Impact Assessment Study of Holistic Rural Development Programme (HRDP) Prayagraj, Uttar Pradesh – P0286

Prepared For:

HDFC Bank Corporate Social Responsibility (CSR)

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Table of Contents

List of Tables

List of Figures

Executive Summary

The study centres on measuring the impact of the Holistic Rural Development Programme (HRDP) of HDFC Bank that was implemented by PANI in the Prayagraj district of Uttar Pradesh from 1st July 2019 to 31st March 2023. This study largely focused on understanding the overall process that the HDFC Bank and the implementing organisation undertook in carrying out the programme activities, the key milestones achieved, the impact created by these activities, and the challenges faced. The key focus areas of the intervention were Natural Resource Management (NRM), Skill Training & Livelihood Enhancement (ST&LE), Health and Sanitation (H&S) and Promotion of Education (PoE). The framework used for the impact assessment was an adaptive version of the DAC criteria - Relevance, Effectiveness, and Sustainability. A comprehensive methodology, comprising both qualitative and quantitative primary data collection, was used for the assessment which was carried out in a participatory manner involving all the key stakeholders of the programme. The study included a sample size of 406 beneficiaries as respondents as against the planned sample of 400.

Natural Resource Management

The implemented initiatives in the Prayagraj district have significantly boosted farmers' income generation capabilities, as shown by changes in both median and mean figures for input costs, gross income, and net income. **Median input costs rose from INR 6,250 to INR 7,500, while median gross income increased from INR 15,000 to INR 19,750, and median net income improved from INR 3,200 to INR 4,000. The mean input cost increased by 36 percent, from INR 10,488 to INR 14,243, and the mean gross income rose by 34 percent, from INR 31,657 to INR 42,279. Mean net income saw a 41 percent increase, from INR 13,074 to INR 18,386.** These outcomes indicate that despite higher input costs, the initiatives have successfully enhanced agricultural productivity and economic conditions. Key factors driving these improvements include better access to irrigation water, training, organic manure promotion, machan farming, and crop diversification. Vermi pits improved soil health, benefiting 55 percent of farmers, while the Group Irrigation System, noted by 47 percent, stabilised crop production. Solar street lights installed in ten villages enhanced safety and mobility, with 94 percent operational and 98 percent satisfaction among respondents. These lights provided protection from wild animals, improved women's safety, and increased night-time mobility. Additionally, 700 solar lanterns distributed across the villages supported domestic tasks and educational activities, with 98 percent using them for general lighting and 93 percent for studying. These interventions collectively led to substantial income growth, increased productivity, and improved quality of life for farmers. Favourable weather conditions and market prices also contributed to these positive outcomes. The data underscores the transformative impact of targeted agricultural and infrastructural initiatives in enhancing the economic well-being and livelihoods of rural communities.

Skill Training and Livelihood Enhancement

The study highlights significant shifts in agricultural practices and income among households in the Prayagraj district following various interventions. The use of organic manure decreased from 75 percent to 60 percent, while the construction of vermi-compost pits increased from 17 percent to 56

percent, indicating a growing interest in organic waste management and soil enrichment. Timely application of fertilizers and insecticides rose slightly from 8 percent to 12 percent, and conservation agriculture practices remained stable. These changes Emphasize the importance of soil health and effective waste management. Improvements were noted in productivity, income, and soil health, with 94 percent of respondents reporting increased productivity, 69 percent reporting higher income, and 50 percent noting better soil health. Enterprise development initiatives, including business management training and initial capital investment**, led to a substantial 35 percent increase in average monthly income from INR 5288 to INR 7149.** Respondents reported income growth, increased savings, and business expansion, with 88 percent experiencing higher income, 82 percent noting increased savings, and 71 percent seeing business growth. Livestock management improvements, particularly in goat and poultry rearing, resulted in a **41 percent increase in average income from INR 1800 to INR 2542.** Goat rearing benefits included **increased income for 74 percent of respondents, higher production for 45 percent, and reduced livestock deaths for 34 percent.** Poultry rearing saw income increases for 60 percent of respondents and production boosts for 30 percent. Overall, these interventions have enhanced productivity, income, and sustainability, showcasing the success of strategic agricultural and enterprise support initiatives in empowering rural communities and improving their livelihoods.

Health and Sanitation

The survey results from various interventions in the Prayagraj district highlight substantial improvements in daily life, particularly for women, following the implementation of improved drinking water, sanitation, and health initiatives. Nearly 99 percent respondents, reported significant time savings and reduced physical effort due to easier access to clean water, with 63 percent observing better overall family health. These changes underscore the transformative impact of reliable water infrastructure on household dynamics, allowing women more opportunities for personal and economic activities and improving overall well-being. In the realm of sanitation, the project introduced community bathrooms and water facilities, with all respondents noting better health and safety, particularly for women. Additionally, 67 percent of respondents reported increased dignity for women, while 33 percent Emphasized enhanced privacy. Comfort and convenience were acknowledged by 67 percent, and all respondents agreed that the new facilities saved time, showcasing their practical benefits. Health and awareness camps also yielded significant benefits, with 96 percent of respondents reporting improved dietary habits and 91 percent noting increased physical activity. While only 22 percent saw a reduction in tobacco, alcohol, and drug use, 76 percent observed overall better health within their households. However, only 47 percent reported easier access to health services for women, indicating a need for further outreach. The camps also led to economic benefits, with 39 percent reporting decreased disease spread and 29 percent mentioning reduced healthcare expenses. These interventions have collectively enhanced health behaviors, service access, and economic aspects, contributing to better health outcomes in the community. Overall, the initiatives in drinking water, sanitation, and health have significantly improved productivity, health, safety, and quality of life in the Prayagraj district, particularly empowering women and fostering socio-economic development.

Promotion of Education

The HRDP initiative by HDFC Bank has markedly improved the educational environment in schools through a comprehensive range of facilities and support. Key improvements include the construction or renovation of smart/digital classrooms, reported by 52 percent of teachers, which facilitate modern learning technologies. Renovations such as painting and repairs were noted by 76 percent of respondents, creating a more welcoming atmosphere. Libraries were established in schools reported by 52 percent of respondents, complete with books and shelves to foster a love of reading. BaLA enhancements, including educational wall paintings, enriched the visual learning experience in schools noted by 67 percent. **Drinking water facilities, including posts and RO filters, were provided in schools reported by 76 percent, ensuring access to clean water.** Additionally, 19 percent of schools received supplementary learning materials. All schools involved in the project received new classroom furniture, significantly improving the learning environment. Separate washrooms for girls and boys were constructed or repaired in schools reported by 71 percent, addressing sanitation and privacy needs. Sports equipment was provided to all schools, promoting physical activity and well-being. These interventions have led to significant improvements as reported by teachers, including better attendance across all respondents and a 71 percent increase in enrollment. **Concept retention improved for 62 percent of students, and dropout rates decreased by 48 percent**. However, improvements in exam performance and attention span were observed by only five percent, indicating the need for ongoing support. From the students' perspective, all reported more interesting classes, **97 percent noted lessons are now covered on time, and 79 percent observed improved study materials.** However, only 21 percent reported seeing improvements in the quality of teaching materials. Regular attendance was reported by 47 percent, and innovative teaching methods were acknowledged by 35 percent of students. Access to sanitation facilities was noted by 53 percent, underscoring the importance of hygiene improvements. Overall, these developments have significantly contributed to more engaging and efficient classes, with ongoing efforts needed to further enhance teaching materials and regular attendance.

Table 1: Summary of Key Income Indicators

Income Indicators	Before	After	percent Change
Increase in net income from agriculture (mean value) (INR)	13074	18386	41 percent
Average Productivity of Paddy (Kg/Acre)	1290	1613	25 percent
Average Productivity of Wheat (Kg/Acre)	1440	1452	1 percent
Average Productivity of Potato (Kg/Acre)	4032	4839	20 percent
Average Monthly Income From Livestock (INR)	1800	2542	41 percent

The above table indicates there is an increase in average net income from agriculture and the income from livestock management have shown a significant increase over the project duration.

HRDI Indicators

The table presents the Holistic Rural Development Index (HRDI) for four key thematic areas of the project. Overall, the HRDI score has increased 89 percent compared to the baseline. The most significant impact is seen in the Health & Sanitation category, where construction of toilets at household level has positively impacted the lifestyle of beneficiaries. Additionally, the Education sector score has risen by 120 percent, while ST&LE has grown by 69 percent, and the NRM category has increased by 20 percent over their respective baselines.

Table 2: Summary of HRDI Scores

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.10	0.12	0.03	0.04	0.04	0.13	0.10	0.22	0.27	0.51
percent Change	20 %		69%		250%		120 %		89%	

1 Introduction

India has made significant advancements in rural development, with 65 percent of its population residing in rural areas as of 2021 and 47 percent depending on agriculture for livelihood (PIB Delhi, 2023). Agriculture and related sectors contribute 18.3 percent to the nation's GDP (Ministry of Agriculture and Farmers Welfare, 2023), and the rural ecosystem has seen an average annual growth of 10 percent over the last five years. Despite this progress, challenges such as inadequate irrigation, poor soil health, disguised unemployment, limited skill development opportunities, unreliable healthcare access, low literacy rates, and increasing environmental degradation persist. Urban development has outpaced rural progress over the past two decades, leading to rural-urban migration. Strengthening the rural economy is crucial for India's overall economic development. In response, HDFC Bank's Corporate Social Responsibility (CSR) initiative '*Parivartan*' supports various programmes aimed at providing holistic rural development to enhance the growth and prosperity of the rural population.

1.1 About HRDP

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

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

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

1.2 Objectives of Impact Assessment

The impact assessment aims at understanding:

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

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

It seeks to:

- Critically and objectively evaluate implementation and performance

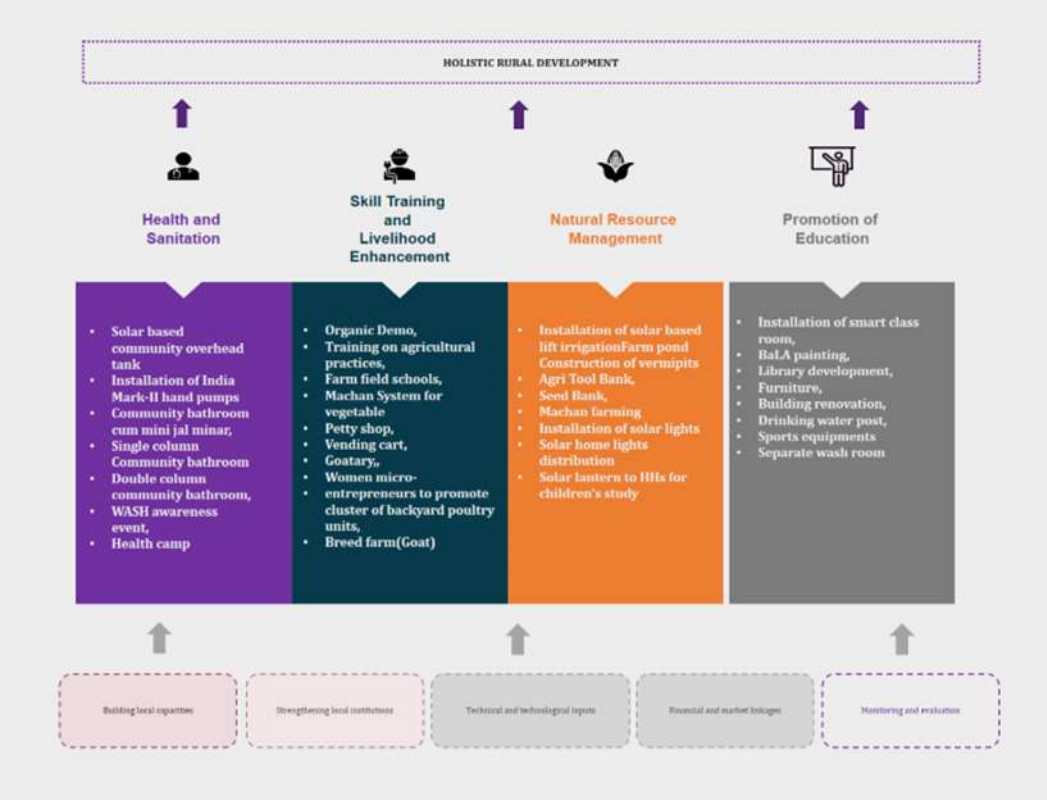
- Determine reasons for certain outcomes or lack thereof
- Derive lessons learned and good practices
- Provide evidence-based findings to inform future operational and strategic decisions while planning and funding partner organisations

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

1.3 Conceptual Framework Adopted

The conceptual framework and the areas covered under the assessment are depicted below. 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

This assessment offers an extensive and impartial report conducted by a third-party entity, evaluating HDFC Bank's Human Resource Development Program (HRDP) implemented as part of the Parivartan initiative in a disadvantaged region of the Prayagraj district of Uttar Pradesh. The program, executed by PANI, the implementing partner in this district, spanned from 1st July 2019 to 31st March 2023 and encompassed interventions in ten villages. Its primary objective was to facilitate the sustainable development of marginalised rural communities by enhancing the capabilities of individuals and institutions. The assessment study took place from 26th May, 2024 to 6th June, 2024.

1.5 About the Implementing Partner

People's Action for National Integration (PANI), founded in 1986 by prominent Gandhian social activists and registered in 1989 under the Societies Registration Act, is a state-level social development organisation in Uttar Pradesh, India. With over 37 years of dedication to creating positive and enduring change, PANI focuses on uplifting communities plagued by poverty and inequality, guided by Gandhian principles of rural development and integrated rural reconstruction. The organisation implements comprehensive programs across child development, health and nutrition, sustainable livelihoods, gender and governance, natural resource management, and climate change. Central to PANI's efforts is fostering community action and empowering the marginalised. Currently, PANI directly supports over 215,000 households, enhancing their quality of life through diverse projects in 20 districts of Uttar Pradesh and one district in Himachal Pradesh. The organisation emphasises integrated community development, aiming to improve livelihoods, healthcare, water and sanitation, women's and girls' empowerment, child development, and natural resource management while addressing climate change. PANI's strategic, well-contemplated interventions have established it as a leading development organisation in Uttar Pradesh, demonstrating a robust commitment to holistic and sustainable rural development.

2 Research Design and Methodology

The impact assessment used a mixed method that includes both qualitative and quantitative methods to assess the impact of the project interventions. The impact assessment process was carried out in a consultative manner, engaging with key stakeholders involved in the project design and implementation, such as HDFC Bank and PANI.

2.1 Criteria for Assessment

For each thematic area, project activities accomplished by PANI were identified from their project documents, reports and MIS that they submitted to HDFC Bank. The impact of those activities was assessed using the following criteria:

- Relevance and Convergence
- Impact and Effectiveness[1]
- Sustainability

Under the criterion of **relevance and convergence**, the team assessed whether the design of the project 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) Convergence with (and making use) of the government's existing resources.
d) Enabling different stakeholders to work together to achieve the intended outcomes of the programme.

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

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

2.2 Primary and Secondary Data Sources

Primary research included a quantitative household survey that was conducted by the survey team consisting of five enumerators and one supervisor, with backstopping by one field coordinator. The primary quantitative data was collected using the Computer Assisted Personal Interview (CAPI) method, and a mobile application was developed to collect data. The qualitative research included in-depth interviews (IDIs), key informant interviews (KIIs) and focus group discussions (FGDs) with project beneficiaries and secondary stakeholders such as the team

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

members of PANI, the HDFC Bank programme team, local leaders from the project area, etc. IDIs were conducted with the specific individuals who were recipients of the project. The qualitative research was conducted by the research coordinator.

Figure 2: An FGD in progress

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

The outcome mapping and result chain development were undertaken in consultation with the HDFC Bank team. Standardised key outcomes and indicators were identified for each thematic area (NRM, ST&LE, H&S, and PoE). Based on the standardised list of outcomes and outputs, the questionnaire was developed.

2.3 Sample Size and Distribution

From the ten villages of Prayagraj where the programme was implemented, beneficiaries were selected using purposive random sampling from a list of beneficiaries obtained from PANI. Since beneficiary selection was undertaken independently for each thematic area, the selection of more than one beneficiary from a single household was probable. Also, there were instances where a single beneficiary received multiple benefits and support across the four thematic areas. The inclusion of beneficiaries in all thematic areas was ensured. The target sample size across ten villages was 400, out of which 406 sample respondents were reached. The thematic area-wise sample covered was as follows (see **Error! Reference source not found.**).

