The “Quiet Revolution” in Myanmar’s Aquaculture Value Chain

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The “Quiet Revolution”?

• Huge (but often overlooked) changes in developing country food systems
• 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
Expenditure on animal source foods exceeds expenditure on staples

Share of Myanmar food expenditure by food group (%) (Source: Belton et al. 2015)
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

- Shift to production for sale, not subsistence
- Formulated feeds
- Larger fingerlings
- Pumps, aeration, chemicals
- New species
- Higher yields

- Most aquaculture at ‘intermediate’ stage of development
Growth of Off-Farm Value Chain Segments

- Farm growth facilitated by growth and innovation in ‘upstream’ and ‘downstream’ VC segments

- Development in ‘clusters’ that facilitate specialization, reduce costs, increase efficiency

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

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

- Rural-urban linkages
- Agro-ecology
- Water control infrastructure
- Land use policy
Fish farms produce bigger economic spillovers than crop farms.

Small commercial fish farms produce bigger indirect spillovers than large fish farms.

Estimated local economy-wide direct and indirect income gains from additional acre of land utilized by large fish farm, small fish farm and crop farm, Myanmar (Filipski & Belton, 2018)
Farmed fish prices falling relative to wild fish

Long run trend in real prices of key fish species from capture fisheries and aquaculture in Myanmar (2008-2018)
The Quiet Revolution in Myanmar’s Aquaculture Value Chain

- Driven mainly by changes in domestic demand
- Growth, intensification, specialization, and innovation by farms and enterprises throughout value chain
- Clustered pattern of development
- Many livelihood opportunities created, both on and off-farm
- Large income spillovers, especially from smaller commercial farms
- Increasing availability and accessibility of farmed fish
- Liberalization of land use policy and better access to credit could spur further growth & diversification