The market for shrimps in Europe:

perspectives from the European indoor shrimp farming sector
+ engineering considerations

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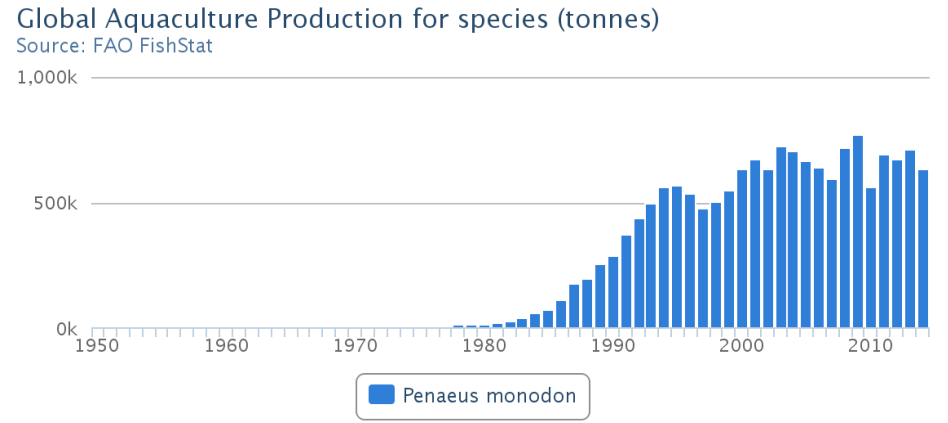
About LandIng Aquaculture

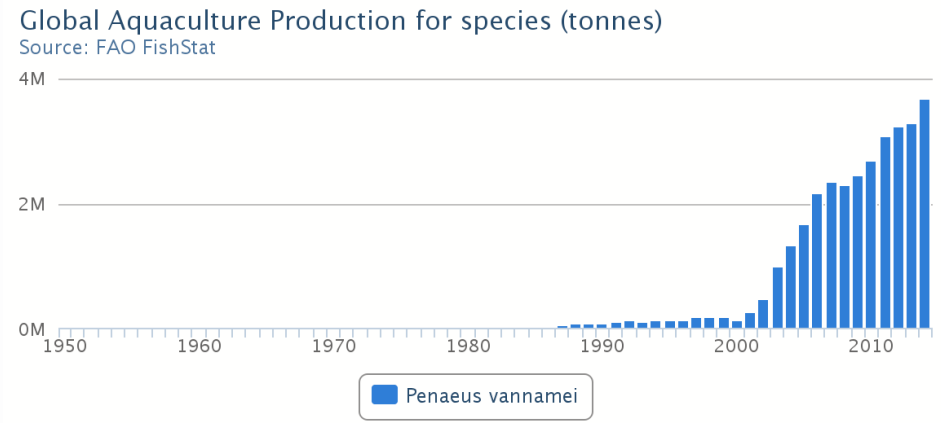
- Founded in 2014 by Rob van de Ven (Wageningen University)
- Aquaculture engineering and consultancy:
  - Market studies, feasibility studies and business planning
  - Training and education
  - Design and engineering
  - Procurement and supply
  - Construction and commissioning
- Main areas so far
  - Indoor shrimp farming (biofloc and RAS)
  - Aquaponic systems
  - Hatcheries (tilapia, shrimp, trout, eel)
  - Research, pilot and proof-of-concept systems




The shrimp farming sector

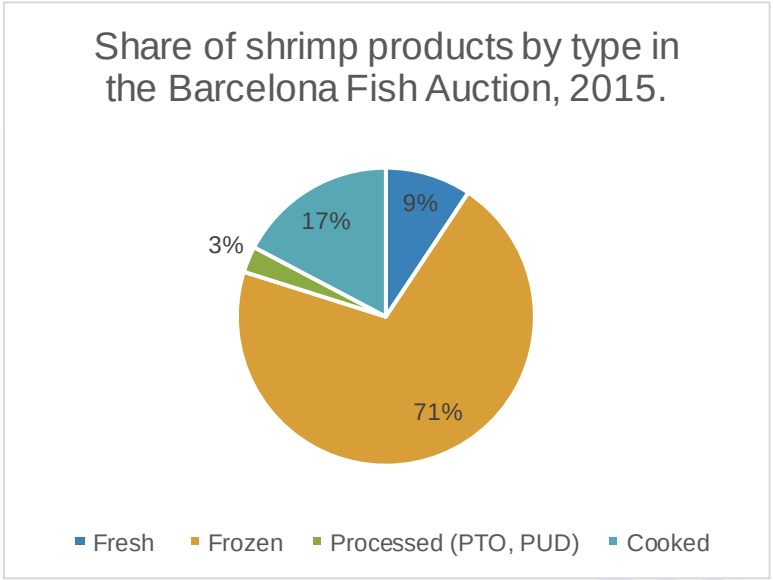
- Dominated by *L. vannamei, s*econded by P. monodon
- 10th species under production worldwide by volume (FAO, 2015)
- 1st species in value (FAO, 2015)





In Europe:

- Two-thirds of the total import value of all seafood products comes from tropical shrimp
- More than 50 countries have been involved at some point with exporting shrimp to the EU
- Increased public awareness of shrimp farming in the tropics
- Myriad of species, presentations, consumer perceptions and price ranges
- Where should shrimp farmers in the EU play?



