

Impact Assessment Study Of Holistic Rural Development Programme (HRDP)

Maharashtra



Prepared For:



HDFC Bank CSR

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Abbreviations

ASER	Annual Status of Education Report
CSR	Corporate Social Responsibility
FFS	Farmer Field School
FGD	Focus Group Discussion
FPO	Farmer Producer Organization
GoM	Government of Maharashtra
HDFC	Housing Development Finance Corporation Limited
HDI	Human Development Index
HRDP	Holistic Rural Development Programme
IDI	In-depth Interview
LSD	Lumpy Skin Disease
NCD	Non-Communicable Disease
NGO	Non-Governmental Organization
NRM	Natural Resource Management
NRLM	National Rural Livelihood Mission
NSSO	National Sample Survey Office
RO	Reverse Osmosis
SDG	Sustainable Development Goal
SHG	Self Help Group
SEQI	School Education and Quality Index
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Executive Summary

The impact assessment study focuses on measuring the impact of the Holistic Rural Development Programme (HRDP) of HDFC Bank that was **implemented by CARD in project clusters in Nanded district of Maharashtra state**. The study focused on understanding the overall process undertaken by HDFC Bank and the partner organisation in implementing the project activities, key milestones achieved, impact created by these activities, challenges faced, and the manner in which such challenges were handled. The **key focus areas of the intervention were Education, Health and Sanitation, Natural Resource Management, and Skill building & Livelihood enhancement**.

For the impact assessment study conducted, both quantitative and qualitative methodologies were used. In this cluster, all eight intervention villages were selected for the study. Sample from each village was selected by using **Probability Proportionate to Size (PPS) sampling method**. The list of beneficiaries was obtained from the implementing partner CARD. Since beneficiary selection was undertaken independently for each programme, the selection of more than one beneficiary from a single household was probable. **The total sample size covered for the quantitative study was 401 households and for the qualitative, 9 focus group discussions and 9 in-depth interviews were conducted.** The impact assessment aims to critically and objectively evaluate the implementation and performance, to recommend possible ways to add value by showcasing successful initiatives, to determine the reasons why certain results were achieved or not, to draw lessons, and to derive good practices and lessons learned

Figure 1: Overview of project impact

	Health and Sanitation	Skill Training and Livelihood Enhancement	Natural Resource Management	Promotion of Education
Overview of Activities	Health related input awareness session for the community Installation of RO filter	SHG strengthening training on agricultural practices, support for enterprise development	Solar pump set/ deepening or widening of Nallas, budgeting exercise, crop diversification	Educational paintings, school repair work, installation of school library, smart class, RO filters
Areas of Improvement	82% reported reduced expenditure on food due to kitchen garden intervention	54% beneficiaries received training on agricultural practices	9.09% change in income due to agricultural interventions	Promoting quality education through infrastructure development
Challenges	No timely availability of filtered water from the RO units was established.	Participation from the farmers and community for agriculture -based training has been challenging	No grievance redressal mechanism Lack of knowledge dissemination	Capacity building of teachers required RO units not operated to maximum capacity
Recommendations	Options for convergence with the government scheme should be looked at in close consultation with the community	The institutional structure created under the program can be made more robust	A system may be put in place to ensure that the beneficiaries do not face any difficulties post-intervention	An asset management fund/committee needs to be established.

Natural Resource Management

Interventions under HRDP included the **installation of solar water pumps, exposure visits, support for irrigation units, cultivation of floriculture**, activities to enhance agriculture production and productivity such as the adoption of mixed cropping, organizing camps for farmers and Field Schools (FFS). **This has increased the average land holding (owned and leased) from**

4 acres to 4.5 acres (median values). Coupled with improved irrigation, agriculture interventions have been pivotal in enhancing production and decreasing the cost of cultivation and agricultural income from agriculture. **The overall net income change has been to the tune of 9.09%.** Of all the sample respondents. **52% reported increase in income due to crop diversification.**

Skill Training and Livelihood Enhancement

The activities under this thematic area include SHG-based women empowerment; agriculture training and support; livestock management; and entrepreneurship development. **The interventions focused on setting up micro-enterprises which resulted in the economic empowerment of the beneficiaries from the weaker section who were working as agricultural laborers before the intervention as per the qualitative findings.** The HRDP interventions for skill training and livelihood enhancement also incorporated activities like livestock rearing. The HDFC Bank project emphasized skill development of the farmers mainly through agriculture training to improve their skills and knowledge. **Of all the respondents, 29% reported decreased in the use of chemical fertilizers after the intervention.** The training was provided on the preparation of organic manure like neemark and dashparni ark. The idea was to impart skills that enable farmers to enhance their crop productivity, improve the health of the soil through mixed farming, cultivation of horticultural crops, and information on how farmers can protect their crops from weather-related shocks. **As per the qualitative findings, training on the manufacturing of organic manure has subsequently reduced expenditure on health to Rs. 10,000 which was earlier Rs. 15,000-20,000 per year.**

Promotion of Education

Activities under education in Nanded, Maharashtra included (a) Educational Institutions Development: Educational paintings, school repair work, installation of school library - installation of RO filter; repair of washrooms for girls and boys, water storage tank and (b) Awareness Generation session. The intervention under HRDP in promoting education aligns with the central and state government objective of providing quality education to the marginalized section of society. **Due to project interventions, changes were observed in enrollment and dropout percentage of students. 56% of teachers reported Improved attendance of students, 33% reported improved concept retention, decrease in dropout (22%), increase in enrollment (30%), concept retention (33%), improved exam performance grades (15%).** Upgradation of physical infrastructure in terms of providing digital screens providing books and cupboards, educational paintings, and installation of RO filters has led to visible positive outcomes. **According to the qualitative findings, teachers reported that due to the awareness session held, there has been a 20% reduction in the rate of absenteeism.** The awareness session on health and hygiene has resulted in a decrease in the rate of absenteeism owing to children falling ill before the intervention. The program supported the government's vision of providing quality education in terms of infrastructure and services which can empower the vulnerable sections.

Health and Sanitation

Health and sanitation are essential components contributing to rural development. In the programme villages, diverse interventions for improving health such as kitchen garden was promoted. **Of all the sample respondents, 82% beneficiaries reported reduced expenditure on food, and 48% reported additional source of income due to kitchen garden intervention.** Activities under the theme include (a) Health-related awareness input sessions for women and (b) Installation of RO filters in villages. Health awareness input sessions were organised where villagers were made aware of the importance of frequent health checkups, a balanced and nutritious diet,

importance of menstrual hygiene were advocated. Through the project interventions, there is a considerable improvement concerning a better understanding of the health issues in the villages.

Table 1: Summary of key income indicators

Income Indicators (based on median)	Before	After	% Change
Average Net Income from Agriculture (INR)	55,000	60,000	9.09%
Average Productivity of 3 major crops (kg/acre)	700	772	10%

For natural resource management, three indicators have been used for the calculation of HRDI- the average productivity of crops (3 major crops) grown (quintal per acre), percentage of farmers having access to irrigation, and increase in area under irrigation. For the thematic area of skill training and livelihood enhancement, three indicators have been used for HRDI calculation- the percentage change (decrease) in the use of chemical fertilizer, the percentage of respondents following agricultural practices (application of organic manure, construction of vermicompost pits, timely application of fertilizers and pesticides, conservation agriculture). For education, one indicator was used for HRDI calculation- the percentage of teachers and students who reported conducting sanitation, hygiene, and cleanliness awareness generation session. For the thematic area, health and sanitation, HRDI was calculated based on change in land area under irrigation.

Table 2: Overall HRDI Score

Domain	NRM		Skill and Livelihood		Health and Sanitation		Education		Total	
HRDI Score	Base line	End line	Base line	End line	Base line	End line	Base line	End line	Base line	End line
	0.08	0.09	0.04	0.05	0.03	0.05	0.11	0.14	0.27	0.33
% Change	13%		25%		67%		27%		22%	

1. Introduction

1.1 Background of the Study

As part of HDFC Bank's CSR initiative, programs are supported to deliver holistic rural development. Within Parivartan, the "Holistic Rural Development Programme" (HRDP) is the flagship CSR program, under which non-governmental organizations across the country are supported to deliver development interventions. The vision of the program is to create happy and prosperous communities in terms of socio-economic and ecological development which is sustainable. The holistic approach supports the lives of communities by providing necessary inputs on issues like shaping economic independence through skilling, providing basic infrastructural development, and establishing a better ecosystem thereby promoting better living conditions. Developing human capital, natural resources, and infrastructure in poor and backward villages would bring about their socioeconomic transformation.

The program was implemented by an NGO partner Center for Advanced Research and Development (CARD) with the support of HDFC Bank. The major focus areas for intervention were Natural Resource Management (NRM), Skill Development & Livelihood Enhancement, Promotion of Education, Healthcare & Hygiene. However, the extent of the work in each village was undertaken based on the need and varied from place to place.

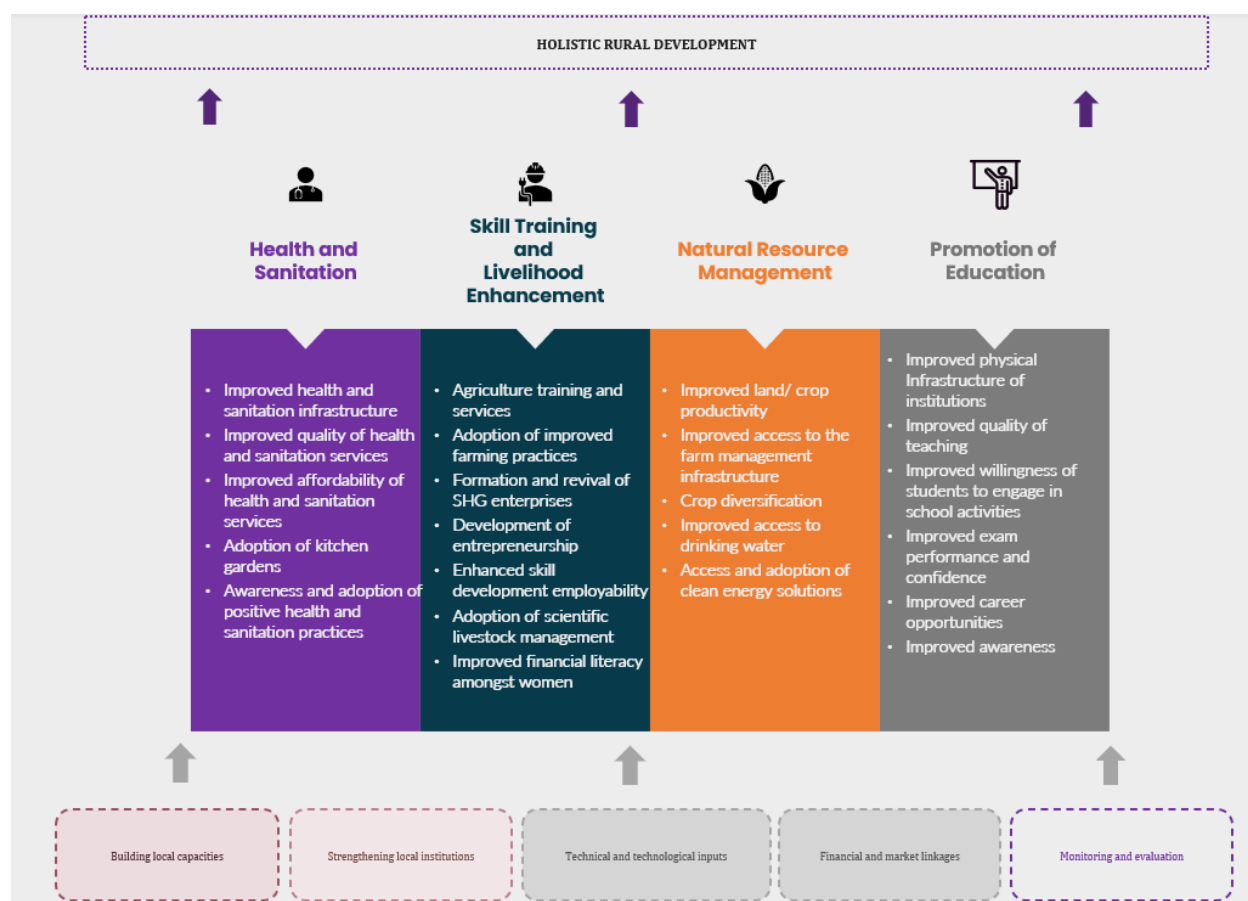
1.2. Partner Organization: Center for Advanced Research and Development

CARD is a non-government organization of Central India, with its activities of research, evaluation, documentation, and program execution running nationwide. It promotes innovative action research and applies its findings for the protection and development of society and the environment. Its programs and activities are designed to be a catalyst that helps bring development to the backward regions and improve the standard of living of the underprivileged. CARD with a head office at Bhopal (Madhya Pradesh) started by developing a strong presence in some distinct regions of central India, namely Gond prominent eastern tribal region (Madhya Pradesh and Chhattisgarh), plateau region of Malwa, agriculturally rich central feudal region and Bhil predominant western tribal region in pockets that have high incidence of poverty among scheduled castes, backward castes and tribals.

