Impact Assessment Study of Holistic Rural Development Programme (HRDP) Koraput, Odisha – P0328

Prepared For:

HDFC BANK | PARIVARTAN
A step towards sustainable progress

HDFC Bank Corporate Social Responsibility (CSR)

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List of Acronyms

APL	Above Poverty Line
ARC	Agricultural Resource Centre
BaLA	Building as Learning Aid
BPL	Below Poverty Line
CSR	Corporate Social Responsibility
CAPI	Computer Assisted Personal Interview
VDC	Village Development Committee
FGD	Focus group discussions
FPO	Farmer Producer Organizations

HH	Household
H&S	Health and Sanitation
HRDI	Holistic Rural Development Index
HRDP	Holistic Rural Development Programme
IDI	In-depth Interview
KII	Key Informant Interview
KPI	key performance indicators
LFA	Logical Framework Analysis
NGO	Non-Governmental Organizations
NRM	Natural Resource Management
NTFP	Non-Timber Forest Product
PoE	Promotion of Education
PPP	Public Private Partnership
PSU	Public Sector Undertaking
SHG	Self-Help Groups
SC	Scheduled Caste
ST	Scheduled Tribe
SMC	School Management Committees
SRI	System of Rice Intensification
SMI	System of Millet Intensification
ST & LE	Skill Training and Livelihood Enterprise

Executive Summary

The Holistic Rural Development Programme (HRDP) by HDFC is a flagship Corporate Social Responsibility (CSR) initiative aimed at fostering comprehensive development in rural India. This program is strategically designed to address various socio-economic challenges faced by rural communities, focusing on uplifting their standard of living and enhancing their overall well-being. This impact assessment report is for the project PO328 which was implemented by the Foundation for Ecological Security (FES) in the Koraput district of Odisha from April 1 2020 to March 31, 2023. The program includes initiatives such as Natural Resource Management (NRM), Skill Training and 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. The project was implemented in a total of 10 villages, and data collection for this report was carried out in all the villages. 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 423 beneficiaries as respondents as against the planned sample of 400, 12 Focus Group Discussions (FGD), 7 In-Depth Interviews (IDI) and 2 Key Informant Interviews (KII) with beneficiaries.

Natural Resource Management

The project implemented several initiatives to strengthen farmer capacity and promote sustainable agricultural practices. These included the establishment of water harvesting structures, tool bank, the formation and training of farmer's groups, the promotion of System of Millet Intensification (SMI) model in agriculture, farm field school, and field-based demonstrations of millet with the support of the project to enhance the strengthening of farmers capacity and adopt new technology in agriculture for better productivity. The installation of solar lights for the community, and the establishment of vermi-compost pits were implemented for better management of the natural resources for income generation. 57.9 percent of the respondents availed themselves of the benefits of the agricultural activities under NRM, **and 95.1 percent of these respondents quoted an increase in their annual agricultural income.** The **mean net income from agriculture increased by INR 9891 over the baseline**. 24.7 percent of the respondents quoted a decrease in the usage of chemical fertilizers in the past years of project implementation, while 67.8 percent of the respondents use the vermi-pit method of composting for natural fertilizers.

The solar lights installed were effective, with **88.9 percent of beneficiaries confirming that these lights are operational, and about 38.8 percent of beneficiaries expressed a sense of safety for women and young children during evening.**

Skill Training and Livelihood Enhancement

All the project villages are in hilly areas of Koraput. The geographical challenges significantly impact agriculture and entrepreneurship. Limited connectivity also affects access to information, training, and financial resources crucial for entrepreneurship development. Soil erosion, landslides, and other environmental risks can further disrupt agricultural activities and livelihoods, and affecting their socio-economic status. To address this issue, various skill training and livelihood enhancing activities

such as agricultural support, integrated farming, seed distribution, and equipment distribution, animal husbandry, nursery management, etc. were implemented under the HRDP Parivartan project of HDFC. All the beneficiaries were trained by the implementing partner in their respective livelihood activities. Skill and entrepreneurship development training for self-employment was provided to 26 beneficiaries, of whom 24 percent are able to establish their own enterprises. The execution and sustainability of all activities are managed and maintained by the Village Development Committee (VDC). Specifically, the assets and infrastructure developed under this project is maintained by VDC.

The skill development of farmers in farming, including training and exposure to organic methods and land development, has contributed to the adoption of sustainable farming practices. This shift has resulted in significant improvements, as reported by respondents. Approximately, 69.9 **percent have noticed an increase in income, and 59 percent have observed higher crop productivity.** The project also empowered the women members through training Women Farmer Federation Groups. Out of which, four women groups started enterprises, such as mushroom cultivation and nursery management. Some groups started vegetable farming and selling at the weekly market. Nonetheless, women's financial independence, self-confidence, and community respect significantly increased.

The livestock management initiatives by the Foundation for Ecological Security (FES) have been instrumental in empowering villagers with sustainable livelihood options through backyard poultry farming, goat rearing, and dairy farming. By providing training, resources, and market access, these initiatives have catalysed economic growth, enhanced food security, and strengthened community resilience in the region. Villagers received comprehensive training from the Foundation for Ecological Security (FES) in livestock management practices, including proper care, feeding, and disease management.

Livestock management initiatives included backyard poultry farming and goat rearing, Foundation for Ecological Security (FES) trained community members from the project villages, provided materials for shelters, and facilitated market access, resulting in increased income and production for cows, poultry and goats. **Goat farming showed a higher income increase (53.8 percent reported by respondents),** while poultry farming improved product quality and market access. However, health and mortality rates remained challenging for both sectors. Vaccination camps and livestock management training were widely used services. **Average income from livestock increased by 58.86 percent, from INR 940.0 to INR 1493.0**, reflecting the positive impact of the interventions. These interventions have empowered rural women, and improved economic opportunities, though continuous support and adjustments are necessary to sustain and build on these gains.

Health and Sanitation

The health and sanitation initiative under the HRDP aims to address critical challenges in rural communities, focusing on improving health outcomes and sanitation practices. This initiative recognizes the fundamental importance of access to clean water, proper sanitation facilities, and health education in enhancing overall community well-being.

In health and sanitation, the implementing partner FES has done so many beneficial activities, such as campaigns for maternal health and nutrition, health camp, and solar drinking water for the community.

Health indicators improved notably, with 51.8 percent reporting improving health status. Approximately 31.1 percent reported reduction in contaminated diseases. An overwhelming majority respondent of 99.7 percent have benefited from solar drinking water while **88.5 percent reported saving time out of daily chores by not having to fetch water anymore**. Around 41.7 percent of respondents reported improvement in family health; 49 percent stated that there was a decrease in water-borne disease; and, 50 percent reported relief in stomach related pain. Additionally, 46.3 percent sample respondents reported having sanitation facilities, while all of them reported about having some degree of awareness on hygiene practices.

Promotion of Education

The project has significantly enhanced education facilities in ten project villages through various initiatives such as teaching learning materials, the distribution of solar lamps to students, indoor and outdoor playing games, awareness programmes, etc.

7.5 percent of respondents observed better student attendance, and 15 percent reported learning is more interesting due to teaching learning material and sports equipment. Additionally, 12.5 percent noted timely lesson coverage, and 6.7 percent responded to regular attendance.

Overall, HDFC interventions significantly upgraded educational infrastructure, enhancing student engagement, attendance, and learning outcomes.

Table 1: Summary of Key Income Indicators

Income Indicators (based on median)	Before	After	percent Change
Increase in net income from agriculture (mean value) (INR)	18101	27992	54.64 percent
Average Productivity of Paddy (Kg/Acre)	684	823.10	20.34 percent
Average Productivity of Bazra (Kg/Acre)	446.10	492.10	10.31 percent
Average Productivity of Little Millet (Kg/Acre)	800.50	896.70	12.02 percent
Average Monthly Income from Livestock (INR)	940.0	1493.30	58.86 percent

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

HRDI Indicators

The table displays the Holistic Rural Development Index (HRDI) for four thematic areas of intervention within the project. Overall, the HRDI has increased by 82.35 percent compared to the baseline. Particularly noteworthy is the substantial impact seen in the H&S category, with a score of 120 percent increase over the baseline. Moreover, there have been significant increases over the baseline in the “ST&LE” and "Natural Resource Management" categories, reaching 100 percent and 42.86 percent, respectively. There is no change in the Promotion of Education (PoE) category.

Table 2: Summary of HRDI Scores

Domain	NRM		ST&LE		H&S		Total	
HRDI Score	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.07	0.10	0.05	0.10	0.05	0.11	0.17	0.31
Percent Change	45%		115%		114%		84%	

1 Introduction

The survey notes that 65 percent of India's population (2021 data) resides in rural areas, with 47 percent relying on agriculture for their livelihood. Consequently, the government's focus on rural development is crucial. The government aims to enhance the quality of life in rural areas, promoting more equitable and inclusive development. Their engagement in the rural economy centres on "transforming lives and livelihoods through proactive socio-economic inclusion, integration, and empowerment of rural India." Nearly 83 percent of Odisha's population lives in rural areas and depends mostly on agriculture as their livelihood. One of the major concerns of the state has been to accelerate the all-round development of scheduled tribes and scheduled castes. For historical reasons, this segment of society has remained socially and economically backward. Therefore, concerted efforts have been made under different plans to bring them into the mainstream of development. Accordingly, various special programmes and welfare measures have been launched for their benefit, which include legal aid, rehabilitation of marginalised STs and SCs, housing facilities, the establishment of special employment exchanges, reservations in employment, etc. The state boasts significant ethnic diversity, with numerous communities and tribes enriching its cultural mosaic. Agriculture serves as the primary occupation, with major crops including tea, rice, jute, soybeans, mustard, and various fruits. However, the agricultural sector faces challenges such as low productivity and reliance on traditional farming methods. Strengthening the rural economy is essential for India's overall economic development. In response, HDFC'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

The Parivartan Project, part of HDFC's Holistic Rural Development Program (HRDP), embodies a comprehensive and sustainable approach to rural development. Implemented through collaboration with local communities, non-governmental organisations (NGOs), and government bodies, the project ensures context-specific interventions that cater to the unique needs of each community. By tackling diverse socio-economic challenges through targeted initiatives, the project aims to catalyse positive transformation in rural communities, enhancing their overall quality of life. Interventions are primarily undertaken 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)

Through continuous efforts and community participation, Parivartan strives to create a lasting impact and drive meaningful change in rural India. 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 to evaluate the effectiveness, sustainability, and socio-economic benefits of the Parivartan Project under HDFC Bank's Holistic Rural Development Program

(HRDP). It seeks to understand how the project has influenced various aspects of rural life and to identify areas for improvement. 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:

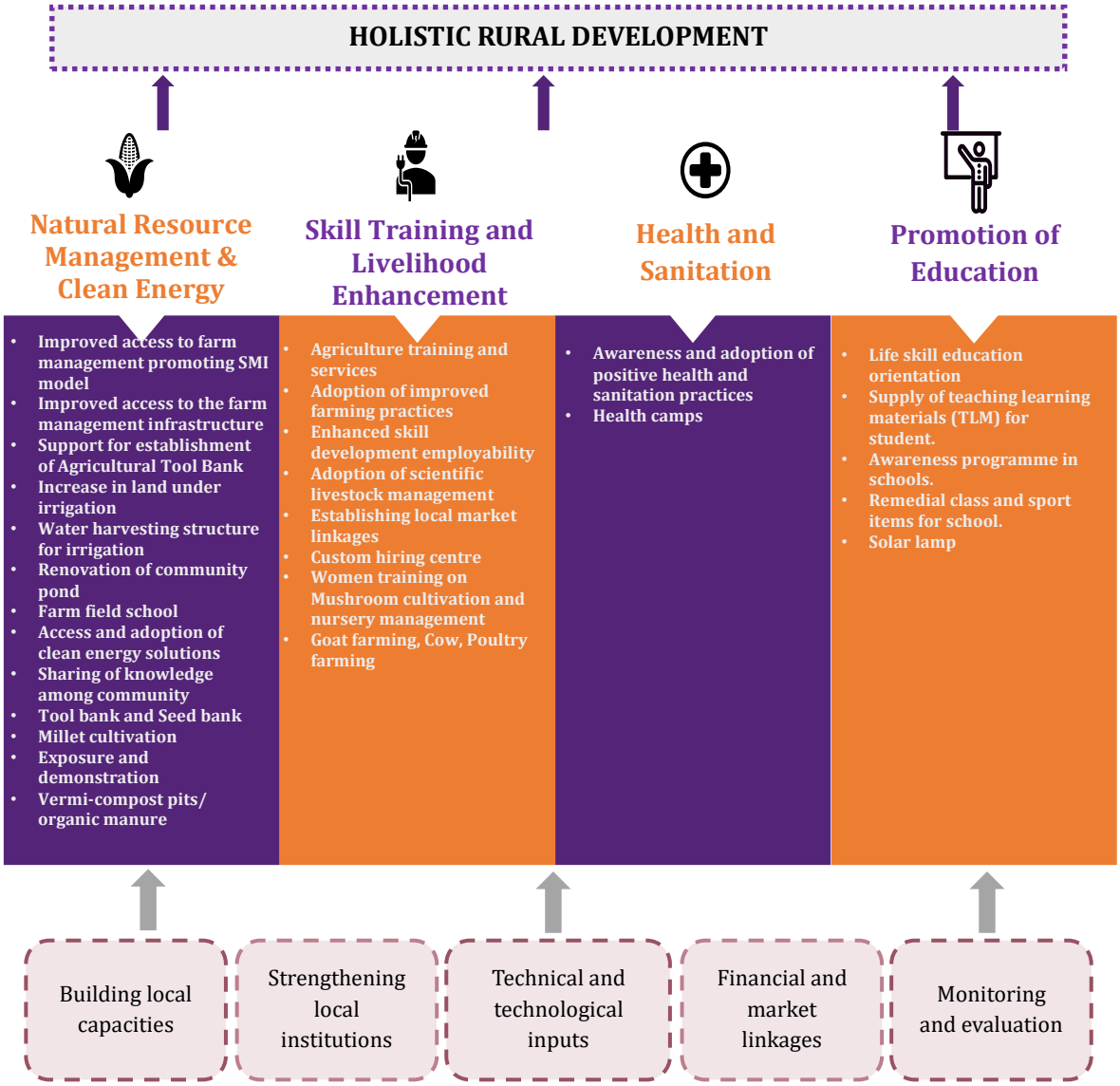
- Critically and objectively evaluate implementation and performance
- Determine reasons for certain outcomes or lack thereof
- Derive lessons learned and good practices
- Provide evidence-based findings to inform future operational and strategic decisions while planning and funding partner organisations

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

Koraput District, the heartland of the tribal community in Odisha, lies along the Eastern Ghats in the southern part of the state. Koraput District is the third largest district of Odisha by geographical area. More than 50 percent of the population is tribal, belonging to various communities like Paraja, Gadaba, Kandha, etc. Koraput is a hilly tribal region, and the majority of human settlements are on sloped hillsides. They had been depending on surface water resources, especially from hill streams, for many generations. In recent times, the contamination of hill stream water and the drying up of streams have been major concerns. The proposed villages are situated in the Sadar block of Koraput district headquarters. All the villages have a tribal population, and the socio-economic condition is very poor. Most of the people in each village are dependent mainly on agriculture, daily labour, and allied service sectors. Realizing the need for a comprehensive initiative, an elaborate effort was undertaken in ten villages of Koraput Sadar block of the district. The project villages are:

Table 3: List of project villages

Sl. No.	Name of Block	Name of GP	Name of the Villages
1	Koraput Sadar block	Mahadeiput	Belaguda
2			Ekdeli
3			Jamadarguda
4			Thatpadar
5			Karanaguda
6			Litiguda
7			Litimaliguda
8			Mandaguda
9			Panasput
10			Putpandi

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 in May and June 2024.

