

Supplementary materials: Data Collection Tools

S1: Household Survey Tool

Information related to farm land, crops, animals, housing building structures and health care facilities in the village is being collected in this study.

Do you agree to participate in this study? 1) Yes 2) No

Village Code

Household Code

Name	
Sex: (1-M, 2-F, 3-Othrs)	

Section 1: Source of Livelihood

A) What are the main sources of income for your family? (You can mark more than one options. Rank according to percentage share in total income).

a) Agriculture __ b) Government jobs __ c) Private jobs __ d) Farm labor __
e) Animal husbandry __ f) Fishing __ g) Business __ h) Other __

B) How many agriculture lands do you own? _____

C) How much land does you and your family own? (In acres) _____

D) How much out of that land do you cultivate? (In acres) _____

E) Have you taken any land on rent to cultivate? If yes, how much (In acres) _____

F) Information on agricultural tools and other agricultural commodities:

	Tractor	Trolley	Bullock cart	Generator	Radio	Motor cycle / scooter	Bicycle	Four wheeler	Tempo / Truck	TV	Mobile
No.											

G) What sources of water do you use for agricultural activities? (You can mark more than one option)
Number

a) Rain water		1) Yes	2) No
b) Own well	_____	1) Yes	2) No
c) Own Borewell	_____	1) Yes	2) No
d) Neighbourhood's well		1) Yes	2) No
e) Neighbourhood's Borewell		1) Yes	2) No
f) Water stream/River/Canal		1) Yes	2) No
g) Agriculture pond	_____	1) Yes	2) No
h) Other	_____		

H) Do you have your own motor pump for farming? 1) Yes 2) No

I) If yes, please give details.

	HP	Company/Model Name	Water tax (yearly)
Motor pump 1			
Motor pump 2			
Motor pump 3			

J) What was the electricity bill of motor pumps in different seasons

- 1) Kharif season (monthly) _____
- 2) Rabi season (monthly) _____
- 3) Summer season (monthly) _____
- 4) Yearly bill _____

K) Do you use generator to run the motor pump?

- 1) If yes, what is the cost of diesel _____
- 2) No

L) What measures do you take to preserve harvested agricultural produce?

M) Do you use reefer van (refrigerated vehicle) to transport agricultural produce to the market?

- 1) Yes
- 2) No

N) What measures do you take while transporting harvested agriculture produce to the market?

O) Has there been loss of agriculture produce due to lack of storage facility, transport and demand in the market during last one year (July 2018 to June 2019)?

- 1) Yes
- 2) No

O. 3) If yes of which produce and how much?

Due to lack of storage: Crops _____ Quantity _____
Amount _____

Due to lack of transport: Crops _____ Quantity _____ Amount _____

P) Which of the following factors considered for selection of crops?

- | | | |
|---|--------|-------|
| 1) Market price | 1) Yes | 2) No |
| 2) Water availability | 1) Yes | 2) No |
| 3) Crops determined by the Farmer Producing Company | 1) Yes | 2) No |
| 4) Crops decided by water user association | 1) Yes | 2) No |
| 5) Crops decided by gramsabha | 1) Yes | 2) No |
| 6) Neighbourhood farms | 1) Yes | 2) No |
| 7) Advertisements related crops | 1) Yes | 2) No |
| 8) Market availability | 1) Yes | 2) No |
| 9) Other | _____ | |

Q) Do you perform organic farming on any of your agriculture land? If yes, in how many acres?

R) If yes, give details of crops produced in organic farm during last one year (July 2018 to June 2019).

Crop	Production (Kg or no.)	Consumed for self (Kg or no.)	Sell in the market (Kg or no.)	Which market?	Rate (per Kg or no.)

S) Do you have certificate of organic farming?

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- 1) Yes 2) No 3) Not aware of it
T) Did you use cold storage facility in the past to store agriculture produce?
1) Yes 2) No 3) Nor aware of it

U) If yes, tell about those cold storage facilities and cost of them.

Name and address	Stored agri produce	Duration (days)	Quantity (Kg or no.)	Cost	Distance (Km)	Time (Minutes)

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V) Crop Production in last one year (July 2018 to June 2019):

Sr No	Crop	Harvesting month	Area (acre)		Seeds (Market/home)	Water source	Production Cost	Production (Kg /No)	Rate (rate per Kg/No)	Which market do you sell these produce?	Distance of the market (Km)	Time (Min)
			Acre	R								

W) Has the agriculture crops damaged due to intense sunlight? If yes, give details.

1) Yes 2) No 3) If yes, give details _____

X) Do you feel that cold storage facility is made available near the village, it will benefit the farmers?

1) Yes 2) No 3) Can't say 4) Yes, if it is provided at affordable cost

Y) How do you get information about the price of agriculture commodities?

Z) How do you get weather forecast information?

AA) Do you use any app to get information related agriculture?

- 1) Agrostar 2) Krushi Vigyan Kendra (KVKS) 3) E-Naam
4) Bharatagro 5) Ninjacart 6) M-Lisan 7) Other _____
0) Don't use

Section 2: Animal Husbandry

Instruction: Question AB is on next page

AC) How much is the annual cost of medication and vaccination of animals? _____

AD) What are the facilities in animal shelter to protect animals from extreme weather conditions?

- | | | |
|--------------------------------------|--------|-------|
| 1) Fan | 1) Yes | 2) No |
| 2) Shower | 1) Yes | 2) No |
| 3) Cover animals with wet jute/cloth | 1) Yes | 2) No |
| 4) Cover shelter ceiling with straw | 1) Yes | 2) No |
| 5) Tungsten lamp | 1) Yes | 2) No |
| 6) Give bath to animals | 1) Yes | 2) No |
| 7) Others _____ | | |

AE) Has there been death of animal in last two years?

- 1) Yes 2) No

AF) If yes, give the details.

Which animals	How many	Reason of death	Reasons for not getting treatment

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AB) Details of domestic animals (Ask details of Chicken, Fish and Eggs as well)- (July 2018 to June 2019):

Type	Breed	Number	Productivity (Milk/Meat) (Lit or Kg)	Number of animals sold in last 1 yr	Price of animals sold in last 1 yr	Productivity (Lit or Kg)			Where do you sell milk/ ani mals / meat ?	Does regular vaccination happen?
						Summer	Rainy	Winter		

Note: Ask the remaining questions on previous page first

Section 3: Household Information

AG) Do you have self-owned dwelling?

- a) Yes b) Yes, built under housing scheme c) Rented
d) other _____

AH) How many rooms? _____

AI) How many floors above the ground floor? _____

AJ) Number of windows? _____

AK) Roof type:

- 1) Thatched 2) Simple tiled 3) Mangalore tiled 4) Tin sheet-4
5) Cement sheet 6) Asbestos sheet 7) Cement slab 8) Other _____

AL) Wall type:

- 1) Soil and thatched 2) Stone & clay 3) Stone & cement
4) Bricks & cement 5) Bricks, cement & plastered 6) Other _____

AM) Floor type:

- 1) Cow dung 2) Cement 3) Stone 4) Kota 5) Mosaic
6) Marble 7) Tiles 8) Other _____

AN) Do you have toilet attached to house? Does everyone in the family use this toilet?

- 1) No, we don't have toilet 2) Yes, and everyone uses it 3) Yes, only some family members use

AO) Have you planted trees near house to protect it from intense sunlight?

- 1) Yes 2) No

AP) What is source of light in the house during daytime?

- 1) Natural (Window) 2) Tubelight, LED, CFL, Tungsten Lamp 3) Solar lamp
4) Kerosene lamp 5) Other _____

AQ) What are the different types of bulbs/ tubelights you have?

	Tube light	LED tubelights and bulbs	CFL	Tungsten Bulb
Number				

AR) How do you feel in this house building during different seasons?

	Temperature (Very cold-1, Cold-2, Medium-3, Hot -4, Very Hot -5)	Air/wind (Very cold-1, Cold-2, Medium-3, Hot -4, very hot-5)	Air/wind (Stagnant air-1, Little windy -2, Very windy-3)	Humidity (No sweat, Little sweat-2, heavy sweaty-3)
Summer				
Monsoon				
Winter				

AS) How do you feel at the farm in different seasons?

	Temperature (Very cold-1, Cold-2, Medium-3, Hot-4, Very Hot-5)	Air/wind (Very cold-1, Cold-2, Medium-3, Hot-4, very hot-5)	Air/wind (Stagnant air-1, Little windy-2, Very windy-3)	Humidity (No sweat, Little sweat-2, heavy sweaty-3)
Summer				
Monsoon				
Winter				

AT) When was the last time you made changes in the house structure? _____

Instruction: If respondent has constructed new house building in last 10 years, ask questions AU to AY

AU) Roof type of previous dwelling:

- 1) Thatched 2) Simple tiled 3) Mangalore tiled 4) Tin sheet-4
5) Cement sheet 6) Asbestos sheet 7) Cement slab 8) Other _____ 9) Don't Know

AV) Wall type of previous dwelling:

- 1) Soil and thatched 2) Stone & clay 3) Stone & cement
4) Bricks & cement 5) Bricks, cement & plastered 6) Other _____ 7) Don't Know

AW) Floor type of previous dwelling:

- 1) Cow dung 2) Cement 3) Stone 4) Kota 5) Mosaic
7) Marble 7) Tiles 8) Other _____ 9) Don't Know

AX) What were the reasons of changing dwelling structures or constructing new dwelling?

AY) Considering winter, summer and air ventilation, which housing dwelling has more thermal comfort?

- 1) Previous 2) Present 3) Both are same
4) Why ____

AZ) In the last one year, in which months and how many times have you experienced intense heat (Heat wave)?

Month _____ Days _____

BA) Have you or any of your family members have avoided going to work/ college/school due to extreme heat?

- 1) If yes, how many school/college days _____ 2) No
3) If yes, how many work days _____ 2) No

BB) Was there any illness caused to you and your family members due to extreme heat during last one year? If yes, how many people and due to which type of illness?

- 1) Yes 2) No 3) If yes, how many people _____ 4) What were the symptoms _____

BC) Was there any death due to heat stroke in the family?

- 1) Yes 2) No

BD) Did you take the sick person (caused due to heat stroke) to the hospital? How much money did you spend?

