

SUSTAINING COMMUNITY NUTRITION GARDENS – POTENTIAL MARKET LINKAGE OPTIONS AND OPPORTUNITIES FOR SIDE-ENTERPRISES

A Scoping Assessment conducted in Khandwa district, Madhya Pradesh



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Abbreviations

AKRSP	Aga Khan Rural Support Programme
AWS	Anganwadi Services
BPL	Below Poverty Line
BRC	Bio-input Resource Centre
CNG	Community Nutrition Garden
CoRE	Community Resource Entrepreneurs
CRP	Community Resource Person
ERADA	Enhancing Rural Resilience Through Appropriate Development Actions
FGD	Focussed Group Discussion
FPC	Farmer Producer Company
FYM	Farmyard manure
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GP	Gram Panchayat
HH	Household
IGSSS	Indo-Global Social Service Society
KVK	Krishi Vigyan Kendra
MAP	Medicinal and Aromatic Plants
MGNERGA	Mahatma Gandhi National Rural Employment Guarantee
NGO	Non-Governmental Organisation
NRLM	National Rural Livelihoods Mission
OBC	Other Backward Caste
PPPCL	Pandhana Pashupalan Producer Company Limited
SENU	Securing Nutrition, Enhancing Resilience
SC	Scheduled Caste
SGG	Skill Green Global
SHG	Self-Help Group
SRLM	State Rural Livelihoods Mission
ST	Scheduled Tribe
SSP	Swayam Shikshan Prayog
TSA	Technical Support Agency



Executive Summary

In Khandwa in Madhya Pradesh (MP), GIZ's SENU (Securing Nutrition, Enhancing Resilience) project is promoting multisectoral Community Nutrition Gardens (CNGs) under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), developed and maintained by Self-Help Group (SHG) women. This study design was jointly developed with Enhancing Rural Resilience through Appropriate Development Actions (ERADA) project who is focusing on strengthening diversified livelihoods of vulnerable households through MGNREGS, National Rural Livelihoods Mission (NRLM) and other rural development programmes. The aim of the study is to find realistic business models, based on potential marketable surplus of CNGs and other side enterprises, which help sustain the CNGs beyond the project, which is ending in 2025. The study was done between Jan – Mar'24, using a combination of secondary review, focussed group discussions, primary survey and interviews with key informants, experts, and stakeholders (existing and potential).

The CNGs are managed by SHG women, from socially and economically vulnerable communities. Mainly from scheduled tribes and castes, the primary source of livelihoods is wage labour followed by agriculture. Chemical based agriculture practices are followed with an aim of generating income, rather than with family nutrition goals. Distress Migration is prevalent, indicating challenges in their current livelihoods and existing resource base. A CNG offering these women a resource (land) they can control, income through wage labour and source of nutritious food assumes importance in their

The aim of this study is to find realistic business models, based on potential marketable surplus of CNGs beyond the project.

context in multiple ways.

The status of CNGs is varied – dynamic factors that affect the success of CNGs include internal factors, mainly number of active members linked to cohesiveness among SHG members, and external factors mainly access to irrigation facilities, support from Gram Panchayat in getting payments released and getting works sanctioned. The choice of crops in CNGs is made by members with primary purpose of nutritious food for the family– they tend to avoid crops which involve tasks like weeding, which cause more drudgery. They are open to other income generating activities, which do not affect the primary purpose of the CNG.

The stakeholders map of the CNG recognises the critical role of Gram Panchayat, project partners, rural development department, MGNREGA in enabling CNGs so far. There are several other interested stakeholders in the ecosystem, mainly, NRLM (for marketing outlet), weekly markets, Farmer Produce Companies (FPCs) in the region (Krushi Namami, Pandhana Pashupalan Producer Company Limited –PPPCL) among others, opening opportunities for CNGs to avail support necessary to grow and sustain. Building upon their strengths and using these opportunities in the ecosystem, to their advantage is one of the success factors in future.



Firstly, **basic requirements for CNGs** – water, seed, bio-inputs and extension, there are opportunities for CNGs to work on

- a. critical irrigation in convergence with MGNREGA, improving water use efficiency
- b. working on seed banks, collective procurement of seeds,
- c. bio input resource centres and
- d. community-based extension models.

Linking these gaps / opportunities, with the success factors of CNGs, it is suggested that interventions around basic requirements for CNGs be worked out as need-based mutual support services of the CNG or network of CNGs, with the aim to develop cohesiveness among the CNGs and enable them to work as a network, to develop their strengths further. It is not recommended to work on these basic requirements as business models catering to the market, which is not conducive. Some less risky options such as supply of bio-inputs to Bio-input Resource Centres (BRCs) established by ERADA can be explored.

Secondly, **choice of crops in the CNG**. Members decide the crops to grow, keeping in mind the complex realities and constraints they face – mainly suitability of land, availability of water, risk of theft/loss and consumption needs. There is an unanimous view of CNG members about the primary purpose of the CNGs to fulfil their nutritional needs. Beyond this, the choice of crops can be diversified, looking at replacing crops

It is suggested to avoid going in for production planning, or nudge CNGs, to grow crops primarily for the market to generate income from CNGs, since it pushes CNGs towards chemical practices. Rather, the recommendation is to grow crop primarily for HH consumption...

important for nutrition but currently purchased from the market, such as lentils (dals), cereals, coriander seeds, fenugreek (methi) seeds, garlic, and ginger. The suggested approach here is to build upon strengths, work on weaknesses by reducing costs and hence increase the net income of households (HH).

The CNG members mainly grow vegetables as per their consumption requirements and surplus is first distributed to interested people in the village, and then any further surplus is taken to the market. As consumers themselves, the CNG members have an intuitive understanding of the market requirements – such as fast moving (like leafy greens), high value (like Chilly) etc. The main recommendation of the study is to not plan for crops with primary intention to sell in market. As explained in various sections, the demand in the market is for vegetables with good appearance, and there is no preference / demand for organic produce or SHG produced vegetables. This demand will have to be gradually created through selling to discerning customers – through weekly markets or Ajeevika outlet as explained in the subsequent sections.

It is suggested to **avoid going in for production planning**, or nudge CNGs, to grow crops primarily for the market to generate income from CNGs, since it pushes CNGs towards chemical practices. Rather, the recommendation is to grow crop primarily for HH consumption, while also having access to favourable market channels to trade surpluses which is win-win for CNG members and discerning consumers. In CNGs where the members are themselves motivated to take up crops that can generate income, because of reasons like larger area, and availability of finance, market access and expertise, as well as the risk-taking ability, then they can do so. It is suggested that the implementing organisation provide some handholding support to such CNGs and help them in their decision-making process.

Thirdly, **managing the harvested produce**. From the initial experiences, CNGs have faced challenges in managing surplus such as getting payments from local buyers at the village level, local institutional buyers like Anganwadi centres and mid-day meal centres require low quanti-

ties as compared to available surplus, low prices for their produce in mandis, weekly markets, etc. Overall, the experience in marketing their surplus has been frustrating for the CNGs. The suggested approach here is to adapt, where markets are aligned with the CNGs.

The key recommendations of the study, in terms of business models include

1. **Recommended Option - Selling their produce in weekly markets.** Weekly markets can work well for CNGs, they can learn and adapt. CNGs can identify members who are willing to sell regularly at weekly markets. These women need to go to weekly market every week or multiple times every week and can be handheld by experienced mentors over a period of 1-2 months to get familiar with the market and gain experience to sell on their own.

2. **Alternative Option** – Selling their produce through outlet (Ajeevika Bazaar)

The pros and cons of each option and the reason for recommending weekly markets for CNGs is explained in the report. The report also provides a roadmap for various business opportunities and allied livelihood options that can be explored instead of a “one shoe fits all” approach by CNGs.

Other allied livelihoods options / side enterprises like goatary, poultry, fisheries (for seedling production), sale of moringa pods in weekly markets, can be explored as members are interested in these options.

- » For taking up cultivation of medicinal plants, it is suggested to further explore opportunities with institutions like KrishiNamami FPC, which can support in marketing and only then go in for cultivation of medicinal plants. Cultivating kusum crop (safflower) can be explored by interested CNGs that have more land, as KrishiNamami FPC is supporting with both production support and purchase of produce.
- » Value addition of CNG produce like making pickles, jams, masala powders as well as value addition products of moringa like moringa laddus may not find an immediate market. CNG members will have to be supported with marketing facilities as well as initial support with developing market-ready products itself, particularly if going in for products like jams and moringa-based products that are new to them.

It is important for the implementing agency to have a dialogue with the members to come up with specific CNG-wise plans considering their strengths, resources, skills and aspirations,

Currently, most of the training for the CNGs is done by the project implementing partners. There is scope for further improvement, considering the opportunities available and the nature of the programme as a convergence initiative. The report has identified the key skilling gaps and the preferred trainings of the CNG members and identified potential stakeholders, partners who can offer these training services. Leadership training to develop and groom CNG Group Leaders who can continue to represent their CNG, interact and network with various stakeholders for achieving their plans/ goals is recommended.



Context of the Study

GIZ's Securing Nutrition, Enhancing Resilience (SENU) project aims to increase dietary diversity of women and children through multisectoral Community Nutrition Gardens (CNGs) developed with convergence with MGNREGS. The CNGs are developed and maintained by SHG women who get wages under MGNREGS for doing different types of work on the CNG.






In order to ensure sustainability of these CNGs, the SENU project along with GIZ's Enhancing Rural Resilience Through Appropriate Development Actions (ERADA) project is looking to understand the enterprise opportunities emerging mainly from the surplus production of these CNGs.

Towards this, SENU commissioned this study to assess the potential marketable surplus from CNGs, develop realistic business models which can take forward CNGs as nutrition-livelihood models and assess the skilling needs of the CNG members, required to prepare them to work on these business models.

The study was conducted in Khandwa district in Madhya Pradesh.

Objective of the Study

The specific objectives of the study were to:

- | | |
|---|---|
|  | 1. Understand status of CNGs – household consumption, surplus production, managing surplus etc., based on a quick analysis of sample CNGs. |
|  | 2. Gap assessment focussed on market demand & potential for CNG primary and value-added produce in the local community and markets. |
|  | 3. Recommend potential enterprise models / concepts depending on the scale of the potential businesses and interest/ capabilities of SHG members. |
|  | 4. Skill gap analysis of the SHG members to take up business models and effectively work on CNGs. |
|  | 5. List potential market players and possible linkages across government, private and other institutions/ stakeholders. |



Study Methodology

The study is based on a combination of secondary review, FGDs, primary surveys and discussions with key informants, experts, and stakeholders – existing and potential. The study tools used in the study, are summarised in Table 1.

Table 1: Study tools

Methodology / Data Collection Tool	Sample of Participants	Sampling Criteria	Timeline
FGDs with CNG members to understand their context, current status of, expectations from CNGs, challenges, concerns, perspective on handling marketable produce, interest areas	List of CNGs visited: 1. Golkhed Raiyat 2. Borkheda 3. Amalpura 4. Tityajoshi 5. Khadki 6. Bothiya Kheda Mamado and Patalda village in Khalwa were visited to understand Moringa intervention.	CNGs suggested by Implementation Partners	CNGs visited between January 9-13, 2024
Rapid survey of CNG members to understand input requirements, cropping patterns, marketable surplus and to validate hypotheses. A questionnaire was used, and data collection was done by Harsha Trust's field staff.	Member level data collected from 90 respondents from 18 CNGs. CNG level data collected from 27 CNGs List of CNGs given in Annexure- 1	Purposive Sampling CNGs selected based on criteria: » Representation from all 4 blocks » Age of CNG » No. of crop seasons taken	Data collection done between Jan 16- 31, 2024
In-Depth Interviews (Semi-structured interviews) to get ecosystem perspective on value chain and opportunities for intervention A few discussions were held online.	Interactions were held with various stakeholders and experts as listed below: 1. KVK 2. MGNREGA 3. SRLM 4. Horticulture Department 5. Fisheries Department 6. Forest Department 7. Spandan (NGO) 8. AKRSP(NGO) 9. Krishi Namami FPC 10. Jaljeevika (TSA) 11. The Goat Trust (TSA) 12. PPPCL (Pandhana FPC) 13. IGSSS (NGO) 14. Swayam Shikshan Prayog (NGO) 15. Gramunnati (TSA) The following locations were visited to get market insights: 1. Khandwa Mandi to interact with commission agent, wholesalers, retailers, transporters, farmers. 2. Weekly market at Gudi 3. Aajeevika Bazar outlet 4. Horticulture Nursery 5. Pashusakhis	Purposive Sampling based on discussions with GIZ / Harsha Trust / SRIJAN team.	Between Feb 15- March 1, 2024

1. Study Findings

1.1 Brief profile of CNG members

Understanding the household context is important to know the relevance of CNGs to its primary stakeholders, the members. The CNGs are managed by a vulnerable section of the rural community – women (who are part of SHGs), who are mainly from Tribal or Scheduled Caste (SC) community, and moderately low literacy levels (see Figure 1 and Figure 2). A significant number of these HHs migrate for work, despite having diversified livelihoods. Land ownership is limited and dependence on wage labour is high, and there is preference for livestock rearing, esp. small ruminants.