Market study

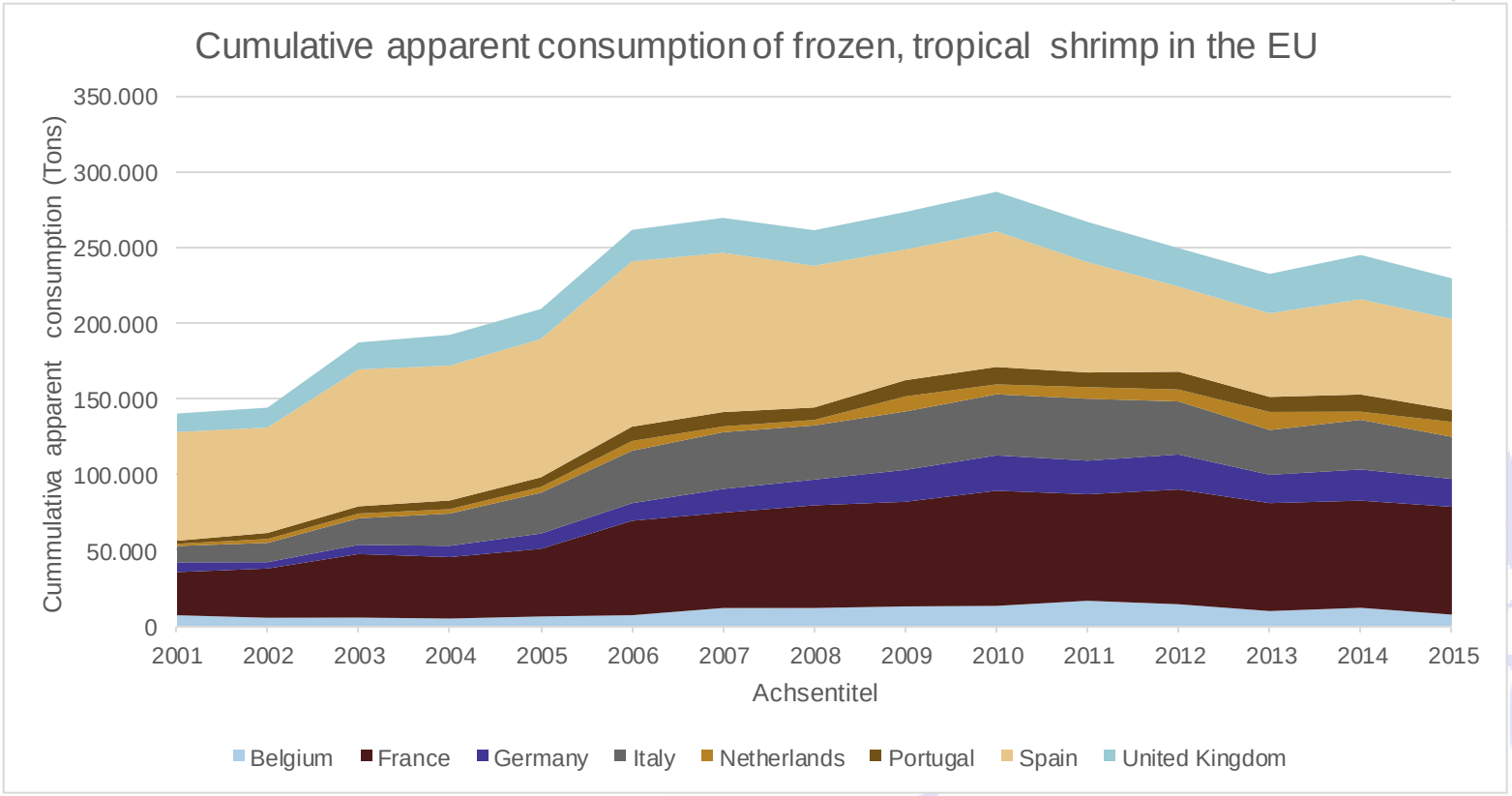
- Desktop-based
- Sources from FishStat (FAO), EUMOFA, MERCASA Network
- Metrics to define the size of the market: trade balance, apparent consumption, self sufficiency ratio

- Apparent consumption = imports + production - exports.
- Trade balance: imports vs exports
- Self-sufficiency ratio

