# Mapping of Pork Value Chain Actors in Selected Districts of Assam

Prepared under the
Assam Agribusiness & Rural Transformation Project (APART)
ARIAS Society, Khanapara, Guwahati

For
Animal Husbandry & Veterinary Department,
Govt. of Assam

Submitted by
The International Livestock Research Institute (ILRI)
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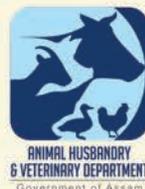
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Acknowledgement

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Abbreviations

AI : Artificial insemination

ALPCo : Assam Livestock and Poultry Corporation Ltd.

APART : World Bank Assam Agribusiness and Rural Transformation Project

ARIAS **:** Assam Rural Infrastructure and Agricultural Services

BVO : Block veterinary officer

CAHW : Community animal health worker

DDL **:** Disease diagnostic laboratory

FGD : Focus Group Discussion(s)

HH : Household(s)

ILRI : International Livestock Research Institute

INR **:** Indian rupee

KII : Key informant interview(s)

Km **:** Kilometre(s)

No. : Number

NRCP : Indian Council of Agricultural Research National Research Centre on Pig

OBC : Other Backward Caste

SC : Scheduled Caste

ST : Scheduled Tribe

T **:** Tonne(s)

VFA : Veterinary field assistant

VO : Veterinary officer

Executive Summary

Importance of pigs

- We conducted 224 Key Informant Interviews (KII) and 350 Focus Group Discussions (FGD) in the 55 APART clusters spread over 13 districts of Assam.
- There are almost one million pigs in APART districts which account for almost 64% of the pig population of Assam.
- Nearly half of the pigs are in three districts; these districts are home to a high proportion of Scheduled Tribe (ST) members.
- The pig population has been increasing over the last decade at 2.8% per year, less than the state average of 3.65%
- Pork share has increased from 29% of meat in Assam in 1998 to 39% in 2016.

Type of pig husbandry

- The identified APARTvillages have a total of 68,143 pig rearing households (HH), 67% out of 101,572 HH.
- HH on average have 2.4 adult pigs and sell 2.6 pigs per year.
- Only 5% of farm families rear indigenous breeds, 93% rear crossbreeds and 2% rear both.
- With regards to purpose rearing, 80% of APART farmers rear pigs for fattening purpose,10% for breeding and 10% both.
- Breeders sell on average 14 piglets a year.
- Most farmers feed their pig's kitchen waste, brewery waste and other local feeds.

Input services

- In the APART clusters, a total of 96 veterinarians, 147 veterinary field assistants (VFAs) and 42 community animal health workers (CAHWs) provide services to the pig farmers.
- Eleven disease diagnostic laboratories (DDLs) provide health care services to the farm families. However, districts with the most pigs tend to have the least access to veterinary services.
- On average, farmers are 3.2 kilometres (km) from veterinary services (public and private).
- Commercial feed is available from local grocery shops (no feed suppliers to the farmers). The total number (no.) of grocery shops in the surveyed villages is 156.
- There are 13 feed mills in the APART districts (located one each in Sonitpur, Darrang and Golaghat, and 10 in the Kamrup district.
- Among the total farming HH, 476 own breeding boars providing access to natural mating services. Artificial insemination (AI) services are yet to be introduced at the farmers' level.
- There are 21 institutional pig breeding farms (private and public) in the APART clusters.

Marketing

- Around 81% of pigs are sold to traders and butchers cum pork retailers who visit villages and the remainder consumed by the HH (especially in ceremonies) or given as gifts.
- Out of the fattened pigs sold (120,927), almost 11% were sold by butchers at a price of 181 Indian rupees (INR)/kg live weight and the remainder sold either to traders or butchers at INR 177/kg live weight.
- Live fattened pigs are also sold to neighbouring states like Arunachal Pradesh, Meghalaya and Nagaland. Local agents supply traders from these states during October–November because of an increase in demand during the marriage and Christmas seasons in these states.
- In the APART villages, 173,988 piglets are sold during the year preceding the survey. Approximately

43% of piglets are sold to other farmers at the farm gate and the remainder (57%) to traders.

- The price per piglet is INR 2,428 when sold to farmers and INR 2,407 when sold to traders.
- There are 121 live pig markets in the clusters of APART.

Gender issues

- Almost 78% of the pigrearing tasks on-farm are carried out by women and women hold 64% share of control over the income from pig rearing.
- There are no female private or public local veterinarian's or VFAs in the APART clusters.
- There are no female butchers cum pork retailers or pig and piglet traders.

Value chain market actors

- There are 68,143 pig producers in the APART districts of which 54,794 are fatteners, 6,925 breeders and 6,472 both breeders and fatteners.
- There are 907 butchers cum pork retailers, 829 pig and piglet traders' and five slaughter houses (in Sonitpur and Kamrup only).

Figure 1: Schematic representation of the value chain actors for all APART districts.

VALUE CHAIN ACTORS

- Vet services: Loc Vets- 96; VFA: 147; CAHW: 42
- Feed: 156; Boar: 476;
- PTO: 0; PPO: 0
- DL: 11; FTL: 0; FM: 3
- Institutional pig breeding farm: 21
- Live pig market (N=113)

Producers

- HH consumption and rituals purpose (N= 20,378) — 19%
- Fattened pigs sold (N=120,927) — 81%
  - 11% → Slaughtered & sold by himself (N=12,959) at INR 181/kg live weight
  - 89% → To traders/butchers (N=109,274) at INR 177/kg live weight
  - 0% → To pork processing plant (N=0) at Rs
- Breeding piglets sold (N=173,988)
  - 43% → To farmers at farm-gate (N=74,053) at INR 2428/piglet
  - 57% → To trader (N=99,935) at INR 2407/piglet

Cluster level Consumers

Outside Supply (Meghalaya, Nagaland, Arunachal

1. Introduction

1.1 Background

In Assam, the pig subsector makes important contributions to livelihoods, nutrition and the economy.Pig farming in Assam is a low-external input enterprise depending upon family labour—mainly women's—and HH feed resources. Traditional management practices continue to dominate the production system. Most pigs are crossbred but these are the outcome of haphazard crossbreeding resulting in poor productive and reproductive performance. Access to veterinary and extension services is poor, and vaccination and deworming are not routinely practised in many parts of the state. The dependence on locally available feed resources and traditional feeding practices further limits pig performance (Deka etal. 2008). Pig producers in Assam, despite good market demand and promising income potential, are unable to increase the size of their herd under traditional systems because of the paucity of HH feed, labour and financial resources, and lack of good housing systems. Well-targeted, affordable and accessible interventions in the pig sector can improve pig productivity and deliver significant economic and employment benefits to the producers and other value chain actors.

In Assam, although the live pig market runs efficiently, the pork market does not (Deka et al. 2008). In the absence of processing firms and because of low demand for processed pork, more than 99% of pork is soldt hrough wet markets. The lack of functional slaughter houses in the cities/towns contributes to an almost non-functional pork quality monitoring system. Although consumer demand for pork is increasing, so also are concerns about the quality and safety of pork. Therefore, to increase consumer satisfaction and sustain demand in the long run, improvement of the pork market is essential along with efforts for increased compliance to food safety standards among market actors.

Similar to the informal pig sector, bringing informal pork market actors under the Food Safety and Standard Act and municipal regulation will help ensure that their business meets prevailing food safety regulations and that they become eligible to access services available to other businesses. To adhere to the rules and regulations, market actors must adopt quality and safety norms which will further enhance demand for pork products. Better hygiene and quality of pork will enhance its shelf life, reduce disease incidence in humans, reduce product wastage and increase market actors' profits. These market improvements can also further mitigate the adverse effects of climate change which would otherwise tend to increase animal and food-borne disease and increase spoilage (Grace et al. 2016).

1.2 Objectives

- This report has the following broad objectives
- To provide background information about the piggery sector with focus on status and dynamics of pig population and pork production for both the state of Assam and the APART districts.
- To identify and map market actors including input suppliers, producers, pig and piglet traders and butchers/pork retailers in the selected clusters of each APART district and establish linkage among the market actors.

To give district-specific recommendations based on the findings of the primary survey in the APART districts.

1.3 Data sources and data collection

As a starting point, the study reviewed available literature on the value chain approach to piggery sector development in a small holder pig production system. The main actors in the informal pork value chain were identified by the ILRI team in the state of Assam context and we conducted KII to elicit information on the general profile of the respondents, live pig and pork marketing, production system, service provisioning and the role of enabling environment such as institutions, knowledge etc. To provide more in-depth understanding of the pork production system and related issues, FGD were conducted in almost 90% of the selected cluster villages in each district. Information regarding the remaining 10% of villages was obtained

through either KII or FGD by convergence. The ILRI field study team visited the listed cluster villages in each project district of Assam, namely Golaghat, Jorhat, Barpeta, Lakhimpur, Morigaon, Darrang, Sonitpur, Goalpara, Nalbari, Karbi Anglong, Kokrajhar, Sivasagar and Kamrup. To begin with, the field study team conducted KII with the district veterinary officer and/or veterinary officer (VO)/block veterinary officer (BVO) assigned as APART district coordinators. Following this, planning occurred for the visit to cluster villages and interviews of the market actors. In each cluster of the APART districts, efforts were made to visit every village, as the pilot experiences (when we tried to do FGD by merging two or more villages) suggested that FGD participants of one village had limited knowledge about farming and marketing status of the other villages. After conducting KII with the concerned VOs/BVOs and VFAs, the listed cluster villages were first visited to conduct FGD to gather information on production, marketing, access to various inputs and veterinary services, and other aspects of the pork value chain. With an emphasis on as certaining the no. of pig producers, traders, butchers, pork retailers and processors in a particular cluster, priority was given to the responses of KII conducted with similar actors.

A total of 224 KII and 350 FGD were conducted in the APART districts of Assam (Table 1.1).

Table 1.1: No. of FGD and KII conducted in the APART districts

District	No. of FGD	No. of KII
Golaghat	20	15
Sonitpur	26	10
Morigaon	7	11
Jorhat	38	13
Nalbari	4	9
Lakhimpur	16	15
Kokrajhar	36	11
Sivasagar	45	18
Goalpara	31	13
KarbiAnglong	36	33
Darrang	29	11
Barpeta	6	6
Kamrup	56	59
Total	**350**	**224**

Source: Field Survey, 2018

1.4 Data analysis

The background information on the piggery sector was drawn from the literature review of primary and secondary sources. The analysis was quantitative and qualitative. It presents cluster segregated maps of pork value chain actors in each APART district, description of the pork production system (HH and village-level pig population and breeds, purpose of rearing,i.e. for breeding, fattening or both), gendered aspects in pig rearing (performing of activities and income control), pork and piglet marketing (type of markets, selling behaviour and sources, prices fetched according to sources), access to services (veterinary, input, financial and infrastructural), enabling environment, actor-specific information (e.g.sources of pigs/pork, volume of pork/no. of piglets sold monthly and average selling prices), physical environment (e.g. approach-road quality), and identification of progressive farmers at cluster level.The report presents simple tabular quantitative analysis of the data using ratios, mean and variance. The qualitative information is presented as text obtained through communication with the value chain actors (KII) and FGD participants.

2. Pig population status and dynamics

In this section, we describe the pig population, pork production and pattern of change over the years in the APART districts and the state as a whole. The analysis and presentation of the data are made based on secondary data collected from the relevant published sources of the various government departments.

2.1 Status of the pig population in Assam

Pork constitutes an important source of protein and nutrition among rural HH as well as urban consumers, and an important source of livelihood, most importantly of the tribal population. The percentage share of the pig population in the APART districts of Assam is shown in Figure 2.1. As of 2012, the pig population of the state was 1.63 million.The total pig population across the APART districts is 1.04 million constituting almost 64% of the total pig population in the state. The percent share of pigs among the APART districts is highest in the Karbi Anglong district (15.56%) followed by undivided Sonitpur district (15%). Districts such as Dhubri and Darrang have a much lower share of pig population with less than 1% each.

Figure 2.1: Per cent share of total pig population in the APART districts of Assam.
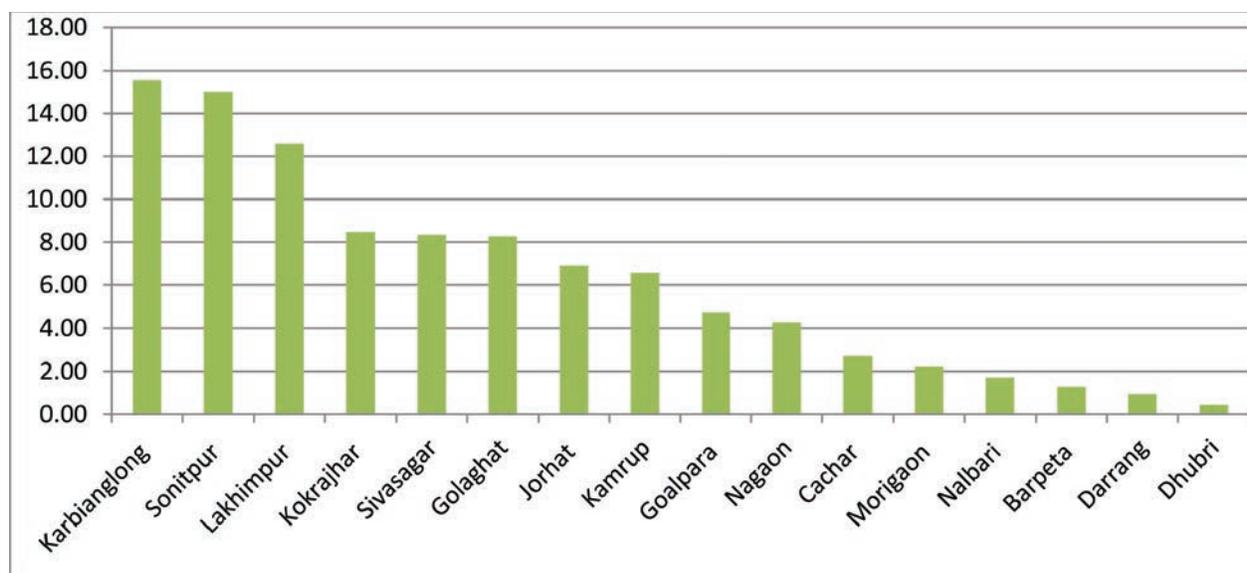
Source: Livestock Census Report, 2012, Government of Assam

The composition of the pig population by breed and sex across the APART districts are shown in Table 2.1. Out of the total 0.96 million pigs across APART districts, 0.51 million are male (almost 52%).A similar composition of male and female pigs in the state as a whole. According to the data of the 19th Livestock Census, crossbreeding of pigs is not taking place at an impressive scale largely because of the high amount of inbreeding due to non systematic breeding and selection. For the state as a whole, the total crossbred pigs comprise 37.5% of the pig population (0.61 million) compared to 62.5% (1.02 million) indigenous breeds. The average proportion of crossbred pigs is smaller in the APART districts (34%)) indicating the need of pig crossbreeding through the APART schemes. However, Karbi Anglong, which has the highest share of pig population both across the APART districts and the state,has a much higher proportion of crossbred pigs (43.84%) compared to districts such as Sonitpur (20.33%) and Lakhimpur (19.84%) (with the second and third highest pig populations respectively). The existence of crossbreeding programmes in Kokrajhar district (with the fourth highest pig population) is high with an almost 49% share. Goalpara, in the lower stratum of districts in terms of pig population, has the highest proportion—94%—of crossbred pigs (Table 2.1).

Table 2.3: Distribution of pig population by sex and breed in the APART districts of Assam

District	No.pigs	No.males (%)	No.females (%)	Total crossbred (%)	Total indigenous (%)
Karbi Anglong	162,295	84,730 (52.21)	77,565 (47.79)	71,149 (43.84)	91,146 (56.16)
Sonitpur	156,574	82,942 (52.97)	73,632 (47.03)	31,835 (20.33)	124,739 (79.67)
Lakhimpur	131,243	68,014 (51.82)	63,229 (48.18)	26,033 (19.84)	105,210 (80.16)
Kokrajhar	88,409	44,995 (50.89)	43,414 (49.11)	43,404 (49.09)	45,005 (50.91)
Sivasagar	86,970	48,456 (55.72)	38,514 (44.28)	26,034 (29.93)	60,936 (70.07)
Golaghat	86,297	48,317 (55.99)	37,980 (44.01)	16,855 (19.53)	69,442 (80.47)
Jorhat	71,943	36,797 (51.15)	35,146 (48.85)	11,085 (15.41)	60,858 (84.59)
Kamrup	68,473	32,809 (47.92)	35,664 (52.08)	41,738 (60.96)	26,735 (39.04)
Goalpara	49,353	27,157 (55.03)	22,196 (44.97)	46,444 (94.11)	2,909 (5.89)
Morigaon	23,287	12,364 (53.09)	10,923 (46.91)	7,632 (32.77)	15,655 (67.23)
Nalbari	17,847	7,457 (41.78)	10,390 (58.22)	2,979 (16.69)	14,868 (83.31)
Barpeta	13,373	6,935 (51.86)	6,438 (48.14)	4,204 (31.44)	9,169 (68.56)
Darrang	9,821	4,919 (50.09)	4,902 (49.91)	2,610 (26.58)	7,211 (73.42)
Total APART districts	965,885	505,892 (52.38)	459,993 (47.62)	332,002 (34.37)	633,883 (65.63)
Assam total	1,636,022	863,112 (52.76)	772,910 (47.24)	613,668 (37.51)	1,022,354 (62.49)

Source: Livestock Census Report, 2012, Government of Assam

To provide a more complete picture of pig production within the districts, the distribution of HH rearing pigs and density of pig population according to the no. of HH are provided. Almost 8% of HH in the APART districts keep pigs; in the state as a whole, almost 9% of HH keep pigs (Table 2.2). Sonitpur, which is tied to second highest pig population across APART districts, has an almost equivalent percentage of HH rearing pigs to that of Goalpara, a district located at the lower rung (13.56% for Sonitpur versus 13.11% in Goalpara). However, Sonitpur district has more pigs per HH than that in Goalpara.Karbi Anglong district has significance in the pork value chain policy front as almost 31% of HH rear pigs with 855 pigs per 1,000 HH. Among the APART districts, Dhurbi has the lowest proportion of HH rearing pigs followed by Barpeta.

The distribution of pig population and pig rearing HH across APART districts shows that in districts dominated by STs such as in Karbi Anglong, Lakhimpur and Kokrajhar. pig rearing is an important livelihood option, where as in districts with a dominant Muslim population such as in Dhubri, Barpeta, Cachar and Darrang,

pig rearing is not an important livelihood option.This indicates that the project should keep districts with a significant ST population at the fore front for intervening with efforts to develop the piggery sector value chain of the state. Further more, crossbreeding of pigs in the APART districts has not taken place at scale and policy priority and should therefore be a focus of interventions, including the introduction of crossbreeding technology such as AI..

Table 2.4: Pig rearing HH and pig population with respect to total HH

District	No. of HH	No. of HH owning pigs (%)	No. of pigs per 1,000 HH
Sivasagar	588,585	42,173 (7.17)	148
Nagaon	482,646	14,071 (2.92)	92
Dhubri	421,239	980 (0.23)	11
Cachar	387,930	6,146 (1.58)	73
Sonitpur	361,934	49,082 (13.56)	433
Barpeta	314,389	3,400 (1.08)	43
Kamrup	298,879	26,719 (8.94)	229
Jorhat	223,344	21,010 (9.41)	322
Golaghat	199,852	31,456 (15.74)	432
Lakhimpur	189,955	38,922 (20.49)	691
Karbi Anglong	189,781	58,867 (31.02)	855
Goalpara	182,109	23,874 (13.11)	271
Morigaon	179,681	9,743 (5.42)	130
Kokrajhar	159,831	29,950 (18.74)	553
Darrang	157,524	3,458 (2.20)	62
Nalbari	151,716	4,103 (2.70)	118
Total APART districts	**4,489,395**	**363,954 (8.11)**	**278**
Assam total	**6,470,066**	**595,662 (9.21)**	**253**

2.2 Pig population trend in Assam

The pig population trend in the APART districts and the state as a whole is presented in Table 2.3. The pig population in the state has increased from 0.82 million in 1994 to 1.63 million in 2012 with an annual growth rate of 3.65%. The total pig population across APART districts of the state has grown at the rate of 2.77% during the same period, lower than the growth rate of the state total by 0.88 percentage point. However, the share of pig population in the APART districts declined from almost 69% in 1994 to 59% in 2012.Barpeta, Morigaon, Darrang and Nalbari districts all experienced a decline in pig population. Among the major pig producing districts of the project, Sonitpur records the highest annual growth rate (7.59%) from 1994 to 2012 followed by Lakhimpur (5.08%). Karbi Anglong, the highest pig producing district, records an annual growth rate of 2.02% from 1994 to 2012 showing a gradual decline in the share of pig population in the state total from 13.34% in 1994 to 9.92% (Table 2.3). The analyses point out that the status of pig production across districts is changing dramatically and to encourage steady growth, policies are required to address specific problems negatively affecting the growth of pig production. This may help in achieving the larger objective ofensuring adequate supply to keep pace with the rise in pork demand.

Table 2.5: Growth rate of pig population in the APART districts of Assam

District	1994 (%)	2003 (%)	2012 (%)	CAGR (1994–12) %
Sonitpur	38,969 (4.70)	86,173 (5.58)	156,574 (9.57)	7.59
Goalpara	15,026 (1.81)	44,751 (2.90)	49,353 (3.02)	6.46
Lakhimpur	51,185 (6.18)	80,614 (5.22)	131,243 (8.02)	5.08
Golaghat	45,929 (5.54)	95,000 (6.15)	86,297 (5.27)	3.38
Jorhat	43,715 (5.28)	167,652 (10.86)	71,943 (4.40)	2.66
Kamrup	42,455 (5.12)	93,496 (6.06)	68,473 (4.19)	2.55
Sivsagar	54,302 (6.55)	62,994 (4.08)	86,970 (5.32)	2.51
Karbi Anglong	110,568 (13.34)	112,426 (7.28)	162,295 (9.92)	2.04
Kokrajhar	60,492 (7.30)	102,001 (6.61)	88,409 (5.40)	2.02
Morigaon	27,312 (3.30)	21,525 (1.39)	23,287 (1.42)	-0.84
Barpeta	16,970 (2.05)	35,140 (2.28)	13,373 (0.82)	-1.25
Nalbari	31,991 (3.86)	81,014 (5.25)	17,847 (1.09)	-3.02
Darrang	36,093 (4.36)	55,626 (3.60)	98,21 (0.60)	-6.62
APART districts total	**575,007 (69.40)**	**1,038,412 (67.28)**	**965,885 (59.04)**	**2.77**
Assam total	**828,536**	**1,543,489 (100)**	**1,636,022 (100)**	**3.65**

Note: Figures in parentheses indicate percentage of Assam total.

CAGR = compound annual growth rate

The trend in the composition of pig population by breed in the APART districts is shown in Figure 2.2.There has been a constant increase in the proportion of crossbred pigs from 13.11% in 1994 to 34.37% in 2012. However, to increase the overall pig population of the state, the proportion of crossbred pigs needs to be increased more from the current level.

Figure 2.2: Trend in the composition of pig population by breed in the APART districts.
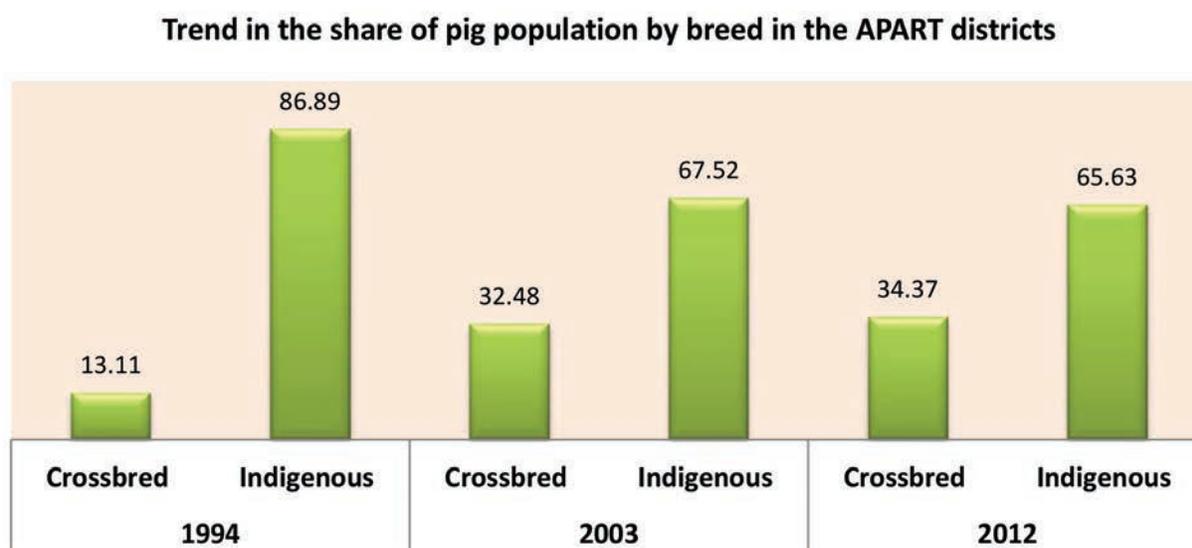
Source: Livestock Census of Assam (various issues)

3. Pork production status and dynamics in Assam

3.1 Status of pork production in Assam

In 2015–16, total pork production in the state was almost 17.5 thousand tonnes (t). As the productivity and average size of pig population is dependent on climatic conditions, seasonality may affect productivity and production. Season-wise pork production in the APART districts is presented in Table 3.1. Although across the state of Assam, almost an equal proportion of pork production occurs in all of the three seasons (summer, rainy and winter), the total pork production across APART districts is highest in the winter season (37% of overall production). According to APART districts, a marked variation is observed across seasons for many of the districts. Table 3.1 presents the total pork production during 2015–16 in the APART districts and the state as a whole. Total pork production of the APART districts constitutes almost 62.7% of the total pork production in Assam. Pork is a dominant meat in the state as almost 39% of the total meat production is pork. Almost half of the total meat production in Karbi Anglong district is pork (49.6%).Kokrajhar (48.5%) has the second highest share of pork in total meat production followed by Lakhimpur (44.3%). Pork is the least important meat produced in Darrang district (25.4%).

Table 3.1: Pork production as a part of total mean production in the APART districts by seasons

District	Seasons			Annual pork production	% share of pork in total meat
	Summer (%)	Rainy(%)	Winter (%)		
KarbiAnglong	734,789 (27.72)	756,919 (28.55)	1,159,272 (43.73)	2,650,980	49.61
Sonitpur	466,637 (30.06)	441,426 (28.44)	644,222 (41.50)	1,552,285	41.46
Kamrup	325,489 (30.31)	309,083 (28.79)	439,165 (40.90)	1,073,737	36.07
Kokrajhar	251,983 (27.28)	257,437 (27.87)	414,313 (44.85)	923,733	48.50
Lakhimpur	275,269 (30.35)	273,298 (30.13)	358,446 (39.52)	907,013	44.31
Golaghat	244,151 (33.23)	227,556 (30.97)	263,016 (35.80)	734,723	43.03
Sivasagar	229,568 (33.06)	210,638 (30.33)	254,238 (36.61)	694,444	42.86
Jorhat	182,739 (32.31)	172,896 (30.57)	209,978 (37.12)	565,613	39.69
Barpeta	168,878 (34.29)	177,359 (36.01)	146,322 (29.71)	492,559	28.83
Goalpara	173,779 (36.29)	170,165 (35.54)	134,860 (28.17)	478,804	36.16
Morigaon	117,387 (34.49)	121,466 (35.69)	101,505 (29.82)	340,358	33.38
Darrang	105,476 (37.22)	105,333 (37.17)	72,566 (25.61)	283,375	25.43
Nalbari	96,387 (36.03)	99,882 (37.33)	71,271 (26.64)	267,540	31.74
APART districts total	**3,372,532 (30.31)**	**3,323,458 (28.79)**	**4,269,174 (40.90)**	**10,965,164**	**38.54**
Assam total	**5,818,818 (33.29)**	**5,820,895 (33.30)**	**5,841,707 (33.42)**	**17,481,420**	**39.01**

Source: 19th Livestock Census of India, 2012;

*Total meat includes pork, beef, buffalo, goat, sheep, chicken and duck

Figures 3.1 and 3.2 present the percentage share of pork production across APART districts and the state as a whole. Combining all of the APART districts, the percentage share of total pork production constitutes almost 74% of total pork production in the state during 2015–16. This indicates that the project under took districts of the state with relatively higher pig productivity. Karbi Anglong district is the highest pork producer in the state (15.2%) followed by the undivided Sonitpur district (8.9%) (Figure 3.2). Kamrup district was ranked eighth in pig population and third in pig production among the APART districts, indicating the relatively better pork productivity of the district. Lakhimpur's position in the share of pork production in the APART districts is fifth all though it is third with regards to pig population indicating relatively low pork production relative to population. Shift in the ranks of pork production compared to pig population is also witnessed in lower rung districts like Barpeta, Nalbari, Goalpara, Morigaon and Dhubri.

Figure 3.1: Percentage share of pork production in the APART districts.
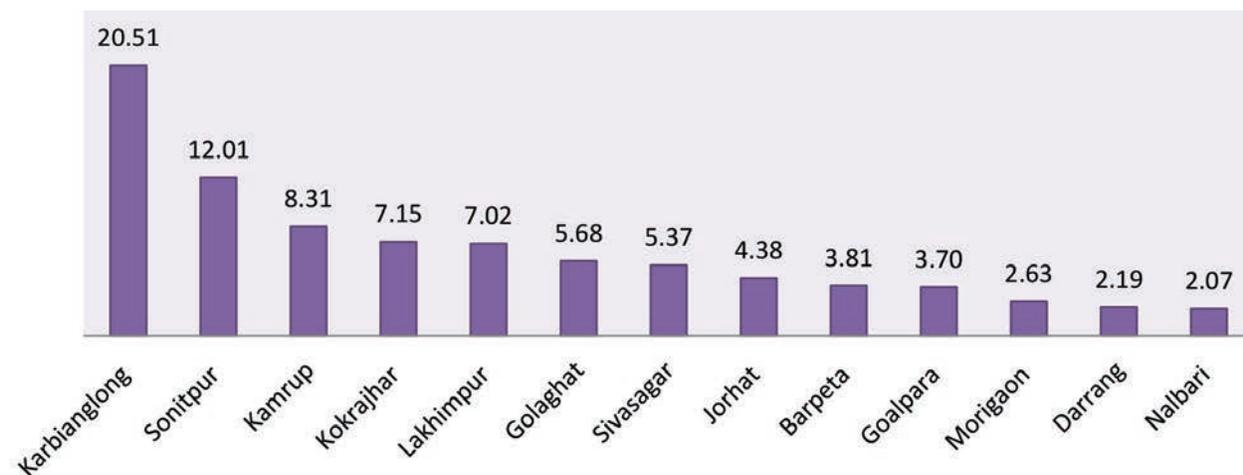
Figure 3.2: Percentage share of pork production in the APART districts as part of total pork production of the state.
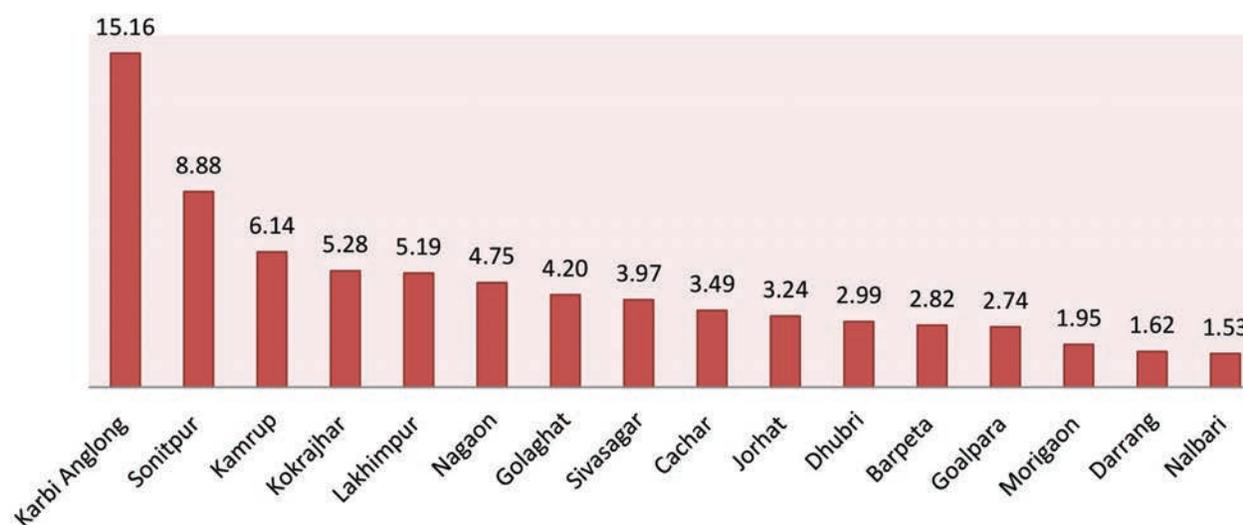
Source: Estimated based on Integrated Sample Survey Report, 2015–16

3.2 Pork production trend in Assam

Pork production in Assam has steadily increased from 4.59 thousand t in 1997–98 to 17.48 thousand t during 2015–16 (Table 3.2 and Figure 3.3). Total meat production in the state including pork, beef, buffalo, goat, sheep, pig and duck has increased from 15.65 thousand t during 1997–98 to 44.81 thousand during 2015–16. However, over the years the importance of pork has grown as the share of pork in total meat production has continuously increased from 29.33% in 1997–98 to 39.01% in 2015–16. This increase may be driven by the rising demand for pork largely due to change in food habits of the people with increasing preference towards animal source protein.

Table 3.2: Annual pork production in Assam

Year	Pork production (in 000 t)	Total meat(in000 t)	Per cent of porkas part of total meat production
1997–98	4.59	15.65	29.33
1998–99	4.65	15.85	29.34
1999–00	4.82	16.09	29.96
2000–01	5.39	17.06	31.59
2001–02	6.03	19.48	30.95
2002–03	6.21	20.93	29.67
2003–04	7.19	22.35	32.17
2004–05	8.71	24.77	35.16
2005–06	9.98	26.63	37.48
2006–07	10.67	28.83	37.01
2007–08	11.74	29.9	39.26
2008–09	12.01	30.69	39.13
2009–10	13.25	31.59	41.94
2010–11	14.91	33.83	44.07
2011–12	14.7	34.19	43.00
2012–13	14.61	36.63	39.89
2013–14	15.96	38.34	41.63
2014–15	16.54	42.6	38.83
2015–16	17.48	44.81	39.01

Source: Integrated sample survey report (various issues)

Figure 3.3: Pork production trends in Assam.

Pork production trend in Assam (in ,000 t)
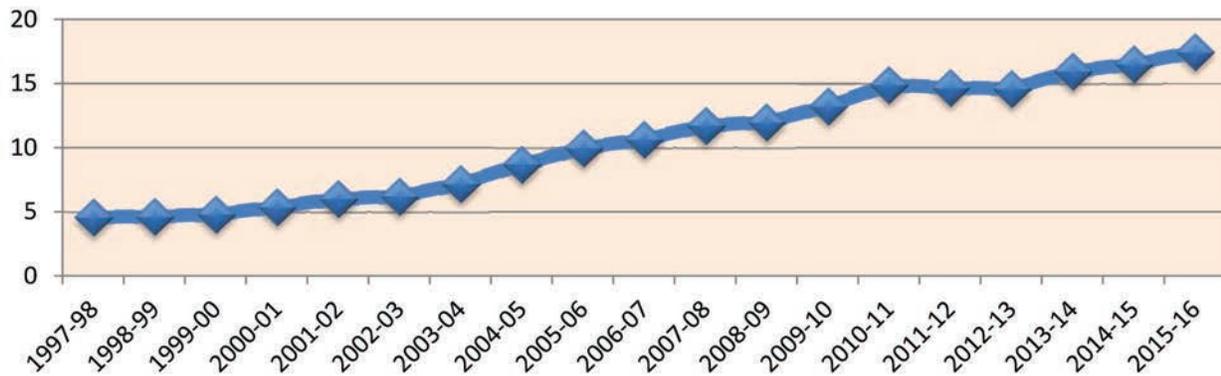
4. Veterinary service centers in the APART districts

The assessment of the performance of the pig health delivery services is essential in order to determine constraints and opportunities for interventions along the pork value chain (Dione et al. 2014). This requires an evaluation of the available infrastructure such as access to veterinary services institutions. Table 4.1 shows, across APART districts,the distribution of various institutions such as veterinary hospitals, dispensaries, subcentres / first-aid centres / stock centres, block veterinary dispensaries, key village centres, regional AI centres, rinder pest check posts and porcine contagious pleuropneumonia check posts. The total no. of veterinary services institutions is 1,236 in Assam with one institution providing services for 1,324 pigs. In the APART districts as a whole, 1,295 pigs are covered by one veterinary institute. The districts having a sizable pig population such as Karbi Anglong, Lakhimpur, Kokrajhar, Sivasagar and Golaghat have on average less veterinary services relative to the pig population. The remaining districts with a low pig population seem to have sufficient infrastructures in terms of veterinary services institutions pointing towards a potential for piggery sector development.

Table 4.1: Distribution of veterinary services institutions in the APART districts of Assam

Districts	Hospitals	Dispensaries	Subcentres / FAC/SC	Block veterinary dispensaries	KVC	RAIC	Rinderpest checkpost	PCPP checkpost	Total vet institutions
Golaghat	1	11(1:7,845)	28(1:3,082)	4	1	2	1	1	49(1:1,761)
Sonitpur	2	17(1:9,210)	65(1:2,409)	7	4	3	1	2	101(1:1,550)
Morigaon	0	8(1:2,911)	26(1:896)	4	2	1	0	0	41(1:568)
Jorhat	1	21(1:3,426)	42(1:1,713)	8	0	1	0	2	75(1:959)
Nalbari	1	12(1:1,487)	43(1:415)	2	0	1	0	0	59(1:302)
Lakhimpur	1	11(1:1,1931)	51(1:2,573)	5	0	1	1	2	72(1:1,823)
Kokrajhar	1	10(1:8,841)	25(1:3,536)	2	3	2	4	0	47(1:1,881)
Sivasagar	2	20(1:4,349)	20(1:4,349)	0	0	1	1	2	46(1:1,891)
Goalpara	1	11(1:4,487)	20(1:2,468)	4	1	0	0	0	37(1:1,334)
Karbi Anglong	1	8(1:20,287)	17(1:9,547)	9	0	0	1	0	36(1:4,508)
Darrang	1	10(1:982)	21(1:468)	3	1	1	0	0	37(1:265)
Barpeta	1	13(1:1,029)	32(1:418)	6	4	1	1	0	58(1:231)
Kamrup	2	27(1:2,536)	44(1:1,556)	6	1	0	2	0	88(1:778)
APART districts total	**15**	**179(1:5,396)**	**434(1:2,226)**	**60**	**17**	**14**	**12**	**9**	**746(1:1,295)**
Assam total	**22**	**337(1:4,855)**	**684(1:2,392)**	**99**	**30**	**25**	**20**	**13**	**1,236(1:1,324)**

Source: No. of veterinary services institutes are cited from the Statistical Handbook of Assam, 2016 and the pig population is cited fromthe 19th Livestock Census, 2012

Note: No. in parentheses indicate the no. of veterinary institutes per numbersof pigs.

