



Sustaining European seafood security - the role of Asian aquaculture

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Cefas



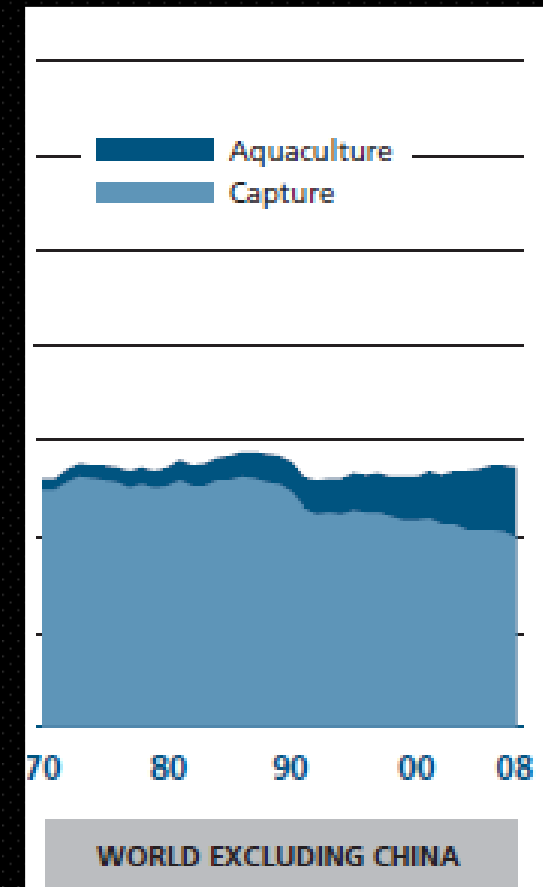
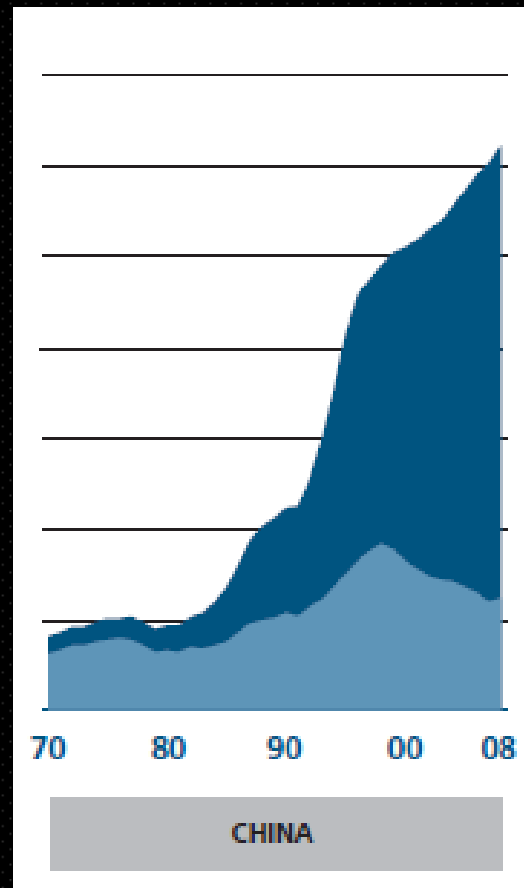
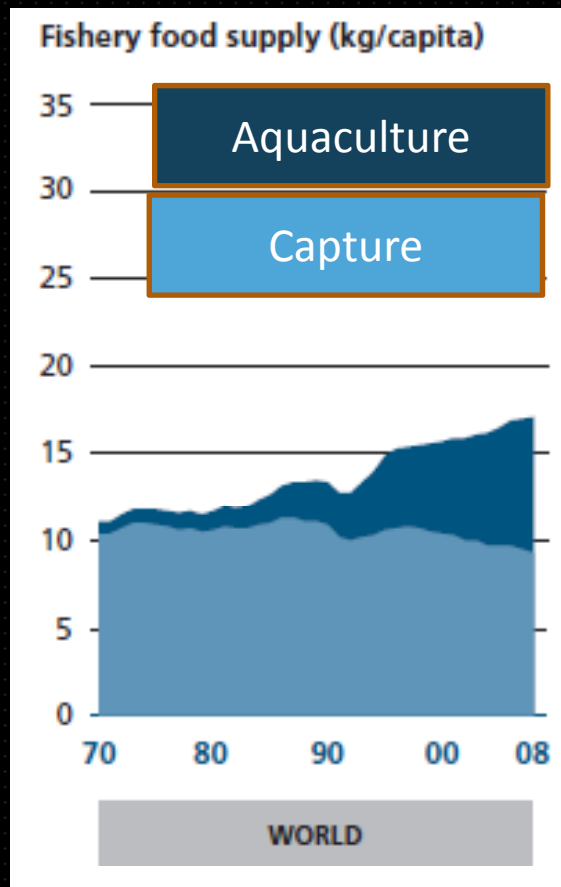
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How are aquatic products different?

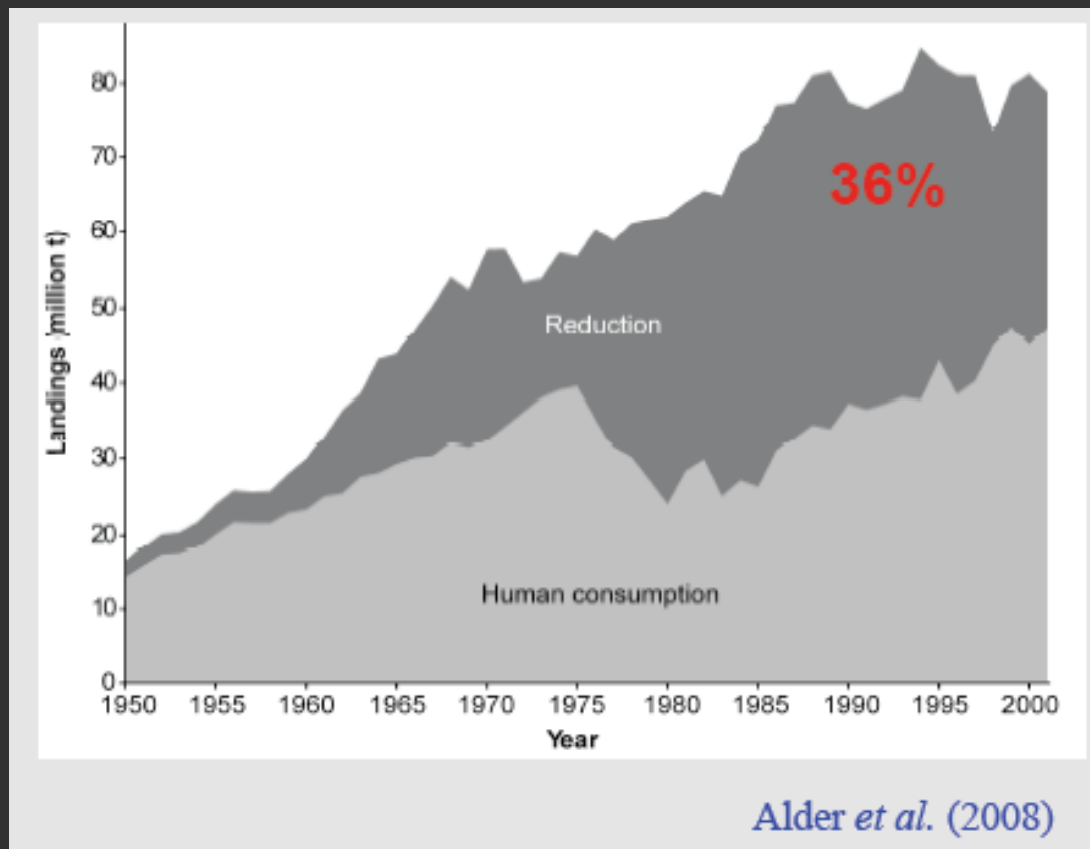
- Until recently dominated by the wild catch
- T.H. Huxley-the 'inexhaustibility' of wild fish stocks
- Issues of common property-access and governance unusual for other forms of food production –closer relations to forestry

Relative contribution of aquaculture and capture fisheries to food fish consumption