Table 2 Figure 1 and Figure 2 show a snapshot of the socio-economic profile of CNG members (N=90) and their resource availability.

Table 2: Socio-economic profile of CNG members

Avg. age of respondent	39.8
Avg. members in HH	5.5
Members who have their home kitchen garden	16%
Members who cultivate – i.e. have own/leased land	54%
Members who rear livestock	49%
Members belonging to HHs that migrate for work	38%
Women CNG members who migrate for work	10%

Table 3: CNG-wise data - members with land and livestock

	CNG-wise data - members with land: No. of CNGs (% CNGs)	CNG-wise data - Members with livestock: No. of CNGs (% CNGs)
More than 70% members	7 (26%)	5 (19%)
40-70% members	11 (41%)	14 (52%)
Up to 40% members	5 (19%)	6 (22%)
No member has land	4 (15%)	-
No member has livestock	-	2 (7%)

1.2 HH Context - Resource Availability: Land and Livestock

The number of members having land or livestock varies across the CNGs (N=27) as shown in the table below. In some CNGs, the number of land-less are high while in some almost all members have land. Similar is the case with livestock (see Table 3).

Figure 1: Community Composition

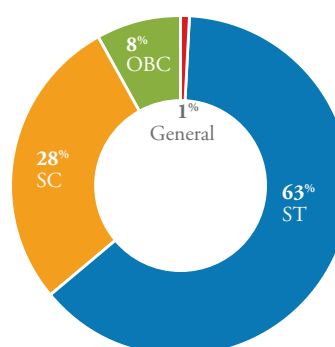
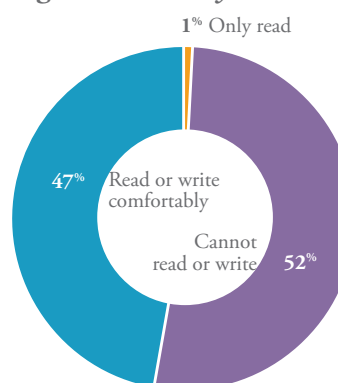


Figure 2: Literacy Status



Among the members who have land, majority are smallholders having less than 2-acre land, and cultivate crops like wheat, cotton, soybean, onion, maize – and **mostly for sale in market** (see Figure 3).

Figure 3: Landholding Size- % members

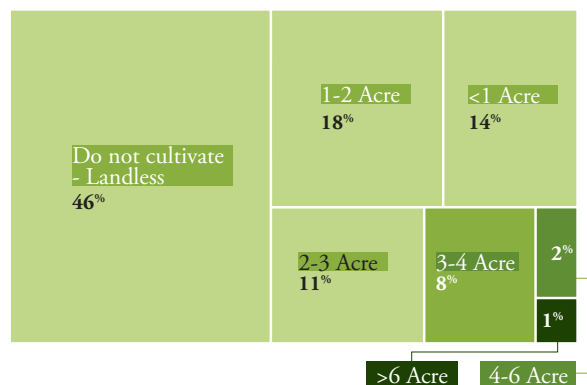


Table 4: Main Source of Food

Main Source of Food	Cereals	Pulses	Vegetables	Fruits
Mostly PDS	26%	2%		
Mostly own production	46%	21%		1%
Mostly buy from market	29%	77%	36%	99%
Mostly CNG			64%	

Those having more land go for cultivation of pulses and a few vegetables, mostly for self-consumption.

Sources of Food and relevance of CNGs

The main source of different food groups for members is shown in Table 4.

- » CNG members depend heavily on market for pulses, and fruits.
- » Even in case of cereal crops like wheat a good 30% members (mostly landless) depend on market as Public Distribution System (PDS) rations alone is insufficient.
- » Since the past 6-8 months members are getting regular supply of vegetables from CNGs, which has reduced dependence on market from before.

Figure 4: Landholding Size- % members

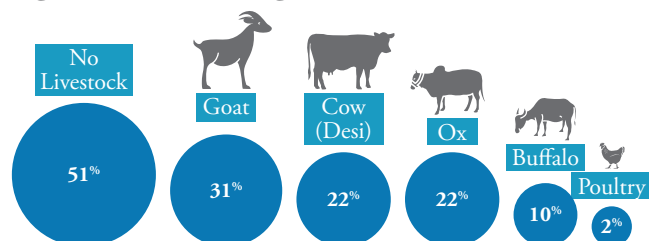


Table 5: No of livestock

No of livestock	Avg/HH	Max	Min
Cow (Desi)	2	4	1
Goats	5	10	2
Ox	2	6	2
Buffalo	1	3	1

Farming Practices (Natural Farming / Bio inputs)

Farming is mostly conventional with use of chemicals. Natural farming / use of bio-inputs is not very prevalent. Members shared that only recently they have

started hearing about natural farming practices, and the practice is being followed by few farmers as part of project interventions in the area.

In this context, a CNG managed by women which is producing vegetables without use of chemicals is perceived as important for the health and nutrition of the family by the CNG members.

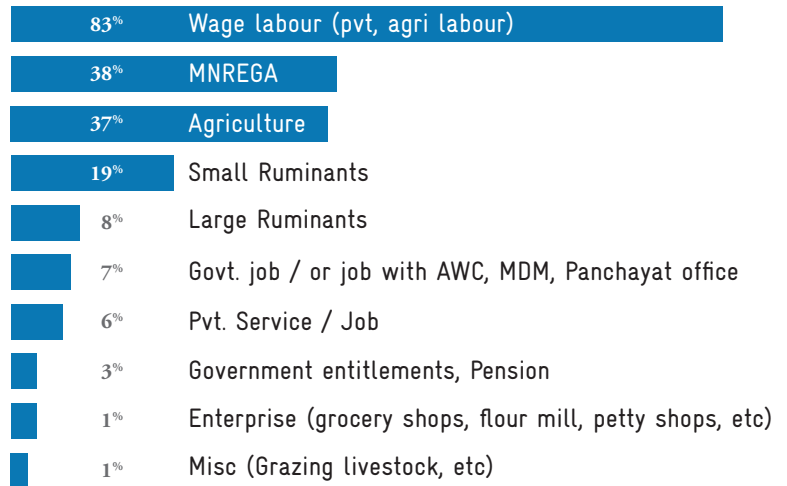
Livestock Rearing

Goat rearing, which is mainly handled by women, is more prevalent than other livestock rearing, across members surveyed (N=90).

The cattle and goat varieties are local – yielding low milk and goat rates are also low at Rs 3000-5000 per goat. See Figure 4 and Table 5.



Figure 5: Sources of Income



A CNG offering wage labour to members, as well as nutritious food assumes importance in the livelihood's context of the HH, also enterprise promotion will require significant skilling.

- » Members have tried rearing poultry, but a high mortality rate has been a common issue. Some members shared, that during COVID they faced difficulties and after that only a few members started poultry again.
- » During discussions with members, it emerged that there is scope for improvement in management practices.

1.3 Sources of Income

Wage labour (both private and MGNREGA) is the main source of income across almost all member HH, followed by agriculture. One-fifth HHs get income from small ruminants like goats and lesser than one-tenth for cattle indicating that livestock rearing is done as a secondary livelihood activity. Also, less than 5% members have experience in running any enterprise. Thus, a CNG offering wage labour to members, as well as nutritious food assumes importance in the livelihood's context of the HH, also enterprise promotion will require significant skilling (see Figure 5).

Across CNGs, members shared that migrating for work is prevalent. However, it's mostly men who migrate for jobs such as in agri- processing units and Agri- and non-farm labour. In a few CNGs it's seen that women too migrate for work for 1 month – 3 months annually.

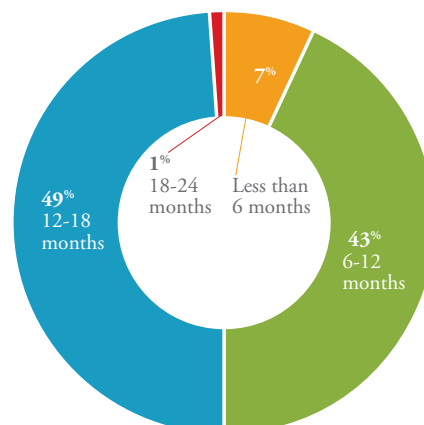
2. Dynamics of CNGs

2.1 Membership in CNGs

A majority of surveyed members have been associated with the CNG for a year to 1.5 years. It is interesting to contrast the membership period with the cultivation data, to get an idea of the effort in setting up CNGs (Figure 6).

There is significant preparation work, after members join the CNGs, to be able to begin cultivation. From field visits, it is observed that the struggle for establishing a CNG, resulting in initial success has developed a "can-do" spirit among CNG members, which is important for any initiative to sustain the CNGs.

Figure 6: CNG- Membership Period



2.2. Member participation in CNG

Table 6: A snapshot of member participation & key motivating factors for membership

Average number of active members in CNG (N=27)	83% active member (ranges from 65% to 100%)
Amount of time spent by women members per day in CNG	5-6 hours per day
Key Motivating Factors for members	More consumption of organic vegetables and food for family, Extra income through MNREGA wages, More savings due to savings on purchase of food

Performance of the CNG is directly impacted by the number of active members. CNG activities require manual labour and those CNGs which have more active members get more done.

» The proportion of active members in the CNGs varies. Typically, around 8-9 members out of 10-12 are active per CNG. It was observed that in certain CNGs like Khadki, Amalpura and Tityajoshi, the participation of members is good, while in some like Bothiya Kheda and Borkheda only 3-5 members are active.

- In Borkheda, members shared that only a part of the allotted land for CNG has been developed so far. A sizeable portion where they plan to grow fruit crops is yet to be made utilisable. This is taking time as all members are not active. Around 4-5 members are more active; 4 members do not participate, and the remaining need to be coaxed to come.
- In Golkeda Raiyat-1 CNG, members shared that they are finding it difficult to motivate the dissatisfied members who feel that they are letting go of agri-labour to work in the CNG – and on occasions 6-7 members are only available which slows down things. Active members shared that they work close to 6-7 hrs daily (9 am – 4 pm).

» Discussions with implementation partners and community members reveal that the strength of the SHG and cohesiveness among

members is a contributing factor. Where the SHGs are strong and have been existing for longer, the participation is better.

- a. Presence / absence of own land cannot be stated conclusively as a factor that affects how active the members are. However, CNGs like Amalpura and Badgaon Gujar have all landless members and the participation is very high. Similarly, in CNGs like Sitabadi, Khadki, Golkheda Raiyat – 1, and Bhilai Kheda more than 75% members have land, there again the participation is good.
- » Motivations of members clearly go beyond pure economic considerations and are possibly linked to aspirations and empowerment. As explained in the subsequent section, access to naturally grown, fresh vegetables are a major motivator for a large number of members. Another aspect that drives members is that their SHG has been given a resource that they can use for themselves. As a member from Golkeda Raiyat said, *"In today's time we will not be able to purchase any land, we have been given 2-2.5 acres of land from the Panchayat. We must do our best and do what we can."*
- » The number of active members could influence the kind of crops members take up – women shared that they are not interested in cultivating crops which involves more weeding and are mulling the use of tractors & equipment so that they are able to do all farm activities on time, which on the other hand means more costs.

Likewise, willingness of members will influence the kind of allied activities that they would want to take up for income-generation from CNG.

2.3. Perceived Benefits, Challenges and Concern areas of members

For members the major benefits of CNG are (see Table 7)

- » More food security – a major consideration.
- » Chemical-free food.
- » A CNG Member shared “Earlier we never used to purchase vegetables- we used to make do with dal and rice. Now we have a diversity in our meals and are absolutely enjoying it.”

While members do say that any sort of income generation would be helpful, they are clear their priority is to ensure that their HHs get the required vegetables and pulses from CNGs, if possible, for the entire year.

