

Buffalo Value Chain



PACE Project

Increasing income of the entrepreneurs through Increasing
Buffalo Production in Coastal region
(Sadiwp and Urir char)

Value Chain Development Sub-Project

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1. Background

Livestock sub-sector has incredible contribution on the development of agro-based economy of Bangladesh. As being prospective and profitable, this sector has been escalating day by day. In the fiscal year 2016-17, the contribution of livestock sub-sector on GNP was about 1.60% (DLS, 2018). 20% of the total population in the country are directly and almost 50% peoples are indirectly involved in this sector for their income generation (DLS, 2018). According to DLS (2018), the country has a current population of 14.78 lakh buffalo. At present per capita milk availability is 157.97 ml per day against 250ml demand (DLS-2018). On the basis of DLS (2018) information, at present, yearly total meat production, demand and surplus in our country are 72.60 lac MT, 72.14 lac MT and 0.46 lac MT, respectively.

As a result of comparative advantages such as available grazing land in char areas, huge demand of buffalo dahi, popularity of buffalo farming in Bathan system as a profitable business and favorable geographical environment different char areas of Swandip upazila in Chattogram district has become a famous cluster of buffalo farming/rearing. According to upazila livestock office of Swandip-2018, at present the total buffalo population in Swandip upazila is around 15,000. In Swandip, normally two methods are used for buffalo rearing, that are Bathan rearing and household rearing. In average, 30-40 buffalo are usually reared in Bathan and most of the families rear 2-3 buffaloes through the year according to the tradition in this area. They do not know how to rear buffalo in scientific method.

Since buffalo cows in the project areas are not bred with planned breeding, exhibit higher rate of inbreeding and are not provided adequate feeds, especially concentrate feeds considering their body weight and milk production, lack of quality drinking water, production performances of these cows are comparatively lower (an average daily milk yield per cow is only 1.5 ltrs, average length of milk production is 165days and average calving interval is 26 months). In the project sites, lack of scheduled vaccination against major diseases in buffalo (Anthrax, BQ, HS and FMD), de-worming, availability of adequate

doses of vaccine and sufficient veterinary health service providers cause comparatively higher rate of mortality (average mortality is about 8.75% and morbidity 85%).

Lack of high yielding buffalo bull for natural services, limited supply of quality inputs like semen, vaccine, deworm, concentrate feed, high yielding green grass due to poor linkage between farmers, livestock service provider (LSP) and input suppliers; quality service are not available due to lack of skill livestock service provider (LSP); low quality medicine and feeds are sold by local vendors, due to lack of knowledge and skill, farmers are habituated to practice poor livestock management (proper breeding, upgradation, artificial insemination, feeding, housing and prevention of diseases), Inbreeding is a common problem facing farmers in the project areas as a result, productivity of buffalo is comparatively low and mortality is high. Buffalo meat and milk price often fluctuate round the year and sometimes in some areas, appeared low milk price due to lack of awareness about food value of buffalo meat and milk and lack of linkage between farmers and buyers of established formal and non-formal markets. Expansion of business according to entrepreneurs is not possible as lack of capital. Banks are not interested to provide loan without land mortgage.

Subject to minimize the above mentioned problems by taking different value chain interventions under the project such as ensuring supply of necessary amount of quality inputs (like feed, vaccine, anthelmintics, proven bull semen, high yielding bull, high yielding green grass, salt tolerant fodder etc.) by establishing linkage between farmers, LSP and input suppliers, providing skill training to the farmers, practicing regular vaccination and de-worming, taking initiative to expand AI technology and introducing high yielding buffalo bull, demonstration of model buffalo shed (killah), demonstration of calf starter feed, UMS and silage feed technology, demonstration of cultivation of HYV fodders and salt tolerant fodder, etc for promoting and practicing improved livestock management, publishing different types of leaflet, health card, disease calendar and poster for building awareness, waste management by introducing vermi-compost technologies, establishing linkage with formal and informal market stakeholders for ensuring

high price of meat and milk etc. At least 35% milk production of buffalo dairy cows will be increased, buffalo mortality rate will be reduced (from 8.75 to below 2%). As a whole, income of 70% project members will be increased to at least 35%.

