

EXECUTIVE SUMMARY - MEGHALAYA
for
**‘A Study of Due Diligence in the Value Chain: Livestock and
Honey for the State of Meghalaya and Tripura’**

Submitted to:

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Executive Summary

Background

North Eastern Development Finance Corporation Ltd. (NEDFi) mandated N R Management Consultants India Pvt Ltd (NRMC) with a “*Study of due diligence in the value chain: livestock and honey for the States of Meghalaya and Tripura*”. The study was completed using a mix of secondary review and primary data collection. In Meghalaya, under livestock, 242 value chain actors and in honey 160 were covered as part of the study, and interactions were held with officials of the Animal Husbandry and Veterinary Development (AHVD), officials from NABARD, ICAR institutions etc.

Between 2004-05 and 2014-15, the contribution of the primary sector to the Gross State Domestic Product (GSDP) has declined from 32.59 percent to 18.94 percent, while that of the secondary sector has risen from 16.80 percent to 26.80 percent and, that of the tertiary sector has changed from 50.61 percent to 54.24 percent of the SGDP.

One of the important feature of the social structure in the Meghalaya is that the society are matrilineal. Therefore, importance to livestock and other domestic earning and livelihood features also are involved extensively in the tribal communities. Therefore, livelihood options like livestock rearing where women plays an important role, are essential features of the society

Livestock Sector in Meghalaya

As meat is an integral part of the diet of people in Meghalaya, there are no taboos associated with consumption of chicken meat, pork or beef. Thus the focus of livestock farming has traditionally been to produce different kinds of meat. To improve the productivity, farmers are also open and ready to adopt modern technologies for breeding, feeding and management. There is availability of favorable markets within the State as well as in the adjoining States for meat. This sector also has benefitted due to availability of manpower and other facilities such as health care for control of Livestock and Poultry diseases, in the state.

Milk production in the state increased from 79 thousand tonnes in 2011-12 to 84 thousand tonnes in 2015-16. For the same time period, the production of meat in the state increased from 37.1 thousand tonnes to 42 thousand tonnes. Egg production in the state increased from 104.9 million units in 2013-14 to 106 million units in 2015-16. Applications of modern technologies have brought a high hope for commercial livestock and poultry farming as a full-time occupation for a decent living.

While the per capita availability of milk has increased by 4 percent between 2014-15 and 2015-16, the per capita availability of meat has decreased marginally with chicken recording a decline of around 2.7 percent. Pork availability grew by 2.7 percent while mutton by 2.5 percent. Egg availability also grew by around 3 percent.

Similarly, availability of eggs per person per year has been estimated at 38 Nos. only as against the National Research Council (NRC) recommendation of 180. In case of meat, the supply meets the demand, taking the import from other States into consideration.

The key trends in the cattle population between the two censuses are;

- While the population of cross bred cattle decreased by 1.45 percent, the indigenous cattle population increased by 2.2 percent.

- The buffalo population, while small in numbers, grew by 10 percent.
- Goat population increased by nearly 30 percent
- The indigenous pig population decreased by 5 percent while that of cross bred pigs increased by 96 percent.
- While in poultry both indigenous and improved varieties recorded an increase, the population of ducks decreased significantly.

Most of the households keep between 6-10 bovines (around 31 percent of the population), followed by 2-5 animals (around 22 percent of the population) and 11-15 animals (around 16 percent of the population). While majority in Ri- Bhoi and West Khasi hills keep cattle size between 2 to 5, in North Garo hills, around 53 percent of the households own more than 26 animals.

Dairy Sub Sector

Dairy Sub Sector overview:

The total milk production in the state is not sufficient to meet the demand. Packaged milk and milk powder imports supplement local production to meet the demand. The total milk production in the state was 83,000 tons in 2014-15. In Meghalaya, the average milk availability from 2013-14 to 2015-16 was 77 gm/capita/day which is much lower than the total per capita availability in India (307 gm/head/day in 2013-14).

