Impact Assessment Study Of Holistic Rural Development Programme (HRDP)

Odisha

Prepared For:

HDFC BANK PARIVARTAN
A step towards sustainable progress

HDFC Bank CSR

Prepared By:

NRMC
An Intellecap Subsidiary

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Executive Summary

The study centers on measuring the impact of the Holistic Rural Development Programme (HRDP) of HDFC Bank that was **implemented by Gram Vikas in the Nayagarh district in Odisha**. This study largely focused on understanding the overall process that the HDFC Bank and the implementing organization undertook in carrying out the programme activities, the key milestones achieved, the impact created by these activities, and the challenges faced. The **key focus areas of the intervention were Education, Health and Sanitation, Natural Resource Management, and Skill building & Livelihood enhancement.** The framework used for the impact assessment was adaptive version of the DAC criterion- Relevance, Effectiveness, and Sustainability. **A comprehensive methodology, comprising both primary and secondary data collection was used for the assessment** and the assessment was carried out in a participatory manner involving all the key stakeholders of the programme. The study included a **sample size of 423** project beneficiary households as respondents as against the planned sample of 400.

NRM: Increasing agriculture productivity and farmers' income was one of the major objectives of the programme as farmers had relatively marginal size of lands with limited access to modern agricultural engineering and technology, and unassured irrigation measures. Thus, as a result of the support in seeds, farm implements, improved package of practices and irrigation measures, and a 47% increase in net median income of farmers was observed. However, favourable weather (59%) and market prices (85%) played an important role in influencing income. When looked at crop-wise, **89% of farmers who cultivated paddy and 87% of farmers who cultivated moong reported an increase in production after the project.** Moreover, the lift and canal irrigation **support in certain villages has been very effective in intensifying the production of paddy and other crops** as farmers can cultivate land in both Kharif (rainy) and Rabi (winter) seasons due to access to irrigation. However, the input cost has increased for 98% of the respondents for reasons like increased use of fertilizers and pesticides and increase in input prices. Further, there has only been a 0.5% increase in **the percentage of farmers having irrigated land as** the intervention in irrigation was limited in scale. The solar street lights installed in the programme villages have benefited the community and **71% of the beneficiaries reported the solar street lights being functional and being used even after the end of the project.**

Health and Sanitation: The challenges faced by the community in terms of accessing safe drinking water, household toilets and awareness regarding health and hygiene management were recognized by the programme. **37% of the households availed of the health services** (health camps and hygiene awareness sessions) under the programme. The community **observed changes in lifestyle** after attending the awareness sessions like improvement in dietary habits (36%), improved health status of household members (27%), etc. but the impact seems to low. The **usage of individual household toilets went up from 50% before the programme to 92% after the programme** which has led to improvement in the overall health of household members (43%), safety for women members (75%), and privacy (63%). About **16% of the sampled respondents received piped water supply and have been consuming the water from about 2 or more years. The people are extremely satisfied with the intervention except for the ones from villages where the water hasn't reached the houses due to technical issues.** Nevertheless, the **change in the source of**

drinking water has brought a change in household health with relief in stomach-related problems (56%), a decrease in instances of water-borne diseases (59%), etc. The community is experiencing a gradual positive change in the practice of proper health and hygiene practices and **58% of the community members are even disposing solid waste by giving it to the waste collection services after segregation.** Further, the **kitchen gardens** made available to ultra-poor households helped in **increasing vegetable consumption** (95%).