2. Project Goal: Generation of self-employment through increasing income of the buffalo rearing entrepreneurs.

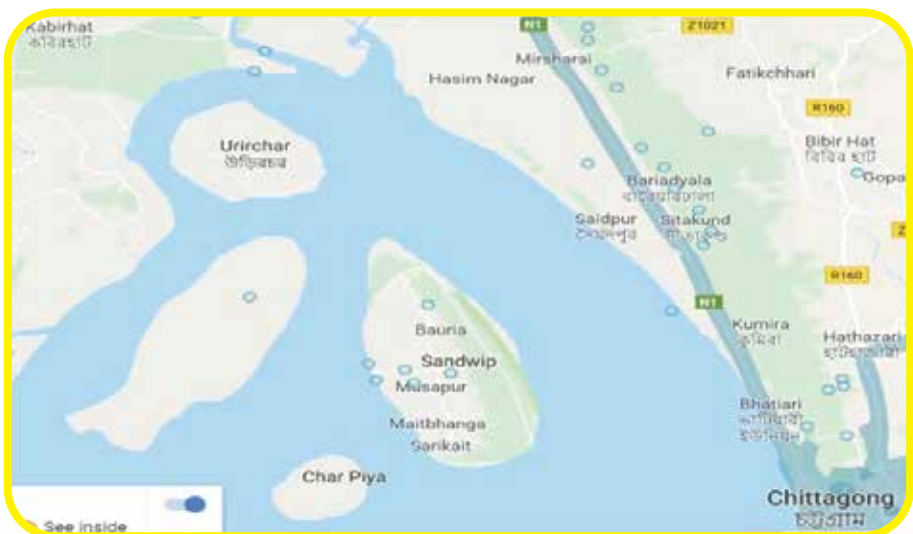
3. Project Objectives: The sub project has following objectives;

- a) To increase buffalo production and reproduction.
- b) To reduce buffalo mortality.

4. Tenure of the project: The implementation period of the sub project is three years from 15 October 2018 to 15 October 2020.

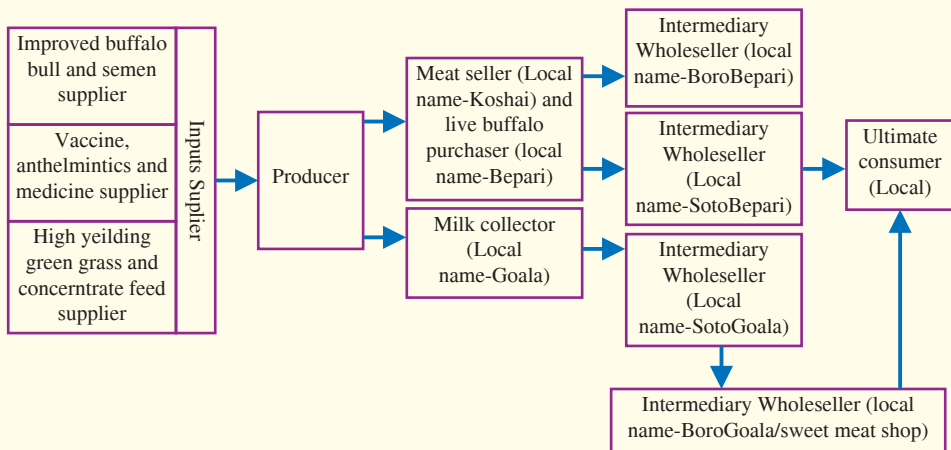
5. Programme participants: The project covers 2100 buffalo rearers, 222 Local Service Providers (LSP), 30 dairy product manufacturers and 150 others stakeholders associated with this sector.

6. Geographical Location of the Business Cluster: The Project is being implemented at two buffalo concentrated areas namely Swandip and Urirchar of Sandiwp upazila in Chottogram district. The project area is given in the Map.



