Impact Assessment Study under Holistic Rural Development Programme (HRDP) Kangra, Himachal Pradesh-P0313

Prepared For:

HDFC BANK PARIVARTAN

HDFC Bank Corporate Social Responsibility (CSR)

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List of Acronyms

CSR	Corporate Social Responsibility
FGD	Focus group discussions
FPO	Farmers Producer Organisation
GHS	Government High School
GMS	Government Middle School
GPS	Government Primary School
GSSS	Government Senior Secondary School
HH	Household
HRDI	Holistic Rural Development Index
HRDP	Holistic Rural Development Programme
IDI	In-depth Interview
INR	Indian Rupee
IWD	International Women's Day
JICA	Japan International Cooperation Agency
KII	Key Informant Interview
LPG	Liquid Petroleum Gas
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MHM	menstrual hygiene management
NABARD	National Bank For Agriculture And Rural Development
NGO	Non-governmental organization

NRM	Natural Resource Management
OBC	Other Backward Classes
PANI	Peoples' Action for National Integration
RIR	Rhode Island Red
RO	Reverse Osmosis
SC	Scheduled Caste
SHG	Self-Help Groups
SIDBI	Small Industries Development Bank of India
SMC	School Management Committee
ST	Scheduled Tribe
VDC	Village Development Committee
VRC	Village Resource Centres
APL	Above Poverty Line
BaLA	Building as Learning Aid
BPL	Below Poverty Line
CSR	Corporate Social Responsibility

Executive Summary

The Holistic Rural Development Programme (HRDP), led by HDFC Bank and implemented through non-governmental organizations (NGOs) across various states, is a cornerstone initiative aimed at equipping the rural population with tools and resources for social and economic growth. Designed to address the critical needs of selected villages, this programme works in close collaboration with local communities within specific geographical regions. This impact assessment report focuses on Project P0313, implemented in fifteen villages of the Kangra block and district in Himachal Pradesh. People's Action for National Integration (PANI), the implementing partner, facilitated key activities under four focus areas: Natural Resource Management (NRM), Skill Training and Livelihood Enhancement (ST&LE), Health and Sanitation (H&S), and Promotion of Education (PoE). Data collection for this report, covering eleven of the fifteen villages, included both quantitative surveys (400 beneficiary households) and qualitative interviews (6 FGDs, 7 IDIs, and 7 KIIs) to evaluate the project's impact on the communities in the specified focus areas. The project ran from July 2020 to December 2023.

Natural Resource Management

NRM activities have benefited 323 individuals through various agricultural and clean energy initiatives. Key activities included organic manure application, multi-tier farming, and the establishment of Village Resource Centres (VRCs) and an agri-tool bank. Vermicompost pits demonstrated high effectiveness by enhancing soil fertility with minimal input costs, enabling households to recycle organic waste. Beneficiaries reported a 55 percent increase in agricultural income, with average monthly income rising from INR 2000 to INR 3000. Enhanced awareness and changes in input choices were major contributors, as acknowledged by 46 percent of respondents. Additionally, project interventions led to increased farming income, with average paddy production increasing from 300 kgs to 400 kgs and wheat from 300 kgs to 350 kgs. Solar streetlights, currently operational for 90 percent of beneficiaries, achieved widespread coverage, with 87 percent of households reporting having one near their homes.

Skill Training and Livelihood Enhancement

The HRD programme uplifted women and farming communities through initiatives such as FPO formation, career counselling, and support for micro-enterprise start-ups in areas like backyard poultry, mushroom cultivation, and goat rearing. Vermi compost pits and the machan model gained popularity, with 58 percent of respondents observing improved pest management and reduced crop loss. Income increased for 23 percent of beneficiaries, and 61 percent saw improvements in soil health. Entrepreneurship trainings enhanced FPO management, access to technical services, marketing support, processing facilities. Mushroom cultivation was a vital activity and engaged 79 percent of beneficiaries. In the first year of setting the unit, one of the groups earned INR 8000 through mushroom cultivation. Improved livestock health, particularly in poultry, reduced livestock mortality. Monthly income from livestock increased from nil to INR 700 post-intervention.

Health and Sanitation

The health camps organised by the project provided diagnostic services, medicines, and referrals to specialist doctors, with 71 percent of households participating in menstrual hygiene awareness and anaemia screening sessions. Additionally, 75 percent of those referred to specialists followed through with the recommended medical consultations. Approximately 58 percent of health camp attendees reported improved health and reduced illness. Improved sanitation facilities provided

relief to 43 percent of elderly or disabled household members. The availability of household toilets reduced community toilet usage from 4 percent to 1 percent and significantly decreased open defecation from 52 percent to 6 percent. After completion of the project, 97 percent of beneficiaries said to have adopted soak pits for liquid waste disposal which was a major shift from the previous 4 percent. The project also enhanced drinking water facilities by installing 21 community water tanks, each with a capacity of 1,000 litres.

Promotion of Education

The PoE initiatives included equipping 19 schools with library and sports material, adding classroom assets such as Reverse Osmosis (RO) water purifiers in 21 schools, and Smart classroom setup in 19 schools (Parivartan Kaksha). Teachers recognized the positive impact of these resources, with 92 percent citing libraries as the most effective in aiding student understanding, followed by BaLA paintings (81 percent) and Smart classes (65 percent). These visual aids kept lessons engaging and prevented monotony. Students also benefited greatly from the school libraries, with all accessing them for exam preparation and 83 percent using them for assignments and extracurricular reading. Consequently, the libraries nurtured good reading habits among students. The project also revitalized the School Management Committees (SMC) in all study villages, with 73 percent of teachers being active SMC members.

The following table outlines the achievements of key income indicators across the baseline and endline of the project. Income from skill was something new for the beneficiaries who had started earning an income from the enterprises or small businesses that they were involved in, after the project began. Income from SHG has been left blank because the project interventions focused on establishing and strengthening FPOs. While the data does not reflect on the average income of the FPOs, filed data indicates earning of INR 6500/kg/month from poultry, INR 3000/month from goat rearing, and INR 13/150gm pack of mushroom. Net income from agriculture is valued in negative because of the small landholdings and a sizeable amount of the total produce being used for self-consumption.

Table 1: Summary of Key Income Indicators

Income Indicators (based on median)	Before	After	% Change
Average Net Income from Agriculture (INR)	-700	-500	29%
Average Productivity of 3 major crops (Quintal/Acre)	10	13	32.5%

HRDI Indicators

The Holistic Rural Development Index (HRDI)[1] score for P0313 indicates a medium impact at 0.7[2] from the baseline HRDI of 0.26. NRM had a 36 percent change from the baseline. Integrating entrepreneurship development modules within skill training initiatives empowered beneficiaries to sustain and grow their businesses. Promotion of education was implemented in 21 schools as part of this project, with regular updates to the curriculum and pedagogy to ensure alignment with academic advancements.

Table 2: Summary of HRDI Scores

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Base line	End line	Base line	End line	Base line	End line	Base line	End line	Base line	End line
	0.09	**0.11**	**0.05**	**0.16**	**0.07**	**0.14**	**0.10**	**0.15**	**0.31**	**0.56**
% Change	**22%**		**227%**		**90%**		**50%**		**81**	

[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)

Recommendations

- It is suggested to establish a structured system for referring patients to different levels of healthcare based on their needs.
- For strengthening the FPO operations, use of micro-credit as a strategic tool for economic empowerment could be promoted.
- To increase are under irrigation specialised approach needs to be taken considering the hilly terrain of the land. targeted approaches like water harvesting in poly-lined steel water tanks, or setting up micro-irrigation.
- A balanced approach must be adopted for *kuhl* expansion—one that includes design elements from the traditional *kuhls* and integrates sturdier materials. But it is paramount that the community involvement in work allocation is ensured.
- Promotion of clean cooking solutions can address the persisting challenge of pulmonary diseases due to prolonged exposure to firewood cooking.

1 Introduction

The farming practices in mountain ecosystems face increasing challenges due to severe water shortages, changing climate patterns, declining traditional knowledge, and growing troubles of crop depredation by animals. Population pressures result in poverty, leading to substantial strain on natural resources with diminishing land and water availability. The irrigation needs of hilly areas differ from those of the plains. Geographical constraints prevent the expansion of canal networks, and the non-availability of groundwater restricts the development of tube-well irrigation. In Kangra, approximately 45 percent of the workforce relies on agriculture, with agricultural labourers making up 8 percent of the total workforce. However, this is percentage is gradually shifting due to diversified income sources, including tourism in the hill region[3]. The diversification in income sources poses a challenge in meeting the food grain production of the state which was recorded at 1.45 million tonnes in 2012-13, but should be around 2.4 million tonnes by 2025[4]. This gap can be filled by bringing more area under irrigation. There is a potential to bring an additional 1 lakh hectare of land under irrigation in the state. The HRDP has addressed the urgent need for targeted interventions that enhanced the resilience of rural population and empowered the communities to address challenges posed by climate change.

1.1 About HRDP

Under the aegis of *Parivartan*, the HRDP is HDFC Bank's flagship CSR programme in collaboration with non-governmental organisations nationwide. The programme focuses on developing human capital, managing natural resources, and improving infrastructure in villages, with the ultimate goal of bringing about a positive socio-economic transformation in the lives of the rural population. Interventions are primarily undertaken in four thematic areas:

a) Natural Resource Management
b) Skill Training & Livelihood Enhancement
c) Health and Sanitation
d) Promotion of Education

The primary objective of HRDP is to provide tools and means for the rural population to grow and prosper, both socially and economically. The HRDP takes a comprehensive approach by addressing various community needs, including promoting economic independence through skill training and livelihood opportunities, enhancing basic infrastructure, and establishing a healthier ecosystem for improved living conditions.

1.2 Objectives of Impact Assessment

This impact assessment study is to evaluate the tangible effects and outcomes of project initiatives. The study has analysed the influence of HRDP on the targeted areas and populations. The assessment provides insights into the effectiveness and sustainability of the project interventions. The study aims at understanding:

- Overall process undertaken for implementing HRDP activities
- Key milestones achieved
- Impact created by HRDP activities

[3] Singh, R. B. (2016). Dynamics of hill agriculture in emergent rural economy of Kangra district, Himachal Pradesh. *Journal of Soil and Water Conservation*, *15*(4), 337-344.
[4] Rana, R. S., Sandal, S. K., Vats, D. K., & Goel, A. K. (2017). An Overview of Water Resources in hills with special reference to Himachal Pradesh-Opportunities and Challenges. *NDCWWC Journal (A Half Yearly Journal of New Delhi Centre of WWC)*, *6*(2), 3-9.

- Challenges faced and how they were managed

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

The study seeks to:

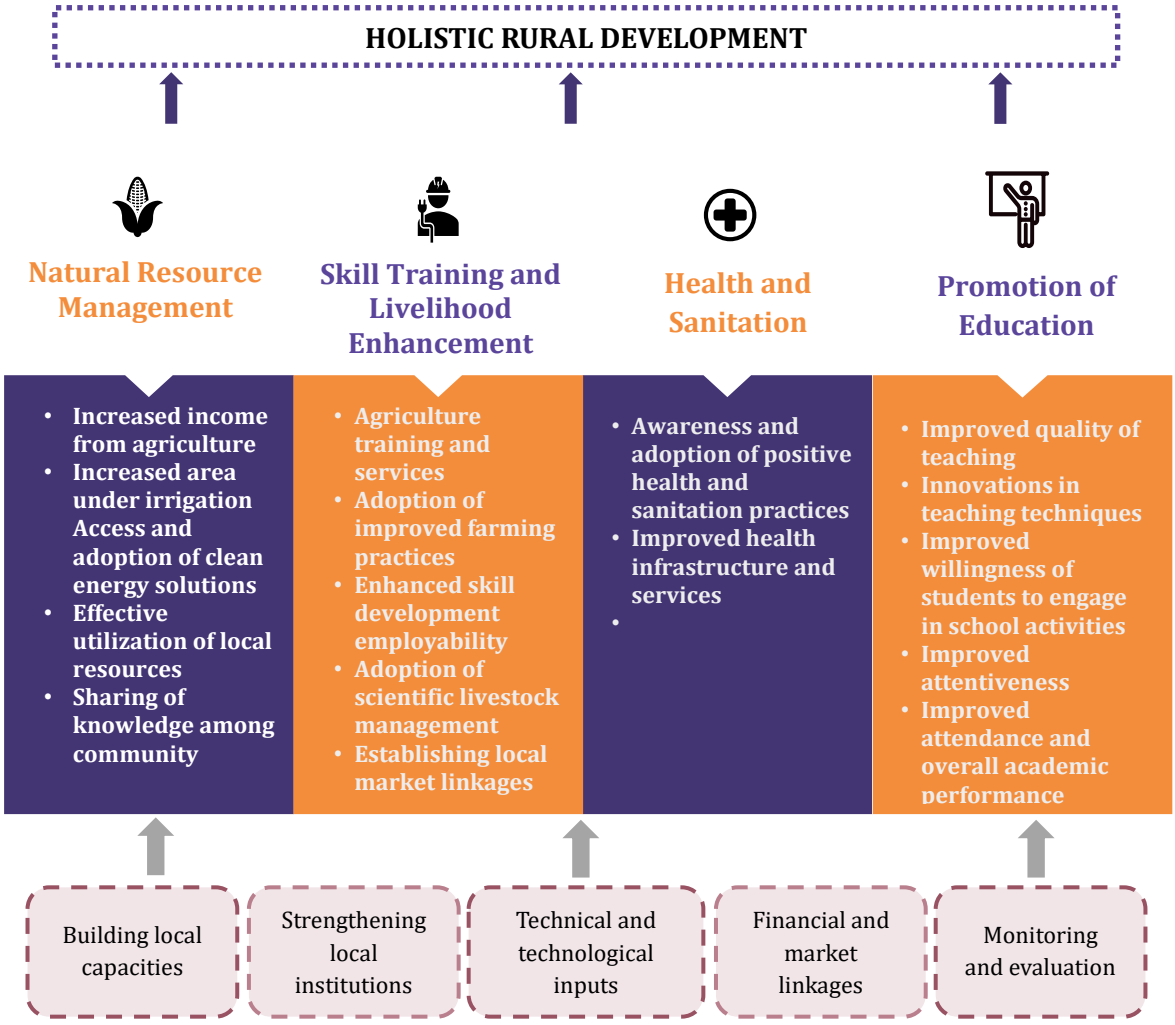
- Critically and objectively evaluate implementation and performance
- Determine reasons for certain outcomes or lack thereof
- Derive lessons learned and good practices
- Provide evidence-based findings to inform future operational and strategic decisions while planning and funding partner organisations

This study 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 input and conducting evaluations across the four thematic areas. The objectives under NRM, ST&LE, H&S and PoE are enumerated in the figure below.

