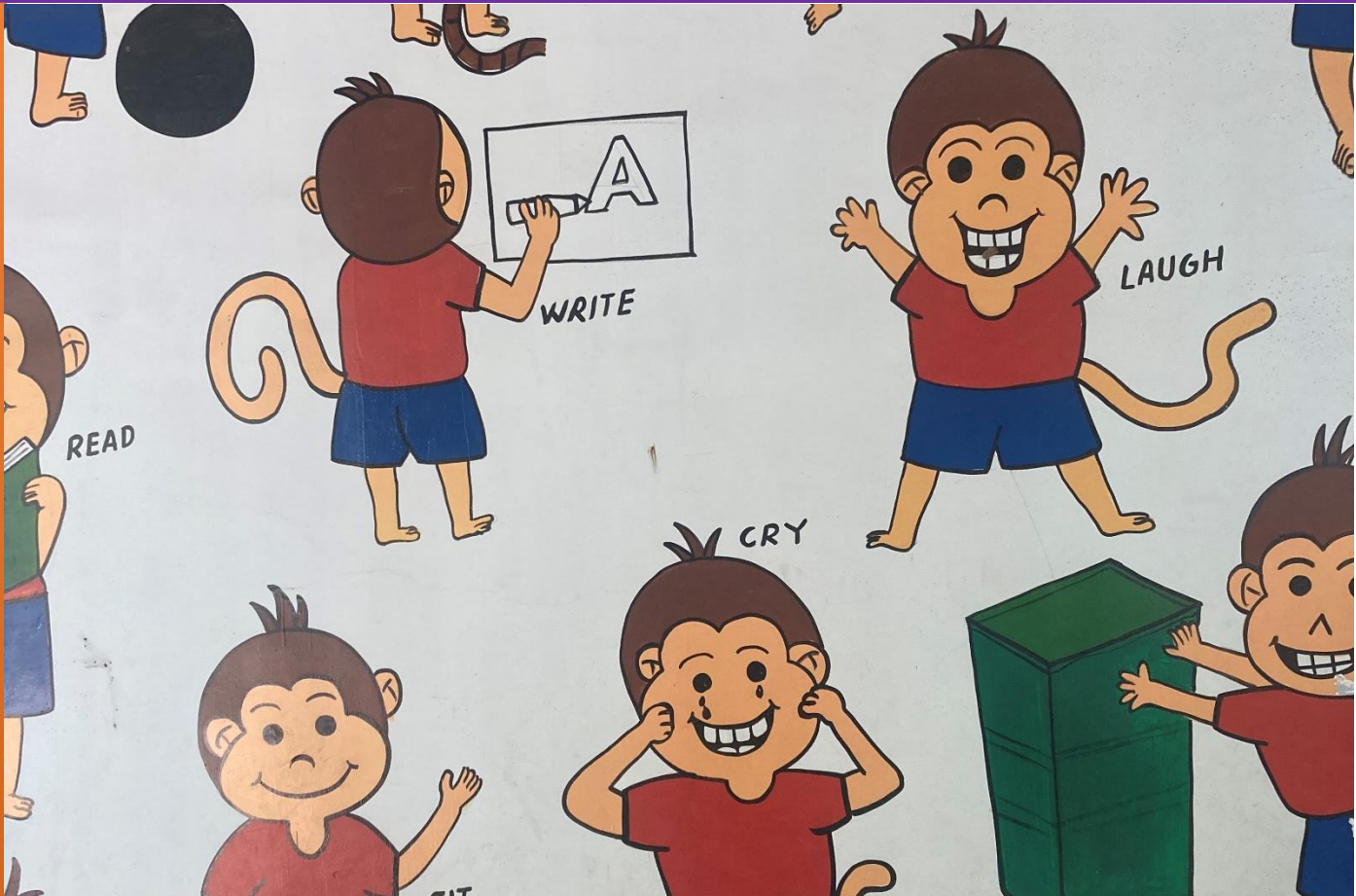


Impact Assessment Study of Holistic Rural Development Programme (HRDP) Sabarkantha, Gujarat – P0270



Prepared For:



HDFC Bank Corporate Social Responsibility (CSR)

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Table of Contents

Table of Contents	1
List of Tables	3
List of Figures	4
Executive Summary	5
1 Introduction	8
1.1 About HRDP	8
1.2 Objectives of Impact Assessment.....	8
1.3 Conceptual Framework Adopted	9
1.4 About the Project Area	9
1.5 About the Implementing Partner – CINI	10
2 Research Design and Methodology	11
2.1 Criteria for Assessment.....	11
2.2 Primary and Secondary Data Sources.....	11
2.3 Sample Size and Distribution	12
2.4 Training of Enumerators	13
3 Programme Planning and Implementation	14
3.1 Selection of Project Area.....	14
3.2 Programme Implementation	16
3.3 Monitoring and Evaluation	17
4 Study Findings	18
4.1 Natural Resource Management.....	19
4.2 Skill Training and Livelihood Enhancement.....	25
4.3 Health and Sanitation	31
4.4 Promotion of Education.....	33
4.5 Holistic Rural Development Index (HRDI)	36
5 Analysis of Assessment Criteria	38
5.1 Relevance and Convergence.....	38
5.2 Sustainability.....	39
6 Recommendations	41
Annexures	43
A Sampling Methodology.....	43

B	HRDI Methodology.....	45
C	Overview of Impact Calculation.....	48
D	Two Sample Proportion Z test.....	50
E	Theme-wise Sustainability Matrix.....	52

List of Tables

Table 1: Summary of Key Income Indicators.....	6
Table 2: Summary of HRDI scores	7
Table 3: Population Sample Covered	12
Table 4: Activities under Four Thematic Areas in Sabarkantha	15
Table 5: Quantum of Activities under each Activity Category across Four Thematic Areas	19
Table 6: Increase in Agricultural Productivity After the HDFC Project	21
Table 7: HRDP Interventions that led to increase in agriculture production	22
Table 8: HRDI Calculation for P0270, Sabarkantha	37
Table 9: Example of HRDI Calculation.....	45
Table 10: HRDI Calculation for Sabarkantha	46
Table 11: Impact Calculation.....	48
Table 12: Z-tests Conducted for P0270.....	50
Table 13: Theme-wise Sustainability Matrix.....	52

List of Figures

Figure 1: Conceptual Framework.....	9
Figure 2: Gender and Age Group wise distribution of Sample.....	13
Figure 3: Planning and Implementation Process	14
Figure 4: Distribution of Sample based on their occupation	18
Figure 5: Education qualification distribution of sample	18
Figure 6: Increase in agricultural income (INR)	20
Figure 7: HRDP interventions that contributed to increase in income	21
Figure 8: Perceived benefits of natural fertilisers	23
Figure 9: Perceived benefits of solar home light.....	24
Figure 10: Overview of Impact and Effectiveness of Interventions - NRM.....	24
Figure 11: Percentage of farmers who learnt new agricultural practices.....	25
Figure 12: Percentage of farmers who received agriculture training on new techniques	25
Figure 13: Perceived Benefits of agriculture trainings.....	26
Figure 14: Perceived Benefits of agriculture practices	26
Figure 15: HDFC Interventions for expanding enterprise/business activity of SHG.....	27
Figure 16: Perceived benefits of livestock interventions	29
Figure 17: Overview of Impact and Effectiveness of Interventions -ST&LE.....	30
Figure 18: Benefits of kitchen garden as reported by beneficiaries.....	32
Figure 19: Overview of Impact and Effectiveness of Interventions -H&S	33
Figure 20: Percentage of teachers who reported different interventions under education in their school.....	33
Figure 21: Capacity building support received by teachers through HRDP	35
Figure 22: Perceived benefits of infrastructure interventions according to teachers.....	35
Figure 23: Overview of Impact and Effectiveness of Interventions -PoE	36
Figure 24: Domain and Indicator Weights	45

Executive Summary

The study centres on evaluating the impact of the Holistic Rural Development Programme (HRDP) implemented by HDFC Bank and executed by Collectives for Integrated Livelihood Initiatives (CinI) in the Sabarkantha district of Gujarat from April 2019 to September 2022. This research primarily focuses on comprehending the overall processes undertaken by HDFC Bank and the implementing organization throughout the programme's activities. It explores key milestones, assesses the impact generated, and identifies challenges encountered. The intervention's key areas are Natural Resource Management (NRM), Skill Training & Livelihood Enhancement (ST&LE), Health and Sanitation (H&S), and Promotion of Education (PoE). The framework used for the impact assessment was an adaptive version of the Development Assistance Committee (DAC) criteria - Relevance, Effectiveness, and Sustainability. A comprehensive methodology, comprising both qualitative and quantitative primary data collection, was used for the assessment involving all the key stakeholders of the programme. The study included a sample size of 303 household beneficiaries as well as 99 education beneficiaries.

Natural Resources Management

HRDP focused on interventions under natural resource management, encompassing activities such as check dam construction, nala plugging, widening of stream, drip irrigation as well as training and distribution of high-quality seeds for kapas, wheat, maize and vegetables. Solar home lights were also distributed through the interventions. **The project resulted in a 20% increase in gross income and a 29% increase in net income of the beneficiary farmers.** Despite a 37% rise in input costs, there has been a positive shift in gross and net income trends over baseline. Farmers reported enhanced productivity and benefits from using natural fertilisers. Respondents have reported an increase in the median productivity of the major crops grown in the area namely wheat, maize, and kapas. This reveals a significant improvement in productivity across all three crops. Wheat production increased by 14%, maize by 21%, and kapas by 28% after the implementation of the HDFC project. These increases indicate the positive impact of the project interventions on agricultural productivity in the region. These interventions have significantly impacted the local population, transforming traditional agriculture practices. Farmers highlight how these practices foster a deeper understanding of collaborative resource management for the collective benefit of all stakeholders. Interventions ensuring irrigation assurance have prompted many farmers to adopt double cropping, indicating a fundamental shift towards increased agricultural efficiency and income. The HDFC interventions in seeds and tools, organic farming, and irrigation significantly contributed to increased agricultural production in the region, as 75 solar home lights were distributed through HDFC Bank interventions. From the sample, 21% of the respondents received the benefits of solar home light that were distributed to the most impoverished households in the region. 75% of the respondents use the solar home light to complete household chores after dark and 50% of the respondents mention how it aids their children to study in the evening.

Skill Training and Livelihood Enhancement

Under skill training and livelihood enhancement, the project conducted agricultural training, the formation of Self-Help Groups (SHGs), and livestock interventions, including distribution and training for goats, cows, and buffaloes. A noteworthy 74% of households have received training in application of organic manure while 60% have been trained in timely application of fertilizers and insecticides resulting in an increase in productivity in the project villages. This indicates that farmers have applied the acquired skills, leading to more efficient farming practices. SHG promotion and enterprise support was provided to 12% respondents, empowering women with

entrepreneurial opportunities, underscoring the project's commitment to fostering gender inclusivity. The SHG interventions in the area aimed at converging interventions and leveraging the existing SHGs to promote saving, safe loan procurement and enterprise activities in the region. The maintenance of community services such as drip system and agri tool banks have are currently maintained by village SHG's. **Livestock interventions have improved the economic well-being of the community. Approximately 11% of respondents reported 20% of the income generated by households is through livestock management. Thus, the intervention has been beneficial in securing 20% of the household income.** The median monthly income from livestock is Rs. 5000 doubling the income through livestock from before the project. The formation of milk procurement centres in 5 villages have also aided in additional revenue from livestock. Farmers have reported increased use of natural fertilisers, which is evident of improved awareness among farmers on the importance of organic farming for better soil health and fertility. This demonstrates that the project's effort was not only imparting skill training but also facilitating the practical application of these skills through viable business initiatives.

Health and Sanitation

The health and sanitation interventions included repairment of handpumps and promotion of kitchen garden. Kitchen garden support resulted in reduced household expenses of about Rs. 250 per month for buying vegetables along with access to nutritious food. The community bathrooms aided in improving the quality of life and aimed to tackle the problem of malnutrition in the region.

Promotion of Education

A combination of multiple activities targeted towards improving enrolment, attendance, and learning outcomes were undertaken in schools located in the project villages. It focused on Educational Institutions Development support that includes school library construction, construction of building as learning aid (BaLA) wall paintings, establishing science lab, and awareness activities among parents & children. The science lab, library setup and BaLA paintings enhanced students' reading and comprehension ability. About 47% of teachers reported reduced dropout rates, and 69% reported increased attendance due to these interventions. Awareness campaigns further helped children understand the significance of sanitation and hygiene practices. Trainings on capacity building of teachers have aided in improving the quality of education in the region.

Table 1: Summary of Key Income Indicators

Income Indicators	Before	After	% Change
Average Net Income from Agriculture (INR)	38,000	49,000	29%
Median Income from Livestock (Rs.)	2,500	5000	100%
Average Productivity of three major crops (Qtl./Acre)	6.94 Qtl/acre	8.39 Qtl/acre	21%

The above table indicates that there is an increase of average net income from agriculture. This is primarily due to project's support in promoting improved farm management along with organic farming. Both the interventions increased the productivity of crops during the project execution. There has been a positive change in income from livestock rearing particularly from goat rearing, and increased livestock health. Most of these livestock-based livelihood activities were new to the

communities, but the routine health check-ups through animal healthcare workers have ensured increase in livestock income.

HRDI Indicators

The Holistic Rural Development Index (HRDI)¹ score for the project indicates a medium impact at 0.61² from the baseline HRDI of 0.39. There is a 44% increase in NRM HRDI score which could be attributed to better access to farm and water management, irrigation interventions, trainings on crop diversification and organic farming. Skill training and livelihood enhancement shows an increase of 25% due to the introduction of planned livestock income generation and fodder development interventions which was not being practiced earlier by these communities. Health & sanitation shows a notable 112% percentage change in HRDI score over baseline which is due to better awareness, knowledge, and adoption of health & hygiene practices among women members. Educational initiatives led to a notable 54% change in HRDI scores. This increase is attributed to better access to functional school infrastructure and learning infrastructure in the schools. The following table provides the thematic area wise HRDI score.

Table 2: Summary of HRDI scores

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.09	0.13	0.12	0.15	0.08	0.17	0.11	0.17	0.39	0.61
% Change	44%		25%		112%		54%		56%	

Recommendations

- The demand for installation of more water pumps and solar irrigation systems as irrigation continues to be a challenge in the region. Provision of additional resources and/or convergence with government schemes may be facilitated by the implementing partner to sustain the growth trends in agriculture.
- Community mobilisation for continuing education till 12th standard is urgently required in project area as many young students occasionally drop out after 6th, 8th and 10th standard and are unable to match the minimum education standards.
- Handholding support to SHGs for promoting rural enterprises is required as there is a lack of opportunities for taking up income generation activities in the project villages other than in agriculture. Training on market linkage, business plan development and linkages with government schemes, etc. is essential for the SHG's that are currently involved in only savings, inter loaning and bookkeeping activities.

¹ To evaluate the impact of the interventions, the study has employed the existing HRDI created by the programme. The HRDI is arrived at by defining key outcome indicators for each of the domains and developing a composite index.