Table 7: CNG Benefits

CNG- Benefits	% Members
More consumption of organic vegetables and food for family	82%
Extra income	60%
More savings	29%
Attending meetings, working together	20%
Better work than other MGNREGS work	17%
Get to meet people and learn	14%
Get wages on time	12%
Awareness about nutrition / information	12%
We take our own decisions	9%

Their concern is lack of critical irrigation, delays in getting payments released and getting works sanctioned, as well as less participation – all of which affects yield and production.

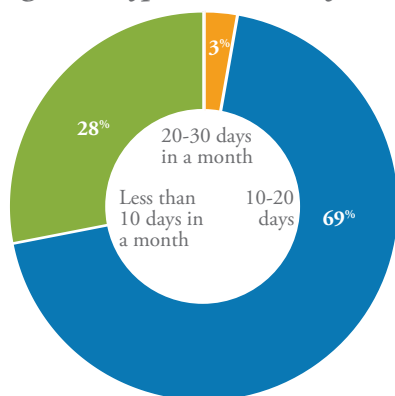
- » Members complained that they are spending close to 15 days in a month at the CNG and put in 5-6 hours of work each day, but in terms of returns, the yield is not that much. They attribute low yield to the soil & water and that they use only bio-inputs (Table 8).
- » Though members say that they are happy with “jaivik” produce, which is fresh and tasty, unlike what they get in the market, it's not very clear if they are really convinced with the benefits of natural farming, in terms

Table 8: CNG Major Challenges

CNG- Major challenges	% Members
Lack of water, irrigation	49%
Do not get timely/ required support from GP	44%
All members do not support in CNG work	41%
Do not get wages on time	34%
Distance to the CNG	20%
No support from family	16%
Do not find time for CNG / CNG is time consuming	14%
Poor transportation facilities to sell produce	4%
Unavailability of organic manure and organic pesticides	3%
Unavailability of good seeds	2%
Don't know	2%
Less income from CNG	1%

of its health benefits or because it keeps costs low. While the project staff stress that its low-cost farming and advantageous, members, specifically, do not bring up that aspect as a benefit (see Figure 7).

Figure 7: Typical number of work days in CNG



Considering that CNGs are diverse and have some strengths and capabilities, sharing of experiences, surplus input material such as seeds, bio-inputs etc. can help in building cohesiveness within and across CNGs.

2.4. Stakeholder Map of CNGs

The key stakeholders of CNGs include implementing partners such as Harsha Trust, government agencies like MGNREGA department, the gram panchayat, markets like mandis, weekly markets etc.

Based on the field visits and interactions, the importance of each stakeholder and the ease of access to CNGs is summarised in the Table 9.

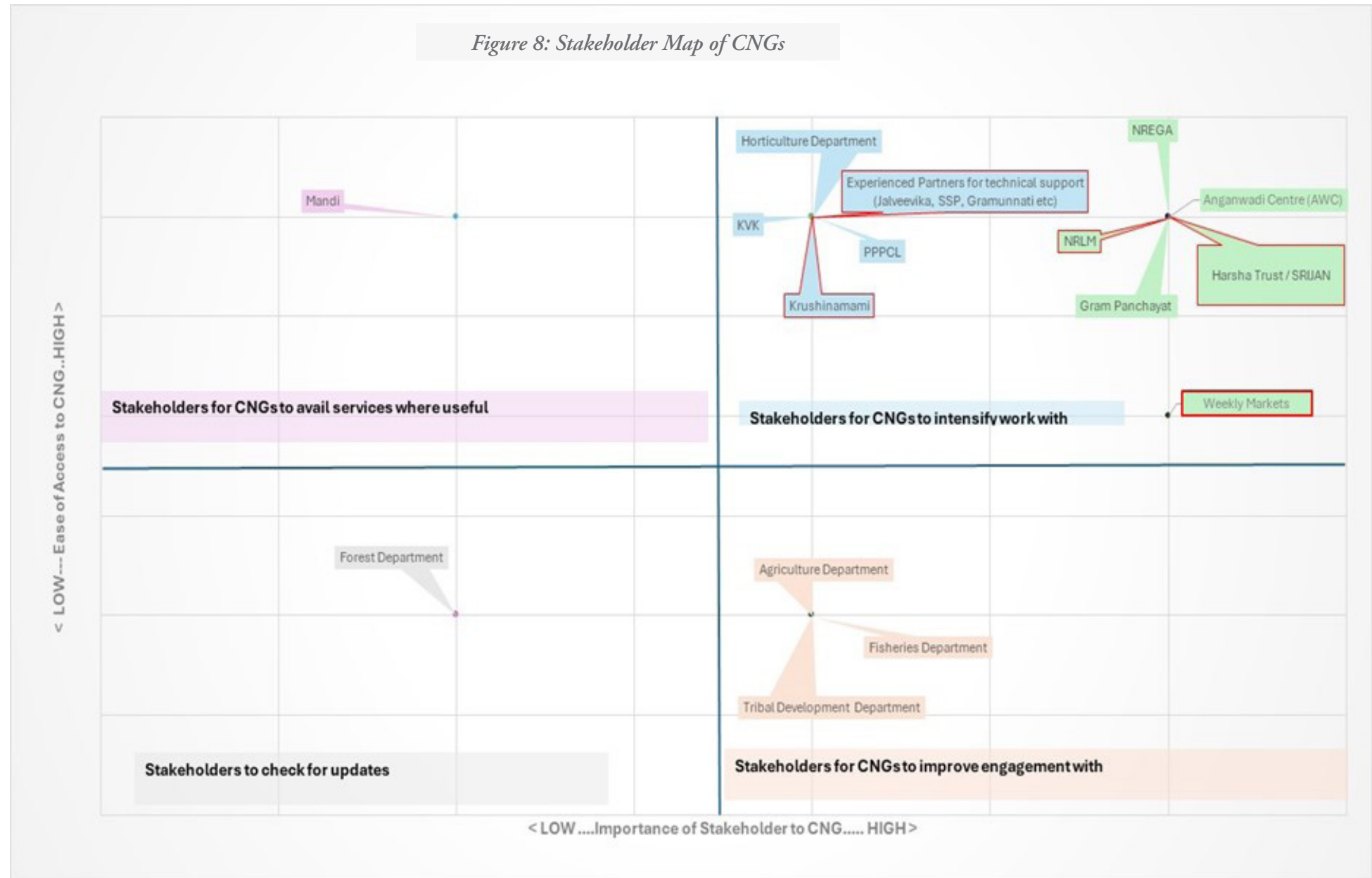
Table 9: Ease of Access to CNG

Stakeholder	Importance to CNG	Ease of Access to CNG
Harsha Trust / SRIJAN	As implementing/ technical partners, CNGs get most support services from them	The partners are also regularly and easily accessible to CNGs for necessary support
MGNREGA Department	CNGs can avail support for land development, irrigation infrastructure and wages through MGNREGA	MGNREGA dept as convergence partner is keen to support CNGs and involved in the project
Gram Panchayat	GPs are very important stakeholders for CNGs since they support in access to land, water and various other requirements for CNGs	As locals, with support from partners and MGNREGA department, CNGs are able to access support of GPs mostly
KVK	KVK offers training on production practices, value-addition & allied enterprises	Partners have good rapport with KVK and KVK is keen to support CNGs in multiple ways
NRLM	NRLM can support for market outlet, financial support and for marketing opportunities like exhibitions	Partners have good rapport with NRLM and it is keen to support CNGs since they are from SHGs
Horticulture Department	Horti department can support with samplings and benefits of schemes for marketing infrastructure support etc.	Partners have good rapport with Horti Dept and CNGs can avail the services

Fisheries Department	Can provide linkage with Co-op Societies for sale of seeds & also possibility of support of schemes	Most schemes are for co-op Societies and difficult to access for SHGs
Tribal Development Department	Tribal department supports schools and institutions which CNGs can access for marketing of vegetables.	Linkages with Tribal Development Department are still very initial stages
PPPCL	PPPCL can offer goatary and poultry related services to CNG members.	PPPCL keen to support CNGs and CNGs can avail the services
KrushiNamami FPCL	The FPC can offer services related to medicinal plants and marketing.	KrushiNamami keen to support. CNGs can avail the services
Forest Department	Forest Department services not relevant to CNGs currently	Linkages with Forest department in very initial stages
Agriculture Department	Agri dept can support through seeds, subsidy on irrigation equipment, etc.	Linkages with Agri department in very initial stages
Mandi	CNGs do not get good prices at mandis and it might not be a good channel for marketing vegetables, however useful for information esp on prices and logistics linkages	Mandis are easily accessible for CNGs
Experienced Partners for technical support (Jalveevika, SSP, Gramunnati etc)	CNGs can benefit from their experience and good practices and avoid expensive trial and error	They are easily accessible to CNGs
Weekly Markets	Weekly markets across Khandwa are good platforms for CNGs to market their produce	They are easily accessible to CNGs, however, CNG members have to develop necessary skills to make weekly markets work for them
Anganwadi Centre (AWC)	Relationship with AWC is important since it is a local institution and CNG members are closely associated with AWC – either CNG members' children go to AWC or even AWW is a CNG member herself	AWC is easily accessible to the CNGs

The stakeholder map is illustrated in Figure 8.

Figure 8: Stakeholder Map of CNGs



3. Gaps and Opportunities in the Value Chain that CNGs are part of:

The below section covers the various factors affecting supply and value chains of CNGs and describes the current gaps and opportunities that members can tap into.

3.1 Basic Requirements for CNGs

A. Irrigation

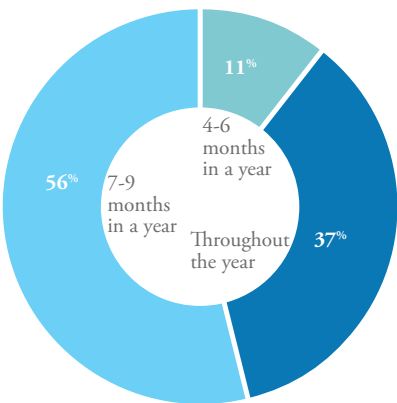
Majority of CNG members (N=27) shared that they have water for irrigation for 2 seasons in a year – Kharif and Rabi (7-9 months), while a good number have water throughout the year. Only a small number of CNGs (3 CNGs out of 27) share that they have water for 4-6 months, i.e. during Kharif and some part of Rabi season, which means by December -January they run out of water. See Figure 9.

On further enquiry it emerges that even where water is available for all months or 7-9 months, by February most CNGs start facing water stress and struggle to ensure critical irrigation for standing crops.

Those CNGs that have water all year round take 2 crops majorly, and only a couple of vegetable crops/ crops that require less water in summer.

Most CNGs have single source of irrigation, while a smaller number of CNGs (8 CNGs out of 27) have multiple sources of irrigation, with rivers/streams being the most common irrigation source among surveyed CNGs (Figure 10).

Figure 9: Availability of water



Even where water is available for all months or 7-9 months, by February most CNGs start facing water stress and struggle to ensure critical irrigation for standing crops.



All CNGs, except one, use electric pump to irrigate. Some farmers, supported by Aga Khan Rural Support Programme (AKRSP) are using solar irrigation, it is however capital intensive. CNGs may not be eligible for government schemes related to solar irrigation as they may not fulfil criteria of land ownership.

In some CNG locations, the Panchayat has made borewells available to the CNG and in some cases allowed Jal Jeevan Mission borewells too, which is meant for drinking water, and takes up responsibility of filling water in open wells when required or supplies water to the CNG in times of need.

That said, the members are interested in knowing more about irrigation options and how they can get better access to water. During field visits, apart from the cattle proof trenches no other water conservation structures were observed (Table 10).