Shillong is the biggest market for liquid milk and milk products, absorbing 45 percent of the milk produced in the state. The liquid milk market in the state is dominated by the unorganized sector, which has an estimated 90 percent market share and the share of the organised milk sector is limited to less than 10 percent. In the unorganised sector, the producers sell milk either to the aggregator or directly to the customer or sweetshops. The footprint of the organised dairy sector is limited to a few milk pockets in the districts of East Khasi Hills and Jaintia Hills where the farmers are organised into village level milk cooperative societies and the milk is procured through the milk collection centre established in each village.

Value Chain Actors in Dairy: Under different programs, units of animals are provided by the department to the respective livestock rearers. Due to proximity to bigger markets in Assam, the feed is sourced from Guwahati or other nearby big markets in Assam by feed suppliers and is sold to farmers. Most of the services are provided by the Animal Husbandry and Veterinary Department through the veterinary hospitals, dispensaries, doctors and AI workers. Farmers incur an expenditure of INR 300 to 500 per visit towards veterinary services for their cow when availed from veterinary doctor. Small dairy farmers are provided animals from different Government programs. However, not all farmers have access to these programs and hence, they raise capital from their own sources such as relatives, private money lenders or microfinance agencies to buy animals. Dairy entrepreneurs who undertake commercial dairy operations, raise loans from banks or other Government programs. Those located in clusters where the NABARD DEEDS project is being implemented have been successful in raising loan funds from banks.

Consumption of milk in Meghalaya, especially the rural areas is low primarily because milk has not been a part of the daily diet of local communities. Livestock ownership in Meghalaya is more evenly distributed with landless laborer and, small and marginal farmers. Around 2 Lakhs milch cows and buffaloes are spread over 5000 villages. About 1.64 Lakhs households are engaged in rearing small animals and ruminants and other allied activities. The returns from livestock sector especially dairying and mixed farming in small and medium holdings are larger and highly sustainable. The cost of livestock rearing is high due to the higher cost of inputs like feed and fodder. While most rear cows for primarily addressing household level milk consumption, surplus is sold for cash incomes. The daily production volumes vary between 6 liters to 80 liters.

The aggregators are a vital link in the milk value chain as they handle 80 percent of the milk being moved from producer to consumer in Meghalaya. The aggregators collect milk from the producers' at their doorstep and supply to the customers in the cities. Some aggregators also collect milk on behalf on the retail shops. The aggregators operate within a radial distance of around 10 kilometers, usually supplying milk on motorbikes or bicycles. The aggregator handles around 50 to 80 liters per day. The incremental costs at this level vary from INR 5-10 per liter and the margins are between INR 3-7 per liter. Most of the costs are related to transportation of the goods.

There are shops selling wide variety of dairy products and bakery items made out of milk such as traditional cakes, pastry, cookies, sweets, curd, cottage cheese etc. in small and large markets in the state. While most sweets are consumed locally, a small percentage also is exported outside the state for gifts.

Channels in Dairy Value chain: In Meghalaya, liquid milk moves from producers to consumers in five distinct channels. The producer-consumer channel, producer-aggregator-consumer channel, producer-collection centre-dairy-consumer channel, producer-sweet shops/bakery-consumer channel and producer-aggregator-sweet shops/bakery-consumer channel. While the producer-aggregator-consumer channel handles around 75 percent of the liquid milk consumption, the producer-collection centre-dairy-consumer channel offers the highest returns to the producers. However, currently this channel has limited outreach in the state.

Constraints: There are various constraints in the dairy value chain in Meghalaya. These are:

Lack of Awareness - Majority of the farmers of the state are still ignorant about the modern technology and improved practices of livestock and poultry rearing. Various schemes implemented by the department benefit only a small percentage of farmers where application of modern technological practices hardly reached the masses. Rural folks are also ignorant about the funding source from where they can avail necessary incentive as required by them.

Low Production - Low production and slow growth rate of the indigenous stock which most of the farmers are rearing.

Feed - Almost all the feed ingredients needed for manufacture of a balanced feed are to be procured from outside the Region, resulting in very high feed cost not affordable to general farmers resulting in a decrease in the production status.

Diseases - Being hilly and difficult terrain, disease control measures cannot reach remote areas which needs further improvement as morbidity from various diseases is also one of the constraints in production besides mortality causing economic loss.