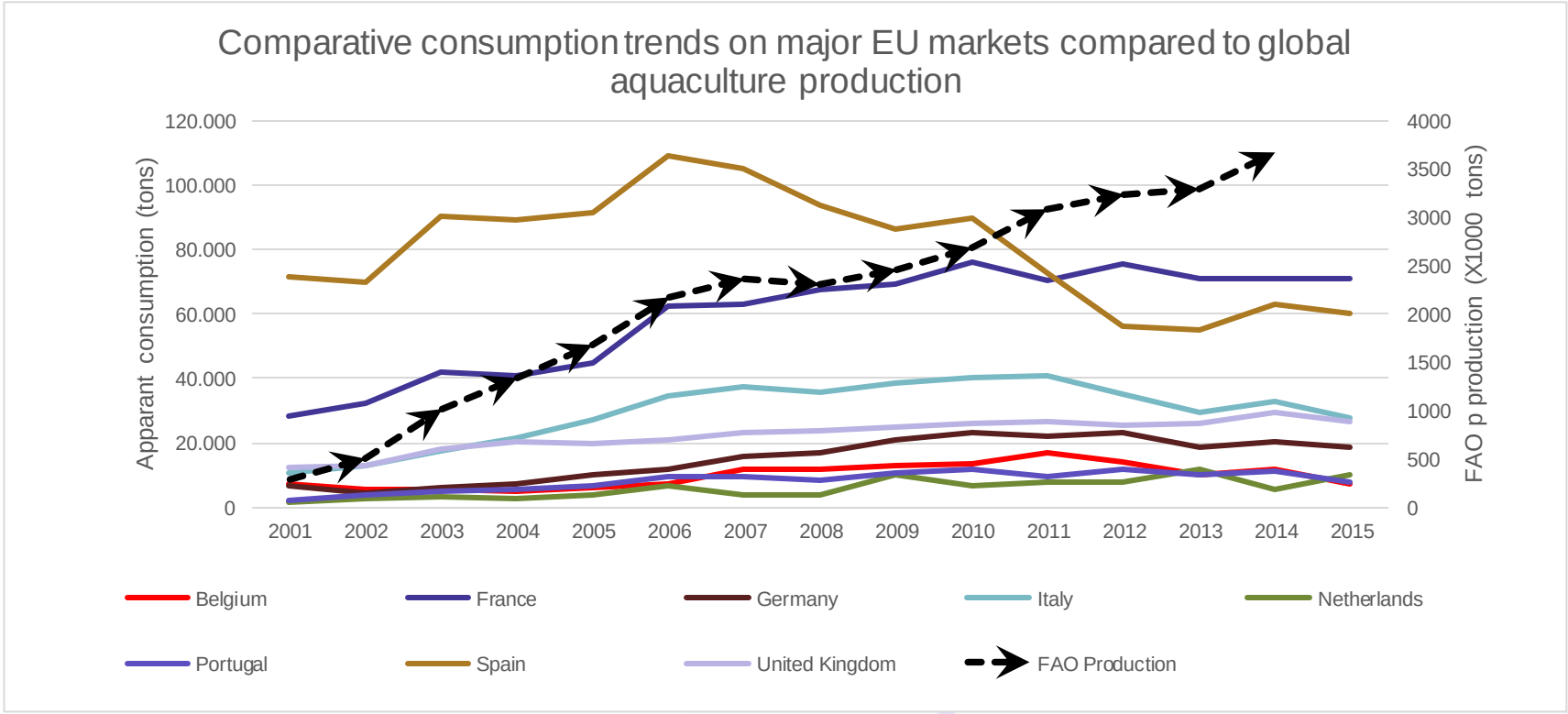
Market study (2)

- Import origins help define possible competitors, presentations and prices
- Price trends on commodity shrimp across the value chain shows bottom price
- Prices of local, high value species can help us know how high can we aim
- What are other EU shrimp farmers doing?