Table 3: Sample distribution across thematic areas (N=406)

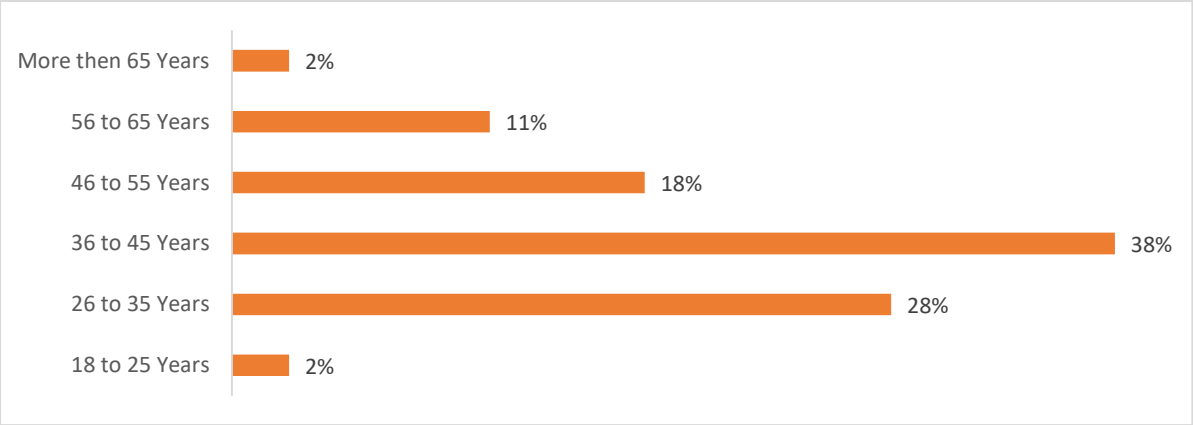
Village Name	NRM	ST&LE	H&S	PoE
Malaka	56	33	51	0
Akbarpur urf Gangaganj	42	14	26	0
Mohiuddinpur	27	15	32	0
Munourpur	22	16	24	0
Raghubanshpur urf Rerua	36	20	36	3

Katra Dayaram	41	24	41	25
Bhawapur	45	22	25	2
Gaddopur	16	11	17	0
Rajapur Maluha	53	33	56	1
Sersa	41	11	27	4
Total	379	199	335	35

Qualitative data collection activities were carried out as a part of the study. These included interviews with various stakeholders such as teachers, students, farmers, livestock owners, beneficiaries of drinking water initiatives, vegetable farmers, *petty shop, vending cart* and breed farm owners. Additionally, FGDs were organised with different groups, including farmers, vegetable producers' groups, group irrigation beneficiaries, and the general population. KIIs were also conducted with key figures like Sarpanch and a staff member from the project implementer.

The sample consisted of 400 females and 6 males. Similarly, youth (18-55 years) represented the majority of the sample (87 percent). The remaining 13 percent of the respondents were over 55 years of age.

Figure 3: Age Group wise distribution of Sample (N=406)



2.4 Training of Enumerators

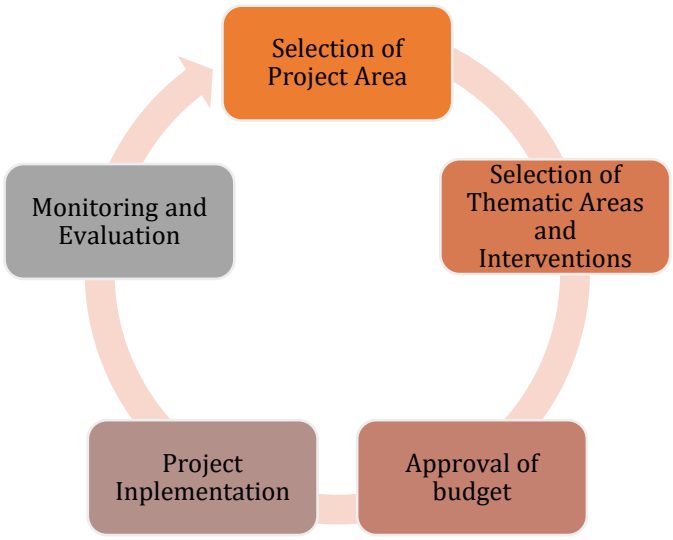
A gender balanced survey team consisting of five local enumerators and one supervisor was recruited with the requisite education and experience for data collection. Two days of training were provided to enumerators and supervisors by the field coordinator and the research coordinator. During the training,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

Image 1: Training of field team held at Prayagraj, UP

3 Review of Project Planning and Implementation

The planning and implementation of the project involve five stages: selection of the project area, viz., district, block, village, etc., selection of thematic areas and interventions; approval of budget; project implementation; and monitoring and evaluation. A review of each of these stages is explained below.

Figure 4: Planning and Implementation Process



3.1 Selection of Project Area

Figure 5: Area covered under the study

Prayagraj, a district in Uttar Pradesh, faces significant socio-economic challenges. With a population of 1.53 million, it is the most populous district in the state and the 13th in India. Approximately 80 percent of its residents rely on agriculture and related activities. However, poverty, low living standards, and unemployment are pervasive, particularly in the 10 targeted villages of an integrated intervention project. Unemployment is a major issue, prompting the annual migration of many men to other states and cities for work. According to the 2011 Census, Prayagraj has alarming rates of infant and under-five mortality, maternal mortality, and congenital disabilities, with a life expectancy below 62 years. Unemployment, seasonal work, and migration among the 18-40 age group severely impact the workforce and community well-being. Social safety nets are insufficient to support the poor and vulnerable, especially in densely populated villages. The area has a high population of Scheduled Castes (SC) and Other Backward Castes

(OBC), who are resource-scarce and often landless or own less than 0.5 acres, insufficient for food security. Limited livelihood options exacerbate poverty, malnutrition, and poor health among children, adolescent girls, and pregnant women. Despite the large population, access to local resources and government facilities is inadequate, with few income sources for basic needs such as food, healthcare, and education. Women and children are particularly affected, with women working both inside and outside the home and facing social insecurity when men migrate for work. Poor health and hygiene among women and adolescent girls lead to numerous diseases, compounded by a lack of basic healthcare awareness. Literacy rates are low, especially among women, who are the most oppressed due to societal impositions. Gender equality is crucial, as women are entitled to dignity, freedom, and the ability to contribute to development at individual, household, and community levels. This intervention project aims to address these issues, focusing on improving the lives of women, men, youth, adolescents, and children in Prayagraj.

3.2 Selection of Thematic Areas and Interventions

In response to the challenges faced in the project area, PANI proposed interventions funded by HDFC Bank CSR under the HRDP program. The focus was on improving water and farm management, along with promoting clean energy through Natural Resources Management (NRM). Additionally, the project aimed to provide agricultural training, skill development, livestock management, and support for entrepreneurship under ST&LE. Educational institution development and support, as well as health awareness and sanitation practices, were prioritised under PoE and H&S themes, respectively.

The specific activities for each village were determined through thorough consultations with the Village Development Committees (VDCs), established at the onset of the project. Activities under each of the four thematic areas are as follows: (see **Error! Reference source not found.**4).

Table 4: Activities under four thematic areas

Activity Category	Activities	Output Indicators
NRM		
Irrigation Management	Installation of solar based lift irrigation	Income from agriculture Farm productivity increases
Farm Management	Preparing organic manure, agri tool bank, seed bank, construction of vermipits, machan farming	
Clean Energy	Installation of solar lights, solar home lights distribution, low smoke Chullah distribution, solar lantern for children's study	Clean energy
ST&LE		
Agriculture Training and Support	Organic demo, training on agricultural practices, farm field schools, machan system for vegetable,	Access to agriculture training and services
Skill and Entrepreneurship Development	Petty shop, vending cart,	Skill and entrepreneurship development
Livestock Management	Goatary,, women micro-entrepreneurs to promote cluster of backyard poultry units, Breed farm(goat)	Livestock management
H&S		
Drinking Water Management	Solar based community overhead tank, installation of India mark-II hand pumps	Clean drinking water

Sanitation	Community bathroom cum mini jalminar, single column community bathroom nearby hand pumps, double column community bathroom, WASH awareness event, health camp	
PoE		
Educational Institutions Development	Installation of smart class room, BaLA painting, library development, furniture, building renovation, drinking water post, separate wash room, Sports equipments	Infrastructure in Educational Institutions

Each category has been further broken down into sub-categories and activities, along with the focus beneficiary types (refer Annexure **Error! Reference source not found.**).

3.3 Project Implementation

The project aimed to improve living conditions and fulfill the socio-economic needs of the poorest families in ten selected villages in Prayagraj. It focused on 1,740 families, especially women and adolescent girls. The target group included landless farmers or those with less than half an acre of land. It also included households with no regular source of income and those dependent on wage labour within or outside the village. Tailored to the specific needs of the area, the project's objectives included:

- Enhancing the economic status of farmers through farm, off-farm, and non-farm livelihood activities.
- Promoting safe living conditions by improving sanitation, healthcare, and environmental hygiene.
- Providing safe drinking water and improving health-seeking behaviour among disadvantaged communities.
- Upgrading infrastructure and learning facilities at government primary schools and Anganwadi centres for quality education.
- Economically empowering women through community-based institution development, financial inclusion, micro-enterprise development, and village resource centres.

Managed by the implementing partner PANI and HDFC Bank, numerous activities were undertaken under the thematic areas. The project followed the SAR (Sustainability, Adaptability and Resilience) approach to ensure continuity. The project team worked to enhance the understanding and capabilities of the VDC and Village Resource Center (VRC) for the project's sustainability. Community members were trained to adapt to changing situations, set goals, assess available resources, and plan activities accordingly. The VDC created activities for holistic rural development based on evolving socio-economic scenarios. The severe COVID-19 pandemic underscored the importance of maintaining support and empowerment activities for the poorest communities. The community was trained to cope with such situations in the future and to be resilient enough to return to normal life. HDFC Bank periodically contacted the implementing partner to ask specific questions about project information.

3.4 Monitoring and Evaluation

The HRDP has a standard monitoring and evaluation approach that was adopted by the implementing partners. These include reporting on project implementation progress periodically to the HDFC Bank. In addition, the program implementation team of PANI and HDFC Bank visit, the project villages at regular intervals to review the project work sites, participate in training programs, awareness camps, and interact with project beneficiaries. HDFC Bank periodically

contacts the relevant implementing partner to ask specific questions about the project implementation. The project data is primarily managed by the implementing partner in spreadsheets that include details of the village wise activities implemented, beneficiaries mapped against each of the project activities, expenditures, etc. In addition, the implementing partner submits an annual progress report on the project activities to HDFC Bank along with the plan for the next year. This document serves as a major source of information that provides a summary of the 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 completion. This is an independent assessment that was evaluated using four criteria: relevance and convergence, impact and effectiveness, sustainability, and replicability. This is backed up by the creation of a Holistic Rural Development Index (HRDI) based on selected outcome indicators. The impact of each activity has also been calculated and classified as high, medium, or low impact. Annexure C goes into greater detail on these.

4 Study Findings

In the project villages managed by PANI, income sources are notably diverse. A significant portion of the population, 71 percent, relies on wage labour, indicating a high dependency on daily or seasonal employment. Livestock farming contributes to the livelihood of 45 percent of respondents, showcasing its importance in the rural economy. Agriculture, traditionally a primary occupation, accounts for 30 percent, reflecting a considerable but not dominant role. Remittances, received by 31 percent, highlight the impact of migration as a crucial financial support system for many families. Salaried employment is the main source of income for 19 percent of respondents, indicating some level of formal job engagement. Non-agricultural income, derived from business activities, rent, and other sources, is reported by 12 percent of the population, suggesting limited entrepreneurial activities. Pensions also support 12 percent of respondents, pointing to the presence of retired individuals or families relying on government or institutional support. This diversified income structure indicates a multifaceted economic environment in the village, with heavy reliance on wage labour and livestock, supplemented by agriculture, remittances, and other income sources.

Figure 6: Distribution of sample based on their occupation (N=406)

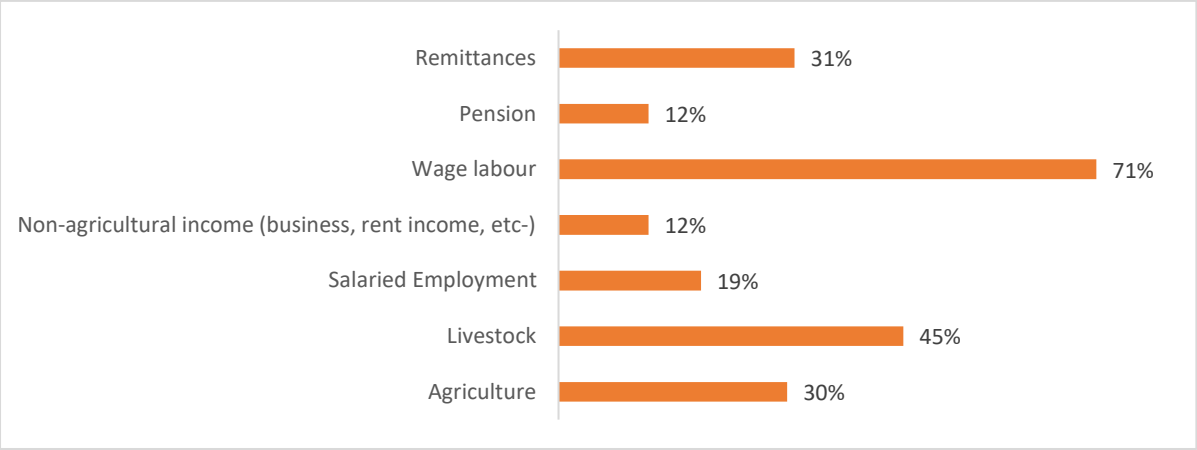
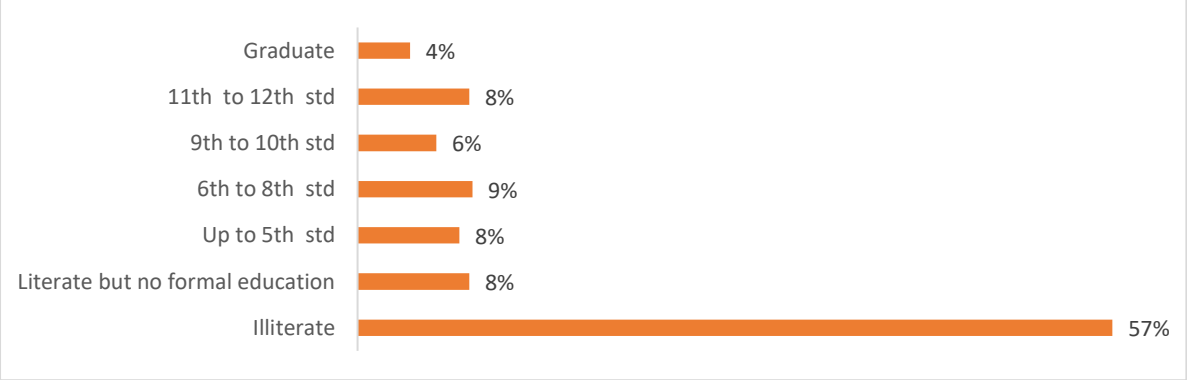


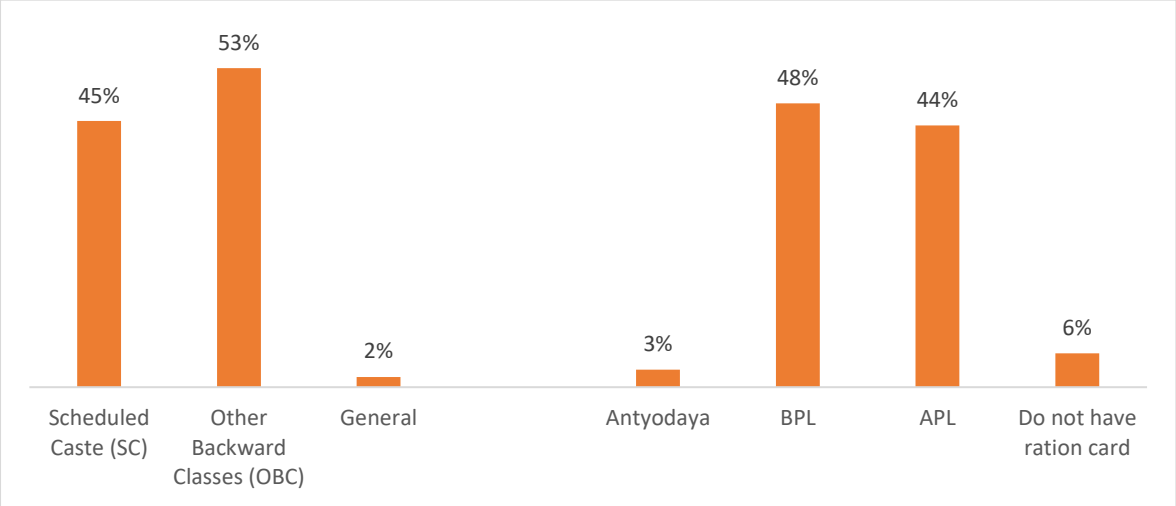
Figure 7: Educational qualification wise distribution of sample (N=406)



The educational profile of these project villages highlights substantial challenges, with 57 percent of the population being illiterate. A small segment, 8 percent, is literate but lacks formal education. Those who have completed education up to the 5th standard and 11th to 12th standard each make

up 8 percent of the population, while 9 percent have education up to the 6th to 8th standard. Only 6 percent have reached the 9th to 10th standard, and just 4 percent are graduates. This figure underscores the critical need for the educational interventions planned under the HRDP.