FAC= first-aid centres, SC = stock centres; KVC = key village centres; RAIC= regional AI

5. Cluster-level profile on pork production and marketing (district specific)

5.1 Golaghat district

5.1.1 Cluster village identifications based on field visit

Five clusters have been selected in Golaghat district for implementation of the ongoing project (Table 5.1.1.). These clusters are Dergaon, Gomariguri, Bokakhat, Sarupather and Marangi. The list of villages incorporated in each cluster is finalized after consulting with local key persons who work and are knowledgeable about pig production and marketing in the locality.

Table 5.1.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Dergaon	Bahgani, Bohikhuwa, Dhemaji, Dani Chapari	Bahgani, Bohikhuwa, Dhemaji, Dani Chapari	0	0
Gomariguri	Adarshgaon, Kalajar	Adarshgaon, Kalajar, Nabajyoti	Nabajyoti	0
Bokakhat	No. 5 Dagaon, Chaparigaon, Bohikhowa, Bhelaguri, Jugalati, Dergaon	No. 5 Dagaon, Chaparigaon, Bohikhowa, Bhelaguri, Jugalati, Dergaon	0	0
Sarupather	Khanikar, Nagajal,Kharua, Naharbari	Khanikar, Nagajal,Kharua, Naharbari, Naojan, Tengahowla, Sonajan	Naojan, Tengahowla, Sonajan	0
Marangi	No. 1 Rongbong, No. 2 Rongbong, Letekuchapari, Borboria	No. 1 Rongbong, No. 2 Rongbong, Letekuchapari, Borboria	0	0

AHVD = Animal Husbandry and Veterinary Department
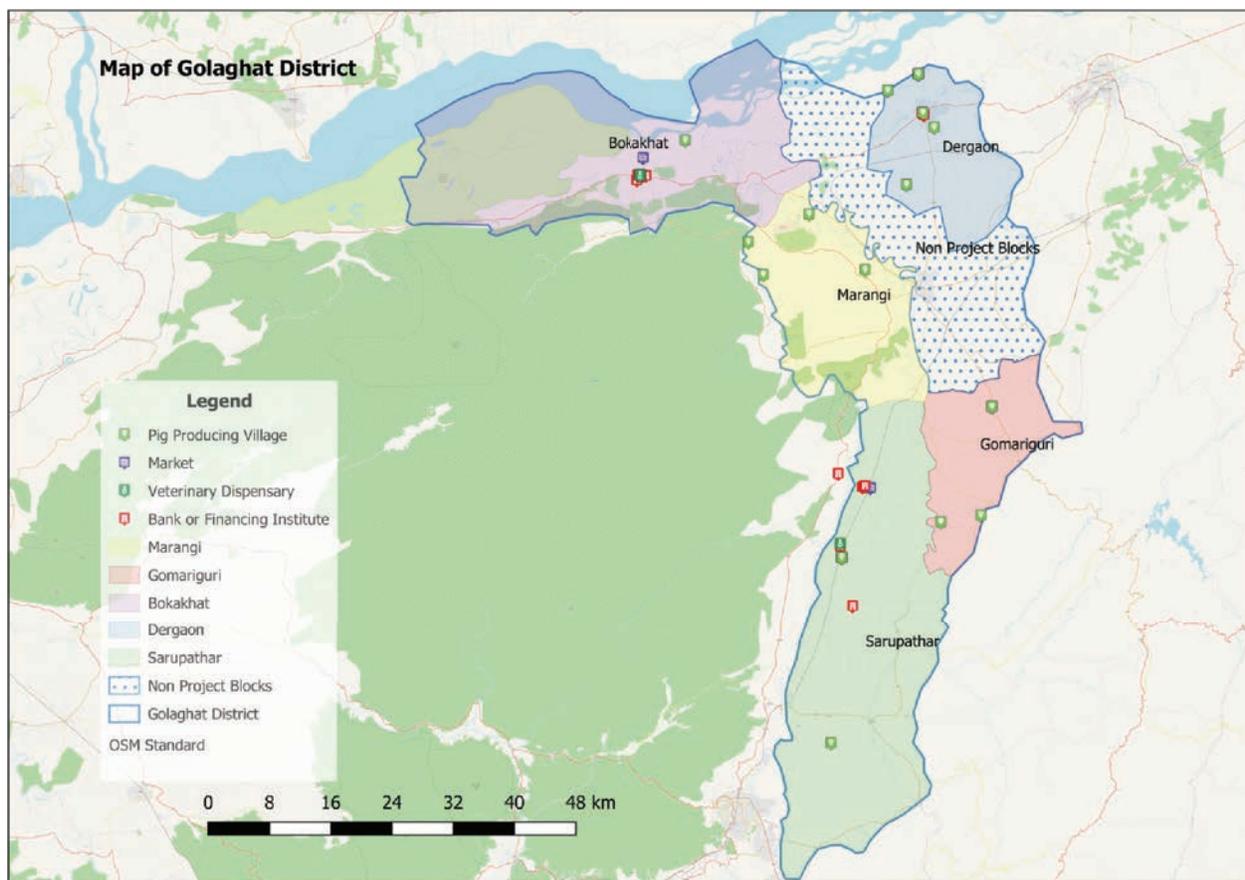
5.1: The map of the surveyed clusters in Golaghat district

5.1.2 FGD participants' profile

Table 5.1.2 provides the no. of FGD participants and social status. The average no. of participants across the APART clusters is 8.3, 5 males and 3.3 females. Pig rearing is popular among the tribal communities throughout the state of Assam. Within the APART clusters of Golaghat, almost 53.4% of the participants are from the ST community followed by 44.6% from the Other Backward Caste (OBC) category. Representation of participants from the Scheduled Caste (SC) community is nil across the clusters, while only 2% of farmers are found to be participants in the FGD from the 'general' category (the forward caste).

Table 5.1.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Dergaon	8.00 (69.57)	3.5 (30.43)	11.5	0	0	0	100
Gomariguri	2.00 (50.00)	2.00 (50.00)	4	0	33	0	67
Bokakhat	5.67 (64.21)	3.17 (35.90)	8.83	0	43	0	57
Sarupather	4.40 (68.75)	2.40 (37.50)	6.4	10	62	0	28
Marangi	5.00 (47.62)	5.50 (52.38)	10.5	0	85	0	15

Source: Field Survey, 2018

Note: Figures in parentheses are the percentage of total farmers.

5.1.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the identified clusters as a whole have 7,340 HH identified through FGD and KII, of which 4,373 HH (59.58%) are identified as having at least one.As the farmers point out, the no. of pure indigenous breeds is drastically decreasing because of cross breeding of the local breed with exotic germ plasm (although with varying levels of inheritance). The percentage of farmers who have pure indigenous breeds is 8% across clusters while 81.6% of farmers have crossbreeds and the remaining 10.4% have both indigenous and crossbred pigs (Table 5.1.3).

Table 5.1.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH	%HH keeping pigs from indigenous breeds	%HH keeping pigs from improved breeds	%HH keeping pigs from both indigenous and improved breeds
Dergaon	1,539	739	12.50	45.00	42.50
Gomariguri	950	455	6.67	93.33	0.00
Bokakhat	1,760	1,140	3.33	90.00	6.67
Sarupather	2,406	1,659	10.40	87.00	2.60
Marangi	685	380	7.50	92.50	0.00

Source: Field Survey, 2018

5.1.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 71% of the total pig rearers), while only 9% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Dergaon (15%) and lowest in Gomariguri (3.33%). Almost 20% of farmers across the APART clusters are found to rear pigs both for breeding and fattening (Table 5.1.4).

Table 5.1.4: Distribution of farm HH by pig rearing purpose

Pig cluster	%rearing for breeding	% rearing for fattening	% rearing for both breeding and fattening
Dergaon	15.00	75.00	10.00
Gomariguri	3.33	78.33	18.33
Bokakhat	10.50	69.00	20.50
Sarupather	11.00	67.00	22.00
Marangi	5.00	65.00	30.00

Source: Field Survey, 2018

5.1.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by female members of the HH. Women's share in making spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 51.7%. This indicates that development of pigrearing activities has implications for rural women empowerment with in the APART districts (Table 5.1.5).

Table 5.1.5: Women's participation in pig and pork production and income control

Pig cluster	No. of farming HH	% of women have a role in pig and pork production	% of women having control of incomefrom pig and pork production
Dergaon	739	60.00	57.50
Gomariguri	455	55.00	46.67
Bokakhat	1,140	59.00	58.33
Sarupather	1,659	54.00	48.00
Marangi	380	54.00	48.00

Source: Field Survey, 2018

5.1.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Golaghat are shown in Table 5.1.6. Across the APART clusters, the average no. of adult pigs held by farmers are 2.95 with the highest in the Dergaon (3.75) cluster and lowest in Marangi (2.5). The average no. of fattened pigs sold yearly (HH keeping pigs for fattening and both breeding and fattening purpose) across the APART clusters is 2.33. The ratio between number of pigs kept by HH and number of pigs sold is highest in the Gomariguri cluster (0.89) (Table 5.1.6).

Table 5.1.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs per HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigsperHH
Dergaon	3.75	2.75	0.73
Sarupather	3.00	2.40	0.80
Bokakhat	2.83	2.17	0.77
Gomariguri	2.67	2.33	0.87
Marangi	2.50	2.00	0.80

Source: Field Survey, 2018

5.1.7 Marketing behaviour of farmers at cluster level in Golaghat district

Farmers either sell live fattened pigs to traders or in the market. In addition to selling fattened pigs, farmers also use adult pigs in the feasts organized as part of social ceremonies including marriage and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders and in the market in the study villages constitutes 79% of the total annual pigs produced while the remaining 21% are used for non-marketing purposes as mentioned above (Table 5.1.7).

Table 5.1.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Dergaon	2.75	77.50	22.50
Gomariguri	2.33	86.67	13.33
Bokakhat	2.17	85.00	15.00
Sarupather	2.40	75.00	25.00
Marangi	2.00	70.00	30.00

Source: Field Survey, 2018

Farmers account for 14.7% of slaughters and meat sales while 85.3% of pigs are sold to traders / butchers.

None of the farmers in any of the clusters in Golaghat report having a slaughter house in close proximity. The average fattened pig price live weight ranges from INR 165/kg in the Sarupather cluster to INR 180/ kg in the Bokakhat cluster when slaughtered and sold by the farmer. The average live weight price range when sold to traders/butchers is INR 170/kg (Dergaon cluster) to INR 185 (Bokakhat cluster). The average pork price in the markets of the APART clusters is INR 240; the price is a little higher in the Bokakhat cluster. Farmers also indicate that the price is not the same across seasons. During summers, the demand for pork is less and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During the festive season such as in October/November/December, traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons (October-november).

Table 5.1.8: Percentage of fattened pig's sale by sources and their respective farm gate prices

| Pig cluster | Slaughtered and sold by farmer | | To traders/butchers | | To slaughter houses | | To others | | Average market price of pork in the cluster (INR/kg) |
	Per cent	Price/kg live weight (INR)	Per cent	Price/kg live weight (INR)	%	Price/kg live weight (INR)	%	Price/kg live weight (INR)	
Dergaon	27.50	176.19	72.50	170.00	0	-	0	-	240
Gomariguri	0	-	100.00	177.00	0	-	0	-	240
Bokakhat	15.00	180.00	85.00	185.00	0	-	0	-	260
Sarupather	11.00	165.00	89.00	161.00	0	-	0	-	240
Marangi	20.00	173.00	80.00	175.00	0	-	0	-	240

Source: Field Survey, 2018

Among the farmers that rear pigs for breeding purposes (partly or fully) , the sale of breeding piglets is shown in Table 5.1.9. Across the APART clusters, an average of 13.7 piglets is sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet traders. In most of the cases, some neighboring farmers (rearing pigs for fattening purpose) give advance to reserve one or two good quality piglets before weaning. The remaining piglets are then taken to market or sold to the visiting traders. Across the APART clusters of Golaghat, almost 54% of the breeding piglets are sold to the neighbouring farmers and the remaining 46% is sold to the traders. In the Sarupather cluster, 92% of the piglets are sold to other farmers in the neighbourhood, while in the Dergaon cluster, only 12% is sold via this channel. The average piglet price at weaning when sold to neighbours is INR 2,925 per piglet and INR 3,043 per piglet when sold to traders (Table 5.1.9).

Table 5.1.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

| Pig cluster | No. of breeding piglets sold/year/HH | To farmers | | To traders | |
		%	INR/piglet	%	INR/piglet
Dergaon	18.0	12.50	2,912	87.50	2,852
Gomariguri	12.3	86.67	2,750	13.33	2,700
Bokakhat	13.2	28.33	3,025	71.67	3,267
Sarupather	13.2	92.00	3,040	8.00	3,350
Marangi	12.0	50.00	2,900	50.00	3,050

Source: Field Survey, 2018

5.1.8. Access to veterinary services

Table 5.1.10 presents the no. of veterinary service providers which includes local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters, an average of 1.6 local

veterinarians operate, while the average distance from the farm villages to access veterinarian care is almost 10 km. At the cluster level, farmers of Gomariguri travel 18 km to visita local veterinarian, while farmers of Bokakhat travel 2.4 km to access veterinary care. The distance farmers travel to access the services of a VFA at his duty station/residence ranges from 2.4 km in Bokakhat cluster to 10 km in Gomariguri cluster, for an average of 4.38 km across clusters. One CAHW provides local treatment services in Dergaon and Marangi cluster while none of the farmers in the remaining clusters report having access to a CAHW (Table 5.1.10).

Table 5.1.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/villagekm	VFA		Distance from the FGD location/village km	CAHWs		Distance from the FGD location/village km
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Dergaon	2	0	7.25	1	0	3.33	1	0	0.5
Gomariguri	1	0	18.0	1	0	10.00	0	0	0
Bokakhat	1	0	2.4	1	0	2.40	0	0	0
Sarupather	2	0	7.4	3	0	5.00	0	0	0
Marangi	2	0	15.0	2	0	3.00	1	0	15

Source: Field Survey, 2018

*Local veterinarian includes both private and government-employed veterinarian

5.1.9 Access to other services (input and breeding)

Farmers in the selected clusters of Golaghat indicated that there is an average of 2.4 grocery shops across the APART clusters readily available for buying concentrate feeds with an average distance of 3.5 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. The majority of farmers prefer feeding the pigs kitchen waste and brewery waste of country liquor. Farm HH keeping sows for breeding purpose are found to access boar services in the cluster villages. At cluster level, an average of four (in Marangi) to 23 (Dergaon) boars provide natural mating services to the other farmers with an average distance from the farm HH of 1.6 km from the boar owners (Table 5.1.11).

Table 5.1.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Dergaon	3	3.0	23	2.0
Gomariguri	2	4.5	7	1.5
Bokakhat	3	4.0	8	1.0
Sarupather	2	4.0	21	2.0
Marangi	2	2.0	4	1.5

Source: Field Survey, 2018

5.1.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are no registered pig traders and pig producers organizations in any of the clusters of Golaghat. This indicates that pig rearing and trading are carried out in an informal setting.

There are no DDL or feed testing laboratory in any of the clusters of the district. However, there is one feed mill operated by ALPCo (Assam Livestock and Poultry Corporation) in Golaghat (Annexe Table A3).

Table 5.1.12: Availability of input supply institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill
Dergaon	0	0	0
Gomariguri	0	0	0
Bokakhat	0	0	1
Sarupather	0	0	0
Marangi	0	0	0

Source: Field Survey, 2018

5.1.11 Major pork market actors and other infrastructures in the pork value chain

In Table 5.1.13, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. Farmers in and outside of the Golaghat district estimate that the no. of pig and piglet traders in the selected clusters ranges from 22 in Bokakhat cluster to 75 in Sarupathar cluster. Similarly, the no. of butcher cum pork retailers is in the range of 24 to 41. There is no slaughter house in any of the clusters of Golaghat.

Table 5.1.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailer	Slaughterhouses
Dergaon	68	33	0
Gomariguri	50	41	0
Bokakhat	22	24	0
Sarupather	75	36	0
Marangi	29	24	0

Source: Field Survey, 2018

In Table 5.1.14, the major pig markets, banks for accessing credit by the farmers of the respective clusters, insurance services and the road quality of the farming HH are presented.

Table 5.1.14: Markets and other infrastructures at cluster level

Pig cluster	Markets pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality (%) of the cluster villages)		
				Poor	Fair	Good
Dergaon	Dergaon (daily), Danichapori (weekly), Bahguri (weekly), No. 3 Gate (weekly)	SBI, Bandhan	0	40	60	0
Gomariguri	Pulibagan (weekly), Nagabat in (Jorhat district	SBI, AGVB	Oriental Insurance, New India Assurance (Adarsha Gaon, Nabajyoti)	35	65	0
Bokakhat	Bokakhat (daily), Bahikhowa	SBI	0	35	15	50

Pig cluster	Markets pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality (%) of the cluster villages)		
				Poor	Fair	Good
Sarupather	Sarupather (daily), Barpathar (weekly), Bokajan (daily), Khatkhati in Karbi Anglong (daily)	SBI, Bandhan	Oriental Insurance, New India Assurance(Nagajuli, Chungajan, Naojan)	30	70	0
Marangi	Karaighat, Letekuyan (daily)	0		20	80	0

*Frequency of market occurrence is included in parentheses (daily, biweekly or weekly)

SBI = State Bank of India, AGVB = Assam Garmeen Vikash Bank.

5.1.12 Progressive farmers at cluster level

Some progressive farmers were identified in the APART clusters of Golaghat. The progressive farmers are defined for operational purposes as those having sizable improved animal stock (≥5 cattle) and a focused business (dairy) development plan. The progressive farmers are shown in Table 5.1.15.

Table 5.1.15: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers
Dergaon	0
Gomariguri	1
Bokakhat	0
Sarupather	7
Marangi	0

Figure 5.1: Schematic representation of the value chain actors in Golaghat district.
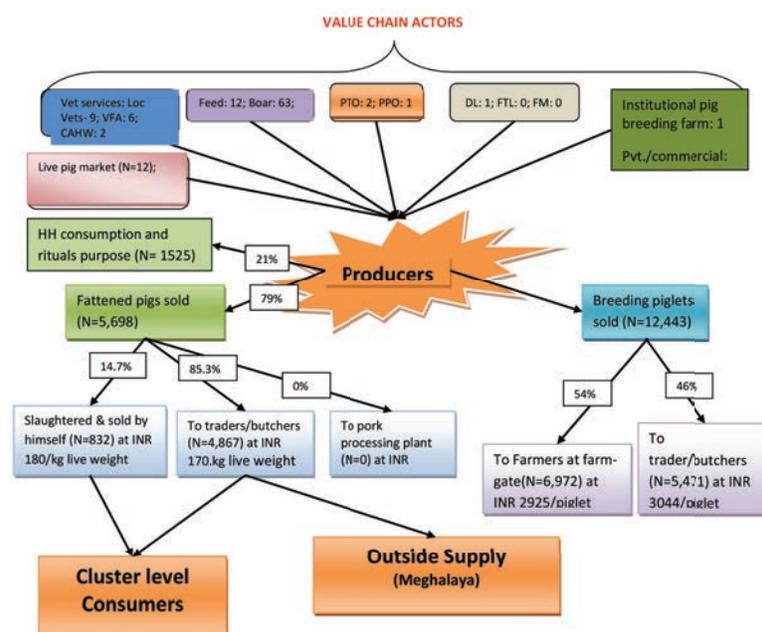
5.2 Jorhat district

5.2.1 Cluster villages identification based on field visit

Three clusters in Jorhat district were identified for the implementation of the ongoing project. These clusters are Ujani Majuli, Dekorgarha and Majuli. The list of villages incorporated in each cluster were finalized after consulting with the local key persons working in and knowledgeable about the pig production and marketing scenario (Table 5.2.1).

Table 5.2.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Ujani Majuli	Thakurchuti, Koliagaon, Nagaochuk, Karkichuk, Rangachahi, Swarnasri, Borpomua, Kumarbari, Cherepai, Majdeuri, Ratanpurmiri, Gajera, Sonowal Kochari, Luitporia, Sriram, Ratanpurgayan	Thakurchuti, Koliagaon, Nagaochuk, Karkichuk, Rangachahi, Swarnasri,Borpomua, Kumarbari, Cherepai, Majdeuri, Ratanpurmiri, Gajera, Sonowal Kochari, Luitporia, Sriram, Ratanpurgayan	0	0
Dekorgarha	Bahphala, Upardeuri, Namdeuri	Bahphala, Upardeuri, Namdeuri	0	0
Majuli	Uparsumurimari, Lowarsamurimari, Kaniajn, Hokonamukh, Upper Sonowal, Baligaon, Jharonigaon, Derghergaon, Randhanichuk, Bahbora, Morituli, Sonapara, Putuki, Tmuloni, Akholachuk, Charighoria, Mohorichuk, Malapindha, No. 3 Borgoyan, No. 2 Borgoyan, No. 1 , Sitadar, Gotiamari, Dhopatgaon	Uparsumurimari, Lowarsamurimari, Kaniajn, Hokonamukh, Upper Sonowal, Baligaon, Jharonigaon, Derghergaon, Randhanichuk, Bahbora, Morituli, Sonapara, Putuki, Tmuloni, Akholachuk, Charighoria, Mohorichuk, Malapindha, No.3 Borgoyan, No. 2 Borgoyan, No. 1 Borgoyan, Sitadar, Gotiamari, Dhopatgaon	0	0
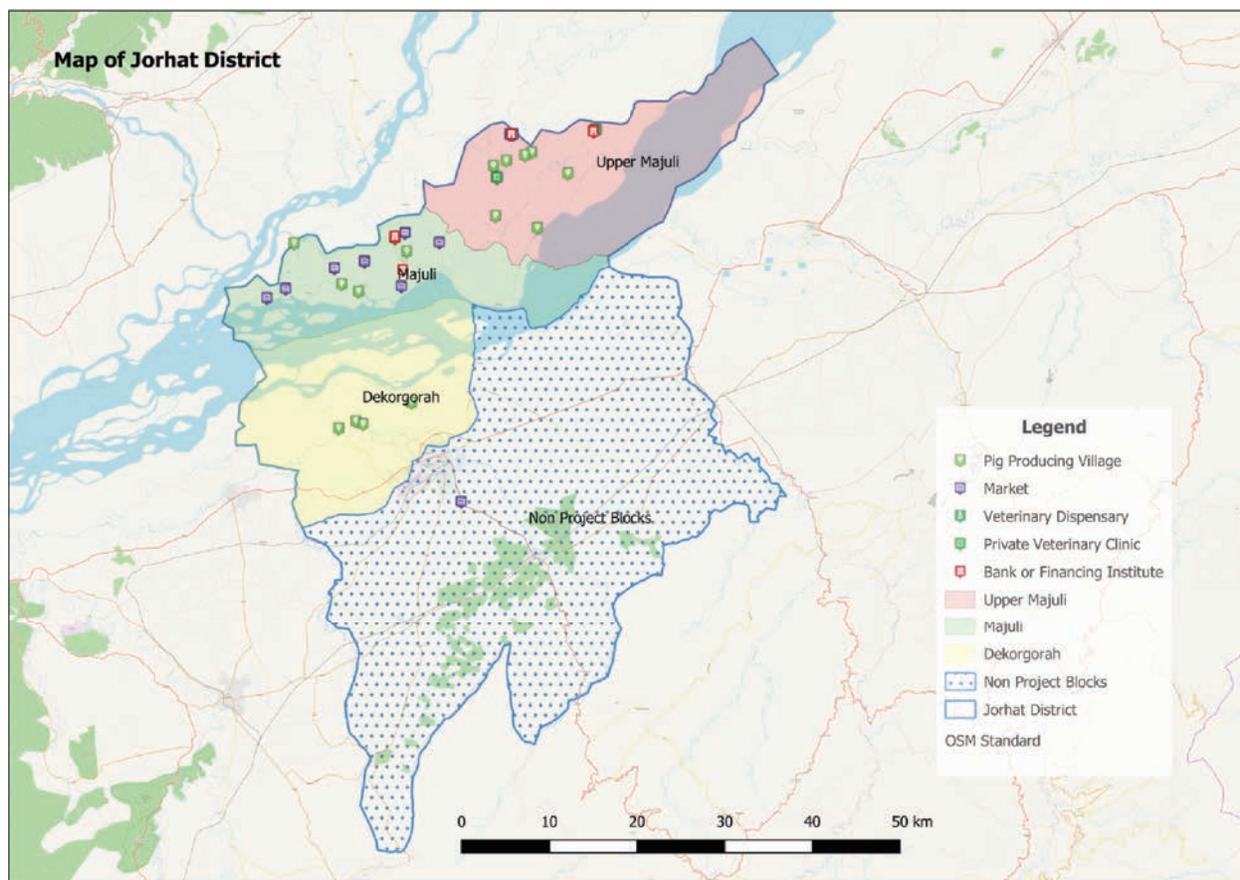
Figure 5.2: The map of the surveyed clusters of Jorhat district

5.2.2 FGD participants' profile

Table 5.2.2 presents the no. of FGD participants and their social status. The average no.of FGD participants across the APART clusters are 5.6 (males 3.4, females 2.2). Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost all participants—96.35% in the APART clusters of Jorhat are from the ST community, while only 3.65% are from the 'general' category (forward caste). As the table indicates, representation of participants from the SC and OBC community is nil across the clusters.

Table 5.2.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
UjaniMajuli	4.8 (77.42)	1.4 (22.58)	6.2	10.96	0	0	89.04
Dekorgarha	1.7 (28.33)	4.3 (71.67)	6.0	0	0	0	100
Majuli	3.7 (80.43)	0.9 (19.57)	4.6	0	0	0	100

Source: Field Survey, 2018

Note   : Figures in parentheses are the percentage of total farmers.

5.2.3 Farming system by type of porcine stock

The Jorhat district is comprised of 8,019 HH enumerated through FGD and KII, of which 7,300 HH (90.68%)

are found to be pig rearers, having atleast one pig during the time of the survey. As the farmers during the FGD pointed out, the no. of pure indigenous breeds has been drastically reduced as a result of crossing the local breed with exotic germ plasm (although with varying levels of inheritance). The percentage of farmers who have pure indigenous breeds is only 5.43% across clusters while 91.20% of farmers have crossbreeds and the remaining 3.37% of farmers have both indigenous and crossbred pigs (Table 5.2.3).

Table 5.2.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigs from both indigenous and improved breeds
Ujani Majuli	2,230	1,940 (87.12)	9.62	87.69	2.69
Dekorgarha	1,236	1,140 (92.24)	4.35	88.23	7.41
Majuli	4,553	4,220 (92.68)	2.33	97.67	0

Source: Field Survey, 2018

5.2.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 59.2% of the total pig rearers), while 17.32% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Ujani Majuli (20%) and lowest in Dekorgarha. Almost 23.48% of farmers across the APART clusters are found to rear pigs both for breeding and fattening (Table 5.2.4).

Table 5.2.4: Distribution of farm HH by pigrearing purpose (%)

Pig cluster	Rearing for breeding	Rearing for fattening	Rearing both for breeding and fattening
Ujani Majuli	20.00	62.31	17.69
Dekorgarha	15.29	65.29	19.42
Majuli	16.67	50.00	33.33

Source: Field Survey, 2018

5.2.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. The women participants in the FGD reported that more than 50% of the pigrearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 74.76%. This indicates that development of pig rearing activities has implications on women's empowerment.

Table 5.2.5: Women's participation in pig and pork production and income control

Pig cluster	No. of farming HH	% women have role in pig and pork production	% women have control of income from pig and pork production
UjaniMajuli	1,940	76.15	63.84
Dekorgarha	1,140	91.67	90.00
Majuli	4,220	82.35	70.45

Source: Field Survey, 2018

5.2.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Jorhat are shown in Table 5.2.6. Across the APART clusters, the average no. of adult pigs held by the farmers is three with the highest in Ujani Majuli cluster (3.54) and lowest in Dekorgarha (2.33). The average no. of fattened pigs sold yearly (HH keeping pigs for fattening and both breeding and fattening purpose) across the APART clusters is 2.49. The ratio of no. of pigs sold to no. of pigs held is highest in the Dekorgarha cluster (Table 5.2.6).

Table 5.2.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Ujani Majuli	3.54	2.46	0.69
Majuli	3.12	2.35	0.75
Dekorgarha	2.33	2.67	1.14

Source: Field Survey, 2018

5.2.7 Marketing behaviour of farmers at cluster level

Table 5.2.7 presents the marketing behaviour of farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to traders or in the market. Farmers also use fattened pigs in the feasts organized as part of social ceremonies like marriage and celebrations such as Christmas and Bihu or offer to relatives when they have such celebrations. Pigs sold to traders or in the market constitute 73% of the total annual pigs produced while 27% are used for non-marketing purposes as mentioned above.

Table 5.2.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold %	% slaughtered at home or used for other purposes
Ujani Majuli	2.46	75.77	24.23
Dekorgarha	2.67	76.67	23.33
Majuli	2.35	68.18	31.82

Source: Field Survey, 2018

Farmers slaughter and sell 24.1% of pigs while 75.8% of pigs are sold to traders/butchers. None of the farmers in any of the clusters in Jorhat report the presence of slaughter houses in close proximity. The average price of the fattened pigs at live weight ranges from INR 180/kg in Dekorgarha cluster to INR 190/kg in Ujani Majuli cluster when slaughtered and sold by the farmer. The average live weight price range when sold to traders/butchers is approximately INR 180/kg to INR 183/kg. The average pork price in the markets of the APART clusters is INR 216. Pork price in both Upper Majuli and Majuli is lower compared to Dekorgarha in the undivided Jorhat district. The reason may be that the consumers are themselves producers and mostly live pigs are exported from the river island to some neighbouring districts such as Sivasagar. A significant portion of the Hindu population is against pig rearing practices and do not consume pork, which accounts for low pork prices in these two locations. Farmers also indicate that the price is not same across seasons. During summers, the demand for pork is low and thus fetches a lower price while during winter the price rises with the rise in demand for pork. During festive periods in winter such as in October/November/December traders from neighbouring states (Arunachal Pradesh, Nagaland and Meghalaya) come and pick up fattened pigs from the villages giving relatively high prices through some local mediators/brokers. The local pork price also rises during the marriage seasons from the month of December to April. (Table 5.2.8).

Table 5.2.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight (INR)	%	Price/kg live weight (INR)	%	Price/kg live weight (INR)	%	Price/kg live weight (INR)	
Ujani Majuli	20.00	190.00	80.00	182.79	0	-	0	-	200
Dekorgarha	30.00	180.00	70.00	179.00	0	-	0	-	240
Majuli	22.35	185.88	77.65	182.79	0	-	0	-	210

Source: Field Survey, 2018

Among the farmers that rear pigs for breeding purpose (partly or fully),the sale pattern of breeding piglets is shown in Table 5.2.9. Across the APART clusters, an average of 20 piglets is sold by the breeding farm HH in a year irrespective of the no. of sows owned by these farmers. Farmers sell the piglets to neighbouring farmers, piglet traders or in the market.Across the APART clusters of Jorhat, almost 27% of the breeding piglets are sold to the neighbouring farmers and the remaining 73% are sold to the traders or in the market. The average piglet price at weaning when sold in the neighbourhood is INR 1,980. When sold to traders or in the market, the price rises to INR 2,074 per piglet (Table 5.2.9).

Table5.2.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Dekorgarha	22.0	33.33	2,100	66.67	2,433.33
Ujani Majuli	20.6	18.46	1,900	81.54	1,838.46
Majuli	17.6	29.41	1,941	72.27	1,952.00

Source: Field Survey, 2018

5.2.8 Access to veterinary services

Table 5.2.10 presents the no. of veterinary service providers which include local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters, an average of 1.67 local veterinarians operates, while the average distance from the farm villages is almost 2.83 km. At the cluster level, farm villages of Majuli do not have a local veterinarian, while farm villages of Ujani Majuli and Dekorgarha are closely located to a veterinarian. The average distance between farmers and VFAs is 4.31 km, ranging from 3.5 km in Dekorgarha cluster to 5.4 km in Majuli. Three CAHWs in Majuli provide local treatment services while none of the farmers in the remaining clusters report having access to a CAHW (Table 5.2.10).

Table5.2.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village km	VFA		Distance from the FGD location/ village km	CAHWs		Distance from the FGD location/ village km
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
UjaniMajuli	1	0	2.5	4	0	4.04	0	0	0
Dekorgarha	2	0	4	2	0	3.5	0	0	0
Majuli	2	0	2	9	0	5.4	3	0	4

Source: Field Survey, 2018

*Local veterinarian includes both private and government employed

5.2.9 Access to other services (input and breeding)

Farmers in the selected clusters of Jorhat indicate that except in Majui there, there are no grocery shops readily available for buying concentrate feeds. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. The majority of farmers prefer feeding their pig's kitchen waste and waste from local alcohol distilleries.Farm HH keeping sows for breeding purpose access boar services in the cluster villages. At cluster level, an average of 36 (in Ujani Majuli) to 79 (Majuli) boars provide natural mating services to the other farmers with an average distance from the farm HH of 1 km (Table 5.2.11).

Table5.2.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Ujani Majuli	0	0	36	0.5
Dekorgarha	0	0	50	1.5
Majuli	5	0.5	79	0.5

Source: Field Survey, 2018

5.2.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders organizations. However, there are some pig producer's organizations in the Ujani Majuli and Majuli clusters of Jorhat (Table 5.2.12).

Table 5.2.12: Availability of producers/traders organizations at cluster level

Pig cluster	Pig traders organizations	Pig producers organizations
Ujani Majuli	0	21
Dekorgarha	0	0
Majuli	0	4

Source: Field Survey, 2018

Throughout the clusters of Jorhat, there is only one DDL. No feed testing laboratories or feed mills exist within the clusters (Table 5.2.13).

Table5.2.13: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill
Ujani Majuli	0	0	0
Dekorgarha	1	0	0
Majuli	0	0	0

Source: Field Survey, 2018

5.2.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.2.14, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from 22 in Majuli cluster to 68 in Ujani Majuli. The no. of pig and piglet traders is a rough estimate by the farmers of who visits the cluster villages from various places in and outside the Jorhat district. Similarly, the no. of butcher cum pork retailers is in the range of 24 to 41. There is no slaughter house in any of the clusters of Jorhat.

Table 5.2.14: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses
Ujani Majuli	68	33	0
Dekorgarha	50	41	0
Majuli	22	24	0

Source: Field Survey, 2018

Table 5.2.15 presents markets, farmers' access to credit institutions and insurance, and approach road quality within the district of Jorhat.

Table5.2.15: Markets and other infrastructure at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality (% of the cluster villages)		
				Poor	Fair	Good
Ujani Majuli	Jengrai, Nayabazar, Karki Chowk, Phuloni	UBI-Kamalabari, AGVB-Nayabranch	0	80	20	10
Dekorgarha	Chinamara (daily), Bahphala Tiniali, Khatiapara	0	0	60	30	10
Majuli	Phutuki, Mahari Chowk, DhapatTiniali, local area (weekly)	UBI-Kamalabari,AGVB	0	60	20	20

Source: Field Survey, 2018

*The frequency of markets is provided in parentheses (daily, biweekly or weekly)

UBI = United Bank of India

5.2.12 Progressive farmers at cluster level

A progressive farmer is defined as one who is open to utilizing AI services and who keeps crossbred pigs. Progressive farmers were self-identified during FGD and identified by the community during FGD and KII. The no. of progressive farmers in the district of Jorhat are provided in Table 5.2.16.

Table 5.2.16: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers
Ujani Majuli	0
Dekorgarha	1
Majuli	0

Source: Field Survey, 2018

Figure 5.2: Schematic representation of the value chain actors in Jorhat district.
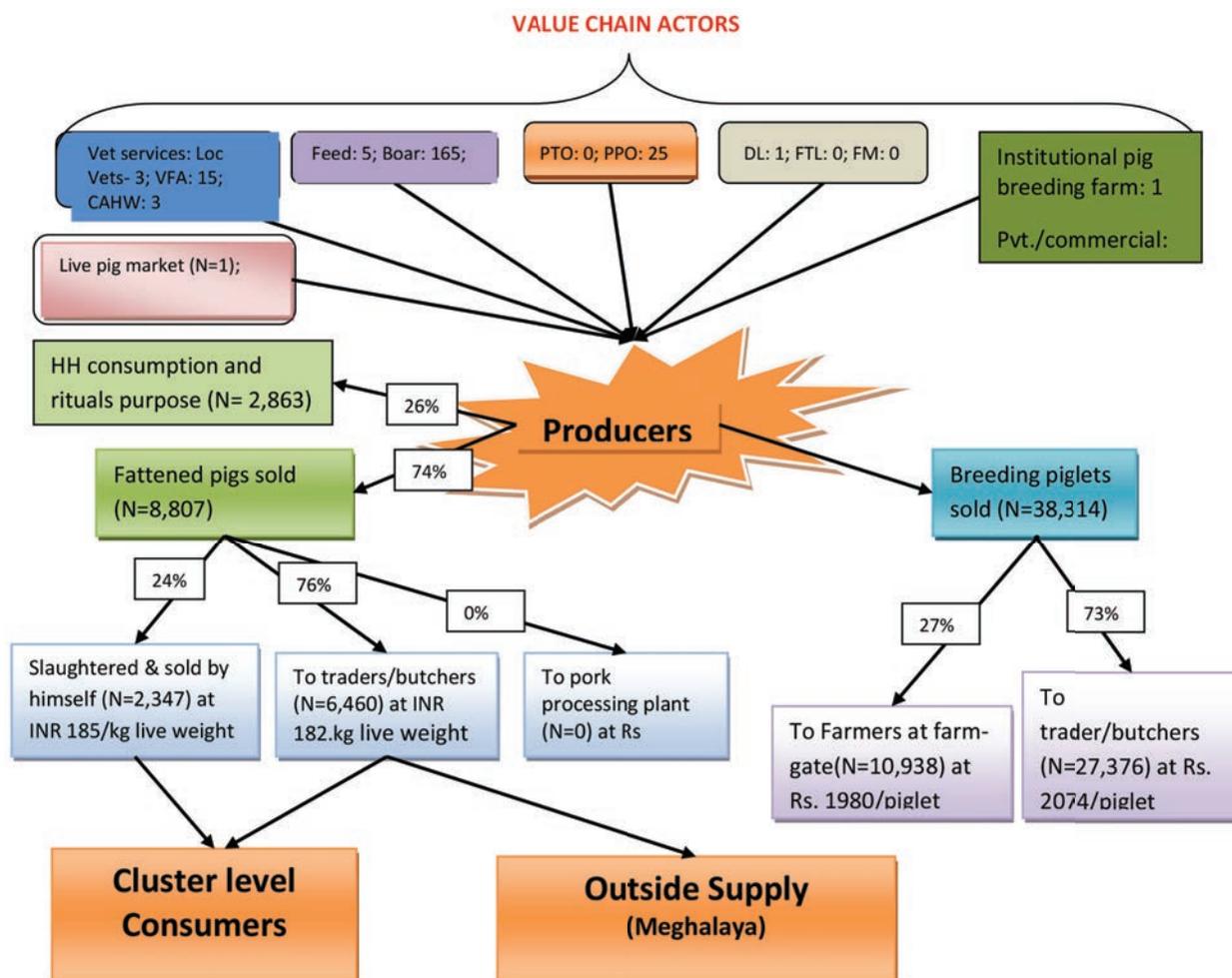
5.3 Barpeta district

5.3.1 Cluster villages identification based on field visit

One cluster, Bajali, in Barpeta district was identified for implementation of the ongoing project. The list of villages incorporated in the cluster was finalized after consulting with the local key persons working in and knowledgeable about the pig production and marketing scenario (Table 5.3.1).