FAO, 2012

..a lot of the global fish harvest is NOT consumed directly by people

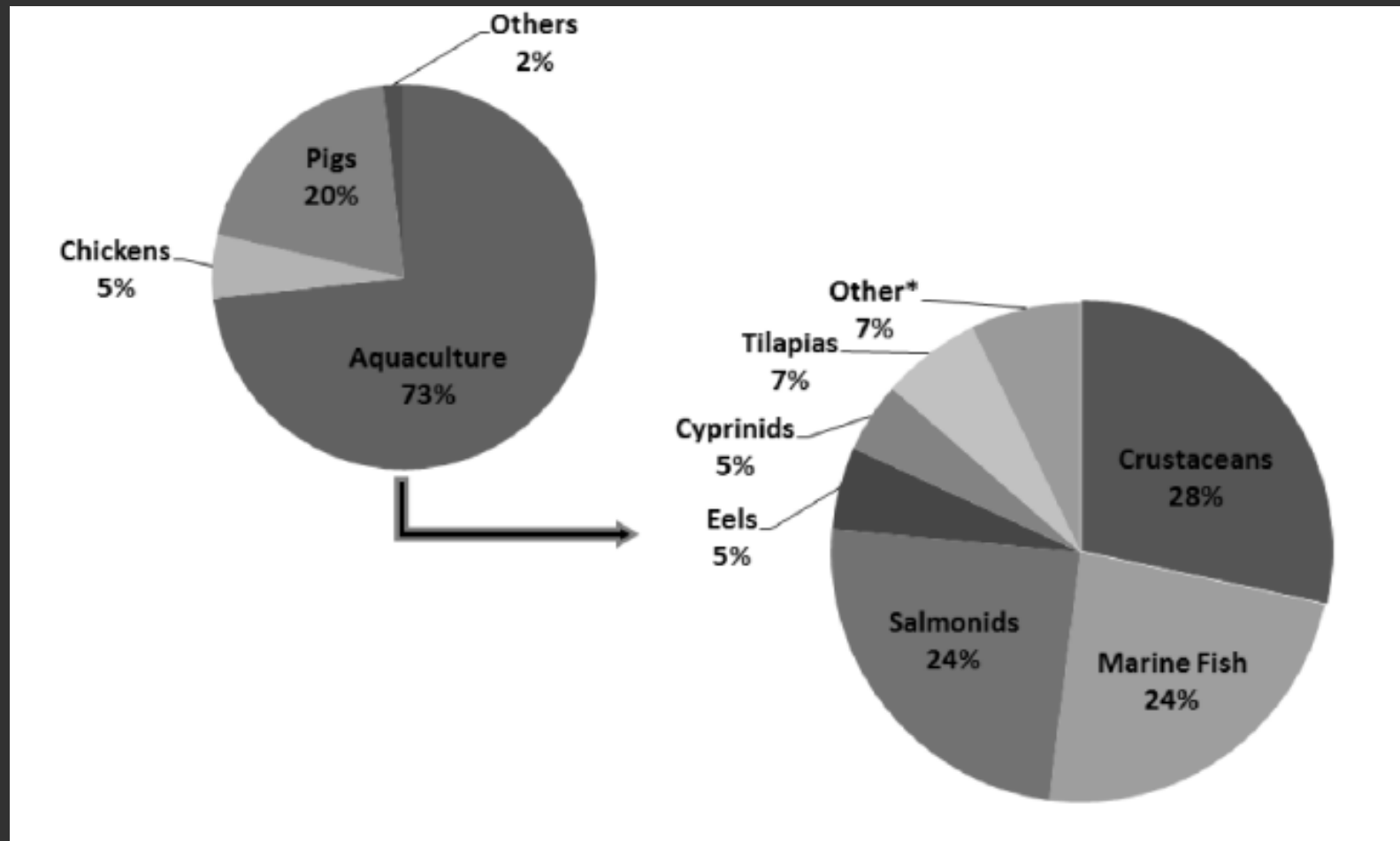


Catcher processor



Knapp, 2008

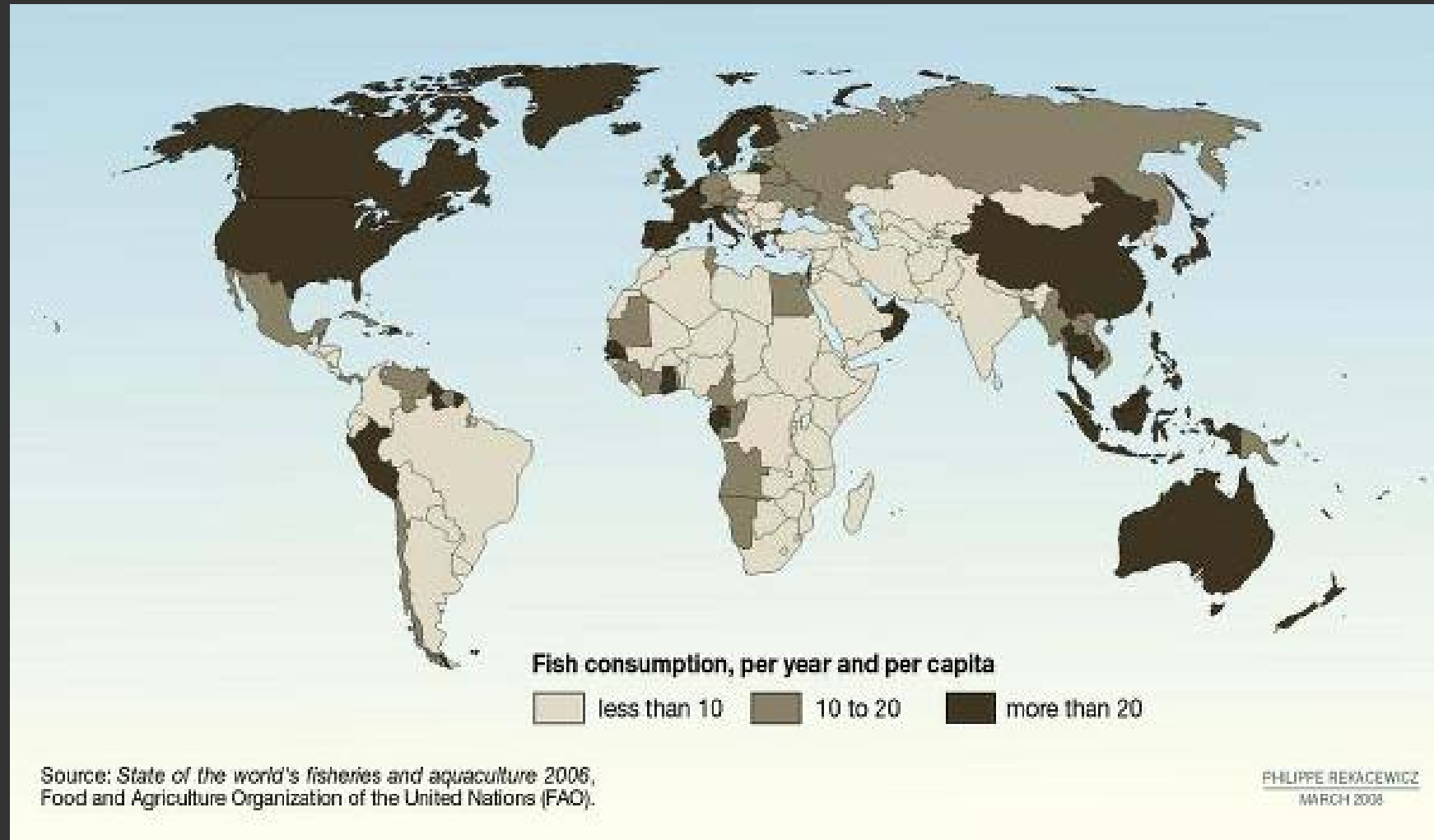
More fishmeal now fed back to fish



IFFO and FAO data, 2010

http://www.seafish.org/media/775395/acigmar2013_shepherd_fishmealsupplygap.pdf

The world and Europe characterised by huge range in fish consumption



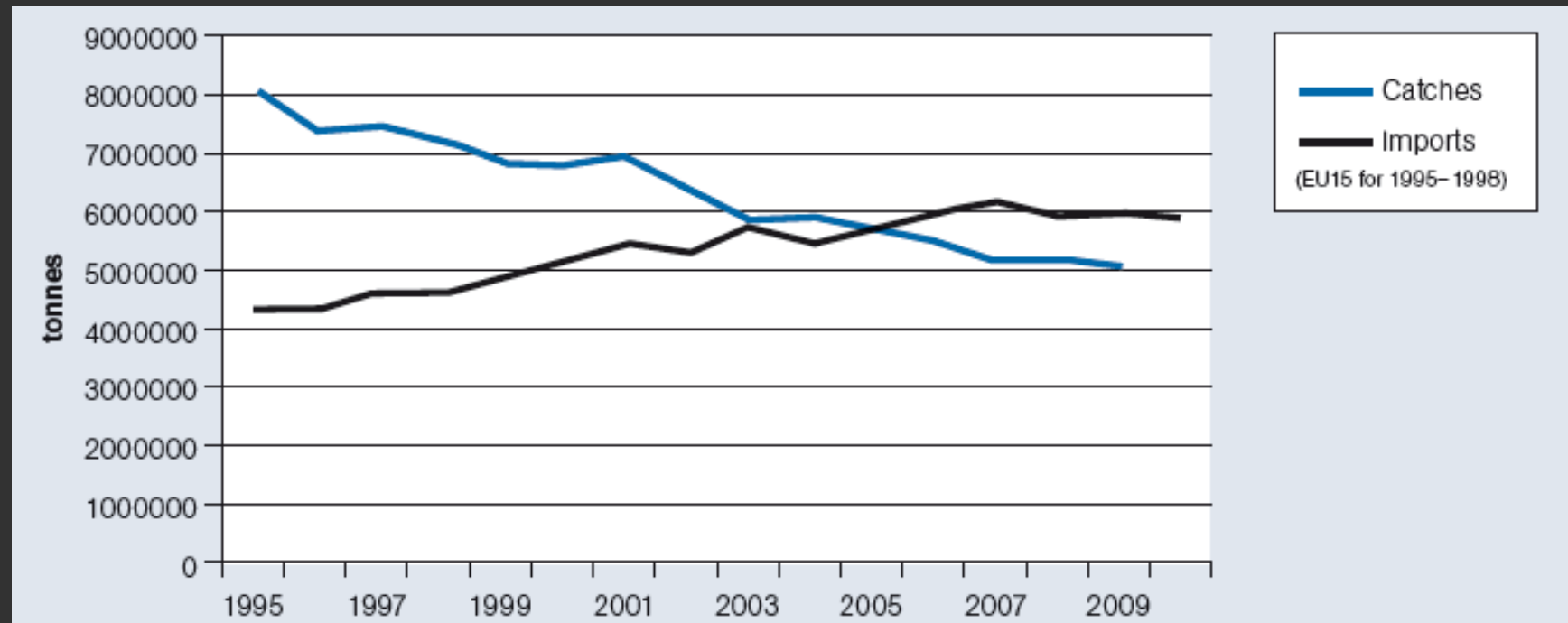
Low (Bulgaria) 4.2 kg/person/year to very high (Portugal) 61.6 kg/person/year <http://www.unep.org/dewa/vitalwater/article173.html>

Trade flows (\$millions)



The seafood security of the EU has been supported by rising levels of imports, increasingly derived from aquaculture, and from the Global South

EU-27 catches and imports

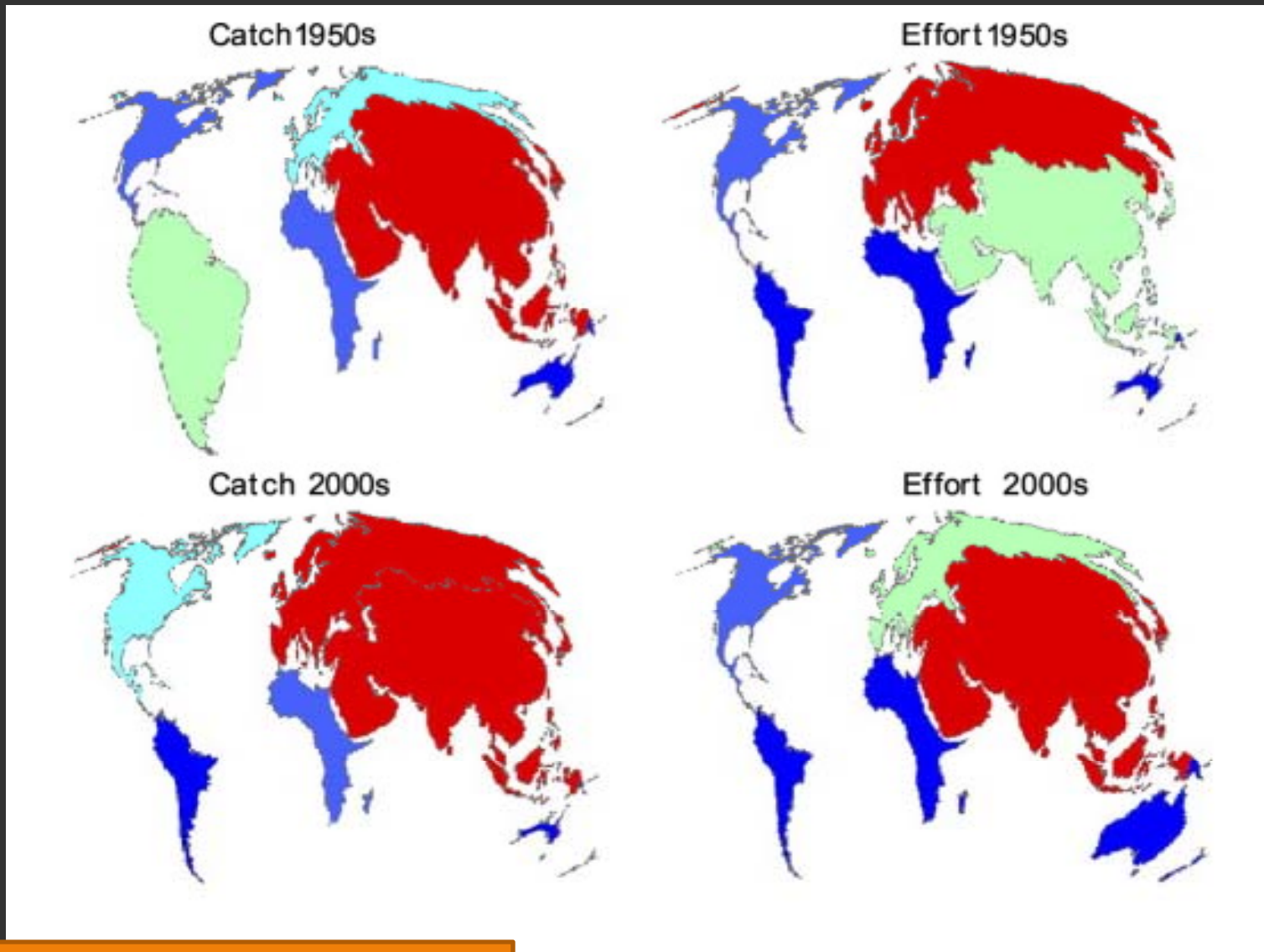


NEF, 2012 modified
Eurostat data

Overfishing

- In Europe if the wild stocks could be optimised, around an additional 3.5-3.75 million/tonnes/year could be harvested
- This would still leave a shortfall of more than 1 million tonnes at current consumption rates

Catch and effort from Europe to Asia



Size of continent reflects magnitude of effort and catch

Watson and Pauly, 2013

What trade?

- Of the 5million tons of seafood imported by the EU, a growing proportion, around 15%, is now farmed in Asia
- This is equivalent to about 30% of all farmed seafood marketed in Europe





Implications for Asia and Europe

- Who are the winners and losers?
- Is the trade sustainable?
 - are the production systems in Asia resilient? Can farmed seafood from Asia meet Europe's growing demand for 'sustainable' products?
 - what are the capacities and limitations within farmed seafood value chains in the products
 - is demand in Europe stable? Will it continue to grow?



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European aquaculture-the answer?