Figure 8: Caste and income categorisation sample (N=406)



The demographic and economic profile of the project village reveals a significant representation of marginalised communities, with 45 percent of the population belonging to Scheduled Castes (SC) and 53 percent to Other Backward Classes (OBC). Only 2 percent fall under the General category. In terms of economic classification, 3 percent of the population holds Antyodaya cards, indicating the poorest segment. Additionally, 48 percent are classified as Below Poverty Line (BPL), highlighting widespread poverty, while 44 percent fall into the Above Poverty Line (APL) category. Notably, 6 percent of the population lacks ration cards, indicating exclusion from essential government food subsidies. These figures underscore the village's socio-economic vulnerabilities and the critical need for targeted interventions to improve the living conditions and access to resources for these communities.

While the above analysis represents the nature and status of the sample, the following table represents the summary and quantum of activities carried out under each intervention category of the four thematic areas (see **Error! Reference source not found.**).

Table 5: Quantum of activities under each activity category of the four thematic areas

Activity Category	Activities	Nos. (as provided by IA)
NRM		
Irrigation Management	Installation of solar based lift irrigation	10 Nos
Farm Management	Construction of vermipits Agri tool bank Seed bank Machan farming	188 Nos 9 Nos 9 Nos 80 farmers
Clean Energy	Installation of solar lights Solar home lights distribution Solar lantern to households for children's study	100 Nos 300 Nos 700 Nos
ST&LE		

Agriculture Training and Services	Organic demo, Training on agricultural practices, Farm field schools, Machan system for vegetable,	188 farmers 22 Nos 45 farmers 80 farmers
Skill and Entrepreneurship Development	Petty shop, Vending cart,	37 Nos 40 Nos
Livestock Management	Goatary,, Women micro-entrepreneurs to promote cluster of backyard poultry units, Breed farm (goat)	300 farmers 110 farmers 12 Nos
H&S		
Drinking Water Mgt.	Solar based community overhead tank Installation of India Mark-II hand pumps	15 Nos 40 Nos
Sanitation	Community bathroom cum mini Jalminar, Single column community bathroom Double column community bathroom, WASH awareness event, Health camp	15 Nos 20 Nos 20 Nos 20 Nos 50 Nos
PoE		
Educational Institutions Development	Installation of smart class room, BaLA painting, Library development, Furniture, Building renovation, Drinking water post, Sports equipments Separate wash room	4 Schools 6 Schools 6 Schools 3 schools 6 schools 4 schools 6 schools

(Source: Project MIS from Implementing Agency)

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

4.1 Natural Resource Management

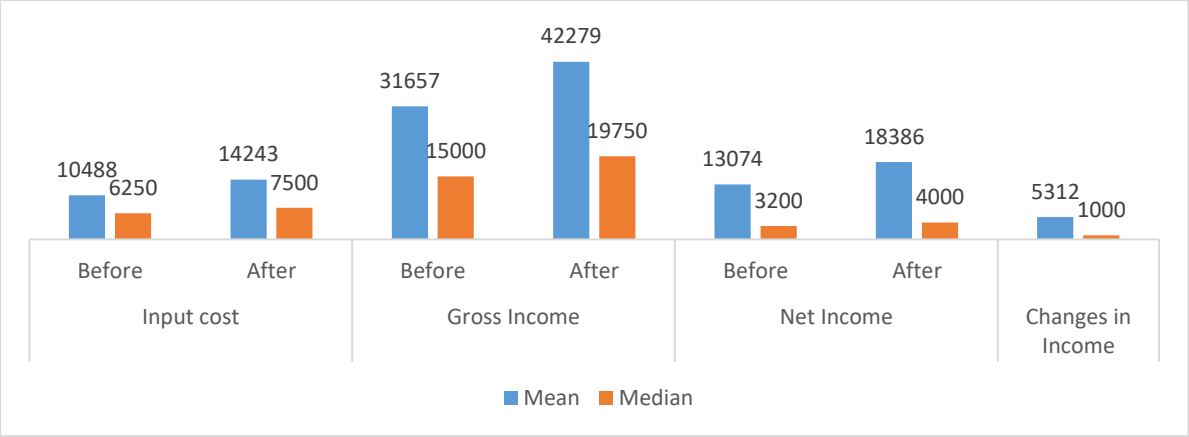
In the Prayagraj district, agriculture has been the primary income source for villagers, heavily reliant on rainfed crops and monsoon-dependent irrigation. The lack of reliable irrigation systems led to dire socio-economic conditions for farmers, as they could not afford essential water-supplying resources like pumps and pipes. To address this challenge, the PANI team installed 10 solar irrigation systems, each equipped with a 5 HP pump, effectively irrigating 61 hectares. This initiative benefited 313 farmers, enabling them to cultivate more crops and significantly boost their income. The availability of water throughout the year has allowed for substantial vegetable cultivation, moving away from the dependency on rainfed farming. These Group Irrigation (GI) units were established in five villages of the Prayagraj cluster to provide marginal farmers from the poorest families with affordable irrigation at just Rs. 25 per hour, enhancing crop production and reducing irrigation costs. In collaboration with the Village Resource Center, nine seed and tool banks were established across nine villages. These banks supply quality seeds and essential farming tools at minimal rent, increasing productivity, reducing labour, and lowering input costs. Additionally, 80 farmers were supported with the Machan system, receiving infrastructure materials and training for crop diversification and multi-layer farming, which added nutritional value to their meals and increased household income. This comprehensive approach has significantly improved the socio-economic conditions of farmers in the region.

4.1.1 Income from Agriculture

The implemented initiatives have yielded a favorable influence on the farmers' income generation capabilities. The data from the PANI initiative highlights significant changes in both median and mean figures for input costs, gross income, and net income for farmers in the Prayagraj district. When examining the median values, input costs increased from INR 6,250 to INR 7,500, reflecting heightened investments in farming. Despite this rise, gross income saw a substantial boost, with median values increasing from INR 15,000 to INR 19,750. This indicates that the investments were effective, leading to higher yields and productivity. Correspondingly, the median net income rose from INR 3,200 to INR 4,000, demonstrating an improvement in farmers' financial well-being with an average increase of INR 1,000.

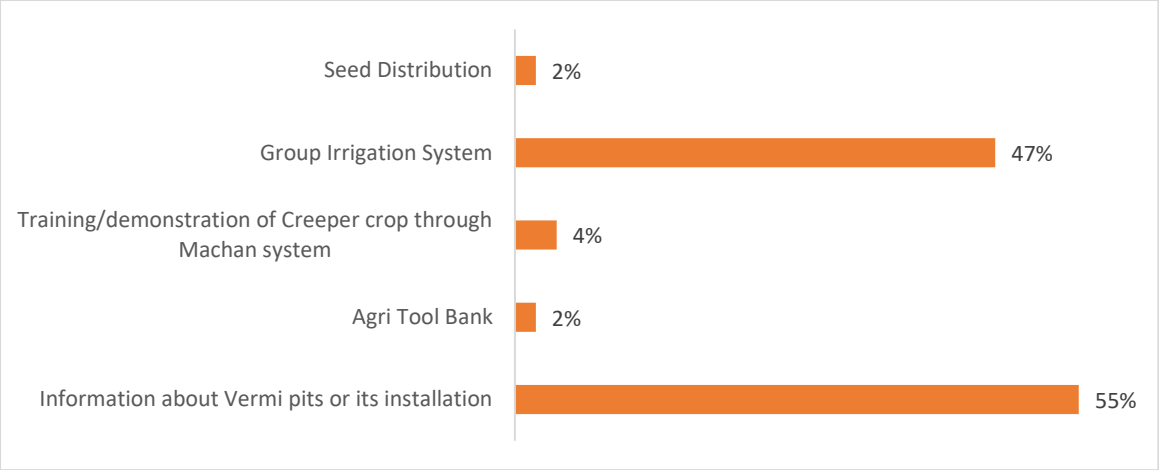
Analysing the mean figures reveals a more detailed picture of the initiative's impact. The mean input cost rose from INR 10,488 to INR 14,243, marking a 36 percent increase. Concurrently, the mean gross income increased from INR 31,657 to INR 42,279, reflecting a 34 percent rise. This growth in gross income suggests that the increased investments were profitable. Additionally, the mean net income grew from INR 13,074 to INR 18,386, representing a 41 percent increase. This translates to an average increase of INR 5,312 in net income. These percentage changes highlight the initiative's success in enhancing agricultural productivity and economic conditions for the farmers, despite the significant rise in input costs.

Figure 9: Income from agriculture (N=73)



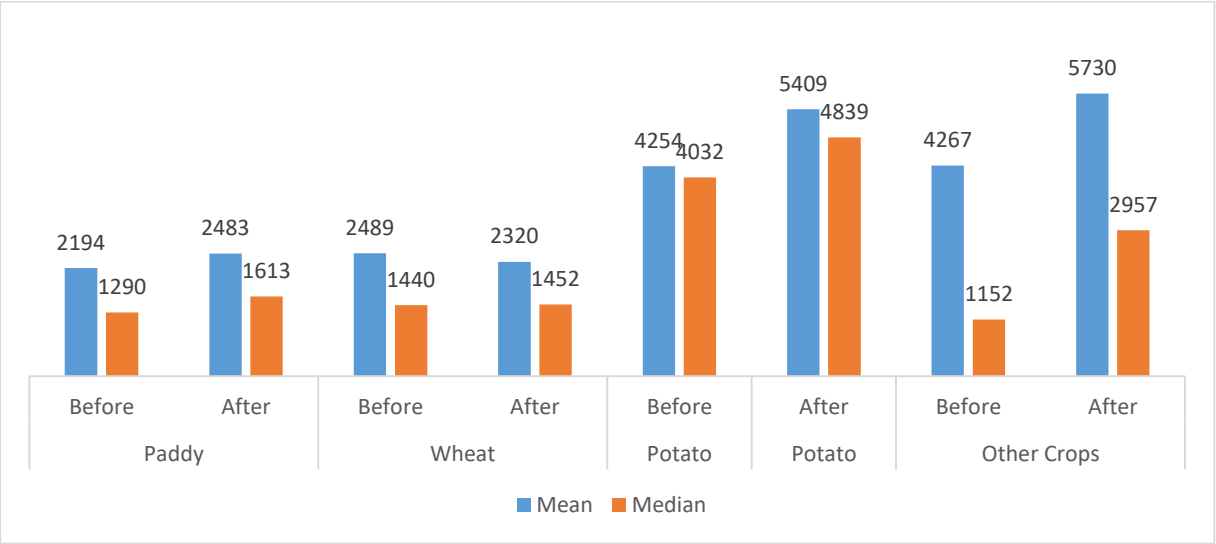
The improvement in farmers' income-generation capacity can be attributed to several key factors. Chief among these is the increased accessibility to irrigation water. Additionally, essential elements such as training, promotion of organic manure, *machan* farming, and crop diversification have significantly enhanced their income and livelihood prospects.

Figure 10: HRDP contribution that contributed to increase in agriculture income (N=73)



The HDFC project interventions have played a pivotal role in increasing agricultural income, as evidenced by the respondents' feedback. Information about vermi pits or their installation had the most significant impact, with 55 percent of farmers acknowledging its benefits. This initiative likely improved soil health and fertility, resulting in higher crop yields and enhanced income. The Group Irrigation System also had a notable influence, with 47 percent of farmers highlighting its importance. Reliable irrigation is essential for consistent crop production, and this system likely mitigated the challenges posed by monsoon-dependent irrigation, thus stabilizing and increasing farmers' income. Training and demonstration of creeper crops through the machan system benefited 4 percent of the respondents. This intervention introduced innovative farming techniques and promoted crop diversification, further boosting productivity and income. Both the agri tool bank and seed distribution were recognized by 2 percent of the farmers. These initiatives provided essential farming tools and quality seeds at minimal cost, reducing input expenses and supporting better crop management and yields.

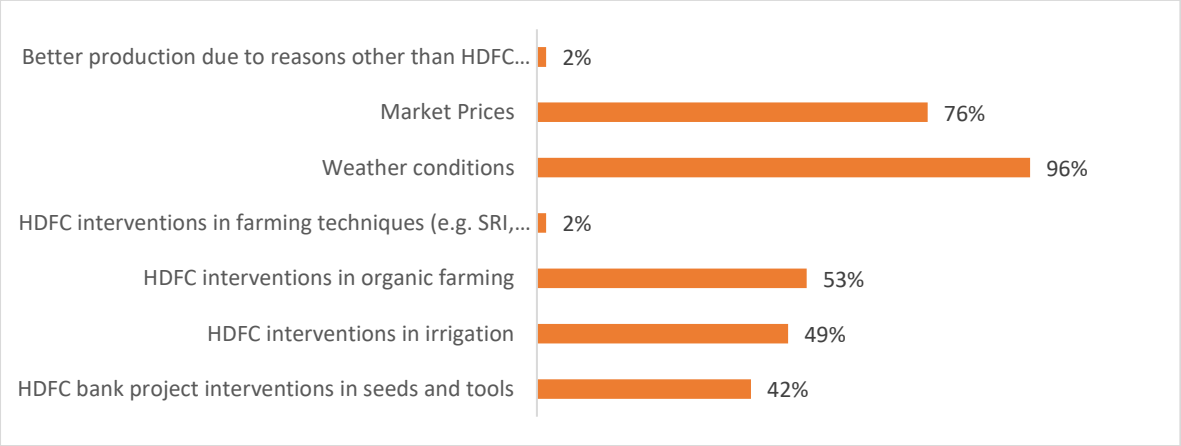
Figure 11: Productivity kg/ per acre (crop-wise)



The intervention significantly impacted crop production across various types, as measured by median values. Paddy and wheat showed moderate changes, with paddy increasing from a median

of 1290 kg per acre before the intervention to 1613 kg per acre after, marking a growth of approximately 25 percent. Wheat saw a slight rise from 1440 kg per acre to 1452 kg per acre, representing a marginal increase of about 1 percent. In contrast, potato production surged notably, rising from a median of 4032 kg per acre to 4839 kg per acre, reflecting a growth of around 20 percent. Other crops, initially yielding a median of 1152 kg per acre, saw a remarkable increase to 2957 kg per acre after the intervention, marking a substantial growth of about 157 percent. The transformation in other crop yields can be attributed to a shift towards cash crops, particularly vegetables, facilitated by consistent water availability throughout the year from solar group irrigation systems. This ensured that crops like potatoes and other vegetables thrived under optimal conditions, contributing significantly to their increased production. The results underscore the effectiveness of the intervention in enhancing productivity, particularly for crops benefiting from improved irrigation practices. These findings highlight the diverse outcomes across different agricultural sectors, guiding future strategies aimed at optimizing yields and promoting sustainable agricultural development. By leveraging advancements in irrigation technology and focusing on suitable crop diversification strategies, agricultural productivity can be further enhanced, ensuring food security and economic sustainability in the project village.