1.5 About the Implementing Partner

The Foundation for Ecological Security (FES), a national NGO, has been working since 2001 to reinforce the massive and critical task of ecological restoration in the country. It enables rural communities to secure legal rights to their commons, prepare resource management and governance plans, and access public investment to support environmental improvement. It also engages with the government to implement policies and programmes that promote the local management and governance of commons. It works towards the ecological restoration and conservation of land and water resources in the uplands and other eco-fragile, degraded and marginalised zones of the country, and to this end, to set in place the processes of coordinated human effort and governance, and provide relief to the poor, in particular. FES has been implementing the Holistic Rural Development Program (HRDP) in villages situated in the Koraput Block of Koraput district of Odisha from 2020 to 2023 with the support of HDFC Bank CSR Parivartan. The project thematic area covers all aspects of Natural Resource Management, Skill Training and Livelihood Enhancement, Health and Sanitation and Promotion of Education to ensure positive growth and development among the community members.

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 FES.

2.1 Criteria for Assessment

For each thematic area, project activities accomplished by FES were identified from their project documents, reports, and Management Information Systems (MIS) that they submitted to HDFC. 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). 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. The impact assessment was done after the completion of the project period.

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. By adhering to these sustainability criteria, rural development projects can ensure that they not only achieve their immediate objectives but also provide lasting benefits to the communities they serve. Sustainable development is about creating resilient systems that can adapt and thrive over time and making continuous improvements based on participatory and inclusive approaches.

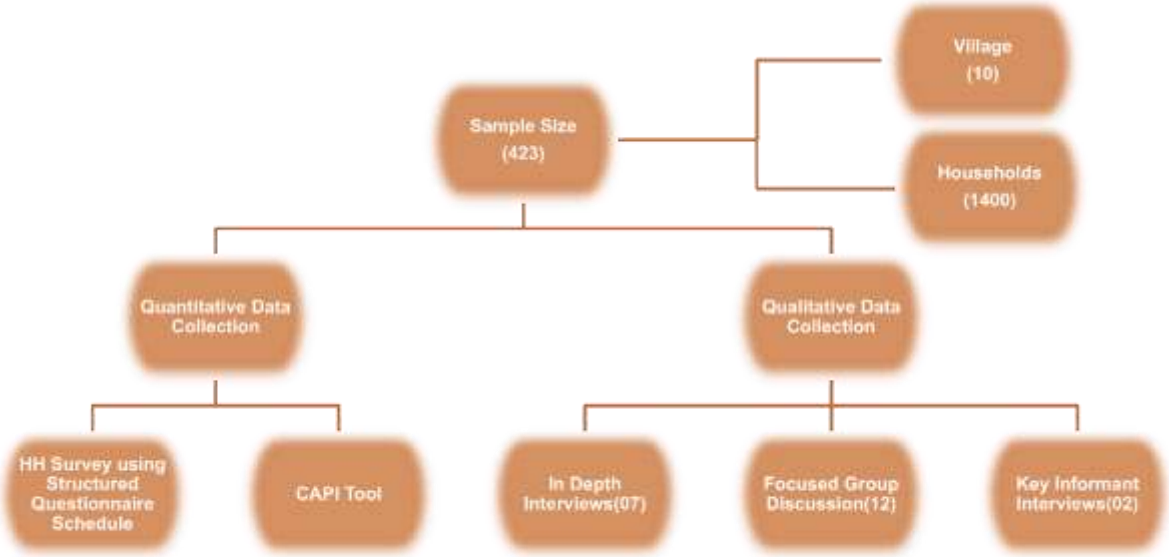
[1] While from an evaluation perspective, impact and effectiveness are two different aspects, in the report, these are used interchangeably.

2.2 Primary and Secondary Data Sources

Primary research included a quantitative household survey that was conducted by a survey team consisting of six enumerators and one supervisor, with backstopping by one field coordinator. The primary quantitative data was collected using the Computer Assisted Personal Interview (CAPI) tool, 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 members of FES, 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

Figure 3: Sampling Design diagram



Secondary data sources included programme log frame (logical framework analysis), project completion reports, year wise target versus achievements, programme implementation timelines, beneficiary details, closure reports related to projects, 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 implementing partner, the HDFC team. Standardized 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

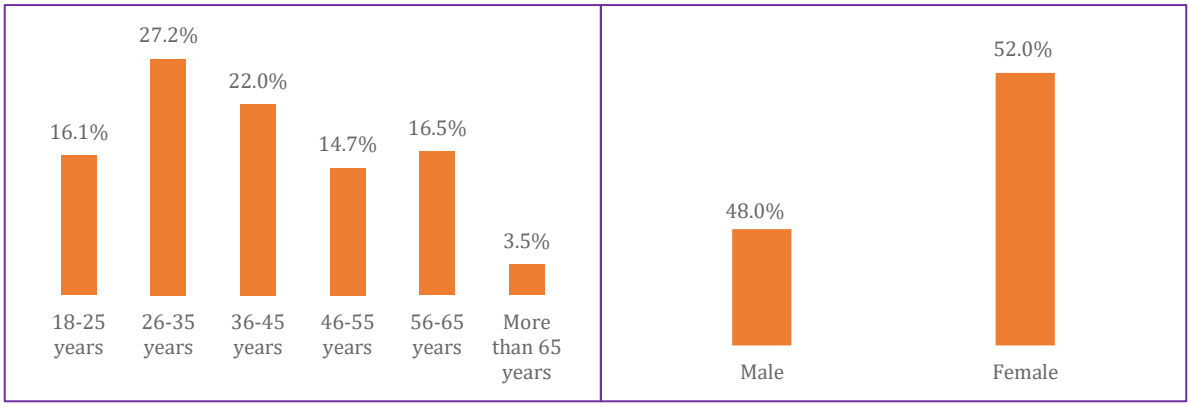
From the ten villages in Koraput district where the program was implemented, beneficiaries were selected using purposive random sampling from a list provided by the FES. Beneficiary selection was conducted independently for each thematic area, which meant that more than one beneficiary could be chosen from a single household, and some beneficiaries received multiple benefits and support across different thematic areas. Ensuring inclusion in all thematic areas, the target sample size across the ten villages was set at 400, but 423 respondents were ultimately reached. The thematic area-wise sample covered was as follows:

Table 4: Sample distribution across thematic areas (N=423)

Village Name	NRM	ST&LE	H&S	PoE	Total
Belaguda	38	21	34	18	**38**
Ekdeli	47	29	33	9	**50**
Jamadarguda	35	25	39	10	**46**
Thatpadar	26	14	22	14	**26**
Karanaguda	51	27	41	13	**52**
Litiguda	43	19	26	9	**43**
Litimaliguda	53	27	44	13	**58**
Mandaguda	28	11	27	6	**28**
Panasput	57	30	51	14	**57**
Putpandi	24	20	17	4	**25**
Total	**402**	**223**	**334**	**110**	**423**

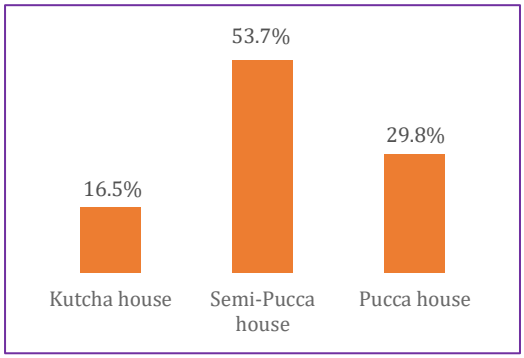
Qualitative data collection activities were an integral part of the study. These included interviews with various stakeholders, such as teachers, students, farmers, livestock owners, beneficiaries of drinking water initiatives, agricultural farmers, and village communities. Additionally, focus group discussions (FGDs) were organized with different groups, including farmers, the Women Federation Group (WFGs), and the general population. Key informant interviews (KIIs) were also conducted with significant figures such as members of the women's federation, those associated with the beneficiaries, and a staff member from the project implementer.

Figure 4: Age Group wise distribution of Sample (N=423)



An analysis of the sample data reveals a gender distribution of 48 percent male and 52 percent female respondents. In terms of age demographics, the majority of respondents, totaling 80.4 percent, fall within the 26-65 age bracket. Young adults aged 18-25 years constitute a smaller yet notable portion at 16.1 percent, while individuals above 65 years of age represent 3.5 percent of the sample. This distribution provides a clear snapshot of the demographic makeup of the sample, highlighting a predominance of middle-aged adults and a balanced gender representation, which are essential factors for any further detailed analysis or interpretation of the data.

Figure 5 Types of Houses



The majority of respondents, accounting for 16.5 percent, reported living in Katcha houses, characterised by temporary or makeshift structures. Semi-pucca houses, which typically combine temporary and permanent materials, represent 53.7 percent of the surveyed population. Pucca houses, known for their permanent and durable construction, make up 29.8 percent of the housing types reported.

The survey data highlights significant insights into drinking water access patterns across Koraput blocks. A substantial majority, comprising 67.8 percent, rely on tube wells or bore wells for their drinking water needs, indicating widespread use of groundwater sources. Conversely, only a small fraction, 11.6 percent, access public or stand posts supplied by the government, underscoring potential gaps in public water infrastructure provision. Additionally, 18.7 percent of respondents utilise solar water pumps, reflecting a nascent adoption of sustainable water technologies in the region.

2.4 Training of Enumerators

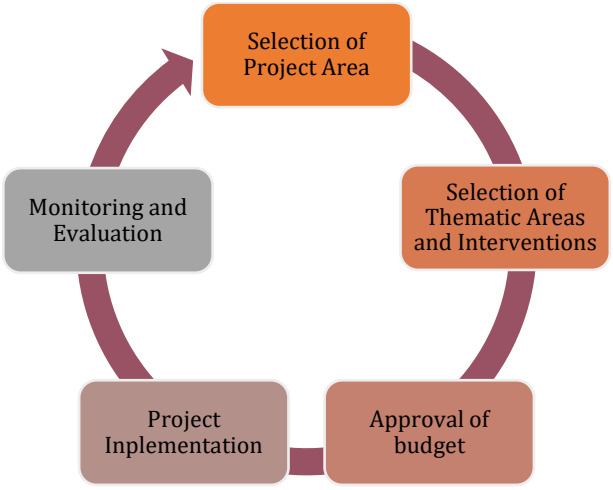
A gender balanced survey team consisting of six local enumerators and one supervisor was recruited with the requisite education and experience for data collection. Two days of training were provided to enumerators and supervisors by the field coordinator and the research coordinator. During the training,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

Image 1: Training of field team held at Hotel Atithi Bhawan, Koraput, Odisha

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 the budget; project implementation; and monitoring and evaluation. A review of each of these stages is explained below.

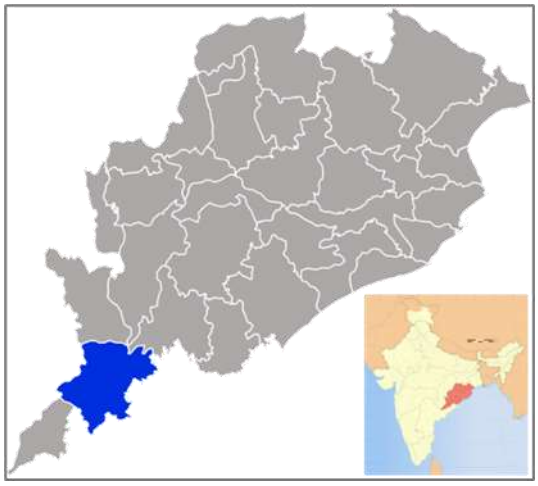
Figure 6: Planning and Implementation Process



3.1 Selection of Project Area

Koraput district is a mosaic of tribal life and culture. The District of Koraput derives its name from her rolling mountains, undulating meadows, roaring rapid, enchanting waterfalls and terraced valleys, is a feast to the eye as few other Districts can. However, over the years the environment has been degraded to a great extent due to deforestation, soil erosion, loss of productivity of the soil etc. The entire District has been declared as a scheduled Area under the Presidential Scheduled Areas Order, 1950.

Figure 7: Area covered under the study



The district, located on a section of the Eastern Ghats, has a wavy form of topography. The district has vast expanse of mountain ranges along with hill streams which ultimately pass to rivers namely Indravati, Kolab and Machkund. The district has an altitude from 600m up to 1000m above mean sea level (MSL), out project area in Koraput block having altitude of above 1000m.

In 2011 census, Koraput had population of 1,379,647 of which male and female were 678,809 and 700,838 respectively. The average literacy rate in Koraput district is 49.21 percent, of which males and females are 60.32 percent and 38.55 percent literate respectively. In rural areas of Koraput district, the sex ratio is 1046 females per 1000 males.

3.2 Selection of Thematic Areas and Interventions

The Parivartan project under the HRDP of HDFC has a focus on four thematic areas such as NRM, ST&LE, H&S, PoE. By enhancing NRM activity, it contributes to the improvement of agricultural productivity, irrigated land, and organic farming. By focussing on health and education to improve overall quality of life, reduce health care disparity, empower communities through education, foster skill development and livelihood, enhance income generation capability and promote economic empowerment among community members. Overall, this project integrates these thematic areas to achieve sustainable development goals. Empower communities and create long-term positive impact on socio-economic status of the region it serves. During the project period, there was a flood in the year 2021 and COVID-19. The project faced unforeseen challenges during its implementation, and these events necessitated additional, unplanned activities to ensure project continuity.

Table 5: Activities under four thematic areas

Activity Category	Activities	Output Indicators
NRM		
Irrigation Management	Construction of community pond, water harvesting structure for irrigation	Income from agriculture
Farm Management	Preparing organic manure, crop diversification, renovation of pond, SMI model for millet cultivation, agricultural tool bank, seed bank	Farm productivity increases
Clean Energy	Installation of solar lights for community, solar lamps for students, solar based drinking water supply system	Clean energy
ST&LE		
Agriculture Training and Support	Agricultural tool bank, vermi compost pit, farm field school, model plot, making of organic manure, making pesticides & insecticides, nursery management	Access to Agriculture Training and Services
Women Empowerment	Women Enterprise Group formed, trained, Promotion of small and micro enterprises	Skill and Entrepreneurship Development
Skill Training	Training and awareness programme, exposure of VDC, Women PG groups and farmers	
Livestock Management	Goat shed, cow shed, poultry shed	Livestock Management
H&S		
Drinking Water Management	Community overhead tank with solar pump	Clean drinking water
PoE		

Educational Institutions Development	Teaching learning materials, solar lamp for students, remedial classes	Infrastructure in Educational Institutions

Each category has been further broken down into sub-categories and activities, along with the focus beneficiary types (refer **Annexure A**).

3.3 Project Implementation

The key implementation objectives of Project were:

- Increase household incomes by diversifying livelihood opportunities through improved agricultural practices, micro-enterprises, and vocational training.
- Facilitate better access to markets to ensure fair pricing and profitability for rural produce and products.
- Introduce and train farmers in advanced agricultural practices and sustainable farming methods. Encourage crop diversification to increase resilience against market and climatic fluctuations.
- Under H&S, increase access to medical services through health camps, and improve healthcare by creating awareness among the communities.
- Under ST&LE, the programme laid emphasis on creating entrepreneurship opportunities among the beneficiaries, both individually and in groups. Activities included nursery management, mushroom cultivation, compost and pesticide preparation, etc.
- Under PoE, provide educational learning materials, and black and white boards for students to learn in a better environment.