Figure 1: Conceptual Framework



1.4 About the Project Area

The assessment provides an independent report on the interventions implemented by HDFC Bank in Kangra district of Himachal Pradesh. The programme was initiated in fifteen villages, namely Samloti, Bhowrni, Bharhun, Ladret, Panjlehr, Kali Jan, Masandkar, Bandi, Mundla, Sunehr, Barai (Warai), Tarindi, Buner, Naugaza, Behra Banjar under Kangra block and district. The extent of the work in each village was undertaken based on the need and varied from village to village. The programme was carried out from July 2020 to December 2023.

1.5 Implementing Partner in the District

People's Action for National Integration (PANI) is a social development organisation with over 35 years of experience focusing on underdeveloped regions of Uttar Pradesh, India. The organisation is committed to bringing about long-term changes in communities with extreme poverty and inequality. PANI accomplishes this through their sectoral approach in the areas of child development, health and nutrition, sustainable livelihoods, gender and governance, natural resource management, and climate change. PANI has worked on other HRD programmes previously in Pratapgarh, Gorakhpur, Ayodhya, Prayagraj, Lucknow and Allahabad.

2 Research Design and Methodology

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

2.1 Criteria for Assessment

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

- Relevance and Convergence
- Effectiveness and Impact
- 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.

The assessment determined the **impact and effectiveness**[5] of the programme by examining the values of outcome indicators associated with thematic interventions. These findings were evaluated against the outcome indicators. Qualitative evidence was used to assess the programme's impact on the communities. This involved analysing programme outcomes in relation to variables identified (in consultation) with the HDFC Bank. Primary quantitative data findings were supplemented by insights gathered through discussions with community members, teachers, students, entrepreneurs, and local institutions at the village level. The study also evaluated the ability of the community to sustain project activities after the project closure.

2.2 Primary and Secondary Data Sources

The 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, and PANI programme team. A total of 6 FGDs, 7 IDIs, and 7 KIIs were conducted in Kangra. These interactions involved various stakeholders including SHGs, community members, farmers, Panchayat Pradhan, government officials, veterinary doctors and Anganwadi, primary school and high school teachers.

The outcome mapping and result chain development was undertaken in consultation with the HDFC team. The exercise resulted in identification of standardized key outcomes and indicators related to each of the programme thematic areas. Based on the standardized list of outcomes and outputs, the questionnaire for the state was developed. A review of various programme documents including HDFC CSR Policy, Programme log-frame (Logical Framework Analysis), Rapid Rural Appraisal Reports, Programme implementation timelines, Communication, and

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

Documentation Products, and other relevant reports/literature related to the programme was utilized for the secondary review.

2.3 Sample Size and Distribution

The project selected beneficiaries from eleven of the twelve villages in Kangra using purposive random sampling from a list provided by PANI. Each thematic area underwent independent beneficiary selection, which occasionally resulted in selecting more than one beneficiary from a single household. Similarly, some beneficiaries received support across multiple thematic areas. All thematic areas ensured the inclusion of beneficiaries. The target sample size was 400, and all 400 sample respondents were successfully reached. The sample size covered during the field is as follows (see Table 3).

Table 3: Quantitative Sample Covered

Thematic Area	Name of Village											
	Mundla	Tarindi	Behra Banjar	Masandkar	Bandi	Bharhun	Naugaza	Buner	Sunehar	Bhowrni	Barai	Total
NRM	52	25	13	43	40	25	34	23	26	19	23	**323**
ST&LE	22	17	15	29	29	21	29	17	35	22	18	**254**
PoE	13	10	0	4	3	3	6	13	0	0	0	**52**
H&S	20	7	12	27	26	12	27	8	17	15	14	**185**
Total	**55**	**29**	**26**	**45**	**43**	**29**	**49**	**26**	**42**	**31**	**25**	**400**

Data for this report was collected from eleven study villages, with an average of 36 households surveyed per village. Due to the absence of a baseline for this evaluation, the household survey utilised the recall method to assess changes over time. Respondents were asked to recall the value of critical indicators at the start of the programme.

2.4 Training of Enumerators

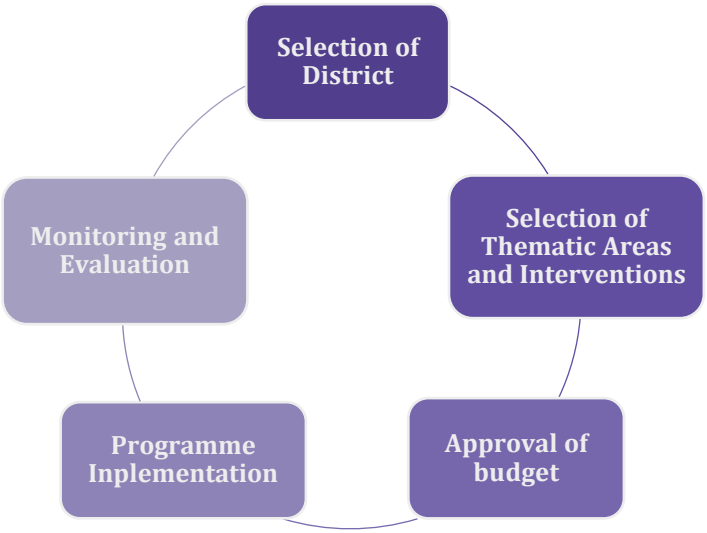
Teams of local enumerators with the requisite education and experience were hired for data collection. Two days of training were conducted for enumerators and supervisors by the Intellecap team at Kangra, Himachal Pradesh.

Image 1: Training of field team held at Kangra, Himachal Pradesh

3 Programme Planning and Implementation

The planning and implementation of the programme involved five stages: selection of the project area, viz., district, block, and village, selection of thematic areas and interventions; approval of budget; programme implementation; and monitoring and evaluation. These stages are further explained below.

Figure 2: Planning and Implementation Process



3.1 Selection of Project Area

Himachal Pradesh is richly endowed with a hilly terrain, benefiting from the substantial water volumes of the Satluj, Beas, Ravi, and Chenab rivers. However, water availability in the state is highly uneven, both spatially and temporally. Precipitation is concentrated in just three to four months (mid-June to mid-September) and ranges from approximately 600 mm in the Lahaul & Spiti district to around 3200 mm in Dharamshala, in the Kangra district. The majority of the state's population (90.2 percent) resides in rural areas, with most villages having fewer than 500 residents. Kangra lies in Earthquake Zones IV and V and is the most populous district in the state, with a total population of 15,10,075. The climate of Kangra varies from sub-tropical in the low hills and valleys to subhumid in the mid hills, and temperate in the high hills. It receives an average annual rainfall of about 205 cm, with 80 percent occurring during the monsoon months of June to September. The economy of Kangra District is predominantly based on agriculture and farming, with tea cultivation playing a crucial role. Kangra tea is renowned worldwide for its rich aroma, colour, and taste. Additionally, the region is known as the 'Fruit Bowl of India' due to its production of apple, stone and citrus fruits in sub-tropical and sub-humid areas.

Figure 3: Area covered under the study

3.2 Selection of Thematic Areas and Interventions

The HDFC project targeted specific developmental needs within designated regions, focusing on empowering communities by equipping them with the knowledge, skills, and resilience required for long-term success. The project integrated social development, infrastructure enhancements, and robust governance to achieve optimal outcomes. These elements were incorporated through institutional collaboration, promoting efficient agricultural practices for income generation. Additionally, skill-building initiatives ensured widespread adoption beyond the immediate scope of the project.

The agricultural sector benefited from diverse interventions, including organic farming techniques such as vermicomposting. Educational institutions were strengthened through the integration of smart classrooms and visual aids (BaLA paintings). Enhanced agricultural production, water resource development, entrepreneurial opportunities, and capacity-building efforts led to increased income for villagers.

3.3 Project Implementation

The project equipped farmers with essential tools and knowledge to enhance their agricultural productivity. This included distributing agricultural implements and establishing VRCs responsible for the safekeeping, distribution, upkeep, and maintenance of equipment.

For NRM, farmers received training in multi-tier vegetable cultivation with *machan*. Key water resource management efforts included renovating *bawadis* and installing 1000-litre capacity water tanks. Additionally, solar lights were installed in villages to provide clean energy.

ST&LE prioritised supporting livelihood diversification and income generation. The initiative provided resources to establish entrepreneurial ventures, including tailoring shops and mushroom cultivation enterprises. Under the thematic area, livestock assets were distributed and accompanying trainings were organised.

H&S efforts concentrated on enhancing household hygiene. The programme installed kitchen wastewater soak pits and constructed household toilets.

To promote education initiatives, the programme implemented smart classrooms by providing digital screens. It also installed RO water purifiers, established libraries and science labs, and distributed sports kits.

Table 4: Activities under Four Thematic Areas in Kangra

Activity Category	Activities	Output Indicators
NRM		
Water Management	Renovation of community *Bawadi* (natural water structure) Renovation/up-gradation of rain-shade at village level	Increased availability of irrigation water Increase in area under irrigation
Farm Management	Farmers training on *Machan* model of multi-layered vegetables cropping Vegetable production/multi-tier vegetable cropping Vermi compost unit Agriculture inputs and tools support to farmers through VRCs Upgradation of agri-tool bank Installation of water tank	
Clean Energy	Installation of solar street light	Clean energy

Activity Category	Activities	Output Indicators
	Repairing of dysfunctional street solar lights installed by govt	
ST&LE		
SHG-Based Women Empowerment	Micro-enterprise start-up support to micro entrepreneurs for small unit of mushroom farming Small unit of mushroom farming	Increase in income
Skill Training	Career counselling of youth (boys and girls) and establishing linkages with govt. skill development schemes	Skill and Entrepreneurship Development
Livestock Management	Micro entrepreneurs for backyard poultry, start-up support for Beetal Goatery Unit	Livestock Management
Entrepreneurship Development	Formation of Farmer Producer Organisation (FPO) Establishment of VRC at Gram Panchayat Bhawan Orientation cum training of VRC members Renovation/upgradation of VRC premises Micro-enterprise start-up support for agri inputs to farmers Support to micro entrepreneurs for small nursery growing unit Support to micro entrepreneurs for collective tailoring workshop	Skill and Entrepreneurship Development
H&S		
Animal Health	Veterinary and vaccination camps for goats and chicks Veterinary drive for medication and health check-up of livestock	Health services
Sanitation	Construction of individual household toilets Double soak pits	Health Infrastructure and Services
Healthcare Service	Activation of Village Health & Nutrition Day (VHND) Activation of Village Health Sanitation and Nutrition Committee (VHSNC) for maternal and child care, MHM and CLTS Health camp and anaemia screening of adolescent girls Menstrual Hygiene Management session Health screening/check-up camp at Gram Panchayat level Provision of equipment	Nutrition service
PoE		
Educational Institutions Development	Anganwadi centres upgradation Complete school development (classroom renovation, school kitchen renovation) Science lab and activity corner School development including library and sport materials Strengthening of previously established library Smart class establishment with LED and E-learning module at upper primary schools	Infrastructure in Educational Institutions
Health service	Renovation of sanitation unit (toilet) at primary and upper primary schools for adolescent girls Safe drinking water facility with capacity of 30 ltrs at primary and upper primary schools	Improvement in attendance

Activity Category	Activities	Output Indicators
Awareness generation	Celebration of all significant days like Environment Day, International Women's Day (IWD), International Day of Girl Child (IGD), Sanitation Day	
SMC Strengthening	Activation of school management committee (SMC)	Functional SMC

3.4 Monitoring and Evaluation

For rigorous oversight, the HRDP followed a set of monitoring and evaluation methods agreed upon by implementing partners. This included the periodic submission of progress reports on project implementation to the HDFC Bank. Additionally, bank representatives made planned trips to the project villages, inspected the work first hand, and spoke directly with the project beneficiaries.