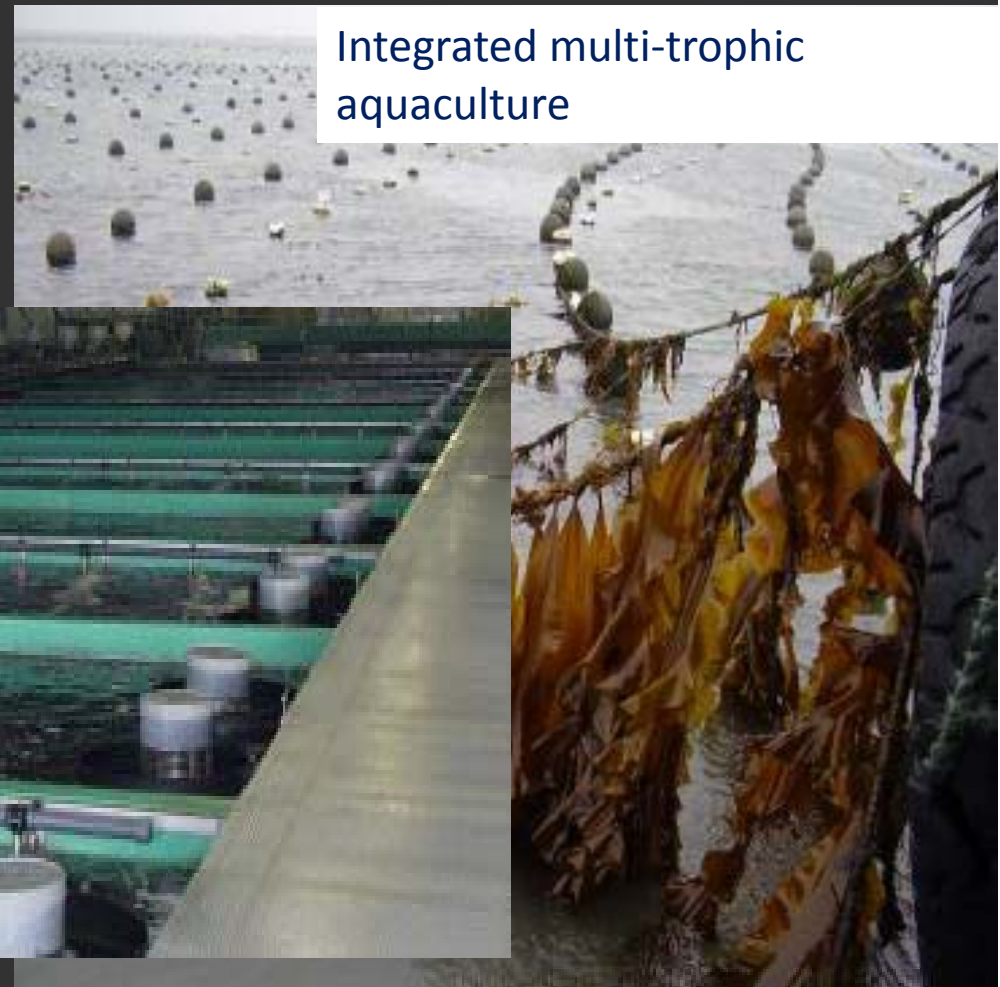
- What constrains the local??
- Stable at 1.25-1.5 million ton/year
- Regulatory environment-water use and mixed use resources
- Carnivorous and resource intensive species
- Growth in low trophic species, molluscs
- Species type and price
 - ‘whitefish’?
 - shrimp?
- The future ? IMTA and RAS

Intensive controlled RAS or extensive, multispecies IMTA?

Recirculating aquaculture Systems



Photo Fishion



Integrated multi-trophic aquaculture

Photo Trevor Telfer

Failures to understand growing importance of trade

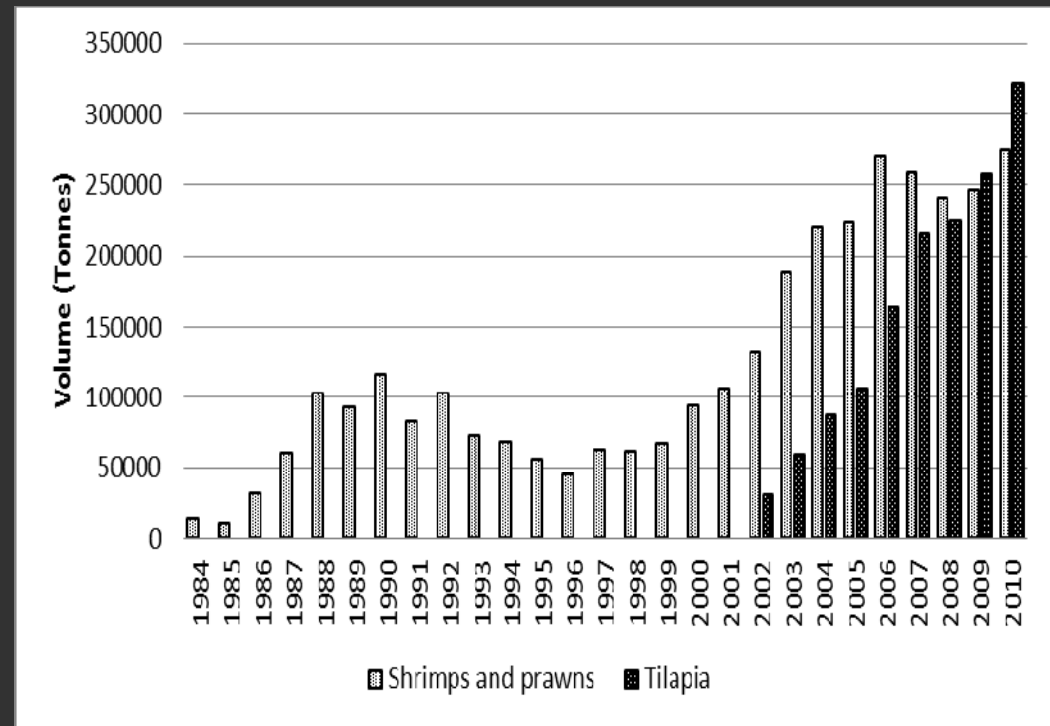
- EU dependent for more than half its seafood on imports- 51% 'self-sufficient'
- EU based aquaculture only produces a fraction of requirement –no mention of imports
- Negative impacts on developing country seafood consumption of global seafood trade



Rapid transformation

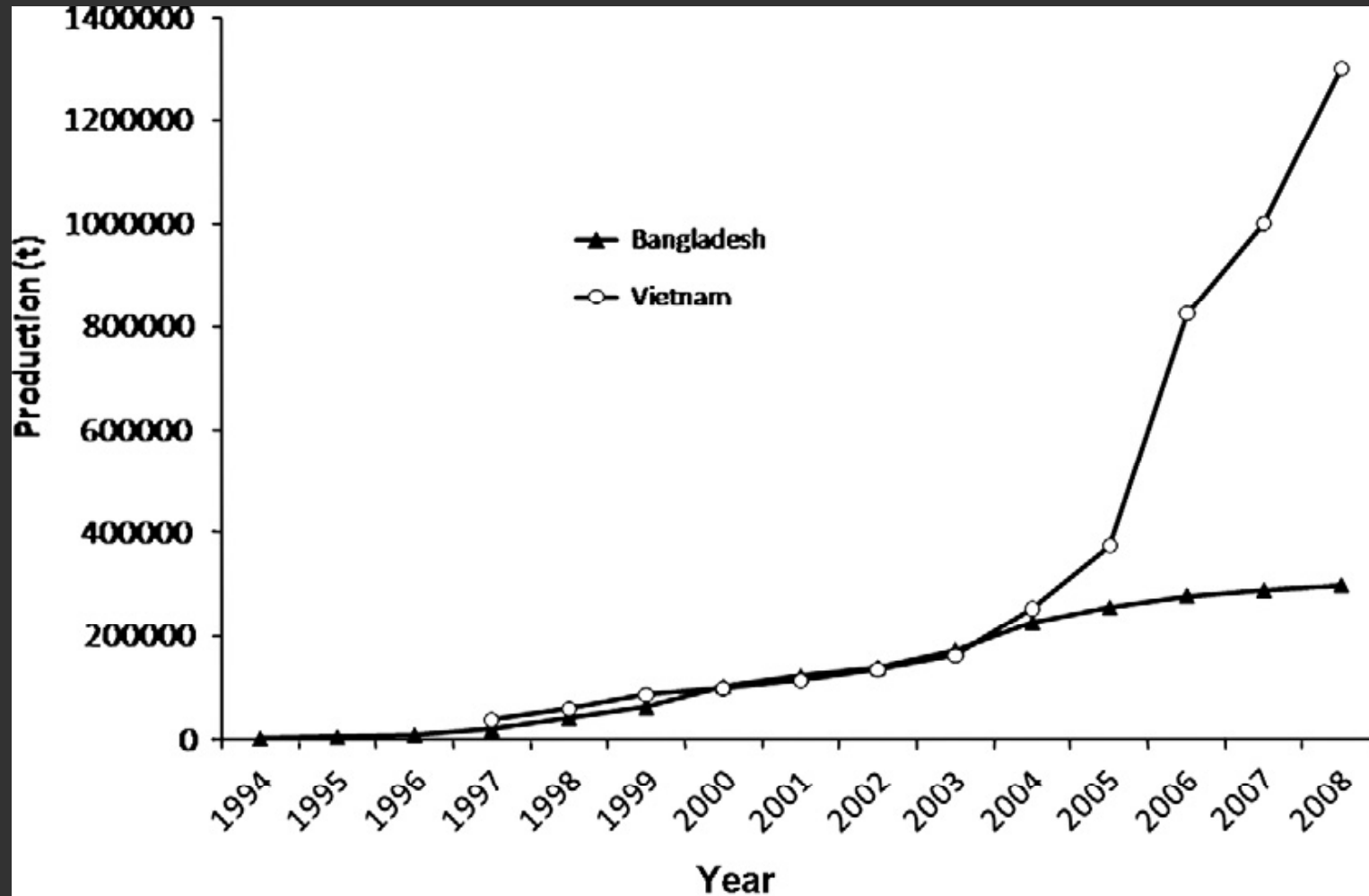
Shrimp and tilapia in China

- From domestic demand to global trade
- Led by shrimp but now being followed by white fish species, pangasius and tilapia