² Overall HRDI scores for different clusters will range from 0 to 1, with: 0 being Low/Poor and 1 being High/Best
 - For instance: 0 to 0.33: Poor/Low; 0.34 to 0.66: Moderate/Medium; 0.67 to 1: High/Best (Good)

1 Introduction

India has experienced massive strides in rural development over the years. While 65% of the country's population live in rural areas (as of 2021), 47% are still dependent on agriculture for their livelihood ([PIB Delhi, 2023](#)). The rural ecosystem grew by around 10% per annum during the last 5 years but it continues to be plagued by numerous problems, such as lack of irrigation, degrading soil health, disguised unemployment, fewer skill development avenues, undependable healthcare availability, low literacy rates, and increasing environmental degradation, etc. To mitigate these diverse yet inter-linked developmental challenges, the HDFC Bank, under its Corporate Social Responsibility (CSR) initiative '*Parivartan*', supports numerous programmes that deliver holistic rural development to aid the growth and prosperity of the rural population.

1.1 About HRDP

Under the aegis of *Parivartan*, the Holistic Rural Development Programme (HRDP) is HDFC Bank's flagship CSR programme in which non-governmental organisations (NGOs) across the country are supported to undertake development interventions in four thematic areas:

- a) Natural Resource Management (NRM)
- b) Skill Training & Livelihood Enhancement (ST&LE)
- c) Health and Sanitation (H&S)
- d) Promotion of Education (PoE)

The World Bank defines rural development as the improvement in the social and economic environment of the rural population. The fundamental aims of rural development include planning, creating, and using the resources such as land, water, and manpower to promote equal opportunity for the population reliant on them. Given this context, HRDP strives to enhance the lives of people in rural communities by primarily bringing about sustainable socio-economic transformation and ecological development. Its holistic approach caters to their various needs by addressing development of human capital, effective management of natural resources, economic independence through skilling and livelihood opportunities, basic infrastructure development, and enhancement of living conditions.

1.2 Objectives of Impact Assessment

The impact assessment aims at understanding:

- Overall process undertaken for implementing HRDP activities
- Key milestones achieved
- Impact created by HRDP activities
- Challenges faced and how they were managed

The guiding philosophy behind this assessment is to add value by showcasing successful initiatives and recommending possible ways to address existing challenges.

It seeks to:

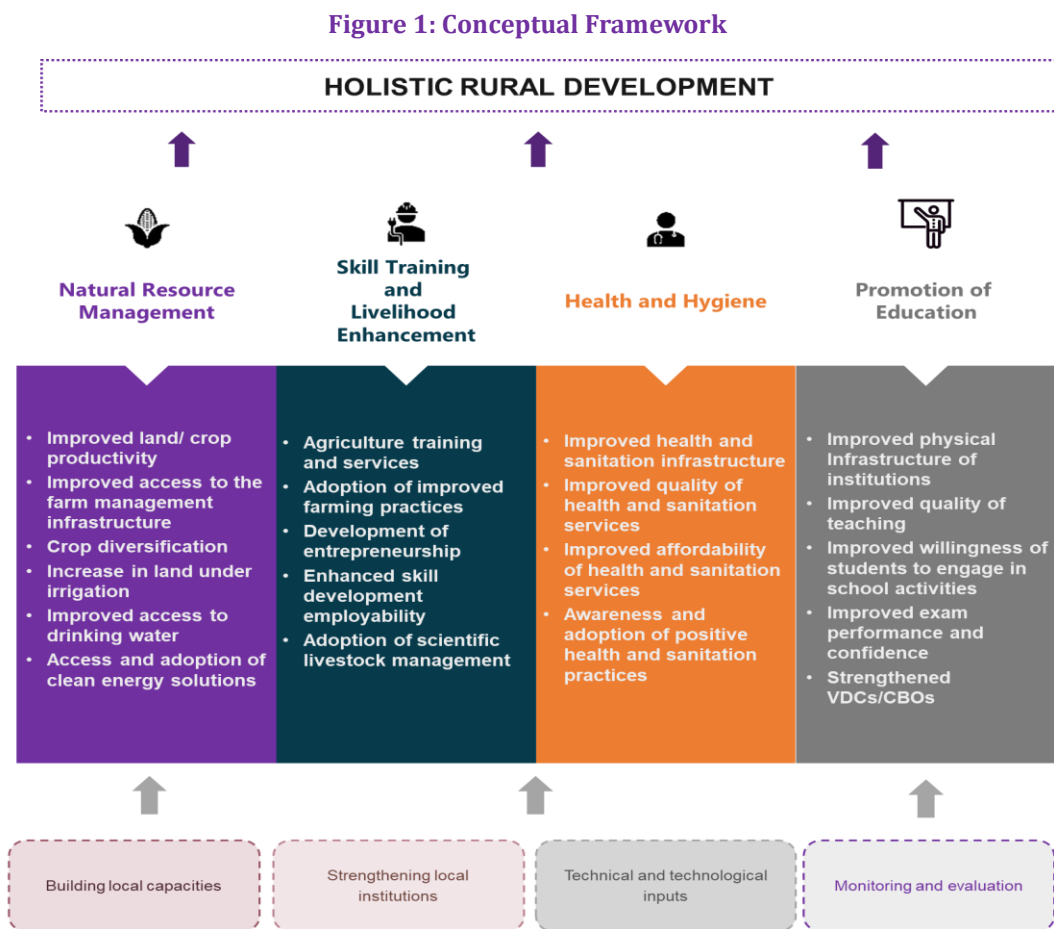
- Critically and objectively evaluate implementation and performance
- Determine reasons for certain outcomes or lack thereof
- Derive lessons learnt and good practices

- Provide evidence-based findings to inform future operational and strategic decisions while planning and funding partner organisations

This assessment was also an opportunity to assess the on-ground relevance and effectiveness of the programme.

1.3 Conceptual Framework Adopted

The conceptual framework and the areas covered under the assessment are depicted below (see Figure 1). The aim is to build local capacities and strengthen local institutions, while giving technical inputs and conducting evaluation across the four thematic areas. The objectives under NRM, ST&LE, H&S and PoE are enumerated in the figure below.



1.4 About the Project Area

The assessment provides an independent, third-party, detailed assessment report of HDFC Bank's HRDP intervention (under *Parivartan*) carried out in a backward district in Gujarat, the Sabarkantha district, by Collectives for Integrated Livelihood Initiatives (CInI), the implementing partner in this district. The programme was undertaken during April 2019 till September 2022 and the interventions covered 15 villages across two blocks; Khedbrahma and Poshina in the Sabarkantha district. The villages were selected as they face challenges in the form of water scarcity, single cropping pattern, and inadequate income from agriculture along with societal challenges.

1.5 About the Implementing Partner – CINI

CINI, based in Jamshedpur and established on 17th May 2007, serves as the pivotal agency for the Trusts, overseeing the Central India Initiative. The primary objective of CINI is to uplift the lives of tribal households residing in the Central India tribal belt. This transformation is pursued through extensive knowledge-building initiatives and the amplification of programs in key thematic areas, including agricultural productivity stabilization, forest-based livelihoods, water resource development, drinking water and sanitation, microfinance, and the reinforcement of community-based organizations.

Employing an integrated approach, CINI strives to instigate comprehensive improvements in the quality of life for the tribal population in India. The organization coordinates diverse stakeholders and operates within the domains of integrated livelihood development, education, and drinking water and sanitation.

CINI's mission is to mobilise communities, foster collective aspirations for an enhanced quality of life, and exemplify viable paths to realise these aspirations. By doing so, they aim to catalyse a domino effect, stimulating similar development efforts across the region. The overarching goal is to bring about substantial poverty alleviation and far-reaching enhancements in the quality of life for tribal communities in the Central India Region.

2 Research Design and Methodology

The assessment used both, qualitative and quantitative methods. The process was carried out in a consultative manner involving interactions at key junctures with, both, HDFC Bank and CInI.

2.1 Criteria for Assessment

For each thematic area, activities completed by CInI were identified. The impact of these activities was assessed using the following criteria:

- Relevance and Convergence
- Impact and Effectiveness³
- Sustainability

Under the criterion of **relevance and convergence**, the team assessed whether the design of the programme interventions was:

- a) Aligned with the State's plans and priorities for rural development.
- b) Relevant to the local needs of the most vulnerable groups.
- c) Convergent with (and making use) of the Government's existing resources.
- d) Enabling different stakeholders to work together to achieve the intended outcomes of the programme.

To assess the **impact and effectiveness** of the programme, the team established the values of outcome indicators of all thematic interventions. The findings were assessed against the outcome indicators finalized during the outcome harvesting stage. Through qualitative evidence and analysis of programme outcomes (in light of variables identified in consultation with HDFC Bank), the team tried to understand whether and how the programme impacted the lives of community members in the programme areas. The findings from primary quantitative data were substantiated by the information gathered from discussions with the communities/beneficiaries, teachers, students, entrepreneurs, and local village-level institutions.

For the criteria of **sustainability**, the team studied the primary data to understand if the programme has worked on strengthening the community's capacity to ensure sustainability, and if any of the activities or strategies adopted have been or could be replicated.

2.2 Primary and Secondary Data Sources

Primary research included a quantitative household survey as well as in-depth interviews (IDIs), Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) with programme beneficiaries, CInI team, and the HDFC Bank programme team. IDIs were conducted with the farmer beneficiaries, implementing partner, schoolteachers, livestock beneficiaries and enterprise beneficiaries. FGDs were conducted with farmers group, self-help groups and with the dairy development units. KIIs were conducted with the community resource persons from various villages. The outcome mapping and result chain development was undertaken in consultation with the HDFC Bank team. Standardized key outcomes and indicators were identified for each thematic area (NRM, ST&LE, H&S and PoE). Based on the standardized list of outcomes and outputs, the questionnaire was developed.

³ While from an evaluation perspective impact and effectiveness are two different aspects, in the report, these are used interchangeably.

An FGD in Progress



Secondary data sources included HDFC's CSR Policy, Programme Log Frame (Logical Framework Analysis), Rapid Rural Appraisal reports, Programme implementation timelines, Communication, and Documentation products, and other relevant reports/literature related to the programme.

2.3 Sample Size and Distribution

From the fifteen villages of Sabarkantha where the programme was implemented, beneficiaries were selected from eight villages across the two blocks using **purposive random sampling** based on a list of beneficiaries obtained from CInI team. Since beneficiary selection was undertaken independently for each thematic area, the selection of more than one beneficiary from a single household was probable. Also, there were instances where a single beneficiary received multiple benefits and support across the four thematic areas. Inclusion of beneficiaries for all thematic areas was ensured. The target sample size across eight villages was 400 out of which 403 sample respondents were reached. Since majority of intervention focused on skill enhancement and education, the sample focused to cover 303 respondents from households and 99 responses from all the fifteen project schools. The thematic areas wise sample covered is as follows, the total numbers being mutually inclusive considering the repetition of beneficiaries for more than one category (see, Table 3).

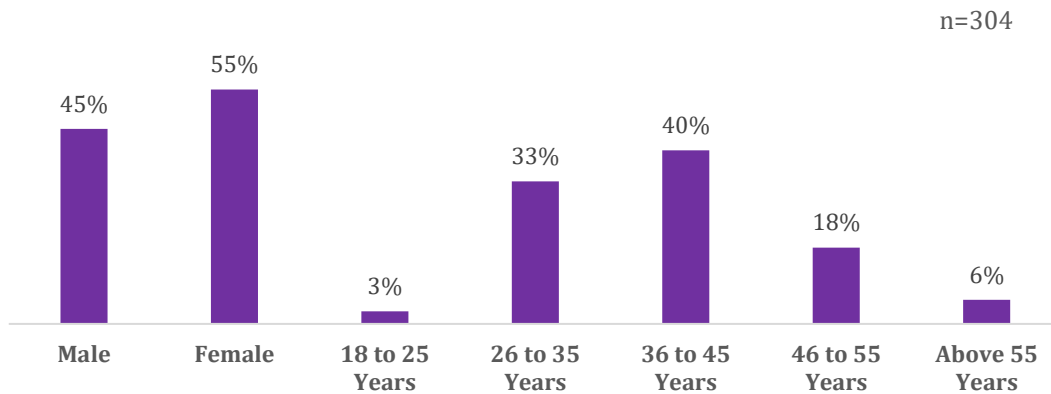
Table 3: Population Sample Covered

Block Name	NRM	ST&LE	H&S	PoE
Khedbhrasma	51	107	77	61
Poshina	144	154	104	110
Total	195	261	181	171

Qualitative tools of in-depth interviews (IDIs) and **focus group discussions (FGDs)** were administered for obtaining information about the various themes as well as to enrich the household survey information with a deeper understanding. A total of eight FGD's with SHGs, farmer groups and Dairy Development Unit were conducted in the project area. A total of 6 IDI's were conducted amongst schoolteachers, livestock beneficiaries, farmers, community resource persons, and 5 Key Information Interviews (KIIs) with animal healthcare workers, implementing partners, and beneficiaries were conducted.

The total sample includes 45% male and 55% female respondents. The highest number of respondents, 41% belonged to the age category of 36-45 followed by 33% respondents belonging to the 26-35 category and 18% respondents in the 46-55 years category. See, Figure 2.

Figure 2: Gender and Age Group wise distribution of Sample



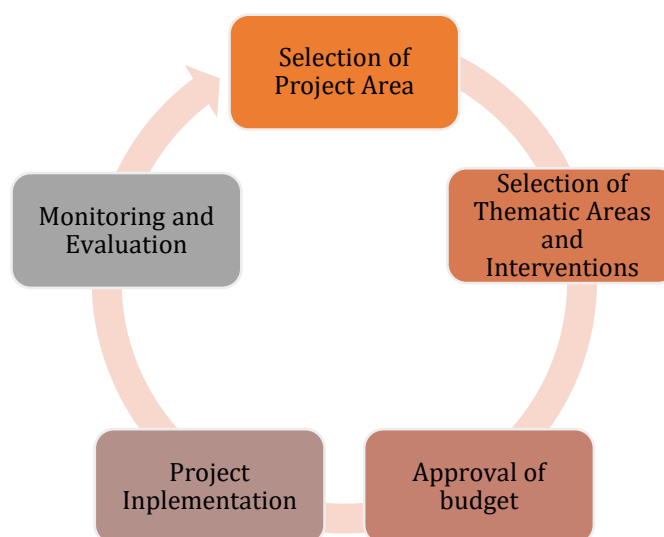
2.4 Training of Enumerators

A gender balanced survey team consisting of 7 local enumerators and 1 supervisor was recruited with requisite education and experience, for data collection. Two days of training were provided to enumerators and supervisors by the field coordinator and the research coordinator. During the training, the survey team was briefed about the project, data collection tools, how to use CAPI, data collection protocols, data quality control etc. The training included both classroom teaching and mock practice of the survey tool.

3 Programme Planning and Implementation

The planning and implementation of the programme involves five stages: selection of the geographical area viz. district, block, villages etc., selection of thematic areas and interventions, approval of budget, programme implementation, and monitoring and evaluation. These stages are further explained below.