7. Value Chain Map

Enabling Environment: Existing business environment, rules and regulations, norms, values, policies etc



Support Services: Existing Treatment services, AI services, Training services, Financial Services, Insurance services etc.

8. Major Identified Knots in the Value Chain

8.1 Knots in Access to Inputs and Services

Due to lack efficient of local service provider (LSP) farmers are not getting quality health services and inputs at proper time, due to poor linkage between LSP and upazila livestock office supply of vaccines are insufficient in the project areas, farmers have to use poor quality vaccines due to unawareness of LSP about reputed vaccine manufacturing companies, newly introduced high yielding Napier “pakchong” and one salt tolerant fodder name “Beju grass” has not yet been cultivated and farmers are not aware of this technology of cultivation, no linkage between ready cattle feed manufacturing company and local cattle feed seller/LSP, as a result farmers are not feeding ready calf starter feed to their cows, inappropriate use and preservation of semen

and indiscriminate breeding due to lack of proper knowledge of the artificial inseminators/LSPs and local medicine seller/LSP are using poor quality veterinary medicines, as there is no communication between local medicine sellers and reputed pharmaceutical companies.

8.2 Knots in Promotion of Improved Livestock Management Practices

Lack of knowledge and skill of the producers on modern dairy management and technologies, rapid breed up-gradation is not appearing due to lack of proper knowledge on breeding and management, low conception rate for inappropriate insemination which leads to discouraging farmers for artificial insemination. As for lack of knowledge on repeat breeding, crossbred cows in the project areas show heat again and again resulting loss of life time productivity of cows. As there is no proper knowledge to provide balanced diet to the pregnant cows, healthy calves are not produced, getting lower birth weight and lower resistance to diseases. Due to lack of proper knowledge on improved calf rearing and management (feeding, health care), calves remain under-nourished from birth up to sexual maturity, as a result their growths are retarded and required long time to reach at puberty. Mortality rate seems to be higher (on an average 6.5%) as a result of not following scheduled vaccination and de-worming program which is responsible for the lack of proper knowledge on preventive health care management.

8.3 Knots in Access to Market

Due to far distance between main land and buffalo rearing area (called char area), no formal/institutional buyers come to buffalo rearing area for purchasing milk. Only few informal buyers (Local name Goala) come to char for purchasing milk. As a results producers did not get competitive milk price regularly. Lack of knowledge about proper transportation and product processing is seen in the buyers level.

8.4 Knots in Access to Finance

Most of the farmers are not willing to invest more for expansion of buffalo farming due to lack of capital in spite of their interest. In addition, banks are not interested to provide appropriate amount of loan without collateral and also buffalo rearing is a risk business as a result lacking of financial access to entrepreneurs is found in project area.

9. Major Identified Areas of Improvement and Interventions in the Value Chain

9.1 Inputs and Service Market Development

The value chain sub-project will provide 10 day residential advanced training to 20 livestock service provider (Paravet), 2 day training to 180 livestock service provider (Rakhal) and day long training to 150 livestock service provider (Bathainna) and 40 days training to livestock service provider (Artificial inseminator) in the project areas to ensure livestock health service and insemination services from bathan to bathan and it will continue after completion of the project period.

The project will provide support to arrange MoU and other linkage activities to development strong linkage with Livestock Service Provider (LSP) and inputs like vaccines, medicines, semen, ready feed, high yielding green grass, salt tolerant green grass etc suppliers/organizations/institute to ensure availability of necessary inputs to farmer level. The project facilitates to increase publicity of LSP by taking a session in each farmers group meetings arranged by the project. In addition, there is a scope in the project activities for doing mass vaccination and deworming campaigning by LSP.