Figure 12: The main reasons for the increase in income (N=55)



Targeted interventions have been pivotal in enhancing farmers' income within the agricultural sector. A significant proportion attributed their higher incomes to HDFC Bank's project interventions, with 42 percent citing improvements in seeds and tools, 49 percent in irrigation, and 53 percent in organic farming. These interventions likely enhanced productivity and efficiency, directly impacting farmers' earnings. Weather conditions were overwhelmingly cited by 96 percent of respondents as a critical factor influencing income levels, indicating favorable climatic conditions that supported better yields. Market prices were also influential, with 76 percent of respondents noting their impact on income, suggesting that favorable pricing environments contributed significantly to profitability. Interestingly, a small percentage (2 percent) attributed income increases to better production resulting from factors other than HDFC Bank's interventions, indicating a diverse range of influences on agricultural productivity and profitability. Overall, the data underscores the multifaceted nature of income growth in agriculture, where external interventions, weather conditions, and market dynamics collectively contribute to improved financial outcomes for farmers in the project area.

Furthermore, a 2-sample z-test conducted on paddy productivity yielded compelling results, with a p-value of 0.299 against a z-statistic of 0.5266 at a 95 percent confidence level, confirming the significant influence of these interventions. Detailed calculations can be referenced in Annexure

(D), highlighting the efficacy of these strategies in augmenting agricultural income and productivity for farmers.

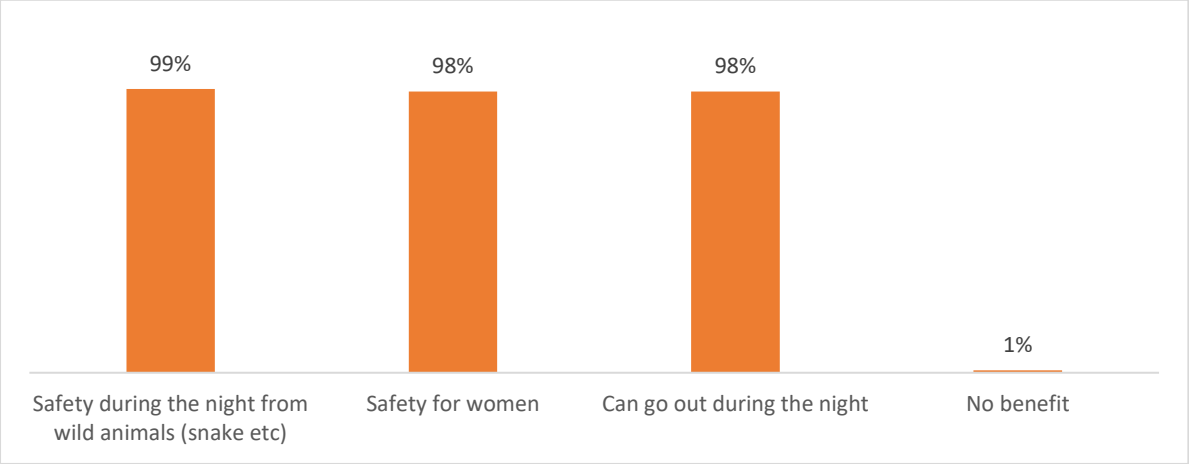
Figure 13: NRM structure run by clean energy (Solar Lift Irrigation)

4.1.2 Use of Clean Energy Solutions

In collaboration with village development committees, the implementing partner installed one hundred solar street lights across ten villages. These installations were strategically located in areas with shared public facilities and high pedestrian activity to offer clean energy solutions and improve community safety and mobility, particularly after dark.

Following the intervention, 51 percent of households reported utilising the clean energy solution facilitated by HDFC Bank, while the remainder did not have access. The introduction of solar street lights significantly improved their circumstances, positively impacting the lives of many villagers. Presently, 94 percent of the installed solar street lights are operational, ensuring continuous illumination throughout the night. This reliability is crucial for meeting the safety and mobility needs of the villagers. Although villagers took on the responsibility for maintenance, challenges emerged related to acquiring spare parts and accessing technicians. Nevertheless, 98 percent of the respondents expressed full satisfaction with the solar lights, indicating strong approval of their functionality and benefits.

Figure 14: Benefits of Solar Street Lights (N-226)



An overwhelming majority of respondents cited safety during the night as the primary advantage, with 99 percent emphasising protection from wild animals such as snakes. Additionally, 98 percent noted enhanced safety for women, underscoring the lights' role in mitigating risks associated with night-time activities. Another 98 percent expressed that the availability of solar lights allowed them to venture out at night, thereby increasing mobility and access to social and economic opportunities. These findings indicate that solar street lights not only illuminate pathways but also address critical safety concerns, particularly in rural areas where nocturnal activities are often constrained by darkness and safety risks. The negligible percentage (1 percent) who reported no perceived benefit suggests a near-universal recognition of the positive impacts of solar lighting on community safety and mobility. Overall, the data underscores the transformative impact of sustainable energy solutions like solar lighting on empowering communities, enhancing safety, and facilitating greater night-time mobility and economic participation.

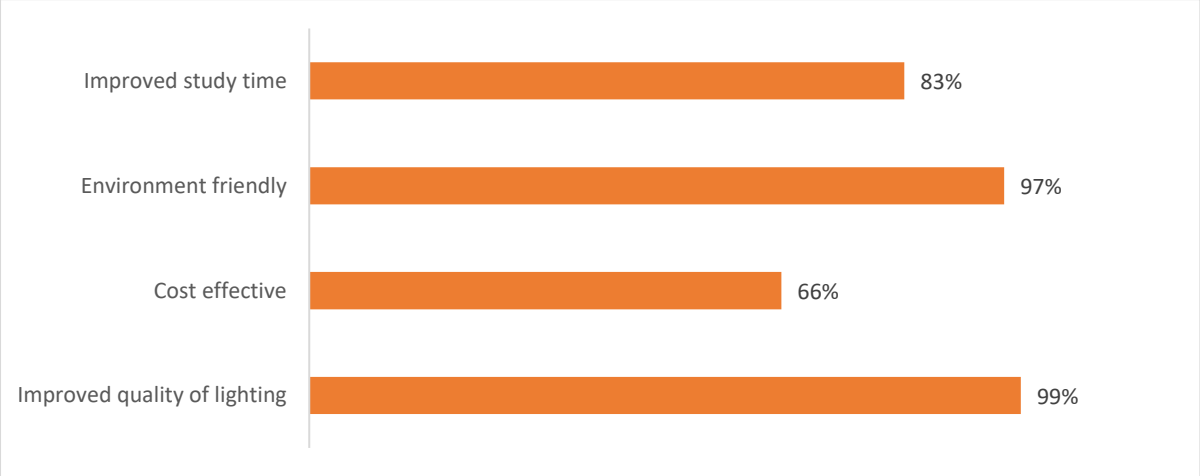
Figure 15: A solar light installed in the project village

In today's world, energy is a critical component of human life. A total of 700 solar lantern units have been distributed to beneficiaries across all 10 villages. These lanterns are being used by families for domestic tasks enabling children to complete their schoolwork at home.

Figure 16: Purpose of the solar lantern used at the HH (N=216)

In this study, respondents highlighted a range of uses for solar lights, showcasing their versatile impact on daily life. A significant 98 percent reported using solar lights for general lighting, emphasising their crucial role in providing night-time illumination. Solar lights are also essential for educational purposes, with 93 percent using them to support studying at home. Furthermore, 79 percent found solar lights useful for completing household chores after sunset, enhancing productivity. In terms of leisure and education, 71 percent of respondents use solar lights for general reading. These findings underscore the diverse benefits of solar lighting in communities with limited access to electricity, improving safety, productivity, and educational opportunities. The widespread adoption of solar lights signifies their transformative effect, not only meeting essential lighting needs but also promoting a more sustainable and empowered lifestyle among rural households.

Figure 17: Perceived benefits of solar lantern (N=216)



The survey reveals strong perceptions of the benefits associated with solar lanterns among respondents. An overwhelming 99 percent cited improved quality of lighting as a major advantage, highlighting the lanterns' effectiveness in providing reliable illumination. Cost-effectiveness was noted by 66 percent of respondents, indicating recognition of the economic benefits associated with reduced energy costs. Additionally, 97 percent viewed solar lanterns as environmentally friendly, underscoring their appeal as sustainable energy solutions. The impact on educational outcomes was also significant, with 83 percent reporting improved study time facilitated by the consistent availability of light. These findings illustrate that solar lanterns not only enhance lighting quality and contribute to cost savings but also align with environmental stewardship priorities. They play a pivotal role in improving study conditions, particularly in areas where reliable electricity access is limited, thereby promoting educational attainment and sustainable living practices within communities.

4.1.3 Impact Observations

Figure 18: Level of Impact – NRM

4.1.4 Case Study

Empowering Agricultural Prosperity: Solar-Based Irrigation Transforms Katra Dayaram Village

Located in Prayagraj district, Katra Dayaram village historically relied on single-crop agriculture during the rainy season. Witnessing neighbouring wealthy farmers succeed with cash crops through private irrigation sparked interest among local farmers. However, high water procurement costs nullified profitability, with farmers paying INR 70 per hour to water suppliers. Recognising this challenge, the PANI, supported by HDFC Bank, intervened decisively.

The project team initiated discussions with farmers and formed a producer group to address the issue. They installed a solar-based irrigation unit at an approximate cost of INR 5 lakh on land owned by Lajwati Patel, nominated by the group. Her husband, Gyan Prakash, underwent training to operate the unit, which now serves 35 farmers. To ensure sustainability, the group charges a nominal fee, accumulating a corpus for maintenance and repairs. This initiative has enabled irrigation of over 9 hectares year-round, focusing on high-value vegetables and catalysing a "green revolution."

Despite their proximity to markets, middlemen now purchase produce directly from farmers, securing better prices. Consequently, farmers' incomes have surged, bringing newfound prosperity and satisfaction. Solar-powered irrigation enhances crop yield, quality, and financial sustainability by reducing diesel and electricity costs. Environmentally, it curtails greenhouse gas emissions and promotes water conservation, which is crucial in water-scarce regions. Socio-economically, the initiative enhances local development and empowers farmers through solar technology skill enhancement.

In summary, Katra Dayaram village exemplifies how solar-powered irrigation revolutionizes agriculture, bolsters climate resilience, and uplifts livelihoods sustainably. This transformative initiative not only ensures agricultural productivity but also fosters economic growth and environmental stewardship in rural communities.

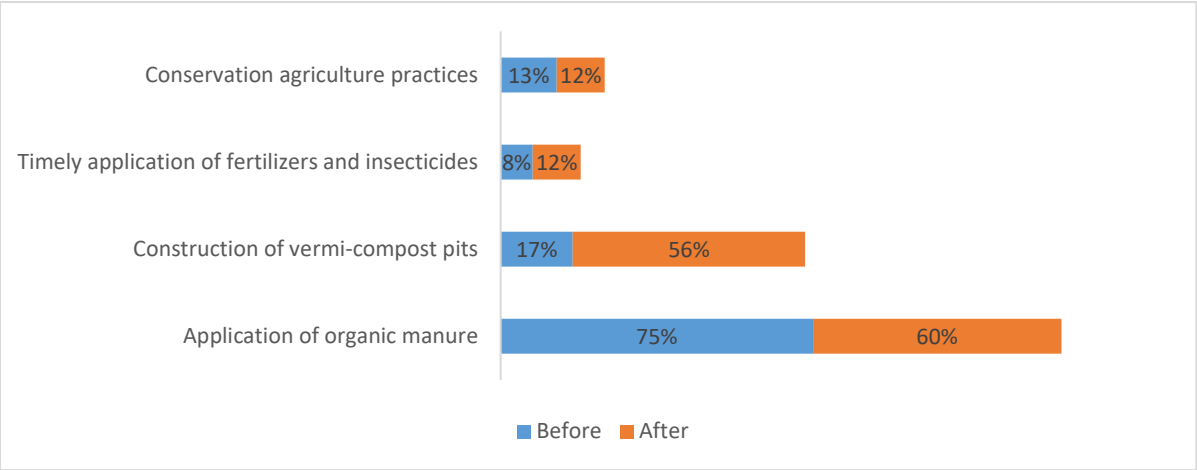
4.2 Skill Training and Livelihood Enhancement

4.2.1 Access to Agriculture Training and Services

Under the HRDP, HDFC Bank has initiated various endeavours to enhance access to agricultural training and services. The project aimed to empower small and marginalised farmers through various initiatives focused on enhancing agricultural practices and productivity. Eighty small farmers received start-up support for multi-tier vegetable cropping using the machan model. Each beneficiary was provided with essential materials such as bamboo, rope, wire, bottle gourd seeds, and an onion nursery, enabling them to cultivate multiple vegetables simultaneously on their limited land. This approach aimed to maximize yield and diversify income sources for these farmers. Furthermore, a training and exposure trip was organised at Acharya Narendra Dev Agriculture University, Ayodhya. This initiative involved 20 small farmers and 12 project staff members, aimed at familiarising them with advanced agricultural practices and technologies. The trip was instrumental in building their capacity and knowledge base, enabling them to adopt more efficient farming techniques. Additionally, 75 small farmers were identified for promoting vegetable cropping on their small plots. The HRDP project supported them with essential inputs like carts and weighing machines, along with high-yield vegetable seeds and nursery recommendations. This support aimed to increase agricultural productivity and income generation through modern agricultural practices. Moreover, 188 progressive farmers received assistance to establish vermicomposting units and were provided with earthworms. This initiative promoted the use of organic fertilizers, enhancing soil fertility and enabling farmers to generate additional income by selling earthworms and organic fertilizers. Additionally, 45 farm field schools were established to provide hands-on training and exposure to different agricultural techniques, further empowering farmers with practical knowledge and skills.

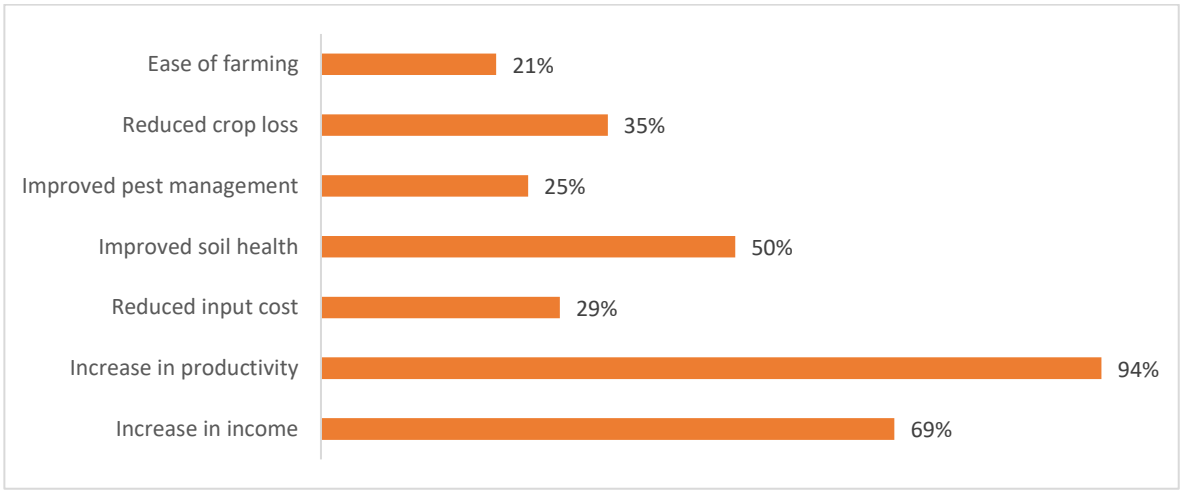
Overall, these efforts under the HRDP project were geared towards sustainable agricultural development, improving livelihoods, and fostering resilience among small-scale farmers through innovative practices and knowledge dissemination.

Figure 19: Respondents Practising Different Activities before and after the Interventions (N=52)



The study highlights shift in the proportion of households adopting various agricultural practices before and after an intervention. Reported by respondents, the use of organic manure decreased from 75 percent to 60 percent, suggesting a move toward alternative organic options. Conversely, 56 percent of households reported an increase in the construction of vermi-compost pits, up from 17 percent, reflecting growing interest in organic waste management and soil enrichment through this method. This shift indicates the perceived effectiveness or appeal of vermi-composting. Additionally, the timely application of fertilizers and insecticides increased slightly from 8 percent to 12 percent, suggesting a minor improvement in input management. Conservation agriculture practices remained relatively stable, with a slight decline from 13 percent to 12 percent, indicating either satisfaction with existing methods or limited further adoption. Overall, the data reveals a notable transition in agricultural practices, particularly emphasising the importance of soil health and fertility through vermi-composting, while maintaining consistency in other areas. This trend may be due to changing priorities, resource availability, or the impact of educational initiatives on sustainable agriculture, underscoring the significance of soil health and effective waste management practices.

