Community based Aquaculture initiatives in coastal Kenya

James M. Mwaluma
Kenya Marine and Fisheries Research Institute, Mombasa Station

SUSTAINABLE USE OF MARINE AND COASTAL RESOURCES IN KENYA: FROM RESEARCH AND SOCIETAL BENEFITS
North Coast Hotel 27th – 29th October 2014
Introduction

- Kenya has a 640 Km of coastline, with large expanses of brackish waters at the River Tana and Athi River deltas, river water and other small water bodies which can also be harnessed for coastal aquaculture.
- Due to lack of proper fishing and rigging gears owing to the heavy investment needed for offshore fishing among other factors, Kenya’s marine fisheries potential is hardly realized and the current landings are only about 4.5 % of the capture fisheries potential.
- Therefore, mariculture presents an alternative supplement to the capture fisheries and can positively contribute towards food security, income generation and job creation.
Under KCDP Baseline survey conducted in 15 - 25 February and 14-24 May 2013

Objectives

- To provide an inventory of aquaculture initiatives and potential along the coast
- To identify the constraints and opportunities towards aquaculture development.
- Understand community perceptions to aquaculture development
- Socio-economic assessment

A total of about 30 groups practicing different forms of mariculture were visited on site
Vuma group, Takaungu
- Seaweed farming

Nkunazini women group
Ngomeni – Prawn farming

Kadhuoni farmers, Gongoni
- Artemia and Milkfish
Dabaso conservation Group - crab farming & ecotourism, mangrove planting

Kibokoni group Kilifi creek - Prawns & milkfish, mangrove planting

Maya group-Kilifi creek Milkfish farming, mangrove planting
Dabaso conservation Group
-crab farming & ecotourism, mangrove planting

Kibokoni group Kilifi creek
-Prawns & milkfish, mangrove planting

Maya group-Kilifi creek
-Milkfish farming, mangrove planting
Comsung group majaoni-Prawns milkfish, mangrove rehabilitation, ecotourism

Ihaleni group-Majaoni-Milkfish prawns

Bakarani group majaoni
Kwetu training center

ComtechTsunza, Mariculture, tree planting, mangrove management

Jimbo environmental group
Map of Kenyan coastline showing potential mariculture sites
Summary of challenges

- Lack of technical knowhow (pond siting & construction)
- Lack of seeds and feeds
- Lack financing (pond construction)
- Low scale production (understocking of seeds)
- Lack of sustainability (group dynamics, business skills, perception)
- Low markets (low market prices)
- Lack of guidelines
- Disputes among group members
FEW SUCCESSES

CRAB FARMING IN DABASO MIDA CREEK
Experimental farm trials from Kmfri and local Universities
Growth, survival and production of crabs in crab cages
  Floating vs Bottom
  Males vs Female
• Grow-out of monosex crabs
• Training to other farmers
CRAB FARMING

Results recommended farming in floating cages using monosex males
Crab farming within ecotourism within the mangroves

Crab farming
Bee keeping
Boardwalk
Canoe riding
Bird watching
Restaurant
Mangrove planting
CRAB SAMOSAS AND SEAFOOD DELICACIES
Seaweed farming in South coast

- Experimental trials for the last 10 yrs in South coast
- Nurseries of *Eucheuma dentriculata* and *Kapphycus* (cottonii) established
- Now spreading to Funzi, Gazi, Mkwiro
Seaweed farming in Kibuyuni, Mkwiro, Gazi and Funzi

- Establishment of cottonii nurseries at Kibuyuni, Mkwiro, Funzi and Gazi
- Upscaling of cottonii
- Establishment of new markets for seaweed
- Value addition

Setting up of nursery lines

Harvesting
Experimental Artemia pond production

Pond construction  Harvesting live artemia  Female and male artemia

Objectives
Train coastal communities in appropriate artemia production technologies
To assess the production potential of the farms
Expansion artemia production through PPP (investors)
Artemia production

- Establish quality control measures
- Processing, Packaging and Marketing artemia cysts (investors)
- Export

Members of Kadzuhi group, majority who are women

Brine shrimp artemia
Made in Kenya?
Milkfish farming in Makongeni Baraka self help group Kwale

- 4 ponds measuring 40x30m each with production capacity of 1 ton per pond
- 2 harvest per year
Milkfish and prawn farming in Kibokoni (Kilifi)

- 4 ponds measuring 40 x 30m each with production capacity of 1 ton per pond for milkfish and prawns
- 2 harvest per year
## Projected community mariculture production

<table>
<thead>
<tr>
<th>Activity</th>
<th>Production current</th>
<th>2013-14)</th>
<th>2014-15</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seaweed farming</strong></td>
<td>600mt/yr (100 farmers)</td>
<td>12 mill/yr</td>
<td>1200mt (200 farmers)</td>
<td>36 mill/yr</td>
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<tr>
<td><strong>Milkfish farming</strong> (Chanos chanos)</td>
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<tr>
<td>Kibokoni</td>
<td>50 kg/yr (8 ponds)</td>
<td>10,000 ksh</td>
<td>1000 kg/yr (12 ponds)</td>
<td>200,000 ksh</td>
</tr>
<tr>
<td>Makongeni</td>
<td>50 kg/yr (7 ponds)</td>
<td>10,000 ksh</td>
<td>1000 kg/yr (10 ponds)</td>
<td>200,000 ksh</td>
</tr>
<tr>
<td><strong>Milkfish seed collection</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Makongeni</td>
<td>6000 seeds (7 ponds)</td>
<td>60,000 ksh</td>
<td>30,000 seeds (10 ponds)</td>
<td>300,000 ksh</td>
</tr>
<tr>
<td><strong>Prawn (P. indicus)</strong></td>
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</tr>
<tr>
<td>Kibokoni</td>
<td>15 kg/yr (8 ponds)</td>
<td>4,500 ksh</td>
<td>1000 kg/yr (12 ponds)</td>
<td>400,000 ksh</td>
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<tr>
<td><strong>Crab farming</strong></td>
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<tr>
<td>Dabaso (@ 265/kg)</td>
<td>347 kg/yr (10 cages)</td>
<td>91,560 ksh</td>
<td>700 kg/yr (20 cages)</td>
<td>184,703 ksh</td>
</tr>
</tbody>
</table>
Interventions

- Establishment of a marine hatchery (seed and feed production)
- Community training in mariculture production
- Private partnership in marketing, value addition and semi processing
- Need for partnership in upscaling, research, packaging and marketing artemia cysts
- Training in business skills
Interventions

- Development of an aquaculture policy
- Development of mariculture guidelines
- Aquaculture master plan - guide development of aquaculture interventions and investment
- Diversify aquaculture species (marine tilapia, siganids) and technology (Cage culture offshore)
- Training in leadership roles (women)