The Emerging ‘Quiet Revolution’ in Myanmar's Aquaculture Value Chain

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Background

• Myanmar among the world's leading aquaculture producers. But less is known about its fish farm sector than any other Asian country.

• Previous grey literature characterized Myanmar’s aquaculture as:
  1. Strongly export oriented
  2. Dominated by very large farms
  3. Small fish farms non-existent due to strict regulations on conversion of paddy fields to ponds
  4. Technologies of big farms ‘traditional’ and extensive/semi-intensive
Methods

• Analysis of pond area, using satellite images
• Value chain study: 250 semi-structured interviews
• Household survey: 1100 HH in main fish farming areas, including fish farming, crop farming and landless HH
• Community survey: 73 villages – recall of numbers of aquaculture-related businesses over past 10 years
Fish farm & survey locations
Finding 1: Most farmed fish produced in Myanmar is sold on the fast growing domestic market

- >75% of fish sold through San Pya market, of which:
  - 40–50% to domestic markets outside Yangon;
  - 30% to markets in and around Yangon;
  - 20–30% for international export (mostly to Middle East)

- Distributed throughout country by truck and express bus
- Proliferation of transport services post-2011
- Better connected markets, faster, cheaper distribution to more distant locations inside Myanmar
Finding 2: Large fish farms dominate in terms of area, but there are many small/medium commercial farms and nurseries.
Large numbers of ‘invisible’ homestead ponds

Homestead ponds in Kayan township, with close up inset (Source Google Earth)
Finding 3: In the main fish farming zones, smaller farms have “worked around” restrictions on agricultural land use conversion.
Need for informal arrangements: increases entry barriers & costs, reduces tenure security, slows down farm growth.
Finding 4: Upstream (feed and seed) and midstream (wholesale and logistics) VC segments have grown fast, driven by private investments of SMEs

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>2006</th>
<th>2016</th>
<th>% change</th>
<th>Reference area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatchery</td>
<td>30</td>
<td>60</td>
<td>100</td>
<td>Village tract</td>
</tr>
<tr>
<td>Nursery</td>
<td>501</td>
<td>1538</td>
<td>207</td>
<td>Village tract</td>
</tr>
<tr>
<td>Seed trader</td>
<td>166</td>
<td>265</td>
<td>60</td>
<td>Village tract</td>
</tr>
<tr>
<td>Pelleted feed trader</td>
<td>5</td>
<td>11</td>
<td>112</td>
<td>Local town</td>
</tr>
<tr>
<td>Rice bran/oil cake trader</td>
<td>112</td>
<td>175</td>
<td>56</td>
<td>Local town</td>
</tr>
<tr>
<td>Small boats for hire</td>
<td>115</td>
<td>216</td>
<td>88</td>
<td>Village</td>
</tr>
<tr>
<td>Fish trader</td>
<td>46</td>
<td>68</td>
<td>47</td>
<td>Local town</td>
</tr>
<tr>
<td>Ice factory</td>
<td>9</td>
<td>16</td>
<td>82</td>
<td>Local town</td>
</tr>
<tr>
<td>Mechanical excavator hire</td>
<td>2</td>
<td>24</td>
<td>961</td>
<td>Local town</td>
</tr>
<tr>
<td>Trucks for hire</td>
<td>1</td>
<td>20</td>
<td>1900</td>
<td>Village</td>
</tr>
</tbody>
</table>
Finding 5: Farms (large and small) are using a mix of traditional and more modern farming practices and technologies.

Average yield, by yield quintile
Hlegu pond cluster (2004-2014)

Pond area: 274 ha → 697 ha
Integrated ponds: 0% → 74%
Use of pelleted feeds increasing (from low base)

Share of farms using feed inputs, by feed type, and share of feed type in total value of feed inputs (%)

Cumulative adoption of pelleted feed, by year and feed type (2000-2015)
Some species diversification (from low base)

Respondents stocking (cumulative)

- Rohu
- Mrigal
- Pacu
- Pangasius
- Tilapia
- Others

Cumulative number of respondents farming species, by species and year

- 93%
- 77%
6) Fish farms produce bigger economic spillovers than crop farms; small fish farms produce bigger indirect spillovers than large fish farms.

Income gain by direct and indirect beneficiaries

<table>
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<tr>
<th>SIM1: new acre small aqua</th>
<th>SIM2: new acre big aqua</th>
<th>SIM3: new acre agri</th>
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<tbody>
<tr>
<td>44%</td>
<td>49%</td>
<td>42%</td>
</tr>
<tr>
<td>56%</td>
<td>51%</td>
<td>58%</td>
</tr>
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</table>

USD
Conclusions

• The domestic market for farmed fish is vibrant and growing, exports relatively unimportant.
• Many smaller commercial farms and nurseries have emerged in last decade.
• Land use restrictions not enforced uniformly, but still hamper small farm development
• Off-farm segments of value chain have grown quickly in step with farms
• Some technological change and diversification in farming
• Aquaculture generates much larger economic spillovers than agriculture; small commercial fish farms generate bigger indirect spillovers than large fish farms
• A Quiet Revolution is emerging Myanmar’s aquaculture value chain, but still has potential to go much further
Thank you!