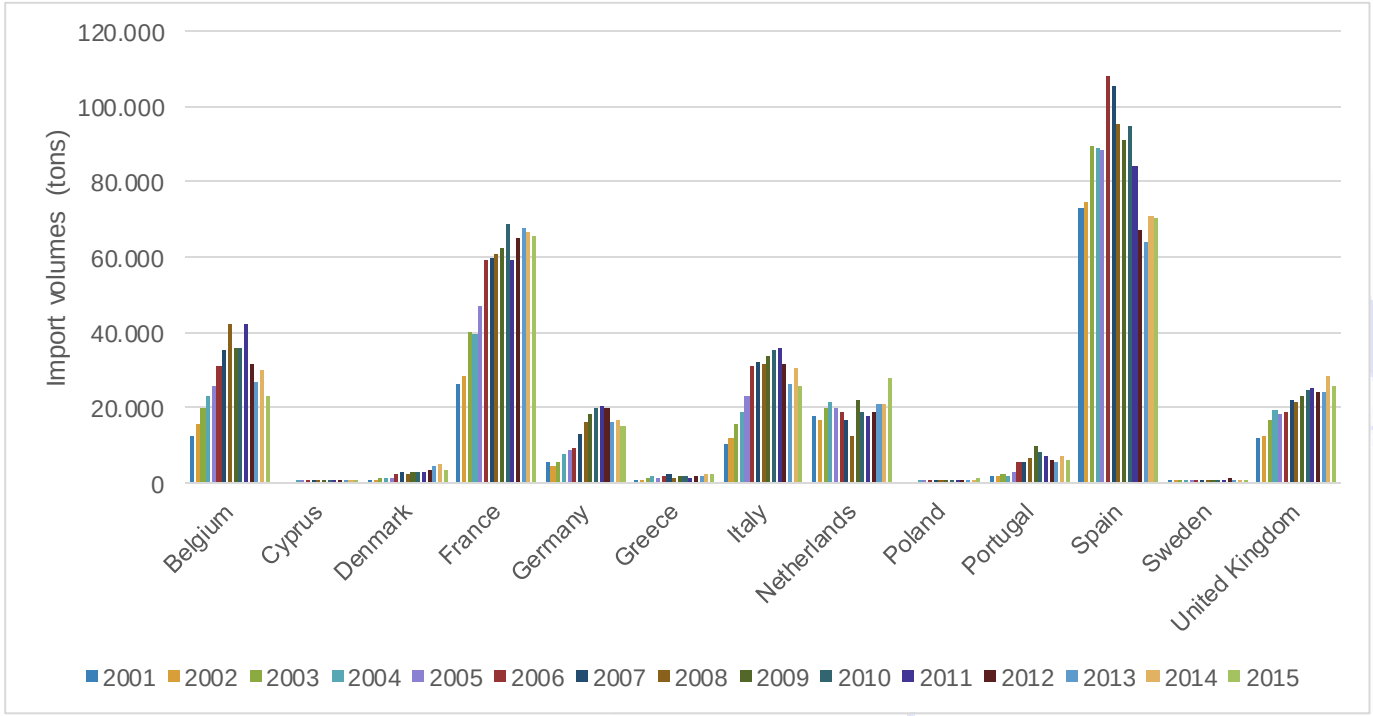
Main markets – apparent consumption



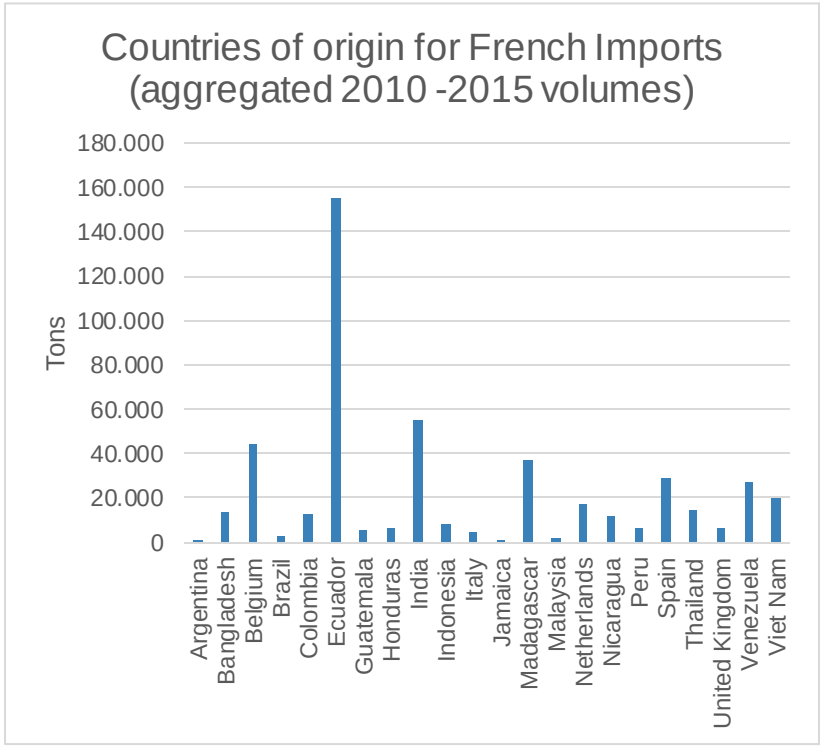
Main markets – apparent consumption

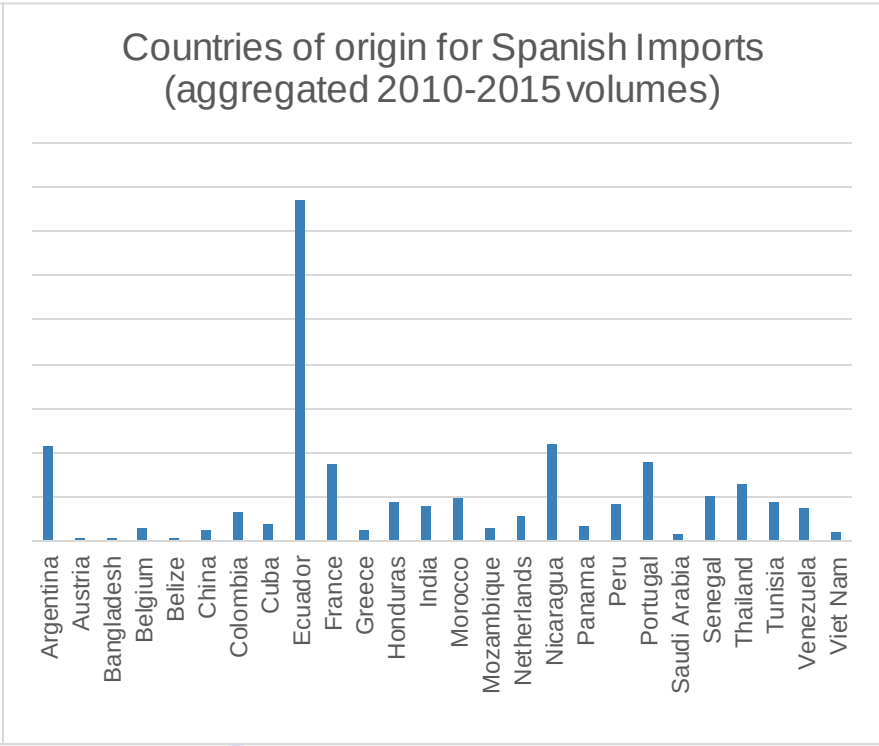


Main markets – import flows

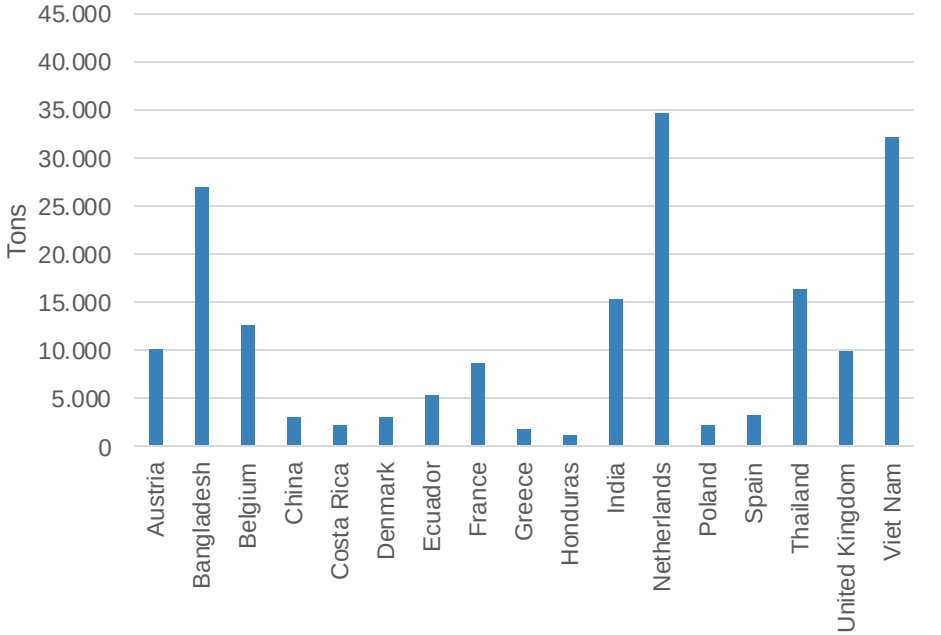