Figure 3: Planning and Implementation Process



3.1 Selection of Project Area

Sabarkantha district in Gujarat stands as one of the most deprived districts in the region, witnessing a recent surge in BPL (Below Poverty Line) holders⁴. According to CInI project reports, more than 90% of the population belongs to the tribal community, primarily the Bhil community. The selected cluster of villages is marked by depleted natural resources and an overall dearth of development. With rain-fed agriculture and allied activities dominating the livelihood landscape, the socio-economic conditions of the residents range from marginal to poor, with an average annual income of approximately Rs 40,000 as per the reports. The report also states that the literacy rate in the project villages is notably low at 38%, in stark contrast to the district (77%) and state (78%) averages. The economic underdevelopment in the project region is exacerbated by the prevalence of rain-fed agriculture, limited landholding sizes, and a lack of alternative opportunities. The degradation of natural resources further compounds the challenges, resulting in lower agricultural productivity, with average yields ranging between 55% and 60% of the district average as per CInI report data. Additionally, the region grapples with issues such as a lack of market linkages, inadequate access to quality agricultural inputs, low implementation of government schemes and services, and the lack of organized community groups. Key personal interviews with the program manager revealed that the average family size in the region is substantial ranging from 5 to 10 family members, necessitating a focused approach to education. The existing school infrastructure is ill-equipped to accommodate the significant number of

⁴ See, (March 2023). 15.61 lakh families below poverty line in 29 Gujarat district. TOI. <https://timesofindia.indiatimes.com/city/ahmedabad/15-61-lakh-families-below-poverty-line-in-29-gujarat-districts/articleshow/98886395.cms>

students, especially when considering that their local dialect differs from the Gujarati medium of instruction. These multifaceted challenges persist in the region, underscoring the need for comprehensive interventions.

In response to prevailing challenges, HRDP interventions have strategically focused on specific areas. Firstly, the initiative seeks to enhance agricultural practices by encouraging farmers to diversify their crops and allocate a segment of their land to higher-value produce. Secondly, it builds capacities of community institutions along with facilitating linkages through assets and technology to take up focused livelihoods in the region. Ensuring year-round assured irrigation is a critical aspect of these interventions. By promoting effective land and water management, the programme aims to support sustainable agricultural practices. The commitment extends to empowering local entrepreneurs and fostering enterprise-based livelihoods. This involves providing quality services to the community and stimulating economic growth at the grassroots level. Additionally, there is a dedicated effort to enhance the educational landscape. This includes strengthening school resources, improving teacher capacity, and elevating student learning levels in intervention schools. Initiatives such as introducing library and sports programmes in schools, along with raising awareness and community engagement on education, are integral components. The section below outlines specific initiatives in each thematic area, providing a comprehensive overview of the impact-driven interventions (see Table 4).

Table 4: Activities under Four Thematic Areas in Sabarkantha

Activity Category	Activities	Output Indicators
NRM		
Irrigation Management	Check Dam, Nala Plugging, Deepening of Stream, Lift Irrigation Scheme	Income from agriculture
Farm Management	Crop Diversification and High Value Crops, Azola Units, Nadep/Vermi Compost Pits	Income from agriculture
Clean Energy	Solar light	Access to light
ST&LE		
Agriculture Training and Services	Agriculture Tool Bank, POP Training, Farmers Field School, Exposure Visit	Access to Agriculture Training and Services
Enterprise Management	Training and support of Enterprises	Skill and Entrepreneurship Development
SHG Based Women Empowerment	Training on SHG and loan procurement, Financial Literacy Camps	Skill and Entrepreneurship Development
Livestock Management	Goatry, Training on Livestock Management, Cattle Shed and Feed Management Training, Training of Animal Health Worker, Animal Health Camps, Cattle Travis, Fodder Development, Establishment of Milk Procurement Centre	Livestock Management
H&S		
Drinking Water	Handpump Repair	Health Services
Kitchen Garden	Kitchen garden promotion, training, distribution of seeds	Health Services
PoE		
Educational Institutions Development	Library set up, BaLa Paintings, Small Infrastructural Aids	Infrastructure in Educational Institutions

Education Enhancement	Maths and Science Capacity Building for Teachers, Teaching Aids, Classroom Development	Education enhancement
Awareness Generation	Sensitization on School Wash (Hand Wash Practices)	Awareness generation

3.2 Programme Implementation

The interventions for community empowerment and rural development hold paramount importance for the targeted villages. The HRDP initiative on NRM has specifically aimed at transitioning from rain-fed agriculture to prioritising land and water management to ensure year-round irrigation. To achieve this objective, the program has successfully constructed 20 lift irrigation systems across 7 villages, positively impacting 20 farmers per pipe. Furthermore, the implementation includes the construction of three check dams, two nala plugs, and the deepening and widening of streams. These measures contribute to water harvesting and enhance groundwater recharge. Notably, one check dam alone has stored backwater up to 567 meters in the nala, harvesting 1032.40 cubic meters, equivalent to almost 10.32 lakh litres of water. This initiative has a significant ripple effect, benefiting the recharge of seven wells and supporting 31 farmers downstream. In addition to water management, the program focuses on promoting improved agricultural practices. Farmers are encouraged to diversify a part of their agricultural lands to cultivate higher-value crops. Demonstrations showcasing high-value crops such as field vegetables, trellis, and spices (potato, tomato, turmeric, bottle gourd, fenugreek, chili, brinjal, cabbage, cauliflower) were promoted in project villages. Farmers actively participate in seed production of vegetables, pulses, and wheat during Kharif, Rabi, and summer, besides producing cotton seed. It is noteworthy that a segment of households in the project villages, comprising 10-15%, lacks access to light due to their farm-situated locations. Recognizing this challenge, the program has distributed 75 solar light units to impoverished families facing nighttime difficulties across all project villages.

In terms of Skill Training and Livelihood Enhancement, the project implemented various initiatives. To provide agricultural training and support, farmers were exposed to field schools, training sessions on organic methods, PoP, NADEP pits, azolla farming methods, and collective marketing strategies. The marginal farmers in the project area primarily rely on draught animals for their field operations, transportation, and agro-processing. Consequently, a Tool Bank for Small Farm Equipment has been established in 15 project villages, with management entrusted to Village Organizations (VOs). The service-based model was developed to facilitate the use of these agricultural tools. The project also facilitated the provision of working capital for Agri enterprise activities through Farmers' Producer Organizations (FPOs), assisting in covering part of the overhead costs. Recognizing livestock as a significant source of income for agrarian households, the project implemented the distribution of Sirohi cattle, contingent upon farmers undertaking cattle shed development. Training programs on cattle shed and feed management were organized for Self-Help Group (SHG) members, covering aspects such as cattle shed for buffalo and goat, feed management, cattle shade management, animal treatment, and the importance of dairy cooperatives. Furthermore, training sessions for Animal Healthcare Workers were established for interested candidates. Essential instruments and equipment were provided to six newly formed milk cooperatives in Ambasar, Ganer, Ratanpur, Changod, Choliya, and Tebda villages to enhance facilities at dairy cooperatives. The project also conducted 14 training programs on Village Organization (VO) management, group dynamics, leadership development, and record-keeping for SHG leaders in project villages, complemented by financial literacy training. Additionally, financial support was extended to micro-enterprises.

Food insecurity was addressed under 'healthcare and hygiene' theme mainly through promotion of kitchen garden. The seeds of everyday use vegetables were distributed, and training was given on how to grow a kitchen garden to ensure consumption of adequate nutrients by households. In addition to kitchen garden, the program also focused on repairing 15 handpumps in the project region.

Through HRDP, 'promotion of education' was undertaken. This involved the renovation of village schools, incorporating BaLA paintings, and the construction of a library. In addition to physical improvements, capacity-building efforts were implemented, providing training for 24 teachers in Maths and 15 teachers in activity-based learning for teaching Science. Furthermore, teaching-learning aids in Science and Maths were procured and disseminated to all 15 schools, respectively. To enhance community engagement with education, interactions were initiated in the 15 intervention villages. These interactions aimed to guide communities in accessing educational content broadcasted by the education department on television and also accessing content shared by CInI through mobile phones.

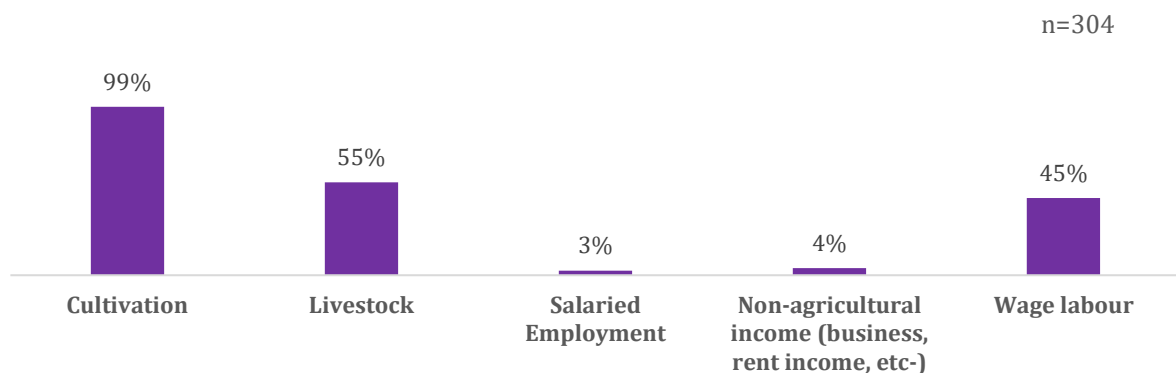
3.3 Monitoring and Evaluation

The impact of CInI activities was evaluated using four criteria: relevance and convergence, impact and effectiveness, sustainability, and replicability. This is backed up by the creation of a Holistic Rural Development Index based on selected indicators. The impact of each activity has also been calculated and classified as high, medium, or low impact. The annexure goes into greater detail on these. (See Annexure B and C).

4 Study Findings

This section provides the analysis of the profile of the respondents covered in the eight villages of Sabarkantha district in Gujarat. All respondents have more than one source of income. All of respondents generate income through cultivation, followed by 55% reporting income from livestock and 45% respondents from wage labour.

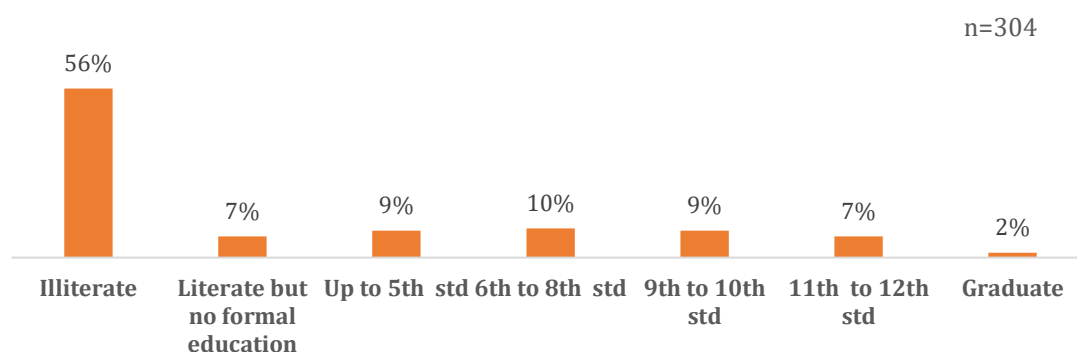
Figure 4: Distribution of Sample based on their occupation



The educational status of the respondents indicates that 56% are illiterate, lacking the ability to read and write. Additionally, only 9% completed education up to the 9th to 10th standard, while 7% pursued studies until the 11th to 12th standard. In terms of higher education, only 2% of the respondents are graduates (See, Figure 5). The 2011 census data reveals that Gujarat's overall literacy rate is 79%, a stark difference from the Sabarkantha district.

Regarding the social category of the interviewees, the majority belong to the Scheduled Tribe (ST) categories comprising of 99% of the total sample. Although the 2011 census notes the ST population in Gujarat at 15%, the chosen intervention villages predominantly consist of ST as evident from the sample. In terms of economic status, 95% possess Below Poverty Line (BPL) cards. A total of 45% of the respondents live in Kutcha houses and 94% of the respondents use firewood for cooking.

Figure 5: Education qualification distribution of sample



While the above analysis represents the nature and status of the sample, the following table represents the summary and quantum of activities carried out under each intervention category of the four thematic areas (See Table 5)

Table 5: Quantum of Activities under each Activity Category across Four Thematic Areas

Activity Category	Activities	Nos. (as provided by IA)
NRM		
Farm Management	Crop Diversification	1523 farmers
	High Value Crops	Info. not provided
	Azola Units	10
	Nadep/Vermi Compost Pits	10
Irrigation Management	Check Dam	3
	Nala Plugging	2
	Deepening of Stream	1
	Lift Irrigation Scheme	20
Clean Energy	Solar lights	242 beneficiaries
ST&LE		
Agriculture Training and Services	Agriculture Tool Bank	166 farmers
	POP Training	147 trainings
	Farmers Field School	71 field schools
	Exposure Visit	147 members
Skill and Entrepreneurship Development	Enterprise Support	17 members
	SHG Support	544 members
	Financial Literacy for SHG	15 camps
Livestock Management	Goatry	44 households
	Training on Livestock Management	562 households
	Training of Animal Health Worker	Info not provided
	Cattle Travis	25 households
	Fodder Development	239 beneficiaries
	Establishment of Milk Procurement Centre	6 villages
H&S		
Drinking Water	Handpump Repair	18
Kitchen Garden	Kitchen Garden promotion	986 households
PoE		
Educational Institutions Development	Library set up	15 schools
	BaLa Paintings	15 schools
	Small Infrastructural Aids	15 schools
Education Enhancement	Maths and Science Capacity Building for Teachers	15 schools
	Teaching Aids	15 schools
	Classroom Development	15 schools
Awareness Generation	Hand Wash Day Celebration	
	Republic Day Celebration	

(Source: Project MIS from Implementing Agency)

The following sub-sections provide details on the findings in each of the four thematic areas.

4.1 Natural Resource Management

NRM stands as a fundamental pillar within the HRDP framework, meticulously tailored to meet the community's needs and adapt to the geographical context. This comprehensive programme encompassed a range of targeted interventions in irrigation management, strategically designed to establish a dependable alternative source of irrigation beyond the limitations of rainfed agriculture. These initiatives were carefully structured to enhance water availability and distribution, ensuring a sustainable and resilient irrigation system. The overarching goal was to diminish reliance on unpredictable rainfall patterns, thereby promoting agricultural practices resilient to weather fluctuations. In collaboration with Village Organisations, the project facilitated the construction of three check dams, two nala plugging, and the widening of streams. The beneficiaries of these structures are those who own agricultural land on either side of the

stream. Furthermore, twenty lift irrigation schemes, each involving groups comprising 10-15 farmers, have been implemented. These group-oriented diesel or electric lift irrigation schemes, situated near streams, serve to bring land under irrigation, ensuring water availability for both the Rabi and Summer agricultural seasons. The local village Self-Help Group (SHG) administers the Lift Irrigation fund, alongside other funds for village necessities. The repair and maintenance of these schemes are guaranteed through the level of usage the pipes receive from respective households. These lift irrigation schemes have facilitated water availability for various purposes, including multiple cropping, crop diversification across two seasons, improved yields, increased farm employment opportunities, and enhanced livestock productivity due to greater fodder availability from the irrigated land.

The program encompassed various activities, including non-pesticide management training, seed distribution, knowledge dissemination on farming techniques, multi-tier cropping, and gabion construction in project villages. By tackling soil erosion issues and implementing sustainable NRM practices, the initiative aimed to create a more resilient environment, fostering enhanced water retention and efficiency. Moreover, the NRM interventions sought to expand cultivable land, boost local households' agricultural productivity, and contribute to overall food security. The program placed a strong emphasis on knowledge dissemination, empowering the community with insights into cultivating cash crops and adopting modern, sustainable farming methods. This educational aspect aimed to equip farmers with tools and understanding to optimize their agricultural practices, fostering a more economically viable and environmentally sustainable agricultural landscape in the region.