Figure 20: Perceived improvements due to adoption of agricultural practices (N=52)



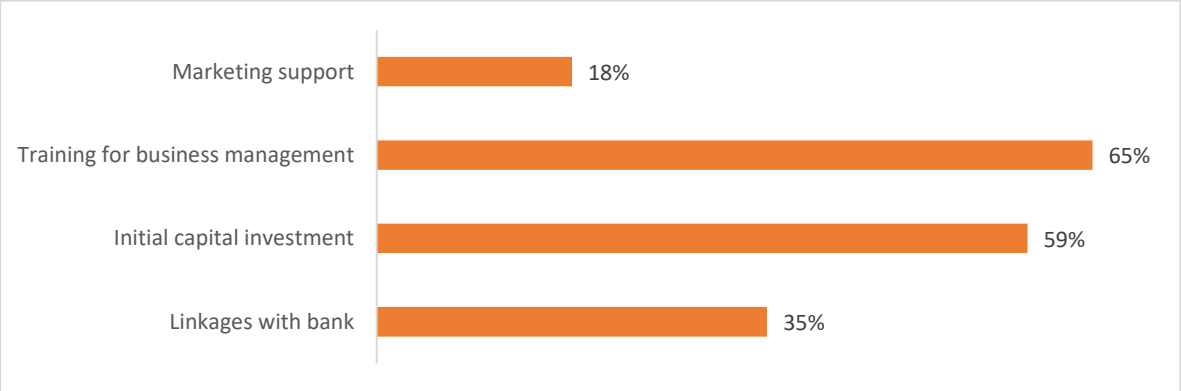
The perceived improvements from adopting agricultural practices suggest a generally positive impact on various farming aspects. The data outlines improvements noticed due to the implementation of farming practices in collaboration with the implementing partner and HDFC Bank. An impressive 94 percent of respondents reported an increase in productivity, indicating

significant enhancements in agricultural output. Additionally, 69 percent experienced an increase in income, highlighting the economic benefits of these practices. Improved soil health was reported by 50 percent, underscoring the focus on sustainable farming methods that enhance long-term soil fertility. Although only 29 percent noted reduced input costs, this still reflects an important financial advantage. Improved pest management was observed by 25 percent, suggesting some progress in controlling pests effectively. Moreover, 35 percent of respondents experienced reduced crop loss, which contributes to overall productivity and stability in farming outcomes. Lastly, 21 percent reported an ease of farming, indicating that the new practices may simplify certain agricultural tasks. Overall, the data demonstrates that these initiatives have led to substantial benefits, particularly in productivity, income, and soil health, while also addressing various aspects of cost and pest management. This reflects the positive impact of strategic interventions in agriculture, focusing on both immediate gains and sustainable development.

4.2.2 Access to Skill and Entrepreneurship Development

In the project villages of Prayagraj, HDFC Bank and PANI played a significant role in promoting rural entrepreneurship by supporting 40 micro-entrepreneurs with vending carts to initiate small businesses or income-generating activities in local markets. Each entrepreneur actively engaged with their mobile petty shops, leading to a remarkable improvement in household incomes, increasing by up to 20 to 25 percent. Additionally, 37 micro-entrepreneurs received assistance for petty shops and other enterprises through the HRDP project. This support allowed them to successfully launch and manage their small businesses. The initiative not only empowered the entrepreneurs but also contributed to the local economy by fostering self-sufficiency and entrepreneurship. The vending carts and small enterprises became vital sources of livelihood, enhancing the economic stability of the beneficiaries and their families. The project's impact was visible in the community, as it encouraged a spirit of entrepreneurship and provided a platform for sustainable income growth. Overall, HDFC's efforts in the selected project villages in Prayagraj exemplified a successful model of rural entrepreneurship promotion, significantly benefiting the local population and encouraging further economic development in the region.

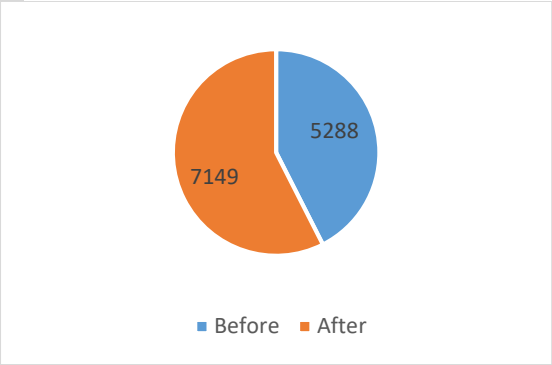
Figure 21: Project support received in enterprise development (N=17)



The data indicates that respondents in the enterprise development project received varied forms of support, with differing levels of impact. Training for business management was identified as the most beneficial aspect, with 65 percent of respondents acknowledging its importance. This suggests that skill development and effective business management are critical for the success of these enterprises. Initial capital investment was also highly valued, with 59 percent of participants recognizing it as essential. This reflects the significant role that financial resources play in starting and sustaining a business. Linkages with banks were noted by 35 percent of

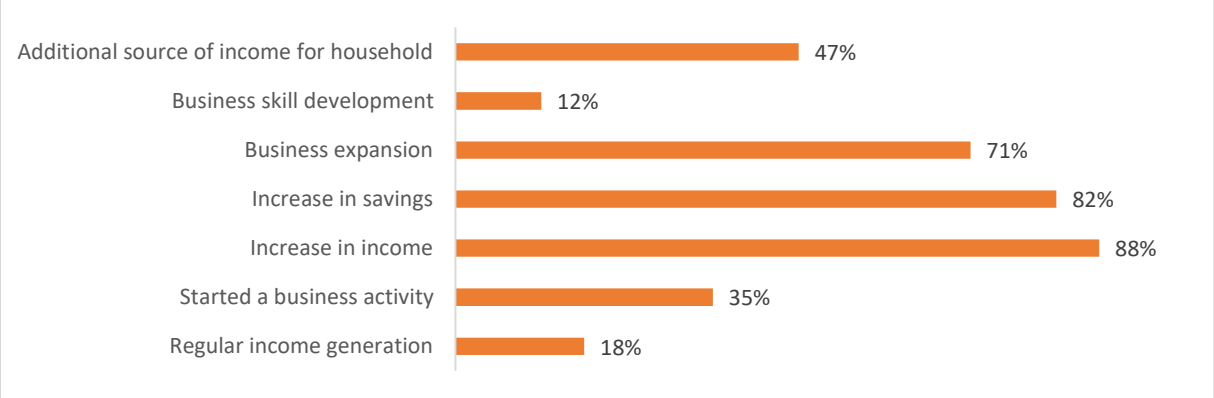
respondents, highlighting the importance of financial institutions in providing necessary support and resources for growth. Lastly, marketing support was acknowledged by 18 percent of the participants, indicating that while important, it may not have been as impactful as other forms of assistance. Overall, the project's support in training and capital investment appears to be crucial for enterprise development, while banking connections and marketing, though beneficial, were less emphasised by the respondents. This analysis underscores the multifaceted needs of entrepreneurs in the development process and the importance of tailored support strategies.

Figure 22: Average monthly income from enterprise in INR



The survey shows a significant increase in the average monthly income from enterprises, rising from INR 5288 to INR 7149. This represents an increase of approximately 35 percent. This substantial growth indicates the positive impact of the enterprise development initiatives, likely due to enhanced training, capital investment, and other support mechanisms provided to the participants. The rise in income not only reflects improved business operations but also suggests a better quality of life for the entrepreneurs involved.

Figure 23: Perceived benefits of skill development training (N=17)



The study reflects various perceived benefits gained from project support for enterprise development. A significant 88 percent of respondents reported an increase in income, highlighting the effectiveness of the project in enhancing financial stability. Additionally, 82 percent noted an increase in savings, indicating improved financial management and security. Business expansion was experienced by 71 percent, suggesting that the support enabled enterprises to grow and diversify. Starting a business activity was acknowledged by 35 percent, illustrating the project's role in fostering entrepreneurial initiatives. However, regular income generation was noted by only 18 percent, which may suggest variability in income stability for some participants. Business skill development was recognized by 12 percent, indicating that while skill enhancement occurred, it may not have been the primary focus for all respondents. Lastly, 47 percent of participants identified the project as an additional source of household income, underscoring its broader impact on family finances. Overall, the project support significantly contributed to income and savings growth, business expansion, and the establishment of new business activities, thereby playing a crucial role in the economic empowerment and sustainability of the respondents' enterprises and households.

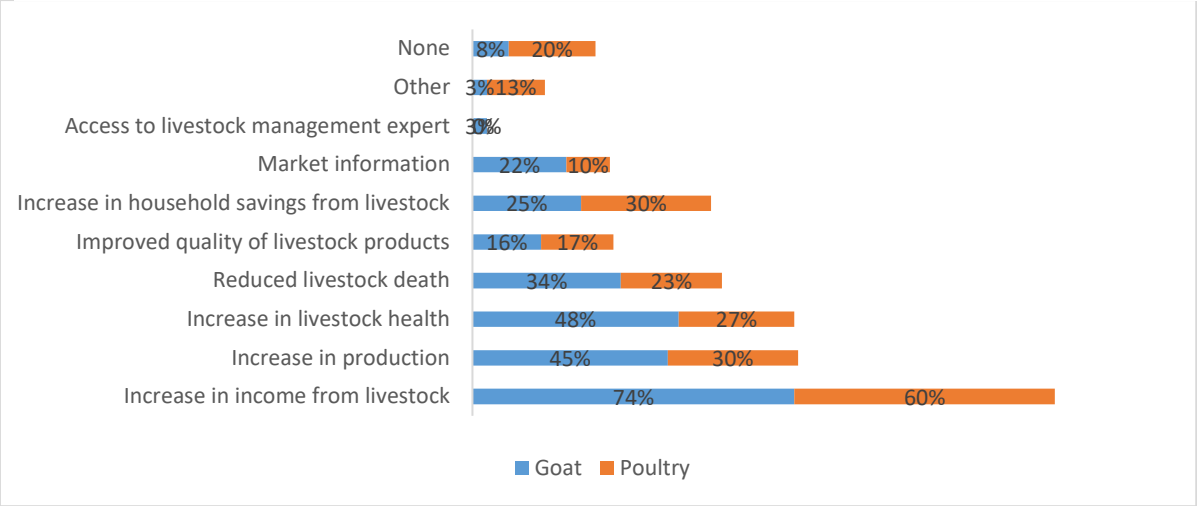
4.2.3 Improved Capacity to Generate Income Through Livestock Management:

A wide array of initiatives focused on enhancing livestock management was carefully implemented in the project villages. This systematic approach led to significant outcomes, as observed from a researcher's perspective.

In the selected project villages of Prayagraj district, the HRDP initiative significantly impacted goat rearing among micro-entrepreneurs. A total of 300 entrepreneurs received start-up support, focusing on goat rearing, with 12 micro-entrepreneurs in each village benefiting. Some beneficiaries received two to three goats at a time, while financial support was initially provided as a revolving fund, later converted to a non-refundable basis. Specifically, 40 micro-entrepreneurs received five goats each (four female and one male), fostering the development of a goat cluster across four villages. Additionally, 12 women micro-entrepreneurs were supported with Sirohi breed bucks from Ajmer, Rajasthan, to enhance crossbreeding efforts. This intervention aimed to boost income for the poorest families by improving goat breeds. The project primarily targeted women from marginalised communities, empowering them through income-generating activities. As a result, the entrepreneurs anticipated an increase in household income of 25 to 30 percent within six months through local goat sales, significantly improving their economic standing.

The HRDP project also supported backyard poultry development among 110 micro-entrepreneurs in Prayagraj, each receiving 40 mature chicks and two traditional bamboo cages. This initiative aimed to provide a sustainable micro-enterprise option, enhancing participants' incomes. In three villages, a poultry cluster was developed, supporting 30 women micro-entrepreneurs, with 10 in each village. The project facilitated the construction of permanent living structures for the chicks, merging the resources of three entrepreneurs into one larger facility. Each entrepreneur also received 50 additional mature chicks, strengthening the poultry operations. This support empowered women from marginalised backgrounds, linking them to income-generating opportunities. The introduction of backyard poultry was expected to substantially increase the entrepreneurs' income, providing them with a reliable source of revenue. By focusing on sustainable practices and collective development, the project not only improved individual livelihoods but also strengthened community ties, fostering economic growth and resilience in the participating villages.

Figure 24: Perceived benefits of livestock management (Goat N=120, Poultry N=30)

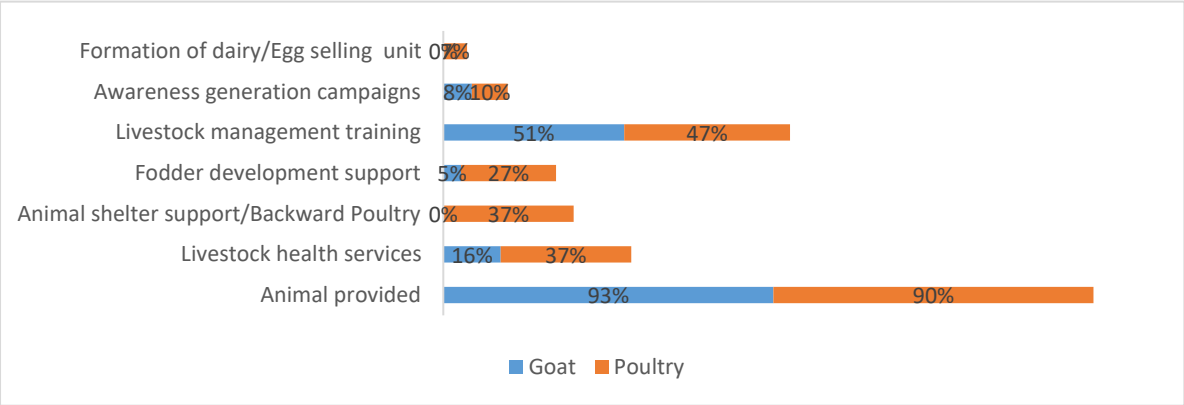


The data highlights the perceived benefits of livestock activities, specifically goat and poultry rearing, among the respondents. For goat rearing, 74 percent of respondents reported an increase in income from livestock, demonstrating a significant economic benefit. Additionally, 45 percent experienced an increase in production, and 48 percent noted improved livestock health. The initiative also led to a 34 percent reduction in livestock deaths, reflecting better management practices. However, only 16 percent observed an improvement in the quality of livestock products, suggesting that while overall health and production improved, product quality enhancements were less pronounced. Household savings from livestock increased for 25 percent of goat rearers, and 22 percent gained better market information. Access to livestock management experts was minimal, with only 3 percent reporting such benefits. In poultry rearing, 60 percent of respondents saw an increase in income from livestock, indicating a positive financial impact, though slightly less than that observed in goat rearing. Production increased for 30 percent of poultry rearers, while 27 percent reported improved livestock health. The death rate of livestock decreased by 23 percent, showing effective disease and mortality control measures. Similar to goat rearing, the quality of livestock products improved for a small portion, 17 percent. Interestingly, 30 percent of poultry rearers experienced an increase in household savings, slightly higher than those in goat rearing. Market information was less accessible, with only 10 percent benefiting, and no respondents reported access to livestock management experts. A notable 13

percent cited other benefits, and 20 percent indicated no perceived benefits, suggesting that the impact of poultry rearing was more varied among participants.

Overall, the livestock initiatives led to significant economic and production benefits, particularly in goat rearing, with notable improvements in income, production, and health, while poultry rearing showed mixed results, highlighting areas for potential improvement.