Fig 1 : Providing health support to farmers through LSP



Fig 2 : Providing health support to farmers through LSP

9.2 Promotion of Improved Livestock Management Practices

9.2.1 Buffalo Breed Development

The value chain sub-project is providing support for introducing 10 high yielding Murrah buffalo replaced with local low producing bull to ensure programme participants for breeding their buffalo cow by this high yielding buffalo bull at proper estrus period (after starting estrus from 12 to 18 hrs) and culling their own buffalo bull from bathan which helps for reducing inbreeding rate and also to increase production and developing high performing local buffalo breed. Besides this natural services through high yielding Murrah buffalo bull, this is also provided support for introducing artificial insemination programme by semen collected from another high yielding Murrah bull for buffalo cows in plain land. By adopting these two systems, the productivity of local buffalo is increasing day by day.



Fig 3 : High yielding Murrah Buffalo bull in char area



Fig 4 : Artificial insemination programme practicing in plain land area

9.2.2 Capacity and Skill Development Activities

The value chain sub-project will provide skill development training to 2100 producer members on improved buffalo management and practices through service providers, 90 micro- entrepreneurs will get a day long training regarding buffalo fattening, a total of 20 service providers will get five days residential training on improving their professional skill and promotional work along with five day long refreshers training and 15 entrepreneurs under the project involved in manufacturing dairy products will get a day long training on manufacturing dairy products (ghee, cheese, chana) and promotion of those products.



Fig 5 : Providing training to farmers



Fig 6 : Providing training to LSP



Fig 7 : Providing training to market stakeholder

9.2.3 Demonstration and Result Demonstration of Different Technologies, Methods and Programmes

9.2.3.1 Natural Breeding through Improved Buffalo Bull

The project is providing 10 demonstration and 06 result demonstration support for introducing 10 highyielding Murrah buffalo replaced with local low producing bull to ensure programme participants for breeding their buffalo cow by this high yielding buffalo bull at proper estrus period which helps for reducing inbreeding rate and also to increase production and developing high performing local buffalo breed.



Fig 8 : Providing natural breeding services through high yielding buffalo bull

9.2.3.2 Artificial Insemination through Improved Buffalo Bull's Semen

The project is providing 100 demonstrations and 6 result demonstrations support to expand high quality bull semen through AI technique to upgrade local buffalo for increasing milk production throughout the project period.



Fig 9 : AI practice in local buffalo for breed upgradation

9.2.3.3 Introducing Buffalo Fattening in Family Level

The project is providing 30 demonstrations support throughout the year to influence people for adopting this technologies as like as beef fattening. It will helpful for producing more tasty and juicy meat in a short time and also to generate more income of the farmers.



Fig 10 : Buffalo Fattening in family level (in plain land)

9.2.3.4 Introducing Milch Buffalo in Family Level

The project is providing 30 demonstrations and 6 result demonstrations support throughout the year to influence people for adopting this technologies. It will be helpful for producing more milk and also to increase more income of the farmers.



Fig 11 : Milch buffalo in family level (in plain land)

9.2.3.5 Development of Exiting Buffalo Housing System in Bathan Areas

The project is providing 4 demonstrations support for developing local exiting buffalo housing system (local name-Killa) with some modern facilities to influence people for adapting this system which helps to reduce buffalo mortality specially calf mortality.



Fig 12 : Model killahin family level

9.2.3.6 Introducing High Yielding Napier Fodder

The project is providing 65 demonstrations and 06 result demonstrations support and also providing fodder cuttings throughout

the year to influence people for cultivating Napier fodder commercially. It will help to minimize shortage of natural grass throughout the year especially during lean period (winter).



Fig 13 : Napier fodder cultivation in field level

9.2.3.7 Introducing Salt Tolerant Beju Grass

The project is providing some demonstrations and result demonstrations support and also providing fodder cuttings throughout the year to influence people for cultivating this grass. It will help minimize shortage of natural grass throughout the year in the saline coastal areas.



Fig 14 : Beju grass cultivation in field level

9.2.3.8 Introducing Urea Molasses Straw (UMS) Feed

The project is providing 60 demonstrations and 06 result demonstrations support throughout the year to influence people for practicing this technology. It will help to minimize shortage of natural grass throughout the year and also increasing higher growth of meat producing buffalo especially for buffalo fattening.



