FISHERIES AND AQUACULTURE IN THE STATE OF MEGHALAYA

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Directorate of Fisheries,
Shillong
Fishery or Fisheries:

Fisheries cover all aspects of fish species, life history, including feeding, breeding, propagation, culture, fishing, harvesting, post harvesting or value addition upto the sale of the fish and fish products.
Fisheries are of two categories:

- **Capture Fisheries**: Fish or Aquatic animals caught or harvested from the natural habitats for human consumption of all forms.

- **Culture Fisheries**: Fish grown or raised in artificial environments like manmade ponds, tanks, impoundments etc into marketable size and harvested for human consumption.
Pisciculture:

Pisciculture derived from the latin word ‘piscis’ meaning fish, which is the controlled breeding and rearing of fish or fish farming for commercial production, mainly for food.
What is AQUACULTURE?

- Aquaculture is derived from the Latin word ‘Aqua’ meaning water, rain, or sea, the practice of growing or culture of aquatic or water organisms to enhance their production for food.
- Culture or farming of finfish, shell fish (crustaceans, molluscs, etc) as well as aquatic plants (seaweed etc).

In India, first attempt at Aquaculture was taken up at Andhra Pradesh, vizag Mandapam Centre of CMFRI in TN (present hqrs, kochi kerela) culture of milk fish Chanos chanos, (seafish) during 1958-59.

- India adopted aquaculture between 1970-1980 (carp farming)
- Presently annual fish production in India is 9.06 mill MT from aquaculture and ranked 2\textsuperscript{nd} in world and ranked third in capture fisheries.
MEGHALAYA STATE AQUACULTURE MISSION:

It is a Mission with a unique positive approach, to capture the potential of life under water, for food security while at the same time focussed at improving the livelihood of the rural folks.

Need for Aquaculture Mission –

- growing population
- demand for food
- decrease of natural resources
- over fishing, over exploitation of fishery resources
- endangered, threatened or species extinction
- employment, livelihood
It was a five year Mission with a vision, launched in 2012, co-terminus with the 12th Five year Plan 2012-2017, the main objective, to raise the fish production in the State from a meagre 4500 MT during 2010-11 to become self sufficient in the States fish production in response to the Mission’s slogan “from Dependency to Self sufficiency.”
## Schemes prior to MSAM 1.0

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Name of schemes</th>
<th>Existing ponds/Resources</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Numbers</td>
<td>Water area(Ha)</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Check dam/Mini barrage</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>Fish cum Paddy/Pig/Duck/Poultry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) State Plan Scheme</td>
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<tr>
<td></td>
<td>i) N.E.C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Fish Farmers Development Agency</td>
<td>42</td>
<td>4.6</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Community Fishery Development Project</td>
<td>76</td>
<td>27.37</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Aquaculture Development of 1000 ponds</td>
<td>891</td>
<td>151.66</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>RKVY 2010-11</td>
<td>432</td>
<td>73.65</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1441</strong></td>
<td><strong>257.28</strong></td>
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</tr>
</tbody>
</table>
COMPONENTS UNDER MSAM 1.0: OBJECTIVE

Mini Mission I: Area and Productivity Expansion
Mini Mission II: Critical Infrastructure Development
Mini Mission III: Conservation of Indigenous Fisheries Resources.
Mini Mission IV: Capacity Building and Human Resource Development
Mini Mission V: Mass Media Campaign, Documentation and Outreach
Mini Mission VI: Emerging Opportunities in the Fisheries Sector
# ACHIEVEMENTS UNDER MSAM 1.0:

## MINI MISSION I: Area and Productivity Expansion

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PRODUCTION (MT)</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>4.558*</td>
<td></td>
</tr>
<tr>
<td>2011-2012</td>
<td>4.799</td>
<td></td>
</tr>
<tr>
<td>2012-2013</td>
<td>5.417</td>
<td>1st year MSAM 1.0</td>
</tr>
<tr>
<td>2013-2014</td>
<td>5.753</td>
<td></td>
</tr>
<tr>
<td>2014-2015</td>
<td>6.040</td>
<td></td>
</tr>
<tr>
<td>2015-2016</td>
<td>11.343***</td>
<td>4th year</td>
</tr>
<tr>
<td>2016-2017</td>
<td>12.330</td>
<td>5th year</td>
</tr>
<tr>
<td>2017-2018</td>
<td>11.961</td>
<td></td>
</tr>
<tr>
<td>2018-2019</td>
<td>2500 ha of Additional Water Area was brought under Fish Culture in Area and Productivity Expansion and providing Livelihood opportunities for more than 18,000 fish farmers at the end of 2016-17*</td>
<td></td>
</tr>
</tbody>
</table>
MINI MISSION II: Critical Infrastructure Development