1.3. Purpose and objectives of the study

The impact assessment aims at understanding the overall process undertaken by HDFC Bank and the partner organization in implementing the program activities, key milestones achieved, the impact created by these activities, challenges faced, and the manner in which such challenges were handled. The guiding philosophy behind this study is to add value by showcasing successful initiatives and recommend possible ways to address challenges that exist. The impact assessment aims to critically and objectively evaluate the implementation and performance, to determine the reasons why certain results were achieved or not, to draw lessons, and to derive good practices and lessons learned. The study is expected to provide evidence-based findings which would inform HDFC Bank in taking operational and strategic decisions while planning and funding its partner organizations for such programmes. The evaluation was also an opportunity to learn about the relevance of the programmes implemented and their effectiveness.

Figure 2: Conceptual framework of implementation



Agriculture is one of the main occupations in the state of Maharashtra. About 82% of the rural population depends on agriculture for livelihood. The total irrigated area under crop cultivation amounts to about 18% of the gross cropped area. In Maharashtra, rainfall patterns differ from region to region.¹

Issues such as erratic electricity supply have led HDFC Bank's HRDP to focus on installation of solar pump sets that can ensure an adequate supply of electricity and water for agriculture. Apart from agriculture, the programme also focused on providing other livelihood opportunities through goat-rearing units, providing entrepreneurial support in terms of providing training for setting up flour mill and strengthening of SHGs. Through these interventions, the program was implemented to create sustainable communities in 13 villages in the Nanded district of Maharashtra.

Intending to achieve holistic rural development in these areas, the programme has focused broadly on four thematic areas of intervention – promoting education, health and sanitation, natural resource management, skill building, and livelihood enhancement.

¹ https://agricoop.nic.in/sites/default/files/Maharashtra-SAP_V1.3-2.pdf

2. Research Methodology

The assessment used both qualitative and quantitative methods. For each cluster and thematic area, activities completed were identified. The impact generated by these activities was assessed using the criterion of Relevance and Convergence, Effectiveness and Impact, and Sustainability and Replicability. The evaluation process was carried out in a consultative manner involving interactions with both HDFC Bank and CARD teams at key junctures. Under the criteria of relevance and convergence, the evaluation sought to answer whether the design of the program interventions is aligned with the state's plans and priorities for rural development. In addition, the evaluation examined whether the design and implementation of the program were relevant to the local needs of the most vulnerable groups. The evaluation tried to understand contextual factors that influence the program design and its implementation and the extent to which such factors have been considered to tailor the program design to suit the local needs. The study has observed if there has been a convergence/ made use of the existing resources of the government and whether different stakeholders involved have worked together to achieve the outcome of the program.

To assess the impact and effectiveness of the program, the findings seek to establish the values of outcome indicators of all the thematic interventions. These findings are assessed against the outcome indicators finalized during the outcome harvesting stage. Further, through qualitative evidence, the evaluation tries to understand whether and how the program impacted the lives of the community members in the program areas. This was done through an analysis of the program outcomes in light of certain variables identified in consultation with HDFC Bank. The findings from primary quantitative data have been substantiated by the information gathered from discussing with the communities/ beneficiaries, teachers, students, entrepreneurs, and local institutions at the village level. Through primary data, the study has tried to understand if the program has worked on strengthening the community's capacity to ensure sustainability, and whether any of the activities or strategies adopted have been/could be replicated.

2.1 Design and Methodology

A review of various program documents including HDFC Bank's CSR Policy, Rapid Rural Appraisal Reports, Program implementation timelines, Communication, and Documentation Products, and other relevant reports/literature related to the program was utilized for a secondary review. The primary research included a quantitative household survey as well as in-depth interviews and focus group discussions with program beneficiaries and the partner NGO. The outcome mapping and result chain development were undertaken in consultation with the HDFC Bank team. The exercise resulted in the identification of standardized key outcomes and indicators related to each of the program's thematic areas. Based on the standardized list of outcomes and outputs, the questionnaire for the state was developed.

2.2 Sample size and distribution

Quantitative sampling methodology

In this cluster, eight intervention villages were selected for the study.

Stage 1 – Selection of villages

All the intervention villages were selected as sample villages. Sample from each village was selected by using Probability Proportionate to Size (PPS) sampling method. Care was taken to cover the

maximum sample from the villages that have received a maximum number of interventions in order to get appropriate coverage of all components of the program.

Stage 2 – Selection of beneficiaries

The list of beneficiaries was obtained from the implementing partner –CARD. Since beneficiary selection was undertaken independently for each programme, the selection of more than one beneficiary from a single household was probable. Also, there have been instances where a single beneficiary received multiple support for the intervention.

Qualitative sampling methodology

Qualitative tools of in-depth interviews (IDI) and focus group discussions (FGD) were administered for obtaining information about the remaining themes as well as to enrich the household survey information with a deeper understanding. Since there was no baseline available for this evaluation, the recall method was used in the household survey to assess the change that has happened over time. For this purpose, the respondents were asked to recall the value of critical indicators at the start of the program. The sample size covered during the field is as follows:

Table 3: Quantitative sample covered

District	Total Households	NRM	Skill Training and Livelihood Enhancement	Health	Promotion of Education
Nanded (Total)	401	263	356	345	83
Planned	400	100	100	100	100

Table 4: Qualitative sample covered

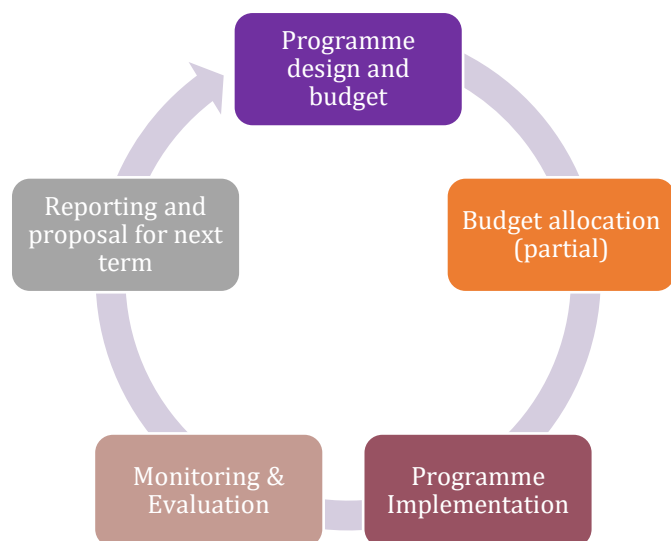
District		Nashik
FGDs	RO installation	1
	SHG enterprise	3
	Vegetable hub/ floriculture	2
	Farm bunding/ horticulture plantation	2
	Street solar light installation	1
IDIs	School teacher	1
	Micro-enterprise- Flour mill	1
	Vermicompost pits/ spiral grader machine	2
	Livestock beneficiary/ Organic manure beneficiary	2
	Spray pump	1
	Parivartak/ sarpanch	2

A team of local enumerators, with requisite education and experience, was hired for data collection. Two days of training at Nanded, Maharashtra was provided to the enumerators and supervisors by the NRMC team.

3. Program review

3.1 Program design and implementation

Figure 3 : Project Planning and implementation process



The programme interventions are decided on an annual basis, with an annual budget allocation based on the proposal by CARD to HDFC Bank. The baseline/ need assessment study was not available for the Nanded project.

Based on preliminary assessments, the partner organization prepared an annual work plan wherein activities were proposed on a need basis. While this approach has helped in providing support for the immediate need of the communities, a systematic approach to resolving issues around such needs and a long-term vision and outcomes towards the thematic areas for HRDP remain desirable.

Based on the observation in the field, budget allocation was largely provided for infrastructure and material support along with skill training and livelihood, whereas behavioral interventions were very limited in the Nanded project.

3.2 Program relevance

The rural population in Maharashtra is predominantly dependent on agriculture and allied activities for their livelihoods and a significant proportion of them are at a subsistence level of income and livelihoods. Intervention villages have been facing the issues of irregular electricity supply, causing water scarcity especially in the summer months. This often leads to low cultivation of crops and decreased productivity. It was difficult for the farmers to cultivate the rabi crops due to water scarcity in the region. Against this backdrop, the interventions were designed around creating infrastructure to support regular supply of water and providing relief from the issue of erratic electricity, by installation of solar pump sets. This has altered the picture in the thirteen intervention villages under the HDFC Bank programme.

Under the HRDP intervention for NRM, activities such as promotion of horticulture plantation, vegetable hubs, exposure visits, on-field demonstration of vegetable cultivation, organizing farmers', and installation of solar pump sets were promoted. The promotion of mixed cropping and cultivation of horticultural crops has an impact on income, especially for smallholder farmers who possess smaller parcels of land. Solar street lights were installed under the intervention to promote clean energy.

The programme has focused on the creation of livelihood opportunities for the economically backward section of society. Under the intervention, the promotion of enterprises such as a **flour mill unit, chatt cutter, tailoring business, promotion of drumstick plantation, and livestock rearing** was introduced to create an additional source of income. The HDFC Bank project has worked towards women's empowerment by strengthening the self-help groups in the intervention villages., This was done to improve the financial situation of women and improve their confidence. For the

smooth functioning of enterprises, training was done for the members, and they were encouraged to promote savings, internal lending, and loan repayment.

While Maharashtra is today one of the most affluent states in India in terms of its per capita income, it continues to have high levels of poverty and inequality which gets reflected in the health outcomes of the state. Maharashtra's performance in the health sector is average even though it is the most urbanized and the largest state economy in India. Deaths due to malnutrition, low levels of access to various healthcare services, and lack of sanitation and hygiene practices are some of the reasons why the state is still struggling to achieve the desired health outcomes.² Although Maharashtra is the largest state economy, and second most populous, the performance of the health sector is average. The public health system is deficient in terms of spread and the number of hospitals close to the community. The systemic vulnerability due to a massive shortfall in specialists has become evident with the spread of the coronavirus disease.³ **Study focusses on promotion of kitchen garden to increase the consumption of fresh vegetables along with conducting activities like health camps. Under the intervention on health of the community, RO units were set up for the rural community to access safe and clean drinking water, thus avoiding water-related diseases.**

As per the ASER report 2018, although learning outcomes in the state of Maharashtra have seen substantial improvement in the last few years, the state has not been able to match its performance from a decade ago. In Maharashtra, drop-out rates show a slightly decreasing trend at the upper primary and secondary levels but vary at the primary level. Compared to primary and upper primary, drop-out rates are high at the secondary level. If we look at the gender-wise distribution, drop-out rates are higher among girls as compared to boys. The intervention under HRDP in promoting education aligns with the central and state government's objective to provide quality education to marginalized sections of society. **HRDP is working on promoting quality education through infrastructure development such as the installation of water post/ RO filters, school repair work, and educational paintings, renovation of anganwadis, and toilets repair work.**

² <https://www.cehat.org/go/uploads/Hhr/hhcm.pdf>

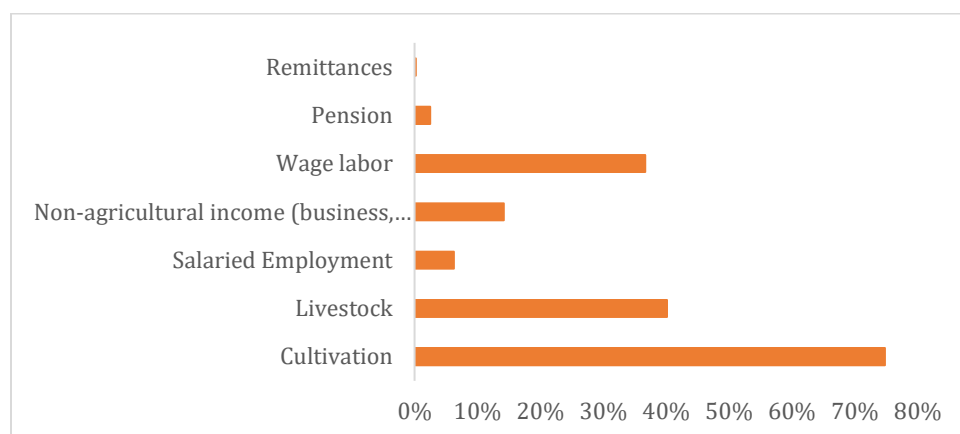
³ <https://www.adb.org/sites/default/files/publication/783876/sawp-091-assessment-maharashtra-state-health-system.pdf>

4. Study Findings

4.1 Demographic profile

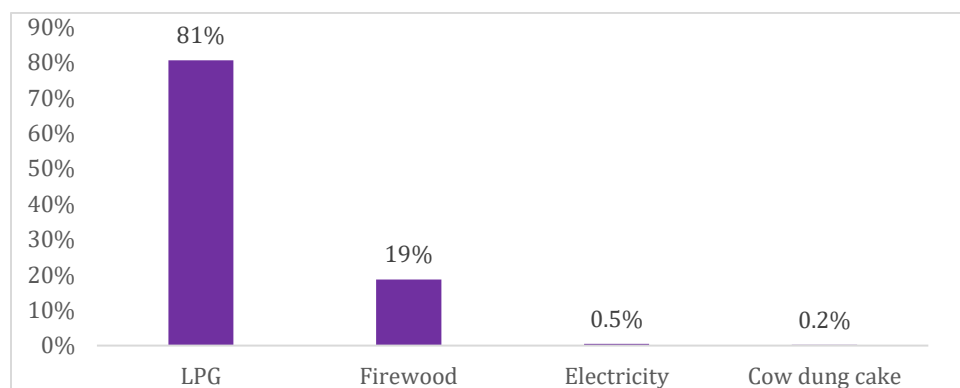
This section provides the demographic profile of the respondents covered in the sampled program villages under the assessment. In the sample villages, 59% are female, whereas 41% are male. In terms of the education status of the respondents, about 19% have completed their secondary education. The majority of the sample respondents (47%) belong to the other Schedule Castes (SC) in the intervention villages. About 58% of the sample population reported cultivation as their major source of income.