The implementing partner positioned a dedicated team of professionals that was responsible for project implementation. They also inducted community level functionaries for mobilising communities and helping them implement project activities. For this, the partner agency formed Village Development Committee (VDC) for selecting and finalising the beneficiaries for different activities for individual and group levels.

3.4 Monitoring and Evaluation

The monitoring and evaluation (M&E) process of Project Parivartan under HDFC 's Holistic Rural Development Program (HRDP) is a comprehensive approach designed to ensure that the project's objectives are met effectively and sustainably. This process begins with the establishment of a robust monitoring framework that outlines key performance indicators (KPIs) aligned with the project's goals across various sectors, such as agriculture, healthcare, education, and infrastructure. Regular data collection is conducted through field visits, surveys, and community feedback mechanisms to track progress against these KPIs.

In addition, the program implementation team of FES and HDFC visit the project villages at regular intervals to review the project work sites, participate in the training programs, awareness camps, and interact with project beneficiaries. HDFC periodically contacts the relevant implementing partner to ask specific questions about the project implementation. Impact evaluations are conducted at defined intervals, typically mid-term and post-completion, to assess the long-term effects and sustainability of the interventions. These evaluations utilize both quantitative and qualitative methods to measure changes in socio-economic conditions, health,

education, and overall quality of life. Feedback from these evaluations is crucial for making necessary adjustments to the project strategy and implementation methods.

To maintain transparency and accountability, periodic progress reports are prepared and shared with stakeholders, including local communities, government bodies, and partner organizations. These reports highlight achievements, challenges, and areas needing improvement, ensuring that all parties remain informed and engaged. Additionally, participatory monitoring practices involve community members in the data collection and review process, fostering a sense of ownership and responsibility for the project's outcomes.

Every week, planning and review meeting at grassroot level organised for smooth running of the project. Ten Village Development Committee (VDC) and Ten PG groups formed in ten villages to smoothly monitor the project progress. Many projects selected and decided by the beneficiary as well as committee for agricultural land development activities. Every activity whether it is individual or group enterprise there is an agreement between the FES (partner agency) and the beneficiary/ group due concurrence of HDFC.

The implementing partner submits an annual progress report on the project activities to HDFC along with the plan for the next year. This document serves as the major source of information that provides a summary of the activities implemented, outputs delivered, and outcomes achieved. In addition, the HDFC 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. The **Annexure C** goes into greater detail on these.

In summary, the M&E process of Project Parivartan is designed to be iterative and adaptive, ensuring continuous improvement and sustainability. It emphasizes transparency, community involvement, and capacity building, enabling the project to achieve its goals and create lasting impacts on rural development.

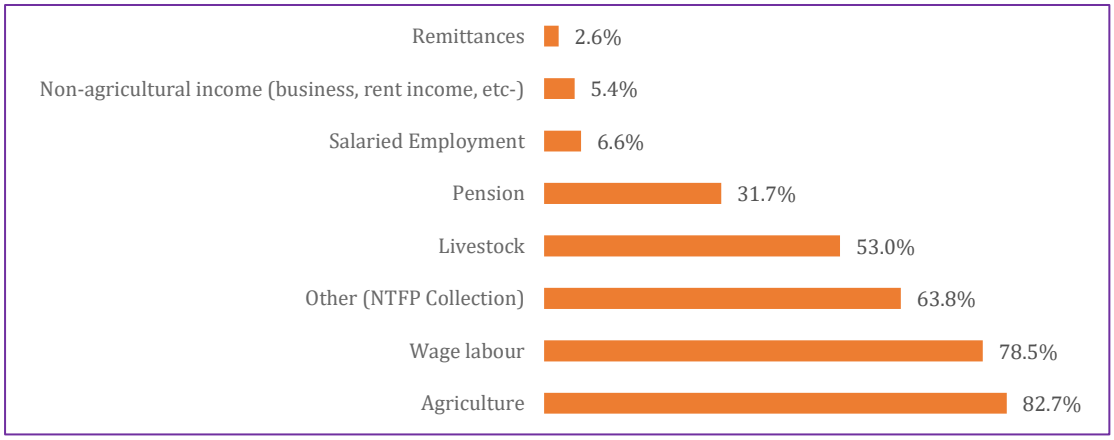
4 Study Findings

This section has explored the findings from the four thematic areas. The first section explores NRM, covering topics of irrigation management, income from agriculture, crop diversification, and the adoption of clean energy solutions. Following this, the chapter examines the impact achieved through ST&LE, with a focus on agriculture training and services, economic empowerment, skill and entrepreneurship development. The next section is on H&S and covers insights on health and sanitation infrastructure, management of drinking water, and the establishment of sanitation practices. The next section on PoE presents findings on infrastructural development, for example, the supply of teaching learning materials in educational institutions. Each of the sections is accompanied by impact observations.

4.1 Demographic profile

This socio-economic profile outlines key aspects of livelihood strategies among respondents from ten villages in Koraput district, Odisha. Agriculture emerges as the dominant occupation, engaging 82.7 percent of the respondents. This underscores the area's reliance on farming for sustenance and income generation. Moreover, a significant 78.5 percent of respondents are involved in wage labour, indicating the prevalence of manual labour as a supplementary source of income. Non-Timber Forest Product (NTFP) collection is also notable, involving 63.8% of respondents, highlighting the economic importance of forest resources beyond agriculture. Livestock rearing is integrated into the livelihoods of 53 percent of respondents, showcasing the combined approach of agriculture and animal husbandry. In contrast, engagement in non-agricultural businesses is minimal, with only 5.4 percent of respondents pursuing such activities. Overall, these findings paint a picture of a predominantly agrarian economy in the studied villages, where agriculture, supplemented by wage labour, NTFP collection, and livestock, forms the backbone of livelihood strategies.

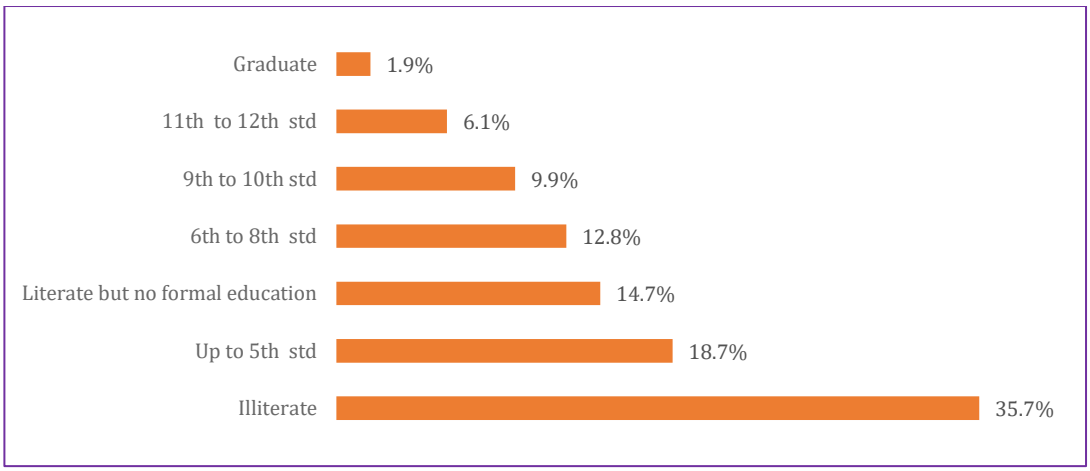
Figure 8: Distribution of sample based on their occupation (N=423)



This section provides an overview of the educational profile of respondents sampled from Koraput district, Odisha, revealing a diverse range of educational attainment levels. A significant portion, 35.7 percent, are classified as illiterate, indicating a lack of formal education among the sample population. Among those with some level of education, 18.7 percent have completed education up to the 5th standard, suggesting a moderate level of primary education. Additionally, 14.7 percent of respondents are literate but have not received any formal education, indicating informal learning experiences. Moving to higher educational levels, 12.8 percent have completed

upper primary education (6th to 8th standard), while 9.9 percent have attained education up to the 9th or 10th standard, indicating a continuation of formal schooling up to secondary levels for a portion of the population. A smaller percentage of respondents have achieved higher educational milestones: 1.9 percent have graduated, and 6.1 percent have completed education up to the 11th or 12th standard. This suggests a gradual but less prevalent pursuit of higher education within the surveyed population. Overall, the data underscores varying levels of educational attainment among respondents in Koraput district, highlighting the need for targeted educational interventions to address literacy gaps and promote further educational advancement across different age groups.

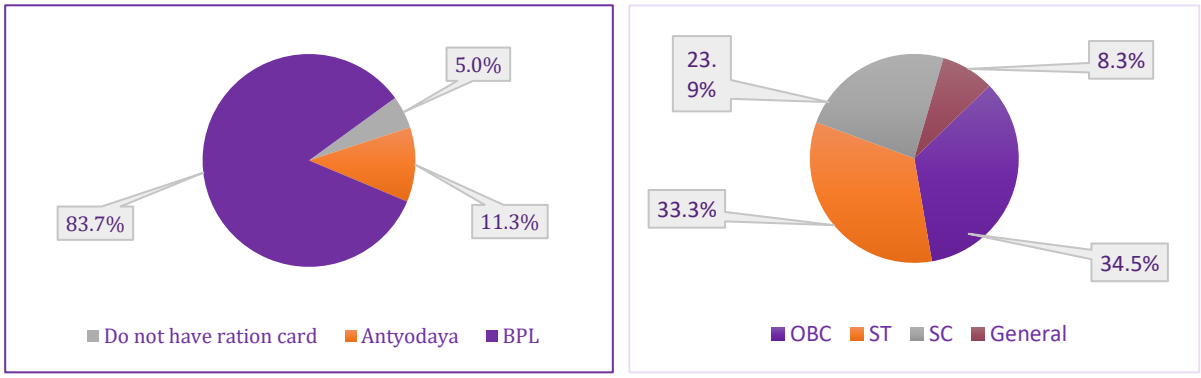
Figure 9: Educational qualification wise distribution of sample (N=423)



In the demographic and socio-economic survey conducted for Project Parivartan, the data highlights a significant representation of marginalized and historically disadvantaged communities among the respondents. Specifically, 34.5 percent of the population identifies as Other Backward Classes (OBC), while 33.3 percent belong to Scheduled Tribes (ST). This demographic composition underscores the project's explicit focus on these groups, aiming to address their socio-economic challenges. Additionally, the survey reveals that 23.9 percent of respondents are from Scheduled Castes (SC), and 8.3 percent belong to the general category, providing a comprehensive breakdown of community representation within the project's beneficiary base. Economically, the survey findings indicate a stark reality: 83.7 percent of respondents possess Below Poverty Line (BPL) cards, indicating their status as economically disadvantaged. This high percentage underscores the project's overarching goal of uplifting the poorest segments of rural society. Furthermore, 11.3 percent of respondents hold Antyodaya Anna Yojana (AAY) cards, which are specifically issued to the "poorest of the poor" households. This statistic highlights the severe poverty faced by a significant portion of the project's beneficiaries, necessitating targeted interventions to improve their living conditions. Finally, 5 percent of respondents do not possess any ration cards, indicating a lack of access to subsidized food and potentially reflecting deeper socio-economic challenges within this subset of the population. Overall, the survey provides a detailed socio-economic snapshot of Project Parivartan's beneficiaries, emphasizing the project's strategic focus on marginalized communities

and the economically disadvantaged, with a commitment to addressing their specific needs and improving their quality of life.

Figure 10: Caste and income categorisation sample (N=423)



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.

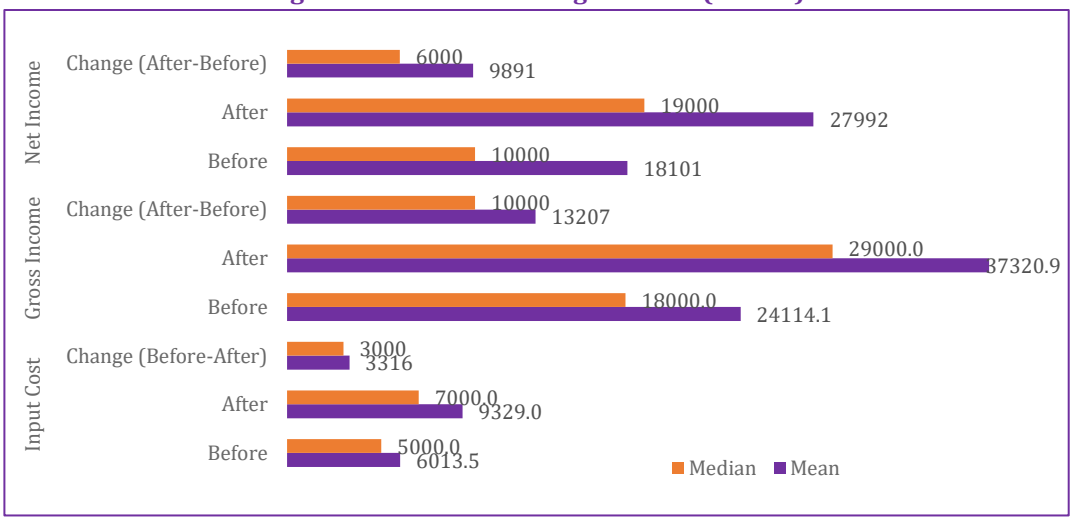
4.2 Natural Resource Management

The NRM interventions aimed to enhance crop productivity, increase farmers' agricultural income, improve access to farm management infrastructure and irrigation mechanisms, and promote the adoption of clean energy solutions. Strategies such as sustainable agricultural practices, and irrigation improvements positively impacted soil fertility, water management, and overall economic well-being. By implementing efficient farm management infrastructure and irrigation mechanisms, tool banks, and farm field schools, the project contributed to optimised resource use and increased crop yields. Additionally, efforts to raise awareness and adoption of crop water budgeting methods and different land development technologies in agriculture are enhancing the overall resilience of the study area.