Figure 10: CNG- Irrigation Source

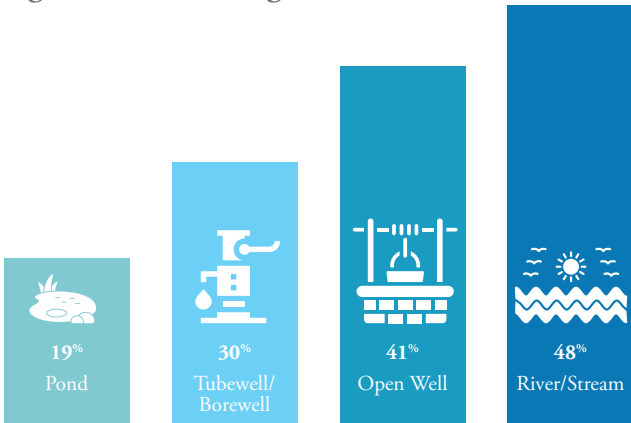


Table 10: Possibilities for Irrigation in CNGs

Gaps	» Only a third (37%) of CNGs (N=27) have water for critical irrigation throughout the year.
Opportunities	<ul style="list-style-type: none"> » Support for deepening Existing Wells and Constructing Pokhar (pool) or farm ponds and open wells is available under MGNREGA. These activities can be done within a period of one year as per the views of PO MGNREGA. » Polythene-lined jalkund which is MGNERGA approved can be tried in CNGs for extending irrigation availability. » Use of Rain pipes to conserve water. The investment for rain pipes is low - around Rs 8000 - 9000 per acre and the results are good. It has been demonstrated by AKRSP in the region.
Considerations	<ul style="list-style-type: none"> » Deepening / Construction of wells possible only in catchment areas. » Pokhar / Ponds require at least 60x80 ft space in the CNG land (might not be possible in all CNGs)
Recommendations	<ul style="list-style-type: none"> » CNG-wise planning for water and submission of demand to the Gram panchayat as per need. » AKRSP's work with Rain pipes and results can be visited and explored further.



Low-cost innovations like Rain Pipes can help optimum use of water



A pond next to Khadki site, which can be developed further as a water source for the CNG

B. Seeds

Among surveyed CNGs, only one-third CNGs (N=27) used own seeds in the Rabi season and fewer (5 CNGs) in kharif season. 4 out of 5 CNGs purchase seeds from market, although they consider it a minor expense (see Table 11).



Table 11: Opportunities for the Procurement of Seeds

Gaps	Currently most seeds are purchased from the market. While some seeds can be saved, mostly seeds have to be purchased every year.
Opportunities	<ul style="list-style-type: none"> » Desi/traditional varieties fetch a price premium in weekly markets (customers prefer traditional varieties, no such preference for natural produce). » CNGs can explore options like having a Seed Bank managed by 1-2 CNGs, SOPs for CNG-wise indenting and collective procurement of seeds. » Seed exchange among CNGs can help in inter-CNG networking. » Members are familiar with nursery bed preparations, and some are already preparing nursery for crops like cabbage. CNGs which have more land and good water source can take up cultivation of saplings/seedling for vegetable crops and supply to other CNGs. » There is demand for desi/local seed varieties in the area from other farmers – if CNGs can produce good quality seeds and demonstrate results in their plots, they could get demand from HHs with a Kitchen Garden and even organisations like Spandan, which are promoting Kitchen Gardens.
Considerations / Support Areas	<p>Challenges with procuring desi/local seeds:</p> <ul style="list-style-type: none"> » Desi/local seeds are available for a few crops – gourds and pulses crops, and some field crops. For certain vegetables like cabbage, cauliflower, etc. there is no choice but to depend on market. » Vegetables, open pollinated seeds/desi seeds are very difficult to get in the market. Complete hybridisation has happened. E.g.: Brinjal, chilli. » KVK is promoting individual Kitchen Gardens as part of nutrition initiative – vulnerable HHs are identified and given seeds– CNG however not in their current scope. » While collective procurement of seeds can happen immediately, establishing a seed bank can take up to 2 years. » CNGs will require initial support from Harsha Trust/SRIJAN in establishing seed banks and with collective procurement of seeds. » Harsha Trust/SRIJAN may have to look at options like getting quality desi seeds from other locations for a couple of seasons to get the CNGs started.
Recommendations	<ul style="list-style-type: none"> » Look at starting collective procurement of seeds for the upcoming Kharif season. » Prepare for a seed bank in future – Reach out to seed banks and procure local / desi seeds. Focus on collecting desi seeds, CNGs developing their own sources of seed. » For developing seed banks, collaboration with other organisations like Spandan can be explored. » Seeds is a critical input, and timely availability is key so that production is not impacted. Having a good supply of own seeds for multiple varieties (at least 10-12 different produce) can help sustainability of CNGs. A nursery (in a small plot) for supply of saplings of brinjal, tomato, chilli, maybe cauliflower, cabbage to supply to other CNGs is recommended. Not for saplings of fruit crops – as already there are nurseries for the same – also some Gram Panchayats have their own plot.

C. Bio-inputs

Members are preparing various bio inputs like ghana jeevamrut, beejamrut, 5-patti kadha, neemastra, etc., for use in the CNGs (Table 12).

Table 12: Possible Usage of Bio-Inputs

Gaps	<p>6 CNGs interacted with during FGDs in blocks of Pandhana and Khandwa shared that they do not have enough cattle among their members, for farm-yard manure (FYM) and bio-inputs.</p> <ul style="list-style-type: none"> » Members were not aware of vermicompost and how its prepared or its uses. (It was clarified by the implementing agency that the vermicomposting technique is not one of the techniques being promoted here. Ghana jeevamrut is an effective soil enricher). » Members are making bio-inputs only for CNG purposes. Discussions with members and key informants reveal that chemical farming is mostly prevalent in this area, and while members are enthusiastic to cultivate using natural farming methods in the CNG they continue to use chemicals for cultivating their own land.
Opportunities	<ul style="list-style-type: none"> » Explore opportunities of some CNGs to fill in the gap with manure, cow urine or bio inputs required by nearby CNGs which have less cattle. » ERADA supported Indo-Global Social Service Society (IGSSS) project plans to set up a decentralised BRC which will procure bio-inputs made by its project participants and market it to buyers like Forest department. CNGs could supply to such an entity. » Preparation of vermicompost pits: Construction of concrete Vermi composting units is supported under NREGA (cost of construction of 4ft X 5 ft X 2 ft structure is around - Rs 20,000 -25,000). Apart from this, the running costs are a minimum (earthworms + manure are the only costs).
Considerations / Support Areas	<p>Demand for bio-inputs:</p> <ul style="list-style-type: none"> » Immediate results are not seen in organic inputs, so farmers do not purchase repeatedly - they purchase them occasionally. However, it can be promoted for the CNG's own use. » An enterprise selling bio-inputs requires a good catchment of farmers who are actively involved in practising natural farming. Most private nurseries have their own set-up or an assured supply. » Some SHGs in the area are involved in making bio-inputs which is procured by the CLF and retailed in the Aajeevika outlet in Khandwa. However, the demand is not very robust and while a lot of SHG women have been trained by SRLM and been given vermi-bags to start making vermicompost, it's not being done actively. Natural farming is not being practiced by many farmers in this area, also awareness of use of organic manure is still low. Vermi-compost currently is being used by farmers who are growing high-value crops like fruits and specific vegetables. » KVKs and agri/horti-department are currently fulfilling their demand of bio-inputs through their own set-up. They are producing for their own use - to be used in trainings/for own demo plots/own nursery, etc. » Experience of organizations like AKRSP on bio input resource centres in the region, are not encouraging. They have tried and failed. Main reason for failure being the inconsistency of demand - bio inputs are in demand by a few farmers, who require them in large quantities sometimes, but it is difficult to forecast and prepare the supply accordingly.

Considerations / Support Areas (Continued)	<p>Focussed capacity building on producing organic inputs in larger quantities</p> <ul style="list-style-type: none"> » SRIJAN has experience of establishing Bio input resource centres and can support the CNGs in piloting production for sale to other CNGs, initially for own use. » KVK can train CNGs on vermi composting/bio-input production. <p>Capital Requirement</p> <ul style="list-style-type: none"> » Initial capital is required for purchase of drums, and other material required for storing organic inputs. In case vermicompost is to be produced, some cost for preparation of the vermicompost bed will have to be borne by members. » To get interested members started on production of vermicompost vermi-bags can be used (cost around Rs 2500-3000 per vermi-bag).
Recommendations	<ul style="list-style-type: none"> » Till members get sufficient experience focus mainly on self-consumption and supply to 1-2 nearby CNGs and local farmers for additional income. » Promote practices like soil testing in CNGs to create awareness on soil quality and then plan for bio-input requirement. » CNGs could start with baby steps like using waste decomposers to decompose organic matter and then use in their CNGs, instead of using farmyard manure (FYM) as it is. » Explore possibility of CNGs supplying to IGSSS promoted FPO in Khalwa which plans to get into marketing of bio-inputs and CLF. » Interested CNGs can visit successful models of Bio Input Resource Centres run by SHG women in other parts of MP and other states. <p>(for more details on BRC please Refer Annexure -2: Is there a case for Bio-Input Resource Centres (BRC) run by a CNG?). Training on bio-input preparations are low cost and time efficient. Hence, even within existing CNG trainings, this could be incorporated. MGNREGA Vermi and NADEP composting units can be set up.</p>

D. Extension services

Members depend mostly on Harsha Trust for any information relating to agri-practice or pest management. Only a few CNGs, and mostly those that are near Khandwa district HQ, are currently interacting and engaging with KVKs and other departments for information. Most of the technical agencies including KVKs and other departments do not have field officers, and when farmers have an issue, they have to go all the way to Khandwa or contact through phone. Members require real-time support when they face challenges in the field, for which community level extension agents can be useful.

Followings are some models for providing timely extension services to CNGs:

Option 1: Community level extension agents / Krishi Sakhis

AKRSP is trying to address this requirement for last-mile extension services by forming Producer Groups of farmers in a cluster of villages. Few progressive farmers are trained as extension agents, who will provide training to Producer Groups and need-based support related to pests and diseases.

A similar approach can be tried out for CNGs as well. Harsha Trust can identify and train few experienced CNG members as community-level extension agents to offer timely support to CNGs and serve as a bridge between technical agencies – KVK, Harsha Trust and CNGs.

- » Community based extension models for agriculture extension depend on project support to incentivise the work of the agents.
- » Revenue based models for extension are more complex where extension agents also provide inputs and marketing services which cross subsidise their extension work.
- » Another option is to explore with SRLM for support to extension agents as Krishi-sakhis.

Usually, it takes 2-3 years to develop a strong cadre of extension agents.

Option 2: Build an informal network of progressive farmers who can support CNGs

Organisations like AKRSP, Spandan, SRLM, IGSSS have been working on natural farming practices in this area. All/most of these organisations have lead progressive farmers who can be introduced to CNG members for handholding support.

Harsha Trust can create a list of available lead farmers block wise or cluster wise, mapping different CNGs to these resource persons. This step can be done in consultation with various organisations.

These practitioners who are the peers of CNG members, can help in better adoption of practices. The learning will be informal and need-based, and practical.

E. Expenses incurred by CNGs

As low input farming is being followed by CNGs, also a lot of land development expenses get covered under MGNREGA, currently not much is being spend by members for crop cultivation. See Table 13.

Table 13: Activities for which expenses incurred

Activities for which expenses incurred	
Purchase of seeds	81%
Land levelling	67%
For irrigation	26%
Fencing	26%
Purchase of farmyard manure	15%

Some members have shared that for producing kharif crops they may have spent around Rs3000-5000, most of which is for seed purchase, getting manure/cow urine for preparation of bio-inputs, irrigation costs- for the CNGs which have diesel pump, and for pipes, etc. Land levelling costs would likely be reimbursed by the Gram Panchayat.

3.2. Production Practices of CNGs:

Current cultivated crops

Most CNGs are able to take Kharif and Rabi crops as they have sufficient water for 2 seasons. Among the studied CNGs an equal number of CNGs have got sown 1 season & 2 seasons till now, while only a few CNGs have taken it to the third season so far (see Table 14).

Table 14: Cultivation of crops

Seasons of cultivation- including the Rabi 2024 season.	No of CNGs
1 (This is the first season)	12
2	13
3	2

A variety of crops have been cultivated in the CNGs –a maximum of up to 13 varieties in Rabi season and up to 5 varieties in Kharif. Fruit samplings have been planted in more than 80% of surveyed CNGs (N=27) and around 3–4 different fruit varieties are planted by most CNGs.

Based on discussion with members and implementation partners, the major considerations for selection of crops to cultivate in their CNGs are:

- 1. Suitability of land:** Some CNGs have issues like flooding during rains (Khadki, Amalpura) as they are near rivers/in the path of water flow, so they may have to go for partial cultivation in Kharif. Such CNGs may opt for paddy, maize cultivation, as vegetables may not be possible.
- 2. Availability of water** – as discussed in detail in the section on irrigation.
- 3. Security concerns:** There are various reasons for security concerns such as village folk stealing/randomly plucking vegetables, livestock being let into the CNG. These are some of the reasons for CNGs not cultivating a variety of vegetables. Some CNGs have already fenced their plots or planning to go in for fencing to avoid these issues.
- 4. For own consumption:** There is a preference

for cultivating crops that they consume regularly, produce that is generally expensive and out of their reach like sesame, groundnut, or crops that were cultivated earlier but now discontinued for various reasons. Similarly, there is an interest to cultivate crops that can be stored and used for a longer period– like dals (lentils), cereals, coriander seeds, methi seeds (fenugreek seeds), garlic, ginger. During discussions with members, it came out clearly that they are looking to cultivate produce that they currently purchase from the market with the outlook to reduce their expenses.