Table 5.3.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI- listed villages	Potential villages incorporated	Non-potential villages dropped
Bajali (9)	Palah, Upornoi, Dubi, Borshahan, Pub Rehabari, Bandhesidhani, Garh, Saradhara, Goremari	Palah, Upornoi, Dubi, Borshahan, Pub Rehabari, Bandhesidhani, Garh, Saradhara, Goremari	0	0
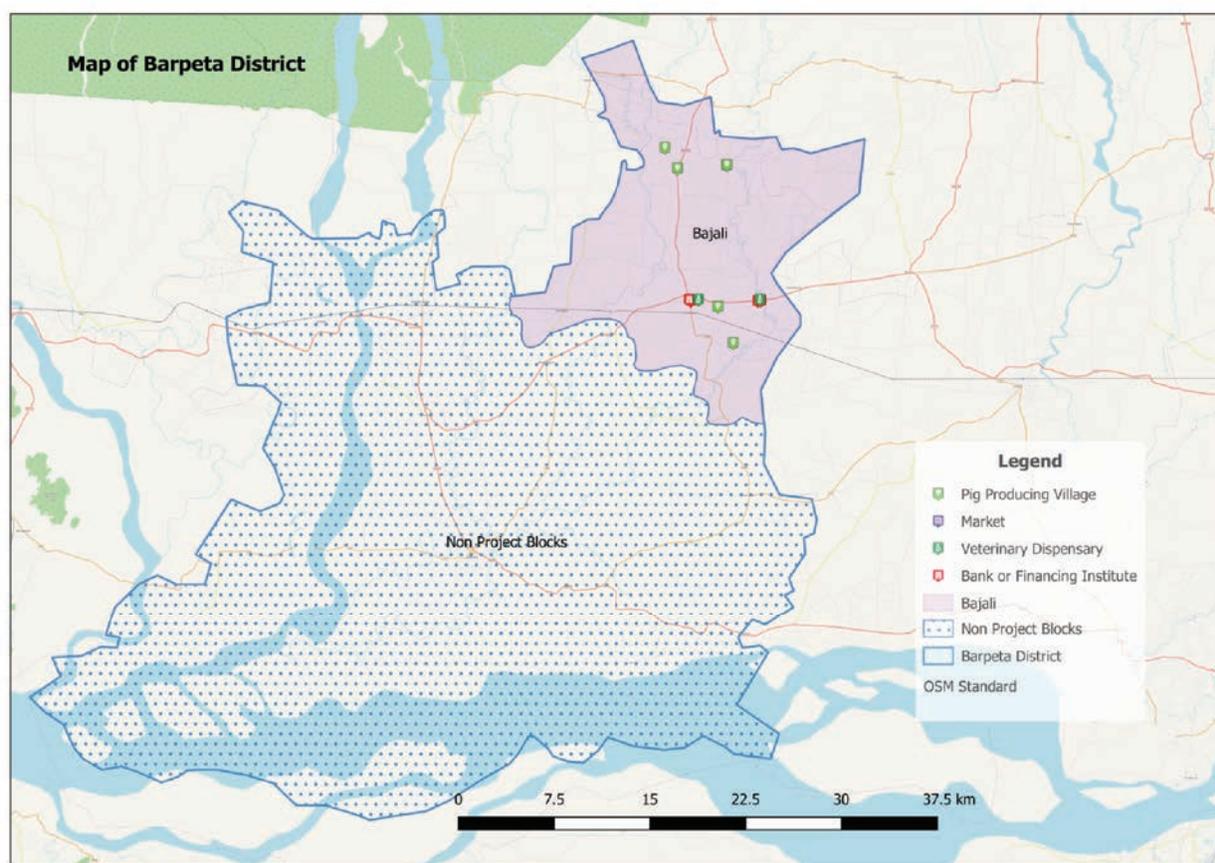
Figure 5.3: Map of the surveyed clusters of Barpeta district

5.3.2 FGD participants' profile

Table 5.3.2 shows the no.and social status profile of FGD participants. The average no. of FGD participants across the APART clusters is 9.77 (male 6.60 and female 3.17). With respect to social status, pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 89.22% of participants in the APART clusters of Barpeta are from the ST community while only 10.78% are from the 'general' category (not ST, SC or OBC). As the table shows, representation of participants from the SC and OBC community is nil across the clusters.

Table 5.3.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Bajali	6.60 (67.55)	3.17 (32.45)	9.77	10.78	0.00	0.00	89.22

Source: Field Survey, 2018

5.3.3. Farming system by type of porcine stock Selected villages for the development of the pork value chain under APART account for 1,590 HH enumerated though FGD and KII, of which 649 HH (40.82%) are identified as pig rearers in the district having atleast one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced as a result of crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. Table 5.3.3 shows that the percentage of farmers who have pure indigenous breeds is 1.67% across clusters while 98.33% farmers have crossbreeds and there are no farmers having both indigenous and crossbred pigs.

Table 5.3.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearingHH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigsfrom both indigenous and improved breeds
Bajali	1,590	649 (40.82)	1.67	98.33	0.00

Source: Field Survey, 2018

5.3.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 73% of the total pig rearers), while only 15% of farmers rear pigs for breeding purpose only in the selected APART cluster. Almost 12% of farmers in the APART clusterrear pigs both for breeding and fattening (Table 5.3.4).

Table 5.3.4: Distribution of farm HH by pig rearing purposes

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Bajali	15.00	73.33	11.67

Source: Field Survey, 2018

5.3.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that 78% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 45% (Table 5.3.5). This indicates that development of pig rearing activities has implications on women's empowerment.

Table 5.3.5: Women's participation in pig and pork production and income control

Pig cluster	No. of HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Bajali	649	78	45

Source: Field Survey, 2018

5.3.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the

APART cluster of Barpeta is shown in Table 5.3.6. The average no. of adult pigs held by the farmers is 2.50. The average no. of fattened pigs sold yearly (HH keeping pigs for fattening and both breeding and fattening purposes) across the APART cluster is 2.67.

Table 5.3.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold yearly

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Bajali	2.50	2.67	1.07

Source: Field Survey, 2018

5.3.7 Marketing behaviour of farmers at cluster level

In Table 5.3.7, the marketing behaviour of pig farmers who rear pigs for fattening purpose is shown. These farmers either sell the live fattened pigs to visiting traders or in the market. In addition to selling fattened pigs to traders and in the market, the farmers also use the pigs in the feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to tradersor in the market in the study villages constitutes 95% of the total annual pigs produced while 5% are used for non-marketing purposes as mentioned above (Table 5.3.7).

Table 5.3.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes %
Bajali	2.67	94.83	5.17

Source: Field Survey, 2018

Farmers slaughter 6.8% of their pigs and sell the meat while 93.2% of pigs are sold to traders/butchers. None of the farmers in any of the clusters in Barpeta report the presence of slaughter houses in close proximity. The average fattened pig price at live weight is INR 187/kg in Bajali cluster when slaughtered and sold by the farmer. The average live weight price when sold to traders/butchers is INR 176/kg. The average pork price in the markets of the APART cluster is INR 240. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is lower and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During festive seasons such as in October/November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons (Table 5.3.8).

Table5.3.8: Percentage of fattened pig sales by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/ kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Bajali	6.83	187.40	93.17	176.25	0	-	0	-	240.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purposes (partly or fully) the sale pattern of breeding piglets is shown in Table 5.3.9. Averages of 17 piglets are sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet traders. Almost 34% of the breeding piglets are sold to the neighbouring farmers and the remaining 66% are sold to the traders. The average piglet price at weaning when sold in the neighbourhood is INR 2,150/piglet and INR 2,050 when sold to traders (Table 5.3.9).

Table 5.3.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Bajali	17	34.17	2,150.00	65.83	2,050.00

Source: Field Survey, 2018

5.3.8 Access to veterinary services

Table 5.3.10 presents the no. of veterinary service providers which include local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. The Bajali cluster of Barpeta district has two local veterinarians at a distance from the farm villages of almost 9 km. The distance between farmers and VFAs is 7 km. Two CAHWs provide local treatment services in Bajali cluster (Table 5.3.10).

Table 5.3.10: Access to veterinary services at the selected APART cluster of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village	VFA		Distance from the FGD location/ villages	CAHWs		Distance from the FGD location/ villages
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Bajali	2	0	9	4	0	7	2	0	1.5

Source: Field Survey, 2018

*Local veterinarian includes both private and government employed.

5.3.9 Access to other services (input and breeding)

Farmers in the selected cluster of Barpeta indicated that there are eight grocery shops in Bajali cluster with a distance of 1 km from the sample villages. Pure feed shops are almost nil in most of the cluster as feeds are primarily sold in the grocery shops only. The majority of the farmers prefer feeding the pigs kitchen waste and waste fromthe local alcohol distillery. Farm HH keeping sows for breeding purpose access boar services in the cluster villages . At cluster level, Bajali has 13 boars providing natural mating services to farmers with a distance from the farm HHof approximately 1 km (Table 5.3.11).

Table 5.3.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Bajali	8	1	13	0.8

Source: Field Survey, 2018

5.3.10 Presence of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders in Bajali cluster, but there are 18 pig producers' organizations (Ban Baraigi). This indicates that pig trading may be carried out through informal channels.

Table 5.3.12: Availability of producers/traders organizations at cluster level

Pig cluster	Pig traders organizations	Pig producers organizations
Bajali	0	18(Ban Bairagi)

There are no DDL or feed testing laboratory in the Bajali cluster. However, there is one feed mill established under cooperatives at Nityananda.

Table 5.3.13: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill	Others
Bajali	0	0	1 (at Nityananda under DCS)	0

Source: Field Survey, 2018

5.3.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.3.14, the no. of pork market actors involved in the pig value chain of the selected APART cluster is presented. The no. of pig and piglet traders in the selected cluster of Bajali is eight. This number is a rough estimate by farmers of traders who visit the cluster villages from various places in and outside the Barpeta district. Similarly, the no. of butchers cum pork retailers is 10. There is no slaughter house in Barpeta.

Table 5.3.14: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses
Bajali	8	10	0

Source: Field Survey, 2018

Table 5.3.15 presents the markets, lending institutions, insurance providers and approach road quality   for farmers in the Bajali cluster.

Table5.3.15: Markets and other infrastructure at cluster level

Pig cluster	Markets with pig trading	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Bajali	Barama, Tihu, Patacharkuchi, Rihabari Chowk	Apex (Nityananda), Apex Bank (Jalah), SBI (Patasarkuchi), AGVB	0	Ban Bairagi, Palaha	Dubi, Lechera, Upornoi	

Source: Field Survey, 2018**;**

5.3.12 Progressive farmers at cluster level

'Progressive' farmers are defined as those who is open to utilizing AI for breeding and crossbreeding purposes. Progressive farmers were self-identified through FGD. Other participants in FGD and KII also identified progressive farmers.

Table5.3.16: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers
Bajali	1

Source: Field Survey, 2018

Figure 5.3: Schematic representation of the value chain actors in Barpeta district.
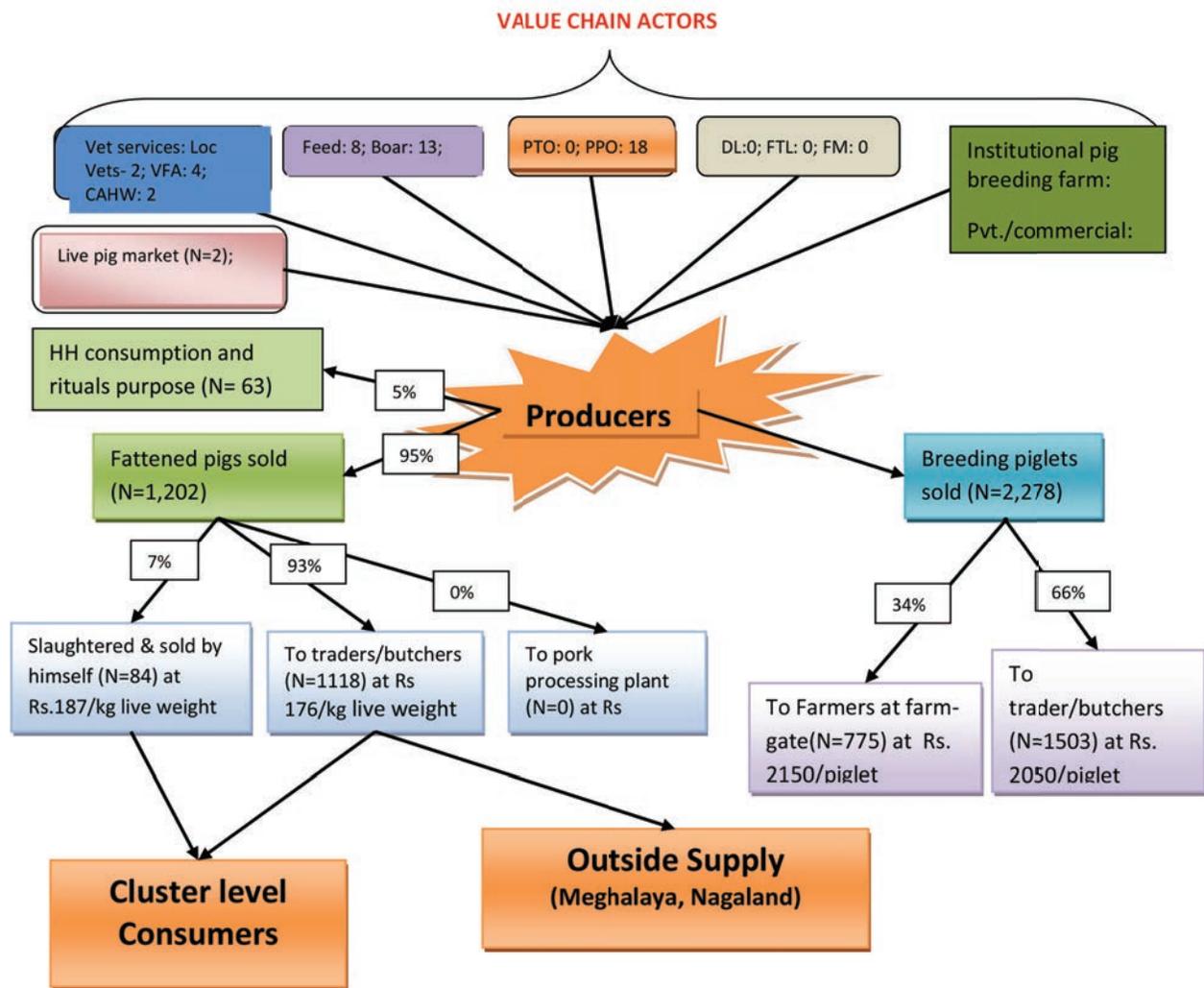
5.4 Lakhimpur district

5.4.1 Cluster villages identification based on field visit

Four clusters in Lakhimpur district were identified for the implementation of the ongoing project. The selected clusters covering the potential villages for intervention with the informal pork value chain actors are Narayanpur, Ghilamora, North Lakhimpur and Boginodi. The lists of villages incorporated in each cluster were finalized after consulting with the local key persons working in and knowledgeable about the pig production and marketing scenario.

Table 5.4.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI- listed villages	Potential villages incorporated	Non-potential villages dropped
Narayanpur	Kinapathar, Majorchapori, Panbari Missing Gaon, Bahgora Deurigaon, Dhunaguri, missing Gaon	Kinapathar, Majorchapori, Panbari Missing Gaon, Bahgora Deurigaon, Dhunaguri missing Gaon	0	0
Ghilamora	Bakula Maghuachuk, Arengia boragaon, Ubhota sampora	Bilmukh, Rathalguri, Gadangor Chowk, No. 2 Medak (Bali Medak)	Bilmukh, Rathalguri, Gadangor Chowk, No. 2 Medak (Bali Medak)	Bakula Maghuachuk, Arengia boragaon, Ubhota sampora
North Lakhimpur	Kuwarigaon, Boisagaon, Ahuchaulgaon, Bogolijan, Changmaigaon	Kuwarigaon, Boisagaon, Changmaigaon, Gharamora, Udeshapur	Gharamora, Udeshapur	Ahuchaulgaon, Bogolijan
Boginodi	Majgaon, Harionigaon, Honpur	Majgaon, Harionigaon, Honpur	0	0
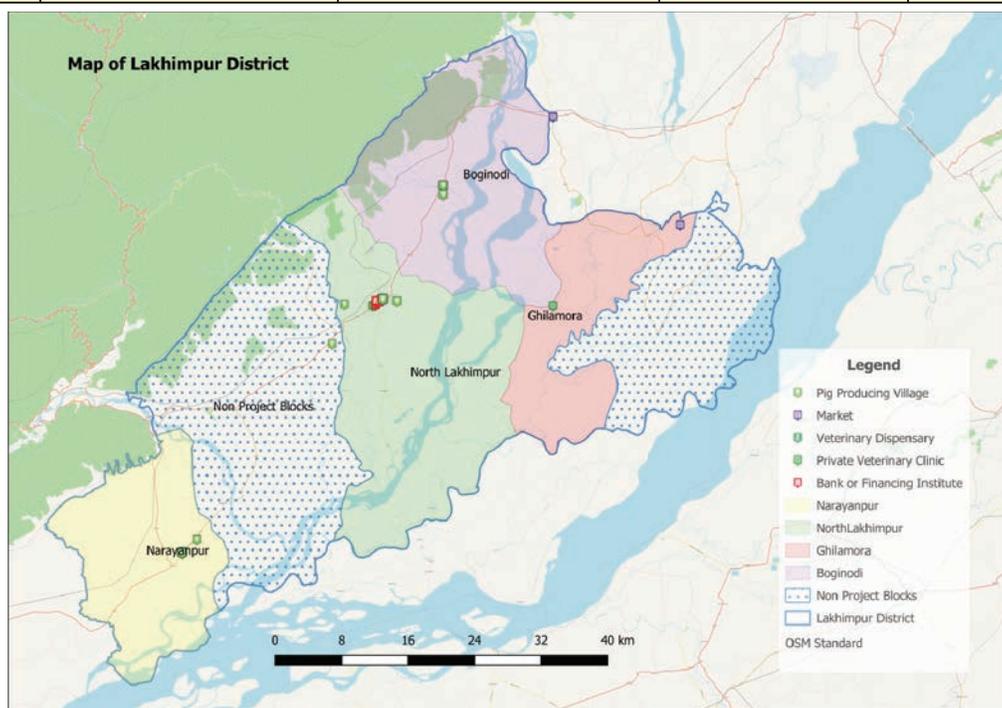
Figure 5.4: Map of the surveyed clusters of Lakhimpur district

5.4.2 FGD participants' profile

Table 5.4.2 shows the no. of FGD participants and their social status. Across the APART clusters, an average of 9.2 persons participated in FGD (male 4.3, female 4.9). With respect to social status, pig rearing is conventionally popular among the tribal communities throughout the state of Assam. All participants in the APART clusters of Lakhimpur are from the ST community.

Table 5.4.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants (%)			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Narayanpur	4.20 (32.31)	6.80 (67.69)	13.00	0.00	0.00	0.00	100
Ghilamora	6.71 (75.73)	2.15 (24.27)	8.86	0.00	0.00	0.00	100
North Lakhimpur	3.20 (29.10)	7.80 (70.09)	11.00	0.00	0.00	0.00	100
Boginodi	3.18 (53.27)	2.79 (46.73)	5.97	0.00	0.00	0.00	100

Source: Field Survey, 2018

5.4.3 Farming system by type of porcine stock

The district includes 3,507 HH enumerated though FGD and KII, of which 2,655 HH (78.97%) are identified as pig rearers having at least one pig. As the farmers point out, the no. of pure indigenous breeds has been drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. Table 5.4.3 shows that the percentage of farmers who have pure indigenous breeds is 8.51% across clusters while 89.32% of farmers have crossbreeds and except in Narayanpur and Ghilamora, the remaining 4.3% of farmers have both indigenous and crossbred pigs.

Table 5.4.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigs from both indigenous and improved breeds
Narayanpur	1,467	1,305 (88.96)	2.60	97.40	0.00
Ghilamora	655	610 (93.13)	10.12	89.88	0.00
North Lakhimpur	1,145	530 (46.29)	8.00	90.00	2.00
Boginodi	240	210 (87.50)	13.33	80.00	6.67

Source: Field Survey, 2018

5.4.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 75.3% of the total pig rearers), while only 8.7% farmers rear pigs for breeding purpose only across the APART clusters. At cluster level, the proportion of farmers rearing pigs for breeding purpose is the highest in Narayanpur (15%) and lowest in Boginodi (1.67). Almost 16% of farmers across the APART clusters are found to rear pigs both for breeding and fattening (Table 5.4.4).

Table 5.4.4: Distribution of farm HH by pig rearing purposes

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Narayanpur	15.00	48.00	37.00
Ghilamora	6.00	80.67	13.33
North Lakhimpur	12.00	76.00	12.00
Boginodi	1.67	96.67	1.66

Source: Field Survey, 2018

5.4.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 66.7%. This indicates that development of pig rearing activities has implications for women's empowerment in the APART districts(Table 5.4.5).

Table 5.4.5: Women's participation in pig and pork production and income control

Pig cluster	No. of farming HH	% women have role in pig and pork production	% women have control of income from pig andpork production
Narayanpur	1,305	58.00	64.00
Ghilamora	610	73.33	76.67
North Lakhimpur	530	58.00	56.00
Boginodi	210	60.00	70.00

Source: Field Survey, 2018

5.4.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Lakhimpur - shown in Table 5.4.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 1.81 with the highest in Narayanpur cluster (2) and lowest in Boginodi (1.67). The average no. of fattened pigs sold yearly (HH keeping pigs for fattening and both breeding and fattening purposes) across the APART clusters is 2.8. The ratio between the no. of pigs sold and no. of pigs held is the highest in the Narayanpur cluster at 1.70 (Table 5.4.6).

Table 5.4.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Narayanpur	2.00	3.40	1.70
Ghilamora	1.80	2.67	1.48
North Lakhimpur	1.78	2.80	1.57
Boginodi	1.67	2.33	1.40

Source: Field Survey, 2018

5.4.7 Marketing behaviour of farmers at the cluster level

Table 5.4.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. In addition to selling fattened pigs to traders or in the market, farmers also use the pigs in the feasts organized as part of some social ceremonies

like marriage and celebrations such as Christmas and Bihu or offer to relatives when they have celebrations. The proportion of pigs sold to traders or in the market is 78% of the total annual pigs produced while 22% are used for non-marketing purposes as mentioned above (Table 5.4.7).

Table 5.4.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Narayanpur	3.40	90.00	10.00
Ghilamora	2.67	56.67	43.33
North Lakhimpur	2.80	86.00	14.00
Boginodi	2.33	80.00	20.00

Source: Field Survey, 2018

Table 5.4.8 shows that 15.3% of pigs are slaughtered and sold by farmers and 84.5% are sold to traders / butchers. None of the farmers in any of the clusters in Golaghat report the presence of slaughter houses. The average fattened pig price at live weight is INR 184 / kg across clusters when slaughtered and sold by a farmer. The average live weight price when sold to traders/butchers is in the range of INR 180/kg (Ghilamora cluster) to INR 193 (Boginodi cluster). The average pork price in the markets of the APART clusters is INR 245/kg. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is lower and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During festive seasons such as in October/November/December, traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.4.8: Percentage of fattened pig sales by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Narayanpur	8.00	190.00	92.00	187.00	0.00	0.00	0.00	0.00	260.00
Ghilamora	23.33	180.00	76.67	180.00	0.00	0.00	0.00	0.00	220.00
North Lakhimpur	10.00	180.00	90.00	189.00	0.00	0.00	0.00	0.00	260.00
Boginodi	20.00	185.00	80.00	193.33	0.00	0.00	0.00	0.00	240.00

Source: Field Survey, 2018

Among the farmers that rear pigs for breeding purpose (partly or fully),the sale pattern of breeding piglets is shown in Table 5.4.9. Across the APART clusters, averages of 22.7 piglets are sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet traders. Almost 36% of the breeding piglets are sold to neighbouring farmers and the remaining 64% is sold to the traders. In clusters such as North Lakhimpur, 70% of the piglets are sold to other farmers in the neighbourhood, while in the Boginodi cluster; only 20% is sold through this channel. The average piglet price at weaning when sold within the neighbourhood is INR 2,427/piglet and INR 2,490 when sold to traders (Table 5.4.9).

Table5.4.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Narayanpur	30	32.00	2,200.00	68.00	2,500.00
Ghilamora	20	23.33	2,333.33	76.67	2,333.33
North Lakhimpur	26	70.00	2,675.00	30.00	2,625.00
Boginodi	15	20.00	2,500.00	80.00	2,500.00

Source: Field Survey, 2018

5.4.8 Access to veterinary services

Table 5.4.10 presents the no. of veterinary service providers which include local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters, an average of one local veterinarian operates with an average distance from the farm villages of almost 4.5 km. At cluster level, the farm villages of Ghilamora are 10 km from a local veterinarian; while farm villages of Boginodi are closer at 1.2 km. VFAs are at average 2.5 km from clusters ranging from 0.5 km in North Lakhimpur to 3.3 km in Narayanpur. One CAHW provides local treatment services in Narayanpur cluster while none of the farmers in the remaining clusters report having access to a CAHW (Table 5.4.10).

Table 5.4.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village km	VFA		Distance from the FGD location/ village km	CAHW		Distance from the FGD location/ village km
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Narayanpur	0	1	3	1	0	3.33	0	1	1
Ghilamora	1	0	10.33	1	0	5	0	0	0
North Lakhimpur	2	2	3	6	0	0.5	0	0	0
Boginodi	1	0	1.16	2	0	1.16	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and government Employed.

5.4.9 Access to other services (input and breeding)

Farmers in the selected clusters of Lakhimpur indicated that there is an average of 2.75 grocery shops across the APART clusters readily available for buying concentrate feeds with an average distance of 1.7 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. The majority of farmers prefer feeding the pigs kitchen waste and waste from the local alcohol distillery.Farm HH keeping sows for breeding purpose access boar services in the cluster villages. At cluster level, an average of two (in Boginodi) to five (Narayanpur) boars provide natural mating services to the other farmers with an average distance to the farm HHof 1.6 km (Table 5.4.11).

Table 5.4.11: Access to input and breeding services at the cluster level

Pig cluster	Feed suppliers/grocery shops selling feed		Boar service providers	
	No.	Distance from the FGD location/ villageskm	No.	Distance from the FGD location/village km
Narayanpur	3	1.6	5	2
Ghilamora	3	2	4	1.5
North Lakhimpur	3	1.5	4	1
Boginodi	2	1.5	2	2

Source: Field Survey, 2018

5.4.10 Presence of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders or pig producers organizations in any of the clusters of Lakhimpur. This indicates that pig rearing and trading are carried out in an informal setting.

Only one DDL, in North Lakhimpur, exists within the district. There are no feed testing laboratories or feed mills within the district clusters (Table 5.4.12)

Table5.4.12: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill	Others
Narayanpur	0	0	0	0
Ghilamora	0	0	0	0
North Lakhimpur	1	0	0	0
Boginodi	0	0	0	0

Source: Field Survey, 2018

5.4.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.4.13, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters is in the range of five in North Lakhimpur cluster to 15 in Ghilamora and Narayanpur clusters. This no. are rough estimates by the farmers of traders who visit the cluster villages from various places in and outside the Lakhimpur district. Similarly, the no. of butcher cum pork retailers is in the range of 8 to 20. There are no slaughter houses in any of the clusters of Lakhimpur.

Table5.4.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butchers cum pork retailers	Slaughterhouses	Pork retailers
Narayanpur	15	20	0	0
Ghilamora	15	15	0	0
North Lakhimpur	5	20	0	0
Boginodi	7	8	0	0

Source: Field Survey, 2018

Table 5.4.14 presents markets, financing institutions, livestock insurance providers and quality of the road to villages throughout the district. Remarkably, no lending institutions exist within the district, which has negative implications regarding the ability of farmers and other pork chain actors to access credit in order expand their business.

Table5.4.14: Markets and other infrastructures at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Narayanpur	Narayanpur (weekly)	0	0	Panbari Mis Singh, Major Chapori	Kinapathar, Temera Mirigaon	Bordeurigaon
Ghilamora	Nagaland, Boginodi, Ghilamora, Gogamukh	0	0	Bilmukh and Rathalguri, Gadangor Chowk	Medak-2(Bali Medak)	
North Lakhimpur	Lakhimpur Town, Narayanpur	0	0			Boichagaon, Changmaigaon, Konwargaon, Gharmora
Boginodi	Boginodi, North Lakhimpur, Lakhimpur, Arunachal	0	NLM-Ghy	Honpur	Majgaon	Harionigaon

Source: Field Survey, 2018

Note   : If known, the market frequency is included in parenthesis (daily, weekly, or biweekly).

5.4.12 Progressive farmers at cluster level

'Progressive' farmers are defined as farmers who might consider AI for breeding and crossbreeding purposes. Progressive farmers were self-identified during FGD. Other participants also identified progressive farmers during FGD and KII (Table 5.4.15).

Table 5.4.15: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig clusters	No. of progressive farmers
Narayanpur	1
Ghilamora	0
North Lakhimpur	5
Boginodi	0

Source: Field Survey, 2018

Figure 5.4: Schematic representation of the value chain actors in Lakhimpur district.

VALUE CHAIN ACTORS

Vet services: Loc Vets- 7; VFA: 10; CAHW: 1

Feed: 11; Boar: 15;

PTO: 0; PPO: 0

DL: 0; FTL: 0; FM: 0

Institutional pig breeding farm:
Pvt./commercial:

Live pig market (N=4);

HH consumption and rituals purpose (N= 1030)

22%

Producers

78%

Fattened pigs sold (N=4,014)

Breeding piglets sold (N=13,279)

15%

85%

0%

23%

77%

Slaughtered & sold by himself (N=498) at Rs.180/kg live weight

To traders/butchers (N=3,513) at Rs 187.kg live weight

To pork processing plant (N=0) at Rs

To Farmers at farm-gate(N=3755) at Rs. 2427/piglet

To trader/butchers (N=9524) at Rs. 2490/piglet

Cluster level Consumers

Outside Supply
(Arunachal Pradesh, Nagaland)

5.5 Morigaon district

5.5.1 Cluster villages identification based on field visit

Two clusters in Morigaon district were identified for implementation of the ongoing project. These two clusters are Bhurbandha and Kapili. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working consistently in and knowledgeable about the pig production and marketing scenario.

Table 5.5.1: Cluster villages identifications based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Bhurbandha	Patidoya, Ouguri, Moinagaon, Bhurbondha, Khatabori	Patidoya, Ouguri, Moinagaon, Bhurbondha, Khatabori	0	0
Kapili	Pachim Nagaon, Konabori, Pharanhkuchi, Thekeraguri, Ahatguri	Pachim Nagaon, Konabori, Pharanhkuchi, Thekeraguri, Ahatguri	0	0

Figure 5.5: Map of the surveyed clusters of Morigaon district
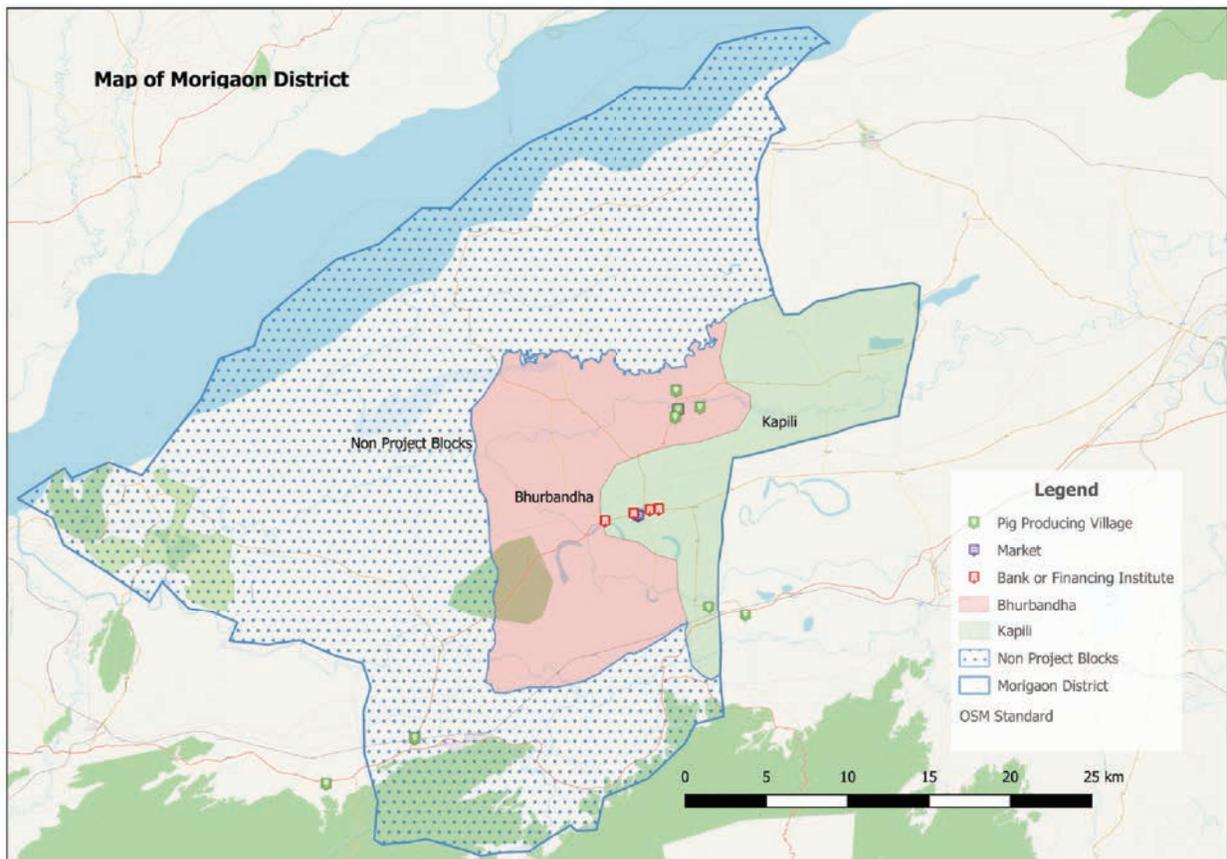
5.5.2 FGD participants' profile

Table 5.5.2 shows the no. of FGD participants and their social status. The average no. of FGD participants across APART clusters is 8.1 (3.6 male and 4.5 female). Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 93.2% of participants in the APART clusters of Morigaon are from the ST community, while 6.8% from the OBC category..

Table 5.5.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Bhurbandha	3.56 (42.13)	4.89 (57.87)	8.45	0	13.65	0	86.35
Kapili	3.67 (47.17)	4.11 (52.83)	7.78	0	0	0	100.00

Source: Field Survey, 2018

5.5.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole includes 2,655 HH enumerated though FGD and KII, of which 2,006 HH (72.48%) are identified as pig rearers having at least one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is 1.67% across clusters while 98.34% of farmers have crossbreds and no farmers have both indigenous and crossbred pigs (Table 5.5.3).

Table 5.5.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearingHH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigs from both indigenous and improved breeds
Bhurbandha	1,840	1,480 (80.43)	0.00	100.00	0.00
Kapili	815	526 (64.54)	3.33	96.67	0.00

Source: Field Survey, 2018

5.5.4 Purposes of pig rearing

The majority of farmers rear pigs for fattening purpose (almost 86.4% of the total pig rearers), while only 8.96% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Kapili (11.67%) and lowest in Bhurbandha (6.25%). Almost 4.6% of farmers across the APART clusters are found to rear pigs both for breeding and fattening (Table 5.5.4).

Table 5.5.4: Distribution of farm HH by the purpose of pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Bhurbandha	6.25	89.50	4.25
Kapili	11.67	83.33	5.00

Source: Field Survey, 2018

5.5.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs

along with domestically slaughtered pigs constitutes 70%. This indicates that development of pig rearing activities has implications on women's empowerment.

Table 5.5.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total farming HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Bhurbandha	1,480	79.00	68.35
Kapili	526	80.00	71.68

5.5.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Morigaon are shown in Table 5.5.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 2.46 with the highest in Kapili (2.67) and lowest in Bhurbandha (2.25). The average no. of fattened pigs sold yearly (HH keeping pigs for fattening and both breeding and fattening purposes) across the APART clusters is 3.25. The ratio of fattened pigs sold to no. of pigs held is highest in the Bhurbandha cluster at 1.44 (Table 5.5.6).

Table5.5.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	Number of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Bhurbandha	2.25	3.25	1.44
Kapili	2.67	3.25	1.22

Source: Field Survey, 2018

5.5.7 Marketing behaviour of farmers at cluster level

Table 5.5.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. The farmers also use the pigs in feasts organized as part of social ceremonies like marriage, Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders or in the market constitutes 37% of the total annual pigs produced while 63% are used for non-marketing purposes as mentioned above (Table 5.5.7).

Table5.5.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Bhurbandha	3.25	40.00	60.00
Kapili	3.25	33.33	66.67

Source: Field Survey, 2018

Farmers slaughter and sell the meat of 6.7% of their pigs while 93.3% are sold to traders/butchers. None of the farmers in any of the clusters in Morigaon report the presence of slaughter houses in close proximity. The average fattened pig price of both clusters at live weight is INR 184/kg when slaughtered and sold by the farmerand the live weight price when sold to traders/butchers is INR 178/kg . The average pork price in the markets of the APART clusters is INR 240. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter the price rises with the rise in demand for pork. During festive seasons such as in October/ November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table5.5.8: Percentage of fattened pig sales by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/ kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Bhurbandha	10.00	187.50	90.00	173.24	0	-	0	-	240.00
Kapili	3.33	180.00	96.67	182.59	0	-	0	-	240.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purposes (partly or fully) the sale pattern of breeding piglets is shown in Table 5.5.9. Across the APART clusters,an average of 24 piglets are sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet traders. Almost 33% of the breeding piglets are sold to the neighbouring farmers and the remaining 67% are sold to the traders. The average piglet price at weaning when sold to neighbours and traders is the same (INR 2,775/piglet) (Table 5.5.9).