Fig 15 : UMS preparing and using in field level

9.2.3.9 Introducing Calf Starter Ready Feed

The project is providing 30 demonstrations and 06 result demonstrations support for expanding calf starter ready feed for influencing people providing this feed to their calf.



Fig 16 : Calf stater feeding

It will help for reducing calf mortality rate and increasing higher growth of the calf.

9.3 Changing Buffalo Rearing Practices

9.3.1 Breeding Practices

The value chain sub-project is providing continuous advisory services through project to ensure programme participants for breeding their buffalo cow by high yielding buffalo bull provided from project at proper estrus period (after starting estrus from 12 to 18hrs) and culling their own buffalo bull from bathan which helps for reducing inbreeding rate and also to increase production and developing high performing local buffalo breed.



Fig 17 : Buffalo Breeding Bull

9.3.2 Artificial Insemination

The value chain sub-project is providing continuous advisory services through livestock Service Provider (Artificial Inseminator) to ensure programme participants for breeding their buffalo cow by quality semen from high yielding bull at proper estrus period (after starting estrus from 12 to 18hrs) which helps for increasing Conception rate and production and also developing high performing local buffalo breed.

9.3.3 Improved Natural Breeding

The value chain sub-project is providing continuous advisory services through project to ensure programme participants for breeding their



Fig 18 : Providing AI services through high yielding buffalo bull



Fig 19 : Providing natural breeding services through high yielding buffalo bull

buffalo cow by high yielding buffalo bull provided from project at proper estrus period (after starting estrus from 12 to 18 hrs) and culling their own buffalo bull from bathan which helps for reducing inbreeding rate and also increase production and developing high performing local buffalo breed.

9.3.4 Feeds and Feeding Practice

The value chain sub-project is providing continuous advisory, technical and technological services through project staff and created livestock service provider (LSP) to ensure all programme participants to practice regular supply of concentrate feed with natural green grass on the basis of body weight and milk production. In addition, 65 yearly producing high yielding Napier fodder plots will be demonstrated, 6 result demonstrations support and fodder cutting will be provided to the potential farmers. 30 demonstrations and 6 result demonstrations support for calf starter feed promotion, 60 demonstrations and 6 result demonstrations support for UMS feed technology expansion will be organized. These above mentioned practice helps to reduce shortages of feeds and fodder and also increase milk production.



Fig 20 : Feeding Napier grass to Buffalo



Fig 21 : Feeding concentrate feed to buffalo



Fig 22 : Feeding UMS feed to buffalo



Fig 23 : Feeding Calf starter feed to buffalo calf

9.3.5 Water Sources and Sources Management Practices

The value chain sub-project is providing support for setup 4 deep ponds in four different locations for ensuring quality drinking water for buffalo in bathan year the round.



Fig 24 : Model pond for buffalo

9.3.6 Buffalo Shelter and Shelter Management Practice

The value chain sub-project is providing support for setup 4 modern demonstrated buffalo shed (killah) containing all facilities like treatment facilities, medication facilities, vaccine storage facilities, drainage facilities, water supply facilities, etc, to ensure programme participants to prepare their buffalo



Fig 25 : Model Buffalo killah

shed in scientific way and also to its use as shelter for buffalo to protect them from any natural calamities like high flood, storm, rainfall etc for reducing buffalo mortality and also to increase productivity.

9.3.7 Health Management Practice

The value chain sub-project is providing 96 vaccinations and 72 deworming campaigns through project staff and created livestock service provider (LSP) to ensure all programme participants to practice regular vaccination of 80% buffalo against four main diseases and also deworming of 80% buffalo which will help to reduce buffalo mortality rate. In addition, the project is preparing and distributing a disease calendar containing causes, symptoms, prevention and also care of main buffalo infected diseases in all farmers which helps to know the farmers for taking necessary actions to prevent and treatment of the buffalo before outbreak of these diseases.



Fig 26 : Vaccination and deworming campaign



Fig 27 : Buffalo Disease calendar

9.3.8 Farm's Data and Accounts Management Practice

The value chain sub-project is providing a buffalo health management and accounts recording card to ensure all programme participants to practice regular farm related data storage and also accounts (cost-benefit) related data recording which helps them to run the buffalo business in a profitable manner.