1) Yes 2) No 3) If yes then cost (Transport, admission and treatment)_____

BE) How many school/ college/ work days were lost because of sickness caused due to heat stroke?

1) School/ college days missed_____

2) Work days lost_____

BF) Was there any incidence of snake bite in your family? If yes, where did you take treatment?

1) Yes, took treatment at_____

2) No

BG) According to you, which of the following diseases are caused by heat stroke?

1) Heart diseases 1) Yes 2) No 3) Don't Know

2) Kidney diseases 1) Yes 2) No 3) Don't Know

3) Lung diseases 1) Yes 2) No 3) Don't Know

4) Brain diseases 1) Yes 2) No 3) Don't Know

5) Diabetes 1) Yes 2) No 3) Don't Know

6) Other_____

BH) How do you deal with extreme heat on daily basis?

1) Change in working hours 1) Yes 2) No

2) Sit inside tree 1) Yes 2) No

3) Umbrella, cover head with cloth 1) Yes 2) No

4) Change in food habits 1) Yes 2) No

5) Fan 1) Yes 2) No

6) Cooler 1) Yes 2) No

7) AC 1) Yes 2) No

8) Other_____

BI) Details of cooling equipment in the household

Type	How much old?	Number	Cost	Company model name	Daily Usage in summer (Hours)	Satisfied (Yes, No)	Remark
Ceiling Fans							
Table Fans							
Fridge							Lit=
Cooler							
Window AC							Ton=
Split AC							Ton=
Other							

BJ) Which cooling-related equipment are you planning to buy in coming times?

Section 4: Household Food Consumption

BK) During last one year, was there any food scarcity due to lack of financial and other resources?

Which of the following category you fit into?

1. During last one year, everyone in the household got enough nutritious food Nutritious Food: Vegetables, Fruits, Green vegetables, sprouts, milk, milk products, bhakari, chapatti, rice, meat, eggs, fish	2. During last one year, we got enough food but the food was not diverse. We got enough food, but we were worried about not getting enough food in the future
3. During last one year, some or all of the family members got to eat one time food for all days or some of the days	4. During last one year, some or all of the family members didn't get food even for one time

BL) During last one year how many times there was food scarcity? (Ask if this question only if answer to the question BK is 2, 3 or 4)

BM) If there was food scarcity, it was in which months and what were the reasons?

- 1) Months _____
- 2) Reasons of food scarcity _____

BN)) Which of the food and food ingredient you wish to eat but can't eat due to some reason?

Not available on the market	
Available in the market but cant buy	

BO) What type of ration card do you have?

- a) No ration card b) Yellow c) Antyoday d) Orange e) White

BP) Do you have kitchen garden? a) Yes b) No

BQ) List all things you produce in the kitchen garden

BR) What do you do with the produce from kitchen garden?

- a) Household consumption b) Sometimes sell in the market c) Sell all produce in the market

BS) Source for vegetables and fruits:

Type	Summer			Monsoon			Winter		
	Homes (%)	Neighbor /Exchange (%)	From the market (%)	Home(%)	Neighborhood / Exchange (%)	From the market (%)	Home (%)	Neighborhoods/ Exchange (%)	From the market (%)
Vegetables									
Fruits									

BT) Source for meat, milk and milk products:

	Homes (%)	Neighbour /Exchange (%)	From the market (%)
Meat and Fish			
Egg			
Milk			
Milk products			

BU) Weekly consumption of fruits, vegetables, milk and milk products)

Ingredients	Component	Quantity (Kg/Lit/No)	How much do you buy? (Kg/Lit/No)	Rate per (Kg/Lit/No)	Amount spoilage (Kg/Lit/No)
Milk					
Milk products					
Vegetables					
	Tomatoes				
	Coriander				
	Lemon				
	Potato				
	Onion				
Fruits					
Meat and Fish					
Other					

Section 5: Household Energy and Water consumption

BV) What are the sources of energy you use for cooking and boiling water?

Source of energy	Usage		
	Summer (Daily)	Monsoon (Daily)	Winter (Daily)
Wood for boiling water (Hours of chulha/ Bumb)			
Wood for cooking (Hours of chulha)			
LPG gas (hours)			
Induction (hours)			
Electric geyser (hours)			
Gas geyser (hours)			
Heating rod (hours)			
Gobar gas/ bio gas			
Kerosene (lit)			

BW) Note down electricity consumer number _____

BX) Average electricity bill? Summer _____ Rainy _____ Winter _____

BY) What methods do you use to cool the drinking water ?

Section 6 : Anganwadi/Kindergarten Information

BZ) Are the children in your family vaccinated as per UIP programme schedule? 1) Yes 2) No

CA) Does the household have children who are eligible to go to Anganwadi? 1) Yes 2) No

CB) Does the Anganwadi operate regularly?

1) Regularly 2) Sometime closed 3) Often closed

CC) Does the Anganwadi provide food? 1) Yes b) No

CD) How satisfied are you with the food provided in the Anganwadi?

1) Highly satisfied 2) Satisfied 3) Unsatisfied 4) Highly unsatisfied 5) Not applicable

CE) If not satisfied, what are the reasons?

CF) Does the Anganwadi provide food for pregnant women?

1) Yes 2) No 3) Don't know

CG) How many times in a month does Anganwadi worker visit home? _____ times

CH) Does the household have children studying up to 8th std? 1) Yes 2) No

CI) Does the children get mid-day meal food? 1) Yes 2) No 3)NA

CJ) How much are you satisfied with the mid day meal served ?

1) Very satisfied 2) Satisfied 3) Dissatisfied 4) Very dissatisfied

CK) If not satisfied, what are the reasons?

Section 7: Employment Guarantee Scheme and Gram Sabha

CL) Have you attended any gram sabha in the last 5 years?

- 1) Yes 2) No

CM) Do you know how many gram sabhas have been conducted in the last one year?

- 1) Number_____ 99) Don't Know

CN) Do you know how many mahila gram sabhas have been conducted in the last one year?

- 1) Number_____ 99) Don't Know

CO) Which of the following topics have been discussed in the Gram Sabha ?

1. Spoilage of agricultural produce, milk and milk products and how to reduce it	Yes	No
2. School building repairs & comfort of students in all seasons (e.g. install fans, roofing work)	Yes	No
3. Tree plantation	Yes	No
4. Environmental degradation and measures to prevent it	Yes	No
5. Install fan and preservation unit for vaccines in the sub-centre	Yes	No

CP) Has any member of your family got work under employment guarantee scheme?

- 1) Yes 2) No, asked for work but didn't get any work allocation
3) MGNREGA scheme is not operational in our village
4) I don't require work under this scheme

CQ) If yes, work for how many days? _____

CR) What type of NREGA work were you involved in?

- 1) Road-building/repair
2) Housing/ other construction/ Building ponds/ irrigation/Structures/flood control
3) Land improvement
4) Tree plantation for shed in the village
5) Others (specify)_____
6) Don't Know
7) NA

CS) Does the gram sabha discuss which type of work is to be performed under MGNAREGA?

- 1) Yes 2) No 3) we don't attend gram sabha 4) NA

CT) What means of transport do you use for travel?

- 1) Two wheeler 2) Four wheeler 3) ST Bus 4) Share auto 5) Railway

CU) Do you feel that AC in the vehicle is necessary? 1) Yes 2) No

CV) What is the total annual income of your family? _____

CW) Have you taken any loan?

- 1) Yes 2) No 3) If yes, how much_____

CX) Do any of the family members have life insurance policy? If yes how many?

- 1) Yes 2) No 3) If yes, how many_____

CY) Does anyone of the family is a member of self help group?

- 1) Yes 2) No

CZ) Considering your current financial status, do you feel that you are more satisfied compare to previous generation?

- 1) Yes. Satisfied 2) Previous generations were satisfied 3) No major difference

DA) Considering your current financial status, do you think that future generations will be more satisfied?

- 1) Yes, future generations will be more satisfied
2) No. there is a hard time for future generations
3) No major difference

DB) Considering present situation, do you feel that farming is a profitable venture?

- 1) Yes 2) No 3) Can't say 4) Why?

DC) What is the caste group of the family?

- a) SC (Scheduled Castes) b) ST (Scheduled Tribes)
c) OBC (Other Backward Castes) d) General (Open)

Section 8: Family characteristics

Name	Sex (M/F)	Age	Education	Occupation	Place of work

S2: Building Structure analysis tool

Sr.	Room	Doors	Windows
1	Living Room		
2	Kitchen		
3	Store Rooms		
4	Bedrooms/ Private Rooms		
5	Toilets		

INDIVIDUAL UNIT LEVEL ANALYSIS

a.) Gathering Basic Information about the Selected House/ Building Typology for BTA

1	Name/ Type of Building	
2	Name of the Owner	
3	Address	
4	Age/ Year of Construction	
5	No. of Residents	
6	Rooms & Other Facilities	

b.) Basic Plan/ Outline of the Selected House/ Building

c.) Building Orientation/ Sun & Wind Path

d.) Construction technique adopted

e.) Materials Usage

1	External Façade	
2	Cladding/ Coating	
3	Internal Partitions	
4	Roofing	
5	Doors	
6	Windows	
7	Flooring	

f.) Room wise Openings (No. of Doors & Windows)

Sr.	Room	Doors	Windows
1	Living Room		
2	Kitchen		
3	Store Rooms		
4	Bedrooms/ Private Rooms		
5	Toilets		

g.) Sizes of Doors & Windows

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- h.) Cut – Sections to understand Levels/ Plinth heights with Material Usage (As per Site Conditions/ Building Layout)

SURROUNDING AREA LEVEL ANALYSIS

- a.) Gathering Basic Information about the area surrounding selected Building
- b.) Basic Line Drawing with Roads/ Pathways/ Other Linkages
- c.) Surrounding Area's Orientation/ Sun & Wind Path
- d.) Identification & Marking of nearby Natural Resources (trees, water bodies, etc.)
- e.) Ground Condition Mapping of elements surrounding all 4 directions of selected Building Typology
- f.) Mapping of Building Height in adjoining area responsible for enhancing Climatic Conditions (Structures with Additional Height: Shadow Casting & Wind obstruction)

