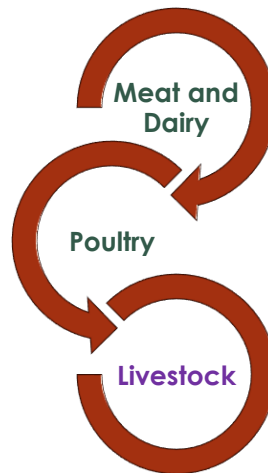




Report

on

Sectoral Impact Study (SIS) of the Livestock Sector



RURAL MICROENTERPRISE TRANSFORMATION PROJECT



**EMBASSY
OF DENMARK**

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GLOSSARY

BDT	Bangladeshi Taka (Bangladesh Currency)
IDI	In depth Interview
NGO	Non-Government Organization
PSU	Primary Sampling Unit
SP	Service Providers
ToR	Terms of References
VC	Value Chain
CBA	Cost Benefit Analysis
PKSF	Palli Karma-Sahayak Foundation
RMTP	Rural Microenterprise Transformation Project
LSP	Livestock Service Provider

EXECUTIVE SUMMARY

The Rural Microenterprise Transformation Project (RMTP), is implementing sixteen VC sub-projects out of which eight VC sub-projects titled ‘Safe Meat and Dairy Products Production and Marketing’ under the meat and dairy sub-sector and eight VC sub-projects titled ‘Safe Poultry and Poultry Products Market Development’ under poultry sub-sector. These subprojects involve a range of innovative interventions, such as establishing vaccine hubs for easy access to livestock and poultry vaccines at rural areas, commercial silage production and ready feed sub-dealer point establishment for strengthening feed & fodder supply network, introducing double layer trucks and boats for improving livestock transportation system, the marketing of safe meat with both BSTI and halal certification and provide capacity building training on Hazard Analysis and Critical Control Point (HAACP), create access and usage of financial & ICT services for profitable livestock business and Nutritional intervention. PKSF has taken the initiative to conduct a Sectoral Impact Study (SIS) by the PMU to measure the performance of the sector in achieving its goal and objectives. The main objective of the study is to assess the performance of the Livestock sector in improving the socio-economic conditions of the project participants i.e. to assess the changes in productivity, income and profitability of IGA/Intervention of the project participants; the mode of adoption and demo effect of the demonstrated technologies by the farmers; the sustainability of the interventions; the Gender and Youth impact on the "Participation & Empowerment" status.

RMTP are providing various technical, technological, and marketing support to the farmers, entrepreneurs and market actors under these VC sub-projects. RMTP supports the farmers to produce safe livestock and poultry products and develops proper market linkages to get the premium price. Many private companies as well as local traders have started to source their demanded product from RMPT’s intervention area. All the entrepreneurs claim that, they earn more income and social acceptance after expanding their intervention/business after engaging with RMTP. Many new entrepreneurs are encouraged to replicate the demonstrated technologies seeing the result of the established demo plot in their locality. Various services and inputs related to the business of entrepreneurs have started to be readily available. Entrepreneurs are able to diversify and add value to their products. New employment is also being created in these initiatives. The rate of adoption and purchase of services and inputs by enterprises has increased. Inputs & service provider Environment sometimes adversely affect project’s activities but, in most cases, project take plausible initiatives to mitigate the adverse

effect. Women are directly working in most of the project's activities with their male counterpart and those male counterpart also share the household work with their female partner as and when necessary. They both takes part actively in their family's decision making (such as, child education, medical service, asset purchase etc).

The visualized success of the project in Livestock Sector in the first half of its duration is very admirable. The project has achieved all its time-bound targets and key performance indicators in Livestock Sector till date. Many successful entrepreneurs has been created on compost plant, vaccination hub, LSP, cattle hotel, silage preparation, meat processing etc. The project had great learnings such as when a successful and innovative business model of value chain is introduced the idea or the concept spreads across the relevant actors. This is evident in the high demand of Compost plant, Garol farming and as well as the Small-scale hatchery.

With the current progress and achievement of the project, it is expected that within the project period, it will successfully achieve the set goals and objectives, will ensure more replication of livestock technologies and it will create a stir in the development of Livestock value chain. To achieve more sustainable and scalable improvement in this sector, it is needed to develop customized livestock value chain project focusing forward market linkages and to increase the fund and duration of current project to achieve more integration of market actors within the value chains. Project should take initiatives for effective certification of vermicompost, which may extend its market. The cattle hotel receives much recognition from cattle seller and buyers. More organized cattle hotel with all essential services and facilities need to establish and their number should also be increased. For the sustainability of the RMTP supported meat processing plant, larger inputs/service market giants needed to come forward to adopt the technology. Attention should also be given to increase dairy farm mechanization with required equipment to reduce labor cost of the intervention.

1.0 INTRODUCTION

1.1 Palli Karma-Sahayak Foundation (PKSF) is an apex development organization established by the Government of Bangladesh in 1990 for poverty alleviation through employment generation. PKSF has been implementing various programs and projects for poverty alleviation since its inception. Currently, PKSF is implementing a project titled Rural Microenterprise Transformation Project (RMTP) jointly financed by PKSF, International Fund for Agricultural Development (IFAD), and Danish International Development Agency (DANIDA). The project is aimed at expanding agricultural microenterprises throughout the country. Apart from providing financial services, RMTP is providing Value Chain and technological support for promoting microenterprises.

1.2 The project's components are value chain enhancement, financial services, institutional strengthening, and project management. The project is implementing 65 value chain subprojects in horticulture, fisheries, and livestock sectors. These subprojects involve a range of innovative interventions, such as systematic vaccination campaigns for cattle, commercial silage production, introducing double layer trucks and boats for livestock transportation, the marketing of native chicken meat with both BSTI and halal certification and provide capacity building training on Hazzard Analysis and Critical Control Point (HAACP) and Nutritional intervention. Additionally, this project provides opportunities to introduce new technologies, such as developing Crowdfunding Web Application and blockchain platform, introducing collateral free larger loans, Internet of Things (IoT) in agriculture, digital ledger technology to improve the quality service to the poor borrower for poverty alleviation. RMTP strengthens the rural microenterprise sector by applying a value chain approach bringing together all actors– micro-entrepreneurs, input suppliers, technical services, microfinance institutions, agribusinesses, processors, wholesalers and retailers. Thus it is generating social, nutritional, financial, economic and institutional benefits for some 450,000 microenterprises including rural women, men and youth emphasizing gender issues and creating productive jobs for many more.