- 12 Eco Hatchery units and 14 FRP Hatcheries under the Mini Mission II resulted in an increase of the production of fingerlings.
- 3 Fish Feed Mills in Ri Bhoi, East Khasi Hills, and West Garo Hills.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PRODUCTION (in millions)</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>2.9627</td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td>3.2689</td>
<td></td>
</tr>
<tr>
<td>2012-13*</td>
<td>2.0167</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;year (construction/installation of infrastructure)</td>
</tr>
<tr>
<td>2013-14</td>
<td>3.14</td>
<td>results of trial breeding</td>
</tr>
<tr>
<td>2014-15</td>
<td>5,82582</td>
<td></td>
</tr>
<tr>
<td>2015-16</td>
<td>11.0736*</td>
<td>marked increase</td>
</tr>
<tr>
<td>2016-17*</td>
<td>7.67725</td>
<td>5&lt;sup&gt;th&lt;/sup&gt; year</td>
</tr>
<tr>
<td>2017-18</td>
<td>9.697</td>
<td></td>
</tr>
</tbody>
</table>
MINI MISSION III: Conservation of Indigenous Fisheries Resources

OBJECTIVES

- to achieve Maximum sustainable Yield (MSY) through proper regulation of fishery resources*

- over-exploitation of natural resources - decrease of fish population both indigenous and endemic species**

- promote tourism***, research, and academic studies in the State,

  * Closed season or Fishing holidays to be in place in all major riverine feeding/breeding grounds on approval of BILL

  ** 54 fish sanctuaries established, sanctuaries were entrusted to the community for management. Active participation of the communities has ensured safe habitat for propagation of aquatic life. Fishing, netting, wanton killing of fish has been halted across the State

***Livelihood/ Income generation
MINI MISSION IV: CAPACITY BUILDING AND HRD

Achievement under MSAM 1.0

- Upgradation of Department Research Center at Mawpun, Ri Bhoi District, to Meghalaya State Fisheries Research and Training Institute (MSFR&TI)
- 5687 farmers were trained in scientific fish farming and its management practices at Meghalaya State Fisheries Research and Training Institute (MSFR&TI)
- 4 (four) Training Halls equipped with Hostel facilities were constructed in the Districts, to carry out various workshops and training programmes.
- Mass awareness and outreach programmes conducted through workshops, festivals and awareness campaigns
ACHIEVEMENT UNDER MINI MISSION V: MASS MEDIA, DOCUMENTATION AND OUTREACH

- Conducted Awareness campaigns about the Mission.
- Wide Publicity given for the Public
- Outreach Activities
- Documentation on Implementation of the Mission.*
- 4 State Aquafests held
- Conducted Regular Workshops and Reviews
- Theme Song MSAM released.
opportunities ranged from technology induction, introduction of new potential* species, and promotion of innovative activities like Aqua Parks etc.

Potential species ‘GIFT Tilapia’ in collaboration with MPEDA taken up at the Meghalaya State Brood Bank at Umktieh, RiBhoi.

Established 3 (three) Aqua-Parks at (i) Phot Ja-Ud, South West Khasi Hills (ii) Umtasor, RiBhoi and (iii) Chenga Benga, South West Garo Hills

Pilot project of Paddy – cum- Fish culture* at Nonglwai Village, West Khasi Hills taken up to demonstrate integrated fish farming, wide acceptance of project in field, successful convergence between the Department of Fisheries and the Community & Rural Development Department
ACHIEVEMENTS UNDER MSAM 1.0

- INDIVIDUAL POND : NORTH GARO HILLS
- INDIVIDUAL POND WEST JAINTIA HILLS
INDIVIDUAL POND : WEST GARO HILLS
COMMUNITY POND: NONGKASEN
WEST KHASI HILLS
HARVESTING OF FISH
CRITICAL INFRASTRUCTURE

FRP Hatchery

ECO Hatchery at Umsning, Ri-Bhoi
CONSERVATION OF INDIGENOUS SPECIES

Nengmandalgre Fish Sanctuary

Nengmandalgre Fish Sanctuary
EMERGING OPPORTUNITIES:
AQUAPARK AT SOUTH WEST KHASI HILLS
As per the recommendation of the National Institute of Nutrition, Hyderabad, projected fish requirement in the State, @ 9 kg/per person/year is approximately 27,000 MT. With the production of 11,961 MT, in 2017-18, the gap between demand and supply is 15,000 MT.