VILLAGE LEVEL ANALYSIS

- a.) Mapping of Village Level Structures/ Building Typologies
- b.) Mapping of all Natural Resources** (trees, water bodies, hills, mountains, etc.)
- c.) Studying the Built Fabric of the Entire Village/ Settlement
- d.) Analysis of the Area's Orientation/ Sun & Wind Path
- e.) Roofing Pattern of all Building Typologies in the Village/ Settlement
- f.) Settlement Growth Analysis, Growth Areas/ Corridors & Reasons
- g.) Analysis of Reduction/ Increase of Green Cover
- h.) Village Level Storage Facilities
- i.) Demographic Details of the Village

SPECIFIC POINTS FOR ANALYSIS

- a.) Identifying 5 Residential Structures, 3 Public Buildings (ZP School, Anganwadi, GP Office, Primary Health Sub-Centre) to Cover all Building construction techniques/ materials/ building use, etc.
- b.) Details study of Anganwadi with respect to Climate compatibility & thermal comfort – Suggesting modifications to the structure
- c.) Identifying relevant location for Proposing CCH** (mostly near Anganwadi/ places of Community Gathering, etc.)
- d.) Discussions about locally available materials, construction techniques, climate adaptability solutions incorporated by Residents
- e.) Change in roofing pattern (use of materials used for roofing) over the last few years

S3: Key Informant Interview with Sarpanch/ Gram Sadasya (Village Information sheet)

Interviews with Village Headman (Sarpanch), Land Record Officer (Talathi), Gram Panchayat Members

Instructions

1. During the first stage, CEE team members will fill up the information available in the public domain through various search strategies.
2. The remaining information will be filled up by data collectors from BAIF and Yuva Mitra after interviewing Sarpanch, Gram Sevak and Talathi.
3. Some information will be filled up through observations and triangulation.

Section 1: Geographic details, size, caste composition of the village

A) Name of the village:

B) Number of households in the village:

C) Block: District: State: Maharashtra

D) Geographical co-ordinates (Source: Google map):

- a. Latitude: _____
- b. Longitude: _____
- c. Altitude: _____

E) Location in the map (Source: Google map)

F) Weather:

	Temperature (°C)					Relative Humidity (%)					Rainfall (mm)				
	'15	'16	'17	'18	'19	'15	'16	'17	'18	'19	'15	'16	'17	'18	'19
Jan															
Feb															
March															
April															
May															
June															
July															
Aug															
Sep															
Oct															
Nov															
Dec															

G) Major castes in the village and the number of households in each caste?

Caste															
Caste category															
No. of H.H.															

H) To what caste does the Sarpanch belong?
category _____

Caste: _____ Caste

I) Is the Sarpanch a woman?

1) Yes

2) No

J) No. of years current Sarpanch has been in the office?

Section 2: Governance

K) Are Gram Sabhas conducted in the village? If yes, how many gram sabhas have been conducted in the last year?

L) Are Mahila Gram Sabhas conducted regularly? If yes, what were the discussion points on agenda of previous mahila gram sabha?

M) How actively do Gram Sabha members participate?

N) Are the members from different communities able to participate effectively?

O) List of all the village level committees (e.g. WUA, SHGs, FPOs, Cooperatives and any other formal entities), mandates, membership, experiences of functioning)

Type (WUA, SHG, FPO, Cooperative)	Name	No. of members	Functions

P) Do these committees perform effectively? If not what are the challenges? (or how successful/ not successful)

Q) Examples of issues that have brought the community together, any history of joint decision-making?

R) Any examples illustrating failures of bringing people together, and reasons thereof

S) Information on any NGO/CSR activity already ongoing on with name of company, implementing agency, CSR activities and funds spent/available.

T) Has the issue of cooling (either for agricultural, workplace, schooling or health reasons) (or extreme heat) been presented in any Gram Sabha. If so, how was the issue resolved? What type of solutions were discussed (even if none were adopted), were they successful / unsuccessful? Why?

U) If this issue of cooling needs/ extreme heat has never been presented, why not? (Is it not perceived as an issue at all, or simply not as relevant/pressing as other issues, or not an issue where the community or gram sabha or panchayat or government have a role or can take action for)?

V) Describe the process followed for Village Development Planning/ Micro-Plan? Include table on key work areas and budget for current/coming year?

W) Key work areas and budget for current year:

Key work areas	Budget

Section 3: Economy and Infrastructure

X) Is the village electrified? 1) Yes 2) No

Y) If the answer to question 1 is yes, then how many hours per day do households in the village get electricity?

	Summer	Monsoon	Winter
Gaothan			
Agriculture			

Z) Location of the village transformer? _____

AA) How far is the nearest sub-station from the village? _____

BB) What are three most three common sources of drinking water in the village as a whole?

1. Piped water_____ 2) Hand pump_____ 3) Protected wells____
4) Open wells_____ 5) Ponds_____ 6) Canal/River_____ 7) Other____

CC) Does shortage of water occur in the village in any month? 1) Yes 2) No

DD) If the answer to question CC is yes, then in which months? _____

EE) What type of drainage system for liquid waste does the village has?

- 1) Closed drains 2) Open drains 3) None

FF) Is the village accessible by road?

1. No, walking only 2) Yes, Katcha road
3) Yes, pucca tar road 4) Yes, pucca cement road

GG) Road connectivity:

	Dimensions (Length, Width)	Road type	Linked with District roads /SH/ NH	Distance from headquarter (Km)
Village roads				
a) Approach Road				
b) Inner roads				
District roads				
State highway				
National Highway				

HH) Is any of the roads inaccessible during some months of the year?

- 1) Yes 2) No

II) If yes then which months? _____

JJ) Nearest (Name & distance from village, condition of road, time required, transport available)

	Name	Distance from the village	Condition of the road	Time required	Transport available
Block Headquarter					
District Headquarter					
State Headquarter					

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Railway station					
Airport					
Port					

KK) List of educational institutes in and nearby vicinity of the village

Education institute level	Name	Type of Institute	Distance from village	Operating since	Approx number of students	Approx no. of teachers	Courses available
Primary							
Secondary							
Higher secondary							
College							
MS-CIT							
Vocational courses (ITI)							

(Coding for type of institute: Government-1, Government aided-2, Recognized private-3, Unrecognized private-4, Religious non-formal-5)

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LL) Access to facilities:

Facility	Is the facility within the village or outside? 1) Within village 2) Outside village	How far is the facility? Km	What is the usual from of transport available to reach this facility?	How long does it take to reach the closest facility using this mode of transport from the village? (Min)
PDS shop				
Bank				
Anganwadi Centre				
Primary School				
Secondary School				
Chemist				
Private doctor/ Hospital				
Sub-centre/ PHC /CHC				
Hospital				
Agri produce collection centre				
APMC Market				

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MM) Access to Health:

Health service	How far would a person have to travel in order to receive the following health service: (One way distance) (Km)	Would this be a public or a private facility?	What is the usual form of transport to reach this facility?	How long does it take to reach this place using this mode of transport from the village?
Normal delivery				
Complicated delivery				
Vaccination				
Blood Bank				
Common ailments like small duration fever, cough etc.				
Complicated or long term medical problems				
Major emergencies like trauma and other surgical emergencies				

Section 4 Agriculture and Forestry

NN) What is the average price of the following types of land in the area?

Type of land	Price per acre
Irrigated	
Non-irrigated	

OO) What is the most common practice of rental arrangement of land in this village?

1. Share cropping 2. Fixed renting

PP) What percentage of the output of the main crop is given to the land lord? _____

QQ) Does the land owner commonly provides or share the inputs with the share cropper?

1. Yes 2. No

RR) Which inputs are shared:

	Yes-1, No-1
Fertilizer	
Irrigation	
Seeds	
Manure	
Hired Labour	

SS) Is there a forest near this village? 1) Yes 2) No

TT) If yes, then how far is the forest? _____

UU) Where do most people collect firewood? _____

VV) Have trees been planted in this area in the past 5 years by the community?

- a) By the community: 1) Yes 2) No
b) By the government: 1) Yes 2) No

WW) Prevailing wages in the village

Task	What are the prevailing wages for casual labor for the following tasks?					
	Male			Female		
	No. of meals	Cash	In kind	No. of meals	Cash	In kind
Ploughing						
Hoeing						
Weeding						
Planting						
Harvesting						
Winnowing wheat/ Paddy						
Construction work						
MNREGA						

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XX) Are there other government or NGO sponsored programs/ projects in the village?

- 1) Yes 2) No

YY) Ongoing projects/Programs in the village:

List the programs/ projects	What type of program/project is it?	Sponsored by: Name of organization	Beneficiaries

Section 5: Performance of a PDS shop

ZZ) How many days is the PDS outlet usually open in a month? _____

AB) Are these days fixed for each month? 1) Yes 2) No

AC) If not, do you get advance information of when the PDS shop would remain open?

- 1) Yes 2) No

AD) What are the quantities of different items that households are entitled to buy per month?

List of items	How much are you entitled to buy per month?		Price per unit Rs.	What was the quality Better than market..1 Same as market.....2 Worse than market..3
	Unit	Quantity		
Rice	Kg			
Wheat	Kg			
Sugar	Kg			
Kerosene	Ltr.			

S4: Key informant interview-Polyhouse/ greenhouse owner from the village

Section 1: Personal Information

- A) Name:
- B) Age:
- C) Education:
- D) Mother-tongue:
- E) Work experience
- F) Name the village

Section 2: Information of Greenhouse

- G) What material is the greenhouse made of? Eg Polythene
- H) What produce do you grow in the facility?
- I) What is the temperature range inside and outside?
- J) What crops do you grow inside?
- K) What was the cost for the facility?
- L) Give details of subsidy or funding scheme.
- M) Crop Production Changes monthly (how does summer affect the output in production):
- N) What are the cooling methods used in peak summer to reduce wastage/losses? Eg sprinklers, source of water
- O) Do you use a motor for pumping the water? Details of the motor pump (Wattage, company, etc).

	HP	Company/Model Name	Water tax (yearly)
Motor pump 1			
Motor pump 2			
Motor pump 3			

- P) What are the challenges faced using the greenhouse?
- Q) Power Source (Diesel/ Grid and type of electrical meter - Agri/ Commercial/ HH Connection)
- R) Sprinkler Cost Capital and Operational cost.