The HDFC Bank requested project information from the implementing partner. The partner managed project data, detailing village-wise activities, beneficiaries, and expenditures. The partner submitted an annual progress report along with the plan for the next year to HDFC Bank. This document summarises activities implemented, outputs delivered, and outcomes achieved.

In addition, HDFC Bank hired Intellecap as an external agency to conduct an impact assessment of the project after one year of project completion. This was an independent assessment that was evaluated using four criteria: relevance and convergence, impact and effectiveness, sustainability, and replicability. This is backed by the creation of a Holistic Rural Development Index (more details in Annexure B) based on selected outcome indicators. The impact (Annexure C) of each activity has also been calculated and classified as high, medium, or low impact. The annexure goes into greater detail on these.

4 Study Findings

This chapter examines findings across four key areas. First, it investigates Natural Resource Management (NRM), analysing irrigation management, agricultural income, crop diversification, and clean energy adoption. Second, the chapter assesses the impact of Skill Training and Livelihood Enhancement (ST&LE) on agricultural training and skill development. Third, it explores Health and Sanitation (H&S) by examining health and sanitation infrastructure. Finally, the chapter presents findings on Promotion of Education (PoE) initiatives, including drinking water stations in educational institutions. Each section includes impact observations and case studies.

4.1 Demographic Profile

The study area comprises eleven surveyed villages in Kangra block and district. Wage labour constitutes the primary income source for 60 percent of households, followed by salaried employment at 38 percent and cultivation at 21 percent. Educational attainment varies across the population, with 33 percent of individuals completing education up to the 9th or 10th standard. Housing types include 53 percent pucca houses, 33 percent semi-pucca houses, and 14 percent kutcha houses. A large proportion (77 percent) of households have access to piped water within their plots, while 11 percent rely on public taps or standpipes for drinking water. The study area is fully electrified, as reported by all respondents.

Table 5: Distribution of sample (n=400)

Age of the Respondents		Sources of Income		Status of Education	
18 to 25 Years	2%	Cultivation	21%	Illiterate	10%
26 to 35 Years	14%	Livestock	9%	Up to 5th std	12%
36 to 45 Years	36%	Salaried Employment	38%	6th to 8th std	19%
46 to 55 Years	25%	Non-agricultural income	4%	9th to 10th std	33%
Above 55 Years	23%	Wage labour	60%	11th to 12th std	21%
Poverty Status		Pension	16%	Graduate	4%
Antyodaya	8%	Remittances	5%	Post graduate	0.5%
BPL	62%	**Social Category**		Diploma	0.5%
APL	30%	Scheduled Caste (SC)	2%	**Type of House**	
Gender of Respondents		Scheduled Tribe (ST)	1%	Kutcha house	14%
Male	6%	Other Backward Classes (OBC)	94%	Semi-Pucca house	33%
Female	94%	General	3%	Pucca house	53%
Gender of Head of HH		**Source of Cooking Fuel**		**Status of Water Supply**	
Male	76%	LPG	46%	Piped water into dwelling, yard or plot	77%
Female	24%	Firewood	54%	Public tap or standpipe	11%
Source of Light				Tube well or borehole	1%
Electricity	100%			Dug well	11%

The subsequent sections highlight the key findings from the field survey conducted to assess the impact of the programme after its completion.

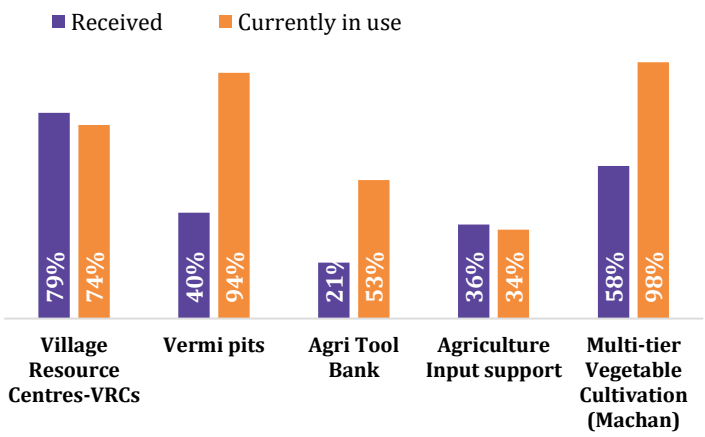
4.2 Natural Resource Management

NRM activities have benefited 323 individuals through agricultural and clean energy initiatives. The project supported diverse activities, including organic manure application, multi-tier farming, creating VRCs, and an agri-tool bank.

4.2.1 Farm Management

The project initiatives like setting up VRCs, an agri-tool bank, providing vermi-pit inputs, imparting training, and providing support for multi-tier vegetable cultivation, or *machan* cultivation, showed sustained impact in the study villages. As indicated by Figure 4, vermicompost pits display high results. This could be attributed to the improvement found in soil fertility due to the use of nutrient-rich compost. Vermi-pits also require minimum input costs, with the worms multiplying in due course. The households were also able to recycle their organic waste with this method. The machan model was also found to be widely in use across the villages. The beneficiaries quoted an increase in income from machan cropping and stated that it made efficient use of a small plot and provided continuous income from seasonal crops.

Figure 4: Proportion of HHs who received support from project and currently use them (n=89)



4.2.2 Income from Agriculture

The data reveals a 55 percent increase in agricultural income among sample households since project commencement. Average monthly income rose from INR 2000 to INR 3000 post-project. However, net income declined from INR 700 to INR 500 due to small landholdings and a sizeable amount being used for self-consumption. Respondents unanimously reported increased input costs, primarily attributed to a shift towards high-value crops (75 percent). Additionally, 46 percent of respondents mentioned that the increase was due to enhanced awareness, leading to changes in input choices. Another 24 percent cited the increase in price of farm inputs as a driving force behind the rising costs.

Figure 5: Reasons for increase in income (n=49)

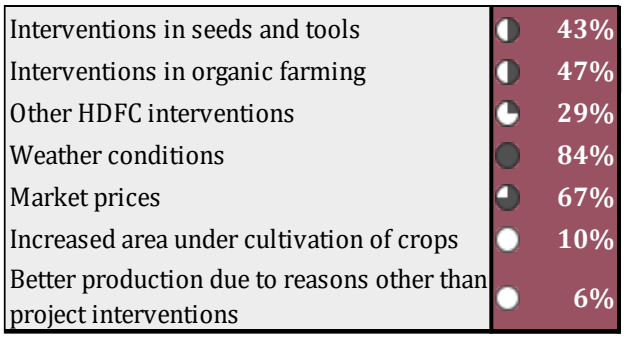
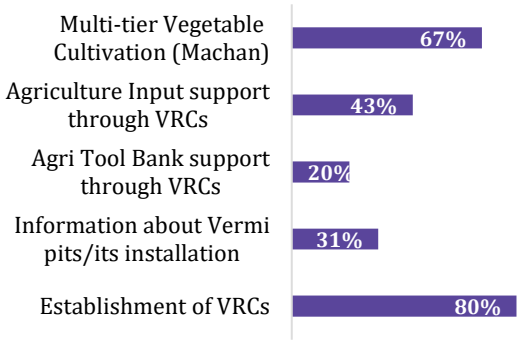
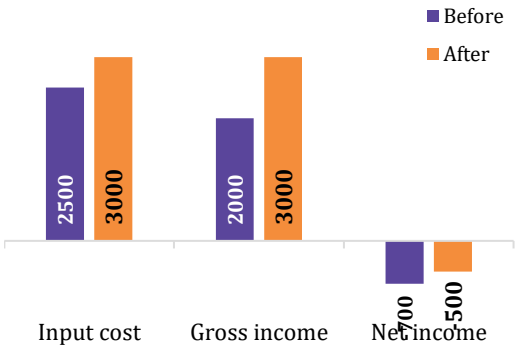


Figure 6: Project interventions helped in increase in income from agriculture (n=49)



Income increases were attributed to multiple factors. Fair market prices for products were cited by 67 percent of respondents, while organic farming interventions influenced 47 percent. Additionally, seed and tool interventions prompted the response from 43 percent of farmers. A proportion of 10 percent of beneficiaries stated that an expansion in cultivation areas contributed to increased output and income. Favourable weather conditions during the cropping season were a reason for the increased income.

Figure 7: Change in income from agriculture (in INR) (median value)



After conducting a 2-sample z-test on agricultural income, the p-value was 0.5 against a z-statistic of 0.6 (at a 95 percent confidence level), indicating that it is not significant. The detailed calculations are reflected in Annexure (D).

Project interventions, including VRC establishment, multi-tier cultivation, and VRC-based agriculture input support, significantly contributed to increased farming income. A beneficiary from Barai village was quoted as earning between INR 10,000 to 20,000 in 3 months. Additionally, 31 percent acknowledged the impact of vermi-pits on the shift in income.

Data analysis indicates varying crop production levels among households. Data analysis reveals varied production levels across different crops among households. Approximately 83 percent and 78 percent of households reported increased production of paddy and wheat, respectively. Farm management support, such as seeds, tools, and organic farming techniques, has been fundamental to enhancing productivity.

Table 6: Reasons for increased production of crops

Intervention	Paddy (n=65)	Wheat (n=53)	Other vegetables (n=57)
Seeds and tools	74%	66%	68%
Organic farming	62%	64%	51%
Other HDFC interventions	38%	43%	42%
Weather	92%	85%	82%
Increased area under cultivation of crops	3%	8%	7%
Improved irrigation	94%	83%	86%

Approximately 8 percent of respondents reported decreased production in both paddy and wheat. Weather conditions influenced both increased and decreased production, potentially due to changes in precipitation patterns.

Table 7: Reasons for decreased production fo crops

	Paddy (n=6)	Wheat (n=6)
Poor weather	33%	33%
Decreased area under cultivation of crops	17%	0%
Poor irrigation	17%	33%
Lack of support from other projects/institutions	17%	0%

4.2.3 Crop Yield

The data below presents the crop yield data for paddy, wheat, and other vegetables, showcasing average production, productivity per acre, and self-consumption pattern before and after the project. Average paddy production rose from 300 kg to 400 kg and wheat from 300 kg to 350 kg.

Wheat emerges as the crop being saved for self-consumption more than paddy. Before the intervention, 67 percent of the wheat produce was being kept for household use, which increased to 86 percent after the intervention.

