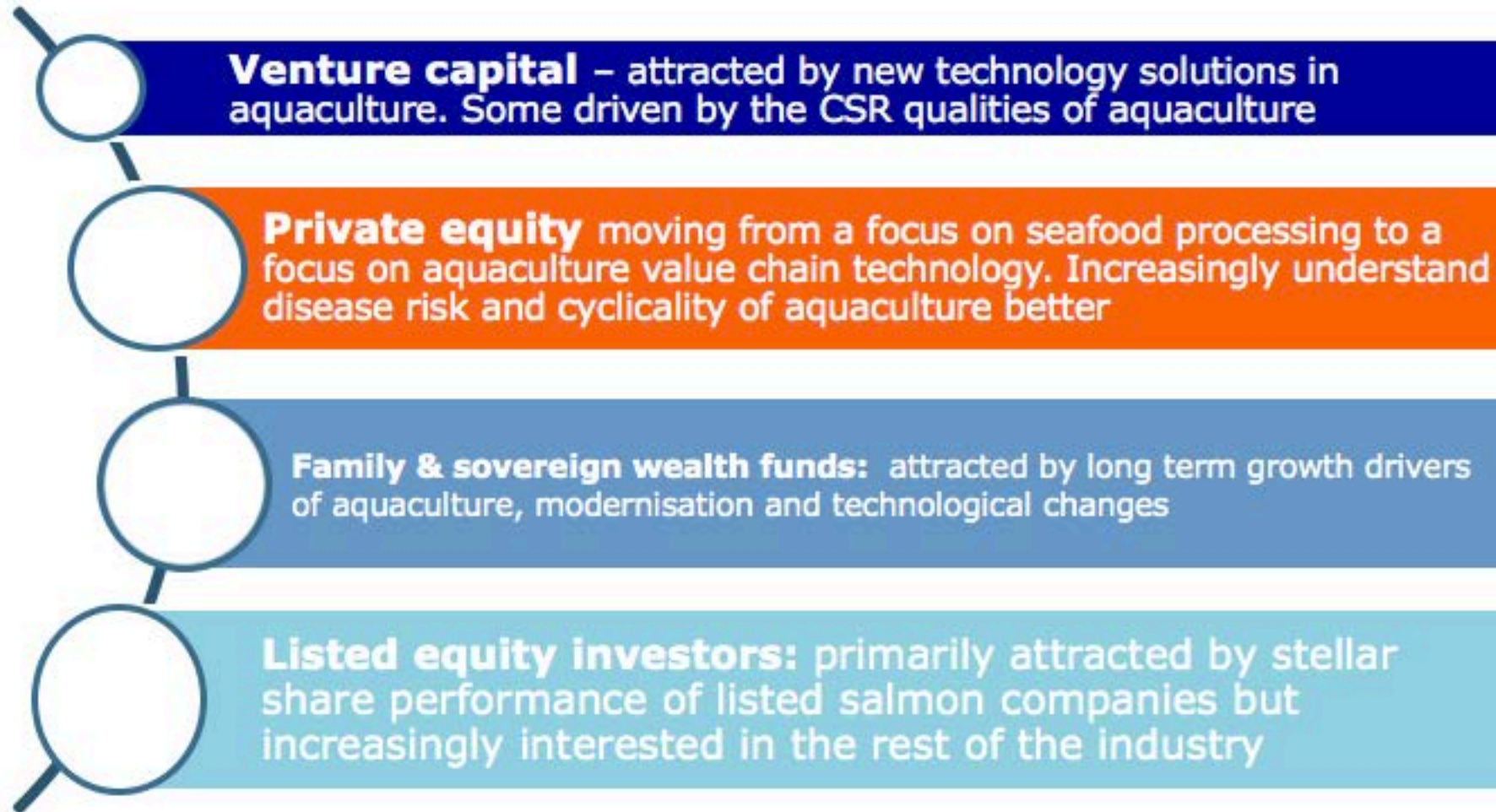
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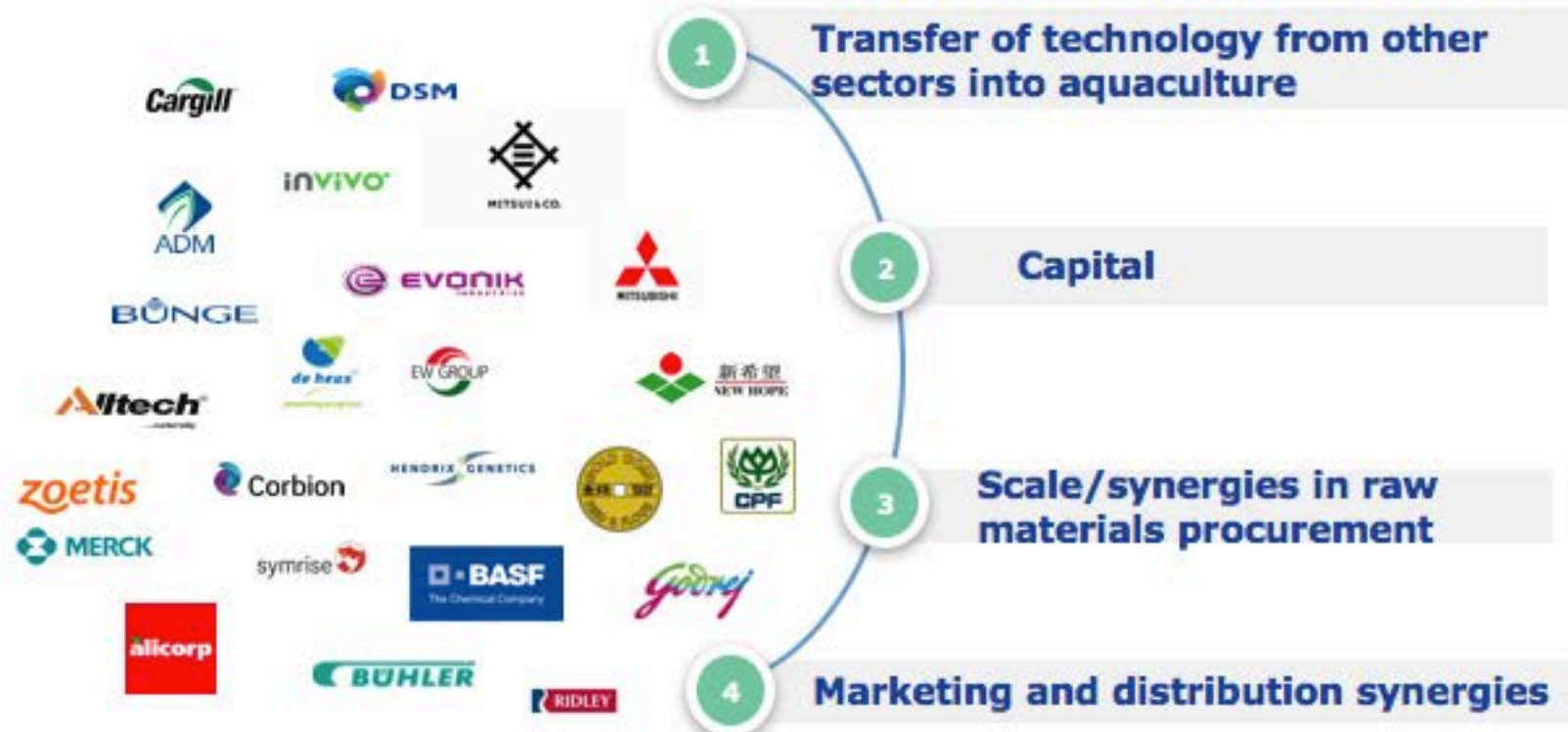


# Due to technology and growth investor interest towards aquaculture is improving





## But most importantly the leading global agro industry players are increasingly more active in the aquaculture value chain





## Contact details



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