Fig 28 : Buffalo Health Management card

9.4 Awareness Creating Activities

The value chain sub-project is providing different awareness creating activities like establishing information board in mass people gathering areas, distribution of important issue based leaflets like inbreeding, UMS feed technology and buffalo calf feeding management, buffalo health management, accounts recording card, buffalo diseases calendar, booklet on buffalo breeding and development, workshop etc. for awareness build-up on disease free improved buffalo rearing and also to produce safe milk and meat from buffalo production.



Fig 29 : Leaflet on Inbreeding Problem



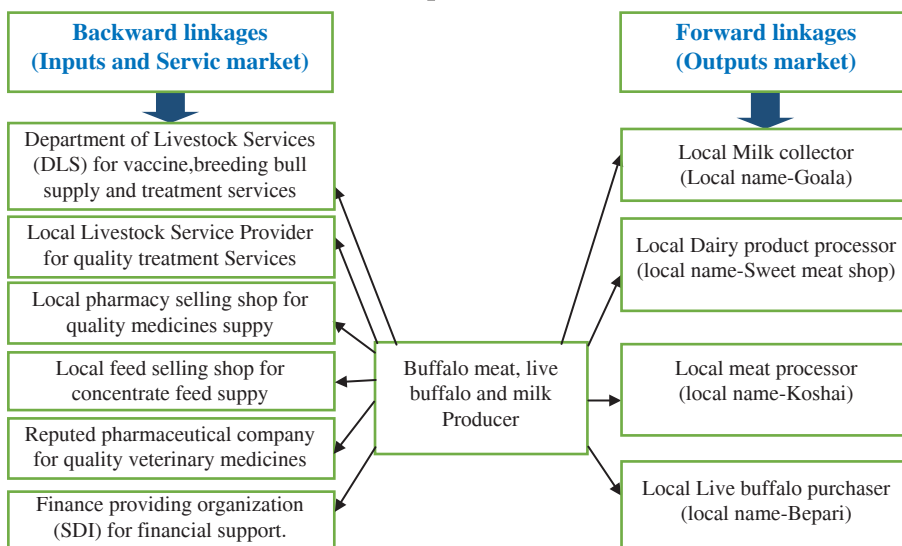
Fig 30 : Leaflet on UMS feed technology



Fig 31 : Leaflet on buffalo calf management

9.5 Linkage Development

Two types of linkages like backward (Inputs and Service market) and forward linkage (output market) will be established under the project for ensuring continuous necessary quality inputs and services (vaccine, medicine, feed, fodder, semen, breeding bull, health services, financial services) supply and selling of additional produced milk, buffalo meat and live fatted buffalo) with fair price.



9.6 Private-Public Sector Engagement

The value chain sub-project will provide support to organize several linkage workshops with public sector like Department of Livestock Services (DLS) for ensuring continuous vaccine supply and also to provide 10 buffalo breeding bulls and MoU with a public sector like a reputed pharmaceutical company for ensuring supply of quality veterinary medicines. A strong linkage will be developed with some local pharmacy and some local feed selling shops. It will help to increase availability of inputs (quality feeds, breeding bulls, medicines and vaccines) in the project area with fair price. Existing linkage between farmers and local milk collector and dairy product manufacturer will be strengthened and linkage with live buffalo purchaser will be also

strengthened. These two initiatives will help to increase sell volume of milk and meat with comparative high price. In addition, several group meetings with a NGO like SDI will be organized by project for extending financial support to farmers for scaling up their buffalo rearing business.



Fig 32 : Private -public sector engagement

9.7 Strengthening Output Market

60 micro-entrepreneurs (local name-goala) under the project involved in manufacturing dairy products will get two days training on manufacturing diversified dairy products (dahi, ghee etc) from buffalo milk and promotion of those products. In addition to these, some media coverage programs like coverage in local print and electronic media, dish channel, social media, poster, miking, signboard/billboard display, meat & dahi display in different fair/mela etc for increasing publicity of buffalo meat and milk based products.