Skill Training and Livelihood Enhancement: In order to tackle the problem of low crop productivity and limited returns, the programme trained farmers on improved packages of practices and formed farmer collectives. **HDFC bank trainings have made the farmers aware of sustainable farming practices like ridge planting (85%), timely application of fertilizers and insecticides (56%), application of organic manure (45%), weeding (33%), and seed treatment (36%).** Adoption of the new **practices have resulted in increase in productivity (68%), increase in income (39%), and improved soil health (21%).** However, benefits in the form of reduced input cost, improved pest management and reduced crop loss were not observed by most farmers. Moreover, there has been an improvement in the practices done before vis a vis the practices adopted after the intervention, especially for ridge planting. Farmer producer groups are now being able to borrow money at low interest rates. Further, 73% of SHG members received training for SHG management which were found useful as it helped in improved awareness of financial management (58%), improved confidence (73%)**.** Almost all SHGs have savings now (98%), and 97% even reported an increase in the group's savings since the project started.

Promotion of Education: Proper infrastructure holds extreme importance in improving education outcomes. The need-based **infrastructural developments undertaken in schools have been useful and have been greatly appreciated by the students and school authorities. They have also caused an increase in enrollment rate (74%) and attendance (91%).** However, the intervention to promote usage of smart classes doesn't seem very effective as teachers are not making regular use of it and lack proper skills and time to bring it to use. The support for the library, however, has helped in inculcating reading habits. **Toilets renovated and constructed in schools have helped in making students attend school regularly (100%).** However, schools face problem of water shortage as the government water supply is insufficient. Nevertheless, the renovation of the Anganwadi centres and the playscape development in schools have received great appreciation and has changed the look of the building.

HRDI Indicators: For assessing the effectiveness of the interventions, the study has used the existing Holistic Rural Development Index (HRDI) created by the programme. The HRDI is arrived at by defining key outcome indicators for each of the domains and developing a composite index. The composite HRDI score indicated a positive impact at **0.70** for Nayagarh, Odisha.

Table 1: HRDI scores for Nayagarh, Odisha

Domain	NRM	Skill and Livelihood	Health and Sanitation	Education	Overall HRDI

HRDI Score % Change	Baseline	Endline	Base line	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.15	**0.17**	**0.20**	**0.22**	**0.06**	**0.16**	**0.09**	**0.15**	**0.50**	**0.70**
	13%		**10%**		**167%**		**67%**		**40%**	

Table 2: Summary of key income indicators

Income Indicators (based on median)	Before	After	% Change
Median Net Income from Agriculture (INR)	17000	25000	47%
Average Productivity of 3 major crops (kg /Acre)	553	678	23%

Figure 1: Overview of project impact

	Health and Sanitation	Skill Training and Livelihood Enhancement	Natural Resource Management	Promotion of Education
Overview of Activities	Health Camps, Individual Toilet and Bathing Room, Piped Water Supply, Kitchen garden, MHM awareness, health and hygiene sessions, community soak pits	Improved agriculture practices training and input support, formation of Farmer Clubs and Producer Groups, Management training to SHG leaders, Animal Health Camp	Promotion of improved practices in paddy and green gram, Lift and canal irrigation, Pond renovation, input support, Solar street lights	School and Anganwadi building renovation, smart class, library, washroom, Bal Sansad,
Areas of Improvement	92% using individual toilets, Increase in women's safety due to sanitation facilities, Increased awareness regarding health and hygiene,	78% of the sample received benefits under agriculture training, Increase in awareness on sustainable farming practices, Increase in productivity for 68%, Increase in SHGs savings	47% increase in net median income, 23% increase in median crop productivity, Irrigation has benefitted targeted farmers	Improved infrastructural support like playscape smart class, washrooms, handwashing post, library
Challenges	Limited reach of piped water supply, slow rate of adoption of the practice of collecting waste and giving it to the waste collection service	Slow rate of adoption of new farming practices taught on large land area, Limited knowledge transfer of SHG management to each member	Insufficient irrigation facilities for ease of cultivation all round the year	Insufficient water supply, furniture and use of smart class
Recommendations	Need for more overhead tanks with piped water connections and its inspection at regular intervals	Further support to extra poor households, enterprise building training for women and youth	Follow up services by agri-experts, expansion of irrigation facilities, replacement or repair of solar street lights	Capacity building of teachers (for smart class)