Table 5.5.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/Piglet	%	INR/Piglet
Bhurbandha	28.00	46.67	2,800	53.33	2,800
Kapili	20.00	20.00	2,750	80.00	2,750

Source: Field Survey, 2018

5.5.8 Access to veterinary services

Table 5.5.10 presents the no. of veterinary service providers which include local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters, an average of 0.5 local veterinarians operates, while the average distance from the farm villages is almost 1.4 kms. Farm villages of both clusters are relatively closely located to a doctor's residence/duty station. The average distance between villages and VFAs is 2.1 km across clusters ranging from 1.5 km in Kapili to 3 km in Bhurbandha. There is no CAHW who provides local treatment services in both clusters (Table 5.5.10).

Table5.5.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location / village	VFA		Distance from the FGD location /village	CAHWs		Distance from the FGD location / village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Bhurbandha	1	0	2.75	2	0	2.75	0	0	0
Kapili	0	0	0	2	0	1.5	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and governmentEmployed.

5.5.9 Access to other services (input and breeding)

Farmers in the selected clusters of Morigaon indicated that there is an average of 16 grocery shops across the APART clusters readily available for buying concentrate feeds with an average distance of 1 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in

the grocery shops. The majority of farmers prefer feeding pigs kitchen waste and waste of local alcohol distillery.Farm HH keeping sows for breeding purpose access boar services in the cluster villages. At cluster level, averages of two (in Kapili) to 12 (Bhurbandha) boars are available to provide natural mating services to farmers with an average distance from the farm HHof 0.8 km (Table 5.5.11).

Table 5.5.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Bhurbandha	30	0.5	12	0.5
Kapili	2	1.3	2	1.0

Source: Field Survey, 2018

5.5.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders or pig producers organizations in any of the clusters of Morigaon. This indicates that pig rearing and trading are carried out in an informal setting. There is one feed mill in Kapili cluster. Moriganon district lacks DDL and feed testing laboratory (Table 5.5.12).

Table 5.5.12: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill	Others
Bhurbandha	0	0	0	0
Kapili	0	0	1	0

5.5.11 Major pork market actors and other infrastructure in the pork value chain

There are 15 pig and piglet traders in Bhurbandha cluster and 10 in Kapili. This no. are rough estimates by farmers based on recall of visiting traders in the district. Similarly, the no. of butcher cum pork retailers in both the clusters is 20 to 30. There is no slaughter house in any of the clusters of Morigaon (Table 5.5.13).

Table 5.5.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailer	Slaughterhouses	Pork retailers
Bhurbandha	15	30	0	10
Kapili	10	20	0	0

Source: Field Survey, 2018

Table 5.5.14: Markets and other infrastructure at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Bhurbandha	Bhurbandha (weekly), Morigaon (daily), Shillong, Kuwartoli	SBI	0	Moinguri		Auguri, Khatobari, Patidoya
Kapili	Jagiroad (daily)	SBI, UBI, Bandhan Bank	Oriental Insurance/ New India Assurance		Konabori, Thekeraguri	Pachim Nagaon, Pharanhkuchi, Ahatguri

Source: Field Survey, 2018

*The frequency of the market (if known is included in parentheses (daily, biweekly or weekly).

5.5.12 Progressive farmers at cluster level

A progressive farmer is defined as one who is open to utilizing AI services and who keeps crossbred pigs. Progressive farmers were self-identified during FGD and identified by the community during FGD and KII (Table 5.5.15).

Table 5.5.15: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers	Names and contacts
Bhurbandha	0	0
Kapili	1	NadiranDeuri

Source: Field Survey, 2018

Figure 5.5: Schematic representation of the value chain actors in Morigaon district.
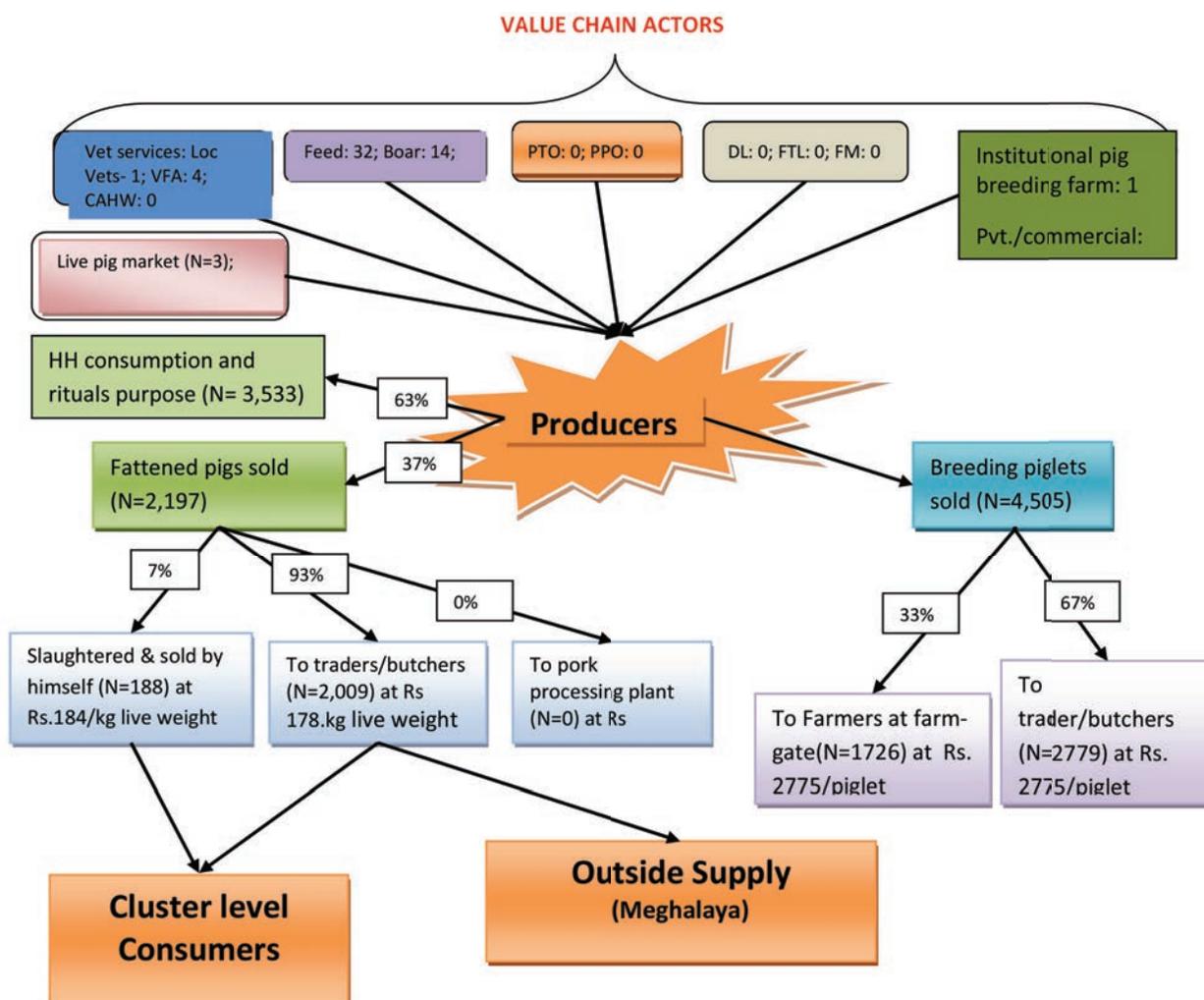
5.6 Darrang district

5.6.1 Cluster villages identification based on field visit

Three clusters in Darrang district were identified for the implementation of the ongoing project. These three clusters are Kalaigaon, Pachim Mangaldoi and Sipajhar. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working consistently in and knowledgeable about the pig production and marketing scenario.

Table 5.6.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Kalaigaon	Akelabari, Bahjani, Durgagaon,	Akelabari, Bahjani, Durgagaon,	0	0
Pachim Mangaldoi	Medhipara, Bezpara, Gelaidingi, Chamuapara, Daha, Barangabari, Kachamari, Adhikari, Mozachuburi, Barhampur, Nagaon, Kuiyapani, Saruthekerabari, Borkumarpara, Pakabangipara, Bhalukkhowapara, Borthekerabari, Chelengeliapara, Kamarpara, Konwarpara, Baniyapara,	Medhipara, Bezpara, Gelaidingi, Chamuapara, Daha, Barangabari, Kachamari, Adhikari, Mozachuburi, Barhampur, Nagaon, Kuiyapani, Saruthekerabari, Borkumarpara, Pakabangipara, Bhalukkhowapara, Borthekerabari, Chelengeliapara, Kamarpara, Konwarpara, Baniyapara,	0	0
Sipajhar	Khatara, Khasdipila, Nagaon (Hatimuria), Dagiapara, Kamargaon, Mahuripara, Bamunjhar, Mahtoli, Kahotoli,	Khatara, Khasdipila, Nagaon (Hatimuria), Dagiapara, Kamargaon, Mahuripara, Bamunjhar, Mahtoli, Kahotoli,	0	0
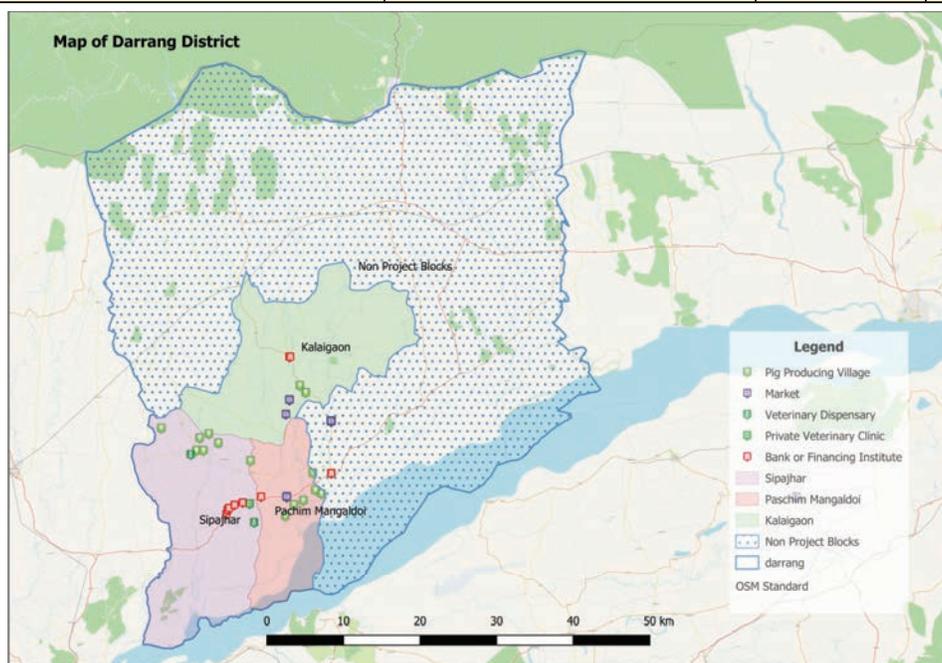
Figure 5.6: The map of the surveyed clusters of Darrang district

5.6.2 FGD participants' profile

Table 5.6.2 shows the no. of FGD participants and their social status. The average no. of FGD participants across APART clusters is 8.8 (5 male and 3.8 female). Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 54.7% of participants in the APART clusters of Darrang are from ST community followed by 25.5% from the 'general' category. Participants from the OBC community are 14.6% across the clusters, while only 5.2% of participating farmers are from the SC community.

Table 5.6.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			Social status of participants (%)			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Kalaigaon	6.33 (68.88)	2.86 (31.12)	9.19	10.29	0.00	15.67	74.04
Pachim Mangaldoi	4.76 (59.50)	3.24 (40.50)	8.00	28.08	28.64	0.00	43.28
Sipajhar	3.84 (42.43)	5.21 (57.57)	9.05	38.15	15.22	0.00	46.63

Source: Field Survey, 2018

5.6.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole includes 7,619 HH enumerated though FGD and KII, of which 1,939 HH (27.39%) are identified as pig rearers in the district having atleast one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is 10.12% across clusters while 86.21% of farmers have crossbreds.Three per cent of farmers in Pachim Mangaldoi keep both indigenous and crossbreeds, 8% of farmers in Sipajhar keep both while no farmers in Kalaigaon keep both indigenous and crossbred animals.

Table 5.6.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pig from both indigenous and improved breeds
Kalaigaon	560	250 (44.64)	6.67	93.33	0.00
Pachim Mangaldoi	5,374	1,539 (28.64)	7.70	89.30	3.00
Sipajhar	1,685	150 (8.90)	16.00	76.00	8.00

Source: Field Survey, 2018

5.6.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 79.6% of the total pig rearers), while only 15.8% of farmers rear pigs purely for breeding purpose across the APART clusters (Table 5.6.4). At cluster level, the proportion of farmers rearing pigs for breeding purpose only is the highest in Pachim Mangaldoi cluster (15%) while lowest in Kalaigaon cluster (6.67%). Only 4.6% of farmers across the APART clusters rear pigs both for breeding and fattening (Table 5.6.4).

Table 5.6.4: Distribution of farm HH engaged in pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Kalaigaon	6.67	93.33	0.00
PachimMangaldoi	22.75	69.50	7.75
Sipajhar	18.00	76.00	6.00

Source: Field Survey, 2018

5.6.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 58%. This indicates that development of pigrearing activities has implications on women's empowerment.

Table 5.6.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Kalaigaon	250	83.33	60.00
Pachim Mangaldoi	1,539	68.50	56.00
Sipajhar	150	56.00	58.00

Source: Field Survey, 2018

5.6.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Darrang is shown in Table 5.6.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 2.23 with the highest in Pachim Mangaldoi (2.35) cluster and lowest in Sipajhar (2.02). The average no. of fattened pigs sold yearly by the HH (HH keeping pigs for fattening and both breeding and fattening purposes) across the APART clusters is 2.25. The ratio of fattened pigs sold to pigs kept is the highest in Kalaigaon cluster (1.16) (Table 5.6.6).

Table 5.6.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no.of pigs/HH
Kalaigaon	2.33	2.00	1.16
Pachim Mangaldoi	2.35	2.55	1.09
Sipajhar	2.02	2.20	1.09

Source: Field Survey, 2018

5.6.7 Marketing behaviour of farmers at cluster level in Darrang district

Table 5.6.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use the pigs in feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders and in the market constitutes almost 90% of the total pigs produced annually while 10% are used for non-marketing purposes as mentioned above (Table 5.6.7).

Table 5.6.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Kalaigaon	2.00	90.00	10.00
Pachim Mangaldoi	2.55	85.25	14.75
Sipajhar	2.20	94.00	6.00

Source: Field Survey, 2018

Farmers slaughter and sell the meat of 12.6% of their pigs while 87.4% are sold to traders/butchers. None of the farmers in any of the clusters in Darrang report the presence of slaughter houses in close proximity. The average fattened pig price at live weight is INR 184.67/kg when slaughtered and sold by the farmer. The average live weight price when sold to traders/butchers is INR 188/kg. The average pork price in the markets of the APART clusters is INR 240. Farmers also indicate that the price is not the same across seasons. During summer the demand for pork is low and thus also fetches a lower price while during winter the price rises with the rise in demand for pork. During festival season such as in October/November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons (Table 5.6.8).

Table 5.6.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/ kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Kalaigaon	6.67	180.00	93.33	185.98	0.00	-	0.00	-	240.00
Pachim Mangaldoi	3.25	183.00	96.75	191.06	0.00	-	0.00	-	240.00
Sipajhar	28.00	191.00	72.00	186.25	0.00	-	0.00	-	240.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purpose (partly or fully) the sale pattern of breeding piglets is shown in Table 5.6.9. Across the APART clusters,an average of 15.5 piglets are sold by the breeding farm HH. Farmers sell the piglets to both the neighbouring farmers and to piglettraders. Almost 48% of the breeding piglets are sold to neighbouring farmers and the remaining 52% aresold to the traders. In Kalaigaon cluster, 83% of the piglets are sold to other farmers in the neighbourhood while in other clusters only about 30% aresold through this channel. The average piglet price at weaning when sold to neighbourhood farmers is INR 2,300/piglet and INR 2,287/piglet when sold to traders (Table 5.6.9).

Table 5.6.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Kalaigaon	10.00	83.33	2,233.33	16.67	2,100.00
Pachim Mangaldoi	20.00	30.53	2,294.12	69.47	2,263.16
Sipajhar	16.67	30.00	2,375.00	70.00	2,500.00

Source: Field Survey, 2018

5.6.8 Access to veterinary services

Table 5.6.10 presents the no. of veterinary service providers which include local veterinarians, VFAs and

CAHWs providing piggery health care services to the farmers. Across clusters an average of 1.3 local veterinarians operates, while the average distance from the farm villages is almost 7.3 km. The distance between farmers and veterinarians in Kalaigaon and Pachim Mangaldoi clusters is approximately 9 km, while farmers of Sipajhar are relatively closely located to a veterinarian's residence/duty station (3.3 km). VFAs are located 3.7 km from villages across clusters. There is not a CAHW to provide local treatment services in the clusters of Darrang district. (Table 5.6.10).

Table 5.6.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village	VFA		Distance from the FGD location/ village	CAHW		Distance from the FGD location/ village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Kalaigaon	1	0	9	1	0	4.6	0	0	0
Pachim Mangaldoi	2	0	9.5	4	0	4.08	0	0	0
Sipajhar	1	0	3.3	5	0	2.5	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and governmentEmployed.

5.6.9 Access to other services (input and breeding)

Sipajhar has the only two grocery shops readily available for buying concentrate feeds across APART clusters, with a distance of 1.7 km from the sample villages. The majority of the farmers prefer feeding pig's kitchen waste and waste from the local alcohol distillery. At cluster level, an average of one (in Sipajhar) to 25 (Pachim Mangaldoi) boars provide natural mating services to the other farmers with an average distance to the farm HH of 1.7 km (Table 5.6.11).

Table 5.6.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/ village km
Kalaigaon	0	0	8	2
Pachim Mangaldoi	0	0	25	2.5
Sipajhar	2	1.7	1	0.5

Source: Field Survey, 2018

5.6.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There is one registered pig producers organization in the Darrang district. However, inspite of having a pig producer organization,pig rearing and pig trading arecarried out in an informal setting. (Table 5.6.12).

Table 5.6.12: Availability of producers/traders organizations at cluster level

Pig cluster	Pig traders organizations	Pig producers organizations
Kalaigaon	1 (Darrang District Pig Farmers Association)	0
Pachim Mangaldoi	1 (Darrang District Pig Farmers Association)	0
Sipajhar	1 (Darrang District Pig Farmers Association)	0

Source: Field Survey, 2018

Only one feed mill exists across APART clusters in Darrang district. There are no DDL or feed testing laboratory in any of the APART clusters (Table 5.6.13).

Table 5.6.13: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill	Others
Kalaigaon	0	0	0	0
Pachim Mangaldoi	0	0	1	0
Sipajhar	0	0	0	0

Source: Field Survey, 2018

5.6.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.6.14, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from three in Kalaigaon cluster to 20 in Pachim Mangaldoi cluster. This no. are rough estimates by farmers of who visits the cluster villages from various places in and outside the Darrang district. Similarly, the no. of butcher cum pork retailers is in the range of four to 20. There is no slaughter house in any of the clusters of Darrang.

Table 5.6.14: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses
Kalaigaon	3	4	0
Pachim Mangaldoi	20	20	0
Sipajhar	15	12	0

Source: Field Survey, 2018

Table 5.6.15 presents the no. of pig trading markets, banks and other financing institutions, livestock insurance providers and the village approach road quality across APART clusters. Of particular note is the absence of banks and other financing institutions across clusters.

Table 5.6.15: Markets and other infrastructure at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Kalaigaon	Kalaigaon, Shillong, Akolibari	0	0	Bahjani, Durgagaon, Akolibari		
Pachim Mangaldoi	Banglagarh market, Shillong, Ramhari market, Meghalaya	0	Oriental Insurance/ New India Assurance	Barthekerabari, Pakabangipara, Barkumarpara and Punia, Chengelipara (BorChuburi), Kuiyapani, Borangabari Gaon, Bhalukkhowapara, Moza Chuburi, Adhikari	Nagaon	Saruthekerabari, Chamuapara
Sipajhar	Bamunjhar, Namkhola, Andharighat market, Goreswar	0	0	Maharimari, Mahtoli, Kanargaon, Dagiapara, Bamunjhar		

Source: Field Survey, 2018

5.6.12 Progressive farmers at cluster level

'Progressive' farmers are open to AI and keep crossbred stock. Progressive farmers self-identified during FGD and were identified by other participants during FGD and KII.

Table 5.6.16: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers
Kalaigaon	1
Pachim Mangaldoi	2
Sipajhar	0

Source: Field Survey, 2018

Figure 5.6: Schematic representation of the value chain actors in Darrang district.
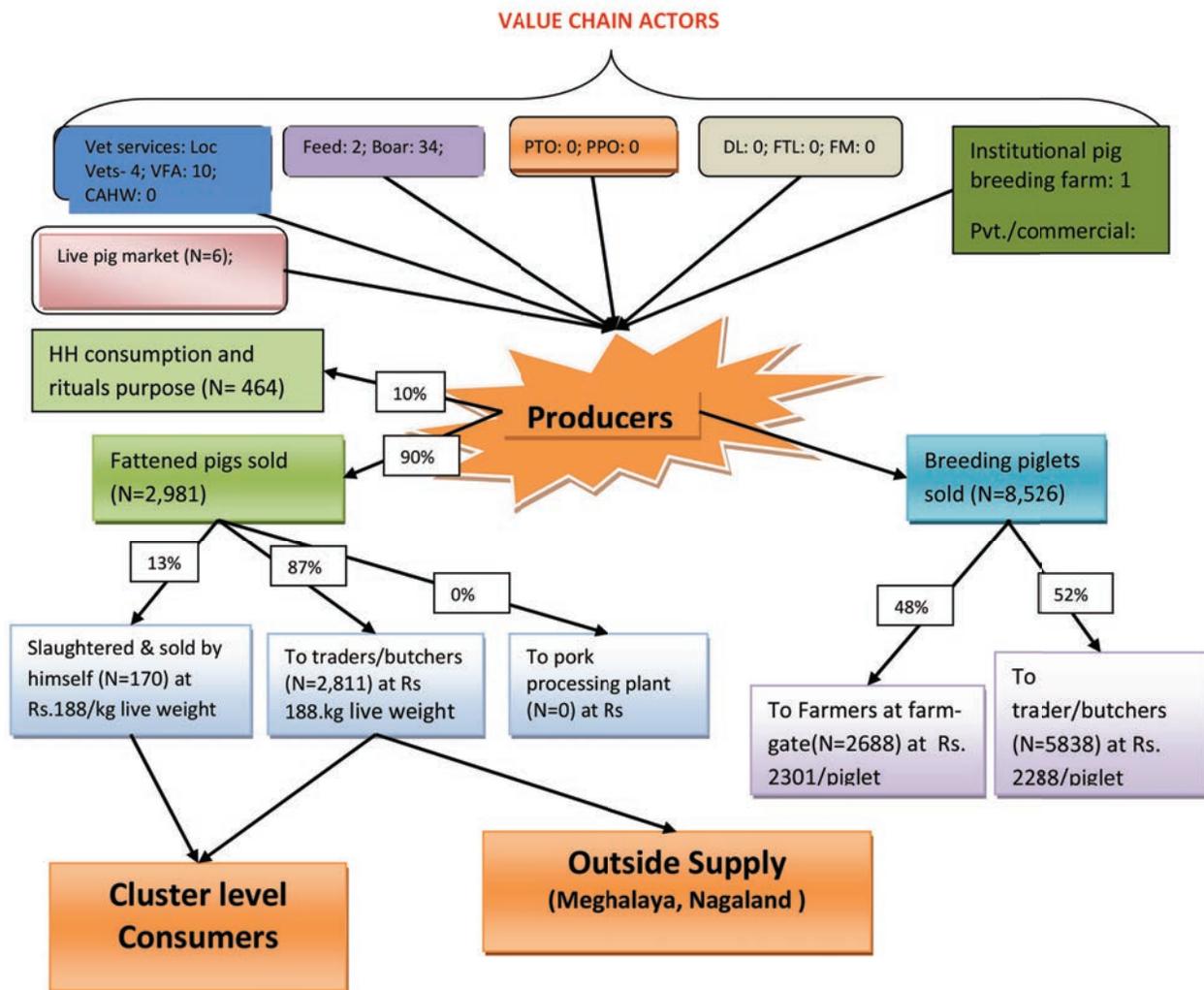
5.7 Sonitpur district

5.7.1 Cluster villages identification based on field visit

Nine clusters in Sonitpur district were identified for implementation of the ongoing project. The selected clusters covering the potential villages for interventions with the informal pork value chain actors are Borsala, Dhekiajuli, Rangapara, Balipara, Na Duar, Sakomatha, Baghmara, Bihali and Chayduar. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working consistently in and knowledgeable about the pig production and marketing scenario.

Table 5.7.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Borsala	Natun Chingri, Nam bogoribari, Borigaon Kamarchuburi	Natun Chingri, Nam bogoribari, BorigaonKamarchuburi	0	0
Dhekiajuli	Bhekerigaon,Chenga, Hiloi, Ghagrakochari	Bhekerigaon,Chenga, Hiloi, Ghagrakochari	0	0
Rangapara	Kheronibasti, Kerabasti	Kheronibasti, Kerabasti	0	0
Balipara	Baligao Miri, Bokagaon Miri, Mulangaon, Amloga	Baligao Miri, Bokagaon Miri, Mulangaon, Amloga	0	0
Na Duar	Bongaon, Khristan Basti, Bordikorai, Toubhanga, Bheleuguri, Patharbasti	Bongaon, Khristan Basti, Bordikorai, Toubhanga, Bheleuguri, Patharbasti	0	0
Sakomatha	Majuligarh, Dhuli, Dihingpathar, Kherbari, Missamari, Karbi Block, Nihansang, Selaikati, Joypur	Majuligarh, Dhuli, Dihingpathar, Kherbari, Missamari, Karbi Block, Nihansang, Selaikati, Joypur	0	0
Baghmara	Monabaribasti, Bihapukhurikachari, Dishiri, Bamgereki, Dagereki, Lahorijan, Rongajan, Naharbari, Birijan, Kalahandi Basti	Monabaribasti, Bihapukhurikachari, Dishiri, Bamgereki, Dagereki, Lahorijan, Rongajan, Naharbari, Birijan, Kalahandi Basti	0	0
Bihali	Maghi, Padum Pukhuri, Borajuli, Singimari, Kachamari, Natun Chang, KalaguriJarani, BihmariJarani, BihmariBoragaon, Bihmari Thandapani, Nanke Bihmari, Borajuli TE, Bedeti TE, Lalpukhuri,	Maghi, Padum Pukhuri, Borajuli, Singimari, Kachamari, Natun Chang, Kalaguri Jarani, Bihmari Jarani, Bihmari Boragaon, Bihmari Thandapani, Nanke Bihmari, Borajuli TE, Bedeti TE, Lalpukhuri,	0	0
Chayduar	Joriguri, Mukaligaon, Aribhangapathar(Mayang), Phatiabari, Benugaon, Arakhuti, Lepetpara, Balijan, Laudangia	Joriguri, Mukaligaon, Aribhangapathar (Mayang), Phatiabari, Benugaon, Arakhuti, Lepetpara, Balijan, Laudangia	0	0
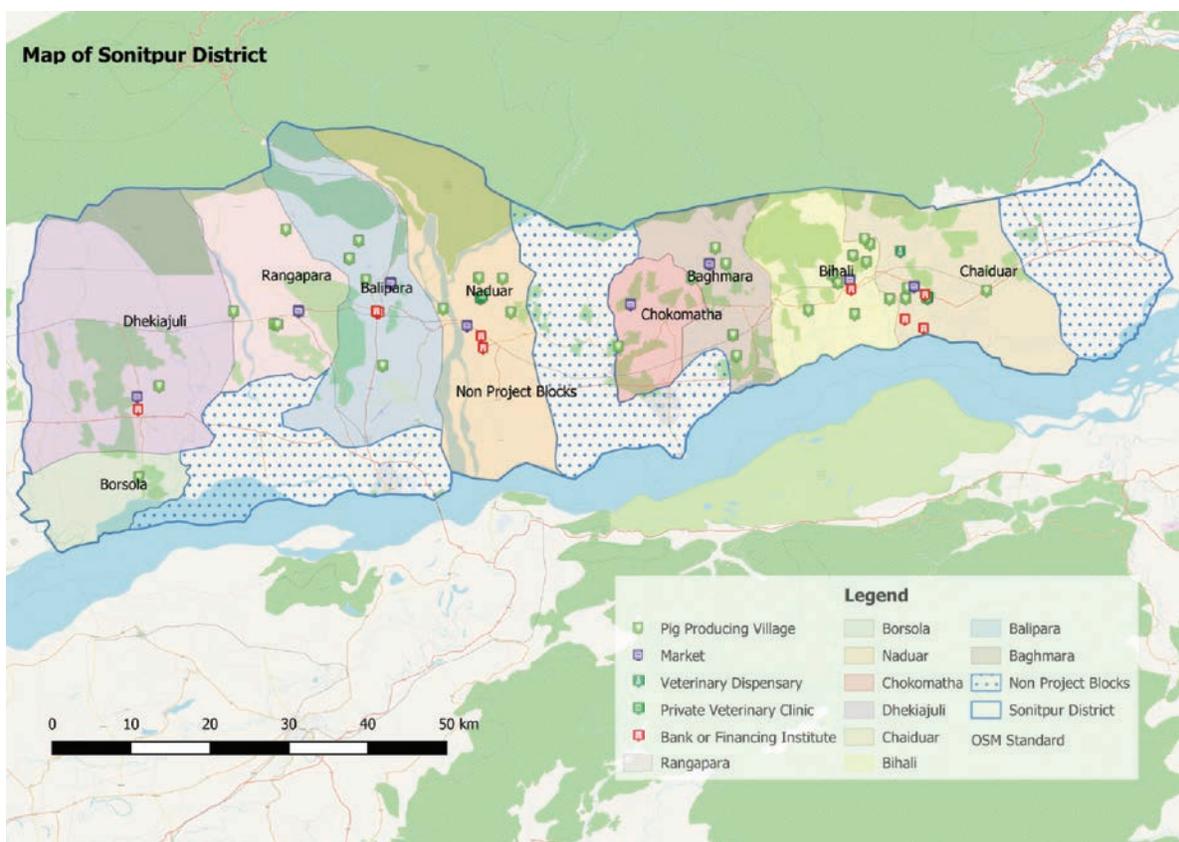
Figure 5.7: The map of the surveyed clusters of Sonitpur district

5.7.2 FGD participants' profile

Table 5.7.2 shows the no. of FGD participants and their social status. The average no. of FGD participants across clusters was 8.3 (male 4.8 and female 3.5). Pig rearing is conventionally popular among tribal communities throughout the state of Assam. Almost 66.2% of participants in the project clusters of Sonitpur are from the ST community followed by 21.9% from the SC community. Representation of participants from the 'general' category is 6.38% across the clusters, while only 2.52% of participating farmers are from the OBC community.

Table 5.7.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Borsala	4.50 (46.25)	5.23 (53.75)	9.73	23.85	0.00	0.00	76.15
Dhekiajuli	3.25 (39.78)	4.92 (60.22)	8.17	0.00	0.00	100	0.00
Rangapara	4.50 (52.94)	4.00 (47.06)	8.50	0.00	0.00	18.16	81.84
Balipara	5.29 (63.81)	3.00 (36.19)	8.29	11.68	0.00	88.32	0.00
Na Duar	5.75 (65.71)	3.00 (34.29)	8.75	0.00	0.00	0.00	100
Sakomatha	4.00 (41.37)	5.67 (58.63)	9.67	0.00	10.00	0.00	90.00
Baghmara	5.50 (57.90)	4.00 (42.10)	9.50	9.28	12.65	0.00	78.07
Bihali	4.66 (61.40)	2.93 (38.60)	7.59	12.65	0.00	18	69.35
Chayduar	6.18 (74.55)	2.11 (25.45)	8.29	0.00	0.00	0.00	100

Source: Field Survey, 2018

5.7.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole is comprised of 11,701 HH enumerated though FGD and KII, of which 7,656 HH (60.48%) are identified as pig rearers having atleast one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is 3.08% across clusters while 95.98% of farmers have crossbreds and only 0.93% of farmers have both indigenous and crossbred pigs (Table 5.7.3).

Table 5.7.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH(%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigs from both indigenous and improved breeds
Borsala	307	157 (51.14)	3.00	97.00	0.00
Dhekiajuli	714	339 (47.48)	2.68	97.32	0.00
Rangapara	445	105 (23.59)	0	100	0.00
Balipara	2,630	1680 (63.88)	1.43	98.57	0.00
Na Duar	1,732	1200 (69.28)	2.50	97.50	0.00
Sakomatha	1,305	1133 (86.82)	9.33	84.00	6.67
Baghmara	1,350	980 (72.60)	2.65	97.35	0.00
Bihali	1,950	1200 (61.54)	4.00	94.75	1.25
Chayduar	1,268	862 (67.98)	2.15	97.37	0.48

Source: Field Survey, 2018

5.7.4 Pigrearing purposes

The majority of farmers rear pigs for fattening purpose (almost 78.2% of the total pig rearers), while only 10.7% of farmers rear pigs for breeding purpose only across the APART clusters. At cluster level, the proportion of farmers rearing pigs for breeding purpose is the highest in Dhekiajuli (20%) while lowest in Borsala (4%). Almost 11.1% of farmers across the project clusters rear pigs both for breeding and fattening (Table 5.7.4).

Table 5.7.4: Distribution of farm HH by the purpose of pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Borsala	4.00	86.00	10.00
Dhekiajuli	20.00	67.15	12.85
Rangapara	15.00	77.50	7.50
Balipara	8.00	86.14	5.86
Na Duar	12.75	64.50	22.75
Sakomatha	10.00	73.33	16.67
Baghmara	6.00	89.00	5.00
Bihali	10.50	74.85	14.65
Chayduar	10.00	85.00	5.00

Source: Field Survey, 2018

5.7.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD

reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 62.06%. This indicates that development of pigrearing activities has implications on women's empowerment.

Table 5.7.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Borsala	157	72.50	56.50
Dhekiajuli	339	70.00	48.25
Rangapara	105	85.00	62.50
Balipara	1,680	82.14	74.29
Na Duar	1,200	84.50	71.25
Sakomatha	1,133	85.67	65.00
Baghmara	980	90.00	62.00
Bihali	1,200	69.58	52.55
Chayduar	862	75.49	66.22

Source: Field Survey, 2018

5.7.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Sonitpur are shown in Table 5.7.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 2.35 with the highest in Balipara (2.71) and lowest in Rangapara and Dhekiajuli (2). The average no. of fattened pigs soldyearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) across the APART clusters is 2.7. The ratio of fattened pigs sold to no. of pigs kept is the highest in Rangapara cluster (1.75) (Table 5.7.6).

Table 5.7.6: Average herd size (adult pig equivalent) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Borsala	2.50	2.00	0.80
Dhekiajuli	2.00	2.20	1.10
Rangapara	2.00	3.50	1.75
Balipara	2.71	2.28	0.84
Na Duar	2.25	2.75	1.22
Sakomatha	2.33	2.67	1.15
Baghmara	2.50	3.00	1.20
Bihali	2.48	2.67	1.08
Chayduar	2.43	2.89	1.19

5.7.7 Marketing behaviour of farmers at cluster level

Table 5.7.7 presents the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use the pigs in feasts organized as part of some social ceremonies like marriage and in Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders or in the market in the study villages constitutes 79% of the total annual pigs produced while 21% are used for non-marketing purposes as mentioned above (Table 5.7.7).

Table 5.7.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Borsala	2.00	90.25	9.75
Dhekiajuli	2.20	90.00	10.00
Rangapara	3.50	90.00	10.00
Balipara	2.28	95.71	4.29
Na Duar	2.75	93.75	6.25
Sakomatha	2.67	85.00	15.00
Baghmara	3.00	92.50	7.50
Bihali	2.67	90.50	9.50
Chayduar	2.89	75.00	25.00

Source: Field Survey, 2018

Farmers slaughter and sell the meat of 9.8% of their pigs while 91.2% are sold to traders/butchers. None of the farmers in any of the clusters in Sonitpur report the presence of slaughter houses in close proximity. The average fattened pig price at live weight ranges from INR 160/kg in Dhekiajuli cluster to INR 189/kg in Balipara when slaughtered and sold by the farmer. The average live weight price range when sold to traders/butchers is INR 162/kg (Chayduar cluster) to INR 187 (Na Duar cluster). The average pork price in the markets of the APART clusters is INR 232. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter the price rises with the rise in demand for pork. During festival season such as in October/November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.7.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/ kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Borsala	0.00	-	100	168.50	0	-	0	-	230
Dhekiajuli	10.00	160.00	90.00	166.67	0	-	0	-	220
Rangapara	9.00	172.50	91.00	164.00	0	-	0	-	240
Balipara	6.14	189.28	93.86	170.86	0	-	0	-	240
Na-Duar	17.50	180.00	82.50	187.50	0	-	0	-	240
Sakomatha	10.00	168.00	90.00	162.00	0	-	0	-	220
Baghmara	7.5	170.00	92.50	169.35	0	-	0	-	220
Bihali	12.62	178.00	87.38	172.66	0	-	0	-	240
Chayduar	6.00	182.55	94.00	162.33	0	-	0	-	240

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purpose (partly or fully),the sale pattern of breeding piglets is sown in Table 5.7.9. Across the APART clusters, averages of 11.4 piglets are sold by the breeding farm

HH. Farmers sell the piglets to both their neighbouring farmers' andto piglet traders. Almost 65% of the breeding piglets are sold to neighbouring farmers and the remaining 35% are sold to traders. In Borsala cluster, 100% of the piglets are sold to other farmers in the neighbourhood, while in Na Duar cluster only 42% is sold through this channel. The average piglet price at weaning when sold to neighbours is INR 2,380/piglet while the price when sold to traders is INR 2,341/piglet (Table 5.7.9).

Table 5.7.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Borsala	13.00	100.00	2,400	0.00	-
Dhekiajuli	8.00	70.00	2,100	30.00	2,000
Rangapara	9.00	55.00	2,800	45.00	2,600
Balipara	16.00	52.50	2,266	47.50	2,400
Na-Duar	17.50	42.50	2,400	57.50	2,425
Sakomatha	10.00	80.00	1,950	20.00	1,800
Baghmara	5.50	50.00	2,400	50.00	2,400
Bihali	9.50	65.28	2,600	34.72	2,700
Chayduar	14.00	70.00	2,500	30.00	2,400

Source: Field Survey, 2018

5.7.8 Access to veterinary services

Table 5.7.10 presents the no. of veterinary service providers which includes local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters, an average of one local veterinarian operates, while the average distance from the farm villages is almost 4.2 km. At cluster level, the distance between veterinarians and Balipara villages is 14 km, while farm villages of Borsala and Rangapara are relatively closely located to a doctor's residence/duty station (1.5 km). VFAs are located 3.42 km from villages across clusters ranging from 1.5 km in Dhekiajuli to 4.75 km in Balipara. Eleven CAHWs provide local treatment services in Sonitpur district (Table 5.7.10).