4.1.1 Income from Agriculture

In the survey sample, 64% of the total respondents benefited from agricultural activities. A primary focus of the programme was to showcase the cultivation of high-value crops such as field vegetables, trellis crops, and spices such as potatoes, tomatoes, turmeric, bottle gourd, fenugreek, chilly, brinjal, cabbage and cauliflower among farmers in the project villages. Furthermore, the programme promoted seed production of vegetables, pulses, and wheat during the Kharif, Rabi, and summer seasons, along with cotton seeds. Additionally, irrigation interventions aimed to facilitate double and triple cropping on the land.

Figure 6: Increase in agricultural income (Rs.)

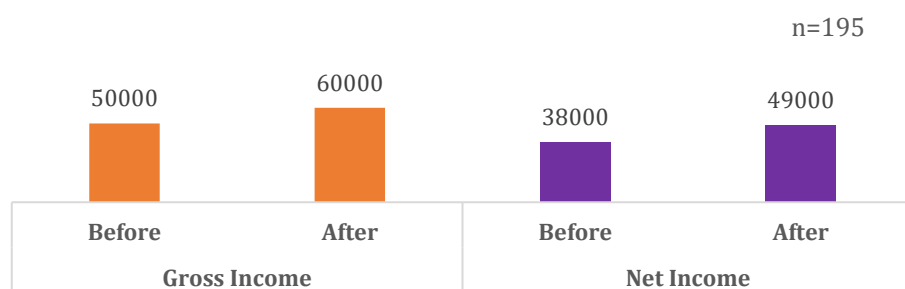
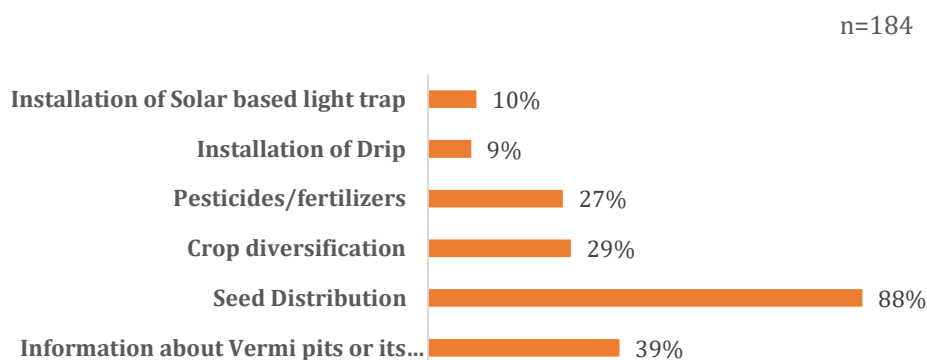


Figure 6 illustrates a comparison between the median gross income and median net income before and after the project intervention. **There is a 20% increase in gross income and a 29% increase in net income.** Despite a 37% rise in input costs, there has been a positive shift in gross and net income trends over baseline. Regarding households reporting a change in income, 94% reported an increase in income. **Upon conducting a two-sample z-test, P-value of less than 0.0001 was found against a z-statistic of 10.5 (at 95% confidence level) indicating that it is**

a significant change. Around 95% of the respondents reported an increase in profit post-project interventions. The attributed reasons for this increase include programme interventions in seed distribution (88%), which aided farmers in improving agriculture vegetable crops and increasing seed production. Other reasons for the increase in income are increased knowledge of vermicomposting (39%), increased crop diversification (29%), and trainings on the usage of pesticides and fertilisers (27%) (See, Figure 7). While the number of beneficiaries for the drip irrigation is limited, qualitative interviews indicate how households maintain a revolving fund within their SHG's for joint management and maintenance of pipes. This practice has facilitated double cropping even in harsh summers when water supply was limited, and farmers resorted to sharecropping or wage labor during such periods. The limited intervention in NRM structures has positively benefitted communities, enhancing land productivity and facilitating the introduction of double or triple cropping.

While the programme has led to a noticeable increase in income for participants, it is crucial to note a simultaneous rise in input costs affecting 79% of respondents. The primary factor contributing to this increase, reported by 89% of respondents, is the increased awareness regarding better quality seeds and investments in land productivity that were not conducted before. The other reason, as noted by 56% of respondents, is the escalation in prices of essential inputs, highlighting the broader pattern of rising input expenses. The surge in input prices, while underscoring the challenges faced by farmers in maintaining profitability, also hints towards changing and emerging farming trends in the region where farmers understand the need for better farm inputs for enhanced productivity.

Figure 7: HRDP interventions that contributed to increase in income



Respondents have reported an increase in the median productivity of the major crops grown in the area namely wheat, maize, and kapas (See, Table 6). The analysis reveals a significant improvement in productivity across all three crops. Wheat production increased by 14%, maize by 21%, and kapas by 28% after the implementation of the HDFC project. These increases indicate the positive impact of the project interventions on agricultural productivity in the region. The productivity of maize is relatively low in comparison to the average yield of maize in Gujarat, due to intercropping with other millets in the region.

Table 6: Increase in Agricultural Productivity After the HDFC Project

Crop Name	Median Productivity Before (kg/ acre)	Median Productivity After (kg/ acre)	% Change
Wheat	702	800	14%

Maize	679	819	21%
Kapas	704	900	28%

Farmers in the region benefitted from guidance on efficient water resource management through drip irrigation, renowned for its precision and water-saving benefits. Additionally, the program promoted seed production of various crops, including vegetables, pulses, and wheat, throughout the Kharif, Rabi, and summer seasons, alongside cotton seed production. Farmers also participated in Farmers Field Schools focusing on maize, cotton, cotton seed plots, fennel, turmeric, and various vegetables like chilly, brinjal, bottle gourd, and tomato, where they acquired technical knowledge on fertiliser application, spacing maintenance, intercultural practices, weeding, and pest control.

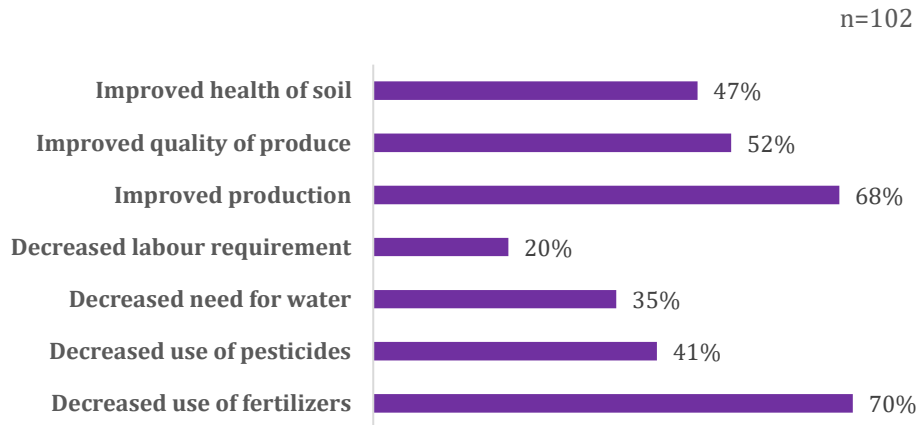
The HDFC interventions in seeds and tools, organic farming, and irrigation significantly contributed to increased agricultural production in the region, as depicted in Table 7. The data indicates the significant impact of HDFC interventions, particularly in seeds and tools, on all crops, leading to improved agricultural practices and increased productivity. Additionally, interventions in irrigation and organic farming also played crucial roles in enhancing crop yields, along with favourable weather conditions and expanded cultivation areas.

Table 7: HRDP Interventions that led to increase in agriculture production

Project Interventions (% respondents)	Wheat	Maize	Kapas
HDFC bank project interventions in seeds and tools	94%	95%	95%
HDFC interventions in irrigation	40%	21%	39%
HDFC Interventions in organic farming	18%	14%	16%
Weather	89%	95%	91%
Increased area under cultivation of crops	10%	15%	7%
Improved irrigation	52%	28%	52%

Currently, 43% of households report using both natural and chemical fertilisers. 9% of farmers in the region exclusively use natural fertilisers. During the last season of the project's intervention, 62% of respondents reported an increase in the use of natural fertilisers, and 45% reported a decrease in the use of chemical fertilisers. 77% of respondents use vermi pits as a source of natural fertiliser, mainly due to the promotion of natural fertilisers through training and demonstrations during the project period. The increased use of natural fertilisers has led to benefits such as improved production (68%), improved quality of produce (52%), and improved soil health (47%), among other benefits (refer to Figure 8).

Figure 8: Perceived benefits of natural fertilisers



4.1.2 Adoption of crop diversification

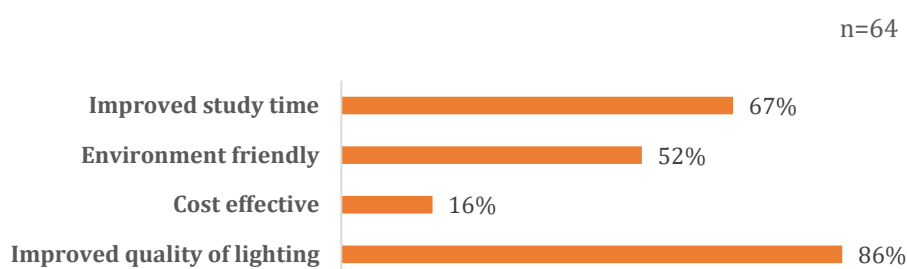
From the sample survey, it is evident that 57% of respondents have altered the crops they previously cultivated, with a significant majority of 90% attributing these alterations to HDFC project interventions. Specifically, arhar was adopted by 65% of the sample respondents, followed by soyabean at 39%, bajra at 31%, kapas at 28%, wheat at 25%, maize at 17%, and urad at 16%. These figures underscore the substantial impact of HDFC interventions on crop diversification among farmers in the region. A total of 89% of farmers have reported an increase in productivity, while 95% of respondents reported an increase in income. The alterations in crop choices align with the project's objectives of promoting sustainable agriculture practices and enhancing livelihoods.

Qualitative discussions underscore the adoption of crop diversification to several factors. Increased irrigation facilities, seed production initiatives, and access to agricultural tools via the agri-tool bank have led to a notable rise in crop diversification and increase in crop harvest cycles. Leveraging existing Farmer Producer Organisations (FPOs) has also contributed to better pricing and assured sales, encouraging farmers to diversify their crops further. Moreover, heightened awareness and effective coordination efforts by the CInI team have facilitated an affinity for better crop management and increased investments in quality of seeds in the region. These qualitative findings highlight the collaborative approach driving positive changes in agricultural practices and livelihoods within the community.

4.1.3 Clean Energy

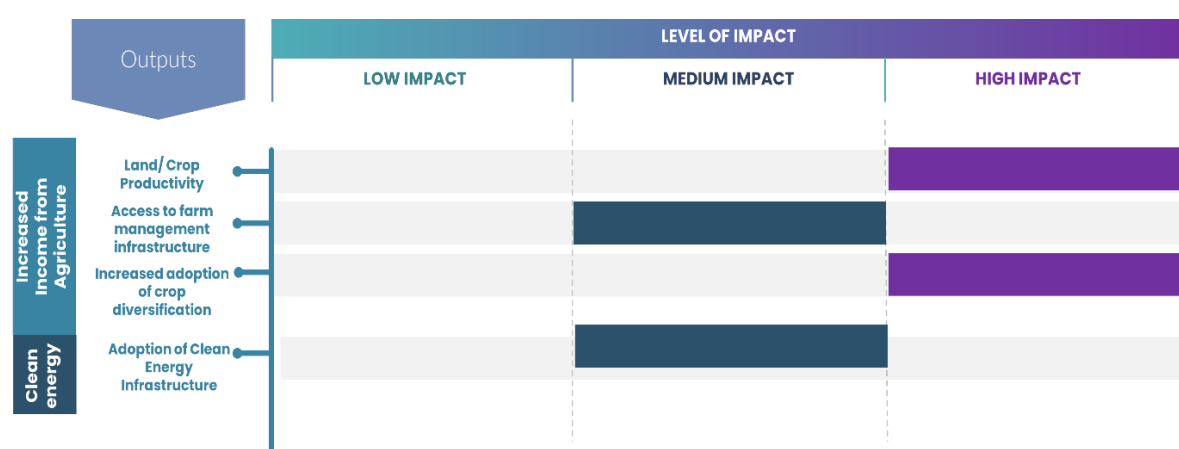
To ensure the project households that are isolated have light in their homes, properly accessible to everyone at night, 75 solar home lights were distributed through HDFC Bank interventions. From the sample, 21% of the respondents received the benefits of solar home light that were distributed to the most impoverished households in the region. 75% of the respondents use the solar home light to complete household chores after dark and 50% of the respondents mention how it aids their children to study in the evening. These solar lights have greatly benefitted the people as 86% respondents note the quality of lighting in their homes. It has also improved study time and is environment friendly as perceived by 67% and 52% of the respondents respectively. Additionally, 81% of the respondents are fully satisfied with the solar home light intervention.

Figure 9: Perceived benefits of solar home light



4.1.4 Impact Observations

Figure 10: Overview of Impact and Effectiveness of Interventions - NRM



In the domain of natural resource management, interventions aimed at enhancing land productivity have demonstrated a high impact across the area. This is predominantly attributed to the high value crop seed distribution in the project area along with training that helped in increasing productivity from limited patch of land. However, interventions in farm management have proven to be medium effective, with half of the farmers adopting natural fertilizers. The dissemination of knowledge and practices among farmers has created a learning space through project interventions, involving even those who were initially not engaged. Notably, interventions targeting assured irrigation have encouraged many farmers to adopt double cropping, thereby increasing their income. The collaborative management of drip irrigation systems by local farmers has contributed to this success. Additionally, the installation of solar home lights has had a medium impact, owing to the limited scope of the intervention in the villages.

4.1.5 Case Study

Cotton Seed Production by Makwana Kamlesh Bhai

Mr. Makwana Kamlesh Bhai, a farmer from Ratanpur village, has traditionally cultivated wheat, maize, and kapas on his limited farmland. However, with the introduction of HRDP interventions, HDFC chose to use his plot as a demo plot to showcase new farming techniques in the village. One of the most significant outcomes of the HDFC interventions for Mr. Kamlesh Bhai has been the training and development on cotton seed production on his land, resulting in a substantial increase in revenue.

Through HRDP interventions, Mr. Kamlesh Bhai began seeding kapas cotton seeds of higher quality, priced at Rs. 500 per kg, compared to the common kapas plants that are sold at 20 kg for Rs. 1000. This

shift to higher quality kapas seeds has led to a significant increase in income. Additionally, with the implementation of vegetable cultivation and NRM interventions such as drip irrigation, the agricultural landscape in the region has been transformed.