1. Introduction

1.1. Background of the Study

The rate of poverty in India continues to remain high with a large proportion of the rural population being engaged in agriculture and dependent on rain-fed irrigation. Therefore, under its CSR initiative, the HDFC bank supports programs to deliver holistic rural development and aid the growth and prosperity of the rural population. Within Parivartan, the CSR initiative, the "Holistic Rural Development Programme" (HRDP) is the flagship CSR program under which non-governmental organizations (NGOs) across the country are supported to bring development interventions. The idea of these programs is to ensure the creation of prosperous and content communities by initiating sustainable socio-economic and ecological development. With its holistic approach, the programme caters to the needs of the communities by providing necessary inputs on issues like promoting economic independence through skilling and livelihood opportunities, providing basic infrastructural development, and establishing a better ecosystem that promotes better living conditions. By focusing on developing human capital, management of natural resources, and infrastructure in poor and backward villages, it plans to bring about a socio-economic transformation in the lives of the rural community.

In the assessed HRD programme, Gram Vikas was the implementing partner in 4 blocks of Nayagarh district, Odisha. The programme covered a total of 17 villages in the block. The major focus areas for the intervention were Natural Resource Management (NRM), Skill Development & Livelihood Enhancement, Promotion of Education, and Healthcare & Hygiene. However, the extent of the work in each village was undertaken based on the need and varied from village to village.

1.2. Partner Organization-*Gram Vikas*

Gram Vikas, established in late 1998 is a not-for-profit, development organisation working in partnership with rural communities with the support of governments, private sector entities and academic institutions to help improve the quality of life in the villages of Odisha and neighbouring states. Based in Odisha, Gram Vikas builds capabilities, strengthens mobilizes resources to respond to the needs of the communities. It follows the development approach of the Movement and Action Network for Transformation of Rural Areas (MANTRA) which promotes a socially inclusive, gender equitable, self-managed and financially viable model of sustainable and holistic development, where everybody benefits. Since the time of its inception, Gram Vikas has been working in six programmatic pillars of water, livelihoods, sanitation & hygiene, habitat & technologies, village institutions.

The Holistic Rural Development Project (HRDP) was initiated in October 2017 and went on till December 2021. It covered 17 villages falling in four blocks of Nayagarh district, Odisha with the support of HDFC Bank Ltd.

Gram Vikas reached over 3000 households, 24% of which have no operational land holding. It aimed to bring about dignified and healthy living among the rural communities and strengthen

community self-governance through simultaneous interventions in natural resource management, agriculture, livelihoods; social awareness, health, education; water, sanitation, infrastructure development; and leadership training for women self-help groups (SHGs).

Gram Vikas's interventions in Nayagarh, Odisha covered the thematic areas of NRM, skill development and livelihood enhancement, healthcare and hygiene, and promotion of education. In agriculture, it worked on improving productivity, crop diversification and access to irrigation facilities, and increasing the irrigation command area. Demonstration were given on improved package of practices for rice and green gram along with input support. Farmer Clubs and Producer Groups were established to enhance productivity and knowledge sharing. Lift irrigation systems have been established along with renovation of community ponds. Moreover, vegetable clusters were formed and given input support for increasing vegetable production. Moreover, farmers were given materials to set up kitchen gardens to improve the nutritional security of their households.

Some other interventions included ensuring access to basic sanitation, hygiene, educational institutions development, electrification facilities through infrastructure support, livelihood enhancement, empowerment of women, and mobilization of household savings for productive use. Further, Gram Vikas closely worked with the village-level institutions (Village Development Committees) to strengthen its leadership abilities to ensure sustainability of the intervention and development work doesn't stop. Moreover, Gram Vikas's interventions are designed and executed in partnership with the village communities benefitting from the intervention since it believes that sustainability can be ensured only if the community owns the results of the project activities.

