



# GENDER ANALYSIS OF AQUACULTURE-BASED LIVELIHOODS IN MIZORAM



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# Indian Inland fisheries

- World's **second-largest** producer of inland fishes
- **Second-largest aquaculture nation**, accounting for **7.58 percent** of world production.
- Contributes substantially to country's overall fish production. NFDB (2021)
- Blue Revolution has demonstrated the significance of India's fisheries and aquaculture sector.
- Indian fisheries have seen a paradigm shift from marine-dominated to inland fisheries.
- A shift from capture to culture-based fishing in inland fisheries has paved the way for long-term blue economy viability. NFDB (2021)
- It is estimated that there are **28 million people engaged** in fisheries activities in India, out of which **15 million or 56% are fishermen, and 12 million or 44% are fisherwomen.**
- In the case of inland fisheries, men account for **13 million, or 56%** of the inland fishing population, while women account for **10 million, or 44%**. Handbook on Fisheries Statistics (2020)
- From this data, it is clear that the participation of men and women in inland fisheries is high.

# Fisheries in Northeastern region

- North Eastern (NE) region plays a vital role in fisheries, particularly inland fisheries.
- It comprises primary fisheries resources
- **Ranked sixth among the world's top 25 biodiversity hotspots.** Kottelat and Whitten, 1996; Gurumayum and Choudhury, 2009
- Northeastern states have enormous water resources that are appropriate for aquaculture, excluding the riverine resources, potential of fish production in these regions is estimated to be **4.88 lakh tonnes** and a total of **5.63 lakh ha** of water spread area is available for fish production (Debroy et al. 2016).
- Fisheries sector in India's northeast area plays a significant role in the socio-economic and cultural environment of the people
- **Region's total fish production is estimated to be 4.36 lakh tonnes**
- Nutritional requirement at 11kg per capita is projected to be 5.49 lakh tonnes, leaving a deficit of 1.05 lakh tonnes, according to the DAHDF Report (2017-18)
- Aquaculture is developing quickly because of high demand for fish, **more than 50% of fish production** comes from aquaculture. Barman et al. (2012)

# Fisheries in Mizoram

- Mizoram is one state located in the southern part of NE India
- It has enormous fishery resources and is known as a **storehouse of indigenous fish**. Hussan et al. (2018).
- Mizoram's fisheries resources include ponds, rivers, and reservoirs. It is estimated that Mizoram has **24,000 hectares** of potential land that may be developed for pond aquaculture; however, only around **5,492.08 hectares (23 %)** of the potential resource has been developed for fish farming.
- Contains **6,000 hectares** of water in form of rivers and streams scattered throughout **1,100 kilometers** of riverine lengths, two big reservoirs, and three small reservoirs totaling around **8400 ha**. Mizoram Economic Survey (2019-20)
- In 2019-2020, overall output of fish flesh from state-owned resources was **7243.04 metric tonnes**. The estimated availability per capita is 5.6 kg, compared to the targeted consumption of 11 kg per capita (DoF, Mizoram 2020-2021).

# Fisheries in Mizoram

- 16406 numbers of fish farmers in Mizoram
- Total fish production in 2020-2021 is 4304.69 metric tonnes (mt).
- According to the Mizoram 2030 Vision, the sectoral contribution of Gross State Value Added (GSVA) output in fisheries and aquaculture in 2017 was 0.51 percent.

*Planning & Programme implementation dept, Mizoram(2018)*

- According to fisheries statistics 2020, Mizoram has 5,328 fishermen and 961 fisherwomen. Handbook on Fisheries Statistics (2020)
- Total fisher population is 6,289 which is 0.5% of Mizoram population.