Figure 8: Avg. production of crops (in Kgs)

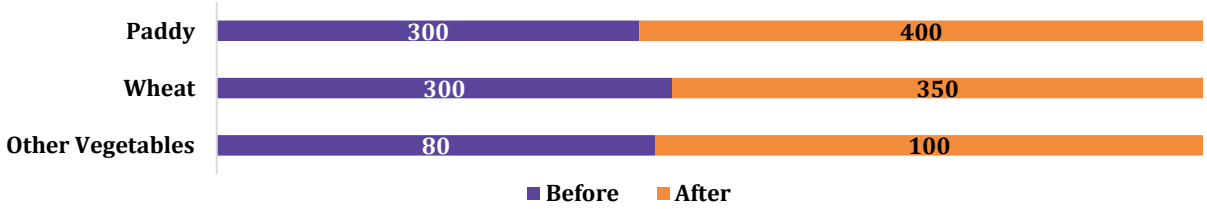


Figure 9: Avg. crop kept for self-consumption (in Kgs)

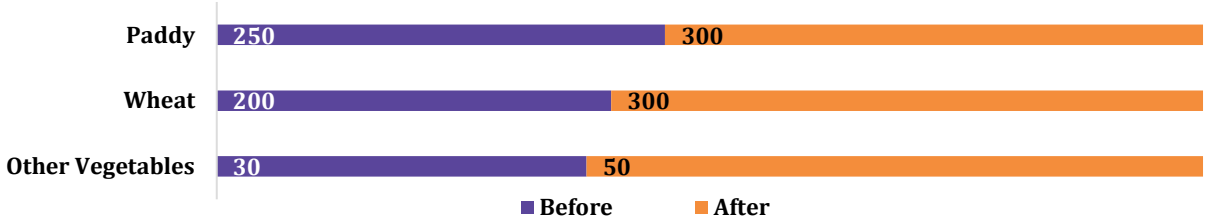
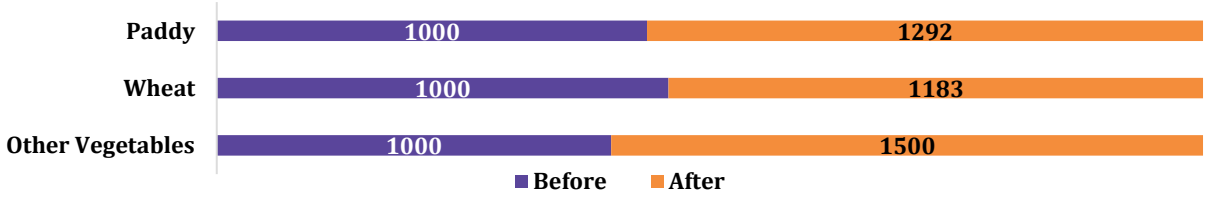


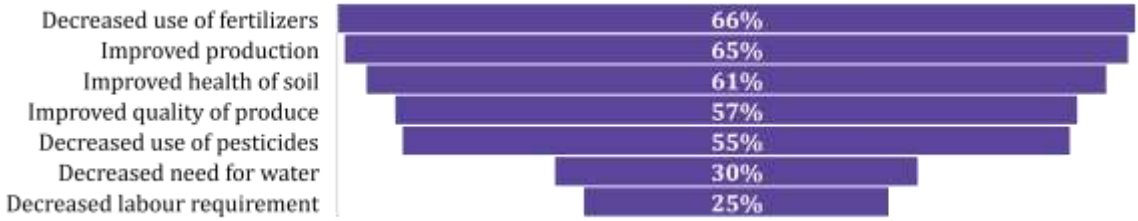
Figure 10: Avg. productivity/acre (in Kgs) (median value)



4.2.4 Farming Efficiency

Integrating organic farming practices not only decreased the use of chemical fertilisers and pesticides (66 percent and 55 percent, respectively) but also aided in efficient usage of water (30 percent) and improved soil health (61 percent of households observing improved soil health).

Figure 11: Proportion of HHs observing adequacy of natural fertilizers (n=83)



Approximately 40 percent of respondents reported that they increased their natural fertiliser usage through methods like vermicomposting. While 69 percent of households encountered no challenges accessing farm management services, 12 percent cited information dissemination gaps.

Table 8: Change in use of natural/chemical fertilizer before and after project

	Natural Fertilizer (n=83)	Chemical Fertilizer (n=81)
Increased	64%	21%
Decreased	7%	54%
Remained the same	29%	25%

4.2.5 Use of Clean Energy Solutions

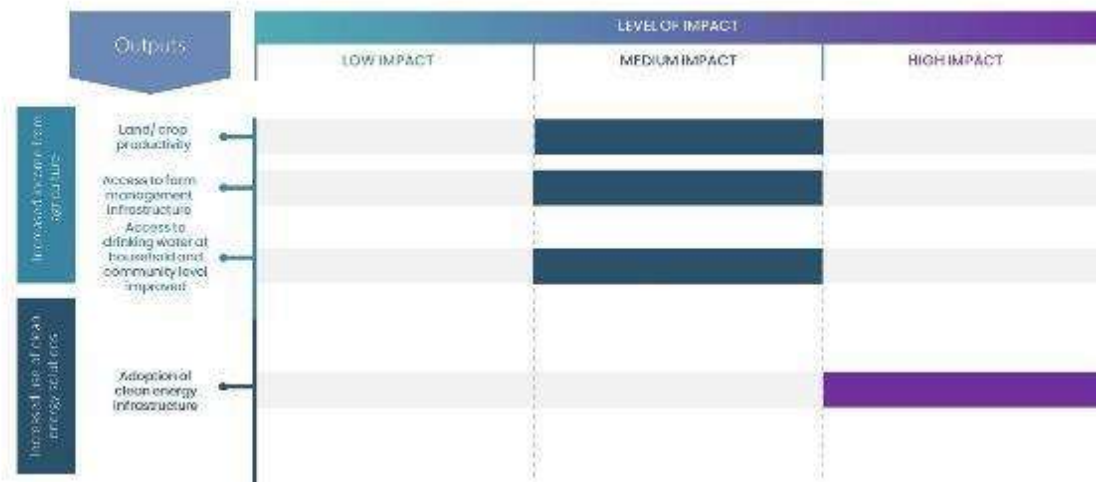
Solar street lights offer a sustainable, cost-effective, and versatile lighting solution that benefits communities in terms of energy savings, environmental impact, and public safety. In the villages of Kangra, 69 percent of households availed themselves of the benefits of solar street lights. Each village was equipped with 10 solar streetlights. Approximately 90 percent of solar streetlight beneficiaries reported that the solar lights are currently operational. 87 percent of households reported having solar streetlights near their houses, signifying widespread coverage at key junctions. Additionally, 84 percent of streetlight beneficiaries acknowledged improved safety for women. **The streetlights have also aided in the free movement of individuals after sunset, as observed by 88 percent of the respondents.**

The project equipped women to repair the solar streetlights in case of any breakdown and it was known during the field interactions how gratified it made the women feel on achieving such a feat.

Image 2: Solar street light

4.2.6 Impact Observations

Figure 12: Overview of Project Effectiveness and Impact of Interventions (NRM)



While the effectiveness of the project shows a medium impact, activities like vermi-pits, agri-tool bank and machan farming had a high level of applicability and acceptance from the community. It must be noted that in the study villages, the majority of the families are small to marginal landholders. To that effect, their agricultural produce like wheat and paddy, are reserved for self-consumption rather than sale. Households avoid selling to the mandi as their yield does not fetch a fair price. However, it is clear from the evaluation that seeds, tools, and organic farming methods aided in the increase in production of crops.

The clean energy initiative has a high impact due to its practical usage and longevity. 90 percent of the respondents said that the lights are fully operational without any breakdowns.

4.2.7 Case Study

Case Study 1: *Subz-e-bahaar—machan cropping leads the path to nutrition and income*

Sanju Bala is a farmer from Barai village, Kangra. She is a beneficiary of the *machan* model of cropping. Prior to associating with the project, she faced recurring episodes of crop depredation by stray animals. Her backyard garden was not fenced-off, which led to this situation. This was a serious menace to her, as being a widow with limited sources of livelihood, she was dependent on the produce from her backyard garden.

The HRD programme was successful in taking cognizance of her circumstances and involving her in *machan* cultivation. As part of the activity, the project supported her with essential resources such as seeds along with fertilisers and organic pesticide sprays. Initially, she received seeds of okra, spinach, radish, and beetroot. Her garden plot of 1 *kanal* (0.12 acre) was also fenced-off with sturdy wiring bound around metal poles for additional support.

Presently, Sanju grows a variety of vegetables including bitter gourd, bottle gourd, brinjal, beans, onions, and garlic. On asking if having the top tier of the machan covered with vegetation hampers the growth of the vegetables on the ground, she shared that it has not been an impediment to the cultivation. The types of vegetables grown vary between the summer and winter seasons. All the produce is sold in the nearby Masandkar market.

She mentions that from tending to her garden to plucking, cleaning, and packaging the produce for sale in the market, she does it all on her own without hiring any extra people for it. Although, this takes a toll on her physically, especially when she has to make 2-3 trips to the market per day. The lack of regular transportation channels is a persistent challenge for her.

Her income from *machan* cropping ranges from INR 10,000 to INR 20,000 which she earns over a period of 2 to 3 months. Her average expenditure is approximately INR 400-500 which mainly includes seeds and organic manure. She is a proponent of organic farming, and while she admits that the overall produce is slightly lower with this method, she still prefers farming organically instead of using chemical fertilisers. Not only does it save her input costs, but has a lasting effect on health.

The source of water for irrigation is secure in her village with the development of *kuhl*[6] irrigation system. Additionally, a JICA assisted project implemented by the Department of Agriculture Development Society constructed 210 small irrigation systems in 5 districts, which included Kangra as well.

Case Study 2: *Every Drop Counts—how ancient water storage structures are revived into action*

In Mandi village, the households have always relied on *bawadi*[7]. However, these structures were eventually becoming unusable due to a lack of maintenance of the structures and contamination by animals. With the advent of the project, these *bawadis* were identified and renovated. They were cleaned, and enclosed with concrete borders. An average of 60 to 70 households have access to *bawadis* which

[6] Kuhl is a community-managed irrigation channel, commonly found in Kangra. Close to 715 major and 2500 minor kuhls irrigate 30,000 ha in Kangra valley. It is like a network of canals that are designed to make use of gravitational pull for flow of water into agricultural fields.
[7] Unique stepwells that are used for water storage.

makes it close to 300 individuals. The beneficiaries are now able to use clean water for drinking and cooking.

The *bawadi* is a constant source of water that remains unaffected even during the summer months. The community reported that the water was tested and confirmed safe by a laboratory, eliminating the need for additional purification. Despite the improvements in water quality, fetching water from the *bawadi* remains a labour-intensive task. Women make 2-3 trips daily, covering half a kilometre to collect water. The women suggested that pumping and channelling water directly to their homes would alleviate the physical burden and save time. Despite these challenges, there have been no conflicts over water access from the *bawadi* due to the strong sense of community cooperation among the households.
With tap water being available intermittently, daily needs like bathing and washing clothes are being fulfilled by the *bawadis*. The project has also created a separate bathing enclosure for the women near these *bawadis* to provide them with privacy and dignity within a public space.

4.3 Skill Training and Livelihood Enhancement

Investing in skill training and livelihood enhancement empowers marginalised communities and drives economic growth. Many job openings across various sectors remain unfilled due to skill shortages. This mismatch highlights the need for programmes that align community skills with available job opportunities. To address this issue, the HRDP undertook various initiatives aimed at uplifting women and farming communities. These involve activities such as FPO formation, establishing a VRC, career counselling sessions, and support for micro-enterprise start-ups (in backyard poultry, mushroom, and goatery).

4.3.1 Agriculture Training and Services

The programme organised several trainings for beneficiaries, with farming techniques receiving the highest attendance (74 percent). 53 percent of trainees reported the sessions as highly useful, leading to increased land productivity for respondents. Additionally, 79 percent of the participants gained awareness of sustainable farming practices. As evident from the figure below, vermicompost pits and *machan* model saw an increase in practice. This could be attested to by 58 percent of the respondents who reported their pest management techniques had improved that resulted in reduced crop loss. In addition, 23 percent confirmed that their income had increased, and 61 percent noticed improvements in soil health.

Figure 13: Improvements due to farming practices (n=74)

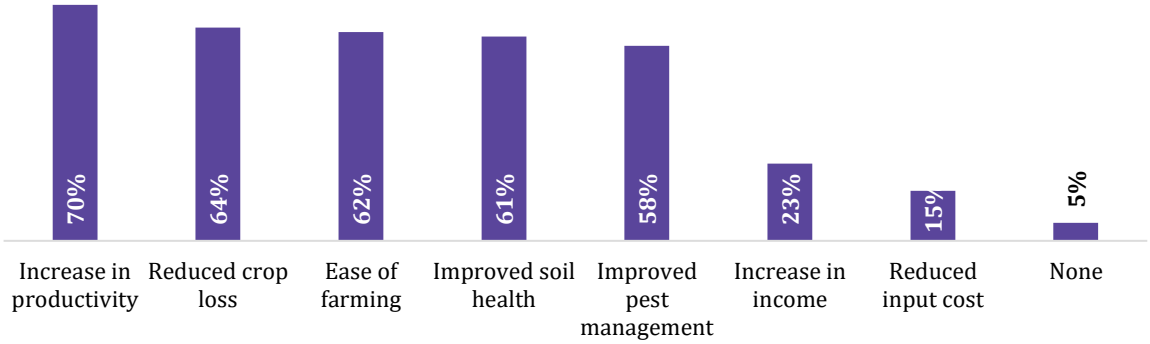
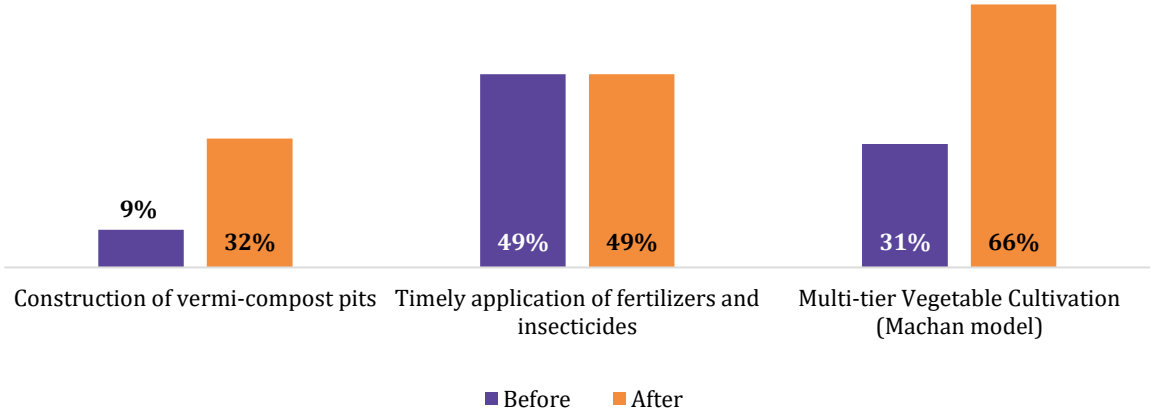


Figure 14: Farming practices before and after project (n=74)



4.3.2 Economic Empowerment through Collectivization

Within the HRD programme, support was provided to set-up FPOs and VRCs in the study villages. Being part of the group, the members were trained to enhance FPO management, avail technical services, enable marketing support, support processing facilities and cultivation units. Knowledge sharing was also one of the responsibilities delegated upon the FPOs. All the training recipients acknowledged being aware of market linkages and getting the best prices for their produce as one of the primary benefits of being a FPO member. In addition, all the members have more exposure to farming techniques and access to government schemes. As mentioned during most of the FGDs as well, women in the study villages would not come forward or participate in the project activities. Consistent project results boosted women's confidence and motivated them to achieve financial security. The FPO beneficiaries were supported in setting up a mushroom cultivation unit, and a tailoring unit among others.