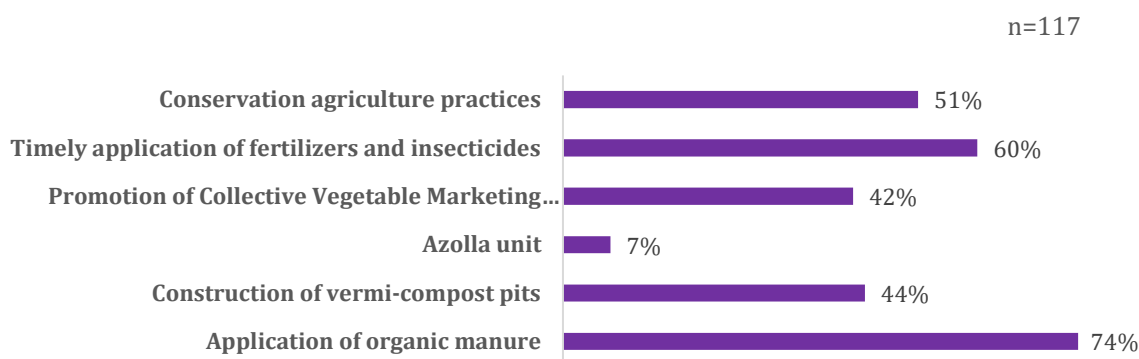
As a result of these interventions, Mr. Kamlesh Bhai's household income has doubled, through a shift to cotton seed production enabling significant improvements in his living conditions. He proudly attributes the transformation of his modest home into a larger, more substantial pakka house to the interventions led by the HDFC team. This case study highlights the importance of adopting innovative agricultural practices, such as seeding higher-quality kapas seeds, in driving economic growth and improving livelihoods in rural communities.

4.2 Skill Training and Livelihood Enhancement

4.2.1 Access to Agriculture Training and Services

From the surveyed households, 38% people have benefitted from the intervention on agricultural training and support. From the households who benefitted, all households have received support in terms of agricultural training practices.

Figure 11: Percentage of farmers who learnt new agricultural practices



As seen in Figure 11, through HDFC interventions, 74% of households have received training in application of organic manure while 60% have been trained in timely application of fertilizers and insecticides. A total of 51% of the respondents received training on conservation agriculture practices and 44% received training in constructing vermi-compost pits. An additional 42% of the respondents also received training on collective vegetable marketing practices. These interventions have significantly contributed to enhancing farmers' income by focusing on developing skills in both farm-based and off-farm-based income generation and livelihood initiatives. Currently, 63% of farmers routinely apply organic manure and timely apply fertilizers in their farms, with 95% learning these practices through HDFC Bank interventions.

Figure 12: Percentage of farmers who received agriculture training on new techniques

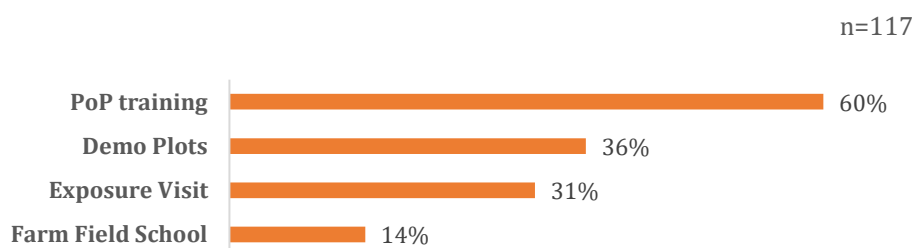


Figure 12 illustrates the diverse training programmes attended by farmers. Among these, 60% participated in Pre-season training sessions on the cultivation of Kharif and Rabi crops, including vegetables such as okra, chilli, brinjal, tomato, and seed production plots for vegetables like bitter gourd and bottle gourd. Additionally, 36% of respondents benefited from demonstrations showcasing high-value crops like field vegetables (potato, tomato), trellis crops, and various spices (turmeric etc.). Moreover, 31% of respondents took part in exposure visits, while 14% attended farmer field schools. These sessions covered topics ranging from maize, cotton and cotton seed cultivation to the cultivation of fennel, turmeric, and various vegetables like chilli, brinjal, bottle gourd, and tomato. Furthermore, the HRDP interventions provided technical knowledge on fundamental agricultural practices, including the application of basal doses of fertilisers, maintaining optimal row-to-row and plant-to-plant spacing, and practical insights into intercropping operations, weeding, and the application of insecticides and urea.

Notably, 97% of respondents found the training useful. The primary benefits reported by 90% of respondents include an increase in income and productivity resulting from agricultural training received through HDFC Bank interventions. Improvements in soil health through organic farming methods were noted by 58% of respondents (Ref. Fig. 13). Figure 14 outlines the perceived improvements in farming after adopting the agricultural trainings. Specifically, 76% of respondents highlighted the improved capacity to increase productivity as the primary benefit of farmer training, followed by 64% mentioning reduction in input cost. Additionally, 63% of respondents noted improved awareness of farming practices as a benefit of the training. Since farmers in the region previously relied on traditional farming knowledge, these interventions have proven invaluable in increasing yields and exposing the entire community to advancements in farming techniques through exposure visits.

Figure 13: Perceived Benefits of agriculture trainings

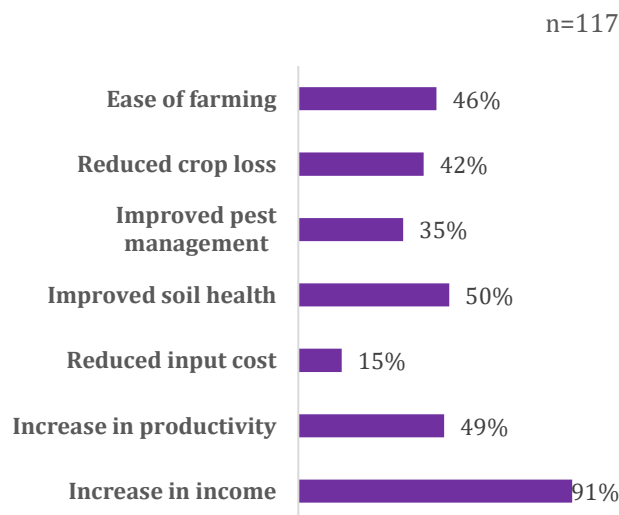
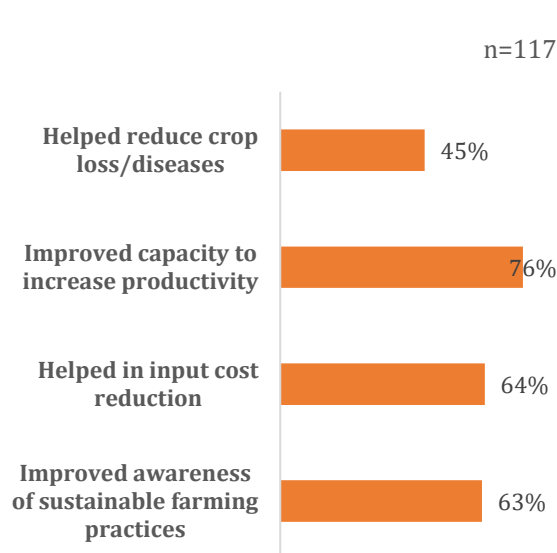


Figure 14: Perceived Benefits of agriculture practices



4.2.2 Economic Empowerment through Collectivisation

Thirty-two percent of respondents have reported benefiting from Self-Help Group (SHG) development. Although SHGs were already established in the area women primarily engaged in getting loans from local lenders, leading to debt distress. The HDFC interventions in the area aimed at converging interventions and leveraging the existing SHGs to promote saving, safe loan

procurement and enterprise activities in the region. Initially, the focus was on enhancing financial literacy among the SHGs, which was undertaken by 12% of the respondents. HDFC Bank facilitated the opening of bank accounts and helped create an ecosystem for loan provision and savings among women in the household. In the training, 307 women were educated about various banking processes, government schemes such as the Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY), Pradhan Mantri Mudra Yojana, and others. They were informed that SHGs following the five cardinal principles "Panchsutra" (regular meetings, regular savings, internal lending, regular repayment and bookkeeping) can receive Rs. 12,000 or Rs. 15,000 as revolving funds.

Through the project, 96% of SHGs received training on bookkeeping, 67% got aid in establishing linkages with the bank and 23% mention establishing or expanding enterprise/business activities as the primary intervention in the project area. Currently, 71% of the SHGs are functional.

The program developed an agricultural tool bank in all 15 villages, managed by the SHGs, and loaned equipment to farmers at Rs 15-30 per use. The marginal farmers in the project area mostly rely on draught animals for their field operations, transport, and agro-processing. The Tool Bank of Small Farm Equipment currently provides small farm equipment like the wheel hoe with 8" weeder, 3-tooth tine attachment for manual wheel hoe, huller, plough attachments; brush cutter; winnowing fan and chaff cutter etc. Additionally, the SHGs assist in the maintenance of project assets such as drip irrigation systems through additional SHG funds. For SHGs that do not have literate women for bookkeeping, the CinI team hired individuals from the village to regularly maintain meeting minutes and do bookkeeping for the women in the project area, at a cost of Rs 1000 per month, which will now be leveraged from the Village Organisations after the project closure. The hired village personnel manages about 4-5 SHG's in the region that are run by illiterate women to provide additional support to the SHG structure. Through collective marketing training, some village SHGs also jointly sell vegetables and agricultural produce to nearby markets especially in the nearby Talod town and a popular market area in the region. The SHG on a rotatory basis get their women members to collect vegetables and sell the produce effectively splitting the cost per week of the sale. These SHG's also leverage village Farmer Producer Organisations for price management of their crops and storage of their produce.

Figure 15: HDFC Interventions for expanding enterprise/business activity of SHG

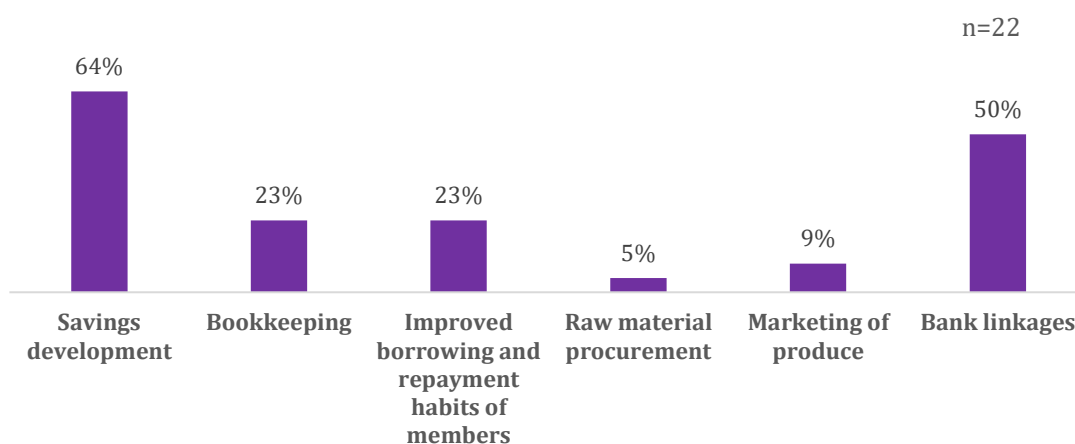


Figure 15 highlights the main trainings received, as reported by women SHG members. Sixty-four percent of respondents mention savings development followed by 50% respondents mentioning training in bank linkages. In addition, women exhibit considerable knowledge of the processes and systems required to maintain their SHGs. They reported that this has boosted their confidence, and loans distributed through the SHGs and bank linkages have been beneficial for constructing houses, conducting marriages, and internal household purposes. The mean monthly income from SHGs in the project area is Rs. 2,500.

4.2.3 Improved Capacity to Generate Income Through Livestock Management

Approximately eleven percent of respondents have benefited from interventions in livestock management. These interventions comprised a combination of awareness-raising activities, training sessions, and the distribution of high-quality goats in the project area. Training programmes on livestock management were organised for SHG members in project villages, benefiting nearly 500 beneficiaries. Farmers were educated on crucial aspects of goat and buffalo rearing, including vaccination, deworming, dipping, milk improvement, cattle shed management, fodder provision, animal treatment, and the importance of dairy cooperatives.

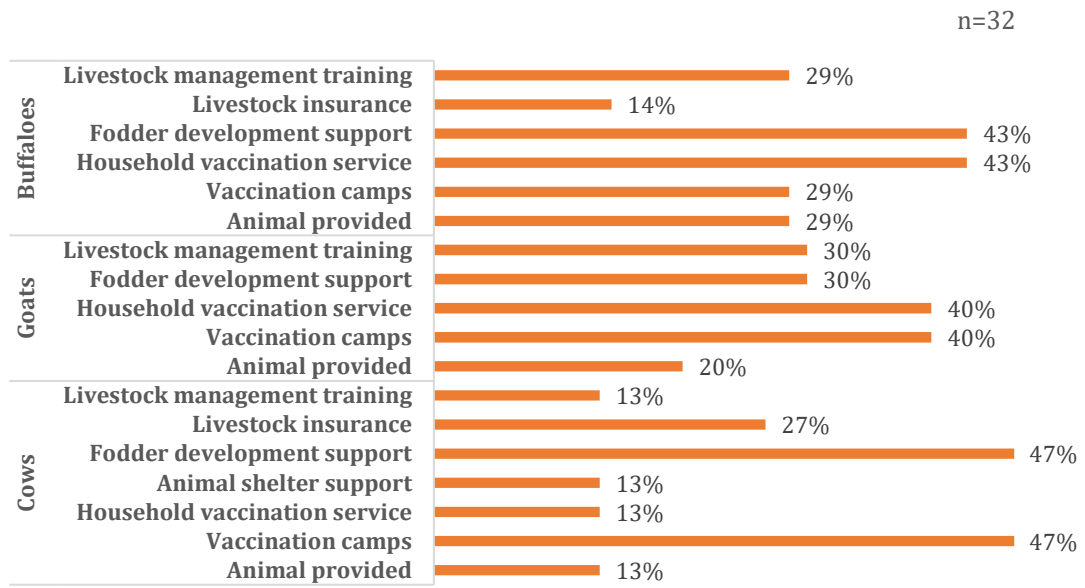
Furthermore, before the interventions, no improved bucks were available in the villages, with only nondescript ones present. However, owing to the support of HDFC, 44 bucks of Sirohi breed were provided to 44 beneficiaries from project villages for breed improvement. These Sirohi bucks have contributed to the emergence of a new generation of improved goats in the region. Additionally, prior to the interventions, villages lacked veterinary facilities, prompting the installation of 11 Travis units (AI crates) in all villages at central locations, thereby enhancing animal treatment facilities at the village level.

Additionally, members in the villages who expressed interest were trained to become animal healthcare workers. Currently, eight such workers travel to nearby villages, providing necessary vaccinations to goats and buffaloes. Given the project's focus on livestock management, HDFC Bank interventions facilitated loans for families to procure buffaloes and provided them with the necessary training for effective management. Interested participants were also encouraged to construct goat sheds worth Rs 40,000 to Rs 70,000, following which the implementation team provided them with eight high-breed goats. Moreover, training on Azolla unit installation helped in providing nutritious food, significantly benefiting the overall health of livestock.

Figure 16 illustrates the perceived benefits of livestock interventions in the project area. In terms of cows, 47% of beneficiaries highlight the significance of health camps and fodder support for their cattle. Additionally, approximately 27% of respondents report receiving assistance in obtaining cattle insurance. Concerning Goatry, 40% of respondents identify the vaccination drive as the primary intervention for maintaining livestock health. Through qualitative interviews, it was observed that households which established goat sheds and received high-quality goats for livestock management now sell approximately two goats annually, fetching an estimated price of Rs.12,000-Rs.15,000. Approximately 43% of respondents acknowledge receiving fodder development support for their buffaloes through project interventions. Overall, access to health camps and fodder support has been the primary benefit for goats, cows, and buffaloes, contributing significantly to livestock health maintenance in the region.