# Studies related to fisheries in Mizoram

- Fish fauna of the Tiau and Tuipui rivers of Mizoram by Ramanujam and Harit (2002).
- Mahapatra (2007) reported about the potential ornamental fish biodiversity of Mizoram.
- Kar and Sen(2007) wrote a systematic list and distribution of fishes in Mizoram, Tripura, and Barak drainage.
- Lalthanzara and Lalthanpuii (2010) discussed traditional fishing methods in Mizoram rivers and streams.
- Zohmingthanga (2011) examined the socio-cultural profile of people and indigenous knowledge in the fisheries of Mizoram.
- Sahoo and Singh (2015) presented the economic analysis on integrated fish pig farming and fish poultry farming in East Kalcho, Saiha District.
- Constraints in fisheries have been reported by Icar, Umiam (Barapani) for Kolasib, Mamit, Serchhip districts of Mizoram in 2015
- Hussan et al. (2018) presented the status and future of aquaculture development in Mizoram.
- Bethsy et al. (2020) discussed the production and supply chain of the unitary and integrated aquaculture systems in Mizoram

## Studies related to role of women and gender analysis in Mizoram

- Chakroborty et al. (2008) have reported the emergence of women from 'private' to 'public': a narrative of power politics from Mizoram.
  - The role of women in the socio-economic development in Mizoram was studied by Lalremmawii (2013).
  - Janet and Namchoom (2014) reported the status and role of women in Mizo society.
  - Women outnumber men at the workplace in Mizoram has been written by Saha (2017).
  - Jangu (2019) has reported about women's empowerment in Mizoram.
  - Hmingthanzuali and Chhangte (2020) discussed the representation of women in Mizo history.
- ***Studies related to gender analysis in the agriculture and livestock sector***
    - Ashem et al. (2018) studied roles of gender in agriculture and livestock production among tribal farm families in the Lunglei district of Mizoram
    - Ramengmawii and LalmalsawmaRalte (2021) conducted an analysis of gender dimensions in agriculture in Mizoram.

**Gender analysis of aquaculture based livelihoods in Mizoram** have not been done in Mizoram.

*So a study entitled "**Gender Analysis of Aquaculture Based Livelihoods in Mizoram**" was conducted*