Figure 4: Source of income of household



About 23% of the households reported completing education till 10th standard. 13% of the households are illiterate, literate but no formal education (5.7%), up to 5th std (10%), 6th to 8th std (16%), 11th to 12th std (15%), and graduate (12%). 99% of the households reported electricity as the major source of lighting.

Figure 5: Source of cooking fuel



4.2 Natural resource management

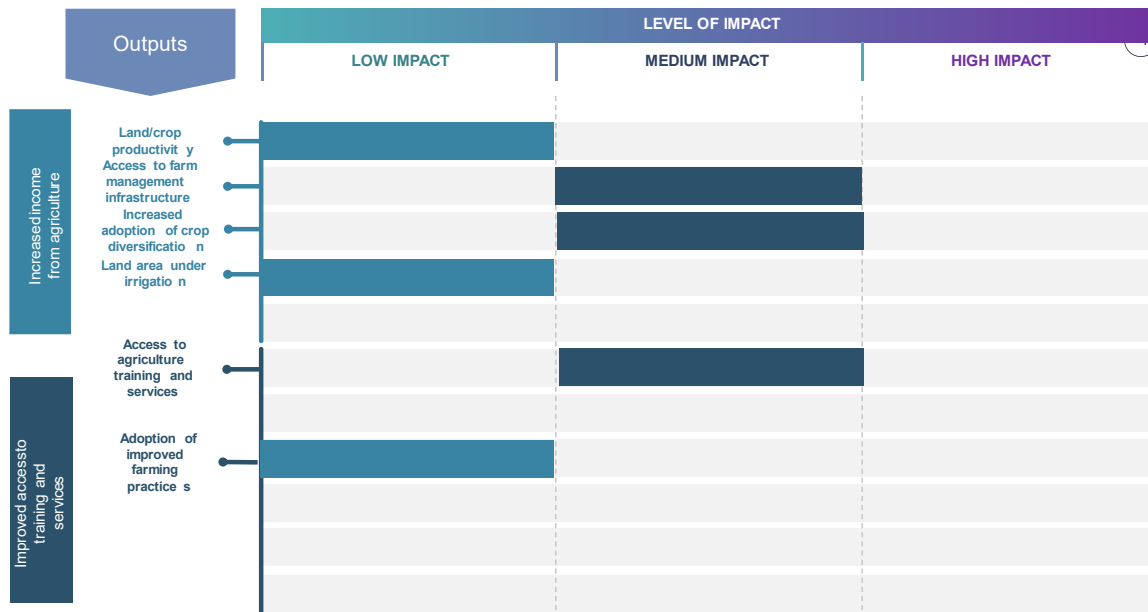
Natural Resource Management is one of the most important pillars of HRDP. The interventions in this pillar were designed and implemented keeping in view the needs of the community as well as suitability to the geography. The programme comprised of interventions under various activities such as installation of solar pump set, water management in agriculture by conducting desiltation of existing water harvesting structure, exposure visit, setting up of solar lights in villages, organizing farmers camp and awareness drive. Since the focused region is drought-prone, intervention in NRM is expected to ease the water-related issues for both household and agricultural purposes.

Table 5: Activities under Natural resource management

Activity Category	Activities
Water management	Solar pump set, deepening and widening of nallas
Farm management	Promotion of mix cropping, horticulture plantation, soil test kit
Awareness generation	Organize mela, organize community awareness drive
Clean energy	Installation of street solar light

4.2.1 Effectiveness and Impact

Figure 6: An overview of project effectiveness and impact in natural resource management (based on the quantitative findings)



The interventions by HRDP have resulted in achieving low to medium impacts across different output indicators under the project intervention in project clusters of Maharashtra. In summary, the following indicator boxes show how the outcome indicators the programme has performed. While

the overall access to water for agriculture has improved, the average increase in income from crops has low to medium impact.

Image 1: Solar pump, Sugaon BK



Image 2: Drumstick plantation, Sugaon BK



Water management for agriculture

Field-level qualitative findings have ascertained that the installation of solar pump has helped farmers have continuous access to irrigation facility which was earlier affecting the crop productivity. According to qualitative findings, project intervention villages faced issues due to erratic supply of electricity in the villages. The problem was more prevalent in the summer months. **With the**

installation of solar pump sets in the field, farmers have regular supply of water required for their crops. These has resulted in improving the crop productivity. Farmers have been able to adopt the practice of mixed farming, which includes plantation of drumstick. This has provided an alternative source of income for families.

About 57% of the beneficiaries stated that they received support for crop diversification from the HDFC Bank. The intervention has been largely beneficial for small and marginal farmers as it has generated a source of income for them. Under the intervention, soil test kits were introduced to optimize the use of NPK and increase soil productivity.

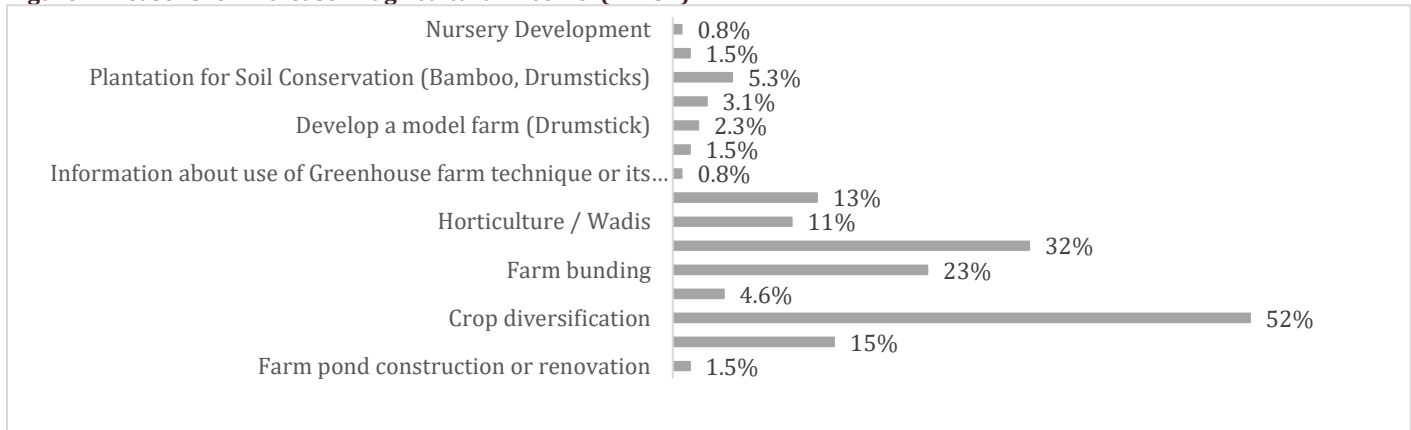
Increase in income from agriculture

Interventions such as water management in agriculture, adoption of crop diversification and floriculture, soil testing, adoption of horticultural crops, installation of vermicompost pits, and reduction in input cost have led to increased income from agriculture. Due to the agricultural

intervention and increased availability of water under the HRDP project, **85% of the respondents stated that there was an increase in income. Before the intervention, the average net income (median) from agriculture was Rs. 55,000 (Rs. 134,766 when based on mean) which increased to Rs. 60,000 post-interventions (Rs. 1,70,601 mean) which is an increase of around 9.09%.** On performing the one-sample t-test, as the significance value is less than 0.05, it can be concluded that net income has significantly increased as compared to the baseline median value. ($p > 0.05$ at 95% confidence interval). Of all the respondents, 15% reported an increase in income due to HDFC Bank intervention in vermipits. The other responses were - HDFC Bank intervention in crop diversification (52%), HDFC Bank intervention in farm bunding (23%), HDFC Bank intervention in fertilizers and pesticides (32%) and HDFC Bank intervention in solar water pumps (2%). **The gross income before the intervention was Rs. 1,17,500 (Rs. 2,28,568 mean) which increased to Rs. 1,30,000 post-interventions (Rs. 2,82,409 mean) which is an increase of 14%.** On performing the one-sample t-test, as the significance value is greater than 0.05, it can be concluded that income has not

significantly increased as compared to the baseline median value. ($p > 0.05$ at 95% confidence interval)

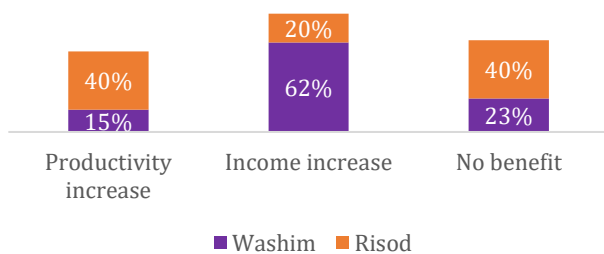
Figure 7: Reasons for increase in agricultural income (n=131)



Adoption of horticulture and crop diversification

Of the sample respondents, 52% reported an increase in income from crop diversification. The

Figure 8: Perceived benefits of crop diversification (n=47)



qualitative findings indicate that there has been an overall increase in income. Other than increasing income from horticulture, many of the farmers have obtained alternate sources of income as well from the cultivation of vegetables such as chilly, tomato, lady finger etc. According to the qualitative study, respondents highlighted that the quality of produce has been good owing to the technical information provided under the project.

Use of clean energy solutions

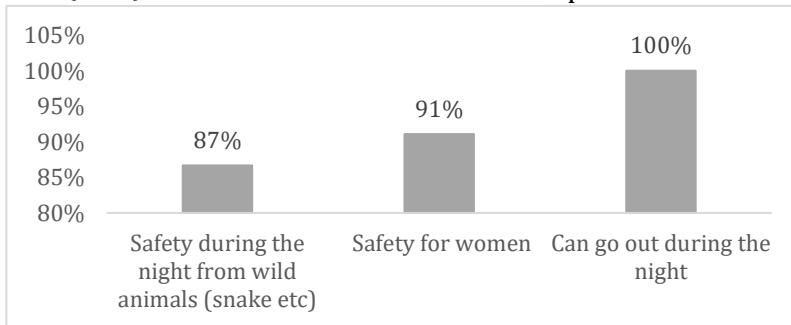
Providing solar streetlights under the HRDP intervention has enhanced basic energy access to rural households. Installation of solar-powered lighting has helped improve the quality of education in rural areas, and safety for those who return from fields at night and for anyone who wants to use public spaces in the evening.

The selected villages in the project areas had an erratic supply of electricity prior to the project. The qualitative findings have shown that the use of solar street lights has resulted in improved quality of lighting post-sunlight hours.

Image 3: Solar street light, Pimpalgaon Village



Figure 9: Benefits of street solar lights (n=90)



The program has installed street solar lights in the intervention areas. Respondents have been using solar lights for studying, lighting, and other purposes. When asked about the benefits of solar light, 87% reported safety during the night from wild animals such as snakes, 91% stated safety for women after dawn as now they can walk freely, and 100% reported that they can go out during the night. Respondents have reported that the solar lights have provided them and their families relief from erratic electricity as now their children are able to study after the sun set which can improve their grades and study timings. Households have reported that solar streetlights have provided cost-effective and environment-friendly solutions to access energy.

Beneficiaries now organize monthly gram panchayat meetings and other cultural events under solar light when there is no electricity. The solar street lights have been strategically erected at locations where no other lighting source was present and so the maximum number of households can benefit. The intervention providing

street solar lights in the program villages has made it safe for women to walk around in the village even after dark. In the past before the intervention, villagers, especially women and children could not go out once the sun goes down as the streets would usually go completely dark at night. Respondents reported an increase in the level of safety after the installation of solar streetlights which helped in breaking the darkness after sunset.

Moreover, there are certain challenges that the community shares after receiving benefits under the intervention. The challenges reported were the high cost of maintenance, and repair issues once damaged.

4.2.2 Case Study 1: Street solar light installation

Solar street lights were installed in Sugaon village under HRDP intervention. Prior to the project, there were issues of safety for women and children in the village. Women did not move out of their homes after day light since there was no source of lighting in the alleys. Earlier, children would also not play after dark. With solar street lights set up at the major entry and exit locations in the village, women and children safely move out now.

The solar street lights recharge during the day and switch-on automatically each night and function till early morning hours. Women inhabiting nearby come out of their home, sit and complete their chores while also socializing with their neighbors, which was not possible earlier. Gram panchayat meetings that were disrupted earlier due to erratic electricity supply can now be held under street light.