Table 5.7.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location / village	VFA		Distance from the FGD location /village	CAHWs		Distance from the FGD location /village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Borsala	1	0	1.5	1	0	2.6	2	0	3
Dhekiajuli	1	0	2	1	0	1.5	1	0	1.8
Rangapara	1	0	1.5	2	0	3	2	0	1.3
Balipara	0	1	13.8	2	0	4.75	3	0	2.6
Na Duar	1	0	5.6	1	0	6	0	0	0
Sakomatha	1	0	2.1	1	0	4	0	0	0
Baghmara	0	0	0	1	0	1.9	3	0	1
Bihali	0	0	0	1	0	3.5	0	0	0
Chayduar	1	0	3.5	1	0	3.5	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and government Employed.

5.7.9 Access to other services (input and breeding)

Farmers in the selected clusters of Sonitpur indicated that there is an average of 0.7 grocery shops across the APART clusters readily available for buying concentrate feeds with an average distance of 0.5 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops only. A majority of farmers prefer feeding pigs kitchen waste and waste from the local alcohol distillery. At cluster level, a range of 1 (in Sakomatha) to 14 (Na Duar) boars provide natural mating services to sows within an average distance to the farm HH of 1km (Table 5.7.11).

Table5.7.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Borsala	0	0	2	1.5
Dhekiajuli	1	0.5	0	0
Rangapara	0	0	3	0.5
Balipara	3	0.5	2	0.5
Na Duar	1	0.5	14	0.5
Sakomatha	0	0	1	1
Baghmara	0	0	0	0
Bihali	0	0	2	1
Chayduar	1	0.5	2	0.5

Source: Field Survey, 2018

5.7.10 Availability of producers/traders organizations and input supplying institutions at cluster level

None of the clusters has a pig producer organization. The only cluster with a pig trader organization is Chayduar. This indicates that pig rearing and trading are carried out in an informal setting.

Table 5.7.12: Availability of producers/traders organizations at cluster level

Pig clusters	Pig traders organizations	Pig producers organizations
Borsala	0	0
Dhekiajuli	0	0
Rangapara	0	0
Balipara	0	0
Na Duar	0	0
Sakomatha	0	0
Baghmara	0	0
Bihali	0	0
Chayduar	1	0

Source: Field Survey, 2018

Across the APART clusters, there are no DDL, feed testing laboratory or feed mill. However, there is a feed mill called Sri Ram Feed producing *motidana* and one feed mill under the government sector. The list of feed mills under various sectors is attached in Annexe Table A3.

5.7.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.7.13, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from three in Dhekiajuli cluster to 15 in Chayduar. This no. are a rough estimate by farmers of traders who visit the cluster villages. Similarly, the no. of butcher cum pork retailers is in the range of two to 15. Rangapara has the only slaughter houses across clusters.

Table5.7.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses	Pork retailers
Borsala	5	2	0	0
Dhekiajuli	3	2	0	0
Rangapara	8	5	2	2
Balipara	10	15	0	0
Na-Duar	4	10	0	0
Sakomatha	5	5	0	0
Baghmara	10	4	0	0
Bihali	4	2	0	0
Chayduar	15	8	0	3

Source: Field Survey, 2018

Table 5.7.14 presents pig trading markets, banks and other financing institutions, livestock insurance providers, and the quality of village approach roads in the district. Of note, there is only one bank across clusters and no livestock insurance providers.

Table 5.7.14: Markets and other infrastructure at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Borsala	Singiri TE market(weekly), Dhekiajuli (daily)	0	0	0	Namagoribari	Natun Singhri
Dhekiajuli	Dhekiajuli market (daily)	SBI	0	0	Ghagara Kachari	
Rangapara	Rangapara market (weekly), Railline market	0	0	0	Kheronibasti, Kerabasti	0
Balipara	Lakhara (daily), Shillong, Sengelimari, Balipara (weekly), Gormara	0	0	Sengelimari, Milangaon, Amlakhi, Phulaguri, Dharikati, Dakhinsila, Rangapara	Uttar Amloga, Dolongbasti	0

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Na-Duar	Baliguri, Toubhanga, Rangachakey, Shillong, Lakhara	0	0	Bordikolai, Bongaon, Christan Basti	Bheloguri, Toubhanga	0
Sakomatha	Dhuli, Tinihuti, Balichang	0	0	Kherbari, Nihangsang	Selai Kati	0
Baghmara	Tinihuti Market	0	0	Naharbari,Rangajan	0	0
Bihali	Bideti Bazaar	0	0	Kalaguru Jaroni	0	0
Chayduar	Helem, Misamari, Pahumara	0	0	0	Nam agoribari, Arakhuti, Juriguri, Aribhanga pathar	Joriguri, Mukoligaon

Source: Field Survey, 2018

*Frequency of markets/bazaars is included in parentheses if known (daily, weekly etc.)

SBI = State Bank of India

5.7.13 Progressive farmers at cluster level

'Progressive' farmers are defined as those who might consider utilization of AI and keep crossbred stock. Progressive farmers self-identified during FGD and were identified by others during FGD and KII (Table 5.17.15).

Table 5.7.15: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers
Borsala	0
Dhekiajuli	6
Rangapara	1
Balipara	3
Na Duar	1
Sakomatha	1
Baghmara	0
Bihali	0
Chayduar	1

Source: Field Survey, 2018

Figure 5.7: Schematic representation of the value chain actors in Sonitpur district.

VALUE CHAIN ACTORS

Vet services: Loc Vets- 7; VFA: 11; CAHW: 11

Feed: 6; Boar: 26;

PTO: 0; PPO: 0

DL: 1; FTL: 0; FM: 1

Institutional pig breeding farm: 2

Pvt./commercial:1

Live pig market (N=13);

Producers

HH consumption and rituals purpose (N= 1666) 11%

Fattened pigs sold (N=14,169) 89%

Breeding piglets sold (N=16,251)

9%

91%

0%

65%

35%

Slaughtered & sold by himself (N=1351) at Rs.175/kg live weight

To traders/butchers (N=12,818) at Rs 169.kg live weight

To pork processing plant (N=0) at Rs

To Farmers at farm-gate(N=9640) at Rs. 2380/piglet

To trader/butchers (N=6,611) at Rs. 2341/piglet

Cluster level Consumers

Outside Supply (Meghalaya)

5.8 Goalpara district

5.8.1 Cluster villages identification based on field visit

As shown in Table 5.8.1 four clusters have been selected in Goalpara district for the implementation of the ongoing project. These clusters are Rongjuli, Kuchdhuwa, Balijana and Lakhipur. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working in and knowledgeable about the pig production and marketing scenario.

Table 5.8.1. Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI listed-villages	Potential villages incorporated	Non-potential villages dropped
Rongjuli	Maslam, Kurihamari, Kothakuthi, Ambuk, Khutabari, Kahibari, Khilamara, Simlitola, Sardarpara, GathiaparaDhanudbhanga, Salpara, Damra Patpara	Maslam, Kurihamari, Kothakuthi, Ambuk, Khutabari, Kahibari, Khilamara, Simlitola, Sardarpara, GathiaparaDhanudbhanga, Salpara, Sarapara, Dighali	Sarapara, Dighali	Damra Patpara
Kuchdhuwa	KharaMedhipara, Kuchdhuwa, Sessapani, Kaljhar	KharaMedhipara, Kuchdhuwa, Sessapani, Kaljhar	0	0
Balijana	Rampur, Agia, DakurvitaGoalpara, Rakhaplara, Sarapara, Ketekibari, Dariduri, BodamalRongsai, Kuruabhasa, Ananda Bazaar, Makri	Rampur, Agia, DakurvitaGoalpara, Rakhaplara, Sarapara, Ketekibari, Dariduri, BodamalRongsai, Kuruabhasa, Ananda Bazaar, Makri	0	0
Lakhipur	Kalyanpur, Basbari, Bolaikhamar, Bordol, Pukhuripara, BoroSingri, Lakhipurtown, Bhalukdubi	Bolaikhamar, Bordol, Pukhuripara, BoroSingri, Lakhipurtown, Bhalukdubi	0	Kalyanpur, Basbari
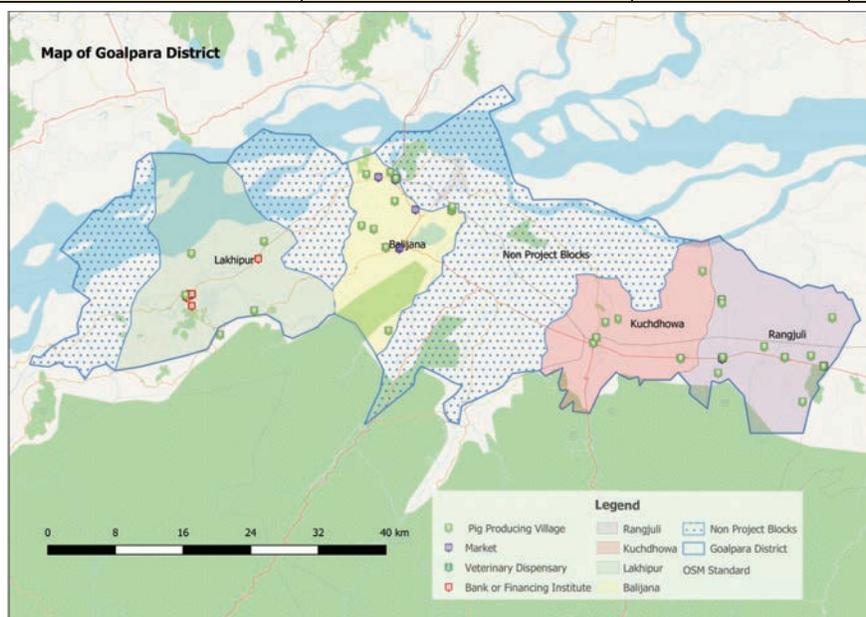
Figure 5.8: The map of the surveyed clusters of Goalpara district

5.8.2 FGD participants' profile

Table 5.8.2 shows the no. of FGD participants and their social status. The average no. of participants across APART clusters was 8.9 (male 4.8 and female 4.1). Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 83.8% of participants in the APART clusters of Goalpara are from the ST community followed by 12.3% from the OBC community. There were no participants from the SC community while only 3.9% of farmers participating in the FGD were from the 'general' category.

Table 5.8.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Rongjuli	5.00 (51.71)	4.67 (48.29)	9.67	15.67	0.00	0.00	84.33
Kuchdhuwa	4.25 (42.50)	5.75 (57.50)	10.00	0.00	18.00	0.00	82.00
Balijana	5.82 (61.52)	3.64 (38.48)	9.46	0.00	11.00	0.00	89.00
Lakhipur	4.00 (62.70)	2.38 (37.30)	6.38	0.00	20.00	0.00	80.00

Source: Field Survey, 2018

5.8.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole accounts for 7,115 HH enumerated though FGD and KII, of which 4,795 HH (66.28%) were identified as pig rearers having at least one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breed is 1.91% across clusters while 98.08% of farmers have crossbreds.No farmers report having both indigenous and crossbred pigs (Table 5.8.3).

Table 5.8.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH(%)	% HH keeping indigenous breeds	% HH keeping improved breeds	% HH keeping both indigenous and improved breeds
Rongjuli	3,283	2,338 (71.22)	1.50	98.50	0.00
Kuchdhuwa	444	338 (76.13)	1.25	98.75	0.00
Balijana	2,224	1,569 (70.55)	0.91	99.09	0.00
Lakhipur	1,164	550 (47.25)	4.00	96.00	0.00

Source: Field Survey, 2018

5.8.4 Pigrearing purposes

The majority of farmers rear pigs for fattening purpose (almost 91% of the total pig rearers), while only 7.9% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Rongjuli (12.8%), while lowest in Balijana (3.64). Only 2% of farmers across the APART clusters rear pigs both for breeding and fattening (Table 5.8.4).

Table 5.8.4: Distribution of farm HH by the purpose of pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Rongjuli	12.80	84.20	3.00
Kuchdhuwa	10.50	89.50	0.00
Balijana	3.64	95.27	1.09
Lakhipur	5.00	95.00	0.00

5.8.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 57.4%. This indicates that development of pigrearing activities has implications on women's empowerment.

Table 5.8.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Rongjuli	2,338	82.00	65.00
Kuchdhuwa	338	87.50	50.00
Balijana	1,569	86.36	64.54
Lakhipur	550	87.00	50.00

5.8.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Goalpara are shown in Table 5.8.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 2.15 with the highest in Rongjuli (2.7) and lowest in Kuchdhuwa (1.8). The average no. of fattened pigs sold yearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) across the APART clusters is 2.67. The ratio of fattened pigs sold to no. of pigs held is the highest in Lakhipur cluster (1.36) (Table 5.8.6).

Table5.8.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Rongjuli	2.70	2.90	1.07
Kuchdhuwa	1.80	2.50	1.39
Balijana	1.88	2.27	1.21
Lakhipur	2.20	3.00	1.36

5.8.7 Marketing behaviour of farmers at cluster level in Goalpara district

Table 5.8.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use pigs in feasts organized as part of some social ceremonies like marriage, and Christmas Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders or in the market in the study villages constitute 83% of the total annual pigs produced while 17% are used for non-marketing purposes as mentioned above (Table 5.8.7).

Table 5.8.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Rongjuli	2.90	91.50	8.50
Kuchdhuwa	2.50	73.75	26.25
Balijana	2.27	80.91	19.09
Lakhipur	3.00	88.00	12.00

With regard to the 83% of total pigs produced and sold yearly, 11.5% are slaughtered and sold by the farmer and 88.5% are sold to traders/butchers. None of the farmers in any of the clusters in Goalpara

report the presence of slaughter houses. The average fattened pig price at live weight ranges from INR 225/kg in Rongjuli cluster to INR 240/kg in Balijana and Kuchdhuwa clusters when slaughtered and sold by the farmer. Similarly, the average live weight price range when sold to traders/butchers is INR 162/kg (Lakhipur cluster) to INR 180 (Kuchdhuwa cluster). The average pork price in the markets of the APART clusters is INR 223. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During festive seasons such as in October/November/December, traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.8.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmers		To traders/butchers		To slaughter-houses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Rongjuli	2.00	225.00	98.00	174.07	0	-	0	-	230.00
Kuchdhuwa	28.75	240.00	71.25	180.00	0	-	0	-	220.00
Balijana	7.27	240.00	92.23	178.00	0	-	0	-	220.00
Lakhipur	8.00	235.00	92.00	162.00	0	-	0	-	220.00

Among the farms that rear pigs for breeding purposes (partly or fully) the sale pattern of breeding piglets is shown in Table 5.8.9. Across the APART clusters,an average of 16 piglets are sold by the breeding farm HH. Farmers sell the piglets to both their neighbouring farmers and to piglet traders. Almost 45% of the breeding piglets are sold to neighbouring farmers and the remaining 55% are sold to the traders. In Sarupather cluster, 54% of the piglets are sold to other farmers in the neighbourhood, while in Balijana cluster only 30% are sold through this channel. The average piglet price at weaning when sold to neighbours is INR 2,748/piglet and traders INR 2,791/piglet (Table 5.8.9).

Table 5.8.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Rongjuli	25	49.20	2,450	50.80	2,583
Kuchdhuwa	15	46.67	3,000	53.33	3,000
Balijana	10	30.00	3,000	70.00	3,000
Lakhipur	15	54.00	2,540	46.00	2,580

5.8.8 Access to veterinary services

Table 5.8.10 presents the no. of veterinary service providers which includes local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters an average of three local veterinarians operates, while the average distance from the farm villages is almost 3.30 km. At cluster level, the farm villages of Kuchdhuwa cluster are 4.5 km from a local veterinarian, while farm villages of Lakhipur are relatively closely located to a doctor's residence/duty station (2.3 km). VFAs are located on average 4.11 km from villages across clusters ranging from 2.3 km in Rongjuli to 7.16 km in Balijana. Two CAHWs provide local treatment services in Rongjuli cluster while none of the farmers in the remaining clusters report having access to a CAHW (Table 5.8.10).

Table 5.8.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/village	VFA		Distance from the FGD location/village	CAHWs		Distance from the FGD location/village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Rongjuli	3	0	3.31	7	0	2.3	2	0	3.5
Kuchdhuwa	4	0	4.5	7	0	4	0	0	0
Balijana	3	0	3.1	3	0	7.16	0	0	0
Lakhipur	3	0	2.3	2	0	3	0	0	0

*Local veterinarian includes both private and government Employed.

5.8.9 Access to other services (input and breeding)

Farmers in the selected clusters of Goalpara indicated that there are not any grocery shops across the APART clusters readily available for buying concentrate feeds. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. The majority of farmers prefer feeding pigs kitchen waste and waste of the local alcohol distillery. At cluster level,a range of one (in Kuchdhuwa) to five (Rongjuli) boars provide natural mating services to farmers within an average distance of 1.6 km (Table 5.8.11).

Table5.8.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Rongjuli	0	0	5	1.75
Kuchdhuwa	0	0	1	1.5
Balijana	0	0	0	0
Lakhipur	0	0	0	0

5.8.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are five pig traders organizations and six pig producers organizations across clusters of Goalpara.

Table 5.8.12: Availability of producers/traders organizations at cluster level

Pig cluster	Pig traders organizations	Pig producers organizations
Rongjuli	5 (Dighali)	5 (Khilamara, Kahibari, Simitola, Sandarpara, Maslam)
Kuchdhuwa	0	0
Balijana	0	1 (Kuruabasa)
Lakhipur	0	0

Source: Field Survey, 2018

Notes: Figures in parentheses are the major linked villages to the organizations.

DDL, feed testing laboratory and feed mills are absent throughout the APART clusters of Goalpara.

5.8.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.8.13, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from one in Kuchdhuwa cluster to 10 in Rongjuli.These no.are rough estimates by the farmers of traders who visit the cluster villages from various places in and outside of the Goalpara district. Similarly, the no. of butcher cum pork retailers ranges from one to 15. There is no slaughter house in any of the clusters of Goalpara.

Table 5.8.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses	Pork retailers
Rongjuli	10	12	0	0
Kuchdhuwa	1	4	0	0
Balijana	4	15	0	0
Lakhipur	4	1	0	0

Source: Field Survey, 2018

Table 5.8.14 presents pig trading markets, banks and other financing institutions, insurance for livestock providers, and the quality of the village approach roads.

Table 5.8.14: Markets and other infrastructures at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance (for livestock)	Approach road quality of the cluster villages		
				Poor	Fair	Good
Rongjuli	Kahibari, Dhupdhara, Darangiri, Rongjuli, Dhanubhanga	AGVB-Rangjuli	0	Khilamara, Sandarpara, Gathpara	Digali, Kurihamari, Maslam	Kahibari, Sarapara, Simitola
Kuchdhuwa	Dudhnoi, Nalbari, Sarupathar, Meghalaya, Darangiri	0	New India Assurance/ Oriental Insurance		Kasudhua, Khara	Kalajar, Chechapani
Balijana	Ananda Bazar,Makri, Shillong, Balijana, Dariduri	SBI	0	Dakurvitha	Makri Village	Kuruabasa, AnandaBazaar, Rokhapara, Charapara, Kalyanpur, Rampur
Lakhipur	Shillong, Rongsai	Central Bank, Lakhipur	0		Bolaikhamar, Lakhipur	Borosigri, Pukhuripar, Bordal

Source: Field Survey, 2018

AGVB = Assam Gramin Vikash Bank

SBI = State Bank of India

5.8.12 Progressive farmers at cluster level

There are no 'progressive' farmers self-identified or identified by others in Goalpara district.

Figure 5.8: Schematic representation of the value chain actors in Goalpara district.
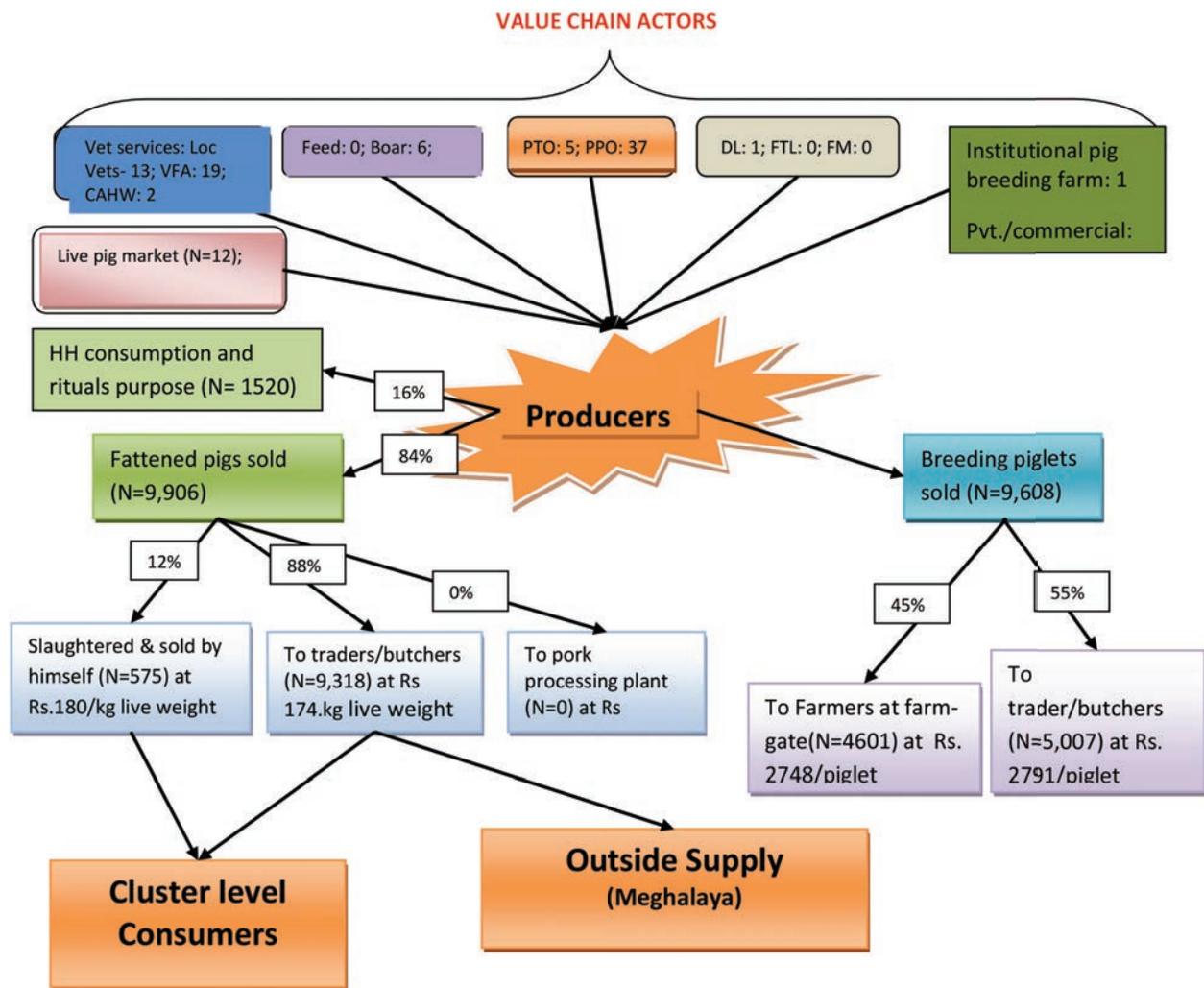
5.9 Nalbari district

5.9.1 Cluster villages identification based on field visit

One cluster in Nalbari district was identified for implementation of the ongoing project—Borigog and Bongaon. The list of villages incorporated in the cluster was finalized after consulting with the local key persons working consistently in and knowledgeable about the pig production and marketing scenario.

Table 5.9.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Borigog and Bongaon	Mahima, Shantipur, Sateribari, Dhamdhama,Balitera, Naharbari	Mahima, Shantipur, Sateribari, Dhamdhama,Balitera, Naharbari	0	0
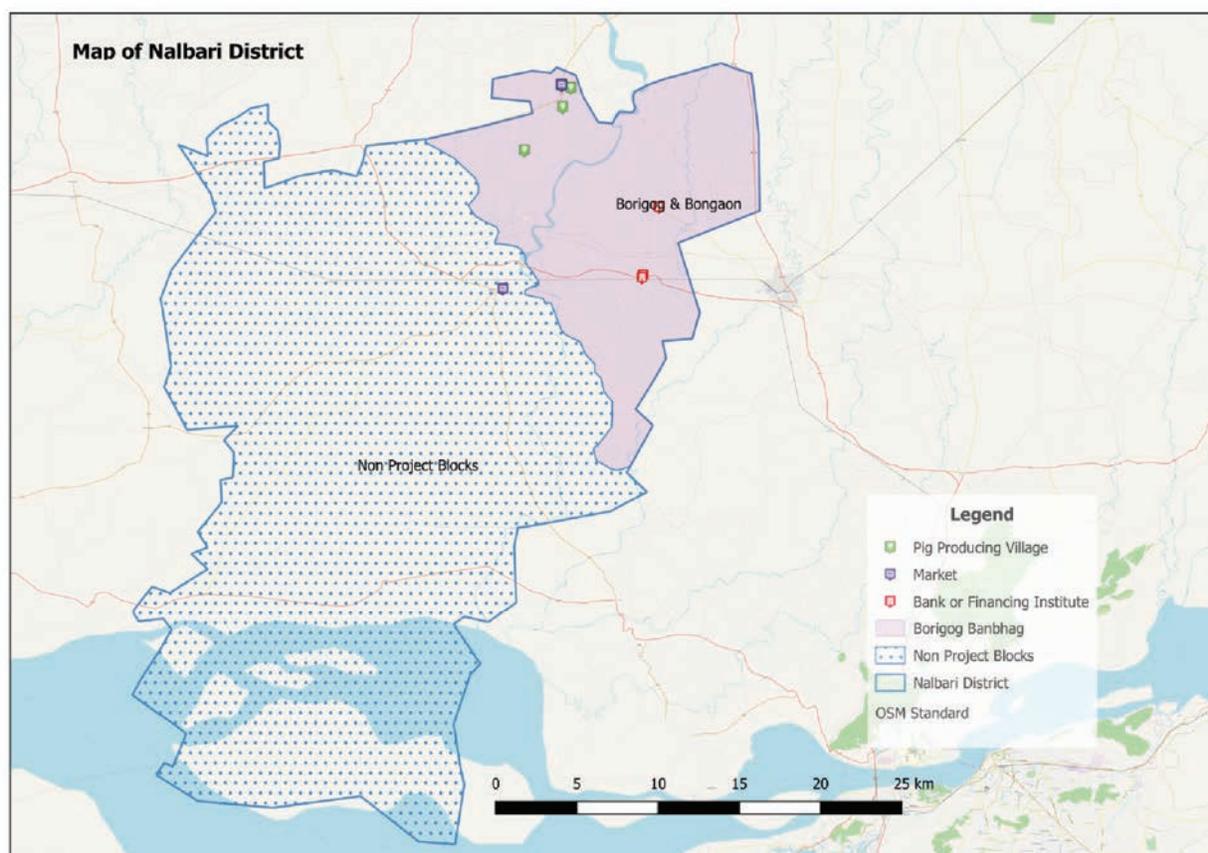
Figure 5.9: The map of the surveyed clusters of Nalbari district

5.9.2 FGD participants' profile

Table 5.9.2 shows the no. of FGD participants and their social status. A total of 9 (5.2 males and 3.8 females) participated in FGD. Almost 43.67% of participants in the APART cluster of Nalbari are from the 'general' category followed by 38.31% from the ST community and 18% from the OBC community. There were no participants from the SC community.

Table 5.9.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Borigog and Bongaon	5.22 (57.74)	3.82 (42.26)	9.04	43.67	18.02	0.00	38.31

Source: Field Survey, 2018

5.9.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the selected cluster is comprised of 1,880 HH enumerated though FGD and KII, of which 740 HH (39.36%) are identified as pig rearers having at least one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is 7.5% across while 90% of farmers have crossbreds and the remaining 2.5% have both indigenous and crossbred pigs.

Table 5.9.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigs from both indigenous and improved breeds
Borigog and Bongaon	1,880	740 (39.36)	7.50	90.00	2.50

Source: Field Survey, 2018

5.9.4 Pigrearing purposes

The majority of farmers rear pigs for fattening purpose (almost 86% of the total pig rearers), while only 9.63% of farmers rear pigs purely for breeding purpose in the APART cluster (Table 5.9.4). Approximately 4% of farmers in the APART cluster rear pigs both for breeding and fattening (5.9.4).

Table 5.9.4: Distribution of farm HH engaged in pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Borigog and Bongaon	9.63	86.12	4.25

Source: Field Survey, 2018

5.9.5 Women's participation in pig production and pork and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitute 60% . This indicates that development of pig rearing activities has implications on women's empowerment.

Table 5.9.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Borigog and Bongaon	740	70.00	60.00

Source: Field Survey, 2018

5.9.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART cluster of Nalbari are shown in Table 5.9.6. The average no. of adult pigs held by the farmers is 1.87. The average no. of fattened pigs sold yearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) in the APART cluster is 2.75.

Table 5.9.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Borigog and Bongaon	1.87	2.75	1.47

5.9.7 Marketing behaviour of farmers at cluster level

Table 5.9.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use pigs in feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders or in the market constitutes 70% of the total annual pigs produced while 30% are used for non-marketing purposes as mentioned above (Table 5.9.7).

Table 5.9.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Borigog and Bongaon	2.75	70.00	30.00

Of the 70% of the total annual pigs produced and sold by farmers, 1.25% are slaughtered and sold by the farmer and 98.75% are sold to traders/butchers. None of the farmers in the clusterof Nalbari report the presence of slaughter houses. The average fattened pig price at live weight is INR 178/kg in Borigog and Bongaon when slaughtered and sold by the farmer. The average live weight price when sold to traders/ butchers is INR 167/kg. The average pork price in the markets of the APART cluster is INR 220. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During festive seasons such as in October/November/December, traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table5.9.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Borigog and Bongaon	1.25	177.78	98.75	166.94	0	-	0	-	220

Among the farms that rear pigs for breeding purposes (partly or fully) the sale pattern of breeding piglets is shown in Table 5.9.9. Averages of 17 piglets are sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet's traders. Almost 17.5% of the breeding piglets are sold to neighbouring farmers while the remaining 82.5% is sold to traders. The average piglet price at weaning when sold to neighbours is INR 2,100/piglet and to traders is INR 2,200/piglet (Table 5.9.9).

Table 5.9.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Borigog and Bongaon	16.75	17.50	2,100	82.50	2,200

Source: Field Survey, 2018

5.9.8 Access to veterinary services

Table 5.9.10 presents the no. of veterinary service providers which include local veterinarians, VFA and CAHW providing piggery health care services to the farmers. The Borigog and. Bongaon cluster of Nalbari district has one local veterinarian whose distance from the farm villages is almost 3 km. The closest VFA at his duty station/residence is 2.6 km. There is no CAHW in the Nalbari cluster (Table 5.9.10).

Table5.9.10: Access to veterinary services at the selected APART cluster of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village	VFA		Distance from the FGD location/ village	CAHW		Distance from the FGD location/ village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Borigog and Bongaon	1	0	3	2	0	2.6	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and government Employed.

5.9.9 Access to other services (input and breeding)

Farmers in the selected cluster of Nalbari indicated that there are 12 grocery shops in within an average distance of 3.5 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops only. A majority of farmers prefer feeding pigs kitchen waste and waste of the local alcohol distillery. Borigog and Bangaon cluster has nine boars providing natural mating services to the other farmers within a distance of approximately 1 km (Table 5.9.11).

Table 5.9.11: Access to input and breeding services at cluster level

Pig cluster	Feed supplier/grocery shop selling feed		Boar service provider	
	No.	Distance from the FGD location/ village km	No.	Distance from the FGD location/ village km
Borigog and Bongaon	12	3.5	9	0.5

Source: Field Survey, 2018

5.9.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are not any registered producers or pig traders in Borigog and Bongaon cluster. This indicates that pig rearing and trading are carried out in an informal setting.

There is one DDL in the Borigob and Bongaon cluster. There are no feed testing laboratories or feed mill (Table 5.1.12).

Table 5.9.12: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill	Others
Borigog and Bongaon	1	0	0	0

Source: Field Survey, 2018

5.9.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.9.13, the no. of pork market actors involved in the pig value chain of the selected APART cluster is presented. The no. of pig and piglet traders in the selected cluster of Borigog and Bongaon is 15. This number is a rough estimate by farmers of traders who visit the cluster villages from various places in and outside the Nalbari district. Similarly, the no. of butcher cum pork retailers is 50. There is no slaughter house in the cluster of Nalbari.

Table 5.9.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughter houses	Pork retailers	Responses against different confidence level
Borigog and Bongaon	15	50	0	5	5

Source: Field Survey, 2018

The selected cluster of Nalbari does have a bank and insurance provider, as well as pig trading markets. However, two of the approach village roads are classified as 'poor' (Table 5.9.14).

Table 5.9.14: Markets and other infrastructures at cluster level

Pig cluster	Markets with pig trading	Bank and other financing institutions$	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Borigog and Bongaon	Dhamdhama, Nalbari, Shillong, Guwahati, Borsimlaguri	AGVB, Dhamdhama	NLM-Guwahati	Shantipur, Mohina		Chataibari, Dhamdhama

Source: Field Survey, 2018

5.9.12 Progressive farmers at cluster level

Two 'progressive' farmers were identified in Nalbari (Table 5.9.15).

Table 5.9.15: Names and contacts of promising progressive entrepreneurs in pork value chain

Pig cluster	No. of progressive farmers
Borigog and Bongaon	2

Source: Field Survey, 2018

Figure 5.9: Schematic representation of the value chain actors in Nalbari district.
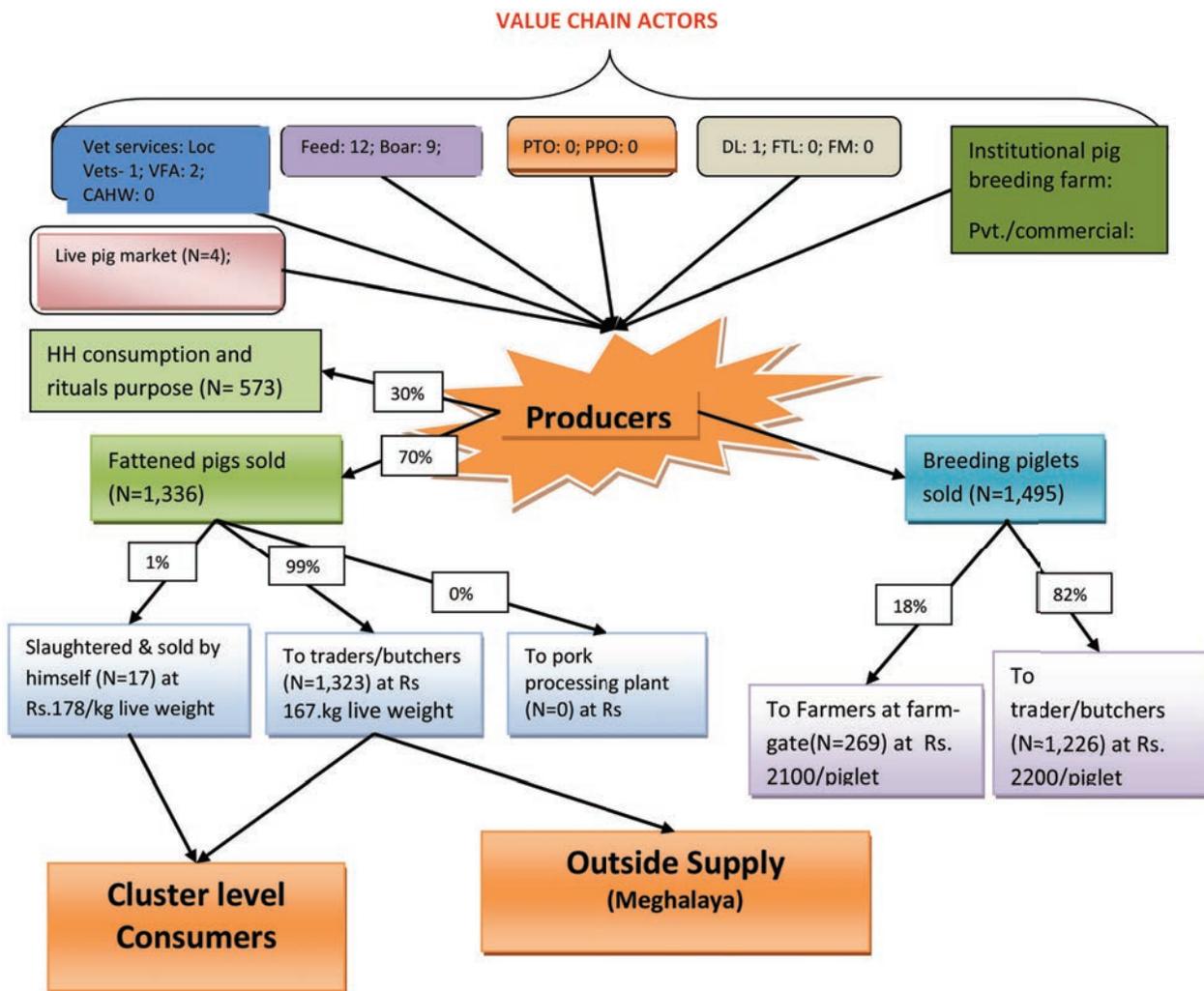
5.10 Karbi Anglong district

5.10.1 Cluster villages identification based on field visit

Seven clusters in Karbi Anglong district were selected for the implementation of the ongoing project. The selected clusters covering the potential villages for intervention with the informal pork value chain actors are Bokajan, Lumbajong, Howraghat, Boithalanso, Ulunkuchi, Silonijan and Kheroni. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working consistently with and favorably knowledgeable about the pig production and marketing scenario.