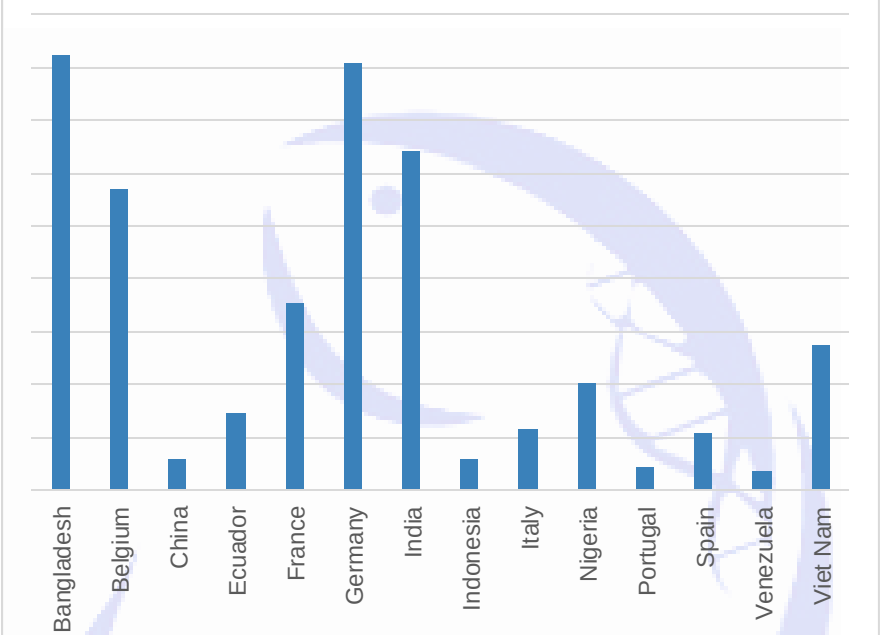
Southern Europe example





Northern Europe example





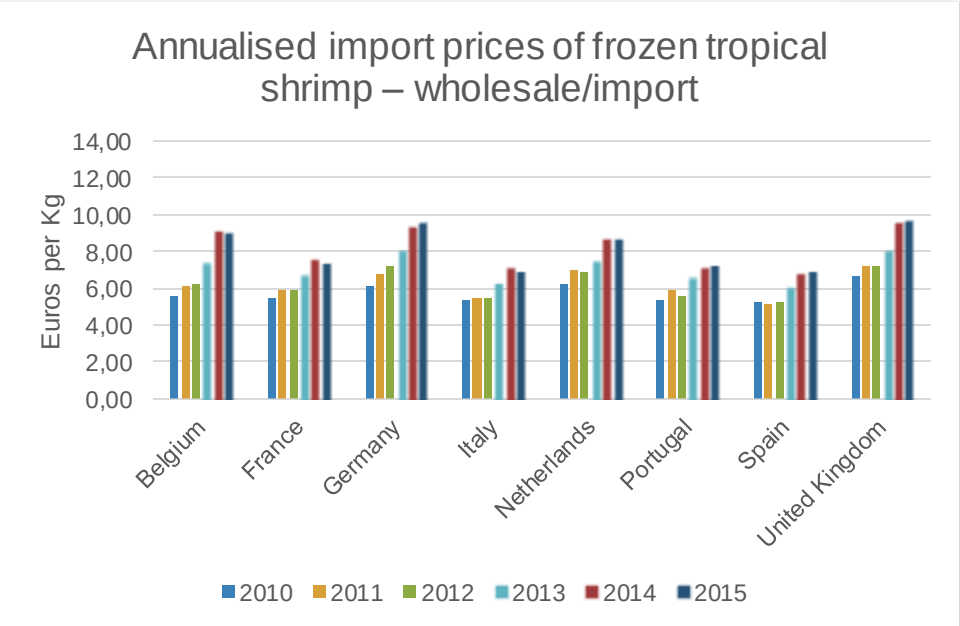
So far:

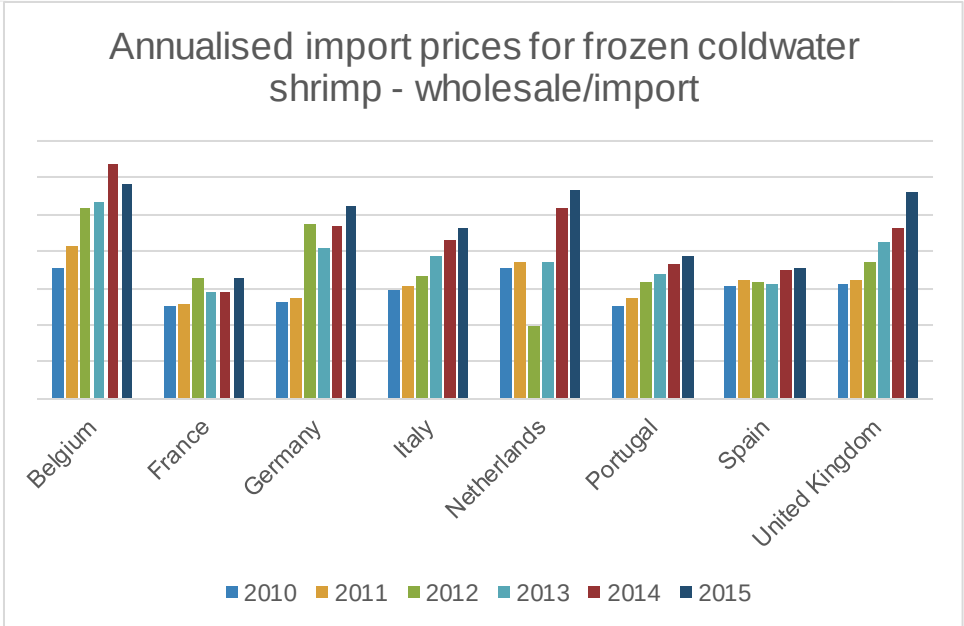
- Southern Europe: high volumes, direct imports, mostly L. vannamei from South America – cheaper shrimp.
- Northern Europe: Lower volumes, both vannamei and monodon, more middlemen – more expensive shrimp

- Opportunity: value chains used to more expensive shrimp, more variety and lower volumes
- Threat: falling under competition with cheap tropical shrimp (does cooking/freezing make sense?)