1.3. Purpose and objectives of the study

The impact assessment aims at understanding the overall process undertaken by HDFC bank and partner organizations in implementing the programme activities, key milestones achieved, impact created by these activities, challenges faced, and how such challenges were handled. The guiding philosophy behind this study is to add value by showcasing successful initiatives and recommending possible ways to address challenges that exist. The impact assessment aims to critically and objectively evaluate the implementation and performance, determine the reasons why certain results occurred or not, draw lessons, and 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 partner organizations for such programmes. The evaluation was also an opportunity to learn about the relevance and effectiveness of such programmes.

Since agriculture and allied activities are the primary livelihoods of the area, the programme targeted small, marginal, and landless farmer households with special focus on women, children and adolescents. Inadequate common infrastructure, facilities for harnessing of natural resources, and inadequate quality of human development services together pose a formidable challenge for the community to attain its fullest development potential, and therefore, the multi-component and holistic approach that the project adopts is expected to improve the conditions of the community and

open up opportunities for growth. The HRDP particularly focused on promoting water management in agriculture, general water management, farm management, and clean energy. Apart from **NRM**, the programme also focused on agriculture training and support, SHG/Women development, and livestock management under **Skill training and Livelihood Enhancement**; educational institutions development under **Promotion of Education**; health and sanitation, drinking water management and kitchen garden under **Healthcare and Hygiene**.