1.3 RMTP is making value chain (VC) interventions in different agricultural sectors to enhance efficiency in different stages of value chains from input suppliers to consumers. The Livestock sector is generating revenue for the rural micro-economy in the country. Recognizing the importance of this sector, PKSF has been implementing sixteen VC sub-

projects out of which eight VC sub-projects titled ‘Safe Meat and Dairy Products Production and Marketing’ under the meat and dairy sub-sector and eight VC sub-projects titled ‘Safe Poultry and Poultry Products Market Development’ under poultry sub-sector.

1.4 The study will consider both the sub-sectors to cover the whole Livestock sector. This sector started meat and dairy sub-sector implementation in December 2021 and the poultry sub-sector in January 2023. These VC sub-projects are being implemented through fifteen partner organizations (POs) of PKSf. A total of 291,480 farmers are getting support from the sector across 65 upazilas from 22 districts of Bangladesh. The farmers are receiving various technical, technological, and marketing support under these VC sub-projects. PKSf has taken the initiative to conduct a Sectoral Impact Study (SIS) by the PMU to measure the performance of the sector in achieving its goal and objectives.

1.5 The goal of RMTP is to sustainably increase the income, food security, and nutrition of marginal and small farmers and micro-entrepreneurs across selected value chains. The development objective is the sustainable growth of selected rural commodity value chains with comparative advantage, market demand, growth potential, and backward linkages to small farmers and micro-entrepreneurs.

2.0 THE OBJECTIVES OF THE STUDY

2.1 The main objective of the study is to assess the performance of the sector in improving the socio-economic conditions of the project participants. To attain this objective, the present socio-economic conditions of the farmers and other project participants need to be compared with the baseline information¹. The baseline information of the participants was collected at the beginning of the sub-project. The SIS should measure changes in productivity, sales, income, assets, etc. of the participants and the creation of new employment in the sector. The SIS will attain the following specific objectives:

- a) To assess the change of productivity of IGA/Intervention of the project participants
- b) To measure whether the farmer’s income increased and how RMTP contributes on it

¹ The attribution of socio-economic condition will be simply compared with the baseline information.

- c) To assess the profitability of that specific intervention/technology
- d) To assess the technology adoption by the farmers.
- e) To assess the demo effect of the technology demonstration plots.
- f) To assess the sustainability of the interventions – systematic change
- g) To recommend further improvement of the market system.
- h) To assess the Gender and Youth impact on the "Participation & Empowerment" status of project beneficiaries through/by project interventions.

3. SCOPE OF THE STUDY

The PMU will have to collect primary data from the participants of the VC sub-project area staying through its' field force. There is scope to interact with different farmers and local service providers from the backward and forward markets, supporting functions, and private entities. Reviewing the baseline report and annual outcome study report will help construct a clear picture of the projects' performance. The project document will be the core material for this study. The study will consider both the meat and dairy sub-sector and the poultry sub-sector to cover the whole Livestock sector.

4. METHODOLOGY:

4.1 The PMU will have to conduct this SIS following the qualitative approach. The PMU may apply individual in-depth interviews for data collection. The Value Chain Facilitators (VCFs) and/or Assistant Value Chain Facilitators (AVCFs) will collect the data from the interviewees. Before collecting the data, the PMU will develop a qualitative data collection tool and will provide training to the VCFs. The quantitative data will be gathered from the annual outcome study (AOS) that will be collected simultaneously. The PMU will simply compare changes in VC project participants' present status with the RMTP baseline information. The purposive sampling method will be used to conduct the study. The sample size will be determined by the following technologies/initiatives.

SL	Technology/Initiatives	Pop.	Method	Tools	Sample
1.	Vaccine Hub	79	Qualitative Data Collection	IDI Checklist	8
2.	Cattle Hotel	14	Qualitative Data Collection	IDI Checklist	3

SL	Technology/Initiatives	Pop.	Method	Tools	Sample
3.	Small-scale meat processing plant	4	Qualitative Data Collection	IDI Checklist	3
4.	Dairy machineries supplier	20	Qualitative Data Collection	IDI Checklist	3
5.	Small-scale hatchery	3	Qualitative Data Collection	IDI Checklist	3
6.	Silage business	58	Qualitative Data Collection	IDI Checklist	4
7.	Compost plant	31	Qualitative Data Collection	IDI Checklist	8
8.	Chilling plant	10	Qualitative Data Collection	IDI Checklist	5
9.	Garol farming	11	Qualitative Data Collection	IDI Checklist	5
10.	LSP	217	Qualitative Data Collection	IDI Checklist	8
Total					50

4.2 The beneficiaries will be selected considering at least one year of involvement with the project initiative and received support from the project. The representation of the context of regional representation will also be considered while selecting sample. The most significant changes methodology will be used for this study. These changes will be triangulated with the annual outcome study which will be parallelly conducted.

5.0 FINDINGS

Under this study data have been collected for 10 technologies/initiatives. The collected findings are described by the following.

5.1 Compost plant and its profitability:

5.1.1 Compost plant plays a vital role in environmental conservation and waste management surrounding the livestock rearing zone. Vermicomposting is a unique waste management approach for converting organic wastes into useful and environmental friendly fertilizer. Vermicompost helps in improving soil texture, aeration and increases water retention capacity. It protects the soil against soil erosion and drought. It supplies plant nutrients and growth promoting hormones. Vermicompost can be used in farms to grow vegetables, herbs, flowers, fruit and other commercial crops.