As stated by the beneficiaries, no challenges exist with the functionality of the solar street light. For the past three years, the solar street light has been functioning well. She further highlighted that social harmony in their neighborhood has improved since people sit in the common area under the street lights and discuss their day-to-day life and issues. Realizing the usefulness of the installation, she also highlighted that if there would be any challenges with the street lights installed under the HRDP project, they would contribute towards its repair works.

Image 4: Street solar light, Sugaon KH



4.3 Skill Training and Livelihood Enhancement

In the project area, a significant proportion of the population depends on agriculture for their livelihood. This sector has been the single largest provider of employment to the rural people in the block. Animal husbandry is the next largest provider of livelihood to the farmers in the area and has been helping them to reduce pressure on crop production. Apart from that, wage labour contributes to the bulk of the livelihood of poor and vulnerable households, especially for the small farmers and landless who are mostly unemployed or underemployed. The HDFC Bank Parivartan project focused on skill development and livelihoods in the thirteen villages of in the Nanded district, especially for the sections in the area that belong to traditionally marginalized social and occupational groups.

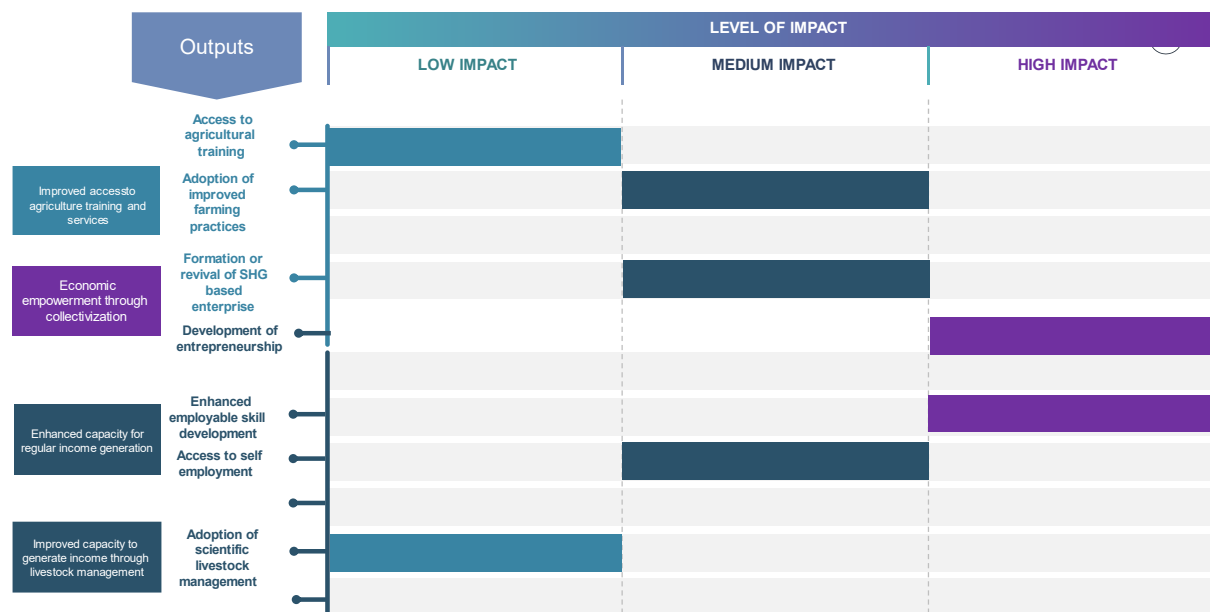
Figure 10: Activities under skill training and livelihood enhancement

Activity Category	Activities
SHG-Based Women Empowerment	Strengthening of SHG's
Agriculture Training and Support	Training on agricultural practices, support for horticulture and floriculture plantation, training on preparation of organic manure and vermicompost pits
Livestock Management	Livestock rearing
Entrepreneurship Development	Establishment of flour mill unit, noodles making unit, tailoring/boutique shop

The activity-wise number of beneficiaries covered during the study is given in the methodology and sampling section. Further, the relevance, effectiveness, and sustainability of activities under skill training and livelihood enhancement will be discussed in detail.

4.3.1 Effectiveness and Impact

Figure 11: An overview of project effectiveness and impact and skill training and livelihood enhancement (based on the quantitative findings)



Agriculture training and support

Figure 12: Proportion of households who received trainings/ support in Agriculture (n=184)

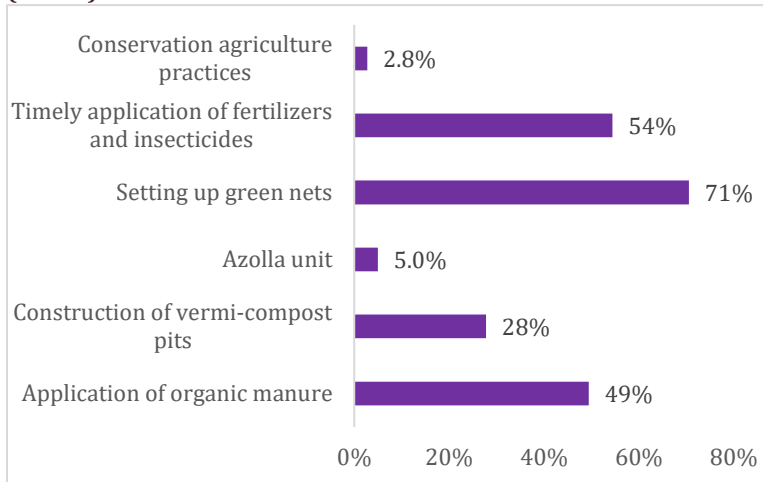


As per the quantitative survey in the project area, of the respondents, 54% received support/ training on agricultural activities under the HRDP intervention.

The awareness about sustainable farming practices among the respondents was - the application of organic manure (56%), construction of vermicompost pits (26%), timely application of fertilizers and insecticides (54%), and conservation of agricultural practices (5.5%). Trainings were conducted under the intervention. 67% of the respondents reported that the training was useful.

Figure 13: Practices learnt through HDFC Bank training

(n=180)



34% of the respondents reported that the training helped them in improving awareness about sustainable farming practices, whereas 44% of respondents stated that the intervention has helped them in reducing input cost, 58% of the respondents stated that training helped in improving capacity to increase crop production and 61% reported a reduction in crop loss or diseases. **Under the intervention, training was conducted on-farm**

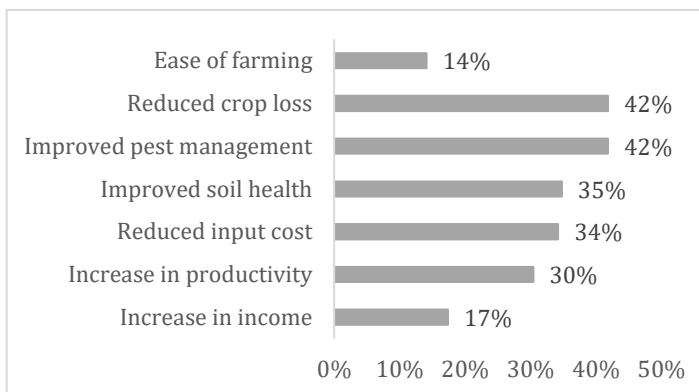
techniques, demonstration plots, and farm field schools, and exposure visits were held at KVK Pokarni (Parbhani district)

(n=123)

Image 5: Chaff cutter unit, Sugaon Bk., Nanded



Figure 14: Perceived benefits of farming practices: Percentage of respondents



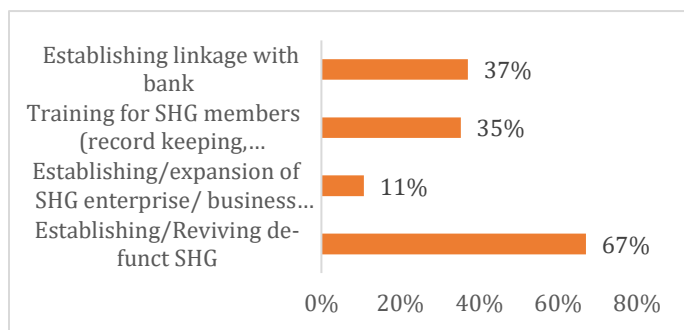
Along with this, the qualitative study indicates that the farmers were trained in manufacturing natural fertilizers like jeevamrut, neemark and dashparni ark. As per the qualitative findings, **training on the manufacture of organic manure has subsequently reduced expenditure on health from Rs. 13,000 to Rs. 10,000 per year.**

Of all the sample respondents, 81% of the beneficiaries reported increased use of natural fertilizers after the project intervention. The training was provided under the intervention on the preparation and use of vermicompost, dashparni ark, lamitarark and neem ark. When asked how the use of natural fertilizers has helped them, the response was decreased use of chemical fertilizers (47%), decreased use of pesticides (32%), decreased need for water (26%), decreased labour requirement (35%), improved production (59%), improved quality of produce (50%), and improved health of soil (55%)

Economic empowerment through collectivization

In the project area, there were several informal groups formed by women for addressing their routine credit needs for consumption purposes before the project commencement. All the SHG groups were formed under the UMED programme of the government of Maharashtra before the commencement of the project. Although HDFC Bank intervention did not work towards the formation of SHG groups, efforts were put towards strengthening the existing groups by providing them with financial literacy as well as through training to start a small business. Further, various enterprise support options were provided to SHG members such as livestock rearing, flour mill unit establishment, noodles making unit enterprise, and tailoring/ boutique shop under the intervention.

Figure 15: Support services for SHG (n=167)



The effort of CARD as a part of the project has been to provide better skills, abilities, and functional capacities for employment and income-generating activities among the poor and marginalized members of the SHGs in the area.

About 17% of the SHG members reported income generation as one of the key benefits of being an SHG member. Besides

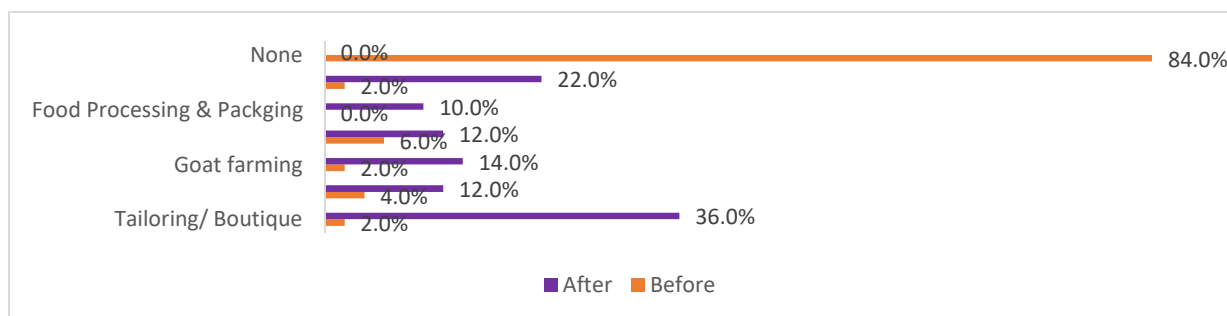
this, having personal savings (90%), an increase in confidence (88%), and getting a loan with less interest amount (71%) were other benefits reported by the members of SHG.

The project endeavour was to imbibe savings habits in the SHG members. The SHG groups were further mobilized to start their enterprises thus economically empowering the women and working on their financial and social inclusion. The project helped in getting access to collateral-free loans which further strengthened the functioning of the group. With the training received under the intervention, the credit absorption capacity of individual members improved substantially, according to the qualitative findings. The work on providing enterprise support to the women was to achieve financial independence for women and improve their confidence to expand the enterprise. **According to the qualitative findings, the flour mill unit was provided to a widowed woman in Pimpalgaon village. Due to this intervention now, she is earning Rs. 6000 monthly.** She reported that the intervention has made her financially independent and now she can take good care of her children's health and education. Earlier women used to work as agricultural labourers when in financial distress. The intervention has provided them with an alternate source of income. On average, the income of the SHG members has increased by 20-30%, according to the qualitative findings.

When asked about the pieces of training received under the intervention, of all the respondents, 66% reported that the project intervention helped them in SHG management (meetings, record keeping), 53% stated that they benefitted in bookkeeping, 61% benefitted in lending on savings management, 17% stated that it helped in enterprise or business activities, benefitted from bank linkages.

About 96% of the respondents stated that their SHG is currently active. SHG groups in the project still follow the method of internal lending, wherein members of the group can borrow money at a 1-2% interest rate. Members attend monthly meetings and save anything ranging from Rs. 100-200 a month (varying for groups). Once the group achieves sufficient collection, the loaning mechanism begins.