On an average 20% of the income generated by households is through livestock management. Thus, the intervention has been beneficial in securing 20% of the household income. The median

monthly income from livestock is Rs. 5000 marking a 100% increase from the income before the project. Figure 16: Perceived benefits of livestock interventions



Goatry Intervention

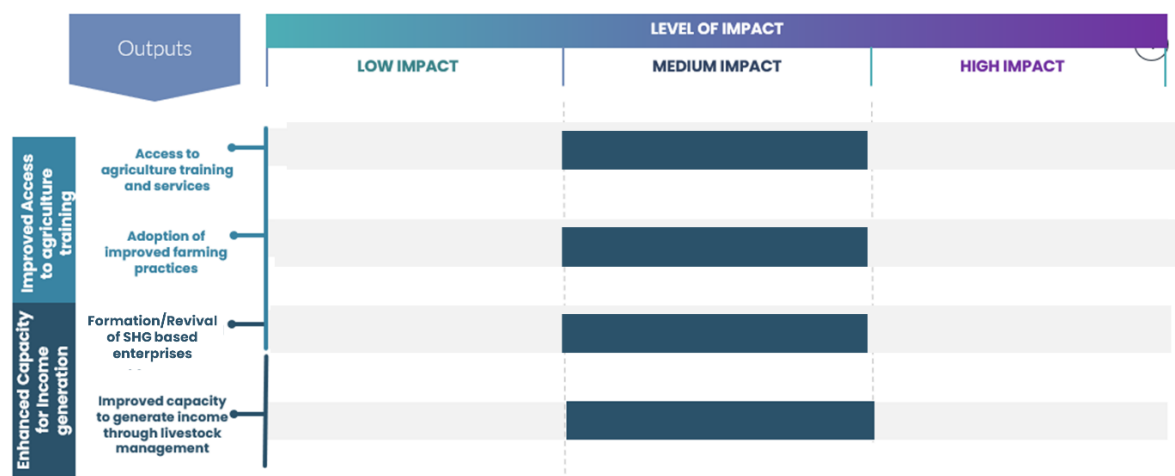


Milk Procurement Centre



4.2.4 Impact Observations

Figure 17: Overview of Impact and Effectiveness of Interventions -ST&LE



Under ST&LE, a considerable number of farmers have adopted the practice of using natural fertilisers and show considerable awareness for sustainable farming practices to some extent resulting in sustained impact. Moreover, SHG women have greatly benefited from routine trainings and leveraging the formation of tool banks and dairy units as joint enterprises. Moreover, interested SHG women have also received loans through the VO for their members showcasing a positive shift. Thus, enterprise support and trainings on record-keeping, along with the regular conducting of routine SHG activities, have been consistently applied with the support of the project interventions. This is observed with a medium impact, particularly given the low scale of the intervention. Livestock management services have helped create awareness regarding livestock diseases and through a cohesive practice of training animal health workers, made resources for vaccination available to the villages thereby increasing livestock health and income.

4.2.5 Case Study

Dairy Cooperative in Tebda Village

HDFC Bank initiatives helped provide additional source of income through dairy cooperatives in adjoining villages around Tebda village. The initiative, aimed at increasing income and connecting Sabarkantha district to the local Himmatnagar Sabar Dairy Cooperative, began with comprehensive trainings conducted in Tebda village. These trainings were designed to empower the community and expand their income opportunities through milk cooperatives. Initially, the community was mobilized, and discussions were held to outline the plan. Representatives were elected, and members were provided with training on procuring buffaloes through loans, including assistance with loan insurances. Furthermore, they received training on proper fodder management for their cattle, ensuring the health and productivity of their livestock. Following the training phase, necessary instruments and equipment were provided to six newly formed milk cooperatives in Ambasar, Ganer, Ratanpur, Changod, Choliya, and Tebda villages. These dairy cooperatives were equipped with modern machines such as the Milko machine, computers, and printers, facilitating efficient and transparent functioning. This transparency is particularly beneficial for the people, as it ensures accurate measurement of fat content and fair distribution of revenue.

In Tebda village alone, 150 members associated with the village organizations and self-help groups must produce 250 litres of milk every day, a quantity they have substantially surpassed owing to the increase in livestock and nearby villages. This initiative has expanded to encompass four villages in the area, with routine checks on fat content and equitable distribution of revenue among interested participants. As more community members learn to maintain buffaloes and join the cooperatives, the initiative's impact

continues to grow. It is estimated that these cooperative ventures contribute up to 20% of the household income of the participants, significantly improving their economic stability and livelihoods. Overall, the HDFC intervention in Tebda village exemplifies the power of community convergence and demonstrates how a well-structured ecosystem of training and awareness can establish sustainable structures that benefit everyone involved.

4.3 Health and Sanitation

4.3.1 Drinking Water

HDFC interventions focused on repairing household handpumps for safe and adequate drinking water facilities in the villages. Of the total sample, 4% households have availed drinking water facilities through HDFC interventions. 18 defunct hand pumps were repaired in project villages. More than 360 families have access to safe drinking water at hamlet level and year round water availability, even during the dryest summer months.

A notable observation is that all of the drinking water beneficiaries acknowledge changes in the water source. Previously, the predominant water source was dug well (92%). Women in project villages noted that the dug well water was sometimes contaminated and caused lots of ailments in the family, especially among children. The drinking water interventions have been beneficial in decreasing the instances of water borne diseases (84%), provided relief in stomach related problems (84%) and teeth related problems (54%). Upon asking the women, they mentioned that drinking water interventions have helped in saving time (92%), reduced physical strain and fatigue (54%), and saved additional effort (70%) that was earlier caused by hard labour to collect drinking water in the project area.

4.3.2 Kitchen Garden

To improve the nutritional status of the community and tackle the problem of malnutrition, especially in ultra-poor households, the project supported the community with kitchen gardens. Out of the total sample, 57% received interventions in kitchen garden out of which 94% of the households' received seeds, 85% households received training on proper management and maintenance, and 9% were shown demonstrations for proper kitchen garden under the intervention. They received support for a variety of vegetables; often mixed seeds for vegetables were distributed such as cabbage, cauliflower, brinjal, tomato, potato, onion, spinach, pumpkin, beans, radish, lady finger etc.

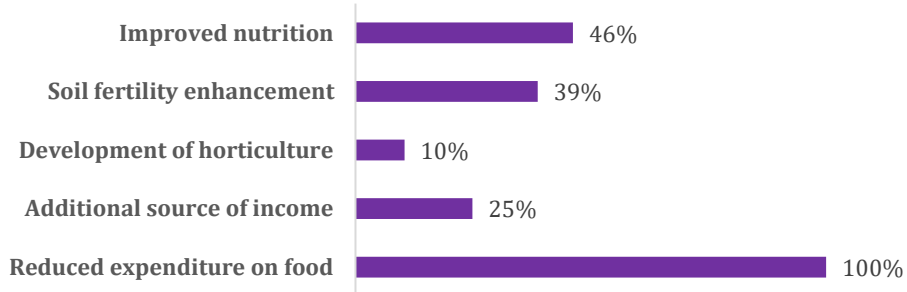
Majority of the respondents were found using the produce from their gardens for self-consumption (90%), and 9% of the respondents do both, sell and consume their kitchen garden produce. The ones involved in selling the produce reported a median monthly income of Rs.500.

While 74% of the beneficiaries observed a decrease in the amount they spent on fruits/vegetables from the market, 92% of the beneficiaries observed an increase in the quantity of consumption of fruits/vegetables from the kitchen garden since the project started. The data shows that a median monthly amount of Rs.250 is reported to have been saved by the households due to kitchen garden.

Moreover, the community is aware of the benefits of having a kitchen garden as can be inferred from Figure 18.

Figure 18: Benefits of kitchen garden as reported by beneficiaries

n=173



The chart shows that all of the respondents note the reduced expenditure on food and improved nutrition in the household (46%) to be the primary benefits of the kitchen garden intervention. This is followed by 39% of the respondents noting soil fertility enhancement to be the benefit of the intervention. 95% of the respondents have said they are fully satisfied with the intervention.

Kitchen Garden Intervention

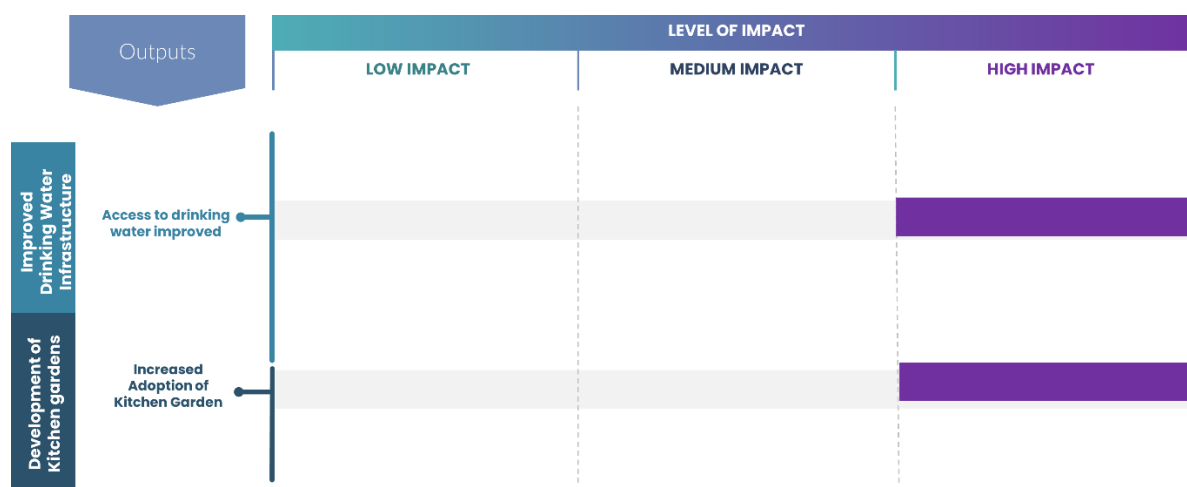


Handpump repair in use



4.3.3 Impact Observations

Figure 19: Overview of Impact and Effectiveness of Interventions -H&S



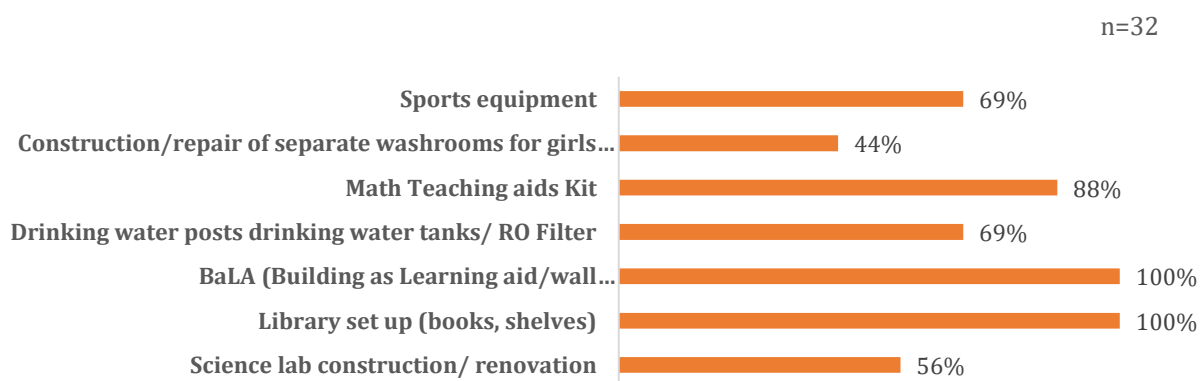
Under H&S, high impact was observed under development of kitchen garden and increased benefits of drinking water interventions in the region. Through handpump repairing in villages and trainings on kitchen garden, beneficiaries note the change in their health and increased awareness regarding healthy practices. Through kitchen garden, women have become more aware of the nutritional value of different crops and the importance of a balanced diet, leading to improved health practices within the community.

4.4 Promotion of Education

4.4.1 Infrastructure in Educational Institutions

A combination of multiple activities targeted towards improving enrolment, attendance, and learning outcomes were undertaken in the project area. The main aim for education interventions is to foster conducive educational environment in government schools that often lack the adequate resources for children to harness learning comfortably. For the same, the project focused on equipping schools with infrastructure facilities. A total of 15 project schools have received a combination of BaLa paintings, library support, washroom repairing and drinking water infrastructure in their villages. Figure 20 reports the percentage of teachers who reported different interventions under education in their school.

Figure 20: Percentage of teachers who reported different interventions under education in their school



HRDP interventions aimed to provide ongoing academic support to teachers in 15 intervention schools, focusing on enhancing their attendance at community classes and assisting them in teaching students effectively by demonstrating various activities. Additionally, School Management Committee (SMC) meetings were conducted in three schools in collaboration with school Had Masters (HMs), where SMC members were briefed on their roles and responsibilities towards school development. The program also facilitated the development of Teaching-Learning Materials (TLM) in collaboration with teachers and the creation of a print-rich environment in project schools. Efforts were made to develop bilingual reading materials, with eight stories translated into Gujarati and Bhil-Dungari (the local language). Furthermore, ten picture-word charts were developed in Gujarati and Bhil-Dungari to aid in retention of concepts and literature as the difference in dialect has been a severe concern in the region as children do not retain language well.

Initiatives were also undertaken to introduce Information Technology (IT)/tablet-based classes for students in grades 6 to 8 in three project schools. During the coronavirus pandemic, HRDP interventions adapted to provide academic support to teachers at the community level in all 15 villages as schools were closed. Teachers were engaged in reaching out to more students, and training and routine classes were conducted through HRDP interventions to ensure continuity in education during the challenging times. All teachers note the distribution of math's teaching kits in the project area, 83% of the teachers use them everyday for teaching. Ninety-six percent of teachers acknowledge that the kits contribute to improved retention of concepts among students. Qualitative interviews revealed that despite some teachers being transferred following the coronavirus pandemic, the math's and science kits remained valuable. This was attributed to the comprehensive orientation provided by schools to new teachers on utilising the kits effectively.

To engage young children in reading and writing, a library shelf along with 300+ books was given to schools in the project villages. This has greatly benefited young students as the difficulty level of the books are matched to the children's ability and make for varied types of readings. The library set-up and the rotatory distribution of books is still active in schools. While 62% of the teachers interviewed have stated that they use the library most days, 28% of the respondents use the library every day, mostly for reference. All teachers have noted that the library makes it easier for students to understand concepts. 72% of the students note that the library set up has aided in providing readily available reference material for exam preparation and for reading material beyond syllabus.

BaLA paintings were also constructed around the school campus. Teachers note that BaLA paintings have been beneficial for teachers to keep their lessons interesting for the students and has improved their ability to pay attention (78% and 96% respectively).

Figure 21 illustrates the extensive capacity building support provided to teachers through the HRDP interventions. The data reveals that 91% of respondents benefited from training sessions focused on developing teaching materials. Additionally, 69% received training on innovative teaching methods, while 53% participated in sessions on child development. These comprehensive training programmes have equipped teachers with the necessary skills to devise effective teaching strategies, innovate in their approaches, and gain deeper insights into the needs of their students.