Market - There is no organized marketing facility available till date to ensure sustainable value addition from the Livestock and Poultry produce in the rural sector.

Recommendations:

- **Productivity Enhancement:** The per capita availability of the milk is lower than the national average. With the growing market demand, production and productivity needs to be enhanced. The cross bred population of cattle in the state is around 14 percent of the total cattle population, which needs to be doubled by 2020. Capacities and investments for increased AI centers for increased coverage and improved performance would be essential.
- **Extension and training:** Systematic farmers' training is crucial in adopting the good practices for making milk production economical. The existing capacities of the extension department would need to be enhanced to cater to the need and for improving production and productivity. The extension material would need to focus on cattle feed, breeding, cattle-shed management and livestock health management.
- **Health Management:** Systematic vaccination against bacterial and viral diseases of milch cattle on campaign mode to be conducted during vulnerable seasons. In keeping with objective of improved productivity deworming to reduce parasitic load would be essential activity. Efforts should be directed towards availability of vaccines and deworming medicines to the producers in a timely and economical way. Cold chain infrastructure would need to be established and/or augmented in the state in identified clusters. The state can produce milk with low antibiotic load, less heavy metals, and low residual pesticides for which training farmers on good management practices is highly essential. Awareness campaign through local media should be prioritized.
- **Demonstration Units:**
 - The AHVD can promote demonstration dairy units (cross bred cows with a herd size of 3-5 cows and with fodder facilities) in collaboration with NABARD and State Apex Cooperative Bank. Each cluster will comprise 5-7 villages covered by a milk route and in close proximity to local or district markets. In each cluster, the approach should be to start with 10-15 units and gradually saturate the cluster by increasing the number of units in the cluster.
- **Promotion of Producer Company/farmer collective**
 - Depending on the density of dairy units in a cluster or district, a producer company/farmer collective comprising a minimum of 500 to 600 small dairy farmers can be promoted. The purpose of the producer company can be as follows:
 - Identification of potential milk producing pockets.
 - Bringing interested dairy farmers together.
 - Increase in membership by including in milch cattle distribution program
 - Improved milk storage facilities through cold chain development.
 - Facilitate value added services to producers like insurance, breeding, feed and fodder and health.
 - Facilitate technical training for producers in production, value addition, quality control, marketing and business development.

- Milk aggregation and marketing of dairy products.
- Promote value added dairy products based on market survey and market under a common brand.
- The seed capital for the producer company can be sourced through NABARD or other interested agencies/ Central Government program based on the producer company business plan. The capital will be used for cold chain development and working capital.
- Fodder:
 - Green fodder availability is a serious problem in the state. Due to low land holding promotion of fodder cultivation is a challenge. However, to meet the demand of the fodder, growing fodder trees on farm bunds can be encouraged.
 - Involve entrepreneurs/ producer companies in the production and distribution of crop residue bales and complete feed blocks to interested farmers. This will not only reduce the transportation cost of crop residue but also ensure year-round availability of fodder
- Feed:
 - For addressing feed availability, the department may consider the viability of procuring feed from established private players like Godrej, Pioneer, and supply to producers
 - The Department may also consider supporting private entrepreneurs through enabling financial incentives to establish feed mixing plants and supply feed to producers.
 - The producers' collective can be incentivized to produce feed and supply to their members. Storing of feed ingredients involves warehouse facilities that are expensive. Hence, it is proposed to have need based production.

Piggery Sub Sector

Sectoral Overview: Meghalaya has witnessed minor increase in meat production from 2013-14 to 2014-15 but is not self-sufficient in meat production. The per capita availability of meat in Meghalaya in 2015-16 stands at 38.02 gram/day. Majority of the population prefer Pork consumption. The demand for pork is highest in Shillong where around 300 live pigs are traded daily. It is also the market that offers the highest price. The other important markets in the state are Tura, Jowai etc. where 100-200 pigs are sold daily. There are smaller markets handling between 50- 100 pigs located in different parts of the state

The piggery sub sector in Meghalaya is largely unorganized and dominated by small holders and aggregators. Large scale commercial production of pork does not take place in the state. There are small scale local markets for traditional smoked pork, but production of large scale value added products in pork does not take place in Meghalaya.