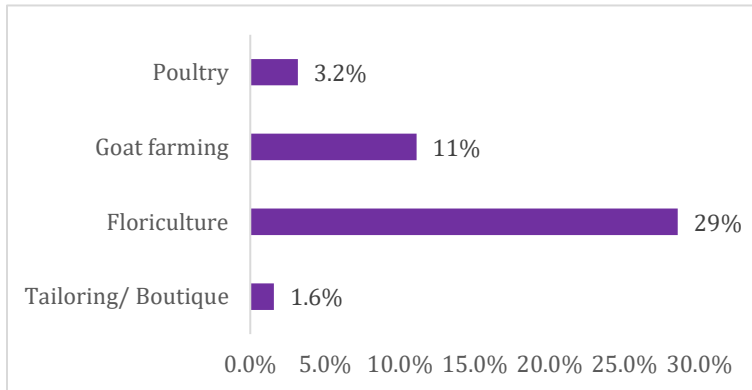
Figure 16: Proportion of SHG members involved in different enterprises before the project and supported



Most of the groups created (or revived) under the HDFC Bank project have around Rs. 60,000 to Rs. 70,000 in savings. **The average monthly income before the intervention from SHG activity was Rs. 1000 which increased to Rs. 4500 (median values) which is a 350% change. On performing the one-sample t-test, as the significance value is less than 0.05, it can be concluded that income has significantly increased as compared to the baseline median value. ($p < 0.05$ at 95% confidence interval).**

Skill and entrepreneurship development

Figure 17: Respondents currently involved in enterprises (n=36)



The HDFC Bank project interventions focused on setting up micro-enterprises by providing them with noodles machine, flour mill, goatery, chaff cutter and spiral grader machine. Setting up micro-enterprises resulted in the economic empowerment of the section of society who used to work as agricultural wage labourers or casual wage labourers before the intervention. Respondents stated improved confidence to establish enterprises due to skill training and

livelihood activities.

Figure 18: HDFC bank support in enterprise development (n=74)

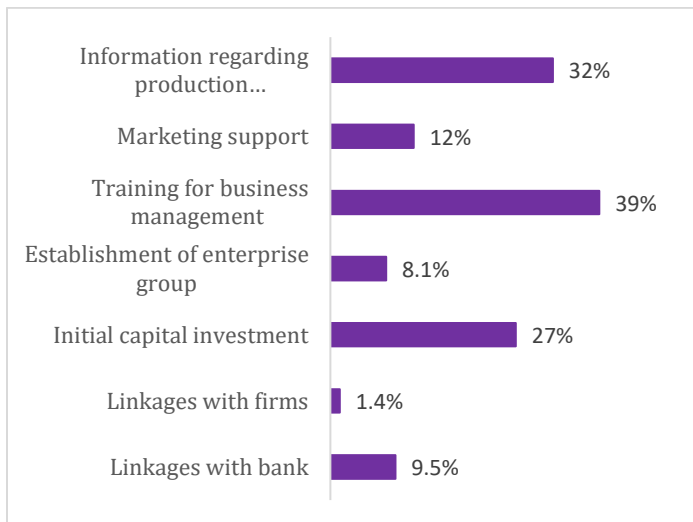


Image 6: Flour mill unit, Pimpalgaon

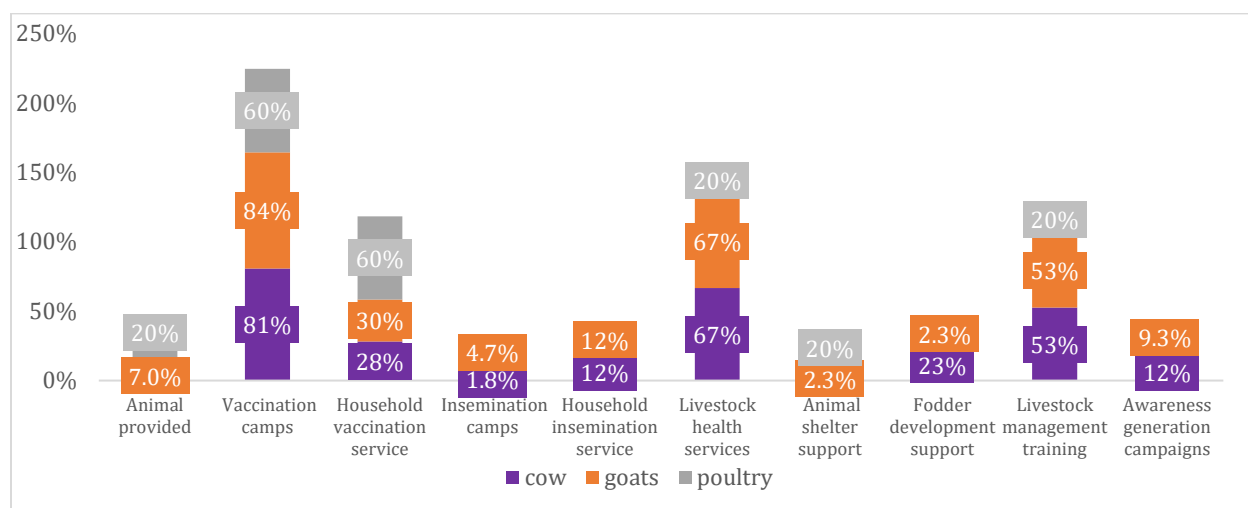


Findings from the qualitative study report that most of the respondents were satisfied with the quality of support received. The intervention has improved the income of the beneficiaries which has led to several other benefits such as saving time, better health treatment for families, and better education for children. The enterprise development has created an additional source of livelihood for the beneficiaries as they now earn an extra source of income besides working as agricultural labourers or livestock rearing. However, at times constant maintenance and quality of the machine such as the dal mill or flour mill unit can prove to be a bottleneck.

When asked about the benefits gained through the project support in enterprise development, 9.2% reported regular income generation, 18% stated starting a new business activity, about 51% of the respondents reported an increase in income, 42% stated an increase in savings, 20% of them stated business expansion, 52% reported business skill development and 25% reported additional source of income. **There is increase in income due to enterprise development support under the HDFC Bank project (median values). The average monthly income before the intervention from the enterprise was Rs. 2,000 whose median values increased to Rs 4,500 post-project intervention which is an increase of 125%. On performing the one-sample t-test, as the significance value is less than 0.05, it can be concluded that income has significantly increased as compared to the baseline median value. ($p < 0.05$ at 95% confidence interval).**

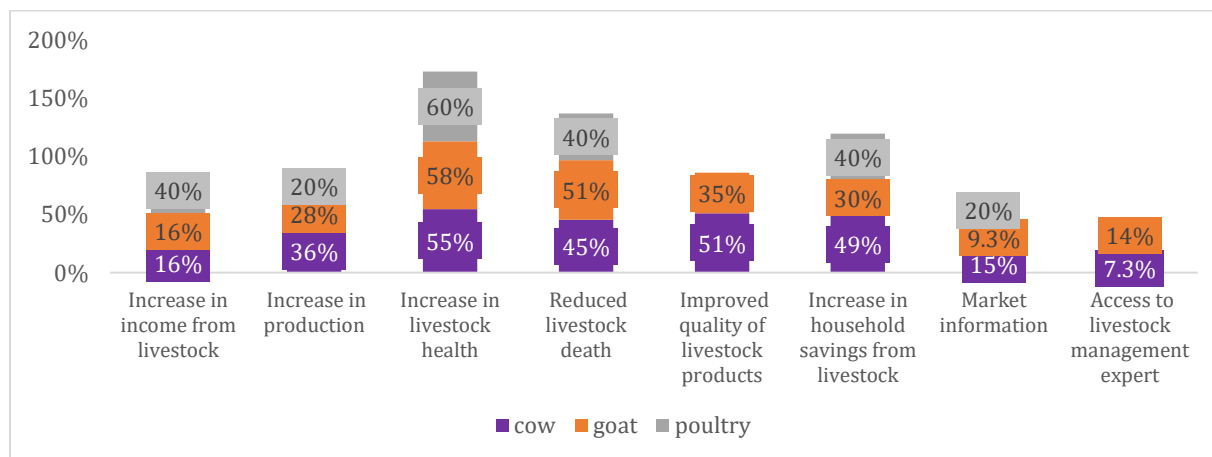
Livestock Management

Figure 19: Project services received for different livestock (n=126)



Proportion of households for which support was received included cows (47%), buffaloes (36%), goats (52%) and poultry (4.1%). The intervention included providing goats to the beneficiaries, conducting awareness generation campaigns, conducting animal health camps, and assisting the beneficiaries in availing of livestock insurance services provided by the state government.

Figure 20: Benefits received from livestock management (n=126)



When asked about the types of livestock, the beneficiaries have after the intervention, the response was - cows (49%), goats (36%), and buffalo (54%) and poultry (7%). **Before the project the monthly average income of the beneficiaries from livestock was Rs. 1,500 (Rs. 5,976 mean), which increased to Rs. 2,500 (Rs. 5,680 mean) after the project intervention. Thus, the proportionate change in income due to livestock management intervention is 66%. On performing the one-sample t-test, as the significance value is less than 0.05, it can be concluded that income has significantly increased as compared to the baseline median value ($p < 0.05$ at 95% confidence interval).** During the animal health camps, a health card was provided for each livestock along with the vaccination and insurance policy details. However, beneficiaries during the qualitative study reported that they faced several difficulties during the pandemic times due to restrictions imposed. While most respondents during the qualitative study said that they had benefitted from an increase in income, they felt that the programme could have focused on follow-up services to ensure the sustainability of the intervention

4.3.2 Case Study 2: Noodle making machine

Vijaymala Ingle is a 35-year-old woman from Khamtana village. She belongs to the Maratha caste. There are a total of six members in her family. She has two school going children. Vijaymala and her husband work as agricultural labourers. Before the intervention, their household's livelihood entirely depended on meagre income earned from working as agricultural labourer.

Under the HRDP, Vijaymala received project support when she was provided a noodle making machine under the intervention in the year 2019. For purchasing the machine she herself contributed Rs. 4000 whereas Rs. 12,000 was contributed by HDFC Bank. This has created a source of income for her and now she is more confident financially. Vijaymala has also started tailoring business from the profits she received from noodles making business.

As the machine was easy to use she did not require any additional training. After starting the enterprise, she earns on an average Rs. 25,000 to 30,000 per month. She has started receiving orders for noodles from neighbouring villages. She sells 5 kg of noodles for Rs. 70 which makes it affordable for other villagers as well. *"Maximum demand for noodles is during the festive season and summer months. Noodles making machine helps me in delivering the order within time and as the quality of noodles are really good, its demand has been increasing not only in my own village but also in the neighbouring ones"*

Vijaymala stated that the assistance was provided timely and suited to her needs. Further, she commented that the HRDP intervention provided her with a stable and alternate source of income because of which she is able to give quality healthcare and education to her family.

Image 7: Noodles making machine, Dhanegaon village



4.4 Health and Sanitation

Health and sanitation are essential components contributing to rural development. In the program villages, diverse interventions for improving health were carried out. Mapping of the villages was done in the initial phase which was later followed by the execution of the program. During the designing of the project, it was observed that villagers do not have access to clean drinking water and there was less awareness with regard to the health and sanitation practices that need to be followed. The intervention focused on creating awareness by organising health camps for villagers and installation of RO filters.

Image 8: Activities under health and sanitation

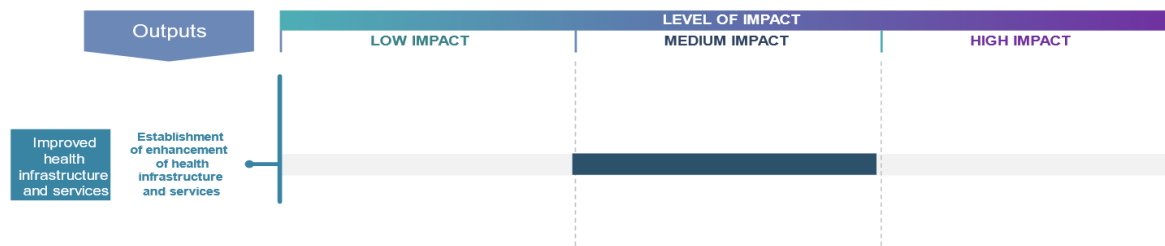
Activity Category	Activities
Health	Health camps, installation of RO filter, kitchen garden

The activity-wise number of beneficiaries covered during the study is given in the methodology and sampling section. Further, relevance, effectiveness, and sustainability for activities under health and sanitation are discussed in detail.

4.4.1 Effectiveness and Impact

Under HRDP, efforts were undertaken to advocate for the importance of hygiene practices so that the early diagnosis of diseases and the incidence of undernutrition among women and children or infectious diseases could be avoided. The health and sanitation interventions in the project area aim to improve health-seeking behaviour among disadvantaged sections of the community.

Figure 21: An overview of project effectiveness and impact and skill training and livelihood enhancement (based on the quantitative findings)



Improved health infrastructure and services

Image 9: Installation of RO filter, Puyini village, Nanded



Under the intervention, RO purifier units were established in the villages. The qualitative study indicates that before the project intervention, villagers did not have access to clean drinking water (as water has high fluoride levels). This may increase the risk of skeletal fluorosis and dental fluorosis. As per the qualitative findings, men and women above the age of 45 years faced many health issues due to high fluoride content in the water. **After the intervention, villagers**

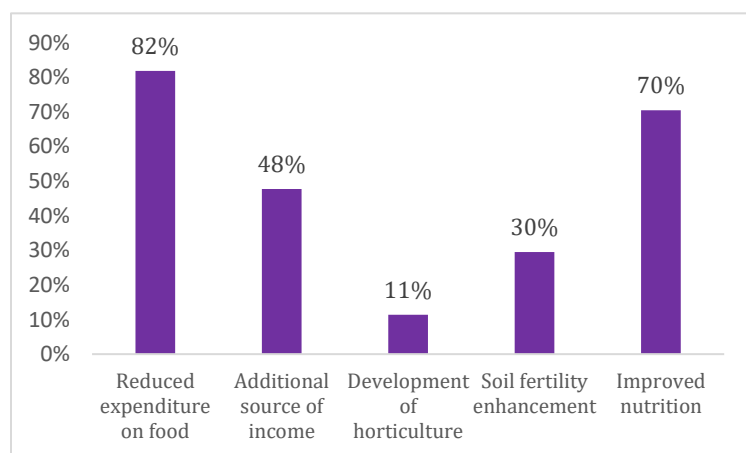
have access to clean drinking water which has considerably reduced the occurrence of diseases.