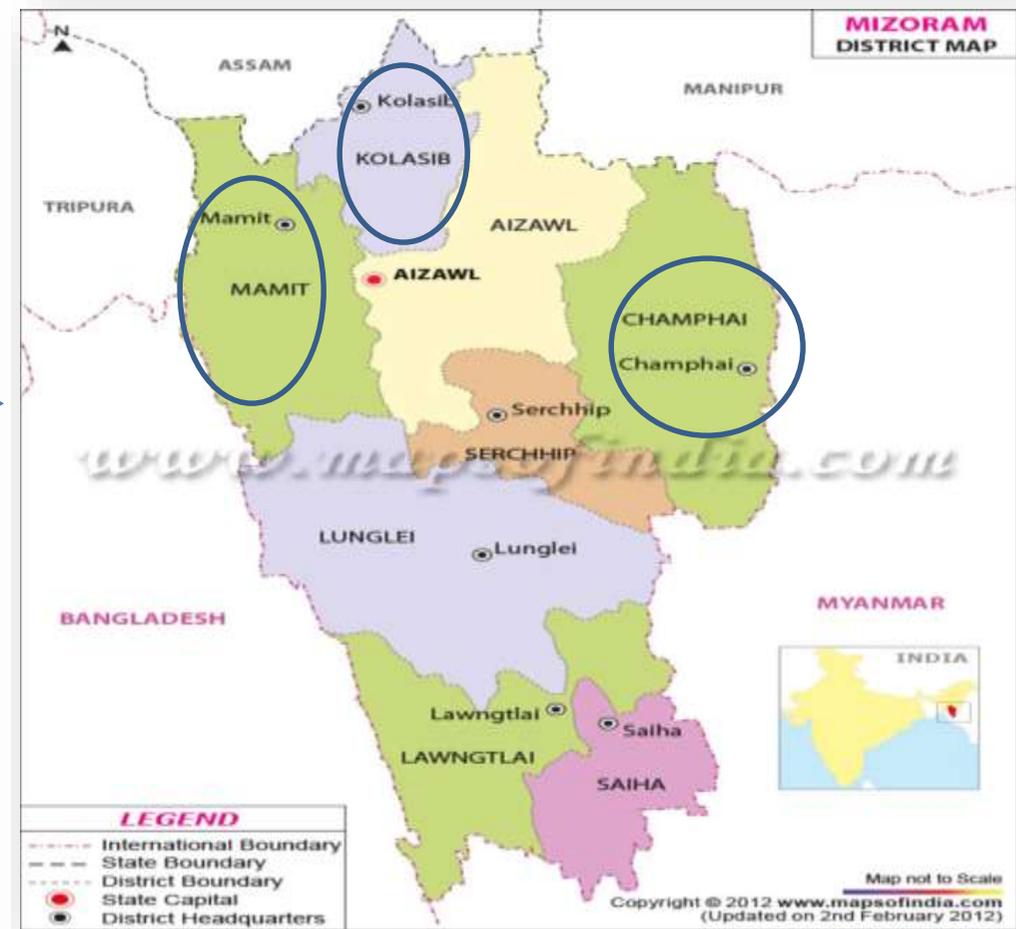
# Research Objectives

1. To assess profile, capacities, constraints and vulnerability contexts

2. To evaluate gender roles, time use pattern, workload, and needs

3. To evaluate access, control, and decision making over resources

# Locale of the study



## Results and Discussion

**Objectives 1: To assess profile, capacities, constraints and vulnerability contexts**

# Results

- In the pre harvest, harvest and post harvest activities there was a statistical significant difference between the capacities of men and women.
- For feed preparation and fish breeding both women and men had low scores.
- Women had less capacity/ involvement in pond preparation, water quality management, fish breeding and gear maintenance .
- The study has revealed that Unitary farming system, an important activity in Mizoram state, has equal involvement of men and women. A similar study in agriculture has been reported by Ramengmawii and Ralte (2021).

# Results in brief

- With reference to paddy cum fish farming, there was no statistical significant difference between capacities of men and women for pre harvest, harvest and post harvest activities.
- The capacity/involvement of women in this farming system was found to be high (0.72).

# ***Result***

- Paddy cum fish farming system, extension constraints were the top ranked constraints faced by both men and women with RBQ score of for 51.18 men and 53.91 for women.

# Results

- **Paddy cum fish farming** system **political vulnerability** had higher score (0.59) for men environmental vulnerability was high for women (0.58)
- Mann Whitney U test revealed that there was **no statistical significant** difference in types of vulnerability between men and women
- Total vulnerability score for women was higher than men

## Objective 2

**To evaluate gender roles, time use pattern, workload and needs**

# Results

## Reproductive roles

- Participation of women was higher than men
- Time spent for reproductive roles - women 6.73 hr/day and men 2.16 hr/day
- Workload perceived **light** for women and **very light** for men

## Productive roles

- Equally in pre-harvest activities such as liming, manuring/fertilizing, seed stocking and feeding of fish
- *Weekly activity*- Fish feeding 0.28 hours per day on average
- *Monthly activity*- In liming, manuring/fertilizing, men spent 1.32 hr/month and women spent 1.04 hrs/month, and it was observed as a with moderately heavy perceived workload.
- *Yearly*: Men spent 8.2 days per year on pond preparation, while women spent 4.5 days per year, and the perceived workload was very heavy.

# Results

- Average time spent by women and men for harvest activities was found to be **5.44 hr/day** and **4.14 hr/day** respectively.
- Both women and men perceived harvesting as **very heavy activity**.
- Under post-harvest activities, women participation is higher in selling of fish as compared to their male counterparts
- 52% of household, only women performed selling fish and in 48% of household both men and women were involved in fish selling and fish unloading (28%) of women performed.
- The average time spent by men and women was found to be **2.51 hrs/day** and **3.14 hrs/day** respectively. Both women and men perceived post harvest activities as heavy activity.
- The time spent for community roles by women was reported to be **16.4hr/month** and for men **19.42 hrs/month**.
- The workload perceived by both men and men was found to be **light** in community roles.