Animal Husbandry and Veterinary Department has proved that there are advantages of pig farming as pig has got highest feed conversion efficiency. In other words, pigs tend to produce more live weight gain from a given weight of feed than any other class of meat producing animals. In recent years, through the initiatives of field officials from Animal Husbandry and Veterinary department, efforts have been made to modernize local pig based industry. Efforts have also been made to improve productivity of small sized rural pig farms. The state government has supported schemes to popularize the scientific pig breeding cum rearing of meat producing animals with adequate financial provisions.

Pigs are reared mostly for fattening purposes and not for breeding. The producers buy piglets from the government farms at a subsidized rate of INR. 2,000 or from the local markets at INR 2500-3500. Pig rearing was initially popular among the tribal population. Over a period of time, it has gained popularity among the small holders across the state. There is good demand for pork, not only among the tribal population but also among the non-tribal population too. Interactions with the farmers revealed that pig farmers rear 1-4 pigs in a shed. In all cases, at least one sow is reared by the farmer. The average litter size is 10-12 piglets and mortality is reported at 10 percent.

Piglets are reared for nine months and sold to middlemen or retail aggregators who collect the piglets from the producer's home. In other cases, small farmers themselves directly sell the pigs in the market. It was observed and reported that farmers procure piglets of two to three months age from the breeders and fatten it for five to six months and sell it in the market.

The aggregators play an important role in the pig value chain as they handle nearly 80 percent of the pigs being transacted in the state. The retailers slaughter pigs and sell the meat in markets. Most of the pigs are slaughtered in open places without following minimum number of (Hazard Analysis Critical Control Point) HACCP and waste disposal mechanisms in place.

Channels in Value chain of Piggery in Meghalaya: The sale of live pigs and piglets happens through three channels in Meghalaya: Producer-Consumer, Producer-Aggregator-Consumer and Producer-Aggregator-Retailer/ Butcher-Consumer. The Producer-Aggregator-Retailer/ Butcher-Consumer handles around 90 percent of the pigs sold in Meghalaya. For both pig and piglet sales, all existing value chains offer the best returns to the producer, although the share of total profits in the channel comes down with the involvement of value chain actors.

The pig value chain in Meghalaya is constrained by lack of local feed ingredients production, high cost of feed, poor management practices at the farm level regarding pig sales, Unhygienic and unscientific slaughtering undertaken by butchers and lack of transparency in weighing during sales.

Recommendations:

- **Production and Processing of Pork:**
 - With the change in habits and higher disposable income, demand for high quality products will increase in the state. Therefore, the state should establish a bacon factory to process 15-20 pigs every day.
 - Capacity building through Knowledge transfer is essential to enable small producers to maximize returns. Extension mechanisms need to be strengthened using local media on production, processing and marketing of produce.
- **Feed:** Government may consider to promote the cultivation of tapioca through state supported schemes. This may be similar to scheme promoting combo Napier fodder. As dairy farmers have an option of cultivating combo napier, similar provisions may be considered for pig rearers. Alternatively, in pig clusters, one or two farmers can be encouraged to produce tapioca on a scale that can address the needs of the pig rearers in the cluster. The pig rearer can buy the tapioca from the tapioca farmer at an agreeable price. Tapioca can constitute up to 50 percent of the feed
 - The feed mixing plant in Shillong, should be capacitated to setup model feed mixing plants in identified clusters. This feed can be supplied through the pig farms or the PRIs/ farmers groups/SHGs or entrepreneurs.