5.1.2 RMTP provides financial support (both loan and grant), technical support, training and market linkage support to the entrepreneurs to establish vermicompost plant at field level. After getting all these supports, entrepreneurs extend their intervention gradually which creates employment opportunity in their farm and increase their income by approximately 35%. These entrepreneurs collect cow dung from different cattle farms of their vicinity as a raw material of vermicompost that maintains pollution-free local environment. Many private companies have started to source vermicompost from RMTP's intervention area and increase market linkage and cash flow in these areas. Environment sometimes adversely affects this composting process i.e. worm/vermi may die during warm environmental conditions. But, it has been overcome under the project by using moisten gunny bag/ water hyacinth covering above the compost chamber. Women are directly working in most of the plants with their male counterparts and they take part in their family's decision making. All the entrepreneurs claim that, they earn more income and social acceptance after expanding this business. Many new entrepreneurs are encouraged to start composting seeing the results of the established plants in their locality.

5.2 Vaccination Hub and its impact

5.2.1 Vaccination has long been an effective way to reduce disease burden in farm animals, and is a key tool in maintaining animal health and welfare. Vaccines continue to play an increasingly vital role in preventative health and disease control programmes in animals. It is a prerequisite to set a continuous vaccination program in developing livestock value chains.

5.2.2 RMTP stressed on setting up functional vaccine hubs under the livestock value chains project to prevent animal disease and decrease animal mortality. It provides financial support to the service providers to increase their service quality, improve vaccine preservation systems and easily operate vaccination services to the project's areas for maximum animal coverage. These provided supports strengthen the project area and both the service frequency and income of these vaccine hubs have significantly increased (Fig. 1).

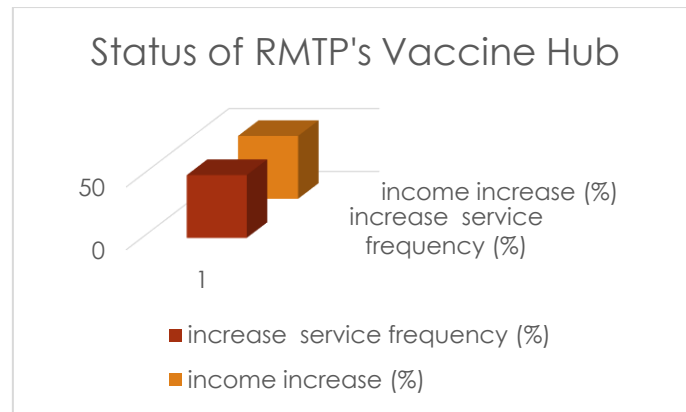


Figure 1: Status of RMTP supported Vaccine Hub

5.3 Role and Significance of Livestock Service Provider (LSP):

5.3.1 A Livestock Service Provider (LSP) provides livestock extension and development related services along with a set of "Minor Veterinary services". LSPs are well positioned to deliver training, services and technology to farmers who are unable to access government or private sector support. Potentially they are more inclusive toward small farmers and women. They expand their own business and income by delivering community services that are in demand from farmers. LSP service overcome high transaction costs of reaching remote areas since LSPs live in the same communities as their target farmers.

5.3.2 Generally, the capacity building of LSP is based on learning by doing, though they need continual training on new technology, newly raised animal diseases, changing threat in livestock sectors etc. RMTP's has provide capacity building training to LSP to make them more proficient in providing "Minor Veterinary services" under the project area. After the project engagement the service providing efficiency, popularity and outreach of LSPs has been increased, their service providing frequency has been increased by around 30 % and income has been increased by around 25 % (Fig. 2). Some of them are now able to established veterinary pharmacy and expand their services magnificently. The projects are benefitted from LSPs by increasing "Minor Veterinary services" to the doorstep of project's member, artificial insemination of goat has been increased, animal mortality has been decreased etc. which create favorable environment to establish successful value chain in livestock sector. Employment generation has also been possible through LSPs as their services has increased. Financial capacity, social acceptance and living standard of LSPs has been increased. Most of the LSPs get the support from their female family members in

vaccine storage, vaccine preparation and in organizing kit boxes, LSPs also support their female counterpart where and when necessary, these create convenient family environment for all. Many new LSPs has developed and started to provide service seeing this more promising at their locality.

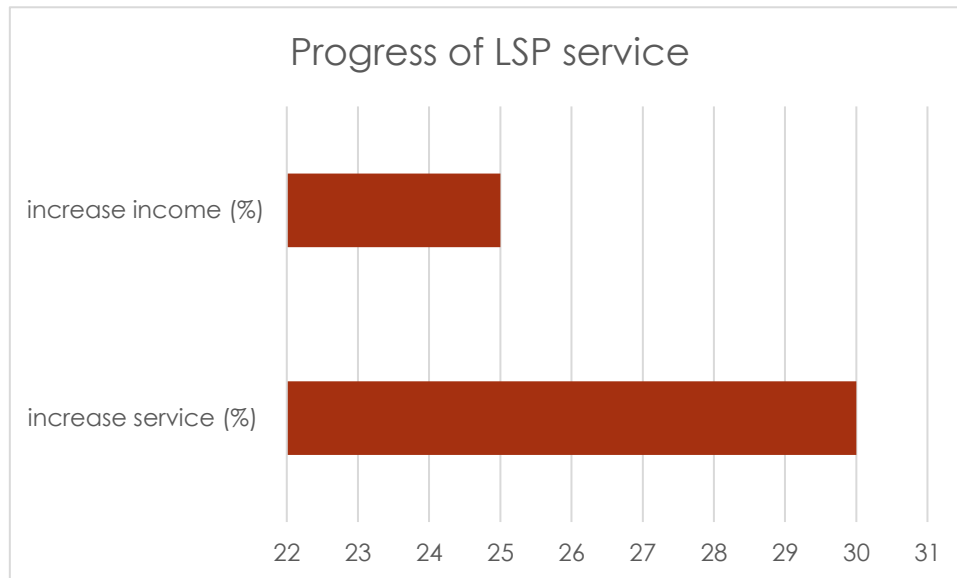


Figure 2: Progress of LSP Service after project intervention

5.4 Garol farming creates encouragement among Farming Community:

5.4.1 The Garole sheep, a small sized (microsheep) breed reared for meat and mostly known for high reproductive performance is found in hot, humid, swampy Ganges delta of West Bengal. RMTP is providing financial and technical support to the garol farmer to increase productivity and income. RMTP provides financial support to buy 5 garol and making perch in garol house to lower disease frequency. This project also provide training on garol rearing, healthcare service for garol, regular vaccination services, counselling and complete business model to the garol farmer. These support increases farmer's technical know-how, competence to initiate a garol farm, productivity of garol as well as income. Generally garol farmers are faces some problems like garol are die resulting from exposure to too much cold/hot weather and outbreak of life threatening PPR diseases. Under the projects these have been overcome by heat and cold temperature management and vaccination. Maximum garol farmer of the project are female, they get support from their husband in collecting green grass for garol; sourcing different inputs like feed, medicine, vaccine etc.; provide food to garol, bathing of them; construction and maintenance of their housing; purchasing/selling of garol etc. Garol farmer under this project is being capable