On average, one RO unit was established in each village. Qualitative findings report that accessibility to clean drinking water post-intervention substantially improved the health of the villagers. Before the installation of the RO filter under the intervention, access to clean drinking water was difficult. After the installation of RO purifier with a storage capacity of the tank being 1000 liters, clean drinking water is easily accessible to the villagers. The repair and maintenance of the RO unit requires an average expenditure of Rs. 1000-1500 per year per village. Even the neighboring villagers have been benefitting from the purified RO water, wherein the key benefits were improvement in health and prevention of diseases. While most respondents said during the qualitative study that they had benefitted from the installation of a water purifier unit, they felt that the program could have focused on some of the bottlenecks such as erratic electricity supply and the requirement for the greater capacity storage tank.

Through the project interventions, there is a considerable improvement concerning a better understanding of the health issues in the villages. Beneficiaries reported that the information given through health camps and community awareness generation sessions helped villagers by improving awareness of health practices and improved confidence to openly discuss the health issues they faced.

Kitchen garden

Figure 22: Perceived benefits of kitchen garden (n=127)



The programme has promoted nutritional kitchen gardens. Under the intervention, beneficiaries received vegetable seeds and plants like spinach, coriander, brinjal, tomato, lady finger, cucumber and chili. While the beneficiaries mostly cultivated for self-consumption (84%), some of them were able to sell the surplus (16%)

When asked if there has been any change in the amount spent on fruits and vegetables since the project started, 81% reported a decrease in the amount spent as now chemical-

free fruits and vegetables are easily available at home. Of all the respondents, 98% reported an increase in the quantity of consumption of vegetables since they started kitchen gardening. On average, Rs. 100 (median) was saved every week on buying fruits and vegetables.

4.5 Promotion of Education

The work of HRDP in promoting education aligns with the Sustainable Development Goal (SDG) 4, which aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.”⁴ In the assessed programme clusters, HRDP is working on promoting quality education through infrastructure improvements and various other activities as listed below:

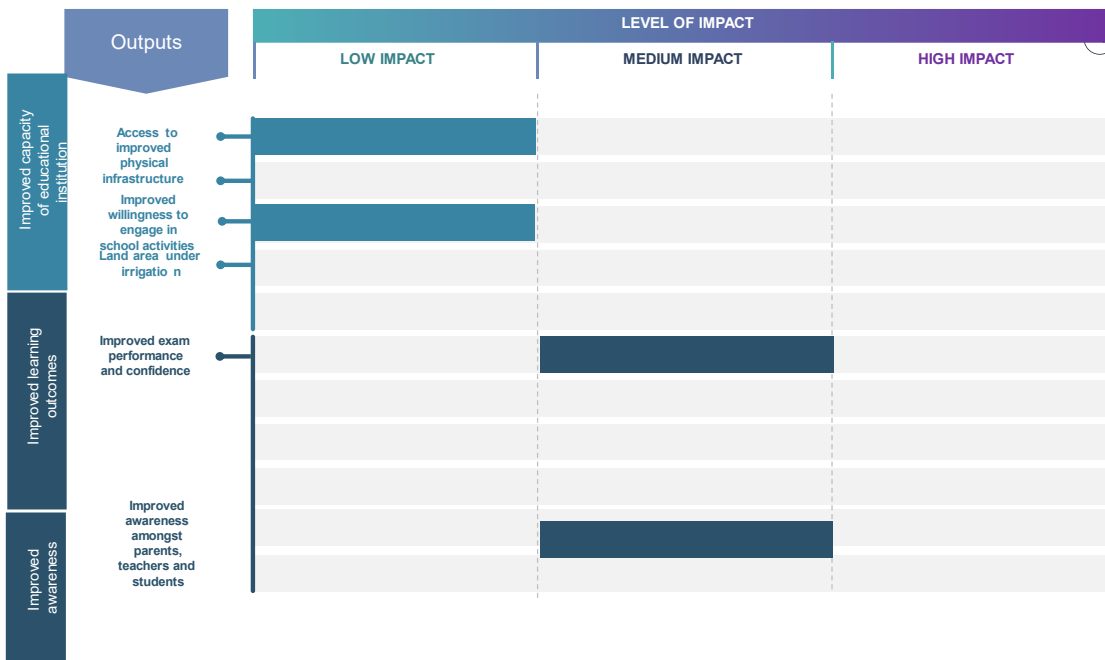
Table 6: Activities under Education

Activity Category	Activities
Educational Institutions Development	Educational paintings, school repair work, installation of drinking water posts/RO filter, setting up of computer lab, repair of separate washrooms for girls and boys
Awareness Generation	Awareness generation session

The activity-wise number of beneficiaries covered during the study is given in the methodology and sampling section. Further, relevance, effectiveness, and sustainability for activities under education will be discussed in detail.

4.5.1 Effectiveness and Impact

Figure 23: An overview of project effectiveness and impact on education (based on the quantitative findings)



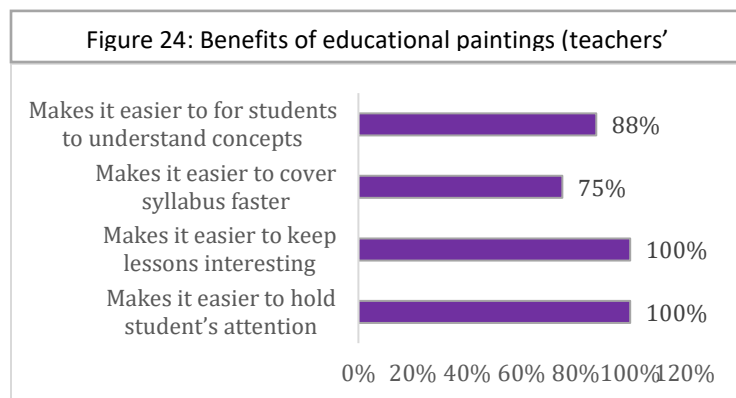
⁴ Sustainable Development Goal 4 (SDG 4) | Education within the 2030 Agenda for Sustainable Development (sdg4education2030.org)

Educational Institutions Development

The intervention under HRDP has resulted in achieving better learning outcomes in schools due to the upgradation in physical infrastructure facilities such as repairing of school, setting up of computer lab, RO filters for clean drinking water, setting up of water storage tanks and educational paintings. The improvement in the facilities has been by making learning more joyful using educational paintings, providing safe and clean drinking water for children, increase in attendance and enrollment, and decrease in dropout ratio of students.

Under the intervention, science materials were provided to the students that have considerably improved grasping power and increased interest in learning outside of textbook knowledge. **Providing computer labs in the schools under the HDFC Bank project made learning far more engaging and interactive. This considerably increased the enrollment ratio according to qualitative findings.** During the qualitative study, teachers reported that due to the upgradation of the school infrastructure facilities, they were able to deliver the courses more efficiently and the quality of teaching was also enhanced. Setting up computer labs under the intervention has helped students learn basic computing skills.

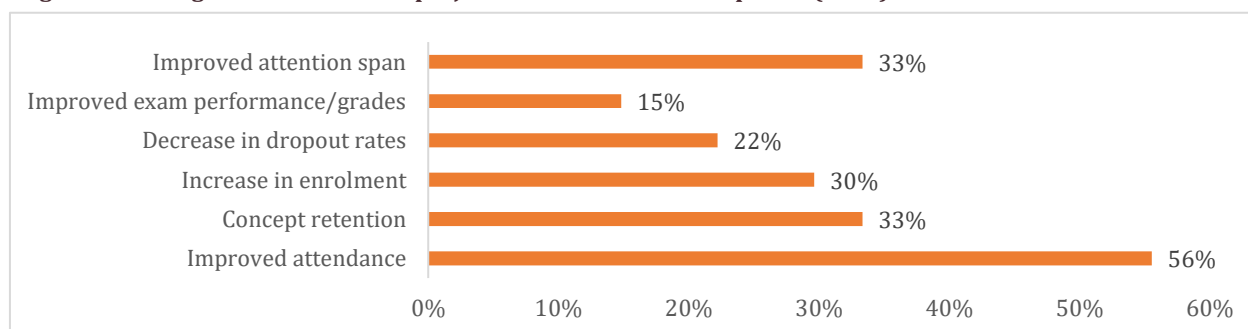
Image 10: Hand wash station, Puyni



When asked about the support received from the HDFC Bank, 81% of respondents stated that the construction and repair of separate washrooms was supported under the HRDP intervention. Sports equipment's were provided under the intervention as reported by 81% beneficiaries. As per the survey findings, 41% of respondents stated that under the intervention, schools were supported with learning materials whereas 7.4%

stated that the schools received support under learning aids such as black or white board. When asked about the changes observed due to infrastructure development, 86% of the respondents reported improved attendance, concept retention (86%), increase in enrollment (64%), decrease in dropout ratio (36%), improved exam performance (43%), and improved attention span (43%).

Figure 25: Changes observed due to project infrastructure development (n=27)

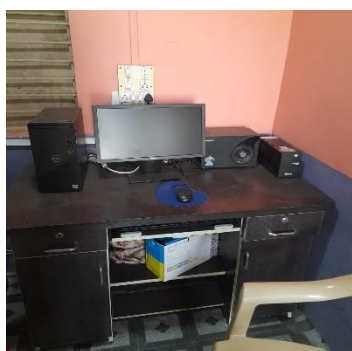


Teachers also received training during the project period. When teachers were asked about the kind of capacity-building support received through the project, 22% stated training on teaching material development, training on innovative teaching methods (22%), training workshops on child development (19%), computer/ digital training (11%).

Figure 26: Improvement in school facilities in the last 3-4 years (as per household respondents)

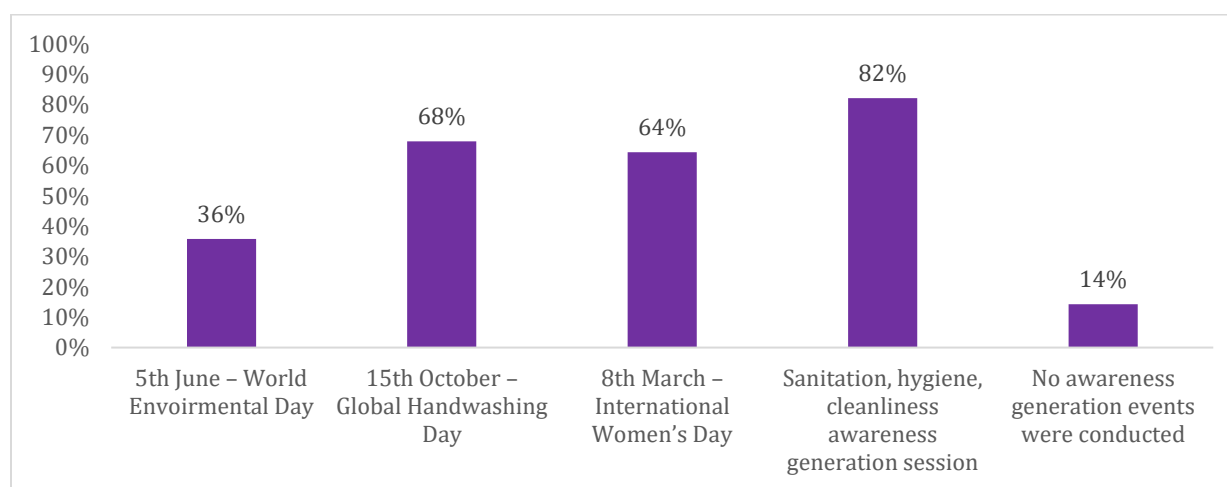
Of all the respondents, 60% reported a decrease in health issues caused earlier due to unsafe water, 80% reported that now they can spend more time at school and 60% stated that they had access to clean drinking water after the project. When teachers were asked how education paintings help them in teaching, the responses were that this made it easier to - hold students’ attention (86%), keep lessons interesting (86%), and understand concepts (71%).

Image 11: Computer lab, village kamtha



Under the intervention, various awareness generation sessions were conducted at schools such as sanitation, hygiene, and cleanliness awareness generation sessions, world water day, international literacy day, the international day against drug abuse, etc. According to the qualitative findings, teachers reported that due to the awareness session held, there has been a 10-15% reduction in the rate of absenteeism. Although most of the beneficiaries were satisfied with the intervention, because of the less capacity storage tank of RO filters and erratic supply of electricity, clean water was not available to the students all the time. Capacity building of teachers and encouraging SMCs’ participation in the decision-making process can ensure the sustainability of the project. When asked about benefits of separate washrooms, 91% students reported spending more time to school, similarly 91% students reported attending school more regularly.