4.3.3 Skill and Entrepreneurship Development

Skill and entrepreneurship development initiatives enabled innovation and self-reliance among community members. The programme provided comprehensive enterprise development support, assisting 45 percent of beneficiaries in establishing businesses, offering marketing

support to 40 percent, and training 52 percent in business management. Additionally, 33 percent of beneficiaries received an initial capital investment from the project.

Figure 15: Project support in enterprise development (n=58)

The highest proportion (79 percent) of the beneficiaries were engaged in mushroom cultivation. The interviews and group discussions around mushroom cultivation indicated the project supported them with at least 60 bags each, provided training about new techniques of mushroom cultivation that focused on pest management and seasonal management of the unit. The cultivation lasts between September and January each year. In the first year of setting up the unit,

Figure 16: Types of enterprise/small businesses beneficiary currently involved (n=58)

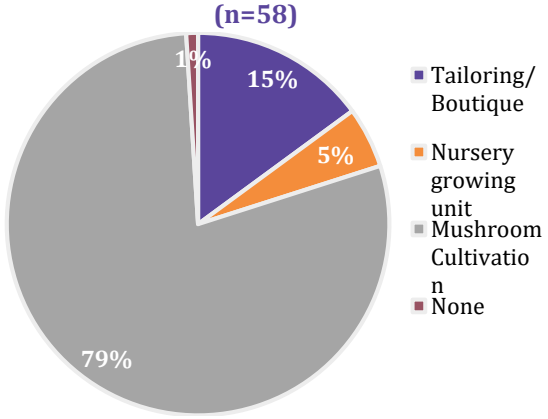
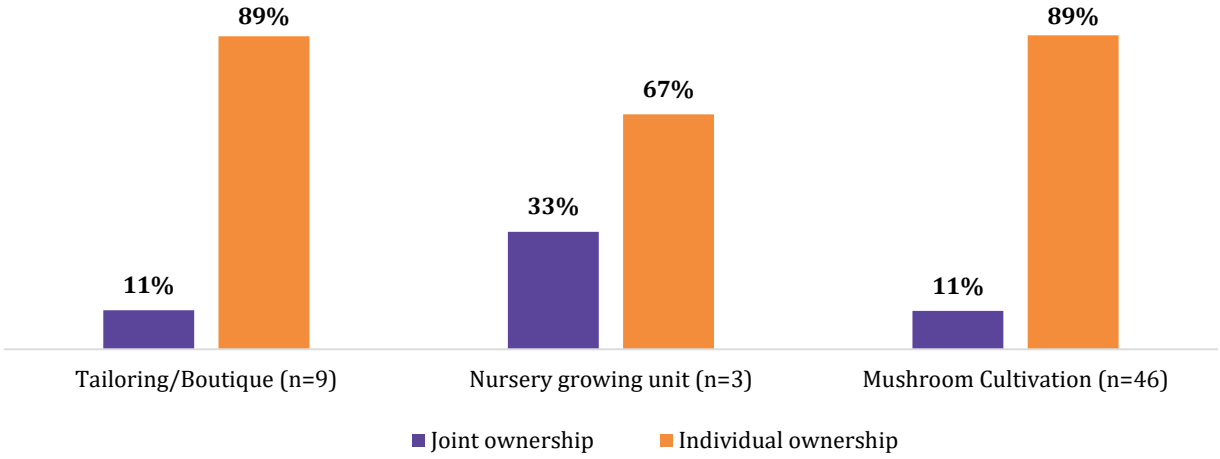


Image 3: Beneficiary of mushroom cultivation unit in Behra Baniar

one of the groups earned INR 8000 through farming. They use cocopeat for the casing of the mushroom bags. If 10 bags (each priced at INR 110) are kept and if the conditions are favourable, approximately 15 packets could be harvested. These packets weigh 150gms each and are moderately priced around INR 12-13 when demand is low and up to INR 20 when markets are favourable. The women sell it at the local markets and have tie-ups with local shops.

Both types of enterprise ownership were to be found in the study area—joint and individual. The reason for joint ownership being less could be due to the inability to run and manage groups with multiple members, while maintaining cohesion. Some of the women also lost interest in continuing the pursuit and returned to farming. But those who have continued running their businesses have observed that approximately 10 percent of their current income comes from the enterprises.

Figure 17: Ownership of enterprises/small business



4.3.4 Animal Husbandry

The project enhanced animal husbandry through targeted interventions. For instance, goats were vaccinated on their respective homesteads. Goat ownership (69 percent) among the households was the highest, followed by poultry (44 percent). Data indicates that households own an average of 2 goats and 5 poultry animals. In one of the interactions in Sunehr village, a beneficiary of backyard poultry narrated that they received all kinds of knowledge and information related to poultry farming. They were supported with 100 chicks and chicken feed from the project. Among these, 50 were of the *kadaknath* breed, 15 were kuroiler FFG and 15 were RIR (Rhode Island Red). The said beneficiary has a total of 160 adult birds now, excluding 10-15 chicks. They have extended the chicken coops out of their own interest and have separated the hatching coop as well as a separate one to keep the diseased birds. These minor but important practices have added to their profits from the sale of meat and eggs. They charge INR 10 for the eggs and INR 300/kg for meat and earn upto INR 6500 per month from poultry farming.

Figure 18: Project services availed for different cattle/poutlry

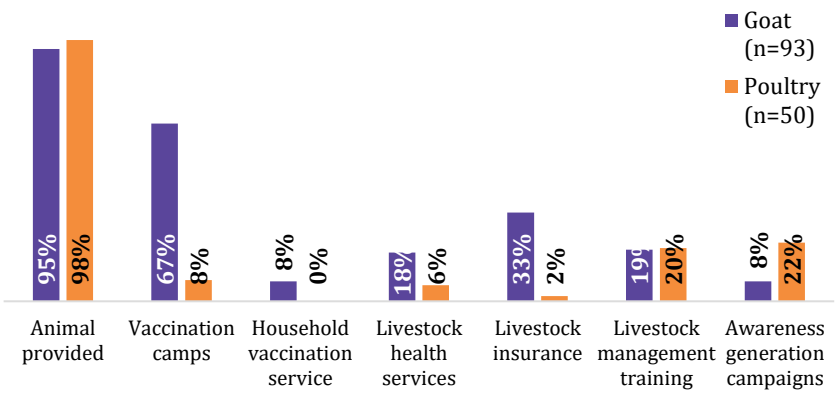


Image 4: Backyard poultry beneficiary in Sunehr

Improved livestock health emerged as a consistent benefit across cattle and poultry. This resulted in reduced livestock mortality, increased household savings, and a higher income, particularly from poultry.

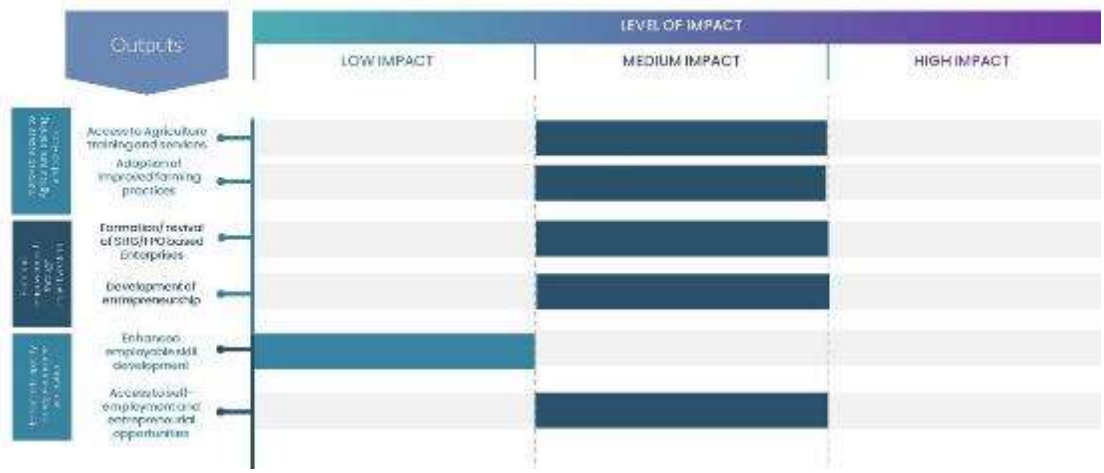
Table 9: Primary benefit gained from livestock ownership

	Goat (n=93)	Poultry (n=50)
Increase in income from livestock	38%	62%
Increase in production	23%	28%
Increase in livestock health	34%	34%
Reduced livestock death	11%	24%
Improved quality of livestock products	3%	8%
Increase in household savings from livestock	26%	18%
Market information	4%	4%
Access to livestock management expert	2%	8%
Other	2%	2%

The average monthly income from livestock had increased from being nil before the project to INR 700 after the intervention. Furthermore, 7 percent of the monthly income of the beneficiaries is generated from livestock activities. Improved livestock management practices, including vaccinations, health services, and market information access, enhanced both livestock health and productivity.

4.3.5 Impact Observations

Figure 19: Overview of Project Effectiveness and Impact of Interventions (ST&LE)



The impact within the ST&LE vertical is primarily restricted to creating a medium impact. One potential reason for the enterprises' performance is the participants' inability to fully dedicate

themselves due to concurrent agricultural responsibilities at the household level. Although field-level interactions captured the growing interest of some of the enterprises, like mushroom, poultry, and goatery, who are following all the steps learned in various trainings and applying them to their businesses.

4.3.6 Case Study

Case Study: *Custom Made—Tailoring Unit Creating a Sustained Source of Income*

Usha Devi is a resident of Mundla village, who learned about the HRD programme it through the Mahila Mandal present in her village. The project encouraged community members to become self-sufficient through specialised skills. Smt. Usha's interest and previous knowledge of sewing came as an advantage to her, and she expressed her desire to be a part of the tailoring unit that the project was supporting. She is a self-taught tailor with no formal training. The organisation provided her with a counter to work on, but she already had her own sewing and interlock machines. The project supported her with an initial sum of INR 10,000 to set up the shop counter, and she spent an additional INR 3000 to complete the setup. She pays a monthly rent of INR 2500, which includes electricity. Her shop has been operational for three years now.

Every month, she earns between INR 10,000 to INR 15,000. During wedding seasons, she receives more orders. To complete the work, she hires other helpers and pays them INR 15 for each kameez and INR 30 for each salwar. All material expenses are borne by her (sewing thread, fabric shears, rotary cutter, etc.). She spends around INR 3000-INR 3500 on threads, lining, *bukram* (fusible interlining), neck design cutting, and similar materials. Bukram is the most expensive, costing around INR 1000. When she first started, she charged INR 150 per suit and INR 250 for suits with linings. Now, she charges INR 300 for simple suits and INR 400 for suits with lining. With an income of her own, she can contribute equally to household expenditures along with her husband.

Apart from Sundays, her shop is open all other days. It opens at 10.00 am in the morning and closes at 6.00 pm in the evening. The shop remains closed for 1 to 1.5 weeks during the harvesting season when she has to tend to her farmland. She has regular customers from nearby villages as well as from farther distances, all of whom have relied on her services repeatedly. When she keeps her shop shut during the harvest season or while she is out procuring the tailoring materials in bulk, she often gets callbacks from her customers to check when the shop will reopen.

Being a part of the HDFC project has benefitted her. In the village, even when she was working intermittently, it was not profitable, and payments were delayed. But here with her business, it is very professional, and payment is complete immediately after order delivery.