Members did not specifically express that they are interested in cultivating crops which have more demand in the market or may generate them an income. One of the reasons for this is because they are cultivating naturally, without any use of chemicals. Women share that since they do not get any price premium for naturally cultivated produce in local markets and mandi, and because the yields are lower in comparison to conventional chemical farming, they prefer to cultivate for home consumption only.

There were, however, indications from some members that they are just starting with production, and the focus till now has been to get the land ready and start production, and going forward they would be interested in selling surplus produce in the markets. When asked specifically, members responded that they may want to cultivate crops that may fetch them better prices, but not at the cost of food security. Primarily, they want to ensure that HHs get adequate vegetable supply and after that they would look at cultivating specific remunerative crops (see Table 15).

Crops that members are interested in cultivating

Members are interested in cultivating crops that they do not cultivate in their own fields, and those food crops that are expensive when they go to purchase in market. Fodder cultivation or cultivation of medicinal plants did not come up during FGDs as well in the quantitative survey, even when probed.

Table 15: Varieties of Crops Cultivated in CNGs

Crops cultivated by most CNGs		Crops cultivated by few CNGs only
Vegetable crops	Bottle gourd, sponge gourd (gilki), tomato, brinjal, okra, radish, carrot, green chillies	Cabbage, cauliflower, beetroot, cucumber, peas, cluster beans, lima beans, pumpkin, onion, potato, cow pea, etc
Green Leafy	Corriander, methi (fenugreek), palak (spinach)	
Pulses		Gram (chana), black gram (udid), green gram (moong) and red gram (tur)
Others		One-off CNGs have cultivated maize, paddy, groundnut even rajgira (Amaranthus) and millets too.
Fruits	A good diversity in fruit crops is observed – medicinal (amla, moringa), fruits (guava, mango, sitaphal, jackfruit).	Varieties like sapota, orange, ramphal and neem have been planted in 1-2 CNGs only

One reason is unavailability of water, and practices like open grazing and that very few members rearing livestock commercially, so members are not oriented towards fodder production. Further it does appear that members feel that the land has been provided to them to grow crops that can be consumed rather than for selling or for income (Table 16).

Table 16: Desired Crops in CNGs

Interested Crops	
Cereals	Maize, bajra, jowar, millets, paddy
Pulses	Various dals – red gram, green gram, masoor, chana, black gram
Vegetables	Onion, ginger, garlic, potato, creeper crops (as they do not need space) and more variety of vegetables, yams, and tubers. There is interest in cultivating chillies, as the chilly cultivated in this area is special, spicier.
Oilseeds	Groundnut, sesame
Flowers	Various flower varieties like marigold
Others	Crops that require less water

3.3. Managing harvested produce

Current Practices

While around 21 CNGs out of the 27 surveyed had taken some harvest at the time of the study, only 5 CNGs (Borkheda, Khadki, Bhutni Kheda, Babanda, Tityajoshi and Golkheda Raiyat- 1) had sold any surplus produce.

Table 17 gives production data in rabi season for a few CNGs for top 5 crops.

» Members shared that only after distributing the produce among their members is the surplus sold. Produce like groundnut, maize, red gram (tur) which can be stored is not sold and only vegetables are sold. When members were specifically asked the reasons for selling produce almost all CNGs stated that it was because it was surplus, and only 1 CNG (Tityajoshi) said it was for income.

» Further, most CNGs had sold the surplus to their neighbours, only 1 CNG had sold to Anganwadi centre/Mid-Day Meal and in mandi, while a couple other CNGs had sold in the Khandwa market and in the local market.

Considerations in managing produce

Below are the experiences and thoughts of members with regards to sale of surplus produce:

1. Getting payment when sold in village:

Members shared that hand cart vendors visit the village regularly to sell vegetables and fruits. Ideally, CNG members too should be able to sell vegetables within the village itself as HHs largely purchase vegetables & fruits, but they also shared concerns that selling in the village comes with its set of issues – people may not pay money, also since CNG land is GP land and not fenced, women are hesitant to take on village folk/ demand for money as they may damage crops or sour relationships.

Members of Borkheda CNG however, felt that while there could be issues of getting payment when selling in the village initially, over time people will realise that they mean business and it should not be a problem. This view was not shared by other CNGs, we interacted with, and women were quite hesitant. A couple of members who had started a chicken shop shared that they were unable to get money from HHs in the village and only shops in market places work. Similar experiences were shared by members who started enterprises like flour mill or a tailoring shop.

2. Selling to AWC / MDM: Members feel that sale to Anganwadi / Mid-Day Meal centres may not work out as

* Requirements are quite low. Typically, AWC/ MDM's requirements for a month could be: Chana dal (gram): 1-2 kg, Tur dal (red gram): 6 kg, Moong dal (green gram): 3-4 kg, Vegetables: around 3-5 kg (including tomato, potato, onion), which works out to once or twice a week purchase of 0.5 -1 kg of vegetables.

Table 17: Production Data of CNGs for Top 5 Crops in Rabi Season

	Khadki	Amalpura	Bhutni Kheda	Golkheda Rayat-1	Tithiya Joshi	Borkheda	Badgoan Gujar	Bamanda	Bothiya
Crop 1 – total production in season	266	140	100	90	40	90	50	50	40
Crop 2 – total production in season	144	90	50	50	40	50	50	40	25
Crop 3 – total production in season	120	30	50	40	40	40	30	20	15
Crop 4 – total production in season	100	30	40	30	37	30	20	10	15
Crop 5 – total production in season	35	30	35	30	35	18	10	10	15
Average production per CNG for top 5 crops	133	64	55	48	38	46	32	26	22

- * These centres receive very less money for preparation of food, so to keep costs low they purchase low quality foodgrains and vegetables that are priced low. Further payments could get delayed as the centres themselves don't receive money on time.
 - * In some locations, AWC "didis" are already taking vegetables from CNGs at no cost.
3. Selling in weekly market & mandi: Members were not very sure about how they can sell extra produce. Most members have not given it much of thought as to what to do with surplus produce, where, to whom and how to sell it, and feel that they may have to try and only then will they know.

Significant points that emerged during discussions are:

- * Members would prefer to use CNG produce for their HH as it is organic/natural and what they purchase from market is chemical. Particularly, because they may not get a premium in case CNG produce is sold in local markets.
- * Weekly markets which are at 3-4 km from their villages can be a good option for sale of produce. Farmers in their village are already selling in weekly market. Also, they are open to selling in mandi. But they are unsure how they can take produce to Khandwa and sell in retail to customers directly.
- * Ideas like pooling produce with other CNGs and taking it to a market were brainstormed, for which members shared that within their CNG they can sell collectively but they were not sure of collaborating with other CNGs and letting them market their produce or them marketing produce of other CNGs. Women shared that they do not know the other groups, logistics and payment could be a difficulty.
- * Support from male members will be available in case they want to sell produce in local markets – feel taking help from male members initially will be needed for transportation and selling. Once they get the experience, they will be able to manage it themselves.

The experience of members who have sold produce in weekly markets & mandi has been underwhelming. The key learnings from the experience as shared by members are mentioned below:

- a. Received lower price than they had hoped for. Prices in mandi were very low, while at weekly market they were better. Customers unwilling to pay more for jaivik, in fact as the produce did not look very appealing, they received lower prices. The CNG member's observation was that taking produce to the mandi yielded low prices. One example was that one small truck load (few quintals) of cabbage was taken to the mandi and sold for Rs.1000/- on that day which CNG members felt was too low.
- b. Not enough planning: The couple of sales done by members have been last moment decisions, when faced with surplus. There was no handholding or guidance provided for selling, or prior planning.
- c. Members felt demotivated by the low prices and dismayed by "all the trouble they had to go to for making such a small sale".

The CNG members mainly grow vegetables as per their consumption requirements and surplus is first distributed to interested people in the village, and then any further surplus is taken to the market. As consumers themselves, the CNG members have an intuitive understanding of the market requirements – such as fast moving (like leafy greens), high value (like chilly) products.

The main recommendation of the study is to not to plan for crops with primary intention to sell them in the market. The demand in the market is for vegetables with good appearance, and there is no preference/demand for organic produce or SHG produced vegetables. This demand will have to be gradually created through selling to discerning customers – through weekly markets or Ajeevika outlet as explained in the subsequent sections.

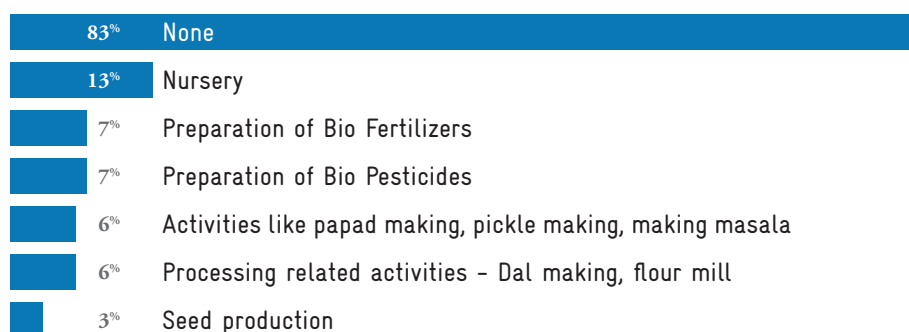
4. Value Addition of Produce: As a surplus has not been high no CNG has done/thought of any value addition activities. In general, very few members have experience of doing any kind of value addition activities or running such enterprises. In Golkheda, one member shared that since they have more land their family has been cultivating turmeric which is processed and then sold in local markets (see Figure 11).

Members, though interested in activities like making coriander seed powder, chilli powder, papads, etc, also were hesitant as most HHs have chakkis, and may prefer to purchase dhaniya seeds and powder them, while for mirchi and turmeric they may prefer powder as currently it's a practice to go to a mill and get it powdered.

Based on experience and as shared by SHG members involved in making masala powders etc. at the Ajeevika Bazaar fair, it is known that getting the product right takes time – a minimum 2 years, also a lot of training and considerable support in terms of equipment (powdering machine, packaging machine, etc.) and marketing support is required initially.

However, it is recommended that members who are interested in pursuing such activities be given the trainings and required exposure to such enterprises. Once members get comfortable with selling fresh produce in weekly markets, they can add on such products on trial basis and then based on customer feedback and the gained experience can look at increasing the range of products and quantities.

Figure 11: Members involved in Value Addition activities or agri-enterprises



4. Success Factors and Benchmarks

Based on the analysis of the current situation, and the gaps and opportunities, success factors and benchmarks for proposed interventions are illustrated as guiding principles of what can be done and what can be avoided and some ways to check the same.

Table 18: Key Consideration and Benchmarks for Effective CNG Intervention Strategies

Factors	Can be done	Can be avoided	Benchmarks
Intervention selection process for CNGs	CNG-wise plans considering their strengths, resources, skills and aspirations	"One Shoe fits all" uniform planning for all CNGs	<ul style="list-style-type: none"> - Updated Data of CNGs requirements, crops, surplus collected and used - Participatory planning exercises conducted with CNGs with options presented and relevant ones selected by members
Complexity of Interventions	"Entry point" or "low hanging fruits" – simple interventions which give immediate results and motivate CNGs to work further on long term initiatives	Complex interventions which take 3–5 years of dedicated project support and extensive trial and error to get results	<ul style="list-style-type: none"> - Suggested options are proven to work and simple and can yield results within one year.
Learning required for new interventions	Taking the support of experienced technical agencies which have developed models	Avoiding expensive and time-consuming efforts in reinventing the wheel, on interventions which are not core competence	<ul style="list-style-type: none"> - Linkages with experienced partners who have ready to deploy solutions with some customisation
Evaluating cost benefit of intervention options	Consider not just economic but empowerment and aspirations of CNG members while evaluating cost benefit	Purely economic considerations which might turn out to be counter productive	<ul style="list-style-type: none"> - Systematic and holistic evaluation of intervention options in consultation with CNG members
Scale of interventions	Developing CNGs as a network sharing individual strengths for collective benefit through steps that improve cohesiveness and thinking as a collective	Thinking of CNGs as just separate/individual entities and working with them individually	<ul style="list-style-type: none"> - Analysis based on data of strengths and various forms of surpluses of CNGs and how CNGs can work as a collective
Purpose of interventions	Enable CNG members to further pursue their primary goals – viz nutritious food, and plan accordingly	Planning for market-based crop production aimed purely at income generation	<ul style="list-style-type: none"> - Crop planning for CNGs taking into considerations their nutrition needs balanced with income generating opportunities

5. Potential Business Models for CNGs

5.1. Enterprises related to forward linkages for CNGs - Potential marketing channels

There is no institutional marketing organisation (like an FPC / other organisations) in Khandwa which are supporting producers in direct sale of jaivik produce to customers.