to guide other new garol farmer which help in quick replication of this technology. Being a member of different samity/groups including microcredit group, maximum Garol farmer are taking part in decision making of different affairs of those groups. Finally, Garol farming increasing self-sufficiency, social and family acceptancy, living standard, decision making capability of women.

5.5 Chilling plant to increase self-life of milk:

5.5.1 Chilling plant have the capacity to preserve milk and are equipped with a chilling tank, generator as well as milk collection container. It also has pasteurizing and packaging facility. All meet the standard requirement in regard to availability of clean water, electricity and management capacity. It is believed that these facilities are game changers for the entrepreneurs/cooperatives especially if the farmers utilize them effectively.

5.5.2 RMTP provides support to entrepreneur establishing modern chilling plant to the project's locality. These support includes financial support to purchase chiller machine, agreement between farmers and milkers to operate chilling plant and fixing milk price, linkages with different companies for milk selling, provide technical training to the farmers, support to build up an effective business model. These chilling plants have all standard facility like chiller machine, generator, Lactometer, milk adulteration detector, tanker for milk transportation etc. These facility overcome the earliest difficulties in milk price fluctuation, load shedding, spoil milk during hot climatic condition, unavailability of suitable milk transporter etc. Farmers are also provided with technical training and they are capable of solving different problem such as using silage as cattle feed during grass crisis from heavy rain or relevant natural calamities. Farmers expect more support from RMTP especially to purchase generator and milk transporter tank, which are little bit costly and difficult to purchase for new entrepreneur. After the project intervention, the availability of quality milk has been increased, the amount of unsold milk gone near to zero, the number of dairy farmers has been increased, the productivity of each dairy cattle has increased, production cost of quality milk has decreased due to farm mechanization, increased farmers knowledge on dairy cattle management in assigned areas. Now, many new milk collector companies and machineries regards to chilling plant has entered into the project areas. The capacity of milk collection, transportation and preservation of chilling plant has increased in such a way that selling has increased by 50% and income has increased by 20% (Fig. 3).

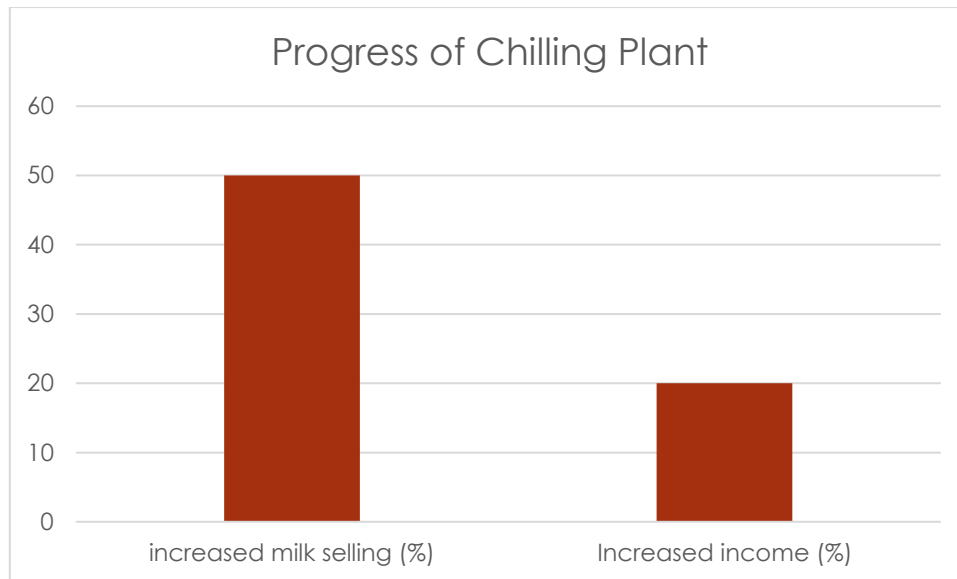


Figure 3: Overall Progress of Chilling Plant after Project Intervention

5.5.3 Most of the Chilling plant operator are now being more financially solvent, their way of life are improved, their acceptance in family and society has been increased. They get the support from their female family members in chilling plant operation and management, they also support their better half in general household chores.

5.6 Development of Silage Entrepreneur:

5.6.1 Silage is a type of fodder made from green foliage crops which have been preserved by fermentation to the point of acidification. It can be fed to cattle, sheep, and other such ruminants (cud-chewing animals). Making silage is an important way for farmers to feed cows and sheep during times when pasture isn't good, such as the dry season. Silage is very nutritious and easy-to-digest feed for cattle. It will ensure high milk production and also stay healthy of domestic animals. Silage undoubtedly is very good for dairy animals, especially during dry seasons. Crops such as maize, sorghum, oats, millet, and hybrid Napier are considered perfect for making silage. In addition, the quality of the silage are getting from these crops can be enhanced by adding molasses, urea etc.

5.6.2 RMTP established many demonstration on silage production and provided entrepreneurs with the support of machineries purchase, market linkage and market promotion both in offline and online, oral agreement with maize grower for supplying raw materials, training to silage producer etc. For this, it has been possible to create uninterrupted raw material

supply channel, silage producer's efficiency has increased, silage productivity has increased, selling through offline and online has increased, created the opportunity for employment generation and increased the income of entrepreneur by 25%. Many new entrepreneurs now being enthusiastic to this business and some of them started successfully. Many new service provider entered in to the project locality to extend their business. Climate changes sometimes impacted adversely the business through difficulties in growing maize plant, their processing and preservation problem due to stagnant water. Under the project, stress tolerant maize are being popularized and high land are being used for their processing and preservation.