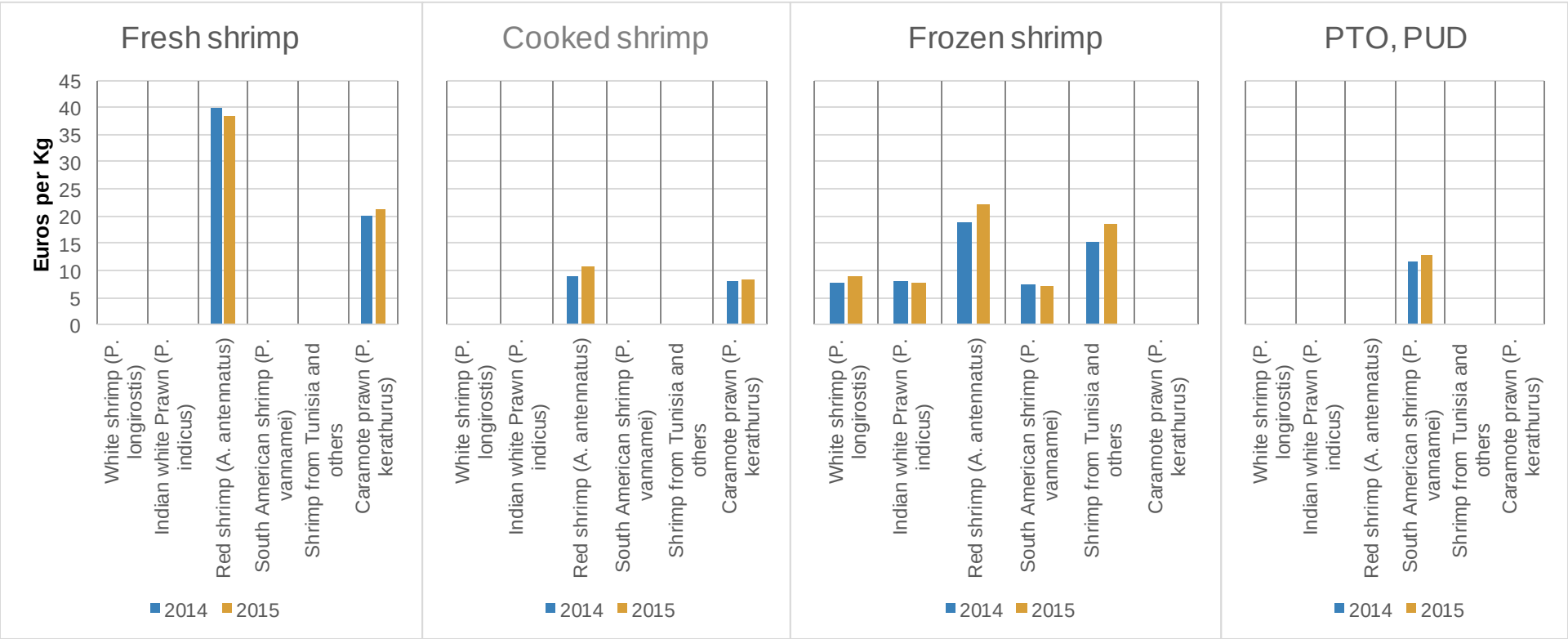
Pricing

- Competitors: EU producers, other shrimp species, other seafood





Pricing


Fresh shrimp
Euros per Kg
45
40
35
30
25
20
15
10
5
0
White shrimp (P. longirostis)
Indian white Prawn (P. indicus)
Red shrimp (A. antennatus)
South American shrimp (P. vannamei)
Shrimp from Tunisia and others
Caramote prawn (P. kerathurus)
2014
2015
Cooked shrimp
White shrimp (P. longirostis)
Indian white Prawn (P. indicus)
Red shrimp (A. antennatus)
South American shrimp (P. vannamei)
Shrimp from Tunisia and others
Caramote prawn (P. kerathurus)
2014
2015
Frozen shrimp
White shrimp (P. longirostis)
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2015
PTO, PUD
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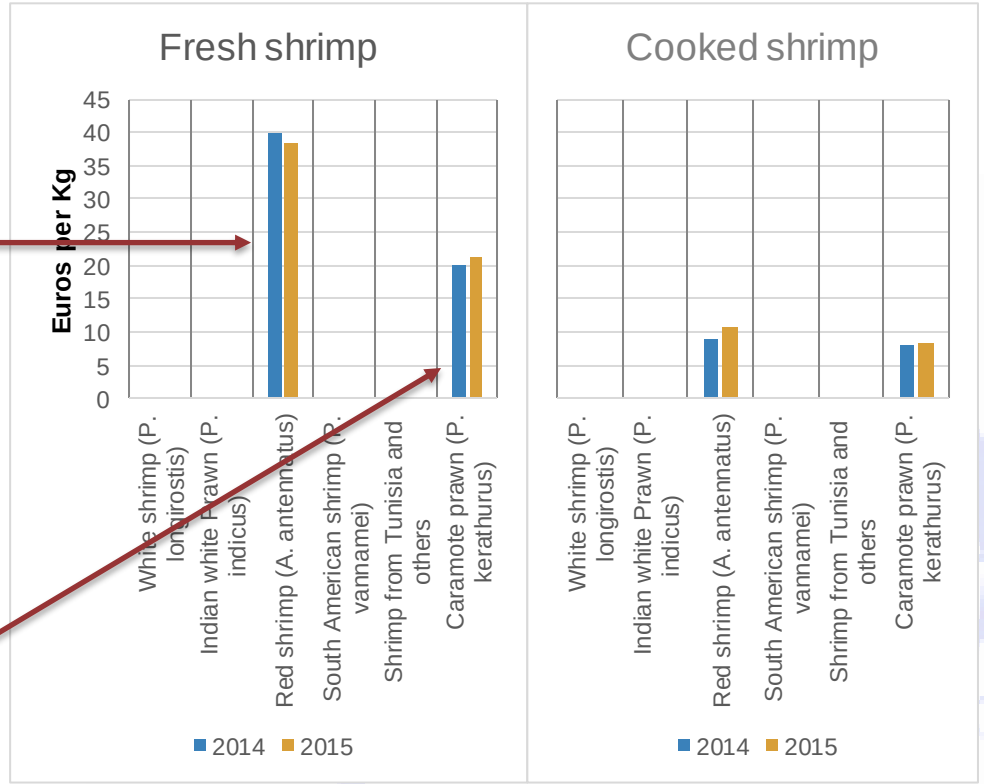
Some examples