- Research based options on low cost feed mix need to be shared with the producers through the extension mechanisms. Efforts could be made to engage/involve KVK for demonstration and extension of feed mix using locally available material.
- **Breeding:**
 - The conservation of indigenous breeds needs to be taken to the village level by involving the community. This will involve the identification of good boars available with farmers and using them for breeding purposes. The community needs to be educated on importance of conservation and on using healthy boars for breeding and not for meat.
 - To meet the growing demand for piglets the state should promote investment for AI program. Collaboration with ICAR Barapani to train staff and providing initial technical handholding support need to be explored.
 - The AI program could start with about 5-10 AI trained workers from each district. The program could be modeled on 'Gopal Mitras' where the producers could pay for services of the service providers to perform AI.
- **Promote Selective Breeding:**
 - The process includes identification of healthy male piglets (heaviest of all piglets born) and conforming to breed born at the farmer's house. These piglets are to be procured by a committee comprising department, members of PRI and pig farm in-charge.
 - These piglets are to be reared in the pig farm as a breeding boar and supplied to field for breeding purposes.
 - Alternatively, for increasing incomes of the poor, rearing of piglets is to be decentralized and reared in the farmer households until it reaches breeding age with a buy-back arrangement between farmer and the department. The boars have to be exchanged on a regular basis (once in two years) to avoid inbreeding.
- **Preventive Healthcare:**
 - The major constraint in the health sector is lack of swine fever vaccine. The department should focus on establishing swine fever vaccine unit to cater needs of NE region. The Unit could be established either in Tripura or Meghalaya. When compared to Tripura, Meghalaya has more advantage due to better infrastructure and being close to Guwahati.
 - The institution of Gopal Mitras could be used to strengthen preventive healthcare through timely Vaccination and Deworming.
 - Although FMD vaccination is done, it is reported that in some places, two vaccinations in a year are not done and this vaccination protocol should be followed.
- **Genetic stock Replacement:**
 - Stock from farms in Kerala can be brought in the ratio 10:1 (10 females to 1 male) for improving breeding.
- **Improving the quality of pork:**
 - The meat production process needs to be improved to ensure health and address conversion efficiency. Although no zoonotic diseases are reported, there is high risk of spread of diseases, if principles of clean meat production are not followed.

- Government of India promotes modernization of meat stalls through funding under NMPS scheme of Ministry of Food Processing. The state Government may consider submitting proposals to ministry for improving meat hygiene.

Poultry Sub Sector

Sector Overview:

Chicken is a popular food in the state and consumed in various forms at home, hotels and from street vendors. It is consumed in the form of varieties of curries and snacks. The annual demand for Poultry in Meghalaya for the year 2015-2016 is 4166 tons which is 10.13 percent of the total meat produced in the state. Shillong is the biggest market in the state with a demand of around 12,000 birds every day, which comes to around 40 percent of the demand of the state. The district headquarters absorb between 35 percent of the demand and the rest 25 percent is absorbed by the small towns and villages.

The local production is augmented with birds from Guwahati to meet the demand in the state. While broiler is common and used for daily meat requirements, the country birds and Kuroilers having a lower sales volume, fetch a good price in the market and, are used for special occasions like marriages.

Broiler:

Present infrastructure in Meghalaya is not sufficient to meet the demand of the state for poultry and eggs are sourced from outside the state, primarily from Assam. The chicks are supplied to farmers through wholesalers based at different markets in Assam, predominated in Guwahati. Poultry feed is sourced from the market, with large proportion of small poultry farms producing a local mix to keep the costs in control.

Most of the services to the poultry farmers are available in open market. The vaccines and medicines are available with the dealers. The vaccines and medicines are sourced from Guwahati. Broiler is reared largely in group farming mode assisted by financial institutions with the help of NGOs and other intermediaries.

It is estimated that there are 200-300 broiler farmers across the state. Most of the producers rear between 200-500 birds. Farmers rear the chicks for 30 to 35 days. While most birds are sold to the wholesalers/ dealers, a small volume of local sales also takes place. The dealer supplies the chicks to the producer's doorstep and also picks the lot from the doorstep after 30 days. The birds are well managed in the farms, due to which, the mortality rate is very low at 2.5 percent. The feed conversion ratio is 1:1.45 to 1:1.5. The winter body weight gain is 1.6 kg in 30 days and in the summer, it is 1.4 to 1.5 kgs in 30 days.

There are more than 100 dealers in Guwahati and every dealer is having association with more than 100 farmers or a poultry company. The dealers from Assam controls the broiler business in Meghalaya.

Retail sales of chicken takes place through butcher shops located at small and big markets spread across the state. Depending on the size of the market, the retailers handle between 500 to 2000 birds per week. Smaller retailers handle less than 200-300 birds per week. The retailers also enjoy the highest margins in the business. In major markets (near district headquarters), it was observed that electronic meters were used for weighing chicken, indicating higher transparency in the sale transactions.

Channels in the Value Chain of Broiler in Tripura are Producer-Consumer and Producer- Wholesaler-Retailer-Consumer. The Producer-Wholesaler- Retailer-Consumer is the most developed value chain in the state with the wholesalers making the most investments and controlling the trade; the margins, however, are highest at the retailer level.

Kuroiler:

The farmers rear the chicks in their backyard mainly through scavenging and supplementing through feed. The egg and meat production from Kuroilers fulfils the household need of animal protein. Some farmers sell the surplus eggs @ INR 6-10 per egg and birds @ INR 250-300 per kg. However, in the field it was found that good amount of the beneficiaries are selling either eggs or birds.

The chicks are distributed to beneficiaries in a female to male ratio of 1:1 or 2:1 respectively. On an average, it was found that around 100 chicks were being distributed to a beneficiary in one go in Garo hills districts along with provision for constricting the shed and feed for 6 months.

Backyard poultry: Usually 5-10 units are maintained in a household. The birds are left in the backyard for scavenging and household members spend little or no time in the upkeep of the birds. The bird lays 25-30 eggs and adult bird gains 3.5 kgs weight over 9 months to a year. Mortality is high at 40 percent. Most of the eggs and meat is used for household consumption. The marketable surplus of both eggs and birds are sold in the local market. These are marketed as country / *desi* eggs and chicken and sold at a premium in the market. While egg sales occur on a daily basis, the meat sales occur on special occasions like marriages or social functions/ feasts. The birds are sold directly to the consumer.

Recommendations for Broiler: The demand for poultry is increasing every year and the per capita meat consumption in the state is expected to reach 12 kg / per capita / year according to the officials at the Animal Husbandry and Veterinary Department, Meghalaya. To meet the demand, the department may consider farmers' cooperative/ producers' company managing a hatchery in the state.

- A 15000 capacity parent farm costs Rs.10 crore. The hatchery will handle 1.9 lakh eggs per month and earn an income of Rs.10 lakh.
- The producers company can also manage a feed unit with INR 15 lakh capital investment.
- Working Capital Support need to be provided to the company as also marketing expenses for the initial period.

Recommendations for Kuroiler: Promoting Kuroiler for producing organic eggs in the state as an alternate to broiler

- A unit of 100 chicks- 50 male (food) and 50 females (laying) need to be promoted.
- Breeding skills to be developed at the farm level and training on breeding needs to be provided for people working at farm level.
- Male chicks can become parent stock.

Recommendations:

- For addressing the challenges of feed, low cost technologies can be promoted. Harvesting of termites by placing jute bags in the open is one such low cost technology which can provide good nutrition for birds.

- The department may consider establishing link with poultry programs being run successfully in Jharkhand.
 - This will provide alternatives to the high cost contract model of poultry rearing being undertaken in the state.
 - Farmers bodies may be encouraged to procure chicks from Hyderabad and further supplying to members.
 - This can be tried on a pilot basis and based on the response, the same can be considered for upscaling.

Honey Value Chain

In Meghalaya, *Apis florea* and *Apis cerana* are the dominant species. *Apis mellifera* was introduced in Meghalaya recently, though it was reported that it is not adapting well. In Meghalaya *Trigona sp.*, the stingless bee is also found.

In the areas close to the forests, honey collection from the wild is practiced as a seasonal activity. The following Government programmes promote bee keeping in Meghalaya:

- Apiculture Mission supported by Meghalaya Basin Development Authority through Department of Commerce and Industries
- Scheme of Fund for Regeneration of Traditional Industries (SFURTI): Meghalaya is among the identified honey clusters of KVIC under the scheme in NER.

The honey production in the state varied from 474 MT to 592 MT from 2010-11 to 2012-13. So, the total potential production in the state can be safely assumed as between 500 and 600 MT per year. This is less than one percent of the total production in the country. The average yield per colony in Meghalaya was found to be 10 kilograms which is lower than the National Average of 15.32 kg per year.