Through MMI- Area and Productivity Expansion, demand for fish seed has increased and the 24 hatcheries established under the Mission 1.0 are not able to meet this demand.

*There is a need for increasing fish seed and fish feed production to cater to the ever growing demand.

These are the issues that would be addressed in MSAM 2.0 on need based mode of implementation.
MSAM : 2.0

- MSAM 1.0 played the role of a catalyst in achieving the objectives far beyond expectation, the Department scaled new heights, however there are short falls and lessons learnt, the Department has launched the MSAM 2.0 to improve on the achievements and to minimize the demand-supply gaps.

- MSAM 2.0 was launched on November 2018, and will continue with the successful components of the MSAM 1.0 while incorporating new components viz., modern and hygienic fish markets, mobile kiosks and transportation facilities, etc.
NEED BASED COMPONENTS OF MSAM 2.0

LIVELIHOOD

- MMI: Area and Productivity Expansion:
  - Individual Ponds
  - Community Ponds
  - Paddy cum Fish Culture

  *State’s Fish Production increased from 4,799 MT in 2011-12 to 16,122.976 MT in 2020-21 providing Livelihood opportunities to more than 25000 Fish farmers*

  As on 31.03.2021, about 4320.33 Ha of water area have been brought under fish farming

- MM III: Conservation of Indigenous and endemic species:
  - Conduct of surveys and studies
  - In Situ Conservation – establishment of more sanctuaries
  - Ex Situ Conservation – specific mahaseer hatcheries

  *Till date 79 nos of Fish Sanctuaries have been established throughout the State*
PRODUCTION

- **MMII : Critical Infrastructure Development:**
  - FRP Hatcheries
  - Retail Units/Kiosks
  - Modern Hygienic Fish Markets
  - Fish Transportation Units
  - Aquatic labs

  *12 (twelve) nos. of Eco-Hatcheries and 16 nos. of FRP Hatcheries This resulted in the increase in Fish seed Production from 3.268 Millions in 2012-13 to 13.79 Millions in 2020-21.*

  *15 Nos of Retail outlet have also been assisted by the Department.*

- **MMV: Emerging Opportunities in the Fisheries Sector**
  - Aqua Tourism
  - Ornamental Fisheries
MMIV: CAPACITY BUILDING AND HUMAN RESOURCE DEVELOPMENT

- Capacity Building of Officers
- Capacity Building of Farmers

Till date more than 8373 individuals have been trained AT the Meghalaya State Research and training institute.
<table>
<thead>
<tr>
<th>MINI MISSION</th>
<th>Activity Description</th>
<th>Total Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINI MISSION I</td>
<td>Area and Productivity Expansion (Paddy Cum Fish Culture)</td>
<td>Total Water area 101.5</td>
</tr>
<tr>
<td>MINI MISSION II</td>
<td>Mobile Retail Outlets</td>
<td>6 Nos</td>
</tr>
<tr>
<td>MINI MISSION III</td>
<td>Establishment of Fish Sanctuaries</td>
<td>10 Nos</td>
</tr>
<tr>
<td></td>
<td>Mahseer Breeding Units</td>
<td>1 Nos</td>
</tr>
<tr>
<td></td>
<td>Indigenous Ornamental Conservation Units</td>
<td>4 Nos</td>
</tr>
<tr>
<td>MINI MISSION IV</td>
<td>Training of Farmers at MSFR&amp;TI</td>
<td>1320 Nos</td>
</tr>
<tr>
<td>MINI MISSION VI</td>
<td>Establishment of Aquapark</td>
<td>2 Nos</td>
</tr>
<tr>
<td></td>
<td>Aquarium Fabrication Unit</td>
<td>5 Nos</td>
</tr>
<tr>
<td></td>
<td>Capacity Building under Ornamental Fisheries</td>
<td>5 Nos</td>
</tr>
</tbody>
</table>
PRESENT SCENARIO

- 4320.33 Ha of water area have been brought under fish farming
- Providing Livelihood opportunities to more than 25000 Fish farmers
- Fish Production increased from 4,799 MT in 2011-12 to 16,122.976 MT in 2020-21
- Increase in Fish seed Production from 3.268 Millions in 2012-13 to 13.79 Millions in 2020-21.
- 15 Nos of Retail outlet have also been assisted by the Department
  8373 individuals have been trained at the Meghalaya State Research and training institute.
THANK YOU