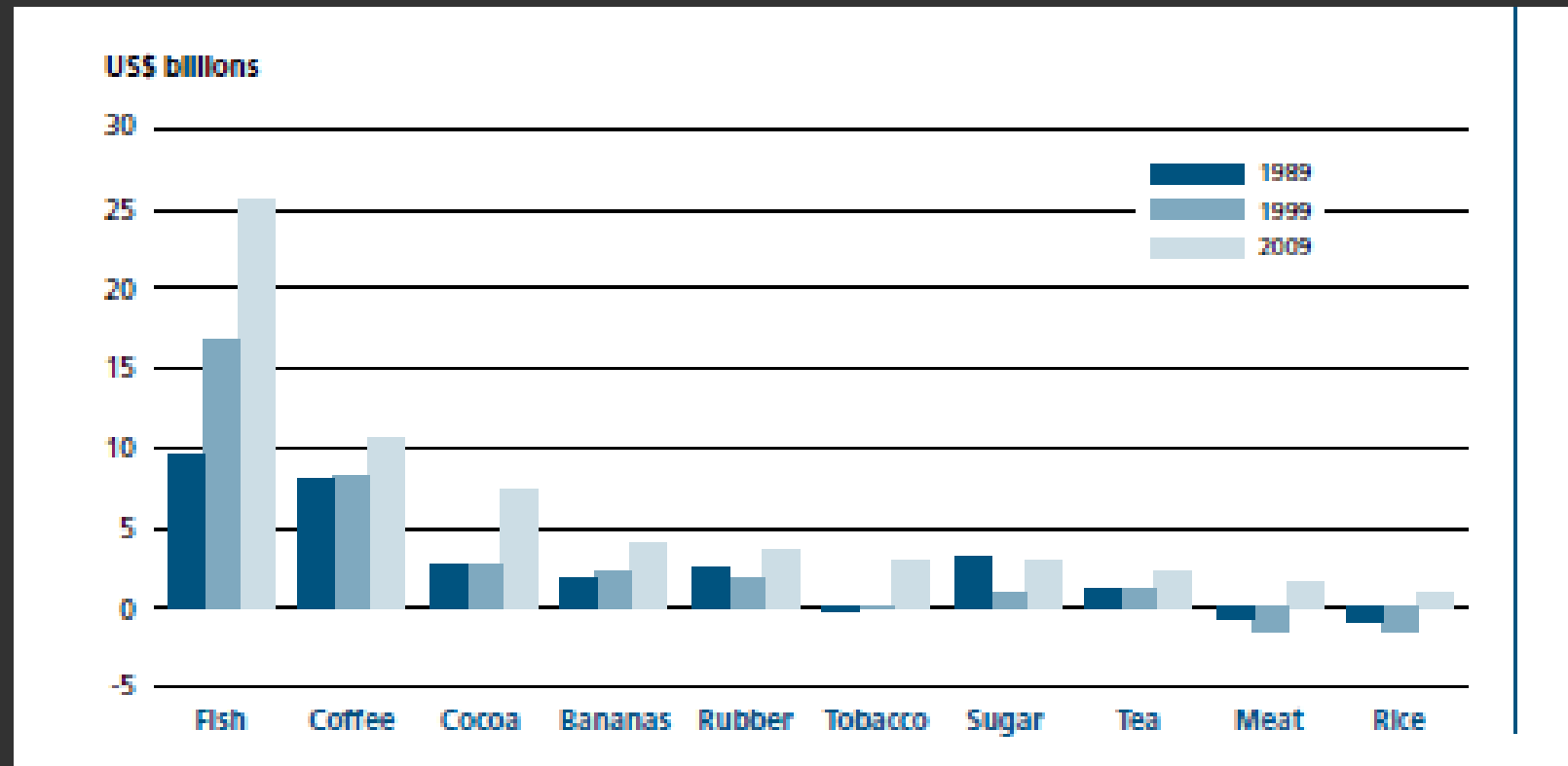
Source FAO, 2010, modified by Zhang et al, 2012

Export or local?



Belton et al, 2011

Seafood – Number 1 exported commodity from developing countries



Incentives and predisposing factors

- Transformation of fisheries to aquaculture
- Population pressures
- Dynamic markets
- Positive or neutral institutions
- Pre-disposing environments



Species and climate



Origins and trajectories



Freshwater floodplains and brackish water deltas

Origins and trajectories



Dependence on wet rice as a staple

Origins and trajectories



Expanding population density and agricultural intensification

Origins and trajectories



Transformation from fisheries to culture

Origins and trajectories



Urbanisation, industrialisation

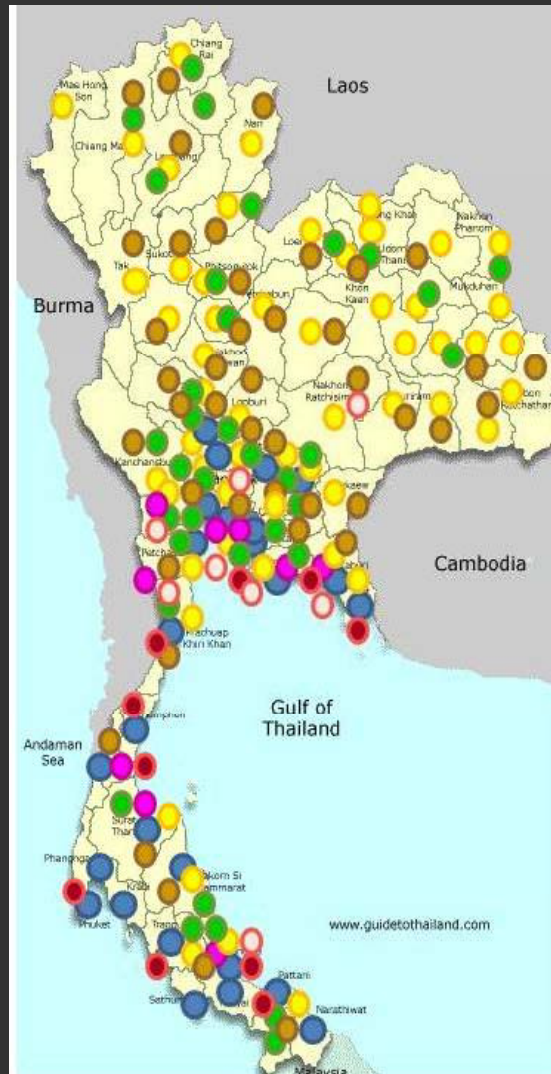
Origins and trajectories



- Co-development of livestock and associated agro-industry

Origins and trajectories

- Seafood processors- initially based on wild stocks- reprocessing/cold storage capacity



●	Tilapia	Samut Prakan Khon Kaen Nakhon Pathom
●	Prawn	Nakhon Pathom Ratchaburi Suphanburi
●	Striped catfish	Nakhon Sawan Bangkok Pathumthani
●	Shrimp	Songkhla Surat Thani Chanthaburi
●	Processing plants	S. Sakorn & Prakan Songkhla Surat Thani
●	Fishmeal plants	S. Sakorn Songkhla N.S. Thammarat
○	Feedmills	S. Sakorn & Prakan

Seafood values Europeans can understand

- Price- 'willingness to pay'
- Food safety
- Environmental-local and global
- Social-producers and consumers

Price and time



ALDI **1st** **Aldi** Voted 1st for low prices.