5.6.3 Some of the silage entrepreneurs are female and they are now being more financially solvent, their living standard are improved, their acceptance in family and society has been increased as like male entrepreneurs. They get the support from their male/female family members in silage preparation and preservation, they also support their better half in general household chores. Being a member of different samity/groups including microcredit group, maximum silage entrepreneurs are taking part in decision making of different affairs of those groups.

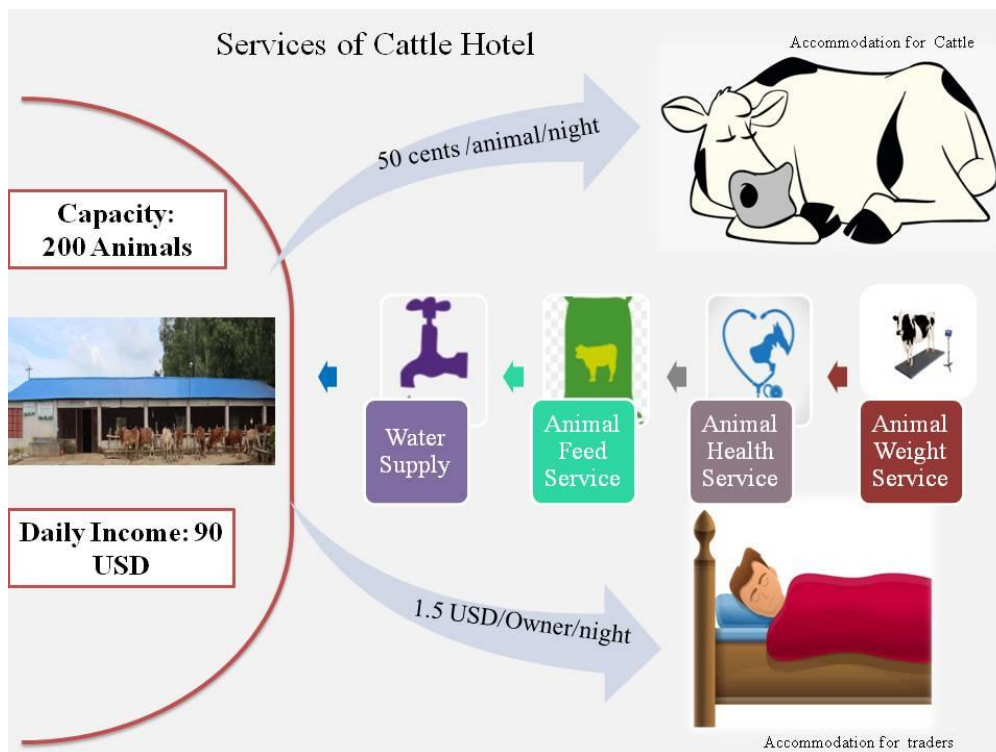
5.7 Cattle Hotel-Innovative Initiatives in Bangladesh

5.7.1 There are 148 livestock markets across the country. These markets (locally called haat) sit twice a week for trading, but they remain open almost every day as traders turn up with their unsold cattle. These cattle are kept in temporary sheds near the markets, or tied up under the open sky. The traders stay around them or in nearby houses for one or two days due to unavailability of hotels in those areas. Traders faced a number of challenges when they brought in their cattle to markets, there was barely any room for safekeeping the cattle and stocking their feed.





5.7.2 An innovative initiative under RMTP has changed all this. This includes: safe accommodation for both traders and cattle. RMTP refurbished the existing poorly established hotel with financial and technical support. The refurbishment included treatment facilities for animals, installation of weight machines, improved drainage system, lighting and ventilation management, and heat reduction management. At present, cattle and traders are getting various services under the same roof. Now these hotel, is accommodating many traders and cattle every day. A trader has to pay BDT 150 for himself and BDT 50 for each cattle for a night's stay.



5.7.3 While this 'cattle hotel' has solved the area's age-old problem of accommodation of livestock animals and traders, it has also enhanced entrepreneur's income. On an average day, they earn about BDT 9,000 from the hotel. They are looking for more land to expand

their business. Meanwhile, having seen its potential for fast growth, a number of locals have already replicated his model and set up their own ‘cattle hotel’.

5.7.4 The owners of cattle hotel are now being more financially solvent, their living standard are improved, their acceptance in family and society has been increased. They get the support from their female family members in cleaning, food and feed preparation and serving and easy operation of all services of cattle hotel. They also support their housewife in general household chores. Being a member of different samity/groups including microcredit group, maximum silage entrepreneurs are taking part in decision making of different affairs of those groups.

5.8 Small-scale meat processing plant:

5.8.1 Meat is an important source of dietary protein which is easily contaminated by various ways. In many countries like Bangladesh have inadequate slaughter facilities and slaughter techniques cause unnecessary loss of meat and valuable byproducts from animal carcasses. Slaughterhouse premises are often contaminated and cannot be protected from dogs, rodents and insects. Meat and meat by-products from these conditions are often deteriorated due to a bacterial or contaminated infection, which can cause foodborne illness in consumers. Most meat is handled with poor hygiene, both in rural and urban areas. A Hazard Analysis and Critical Control Point (HACCP) system that prevents and mitigates food safety hazards through critical control points and good hygiene practices are both part of an effective food safety management system.

5.8.2 The general condition of the slaughterhouse and meat sales center did not meet the standard requirements. In some places butchers and met seller are completely ignorant of hygiene measures. Consumers are unaware of slaughterhouse condition and slaughter hygiene. All area involved in slaughtering and meat processing lack adequate facilities. Quarantine, modern equipment, washing facilities, drainage and waste management system, chilling facilities are inadequate in all most all the areas. To solve these issues first one is introducing efficient meat inspection procedures, then building simple and modern slaughterhouses with all the necessary facilities for waste disposal to prevent contamination of the environment and establish standard procedures to secure the health and well-being of butchers, meat processor and the public.