Figure 2: Conceptual framework of the implementation

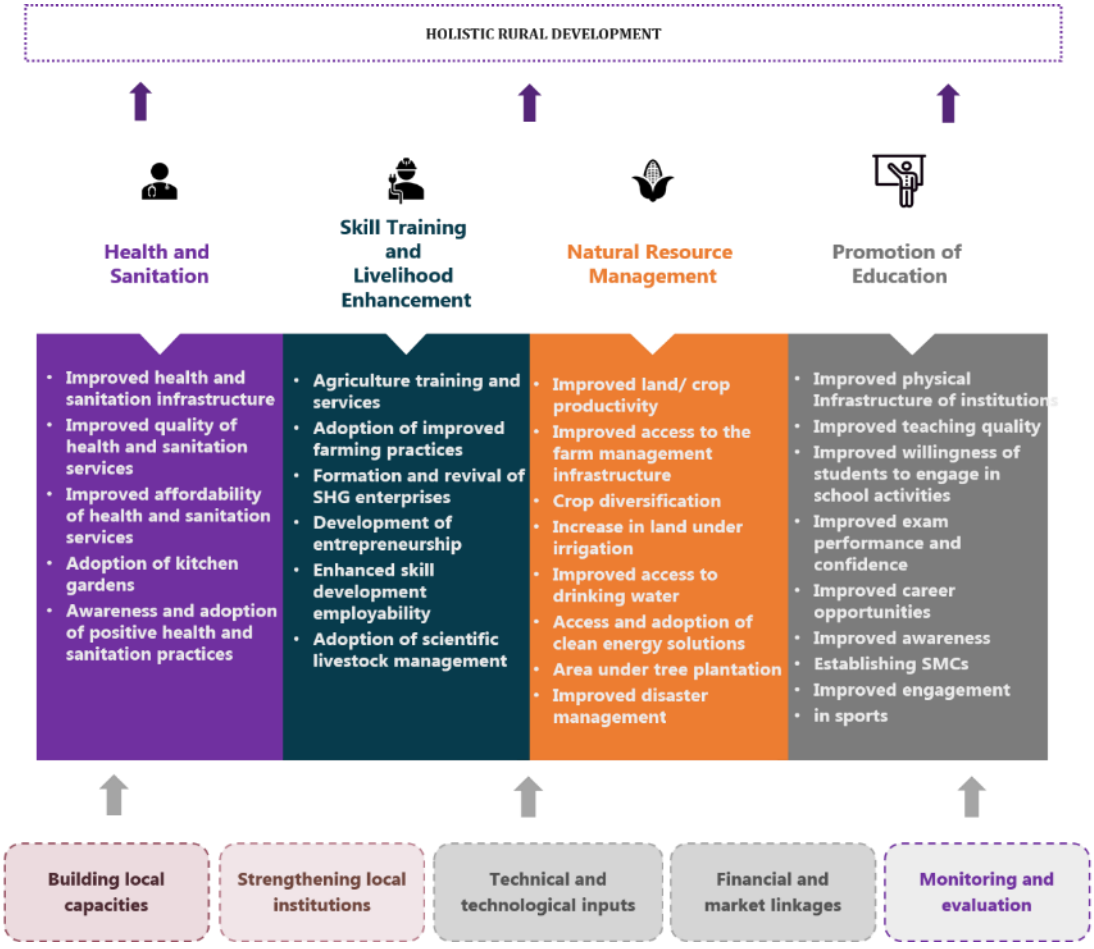


Image 1: Areas covered under the study

The study was conducted in 17 villages located in four blocks i.e. Nayagarh, Nuagaon, Odogaon and Khandapara in Nayagarh district, Odisha.

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, Sustainability and Replicability**. The evaluation process was carried out in a consultative manner involving interactions with both HDFC bank and Gram Vikas team 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 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[1] 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 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 programme 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's CSR Policy, Program log-frame (Logical Framework Analysis), 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 focused group discussions with program beneficiaries, the partner NGO, and the HDFC program team. The outcome mapping and result chain development were undertaken in consultation with the HDFC 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.

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

2.2. Sample Size and Distribution

The sample size covered during the field is as follows:

Table 3: Quantitative Sample Covered

District	Health and Sanitation	Skill Training and Livelihood Enhancement	NRM	Promotion of Education	Total HHs
Nayagarh	399	357	420	141	423
Planned	100	100	125	75	400

The total sample calculated for the study was 423. This sample was divided into various thematic areas covered under the programme in the state based on the relevance of the activities conducted and the beneficiaries covered. For the selection of the sample, beneficiaries were selected from the list obtained from Gram Vikas using random sampling. For the next step, the village-level sampling was done following the Probability Proportionate to Size (PPS) method. For the qualitative analysis, a total of 17 IDIs and FGDs were conducted out of 20 to assess the change that has happened over time.

Table 4: Qualitative sample size covered

Nayagarh	FGDs				IDIs					
	VDC	*Teacher*	*FPG*	*SHG*	*Students*	*Teacher*	*Vulnerable*	*AWW*	*SHG*	*Other*
Total	3	1	3	1	1	1	2	1	1	3
Planned	3	2	3	2	2	1	2	1	1	3

Image 2: Training of field team held at Bhubaneswar, Odisha

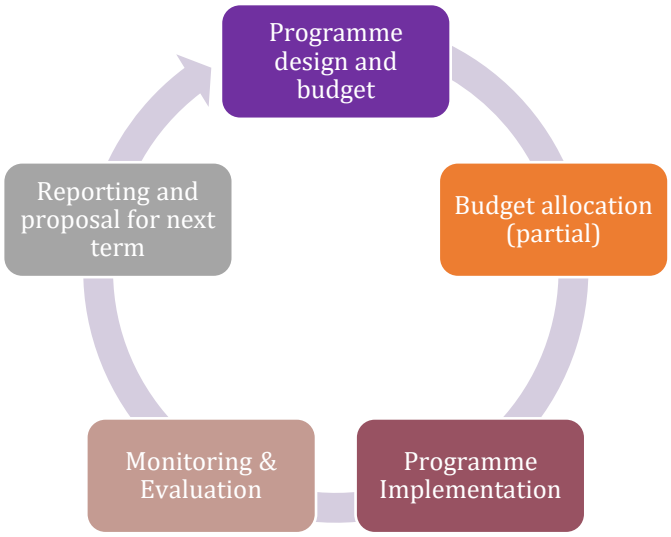
Since there was no baseline available for this evaluation, the recall method was used in the household survey to assess the change that has happened over time. For this purpose, the respondents were asked to recall the value of critical indicators at the start of the program. Teams of local enumerators, with requisite education and experience, were hired for data collection. Two days of training in Bhubaneswar was provided to enumerators and supervisors by the NRMC team.