There is some uncertainty with this business in terms of steadiness in getting orders. When orders are fewer, she has to depend on her savings. Although, she has not done any marketing for the business, marketing and advertising could aid her in making her a familiar presence in the neighbourhood as well

as ensure continuous receipt of orders at the shop. In the years to come, she intends to involve her youngest child with a disability, at the shop.

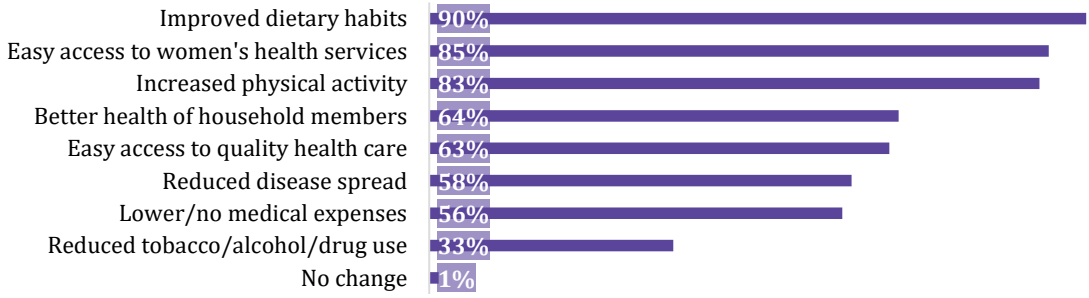
4.4 Health and Sanitation

The programme prioritised community well-being through health camps and sanitation infrastructure development. A proportion of 97 percent households actively participated in hygiene-related sessions. The waste water soak pit construction was availed by 52 percent of the sample group and a proportion of 51 percent households received complete sanitation units (toilets).

4.4.1 Health Infrastructure and Services

Health camps offered diagnostic services, medicines, and referrals to specialist doctors. A total of 71 percent of households participated in menstrual hygiene awareness and anaemia screening sessions. Moreover, 75 percent of those referred to specialists subsequently consulted with the recommended medical services. Approximately 58 percent of health camp attendees reported improved health and reduced illness. These camps emphasised on preventive measures and awareness, empowering the communities to combat disease spread. Notably, health camps significantly enhanced healthcare accessibility for women, with 90 percent of respondents reporting improved dietary habits due to camp-based awareness initiatives.

Figure 20: Perceived benefits of health camps/clinics/awareness session (n=78)



4.4.2 Sanitation Infrastructure and Services

Soak pits are a practical and sustainable solution for wastewater management, especially in rural and peri-urban settings. Soak pits help recharge the groundwater table by allowing treated wastewater to seep into the soil. Since they are constructed underground, soak pits reduce the risk of human and animal contact with wastewater. In the project area, soak pits were constructed to dispose of kitchen waste water and to promote proper treatment and disposal of waste. These pits successfully prevented wastewater accumulation, eliminating foul odours and mosquito breeding grounds.

Table 10: Proportion of HHs that received different support for different sanitation services

	Soak pit (n=68)	HH sanitation unit (toilet) (n=67)
Partial payment for construction	16%	16%
Full payment for construction	68%	64%
Partial payment for renovation/maintenance	1%	3%
Full payment for renovation/maintenance	4%	3%
Provided materials for construction/renovation	15%	22%
Training on utilisation	7%	9%

The benefits of the sanitation services were found to be varied. More than 90 percent of respondents reported that these services enhanced the safety and dignity of women in their households. Additionally, 84 percent noted that the overall health of household members had improved. Furthermore, 43 percent indicated that the sanitation facilities provided relief to elderly or disabled members in their homes. The project activities starkly improved toilet usage and liquid waste disposal practices among the households. Before the project, only 43 percent of households used individual toilets, whereas now 93 percent use one. Community toilet usage decreased from 4 percent to 1 percent due to the availability of toilets at homes. Open

Figure 21: Type of toilet in use before and after the project (n=67)

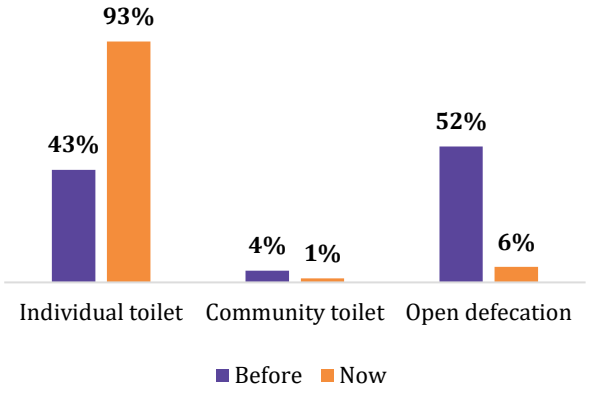
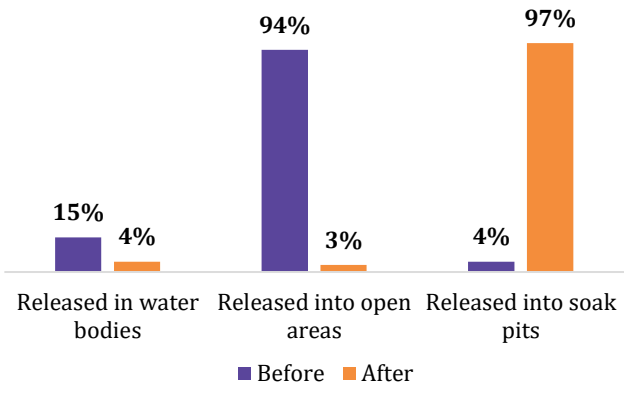


Figure 22: Liquid waste disposal before and after the project (n=68)

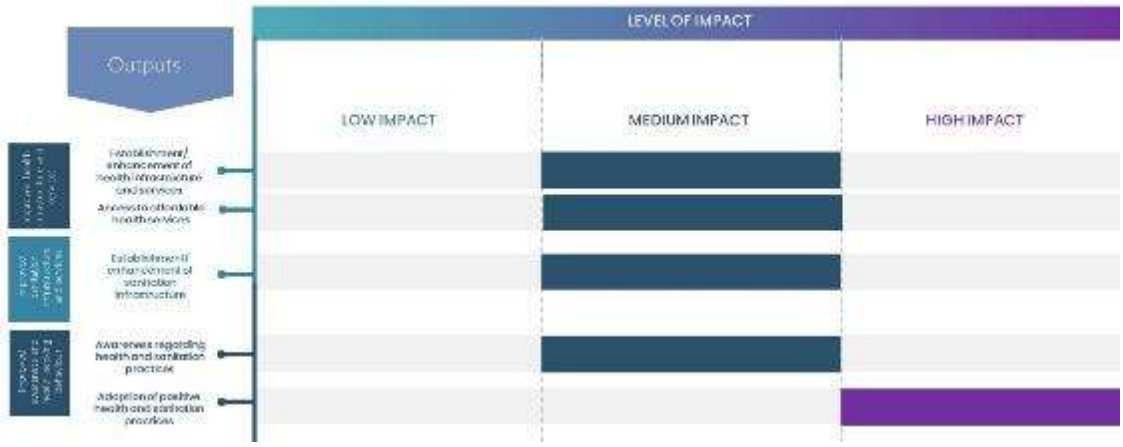


defecation has dropped considerably, from 52 percent to 6 percent. In terms of liquid waste disposal, 15 percent of the respondents said the waste was released into water bodies, which has now been reduced to 4 percent. The use of soak pits for liquid waste disposal is being opted for by 97 percent of the beneficiaries after the project, a major shift from 4 percent. Cleanliness practices like using toilets instead of open defecation, and liquid waste management like making optimum usage of soak pits were some of the crucial learnings that the community imbibed from the health camps (an average proportion of 52 percent) and awareness campaigns (an average proportion of 57 percent).

The project improved drinking water facilities in the study villages by installing 21 community water tanks, each with a capacity of 1,000 litres. Having a source of clean drinking water saved both time and effort for fetching water, as felt by 75 percent of the surveyed group.

4.4.3 Impact Observations

Figure 23: Overview of Project Effectiveness and Impact of Interventions (H&S)



Health and sanitation received a mixed level of impact, distributed from medium to high. However, the targeted interventions in sanitation infrastructure and awareness created a deep impact among the households. Crucial transitions from open defecation to using toilets were to be found among the respondents, and a heightened sense of maintaining cleanliness was witnessed within the group. From only 3 percent of the respondents releasing liquid waste in soak-pits, the proportion increased to 94 percent after the project. An average of 57 percent of the households stated that these learnings were imbibed from the HDFC health camps and awareness campaigns.

4.5 Promotion of Education

PoE encompassed the renovation of school buildings with BaLA paintings, adding classroom assets such as a library, RO water purifier, and smart digital screens/*parivartan kaksha*. Taking up sports was encouraged among the students with the sports kits that were provided. In some of the schools, items to set up a science lab were distributed.

4.5.1 Infrastructure in Educational Institutions

The study confirmed the high effectiveness of smart classes and BaLA. All teachers reported that these interventions augment student engagement. A slightly higher percentage of teachers (90 percent) find BaLA interventions make it easier to keep lessons interesting, compared to 88 percent for SMART classes. A consensus emerged from teachers, who recognised the impact of libraries as the most effective in aiding student understanding of concepts (92 percent), followed by BaLA (81 percent) and Smart classes (65 percent)[8]. They acknowledged the power of visuals in keeping lessons engaging and preventing monotony, which ultimately led to increased enthusiasm for learning. Furthermore, teachers reported that having a library in the classroom was an easy source of reference material for the students. The students also felt the profound benefits of a school library. While all of them accessed the library to source reference material for exam prep, 83 percent of them used the library resources to complete school assignments as well as to read something new, beyond the syllabus. Thus, the library was responsible in inculcating good reading habit within the student community.

As the results indicate, 25 percent of teachers reported improved student enrollment after clean water became available within school premises. The availability of safe drinking water has reduced the likelihood of students falling sick.

The project was instrumental in revitalising the School Management Committees (SMC) in all the study villages. Out of the selected sample, 73 percent of the teachers were members of the SMC. The project supported the SMCs by mobilising the members for the committee, and by organising capacity building sessions for the members. A large proportion of the study group (97 percent) felt that an active SMC enables greater participation of the community members. And it also creates a forum to discuss and stay abreast of school activities.

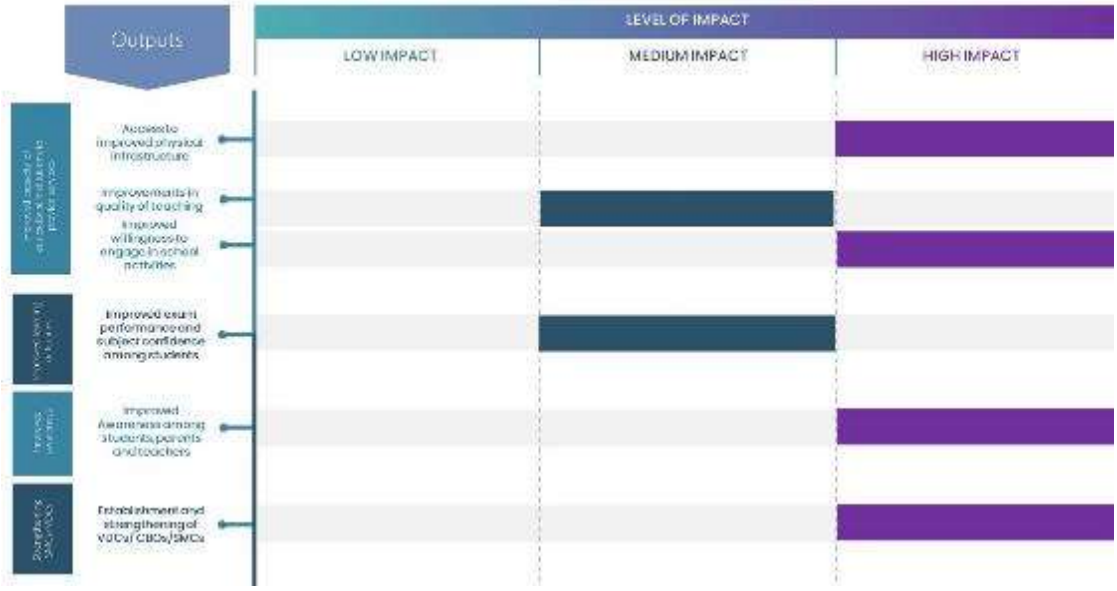
[8] Smart Class Sample: 17, BaLA Sample: 31, Library Sample: 25

Table 11: Enhanced Learning Outcomes and Reasons for Improvement

Learning Outcome / Reasons for Improvement	Improved attendance	Concept retention	Increased enrolment	Decreased dropout rates	Improved exam performance/grades	Improved attention span
Classes are more interesting	97%	93%	90%	88%	100%	89%
Lessons are covered on time	39%	43%	24%	50%	19%	11%
Improved study material	74%	64%	59%	75%	63%	67%
Students are attending classes regularly	39%	64%	48%	25%	38%	39%
Improved quality of teaching material	55%	64%	34%	50%	44%	61%
Innovative teaching methods	32%	36%	62%	31%	50%	28%
Access to sanitation	65%	71%	45%	75%	56%	67%

4.5.2 Impact Observations

Figure 24: Overview of Project Effectiveness and Impact of Interventions (PoE)



As depicted in the figure above, PoE had a high impact on the community. This could be corroborated through the field-level interactions with *Anganwadi* teachers, primary school teachers, high school principals, and students from these schools. The benefits from the project were well-received and well-maintained, with a high sense of accountability among the teaching community. One of the high school principals from Samloti said that the student strength in the 6th standard has increased from 7 to 19 students, which he believes is because of the smart class and other science lab apparatus received from the project. He also observed that scientific aptitude among the students has increased, and they are steadily faring well in their exams.