Special Buys Shopping at Aldi Info and Service About Us Store Locator

The Grocer
The Grocer supermarket
See full details at www.thegrocer.co.uk

Careers



Thai Basa Fillets

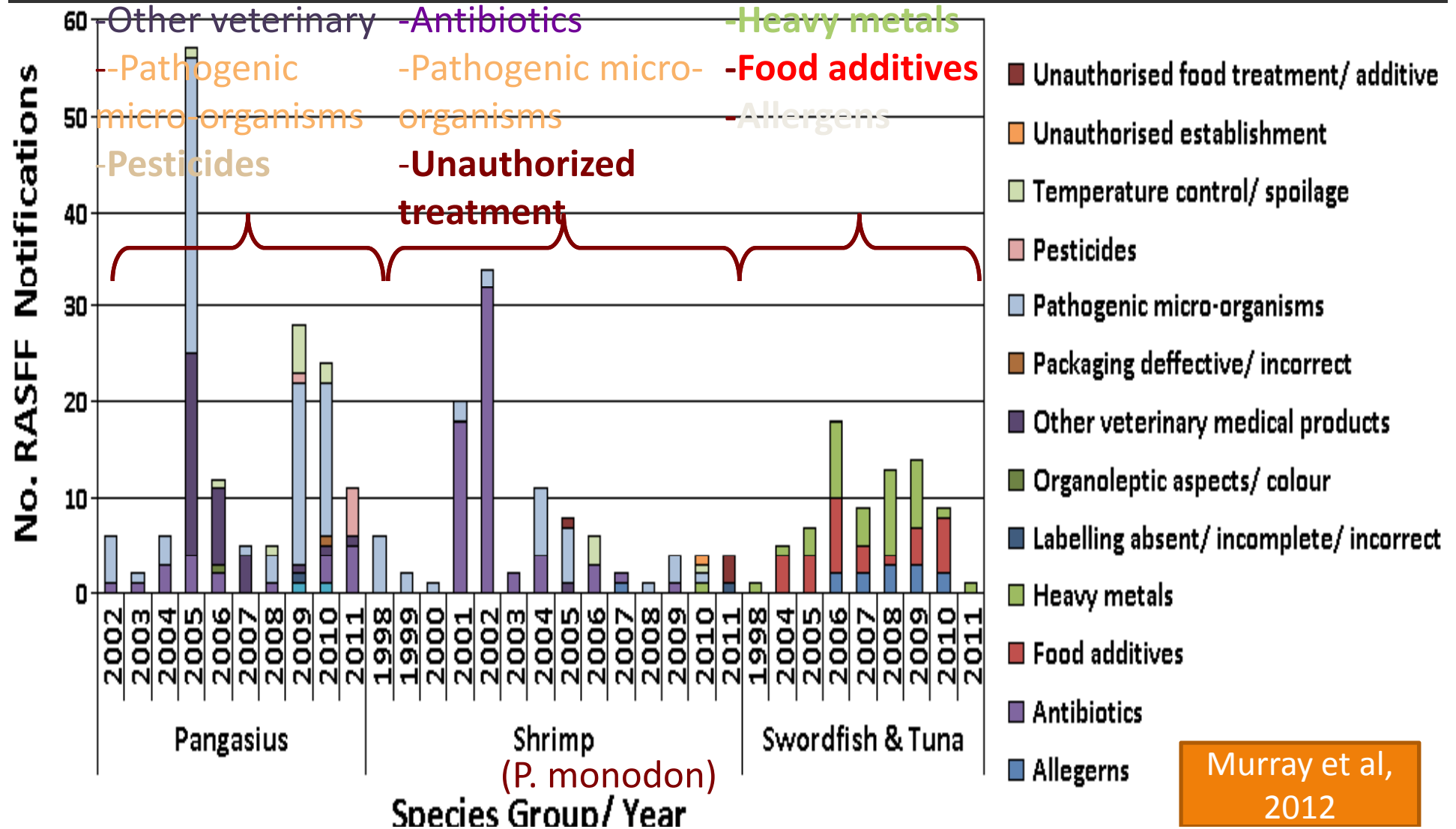


RASFF Notifications – Imports to EU from Vietnam 1998- 2011

Pangasius:

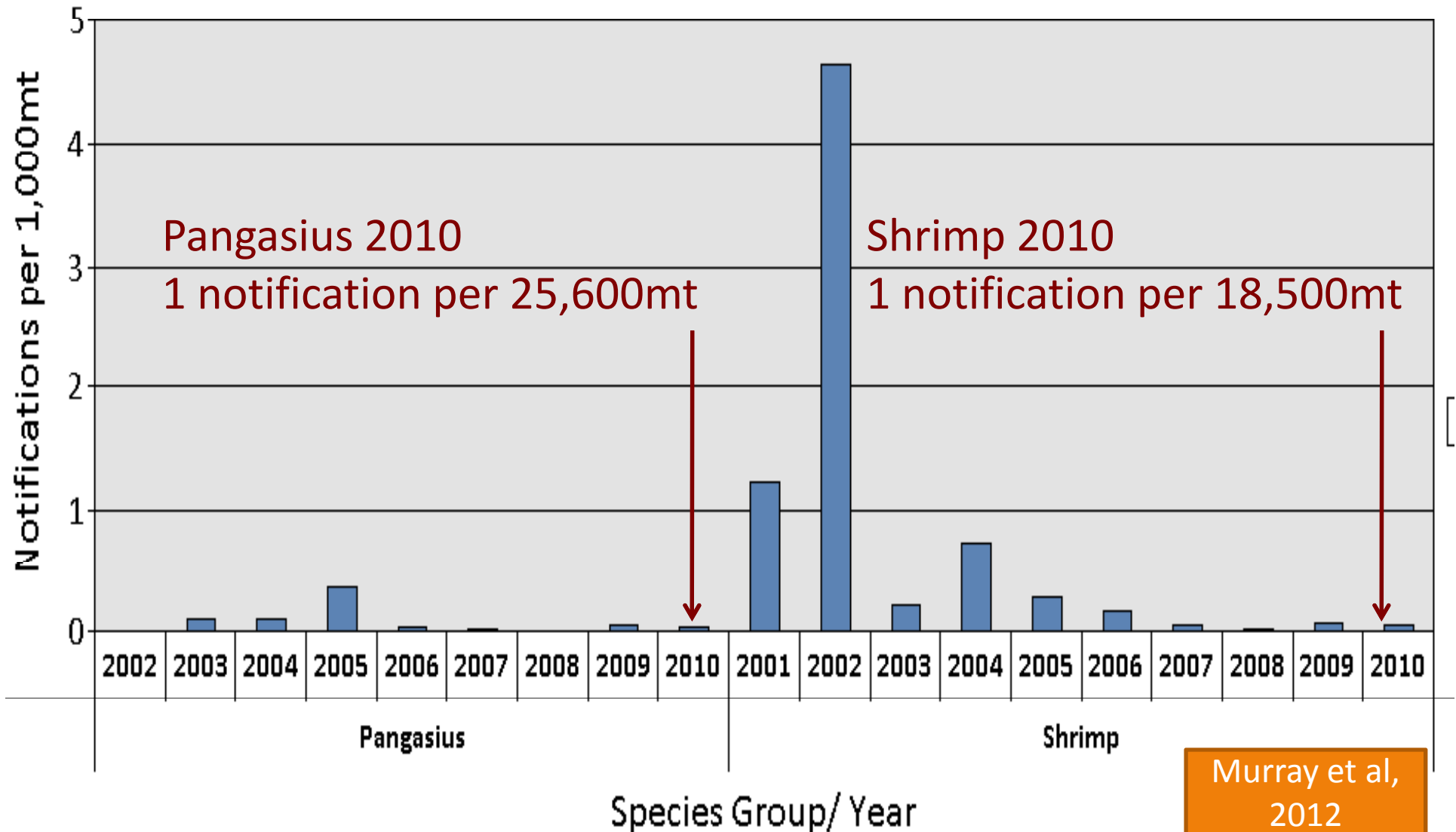
Shrimp:

Capture:



Murray et al, 2012

EU RASFF Notifications/1,000mt product Imported to EU from Vietnam 2001-2010



Extractive? Undermining local food availability?