Figure 21: Capacity building support received by teachers through HRDP

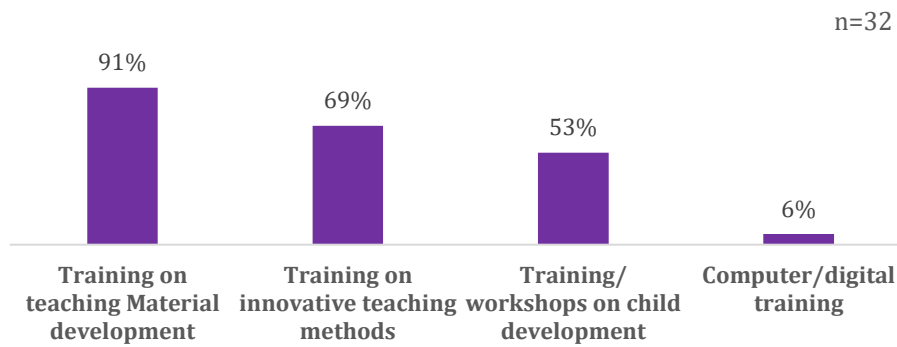
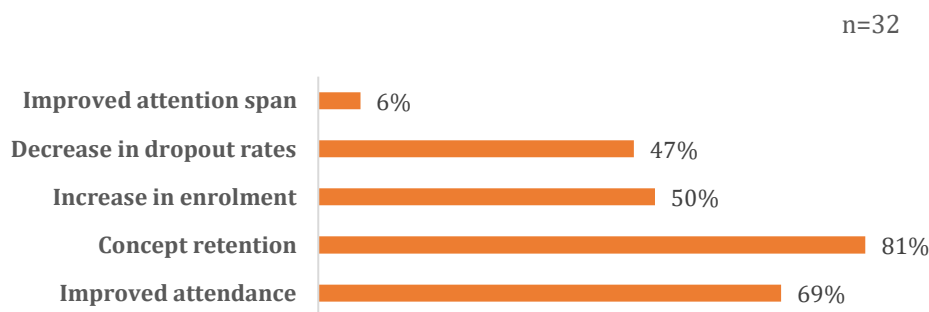


Figure 22 indicates the perceived benefits of infrastructural interventions according to teachers. As evident from the figure, 81% teachers note the improvement in concept retention among students since the interventions. While 69% mention improved attendance through interventions, 50% note the increase in enrolment in government schools as opposed to nearby private schools. 47% teachers also note the increase decrease in dropout rates of the students.

Figure 22: Perceived benefits of infrastructure interventions according to teachers



Awareness campaigns advocating for proper handwashing practices were conducted across the project villages. These initiatives aimed to educate residents, particularly students, on the importance of maintaining cleanliness through effective handwashing techniques. By instilling these habits early on, the intervention contributes significantly to the students' overall well-being, creating a hygienic learning environment conducive to their academic growth and development. This initiative not only supports public health objectives but also complements the educational system's efforts to instill essential life skills and promote hygiene practices among students. Furthermore, project schools also organised celebrations for Independence Day and Gandhi Jayanti, incorporating a range of academic and non-academic activities such as video screenings, writing and speech competitions, as well as drawing activities, to enrich students' learning experiences.

While education infrastructure in the form of BaLA, libraries etc., are crucial elements of the learning environment and are known to improve student outcomes, facilitate better instruction and reduce dropout rates, there is a strategic and holistic approach that can help in focusing on social-emotional learning, student's academic progress and one which is data-driven and centered on measuring student's learning outcomes and overall quality of education. While the project was successful in creating a conducive learning environment in the schools, more needs to be done to engage with the community. The project needs to create greater awareness among

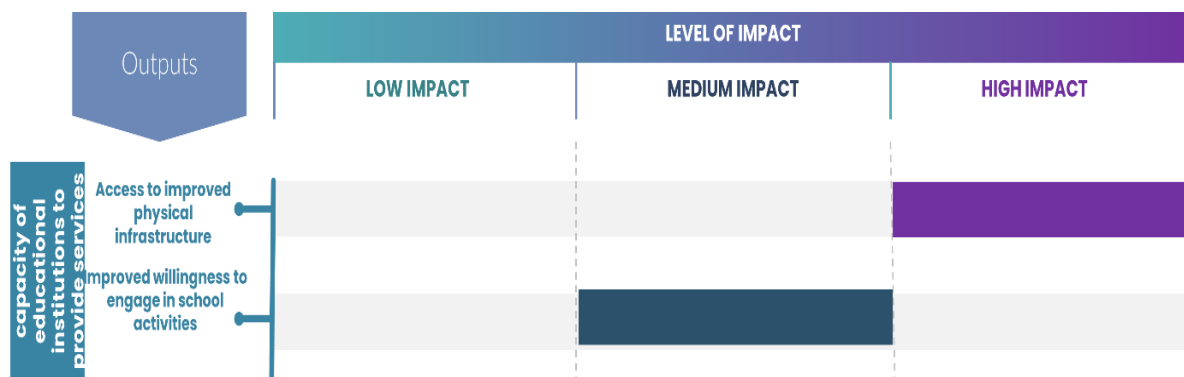
the School Management Committee (SMC) members on the RTE (Right to Education Act) as well as their roles and responsibilities towards school development.

Library and Learning aids in classroom



4.4.2 Impact Observations

Figure 23: Overview of Impact and Effectiveness of Interventions -PoE



Under PoE, high impact can be noticed for the access to improved physical infrastructure, quality of teaching and children’s willingness to engage in school activities. These positive outcomes can be attributed to the sustained interventions implemented, which have catalysed widespread transformations in the project schools. The comprehensive efforts have not only elevated the physical infrastructure standards but have also fostered an enriched learning environment, thereby positively influencing the overall educational experience for the students.

4.5 Holistic Rural Development Index (HRDI)

There are multiple dimensions involved in achieving the goals of HRDP that includes agricultural production, generates new jobs, enhances health, increases communication, and provides better living infrastructure.

Based on the design of the HRDP program supported by HDFC Bank, a composite index has been developed called Holistic Rural Development Index (HRDI) that indicates the achievements of the HRDP interventions leading to overall improvements of the results indicators. As, the program

interventions varies across projects and geographies, it was not possible to ascribe a single impact indicator that might be able to accurately capture the overall performance of HRDP. Thus, HRDI serves the purpose of quantifying the impact through blending of results of various indicators grouped into four thematic areas.

For calculation of HRDI, the values of the impact indicators at baseline and endline were selected and assigned weights based on their relative contribution to the final expected outcome across four themes. Depending upon the variations in the interventions made in each project, the HRDI customized to accommodate the most significant results that attributes to the goal of the HRDP program. The detailed methodology and indicators are explained in detail (see Annexure B).

The HRDI calculation for project P0270 implemented in Sabarkantha, Gujarat has been given in the following table.

Table 8: HRDI Calculation for P0270, Sabarkantha

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.09	0.13	0.12	0.15	0.08	0.17	0.11	0.17	0.39	0.61
% Change	44%		25%		112%		54%		56%	

While the overall HRDI has 56% increase over baseline, the impact is observed to be high in Health and Sanitation (112%) due to streamlined interventions that were new to the region, Skill and Livelihood at 25%, 44% for Natural Resource Management and 54% for increase in Promotion of Education.

5 Analysis of Assessment Criteria

As outlined earlier in 2.1, for each thematic area, activities completed by CInI were identified and assessed using the following criteria:

- Relevance and Convergence
- Impact and Effectiveness⁵
- Sustainability

The following sub-sections provide an analysis of the HRDP programme with respect to each of these criteria.

5.1 Relevance and Convergence

Sabarkantha district in Gujarat faces numerous challenges stemming from socioeconomic disadvantages and a lack of income-generating opportunities. The project engaged with targeted households, playing a vital role in mobilising tribal communities into primary and secondary groups. This initiative has facilitated the adoption of improved agricultural practices aimed at enhancing productivity and diversifying agricultural lands to cultivate higher value crops, thereby enabling households to earn additional income. Qualitative interviews have highlighted that this comprehensive engagement has led to a notable increase in crop productivity, ranging from 25% to 30%, and has encouraged the cultivation of vegetables, resulting in annual additional incomes ranging from Rs. 25,000 to Rs. 40,000. The engagement processes have focused on strengthening forward and backward services through active involvement of secondary and apex institutions, such as village-level organisations and farmer producer companies. The momentum generated by these interventions has enabled value-added initiatives that have stabilised and further enhanced the income-generating capacities of small and marginal tribal households. Moreover, these interventions have improved the quality of life by introducing various livelihood prototypes, including productivity enhancement, promotion of higher value crops, expanded irrigation coverage, improved water use efficiency, livestock development, enhanced extension services, and strengthened community-level institutional support.

The programme converges with Gujarat's cooperative dairy model as the intervention aided in establishing milk procurement centres in villages. Through financial literacy trainings, people were facilitated in acquiring buffaloes through loans. A sum of Rs. 20000 was allocated for buffalo purchases per beneficiary in four villages of Khedbrahma, and Rs. 10000 in four villages of Poshina, as beneficiaries received support from government departments. This initiative has led to additional income of Rs. 24000 per month for each member through milk sales to dairy cooperatives.

Training programmes for SHG leaders in project villages covered various aspects of Village Organisation (VO) management, group dynamics, leadership development, and record keeping. The trainings on VO meeting procedures, conflict resolution, linkages with banks and government departments, subcommittee formation, leadership qualities, and the importance of record-keeping have enhanced financial awareness and improved understanding of community organisation processes in the region.

⁵ While from an evaluation perspective impact and effectiveness are two different aspects, in the report, these are used interchangeably.

In addition to livelihood enhancement, there is a recognised need to engage with schools in the selected villages to address emerging issues among the younger generation. The project has made significant contributions to both government schools and the wider community, enhancing the quality of educational experiences for students. Improved teaching and learning practices in literacy and numeracy, the introduction of library and sports programmes, integration of technology with education, and community engagement on education have all positively impacted student learning levels and strengthened the capacity of schoolteachers.

The improper utilization of natural resources, coupled with unsustainable agricultural practices, and community backwardness has led to environmental degradation, affecting the livelihoods of local communities. Major work under HDFC *Parivartan* devised a comprehensive approach that combined efforts to improve socioeconomic conditions with sustainable natural resource management strategies tailored to the needs of the villages. The evaluation observed that there was convergence or utilization with the existing schemes of the government. This implies that the programs were designed to work in harmony with the ongoing government schemes and initiatives. National schemes like MGNREGA and state specific initiatives for education were leveraged for the implementation of specific activities.

5.2 Sustainability

The project has demonstrated a commitment to its continuation even after the designated project years. The establishment of Village Organisations and the hiring of Community Resource Persons have proven instrumental in effectively managing HDFC funds during the project intervention. As a result, project villages have successfully sustained maintenance groups for all the infrastructural interventions, routinely maintaining contribution funds for the effective utilisation of the assets. These maintenance groups work under the Village Organisations and Self-Help Groups and are successful in proper maintenance of resources provided through HDFC interventions. The knowledge gained from the community's collective maintenance of resources has helped in sustaining many practices that were not previously implemented. The drip systems are managed by SHG's with separate funds to manage the maintenance and repair of the structures.

In the realm of skill development and livelihood enhancement, farmers continue to actively participate in training sessions on new scientific farming practices and some farmers maintain nurseries for vegetable farming. This proactive approach has facilitated the adoption of environmentally friendly agricultural practices, reducing input costs for farmers. Women involved in SHG initiatives have displayed interest in maintaining their SHGs and in pursuing new entrepreneurial endeavours, due to the project interventions in enterprise support. The SHG's routinely leverage their positions to get loans of livestock for their members and actively manage the agri tool banks of their villages apart from other projects. Additionally, the formation and maintenance of milk processing centres has harnessed the power of Gujarat dairy cooperatives, and more farmers are receiving loans for purchase of buffaloes. The Animal Healthcare workers have aided in reducing livestock mortality through proper vaccination of livestock at nominal prices. There is a coordinated effort between awareness generation and deploying of adequate resources to harness the knowledge developed through HDFC interventions. The adoption of kitchen gardens has been widespread, even among households that did not receive formal training through HDFC Bank.

The educational interventions have proven particularly advantageous in establishing enduring systems that contribute to the sustained attention and well-being of students. Teachers note the decrease in dropout rates in students and are motivated to develop more such structures looking at the success and impact it has created on students. The focus on developing resources in schools that cater to the community have helped in concept retention and is a small step towards dealing with the educational backwardness in the region.

The project's commitment to post-project continuity, coupled with the community's active engagement and implementation of sustainable practices, has sustained progress in various areas of intervention. The project's impact is not only evident during its tenure but also endures till now.

While assessing the sustainability of this project, it is crucial to keep in mind that the COVID-19 pandemic hit in the middle of the project implementation period. Hence the scale of the project and continuous follow up got limited. Even with this huge challenge, the project has still managed to gain significant on-ground results.

6 Recommendations

To further improve the outcomes of HRDP in Ramgarh district of Jharkhand, the following recommendations are made for the HDFC Bank's *Parivartan* and HRDP teams and the implementing:

Recommendations that can sustain the project initiatives:

- There needs to be more investment in seed banks and other input provision which has been most crucial in increasing farmers' income.
- A follow-up by agriculture experts is needed to ensure farmers are making use of the practices taught and assist them in their problems.
- The scale of the project must increase to encourage more farmers to adopt efficient water resource management practices such as drip irrigation systems as irrigation continues to be a main challenge in the area. Provide training and support for the maintenance and effective use of drip irrigation systems to optimize water usage and enhance agricultural productivity.
- Expand check dam and LIS initiatives in strategic locations considering their positive impact on water availability and distribution.
- Conduct regular training sessions, workshops, and awareness programs on soil erosion control, water conservation, and other NRM techniques.
- Build on the success of crop diversification initiatives, by exploring crops that are suitable for the region and align with market demand.
- The scaling up of digital support to schools is crucial.
- Assistance in infrastructure development like classroom construction as the student-classroom ratio is low, and the funds received by the government are insufficient for construction work.
- More trained professionals in the village area are required to translate Gujarati literature to Bhil dialect for improved development of language and grammar amongst students.
- Need to implement programs that specifically target students in the transition periods after 6th, 8th, and 10th standards, addressing the reasons for potential dropouts. Provide counselling and guidance to students and their families, addressing concerns and misconceptions about the continuation of education. Establish scholarship programs to alleviate financial burdens on families, making education more accessible. Provide financial support for transportation, study materials, and other essential needs that may hinder students from continuing their education.

Recommendations that can improve project management efficiencies:

- Regularly collect data on crop yields, soil health, and water usage to measure the effectiveness of implemented strategies.
- Encourage farmers to become members of local Farmer Producer Organisations (FPOs) and play an active role in its management.
- Handholding support to enterprises for marketing tie-up, business plan development, linkages with government schemes, etc. is essential.

Recommendations that can improve the design of the HRDP:

- More income-earning opportunities and business-related training for women and youth as there is lack of non-farm-based opportunities in the project area.
- More advanced training on production practices and the use of machines/tools for farmers to keep pace with the demands of the market.
- Various training programs for SHG's for group enterprises can be supported in the region.
- Basic financial literacy training for SHG members is needed to ensure self sufficiency of SHG's.
- Most village women still prefer getting loans from moneylenders, the scale of project needs to harness the power of collective mobilisations for economic independence.
- The sensitisation programmes on health issues and menstrual hygiene along with distribution of sanitary pads will help in changing the lifestyle during menstrual cycle and help in reducing stigma around the same.
- The program needs to focus on women nutrition in the area along with contraceptives training to households as high family sizes result in economic constraints on families.