5.8.3 RMTP took an initiative to refurbish and modernize the existing meat processing plant in the project area with providing technical training, financial support to build up modern butcher house, assistance to develop unique design with packaging, startup contract farming system. These meat processing plant are now being adorn with adequate facilities, modern equipment, washing facilities, drainage and waste management system, chilling facilities etc. and maintaining the health and well-being of butchers, meat processor and the public. The sale through offline and online of raw and processed meat has increased by 50% and income of the plant has increased by 60% due to maintaining all the necessary facilities accelerating customer satisfaction. It also has created the opportunity for employment generation. Many new entrepreneurs now being enthusiastic to this business and some of them started successfully. Many new service provider entered in to the project locality to extend their business.

5.8.4 The entrepreneurs are now being more financially sufficient, their living standard are improved, their acceptance in family and society has been increased. They get the support from their female family members in meat processing pant maintaining and packaging, they also support their wife in her work. Being a member of different samity/groups including microcredit group, entrepreneurs are taking part in decision making of those groups as a whole.

5.9 Dairy machineries supplier

5.9.1 Machineries used in dairy farming reduces operational costs, labor, time should be considered. I should be made sure that the machineries has spare parts for easy replacement. Everything from pasteurization to storage needs to be done properly. The required machineries and equipment depend on the level of mechanization is required and the scale of operation. However some machineries and equipment are primarily required such as chuff / green fodder cutter machine, milking equipment, milking pails, milk cans, and small tools. On more than 20 milch animals, machine feeding may be more economical and easier than manual feeding. The installation of fans and mist cooling devices in animal shed is also essential for protection from heat stress in case of high-yielding cross bred cow.

5.9.2 RMTP establishes linkage between dairy farmer and dairy machineries supplier to encourage farmers mechanizing their farm with required equipment. After project engagement the farmers are become aware of using efficient machineries to reduce labor

cost and increase farm efficiency. The dairy machineries supplier are also benefitted by receiving technical training, advertising their equipment to more farmers, increasing demand and selling of dairy machineries etc. The dairy machineries supplier expect project area extension to extend their service to more farm.

5.10 Small-scale hatchery

5.10.1 The hatchery is a central place where the hatching egg is transformed into a one day old chick, during 21 days. The most important goal of any hatchery is to introduce the best quality parent flock with the highest hatchability. The environment of a poultry hatchery is very susceptible to contamination by microorganisms. The major cause of poor hatching is improper control of temperature or humidity. Poor egg quality is a big challenge, with many hatcheries placing dirty floor eggs into clean machines due to low egg numbers. This can often result in the infection of chicks on a growing farm and blame directed towards the hatchery. Poor management of eggs, machines, and chicks have a significant impact on the hatchery's production.

5.10.2 Successful management of eggs and machines is essential. Hatching management depends on factors such as temperature, humidity, ventilation, egg turning, and sanitation. Maintaining a lower temperature and higher humidity during egg storage can improve the viability of the egg cells and allow them to be stored for a longer time. The day-to-day operations of modern commercial hatcheries are therefore an important managerial responsibility.

5.10.3 RMTP support the entrepreneurs to build up a standard hatchery with maximum hatchability ensuring good quality healthy eggs, successful egg incubation, efficient egg handling equipment and good operation from egg collection on the supply farm to the distribution of chicks from the hatchery. This projects facilitate the entrepreneurs with providing financial support to buy essential machineries, linkages the entrepreneurs with the farmers, starting Facebook marketing and boosting, support to develop contract farming system etc. The productivity of these modern hatchery has increased, demand as well as sale of poultry chicks and egg has increased, number of customer has increased, the quality of poultry chicks and egg has increased, the necessity of labor has decreased due to using farm machineries. Many new entrepreneurs started hatchery business seeing the boosting

result of these hatcheries and benefitted. Many new service provider, buyers and companies entered in to the project locality to extend their business.

5.10.4 The entrepreneurs are now being financially well off, their living standard are improved, their acceptance in family and society has been increased. They get the support from their female family members in hatchery management, they also support their wife in her work. Being a member of different samity/groups including microcredit group, entrepreneurs are taking part in decision making of those group.

5.11 "Participation & Empowerment" Status of Project Beneficiaries through/by Project Interventions:

5.11.1 The engagement of women in the livestock sector, whether formal or informal, by assisting their partner, takes a positive turn to increasing women's decision-making and economic benefit within both the household and community. We all know that women's typical role within the livestock value chain system is different from region to region, and the distribution of livestock ownership between men and women is strongly related to social, cultural, and economic factors. In the Bangladesh context, most of the women involved in homestead cattle rearing livestock management, processing, acting as care providers, feed gatherers, and birth attendants.

5.11.2 As part of the RMTP project, gender played a significant role in the participation & empowerment status of both women & men in the horticulture sector. The following findings were observed:

- i) **Group Membership:** Out of the 50 respondents surveyed 34 of them were members of various groups such as farmer/producer/market committees, somitees, etc. Being part of such groups allowed them to discuss their needs, add new members, and more.
- ii) **Work Balance:** 83% of women assisted their husbands in the poultry & livestock sector, women mostly engaged in fodder collection and preparation, feeding, watering, cleaning, herding, milking, shearing, disease prevention, caring for sick animals, a small proportion of women taking the animals to the market, and selling. Most of the respondents said that household care tasks cause extra pressure for that reason they worked together for family well-being. Over 92% of respondents agreed that working together could improve family harmony, bonding, respect, and sincerity.
- iii) **Socioeconomic Status:** Participation in the project led to an improvement in the respondents' socio-economic status, particularly in areas such as food intake, nutrition, contribution to children's education, family wealth, and social recognition.
- iv) **Mutual Decision-Making:** About 87% of respondents reported engaging in mutual decision-making regarding both household expenditures and income generated from livestock activities.
- v) **Women's Interest & Engagement:** 68% of women showed interest in production, especially homestead cattle rearing & poultry, 17% in marketing, and 15% in processing.

It's a widely recognized truth that, access to credit & income generating activities takes an important role in economic and social empowerment. Collected data from the RMTP beneficiaries also showed the reality of that truth, and we got a positive impact on women's participation in the livestock sector on their empowerment status. Input in productive decisions and access to and decisions on financial services increasing day by day in our country.