…And so far:

1. Freshness matters. Fresh shrimp = higher price
2. Location matters. Local production = higher price
3. There is ample confusion with proper naming of shrimp, (Argentinian red shrimp sold as local “scampi”, “king prawn” or “langoustine”). This can be an advantage.
4. Freezing and processing ultra-fresh shrimp = competition with other frozen and processed products

Who is doing what in the EU?

Producer country	Capacity	Sales price €/Kg	RAS/BFT	Project cost
Spain	50 TPA	28-45	BFT	7.5m*
Germany	15 TPA	49-50	RAS	3.9m**
Belgium	????	40	BFT	????
Switzerland	????	87 (converted from Swiss francs)	BFT	????
Spain	25 TPA	50	BFT	0.7m***

*http://www.expansion.com/actualidadeconomica/lujo-y-moda/2016/03/16/56e92ee122601d140e8b46af.html

**http://www.dafa.de/fileadmin/dam_uploads/images/Fachforen/FF_Aquakultur/Konzeptstudie_Metropolregio%20HH_2016.pdf

***http://www.laprovincia.es/gran-canaria/2017/04/19/langostino-criado-malfu-estrellas-feria/929918.html

Some design and engineering considerations

RAS vs BioFloc

RAS

- Autotrophic system: slow microbial growth, but more stability
- Clean water = better stock control
- Less O2 consumption, less CO2 and TSS production (affects OPEX)
- Higher CAPEX
- More complex to setup, but easier to control

BFT

- Mixotrophic: continuous steering of microbial communities
- Poor visibility hampers stock control
- More O2 consumption, more CO2 and TSS production
- Lower CAPEX
- Simpler setup, but requires more management

Energy balances

Consider:

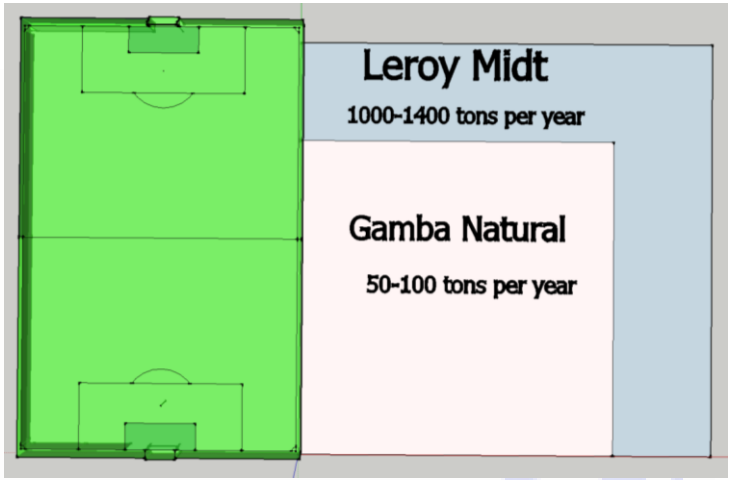
- Building ventilation
- Humidity and CO2 control
- Energy losses due to water exchanges and system flushing
- Loss of latent heat from water surfaces
- Building insulation
- Heat gains by equipment, feed addition

“Industrialising” the designs

- Automation of processes (feeding, water treatments)
- Large tanks allowing for mechanization
- Mechanised crowding and harvesting
- Access to economies of scale
- Main bottleneck: stocking densities

Some last things to consider

1) Indoor shrimp farming today possible under current market conditions – high prices are attainable
2) System productivity ***not*** limited by carrying capacity, but **stocking densities**
3) RAS equipment may be 35-50% of CAPEX. Biofloc equipment about 15%.
4) Compared to finfish aquaculture. Land, infrastructure and building costs for shrimp will be higher.
5) Can your business survive a 100% sales price drop?
6) Are you willing to invest in solving current bottlenecks?



Thank you for your attention

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