Fig 33 : Buffalo Dairy Product

9.8 Access to Finance

The value chain sub-project will be organized several group meetings with private financial providing NGO like SDI for facilitating financial support to buffalo rearer for scaling up their buffalo rearing business.

10. Resource Allocation

Total cost of the project is around BDT 12.2 million. PACE Project from PKSf is providing around BDT 10.9 million as grant and remaining budget will be provided by the implementing partner organization Society for Development Initiatives (SDI).

11. Management of the Interventions

A value chain sub project management unit headed by a Project Coordinator has been formed at the office of the Society for Development Initiatives (SDI) to supervise the implementation of the project. A number of officials including one Value Chain Facilitator, one data analyst, one accountant and four Assistant Value Chain Facilitators are working under the guidance of the Project Coordinator. Project Management Unit is monitoring the field level progress. One Concern Officer of the Project Management Unit (PMU) of the PACE Project from PKSf is monitoring the field level project progress and supervise the project staff to implement the project successfully.

12. Expected Results

12.1 Project Outputs

Necessary quality inputs supply such as concentrate feeds, calf starter feed, high yielding green grasses, vaccines, semen and veterinary medicines have been increased to about 50-60% as a result of linkage establishment between Livestock Service Provider (LSP), farmers and reputed inputs suppliers/supply company/organizations; 05 acre land will be used for cultivation of high yielding green fodder, Almost 5% of the entrepreneurs will adopt Artificial insemination technology and other 3% project members will also be adopted buffalo fattening technology, 20% of the total project members will bred their buffalo by 10 high yielding buffalo bull, 2100 enterpreneur will get skill training on modern dairy cow rearing technique and then about 70% producers have been practicing improved farm management (feeding concentrate feeds and green fodder regularly, regular scheduled vaccination and de-worming) through acquiring skills and knowledges on modern

farming, 90 project members will get day long training on buffalo fattening; 200 livestock service providers (LSP) will get hands on training by whom primary treatment services will be ensured. The project will provide 4 demonstration housing (killah) support for setup model killah, 30 demonstration support for expanding milking buffalo rearing system in household level, 65 demonstrations and 6 result demonstrations support for high yielding fodder production; 30 demonstrations and 6 result demonstrations support for calf starter feed promotion, 60 demonstrations and 6 result demonstrations support for UMS feed technology expansion; 100 demonstrations and 6 result demonstrations support for Artificial insemination technology extension and 10 demonstrations and 6 result demonstrations support for natural breeding expansion through 10 high yielding bull; 80% buffaloes of these 13500 buffalo will come under regular vaccination, deworming and veterinary treatment services in each year. Different awareness creating activities (leaflet on inbreeding, UMS feed technology, and calf feed management, buffalo disease calendar, buffalo health management card, booklet on buffalo breeding and development, information board establishment, workshop etc.) will be taken for awareness build-up on disease free improved buffalo rearing and also safe milk production, 60 dairy product processors will get training on diversified dairy product production and marketing, linkage between farmers and other 20-30 market stakeholders (local name-goala&sweet meat shop) will be developed and also print and electronic media coverage, facebook base marketing, milking etc activities will be taken to increase buffalo milk and meat sells and also income of the producers and 5% project members will get financial services from SDI for expanding their buffalo farming business.

12.2 Outcomes

The daily milk production of buffalo cows of 70% programme participants will be increased to about 35%, lactation period will be increased from an average 165 day to 210 days, calving interval will be decreased from an average 26 month to 19 month, inbreeding rate will be decreased from an average 100% to 60%, 03% programme participants will be adapted artificial insemination technology and

capable to produce 50% crossbred calf, 10% programme participants will be adapted buffalo fattening technology and capable to produce at least one fattened bull each year, buffalo mortality will be reduced from 8.75% to below 2% and also milk price per litre will be increased to about 10% at the end of the project.

12.3 Impact

Income of the 70% programme participants will be increased to at least 35% after completion of the project.

13.0 Business Model for the Project