However, women still face obstacles such as limited access to information, services, and money, and low decision-making power to pay for veterinary services, which are threats to the health of household-based animals, especially during periods of male migration and the sale of larger animals; and low participation in producer groups threaten their ability to increase their livestock earnings.

6.0 GOOD PRACTICES AND LEARNINGS

RMTP is working to extend the financial services of microenterprises as well as to improve the income, food security, and nutrition status of small and marginal farmers, entrepreneurs, and other market actors involved in the value chains of selected high-value agricultural products. The project is implementing value chain development activities across the country to expand the markets for comparative advantage, market demand, and growth of agro-based products. Many successful entrepreneurs has been created on compost plant, vaccination hub, LSP, cattle hotel, silage preparation, meat processing etc. who are now financially more solvent, more dignity receive from family and community, takes part in decision making in group/samity etc. The project had great learnings such as when a successful and innovative model of value chain is introduced the idea or the concept spreads across the relevant actors. This is evident in the high demand of Compost plant, Garol farming and as well as the Small-scale hatchery.

7.0 RECOMMENDATIONS

With the current progress and achievement of the project, it is expected that within the project period, it will successfully achieve the set goals and objectives, will ensure more replication of livestock technologies and it will create a stir in the development of Livestock value chain. For the sustainability of the technologies/activities as well as to capitalize the greater impact, the PMU team is recommended the following issues:

6.1 To achieve more sustainable and scalable improvement in this sector, it is needed

- i) to develop customized livestock value chain project focusing forward market linkages.
- ii) to increase the fund and duration of current projects to achieve more integration of market actors within the value chains.

- 6.2 Vermicompost production has been increased and their market linkage and value chain has developed due to RMTP's initiatives but there is no/inadequate scope of vermicompost certification in the market. So project should take initiatives for effective certification of vermicompost.
- 6.3 The cattle hotel receives much recognition from cattle seller and buyers but their number is very limited. For the greater impact and sustainability of the technology, it is needed to establish more descent cattle hotel with all essential services and facilities and their number should also be increased. More fund might be allocated for these under RMTP.
- 6.4 RMTP supported meat processing plant are now maintaining with proper hygiene and adorn with adequate facilities, modern equipment, etc and maintaining the health and well-being of butchers, meat processor and the public. The sale and income of raw and processed meat has increased by 50% and 60% respectively. But for the sustainability of the technology, larger inputs/service market giants needed to come forward to adopt the technology. Activities should be taken to facilitate HACCP, ISO and HALAL certificates for the meat processing plants.
- 6.5 RMTP supported the dairy machineries supplier which accelerating dairy farms mechanization with required equipment. After project engagement the farmers are become aware of using efficient machineries to reduce labor cost and increase farm efficiency. It is prime expectation of dairy machineries supplier that the extension of project area so that they can extend their service to more farms.
- 6.6 Train young men and more women as community animal health workers and first responders for home-based animal care and also enhance women's diagnostic and curative skills in livestock production.
- 6.7 Activities can be taken under the project to use spoiled eggshells.

8.0 APPENDIX

**Palli Karma-Sahayak Foundation (PKSF)
Rural Microenterprise Transformation Project (RMTP)**

শীর্ষক প্রকল্পের লাইভস্টক সেক্টরের প্রভাব মূল্যায়ন সমীক্ষা

**In-depth Interview (IDI) Checklist for Livestock & Poultry Sub-sector Market
Actors/Service Providers**

সাধারণ তথ্য:

সংস্থার নাম: _____

উত্তরদাতার নাম: _____

পিতা/স্বামীর নাম: _____

প্রধান পেশা: _____ বয়স: _____

গ্রাম: _____, ইউনিয়ন: _____

উপজেলা: _____। জেলা: _____

মোবাইল নম্বর: _____।

১. আপনি প্রকল্প সম্পর্কিত কোন ধরনের সেবা প্রদানকারী/ব্যবসার সাথে জড়িত?

(ক) ভ্যাকসিন হাব পরিচালনাকারী , (খ) প্রাণির হোটেল পরিচালনাকারী , (গ) সাইলেজ সরবরাহকারী , (ঘ) ছোট আকারের মাংস প্রক্রিয়াজাতকরণ প্ল্যান্ট পরিচালনাকারী , (ঙ) মেশিন ব্যবহারকারী , (চ) ক্ষুদ্র হ্যাচারী পরিচালনাকারী , (ছ) কম্পোস্ট উৎপাদনকারী , (জ) চিলিং প্ল্যান্ট পরিচালনাকারী , (ঝ) গাড়ল খামারী , (ঞ) এলএসপি ।

২. আপনি ব্যবসা পরিচালনা/সেবা সরবরাহ সম্পর্কিত কি কি কাজ করে থাকেন?

৩. ক) আপনি কত বছর যাবৎ এই পেশার সাথে জড়িত?

খ) কতজনের কাছে সেবা/পণ্য সরবরাহ করছেন?

৪. ক) সেবা প্রদান করতে কি ধরনের সমস্যার সম্মুখীন হন?

খ) কিভাবে এই সমস্যার সমাধান করা যেতে পারে?

৫. ক) আপনার ব্যবসা পরিচালনায় কি ধরনের উপকরণ/সেবা/প্রযুক্তির প্রয়োজন হয়?

খ) কোথা থেকে সংগ্রহ করেন? এসবের প্রাপ্তিতে কোন সমস্যা আছে কিনা?

৬. ক) PKSF দ্বারা বাস্তবায়িত RMTP প্রকল্প থেকে আপনি কি কি সহায়তা পেয়েছেন?

খ) এই সহায়তা আপনার জন্য যথেষ্ট কি না?

গ) যদি যথেষ্ট না হয়, তবে সমাধান করার জন্য কি ধরনের ব্যবস্থা গ্রহণ করা যেতে পারে?

৭. ক) প্রকল্পে যুক্ত হওয়ার পর আপনার উদ্যোগে পণ্য উৎপাদন/সেবা সরবরাহের ক্ষেত্রে ব্যবসা পরিচালনায় কোন পরিবর্তন এসেছে কি?

