



RESEARCH INSTITUTE FOR AQUACULTURE No. 2
RESEARCH CENTER FOR AQUAFEED NUTRITION AND
FISHERY POST HARVEST TECHNOLOGY

AQUACULTURE, TREND AND OPPORTUNITY FOR PROCESSED FOOD INDUSTRY

Dr. Nguyen Van Nguyen

7th November 2019



LANCANG - MEKONG

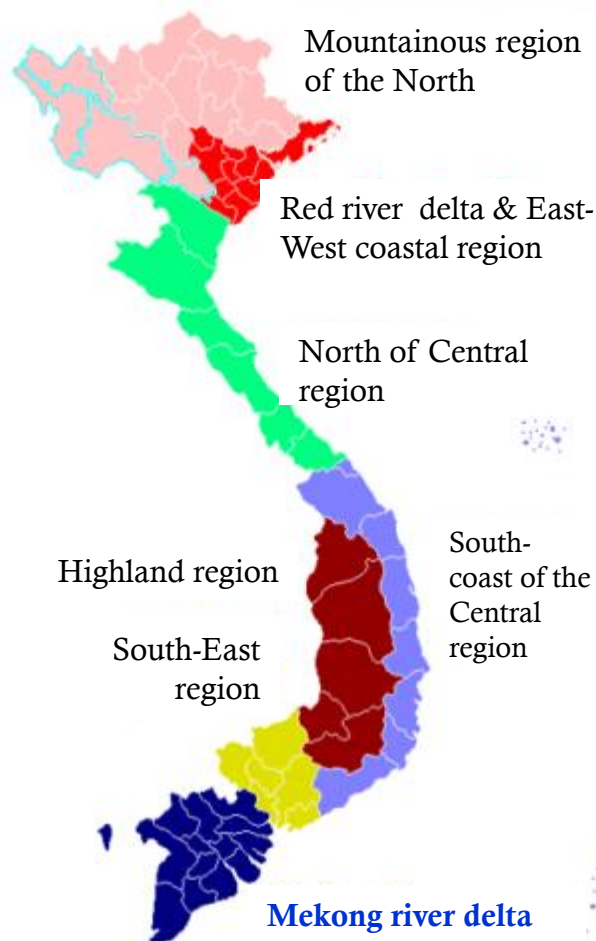


Mekong Fisheries

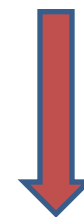


Natural conditions

- Vietnam has:
 - 1,200,000 ha of potential water surface for aquaculture development (the Mekong River Delta shares 805,460 ha or 67%)
 - Long coastline (3,260 km), many lakes (~420,000 ha), dense rivers network (~2,360 rivers), large mangrove forest (~150,000 ha),...



7 geographical regions



**Great potential for
aquaculture
development**

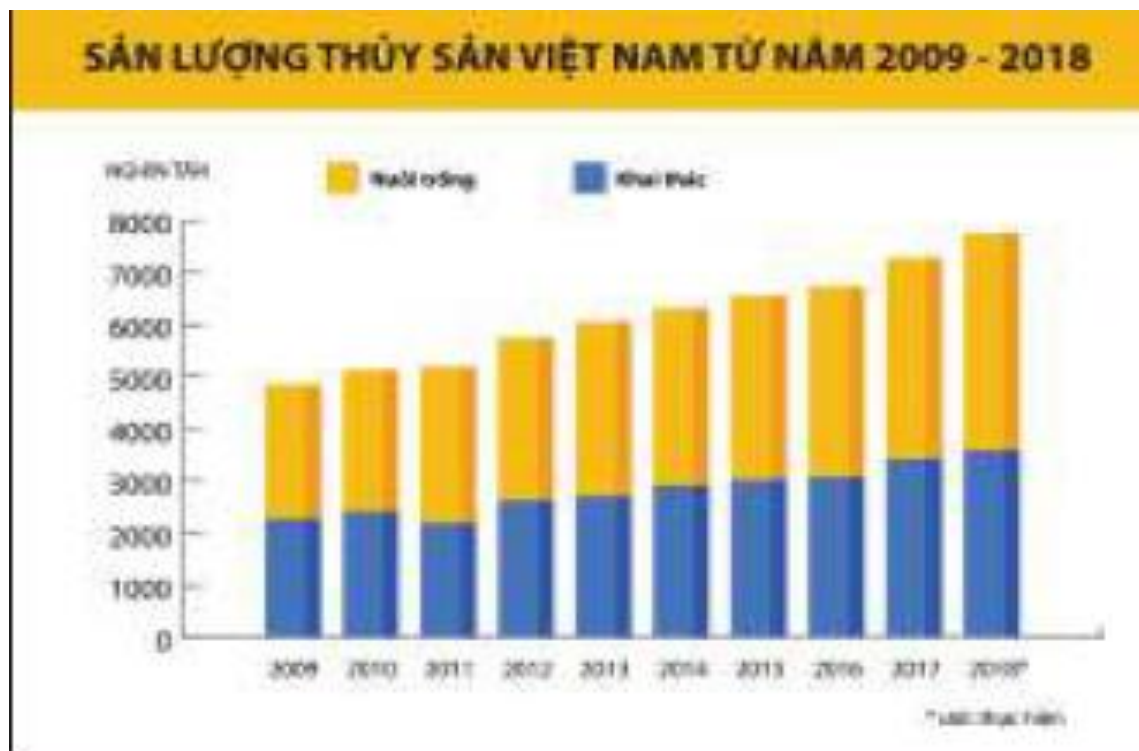


Mekong Fisheries

Aquaculture and Fisheries

The Mekong delta (2018):

- Capture fisheries production: ~3.2 mil. tons (45.7% of Vietnam)
- Aquaculture production: ~3.8 mil. tons (54.2 % of Vietnam)



Production growth of aquaculture and capture fishery in Vietnam during the period 2009-2018

KIM NGẠCH XUẤT KHẨU THỦY SẢN (ĐƠN VỊ: TỶ USD)



2018

- Total export value: \$ 9.0 bil.
 - Shrimp (US\$ 3.58 bil.)
 - Catfish (US\$ 2.26 bil.).



Mekong Fisheries



Aquaculture sectors of the Mekong River Delta





Mekong Fisheries



a) Historical development

FOOD aquaculture



- Started since 1960s
- integrated farming
 - Low inputs
 - Polyculture
 - For local consumption

BUSINESS aquaculture



- Recent developments (2000s)
- Monoculture of high value species
 - Intensive culture
 - For export



Mekong Fisheries



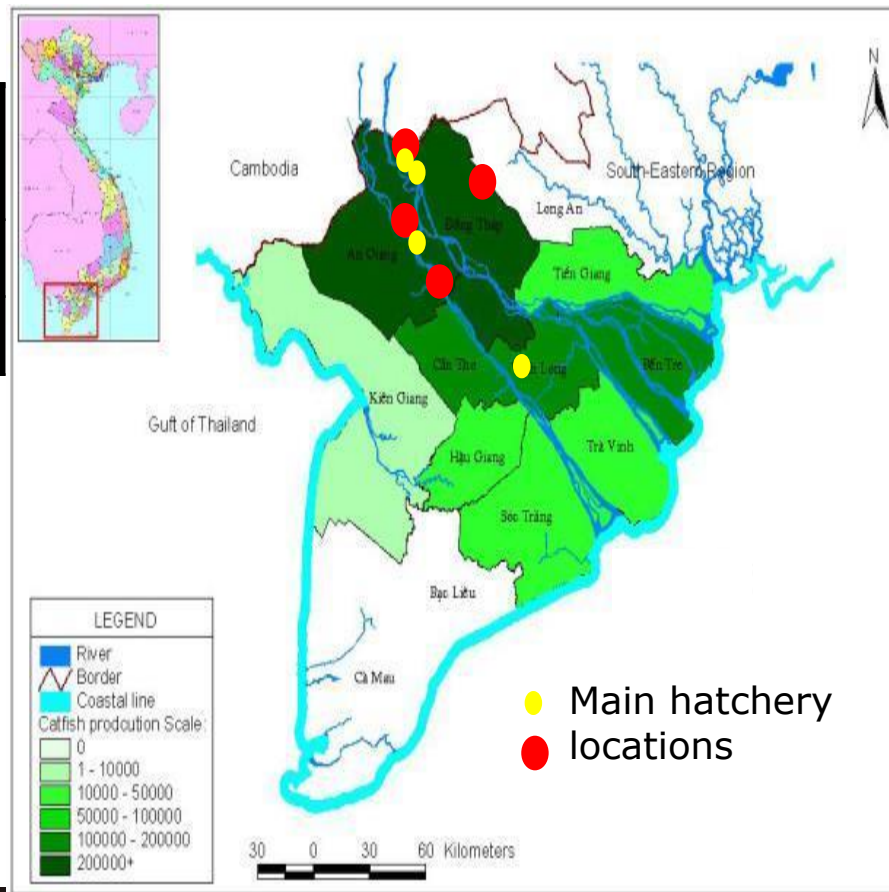
✓ Growth of aquaculture in the MKD

In 2000:

	Việt Nam	MKD
Area (ha)	642.000	445.300 (70%)
Production (tons)	589.000	365.000 (62%)

In 2016:

	Việt Nam	MKD
Area (ha)	1.300.000	(58%)
Production (tons)	6.700.000	(63%)



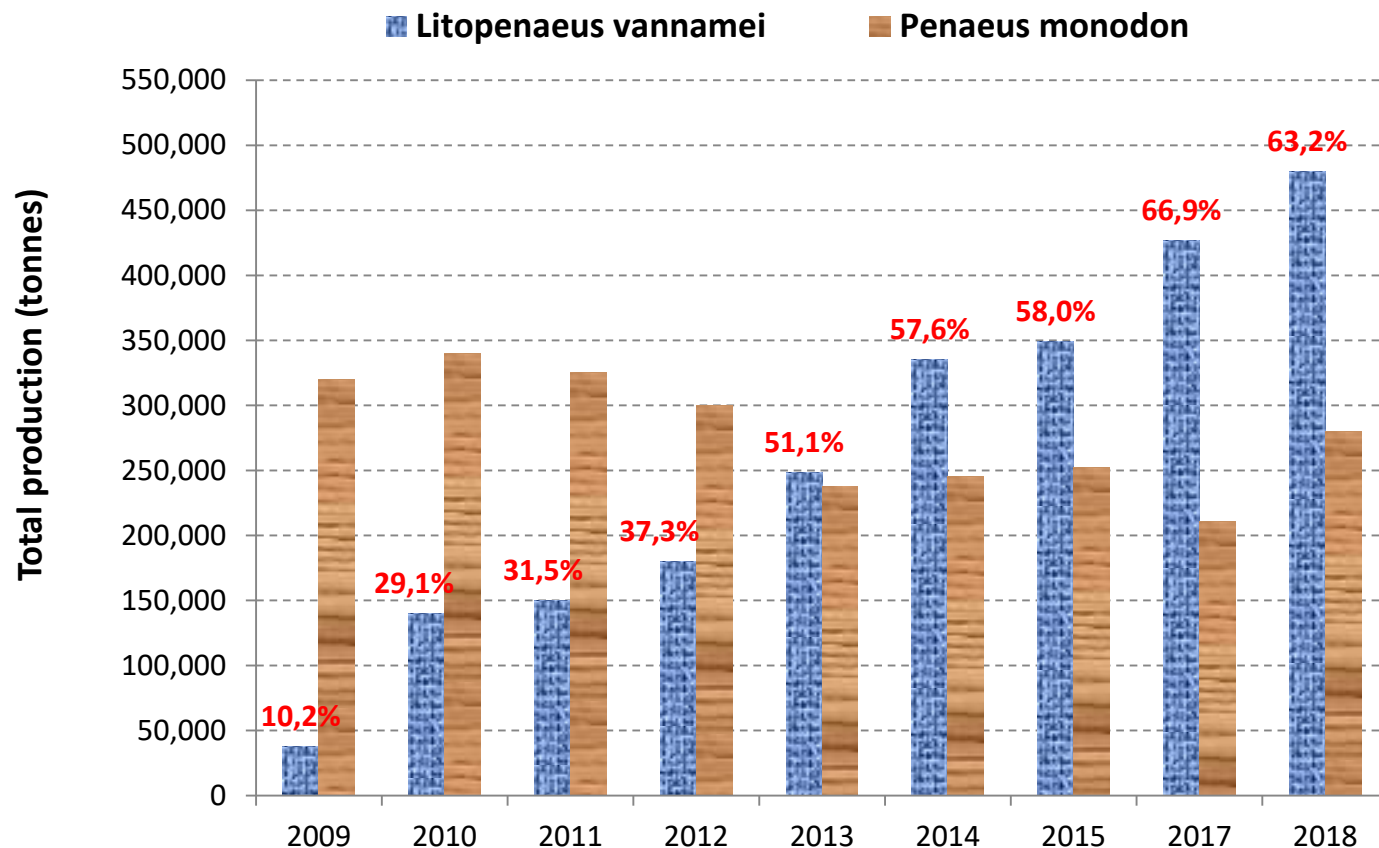
Adapted from Phan *et al.* (2011)



Mekong Fisheries



c) Shrimp farming



Annual production of *Litopenaeus vannamei* (white shrimp) and *Penaeus monodon* (black tiger shrimp) in the period 2009 – 2018 (Fisheries Directorate, 2018).



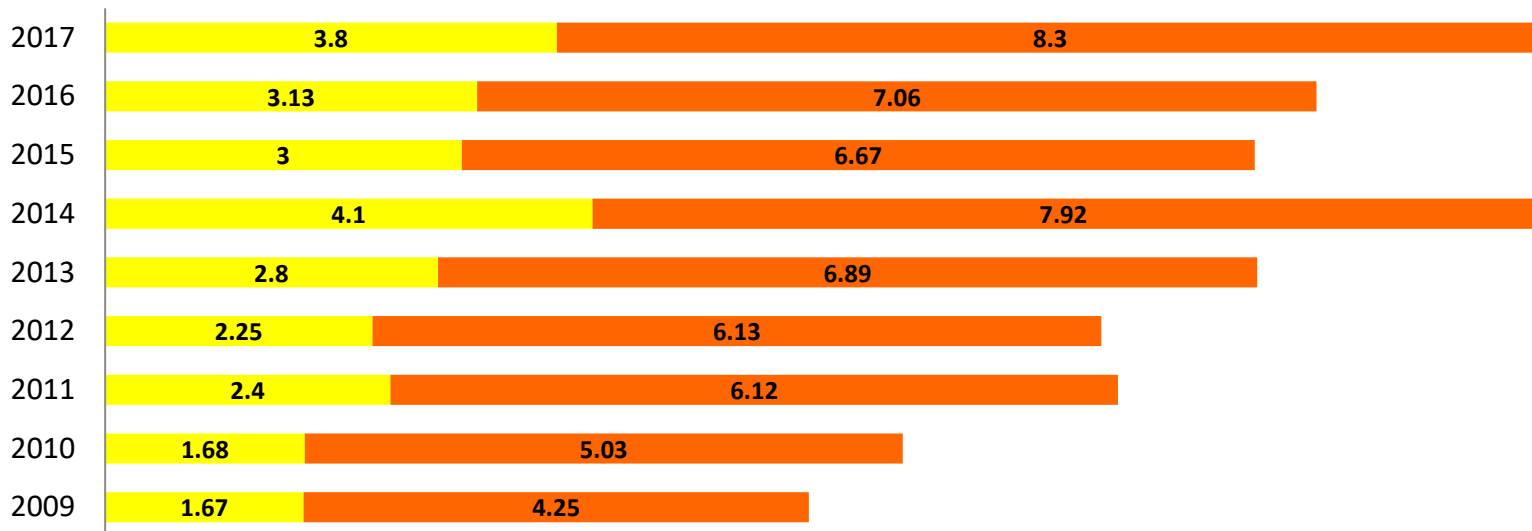
Mekong Fisheries



Aquaculture and Fisheries

Shrimp export vs. total fishery export (bill. USD) in 2009 - 2017 (Source: Ministry of Agriculture & Rural Development of Vietnam)

■ Shrimp export ■ Total fishery export





Mekong Fisheries



e) Other species

Mollusk culture:

- Mekong delta: mostly farmed in Ben Tre, Tien Giang and Kien Giang provinces





Mekong Fisheries



e) Other species

- ❑ **Mud crab culture** (290,000 ha; production of 39,200 t/yr.); local market only
- ❑ **Ell** (*Anguilla mamorata*) **culture** in ponds: 2000 ha; 100 kg/100 m²
- **Mud skipper culture** in ponds: over 150 ha; 2-8 tons/ha





Mekong Fisheries



e) Other species

- Simple and back yard production systems
- Low incomes and market price;
- Local consumption NOT YET for inter'l markets
- Food safety issues?



Livestock-fish



Rice-fish

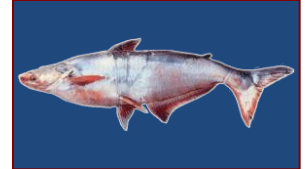


Climbing perch
intensive
pond culture



Snakehead
fish intensive
culture in
ponds and
hapa

Aquaculture sector, a huge food production



Fishery products generally is one of the key economic sectors, accounted for 6-7% total national export turnover. Currently, Vietnam ranks fourth in aquaculture production and in seafood exporter worldwide.

Total fisheries production in 2018: reached over 7.0 mil. tones. Production of fishery caught: appro. 45% and aquaculture production of 55%.

Export revenues in 2018 was USD 9.0 billion, shrimp export: 3.58 billion USD, catfish USD 2.26 billion.

INTRODUCTION

Striped catfish production in Vietnam





Shrimp processing



TRA CATFISH BY-PRODUCTS

Proportion of different parts from Tra catfish



Body parts	Percentage (mean %)	SDV $\pm$
Fillet (%)	35.4	1.51
Skin (%)	1.6	0.17
Head (%)	20.8	0.71
Bone, fins, tail (%)	17.9	0.58
Broken meat (%)	1.7	0.37
Belly fat (%)	8.1	0.55
Intraperitoneal fat (%)	3.1	0.08
Liver (%)	1.8	0.19
Stomach (%)	1.8	0.56
Bladder (%)	1.4	0.09
Gut (%)	6.1	1.17



Shrimp wastes from shrimp processing plants

The challenges in aquaculture

- The mangrove
- Erosion, drought
- Disease outbreak
- Climate change
- Feed ingredients

The trend in aquaculture

- Improvement of sustainability of aquaculture through the shrimp and fish farming models linked with environmentally friendly.
- Development of marine sustainable aquaculture.
- Improving the quality of fishery products instead of the production focused

Opportunities for processed food industry

- Value-added foods: Improving value-added products from raw fish and shrimp products by advanced food processing technologies.
- Functional foods: Applying innovative technologies in producing functional foods extracted from seafood and other aquatic products.
- Extracted bioactive compounds: Improving value-added products from aquatic wastes sourced from seafood processing plants by innovations.
- Post-harvest technology: innovations in preservation and storage of aquatic products after harvesting

POTENTIALS OF PROCESSED DOOD INDUSTRY

Potential products

Fish meal, protein concentrate



Collagen, Gelatin

Peptides ... chitin, chitosan

Bone meal, calcium powder



Fish oil, bio-diesel



Blood meal, serum



**THANK YOU FOR
YOUR ATTENTION!**

**Research Center for Fish nutrition and
Fishery Post-harvest Technology (APOTEC)**

**116 Nguyen Dinh Chieu Street, District 1
Ho Chi Minh City, Vietnam**