4.2.1 Income from Agriculture

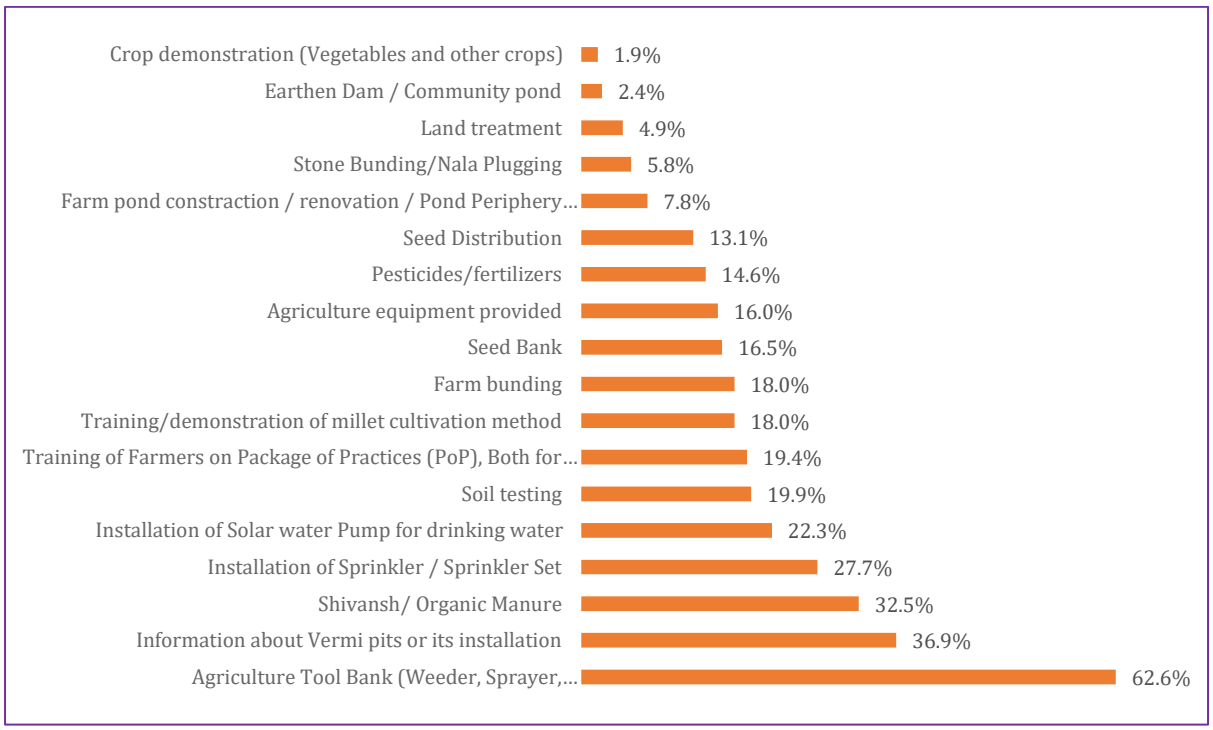
The agriculture survey data reveals significant changes in input costs, gross income, and net income before and after the adoption of agricultural practices. Before the intervention, the mean input cost was INR 6013.47 with a median of 5000 units, which increased to a mean of INR 9328.98 and a median of INR 7000 after implementation, indicating an average rise of INR 3316 per respondent. Gross income showed substantial improvement from a mean of INR 24114.1 and a median of INR 18000 before to a mean of INR 37320.90 and a median of INR 29000 after, resulting in an average increase of INR 13207. Similarly, net income increased from a mean of INR 18101 and a median of INR 10000 before to a mean of INR 27992 and a median of INR 19000 after, reflecting an average gain of INR 9891. These findings highlight the positive impact of the agricultural practices on income generation, emphasising improved profitability and economic stability for the surveyed participants. The data underscores the effectiveness of these practices in enhancing financial outcomes, suggesting a beneficial shift in agricultural management strategies and their impact on overall income levels. Continued monitoring and support for these practices will be essential to sustain and further enhance these positive economic trends in agriculture.

Figure 11: Income from agriculture (N=423)



The project interventions have demonstrated varied impacts on enhancing agricultural profitability among the respondents. Notably, the provision of seeds emerged as the most effective initiative, with 62.6 percent of respondents reporting increased profits. This underscores the critical role of quality seeds in boosting yield and income generation. Following closely, training on the System of Millet Intensification (SMI) model showed significant impact, with 18 percent of respondents attributing profit growth to this technique, highlighting its effectiveness in enhancing crop productivity. Additionally, initiatives such as vermi-pit construction (36.9 percent), adoption of organic manure (32.5 percent), and installation of sprinkler sets (27.7 percent) were also noted for contributing positively to agricultural profits.

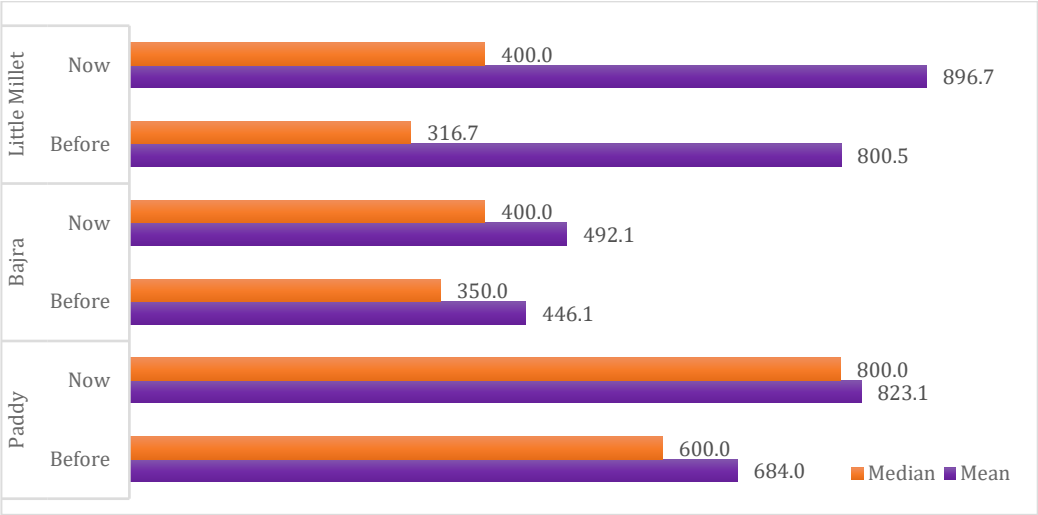
Figure 12: HRDP contribution that led to increase in agriculture income (N=423)



These efforts signify a shift towards sustainable farming practices and efficient water management, crucial for maximizing output while minimizing costs. Moreover, training sessions focused on Farmer Producer Organizations (FPOs) were cited by 19.4 percent of respondents as

beneficial, indicating the importance of collective action and market linkages in improving profitability and market access for smallholder farmers. Seed distribution initiatives, though less prevalent at 13.1 percent, still played a role in enhancing seed quality and crop resilience among beneficiaries. Overall, the diverse impacts of these interventions underscore their collective contribution to increasing agricultural profits, promoting sustainable farming practices, and enhancing the socio-economic resilience of rural communities involved in the project.

Figure 13:Produtivity per acre (crop-wise) (Kgs/acre)



The principal crops cultivated in the study area include paddy, bajra and little millet. With the expansion of irrigated land and training programs, farmers have increasingly adopted millet cultivation as a second crop. Quantitative analysis showed significant improvement in productivity per acre for these crops post-intervention. For little millet, the mean productivity increased from 800.5 kg to 896.7 kg per acre, and the median rose from 316.7 kg to 400 kg per acre. Bajra mean productivity increased from 446.1 kg to 492.1 kg per acre, with the median rising from 350 kg to 400 kg per acre. Paddy saw a substantial increase in mean productivity from 684 kg to 823.1 kg per acre and the median increased from 600 kg to 800 kg per acre. These findings suggest that the interventions positively impacted crop productivity, leading to significant improvements in agricultural output.

Figure 14: NRM structure for Land Development

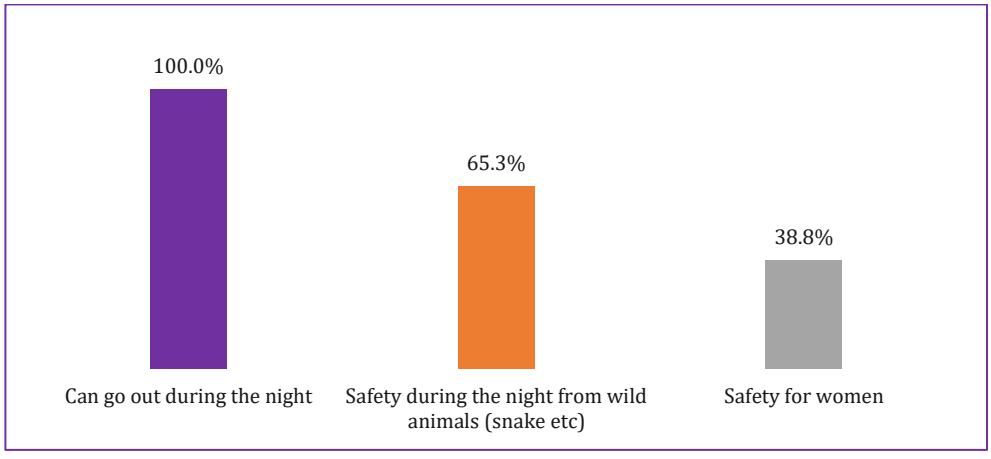
4.2.2 Use of Clean Energy Solutions

In consultation with village development committees, the implementing partner installed 10 community solar lights across ten villages, strategically placing them in areas with common public infrastructure. This initiative aimed to provide access to clean energy solutions for the community, especially at night. Additionally, 514 solar home lights were distributed in the same ten villages, particularly targeting students. This effort aimed to address the issue of evening power cuts, ensuring that students without electricity provision could continue their studies uninterrupted.

Figure 15 Solar lamps distributed in the Project

After the intervention, 34.3 percent of households reported accessing the clean energy solution provided by HDFC Bank, significantly enhancing their quality of life. The introduction of solar lights has had a notable positive impact, with 88.9 percent of the beneficiaries reporting them to be currently functional. This operational efficiency is crucial for meeting the safety the villagers. Although the villagers assumed responsibility for maintaining the solar lights, they faced challenges in procuring spare parts and accessing technicians, which has created some obstacles in ensuring consistent maintenance.

Figure 16: Benefits of Solar Lights (N-145)



The study yielded positive feedback regarding the advantages of solar lights. Specifically, 65.3 percent of respondents noted feeling safe from wildlife, such as snakes, while 38.8 percent emphasised enhanced safety for women. Despite these successes, there remains room for improvement, particularly in ensuring the ongoing functionality of all installed lights. Moving forward, prioritising maintenance and promptly addressing operational issues are essential steps to sustain the positive impact on the communities.

4.2.3 Case study: Transformation of Haribandhu Paika (A Model Farmer) through Project Parivartan

Haribandhu Paika, a farmer residing in Baliguda village, Koraput district, Odisha, has undergone a remarkable transformation in his agricultural practices and livelihood, thanks to the interventions of Project Parivartan under HDFC's HRDP initiative. This case study delves into his journey from modest beginnings to becoming a model farmer in his community.

Haribandhu Paika, aged 56, resides with his wife and four children in Village Baliguda. Before the intervention of Project Parivartan, his family's primary source of income was vegetable farming, yielding an annual income of Rs. 20,000. Despite their hard work, they faced challenges due to limited resources and traditional farming methods.

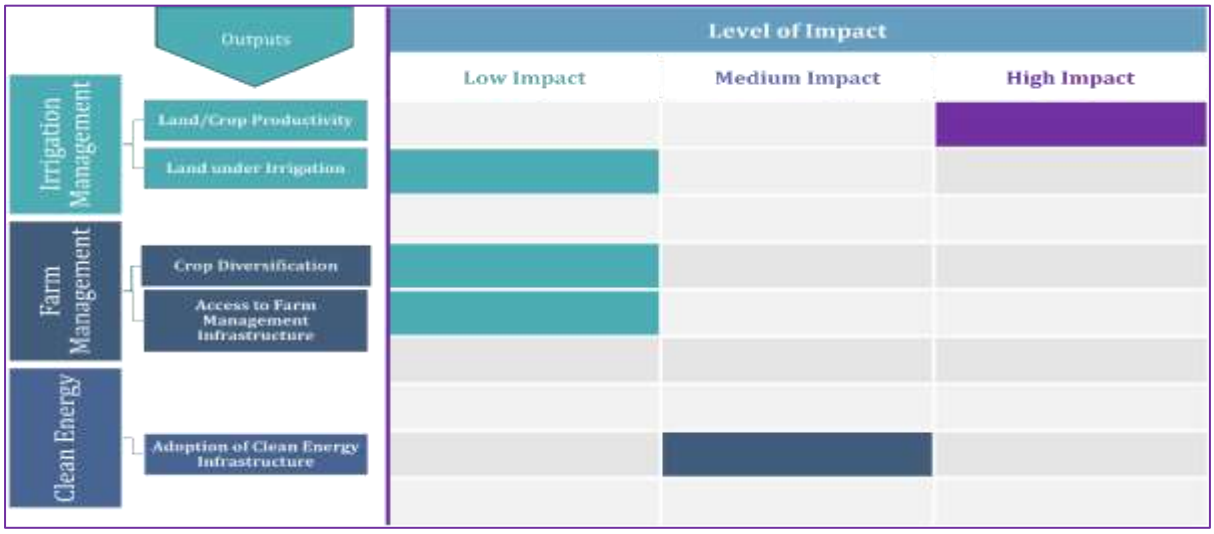
Under Project Parivartan, Haribandhu Paika and his family received comprehensive support aimed at enhancing agricultural productivity and sustainability. The implementing agency provided. Haribandhu and his wife received training on modern agricultural practices, including the use of organic manure, pesticides, and composting techniques. Exposure visits allowed them to learn from successful farmers in other regions. They were equipped with essential tools such as a motor, pipe weeder, seed green net, and other necessary equipment to improve efficiency in farming operations.

The project facilitated access to financial resources for investing in improved seeds, fertilizers, and other inputs. Empowered by the knowledge gained and supported by the resources provided, Haribandhu Paika adopted a three-phase cropping pattern—summer, rainy season, and winter. Each phase is carefully planned to optimize yield and income. Initially spending INR 2,500 on inputs per phase, he now earns INR 30,000 per phase, significantly increasing his annual income and improving financial stability. The increased income has had a profound impact on Haribandhu's family. His son is now studying at a private college in Sunabeda, furthering his education and aspirations. The family has embarked on constructing a new house, symbolizing improved living standards and quality of life. Haribandhu and his wife are actively involved in every aspect of the farm, jointly contributing to their success.

Haribandhu Paika has emerged as a role model within his community, inspiring other farmers to adopt modern techniques and improve their livelihoods. His success story has been shared during community meetings and serves as a testament to the effectiveness of Project Parivartan in transforming rural lives. Haribandhu Paika's journey exemplifies the positive impact of targeted interventions and support provided by Project Parivartan. Through training, exposure visits, and access to modern agricultural equipment, he has not only increased his income but also improved his family's well-being and future prospects. As a model farmer, he continues to play a pivotal role in spreading knowledge and fostering agricultural innovation within his community, paving the way for sustainable development and prosperity.

4.2.4 Impact

Figure 17: Level of Impact - NRM



Under the NRM program, access to farm management and land under irrigation has shown a low impact. Significant progress has been made with the installation of solar lights, which have had a medium impact. However, land and crop productivity have demonstrated a high impact. In the tribal area of Koraput under the NRM program, the low impact observed in access to farm management and land under irrigation is due to some factors, such as the fact that these communities often face challenges related to rocky and rough land and limited infrastructure, which affects the implementation of effective irrigation systems and proper farm management practices. Additionally, there may be a lack of awareness or training among local farmers about modern farm management techniques and the benefits of irrigation, further limiting their adoption and impact.