Figure 25: Type of project services received for different livestock (Poultry N=30, Goat N=124)

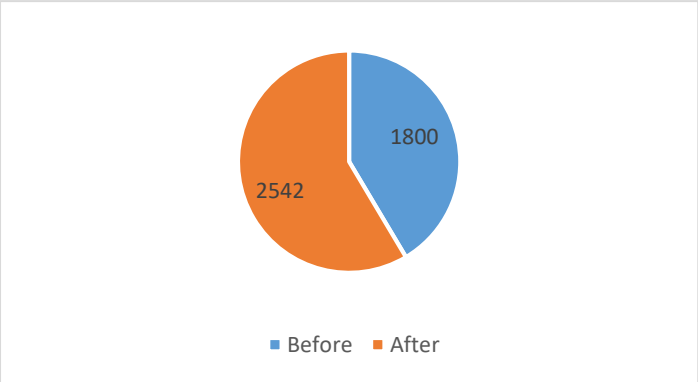


The study reveals respondents' perceived benefits from goat and poultry initiatives. In goat rearing, 93 percent of participants received animals, indicating strong support for livestock provision. However, only 16 percent benefited from livestock health services, suggesting limited access to veterinary care. No respondents reported animal shelter support, and only 5 percent received fodder development assistance, highlighting gaps in these areas. Livestock management training was beneficial for 51 percent, indicating a focus on capacity building. Awareness campaigns reached 8 percent, showing room for improvement in outreach. There was no formation of dairy units, indicating a lack of organisational support in this area. For poultry, 90 percent of respondents received animals, similar to goat rearing. Livestock health services were more prevalent, benefiting 37 percent, and 37 percent also received animal shelter support, suggesting better infrastructure support compared to goats. Fodder development support reached 27 percent, indicating moderate assistance in feed management. Livestock management training benefited 47 percent, slightly lower than for goats, but still significant. Awareness campaigns reached 10 percent, showing consistent engagement in information dissemination. Additionally, 7 percent participated in forming egg-selling units, indicating some organisational support for market linkages.

Overall, both initiatives provided substantial livestock and training support, with notable differences in health services and infrastructure between goat and poultry rearing. There remains

potential for enhancing health services, fodder support, and market organisation to further benefit the participants.

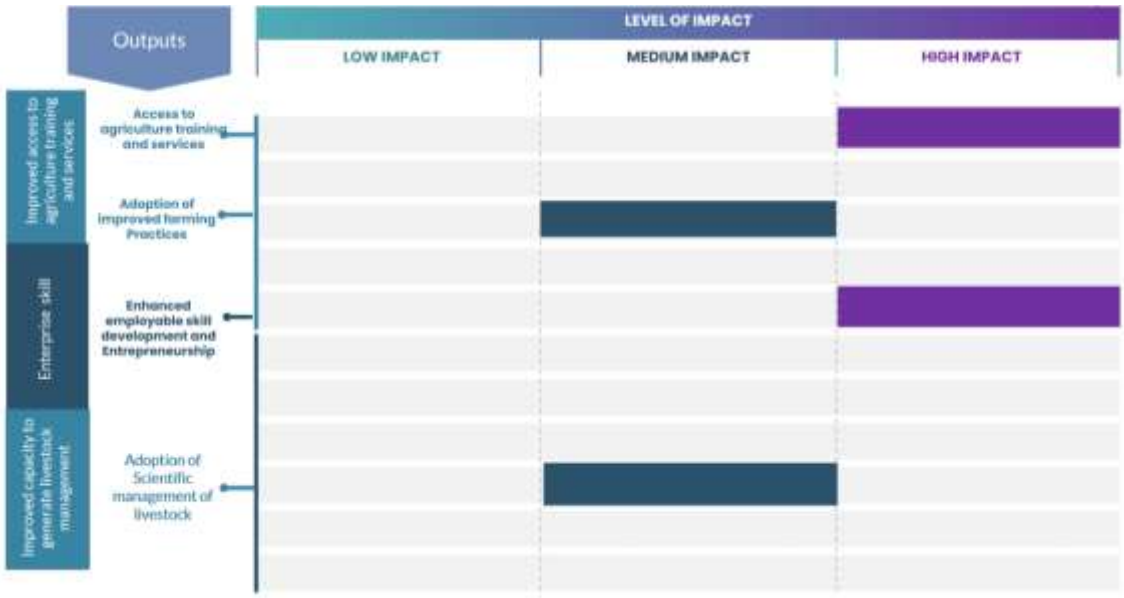
Figure 26: Average monthly income from livestock in INR



The study shows a significant increase in the average income from livestock before and after a specified period. According to the data, there was an increase from INR 1800 to INR 2542, indicating a notable 41 percent improvement. This rise suggests a positive outcome resulting from interventions or changes implemented within the livestock sector, which could include improved management strategies, enhanced breeding techniques, or better access to markets.

4.2.4 Impact Observation

Figure 27: Level of Impact – ST & LE



4.2.5 Case Study

Empowering Women Entrepreneurs: The Transformation of Kunti Patel

Kunti Patel, a member of a six-person joint family, previously struggled with farming on their half-bigha land in Bhaopur village of Prayagraj. The crops they produced were insufficient for their consumption, forcing the entire family to work as wage labourers to survive. Health care and education seemed like distant dreams for them. In 2019, Kunti Devi became associated with the HDFC Bank CSR-promoted Parivartan project, organised by PANI sansthan through women's groups. Through regular monthly meetings, she gained valuable knowledge about starting micro-enterprises with small-scale support. Recognising her potential, PANI Sansthan promoted her as a woman micro-entrepreneur, providing her with INR 18,000 to start a small business. She used this support to open a kirana (grocery) shop at her home.

Kunti showed exceptional dedication in running her small business, quickly achieving success. Seeing her determination, her husband also joined her in managing the shop. Currently, Kunti earns approximately INR 400 to INR 500 per day. Her earnings have significantly contributed to the family's development, enabling them to construct a semi-pucca house. Additionally, she has accumulated a stock worth around INR 80,000 in her store and purchased a refrigerator worth INR 20,000 to keep perishable goods. This transformation has greatly improved her family's situation. Kunti now lives with respect and social importance within her community. She is happy and grateful for the support and intervention provided by the Parivartan project.

Kunti Patel's journey from a struggling farmer to a successful micro-entrepreneur exemplifies the power of targeted interventions and community support. Her story is a testament to the impact of empowering women, showcasing how financial support and knowledge can transform lives and bring sustainable development to disadvantaged communities.

4.2.6 Case Study

Sheeta Devi's Journey from Poverty to Prosperity: A Beacon of Hope

Sheeta Devi, a resident of Munaurpur village in Prayagraj, lives with her family of eight, including her husband, five daughters, and one son. Owning only two to three biswa of land, they grow paddy and wheat, but the meager produce is insufficient to sustain their large family. To make ends meet, Sheeta and her husband work as daily wage labourers, though their income remains low and irregular. There were many times when they couldn't find work for days, forcing the couple to withdraw their children from school due to their poor economic situation. Living in a kuchha house, the family faced significant challenges, especially during the rainy season.

During a household survey in the project locations, the HRDP team identified Sheeta Devi's household as one of the poorest in the area. Being a member of a women's group, she began attending their meetings. Upon learning about the Micro Enterprise Development model, she proposed starting her own business selling bhunja muri (puffed rice).

Further discussions between the project team, her family members, and the Village Development Committee (VDC) led to Sheeta Devi being included beneficiary list. She received approximately INR 14,000 for a cart and raw materials, along with her own small investment of INR 1,000 as a token to show her commitment to the business.

With support from the HRDP project and her own hard work, Sheeta Devi established her business successfully. Her husband also assists her when necessary. She now earns approximately INR 500 per day. With the savings from her business, she has significantly contributed to her family, including constructing a pucca house, which is nearly completed. Additionally, she married off her eldest daughter and readmitted her children to school.

Sheeta Devi is delighted with the positive response to her enterprise and remains grateful to HDFC Parivartan and PANI for their support. She has become a role model for many women in her community, demonstrating that with support and determination, it is possible to overcome poverty and achieve prosperity.

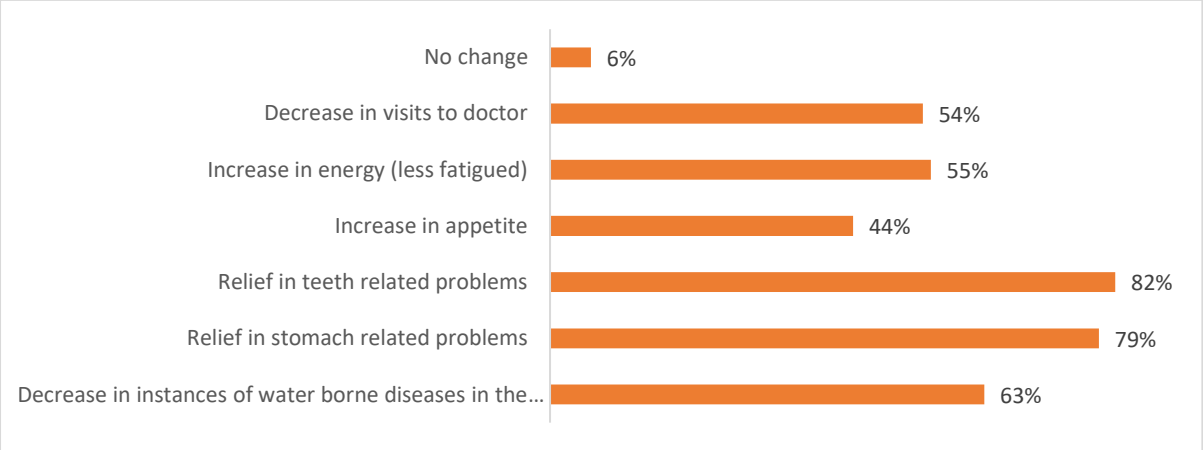
4.3 Health and Sanitation

4.3.1 Availability of drinking water

Access to clean drinking water has posed a significant challenge in the selected villages targeted by PANI under the HRDP project. Issues such as water contamination, inadequate infrastructure, seasonal shortages, and reliance on polluted sources like ponds and untreated wells have plagued these communities. In response, PANI has implemented a comprehensive strategy to alleviate these hardships. They have erected 15 solar-powered drinking water stations, known as community "Jal Minars", each linked to deep bore wells drilled to depths averaging between 120 to 150 feet in every village. This initiative has been instrumental in providing safe drinking water access to communities sharing similar socio-economic backgrounds. Each jal minar serves an average of 40 households, collectively benefitting over 500 families across the ten villages involved in the project.

In locations where the installation of jal minars was not feasible, PANI installed 40 units of India Mark-II hand pumps at strategic locations. These hand pumps have become vital sources of clean water, catering to the daily needs of average 15 households per pump. Moreover, to address sanitation issues comprehensively, platforms with soak pits were constructed alongside these water points in each village. This dual approach not only ensures access to safe drinking water but also enhances community health by improving overall sanitation standards.

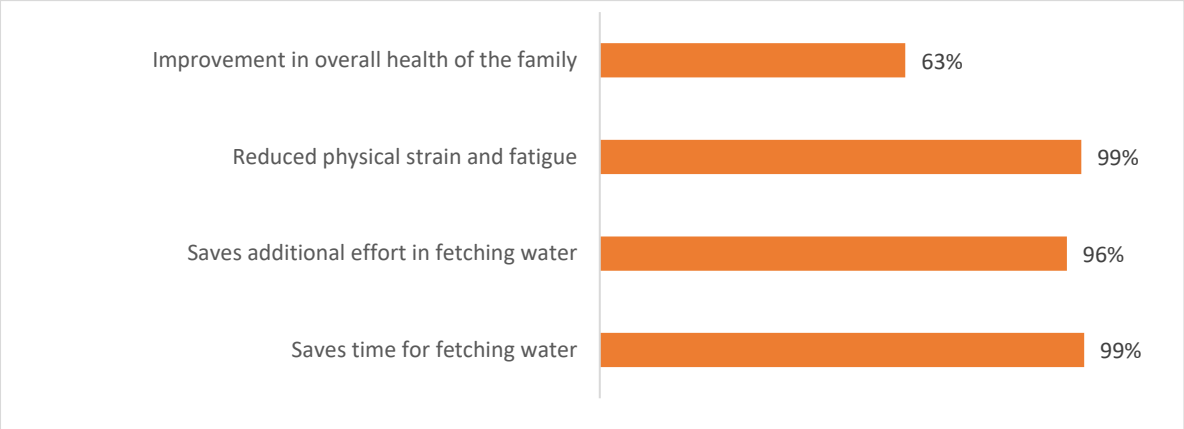
Figure 28: Perceived health benefits of improved drinking water sources (N=169)



The respondents in the villages where PANI implemented improved drinking water structures have reported several perceived benefits, as indicated by the survey results. A significant 63 percent noted a decrease in instances of waterborne diseases such as diarrhea, cholera, and typhoid, highlighting the direct health impact of accessing clean water. Furthermore, a substantial majority, 79 percent, reported relief from stomach-related problems, while 82 percent experienced improvements in teeth-related issues, underscoring the broader health benefits of improved water quality. In terms of overall well-being, 55 percent reported feeling less fatigued and experiencing increased energy levels, while 44 percent noted an increase in appetite. This positive shift in health outcomes is reflected in the reduced need for medical visits, with 54 percent reporting fewer visits to doctors since the implementation of the improved water infrastructure. Only a small portion, 6 percent, indicated no change in their health status. These findings collectively demonstrate that access to clean drinking water through the HRDP initiatives not only addresses immediate health concerns but also contributes significantly to improving

overall health, vitality, and quality of life in rural communities affected by water scarcity and contamination issues..

Figure 29: Drinking water availability helps the women in households (N=169)



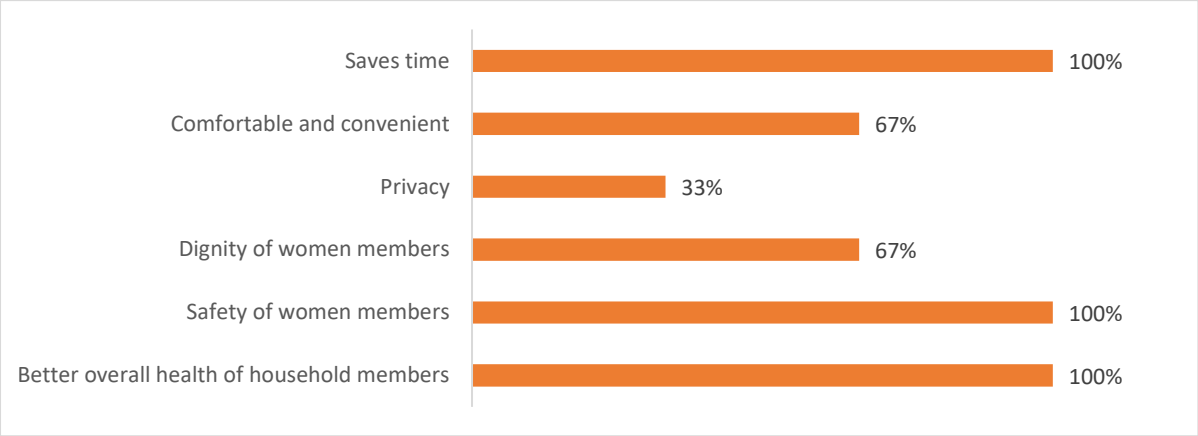
The survey results from households benefiting from improved drinking water availability highlight substantial improvements in various aspects of daily life, particularly for women. Nearly all respondents, 99 percent, reported that having access to clean water saved time previously spent fetching water, and a similar percentage, 96 percent, noted reduced physical effort required for water collection. This reduction in the burden of water fetching not only saves time but also decreases physical strain and fatigue, as reported by 99 percent of respondents. Moreover, 63 percent of households observed an improvement in the overall health of their families, likely attributable to the higher quality and accessibility of the water provided through PANI's interventions. These findings underscore the transformative impact of reliable water infrastructure on gender dynamics within households. By reducing the time and effort traditionally allocated to water collection, women in these communities are afforded greater opportunities for personal and economic activities. Furthermore, the observed improvements in health outcomes suggest that access to clean water contributes significantly to enhancing the well-being and productivity of families, thereby fostering positive socio-economic development in rural areas where such infrastructure is often lacking.

4.3.2 Sanitation

The construction of community bathrooms in the project villages of Prayagraj addressed critical needs for privacy, hygiene, and water access, particularly for women and adolescent girls. Recognising the lack of safe and private bathing spaces, the project constructed twenty double-column community bathrooms, each serving an average of fifteen to twenty households. These facilities provided a secure environment for women and girls, fostering dignity and safety within their own communities. Additionally, twenty single-column community bathrooms were strategically placed near hand pumps across the villages, ensuring accessible bathing facilities. This initiative was particularly crucial in promoting hygiene and convenience for women and adolescent girls, addressing the community's need for dedicated spaces that cater to their unique requirements. The construction of "Community Bathroom cum Mini Jal Minar" structures, equipped with solar-powered water supply systems, further enhanced these efforts. Fifteen units were completed, offering multifunctional spaces that included safe bathing areas, drinking water facilities, and spaces for washing clothes. This comprehensive approach not only improved access to essential services but also leveraged sustainable energy solutions, highlighting a commitment to environmental sustainability. Overall, these initiatives directly responded to the need for

improved hygiene, safety, and water accessibility in the community, significantly enhancing the quality of life for women and girls in the Prayagraj cluster.