# ***Roles of men and women in Paddy cum fish farming***

| Profile                | Who performs the activity |    |      |                           |                         | Time Use    |             | Workload         |             |
|------------------------|---------------------------|----|------|---------------------------|-------------------------|-------------|-------------|------------------|-------------|
|                        | M                         | W  | Both | W + any other woman in HH | M + any other man in HH | hrs/day     |             | Normalized score |             |
|                        | M                         | W  | Both | W + any other woman in HH | M + any other man in HH | M           | W           | M                | W           |
| Reproductive roles     |                           |    |      |                           |                         |             |             |                  |             |
| Cooking                | 4                         | 76 | 0    |                           |                         | 1.00        | 1.90        | 0.25             | 0.41        |
| House cleaning         | 0                         | 76 | 0    | 24                        | 0                       | 0.00        | 0.51        | 0.00             | 0.25        |
| Utensils cleaning      | 0                         | 76 | 0    | 24                        | 0                       | 0           | 0.34        | 0.00             | 0.25        |
| Shopping for groceries | 20                        | 74 | 0    | 6                         | 0                       | 0.46        | 0.60        | 0.25             | 0.31        |
| Washing clothes        | 0                         | 72 | 0    | 28                        | 0                       | 0.33        | 1.60        | 0.25             | 0.40        |
| Child care             | 0                         | 80 | 0    | 20                        | 0                       | 0           | 0.41        | 0.20             | 0.36        |
| Care for elderly       | 0                         | 28 | 0    | 4                         | 0                       | 0           | 0.30        | 0.25             | 0.25        |
| Total                  |                           |    |      |                           |                         | <b>1.79</b> | <b>5.66</b> | <b>0.15</b>      | <b>0.27</b> |

- Participation of women was higher than men in reproductive activities and **only 4% of men** performed cooking and **20%** of men participate in groceries shopping.
- Women spent **5.66 hr/day** for household work, caring and personal time while men spent **1.79 hr/day** in the same work.
- The perceived workload for reproductive roles was found to be **light** for women and **very light** for men.

# Results

- Ploughing of land, transplantation of paddy seeds, liming and seed stocking are reported as yearly activities and the participation of both men and women was high
- The average time spent for ploughing of land and transplantation of paddy seeds for men was **8.21 days/yr** and **7.8 days/yr** for women.
- The workload perceived by both men and women was classified as **heavy activity**.
- The average time spent for liming and seed stocking for men was **2.07 hrs/yr** and **2.03 hrs/yr** for women, workload was perceived as **moderately heavy**.
- Both men and women spent **0.50 hrs/month** on manuring/fertilizing, which was observed as a **monthly activity** with a **moderately heavy** perceived workload.
- Fish feeding and hand weeding were observed as a weekly activity, with both men and women spending 0.35 hours per week on feeding and perceived workload as light. While in hand weeding average time spent by men was 4.52 hr/week and 3.47 hr/week for women with perceived workload as heavy activity.