4.3 Skill Training and Livelihood Enhancement

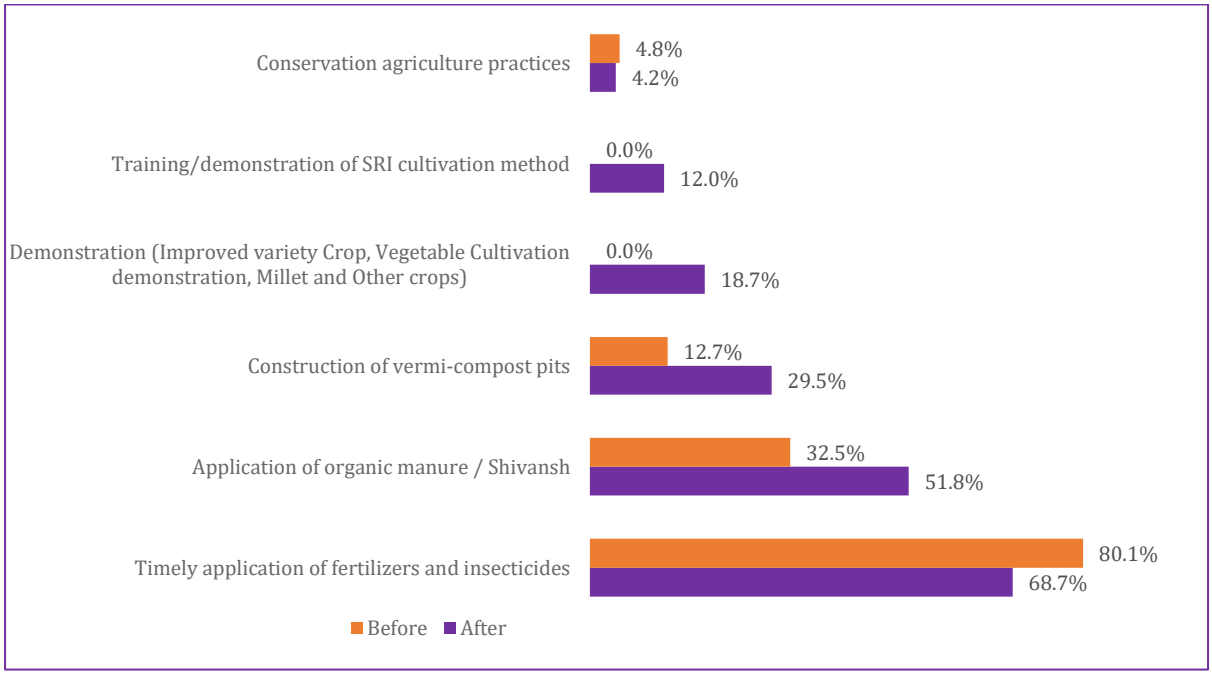
The project initiated several initiatives focused on uplifting women and farming communities by formation of women Producer Groups (PG), women Farmers Producer Groups (FPGs) and Village Development Committees (VDC). These efforts include using advanced technology and resources in activities such as vegetable farming, exposure visits, millet cultivation, crop demonstrations, and visits to demonstration plots. By equipping individuals with relevant skills and knowledge, these initiatives not only aim to enhance productivity in agriculture but also to create sustainable livelihoods and improve overall economic resilience within these communities. This approach underscores the importance of practical training and innovation in addressing socio-economic challenges and fostering inclusive growth.

4.3.1 Access to Agriculture Training and Services

Under the HRDP, FES has launched several initiatives aimed at improving access to agricultural training and services. These efforts include promoting practices such as vermi-compost production, pond renovation, crop diversification, and training farmers in the System of Millet Intensification (SMI) model. Additionally, an agricultural seed bank has been established to provide seeds and tool bank for other necessary resources. For instance, the VDC and PG group farmers in ten villages engaged in vegetable cultivation were equipped with vermicompost pits and training on organic manure production. This initiative empowered farmers to produce high-quality manure, leading to enhanced crop yields and reduced reliance on chemical fertilizers.

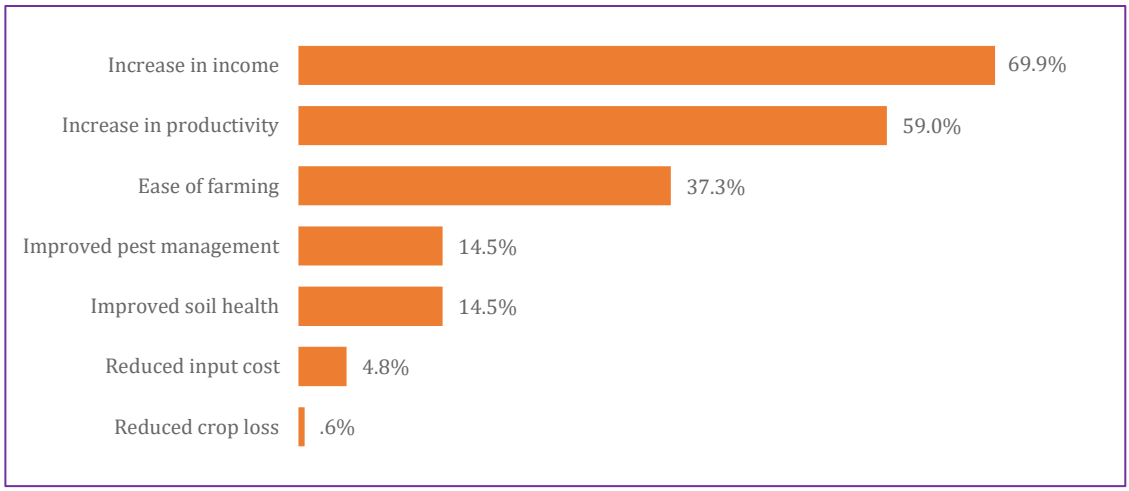
A comparative study was conducted to assess crop production using organic manure versus chemical fertilizers. Increasing yields and the long-term impact on soil health and sustainability favour organic practices, as chemical fertilizers can lead to soil degradation over time. Furthermore, the HRDP has implemented farm field schools and model plots to demonstrate crop diversity and enhance farming practices. Additionally, the establishment of a custom hiring centre facilitates the safe storage of vegetables during inclement weather. These initiatives collectively aim to improve agricultural productivity, sustainability, and resilience in the communities served by the program.

Figure 18: Respondents Practising Different Activities before and after the Interventions (N=166)



The effectiveness of various agricultural interventions has shown notable shifts before and after implementation, as evidenced by recent data. Timely application of fertilizers and insecticides, which previously stood at 80.1 percent, has decreased to 68.7 percent. Conversely, the adoption of organic manure, including Shivansh, has notably risen from 32.5 percent to 51.8 percent. Similarly, the construction of vermi-compost pits has seen an increase from 12.7 percent to 29.5 percent, indicating growing acceptance and implementation. Significant gains have also been made in the demonstration of improved crop varieties and vegetable cultivation (18.7 percent), and in training sessions on the SMI cultivation method (12 percent). However, conservation agriculture practices have seen a slight decline from 4.8 percent to 4.2 percent, suggesting potential areas for targeted improvement. These figures underscore a dynamic landscape where traditional practices are being complemented and sometimes supplanted by more sustainable and demonstrably effective agricultural techniques. Continued monitoring and adaptation of strategies will be crucial to further enhance agricultural productivity and sustainability in the region.

Figure 19: Perceived improvements due to adoption of agricultural practices (N=166)

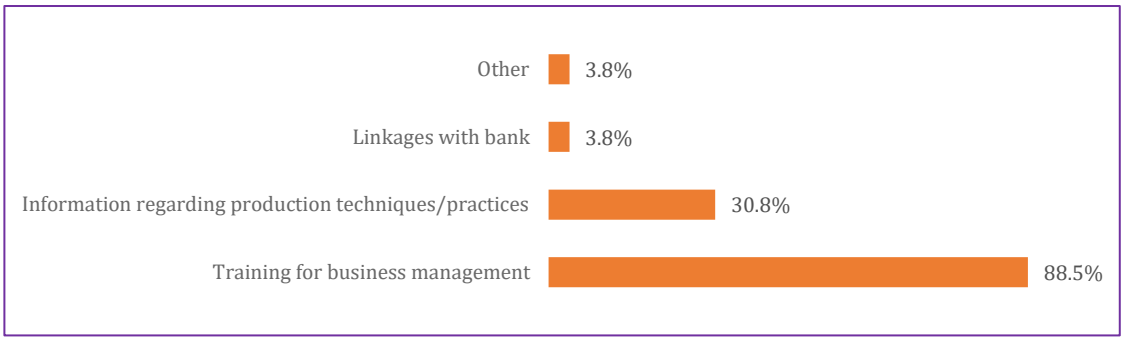


The adoption of agricultural practices has led to significant perceived improvements across various dimensions of farming, as reported by respondents. Notably, a substantial majority acknowledged increased productivity (59 percent), indicating that the implemented practices effectively enhanced farm output. Moreover, a significant proportion noted a boost in income (69.9 percent), illustrating a direct correlation between adopting these practices and economic gains. Reductions in input costs (4.8 percent) and improvements in soil health (14.5 percent) were also recognized, highlighting the broad benefits of sustainable farming techniques. Despite these gains, challenges persist in pest management, with only 14.5 percent reporting improvements in this area, indicating ongoing difficulties in implementing effective pest control strategies. Additionally, while some respondents noted improvements in the ease of farming (37.3 percent), suggesting potential gains in labor efficiency, this aspect did not garner as much recognition as productivity and income enhancements. Overall, while agricultural practice adoption shows promising benefits, continued efforts are needed to address challenges such as pest management to further optimize farming outcomes.

4.3.2 Access to Skill and Entrepreneurship Development

Under HDFC's HRDP, significant efforts have been made to empower women through bank linkages and enterprise management initiatives. As part of this program, various groups were formed, including those focused on mushroom cultivation, goat rearing, poultry, dairy farming, vegetable farming, and nursery management. Members of these groups received extensive training and support to develop and manage their enterprises. The intervention of the HRDP project played a pivotal role by providing essential machinery, training, and ongoing guidance to ensure the success of these activities. These activities have not only empowered women but also diversified their income streams significantly

Figure 20: Proportion of households supported in Enterprise Development (N=26)

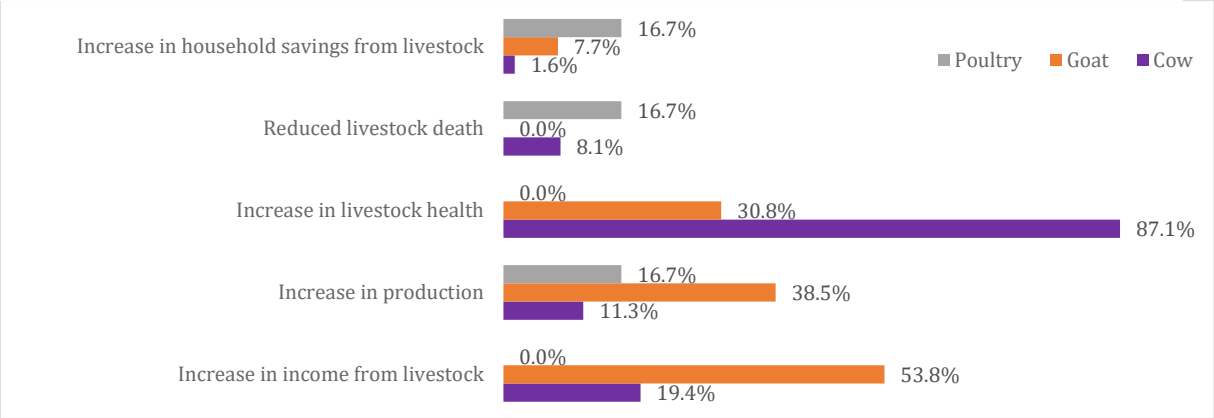


The recent data highlights significant trends in the uptake of various training and support services among agricultural stakeholders. Training for business management stands out prominently with a substantial adoption rate of 88.5 percent, indicating a strong recognition of its importance in enhancing operational efficiency and strategic decision-making within the sector. Information regarding production techniques and practices follows with a moderate adoption rate of 30.8 percent, suggesting a growing interest in optimizing agricultural processes and output through informed methodologies. However, linkages with banks and other financial institutions, crucial for accessing capital and financial services, are relatively underutilised at 3.8 percent each. This indicates a potential area for improvement in facilitating access to financial resources that are essential for scaling agricultural operations and investments. The category of "Other" also warrants attention at 3.8 percent, reflecting diverse needs or initiatives that may require further exploration or support. Overall, while there is strong participation in business management training and a growing interest in production techniques, efforts to strengthen financial linkages and address other specific needs could further bolster the resilience and competitiveness of agricultural enterprises in the region.

4.3.3 Improved Capacity to Generate Income Through Livestock Management:

A comprehensive range of initiatives aimed at improving livestock management were diligently implemented across the project villages by the FES. These interventions, viewed from a researcher's perspective, yielded significant outcomes. The FES trained a total of 98 villagers and facilitated the establishment of cow sheds, goat sheds, and poultry sheds as well as training and awareness regarding animal health care and vaccination to ensure the sustainability of these enterprises. Each beneficiary received financial support for raw materials such as bricks, cement, cement sheets, iron doors, and netting for building shelters and farms.

Figure 21: Perceived benefits of livestock management (Goat N=13, Cow N=62, Poultry N=6)

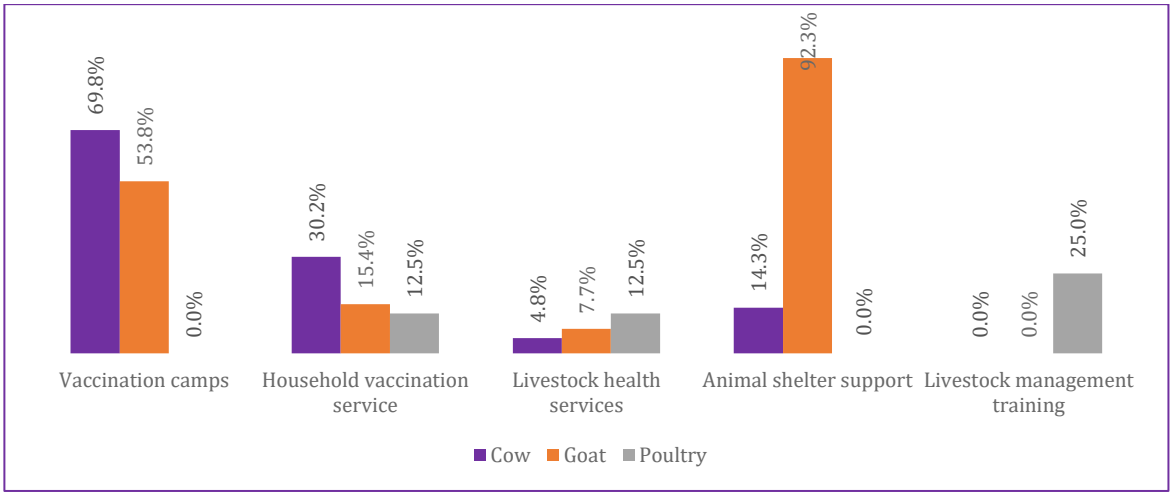


In Koraput district, livestock management activities, particularly goat farming, have proven to yield substantial benefits for local households, as indicated by respondent feedback. Goat farming stands out as particularly lucrative, with a significant 53.8 percent of respondents reporting a notable increase in income. This underscores the economic viability of goat rearing as a profitable enterprise in the region. Moreover, 38.5 percent of respondents noted a commendable increase in production, indicating higher yields and productivity in goat farming practices.

In contrast, cow farming, while beneficial, showed slightly lower reported gains. Approximately 19.4 percent of respondents reported increased income from cow rearing activities, highlighting its role in contributing to household finances, albeit to a lesser extent compared to goat farming. Additionally, 1.6 percent of respondents noted an increase in household savings attributable to cow farming, suggesting a positive impact on financial stability.

These findings underscore the diverse economic benefits of livestock management in Koraput district, with goat farming emerging as a particularly successful venture in terms of income generation and productivity. The insights provided by respondents reflect the significant role that livestock, especially goats, play in enhancing financial resilience and economic well-being within local communities. As such, promoting and supporting goat farming initiatives could further strengthen livelihoods and economic sustainability in the region.