East Khasi Hills and South Garo Hills districts are potential areas for honey production, and Ri-Bhoi is a less potential area for honey production. The major markets for honey are in East Khasi Hills, West Jaintia Hills, Ri-bhoi and South Garo Hills. The honey produced in Meghalaya is presently consumed locally for its medicinal properties.

The honey sector in the state is dominated by the unorganised sector players. The total production in the state is limited to not more than 600 metric tons. Of this, around 80 percent is sold as unprocessed/ or producer-level processed honey in the open market. This wild honey fetches a higher price, between INR 350 to INR 600/ kg, compared to the price offered by KVIB, DIC which is INR 300-350 per kg. The honey is packed in used glass bottles (usually whiskey bottles) and sold either in the local markets along the roadside or from the farmer's doorstep.

Value Chain Actors in Honey:

A beekeeper is a small or marginal farmer who has a keen interest in beekeeping. Only few beekeepers trained by KVIB/DIC are active in beekeeping as most discontinue the activity after the initial enthusiasm. As incomes from beekeeping are less than 10 percent of the total annual incomes of the beekeepers, it is only people interested in beekeeping who take up the activity. Around 1000-1200

beekeeper are located in different parts of the state but concentrated in pockets closer to flora in East Khasi Hills, South Garo Hills and Ri-Bhoi districts of the Meghalaya.

The aggregators are also producers but who manage honey on a larger scale by aggregating honey from small producers in addition to their own production. There are around 100 aggregators in the state. They handle 40 percent of the total honey being sold in the state and sell most of the honey directly to the consumer.

The aggregators sell the honey to DIC/KVIB, who have a processing plant in Ri-Bhoi district. The honey is tested in the testing laboratory at Shillong and payments are made based on the quality of honey. After processing the honey, KVIB packs it into the glass bottles and markets through their retail outlets at Shillong. The price paid to the producer/ aggregator is Rs. 300 per kg and the honey is sold in the market at INR 400 per kg. The KVIB markets honey through its outlet in Shillong and also through rural marketing events held in Meghalaya and the North East.

Constraints: While there exists a push from Apiculture mission through DIC/KVIC to promote beekeeping in the state, the following factors are hindering the growth of the sector in the state:

- Price offered by DIC/KVIC to farmers is Rs.300-350 per Kg while these farmers are able to sell honey between Rs. 500-600 per Kg in local market. There is a need to look into price revision for making this value chain more organized.
- The income from bee keeping is seasonal and contributes less than 5 percent to the total annual income of the households. While there is little transaction time involved at the household level, most beekeepers are not enthused by this vocation. With more youth getting educated, their aspirations are higher and they do not want to pursue beekeeping. There is a high dropout rate among the trainees with less than 10 percent continuing after the training.
- The beneficiary selection process is politicized and the person selected for the training is usually not interested in pursuing beekeeping. The activity is not pursued diligently.
- Women generally avoid beekeeping for fear of being stung by the bees.
- Critical mass of beekeepers does not exist in a cluster in the state to consider collectivization options.

Recommendations:

- For any activity to be successful on scale, it is important to have a critical number of organised producers. There is limited scope for beekeeping in the state, but in the identified clusters, there is a potential to achieve critical mass of producers.
- Efforts need to be taken by the KVIB/DIC and the Government to popularize bee keeping as a source of supplementary income generation activity in the state. A communication strategy targeting the educated youth should be devised to share about the potential of the activity and its impact on the environment.
- Currently only aggregation happens at the cluster level. Efforts should be made to decentralize processing, quality assurance and packaging at the cluster level. The cluster should function like an active hub of beekeeping activities and should strive to be a profit centre. Other activities like colony supply, making of bee hive boxes and frames can also be undertaken in few clusters by members.

- The focus of trainings should also be on improving the packaging of honey and making it more hygienic.
- A branding strategy should be devised for the honey produced in the state. The brand attributes of the honey and its differentiating factors should be identified. A communication strategy should then be devised to share this with the larger public.
- Consumer education campaigns on promoting branded honey should be undertaken. The misconception that processing reduces the medicinal value of honey should be mitigated through such campaigns.