### **PGNs women (Top 3 needs):**

**Paddy cum fish farming** :Food, electricity and fuel for cooking

### **PGNS men(Top 3 needs):**

**Paddy cum fish farming** :Water, education and electricity

### **SGNS women(Top 3 needs):**

**Paddy cum fish farming** : Sharing of domestic work and childcare by men, house ownership and ownership of assets

### **SGNS men(Top 3 needs):**

**Paddy cum fish farming** : Access to credit, control over resources and finance

### **PFNs women (Top 3 needs):**

**Paddy cum fish farming** : Availability of fish seed, availability of fish feed and feed mill

### **PFNS men(Top 3 needs):**

**Paddy cum fish farming** : Availability of fish seed, availability of fish feed and feed mill

### **SFNS women(Top 3 needs):**

**Paddy cum fish farming** : Access to schemes, training on fisheries and access to and control over farm resources.

### **SFNS men(Top 3 needs):**

**Paddy cum fish farming** : Training on entrepreneurship, leadership in cooperative society and credit facilities

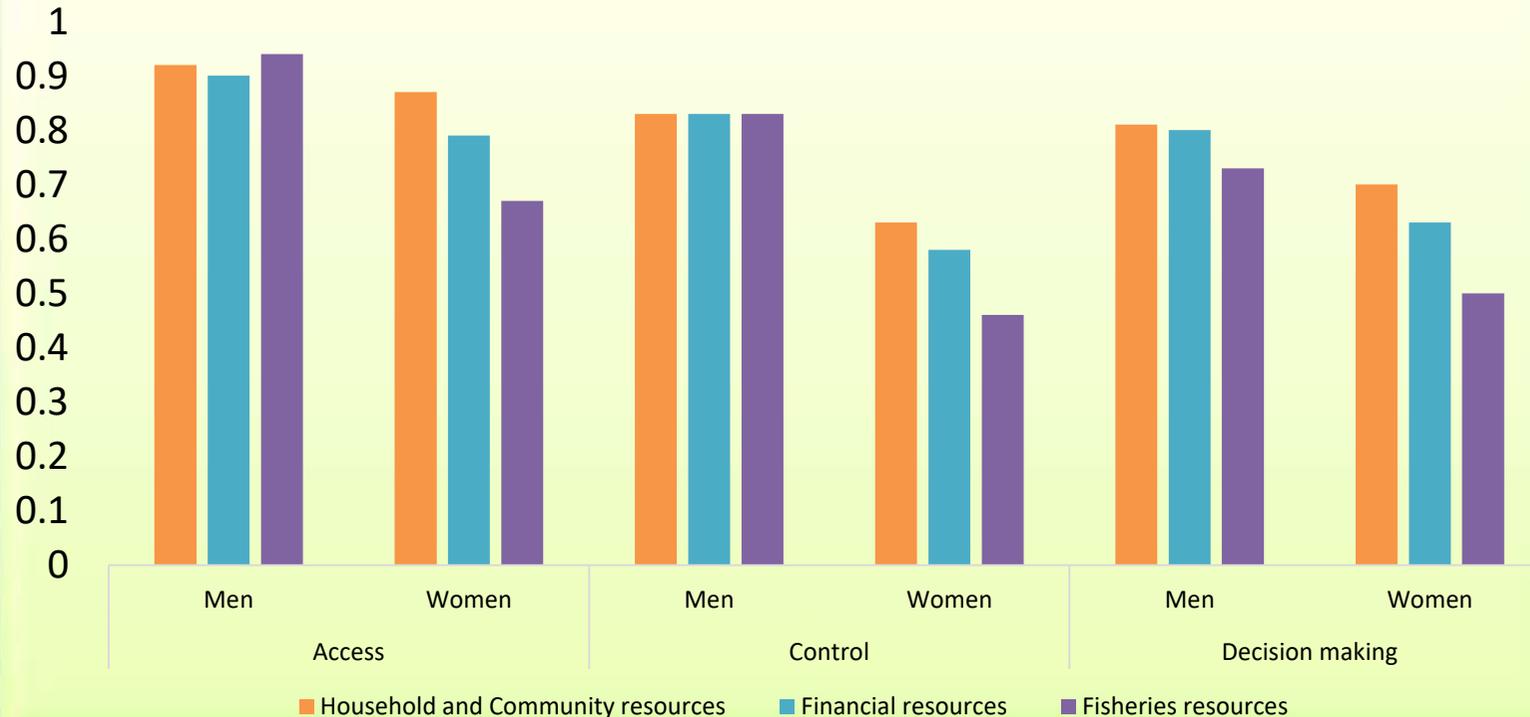
## Access/Control on resources and participation in Decision making

- Men had more access/control on resources and participation in decision making than women for household and community, financial resources and fisheries resources.

- Men and women had equal participation in decision making of financial resources.

# Access/Control on resources and participation in decision making

Access/Control on resources and participation in decision making by men and women fish farmers of Paddy cum fish farming system



In Paddy cum fish farming system men had more access/control on resources and participation in decision making than women for household and community, financial resources and fisheries resources. Similar findings have been reported by Yadav and Sharma (2017) that men have higher access and control over resources in ornamental fish enterprises Maharashtra.

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THANK YOU