Figure 22: Type of project services received for different livestock (Goat N=13, Cow N=62, Poultry N=6)

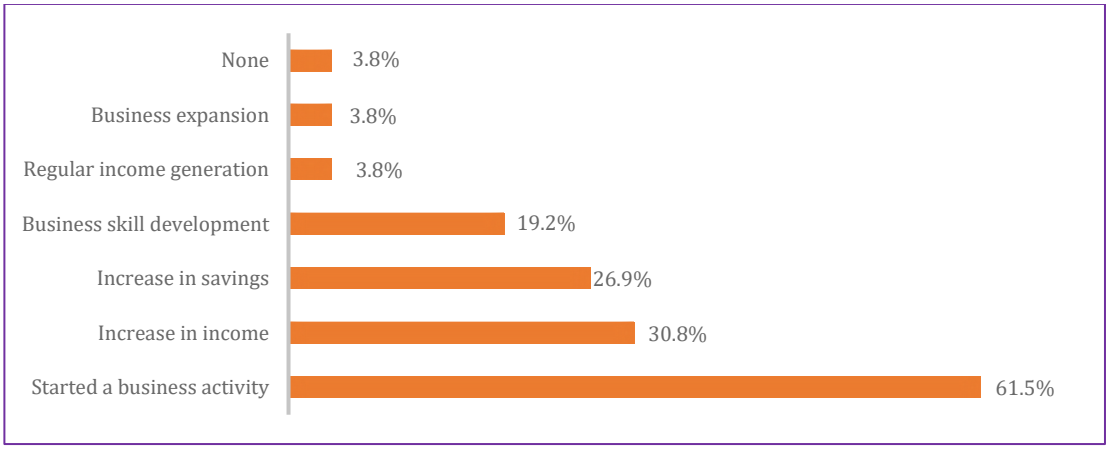


The survey data reveals significant disparities in the types of project services utilized across goat, cow, and poultry livestock farming in the surveyed area. For goat farming, vaccination camps were

accessed by 53.8 percent of sample beneficiaries, reflecting their critical role in maintaining animal health. Similarly, animal shelter support is nearly universal (92.3 percent), underscoring its importance. However, services like insemination camps and fodder development have minimal uptake, suggesting potential areas for enhancement or reallocation of resources to better meet farmer needs. In contrast, cow owners primarily rely on household vaccination services (30.2 percent), and livestock management training did not take off among cow and goat owners, indicating a significant gap in the area due to a lack of awareness among community members about the potential benefits of modern livestock management practices, highlighting a crucial gap in skills development. Poultry owners, meanwhile, showed a higher uptake in livestock management training (25 percent) but did not provide animal shelter support services.

The research highlights a substantial rise in the average income derived from livestock before and after a specified timeframe. **The data reveals an increase from INR 940 to INR 1493.30, indicating a noteworthy 59 percent improvement.** This growth implies a beneficial outcome resulting from interventions or alterations implemented within the livestock sector. These interventions could encompass enhanced management strategies, improved breeding techniques, or better access to markets.

Figure 23: Benefits gained through project support for enterprise development (N=26)



The survey data demonstrates the substantial positive impact of the project on the income and economic stability of the respondents. A significant **30.8 percent reported an increase in income** directly attributable to the project, highlighting its effectiveness in improving financial well-being among participants. Moreover, **61.5 percent indicated they started new businesses**, leading to regular income generation, underscoring the project's pivotal role in fostering sustainable livelihoods. Alongside income gains, 26.9 percent noted an increase in savings, indicating enhanced financial security and management practices resulting from project support. The project also significantly contributed to skill development, with 19.2 percent reporting improvements in business skills, which are crucial for long-term entrepreneurial success. Additionally, 3.8 percent mentioned expanding their businesses, illustrating the project's role in stimulating business growth and development opportunities within the community. Overall, these findings affirm the project's comprehensive impact on bolstering economic resilience, fostering entrepreneurship, and promoting financial stability among respondents.

The project has substantially improved income levels, financial stability, and business capabilities among respondents, with significant increases in regular income, savings, and business development being key outcomes. These results underscore the project's effectiveness in fostering economic empowerment and resilience within the community.

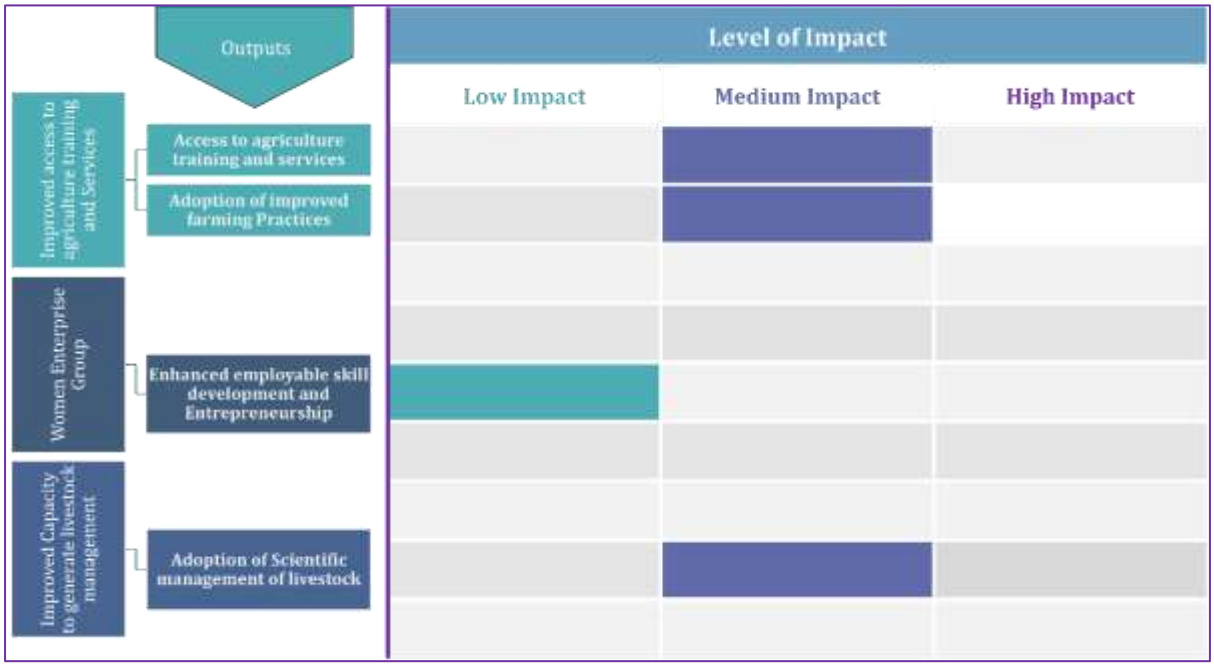
The implementation of the Parivartan project has led to significant improvements in the financial outcomes of enterprise activities, particularly in the area of livestock management. **Before the project's initiation, the average monthly income from enterprises was at INR 730. However, upon completion of the project, this average monthly income rose significantly to INR 1415**

This substantial increase in income highlights the project's effectiveness in enhancing the profitability and sustainability of livestock enterprises. The Parivartan project has evidently played a crucial role in empowering participants by providing the necessary resources, training, and support to optimise their livestock management practices. Consequently, this has led to a marked improvement in their economic stability and overall quality of life.

The Parivartan project has achieved notable success in boosting average monthly incomes from enterprise activities, with a significant increase from 34 percent to 66 percent. This demonstrates the project's positive impact on livestock management and its contribution to the economic empowerment of the beneficiaries.

4.3.4 Impact

Figure 24: Level of Impact – ST & LE



The data highlights positive trends in several key areas, particularly in the adoption of improved farming practices and the scientific management of livestock. Farmers have increasingly accessed agricultural training and services, leading to significant advancements in their skills and practices. This enhanced access has not only improved employable skill development but also fostered entrepreneurship within the community.

The low impact observed on enhanced employable skill development and entrepreneurship can be attributed to several factors. Firstly, there may be a lack of access to quality education and vocational training facilities that are essential for equipping individuals with market-relevant skills. Limited awareness about available opportunities and career paths may also contribute to low participation in skill development programs.

4.4 Health and Sanitation

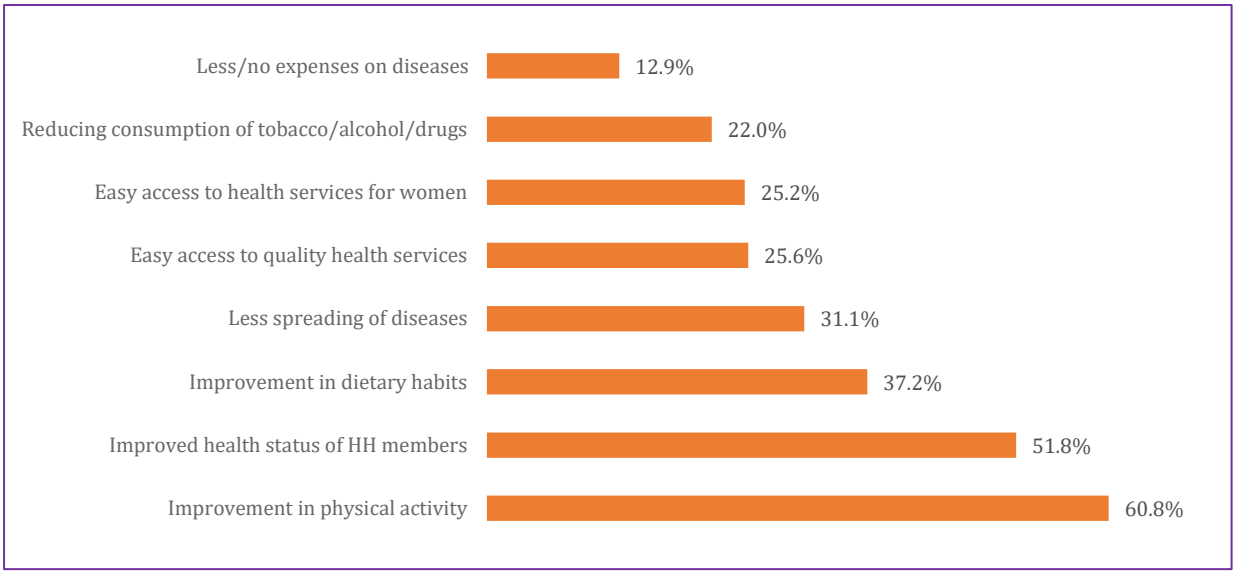
The project focused on improving the well-being of community members through awareness generation activities and sanitation infrastructure. A proportion of 72.9 percent of households received hygiene related awareness sessions. Waste water soak pits were availed of by 59.7 percent of the sample, whereas the mobile van awareness campaign benefitted a proportion of 100 percent of the households. The project also took initiatives for access to safe drinking water by providing a solar water pump with water taps to collect water from the pump house. The project organized vermi-compost training and motivated the household to adopt organic farming methods.

4.4.1 Health Infrastructure and services

The data from various health and wellness interventions indicates notable improvements across several key areas within the targeted communities. Physical activity has shown significant enhancement, with 60.8 percent of households reporting improved engagement in physical activities. This suggests a positive shift towards healthier lifestyles and increased awareness of the importance of regular exercise. Concurrently, there has been a noticeable improvement in the health status of household members, with 51.8 percent experiencing better overall health outcomes, likely influenced by increased physical activity and possibly improved dietary habits. Speaking of dietary habits, although improvements have been noted in 37.2 percent of households, there remains a considerable opportunity for further enhancement in this area. The impact on disease control has been noteworthy, with 31.1 percent reporting a reduction in disease prevalence, indicating effective health education and preventive measures at play. Access to quality health services has also seen progress, albeit more modestly, with 25.6 percent benefiting from easier access to healthcare facilities, underscoring ongoing efforts to improve healthcare infrastructure and outreach. Despite these gains, challenges persist in specific areas, such as access to health services for women (25.2 percent) and efforts to reduce tobacco, alcohol, and drug consumption (22.0 percent). These issues highlight the need for targeted interventions and community engagement to address gender disparities in healthcare access and promote healthier lifestyle choices.

Overall, while strides have been made in promoting physical activity, improving health status, and enhancing dietary habits, continued focus on these areas, along with addressing remaining challenges, will be crucial to sustain and further improve the health and well-being of the community. Continued monitoring and adaptation of strategies will be essential to build on these achievements and foster lasting health improvements in the targeted population.

Figure 25: Perceived health benefits of improved health awareness (N=192)

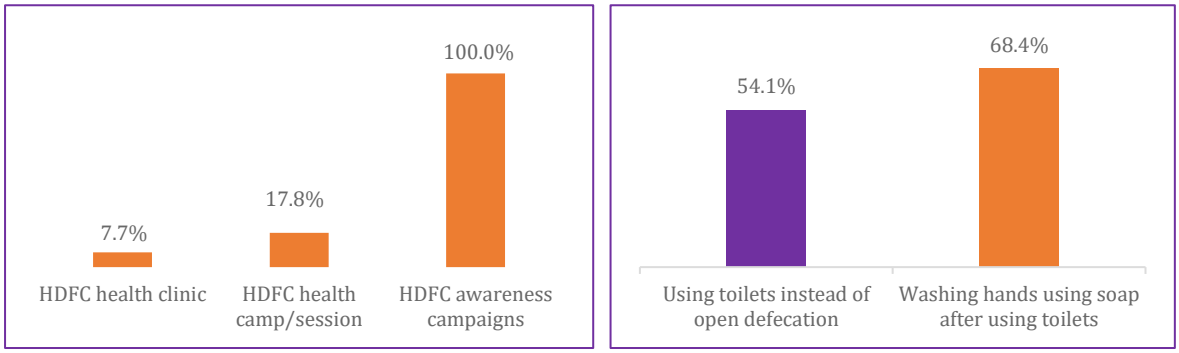


4.4.2 Sanitation infrastructure and services

The project incorporated the disposal of household wastewater and organized waste management awareness campaigns to promote proper treatment and disposal of waste. These initiatives led to several key learnings and behavioral changes in the community. One of the most significant learnings reported by respondents was the adoption of washing hands after using toilets and toilet usage over open defecation. This shift represents a crucial improvement in sanitation practices, contributing to better health and hygiene in the community. This practice is essential to preventing the spread of diseases and improving overall public health.

The awareness campaigns conducted by HDFC effectively educated the community on proper waste management and hygiene practices, resulting in significant behavioral changes among respondents. A substantial 54.1 percent of respondents reported using toilets regularly, indicating improved sanitation practices. Moreover, 68.4 percent of respondents reported adopting regular handwashing practices, contributing to enhanced personal hygiene and reduced disease transmission. The campaign also achieved an awareness rate of 17.8 percent among respondents regarding behavioral changes promoted by HDFC, underscoring the community's receptiveness to sustainable practices. These efforts have collectively fostered a healthier environment, promoted sustainable waste management solutions, and contributed to improved public health outcomes within the community.