AKRSP which has been working in the region for decades now, works extensively on natural farming extension, but the benefit is cost reduction and environmental sustainability, not better price realisation for organic. The challenge is farmers tend to use some chemical or the other, so it is not possible to guarantee organic, and consumers tend to associate quality of vegetable with external appearance (no presence of insects, any form of damage etc). Also, there is no premium available for organic through conventional market channels like mandi.

Models such as selling to health-conscious urban customers through outlets in Khandwa will have to be experimented with, which requires project support for a longer period and cannot be done in convergence with government schemes alone.

The options for CNGs to market surplus produce are:

- » Sale through Mandi
- » Sale in Weekly markets
- » Sale through Ajeevika Bazaar in Khandwa

CNGs do not have a competitive advantage in the mandi. The mandi is the major market where most of the vegetable gets traded, also from other districts and states, and it serves as the benchmark. It's a place for trading large volumes, which CNGs will not have unless they go for mono-cropping or collective procurement from all CNGs is planned.

It is not recommended that CNGs take their produce to mandis - however, they can understand how market operates, use logistics used by mandi traders and use mandi prices as reference for setting prices for their produce.

Selling in weekly markets is a more feasible option for CNGs, while selling in Ajeevika Bazaar may work out for CNGs that are close to Khandwa or in case sufficient provision for initial marketing support is made available.

Details of these 2 options are as outlined in Table 19 and Table 20.

Some glimpses of weekly market at Gudi, visited during the study:



A lot of different products are sold in these vibrant weekly markets varying from vegetables to sarees to grocery and medicines. It's a go-to place for rural HHs.



Table 19: Option 1 – Sale of Produce in Weekly markets

Option 1: Train few CNG members as vegetable vendors who can sell the produce of their CNG and of other CNGs in weekly market	
Opportunities	<ul style="list-style-type: none"> » Ease of access: Weekly markets happen one each day of the week in different places. CNGs could choose those that are close to them. Also, these markets are frequented by rural HHs, and will have assured footfalls. » Low entry barriers and presence of a well-established ecosystem – in terms of suppliers of low-cost weighing scales, low-cost transport, etc., connecting sellers to weekly markets. » Entry level activity: Once comfortable with selling in these markets, members can look at selling value added products like pickles, papads, speciality items. For fruits also these markets can be a good place to sell. » Low capital requirement (less than Rs 5000): Except for some rudimentary requirements like weighing machine and tarpaulins/mats, no other requirements. Low capital also means that it provides new entrants opportunities for trial and error, without major risks. » Scope for a neat profit: Overall, there seems to be enough market for multiple sellers in such markets. Sellers at the market shared that they were able to sell off all their produce at a profit by adjusting the prices. <p>(More details about Weekly Markets in Annexure – 3)</p>
Considerations / Support Areas	<ul style="list-style-type: none"> » It requires some experience and skills to effectively sell in weekly markets, trial and error currently can prove to be frustrating and demotivating for first time sellers in weekly markets. » There is no premium currently available in weekly market for organic vegetables – the premium is for traditional/desi varieties. » Cost of transportation (minimal, if they can use existing transportation routes), labour costs of spending a day in the market (usually sales pick up later in the evening). » Members must be willing to spend almost a day at the market. » May not work for CNGs which are at a distance of more than 7–8 km. Such CNGs can get into an arrangement with other CNGs which are closer to these markets.
Recommendations	<ol style="list-style-type: none"> 1. Selling in weekly markets will need handholding as well as orientation on business and planning for selling and production planning too. Generally, women will be able to figure this out as they are quite hands on but the learning process will require at least 2 more seasons (with the group having a clear focus on selling surplus). 2. Women, when supported with required training, handholding and adequate exposure, generally do well in selling/trading activities. Some women tend to do well/thrive better than others – identifying such women becomes key to get interventions such as these off the ground. 3. CNGs can identify women who are willing to sell regularly at weekly markets. These women need to go to weekly market every week or multiple times every week and can be handheld by mentors over a period of 1–2 months to get familiar with the market and experienced to sell on their own.

4. A social enterprise, Gramunnati has a cadre of Community Rural Entrepreneurs (CoRE) who have experience in setting up weekly markets in Maharashtra (districts like Wardha, Osmanabad, etc) and can train/support/mentor CNG members to sell effectively in weekly markets /haats. This can be done immediately, i.e. within a few months.
5. Field staff of implementation agency must be capacitated and adequately oriented to support members in such marketing activities.
6. Entrepreneurship development training including business plan development, access to finance and credit, markets etc. can also be an additional option. ERADA has a partnership with Entrepreneurship Development Institute of India for a 5-day certified micro-enterprise development training, that is then followed up with mentorship support for a few months, buyer-seller meets, linking them to finance and government programmes etc.

Table 20: Option 2 – Sale of Produce in Outlet (Ajeevika Bazaar)

Option 2: Sale of vegetables and fruits through Ajeevika Bazaar in Khandwa	
Opportunities	<ul style="list-style-type: none"> » While weekly markets service rural customers, urban customers still depend largely on retailers who purchase from the mandi and therefore are not having access to chemical free vegetables that CNGs can provide. » The mandi is not an option for the CNGs to reach urban customers, thereby necessitating alternative channels where CNGs can directly reach urban customers. » CNGs can use the outlet which is offered by Ajeevika Bazaar of NRLM for SHG women. The outlet is available for use by CNGs and is in the campus of the collectorate. » The outlet is available for immediate use, at no-cost. It is in a place which is easily accessible for government officials and urban customers. » CNGs can use social media platforms to promote the sale of vegetables at the location, forming WhatsApp groups of interested customers and giving them updates of cultivation and availability of produce in the outlet. » CNGs can also experiment with ideas such as preparing baskets of vegetables and getting prior orders from customers and using the outlets as supply points. <p>There is not much competition in this space currently. During the study, we did not come across any other seller of chemical free vegetables.</p>
Considerations / Support Areas	<ul style="list-style-type: none"> » Common urban customers do not frequent the Ajeevika Bazaar, as its situated within the collectorate. Therefore, it might not result in sales if CNGs simply bring their vegetables and place it there. There is risk of spoilage or of wastage if there are rejects or delays in selling. To manage this, supply can be based on pre-orders, which comes with its own set of complexities, particularly for first-time, semi-literate, rural entrepreneurs. » Significant support from the project will be required initially to get something like this started, both in terms of getting members ready to supply regularly, have the required system and operations in place, manage rejects and unsold produce, maintain records, sales skills.

Considerations / Support Areas (Continued)	<ul style="list-style-type: none"> » Some capital investment would be needed for purchase of weighing machine, crates, containers, promotion material, etc. » This may not work for CNGs which are at more than 15 km from Khandwa. Such CNGs can get into an arrangement with other CNGs which are closer to Khandwa, transport routes will need to be established to link more CNGs.
Recommendations	Successful model of vegetable marketing to urban customers by SHG women has been demonstrated by Sarva Shikshan Prayaog (SSP) in Osamanabad and Solapur in Maharashtra. CNG members and field staff can be taken for exposure visit to the intervention to understand how they can start similar initiatives in their region.

5.2. Allied Livelihoods / Side enterprises for CNG members

A. Goatary

CNG members (56% respondents) (N=90) have mentioned Goatary as their preferred choice of enterprise, during the study. Further, a sizeable number of members are already rearing goats (around 35%).

CNG members are following traditional practices and facing challenges of high mortality of goats, low productivity and reduced-price realisation. AKRSP which has been working on goatary in this region had done a study of control vs AKSRP villages where Pashu-Sakhi model was operational. In control village mortality of goats was around 22% whereas in AKRSP villages, the mortality rate was around 5%.

The model for work on Goatary is well established and there is a well-functioning FPC (Pandhana Pashu Palan Producer Company Limited - PPPCL) in the same area where the CNG project is going on.

Spandan, an organisation that works in the area has around 35+ Pashu Sakhis (livestock extension workers) in Khalwa and nearby blocks, are currently earning a decent income of Rs 300-500 per day by providing various services to goat farmers. CV Raman Institute is a useful resource institute in Khandwa to provide training on goatary (Referred by The Goat Trust, which works across the country on the goat value chain). See Table 21.

B. Backyard Poultry

CNG members have also mentioned poultry as a livelihood of choice for them, though only 4% members are having back yard poultry currently.

Reasons shared by members for not having Backyard Poultry (BYP)

- » During FGDs, members shared that they had poultry earlier but due to high mortality they have stopped rearing.
- » Poultry birds make lot of noise and smell of birds make it difficult to rear birds within the home. It was explored if the poultry birds can be kept in the CNG, members shared that risk of theft is a concern, also animal attacks at night.

Recommendations:

1. Back yard poultry is important from nutrition perspective (major source of animal protein) and can generate income. Members have experience in rearing poultry, some focussed training can help them improve earnings also more members may want to take it up as an individual or CNG enterprise.
2. Like goatary, early-stage interventions in Poultry, focussed on behavioural change and awareness on vaccination, proper feeding of birds can be introduced in villages where CNGs are operating. PPPCL (Pandhana Pashu Palak Producer Company) is also providing services to poultry farmers. CNG members can be enrolled as members of FPC.
3. In CNGs which are located within the village, and members show interest, poultry sheds can be kept in the CNG itself. It will be necessary to fence off the CNG.

Table 21: Opportunities, Considerations and Recommendations for Integrating Goatary into CNG

Scope for early-stage interventions in Goatary to increase income for members having goats and exploring possibility of having goatary as a CNG enterprise	
Opportunities	<ul style="list-style-type: none"> » CNG members are already working on goatary and interested to work to improve their practices in goatary. » Early-stage interventions in goatary focussed on behavioural change and awareness on preventive care (deworming, vaccination) of livestock can be introduced in villages where CNGs are operating and CNG members can be enrolled as members of FPC. » Adoption of simple practices have known to result in better outcomes and increased income from goatary. » Multiple support options to train and handhold members interested in this activity – Pashusakhis of PPPCL and Spandan.
Considerations / Support Areas	<ul style="list-style-type: none"> » Goatary is not directly related to CNGs. » While CNG members already have goats, some capital costs might be involved in construction of improved goat sheds etc., which come under the ambit of NREGA works. However, initial costs of costs of awareness camps, vaccination, deworming and other services may have to be supported by the project. The benefit to members would be in the form of improved income from goatary. » After interaction with the FPC, and few pashusakhis, they are keen to work in villages where CNGs are functioning and provide support services to the CNG members and other goat farmers in the village. <p>(Approximate costs of conducting training camps is shared in Annexure 4)</p>
Recommendations	<ul style="list-style-type: none"> » Mobilise goat farmers and approach PPPCL to offer services in their villages. CNG members could become members of PPPCL. » Can be taken up immediately and results can be seen within one year. » CNG members might not have space to increase their goat herd size, so options of having a shed on CNG can be looked at.

C. Fishery - seedling production

Under the MGNREGA programme several types of works are identified which belong to water conservation and extends to fisheries and pond-based livelihood. Support for Constructing Pokhar or farm ponds and raising nursery for fish seed production is available under NREGA. There are few potential CNGs with access to water in ponds, which are interested in fisheries.

Main fisheries in the district are happening in Pandhana, and the Fisheries Dept has a hatchery with 50 lacs production capacity (of standard fry). Fisheries department shared that there

is huge potential for seed production in the district, which they are unable to fulfil demand and getting seeds currently from Khargone and Hoshangabad. This demand can be fulfilled by CNGs (see Table 22).