Extensive 'free-range' shrimp ponds in Southwest Bangladesh

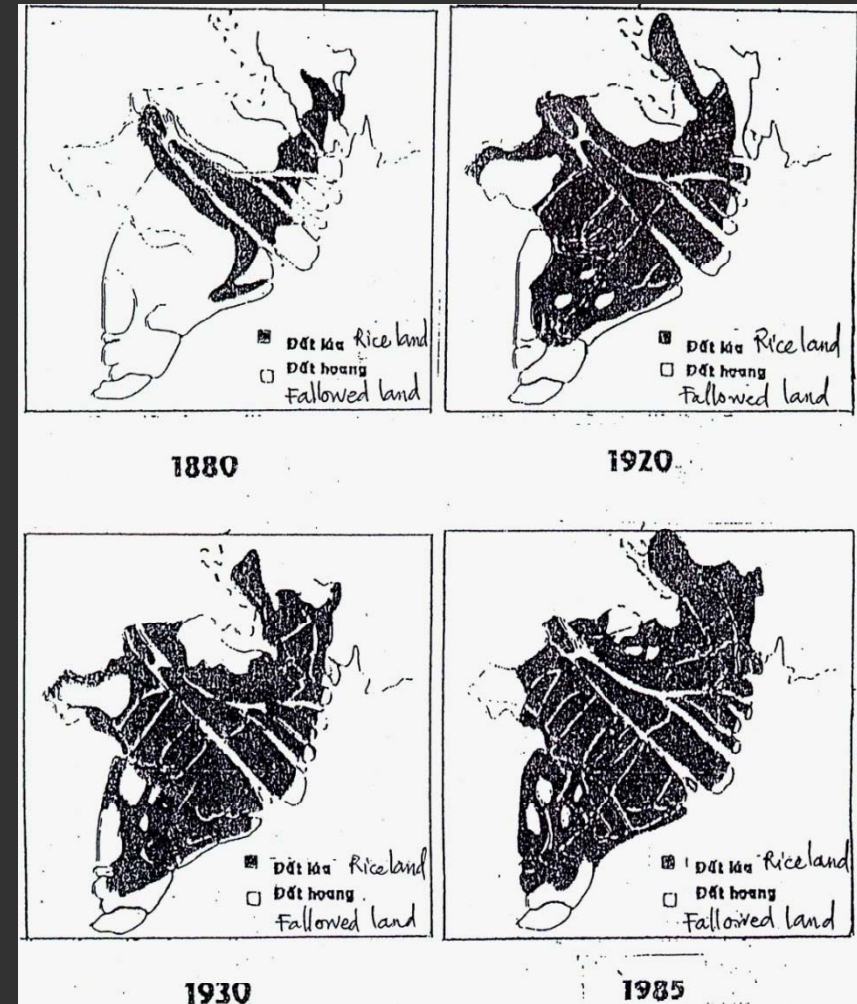
Local food chains and employment

- Income from extensive 'shrimp' ponds in southeast Bangladesh less than half of income from shrimp
- Employment gains for the poorest groups



Environmental destruction

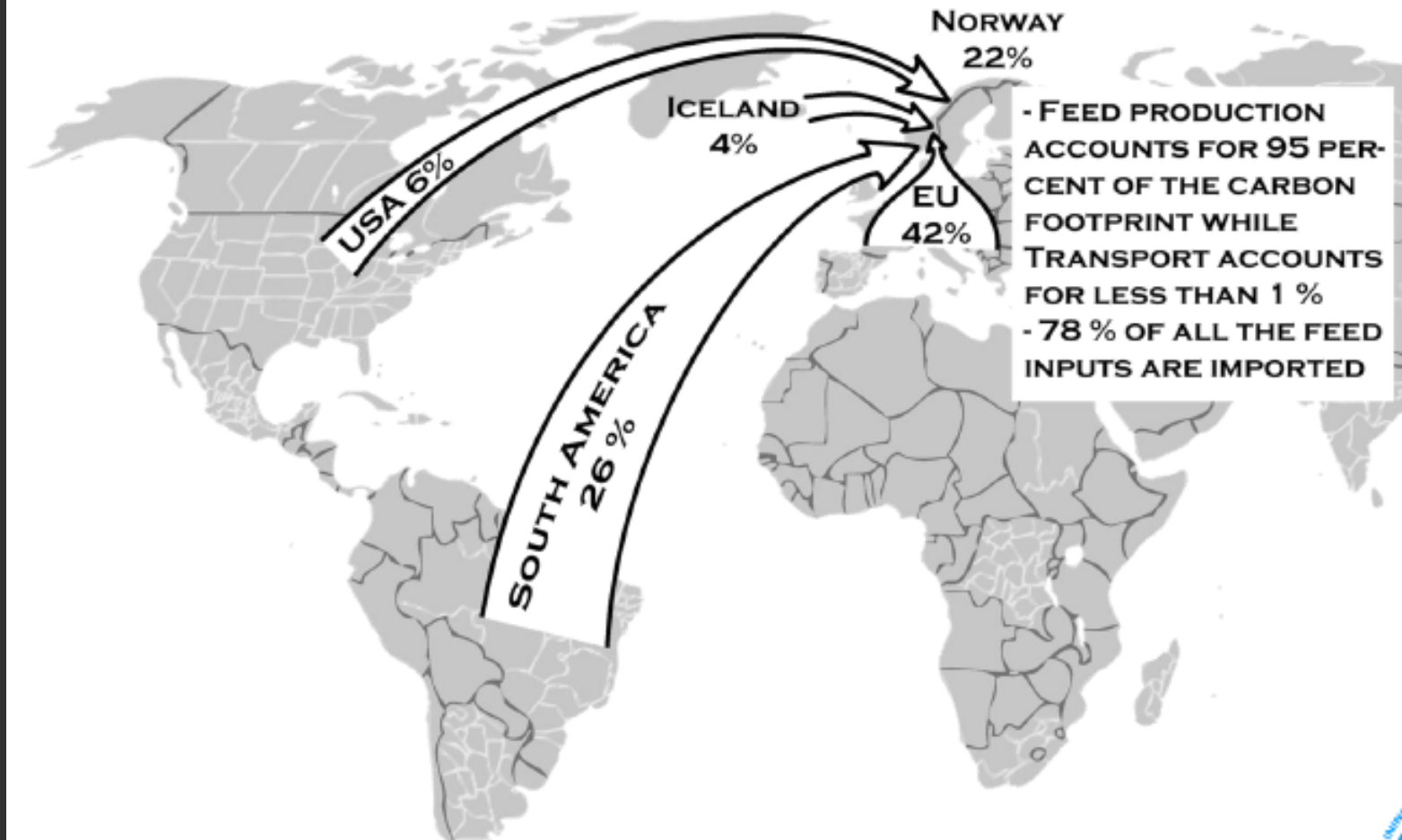
- Zero impact food production?
- Mangrove loss and land use changes
- Often in low productivity agro-ecosystems
- May have occurred decades prior to use for aquaculture
- Mekong Delta, Vietnam loss of forest -80% in 30 years....a century ago



Howie, 2010

Why life cycle thinking?

ORIGIN OF FEED FOR NORWEIGIAN SALMON PRODUCTION



Life cycle approaches

Environmental impacts
through the life cycle

Urgent need to consider whole
product ..up to 60% is a 'by-
product'



Do European consumers/celebrities know what they want?



Informed, sustainable consumption?????

Certifying seafood

- Increasing role of private governance
- Less than 5% of global farmed seafood is certified
- Multiple standards and confusion
- Pushing out of smallholder producers from value chains?
- Narrow interpretations of sustainability



Contents lists available at [SciVerse ScienceDirect](#)