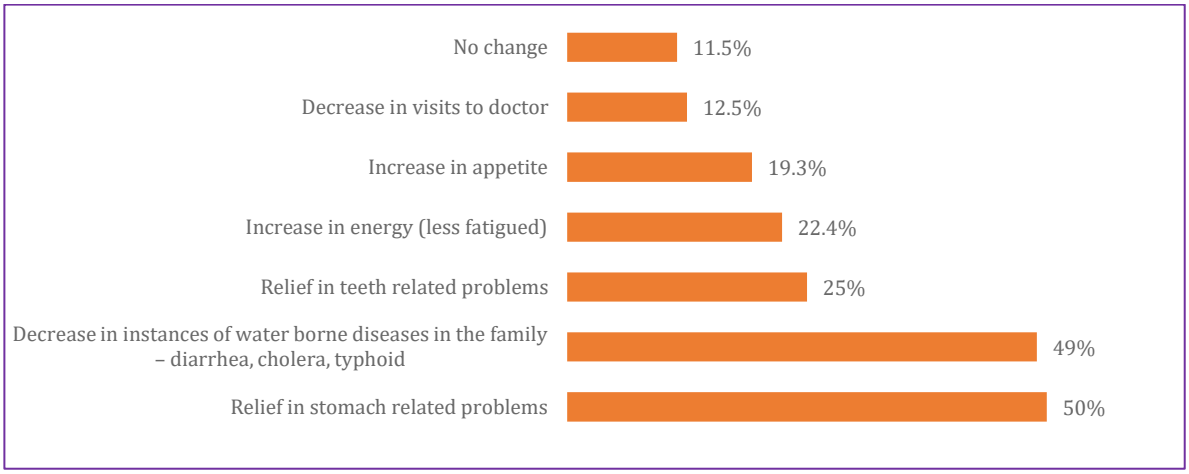
Figure 26: Cleanliness practices awareness & Behavioural changes (N=126)



4.4.3 Availability of drinking water

Before the intervention by HDFC and the FES in Koraput block, families relied on hand pumps and wells for drinking water, with many households facing significant distances of at least 100 meters. This situation disproportionately affected women, who spent 1 to 2 hours daily fetching water, leading to work delays and exhaustion. Due to water scarcity, the health and hygiene were badly affected. Following the installation of solar drinking water units in 10 project villages, supported by VDC for maintenance, the community experienced a transformative improvement in their quality of life. Free from the burden of water collection, families could now dedicate more time to childcare, household tasks, and agricultural activities, enhancing overall productivity and well-being. This initiative not only eased daily hardships but also provided moments of respite and improved living conditions across the communities involved.

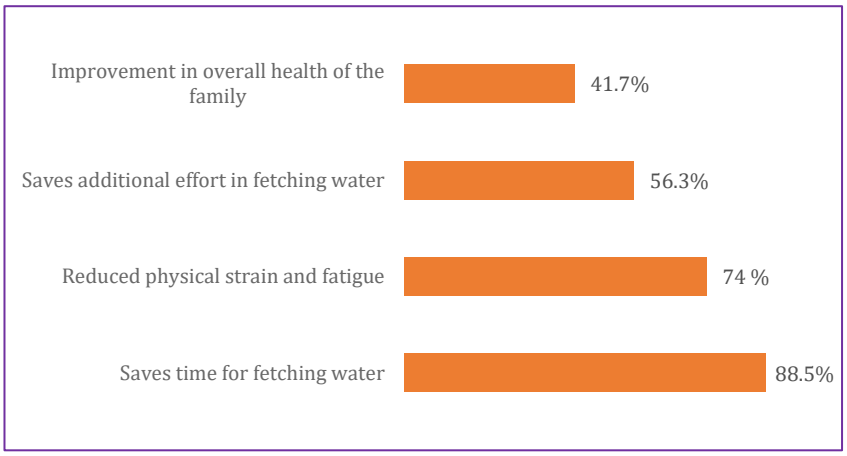
Figure 27: Perceived health benefits of improved drinking water sources (N=192)



A significant 50 percent of respondents reported experiencing relief in stomach-related issues, indicating a notable improvement in digestive health among participants. Nearly half of the respondents (49 percent) noted a reduction in waterborne diseases such as diarrhoea, cholera, and typhoid within their families, underscoring the program's effectiveness in improving water

sanitation and hygiene practices. A quarter of respondents (25 percent) reported relief in teeth-related problems, suggesting improvements in dental health possibly due to hygiene education or access to dental care. Approximately 22.4 percent of participants reported feeling less fatigued and experiencing increased energy levels, indicating a positive impact on overall well-being and vitality. 19.3 percent of respondents reported an increase in appetite, which could indicate improved nutrition or digestive health benefits of the program. 12.5 percent of participants noted a decrease in visits to doctors, suggesting reduced incidence of health issues requiring medical attention, possibly due to preventive measures or improved health practices. 11.5 percent of respondents reported no noticeable changes in their health status following the intervention.

Figure 28: Drinking water availability helps the women in households (N=192)

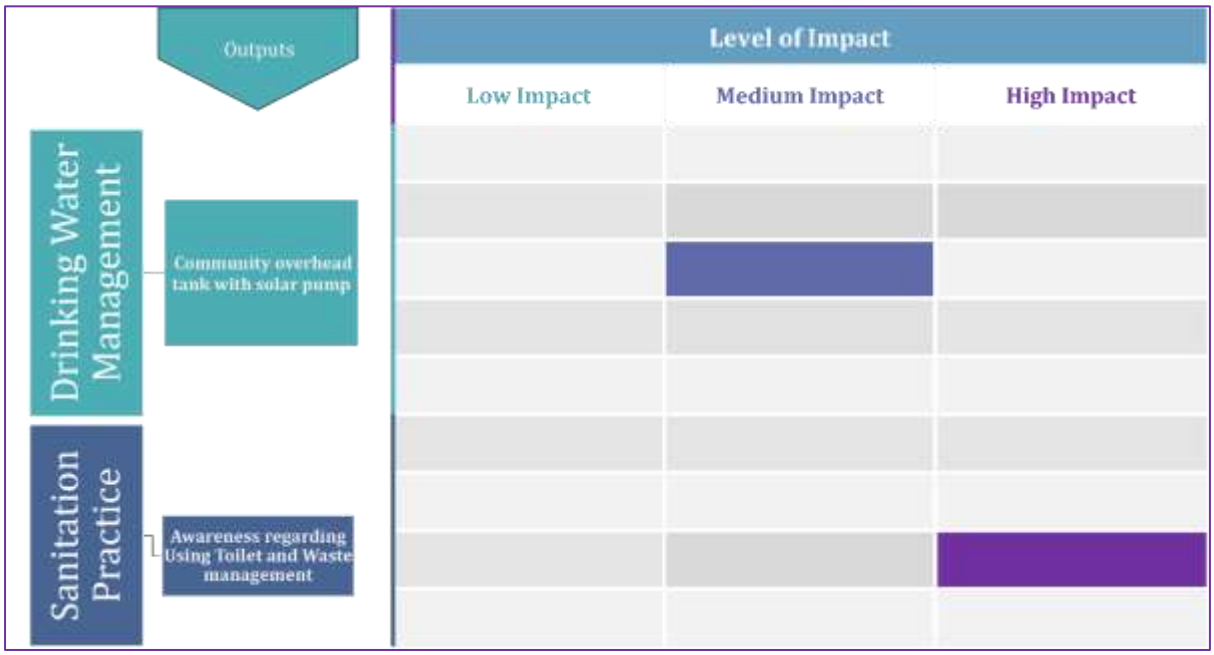


The study on the impact of improved drinking water availability on households reveals several key benefits, as reported by the respondents. **Notably, 88.5 percent of respondents highlighted that the availability of drinking water saved time that was previously spent fetching water.** This significant time-saving aspect is crucial, especially for women, who often bear the primary responsibility for water collection in many households. Additionally, 56.3 percent of respondents reported a reduction in the effort required for water collection, further alleviating the physical and logistical burdens associated with this task. A notable **74 percent of respondents mentioned a decrease in physical strain and fatigue related to water collection, emphasizing the physical relief provided by improved water accessibility.** However, only 41.7 percent of respondents cited an improvement in the overall health of their families. This indicates that while health benefits are recognized, they are not as immediately pronounced as the logistical and physical advantages.

These findings underscore the significant positive effects of enhanced water accessibility. The primary benefits include time-savings and reduced physical burden, particularly for women. These improvements can lead to better well-being and quality of life for households, allowing them to allocate their time and energy to other productive activities and reduce the physical toll associated with water collection. While the direct health improvements might not be as evident, the overall enhancement in daily life and reduced physical strain represent substantial gains for the community.

4.4.4 Impact

Figure 29: Level of Impact - H&S



Access to safe drinking water was made easy with the project. This was attested by the proportion of 74 percent of respondents who reported that physical strain on women was reduced with easier access to drinking water. These findings underscore the substantial positive impact of HDFC interventions on the health outcomes of households by providing access to safe drinking water. The significant decrease in waterborne diseases and related health issues reflects the effectiveness of awareness regarding sanitation and hygiene practices and behavioural change initiatives in enhancing public health.

4.5 Promotion of Education

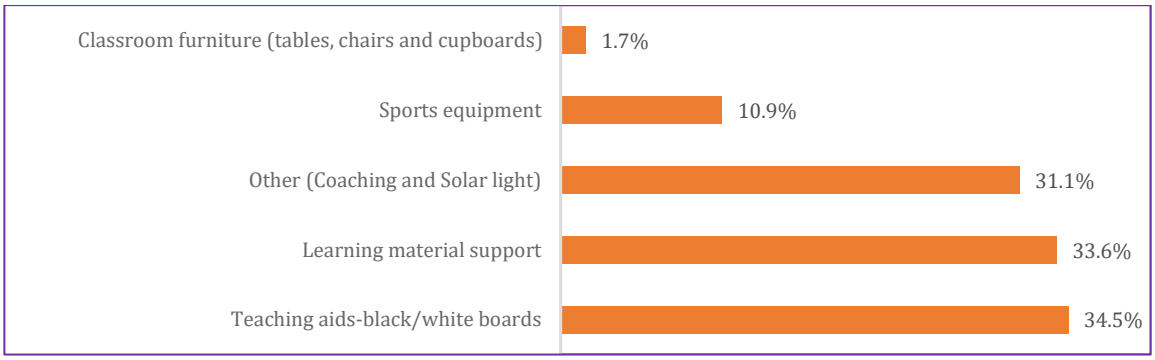
Under the HRDP Parivartan project, supported by HDFC and managed by FES, significant efforts have been made to improve schools in targeted communities. One important step was organizing remedial classes for students during the COVID-19 pandemic. Many students couldn't study online due to a lack of internet or smartphones. Instead of online learning, FES gave out study materials and solar lamps. These lamps helped students' study in the evenings when electricity was unreliable. Special teachers were hired to teach extra classes in 10 villages. Their goal was to improve teaching and help students with their studies.

4.5.1 Infrastructure in Educational Institutions

The project introduced remedial classes to help struggling students catch up, provided teaching materials to enhance learning resources, and supplied sports equipment and solar lamps to

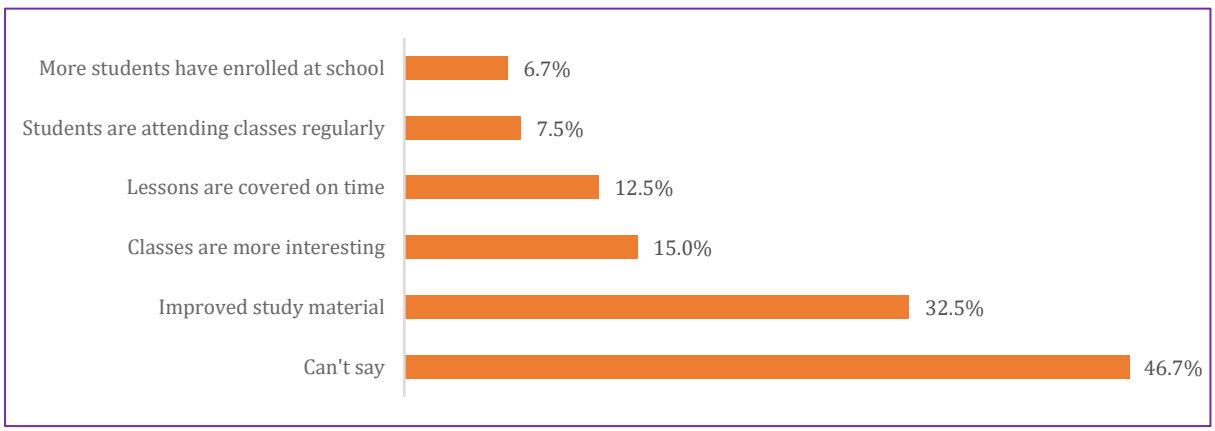
support students' overall development and ensure they could study even when electricity was unreliable.

Figure 30: Infrastructural support provided by the project (N=119)



According to the data, teaching aids such as blackboards and whiteboards were provided to 34.5 percent of beneficiaries, aiming to improve classroom interaction and teaching effectiveness. Learning material support was also significant, benefiting 33.6 percent of recipients, ensuring students had access to necessary educational resources. Additionally, other forms of support, including coaching services and solar lights, accounted for 31.1 percent of interventions, further enhancing learning opportunities and study conditions, especially in areas with unreliable electricity. Sports equipment, aimed at promoting physical activity and extracurricular engagement, was provided to 10.9 percent of beneficiaries. Classroom furniture such as tables, chairs, and cupboards saw limited provision at 1.7 percent. These initiatives collectively highlight FES's commitment to improving educational infrastructure and fostering a conducive learning environment in Koraput, addressing various needs from instructional aides to supplementary resources and beyond. Continued support and expansion of these efforts will be crucial for sustaining and further enhancing educational outcomes across the district.

Figure 31: Improvements in school activities noticed in last 3-4 years (N=120)

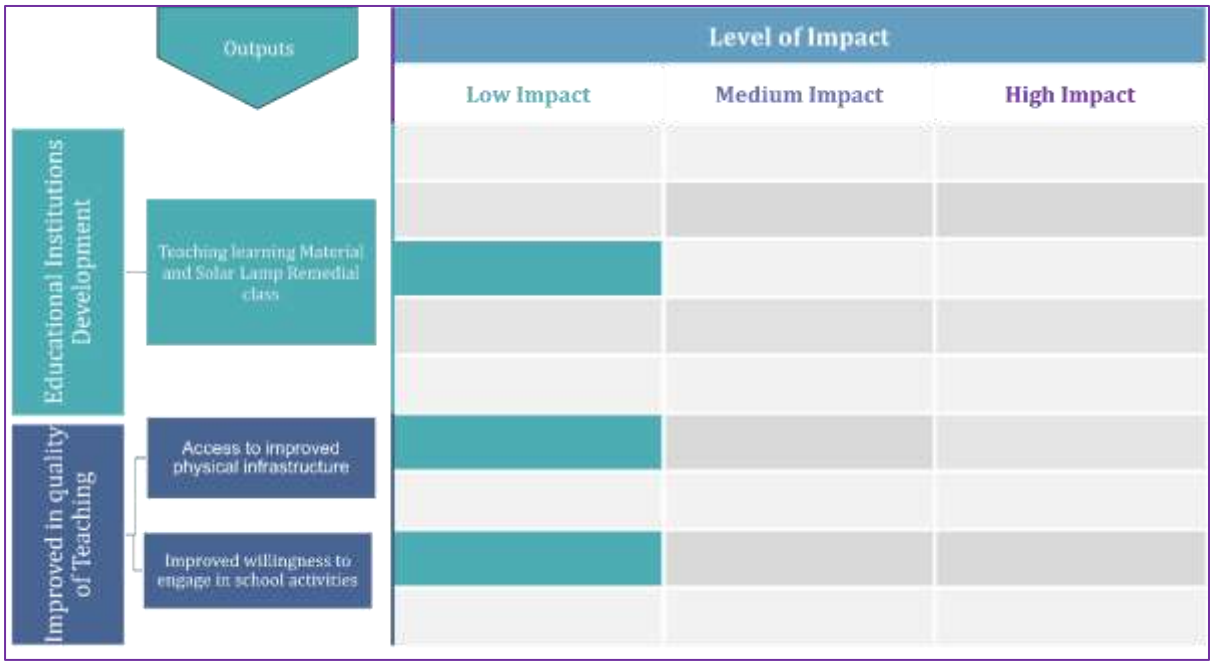


The survey results on improvements in school activities over the last 3-4 years in Koraput district, Odisha, reveal a mixed response among respondents. A significant 46.7 percent indicated uncertainty or neutrality ("Can't say") regarding observed improvements, suggesting varied perceptions or possibly limited awareness of changes. However, 32.5 percent acknowledged the positive impact of improved study materials, indicating enhancements in educational resources. Additionally, 15.0 percent reported that classes have become more interesting, which may signify efforts to enhance teaching methodologies and engagement. A smaller percentage noted improvements in timely lesson coverage (12.5 percent) and increased regular attendance of

students (7.5 percent), highlighting incremental gains in educational delivery and student participation. Furthermore, 6.7 percent mentioned an increase in school enrollment, suggesting broader community engagement or outreach efforts. These findings underscore ongoing efforts to strengthen educational outcomes and infrastructure in Koraput, while indicating areas where further focus and development may be needed to sustain and expand these positive trends.