4.5.3 Case Study

Case Study: ***Stepping Stone of a bright Future—Smart Classrooms shows lasting effects***

One of the teachers from the Government Primary School (Samloti), Sunita Kumari, hails from Nagrota. She has been here since the start of the project and, hence, has been a witness to all the activities conducted and facilities provided by the organisation till date. She states that the project provided and installed a smart classroom, activity corner, library, supply of books, and RO water filter. All these facilities have been working properly up until the present and have not malfunctioned once. As a direct result of these facilities and activities, school enrolment has increased.

Before the start of the project, the total student strength of the school used to be around 11 to 12. But after the implementation of the project, it had risen to 20 last year. Currently, the student strength is 17. She mentions that due to these provisions and activities, the parents of the children from the neighbouring villages got motivated to come and enrol their children. The school had also done its part in promoting awareness in the local villages by putting up posters about the newly added facilities in the school. This process was successful because the local SMC is very active in this area, and helped influence parents to send their children to primary schools such as this one. She praises the SMC and states that they maintain a healthy co-operation with the primary school.

One of the big changes that took place in recent years is the opening of the nursery division at the school. The directive came from the government and happened around the same time as the start of this project. Thus, the conducted activities and provided facilities helped to jump start enrolment of children into the nursery division. Although currently there is only 1 student enrolled, in previous years the total student strength in that division had been 5, 7 and even up to 11.

The main issue plaguing this school is the lack of teachers. Currently, there are only two teachers, who conduct all the classes from 1st to 5th standard, and the nursery division as well. The total student strength is 16 in 1st to 5th standard and 1 in nursery. Among these 17 students, 9 are girls and 8 boys. She mentions the fact that although the number of families residing in neighbouring villages who have children of school going age are not less, the overall low student strength in government primary schools such as this can be attributed to the presence of few private schools in the area. Some parents prefer to send their children to such private schools, despite the higher fee structure. The school, however, does its part in promoting awareness through events and activities like Nipun Mela to offset this issue. They recently conducted a school event on World Environment Day. She feels that these events help motivate both parents and children to join.

Among the facilities provided by the organisation, the smart digital screen has led to a change in teaching style. The interactive nature of these boards engages the students in a better way, which is a big support as sometimes it becomes difficult for the only two teachers to manage all the classes. It is also helpful in explaining difficult topics through visual learning aids, and overall enhances student participation and engagement. Although it is not used in every class, she mentions that almost every day, 15-20 minutes before the end of school, they gather all the children and show them educational videos or poems on the smart digital screen.

The library installed by the organisation is also functioning in a proper way, with books being regularly issued to the students, and a register maintained. She states that the organization initially supplied them with books during opening of the library, and every 6 months, new books are added from the school administration. Although some of these books are above the level of the 5th standard curriculum, they help the students learn the English language. Other facilities provided by the organisation include class benches, sports items for cricket, carrom, and ludo. These are regularly used by the students.

4.6 Holistic Rural Development Index

The official Human Resource Development Index (HRDI) outlined by HDFC Bank emphasises the broad objective of achieving holistic rural development through a multifaceted approach. These interventions target interconnected aspects, making it challenging to identify a single impact indicator that accurately reflects the programme's overall effectiveness. To ensure consistency across diverse clusters, HRDI employs standardised indicators in its calculations. The resulting HRDI scores for the examined villages are presented in the table below.

Due to the absence of initial baseline data, the programme employed the recall method to establish this baseline. Relevant indicators were selected and weighted to determine their significance in achieving the desired outcomes across all domain-specific interventions. Although most indicators were suitable for this study, some required modifications to align with the programme objectives and the collected data. Based on our calculation, the HRDI scores for the examined villages are presented in the table below. A comprehensive explanation of the methodology can be found in Annexure B.

Further, the thematic-wise indicators were assigned weights, to arrive at the composite HRDI score of **0.56, indicating a positive change towards impact from the baseline score of 0.31**. This is a medium-impact project with a lasting impact. NRM had a 22 percent change from the baseline. The project was successful in promoting sustainable practices through renewable sources like solar street lights, by adopting organic farming methods such as vermi composting, and by fortifying community-owned resources like the *bawadi*.

Interventions on ST&LE have undergone such a vast change due to the depth of implementation. Integrating entrepreneurship development modules within skill training initiatives empowered the beneficiaries to sustain and carry their businesses further. For instance, the enterprise support provided to the tailoring unit beneficiary has enabled her to create jobs for others and provide mentorship to prospective tailors.

Promotion of education was actively carried out in 21 schools for this project. Curriculum and pedagogy were regularly updated to stay relevant with academic advancements. For this, innovative and learner-centric teaching approaches were adopted with the help of smart classrooms, upgraded libraries, and science labs. Activating the SMCs created a supportive environment for the students.

Figure 25: HRDI calculation for Kangra, Himachal Pradesh

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Base line	End line	Base line	End line	Base line	End line	Base line	End line	Base line	End line
	0.09	**0.11**	**0.05**	**0.16**	**0.07**	**0.14**	**0.10**	**0.15**	**0.31**	**0.56**
% Change	**22**		**227**		**90**		**50**		**81**	

5 Analysis of Assessment Criteria

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

- Relevance and Convergence
- Impact and Effectiveness[9]
- Sustainability

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

5.1 Relevance and Convergence

Kangra district features varied climates, with the plains and the mountainous region (Dharamshala) each having distinct weather patterns. Dharamshala experiences extreme rain, cold, and snow, which leads to respiratory ailments in the winter. Agriculture is mostly rainfed here and yields less than the state average. Despite good connectivity, the district suffers from a poor economy, malnutrition, and inadequate infrastructure, resulting in widespread public health issues. Crowded living conditions and low socio-economic status contribute to rising cases of pulmonary diseases. The high prevalence of respiratory diseases is further exacerbated by smoke from firewood, which is used by 90 percent of the rural population. Even if the study villages, 54 percent of the households said they use firewood for cooking fuel. Efficacy of Pradhan Mantri Ujjwala Yojana, which provides LPG connection and gas stove to households, needs to be assessed in case of Kangra.

Livestock management emerged as an important component of agricultural diversification, impacting food security, employment, and ecology. This is particularly important in hilly regions with limited livelihood options. In these areas, livestock provide milk, and meat, as well as draught power for tilling land and performing other agricultural operations like threshing and transportation. The HRD programme did a thorough implementation of livestock management activities. Families that opted to associate with goatery, were supported by four kids. One of the households already had four goats and received 4 kids additionally from the project, and after 2-3 years, they have increased the number to 14-15. The sale of goats fetched INR 30,000 to INR 40,000.

Government data shows that primary education in the district faces challenges, with about 17 percent of schools managed by only one teacher, 15 percent of primary schools having common toilet facilities, and only 9 percent having toilet facilities for girls[10]. The project was able to address these challenges accurately, as evidenced by the field interactions. The installation of digital smart screen has become a quintessential teaching aid in primary schools. In addition to this, the issue of no separate toilet facility for the girls was addressed to a large extent through the construction of new toilets within school premises.

5.2 Sustainability

Sustainable projects can have a lasting impact on the community by providing ongoing benefits and services. Projects that integrate environmental considerations into their design and operations can have a lasting impact on the environment. As an example, solar streetlights installed as part of the project continue to provide illumination after dark. The effect of these

[9] While from an evaluation perspective impact and effectiveness are two different aspects, in the report, these are used interchangeably.
[10] District Human Development Report Kangra. 2009

lights can be measured by the proportion of 90 percent of households that said that the lights were fully operational.

Project interventions for water conservation, achieved through *bawadis* and drinking water tanks, are the renewed means of access to clean water. There were 8 water tanks installed at important landmarks within the villages, and each had the capacity to hold 1000 ltrs of water. These water tanks are capable of providing drinking water for approximately 30 to 40 families staying nearby. All the tanks are in good condition, and they are kept clean by the community members themselves.

There were 25 *bawadis* that were renovated and beautified with anti-skid tiles and bathing enclosures. The *bawadis* were a constant source of cool water, especially in the summer months.

Another value addition was the renovation work for the rain shades in the villages. These shades became a convenient space for the women to wait for local transport, even meet their friends sometimes. These shades were majorly unkempt and used to park cycles and motorcycles. That made the women reluctant to use them. But with the renovation work, these facilities were being used equally by the women. The shade is particularly useful during the summer and monsoon months.

6 Recommendations

The design and implementation of HRDP in the eleven villages of Kangra, had a notable impact, as depicted through the data results, both qualitative and quantitative. In order to continue with the developments in the area, some of the recommendations that the programme can include, have been discussed here. These have been categorised into three parts, as follows:

6.1 Recommendations to Sustain Project Initiatives

6.1.1 Health and Sanitation

It is suggested to establish a structured system for referring patients to different levels of healthcare based on their needs. This system ensures that communities have access to appropriate healthcare services through a hierarchy of medical institutions, such as community health centres that provide basic and preventive healthcare services, district hospitals that offer specialised treatments, and medical centres that provide advanced diagnostic services.

6.2 Recommendations to Build Project Efficiency

6.2.1 Skill Training and Livelihood Enhancement

To strengthen the FPO operations, the use of microcredit as a strategic tool for economic empowerment could be promoted. Collaboration with Development Agencies/Nodal Agencies like NABARD, and SIDBI could be established to ensure adequate funding and support and to utilise their guidelines and training materials to implement effective microcredit activities.

6.2.2 Natural Resource Management

To increase the area under irrigation, a specialised approach needs to be taken, considering the hilly terrain of the land. Expansion of tubewells is not feasible due to a lack of groundwater. Therefore, targeted approaches like water harvesting in poly-lined steel water tanks, or setting up micro-irrigation channels like drip irrigation or sprinkler sets may be tested.

6.3 Recommendations to Strengthen Project Design

6.3.1 Natural Resource Management

Kuhls are unique surface water irrigation channels found extensively in Kangra. These channels carry water from glaciers to villages and fields. Where the terrain is muddy, the *kuhl* is lined with rocks to keep it from becoming clogged. Kuhls have been known to be community-managed up until the 1970s after which they started getting concretised under MGNREGS works. There is a divide amongst the villagers as to which *kuhl* is more sustainable—the earthen ones or the concretised ones. Earthen *kuhls* can be diverted with ease and act as a natural filter for the water with its rock bed, but the Himachal Pradesh State Water Policy (2013) aims to move towards micro irrigation supply. This is already being aided by the JICA Crop Diversification Promotion Project that constructed 210 small irrigation channels throughout five districts of Himachal. Alternatively, the concrete *kuhl* has a higher cost of maintenance and is restrictive on the grazing animals from drinking water. It is suggested that a balanced approach be adopted for *kuhl* expansion—one that includes design elements from the traditional *kuhls* and integrates sturdier materials. But it is paramount that community involvement in work allocation is ensured; after all, this water structure has always been a community-owned resource.

Annexures

A Sampling Methodology

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

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 400.

Quantitative Sampling Methodology

Sampling methodology to be added

Stage 1 – Selection of villages:

The list of beneficiaries from all the eleven villages acted as the sampling frame for the programme. This list was obtained from the implementing partner—PANI. 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 – Selection of beneficiaries:

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 eleven villages were covered under the survey.

Qualitative Sample Size Calculation

Qualitative tools of In-depth Interview (IDI) and Focus group discussions (FGD) 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 at the start of the programme.