Table 5.10.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Bokajan	Kacharigaon, Mainapuri, Bormanthi	Kacharigaon, Mainapuri, Bormanthi	0	0
Lumbajong	Nepali Basti, Adorsho, Bhetagaon, Dimaidi, Nagachang, HidimTeron, Upper Ekorani, Lower Ekorani, DhansingTeron, Rongnokse, HondemtimungArong, Phonglangso, Rongchingri, Rongchingdon, KakatiRonghangArng, HemariRonghangArong, MensingRonghang,Arong, Serlongbi, Beltola, Rongkhelang Jensing Timung Arong	Nepali Basti, Adorsho, Bhetagaon, Dimaidi, Nagachang, HidimTeron, Upper Ekorani, Lower Ekorani, Dhansing Teron, Rongnokse, Hondemtimung Arong, Phonglangso, Rongchingri, Rongchingdon, Kakati Ronghang Arng, Hemari Ronghang Arong, Mensing Ronghang, Arong, Serlongbi, Beltola, Rongkhelang Jensing Timung Arong	0	0
Howraghat	BongtokTerang,KumoiRonghang, HabeKathar, PatarTimung, Sikaripathar, Sikarigate, SikarighatDimasagaon, Jiteplong, Mohiram Taro, Patradisha, SarsingEngti, BaliramEngti,Kehai Kro, Langchitim, Pan Engti, Rongmili, Bura Kiling, Long Terang, Baligaon, RongkhotHarijon Basti, Rongkhot Chauhan, Kalai Gaon - 1, Kalai Gaon - 3, Bali Gaon, Hongkram	Bongtok Terang, Kumoi Ronghang, HabeKathar, PatarTimung, Sikaripathar, Sikarigate, Sikarighat Dimasagaon, Jiteplong, Mohiram Taro, Patradisha, Sarsing Engti, Baliram Engti, KehaiKro, Langchitim, Pan Engti, Rongmili, Bura Kiling, Long Terang, Baligaon, Rongkhot Harijon Basti, Rongkhot Chauhan, Kalai Gaon - 1, Kalai Gaon - 3, Bali Gaon, Hongkram	0	0
Boithalanso	Edenbari, Mahajan Timung, Ambinong, near Saturday market, Porbot, near New Market, Umteli, near Old Market.	Edenbari, Mahajan Timung, Ambinong, near Saturday market, Porbot, Near New Market, Umteli, Near Old Market.	0	0
Ulukunchi	Birsinki, Umpenai, Ulukunchi	Birsinki, Umpenai, Ulukunchi	0	0

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Silonijan	Kathkatia, Dihingia Gaon, Aturkimi, Sardeka, Langsomepi, Zing Basti, Panika Gaon, Silkhuti	Kathkatia, Dihingia Gaon, Aturkimi, Sardeka, Langsomepi, Zing Basti, Panika Gaon, Silkhuti	0	0
Kheroni	Rikangmihong Pt - 1, Rikangmihom Pt - 2,Phelangpi, PrilooMakum, Durbintila, Rangmili	Rikangmihong Pt - 1, Rikangmihom Pt - 2,Phelangpi, PrilooMakum, Durbintila, Rangmili	0	0
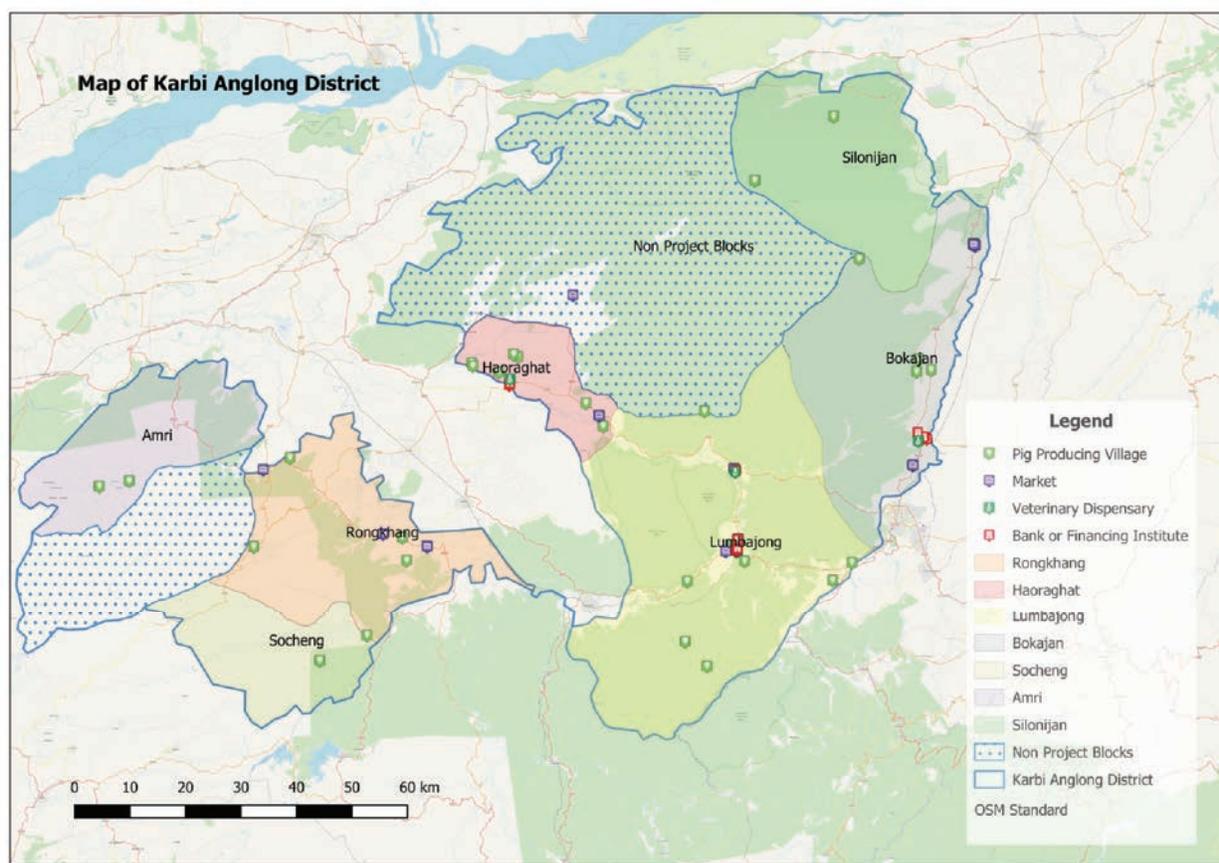
Figure 5.10: The map of the surveyed clusters of Karbi Anglong district

5.10.2 FGD participants' profile

Table 5.10.2 shows the no. of FGD participants and their social status. The average no. of participants across APART clusters is nine (4 male and 5 female). Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 98% of participants in the project clusters of Karbi Anglong are from the ST community while 2% are from the 'general' category.

Table 5.10.2: Distribution of participants by gender and social status

Pig clusters	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Bokajan	2.29 (22.29)	7.81 (77.71)	10.05	0	0	0	100
Lumbajong	3.19 (37.93)	5.22 (62.07)	8.41	0	0	0	100
Howraghat	2.75 (34.38)	6.24 (65.62)	8.99	0	0	0	100
Boithalanso	3.57 (42.25)	4.88 (57.75)	8.45	0	0	0	100
Ulukunchi	4.18 (40.27)	6.20 (59.73)	10.38	0	0	0	100
Silonijan	6.62 (69.32)	2.93 (30.68)	9.55	11.77	0	0	88.33
Kheroni	5.22 (79.09)	1.38 (20.91)	6.60	0	0	0	100

Source: Field Survey, 2018

5.10.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole encompasses 1,200 HH enumerated though FGD and KII, of which 926 HH (68.15%) are identified as pig rearers having at least one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is 1.7% across clusters while 97% of farmers have crossbreds and 1.3% of farmers have both indigenous and crossbred pigs (Table 5.10.3).

Table5.10.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH(%)	%HHkeeping indigenous breeds	% HH keeping improved breeds	HH keeping both indigenous and improved breeds
Bokajan	770	465 (60.39)	0.67	99.33	0.00
Lumbajong	2,096	1,840 (87.79)	0.00	100.00	0.00
Howraghat	2,940	2,680 (91.16)	0.00	100.00	0.00
Boithalanso	802	585 (72.94)	10.00	80.00	10.00
Ulukunchi	370	225 (60.81)	1.07	98.93	0.00
Silonijan	940	390 (41.49)	0.00	100.00	0.00
Kheroni	480	300 (62.50)	0.00	100.00	0.00

Source: Field Survey, 2018

5.10.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 82% of the total pig rearers) while only 8.8% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Boithalanso (17.5%), while lowest in Howraghat (2.86). Almost 10.6% of farmers across the APART clusters rear pigs both for breeding and fattening (Table 5.10.4).

Table 5.10.4: Distribution of farm HH by pig rearing purpose

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Bokajan	15.00	76.67	8.33
Lumbajong	3.23	90.85	5.92
Howraghat	2.86	80.00	17.14
Boithalanso	17.50	72.50	10.00
Ulukunchi	8.00	78.75	13.25
Silonijan	10.00	90.00	4.80
Kheroni	5.25	85.20	14.75

Source: Field Survey, 2018

5.10.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 74.9%. This indicates that development of pig rearing activities has implications on women's empowerment in the APART districts (Table 5.10.5).

Table 5.10.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Bokajan	465	87.67	79.67
Lumbajong	1,840	81.54	75.77
Howraghat	2,680	80.00	78.19
Boithalanso	585	80.00	71.67
Ulukunchi	225	80.12	68.75
Silonijan	390	84.00	74.00
Kheroni	300	88.00	76.23

Source: Field Survey, 2018

5.10.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Karbi Anglong are shown in Table 5.10.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 2.27 with the highest in Boithalanso cluster (2.83) and lowest in Kheroni (1.98). The average no. of fattened pigs sold yearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) across the APART clusters is 2.5. The ratio of sale of fattened pigs to no. of pigs kept is the highest in Howraghat and Silonijan clusters (1.40) (Table 5.10.6).

Table 5.10.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Bokajan	2.33	2.33	1.00
Lumbajong	2.46	2.38	1.03
Howraghat	2.14	3.00	1.40
Boithalanso	2.83	2.33	0.82
Ulukunchi	2.17	2.85	1.31
Silonijan	2.00	2.80	1.40
Kheroni	1.98	2.15	1.08

Source: Field Survey, 2018

5.10.7 Marketing behaviour of farmers at cluster level

Table 5.10.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use pigs in the feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders and in the market in the study villages constitutes 76.6% of the total annual pigs produced while 23.4% are used for non-marketing purposes as mentioned above (Table 5.10.7).

Table 5.10.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Bokajan	2.33	100.00	0.00
Lumbajong	2.38	95.15	4.85
Howraghat	3.00	95.00	5.00
Boithalanso	2.33	56.00	44.00
Ulukunchi	2.85	88.73	11.27
Silonijan	2.80	93.60	6.40
Kheroni	2.15	98.00	2.00

Source: Field Survey, 2018

Of the 76.6% of total pigs produced and sold yearly by the farmers, 5.8% are slaughtered and sold by the farmers and 94.2% are sold to traders/butchers. None of the farmers in any of the clusters in Karbi Anglong report the presence of slaughter houses. The average fattened pig price at live weight is INR 170/kg when slaughtered and sold by the farmer. The average live weight price when sold to traders/butchers is INR 178/kg. The average pork price in the markets of the APART clusters is INR 208. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During festival seasons such as in October/November/December, traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.10.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmer		To traders/butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/ kg live weight	
Bokajan	3.33	200.00	96.67	179.00	0.00	-	0.00	-	220.00
Lumbajong	2.08	188.00	97.92	183.00	0.00	-	0.00	-	200.00
Howraghat	4.28	200.00	95.71	159.28	0.00	-	0.00	-	200.00
Boithalanso	11.67	200.00	88.33	187.00	0.00	-	0.00	-	200.00
Ulukunchi	9.50	200.00	90.50	178.00	0.00	-	0.00	-	200.00
Silonijan	10.00	200.00	90.00	200.00	0.00	-	0.00	-	240.00
Kheroni	0.00	-	100.00	165.00	0.00	-	0.00	-	200.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purpose (partly or fully) the sale pattern of breeding piglets is shown in Table 5.10.9. Across the APART clusters,an average of 14.2 piglets are sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet traders. Almost 64% of the breeding piglets are sold to neighbouring farmers and the remaining 36% is sold to traders. In Kheroni cluster, 80% of the piglets are sold to other farmers in the neighbourhood, while in Boithalanso cluster only 18% are sold through this channel. The average piglet price at weaning when sold to neighbours is INR 2,612/piglet and to traders is INR 2,656/piglet (Table 5.10.9).

Table5.10.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Bokajan	14.00	73.33	3,000.00	26.67	2,800.00
Lumbajong	11.54	77.69	2,830.00	22.31	2,800.00
Howraghat	21.43	77.14	2,728.57	22.86	2,728.00
Boithalanso	15.83	18.33	2,166.00	81.67	2,167.00
Ulukunchi	10.00	68.17	2,500.00	31.83	2,500.00
Silonijan	14.40	54.00	2,360.00	46.00	2,800.00
Kheroni	12.00	80.21	2,700.00	19.79	2,800.00

Source: Field Survey, 2018

5.10.8 Access to veterinary services

Table 5.10.10 presents the no. of veterinary service providers which include local veterinarians, VFA and CAHW providing piggery health care services to the farmers. Across clusters an average of one local veterinarian operates, while the average distance from the farm villages to the veterinarian is almost 4km. VFAs distance from villages ranges from 1 km in Bokajan cluster to 5 km in Kheroni cluster. Eleven CAHWs provide local treatment services in Bokajan, Lumbajong and Silonijan clusters while none of the farmers in the remaining clusters report havingaccess to a CAHW for veterinary services (Table 5.10.10).

Table 5.10.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village	VFA		Distance from the FGD location/ village	CAHW		Distance from the FGD location/ village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Bokajan	1	0	3.26	1	0	1	2	0	1.5
Lumbajong	3	0	5.4	2	0	3.5	4	0	2.4
Howraghat									
Boithalanso	2	0	3.83	2	0	3.8	0	0	0
Ulukunchi									
Silonijan	1	0	3.5	2	0	4	5	0	2.8
Kheroni	1	0	4.6	2	0	5	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and government Employed.

5.10.9 Access to other services (input and breeding)

There is an average of 3.29 grocery shops across the APART clusters readily available for buying concentrate feeds with an average distance of 0.5 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. A majority of the farmers prefer feeding the pig's kitchen waste and waste from the local alcohol distillery. At cluster level, arange of 2(Bokajan) to 28 (Howraghat) boars provide natural mating services to farmers within an average distance of almost 1 km (Table 5.10.11).

Table 5.10.11: Access to input and breeding services at cluster level

Pig cluster	Feed suppliers/grocery shop selling feed		Boar service providers	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Bokajan	6	1.5	2	1
Lumbajong	7	0.5	11	0.5
Howraghat	6	0.5	28	0.5
Boithalanso	4	0.5	2	2
Ulukunchi	0	0	2	1
Silonijan	0	0	3	1.5
Kheroni	0	0	2	1

Source: Field Survey, 2018

5.10.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders or pig producers organizations in any of the clusters. This indicates that pig rearing and trading are carried out in an informal setting.

There is one DDL across clusters, in Lumbajong. There are no feed testing laboratories or feed mill in the district clusters.

Table 5.10.12: Availability of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill
Bokajan	0	0	0
Lumbajong	1	0	0
Howraghat	0	0	0
Boithalanso	0	0	0
Ulukunchi	0	0	0
Silonijan	0	0	0
Kheroni	0	0	0

Source: Field Survey, 2018

5.10.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.10.14, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from three in Kheroni to 20 in Howraghat. This no.are the rough estimates by the farmers of traders who visit the cluster villages from various places in and outside the Karbi Anglong district. Similarly, the no. of butcher cum pork retailers is in the range of one to 25. There is no slaughter house in any of the clusters of Karbi Anglong.

Table 5.10.13: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses
Bokajan	10	2	0
Lumbajong	10	20	0
Howraghat	20	20	0
Boithalanso	15	25	0
Ulukunchi	5	10	0
Silonijan	6	5	0
Kheroni	3	1	0

Source: Field Survey, 2018

Table 5.10.14 includes pig trading markets, banks and other financing institutions, livestock insurance providers and the quality of approach roads to the villages. Across clusters, only one bank and one insurance provider are available. In addition, many of the village approach roads are of poor quality.

Table5.10.14: Markets and other infrastructures at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Bokajan	Khatkhati market	0	0	0	Mainapuri, Bormanthi, Kacharigaon	0
Lumbajong	Manja, Diphu, Rangkhelam, Birala, Amalapatty	0	0	Serlongjan, Kakoti, Ronghangarong, Beltola, Hidim Teron, Mensing Ronghangarong, Dhonhlangso, Rongchingdon, Saranjong, Sankuranlong	0	Upper Ekorani and Lower Ekorani, Jiteplong, Rongchingri
Howraghat	Hawraghat, Diphu, Baligaon, Manja	0	0	Patardisha, Kalaigaon, Sikarighat, DimasaGaon, Mahiram Taro	0	Rongmili, Burakuling and Longtenang, Baligaon, Paningti
Boithalangso	Amsoi, Meghalaya, Boithalangso, New Market	LDRB-Bhoksong Branch	NLM-Ghy	Ambinong, New Market, Umteli, Parbat	0	Edenbari
Ulukunchi		0	0	0	0	0
Silonijan	Silonijan Market	0	0		Kathkatia, Dhiginiagaon, Aturkumi, Sardeka, Silkuti	
Kheroni	Kheroni Bazaar, Jenka Pork Bazaar	0	0		Rikhanmihong	

Source: Field Survey, 2018

LDRB = Langipi Dehangi Rural Bank

NLM =

5.10.12 Progressive farmers at cluster level

Across clusters, four 'progressive' farmers are identified (Table 5.10.5).

Table5.10.15: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers	Names and contacts
Bokajan	0	0
Lumbajong	3	Missionary Don Bosco Agro Farm; Raton Engti (9954833387); Rosemary Rongpharpi (8874558649)
Howraghat	1	Dominic R. Marak (7002869764)
Boithalanso	0	0
Ulukunchi	0	0
Silonijan	0	0
Kheroni	0	0

Source: Field Survey, 2018

Figure 5.10: Schematic representation of the value chain actors in Karbi Anglong district.
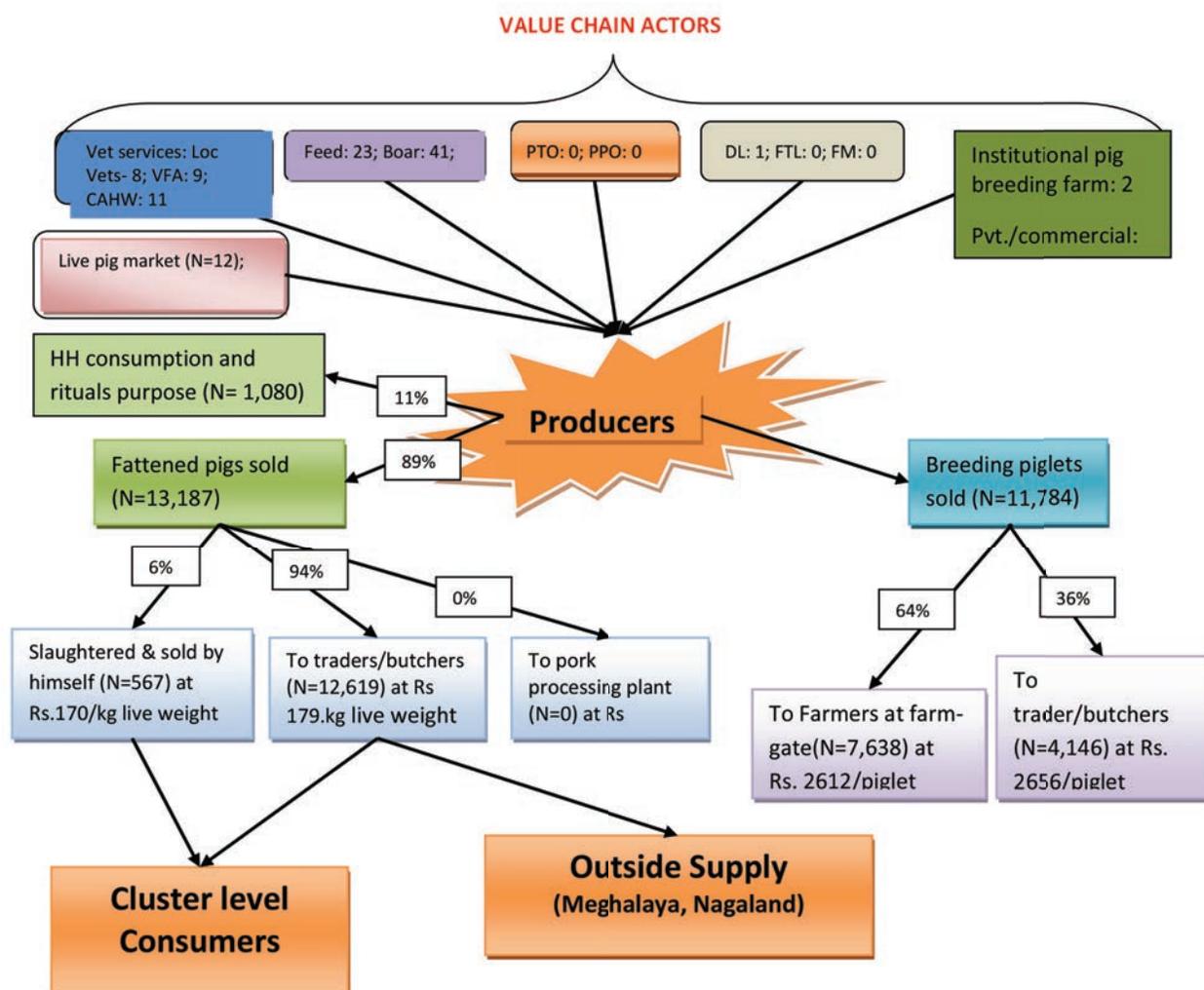
5.11 Kokrajhar district

5.11.1 Cluster villages identification based on field visit

Four clusters in Kokrajhar district were identified for implementation of the ongoing project. The selected clusters covering the potential villages for intervention with the informal pork value chain actors are Kokrajhar, Dotoma, Gossaingaon and Debitola. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working in and favorably knowledgeable about the pig production and marketing scenario.

Table 5.11.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Kokrajhar	Kathalguri - 1, Kathalguri - 2, Bangladuba, Titaguri - 1, Titaguri - 2, Halowador, MagurmariKumguri	Kathalguri - 1, Kathalguri - 2, Bangladuba, Titaguri - 1, Titaguri - 2, Halowador, MagurmariKumguri	0	0
Dotoma	Nalbari, Belguri, Dhupguri, Saraguri, PachimPatgaon, Borsijhora Part - 2, Batabari, Bonshigaon, Lokhnabari, Aflagaon, Banargaon, Ghoskata, Hogmabil, No. 1 Habrubari, Gossainichina	Nalbari, Belguri, Dhupguri, Saraguri, PachimPatgaon, Borsijhora Part - 2, Batabari, Bonshigaon, Lokhnabari, Aflagaon, Banargaon, Ghoskata, Hogmabil, No. 1 Habrubari, Gossainichina	0	0
Gossaigaon	Chekadani, Gambaribil, Raikhumbari, Boirali, Bhumka 1, Bhumka 2, Chakma, Thuribari, Sukanbaonai, Satyapur, Mohanpur, Restekpur(Bhairiguri), No. 1 Dawaguri, Alokjhar, No. 1 Gorjan, Koklingbari, Kamalsing, Rajapara, Thuribari	Chekadani, Gambaribil, Raikhumbari, Boirali, Bhumka 1, Bhumka 2, Chakma, Thuribari, Sukanbaonai, Satyapur, Restekpur (Bhairiguri), No. 1Dawaguri, Alokjhar, No. 1Gorjan, Koklingbari, Kamalsing	0	Mohanpur, Rajapara, Thuribari
Debitola	Debitola, Gambhirkhata, Bashijhora, Kazigaon, Alupara	Debitola, Gambhirkhata, Bashijhora, Kazigaon	0	Alupara
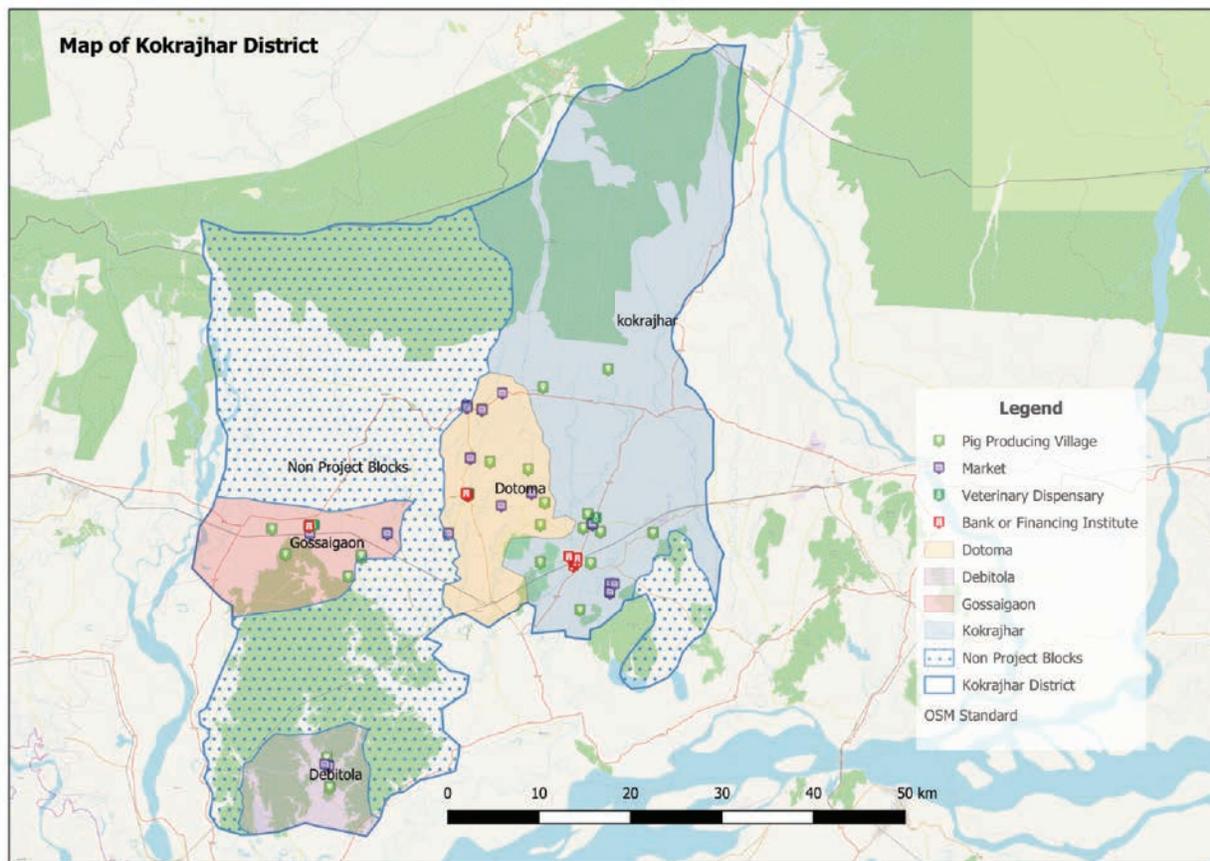
Figure 5.11: The map of the surveyed clusters of Kokrajhar district

5.11.2 FGD participants' profile

Table 5.11.2 shows the no. of FGD participants and their social status. The average no. of male and female participants is 8.7 across clusters (4.2 male 4.5 female). Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. All of the participants in the APART clusters of Kokrajhar are from the ST community.

Table 5.11.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Kokrajhar	3.10 (42.35)	4.22 (57.65)	7.32	0	0	0	100
Dotoma	5.17 (64.14)	2.89 (35.86)	8.06	0	0	0	100
Gossaigaon	4.10 (49.40)	4.20 (50.60)	8.30	0	0	0	100
Debitola	4.50 (40.00)	6.75 (60.00)	11.25	0	0	0	100

Source: Field Survey, 2018

5.11.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole comprises 7,311 HH enumerated though FGD and KII, of which 6,404 HH (88.4%) are identified as pig rearers having at least one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of

inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is 13.2% across clusters while 62.5% of farmers have crossbreds and 1.8% of farmers have both indigenous and crossbred pigs (Table 5.11.3).

Table 5.11.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pig from both indigenous and improved breeds
Kokrajhar	754	709 (94.03)	7.00	92.00	1.00
Dotoma	2,271	2,040 (89.83)	5.31	94.31	0.38
Gossaigaon	3,150	2,700 (85.71)	26.50	68.50	5.00
Debitola	1,136	955 (84.07)	14.00	85.00	1.00

Source: Field Survey, 2018

5.11.4 Pig rearing purposes

The majority of the farmers rear pigs for fattening purpose (almost 81% of the total pig rearers), while only 13% of farmers rear pigs purely for breeding purpose across the APART clusters (Table 5.11.4). At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Dotoma (19.3%) while lowest in Kokrajhar (5.89%. Almost 6% of farmers across the project clusters rear pigs both for breeding and fattening (Table 5.11.4).

Table 5.11.4: Distribution of farm HH engaged in pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Kokrajhar	5.89	92.11	3.44
Dotoma	19.31	78.38	2.46
Gossaigaon	13.00	82.00	5.00
Debitola	13.75	71.25	15.00

Source: Field Survey, 2018

5.11.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 75.4%. This indicates that development of pig rearing activities has implications on women's empowerment in the APART districts (Table 5.11.5).

Table 5.11.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Kokrajhar	709	87.78	77.78
Dotoma	2,040	90.38	67.31
Gossaigaon	2,700	88.00	74.00
Debitola	955	91.25	82.50

Source: Field Survey, 2018

5.11.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Kokrajhar are shown in Table 5.11.6. Across the APART clusters, the average no. of adult pigs held by the farmers is 2.4 with the highest in Gossaingaon (2.7) and lowest in Debitola (2.25). The average no. of fattened pigs sold yearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) across the APART clusters is 2.34. The ratio of fattened pigs sold to no. of pigs held is the highest in Dotomaat 1.4 (Table 5.11.6).

Table 5.11.6: Average herd size (adult pigs) of the farm HH and average no.of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Kokrajhar	2.33	2.00	0.86
Dotoma	2.31	3.23	1.40
Gossaigaon	2.70	1.90	0.70
Debitola	2.25	2.25	1.00

Source: Field Survey, 2018

5.11.7 Marketing behaviour of farmers at cluster level

Table 5.11.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use pigs in feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders and in the market constitutes 91% of the total annual pigs produced while 9% are used for non-marketing purposes as mentioned above (Table 5.11.7).

Table 5.11.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Kokrajhar	2.00	92.50	7.50
Dotoma	3.23	91.15	8.85
Gossaigaon	1.90	86.00	14.00
Debitola	2.25	95.00	5.00

Source: Field Survey, 2018

Of the 91% of the total annual pigs produced and sold by farmers, 15.5% are slaughtered and sold by farmers and 84.5% are sold to traders/butchers. None of the farmers in any of the clusters in Kokrajhar report the presence of slaughter houses. The average fattened pig price at live weight is INR 214/kg when slaughtered and sold by the farmer and the average live weight price when sold to traders/butchers is INR 182/kg. The average pork price in the markets of the APART clusters is IN 222 (Table 5.11.8). Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus fetches a lower price while during winter, the price rises with the rise in demand for pork. During festive seasons such as in October/November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.11.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmers		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/ kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Kokrajhar	17.22	225.00	82.78	197.04	0	-	0	-	250.00
Dotoma	15.77	230.00	84.23	183.25	0	-	0	-	240.00
Gossaigaon	21.70	200.00	78.30	179.33	0	-	0	-	200.00
Debitola	7.50	200.00	92.50	168.00	0	-	0	-	200.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purpose (partly or fully) the sale pattern of breeding piglets is shown in Table 5.11.9. Across the APART clusters, averages of 18.6 piglets are sold by the breeding farm HHs. Farmers sell the piglets to both the neighbouring farmers and to piglet traders. Almost 36.5% of the breeding piglets are sold to neighbouring farmers and the remaining 63.5% are sold to traders. In Kokrajhar cluster, 57% of the piglets are sold to other farmers in the neighbourhood while in Debitola cluster only 6% are sold through this channel. The average piglet price at weaning when sold to neighbours is INR 2,092/ piglet and to traders is INR 2,158/piglet (Table 5.11.9).

Table 5.11.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Kokrajhar	26.00	57.14	2,157.14	42.86	2,114.00
Dotoma	22.00	40.00	2,323.08	60.00	2,346.15
Gossaigaon	15.25	42.50	2,187.50	57.50	2,325.00
Debitola	11.25	6.25	1,700.00	93.75	1,850.00

Source: Field Survey, 2018

5.11.8 Access to veterinary services

Table 5.11.10 presents the no. of veterinary service providers which include local veterinarians, VFA and CAHW providing piggery health care services to the farmers. Across clusters an average of 2.75 local veterinarians operates, while the average distance from the farm villages is almost 3.3 km. At cluster level, farm villages of Kokrajhar cluster are 7 km from a local veterinarian. VFAs are an average 2.22 km in distance from villages across clusters ranging from 1.5 km in Debitola to 3.28 km in Kokrajhar. There is no CAHW in Kokrajhar district. (Table 5.11.10).

Table 5.11.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village km	VFA		Distance from the FGD location/ village km	CAHW		Distance from the FGD location/ village km
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Kokrajhar	2	0	6.8	5	0	3.28	0	0	0
Dotoma	5	0	1.66	8	0	1.6	0	0	0
Gossaigaon	3	0	3.05	7	0	2.5	0	0	0
Debitola	1	0	1.75	2	0	1.5	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and government Employed.

5.11.9 Access to other services (input and breeding)

There are two grocery shops to buy feed in Gossiangaon cluster. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops only. The majority of farmers prefer feeding pigs kitchen waste and waste from the local alcohol distillery. At cluster level, arange of 4 (in Kokrajhar) to 21 (Dotoma) boars provide natural mating services to the other farmers within an average distance of 1 km (Table 5.11.11).

Table 5.11.11: Access to input and breeding services at cluster level

Pig cluster	Feed suppliers/grocery shops selling feed		Boar service providers	
	No.	Distance from the FGD location/ village km	No.	Distance from the FGD location/village km
Kokrajhar	0	-	4	0.5
Dotoma	0	-	21	1.5
Gossaigaon	2	0.5	9	0.5
Debitola	0	-	6	1.5

Source: Field Survey, 2018

5.11.10 Availability of producers/traders organizations and input supplying institutions at cluster level

While there are not any registered pig traders, there are 15 pig producers organizations in the clusters of Kokrajhar.

Table 5.11.12: Availability of producers/traders organizations at cluster level

Pig cluster	Pig traders organizations	Pig producers organizations
Kokrajhar	0	5
Dotoma	0	1
Gossaigaon	0	5
Debitola	0	4

Source: Field Survey, 2018

Across the Kokrajhar district clusters, there is one DDL and one feed mill in Kokrajhar cluster (Table 5.11.13).

Table 5.11.13: No. of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill
Kokrajhar	1	0	1
Dotoma	0	0	0
Gossaigaon	0	0	0
Debitola	0	0	0

Source: Field Survey, 2018

5.11.11 Major pork market actors and other infrastructure in the pork value chain

In Table 5.11.14, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from 10 in the Kokrajhar and the Dotoma cluster to 20 in Debitola. This no. are the rough estimates by farmers of traders who visit the cluster villages from various places in and outside the Kokrajhar district. Similarly, the no. of butcher cum pork retailers is in the range of 15 to 20. As the table points out, there is no slaughter house in any of the clusters of Kokrajhar.

Table 5.11.14: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses
Kokrajhar	10	15	0
Dotoma	10	20	0
Gossaigaon	15	15	0
Debitola	20	20	0

Source: Field Survey, 2018

There are no banks/financing institutions or livestock insurance providers across clusters. In addition, many village approach roads are classified as 'poor' quality (Table 5.11.15).

Table 5.11.15: Markets and other infrastructure at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Kokrajhar	Kadamtala, Titabari, Tiniali market	0	0	Nalbari		Doulagaon, Titabari 1, Saraguri, Kathalguri,Haluwadol, Belguri, Dhupguri
Dotoma	Dotoma, Hokoma Bill, Bongaon, Ramfol Bill, Aflaguri	0	0	Magurmari, Kumguri, Hokomabil, Batabari	Vet sub- centre Bongaon, Pachim Patgaon, Bongshigaon	Habrubari part 2, Habrubari part 3, Bornijhar Part 2, Goshkata, Lakhnabari, Aflagaon
Gossaigaon	Bhaoraguri, Gossaingaon, Kachugaon, Hasimari, Kokrajhar	0	0	Alokjhar		Koklingbari, Chekadami, Thuribari, Boirali, Gambaribi, Raikhumbari, Kamalsingh, Gorjan 1, No. 1 Dawaguri
Debitola	Debitola, Kazigaon	0	0	Debitola	Kazigaon	Gambirakata,Kazigaon market (Barsijhara)

5.11.12 Entrepreneurs at cluster level

There are two 'progressive' farmers in Kokrajhar district, Kokrajhar cluster. Progressive farmers were self-identified during FGD and identified by others during FGD and KII (Table 5.11.16).

Table 5.11.16: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of entrepreneurs	Names and contacts
Kokrajhar	2	Jayanta Basumtary(9864701323), Amit Brahma (7002432622)
Dotoma	0	0
Gossaigaon	0	0
Debitola	0	0

Figure 5.11: Schematic representation of the value chain actors in Kokrajhar district.
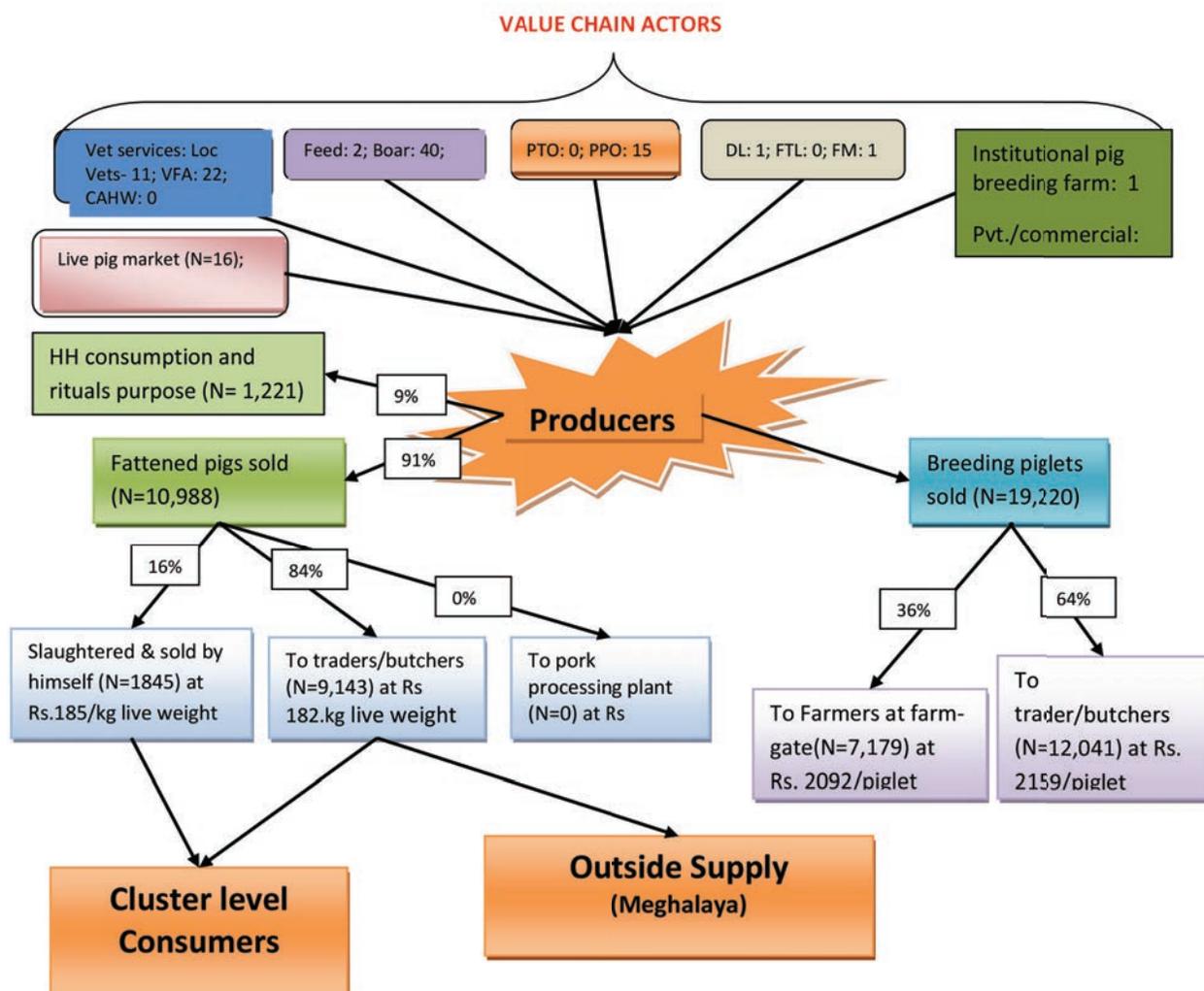
5.12 Sivasagar district

5.12.1 Cluster villages identification based on field visit

Six clusters were identified in Sivasagar district for implementation of the ongoing project. The selected clusters covering the potential villages for intervention with the informal pork value chain actors are Khelua(Lakowah), Gaurisagar, Demow, Disangpani(Sonari), Sapekhati and Nazira. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working in and knowledgeable about the pig production and marketing scenario.

Table 5.12.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Khelua (Lakowah)	Afala Missing, Majarbari and Ligiribari, Boloma missing, LepaiChumoni, Dimowmukh, Garbhaga, Chenimora, DigholDorioli, Bhadhara, Betbari 2 No. Konwar, Nowjan, TamulibazarChangmai, Khamun, Khanikar, Khelowa, Robi Gaon, MoutMoupiya, Borpatra, Bokabil, Da-Gaon, Melamora, Betonipam, Jatipotia, Dowari Gaon, Gandhia, Bakal, Lebang, HahcharaChetia, Nimaijan, Naga Gaon, Choulkara, Moran Gaon, Haripara Ali Kochari, Bam Gohain, JabalatingChetia, Konwar Gaon, Boiragibor, Bailung Gaon, Kohar Gaon, Punibil	Afala Missing, Majarbari and Ligiribari, Boloma missing, LepaiChumoni, Dimowmukh, Garbhaga, Chenimora, DigholDorioli, Bhadhara, Betbari 2 No. Konwar, Nowjan, TamulibazarChangmai, Khamun, Khanikar, Khelowa, Robi Gaon, MoutMoupiya, Borpatra, Bokabil, Da-Gaon, Melamora, Betonipam, Jatipotia, Dowari Gaon, Gandhia, Bakal, Lebang, HahcharaChetia, Nimaijan, Naga Gaon, Choulkara, Moran Gaon, Haripara Ali Kochari, Bam Gohain, JabalatingChetia, Konwar Gaon, Boiragibor, Bailung Gaon, Kohar Gaon, Punibil, Kakojan, Gomotha, Mesgaon	Kakojan, Gomotha, Mesgaon	0
Gaurisagar	RupohimukhMising, JonmiriBorgaon, Thekaratol,Teliadunga	RupohimukhMising, JonmiriBorgaon, Thekaratol,Teliadunga	0	0
Demow	Tetaliguri, Bamrajabari, Kotiori, Dolopani, Dhaibari, Balikur, Samukjan, Milonkur, Borchumoni, Tengapani	Tetaliguri, Bamrajabari, Kotiori, Dolopani, Dhaibari, Balikur, Samukjan, Milonkur, Borchumoni, Tengapani	0	0
Disangpani (Sonari)	Solmari, Borpathar, Dakshin Borpathar, Maj Pathar, Khoumtai, BalikhutiGumutha, Rangoli, Hajuajungal Block, Changmai Gaon, Moudumoni, Tifuk Kochari, Doba Grant, Lukurakhan, PorosaniHabi 1 and 2, Chengalimora, MahmoraKonwar, Jajali, Borchohoki, Borbil, Ram Nagar, Nirmolia, DesawBotuwa, KurukaniDeori, Erabari, KhaloiGhugura, Borahigaon, Bahboria,RajapatharRaidongia, Lalati Pathar, AbhoipurChangmai Gaon	Solmari, Borpathar, Dakshin Borpathar, Maj Pathar, Khoumtai, BalikhutiGumutha, Rangoli, Hajuajungal Block, Changmai Gaon, Moudumoni, Tifuk Kochari, Doba Grant, Lukurakhan, PorosaniHabi 1 and 2, Chengalimora, MahmoraKonwar, Jajali, Borchohoki, Borbil, Ram Nagar, Nirmolia, DesawBotuwa, KurukaniDeori, Erabari, KhaloiGhugura, Borahigaon, Bahboria,RajapatharRaidongia, Lalati Pathar, AbhoipurChangmai Gaon	0	0

Sapekhati	Nagahat, Dhadum, Kolakata, KolakataGohain, Moranhabi 1, Moranhabi 2, Dabaluhabi, Garkush, Bheshelipathar, Ghalaguri	Nagahat, Dhadum, Kolakata, KolakataGohain, Moranhabi 1, Moranhabi 2, Dabaluhabi, Bheshelipathar, Ghalaguri	0	Garkush
Nazira	SantakBorMising, Bali Gaon, Tipomia, Soladhara, PahuchungiDeodhai, Senbessa,Henor Ali, Namati Joy Khamdang, RabotiKopohuwa, Habi Gaon, Lahon Gaon, Singhibil, NapamBarutia	SantakBorMising, Bali Gaon, Tipomia, Soladhara, PahuchungiDeodhai, Senbessa,Henor Ali, Namati Joy Khamdang, RabotiKopohuwa, Habi Gaon, Lahon Gaon, Singhibil, NapamBarutia, Bailung Gaon, Malagaon	Bailung Gaon, Malagaon	Nil
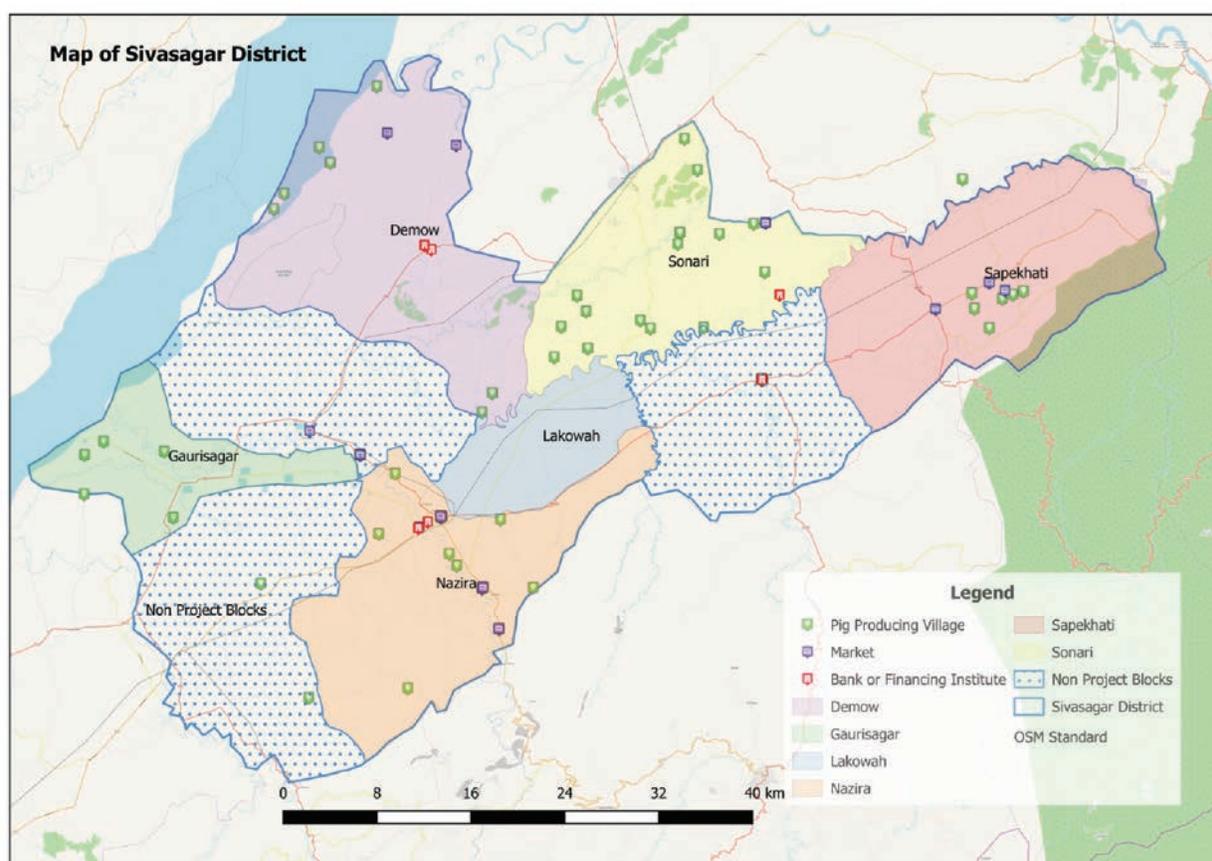
Figure 5.12: The map of the surveyed clusters of Sivasagar district

5.12.2 FGD participants' profile

Table 5.12.2 shows the no. of FGD participants and their social status. The average no. of participants across APART clusters is 8.6 (6.1 male and 2.5 female).Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 49.4% of participants in the APART clusters of Sivasagar are from the OBC community, following by 42.3% of participants from the ST community and 8.3% of participants from the 'general' category. Representation of participants from the SC community is nil across the clusters.

Table 5.12.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)_	Female (%)	Total	General	OBC	SC	ST
Khelua (Lakowah)	5.93 (57.41)	4.40 (42.59)	10.33	13.28	71.68	0.00	15.04
Gaurisagar	5.00 (80.00)	1.25 (20.00)	6.25	0.00	32.07	0.00	67.93
Demow	7.75 (88.07)	1.05 (11.93)	8.80	0.00	14.28	0.00	85.72
Disangpani (Sonari)	5.91 (65.67)	3.09 (34.33)	9.00	8.29	46.25	0.00	45.55
Sapekhati	5.50 (70.06)	2.35 (29.94)	7.85	10.65	63.28	0.00	26.07
Nazira	6.44 (69.85)	2.78 (30.15)	9.22	17.35	69.06	0.00	13.59

Source: Field Survey, 2018

5.12.3 Farming system by type of porcine stock

Considering the selected villages for the development of the pork value chain under APART, the district as a whole is comprised of 15,217 HH enumerated though FGD and KII, of which 12,044 HH (68%) are identified as pig rearers having at least one pig. As the farmers point out,the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breed is 5.3% across clusters, 93.3% of farmers have crossbreds and 1.4% of farmers have both indigenous and crossbred pigs.

Table 5.12.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pig from both indigenous and improved breeds
Khelua (Lakowah)	3,602	2,738 (76.01)	1.22	98.78	0.00
Gaurisagar	485	435 (89.69)	15.00	82.50	2.50
Demow	1,429	1,374 (96.15)	0.00	100	0.00
Disangpani (Sonari)	5,585	4,145 (74.22)	9.09	89.09	1.82
Sapekhati	2,081	1,755 (84.33)	5.00	92.50	2.50
Nazira	2,035	1,597 (78.48)	1.67	96.67	1.66

Source: Field Survey, 2018

5.12.4 Pig rearing purposes

The majority of farmer's rear pigs for fattening purpose (almost 89.5% of the total pig rearers), while only 7.7% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Gaurisagar (17.5%) while lowest in Khelua (2.33%). Almost 2.8% of farmers across the APART clusters are found to rear pigs both for

breeding and fattening (Table 5.12.4).

Table 5.12.4: Distribution of farm HH by the purpose of pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Khelua (Lakowah)	2.33	97.67	0.00
Gaurisagar	17.50	72.50	10.00
Demow	4.75	91.50	3.75
Disangpani (Sonari)	7.36	92.64	0.00
Sapekhati	12.50	85.00	2.50
Nazira	1.50	97.94	0.56

Source: Field Survey, 2018

5.12.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 84.7%. This indicates that development of pig rearing activities has implications on women's empowerment in the APART districts (Table 5.12.5).

Table 5.12.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total farming HH	% women have role in pig and pork production	% women have control in income from pig and pork production
Khelua (Lakowah)	2,738	72.53	46.00
Gaurisagar	435	86.25	41.25
Demow	1,374	93.50	67.50
Disangpani (Sonari)	4,145	82.73	52.00
Sapekhati	1,755	85.00	60.00
Nazira	1,597	88.11	58.33

Source: Field Survey, 2018

5.12.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearly by the farming HH in the APART clusters of Sivasagar are shown in Table 5.12.6. The average no. of adult pigs held by the farmers is 2.27 with the highest in Gaurisagar cluster (2.7) and lowest in Sapekhati (2). The average no. of fattened pigs sold yearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) across the APART clusters is 2.6. The ratio of sale of fattened pigs to no. of pigs held is the highest in Gaurisagar cluster (1.27) (Table 5.12.6).

Table5.12.6: Average herd size (adult pigs) of the farm HH and average no.of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Khelua (Lakowah)	2.07	2.33	1.13
Gaurisagar	2.75	3.50	1.27
Demow	2.25	2.50	1.11
Disangpani (Sonari)	2.09	1.91	0.91

Sapekhati	2.00	3.00	1.50
Nazira	2.44	2.43	0.99

5.12.7 Marketing behaviour of farmers at cluster level

Table 5.12.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use pigs in feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders and in the market in the study villages constitutes 75.3% of the total annual pigs produced while 24.7% are used for non-marketing purposes as mentioned above (Table 5.12.7).

Table 5.12.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Khelua (Lakowah)	2.33	89.67	10.33
Gaurisagar	3.50	86.00	14.00
Demow	2.50	89.00	11.00
Disangpani (Sonari)	1.91	85.45	14.55
Sapekhati	3.00	95.00	5.00
Nazira	2.43	96.67	3.33

Source: Field Survey, 2018

Of the 75.3% of total annual pigs produced and sold by farmers, 8.6% are slaughtered and sold by farmers and 91.4% are sold to traders/butchers. None of the farmers in any of the clusters in Sivasagar report the presence of slaughter houses. The average fattened pig price at live weight isINR 186/kg when slaughtered and sold by the farmer and INR 180/kg when sold to traders/butchers. The average pork price in the markets of the APART clusters is INR 250. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter, the price rises with the rise in demand for pork. During festive seasons such as in October/November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.12.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmers		To traders/ butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Khelua (Lakowah)	8.33	183.25	91.67	179.12	0.00	-	0.00	-	260.00
Gaurisagar	18.33	186.67	81.67	189.63	0.00	-	0.00	-	240.00
Demow	5.00	190.00	95.00	180.00	0.00	-	0.00	-	220.00
Disangpani (Sonari)	9.09	186.00	90.91	176.63	0.00	-	0.00	-	260.00
Sapekhati	8.00	178.35	92.00	172.50	0.00	-	0.00	-	260.00
Nazira	3.00	193.81	97.00	180.00	0.00	-	0.00	-	260.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purpose (partly or fully) the sale pattern of breeding piglets is shown in Table 5.12.9. Across the APART clusters,an average of 17 piglets are sold by the breeding farm HH. Farmers sell the piglets to both the neighbouring farmers and to piglet traders. Across the APART clusters of Sivasagar almost 66% of the breeding piglets are sold to neighbouring farmers and 34% are sold to traders. In most of the clusters, 100% of the piglets are sold to other farmers in the neighbourhood, while in the Demow cluster, 100% is sold to traders. The average piglet price at weaning when sold to neighbours is INR 2,175/piglet and INR 2150/piglet when sold to traders (Table 5.12.9).

Table 5.12.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Khelua (Lakowah)	10.00	100.00	3,000.00	0.00	-
Gaurisagar	24.00	36.25	2,000.00	63.75	1,650.00
Demow	25.00	0.00	-	100.00	1,800.00
Disangpani (Sonari)	18.00	62.27	2,728.57	37.73	3,000.00
Sapekhati	14.50	100.00	2,650.00	0.00	-
Nazira	10.75	100.00	2,675.00	0.00	-

Source: Field Survey, 2018

5.12.8 Access to veterinary services

Table 5.12.10 presents the no. of veterinary service providers which include local veterinarians, VFAs and CAHWs providing piggery health care services to the farmers. Across clusters, an average of two local veterinarians operates, while the average distance from the farm villages is almost 7.2 km. At cluster level, the distance between veterinarian and village ranges from 22.5 km in Demow to 0 km in Disangpani (Sonari).VFAs are averages of 6.6 km from farm villages across clusters ranging from 2.5 km in Nazira to 15.75 km in Demow. Two CAHWs provide local treatment services in Demow cluster while none of the farmers in the remaining clusters report access to CAHWs (Table 5.12.10).

Table 5.12.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/ village	VFA		Distance from the FGD location/ village	CAHW		Distance from the FGD location/ village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Khelua (Lakowah)	5	0	4.5	3	0	4.12	0	0	0
Gaurisagar	1	0	3.6	1	0	2.7	0	0	0
Demow	1	0	22.5	1	0	15.75	2	0	0.5
Disangpani (Sonari)	0	0	0	2	0	7.28	0	0	0
Sapekhati	2	0	9	2	0	7.5	0	0	0
Nazira	4	0	3.37	3	0	2.5	0	0	0

Source: Field Survey, 2018

*Local veterinarian includes both private and government employed.

5.12.9 Access to other services (input and breeding)

Farmers in the selected clusters of Sivasagar indicated that there is an average of one grocery shop across the APART clusters readily available for buying concentrate feeds with an average distance of 0.5 km from the sample villages. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. The majority of farmers prefer feeding pigs kitchen waste and waste from the local alcohol distillery. At cluster level, arange of one (in Disangpani) to four (Khelua) boars provide natural mating services to the other farmers with an average distance to the farmsof 0.5 km (Table 5.12.11).

Table5.12.11: Access to input and breeding services at cluster level

Pig cluster	Feed suppliers/grocery shops selling feed		Boar service providers	
	No.	**Distance from the FGD location/village km**	**No.**	**Distance from the FGD location/village km**
Khelua (Lakowah)	0	0	4	0.5
Gaurisagar	0	0	0	0
Demow	0	0	3	1
Disangpani (Sonari)	0	0	1	0.5
Sapekhati	4	0.5	2	0.5
Nazira	3	0.5	0	0

5.12.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders or pig producers organizations in any of the clusters of Sivasagar. This indicates that pig rearing and trading are carried out in an informal setting.

Across clusters, there are no DDL, feed testing laboratory or feed mill.

5.12.11 Major pork market actors and other infrastructures in the pork value chain

In Table 5.12.12, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented.The no. of pig and piglet traders in the selected clusters range from zero in Khelua to 20 in Disangpani (Sonari) cluster. Similarly, the range of butcher cum pork retailers is zero in Gaurisagar to 20 in Disangpani (Sonari). There is no slaughter house in any of the clusters of Sivasagar.

Table 5.12.12: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders	Butcher cum pork retailers	Slaughterhouses	Pork retailers
Khelua (Lakow-ah)	0	3	0	0
Gaurisagar	3	0	0	0
Demow	5	2	0	0
Disangpani (Sonari)	20	15	0	0
Sapekhati	12	5	0	1
Nazira	5	4	0	2

Source: Field Survey, 2018

There are many pig trading markets andfive banks or other financing institutions across the APART clusters. However, there are no providers of livestock insurance and several of the village approach roads are classified as in 'poor' condition.

Table 5.12.13: Markets and other infrastructures at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Khelua (Lakowah)	Simoluguri	SBI, UBI-Khelua	0	Bokoi Gaon, Moupia, Gandhia, Duarigaon, Gomutha	Lholikara, Chetia Gaon, Bhadhara	Mech Kacharigaon, Lebang Gaon, Betani, Rabigaon, Naga Gaon
Gaurisagar	Amguri market, Sivasagar market, Gaurisagar	0	0	Jonmiri Borgaon, Teliadonga	Thekeratol	
Demow	Rajmai, Nitaipukhuri market, Rajabri	0	0	Balikur, Barchumoni	Bamrajabari	
Disangpani (Sonari)	Sonari market, Dipling (weekly), Namtola, Derghoria, Nagaland	0	0	Konwargaon	No. 1 Nirmolia, RamNagar, Borbeel	
Sapekhati	Sapekhati Chariali, Kolakata market	0	0	Kolakata Gohain Gaon, MoranHabi		
Nazira	Santak, Bihubor (daily), Simoluguri, Nazira market, tea garden	SBI-Santak, Nazira-SBI,Canara	0	Soladhara	Baligaon, Santak, Bormissing Gaon	Bailung Gaon

Source: Field Survey, 2018

SBI = State Bank of India

UBI = United Bank of India

*Frequency of market if known is in parentheses.

4.12.12 Progressive farmers at cluster level

There are 11 'progressive' farmers across clusters self-identified at FGD and identified by others at FGD and KII. Progressive farmers are defined as those open to or already engaged in AI and who keep predominantly crossbred stock.

Table 5.12.14: Names and contacts of promising progressive entrepreneurs in pork value chain

Pig cluster	No. of progressive farmers
Khelua (Lakowah)	2
Gaurisagar	5
Demow	1
Disangpani (Sonari)	1
Sapekhati	1
Nazira	1

Source: Field Survey, 2018

Figure 5.12: Schematic representation of the value chain actors in Sivasagar district.

VALUE CHAIN ACTORS

Vet services: Loc Vets- 13; VFA: 12; CAHW: 2

Feed: 7; Boar: 10;

PTO: 0; PPO: 1

DL: 0; FTL: 0; FM: 0

Institutional pig breeding farm: 3

Pvt./commercial:

Live pig market (N=13);

HH consumption and rituals purpose (N= 2,561)

10%

Producers

Fattened pigs sold (N=23,527)

90%

Breeding piglets sold (N=14,122)

9%

91%

0%

66%

34%

Slaughtered & sold by himself (N=1799) at Rs.186/kg live weight

To traders/butchers (N=21,727) at Rs 180.kg live weight

To pork processing plant (N=0) at Rs

To Farmers at farm-gate(N=8,647) at Rs. 2611/piglet

To trader/butchers (N=5,475) at Rs. 2150/piglet

Cluster level Consumers

Outside Supply
(Nagaland, Arunachal Pradesh)

5.13 Kamrup district

5.13.1 Cluster villages identification based on field visit

Six clusters in Kamrup district were identified for implementation of the ongoing project. These clusters are Rani, Boko, Bangaon, Rangia, Chaygaon andDimoria. The list of villages incorporated in each cluster was finalized after consulting with the local key persons working consistently in and knowledgeable about the pig production and marketing scenario.

Table 5.13.1: Cluster villages identification based on field visit

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Rani (16)	Andherijuli,Sajanpara, Rajapanichanda, Hakakhabari, Rangapara, Bahupara, Puransukurberia, Belguri, Garopara, Joypur (F.V), Tanganpara, Salser, Patgaon, Umsor, Muduki, Kutalpara.	Andherijuli,Sajanpara, Rajapanichanda, Hakakhabari, Rangapara, Bahupara, Puransukurberia, Belguri, Garopara, Joypur (F.V), Tanganpara, Salser, Patgaon, Umsor, Muduki, Kutalpara.	0	0
Boko (9)	Narenga, Alekjuri, Pairenga, Jarisatra, Bhehua, Kaithpara, Bondapara, Khatajuli, Sakhati-I	Narenga, Alekjuri, Pairenga, Jarisatra, Bhehua, Kaithpara, Bondapara, Khatajuli, Sakhati-I	0	0
Bangaon (10)	NizBogai, Nilaghat, Ouphula, Phalaphang, Choudhurypara, Tarabari- I, Tarabari- II, Chatabari, Lakadubi, Ranibhitha	NizBogai, Nilaghat, Ouphula, Phalaphang, Choudhurypara, Tarabari- I, Tarabari- II, Chatabari, Lakadubi, Ranibhitha	0	0
Rangia (27)	Bishenella, Halikuchi, Kekohati, Khoponikuchi, Tulsibari, Jaljali, Doloigaon, Balagaon, SeptiNakul, Bangalikuchi, Boangaon, Dahara, Maranjana, Bormurah, Balisatra, Lassi- Bishnipur, Sundhia, Kanikuchi, Baranghati, Bhaira, Dimu - I, Nakuchi, BorLechakona, Uttar Bordol, DakhinBordol, GosainSolmari, KachariSolmari	Bishenella, Halikuchi, Kekohati, Khoponikuchi, Tulsibari, Jaljali, Doloigaon, Balagaon, SeptiNakul, Bangalikuchi, Boangaon, Dahara, Maranjana, Bormurah, Balisatra, Lassi- Bishnipur, Sundhia, Kanikuchi, Baranghati, Bhaira, Dimu - I, Nakuchi, BorLechakona, Uttar Bordol, DakhinBordol, GosainSolmari, KachariSolmari	0	0
Dimoria (53)	Batakuchi, Kurkuria, Topatontoli, Ghagua, Belguri, Sagoligaon, Jhargaon, Goriaghuli, Mahmora, Urol, Erabari, Samota, Diksak, Rewamaheswari, Rewagaon, Dapata, Hirapara, Borobasti, MadhayaMalaibari, Keotpara, Barpak, Barghuri, Pub Malaibari, Ozari-1,2 and 3, Gaon Dimoria, NizDimoria, Dhupguri, Bahtola, Na-kuchi, Borbitoli, Sitalkuri, Deulguri, Belguri, Khaloibari, Bhoregaon, Tegheria, Langchung, Latabari, Rajakhat, Lofar, Amguri, Dhemai, Fulunggaon, Moupur, Lahari, Luri, Bhumgaon, Laflong, Khulabari, Bhakua, Borkuchi, Rongdoloi	Batakuchi, Kurkuria, Topatontoli, Ghagua, Belguri, Sagoligaon, Jhargaon, Goriaghuli, Mahmora, Urol, Erabari, Samota, Diksak, Rewamaheswari, Rewagaon, Dapata, Hirapara, Borobasti, MadhayaMalaibari, Keotpara, Barpak, Barghuri, Pub Malaibari, Ozari-1,2 and 3, Gaon Dimoria, Niz Dimoria, Dhupguri, Bahtola, Na-kuchi, Borbitoli, Sitalkuri, Deulguri, Belguri, Khaloibari, Bhoregaon, Tegheria, Langchung, Latabari, Rajakhat, Lofar, Amguri, Dhemai, Fulunggaon, Moupur, Lahari, Luri, Bhumgaon, Laflong, Khulabari, Bhakua, Borkuchi, Rongdoloi	Nil	Nil

Pig cluster	Names of the AHVD-listed villages	Names of the ILRI-listed villages	Potential villages incorporated	Non-potential villages dropped
Chaygaon (14)	Batakuchi, Ratanpur, Phalaghat, Rehabari, Jogibari, Dakowapara, Patgaon, Borjhar, Khalbakhal, Moinapara, Ouguri, Hatigarh, Sanyasi, Bherbheri.	Batakuchi, Ratanpur, Phalaghat, Rehabari, Jogibari, Dakowapara, Patgaon, Borjhar, Khalbakhal, Moinapara, Ouguri, Hatigarh, Sanyasi, Bherbheri.	0	0
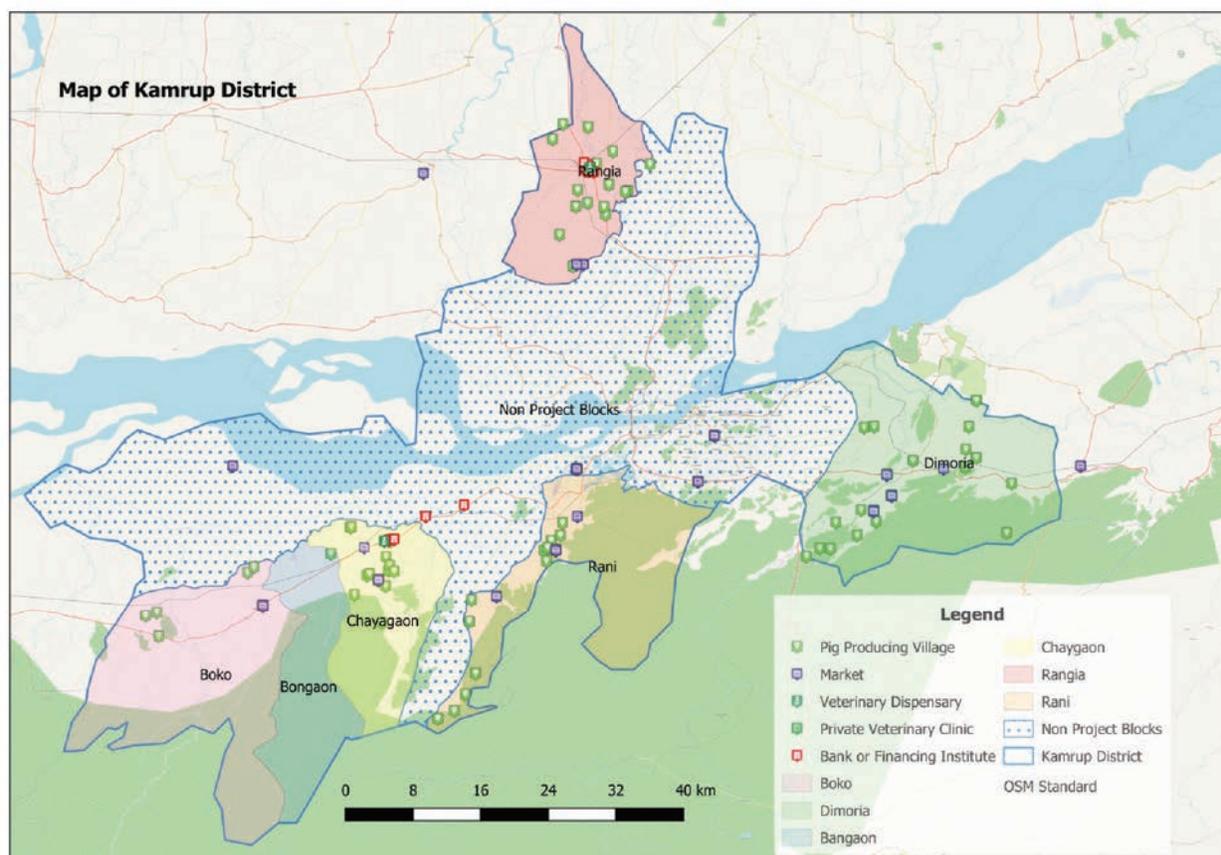
Figure 5.13: The map of the surveyed clusters of Kamrup district

5.13.2 FGD participants' profile

Table 5.13.2 shows the no. of FGD participants and their social status. The average no. of participants across clusters is 9.4 (4.5 male and 4.9 female).Pig rearing is conventionally popular among the tribal communities throughout the state of Assam. Almost 74% of participants in the APART clusters of Kamrup are from the ST community, followed by 9.8% from the OBC community, 9% from the SC community and 7.2% fromthe 'general' category.

Table 5.13.2: Distribution of participants by gender and social status

Pig cluster	Average no. of participants			% social status of participants			
	Male (%)	Female (%)	Total	General	OBC	SC	ST
Rani	6.44 (55.52)	5.22 (44.48)	11.66	0.00	0.00	0.00	100.00
Boko	5.80 (47.54)	6.40 (52.46)	12.20	0.00	14.28	19.56	66.16
Bangaon	2.33 (24.42)	7.21 (75.58)	9.54	18.34	0.00	0.00	81.66
Rangia	4.57 (62.77)	2.71 (37.23)	7.28	9.53	21.00	0.00	69.47
Dimoria	3.35 (41.46)	4.73 (58.54)	8.08	10.45	12.87	25.65	51.03
Chaygaon	4.62 (58.70)	3.25 (41.30)	7.87	5.22	10.67	8.67	75.44

Source: Field Survey, 2018

5.13.3 Farming system by type of porcine stock

Considering the selected villages for the development of a pork value chain under APART, the district as a whole is comprised of 19,220 HH enumerated though FGD and KII, of which 11,097 HH (64.8%) are identified as pig rearers having atleast one pig. As the farmers point out, the no. of pure indigenous breeds is drastically reduced with crossbreeding of the local breed with exotic germ plasm (although with varying levels of inheritance) at a fast rate. The percentage of farmers who have pure indigenous breeds is only 1% across clusters while 98.5% of farmers have crossbreeds and 0.5% of farmers have both indigenous and crossbred pigs.

Table 5.13.3: Distribution of farm HH by type of pig stock

Pig cluster	Total HH	No. of pig rearing HH (%)	% HH keeping pigs from indigenous breeds	% HH keeping pigs from improved breeds	% HH keeping pigs from both indigenous and improved breeds
Rani	1,936	1,712 (88.43)	0.00	100.00	0.00
Boko	1,410	1,120 (79.43)	0.40	99.20	0.40
Bangaon	1,350	840 (62.22)	1.33	97.69	0.98
Rangia	4,710	1,888 (40.08)	0.00	100.00	0.00
Dimoria	6,876	3,589 (52.20)	0.77	99.23	0.00
Chaygaon	2,938	1,948 (66.30)	2.65	96.03	1.32

Source: Field Survey, 2018

5.13.4 Pig rearing purposes

The majority of farmers rear pigs for fattening purpose (almost 81% of the total pig rearers), while 10% of farmers rear pigs purely for breeding purpose across the APART clusters. At cluster level, the proportion of farmers rearing pigs purely for breeding purpose is the highest in Boko (23.6%) and lowest in Chaygaon (5.38). Almost 9% of farmers across the project cluster rear pigs both for breeding and fattening (Table 5.13.4).

Table 5.13.4: Distribution of farm HH by the purpose of pig rearing

Pig cluster	% rearing for breeding	% rearing for fattening	% rearing both for breeding and fattening
Rani	6.00	85.56	8.44
Boko	23.60	64.40	12.00
Bangaon	6.55	78.91	14.54
Rangia	10.00	82.43	8.57
Dimoria	8.00	86.19	5.81
Chaygaon	5.38	89.09	4.63

Source: Field Survey, 2018

5.13.5 Women's participation in pig and pork production and income control

Pig rearing is a highly popular livelihood option among tribal women. Women participants in the FGD reported that more than 50% of the pigs rearing tasks are performed by the female members of the HH. Women's share in making the spending decisions regarding the income earned through the sale of live pigs along with domestically slaughtered pigs constitutes 65.7%. This indicates that development of pig rearing activities has implications on women's empowerment.

Table 5.13.5: Women's participation in pig and pork production and income control

Pig cluster	No. of total HH	% women have role in pig and pork production	% women have control of income from pig and pork production
Rani	1,712	91.89	74.78
Boko	1,120	81.60	63.00
Bangaon	840	78.54	66.29
Rangia	1,888	83.65	71.88
Dimoria	3,589	78.43	58.44
Chaygaon	1,948	72.54	60.04

Source: Field Survey, 2018

5.13.6 Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

The average herd size of adult pigs and average no. of fattened pigs sold yearlyby the farming HH in the APART clusters of Kamrup are shown in Table 5.13.6. The average no. of adult pigs held by the farmers is 2.2 with the highest in Rangia cluster (2.57) and lowest in Chaygaon (1.87). The average no. of fattened pigs sold yearly (HH keeping pigs purely for fattening and both breeding and fattening purposes) across the APART clusters is 2.7.The ratio of sale of fattened pigs to no. of pigs kept is the highest in Rangia cluster (1.17) (Table 5.13.6).

Table 5.13.6: Average herd size (adult pigs) of the farm HH and average no. of fattened pigs sold

Pig cluster	No. of pigs/HH	No. of fattened pigs sold yearly	Ratio of fattened pigs sold to no. of pigs/HH
Rani	1.88	2.55	1.36
Boko	2.00	2.20	2.10
Bangaon	2.33	2.87	1.23
Rangia	2.57	3.00	1.17
Dimoria	2.55	2.97	1.16
Chaygaon	1.87	2.37	1.27

Source: Field Survey, 2018

5.13.7 Marketing behaviour of farmers at cluster level

Table 5.13.7 indicates the marketing behaviour of pig farmers who rear pigs for fattening. These farmers either sell the live fattened pigs to visiting traders or in the market. Farmers also use pigs in feasts organized as part of some social ceremonies like marriage, and Christmas and Bihu celebrations or offer to relatives when they have such celebrations. The proportion of pigs sold to traders and in the market constitutes an average of 91.3% across clusters of the total annual pigs produced while 8.7% are used for non-marketing purposes as mentioned above (Table 5.13.7).

Table 5.13.7: Percentage of fattened pigs sold versus used for other purposes

Pig cluster	Average no. of fattened pigs sold yearly	% sold	% slaughtered at home or used for other purposes
Rani	2.55	93.89	6.11
Boko	2.20	93.00	7.00
Bangaon	2.87	90.12	9.88
Rangia	3.00	88.76	11.24
Dimoria	2.97	90.55	9.45
Chaygaon	2.37	91.28	8.72

Source: Field Survey, 2018

Of the 91.3% of the total annual pigs produced and sold by farmers, only 6.3% are slaughtered and sold by farmers and almost 93.7% are sold to traders/butchers. None of the farmers in any of the clusters in Kamrup report the presence of slaughter houses. The average fattened pig price at live weight ranges from INR 168/kg in Chaygaon cluster to INR 188/kg in Rangia when slaughtered and sold by farmers. The average live weight price when sold to traders/butchers is approximately INR 170/kg. The average pork price in the markets of the APART clusters is INR 238. Pork prices in both Chaygaon and Rangia are lower compared to the other clusters in the Kamrup district. Farmers also indicate that the price is not the same across seasons. During summer, the demand for pork is low and thus also fetches a lower price while during winter the price rises with the rise in demand for pork. During festival seasons such as in October/November/December traders from neighbouring states (Arunachal Pradesh and Nagaland) come and pick up fattened pigs from the villages giving relatively higher prices. The local pork price also rises during the marriage seasons.

Table 5.13.8: Percentage of fattened pigs sale by sources and their respective farm gate prices

Pig cluster	Slaughtered and sold by farmers		To traders/butchers		To slaughterhouses		To others		Average market price of pork in the cluster (INR/kg)
	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	%	Price/kg live weight	
Rani	7.22	180.34	92.78	169.32	0	-	0	-	240.00
Boko	7.00	184.31	93.00	172.25	0	-	0	-	240.00
Bangaon	9.32	178.65	90.68	168.44	0	-	0	-	240.00
Rangia	2.86	188.55	97.14	179.69	0	-	0	-	230.00
Dimoria	6.54	177.76	93.46	167.34	0	-	0	-	250.00
Chaygaon	5.00	168.43	95.00	166.45	0	-	0	-	230.00

Source: Field Survey, 2018

Among the farms that rear pigs for breeding purposes (partly or fully) the sale pattern of breeding piglets is shown in Table 5.13.9. Across the APART clusters, an average of 14 piglets are sold by the breeding farm HH. Farmers sell the piglets to both neighbouring farmers and to piglet traders. Almost 40% of the breeding piglets are sold to neighbouring farmers and 60% are sold to traders. The average piglet price at weaning when sold to neighbours is INR 2,468/piglet and to traders is INR 2,276/piglet (Table 5.13.9).

Table 5.13.9: Percentage of breeding piglets sold (at weaning) per HH and price per piglet

Pig cluster	No. of breeding piglets sold/year/HH	To farmers		To traders	
		%	INR/piglet	%	INR/piglet
Rani	8	45.00	2,620	55.00	2,400
Boko	14	28.00	2,300	72.00	2,360
Bangaon	12	44.66	2,280	55.34	1,320
Rangia	17	45.00	2,500	55.00	2,500
Dimoria	20	50.95	2,609	49.05	2,619
Chaygaon	14	28.56	2,500	71.44	2,460

Source: Field Survey, 2018

5.13.8 Access to veterinary services

Table 5.13.10 presents the no. of veterinary service providers which includes local veterinarians, VFAs and CAHWs providing piggery health care services to farmers. Across clusters, an average of 2.8 local veterinarians operates, while the average distance from the farm villages is almost 7.8 km. Farm villages of Bangaon cluster do not have a local veterinarian.VFAs are located an average of 2.9 km from villages across clusters ranging from 1 km in Rangia to 5 km in Chaygaon. Eight CAHWs in Majuli provide local treatment services while none of the farmers in the remaining clusters report having access to aCAHW (Table 5.13.10).

Table 5.13.10: Access to veterinary services at the selected APART clusters of the district

Pig cluster	Local veterinarian*		Distance from the FGD location/village	VFA		Distance from the FGD location/village	CAHWs		Distance from the FGD location/village
	No. of male actors	No. of female actors		No. of male actors	No. of female actors		No. of male actors	No. of female actors	
Rani	2	0	7.8	6	0	3.6	2	1	4.5
Boko	8	0	5.6	3	0	3.5	3	0	4
Bangaon	0	0	0	0	0	0	0	0	0
Rangia	1	0	8.57	7	0	1	0	0	0
Dimoria	4	0	4.57	3	0	4.12	0	0	0
Chaygaon	2	0	20	4	0	5	3	1	5.6

Source: Field Survey, 2018

*Local veterinarian includes both private and government Employed.

5.13.9 Access to other services (input and breeding)

Farmers of Kamrup report that there is an average of 6 grocery shops across the APART clusters readily available for buying concentrate feeds. Pure feed shops are almost nil in most of the clusters as feeds are primarily sold in the grocery shops. The majority of farmers prefer feeding pigs kitchen waste and residual waste of country liquor, and waste of hotel's, hostels' and educational institutes' kitchens. A range of 0 (Bangaon) to 24 (Dimoria) boars provide natural mating services to farmers within an average distance of 0.67 km (Table 5.13.11).

Table 5.13.11: Access to input and breeding services at cluster level

Pig cluster	Feed suppliers/grocery shops selling feed		Boar service providers	
	No.	Distance from the FGD location/village km	No.	Distance from the FGD location/village km
Rani	5	1	7	0.5
Boko	8	2.5	3	1
Bangaon	0	0	0	0
Rangia	3	0.5	4	0.5
Dimoria	10	0.5	24	0.5
Chaygaon	10	2.5	2	1.5

Source: Field Survey, 2018

5.13.10 Availability of producers/traders organizations and input supplying institutions at cluster level

There are not any registered pig traders but there are a total of six pig producers organizations in the Rani, Boko and Chaygaon clusters of Kamrup. This indicates that pig rearing and trading are mostly carried out in an informal setting.

Table 5.13.12: Availability of producers/traders organizations at cluster level

Pig cluster	Pig traders organizations	Pig producers organizations
Rani	0	1
Boko	0	1
Bangaon	0	0
Rangia	0	0
Dimoria	0	0
Chaygaon	0	4

The district as a whole is endowed with four feed mills under the public sector, six under the private and one under cooperatives (WAMUL) (Refer to Annexe Table A3). There is a DDL in Rani, a feed testing laboratory in Rani and a feed mill in Rangia.

Table 5.13.13: No. of input supplying institutions at cluster level

Pig cluster	DDL	Feed testing laboratory	Feed mill	Others
Rani	1 (NRCP)	1 (NRCP)	0	0
Boko	0	0	0	0
Bangaon	0	0	0	0
Rangia	0	0	1 (Amrit Feeds)	0
Dimoria	0	0	0	0
Chaygaon	0	0	0	0

Source: Field Survey, 2018

NCRP = Indian Council of Agricultural Research National Research Centre on Pig

5.13.11 Major pork market actors and other infrastructures in the pork value chain

In Table 5.13.14, the no. of pork market actors involved in the pig value chain of the selected APART clusters is presented. The no. of pig and piglet traders in the selected clusters ranges from zero in Bangaon to 20 in Rani and Rangia. This no. are rough estimates by farmers of traders who visit the cluster villages from various places in and outside the Kamrup district. Similarly, the no. of butcher cum pork retailers is in the range of five to 20. There is no slaughter house in any of the clusters of Kamrup.

Table 5.13.14: No. of pork market actors at cluster level (based on KII and FGD)

Pork cluster	Pig and piglet traders*	Butcher cum pork retailers	Slaughterhouses
Rani	20	5	0
Boko	10	8	0
Bangaon	3	6	0
Rangia	20	20	0
Dimoria	15	20	0
Chaygaon	15	20	0

Source: Field Survey, 2018

*Apart from the reported clusters, Guwahati city (Kamrup metro) has 109 butchers cum pork retailers.

Table 5.13.15 shows markets with pig trading, banks and other financing institutions, livestock insurance providers and village approach road quality.

Table 5.13.15: Markets and other infrastructures at cluster level

Pig cluster	Markets with pig trading*	Bank and other financing institutions	Insurance for livestock	Approach road quality of the cluster villages		
				Poor	Fair	Good
Rani	Rani, Muduki Bazar, Loharghat, Sajanpara	World Bank provided assistance		Muduki	Sajanpara, Salser, Joypur, Patgaon, Puransukurberia, Banupara, Rangapara	
Boko	Boko, Dhupdhara, Bamunigaon	0	0			Shakheti, Darisatra, Kaithapaa
Rangia	Guwahati, Shillong, Dimo, Lakhara, Rangia	0	NLM-Ghy	Uttar Bordol and Dakhin Bordol, Tulsibari, Gosain Solmari, Kachari Solmari	Nakul, Septi, Bangalikuchi, Kanikuchi, Nakuchi	Dolegaon and Balagaon, Halikuchi, Balaghati
Dimoria	Jagiroad, Nortap, Borni, Shillong, Tetelia	AGVB, UCO, Syndicate Bank- Sonapur Branch, SBI- Jorabat	0	Borkuchi, Moupur, Fulung Gaon (Nortap NC), Bhakua, Lorigaon, Lofar,Amguri, Keotpara, Borpak, Barghuri, Dhupguri, Bahtola		Dhemai, Buungaon, Dapata, Maheswari, Ranmahes, Rongdoloi
Chaygaon	Rehabari, Gobardhan, Chaygaon	AGVB	NLM-Ghy		Rehabari, Hatigarh, Ratanpur, Jogibari, Borjhar	Sanyashi, Batakuchi

Source: Field Survey, 2018

AGVB = Assam Gramin Vikash Bank

SBI = State Bank of India

NLM =

5.13.12 Progressive farmers at cluster level

There are 16 'progressive' farmers throughout the clusters.

Table 5.13.16: Names and contacts of promising progressive entrepreneurs in the pork value chain

Pig cluster	No. of progressive farmers
Rani	4
Boko	3
Bangaon	0
Rangia	2
Dimoria	5
Chaygaon	2

Figure 5.13: Schematic representation of the value chain actors in Kamrup district.
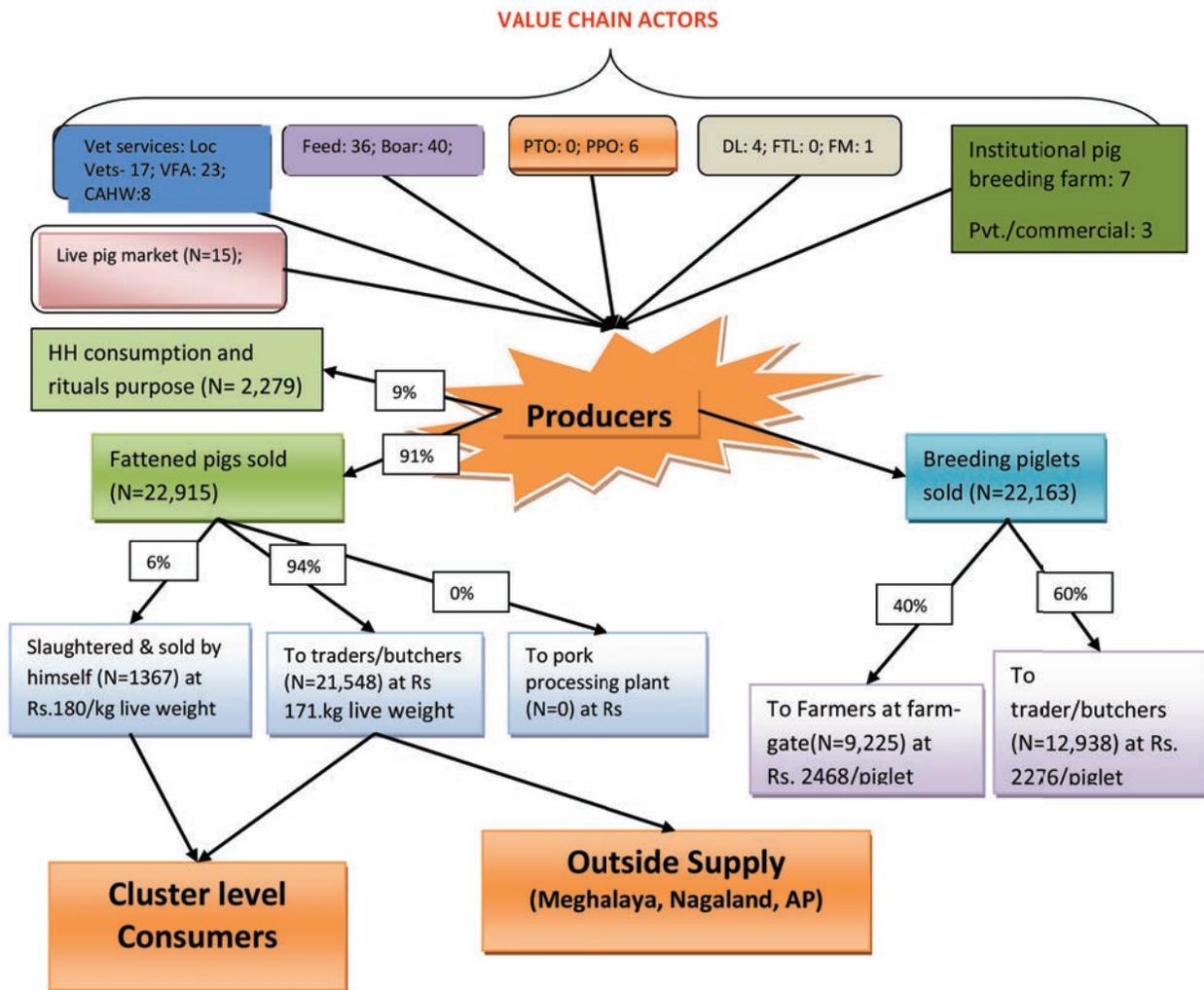
6. Summary and recommendations

Summary

The mapping of the pork value chain actors at the cluster-level in each district will aid policy makers in the strategic design of the training programme and other related APART interventions. However, many of these market actors, such as traders of live animals, are not static within the clusters as many of the outside buyers occasionally visit cluster villages to pick up and supply pigs to markets in and out of the state.

Among the districts, a total of 55 project clusters were identified for intervention under APART. The district-specific no. of pork value chain clusters ranges from a low of one to a high of nine considering the pork production intensity of the districts. The ILRI enumerators visited the cluster villages documented in the project implementation plan and initially conducted an overview of those villages and subsequently incorporated or dropped villages according to the village's potential for project intervention and consent of the local veterinarians. Thus, based on an intensive survey done by the ILRI enumerators under constant guidance of the scientific officers and ILRI's international scientists, a total of 68,143 farm families were identified in 13 APART districts. Among these, farmers rearing pigs for fattening purpose constitute the dominant segment of the producers (80.41%). The proportion of farmers rearing pigs for breeding purpose only and both for breeding and fattening constitute 10.16% and 9.5%, respectively. The total no. of producers targeted for training by ILRI staff under APART is slightly higher than what was estimated by AHVD (60,000). This study identified 793 butchers cum pork retailers, 825 pig traders and 5 slaughter houses. Additionally, the study identified the presence or absence of banks, livestock insurance services, feed mills, DDLs feed testing laboratories and other infrastructure to promote enhancement of the pork value chain.

The no. of boar service providers and the presence of live pig markets were also identified to guide planners in the preparation of a strategic pig market development plan and to assist in designing breeding programmes. Across the APART districts, a total of 476 boar service providers are found and 121 live pig markets are present.

Overall, identifying the no. of market actors and status of access to various services will guide in strategic policy formulation for the development of the pork value chain in these project districts.

Table 6.1: Cluster level information on farming HH

District	No. of clusters	No. of farming HHs	No. of pig fattening HHs	No. of breeding HHs	No. of both breeding and fattening HHs
Golaghat	5	4,373	3,056	447	870
Jorhat	3	7,300	4,534	1,223	1,543
Barpeta	1	649	474	97	78
Lakhimpur	4	2,655	1,724	299	631
Morigaon	2	2,006	1,763	154	89
Darrang	3	1,939	1,417	394	128
Sonitpur	9	7,656	5,999	762	895
Goalpara	4	4,795	4,288	419	87
Nalbari	1	740	636	74	30
Karbi Anglong	7	6,485	5,380	381	758
Kokrajhar	4	6,404	5,146	918	353
Sivasagar	6	12,044	11,143	754	148
Kamrup	6	11,097	9,234	1,003	862
Total	**55**	**68,143**	**54,794**	**6,925**	**6,472**

Table 6.2: Summary of market actors

District	No. of butcher cum pork retailers	No. of pig/piglet traders	No. of slaughter houses	No. of progressive farmers	No. of Banks	No. of livestock insurance providers	No. of boars for natural breeding	No. of live pig markets
Golaghat	158	244	0	8	4	1	63	12
Jorhat	98	140	0	0	8	1	165	1
Barpeta	10	8	0	1	8	1	13	2
Lakhimpur	63	42	0	4	3	1	15	4
Morigaon	50	25	0	1	1	1	14	3
Darrang	36	38	0	0	5	1	34	6
Sonitpur	53	64	2	4	6	1	26	21
Goalpara	32	19	0	0	5	1	6	12
Nalbari	50	15	0	1	5	1	9	4
Karbi Anglong	83	69	0	1	3	2	41	12
Kokrajhar	70	55	0	2	1	1	40	16
Sivasagar	25	40	0	0	4	1	10	13
Kamrup	65	70	3	9	6	3	40	15
Total	798 +109*= **907**	**829**	**5**	**31**	**59**	**16**	**476**	**121**

*Guwahati city has 109 butchers cum pork retailers in different locations and thus added into the total no. of butchers cum pork retailers.

Recommendations

- When performing APART interventions (conducting training to value chain actors), contiguous villages within a cluster should be prioritized at the beginning for the sake of resource optimization. Interventions in villages at a distance from the cluster of villages may be implemented at a later phase.

- The clusters and villages within clusters having easy access to inputs, veterinary services, markets of live animals and pork may show rapid changes in terms of the outcome indicators (higher market-led production and productivity, and adoption of clean and hygienic pork production) and thus should be prioritized. Far-flung villages with potential constraints may be considered at a later stage.

- There are variations among the villages within a cluster in terms of the no. of producers and other value chain actors. While intervening, these villages should be ranked in the order of presence of producers and market actors and prioritized accordingly.

- Almost 80% of the farm HH in the APART districts rear pigs for fattening purpose and the remainder rear partly or solely for breeding purpose. Among the farm HH rearing pigs for breeding purpose, the intensity differs from village to village. Those villages having the highest no.of breeding farms should be prioritized for organizing training to comply with APART objectives.

- Some villages have evidence of a growing no. of pig entrepreneurs compared to others. These entrepreneurs provide a win-win situation within the project by supplying piglets and by availing of services under the project leverage growth momentum.

- APART villages with a good no. of butchers and traders should be prioritized as they may have a strongly established marketing network for the pigs and piglets. This will help achieve the training targets of all value chain actors.

- Among the APART clusters, those clusters having conducive socio-political situations should be prioritized over those that might have disturbed socio-political situations.

- The clusters or villages of conducive institutional environments (with a greater no. of banks, insurance services, farmer producer organizations, live animal markets etc.) should be taken up under the priority list.
- One may also consider the suitability of road infrastructure and environmental factors to realize a higher participation rate in the training intervention.

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Table A1: Butchers/retailer and traders of the pig value chain

1.Barpeta	Butchers/Retailer	Pig/Piglet Traders
Bajali	Bhaben Bora; Baneswar Bora (8011691758); Jatinbor;Harenboro; Batori Bora Konak Boro(9706544048); Ranjit Boro(7086293211)	Baneswar Boro (8011691758); Haren Boro
2.Darang		
Pub Mangaldoi	LetinBor, Jitu Bora, Mantu Bora, Bikram Deka, Bhupen Bora	
Pachim Mangaldoi	Nripen Deka(8486966511); Jyotiprasad Saikia(7896951840); Ranjit Deka(8402828830); Bhrigu Saliha(9365280093); Nagen Boro Utpal Deka; Manik Deka BenuBoro (from Bahjani); Tankeswar Boro (Bahjani);Pulin Saharia(7638860937)(Akoli Bari); Atul Boro(9954025050); UpenBoro(9101108286); Raimohan Boro(9365267516); Bijay Boro(8473973125)-pork retailer; Gajen Boro(936548776); Tulen Boro(8472010866)- Pork Retailer); Mukut Deka(6900889897); Nripen Deka(8486966511); Jyotish Nath(6900967689);	Jiban Saharia(9365339719); Dilip Deka, Bharat Saharia, Jayanta Deka, Khatnam Saharia, Arun Deka(8408012173), Ranjit Saharia Tralokya Saharia Dipankar Bora, Pranab Bora, Tapan Bora Jagadish Borah (from Hengerajhar), Ranjan Deka (Deomornoi)
Sipajhar	Mani Nath, Karuna Kakati, Babul Bora Gopal Barua; Jayanta Bor; Munindra Deka	Satyan Bora, Nripen Bora
Kalaigaon	FwrdanBasumatary(9476778805); PulinSaharia(7638860937); Aviram Bodo, Srisam Bodo, Tarun, TapeswarBoro, BhriguBoro, Ashok Boro, Bhupen Boro	Ashok Boro (9613679090); Jayanta Deka
3.Goalpara		
Kuchdhuwa	Manoj khaklary, Dhanajay Swaigiary, Upen basumatary, Jibon Basumatary, Abhi Basumatary, Sunit Khaklari, Gyan Musahari, KalnHajet, Prabin Basumatary Kalidas Rabha(7576877502); Nipen Rabha, Prabhat Rabha (piglet traders)	
Balijana	Rapid Rabha, Ranjit Rabha, Doreswar Rabha, Karan Rabha, Aram Rabha, Khowari Rabha, Deepen Rabha,Bhutan Rabha, PorwingMarak(8472819678); Neikelikson Sangma(9678251496); Parmeswar Rabha(9613814194); Brillian Marak(8011234043); Khaikhu Rabha(8811030486)	Bipulrabha, Malinrabha, Bibima Rabha, Ranjit Rabha, Mukunda Rabha
Lakhipur	Jola Boro	Jola Boro; Ramesh; Ravi Das; Nakeswar Rabha; Satiram Bora;Lalmohan; Dengo Rabha
Rongjuli	Diganta rabha; Hemanta Rabha; Dhanti Rabha; Babul Rabha; Lakheswar Rabha; Dharmendra Bodo; Sambaru Bodo;Rantu Bodo; Sachin Rabha; Amulya Rabha; Chandrakanta Bodo; Babul Bodo; Birat Bodo; Simanta Bodo; Dalim Bodo; Manik Rabha; Aniram Rabha; Jayanta Rabha; Thakur Rabha; Anil Rabha; Pankaj Kachari; Biju Kachari; Bikram Rabha; Ajay Rabha; Sonkumar Rabha(9954787977)	Rantu, Sambaru; Dharmendra Bodo; Sachin Rabha; Kandarpa Das; Babul Das; Bidyut Das; Madhab Das; Dhiren Rabha; Arban Rabha; Sonkumar Rabha(9954787977); Prashanta Rabha; Kumol Rabha; Bhonti Rabha; Bipul Rabha (piglet trader)

4.Golaghat		
Sarupathar	Mintu Bora; Dulal Saikia; Gokul Bora; Dipen Bora; Bikash Saiki;Biswa Saikia; M.Bod; Gopi Konwar; Haren Murrah(8011276875); Dulal Bodo; Dilip Murral; Dalu Murral; Ramen Borah; Santosh Bora; Nitul Bora; Diganta Bora; Pabitra Gogoi; Tulan Gogoi; Chandra Saikia; Binita Buragohain; Anil Handique(8254918670); Pradeep Bora; Bhupen Bora; Kalia Bora; Ladu Bora; Jon Bora; Upen Bora; Simanta Hati Baruah(9678543163)	MontuSaikia; Nitul Borah; PhulaSaikia; Sanjay Mes; Durga Saikia
Dergaon	Lutu Pegu; Mati Tagar Pegu; Krishna Taing; DadalTaing; Bhibhisam Pegu; Kamal Pegu; Tarun Mili; Bubul Pachung; Rama Kt. Pachung; Nimesh Pegu; BabaiPegu	Jadab;Istin; Ajil;Apal; Dipen Pegu(8133085584)
Bokakhat	Bimola Pegu; Lila Dolley; Lakhi Pegu; Hema Pegu; Ramen Dolley(9085931773); Lakhi Pegu(8761851524);MizingaKutuna(9577503176)	Nalen Dolley; Pelua Dolley; Mongela Dolley; Labhi Pegu(8761851524)
Gomariguri	Binanda Dolley(7896610210); Atul Pegu(7086847850); Sanjib Pegu(9101817234); Mineswar Pegu(8011313247)	Atul Pegu; Sanjib Pegu; Mineswar Pegu (butchers cum pig traders). Nipen Pegu; Bishnu Pegu; Upen Pegu (piglet traders)
Marangi		
5.Jorhat		
Dekargarah	Pradip Pegu; Kroishna Kanta Pegu; Bora Pegu; Biswajit Dolley; Bhaity Dolley(9678821903); Pradip Pegu(6000091389); Krishna Kanta Pegu(6900593384)	Joilal Deuri; Mridul Singh Deuri; Moina Deuri; Niranjan Deuri; Joylal Deuri; BayenIndeswar Pegu; Rajesh Dolley
Majuli	Sadananda Mili; Narayan Payeng; Binmal Mili; Kanak Payeng; Dader Pegu; Gahin Payeng; Pelu Patir; Beben Sarok; Jayanta Dolley; Debarajana Dolley; Bolin Dolley; GobindaDolley; Kanak Payeng; Dada Pegu; Nayan Kamen; Nabin Gam; Anil Gam; Pranjal Gam; Susul Gam; Babu Pegam; Prafulla Dolley; Rabin Dolley; Nayanmoni Dolley; Bhupen Pame; Tulashi Regon; Dharmeswar Regon; Naren Pame; Madan Pame; Konpai Regon; Fulakanta Kutum; Khaniram Dolley	Mohan Kutum; Nabajyoti Kutum; Mrigen Dolley
UjoniMajuli	Jogeswar Pegu; America Pegu; Ranju Dolley; Rajeeb Dolley; Papa; Ganesh Patir; Jagadish Pegu; BidekiNarah; Tapala Mili; Papal Mili; Arilam Payeng; Jyotiprasad Patir	Hieswar; Manu; Priyanath; Lama Pegu; Biju Pegu; Tornam Dolley; Ranjit Dolley; Suresh Pegu; Lakhinath Kuli; Yaka Dolley; Jadav Narah; Maheswar Payeng(most of the traders are outside of the village); MinaramPayeng; Nepali Payeng; Bhupen Dolley; Ursia Panging;traders from NayabazarChariali
6.Kamrup		
Dimoria	Madhu Bodo; Mantu Bodo; Puspa Bodo; Jyotil Bodo; Prameswar Kro; Kalnal Ranghang; Mantholu Ranghang; Ratan Tejang; Ramesh Bodo; Deep Bodo; Khetry market; Susa Rahang; Govinda Kathar(9101335007); Gajen Deuri(9678130471); AparKathar(9957965011); Durna Kathar(8761839738); Biraj Bodo(7663998663); Jayanta Bodo(9954119876); Prabin Bodo(7896920571),Kumud Kathar(9365584571); Pranab Bodo(8486168721	Sukul Singh Kathar(8876766130); Durga Kathar(7896482988); RatneswarBordoloi; Mihiram Bordoloi; Bishnu Teron; Bangthai(8724972728); Dhanbar Rahang; Basanta Nath(8761027014); Kumud Kathar(9365584571)

Boko	Babrubahan Kaibarta(9101876096)	Babrubahan Kaibarta(9101876096)
Chaygaon	Mahendra Rava; Aditya Rava; Babul Rava; Dakhrat Bodo; Ranjit Bodo(8402908697)	Boloram Bodo(9435141742); Porikhit Rava; Dakhrat Bodo; Lokheswar Bodo; Paban Bodo(Mainapara)
Rani	Subhash Rabha; Dilip Bodo; Samudra Rabha; Binapani Bodo(Sajanpara); Baikuntha Das(7896793522)	Somitra Rabha; Kulimon Rabha
Rangia	Bhaben Das(9854462787); Pratap Bodo(6900783946)	Trader from Bhutan(9859258313), Shillong
Bongaon		
7.Karbi Anglong		
Bokajan	Lon Ingti	Lon Ingti; Monoj Das;Pora Bora
Silonijan	Pawan Gogoi; Milan Bora(7637897507); Mani Sarkar; Atal Sarkar; Manjal Singh Tesso(9476529320)	
Hawraghat	Mohan Inglang; Dikat Rompi; Raju Inglang; Suresh Tumung; Amrit Teron; Baliram Timung; TapanIngti; Lipson Kilung; Biplab Basumatary; Rajani Bodo; PhulsingRongpi; Khundar Ingti; Rakesh Jildung; Dharam Bhongsa; Paniram Kurmi(8638804651); Deben Phangse; Biplab Basumatary(8638178157; Suresh Tumung	RongbongTerang (9678660350)
Lumbajong	Baburam Tokbi(8011395719); Jiten Hanse; Kalam Khamsa; Jayanti Ingti; Mohan Singh Ronghang; Bilson Bey; Sam Kro; Nelson Terang; SarsungTerson(8486943973); Ranjit Rongpi; Amarsing Hanse; Rajen Rongphas; Ujjal Basumatary; Birsing Dey; Sarman Ronghang; Khonsing Ronghang; Bidya Khansa; Welson Terang; Chandra Teron; Gandhi Ronghang; JonaTumung; Kalam Khansa; Barli Teron; Ren Hanse; HumeswarTisso; Sagar Basumatary; Biren Tisso; Kalam Khamsa(9453277119); Jenganti Ingti(9101694308); Suman Rongpi(9954796396)	Bidya Singh Tisso(9476884828); Ranjit Rangpi; BodhoInglang; Krishna Ingti; Sarth Teron; BaburamTokbi; Manik Bey; Kiso Terang(7399864264)-(piglet trader)
Boithalangso	Mangal Singh Hanse; DulanTeron; Dolbahadur Newas(9401412615); DhaneswarPangso(9435656417)	Mangal Singh Hanse
Kheroni	Arjun Bey	Rajen Rongpi(7892094630)
8.Kokrajhar		
Gossaigaon	Jaisat Brahma/Mohan Brahma (9859107417); Alokbir Brahma; Mausang Brahma; Gobda Brahma; Biswanath Brahma; Jaleswar Brahma; BujarajNarzary; DebajitNarzary; Niranjan Basumatary; Ramen Basumatary; Uttam,Lakhiram; Sumen Basumatary; Binoy Basumatary; RinoyBasumatary; Alokbir Brahma; Anil Kr Brahma; Sunil Basumatary(8876627719); Binod Narzary(9365697730); Subut Mucahary(7575953067); Asara Narzary(9127468086)	Dipak Brahma (7086114650); Kotheng Brahma (8011567592); JathiBasumatary; Laoka Narzary; Gala Basumatary; Raju Basumatary
Kokrajhar	Durga Borgoyary; SabiBorg Ayary; Saukhar Borgyary; Hero Basumatray (8486471341); Hajar Bodo; Arjun Brahma(7896938378); Pradeep Brahma; Durga Basumatary; Manoj Musahary; Prem Chandra Basumatary; Phulung Basumatary; Kamen Rabha; Pandeswar Rabha; Dipendra Musahary(9957092665); Shankar Basumatary(9954214321); Rahul Basumatary(9365466909)	

Dotoma	Rajiv Basumatary(7896790853); Munin Narzary; Sanjib Basumatary; Meherjen Basumatary; Sobaram Basumatary; Debanath Basumatary; Monilal Basumatary; Robichan Basumatary; Serkaram Brahma; Bhuban Barman; Niren Brahma; Khirod Brahma; Khenaram Mucahary; Sila Brahma(9678979842); Pradeep Narzari(7896480894)	Birtisarah Basumatary; Sunandra Basumatary; Joyshree Brahma; Lowni Brahma; Belam Narzary; Danlang Brahma; Naga Brahma
Debitola	Peper Rabha; Kishi; Munchi Rabha; Salte; Sunil Marak; Nitya Marak; Letima Brahma(8133076435); TinenMarak	Phule Brahma; Moina Brahma; Lasmi Brahma
9.Morigaon		
Mayong	Pradip Bordoloi; Bipul Daimary; Biswajit Bordoloi; Manabendra Palar; Nandeswar Konwar; Sanjib Konwar; Promod Palar	Matia Bordoloi; Ajit Bhuyan; Pradip Doimary
Bhurbandha	Junti Bordoloi; Mahedev Bordoloi	Manoj Konwar
10.Lakhimpur		
Boginodi	Bhaben Bora; BaneswarBora(8011691758); Batori Bora	Loladhar Pegu; Gopal Payeng; Jaganath Pegu (piglet traders)
Ghilamora	Likam Patir; Dharmendra Sintey; Mohan Basumatary; Nitesh Patir; Prakash Dolley(9531293015)	Momin Dolley; Prabin Chand,Niran Dolley; HirakantaPatir; Pabitra Dolley; Naren Patir; Bhupen Dolley; Kishor Dolley; BimalaPatir; DeobarPatir; Kushal Patir; Tuniram Dolley; Jiten Patir; Belang Medak
North Lakhimpur	Diganta Gogoi; Dilip Mili; Giris Gogoi; Rahul Gogoi; Pranjal Konwar; Sanjay; Konpito; Diganta Konwar(8723878825); Umesh Mili(8404045424); Raju Das(9954182678); Dinesh Gowala	Dilip Gogoi; Ram Mili(9101679519); Ram
Narayanpur	Ramprasad Deuri; Niranjan Deuri; Lakhi Deuri; Atul Deuri; Rajabar Deuri; Gunadhar Deuri; Sadananda Deuri; Maneswar Pegu; Brajen Pathori; Rustam Deuri; Lakhi Deuri; Atul Deuri; Rajabar Deuri; Sadananda Deuri; Gunadhar Deuri; Nagendra Deuri; Dighala Deuri(6900929866); Darasingh Deuri(9957541541); Jayprasad Deori(7635846074); Mistiram Deori(8474856613); Dighla Deori(6900929866)	Mohim Bori(9678489905); Dimbeswa Chutia(9101060892); Haren Baruah(8486298583); Chandra Morang; Khirud Gohain; Kamal Bori; Ramen Bori; Deba Pegu(8473814636); Raghumoni Doley(6001800498); Dipankar Baruah; Dharmen Pegu
11.Nalbari		
Borigog and Bongaon	Rajib Bodo(8399019775); Manoj Bodo(8011646402); Jitu Bodo(8011107780); Prabin Bodo(9954941883); Kamal Singh Ramchiary(6001076005); Kola(8135889892); Igrang(9127390632)-Dhamdhama market	Lenis Narzary(8471998526)-(Ghograpar); Bhebla (Nick), Babul Boro; Balen Boro, Kishor Boro
12.Sivasagar		
Khelua (Lakuwah)	Diganta Gogoi; Simanta,Nitul; Gibon Gogoi; Uma Kaira,Rajen Mech(7896185621); LakhiKt.Mech(9401990203); Mina Kt.Mech; Manas Baruah(9954908259)-(cutting pig wholesaler)	NitulGogoi; SimantaGogoi(8133838062)
Demow	Pallab Sonowal(8136007854)(Bam Rajabari); Pabitra Gogoi	Dipankar Lason(7635450108); Mrinal Taje; Hunmoni Sinte; Niranjan Panging,Nesal Taje; Tilok Panging(8011568308); Gulap Sonowal; Padma Gogoi; Mesel Taje; Tilok Panging(8011568308); Anup Gogoi(9954758880)

Gaurisagar	Debola Mili; Atal Taye; Atal Mili	Doloi Darik(8134896979)-(JonmiriBorgaon); Jan Payeng(7637982893)-(Teliadunga)
Nazira	Jitu Bolimar; Pinku Bourah(9954917415)	
Disangpani (Sonari)	Biplab Borgoain(9365989358)-(Sonari Market); Putukon(995499550); Budhin Borgohain(8811933363)-(Sonari Market); Bablu; Akaman; Biju; Jagat; Gethai; Babu Changmai; Hiren; Khagen;	
Sapekhati	Rajeev Borgohain(8133844799)-(SapekhatiChariali); Dhanti Borgohain(9101431545)-(SapekhatiChariali),Bipul Barman(8133869596)-(Sapekhati Market); Jitu Gogoi(9957260127)-(SapekhatiChariali)	Mintu
13.Sonitpur		
Baghmara	Gomesh (6900261063); Lalit Takbe(7429217088)	Sunil Swargiary(8133805969)
Bihali	Seka Tisso; James Tarang(9436879076)-(NankeBihmari pork point); Biren Khatamari(Padumpukhuri)	BrojenTisso
Chayduar	Jaideep Sinte; Tae,Raju Taye; Ratan Taye(9365400214)	Jiten Sinte (9954457636)
Balipara	Bimal Bodo; Jagat Bodo; Paresh Bodo; Anuram Bodo; Dihiram Bodo; Parishram Bodo; Dilip Bodo; Menjing Bodo; Rajesh Bodo; Rupam Bodo; Subhas Baklari; Jintu Bodo; Punat Bodo; Mahanta Bodo; Punat Bodo; Raju Hainary; Prashad Mamin; Hiran Mamin; Minur Mamin; Kinwarsonmamin; Lal Mech; Babul Mech; Rajib Mech; Rajib Daimary; Babu Mech; Padmeswar Payeng	Bichitra Mech; Nazil basumatary; Paresh Bodo(7636044337)-(Dakshin Amloga)
Borsala	Dimeswar Bora	Dimeswar Bora
Dhekiajuli	Rohit Muchahary; Jiten Basumatary; Pinsul Doimary; Raviram Basumatary; Sumeswar Rabha	Krishna Basumatary; Rajib Muchahary
Rangapara	Basantigor(7578937649); Dwipen Deori(9957435027); Nipen Deori, AjoyBoro; Pabitra Deori; Purna Mahilary; Dilip Boro	Karen Basumatary(9954647760); Jiban; Govinda; Sabaram-piglet traders
Na Duar	Binod Boro(9707473072); Dakharat Sinte; Ajit Narah; Leta Nalah; Dilen Mili; Kaneswar Mili; Digen; Bipul Basumatary(7086871196)	Gunanjay Deuri; Local Traders and Lakhimpur,Shillong,Nagaland

Table A2: Government pig farms in Assam

Sl. No.	Name of government pig farm	District
1.	Base Pig Breeding Farm, Khanapara, Guwahati-22 (Nucleus Pig Breeding Centre (Rani Wing)	Kamrup
2.	Base Pig Breeding Farm, Khanapara, Guwahati-22 (Khanapara Wing)	Kamrup
3.	Pig Breeding cum Demonstration Farm, Sonapur	Kamrup
4.	Nucleus Pig Breeding Centre	Morigaon
5	Base Pig Breeding Farm, Bajalbari, Titabor	Jorhat
6.	Pig Breeding Farm, Khanikar	Dibrugarh
7.	Pig Breeding Farm	Kokrajhar
8.	Pig Breeding Farm, Diphu	Karbi Anglong
9.	Pig Breeding Farm, Dongkamokam	Karbi Anglong
10.	Pig Breeding Farm, Sontila	Dima Hasao
11.	Pig Breeding Farm, Umrangsu	Dima Hasao
12.	Pig Breeding Farm, Sonaigaon	Udalguri
13.	Neucleus Pig Breeding Centre, Kathiatoli	Nagaon
14.	Pig Breeding Farm, Kopahtoli, Halowating	Sivasagar
15.	Pig Breeding Farm, Gargaon	Sivasagar
16.	Pig Farm, Khelowa	Sivasagar
17.	Pig Breeding Farm, Dirpai, Gogamukh	Dhemaji
18.	Pig Breeding Farm, Kushdhowa	Goalpara

Table A3: Status of feed mills in Assam

Districts	Public	Status	Private	Status	Cooperative	Status
Golaghat	1 (Under ALPCo)	Functional	0		0	
Jorhat	1	Non-functional	0		0	
Barpeta	0		0		1 (at Nityananda)	Functional
Lakhimpur	0		0		0	
Morigaon	0		0		1 (under Sitajakhala DUSS)	Functional
Darrang	0		1 (Sanjukta Feed)	Functional	0	
Sonitpur	1	Non-functional	1 (Sri Ram Feed)	Functional	0	
Goalpara	0		0		0	
Nalbari	0		0		0	
Karbi Anglong	1 (6–7 t through district council)	Functional	0		0	
Kokrajhar	2 (1 under AHVD; 1 under BTC at Runikhata)	Non-functional	1 (at Titaguri)	Functional	0	
Sivasagar	0		0		0	
Kamrup	4 (Under ALPCo 1 Mesh atBirubari; 1 Mesh atSonapur; 1 Pellet Feed at Sonapur, AHVD)	Functional (The one under AHVD is non-fuctional)	6 (Smart Feed; Sona Vets; Godrej Agrovets (P) Ltd.; SKM Animal Feeds and Foods India Ltd.; Delux Feeds Products (P) Ltd.; Manas Products (P) Ltd.)	Functional	1 (at Changsari under WAMUL)	Functional
Cachar	1	Non-functional	0		0	
Total	11		9		3	

Few images of preparatory discussions and meeting various pork value chain actors while conducting FGD and KII in the APART districts of Assam