4.5.2 Impact

Figure 32: Level of Impact – PoE



The impact of Teaching Learning Materials (TLM) and solar lamps has been noted as relatively low. While these resources were provided to support learning and ensure study continuity despite electricity issues, their effectiveness may have been low due to limited awareness among communities about their benefits. Additionally, the remedial classes aimed at boosting academic performance seem to have had mixed results, possibly due to varying levels of participation and adoption in organizing these sessions effectively across remote villages.

4.6 Holistic Rural Development Index (HRDI)

There are multiple dimensions involved in achieving the goals of HRDP, which include agricultural production, the generation of new jobs, the enhancement of health, improved education, etc. Based on the design of the HRDP program supported by HDFC, a composite index called the Holistic Rural Development Index (HRDI) has been developed that indicates the achievements of the HRDP interventions, leading to overall improvements in 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 the 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 P0328 implemented in Koraput district, Odisha is given in the following table.

Table 6: HRDI Calculation for P0328

Domain	NRM		ST&LE		H&S		Total	
HRDI Score	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.07	0.10	0.05	0.10	0.05	0.11	0.17	0.31
Percent Change	45%		115%		114%		84%	

The table displays the Holistic Rural Development Index (HRDI) for four thematic areas of intervention within the project. Overall, the HRDI has increased by 82.35 percent compared to the baseline. Particularly noteworthy is the substantial impact seen in the H&S category, with a score of 120 percent increase over the baseline. Moreover, there have been significant increases over the baseline in the “ST&LE” "Natural Resource Management" and "Education," categories, reaching 100 percent, 42.86 percent, and remaining the same, respectively.

5 Analysis of Assessment Criteria

As outlined earlier for each thematic area, activities completed by the FES 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

Odisha is home to a mix of indigenous ethnic groups, migrants from other parts of India, and diverse tribal communities. The state has made notable progress in literacy, achieving an overall literacy rate of about 72.9 percent, demonstrating ongoing efforts to enhance education access and quality across both urban and rural areas. However, Odisha grapples with various health challenges influenced by its diverse geography and socio-economic conditions. The healthcare infrastructure in the state continues to expand to meet the diverse health needs of its population, addressing issues ranging from communicable diseases such as malaria and dengue to emerging concerns in maternal and child health.

The HRDP of the HDFC Parivartan project aims to uplift the quality of life for rural residents through various initiatives focusing on agriculture, livelihood, skill training, education, and health and sanitation. Enhancing agricultural practices through modern techniques, irrigation, and the training of farmers in sustainable farming practices to increase productivity and income. Creating and offering specialised training programme in various traditional trades and skills such as weaving, fish farming could create opportunities for rural residents to increase their income sources. By organising various awareness programs on hygiene and sanitation practices, one can help expand the provision of healthcare services while lowering the incidence of diseases that can be prevented and improving health outcomes.

5.2 Sustainability

The initiative has gathered appreciation from the community, who have been trained to make natural fertilizer and pesticides and use them in their farms to produce crops in an organic manner, maintain the irrigation water resource point by sharing the water among themselves in the crop water budgeting method. For the solar pump used for drinking, a farmers' group was formed to oversee its operation. The agricultural seed bank and tool bank are managed and maintained by VDC. This tool is also used for their own purposes as well as in business. The collecting fund is meant for village development work and the maintenance of equipment.

The VDCs have taken ownership of various agricultural and enterprise activities introduced by the project. In terms of drinking water management, VDC also took responsibility for overseeing the operation of the solar drinking water. The VDC collects money from the user family to repair and maintain the water system when necessary to ensure its long-term viability.

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

The project, supported by FES, has empowered the local communities in Mahadeiput GP of Koraput block to take control of their development initiatives. Through training, community engagement, and the establishment of a self-sustaining model, the project has created a lasting impact, ensuring that the benefits continue to support the villagers long after the project's conclusion. (See **Annexure E**)

6 Recommendations

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

Recommendations to Sustain Project Initiatives:

- Regarding agricultural practice, encourage and promote the adoption of sustainable agricultural practices such as agroforestry, contour farming, and crop rotation. These practices help to minimise soil erosion, improve soil fertility, and enhance long-term agricultural productivity.
- Addressing the barriers would require improved infrastructure, targeted education programs, and sustainable agricultural practices that align with local needs and capabilities, which may have a positive effect on farm management and land development.
- In livestock management in the project village, empowering local communities through training and capacity building programs on sustainable livestock management practices, entrepreneurship, and financial management needs to be developed.
- Encourage diversification of income through integrated farming practices that combine livestock rearing with crop cultivation. Promote the development of value-added products such as dairy products, wool (Koraput Sheep breed which is adapted to local climate), and poultry meat to increase income opportunities for farmers.
- Encourage the development of sustainable forest-based enterprises such as non-timber forest products (NTFPs) harvesting, eco-tourism, and herbal medicine production. Provide training and support in sustainable harvesting techniques, value addition, and market linkages.
- The focus on skill development and entrepreneurship has provided farmers with the tools necessary to improve their livelihoods and contribute to the local economy.
- Offer skill development programs and entrepreneurial training tailored to local needs and resources. Focus on building skills in product development, marketing, financial management, and business planning to enhance the capacity of local entrepreneurs.
- Invest in capacity-building efforts for project beneficiaries, including training programs and skill development workshops. By equipping individuals with the necessary knowledge and skills, they can effectively manage project initiatives and adapt to changing circumstances, thereby enhancing the sustainability of the project in the long run.

Recommendations to Build Project Efficiency

- To ensure the success of the intervention, each village must develop a local cadre of trained individuals to serve as village resource coordinators. These coordinators will be the primary point of contact for all intervention-related matters and will be accountable to the villagers. They will provide information on farm advisory services, disease management, vaccination schedules, deworming schedules, and other emergencies.
- 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.
- Systematising the project monitoring and backstopping process and synchronising engagement of HDFC program staff and the implementing partner.

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 ten villages acted as the sampling frame for the project. This list was obtained from the implementing partner – FES. 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 ten 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

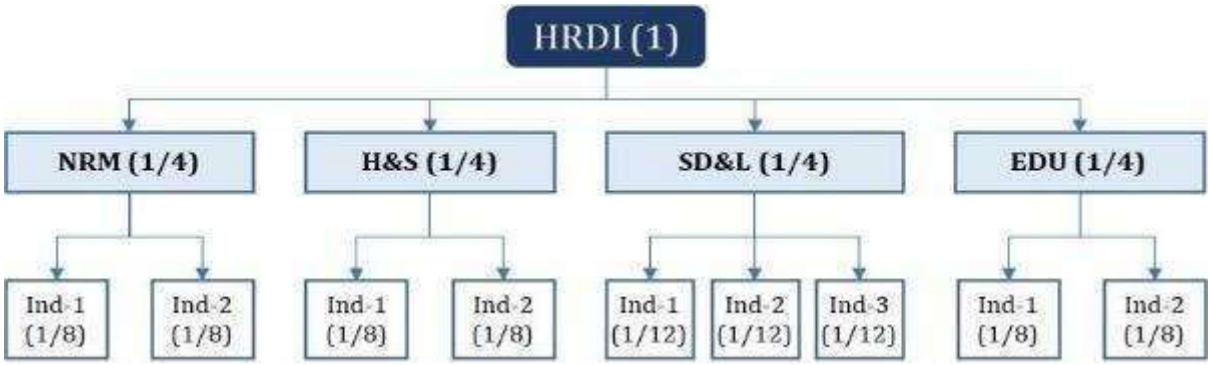
The outcome indicators included in the HRDI were obtained from different domains and are consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables such that the indicators could be measured between 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 33: 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 Household 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 standardized 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 standardized and weighted, a sum of these weighted indicators are utilized to calculate the value of HRDI.

B.3 Method to Calculate HRDI

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

Step 2: A cut-off value was calculated by taking the 50th percentile for each indicator before HRDP (baseline). For instance, consider the indicator, average annual income of farmers. It was considered at baseline, and 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 (the 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.

Table 8: HRDI Calculation for Koraput

Domain	Indicators	Baseline	HRDI	End line	HRDI	percent Change
NRM	Proportion of farmers with net income above median	0.16	0.07	0.23	0.10	42.36 percent
	Proportion of farmers reporting increased productivity of three main crops above median (before and after)	0.10		013		
	Percentage of farmers reporting access to irrigation	0.03		0.05		
ST&LE	Percentage of SHG members reporting income above median from rural enterprises	0.00	0.05	0.00	0.10	100 percent
	Percentage of households who getting skill training & reporting increase in income from job/enterprise/self-employment	0.03		0.10		
	Percentage of HOUSEHOLD reporting income above median from livestock	0.16		0.29		
H&S	Percentage of households reporting increase in use of fruits/vegetables from the nutrition garden	0.00	0.05	0.00	0.11	120.00 percent
	Percentage of households reporting increase availability of drinking water facility	0.17		0.28		
	Percentage of households with access to improved toilet facility	0.03		0.14		
PoE	Percentage of respondents reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, furniture etc.)	0.00	0.00	0.00	0.00	No intervention around this indicator
	Percentage of respondents reporting increased access to functional learning	0.00		0.00		

	infrastructure (library, science labs, smart class, etc.)					
Total			**0.17**		**0.31**	**82.35 percent**

C Overview of Impact Calculation

Impact of the programme was calculated based on the averages of quantitative output indicators as demonstrated below.

Table 9: 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	58.9 percent	74.6 percent	**High**
	Proportion of farmers reporting increased income from crops that were supported under HRDP.	95.1 percent		
	Proportion of farmers who are the above median range	69.8 percent		
Access to the farm management infrastructure	Proportion of beneficiaries satisfied with the quality of available services (in Agriculture equipment provided)	64.9 percent	39.2 percent	**Low**
	Proportion of farmers who use both, chemical and natural fertilizers	28.2 percent		
	The proportion of farmers reporting a decrease in the use of chemical fertilizers	24.7 percent		
Increased adoption of crop diversification	Proportion of farmers diversifying their crops with the project support.	0.4 percent	0.45 percent	Low
	Proportion of farmers who report income increase due to crop diversification (base = farmers who adopted crop diversification)	0.5 percent		
Land under irrigation	Increased area under irrigation	36.3 percent	23.7 percent	Low
	Proportion of farmers who received support for irrigation	11.1 percent		
Increased use of clean energy solutions				
Adoption of clean energy infrastructure	Proportion of HOUSEHOLDs using clean energy infrastructure (Base=all)	34.3 percent	53.2 percent	Medium
	Proportion of households fully satisfied from using clean energy infrastructure (Base=clean energy beneficiaries)	72.1 Percent		
Improved access to agricultural training and services				
Access to Agriculture training and services	Proportion of farmers who reported project training services are useful	68.7 percent	62.0 percent	Medium
	Proportion of farmers who demonstrate awareness regarding sustainable farming practices	55.4 percent		
Adoption of improved	Proportion of farmers who continue to practice conservation agricultural practices	4.2 percent	55.8 percent	Medium

Outputs	Output Indicators		Output Avg	Impact Level
farming practices	Proportion of beneficiaries reporting an increase in productivity due to better farm management	75.5 percent		
	Proportion of farmers reporting increased income	87.8 percent		
Enhanced capacity for regular income generation				
Enhanced employable skill development	Proportion of House hold accessed skill development training	6.1 percent	22.5 percent	Low
	Percentage of households who getting skill training & reporting increase in income from enterprise/self-employment	- 30.8 percent		
	Proportion of Beneficiary reporting increase in income enterprise development	30.8 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	23.2 percent	55.06 percent	Medium
	Proportion of beneficiaries reporting improved livestock health	55.5 percent		
	Percentage of household reporting income above median from livestock	86.5 percent		
Improved sanitation infrastructure and services				
Establishment/ enhancement of sanitation infrastructure.	Proportion of households with access to Household/community sanitation units (toilets/bathing enclosures)	26.5 percent	49.8 percent	Medium
	Proportion of beneficiaries reporting safety of women due to improved access	73.1 percent		
Awareness regarding health and sanitation practices	Improved awareness regarding cleanliness and sanitation practices (Using toilets instead of open defecation)	54.1 percent	77.01 percent	High
	Improved awareness regarding waste management	100 percent		
Adoption of positive health and sanitation practices	Proportion of improved health status of household member	51.8 percent	62 percent	Medium
	Increase in no of households adopting proper liquid waste management practices	72.2 percent		
Improved availability and management of water				
Access to drinking water at household and community	The proportionate number of households reporting change in source of drinking water	59.4 percent	62.1 percent	Medium
	The proportion of households reporting improved well-being due to the availability of clean drinking water.	41.7 percent		

Outputs	Output Indicators		Output Avg	Impact Level
levels improved	Proportion of household reporting increase availability of drinking Water facility	85.4 Percent		
Improved capacity of educational institutions to provide services				
Access to improved physical infrastructure	Proportion of students/schools who report gaining access to functioning learning aid/furniture/sports equipment	34 percent	32.5 percent	Low
	Proportion of Students received remedial class facility in covid 19	31.1 percent		
Improved willingness to engage in school activities	Teachers reporting improvements in attendance due to improved infrastructure	7.5 percent	7.1 percent	Low
	Proportion of institutions reporting a decrease in dropout rates and increasing enrollment	6.7 percent		

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

D Two Sample Proportions Z Test

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

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

z = (p1 - p2) / sqrt(p*(1-p)/(n1 + n2))
where:

p1 is the proportion in the first sample
p2 is the proportion in the second sample
p is the pooled proportion, calculated as (p1n1 + p2n2)/(n1 + n2)
n1 is the sample size of the first sample
n2 is the sample size of the second sample
The z-statistic is then compared to the standard normal distribution to determine the p-value of the test. A p-value less than alpha (typically 0.05) indicates that the null hypothesis can be rejected, and there is evidence to suggest that the two proportions are different.

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

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

- The two samples are independent.
- The two populations are normally distributed.
- The sample sizes are large enough (n1p1n2*p2 > 10) (Basically, the Central Limit theorem should apply for the sampling distribution of the z-statistic can be approximated by the standard normal distribution.)

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

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

Assumptions:

- Independence: The two samples must be independent of each other.
- Normality: The two populations must be normally distributed, or the sample sizes must be large enough (n1p1n2*p2 > 10).
- Binomial distribution: The population does not need to follow a binomial distribution, but the test is more powerful if it does.

The z-test conducted for one indicator- Proportion of farmers with average productivity of paddy above baseline median-is shown below.

Table 10: Z - Test conducted for P0328

Indicator	Proportion of farmers with average productivity of paddy above baseline median
p1 (proportion of first sample-endline)	154
n1 (sample size of p1)	245
p2 (proportion of second sample-baseline)	109
n2 (sample size of p2)	243
p	53
Calculation	0.5389
z statistic	3.988
	Statistically significant as it is less than our alpha value (0.05)
p-value for the z statistic	0.0000647

E Theme-wise Sustainability Matrix

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

Table 11: 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		✓	✓	
	P			
Educational Institutions Development	✓		✓	✓

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