Figure 30: Perceived benefits of sanitation unit (N=3)



The survey results from the project in the Prayagraj villages reflect significant positive impacts on the community. All respondents reported better overall health of household members and emphasised the safety of women, with one hundred percent acknowledging these improvements. This highlights the effectiveness of the newly constructed community bathrooms and water facilities in enhancing health and safety. Additionally, sixty-seven percent of respondents noted an increase in the dignity of women, indicating that the facilities have contributes to greater respect and social standing. Privacy was recognised by thirty-three percent of respondents, showing that while not universal, it remains an important factor for many. Comfort and convenience were appreciated by sixty-seven percent, underscoring the practical benefits of the installations. Finally, all respondents agreed that these facilities saved time, reflecting their efficiency in daily life. Overall, the project has significantly improved health, safety, dignity, and convenience for the community, particularly for women and girls.

4.3.3 Health camp and awareness programme

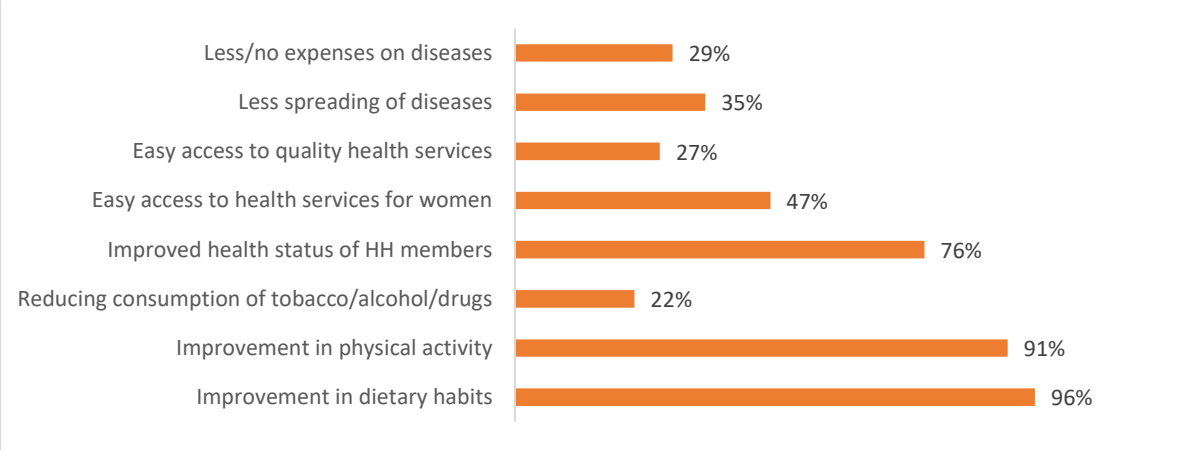
The initiatives undertaken in the project villages of Prayagraj cluster were driven by a comprehensive need assessment aimed at addressing critical health and sanitation challenges faced by the community, particularly focusing on women and adolescent girls. There was a significant prevalence of anaemia among adolescent girls, affecting their health and well-being. To combat this, the project team organised anaemia screening camps, ensuring the participation of all listed girls. These camps not only provided individual reports on haemoglobin levels but also offered dietary advice to improve their nutritional intake, directly targeting the need for better health outcomes among adolescent girls. The sanitation and hygiene practices were found lacking, impacting community health. Through 20 WASH awareness events at the Village Resource Centre, the project educated both men and women on sanitation regulations and the benefits of low-cost latrines. This initiative prompted families to engage with local authorities for the construction of these facilities, thereby addressing the community's need for improved sanitation infrastructure.

Additionally, the activation of Village Health and Nutrition Days (VHND) was crucial in addressing healthcare gaps. By organising 43 sessions benefiting 671 individuals, including women and children, the project promoted essential health monitoring and education. This initiative directly linked to the community's need for regular healthcare access and monitoring, empowering

vulnerable families to engage with healthcare services effectively. Lastly, menstrual hygiene management (MHM) sessions were conducted to address the specific needs of adolescent girls. With 514 girls participating across 10 villages, stakeholders facilitated sessions on menstrual health and the use of sanitary products, thereby addressing the community's need for proper menstrual hygiene education and support.

Overall, these interventions were strategically aligned with identified community needs, focusing on health education, sanitation improvements, and targeted healthcare interventions. By addressing these needs comprehensively, the project aimed to enhance the overall health, well-being, and empowerment of residents in the project villages of Prayagraj.

Figure 31: Perceived benefits of health camp and awareness generation programme (N=299)



The health and awareness camps in the Prayagraj villages resulted in significant perceived benefits. 96 percent of respondents reported improvements in dietary habits, reflecting the effectiveness of the nutritional guidance provided. Additionally, 91 percent noted an increase in physical activity, highlighting the positive impact on lifestyle changes. Although only 22 percent reported a reduction in tobacco, alcohol, and drug use, it indicates a meaningful impact on harmful habits. 76 percent of respondents observed an overall improvement in the health status of household members, suggesting that the camps played a crucial role in enhancing family well-being. However, only 47 percent noted easier access to health services for women, indicating a need for further outreach and accessibility improvements. Access to quality health services was perceived by twenty-seven percent, pointing to potential areas for enhancement in service delivery.

Furthermore, 39 percent of respondents reported a decrease in the spread of diseases, and twenty-nine percent mentioned reduced healthcare expenses, indicating economic benefits from improved health practices. Overall, these camps positively influenced health behaviours, service access, and economic aspects, contributing to better health outcomes in the community.

4.3.4 Impact Observation

Figure 32: Level of Impact - H&S

4.3.5 Case Study

Empowering Community Health and Dignity: The Transformation of Ragubanspur Village

Until four years ago, life in Ragubanspur (also known as Rarua) was marked by profound challenges. With a single well serving over 100 households for drinking and bathing needs, the community faced severe health risks and privacy concerns, especially for women and girls who lacked private bath enclosures. Open-air bathing exposed them to harassment and threats, exacerbating fears and insecurities. The scarcity of clean drinking water heightened the prevalence of waterborne diseases like cholera and dysentery, disproportionately affecting women who managed household water supplies. These health challenges imposed significant economic burdens, straining already tight household budgets with medical expenses and reduced income opportunities due to time spent fetching water or purchasing costly packaged drinking water. Summers brought additional hardship as the well frequently ran dry, intensifying the villagers' struggles.

Upon the introduction of the project in Ragubanspur, these critical issues were swiftly addressed through two strategic initiatives. Firstly, the construction of single-column community bathrooms near hand pumps provided secure, private bathing facilities tailored for women and adolescent girls. Secondly, the establishment of a "Community Bathroom cum Mini Jal Minar," equipped with a 0.5 HP solar pump, not only delivered bathing amenities but also ensured a reliable supply of clean drinking water for all families.

These interventions have been transformative. They significantly elevate personal hygiene standards by offering clean, private spaces for bathing and guaranteeing access to safe drinking water, thereby mitigating the risks of waterborne diseases and skin infections. The enhanced privacy and security provided by these facilities have restored dignity and comfort to women and girls, shielding them from harassment and promoting a sense of safety within the community. Moreover, the saved time and improved health resulting from accessible clean water have empowered women to engage more productively in education and work, enhancing household incomes and overall economic stability. These improvements have also had a positive ripple effect on school attendance and academic performance among children, fostering a healthier and better-educated community in Ragubanspur.

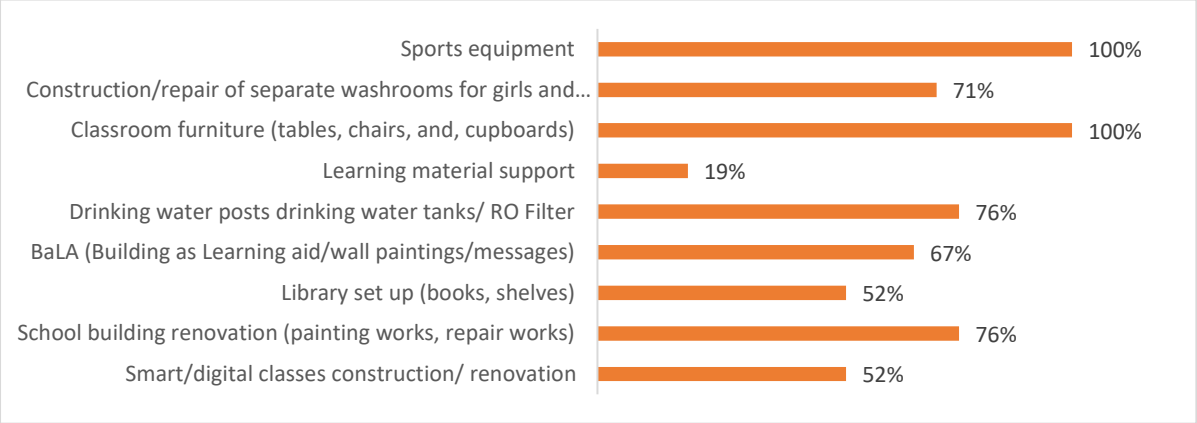
4.4 Promotion of Education

4.4.1 Infrastructure in Educational Institutions

Improving the infrastructure of educational institutes, especially in village government schools, is vital for fostering a conducive learning environment. In the selected project villages of the Prayagraj district, various initiatives addressed critical needs. Smart classrooms were established in four schools with support from Edutek Smart Class, integrating digital learning and enhancing teachers' ability to deliver interactive lessons. The addition of benches and desks improved seating arrangements, creating a better classroom atmosphere and potentially increasing student attendance. BaLA (Building as Learning Aid) painting in three schools created a vibrant and engaging learning environment. The procurement of shelves, benches, and books for libraries enriched educational resources, promoting reading habits and learning opportunities. Additionally, drinking water posts and RO filters were installed in some schools to ensure access to clean drinking water, benefiting students by reducing the risk of waterborne diseases and promoting hydration. Sports equipment provided in seven schools encouraged physical activity, improving students' physical health and teamwork skills.

Furthermore, WASH (Water, Sanitation, and Hygiene) units were constructed at different heights for various age groups in four schools, ensuring proper hand-washing facilities. These units, connected to a reliable water supply, addressed hygiene needs, crucial for maintaining health and preventing disease. These comprehensive interventions were tailored to meet the schools' specific needs, significantly enhancing educational infrastructure and supporting the overall development of students in the Prayagraj cluster.

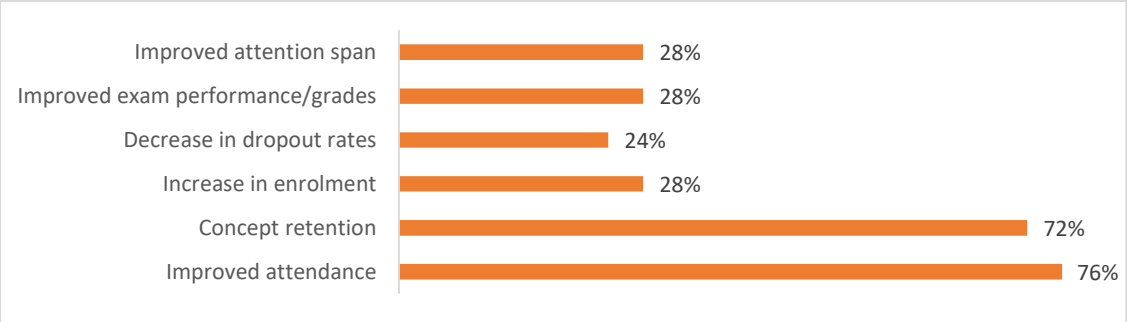
Figure 33: Infrastructural support provided by the project (N=57)



The HRDP initiative by HDFC Bank provided a range of facilities and support to schools, significantly enhancing the educational environment. 52 percent of respondents noted the construction or renovation of smart/digital classrooms, which improved access to modern learning technologies. 76 percent reported renovations to school buildings, including painting and repairs, creating a more inviting atmosphere for students. Libraries were set up in 52 percent of schools, complete with books and shelves, fostering a love of reading and learning. BaLA enhancements, such as wall paintings and educational messages, were implemented in 67 percent of schools, enriching the visual learning experience. Drinking water facilities, including posts and RO filters, were provided in 76 percent of schools, ensuring access to clean water and promoting student health. 19 percent reported of schools received additional learning materials, supplementing educational resources.

All schools who were in the list of project received new classroom furniture, such as tables, chairs, and cupboards, significantly improving the learning environment. Furthermore, 71 percent benefited from the construction or repair of separate washrooms for girls and boys, addressing important sanitation and privacy needs. Finally, all schools were equipped with sports equipment, promoting physical activity and overall well-being among students. These comprehensive interventions collectively enhanced the infrastructure and educational experience across the schools.

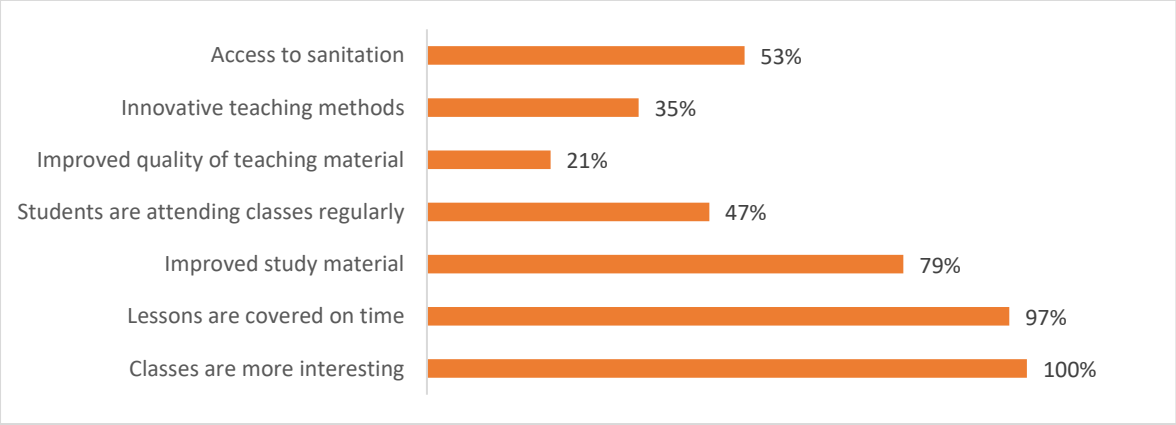
Figure 34: Perceived benefits from improvements in school activities (N=21)



The project infrastructure developments have led to noticeable changes among students, as reported by teachers. All respondents observed a significant improvement in attendance, indicating that the enhanced learning environment is attracting students regularly. Seventy-one percent of respondents noted an increase in enrollment, suggesting that the improved facilities have made schools more appealing to both students and parents.

Concept retention improved for 62 percent of students, reflecting the effectiveness of new teaching aids and methods. Additionally, there was a 48 percent decrease in dropout rates, highlighting the positive impact of the improved infrastructure on student retention. However, only five percent of respondents reported an improvement in exam performance or grades, indicating that academic outcomes may require further support and time to manifest. Similarly, an improved attention span was observed in just five percent of students, suggesting that while physical infrastructure has improved, additional interventions may be needed to enhance focus and engagement. Overall, these developments have significantly contributed to better attendance and enrollment, with ongoing efforts required to boost academic performance and attention.

Figure 35: Perceived benefits received as per students (N=34)



The improvements in school activities have led to substantial perceived benefits from the students' perspective. All students reported that classes are now more interesting, reflecting the

positive impact of the enhanced learning environment and teaching methods. Ninety-seven percent indicated that lessons are covered on time, demonstrating improved efficiency in classroom management and curriculum delivery. Seventy-nine percent of students noted an improvement in study materials, contributing to a better learning experience. However, only 21 percent perceived an improvement in the quality of teaching materials, suggesting that further enhancements in this area may be needed. Regular attendance was reported by 47 percent of students, indicating that while improvements have encouraged attendance, there is still room for growth in this aspect.

Innovative teaching methods were acknowledged by 35 percent of students, showing that new approaches are being implemented but may not yet be widespread. Access to sanitation facilities was noted by 53 percent, highlighting the importance of hygiene improvements in schools. Overall, these developments have significantly contributed to making classes more engaging and efficient, with ongoing efforts needed to further enhance teaching materials and encourage regular attendance.