D. Cultivation of Medicinal plants

Madhya Pradesh government has been promoting the cultivation of Medicinal and Aromatic Plants (MAPs) such as Ashwagandha, Shatavari, Safed Musli, Basil (Tulsi), Lemon-grass, Aloe Vera, under various schemes. The Devaranya Yojana being one of them. Some of medicinal crops can be cultivated with less

Table 22: Scope for CNGs producing seedlings

Scope for CNGs producing seedlings in small ponds and selling seedlings to fisheries cooperative societies in Khandwa district.	
Opportunities	<ul style="list-style-type: none"> » There are 95 societies in the district with annual requirement of around 477 lakh fry. Nearly 300 lakh fry is coming from outside – West Bengal, etc. » Access to better quality and timely seed availability is one of the prerequisites for the inland fisheries sector. » Seed production in the district was just about 50% of the set target (100.81 lakh fry produced in '22-23, with a target of 200 Lakh fry). » Seed production can be done in small water bodies of 0.1 ha with sufficient depth.
Considerations / Support Areas	<ul style="list-style-type: none"> » There are risks in nursery – availability of water needs, pond should not flood or overflow. The ponds must have lining. A lack of natural feed will impact production, etc. » Capital requirement for setting up small nursery using low-cost materials. Costs of fish seed, feed, bags and labour for maintaining the pond and harvesting and packing the seedlings. » Pradhan Mantri Matsya Sampada Yojana provides funding for fisheries, and its comparatively easy to access these funds. » Fisheries department does not provide trainings. Training will have to be availed from Jaljeevika, an organization working on inland fisheries, that offers services to SHG members interested to work on fisheries.
Recommendations	<ul style="list-style-type: none"> » Identification of potential CNGs with small ponds, interested in establishing low-cost seedling nurseries. » This can be taken up immediately and results can be seen within one year.

water and in soils of medium to low fertility and could be remunerative to farmers in comparison to conventional crops.

In the Khandwa region, marketing support in the form of Krishi Namami FPC is available to CNG members if they decide to cultivate MAPs. The shareholders of KrishiNamami are Ajeevika SHG members, and some CNG members are already shareholders of the FPC. A Board of Director of the FPC- Kalpana ji, is a member of the Golkheda CNG.

The FPC's major service offerings currently are:

- » Agri-extension for cultivation of Kusum (Safflower)
- » Procurement and marketing of Amla, Hirda, Beheda (an NTFP produce), kusum flowers & seed, nimboni (fruit of neem tree). The produce is collected/cultivated by SHG members and marketed by FPO.

- » The FPC also plans to get into promotion of lemon grass and plans on setting up a distillation unit in the area. This is however in the pipeline and no farmers had started cultivation of lemongrass at the time of the study.

The FPC is currently looking to increase its membership base and also targeting increasing acreage under Kusum cultivation. The FPC has tied up with companies like Dabur for sale of produce.

About cultivation of Kusum (Safflower)

Kusum is a 4-month crop which is cultivated in Rabi season (September –end sowing – January –end / February harvest). It requires similar amount of water as required by chana crop – and it thrives well in residual moisture from kharif season along with around 2-3 critical irrigation which can be provided from farm rain-water harvesting structures too. It grows well in soils of medium fertility; however the yield may vary depending on soil fertility.

While currently Kusum is being cultivated using chemical farming methods, the FPC CEO shared that it's possible to cultivate the crop using bio-inputs.

- » Current cost of cultivation: Rs 12000–14000 per acre (including labour costs)
- » Yield: One acre yield around 40–50 kg of dried flowers and 200–300 kg of seeds (yield varies based on soil fertility).

» Price: Last year the FPC procured seeds at Rs 35 –40 /kg and dried flowers at Rs 500–600/kg

» Income per acre: Rs 28000–35000/acre

» Profit per acre: 14000–23000/acre.

(These are back of the envelope calculations, a detailed cost –profit estimate can be got from the FPC). See Table 23.

Table 23: Scope for cultivating Kusum (safflower) in CNG

Opportunities	<ul style="list-style-type: none"> » The FPC currently provides support for cultivation Kusum (safflower) as well as procures its seed and flowers from its member farmers. » Key informants have shared that in Karnataka and Telangana, the crop is cultivated as an intercrop, and in some places as a fence crop to keep away cattle. This need to be checked with the FPC. » Safflower seed oil can be extracted in a typical Ghani (oil extraction unit), and the oil is known to have several health benefits and can be used like other oils such as groundnut oil in daily cooking. (It is to be noted that while FPC members are aware of this, all of them sell the seeds, it did not come across that members are extracting oil to use for own consumption). » In certain districts of Karnataka, safflower seed is used to make a spice powder (kusubi chutney podi) that is consumed with rice / bhakri. It is a flavourful side dish packed with several health benefits.
Considerations / Support Areas	<ul style="list-style-type: none"> » A crop like Kusum directly competes for space with food crops like chana, wheat and vegetables in Rabi season. For most CNGs, Rabi is an important season as a variety of vegetables are cultivated in winter. » Krishi Namami FPC is promoting the crop in 1 acre per farmer. It's unclear if the crop when cultivated in a smaller patch, like 1 bigha, will still be remunerative. This will need to be explored as cultivation of 1 acre of kusum may not be possible in a large number of CNGs. » Capital required: Crop requires more labour and weeding operations. Considering that the crops currently cultivated in CNGs are with minimum input, whether the members will be able to pool in the input costs. In terms of labour, the 8–12 women in each group would likely be able to manage cultivation without hiring any extra labour. » Pest management: The crop is prone to leaf spots, wilt, etc., which necessitates spraying with chemical pesticides. But these can be managed with good bio-inputs too. » Harvesting the flowers is challenging, as the plant has sharp spines on its leaves. Women shared that they found the harvesting difficult, and it requires getting adjusted to. In Dharwad Agriculture University (Karnataka) thorn-less varieties of safflower are available, which can be tried after consultation with experts and FPC.

Considerations / Support Areas	» During FGD, Golkheda CNG members did not specifically mention their interest in cultivating a crop like Kusum in their field. When cross-checked with them after interacting with Krishi Namami CEO, they shared that considering that CNG is primarily aimed at ensuring food security and nutrition, they are not sure whether this crop can be cultivated in the CNG – as income is not the objective in CNG. Also, CNGs may not have enough land to take up cultivation in 1 acre or 0.5 acre even, water could be a constraint too. They felt bigger CNGs may consider in case they are looking at income.
Recommendations	<ul style="list-style-type: none"> » CNGs can look at Krishi Namami FPC for sale of medicinal produce like amla and neem products. » With respect to kusum, FPC members were still not very clear about profitability. It's still very early days to be sure about how remunerative the crop is. However, it qualifies not just as a medicinal crop but is a food crop too. It's to be seen if people in the region can adopt it in their regular diet. » CNG members can decide whether to cultivate Kusum (safflower) after interacting with farmers who are cultivating it. Harsha Trust can facilitate the process and support them in decision making.

The potential with respect to other MAPs like Ashwagandha, Basil, Aloe Vera is not very clear. Based on experience of organisations like Spandan which have promoted certain medicinal plants cultivation, it's suggested that it's better to go for crops which have marketing support. In this regard, it would be helpful for CNG members to seek advice from Krishi Namami FPC or other expert agencies and then get into cultivation.



A demo plot of Kusum visited as part of field visit. The leaves are spiny, because of which harvesting is difficult. Experts shared that thornless varieties of safflower are available.

E. Sale of Moringa –pods and value-added products

All CNGs have planted moringa, and the number of saplings ranges from 5 and goes up to 200. Moringa is one of the varieties along with other fruit crops, and it's not being planted as a single crop, keeping with the principles of CNG which focuses on mixed cropping and having a diversity.

It is not clear if the planted varieties are pod varieties or for leaf production, however project field executives shared that it will likely be the pod varieties as the saplings were planted with the objective of getting moringa pods for consumption.

Some gaps that came up during discussion with members and project staff and suggested ways to address them have been listed after discussion with IGSS team and ERADA.

Scope of selling leaves, leaf powder and value-added products:

It is suggested that CNGs look at selling pods. Unlike other greens like spinach, fenugreek

(methi), there is very less demand for moringa leaves in retail market as awareness about its use is less. Moreover, it's not a part of the daily diet in this region. Also, leaves have very short shelf life and wilt fast.

Leaf powder is a volume business and requires large scale plantations. For example, a 1-acre plantation of moringa has around 30,000 – 40,000 trees and yields around 20– 25 quintal fresh leaves. The demand from a small /medium sized enterprise is to the tune of 10 quintal over 3 months. CNGs do not have this kind of large-scale plantations.

Value addition namely making leaf powder at SHG level is not a sustainable business as local demand is very low, almost nil. Already SHGs are making leaf powder. In preparations like moringa laddu, the quantity of leaf powder used is very less as its moringa is just one ingredient among several others (Table 24).

Table 24: Gaps and Solutions for Moringa Sale and Utilisation

Gap Areas	Ways to address
Shortage/un-availability of moringa saplings	<ul style="list-style-type: none">» Survival rate of direct seed sowing is better for leaf varieties and for pod varieties its suggested to go for saplings.» 1 or 2 CNGs can take up nursery of moringa to fulfil demand for a cluster of CNGs. Nursery is raised using seeds and it's a simple process that is being done by SHG groups efficiently. IGSSS can support in this.» It was suggested that nursery be maintained for assured, local demand only as there are several risks in having large-scale nursery and costs increase when saplings need to be transported over distances. A de-centralised, localised nursery works better.
Members shared that moringa is not a part of their diet and they were interested in learning moringa leaf recipes that they can use. Issues regarding palatability of moringa was also raised.	<ul style="list-style-type: none">» There seems to be a lot of focus on health benefits of moringa powder and it being a super-food but less on sharing recipes and ways to use moringa in their diet.» Look at focussing on everyday recipes and using moringa pods, flowers and leaves in dals, rotis, papads and laddus for self-consumption.» Moringa leaves have use as animal feed too – for goats, cattle and hens. Orientation on this can help improve usage of moringa. <p>Reference videos: Moringa as green fodder – https://www.youtube.com/watch?v=BmHI6wiTXZA</p>

Members are not clear where to sell moringa pods

- » As per discussion with experts the yield per tree is around 20-30 kg around 2 times a year. CNGs which have 5-20 trees can easily use this for self-consumption and sell the surplus in weekly markets along with other vegetables and fruits.
- » CNGs which have more plants, can look at selling the surplus in the Khandwa mandi.
- » IGSSS plans to supply pods to Indore for which they are planning collection centres in Pattalda, Roshni and Khalwa, but enroute to Indore produce can be picked up at Khandwa.
- » Harsha Trust can work out the route details with IGSSS and support with one or two supplies after which IGSSS can co-ordinate directly with CNG members.
- » Some CNG group leaders from across CNGs will have to be specifically entrusted with the responsibility of aggregating produce and coordinating with IGSSS for supply.

F. Other Options – Biogas , Azolla Cultivation

Table 25: Gaps and Solutions for Biogas and Azolla Cultivation

Gap Areas	Ways to address
Biogas – small size digester for household use.	<ul style="list-style-type: none"> » Opportunity: There is support available from MGNREGA for construction of the cement biogas unit. » Concerns: <ul style="list-style-type: none"> » Discussions with experts reveal that the cement structure has issues like leakage and the creation of enough pressure is an issue. The ready HDPE units are more user friendly and efficient, which is why most projects prefer to use it. The entire unit costs around Rs 35,000 – 40,000. » The location of the CNG is away from the household. It is advised that the unit should be as near to the household as possible. If a longer gas pipe is used the cost will be increased. Also, biogas is difficult to store and transport. » The rule of thumb says that 3-4 cows are needed to make biogas production viable at household level. Only a few CNGs have good number of cattle. » Suggestion: <ul style="list-style-type: none"> » Biogas may be more suited to an individual set up for farmers who have sufficient cattle. A biogas unit at CNG may not be feasible.
Promotion of Azolla cultivation	<ul style="list-style-type: none"> » Azolla is a feed supplement for livestock and also used in farm to improve soil fertility. » Azolla can be cultivated in the CNGs. It can be cultivated in special bags or in pits. The activity comes under approved NREGA work and interested CNGs can take it up. » Recommendations <ul style="list-style-type: none"> » After providing awareness about Azolla and how it is used, interested members can be supported to cultivate in their CNGs.

6. Skill Gap Analysis

6.1. Training – Current Trainings and Areas of Interest for Members

A majority of respondents (almost 2/3rds) (N=90) feel the need for more training for managing their CNGs. A large part of the training received is in the area of crop management and technical aspects of agriculture (see Figure 12 and Table 26).

Only a few CNGs have been taken for exposure visits. Members are clear about the concept of CNG, what they want to cultivate and why and quite hands-on with respect to dealing with Gram Panchayat.