S5: Key informant interview-Vegetable/ Fruits traders from the village

Section 1: Personal Information

- A) Name:
- B) Age:
- C) Education:
- D) Gender:
- E) Name the village

Section 2: Information of Trade

- F) What produce do you trade?
- G) Where do you take the produce from? Farm (bandh) or main area in village? Collection point? Common farm collection?
- H) How much produce do you trade in a day? Seasonality changes.
- I) Which markets do you take the produce to?
- J) Where do you get information on market prices?
- K) What are the challenges you face when selling to the main market?
- L) How much produce gets damaged due to intense heat during transportation? How much is its economic value?
- M) What mode of transport do you use? Do you own the vehicle or rent? Give vehicle details.

Vehicle	Petrol/Diesel and its cost	Rent cost	Capacity of Container

N) Produce Cost and Profit

Produce Cost	Produce Selling rate at market	% Profit	% Waste during transport

- O) What are the current charges for transportation?
- P) What are the current charges for commission?
- Q) What are the market yard fee charges? Any other charges and from whom?
- R) How do you wrap the produce and in what material?
- S) How do you keep the produce cool during summer?

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- T)** Do you use a reefer van? Do you know about a reefer van? Method of reefer and material
- U)** Would a reefer van be more useful than the current mode? Why?
- V)** Have you used any cold storage facility? If yes, when, where for how much time, cost, why did you decide to store?
- W)** Any method of pre-cooling before transport?
- X)** Market linkages (Farm to fork with volumes, prices)

S6: Key informant interview - Fish/ Meat Distributor Company representative

- A.** Name:
- B.** Name of the company:
- C.** Understand the economic model of contracting out meat production to farmers (animal sourcing, average sale per day during high demand and low demand period, cost and profit sharing, wastage avoidance practices)
- D.** Advantages and disadvantages of sale of live animals vs slaughtered preserved meat to retail shops?
- E.** If the cold storage is provided, is the model of sale of preserved meat is profitable? How?
- F.** Process Maps with distance and time between slaughterhouse (in case of preserved meat model) and sale/aggregation points (Nearest one from cluster)
- G.** The cost of slaughtered meat vs live animals. The market potential of both kinds of meat
- H.** Present methods of transport and If any storage required before, during and after transportation
- I.** Process map of existing cooling chain if any.
- J.** When and how it was installed, any grant, loan accessed?
- K.** What are the challenges/ pain points of running these; e.g. O&M costs, spares, maintenance, technical trained staff
- L.** What are loss/ spoilage during the process, cost of loss sharing at different stages and its variability over seasons?
- M.** What is the nature of information flow back from Fork to Farm, and how does it influence decisions related to production / breeding?
- N.** Benefits of if produce is sold in local markets, or, if sold in distant markets, what is the nature of feedback, communication channels whether such feedback is taken into account, and how this information is obtained.
- O.** Future trend and potential for cooling

S7: Key informant interview-Dairy owner/staff/co-operative members

Section 1: Personal Information

- A. Name:
- B. Gender:
- C. Age:
- D. Educational:
- E. Year of establishment:
- F. Name the villages:
- G. Nature of ownership (Private/Cooperative):

Section 2: Information of Dairy unit

- A) If it is a cooperative dairy, give the details of membership, committees etc.

- B) Per day milk collection (Lit)

Summer	Monsoon	Winter

- C) The cost at which milk purchased from producers. Which factors decide the cost? (Rs/Lit)

- D) Milk aggregation process in the village (Transportation facility, Milk containers, cooling methods, shelf life, collection schedule, collection management)

- E) Range of different products produced from the milk

- F) What quantity and at what price are milk and milk products sold in the local market?

Milk and milk product	Quantity sold	Price

- G) What quantity and at what price are milk and milk products sold to milk packaging and distributor companies?

Milk and milk product	Quantity sold	Price

- H) Electronic Appliances in the dairy

Electronic appliance	Cost of the appliance	Company, Model name/number	Energy capacity (Watt)	Per day usage (min/hours)

- I) If there is daily or occasional load shedding, please mention the time and duration

- J) How does cooling maintain during power disruption and load shedding? The cost of alternate source of power? If generator is installed, its capital cost, maintenance cost and fuel cost?

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- K)** What is the cold chain management system for transportation of milk and milk products from dairy till milk packaging and distributor companies? (Transportation facility, Milk containers, cooling methods, shelf life, collection management)
- L)** How much was the per month loss of milk and milk products due to insufficient cooling, interruption in electricity supply or during transportation during different seasons in the last year?

Milk and Milk Product	Loss					
	Summer		Monsoon		Winter	
	Quantity	Quantum of loss in INR	Quantity	Quantum of loss in INR	Quantity	Quantum of loss in INR

- M)** Who does bear the cost of spoilage?
- N)** Is there any government scheme and subsidy available for dairy setup? If yes, give details.

S8: Key informant interview-Meat shop owner

Section 1: Personal Information

- A. Name:
- B. Age:
- C. Name of the shop:
- D. Village:
- E. Type of meat (Chicken/Goat meat/Sheep meat/Fish):

Section 2: Business Information

- F. Breeds of chicken/Mutton/Fish/egg
- G. What are different kinds of certification/permits required before opening meat shop?
- H. What all certificates do you have?
- I. What are the meat selling practices? (Live/frozen meat)
- J. Why do you prefer particular type of practice? What are the advantages and disadvantages of both kinds of practices?
- K. What are different preservation techniques do you use?
- L. Do you have a refrigerator? 1) Yes 2) No
- M. If yes, model/company name, watt, daily use, capacity?
- N. If supply is from meat supplier company, please mention the business model

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O. Meat demand (Chicken, Meat Fish, egg):

Type of meat & Breed	Animal Sourcing	Rate per Kg or no.	Average sale in (kg/day)	Peak Demand Period	Peak Period sales (Kg/day)	Low demand Period	Low Period sales quantity	Average Unsold Quantities (Kg)	How did you preserve	Quantity spoiled during last week

P. If the necessary resources are made available, do you think that frozen meat selling can be more profitable? If yes how?

Q. What resources will you need to be able to sell frozen meat?

S9: Key informant interview- School (mid day meal) and anganwadi cook

Section 1: Personal Information

- A) Name:
- B) Age:
- C) Education:
- D) Work experience
- E) Name the village

Section 2: Information Regarding Midday Meal

- F) Is hot cooked meal provided in the school? 1. Yes 2. No
- G) Name and contact information of the contractor/ agency/ SHG providing midday meals
- H) Is a refrigerator used to store any food, milk or curd? Should there be a cooling facility (fridge, etc)?
- I) If no refrigerator, what methods do you use to store vegetables and other perishable goods?
- J) Would it be useful to have a refrigerator to provide nutritious food in the mid-day meal? If yes how
- K) If a common fridge is given, are you willing to use it for storing ingredients for midday meals?

L) Weekly food menu

Day	Menu	Ingredients required	Quantity
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			

- M) Is the meal given sufficient in quantity? 1. Yes 2. No
- N) Is the meal given regularly throughout the year on all working days? 1. Yes 2. No
- O) Are meals provided during vacations? 1. Yes 2. No
- P) Where do you get these ingredients from? (Market?)
- Q) What are the constraints you face in serving quality food?
- R) What are the requirements of parents and any complaints?
- S) How much funding is allotted per child for food?

T) Do you take any effort to include locally available food ingredients in the food menu? If yes, how?

S10: Key informant interview-Anganwadi worker

Section 1: Personal Information

- A)** Name:
- B)** Age (years):
- C)** Education:
- D)** Mother-tongue:
- E)** Work experience:

Section 2: Anganwadi infrastructure

- F)** Roof type:
 - 1) Tiled 2) Tin sheet 3) Cement sheet
 - 4) Cement slab 5) Others _____
- G)** Wall type:
 - 1) Stone and cement 2) Bricks and cement 3) Bricks, cement and plastered
- H)** Floor type:
 - 1) Cemented 2) Stone 3) Kota
 - 4) Mosaic 5) Marble 6) Tile 7) Other _____
- I)** Number of rooms and what are they used for:
- J)** Wall paint colour: 1. Inside walls: 2. Outside walls:
- K)** Toilets:
 - a) Number of toilets:
 - b) Type of toilets (pit, flush):
- L)** Is the Anganwadi building
 - a) Spatially adequate 1) Yes 2) No
 - b) Well lighted and ventilated 1) Yes 2) No
 - c) Accessed by good roads 1) Yes 2) No
- M)** Are there any trees around the Anganwadi? 1) Yes 2) No
- N)** What are the effects of seasonal variations (summer, winter, monsoon) on children and comfort in the Anganwadi? (drop outs, reason for drop outs)
- O)** What is the source of light during the day time?
 - 1) Natural sunlight 2) Bulb, tube lights 3) Solar lamp 4) Other _____
- P)** How often there is disruption in electricity supply during week? (No. of times and duration)
- Q)** What is the source of electricity after power get disrupted?

R) If generator is being used, weekly expenses of diesel?

S) What are the different electronic equipment available in the Anganwadi?

Equipment	Number	Company/ model name	Capacity	Daily usage
Tungsten Bulb				
CFL Bulb				
Tube lights				
LED bulb				
Ceiling Fan				
Table fan				
Generator				
Window AC				
Split AC				
Cooler				
Fridge				

Section 3: Anganwadi services

T) No. of children come to Anganwadi? Boys _____ Girls _____

U) How many children from the village are not coming to Anganwadi? _____

V) What are the possible reasons of children not coming to the Anganwadi?

W) Were you given induction training after joining? 1) Yes 2) No

X) What was the modular content of the UIP related activities? (specially focussed on storage and transportation of vaccines and other medicines)

Y) Have you participated in a community survey under ICDS? 1) Yes 2) No

Z) What are the Physical growth monitoring records of children of this Anganwadi? (Degree of malnutrition, under-nutrition, Number of anaemic children)

AA) What are the nutrition records of women in this village? (Number of anaemic women)

BB) What are the Disease profile of the Anganwadi children, and mothers (lactating and expecting)

CC) Were there any incidences of heat related exhaustion, heat cramps and heat stroke, heavy sweating, tiredness and weakness, dehydration, headache, dizziness, Nausea and vomiting, Fainting, sunburn, heat rash (record 2-3 case studies in detail)

DD) What are the challenges you face in providing following anaganwadi services?