4.4.2 Impact Observation

Figure 36: Level of Impact - PoE

4.5 Holistic Rural Development Index (HRDI)

There are multiple dimensions involved in achieving the goals of HRDP that includes agricultural production, generation of new jobs, enhancement of health, improved education etc., Based on the design of the HRDP program supported by HDFC Bank, a composite index has been developed called Holistic Rural Development Index (HRDI) that indicates the achievements of the HRDP interventions leading to overall improvements of the results indicators. As, the program interventions vary across projects and geographies, it was not possible to assign a single impact indicator that might be able to accurately capture the overall performance of HRDP. Thus, HRDI serves the purpose of quantifying the impact through the blending of the results of various indicators grouped into four thematic areas.

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

The HRDI calculation for project P0286 implemented in Prayagraj are given in the following table.

Table 6: HRDI Calculation for P0286

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.10	0.12	0.03	0.04	0.04	0.13	0.10	0.22	0.27	0.51
percent Change	20 %		69%		250%		120 %		89%	

A remarkable impact was observed in the "Promotion of Education" category, with an impressive 120 percent increase over the baseline. Significant improvements were also seen in the "ST&LE" category, which experienced a 33 percent increase. The "Natural Resource Management" category showed a positive change with a 20 percent increase. Additionally, there were notable advancements in the "Health & Sanitation" category, with the HRDI score rising from 0 to 0.08 after the project. While a percentage increase cannot be calculated due to the initial baseline being zero, this improvement is significant as it marks the introduction and progress of health and sanitation initiatives where none previously existed. Overall, the HRDI demonstrated a 100 percent growth over its baseline, underscoring the comprehensive impact of these initiatives.

5 Analysis of Assessment Criteria

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

- Relevance and Convergence
- Impact and Effectiveness[2]
- Sustainability

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

5.1 Relevance and Convergence

The project implemented in the ten villages of the cluster in Prayagraj addressed the prevalent issues of poverty, low standards of living, and unemployment. Through the efforts of PANI, the implementing organisation, the project facilitated the mainstreaming of vulnerable sections of society by incorporating major and impactful development components. By improving the life situations of the targeted families and augmenting their sustainable livelihood opportunities, the project enabled women, men, youth, and adolescent girls to lead dignified lives. The initiative focused on enhancing living conditions through livelihood enhancement, health and sanitation improvements, access to safe drinking water, and the development of school infrastructure for a better learning environment. As a result, the economic status of farmers improved significantly through multiple interventions on farm, off-farm, and non-farm livelihood activities. Additionally, the project promoted safer living conditions by improving sanitation, healthcare, and environmental hygiene, provided safe drinking water, and encouraged health-seeking behaviour among disadvantaged sections of village communities. Furthermore, the infrastructure and learning facilities at government primary schools and anganwadi centres were enhanced, contributing to quality education for children. The economic empowerment of women was also achieved through the development of community-based institutions, financial inclusion, micro-enterprise development, and village resource centres.

The HRDP team effectively collaborated with gram panchayat Pradhan and Rojgar Sewak to leverage MGNREGA funds for crucial infrastructure development projects, such as pond renovation and road construction in the villages. They motivated community members to demand work under MGNREGA, resulting in more than 12,000 persondays of employment for job cardholders. The team also organised several career counselling events, engaging both boys and girls, to explore better career opportunities. During these events, HRDP team members discussed various career options, encouraged entrepreneurship, and informed participants in linking with Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Zila Udyog, and other government programs focused on youth development. This collaboration with government offices significantly benefited the villagers, providing them with employment, improved infrastructure, and enhanced career prospects.

5.2 Sustainability

The project team consistently worked to develop the understanding and capacities of Village Development Committees (VDC) and Village Resource Centres (VRC) to ensure the sustainability

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

of activities. Sustainability is crucial, as the target population is vulnerable and poor, with limited financial means to contribute. Therefore, **the team positioned the VDCs and VRCs as the main pillars of the continuity plan, requiring minimal financial input. The project team handed over the VRCs to social entrepreneurs and VDCs with a written, signed MoU and established mechanisms. Social entrepreneurs, under the leadership of the VDCs, will continue to operate the VRCs, tool banks, and literacy corners. The project also formed user groups for community infrastructure, such as jal minars, group irrigation units, community bathrooms, street lights, and India Mark-II hand pumps, to ensure the sustainability of project interventions. They are collecting a nominal usage fee to create a maintenance fund for these units. VDC members hold overall responsibility for maintaining the project's sustainability. They manage the VRCs with limited resources through social entrepreneurs in their respective villages.** This approach, implemented by PANI and HDFC Bank, ensures that the project continues to benefit the community long after the initial intervention, fostering self-reliance and long-term development. (see Annexure E).

6 Recommendations

To further improve the outcomes of HRDP in Prayagraj district of Uttar Pradesh, the following recommendations are made for the HDFC Bank's Parivartan and HRDP team and the implementing partner:

Recommendations to Sustain Project Initiatives

- The community infrastructure installed on private land, such as hand pumps and community bathrooms, is not functioning smoothly. In some areas, conflicts have arisen, necessitating intervention from the project team to engage the community and ensure smooth operation.
- Given the significantly high bird mortality rate in poultry, an appropriate action plan should include regular training sessions for farmers on best practices in poultry management, establishing partnerships with local veterinarians, and setting up a disease monitoring system to quickly detect and respond to outbreaks.
- Enhance connections with relevant government programs and schemes to secure continuous support and resources for the project. This may involve obtaining funding, technical expertise, or policy support.
- Invest in capacity-building for project beneficiaries through training and skill development workshops. Equipping individuals with the necessary knowledge and skills will enable them to manage project initiatives effectively and adapt to changes, ensuring long-term sustainability.

Recommendations to Build Project Efficiency

- The revenue generated from the VRC, tool bank, and literacy centre is insufficient for the social entrepreneur to sustain the service. It is recommended to explore the possibility of converting the VRC into a Common Service Centre (Jan Seva Kendra). This transformation would enable communities to access public services such as crop advisory, financial services like insurance and crop credit, and digital services like Aadhaar and ration cards, in addition to the current services provided by the VRC. This expansion will also enhance the revenue of the centre, making it more sustainable for the social entrepreneur to continue offering these services.
- Integrate technology solutions like project management software or mobile applications to automate tasks, improve communication, and track progress more efficiently at the beneficiary level.
- Perform comprehensive reviews and need assessments to identify potential challenges and opportunities within the current project methodologies. Implement suitable interventions based on the findings to enhance the effectiveness and precision of the outcomes.

Recommendations to Strengthen Project Design

- Involve key stakeholders, including beneficiaries and community members, in the project design process to ensure their needs and perspectives are considered and incorporated into the plans.
- Extending the project's duration from three to five years can aid in better programme implementation and maintenance.

Annexures

A Sampling Methodology

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

A.1 Quantitative Sample Size Calculation

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

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

Where,

N= sample size

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

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

S_e= margin of error, set at 5 percent;

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

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

A.2 Quantitative Sampling Methodology

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

Stage 1 – Selection of beneficiaries:

The list of beneficiaries from all the nine villages acted as the sampling frame for the project. 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 project, the selection of more than one beneficiary from a single household was probable.

Stage 2- Sampling for villages:

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

A.3 Qualitative Sample Size Calculation

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

Since there was no baseline available for this evaluation, recall method was used in the household survey to assess the change that has happened over time. For this purpose, the respondents were asked to recall the value of critical indicators that they could recall from the time the programme started.

B HRDI Methodology

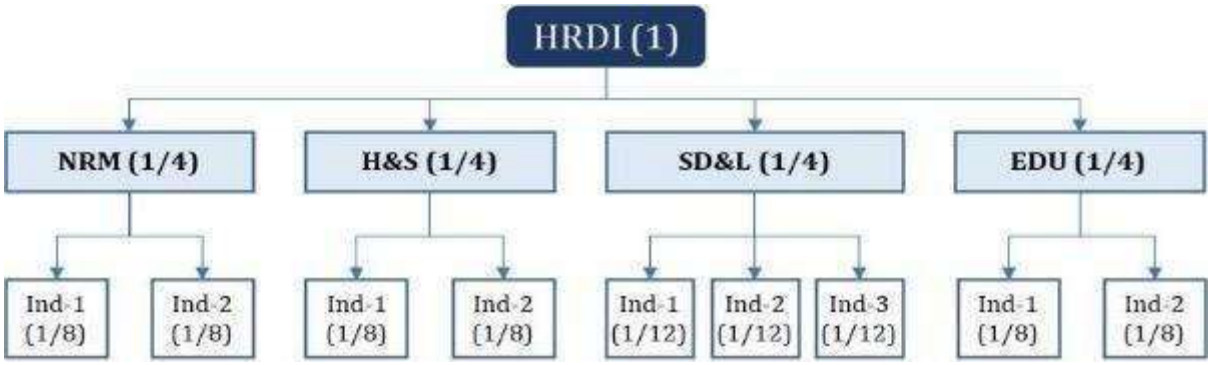
The outcome indicators included in the HRDI were obtained from different domains and are consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables such that the indicators could be measured between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

B.1 Indicator Weights

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

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

Figure 37: Domain and Indicator Weights



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

Table 7: Example of HRDI Calculation

Thematic Area	Indicators	**Formula**
NRM	Proportion of farmers with net income above median	(1/4) x (1/3) = 0.083
	Proportion of farmers reporting increased productivity of three main crops above median (before and after)	(1/4) x (1/3) = 0.083
	Percentage of farmers reporting access to irrigation	(1/4) x (1/3) = 0.083
ST&LE	Percentage of households who are getting skill training & reporting increase in income from job/enterprise/self-employment	(1/4) x (1/2) = 0.125
	Percentage of HH reporting income above median from livestock	(1/4) x (1/2) = 0.125
H&S	Percentage of households reporting increase in use of fruits/vegetables from the nutrition garden	(1/4) x (1/3) = 0.083
	Percentage of households reporting increase availability of 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
PoE	Percentage of respondents reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, furniture etc.)	(1/4) x (1/2) = 0.125
	Percentage of respondents reporting increased access to functional learning infrastructure (library, science labs, smart class, etc.)	(1/4) x (1/2) = 0.125

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

B.2 Analysis Plan

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

B.3 Method to Calculate HRDI

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

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

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

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

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

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

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

The calculation for Prayagraj has been detailed below (see **Error! Reference source not found.**9).

C Overview of Impact Calculation

Impact of the programme was calculated based on the averages of quantitative output indicators as demonstrated below (see **Error! Reference source not found.**0).

Table 8: Impact Calculation

Outputs	Output Indicators		Output Avg	Impact Level
NA. Increased income from agriculture				
Land/ crop productivity	Proportion of farmers reporting increased productivity of three main crops above median	52 percent	60 percent	Medium
	Proportion of farmers reporting increased income from crops that were supported under HRDP.	75 percent		
	Proportion of farmers who are the above median range	53 percent		
Access to the farm management infrastructure	Proportion of beneficiaries satisfied with the quality of available services (in farm management)	89 percent	76 percent	High
	Proportion of farmers who use both, chemical and natural fertilizers	77 percent		
	The proportion of farmers reporting a decrease in the use of chemical fertilizers	62 percent		
Increased adoption of crop diversification	Proportion of farmers diversifying their crops with the project support.	28 percent	59 percent	Medium
	Proportion of farmers who report income increase due to crop diversification (base = farmers who adopted crop diversification)	90 percent		
Land under irrigation	Increased area under irrigation	-	24 percent	Low
	Pproportion of farmers who received support for irrigation	48 pecent		
Increased use of clean energy solutions				
Adoption of clean energy infrastructure	Proportion of HHs using clean energy infrastructure (Base=all)	70 percent	82 percent	High
	Proportion of households fully satisfied from using clean energy infrastructure (Base=clean energy beneficiaries)	94 Percent		
Improved access to agricultural training and services				
Access to Agriculture training and services	Proportion of farmers who reported project training services are useful	98 percent	77 percent	HIgh
	Proportion of farmers who demonstrate awareness regarding sustainable farming practices	55 percent		
	Proportion of farmers who continue to use conservation agricultural practices	12 percent	59 percent	Medium

Adoption of improved farming practices	Proportion of beneficiaries reporting an increase in productivity due to better farm management	95 percent		
	Proportion of farmers reporting increased income	70 percent		
Enhanced capacity for regular income generation				
Enhanced skill development	Percentage of women who accessed skill development training	50 percent	73 percent	High
	Proportionate increase in average income from enterprise support	88 percent		
	Percentage of women who report increased savings through skill development and enterprise support	82 percent		
Improved capacity to generate income through livestock management				
Adoption of scientific management of livestock	Proportion of beneficiaries who received support in livestock management services	37 percent	41 percent	Medium
	Proportion of beneficiaries reporting an increase in income from livestock management	67 percent		
	Proportion of beneficiaries reporting improved livestock health	38 percent		
	Percentage of HH reporting income above median from livestock	21 percent		
Improved health infrastructure and services				
Establishment/ enhancement of health infrastructure and services	Proportion of households who reported improved health status	75 percent	46 percent	Medium
	Proportion of households who reported easy access to health services for women	47 percent		
	Proportion of households who reported less spread of diseases	35 percent		
	Proportion of households who reported less expenses on diseases	29 percent		
Improved sanitation infrastructure and services				
Establishment/ enhancement of sanitation infrastructure.	Proportion of beneficiaries who gained access to sanitation services	35 percent	73 percent	High
	Proportion of households with access to household/community sanitation units (toilets/bathing enclosures)	85 percent		
	Proportion of beneficiaries reporting safety of women due to improved access	100 percent		
Awareness regarding health and sanitation practices	Improved awareness regarding cleanliness and sanitation practices (Using toilets instead of open defecation)			

	Improved awareness regarding waste management			
Adoption of positive health and sanitation practices	Increase in no. of households adopting proper solid waste management practices			
	Increase in no of households adopting proper liquid waste management practices			
Improved availability and management of water				
Access to drinking water at household and community levels improved	Proportion of households reporting change in source of drinking water	84 percent	87 percent	High
	Proportion of households reporting improved well-being due to the availability of clean drinking water	89 percent		
Improved capacity of educational institutions to provide services				
Access to improved physical infrastructure	Proportion of schools which gained access to functioning smart classrooms/ BaLa/science labs/libraries/learning aid/furniture/sports equipment	67 percent	72 percent	High
	Proportion of schools which gained access to clean and functioning sanitation units/drinking water posts at education institutions	76 percent		
Improvements in quality of teaching	Proportion of teachers regularly utilizing smart classrooms/ libraries/ science lab (Regularly= Everyday + Most days)	45 percent	45 percent	Medium
	Proportion of students who regularly use smart classrooms/science labs/ libraries for lessons ((Regularly= Everyday + Most days)			
Improved willingness to engage in school activities	Teachers reporting improvements in attendance due to improved infrastructure	100 percent	78 percent	High
	Proportion of teachers reporting improvements in learning outcomes due to infrastructural facilities at institutions (concept retention)	62 percent		
	Proportion of institutions reporting a decrease in dropout rates and increasing enrollment	71 percent		

Change	Impact Level
0 percent-40 percent	**Low**
>40 percent - 70 percent	**Medium**
>70 percent- 100 percent	**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 paddy above baseline median-is shown below.

Table 8: Z - Test conducted for P0286

Indicator	Proportion of farmers with average productivity of paddy above baseline median
p1 (proportion of first sample-endline)	53
n1 (sample size of p1)	73
p2 (proportion of second sample-baseline)	49
n2 (sample size of p2)	73
p	0.698630137
Calculation	0.075949888
z statistic	0.526663056
	Statistically significant as it is less than our alpha value (0.05)
p-value for the z statistic	0.2992115

E Theme-wise Sustainability Matrix

The programme support provided the capability to continue even after it ended. The programme's support to sustain improved outcomes are enumerated below (see **Error! Reference source not found.**).

Table9: Theme wise sustainability matrix

Support Provided	Structures Established	Technical Know-how	Usage	Maintenance
NRM				
Irrigation Management	✓	✓	✓	✓
Farm Management	✓	✓	✓	✓
Clean Energy	✓		✓	✓
ST&LE				
Agriculture Training and Support	✓		✓	✓
Entrepreneurship Development	✓		✓	
Livestock Management	✓		✓	
H&S				
Health	✓		✓	
Sanitation	✓	✓	✓	
PoE				
Educational Institutions Development	✓	✓	✓	

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