The members who were taken for an exposure visit to Odisha, seemed more eager and even impatient to try out new things in their CNGs. While the members are part of WhatsApp groups where they receive information about happenings in the other CNGs, it appears that there is not much exchange of information between the CNGs. Most updates are provided to members by the Harsha Trust field staff.

It is important for CNGs to keep in touch with each other and keep sharing their successes,

Table 26: Current Training Areas

Areas in which received training	% Members
Nutrition	61%
Organic / Natural farming	56%
Training on agriculture	39%
Pest Management	22%
Group based savings	21%
Drip irrigation	20%
Water Conservation	17%
WASH	16%
Tree Farming / Wadi	12%
Exposure visits to enterprises	3%

trials and small innovations & experiences with each other. For instance, during field visit there was a discussion in one CNG about security-related concerns for which they wanted to get fencing done. Already a couple of CNGs have done fencing and this information can be sought from those CNGs. Harsha Trust can look at facilitate the process of regular communication between CNGs.

A majority of 70% respondents (N=90) shared that most of the trainings have been imparted by Harsha Trust (Figure 13).

This could be a cause for concern, as being a convergence project, there is the need to get other stakeholders involved and more regularly.

There is also a need for CNGs (through their group leaders) to start approaching government departments for training and advisory. Initially, this can be facilitated by Harsha Trust.

Figure 12: Need for training and information for managing CNG (N=90)

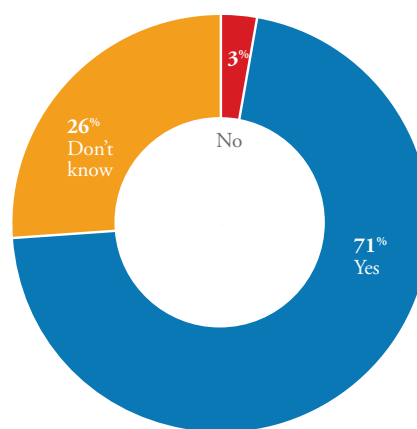
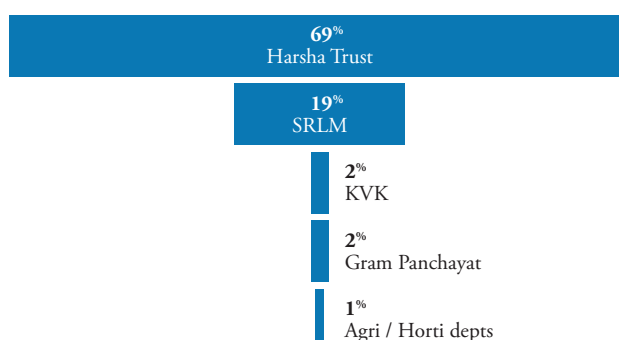


Figure 13: Current Training Providers



6.2. Skilling needs for identified potential enterprises and sustainability of CNG

Table 27: Training Needs and Potential Partnerships for CNG

Gap Area / Enterprise	Training / Skilling Needs	Potential partners / linkages
Rainwater harvesting structures	Creation and maintenance of RWH structure	NREGA, Irrigation Department
Seed	<ul style="list-style-type: none"> » Selection, storage and preservation of seeds » Sowing process for certain crops- many members are not familiar with cultivation of vegetables » Managing seed bank 	Spandan, KVK
Inputs	<ul style="list-style-type: none"> » Scaling up production of bio-pesticides and bio-fertilisers, » Preparation and uses of vermicompost 	SRLM, KVK
Production and post-production-related	<ul style="list-style-type: none"> » Information about crops that require less water for cultivation » Produce planning to get produce for most part of the year » Soil fertility » Post harvest management, particularly in relation to quality requirements for selling, storage of fresh vegetables and pulses 	KVK
Goatary and Poultry	Awareness on best practices	Pandhana Pashu Palan Producer Company (PPPCL) along with AKRSP, CV Raman Institute
Fishery	Seed Production and Management	Jaljeevika
Cultivation of Medicinal Plants	Cultivation and harvesting practices	Krushi Namami FPC
Moringa	<ul style="list-style-type: none"> » Local Nursery management » Uses of Moringa in daily diet » Moringa recipes for consumption 	KVK. IGSSS
Business Orientation training	<ul style="list-style-type: none"> » "What is a business?", "Who are my customers?", "How do I grow my business?" » Planning for my business » Record keeping » Marketing and Networking skills » Mentoring and Handholding for specific enterprises » Soft skills - Working together, Managing conflicts 	Gramunnati CoRE (More details about Gramunnati in Annexure 5)
Leadership training to identified members in every CNG	<p>Developing CNG Group Leaders who can continue to represent their CNG, interact and network with various stakeholders for achieving their plans/goals.</p> <p>Recommended to do this as part of a 3-day Exposure visit at SSP location</p>	Sarva Shikshan Prayog (SSP)

Annexure -1: List of CNGs analysed

CNG Sites Analysed for Macro Data	CNG Members surveyed	FGD conducted by Consultant
Amalpura	Yes	Yes
Babanda	Yes	
BadgoanGujar	Yes	
Bhilaikheda-dam		
BhutniKheda	Yes	
Borkheda	Yes	Yes
Bothiya	Yes	Yes
Golkhedaraayat-1	Yes	Yes
Golkhedaraayat-2	Yes	
Hirapur-1	Yes	
Hirapur-2	Yes	
Kakriyan-1	Yes	
Khadki	Yes	Yes
Khidgaon-1		
Khidgaon-2	Yes	
Kohdad		
Kumtha-1		
Kumtha-1		
Mokalgana-1	Yes	
Naharmal-1		
Piplodkhas		
Singhot-1HighSchool		
Singhot-2Sukta	Yes	
Sitabadi-1	Yes	
Sitabadi-2	Yes	
Tityajoshi	Yes	Yes

Annexure -2: Is there a case for Bio-Input Resource Centres (BRC) run by a CNG?

What is a BRC?

BRCs are typically for-profit enterprises run by individuals or groups who have expertise in natural farming, have a demo plot to demonstrate use of bio-inputs, and have the capital to set-up BRC and run its operations.

A BRC entrepreneur is capacitated on recommended package of practices for various crops, production and handling of bio formulants, building a market and running an enterprise.

Farmers practicing natural farming or those interested in natural farming in the neighbouring villages would be the ideal customers of BRCs, in addition to institutions like nurseries, government agencies.

Some activities that a BRC entrepreneur does regularly are:

- » Production and sale of bio-inputs as per requirements of customers
- » Maintaining and sale of cultures of bio fertilizers and biopesticides for multiplication and use by farmers
- » Training farmers on the preparations of inputs
- » Marketing and networking activities to increase customer base, interact with various government and market stakeholders

Some pre-requisites for potential BRC entrepreneurs include:

- » 3-5 years of natural farming experience
- » Recognised as a progressive farmer in the village
- » A demo plot for field visit
- » Access to cattle – for producing for market at least 4-6 cattle is required, while if producing for self (1-2 acres) even 1 cow/ buffalo will suffice

- » Experienced bio-input entrepreneurs say that they take around 2-3 years of persistent trial and error to get the production process right and produce bio-inputs for market use. Correct temperature and moisture controls need to be maintained to ensure quality. One of the reasons for farmers not taking up bio-input production for self-use is that its time consuming and requires a lot of effort, esp. in the earlier stages.
- » Maintaining quality parameters at competitive rates is a key requirement to supply to buyers/market, including government agencies.

Required support from a resource institution for initial few years

- » Farmers require extensive capacity building on a variety of topics– Technical trainings (package of practices of the local crops including pest management, production and handling of necessary bio-inputs, quality control), along with handholding support, interactions with other BRC entrepreneurs and exposure visits.
- » Procuring quality mother cultures and other relevant inputs.
- » The resource institution/support agency must work with farmers and create awareness on natural farming practices.
- » Initial support to BRC entrepreneur for getting orders from institutional buyers is required or linking them to an institutional marketing mechanism like FPCs which are already operating in the region.

Annexure 3: More about Weekly Markets

Weekly markets happen one each day of the week in different places, along the arterial roads leading from Khandwa. The markets happen in sequence on different days. For ex: Sunday – Dedtalai, Khandwa, Monday – Gadwa, Tuesday – Singot, Wednesday – Piplod, Thursday – Khar, Friday – Gudi. Like this, there are markets in different directions.

- » **Customers & their preferences:** The customers are rural HHs who regularly purchase vegetables at the weekly market. Key informants shared that said customers don't recognise jaivik/natural/organic, as the perception is there cannot be cultivation without use of chemicals. But there is a premium for desi variety. For example: tomato of desi variety sells at 30 Rs a kg vs hybrid variety which sells for 20 Rs a kg. Quality is seen as freshness of vegetables and looks of produce matters. Shiny, big sized conventionally grown vegetables that look fresh will be preferred over smaller sized jaivik vegetables!
- » **Activities done by seller:** The retailers interacted with in weekly markets were regular sellers and most are farmers themselves, some go to weekly market all 7 days a week, while others may prefer to visit nearby markets. It's common to see husband & wife duo managing sale in these markets.

- » The sellers purchase a few vegetables from Khandwa mandi (ginger, garlic which is not grown locally) and have own vegetables as well as get produce from other farmers to sell them in various weekly markets throughout the day from noon till evening to sell as sales happen more in the evening. The sellers are quite satisfied with sale in weekly markets and shared that they earn well.
- » **Pricing & margins:** The rate depends on the purchase costs. For example, if produce is purchased Rs.35 per kg, they sell at Rs.15 for quarter kg. Even low-quality vegetables get sold. For example, low quality onion was kept in plates separately. Customers are more price conscious, but margins are better for higher value vegetables like chillies. During rains they reduce prices and try to sell the stock quickly.
- » **Requirements to sell in weekly markets:** A bill from Gram Panchayat is required to sell, and anyone can sell in weekly markets. No other permits are required. Sellers will need a weighing machine, crates to keep vegetables, polythene bags, some tarpaulins and mats.

Annexure 4: Brief budget of Goatary and Poultry Camps

	Head	Activity	Budget (Rs)	Outcome
1.	Health Camps	Village wise Camps-at a Central location where goat rearers come and vaccinate their goats. Sale of Inputs like Pashu Chatt, Masala Bolus, Mineral Mixture can be conducted at the camps.	5000 Per Camp	*Vaccination and de-worming of goats at the spot. * Sale and purchase of inputs
2.	Training of CNG members on systematic Goat Rearing	Training sessions for Goat farmers. (3 days training)	10000*3	*After awareness/ orientation, goat farmers adopt basic processes like vaccination, feeding practices, etc.

Please Note: These are tentative figures based on discussion with The Goat Trust. The budget could vary depending on technical support agency selected.

These costs could reduce if services are availed from a local resource like the Pandhana Pashu Palan Producer Company.

Annexure 5: A note on mentoring and hand-holding support to entrepreneurs provided by Community Resource Entrepreneurs (CoRE)

Gramunnati.net is a network of Enterprise promotion cadre from villages of Maharashtra. The cadre known as CoRE (Community Resource Entrepreneurs) are men and women from various villages of Wardha, Dharashiv and Ratnagiri districts of Maharashtra.

They are engaged in micro and small business across various domains: vegetables vending, fruit selling, food processing, agri-produce trading, mushroom production, milk business and various other agriculture related activities. CoRE are also engaged in animal husbandry like goatary, poultry, and cattle rearing. Few are having their own non-farm units/businesses like candle making, grocery stores, departmental stores etc. Few are resource persons for FPOs, govt schemes like PMFME etc.

How this team of Community Resource Entrepreneurs was developed:

1. In 2016, a village cadre was selected as Micro Enterprises Consultant (MEC) for their cluster of villages. Post that they gained rich experience in servicing the enterprises of their villages and other locations. They also developed capacities with exposure in district and state level exhibitions.
2. They sharpened their skills of training while catering to enterprises of various trades and domain.

3. They supported various enterprises and their products for availing schemes, skills, loans, linkages, policies and marketing platforms like digital media, social media etc.
4. They became mentors, master trainers, and experts in the enterprise's promotion field.
5. They have supported more than 800 micro entrepreneurs across India.

Now CoRE work as Resource Entrepreneurs Pan India through this social enterprise – Gramunnati.net.

CoRE supports the first time village entrepreneurs by providing the following support:

- » Conducting a village study and market study to assess local demand for their specific produce/product
- » Support in business planning
- » Handhold and mentor entrepreneurs
- » Conduct business skills training, training on record keeping and financial management, digital skills, use of digital tools etc. based on needs.

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