Figure 27: Awareness generation session conducted under the project (n=28)



4.6 Sustainability and Replicability

Under the NRM thematic intervention, the project support provided demonstrated the capability to continue even after the program ended. The project's support to sustain improved farm income, agriculture water management, livestock management, SHG-based and individual enterprises can enable improved adoption of sustainable land and water resource management in the targeted landscape. This combined with the focus on institutional and capacity-building requirements can help bring about improvements in the project villages.

Support provided for setting up micro-enterprises such as setting up tailoring businesses, flour mill unit, noodles making unit has resulted in the economic empowerment of the weaker sections of society. Since the quality of material support provided was satisfactory, the micro-enterprises established would ensure the sustainability of the intervention. Women are now more financially literate and have developed a sense of confidence to effectively participate in economic activities and to take appropriate decisions for themselves and their families.

In terms of sustainability, under the thematic area of health and sanitation, the RO units established did not have a continuous supply of water due to the erratic electricity supply. For the sustainability of the intervention, options for convergence with government schemes should be looked at in close consultation with the community and respective sarpanch of the village. To spread awareness about COVID-19 and to avoid the spread, brochures were circulated amongst the villagers. Brochures contain information on COVID-19 appropriate behaviour such as social distancing, and the importance of vaccination. Although the programme intervention helped in raising awareness, it can become sustainable if village volunteers are trained to collectively organize people and arrange a health camp at least once in six months by inviting doctors/experts from the Nanded district.

The sustainability of the support provided has been considered in terms of establishing structures, technical know-how, usage, and maintenance. **The interventions in education have performed well in most aspects of the programme, which has resulted in creating a conducive environment for students, teachers, and parents.** Computers in schools have made learning more interesting and joyous for students. Science materials provided under the intervention have improved the grasping power of students. All these have had direct positive results and have encouraged higher attendance and enrollment. Installation of RO filters have considerably improved the health of students, as a result, attendance rates have increased in the schools. However, the erratic supply of electricity and less capacity storage tank has hindered the continuous supply of water. Post-follow-up intervention would have ensured the sustainability of the programme. Training the School Management Committee to monitor the working of the school and follow the recommendations of the school management plan can help achieve better outcomes.

Table 7: Sustainability thematic matrix

Support provided	Structures established	Technical Know-how	Usage	Maintenance
<i>NATURAL RESOURCE MANAGEMENT</i>				
Installation of solar pump	✓	✓	✓	✓
Desiltation of existing water harvesting structures	✓	✓	✓	✓
Horticulture and floriculture plantation and Farm Field Schools	✓	✓	✓	✓

SKILL TRAINING AND LIVELIHOOD ENHANCEMENT				
Livestock Management	✓	✓	✓	✓
Agricultural training and services	✓	✓	✓	✓
Promotion of micro-enterprises	✓	✓	✓	X
Strengthening of SHG-based enterprises	✓	✓	✓	X
HEALTH AND SANITATION				
Kitchen garden	✓	✓	✓	✓
Installation of RO water purifier	✓	✓	✓	X
EDUCATION				
Educational paintings, school repair work, providing computers to schools, installation of drinking water posts/RO filter	✓	✓	✓	✓
Science materials	✓	✓	✓	✓
Awareness session on health and sanitation for students	✓	✓	✓	✓

4.7 Holistic Rural Development Index (HRDI)

HRDI is a composite index developed to measure and rank the clusters and thereby the NGO partners based on their performances on key outcome indicators across these domains. HDFC Bank in its document explaining HRDI states that since the aim of HRDP was to achieve holistic rural development through a multitude of interventions that would lead to overall improvements across related dimensions and therefore the programme introduced significant variability in the interventions. Therefore, it was not possible to ascribe a single impact indicator that might be able to accurately capture the overall performance of HRDP.

Basis our calculation, the HRDI for the studied clusters is presented in the table below since the programme did not have an available baseline, the baseline was captured through recall during the study. The index above indicates an improvement in various indicators in the project area over the baseline. Typically, HRDI comprises nine key performance indicators selected from the four domains of focus of the HRDP. The indicators selected were based on their relative contribution to the final expected outcome across all domain-wise interventions. Most of the indicators were found to be relevant for the study in the Nanded project area but some needed modifications in accordance with the programme as well as with the study design and information collected.

Table 8: Holistic rural development index for the Nanded project

Domain	Category	Value
NRM	Baseline	0.08
	End line	0.09
	% Change	13%
Skill and Livelihood	Baseline	0.04
	End line	0.05
	% Change	25%
Health and Sanitation	Baseline	0.03
	End line	0.05
	% Change	67%
Education	Baseline	0.11
	End line	0.14
	% Change	27%
Overall HRDI	Baseline	0.27
	End line	0.33
	% Change	22%

The per cent change in HRDI for thematic area skill and livelihood enhancement is 25% due to the intervention that led to the creation of employment opportunities thus empowering the economically weaker section. Under the thematic area-skill and livelihood, the intervention focused on setting up microenterprises, strengthening the SHG, and providing agricultural training to farmers. The improvement in the hygiene condition in each village and a better understanding of health are essential factors contributing to improved health and sanitation practices in the villages. Development of educational institutions such as the installation of computers in schools, installation of RO purifiers, and the upgradation of physical infrastructure has led to visible positive outcomes. The interventions successfully worked towards the larger goal of providing quality education to empower the vulnerable sections of society. Whereas under the thematic area of NRM, interventions have led to continuous supply of water for irrigation by installation of solar water pump in the field.

5. Conclusion

Based on the observations and analysis of primary and secondary information presented in the report, the study presents the following conclusion:

- High-value horticulture and floriculture crops such as marigold have been promoted under the programme by means of crop diversification and farm field demonstrations. Farmers have benefited from these interventions in terms of an increase in income. Intervention such as installation of solar water pump has solved the issues of irregular supply of electricity. The interventions taken up under livestock management benefitted the respondents by creating an additional source of income for livelihood. To ascertain the sustainability of the intervention, follow-up of the project is important. **According to the qualitative findings, after setting up of solar water pump in the field, crops had regular supply of water which was one of the major issues especially in the summer months.**
- The programme theme aimed at achieving women's empowerment through the creation of enterprises such as noodles making machine, flour mill unit enterprises, etc. This has improved women's confidence to further expand their businesses and helped in increasing the socio-economic empowerment of women at household and community levels. The qualitative study found that the **women participating in the program did report greater economic empowerment and an improvement in status/ quality of life and their overall agency.** Farmers under the intervention were trained in manufacturing and use of natural fertilizers like neem ark, dashparni ark etc. Farmers have started replacing chemical fertilizers with natural fertilizers. 100% of the beneficiaries reported that they received training on agricultural practices.
- Earlier villages in the intervention area did not have proper access to safe and clean drinking water. Due to high fluoride levels, they suffered from various diseases. **With the installation of RO filters, villagers have access to safe and clean drinking water. However, as villagers lack technical knowledge on the maintenance of RO filters, it was not in working condition. Dissemination of knowledge or creation of committee that is backed by the skills can ensure that the villagers have regular access to safe drinking water.** Promotion of kitchen garden has ensured better health of the members of the household.
- The program had established drinking water facilities in the schools, however, a maintenance fund under the school committee is required for better maintenance and upkeep of the facility created. Science materials provided under the intervention and computers have changed the relationship between teacher and learner and have the potential to be more than a medium for the transmission of knowledge. But this needs to be backed by new skills, competencies, and attitudes among teachers who are going to design and develop materials and support learners using these aids. It is not enough to establish the basic infrastructure; it has to be consistently maintained and upgraded.

a.1 Summary of findings

Natural resource management

The project intervention aimed at improving the water availability in the drought-prone region of Nanded district. The project tried to improve the availability for agriculture and drinking water purpose. **For this, solar water pump was installed to reduce dependence on electricity.** This region faced issues due to erratic supply of electricity. Installation of solar pump in fields has ensured regular supply of water for irrigation. It is aimed at the creation of sustainable livelihood opportunities for the community. **Floriculture was promoted to reduce the risk of crop failure.** Farmers who had stopped cultivation of floriculture crops has resumed the practice after the support provided under the intervention. The project has promoted livestock rearing as it would help in the creation of an alternative source of income. The livestock product market is local and provides a good source of income, especially for the economically weaker section of society. Hence the promotion of livestock can be considered a promising intervention.

Skill training and livelihood enhancement

The rural population in Maharashtra is prominently dependent on agriculture and allied activities for their livelihood. A significant proportion of the rural population is at a subsistence level of income and livelihood. For the sustainable development of the rural community, the state government has made substantial efforts toward the promotion of micro-enterprises. Under HDFC Bank intervention, women were empowered to start their own enterprise. Noodles making machine, flour unit, flour mill unit, tailoring business were some of the interventions supported by the project. **A woman who was provided with support to start her tailoring business has now invested her income to start the computer services.** She manages both her businesses with some assistance from her husband. **This has encouraged other women to start their own enterprises as it guarantees economic independence.** Women were made financially literate and started participating in economic activities. Besides this, organic farming was promoted by providing training on the preparation of neem ark and dashparni which are organic manures.

Health and sanitation

Under the HRDP program, awareness generation sessions on health and hygiene were organized and kitchen garden were promoted. It was much needed as the rural community lacks awareness about the importance of appropriate COVID-19 behavior and protocols that need to be followed to avoid the spread of the pandemic. Setting up RO units in the villages has reduced the frequency of diseases caused due to drinking water with high fluoride levels in the water. **Promotion of kitchen garden has ensured increased consumption of fresh vegetables and creation of alternate source of income.**

Education

The project is working on promoting quality education through infrastructure improvement and awareness generation activities. Various learning aids such as computers, science learning materials, educational paintings, and RO units, were provided under the intervention. **This helped in improving the knowledge and learning outcomes of students. Post-intervention, students have been taking more interest in learning and their grasping power has considerably improved.**

5.2 Recommendations

Based on the observations and analysis of primary and secondary information presented in the report, the study recommends strategies for the program to meet the desired outcomes better.

Natural resource management

A system may be put in to check on beneficiaries who adopted practices such as solar water pump installation. It should be ensured that beneficiaries are provided with good quality assistance in case of any issue they face after the project completion. Farmers were encouraged to resume cultivation of floriculture and horticulture plantation as it was proving to be quite a profitable business. In the coming years, more beneficiaries can be encouraged to adopt floriculture plantation. Continuous dissemination of knowledge whenever any new technology or agriculture practices are introduced either through parivartaks/village volunteers or frequent visits from agricultural experts is required. This can ensure farmers' trust in modern agricultural technology and reduce the risk of crop failure. There is a need to ensure that the farmers have time-to-time access to extension services available through KVKs or experts from agricultural universities who can assist them in the easy adoption of scientific practices. Time-to-time dissemination of practices and follow-up services are required. Activities around connecting farmers directly to consumers or linking them to smaller market channels would have improved farmers' share in consumer prices. Further, promoting post-harvest techniques for collection and storage can impact the shelf-life and quality of products.

Skill training and livelihood enhancement

The qualitative and quantitative study found that the women participating in the program did report greater economic empowerment and an improvement in status/quality of life and their overall agency. Women who learned about the manufacturing of organic manure and saw visible results in terms of higher prices started demonstrating and transferring the knowledge to the other members of the community. Women started investing their return from one business and initiated new enterprises on their own. Post-intervention, a good number of farmers have started cultivating vegetables which are used both for self-consumption and selling. Activities around connecting women entrepreneurs with the markets can ensure better market linkage and better prices for their produce due to the unavailability of markets. More needs to be done on developing self-sustainable individual and group-level enterprises. While the programme focuses on ensuring that the needs of the community are met, it is very critical to thoroughly analyze the input and standardize its quality to achieve the desired outcomes.

Health and sanitation

Although RO units established helped in reduction of water borne diseases, lack of maintenance and technical know-how has led to closure of RO units. Options for convergent efforts with the community and respective sarpanch of the village should be looked at. An agreed plan of action for the community may be prepared to ensure sustainability. Parivartaks should be trained in each village to organize frequent health awareness sessions for the community, encouraging them to adopt sanitation and hygiene practices along with regular health checkups.

Education

To optimize the use of educational aids, the capacity building of teachers needs to be ensured. Parents must be encouraged to take active participation in the development of schools. An asset maintenance fund/ committee needs to be established in the program-supported schools to ensure the necessary maintenance of supports such as drinking water posts. Proactive convergence with ongoing schemes of the government will ensure efficient use of resources. Post-follow-up intervention to ensure the sustainability of the project is necessary.