Marine Policy

journal homepage: www.elsevier.com/locate/marpol



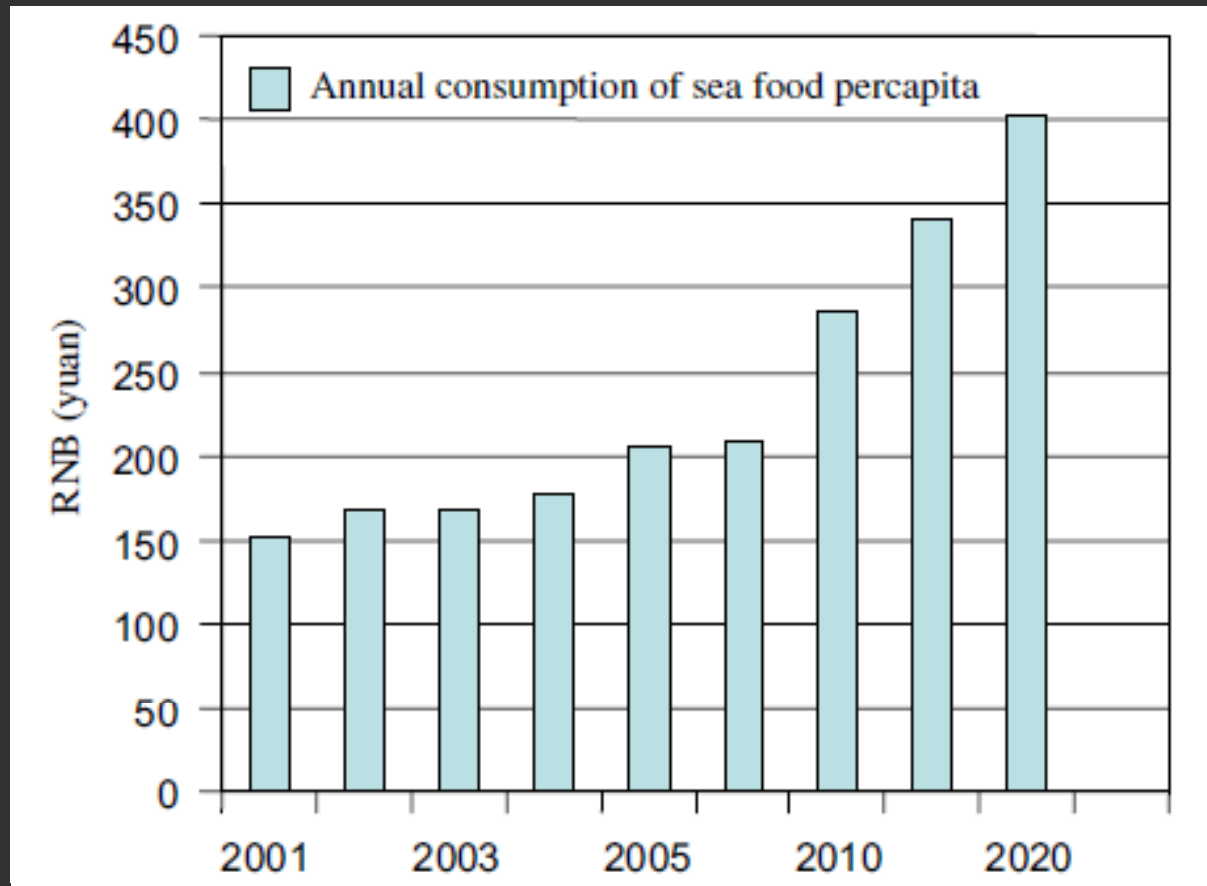
Whitefish wars: Pangasius, politics and consumer confusion in Europe

Choices

- Regional trade within Asia and between Asia and elsewhere is growing fast
- Rapid rise in consumer purchasing power
- Different values e.g. taste over animal welfare
- Will European's be willing to pay for their seafood habit?

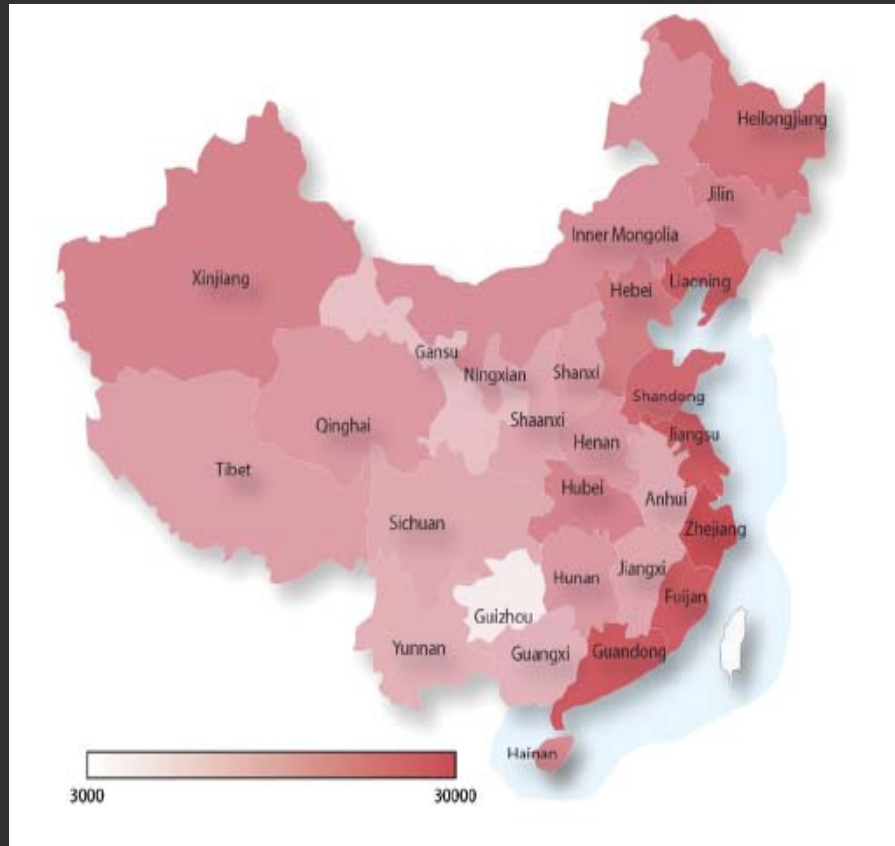


Rapidly growing seafood consumption in China

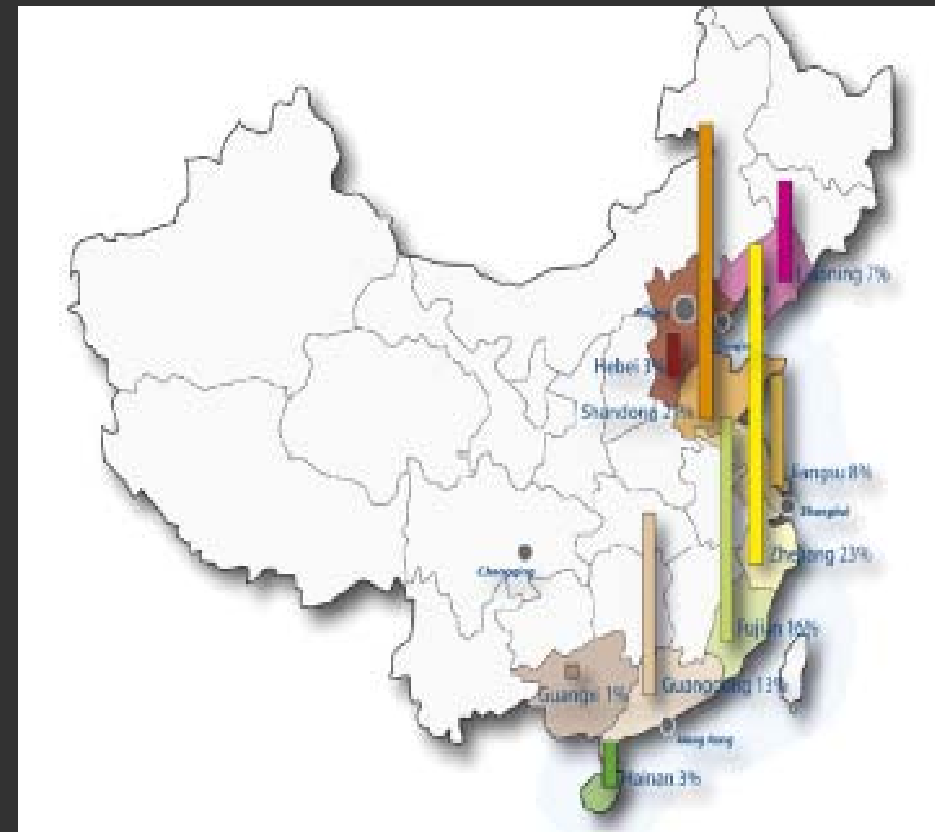


Lindkist et al, 2008

Clusters of production and consumption



Income



Seafood industry

Asia



FAO, 2012

Key summary points

1. A low level of fish 'self –sufficiency' of seafood in Europe (50%) is being met by imports from developing countries; farmed seafood from Asia has become significant-this is not widely acknowledged in research, NGO or policy communities
2. No short term prospect of EU-based aquaculture to makeup this deficit; local production constrained by multiple factors
3. The recent and rapid development of the aquaculture trade between Asia and Europe has been based on the formers comparative advantage based on rising domestic demand , local dietary significance, environmental and cultural factors

Key summary points (contd)

4. The sustainable qualities of many Asian aquaculture systems that export product to Europe have not been adequately recognised and criticism on food safety, environmental and social grounds have often been misplaced or made based on inadequate evidence
5. Growth in Asian economies may limit sustainability of current trade flows but offer opportunities for EU producers
6. The current situation may offer a 'breathing space' for Europe to develop a balanced approach to meeting its seafood security through better managed fisheries, domestic and imported farm product



ACKNOWLEDGEMENTS

- Colleagues , students and stakeholders from the SEAT project in Asia and Europe
- Find us at www.seatglobal.eu



Cefas



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