EE) Supplementary Nutrition

Day	Menu	Ingredients required	Quantity
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			

FF) Are the children served regular meals in the Anganwadi?

- 1) Yes 2) No

GG) If yes, are the meals freshly cooked or are they ready to eat food items?

1. Freshly cooked 2. Ready to eat

HH) Challenges related food preservation, preparation, food spoilage, loss, causes of loss

S11: Key informant interview-School Teacher/ Institutional head

Section 1: Personal Information

- A) Name:
 B) Age group (years):
 C) Work experience:
 D) Name of the school:
 E) Village:

Section 2: School infrastructure

F) Roof type:

a. Tiled	b. Tin sheet	c. Cement sheet
d. Cement slab	e. Others	

G) Wall type:

1. Stone and cement 2. Bricks and cement 3. Bricks, cement and plastered

H) Floor type:

1

a. Cemented	b. Stone	c. Kota	d. 4. Mosaic
e. Marble	f. Tile	g. Other_____	

I) Number of rooms and what are they used for:

J) Wall paint colour:

- a) Inside walls
 b) Outside walls:

K) Toilets:

- a) Number of toilets:
 b) Type of toilets (pit, flush):

L) Is the school building

- | | | |
|--------------------------------|--------|-------|
| a) Spatially adequate | 1) Yes | 2) No |
| b) Well lighted and ventilated | 1) Yes | 2) No |
| c) Accessed by good roads | 1) Yes | 2) No |

M) Are there any trees around the school? 1) Yes 2) No

N) What are the effects of seasonal variations (summer, winter and monsoon) on children health and comfort in school?

O) What is the source of light during the day time?

- 1) Natural sunlight 2) Bulb, tube lights 3) Solar lamp 4) Other_____

P) How often there is disruption in electricity supply during week? (No. of times and duration)

Q) What is the source of electricity after power get disrupted?

R) If generator is being used, weekly expenses of diesel?

S) What are the different electronic equipment available in the RH/PHC?

Equipment	Number	Company/ model name	Capacity	Daily usage
Tungsten Bulb				
CFL Bulb				
Tube lights				
CFL bulb and tube lights				
Ceiling Fan				
Table fan				
Generator				
Window AC				
Split AC				
Cooler				
Fridge				

T) Monthly electricity Bill:

Section 3: School services

U) No. of children enrolled in school? Boys_____ Girls_____

V) No. of children attending school? Boys_____ Girls_____

W) Number of teachers_____

X) School is till _____std

Y) What are the possible reasons of children not coming to the schools or school drop out?

Z) Are students frequently absent in some season(s)? Which season(s), and why?

AA) Have there been any incidents related to heat exhaustion, heat cramps and heat stroke, heavy sweating, tiredness and weakness, dehydration, headache, dizziness, Nausea and vomiting, Fainting, sunburn, heat rash in school children?

BB) What are the challenges you face in providing quality education to the children?

Section 4: Mid Day Meal

CC) Is hot cooked meal provided in the school? 1. Yes 2. No

DD) Is the meal given sufficient in quantity? 1. Yes 2. No

EE) Is the meal given regularly throughout the year on all working days? 1. Yes 2. No

FF) Are meals provided during vacations? 1. Yes 2. No

GG) Weekly food menu

Day	Menu	Ingredients required	Quantity
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

HH) Wastage of food and food ingredients during last one week?

Food and food ingredients wasted	Quantity

II) Is the work related mid day meal cooking has been outsourced? 1. Yes 2. No

JJ) If yes, to whom contract has been allotted?

KK) Does the school have its own refrigerator? If yes, for what purpose do you use that fridge?

1. Yes 2) No 3) Purpose_____

LL) How will it benefit children, if the common refrigeration facility is provided?

MM) What methods do you use to cool the drinking water?

S12: Key informant interview – Shopkeepers

Section 1: Personal Information

- A) Name:
- B) Age:
- C) Education:
- D) Mother-tongue:
- E) Work experience
- F) Name the village

Section 2: Information of Cooling Requirements

- G) What products do you sell?

	Daily goods
	Fruits/ Veg

	Sweets
	Cold drinks

- H) What products do you store in the fridge?

- I) What products get wasted in absence of cooling?

1. Milk 2. Yoghurt 3. Ice cream 4. Cold drink 5. Others (specify)

- J) What products do not need cooling? What goods need to be refrigerated?

- K) Daily load shedding timings?

- L) What products get wasted due to load shedding?

- M) How is cooling maintained during power disruption and load shedding?

- N) How much was the per month loss of products due to insufficient cooling, interruption in electricity supply or during transportation during different seasons? Daily how much is wasted?

Product	Loss					
	Summer		Monsoon		Winter	
	Quantity	Cost	Quantity	Cost	Quantity	Cost

- O) Refrigeration Appliances in the facility:

Electronic appliance	Price of appliance	Company, Model name/number	Energy capacity (Watt)	Per day usage (min/ hours)		

- P) Supplier Details? Where are they located?

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Q) Expenses on repair and maintenance of cooling facility

In last 1 year _____ In last 5 years _____

R) How much produce gets expired and how much are the losses?

S) What are the other methods you use to preserve the products?

T) Power Source (Diesel/Grid—Agri/Commercial/HH Connection)

U) If one common refrigerator facility is provided, will you be able to take out necessary ingredients on daily basis? If yes/no Explain?

S13: Key informant interview-Biogas plant owner

Section 1: Personal Information

- A) Name:
- B) Age:
- C) Education:
- D) Mother-tongue:
- E) Work experience
- F) Name the village

Section 2: Information of Biogas

- G) Type of Biogas:
 - 1) Fixed Dome 2) Floating Dome 3) Earth Pit
 - 4) Ferro Cement Plant 5) Polyethylene tank digestion
- H) How much gas does it produce? (Actual daily use/full capacity) [Seasonal impact SWM]
- I) How much waste is fed daily/weekly? (Daily) Kind of waste, source, pre-processing required before feeding.
- J) Where do you source the waste?
- K) What is the cost of construction and annual maintenance?
- L) What are the different types of uses of gas? Cooking/Boiling water, etc
- M) Are you using other fuel sources for cooking and boiling water?
- N) Does burning of biogas produce enough heat (temperature)?
- O) What is the colour of the flame?
- P) How often do you need to clean the digester tank? What difficulties do you face?

Volume	Age of plant	In use/not in use	Why not in use	Feed	Quantum of gas (in hours of use or persons food cooking etc)	Uses	Any spare energy

- Q) Availability of biomass for energy: cow-dung (from cattle numbers), availability of crop residue and other biomass (what is currently done with crop residue); what is currently done with cow dung; other materials such as oil seed hulls/ husks
- R) Why do you use biogas plant?

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- S)** How much have you saved by using biogas?
- T)** Were there any funding schemes for its establishment? (Govt Subsidy/Zilha Parishad/ Organisation/ BAIF)
- U)** How much did you spend?
- V)** What do you use the slurry for? How much output do you get? How much area of land can be fertiliser using this?
- W)** How has been your experience of biogas?

S14: Key informant interview - Solar pump owner

- A. Name
- B. Gender
- C. Age group (years)
- D. Educational level
- E. Name the village:

- F. Solar Pump Details
 - a. MW/KW:
 - b. Per day usage (wattage/hours per day):
 - c. Savings on electricity bill monthly:

- G. Electricity supply quality, price/ affordability
 - a) Source of Power (Grid- agri/commercial/household consumption OR Diesel)

- H. Solar pumps, or any other solar devices in use? What is the experience?

Ownership/ Individual/ Sharing	Company Name	Age of Pump	Spec- ifications	Scheme/ subsidy used	What is it used for	If used for water, is it switched off	Is net metering installed	Timings of use

- I. Experience with load shedding. (Weekly schedule if any)

- J. Solar pump subsidy details and experience.

- K. Investment cost details.

- L. Maintenance issues and cost with solar pump. Where is the maintenance? Cost of maintenance, free period? Charges after free period?

- M. Challenges with using solar pump (during monsoon?)

- N. Advantages of using solar pump

- O. Water pumping (hours per day) before and after installation? Regulation mechanism of turning tap on and off?

- P. Crops you sow now and used to sow before?

- Q. Motor pump Sizing (Previous and now) Usage hour comparison before and after.

S15: Key informant interview-Auxiliary Nurse Midwife & ASHA

Section 1: Personal Information

- A. Name:
- B. Age:
- C. Education:
- D. Mother-tongue:
- E. Work experience:

Section 2: Sub-centre Infrastructure

- A) Roof type:
 - 1) Tiled 2) Tin sheet 3) Cement sheet
 - 4) Cement slab 5) Others _____
- B) Wall type:
 - 1) Stone and cement 2) Bricks and cement 3) Bricks, cement and plastered
- C) Floor type:
 - 1) Cemented 2) Stone 3) Kota 4) Mosaic 5) Marble
 - 6) Tile 7) Other _____
- D) Number of rooms and what are they used for:
- E) Wall paint colour:
 - a) Inside walls:
 - b) Outside walls:
- F) Toilets:
 - a) Number of toilets:
 - b) Type of toilets (pit, flush):
- G) Is the sub-centre building
 - a) Spatially adequate 1) Yes 2) No
 - b) Well lighted and ventilated 1) Yes 2) No
 - c) Accessed by good roads 1) Yes 2) No
- H) Are there any trees around the sub-centre? 1) Yes 2) No
- I) What are the effects of seasonal variations (summer, winter, monsoon) on patient's health and comfort in sub-centre?
- J) What is the source of light during the day time?

<input type="checkbox"/> Natural sunlight	<input type="checkbox"/> Bulb/ Tube light	<input type="checkbox"/> Solar pump	<input type="checkbox"/> 4) Other _____
---	---	-------------------------------------	---
- K) How often there is disruption in electricity supply during week? (No. of times and duration)

L) What is the source of electricity after power get disrupted?

M) If generator is being used, weekly expenses of diesel?

N) What are the different electronic equipment available in the sub-centre?

Equipment	Number	Company/ model name	Capacity	Daily usage
Tungsten Bulb				
CFL Bulb				
Tube lights				
LED bulb				
Ceiling Fan				
Table fan				
Generator				
Window AC				
Split AC				
Cooler				
Fridge				
Deep Fridge				
Ice pack freezer				

Section 3: Sub-centre services

O) Sub-centre timings:

P) Disease profile of the village:

Q) No. of pregnant women in the village at present:

R) No. of lactating women in this village at present:

S) Number of anaemic children:

T) Causes of anaemia in children:

U) Number of anaemic women:

V) Causes of anaemia in women:

W) If people in this village had a health problem, what percentage would approach the nearby sub-centre and PHC?

	Almost none
	< 25 percent
	Almost all

	25-50 percent

	50-75 percent

X) Average number of patients comes to sub-centre (daily) _____

Y) Human resource at the sub-centre:

Z) Kinds of health services provided

Type	Health service
Curative	
Preventive	
Promotive	

AA) Incidences of diseases related to exposure to intense heat:

Name	Did the child suffer from any of the following disease during past summer season	No. of episodes/ injuries	Duration of episode/ injuries	Culmination of illness?
	Heat exhaustion, heat cramps and heat stroke-1			Recovered-1, Not recovered-2, Death-3
	Heavy sweating, tiredness, weakness, dehydration-2			
	Headache, dizziness, fainting-3,			
	Nausea and vomiting-4,			
	Sunburn, heat rash-5			

AB) During past one year, how many incidences of venomous snake bite have happened?

AC) Is the snake anti-venom treatment available at this sub-centre? 1) Yes 2) No

AD) Which of the medicines and vaccines require refrigeration?

AE) What are the challenges you face in providing designated health services?

AF) Health Services for which patients are referred to PHC/Rural Hospital/CHCs?

AG) Access to in-patient services:

Health service	How far would a person have to travel in order to receive the following health service: (One way distance)	What is the usual form of transport to reach sub-centre? On foot-1 Bus-2 Tempo/Jeep-3 Horse/Bullock cart-4 Any other-5	How long does it take to reach this place using this mode of transport from the village? (Time taken one way)
Vaccination			
Anti-venous treatment			

Normal delivery			
Complicated delivery			
Common ailments like small duration fever, cough etc. or minor surg.			
Complicated or long term medical problems			
Major emergencies like trauma or other surgical emergencies			

Section 4: Immunization

AH) Vaccine utilization during last one year

No	Vaccine	Number of doses administered in village	Vaccines stored in?	Vaccines carried/ transported in?
1	Bacillus Calmette Guerin (BCG)			
2	Oral Polio Vaccine (OPV)			
3	Hepatitis B			
4	Diphtheria Pertussis and Tetanus (DPT)			
5	Measles			
6	Tetanus Toxoid (TT)			
7	Pentavalent			

AI) Number of vaccinations under program, periodicity and scheduling

AJ) Do you know how vaccines reach from central facility to village level? (Existing practices of collecting and transporting vaccines and other medicines) If yes, tell about cold chain in detail.

AK) Distance between point of administration and cold chain point, time required, road connectivity

AL) Has there been training component about cold chain management of the vaccines? If yes, tell about learning in details.

AM) Tell us about experience with different types of cooling equipment during community immunization camps and house visits.

AN) Do you have any information on losses, extent of loss of vaccine vials due to inadequate storage and transport facilities?

AO) How are vaccines tested to check whether cold chain was maintained?

AP) Are there any gaps in the system; and if yes, what are they? What are the possible solutions?

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AQ) Is the ambulance service available for the village? If yes, are the ambulance air conditioned?

AR) Comments on usage of vaccines, medicines and blood from blood bank in health care services from village and challenges you face.

AS) Comments on usage of vaccines, medicines and blood from blood bank in health care services from village and challenges you face.

AT) Is the operation theatre/Labour room air conditioned?

- 1) Yes 2) No

AU) If yes, what are the daily average usage, brand and model of AC, capacity?

AV) If no, do you think that AC is necessary to be installed in operation theatre/Labour room?

1. Yes 2) No

S16: Key informant interview- Medical Officer (Rural Hospital/ PHC)

Section 1: Personal Information

A) Name:

- A) Age:
- B) Education:
- C) Mother-tongue:
- D) Work experience

Section 2: PHC/RH infrastructure

E) Roof type:

<input type="checkbox"/>	a. Tiled
<input type="checkbox"/>	d. Cement slab

<input type="checkbox"/>	b. Tin sheet
<input type="checkbox"/>	e. Others

<input type="checkbox"/>	c. Cement sheet
<input type="checkbox"/>	

F) Wall type:

<input type="checkbox"/>	a. Stone and cement
--------------------------	---------------------

<input type="checkbox"/>	b. Bricks and cement
--------------------------	----------------------

<input type="checkbox"/>	c. Bricks, cement and plastered
--------------------------	---------------------------------

G) Floor type:

<input type="checkbox"/>	a. Cemented
<input type="checkbox"/>	d. Mosaic
<input type="checkbox"/>	g. Other

<input type="checkbox"/>	b. Stone
<input type="checkbox"/>	e. Marble

<input type="checkbox"/>	c. Kota
<input type="checkbox"/>	f. Tile

H) Number of rooms and what are they used for:

I) Wall paint colour:

- a) Inside walls:
- b) Outside walls:

J) Toilets:

- a) Number of toilets:
- b) Type of toilets (pit, flush):

K) Is the PHC/RH building

- a) Spatially adequate 1) Yes 2) No
- b) Well lighted and ventilated 1) Yes 2) No
- c) Accessed by good roads 1) Yes 2) No

L) Are there any trees around the PHC/RH? 1) Yes 2) No

M) What are the effects of seasonal variations (summer, winter, monsoon) on patient's health and comfort in PHC?

N) What is the source of light during the day time?

	Natural sunlight
	Natural sunlight

	Bulb/ Tube light
	Bulb/ Tube light

	Solar pump
	Solar pump

	4) Other _____
	4) Other _____

E) How often there is disruption in electricity supply during week? (No. of times and duration)

F) What is the source of electricity after power get disrupted?

G) If generator is being used, weekly expenses of diesel?

H) What are the different electronic equipment available in the sub-centre?

Equipment	Number	Company/ model name	Capacity	Daily usage
Tungsten Bulb				
CFL Bulb				
Tube lights				
LED bulb				
Ceiling Fan				
Table fan				
Generator				
Window AC				
Split AC				
Cooler				
Fridge				
Deep Fridge				
Ice pack freezer				

Section 3: PHC/RH services

P) PHC/RH timings:

Q) Disease profile of the village:

R) No. of pregnant women in the village at present:

S) No. of lactating women in this village at present:

T) Number of anaemic children:

U) Causes of anaemia in children:

V) Number of anaemic women: _____

W) Causes of anaemia in women: _____

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- X)** If people in this village had a health problem, what percentage would approach the nearby RH/PHC?

<input type="checkbox"/>	Almost none
<input type="checkbox"/>	< 25 percent
<input type="checkbox"/>	Almost all

<input type="checkbox"/>	
<input type="checkbox"/>	25-50 percent
<input type="checkbox"/>	

<input type="checkbox"/>	
<input type="checkbox"/>	50-75 percent
<input type="checkbox"/>	

- Y)** What is average number of patients availing RH/PHC on daily basis?

- Z)** How many beds are available in RH/PHC?

AA) Human resource at the RH/PHC:

BB) Kinds of health services provided

Type	Health service
Curative	
Preventive	
Promotive	
Out-patient	

CC) Incidences of diseases related to exposure to intense heat:

Name	Did the child suffer from any of the following disease during past summer season	No. of episodes/injuries	Duration of episode/injuries	Culmination of illness?
	Heat exhaustion, heat cramps and heat stroke-1			Recovered-1, Not recovered-2, Death-3
	Heavy sweating, tiredness, weakness, dehydration-2			
	Headache, dizziness, fainting-3,			
	Nausea and vomiting-4,			
	Sunburn, heat rash-5			

DD) During past one year, how many incidences of venomous snake bite have happened?

EE) Is the snake anti-venom treatment available at this RH/PHC? 1) Yes 2) No

FF) Which of the medicines and vaccines require refrigeration?

GG) What are the challenges you face in providing designated health services?

HH) Health Services for which patients are referred to CHCs/District Hospitals/Other health care setups

II) Access to in-patient services:

Health service	How far would a person have to travel in order to receive the following health service: (One way distance)	What is the usual form of transport to reach sub-centre? On foot-1 Bus-2 Tempo/Jeep-3 Horse/Bullock cart-4 Any other-5	How long does it take to reach this place using this mode of transport from the village? (Time taken one way)
Vaccination			
Anti-venous treatment			
Normal delivery			
Complicated delivery			
Common ailments like small duration fever, cough etc. or minor surg.			
Complicated or long term medical problems			
Major emergencies like trauma or other surgical emergencies			

JJ) Is the ambulance service available for the village? If yes, are the ambulance air conditioned?

KK) Is the operation theatre air conditioned? 1) Yes 2) No

LL) If yes, what are the daily average usage, brand and model of AC, capacity?

MM) If no, do you think that AC is necessary to be installed in operation theatre?

1) Yes 2) No

NN) Are there any cases of hospital acquired infections? If yes, give details

Section 4: Immunization

OO) Vaccine utilization during last one year

No	Vaccine	Number of doses administered in village	Vaccines stored in?	Vaccines carried/ transported in?
1	Bacillus Calmette Guerin (BCG)			

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2	Oral Polio Vaccine (OPV)			
3	Hepatitis B			
4	Diphtheria Pertussis and Tetanus (DPT)			
5	Measles			
6	Tetanus Toxoid (TT)			
7	Pentavalent			

UU. Number of vaccinations under program, periodicity and scheduling

VV. Do you know how vaccines reach from central facility till local village (Existing practices of collecting and transporting vaccines and other medicines)? If yes, tell about cold chain in detail.

WW. Distance between point of administration and cold chain point, time required, road connectivity

XX. Has there been training component about cold chain management of the vaccines? If yes, tell about learning in details.

YY. Tell us about experience with different types of cooling equipment during community immunization camps and house visits.

ZZ. Do you have any information on losses, extent of loss of vaccine vials due to inadequate storage and transport facilities?

AAA. How are vaccines tested to check whether cold chain was maintained?

BBB. Are there any gaps in the system; and if yes, what are they? What are the possible solutions?

CCC. Comments on usage of vaccines, medicines and blood from blood bank in health care services from village and challenges you face.

S17: Key informant interview-Veterinary Doctor

Section 1: Personal Information

- A) Name:
- B) Age:
- C) Education:
- D) Work experience (years):
- E) Name the villages you work in:
- F) Govt/Private practicing doctor:

Section 2: Animal diseases and treatment

- G) What are the different of animal related disease in the village:

Animal	Breed	Diseases

- H) Can you provide names of the diseases against which animals are vaccinated?

- I) No. of animals in the village:

Type of the animal	Number

- J) Newborn calves and other newborn animals during last one year:

Type of animal	Jan 2019	Feb 2019	Mar 2019	April 2019	May 2019	June 2019	July 2019	Aug 2019	Sep 2019	Oct 2019	Nov 2019	Dec 2019

- K) Total vaccine demand in the village (yearly):

Name of vaccine	Jan 2019	Feb 2019	Mar 2019	April 2019	May 2019	June 2019	July 2019	Aug 2019	Sep 2019	Oct 2019	Nov 2019	Dec 2019

- L) Temperature requirement of different vaccines and medicines:

Type of vaccine/medicine	Temperature range	Cost	Number of Vaccines/ Medicines spoiled due to higher temp

- M) How do you preserve vaccines and medicines during power cut and load shedding?

- N) How do you carry vaccine to the field?

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- O)** What are the total number and types of animals did you vaccinate, periodicity of vaccination, cost of the vaccination during past one year?
- P)** Which are the medicines apart from vaccines requires cold preservation? their consumption?
- Q)** What are the existing systems of vaccine and medicines preservation cold chain? (Distance, mode of transportation, cooling equipment, key protocols etc.)
- R)** What are the challenges related to protocols to follow among key stakeholders?
- S)** What are breed improvement/ artificial insemination related cooling needs, demand in the village, process map of semen transport, cooling equipment required for the process?
- T)** Are there any gaps in the vaccine cold chain system? If yes, please explain them in detail along with possible solutions.
- U)** Do you think that temperature and humidity changes affect the productivity of the animals? If yes, what is the nature of the impact on different animals and what is the quantum of change in productivity?
- V)** What can be possible remedies to avoid this loss?
- W)** Which are the diseases in animals related to intense heat? Have you come across such cases in this village? What were the treatments provided and what are the results?
- X)** Has there been death of any animals in the last two years? 1) Yes 2) No

Y) If yes, give the details.

Type of animal	Number of deaths	Cause of death

S18: Interview guidelines for National Cold Chain Resource Centre, Pune

A) Vaccine utilization at state level:

Sr No	Vaccine	Number of doses administered	Vaccines stored (Temperature requirement)	Open vial policy applicable? (Yes/No)
1	Bacillus Calmette Guerin (BCG)			
2	Oral Polio Vaccine (OPV)			
3	Hepatitis B			
4	Diphtheria Pertussis and Tetanus			
5	Measles			
6	Tetanus Toxoid (TT)			
7	Pentavalent			

- B) Which are the different modes through which vaccines reach from central facility till local village (Existing practices of collecting and transporting vaccines and other medicines)? If yes, tell about cold chain in detail.
- C) What are the components of training of cold chain management of the vaccines?
- D) Tell us about experience with different types of cooling machines used in cold chain management, energy consumption, their capacity to hold vaccines, cost (Capital, O & M)?
- E) Breakdown rate, reasons of breakdown, how breakdown of machinery is monitored?
- F) Do you have any information on losses, extent of loss of vaccine vials due to inadequate storage and transport facilities?
- G) How are vaccines tested to check whether cold chain was maintained?
- H) Are there any gaps in the system; and if yes, what are they? What are the possible solutions?
- I) Source of energy, source during load shedding, possibility of using solar energy?

S19: Key informant interview - BAIF Artificial Insemination and seed storage facility

- A)** Name:
- B)** What are breed improvement/artificial insemination practices?
- C)** What is frozen insemination technology?
- D)** What are the different breeds? Are there any specific temperature requirements related different breeds?
- E)** What are breed improvement/ artificial insemination related cooling needs?
- F)** What are the cooling equipment required? Company, wattage, usage?
- G)** Temperature requirements?
- H)** Protocols for preservation of semen?
- I)** Protocols for preservation of medicines and vaccines?
- J)** Is it possible to preserve semen at community level? What are the different resources required?
- K)** Which are the different semen collection methods? Which one is the most effective and why?
- L)** What is the shelf life of semen? What are the different colour codes for different breed semen?

S20: Social mapping guidelines and tool

Objective:

To visually represent relative location of households, distribution and location of land resources, demographic distribution, water bodies, religious and cultural institutions, social structures, and institutions.

Participants:

- ✓ Mixed group members of the village for household (Gaothan map)
- ✓ Farmers Producers organizations (FPOs), old age people (Community resource map)









Resources required

- ✓ Two Facilitators with participatory facilitation and social analytical skills, note taker,
- ✓ Different colour markers with one village map, one road map of satara and pune district, 3 farm field maps.
- ✓ Notebook and pen for notes taking
- ✓ Audio recorder



Data to be gathered (Colours and legends are to be used as indicated):

Household map (Gaothan Map-Please see sample map attached at the end of the tool)

❖ **Nature of household (Type of household, type of roof) →** This will be marked on village map



Kaccha Households	KH
Household constructed under PMAY	PMAY
Thatched	
Simple tiled	
Mangalore tiled	
Tin sheet	
Cement sheet	
Asbestos sheet	
Cement slab	
Households without electricity	

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Households having biogas	
Households/public buildings having solar pump or using solar lamp	

Try identifying some of the household roof from one section.

❖ **Households of transporters and traders** → This will be marked on village map

Households of transporters (agri produce)	
Households of traders (agri produce)	

❖ **Defecation practices, toilets (public, private)** → This will be marked on village map

Open defecation area	
Public toilet	
Private toilets type	Note down popular type of private toilets, drainage systems









❖ **Caste wise localities (General, SCs, STs)** → This will be marked on village map

General caste locality	Mark the border using different colour sketch pen
OBC caste locality	Mark the border using different colour sketch pen
SC locality	Mark the border using different colour sketch pen
ST locality	Mark the border using different colour sketch pen
NT Locality (Shepherd community)	Mark the border using different colour sketch pen

Identify the different castes in different caste categories.




❖ **Transportation** → This will be marked on village map and road map of Satara and Pune

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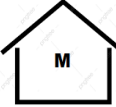




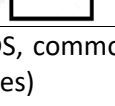
Kaccha road (village road)	 Mark the road in village map
Tar road (village road)	 Mark the road in village map
Cement road (village road)	 Mark the road in village map
State highway	 Mark the section of road in road map and distance from village
National highway	 Mark the section road in road map and distance from village
Nearest railway station	 Indicate the direction of the railway station and distance from the village
Nearest port	 Indicate the direction of the port and distance from village
Nearest cargo airport	 Indicate the direction of the port and distance from village

Note down collection methods of different agriculture produce and process map their transport from village to different markets.

❖ **Different kinds of shops in the village** → This will be marked on village map


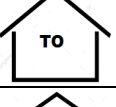
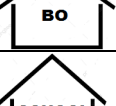
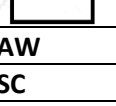
PDS Shop	
Shops with refrigerator	
Vegetable vendors	

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Chicken shop	
Shops which sell eggs	
Mutton shops	
Fish shop	
Juice/ sugarcane juice shop	
Weekly market	
Agriculture fertilizers, seeds and insecticide shop	
Bank	

Process diagram of each of the commodities (PDS, commodities in fridge, vegetables, chicken, eggs, mutton, fish, ice, seeds, fertilizers, insecticides)







❖ **Public Services** → This will be marked on village map

Gram Panchayat	
Talathi office	
Block office	
Schools	
Anganwadi	AW
Sub-centre	SC
PHC	PHC (Indicate direction to PHC, its distance from village in the village map)
Rural Hospital	RH




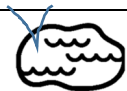
	(Indicate direction to RH, its distance from village in the village map)
Private clinic in the village	PC
ANM (if ANM is from village)	ANM-Name of ANM
ASHA worker	ASHA-Name of ASHA

Process diagram of vaccines transport, ration/vegetables to Anganwadi and schools

❖ **Occupation** → This will be marked on village map








Households with backyard garden	
Poultry	
Goatry	
Gothas	
Private Dairy	
Co-operative Dairy	 Document process of collection

❖ **Water source** → This will be marked on village map

Water tank	
Public water tap	
Bore wells in the village	BW
Ground water level at different location in the village during different seasons	Divide the village and nearby area according to ground water availability
Water streams, river	
Pond/Lake	

❖ **Religious institutions** → This will be marked on village map



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Mandir	
Masjid	
Church	
Buddha vihar	
Community hall	
Community gathering places	
Festival gathering places	



❖ **Village organizations** → This will be marked on village map

Households of office bearers of SHG groups	SHG-Name of office bearer
Households of office bearers of farmer producer's organizations	FOP-Name of office bearer
Households of office bearers of milk co-operatives	MC-Name of office bearer
Households of office bearers of water user associations	WUA-Name of office bearer

❖ **Industries in the vicinity** → This will be marked on road map of Satara and Pune district





Food processing industry	 FOOD Note down input, products, distance
Other types of industry which produces waste heat, pollutants	 Note down heat, pollutants generated

❖ **Solid waste management practices, water treatment** → This will be marked on village map

Solid waste dumping location	
Water treatment facility if any	

Community resource map (Please see sample map attached at the end of the tool)

❖ **Type of land**

Agriculture land	
Notified forest land	Note down Flora and Fauna 
Waste land	
Grassland/Common pasture land	
Gaothan land	Draw border of this land and mark blue

❖ **Types of crop** (Prepare three agriculture field maps for three seasons)

List down common kharif, rabi and summer crops in the village (& fallow land) (Food crop, Cash Crops, plantation crop, horticulture crop), if they are specific to some farm fields of the village and farm to fork and fork to farm process map of each crop.

❖ **Farms using bio-fertilizers and/or bio-pesticides**

Write **OF** indicating organic farm

❖ **Water irrigation bodies (streams, canal, river, well etc), seasonal variations, solar pumps**

❖ **Water availability during different seasons.**

Prepare zones based on ground water availability and border them with different colours

❖ **Greenhouses/cool houses, crops and productivity**



❖ **Any existing cold storage unit in the village or vicinity, crops/seeds stored and process map**



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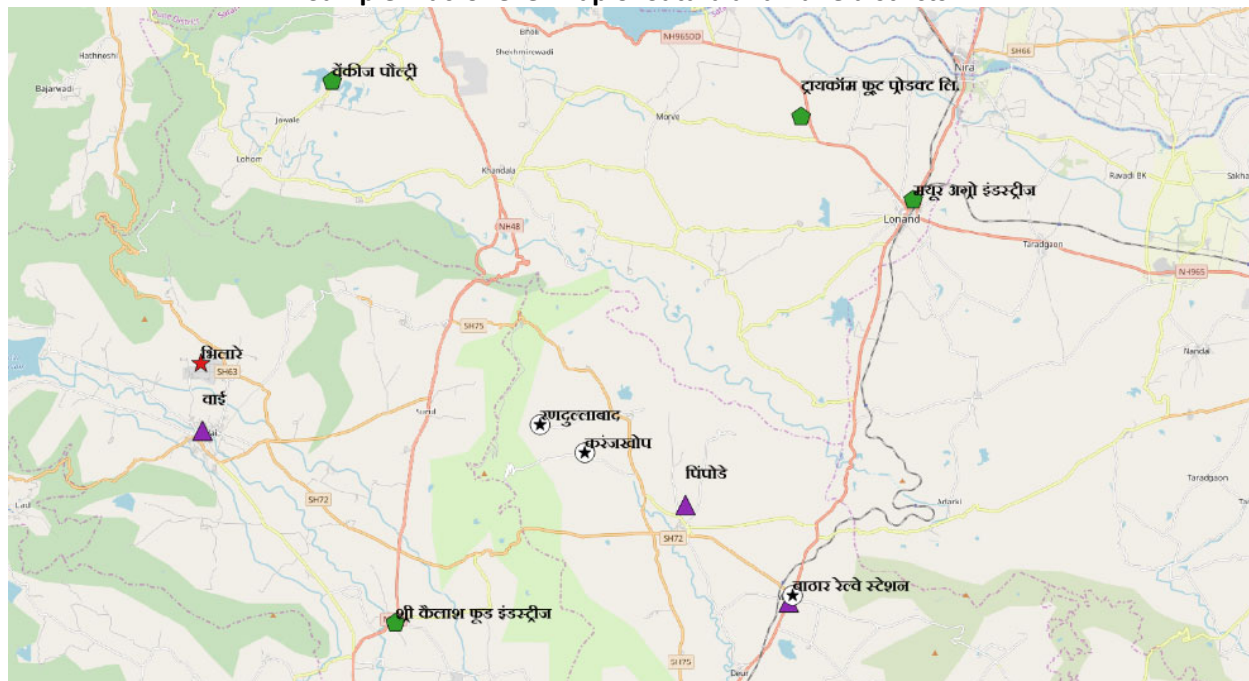
Sample gaathan google map image of Karanjhop village



Sample agriculture land map image of Randullabad for community resource mapping



Sample macro-level map of Satara and Pune districts



S21: Focused group discussions (Interview with partner organization staffs)

Sector 1: Agriculture and post-harvest: Field crops, animal husbandry, potential for fish & goater, historical trends, climate change impacts

1. Is cooling an issue in the study clusters? If yes, according to you which of the following sectors require cooling?

Sector	Sub-sector	Yes/No	Methods of cooling (Active/ Passive)	Types of Produce/ establishment/ services
Agriculture	Space Cooling (Polyhouse, mushroom cultivation)			
	Refrigeration (Storage of seeds)			
Post harvest	Produce refrigeration			
	Produce Transport			
	Food processing			
Livestock	Space cooling			
	Refrigeration of milk			
	Refrigeration of meat			
	Refrigeration of sperms			
	Livestock vaccine refrigeration			
	Livestock vaccine transport			
Fisheries	Refrigeration of sperms			
	Refrigeration of fishes			

2. Considering climate change, what preventive measures are taken presently to protect crops from extreme climatic conditions? (Resilient crops/ polyhouse/ change in breeds/ change in crops)	
--	--

3. What have been changes in cropping pattern due to change in climatic conditions? (crops they used to produce and producing at present)	
4. What will be the changes in cropping pattern considering climate change in future?	
5. What is the potential for integration of seed banks of local varieties, preserving local varieties, production and marketing?	
6. If active and passive cooling is provided for storage and transport, will the cropping pattern change? (Yes/No)? If yes, what will be those changes?	
7. Will cooling for storage of produce add value to produce and increase profit for farmers? If yes, how? Explain with one such case	
8. Will cooling for storage of produce will add value to produce and increase profit for farmers? If yes, how? Explain with one such case	
9. If cooling for storage and transport is provided, what are the possible changes in marketing existing chains? Which of the present crops and potential crops have potential of exporting to other states and nations? How will this add in to value of crop?	
10. What are the possibilities of aggregating vegetables, fruits produced in kitchen garden/ backyard garden and storing them into CCH to add economic value and integration of this with women/ SHGs of women?	
11. What is the potential for employment in presence of community cooling hub? (transport, packaging etc) What kind of training needs do you envisage? as well as availability of interested young people to take up these services?	
12. Which are the different kinds of food processing industries in the study clusters? What raw products are required, final products produced, cooling requirement of these units?	
13. If cooling for agriculture produce is provided, what is the potential of different kinds of food	

processing industries, their raw products and cooling requirements?	
14. Do you think that extreme heat has an impact on productivity of animals (meat and milk)? If yes, what can be possible cooling solutions? Which of them is most economical? (climate resilient breeds vs space cooling)	
15. Do you think that providing space cooling will add value to the produce (meat and milk)?	
16. Is it possible and economically viable to produce other milk products at clusters level?	
17. Some of the study villages have bulk milk coolers in their dairies. Is it possible to convince milk supplier agencies to integrate everything under one roof in CCH?	
18. Is it possible to implement goatery model of Yuva Mitra in other study clusters and integrate that within CCH?	
19. What is the marketing potential for frozen meat against live chicken/ goat/ sheep?	
20. What are the possibility of aggregating chicken produced from local varieties, eggs (desi) etc and storing them into CCH to add economic value and integration of this with women/SHGs of women?	
21. Will there be any adverse impacts/ unintended consequences with cold storage? What types?	

Sector 2: Health services

Sub-sector	Yes/ No	Methods of cooling (Active/ Passive)	Types of establishment/ services
Space cooling			
Vaccine storage			
Other medicines storage			
Blood storage			

1. What are the possible measures required to enhance thermal comfort in PHCs and CHCs?	
2. Are any changes in storage quantum, vaccine/ healthcare supply chain management needed, in light of COVID 19 and similar situations? What type of changes?	

Sector 3: Public buildings, household cooling needs

Sector	Sub-sector	Yes/ No	Methods of cooling (Active/ Passive)	Types of establishment/ services
Public Building	Space cooling			
	Food refrigeration			
Private buildings	Space cooling			
	Food refrigeration			
Transport cooling	Public			
	Private			

1. Is it possible to integrate domestic refrigeration with CCH? Will it be economically, socially, culturally viable to provide community level refrigeration system integrated with CCH to store domestic food ingredients and items? If yes/No, explain why?	
2. Will this kind of facility help avoid food wastage and add nutrition value for villagers (especially children and women)	
3. Will such as facility change food consumption pattern of people? If yes, what are these possible changes?	
4. What are the possible measures required to enhance thermal comfort in public buildings such as school, anganwadi, gram panchayat, sub-centre?	
5. What are hours and months of operation of the anganwadi during the year?	
6. Do you think community is in need of community cooling space where they could spend some leisure time during extreme hot days (especially women, children, old age, farmers)?	

7. Will this add thermal comfort for community members?	
8. Do you think that one common centralised kitchen for anganwadi and schools integrated with CCH is possible? Will it help to provide nutritious food and improve health status of children and pregnant women if community fridge facility is provided to store ingredients require for cooking supplementary food/ mid-day meal?	
9. What are the possible measures to provide cooling in transport?	

Siting

List possible locations for community cooling hub in the cluster, keeping in mind different types of cooling needs (agri-produce, healthcare, thermal comfort etc)?	Advantages and disadvantages of each of the location?	
	Advantages	Disadvantages

Information Platforms

Most farmers are not currently using apps for market prices. What are the conditions / factors that would enable farmers to use apps and benefit from market demand and price information.

Governance and Business Model

The key in running the model successfully is providing market linkages and facilities.

1. What are the possible mechanisms of governance of the Community Cooling Hub?	Advantages and disadvantages of each of the locations?	
	Advantages	Disadvantages
FPO		
Cooperative		
SHG		

Youth Association		
Gram Panchayat		
Other, specify		

2. What is the payment cycle that is currently practiced between the farmers and the traders (frequency, advances (if any), mode of payment, credit support, loan support, subsidies etc.)?	
3. What are the payment models for the farmers to the FPOs (amounts, frequency, fees, subsidies, loans)	
4. What are the possible business models for the capital costs and the operational costs of the CCH	
a) Loan availability (tenure, interest, access)	
b) Grant (Funding organizations, amounts, criteria)	
c) Subsidies (schemes, eligibility)	
5. What is the current payment structure for satisfying cooling requirements? (Amount spent, frequency, mode of payment) Any current challenges in making these payments?	
6. Would community members be willing to pay an additional amount for community cooling Hubs? If yes, how much? (0%-10%. 10%-30%, 30% and more).	
7. What is the frequency of payments that members/ households would prefer to make for CCH?	
8. What feature of the CCH would households be most interested in and are willing to pay for?	
9. Are there any innovative business models for cooling centres that you have come across in other areas/districts.	

General question

Which of the above sectoral needs can be integrated into the community cooling hub?

Impact of COVID 19?

© Data collection tool for CCH developed by CEE On the basis of the Cooling Needs Assessment developed by Heriot-Watt University (can be found in <https://coolcoalition.org/new-publications-cooling-for-all-needs-based-assessment-country-scale-cooling-action-plan-methodology/>)

In what ways they think having cold storage, cooling solutions could help to address

- 1) Relief supplies and adequate food
- 2) Medicines and future vaccines
- 3) Properly ventilated buildings to avoid unhealthy air circulation