খ) কি ধরনের পরিবর্তন এসেছে?

৮. ক) প্রকল্পের কার্যক্রমে যুক্ত হওয়ার পর আপনার কার্যক্রমে কি কোন নতুন কর্মসংস্থানের সৃষ্টি হয়েছে কি?

খ) যদি হ্যাঁ হয়, তবে কতজন এই কর্মসংস্থানে যুক্ত হয়েছেন (শ্রম/বছর)?

৯. ক) প্রকল্পে যুক্ত হওয়ার ফলে আপনার উদ্যোগের উৎপাদনশীলতা বৃদ্ধি পেয়েছে কি?

খ) আপনার উদ্যোগে পণ্য/সেবা ক্রয়ের পরিমাণ/ফিক্সেচিউরি বৃদ্ধি পেয়েছে কি?

গ) পণ্যের/সেবার বিক্রয় বৃদ্ধি পেয়েছে কি?

ঘ) শতকরা কত বৃদ্ধি হয়েছে?

১০. ক) প্রকল্পে যুক্ত হওয়ার ফলে আপনার আয় বৃদ্ধি পেয়েছে কি?

খ) আনুমানিক শতকরা কত টাকা বৃদ্ধি পেয়েছে?

১১. ক) আপনার উদ্যোগ দেখে আশেপাশের কেউ উক্ত ব্যবসা শুরু করেছে কি?

খ) তারাও কি উক্ত ব্যবসা পরিচালনায় সফল হয়েছে?

১২. ক) প্রকল্পের কর্মকাণ্ড শুরু হওয়ার পর আপনার ব্যবসা/সেবা/উদ্যোগ সম্পর্কিত/অসম্পর্কিত নতুন নতুন পণ্য/সেবা সরবরাহকারীর বাজারে অনুপ্রবেশ ঘটেছে কি?

খ) কি কি ক্ষেত্রে এমন ঘটেছে?

১৩. ক) প্রকল্পের কর্মকাণ্ড শুরু হওয়ার পর আপনার ব্যবসা/সেবা/উদ্যোগ সম্পর্কিত/অসম্পর্কিত পণ্য/সেবা সরবরাহকারীর ব্যবসা পরিচালনায় কোন পরিবর্তন এসেছে কি?

খ) কি কি ক্ষেত্রে এমন ঘটেছে?

১৪. ক) দুর্যোগ এবং জলবায়ু পরিবর্তন পণ্য উৎপাদনকে কিভাবে প্রভাবিত করে বলে মনে করেন?

খ) উক্ত প্রভাব মোকাবেলায় কি কি পদক্ষেপ গ্রহণ করেন?

১৫. ক) আপনি বা পরিবারের কোনো সদস্য কি কোন সমিতি, দল বা সমবায় সংগঠনের সাথে যুক্ত আছেন?

খ) হ্যাঁ হলে, সদস্য হিসেবে কি মতামত/সিদ্ধান্ত/পরামর্শ দিতে পারেন কি না তা উল্লেখ করুন।

১৬. ক) আপনি যে উৎপাদন/সেবা/পণ্য সরবরাহ করছেন/ব্যবসা পরিচালনা করছেন, এই কাজে আপনার স্বামী/ স্ত্রী কি আপনাকে সহযোগিতা করে? স্বামী / স্ত্রী

খ) করে থাকলে কি ধরনের সহযোগিতা করে থাকেন?

গ) এ কাজ/সহযোগিতার ফলে কি ঘর-গৃহস্থালীর কাজে অধিক চাপ পড়ে বলে আপনি মনে করেন?

ঘ) আপনার পরিবারে ঘর-গৃহস্থালীর কাজ নারীরা একাই করেন নাকি নারী-পুরুষ যৌথভাবে অংশগ্রহণ/সহযোগিতা করেন?

নারী যৌথ

ঙ) ঘর-গৃহস্থালীরসহ সকল কাজ নারী-পুরুষ যৌথ অংশগ্রহণে করার ফলে পারিবারিক সম্প্রীতি, শ্রদ্ধা এবং আন্তরিকতা বৃদ্ধি পায় বলে আপনি মনে করেন কি?

১৭. ক) কার্যক্রম বাস্তবায়নের ফলে আপনার পরিবারের পুষ্টি, শিক্ষা, চিকিৎসা, সামাজিক মর্যাদা, সম্পদ ইত্যাদি ক্ষেত্রে কি কোন ধরনের পরিবর্তন এসেছে?

খ) কি কি পরিবর্তন এসেছে তা উল্লেখ করুন।

১৮. কার্যক্রম বাস্তবায়নের মাধ্যমে যে আয় হয় তা থেকে পারিবারিক ব্যয় নির্বাহের কাজে (পারিবারিক খরচ, সঞ্চয় করা, সম্পদ বৃদ্ধি করা ইত্যাদি) বিষয়ে আপনি একাই নেন সিদ্ধান্ত নেন নাকি স্বামী/স্ত্রী যৌথভাবে সিদ্ধান্ত নেন?

১৯. ক) আপনার এলাকায় সাধারণত নারীরা উৎপাদন /প্রক্রিয়াজাতকরণ /বাজারজাতকরণ এর কোন ধরনের কাজের সাথে যুক্ত?

খ) নারীরা কি উৎপাদিত পণ্য উৎপাদন/প্রক্রিয়াজাতকরণ/বাজারজাতকরণ করতে যেয়ে পারিবারিক বা সামাজিক কোনো সমস্যা/প্রতিবন্ধকতার সম্মুখীন হন?

গ) হ্যাঁ হলে, কিভাবে এ সমস্যার সমাধান করে এই সেক্টরে নারীর অংশগ্রহণ বৃদ্ধি করা যায় বলে আপনি মনে করেন?

ঘ) না হলে, নারীর জন্য কি কি সুযোগ-সুবিধা/ব্যবস্থা আছে তা উল্লেখ করুন।

সহযোগিতার জন্য ধন্যবাদ

তথ্য প্রদানকারীর স্বাক্ষর সহ অফিস সিল (যদি থাকে)

সুপারভাইজার-এর নাম:

তারিখ: