The "Quiet Revolution" in Aquaculture Value Chains

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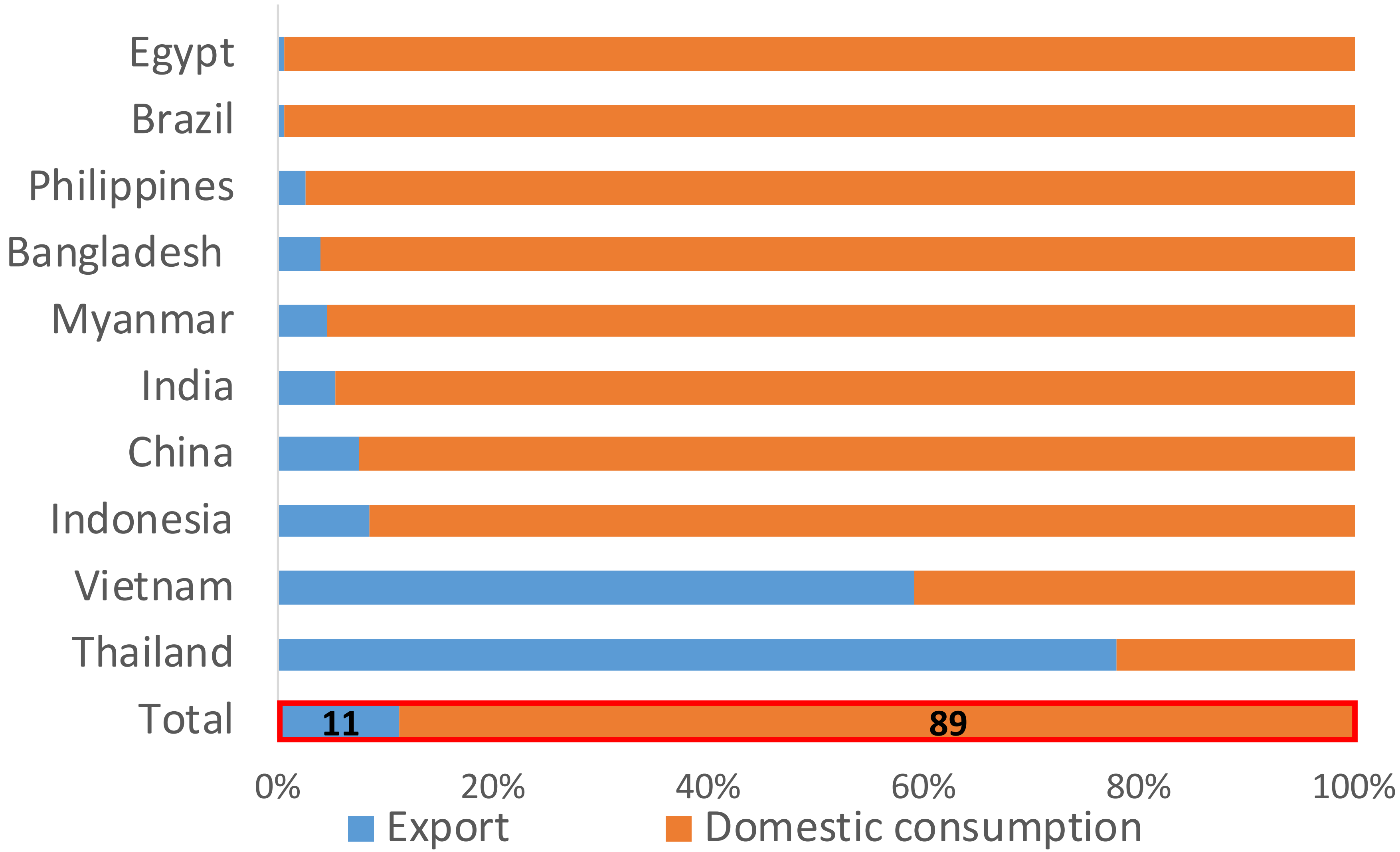
What is the "Quiet Revolution"?

- Huge (but overlooked) changes in food value chains
- Occurring across developing countries for multiple commodities (e.g. Reardon et al, 2012; Reardon et al, 2018)
  - Farm commercialization, intensification, specialization
  - Growth of supporting off-farm enterprises
- Driven by changes in demand

Changes in Demand

- Rapid urbanization (66% by 2050)
- Urbanization → Higher incomes
- Higher incomes → Diet change
- More demand for non-staple foods (including fish) as diets diversify

Domestic markets dominate demand



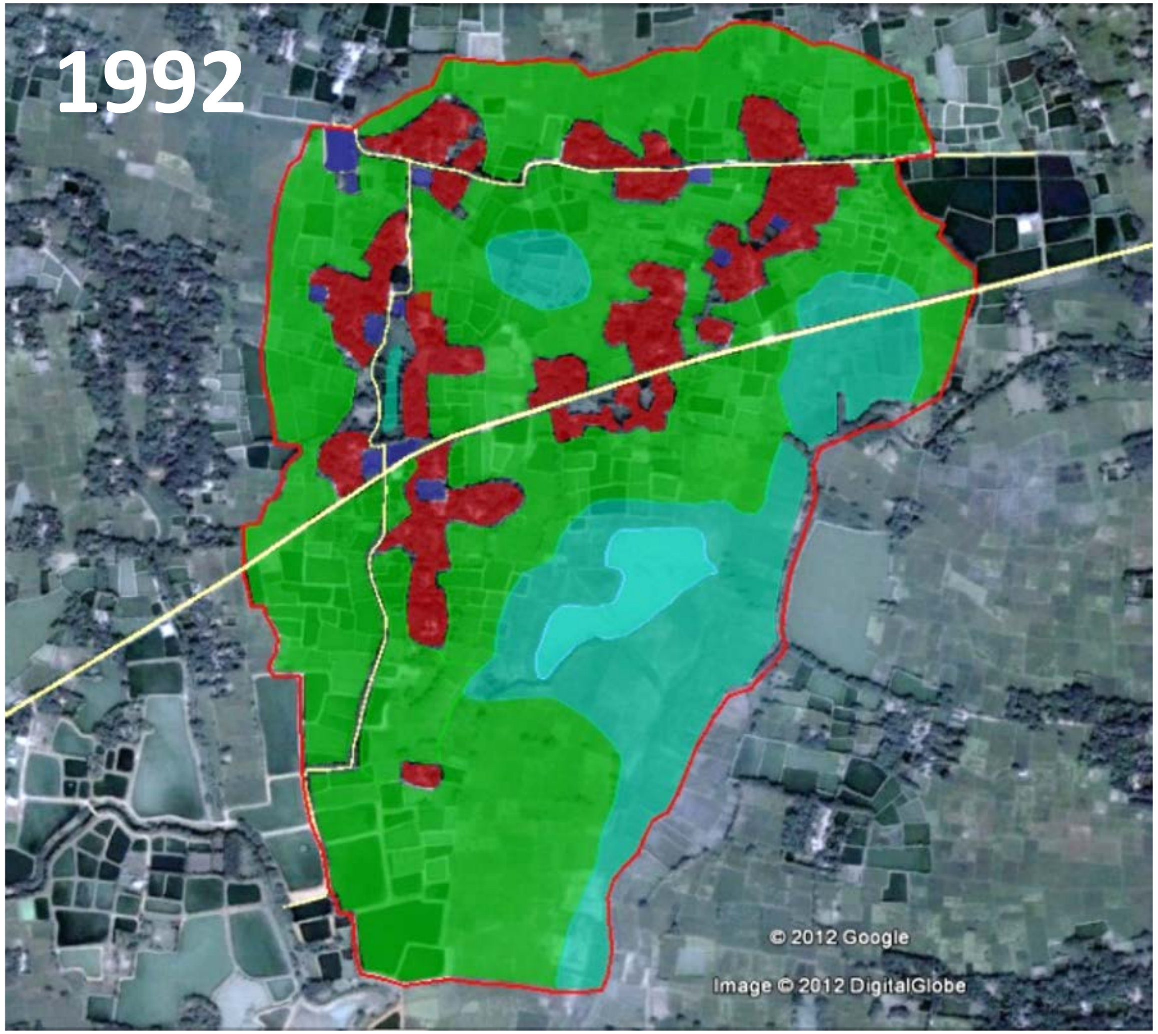
Aquaculture exports and domestic consumption from the top 10 aquaculture producing developing countries

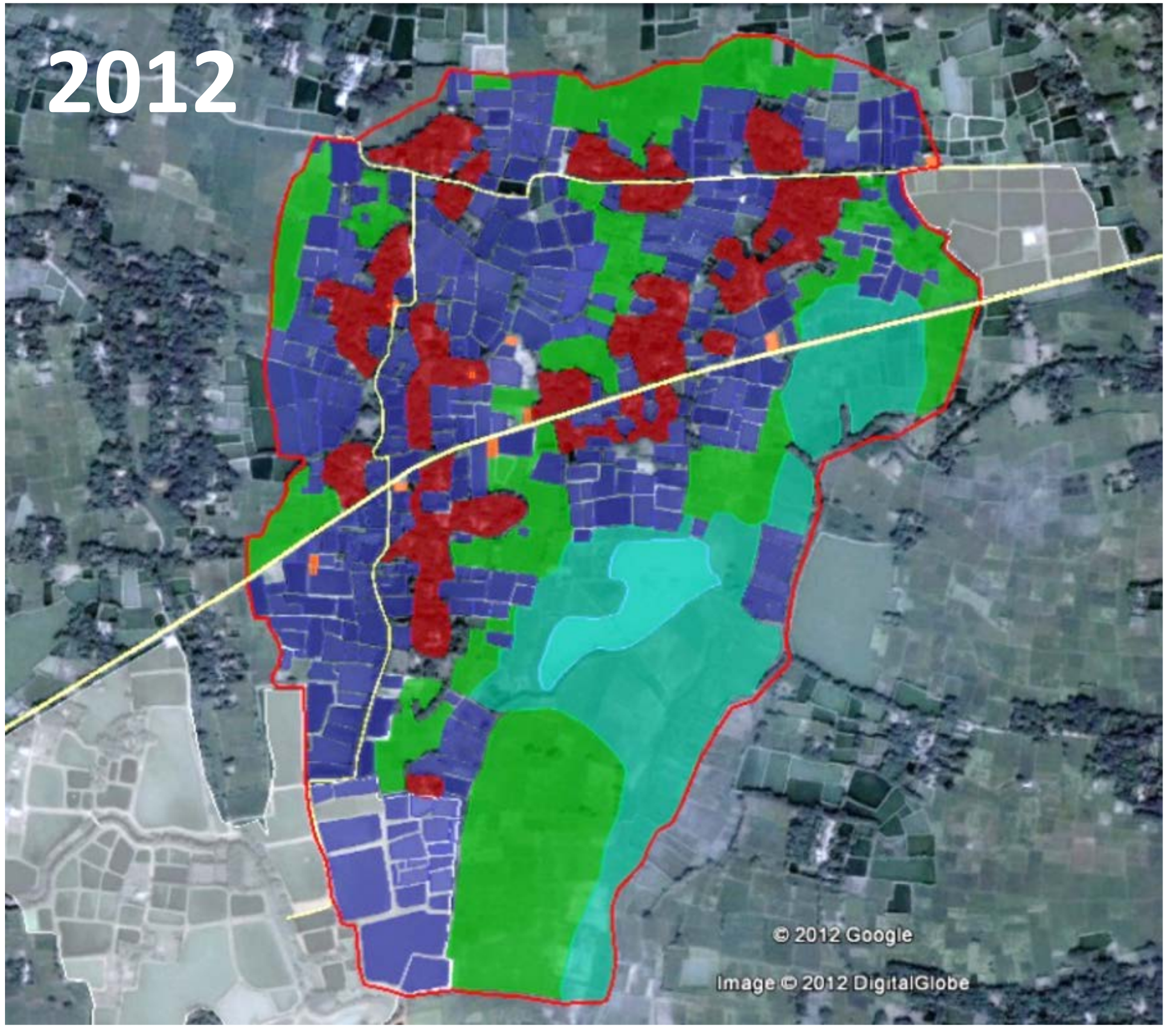
(87% of global farmed fish production)

(Belton et al, 2018a)

Changes in Supply

Fish farm expansion (Belton et al, 2017)





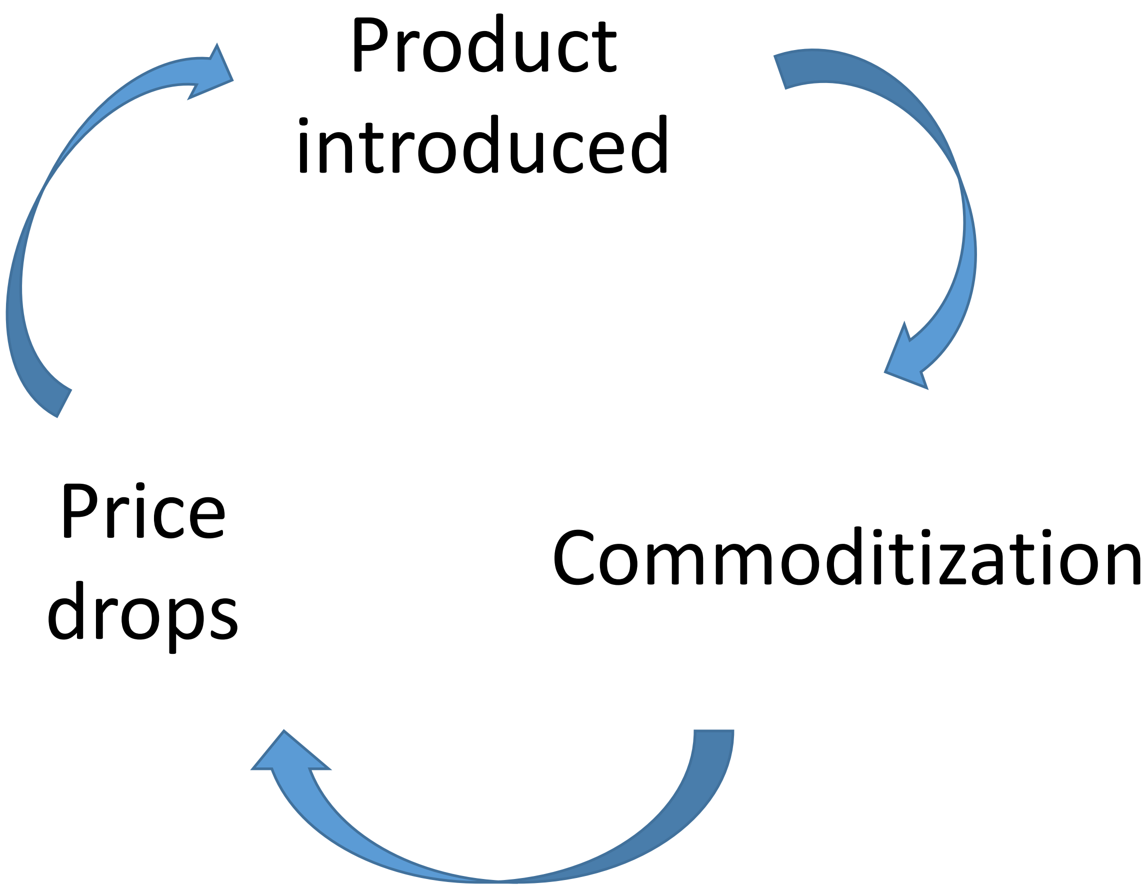
Commercialization, intensification, specialization

- Production for sale, not subsistence

- Formulated feeds
- Larger fingerlings
- Deeper ponds
- Pumps, aeration
- Chemicals
- Higher yields

- Most aquaculture at 'intermediate' stage of development

Product cycle



Hernandez et al, 2018

Growth of Off-Farm VC Segments

Farm growth facilitated by businesses in 'upstream' and 'downstream' VC segments

Enterprise	2006	2016	% change
Hatchery	30	60	100
Nursery	501	1538	207
Seed trader	166	265	60
Pelleted feed trader	5	11	112
Rice bran/oil cake trader	112	175	56
Small boats for hire	115	216	88
Fish trader	46	68	47
Ice factory	9	16	82
Mechanical excavator hire	2	24	961
Trucks for hire	1	20	1900

Inventory of enterprises in the aquaculture value chain, in villages with high concentrations of fish farms, Myanmar, 2006-2016 (Belton et al, 2018b)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KUMING

Innovation in off-farm VC segments

- Example of Andhra Pradesh (Belton et al, 2018c)

- Larger fingerlings, improved seed transport, specialized nursing hubs
- Ice, insulated boxes, 3rd party logistics

- Clusters facilitate specialization, reduce costs, increase efficiency
- Geographical lengthening of value chains

The Quiet Revolution in Aquaculture Value Chains

- Driven mainly by changes in domestic demand (not export)
- Massive growth of farms and enterprises in all VC segments (transforming structure)
- Intensification, specialization, constant innovation (transforming conduct)
- Most farms & firms are SMEs, many livelihood opportunities created, but may change with further modernization
- Farmed fish supply growing & diversifying, falling price – greater food security

Aquaculture

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