The HRDP program in Sabarkantha district, Gujarat, led by the CInI across 15 villages, had a multi-faceted approach. It encompassed NRM interventions, including fencing and irrigation, resulting in a 20% increase in gross income and 29% increase in net income for farmers. Skill development & livelihood enhancement initiatives focused on agricultural training, self-help group support, and livestock management, benefiting households through increased productivity and income. Health efforts, such as kitchen garden training, improved physical well-being and reduced food expenses. Promotion of education initiatives, including teacher trainings, library construction and awareness activities, positively impacted student enrolment, attendance, and learning outcomes, with teachers reporting reduced dropout rates and improved concept retention.

Annexures

A Sampling Methodology

The quantitative household survey was administered for four thematic areas in the district.

A.1 Quantitative Sample Size Calculation

For this study, the formula for calculation of finite sample size for one-time cross-sectional survey (Cochran's 1977), has been deemed appropriate. The formula used to estimate the sample size for the quantitative household survey is given below:

$$N = Z_{1-\alpha}^2 \times P (1 - P) \times D_{eff} \div (S_e)^2$$

Where,

N= sample size

P= key characteristic of the population, set at 50%;

$Z_{1-\alpha}$ = standard score corresponding to the confidence interval, set at 95% (1.96 for two tailed test);

S_e = margin of error, set at 5%;

D_{eff} = factor for design effect, set at 1 (no design effect)

Thus, the estimated maximum sample size is (*enter number*).

A.2 Quantitative Sampling Methodology

All the nine programme villages were selected for the study. The stages of sampling are explained as follows:

Stage 1 – Selection of beneficiaries:

The list of beneficiaries from all the eight villages acted as the sampling frame for the programme. This list was obtained from the implementing partner –CInI. Simple random sampling was done to select the required number of households from within the list. Since beneficiary selection was undertaken independently for each programme, the selection of more than one beneficiary from a single household was probable.

Stage 2- Sampling for villages:

Sampling for each village was done using the Probability Proportionate to Size (PPS) method. The percentage of the total number of beneficiaries in a village was taken out from the total beneficiaries. This percentage was then converted into a sample per village. A total of nine villages were covered under the survey.

A.3 Qualitative Sample Size Calculation

Qualitative tools of In-depth Interviews (IDIs) and Focus Group Discussions (FGDs) were administered for obtaining information about the remaining themes as well as to enrich the household survey information with a deeper understanding.

Since there was no baseline available for this evaluation, recall method was used in the household survey to assess the change that has happened over time. For this purpose, the respondents were

asked to recall the value of critical indicators that they could recall from the time the programme started.

B HRDI Methodology

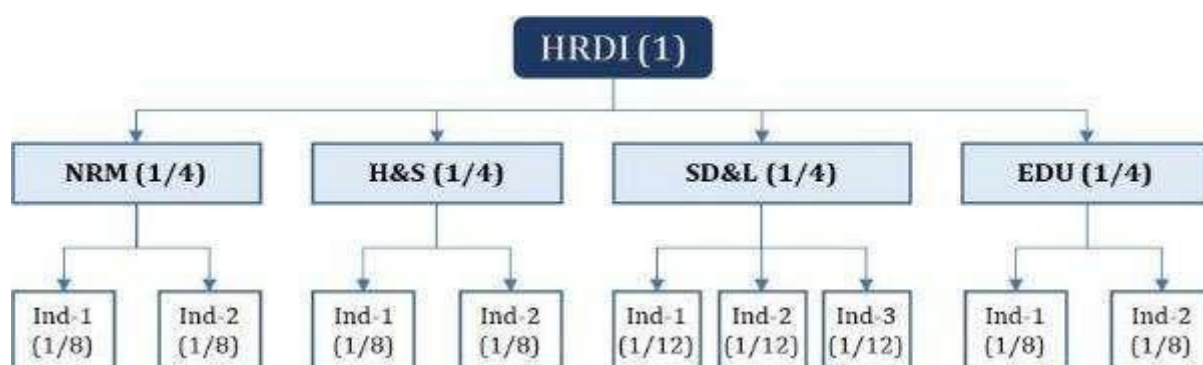
The outcome indicators included in the HRDI were obtained from different domains and are consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables such that the indicators could be measured between 0 and 1. Indicators such as productivity and income which were measured on a continuous scale were converted to discrete variables by setting a cut-off. The 50th percentile of these indicators at baseline was chosen as the cut-off point. Thus, a change in the indicator could be captured by recording the proportion of beneficiaries above the cut-off at two distinct points in time.

B.1 Indicator Weights

Weights were applied to each of these indicators, in similar lines with the HRDI calculation. Attribution of equal weights to all the domains were done in order to create a standard HRDI for each cluster.

Equal weights were assigned to each of the four domains. Further, the domain weight was equally distributed among the indicators of that domain; thereby ensuring that equal weightage of the domains was maintained overall.

Figure 24: Domain and Indicator Weights



The example above is indicative. The domains as well as indicators were different across all programmes, and hence the weights were changed slightly for the purpose of the study, following the principle stated above.

Table 9: Example of HRDI Calculation

Thematic Area	Indicators	Formula
NRM	Proportion of farmers with net income above median	$(1/4) \times (1/3) = 0.083$
	Proportion of farmers reporting increased productivity of three main crops above median (before and after)	$(1/4) \times (1/3) = 0.083$
	Percentage of farmers reporting access to irrigation	$(1/4) \times (1/3) = 0.083$
ST&LE	Percentage of households who are getting skill training & reporting increase in income from job/enterprise/self-employment	$(1/4) \times (1/2) = 0.125$
	Percentage of HH reporting income above median from livestock	$(1/4) \times (1/2) = 0.125$
H&S	Percentage of households reporting increase availability of drinking water facility	$(1/4) \times (1/2) = 0.125$
	Percentage of households with access to improved toilet facility	$(1/4) \times (1/2) = 0.125$
PoE	Percentage of respondents reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, furniture etc.)	$(1/4) \times (1/2) = 0.125$

Percentage of respondents reporting increased access to functional learning infrastructure (library, science labs, smart class, etc.)	$(1/4) \times (1/2) = 0.125$
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Once all the indicators were standardized and weighted, a sum of these weighted indicators was utilized to calculate the value of HRDI.

B.2 Analysis Plan

HRDI for Ramgarh district was calculated at two points in time i.e., before and after HRDP and can be compared cross-sectionally to understand which indicators contributed to an increase or decrease in HRDI value. Since the value attribution of the indicators is in proportion, the HRDI value numerically ranges between 0 and 1. Once all the indicators are standardized and weighted, a sum of these weighted indicators are utilized to calculate the value of HRDI.

B.3 Method to Calculate HRDI

Step 1: All the indicators were cleaned and adjusted for outliers. Only those beneficiaries were considered for the analysis where data on outcome indicators was available for both pre- and post-intervention.

Step 2: A cut-off value was calculated by taking the 50th percentile for each indicator before HRDP (baseline). For instance, consider the indicator, Average Annual Income of Farmers. It was considered at baseline, then all the farmers were sorted across the seven blocks/villages in ascending order based on their income. The 50th percentile i.e., the median value of the income was taken. This median or 50th percentile was taken as the cut-off (baseline cut-off to be precise).

Step 3: Calculated the proportion of beneficiaries above the set cut-off value at the baseline for each indicator.

Step 4: Calculated the same at the endline i.e., the proportion of beneficiaries above the baseline cut-off for each indicator.

Step 5: Multiplied each proportion of the indicators with the set indicator weights.

Step 6: Summed up all the indicators (i.e., weighted sum) to calculate the HRDI value at baseline and endline.

Step 7: Calculated the relative change in the HRDI value from baseline to endline.

The calculation for Sabarkantha has been detailed below (see Table 10).

Table 10: HRDI Calculation for Sabarkantha

Domain	Indicators	Baseline	HRDI	End line	HRDI	% Change
NRM	Proportion of farmers with net income above median	0.16	0.09	0.25	0.13	44%
	Proportion of farmers reporting increased productivity of three main crops above median (before and after)	0.12		0.18		
	Percentage of farmers reporting access to irrigation	0.08		0.08		
ST&LE	Percentage of SHG members reporting income above	0.15	0.12	0.19	0.15	25%

Domain	Indicators	Baseline	HRDI	End line	HRDI	% Change
	median from rural enterprises					
	Percentage of households who getting skill training & reporting increase in income from job/enterprise/self-employment	0.17		0.17		
	Percentage of HH reporting income above median from livestock	0.16		0.23		
H&S	Percentage of households reporting increase in use of fruits/vegetables from the nutrition garden	0.23	0.08	0.33	0.17	112%
	Percentage of households reporting increase availability of drinking water	0.08		0.33		
PoE	Percentage of respondents reporting increased access to functional school physical infrastructure (smart class, furniture etc.)	0.19	0.11	0.28	0.17	54%
	Percentage of respondents reporting increased access to functional learning infrastructure (library, science labs, smart class, etc.)	0.25		0.39		
Total			0.39		0.61	56%

C Overview of Impact Calculation

Impact of the programme was calculated based on the averages of quantitative output indicators as demonstrated below (see Table 11).

Table 11: Impact Calculation

Outputs	Output Indicators		Output Avg	Impact Level
Increased income from agriculture				
Land/ crop productivity	Proportion of farmers reporting increase in production of crops that were supported under HRDP	90%	84%	High
	Proportion of farmers reporting increased income from crops that were supported under HRDP	79%		
Access to the farm management infrastructure	Proportion of beneficiaries satisfied with the quality of available services (in farm management)	53%	57%	Medium
	The proportion of farmers reporting an increase in the use of natural fertilizers	62%		
Increased adoption of crop diversification	Proportion of farmers diversifying their crops with project support	57%	76%	High
	Proportion of farmers who report income increase due to crop diversification (base = farmers who adopted crop diversification)	95%		
Increased use of clean energy solutions				
Adoption of clean energy infrastructure	Proportion of HHs using clean energy infrastructure (Base=all)	21%	51%	Medium
	Proportion of households reported being fully satisfied with clean energy infrastructure (Base=clean energy beneficiaries)	81%		
Improved access to agricultural training and services				
Access to Agriculture training and services	Proportion of farmers who accessed project training services	38%	42%	Medium
	Proportion of farmers who demonstrate awareness regarding sustainable farming practices	46%		
Adoption of improved farming practices	Proportion of farmers who adopt scientific agricultural practices	40%	60%	Medium
	Proportion of beneficiaries reporting an increase in productivity due to better farm management	49%		
	Proportion of farmers reporting increased income	91%		
Enhanced capacity for regular income generation				
Formation/ revival of SHG-	Proportion of members who received support with establishing/reviving SHGs enterprise	32%	51%	Medium

based Enterprises	Proportion of members whose SHGs are currently functioning	71%		
Improved capacity to generate income through livestock management				
Improved capacity to generate income through livestock management	Proportion of beneficiaries who received support in livestock management services	11%	47%	Medium
	Proportion of beneficiaries reporting an increase in income through livestock	73%		
	Proportion of beneficiaries reporting increase in livestock health	57%		
Improved availability and management of water				
Access to drinking water at household and community levels improved	Proportion of households reporting relief in stomach related problems	85%	85%	High
	The proportion of households reporting decrease in instances of water borne diseases in the family	85%		
Development of kitchen gardens				
Increased adoption of kitchen gardens	Proportion of HHs reporting improved nutrition from kitchen gardens	46%	84%	High
	No of HHs received seeds/training in kitchen garden	94%		
	No of HHs with reduced expenditure	100%		
	Proportion of HHs reporting fully satisfied of the intervention	95%		
Improved capacity of educational institutions to provide services				
Access to improved physical infrastructure	Proportion of teachers who report gaining access to functioning libraries, smart class, furniture	75%	72%	High
	Proportion of students who gained access to Science equipment at education institutions	69%		
Improved willingness to engage in school activities	Teachers reporting improvements in attendance due to improved infrastructure	69%	66%	Medium
	Proportion of teachers reporting an increase in enrolment post infrastructure development	50%		
	Proportion of teachers reporting an increase in concept retention post infrastructure development	81%		

Change	Impact Level
0%-40%	Low
>40% - 70%	Medium
>70%-100%	High

D Two Sample Proportion Z test

The two-sample proportions z-test is a statistical hypothesis test used to determine whether two proportions are different from each other. The null hypothesis of the test is that the two proportions are equal, while the alternative hypothesis is that the two proportions are not equal.

The test statistic for the two-sample proportions z-test is given by the following formula:

$$z = (p_1 - p_2) / \sqrt{p(1-p)/(n_1 + n_2)}$$

where:

p_1 is the proportion in the first sample

p_2 is the proportion in the second sample

p is the pooled proportion, calculated as $(p_1n_1 + p_2n_2)/(n_1 + n_2)$

n_1 is the sample size of the first sample

n_2 is the sample size of the second sample

The z-statistic is then compared to the standard normal distribution to determine the p-value of the test. A p-value less than alpha (typically 0.05) indicates that the null hypothesis can be rejected, and there is evidence to suggest that the two proportions are different.

The two-sample proportions z-test can be used to test for a difference in proportions between two groups of people, such as men and women, or two different brands of products. The test can also be used to compare the proportions of two different populations, such as the population of a city and the population of a state.

Here are some of the assumptions of the two-sample proportions z-test:

- The two samples are independent.
- The two populations are normally distributed.
- The sample sizes are large enough ($n_1p_1n_2*p_2 > 10$) (Basically the Central Limit theorem should apply for the sampling distribution of the z-statistic can be approximated by the standard normal distribution.)

If these assumptions are not met, the results of the test may not be reliable.

The two-sample proportions z-test is a powerful tool for comparing two proportions. However, it is important to be aware of the assumptions of the test and to ensure that the data meets these assumptions before using the test.

Assumptions:

- Independence: The two samples must be independent of each other.
- Normality: The two populations must be normally distributed, or the sample sizes must be large enough ($n_1p_1n_2*p_2 > 10$).
- Binomial distribution: The population does not need to follow a binomial distribution, but the test is more powerful if it does.

The z-test conducted for one indicator- Proportion of farmers with income from agriculture above baseline median-is shown below.

Table 12: Z-tests Conducted for P0270

Indicator 1	Proportion of farmers with income from agriculture above baseline median
p1 (proportion of first sample-endline)	147
n1 (sample size of p1)	195

p2 (proportion of second sample-baseline)	95
n2 (sample size of p2)	195
p	0.6205128205
Calculation	0.04914412713
z statistic	10.5811219
	Statistically significant at 95% confidence level (or $p < 0.05$)
p-value for the z statistic	<0.00001

E Theme-wise Sustainability Matrix

The programme support provided demonstrated the capability to continue even after the programme ended. The programme's support to sustain improved outcomes are enumerated below (see Table 13).

Table 13: Theme-wise Sustainability Matrix

Support Provided	Structures Established	Technical Know-how	Usage	Maintenance
NRM				
Irrigation Management	✓		✓	✓
Farm Management	✓	✓	✓	
Clean Energy				✓
ST&LE				
Agriculture Training and Support		✓	✓	
SHG Development		✓		✓
Livestock Management	✓	✓	✓	
H&S				
Kitchen Garden	✓	✓	✓	✓
Drinking Water	✓	✓	✓	✓
PoE				
Educational Institutions Development	✓	✓	✓	✓
Awareness Generation				