B HRDI Methodology

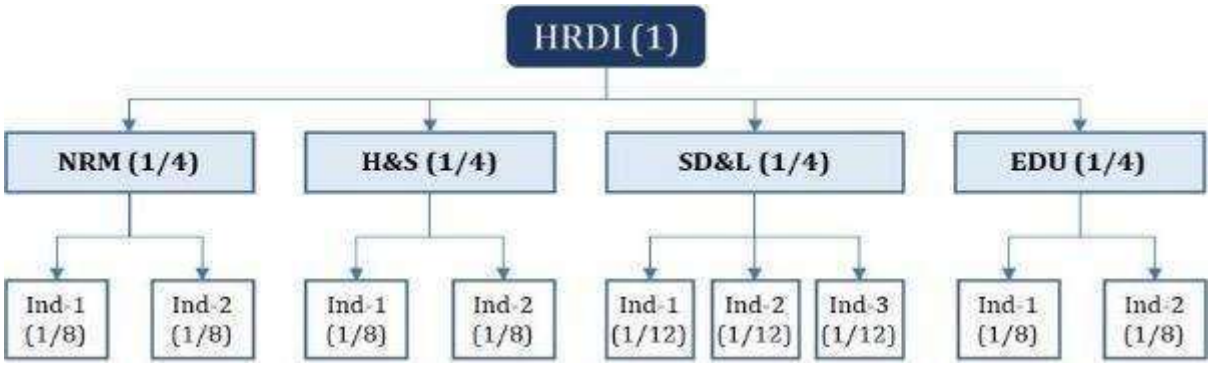
The outcome indicators included in the HRDI were obtained from different domains and are consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables such that the indicators could be measured between 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.

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 26: Domain and Indicator Weights[11]



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

Table 12: Example of HRDI Calculation

Project X		
Natural Resource Management	The proportion of farmers with net income above median	(1/4) x (1/2) = 0.125
	Percentage of farmers reporting access to irrigation	(1/4) x (1/2) = 0.125
Health and Sanitation	Percentage of households with access to improved drinking water facility	(1/4) x (1/3) = 0.083
	Percentage of households with access to improved toilet facility	(1/4) x (1/3) = 0.083
	Percentage of households with individual bathing unit	(1/4) x (1/3) = 0.083
	Percentage of SHG members reporting their groups having savings	(1/4) x (1/2) = 0.125
	Percentage of households with improved skills in Agriculture	(1/4) x (1/2) = 0.125

[11] NRM: Natural Resource Management | H&S: Health and Sanitation | SD&L: Skill Development and Livelihoods | EDU: Education

Livelihoods and Skill development	Percentage of students reporting increased access to functional learning infrastructure (library, smart class, BaLA, etc.)	(1/4) x (1/2) = 0.125
Education	Percentage of students reporting increased access to functional school physical infrastructure (handwash station, separate washrooms, etc.)	(1/4) x (1/2) = 0.125

Once all the indicators were standardized and weighted, a sum of these weighted indicators was utilized to calculate the value of HRDI.

Analysis Plan

HRDI for each cluster/ NGO was calculated at two points in time i.e., before and after HRDP and can be compared cross-sectionally to understand which domains contributed to an increase or decrease in HRDI value. Concurrently, the NGOs can be ranked according to the HRDI score based on their performance across different domains, but care should be taken as the project context varies for each area. Since the value attribution of the indicators is in proportions, the HRDI value numerically ranges between 0 and 1. Once all the indicators were standardized and weighted, a sum of these weighted indicators was utilized to calculate the value of HRDI.

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, at baseline, then sorted all the farmers across the seven clusters 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 end-line 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: Sum all the indicators (i.e., weighted sum) to calculate the HRDI value at baseline and end-line.

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

Step 8: Ranked the clusters based on relative change brought about in the HRDI value i.e., the cluster that brought the maximum change in the HRDI value received the first rank.

Table 13: HRDI Calculation for Kangra

Domain	Indicators	Baseline	HRDI	End line	HRDI
NRM	Proportion of farmers with net income above median	0.16	**0.09**	0.18	**0.11**
	Proportion of farmers reporting increased productivity of three main crops above median (before and after)	0.10		0.16	
	Percentage of farmers reporting access to irrigation	0.08		0.09	

Domain	Indicators	Baseline	HRDI	End line	HRDI
ST&LE	Percentage of SHG members reporting income above median from rural enterprises	0.00	**0.05**	0.00	**0.16**
	Percentage of households who getting skill training and reporting increase in income from job/enterprise/self-employment	0.11		0.31	
	Percentage of HH reporting income above median from livestock	0.09		0.33	
H&S	Percentage of households reporting increase in use of fruits/vegetables from the nutrition garden	0.00	**0.07**	0.00	**0.14**
	Percentage of households reporting increase availability of drinking water facility	0.14		0.26	
	Percentage of households with access to improved toilet facility	0.16		0.31	
PoE	Percentage of respondents reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, furniture etc.)	0.29	**0.10**	0.32	**0.15**
	Percentage of respondents reporting increased access to functional learning infrastructure (library, science labs, smart class, etc.)	0.10		0.27	
	Total		**0.31**		**0.56**

C Overview of Impact Calculation

The impact assessment process of PANI involves evaluating the effects of various activities. This evaluation is centred around quantifiable output indicators. Impact of each indicator is gauged by calculating the average proportion of beneficiaries associated with it. The overall impact level of an activity on beneficiaries is then determined by the degree of change in these output indicators. The impact levels are categorized into three tiers according to a predetermined scale:

Low: 0% - 40% change

Medium: >40% - 70% change

High: >70% - 100% change

Overview of Impact in the effectiveness section was calculated based on the averages of quantitative output indicators as demonstrated below.

Outputs	Output Indicators		Output Avg.	
Increased income from agriculture				
Land/ crop productivity	Proportion of farmers reporting increase in production of crops that were supported under HRDP	**84%**	**68%**	**Medium**
	Proportion of farmers reporting increased input efficiency after the intervention	**74%**		
	Proportion of farmers reporting increased income from crops that were supported under HRDP.	**55%**		

Outputs	Output Indicators		Output Avg.	
	Average increase in income from crops that were supported under HRDP.	57%		
Access to farm management infrastructure	Proportion of beneficiaries satisfied with quality of available services	58%	49%	Medium
	Proportion of farmers that are able to access farm machinery	21%		
	Proportion of farmers that accessed input support	36%		
	Proportion of farmers that are able to access functional Farmer Resource centres	79%		
Access to drinking water at household and community level improved	Proportion of households having access to clean drinking water	71%	68%	Medium
	Proportion of households reporting improved well-being due to availability of clean drinking water	64%		
Increased use of clean energy solutions				
Adoption of clean energy infrastructure	Proportion of HHs using clean energy infrastructure	69%	77%	High
	Proportion of households reporting benefits from using clean energy infrastructure	85%		
Improved access to agricultural training and services				
Access to Agriculture training and services	Proportion of farmers who accessed project training services	53%	51%	Medium
	Proportion of farmers who demonstrate awareness regarding sustainable farming practices	48%		
Adoption of improved farming practices	Proportion of farmers who adopt scientific agricultural practices	49%	55%	Medium
	Proportion of beneficiaries reporting increase in productivity due to better farm management	70%		
	Proportion of farmers reporting increased income	45%		
Economic empowerment through collectivization (Only for FPO/SHG members)				
Formation/ revival of SHG based Enterprises	Proportion of members who received support with establishing/reviving SHGs	45%	45%	Medium
	Proportion of members who received support with establishing/reviving SHG enterprises	..		
	Proportion of members whose SHGs are currently functioning	..		
Development of entrepreneurship	Proportion of SHG members who received training	52%	57%	Medium
	Proportion of SHGs undertaking entrepreneurial activities	33%		
	Proportion of SHGs continuing SHG enterprise activities post project	..		
	Proportion of SHGs with increased savings	64%		
	Proportion of SHG members reporting improved income	78%		
Enhanced capacity for regular income generation				

Outputs	Output Indicators		Output Avg.	
Enhanced employable skill development	Percentage of youth/beneficiary who accessed skill development training	15%	19%	Low
	Percentage of youth who report improved employability	23%		
Access to self-employment and entrepreneurial opportunities	Proportion of beneficiaries who established/ expanded entrepreneurial activities	39%	55%	Medium
	Proportion of beneficiaries reporting improved capacity to undertake entrepreneurial activities	48%		
	Proportion of beneficiary HHs reporting increase in income	78%		
Improved health infrastructure and services				
Establishment/ enhancement of health infrastructure and services	Proportion of beneficiaries who gained access to health services	19%	43%	Medium
	Proportion of beneficiaries reporting lifestyle changes due to improved access	67%		
Improved quality of health services	Increase in no. of beneficiaries satisfied with quality of available services	..		
Access to affordable health services	Decrease in average annual HH health expenditure due to better health condition	56%	56%	Medium
Improved sanitation infrastructure and services				
Establishment/ enhancement of sanitation infrastructure.	Proportion of beneficiaries who gained access to sanitation services	33%	60%	Medium
	Increase in no of HHs with access to community sanitation infrastructure facilities at	51%		
	Proportion of beneficiaries reporting benefits due to improved access	65%		
	Increase in no of sanitation services available-	92%		
Improved awareness and health seeking behaviour				
Awareness regarding health and sanitation practices	Improved dietary practices/ reduced tobacco consumption/ improved physical exercise	..	56%	Medium
	Improved awareness regarding sanitation practices	65%		
	Improved awareness regarding waste management	46%		
Adoption of positive health and sanitation practices	Increase in no of HHs demonstrating adoption of WASH practices	92%	95	High
	Increase in no. of HHs adopting proper solid waste management practices	..		
	Increase in no of HHs adopting proper liquid waste management practices	97%		
Improved capacity of educational institutions to provide services				
Access to improved physical infrastructure	Proportion of students/schools who gained access to functioning smart class rooms/ BaLA/science labs/libraries/learning aid/furniture/sports equipment	79%	71%	High

Outputs	Output Indicators		Output Avg.	
	Proportion of schools who gained access to clean and functioning sanitation units/drinking water posts at education institutions	62%		
Improvements in quality of teaching	EA.ii(a) Proportion of teachers regularly utilising smart class rooms and other learning aids (including BaLA)	..	73%	High
	Proportion of teachers regularly utilising smart class rooms and other learning aids (including BaLA)	77%		
	EA.ii(b) Proportion of students who prefer smart class rooms for lessons	100%		
	EA. ii(c) Proportion of parents/students/teachers who report improvements in teaching quality	..		
	EA. ii(d) Proportion of students/teachers who regularly utilize science labs/ libraries/other infra	73%		
	EA.ii(e) Proportion of teachers reporting improved capacity to adopt innovative teaching methods	40%		
	EA.ii(f) Awareness among teachers regarding child development	..		
Improved willingness to engage in school activities	EA.iii(a) Improvements in attendance due to improved infrastructure	97%	92%	High
	EA.iii(b) Proportion of institutions reporting increase in enrolment post infrastructure development	91%		
	EA.iii(c) Proportion of institutions reporting improved interest of students to engage in classroom activities	87%		
Improved learning outcomes				
Improved exam performance and subject confidence among students	Proportion of students who gained access to coaching classes	..	51%	Medium
	Proportion of students who report improvements in exam performance for various subjects	50%		
	Proportion of students reporting increase in confidence in various subjects	..		
	Proportion of students who received scholarships	..		
	Proportion of teachers reporting improvements in learning outcomes due to infrastructural facilities at institutions (concept retention, attention span, and exam performance)	51%		
Improved Awareness				
Improved Awareness among students, parents and teachers	Awareness activities conducted	100%	100%	High
	Perceived benefits of awareness sessions conducted	..		
Strengthening SMCs/VDCs				

Outputs	Output Indicators		Output Avg.	
Establishment and strengthening of VDCs/ CBOs/SMCs	No of schools with SMC that are functioning regularly	94%	86%	High
	Proportion of beneficiaries who actively engage in SMCs	73%		
	Perceived benefits of SMC	92%		

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

D Two Sample Proportions 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 = (p1 - p2) / sqrt(p*(1-p)/ (n1 + n2))
where:

p1 is the proportion in the first sample
p2 is the proportion in the second sample
p is the pooled proportion, calculated as (p1n1 + p2n2)/ (n1 + n2)
n1 is the sample size of the first sample
n2 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 (n1p1n2*p2 > 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 (n1p1n2*p2 > 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 average productivity of bajra above baseline median-is shown below.

Table 14: Z-test Conducted for P0313

Indicator	Proportion of farmers with income from agriculture above baseline median
p1 (proportion of first sample-endline)	54
n1 (sample size of p1)	89

p2 (proportion of second sample-baseline)	49
n2 (sample size of p2)	89
p	0.578651685
Calculation	0.074020027
z statistic	0.675492868
	Statistically not significant at 95% confidence level
p-value for the z statistic	0.251

E Theme-wise Sustainability Matrix

The project support provided demonstrated the capability to continue even after the programme ended. Support of the project to sustain improved outcomes are demonstrated below:

Support provided (Enter relevant activity categories)	Structures established	Technical Know-how	Usage	Maintenance
NRM				
Farm Management	✓	✓	✓	✓
Clean Energy	✓	✓	✓	✓
Skill Training and Livelihood Enhancement				
Agriculture Training and Support		✓	✓	✓
FPO-Based Women Empowerment	✓	✓	✓	
Skill Training	✓	✓	✓	
Health and Sanitation				
Health		✓		
Sanitation	✓	✓	✓	✓
Promotion of Education				
Educational Institutions Development	✓	✓	✓	✓

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