6. Annexures

a.1 Detailed Activity list

Sl No	Focus area	Category	Sub-category	Activity	Beneficiary Type
1	Promotion of education	Educational Institutions Development	Infrastructure – Infrastructure renovation	Educational paintings, school repair work, installation of school library- providing computers to schools, installation of drinking water posts/RO filter, , awareness, health and sanitation sessions for students	Students and teachers
2	Health and sanitation	Sanitation	Community health session, Construction/ Renovation	Health awareness input session, setting up of RO units, health camps, kitchen garden	Community
6	NRM	Farm Management	Farm management	Installation of solar water pump, desiltation of existing water harvesting structures	Farmers
7	NRM	Water management for agriculture	Farm technique – Other	Floriculture plantation, horticulture plantation	Farmers
8	NRM	Farm Management	Farm technique – Other	The farm field school, organic manure preparation, organizing mela, and climate resilience camp, exposure visits	Farmers
9	Skill development and livelihood enhancement	Skill Training	Skill Training	Training cum entrepreneurship development support to women	Women
14	Skill development and livelihood enhancement	Entrepreneurship Development	Goatery	Development of goat breeding farm.	Farmers
19	Skill development and livelihood enhancement	Entrepreneurship Development	Other Small business	Tailoring/ boutique business, flour mill unit, noodles making machine	Individual

6.2 Sampling methodology

6.2.1 Quantitative sample size calculation

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

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

Where,

N = sample size

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

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

S_e = margin of error, set at 5%;

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

Thus, the estimated maximum sample size is 400

Quantitative sampling methodology

In this cluster, twelve intervention villages were selected for the study.

Stage 1 – Selection of villages

All the intervention villages were selected as sample villages. Sample from each village was selected by using Probability Proportionate to Size (PPS) sampling method. Care was taken to cover the maximum sample from the villages that have received a maximum number of interventions in order to get appropriate coverage of all components of the program.

Stage 2 – Selection of beneficiaries

The list of beneficiaries was obtained from the implementing partner – Ugam Gram Vikas Sanstha. Since beneficiary selection was undertaken independently for each programme, the selection of more than one beneficiary from a single household was probable. Also, there have been instances where a single beneficiary received multiple support for the intervention.

6.2.2 Qualitative sample size calculation

Qualitative tools of In-depth Interviews (IDI) and Focus group discussions (FGD) were administered for obtaining information about the remaining themes as well as to enrich the household survey information with a deeper understanding.

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

6.4 HRDI Methodology

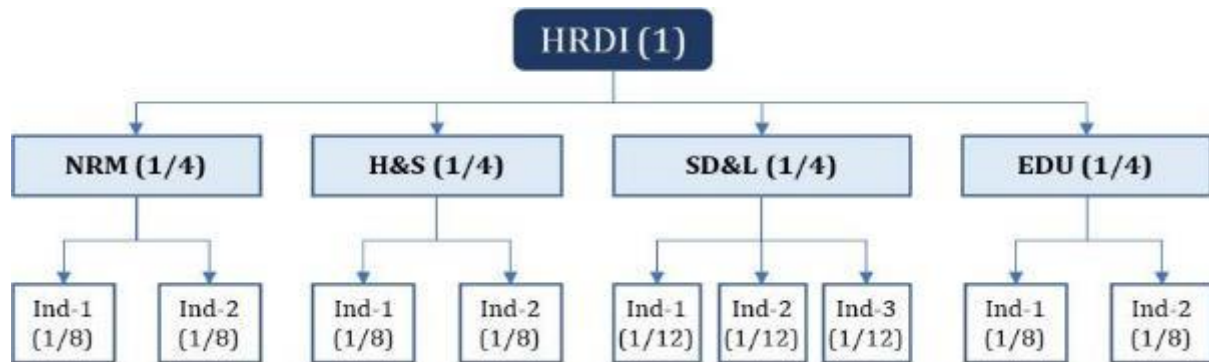
The outcome indicators included in the HRDI were obtained from different domains and are consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables such that the indicators could be measured between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

Indicator Weights

Weights were applied to each of these indicators, along similar lines to the HRDI calculation. Attribution of equal weights to all the domains was 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.

Domain and indicator weights⁵



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

Project X

<i>Natural Resource Management</i>	Average net income from farming	$(1/4) \times (1/3) = 0.083$
	Percentage of farmers reporting access to irrigation	$(1/4) \times (1/3) = 0.083$
	The area under irrigation (Ha)	$(1/4) \times (1/3) = 0.083$

⁵ NRM: Natural Resource Management | H&S: Health and Sanitation | SD&L: Skill Development and Livelihoods | EDU: Education

<i>Health and Sanitation</i>	The average number of months with access to adequate drinking water	$(1/4) \times (1/3) = 0.083$
	Percentage of households with access to an improved toilet facility	$(1/4) \times (1/3) = 0.083$
	Percentage of households utilizing soak pits	$(1/4) \times (1/3) = 0.083$
<i>Livelihoods and Skill development</i>	Average monthly income of household from Livestock (INR)	$(1/4) \times (1/3) = 0.083$
	Average monthly income from enterprises (INR)	$(1/4) \times (1/3) = 0.083$
	Average monthly income of SHG women from enterprise (INR)	$(1/4) \times (1/3) = 0.083$
<i>Education</i>	Percentage of students reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, etc.)	$(1/4) \times (1/2) = 0.125$
	Percentage of students reporting increased access to functional learning infrastructure (library, science labs, learning aids, etc.)	$(1/4) \times (1/2) = 0.125$

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

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

Method to calculate HRDI

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

Step 2: A cut-off value was calculated by taking the 50th percentile for each indicator before HRDP (baseline). For instance, consider the indicator – average annual income of farmers, at baseline, then sorted all the farmers across the seven clusters in ascending order based on their income. The 50th percentile i.e., the median value of the income was taken. This median or 50th percentile was taken as the cut-off (baseline cut-off to be precise).

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

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

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

Step-6: Sum all the indicators (i.e., weighted sum) to calculate the HRDI value at baseline and end-line.

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

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

Domain	Indicators	Baseline	Weight	HRDI	Endline	Weight	HRDI	% Change
NRM	The average productivity of crops (3 major crops) grown (quintal per acre)	7.00	33%	0.08	7.7	33%	0.09	13%
NRM	Percentage of farmers reporting access to irrigation	94.00	33%		98.00	33%		
NRM	Area under irrigation	5.4	33%		5.5	33%		
H&S	Increase in the percentage of land area for kitchen garden	11	100%	0.03	19.00	100%	0.05	67%
Skill	Percentage change (decrease in the use of chemical fertilizers)	7.3	50%	0.04	28.5	50%	0.05	25%
Skill	Percentage of respondents following agricultural practices (application of organic manure, construction of vermicompost pits, timely application of fertilizers, conservation agricultural practices)	27.00	50%		29.00	50%		
ED	Percentage of students reported conducting sanitation, hygiene, and cleanliness awareness generation session	46	50%	0.11	64	50%	0.14	27%
ED	Percentage of teachers reported conducting sanitation, hygiene, and cleanliness awareness generation session	45.00	50%		47.00	50%		

6.5 Overview of project effectiveness and impact tables

An overview of project effectiveness and impact on education (based on the quantitative findings)

1. Improved capacity of educational institutions to provide services				
1.1 Access to improved physical infrastructure	(a) Proportion of schools (students) who report gaining access to functioning smart classrooms/ Bala/ science labs/ libraries/ learning aid/furniture/sports equipment	46%	29%	Low
	(b) Proportion of schools that gained access to clean and functioning sanitation units/drinking water posts at education institutions	NA		
	(c) Proportion of teachers who report improvements in teaching quality	NA		
	(d) Proportion of teachers reporting improved capacity to adopt innovative teaching methods (Base= teachers who received training)	22%		
	(e) Awareness among teachers regarding child development (Base= teachers who received training)	19%		
1.2. Improved willingness to engage in school activities	(a) Teachers reporting improvements in attendance due to improved infrastructure	56%	36%	Low
	(b) Proportion of teachers reporting an increase in enrolment post infrastructure development	30%		
	(c) Proportion of institutions reporting a decrease in dropout rates	22%		
2. Improved learning outcomes				
2.1 Improved exam performance and subject confidence among students	(a) Proportion of students who gained access to coaching classes	NA	60%	Medium
	(b) Proportion of students who report improvements in access to reference material	86%		
	(c) Proportion of students reporting an increase in confidence in various subjects (lessons are easy to understand, more interesting, etc.)	33%		
	(d) Proportion of students who received scholarships	NA		
3 Improved Awareness				
3.1 Improved Awareness among students, parents, and teachers	(a) Awareness activities conducted	44%	44%	Medium

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

An overview of project effectiveness and impact and health and sanitation (based on the quantitative findings)

1. Improved health infrastructure and services				
1.1 Establishment/ enhancement of health infrastructure and services	(a) Proportion of beneficiaries who gained access to kitchen garden	89%	50%	Medium
	(b) Proportion of beneficiaries reporting additional source of income due to kitchen garden	11%		
2. Improved awareness and health-seeking behavior				
2.1 Awareness regarding health and sanitation practices	(a) Improved dietary practices/ reduced tobacco consumption/ improved physical exercise	NA%	NA	High
	(b) Improved awareness regarding cleanliness and sanitation practices	NA%		
3. Improved availability and management of water				
3.1. Access to drinking water at household and community levels improved	(a)The proportionate increase in the average number of months with access to clean drinking water	0%	0%	Low

An overview of project effectiveness and impact on skill training and livelihood enhancement (based on the quantitative findings)

SA. Improved access to agricultural training and services				
S.A.1 Access to Agriculture training and services	SA.i(a) Proportion of farmers who reported project training services are useful	67%	51%	Medium
	SA.i(b) Proportion of farmers who demonstrate awareness regarding sustainable farming practices	34%		
S.A.2.Adoption of improved farming practices	SA.ii(a) Proportion of farmers who adopt conservation agricultural practices	2.8%	18%	Low
	SA.ii(b) Proportion of beneficiaries reporting an increase in productivity due to better farm management	30%		
	SA.iii(c) Proportion of farmers reporting increased income	17%		
SB. Economic empowerment through collectivization (Only for SHG members)				
SB.1 Formation/ revival of SHG-based Enterprises	SB.i(a) Proportion of members who received support with establishing/reviving SHGs	67%	58%	Medium
	SB.i(b) Proportion of members who received support with establishing/reviving SHG enterprises	11%		
	SB.i(b) Proportion of members whose SHGs are currently functioning	96%		
SB.2 Development of entrepreneurship	SB.ii(a) Proportion of SHG members who received training	41%	75%	High
	SB.ii(b) Proportion of SHG members undertaking entrepreneurial activities	100%		
	SB.ii(d)Proportion of SHGs with increased savings	85%		
	SB.ii(e) Proportion of SHG members reporting improved income	72%		
SC. Enhanced capacity for regular income generation				

SC.1 Enhanced employable skill development	SC.1(a) Percentage of youth who accessed skill development training	52%		High
	SC.1(b) Percentage of youth who report improved income through skill development	51%		
SC.2 Access to self-employment and	SC.2(a) Proportion of beneficiaries who established/ expanded entrepreneurial activities	20%	41%	Medium
SD. Improved capacity to generate income through livestock management				
SD.1 Adoption of scientific management of livestock	SD.i(b) Proportion of beneficiaries reporting an increase in income from livestock management	21%	39%	Low
	SD.i(c) Proportion of beneficiaries reporting improved livestock health	56%		

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

An overview of project effectiveness and impact in natural resource management (based on the quantitative findings)

Outputs	Output Indicators		Output Avg	Impact Level
NA. Increased income from agriculture				
N. A1. Land/ crop productivity	NA1. (a) Proportion of farmers reporting an increase in production of crops that were supported under HRDP (soybean, sugarcane, wheat, gram, Arhar)	62%	33%	Low
	NA1. (b) Proportion of farmers reporting a reduction in input cost	16%		
	NA1. (c) Proportion of farmers reporting increased income from crops that were supported under HRDP.	85%		
	N.A1.i(d) Average increase in income from crops that were supported under HRDP (% change)	9.09%		
	N.A1.I (e) Average increase in productivity from top three crops that were supported under HRDP (% change)	8.2%		
	N.A1.i(f) Average decrease in input cost (% change)	16%		
N.A2. Access to the farm management infrastructure	NA2(a) Proportion of beneficiaries satisfied with the quality of available services (in farm management)	100%	41%	Medium
	NA2. (b) Proportion of farmers reporting support in agriculture	11.2%		
	NA2. (c) Proportion of farmers reporting project interventions leading to an increase in income	11%		
	NA2. (e) Proportion of farmers currently practicing organic farming/conservation agriculture/other sustainable practices	1.9%		
	NA2.(f) The proportion of farmers reporting an increase in the use of natural fertilizers?	81%		

NA.3 Increased adoption of crop diversification	NA3. (a) Proportion of farmers diversifying their crops with project support.	57%	54.5%	Medium
	NA3. (b) Proportion of farmers who report income increase due to crop diversification (base = farmers who adopted crop diversification)	52%		
NA.5 Land under irrigation	NA4. (a) Increased area under irrigation	NA	17%	Low
	NA (4). (b). The proportion of farmers who received support for irrigation	17.2%		
SA. Improved access to agricultural training and services				
S.A.1 Access to Agriculture training and services	SA.i(a) Proportion of farmers who reported project training services are useful	67%	51%	Medium
	SA.i(b) Proportion of farmers who demonstrate awareness regarding sustainable farming practices	34%		
S.A.2.Adoption of improved farming practices	SA.ii(a) Proportion of farmers who adopt conservation agricultural practices	NA%	NA%	Low

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