3. Program Review

3.1. Program Design and Implementation

The programme's interventions are decided on an annual basis, with an annual budget allocation based on the proposal by Gram Vikas to HDFC Bank. Based on our discussions with the partner team, a preliminary rapid rural appraisal (RRA) for each programme village was conducted in Nayagarh to explore the problems and constraints in the villages. The methodology used for the RRA was transect walk, social mapping, and FGDs. The partner organization prepared an annual work plan wherein activities were proposed on a need basis, which emanated from the preliminary assessments. While this approach has helped in providing support to 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. Upon field observation, budget allocation was largely provided for infrastructure and material support, the establishment of irrigation facilities, overhead water tank, and micro weather station. Painting and renovation work at schools and Anganwadi centres and the e-learning initiative in schools were also the areas where the budget was allocated. While the capacity building of farmers and provisioning of vegetable seeds and other inputs were there, the budget fell short for establishment of more and much needed irrigation structures.

Figure 3: Project Planning and implementation process



3.2. Program Relevance

NRM: Agriculture is the major contributor to the state's economy in Odisha and about 76%[2] of the total working population of the state is engaged in agriculture. As per 2011 census, 91.72% population of Nayagarh district resides in the rural areas with agriculture as their major livelihood. Majority of the farming community are small and marginal farmers with **very small land holdings** of less than 1 ha[3]. This was even brought out from the analysis of the RRA which highlighted the problem of the relatively marginal size of lands having **limited access to modern agricultural engineering and technology**. Moreover, **lack of assured irrigation measures**, especially during lean periods in Kharif and during Rabi, largely limits the agronomy to lower productivity, crop loss and with a single cropping pattern. Therefore, irrigation facilities were made available to address the problem of inaccessible irrigation. The analysis from RRA found that lack of crop diversification, crop rotation, limited access to newer technology/ method of farming, negligible storage (temporary) space, and absence of farmer collectives are leading to limited or negative returns from agriculture. These gaps in yield potential and technology transfer provided an opportunity to increase the production and productivity substantially through support in farm management. Further, programme villages did not have streetlights or lighting near hand pumps or meeting places leaving the streets pitch dark and therefore, a need was felt to support the community members, especially the women and the children with the installation of streetlights.

Image 3: Pond Renovation under HRDP

Skill: One of the concerns highlighted during the RRA was **backward agricultural practices and low crop productivity because of poor packages of practices**. Moreover, absence of farmer collectives and collective marketing approach led to limited or negative returns from agriculture. HRDP recognized the potential the villages have to adopt good agricultural practices and organic farming for high value cropping. It, therefore, worked on promoting agricultural skill sets by training farmers on improved farming practices for paddy and green gram. Supporting vegetable clusters with farm inputs and mobilizing farmers to form producer groups to increase their incomes was also found relevant. A significant proportion of the community are at a subsistence level of income and livelihood and one of the programme's key objectives was to strengthen and enable women's group-based institutions such as self-help groups (SHG) to build productive assets of their own. Therefore, SHG members were trained on management practices. Further, some community assets like community ponds which can provide wise returns had been inadequately utilized. They were renovated for the community for pisciculture which brought high income turnover.

[2] https://www.agrifarming.in/agriculture-in-odisha-crops-farming-practices
[3] https://www.nabard.org/demo/auth/writereaddata/tender/2410162139Nayagarh.split-and-merged.pdf

Health and Sanitation: Proper health and sanitation is essential for maintenance of health, the extension of life spans, and in reducing health expenditure. The programme villages reported poor health and hygiene practices, especially in women and children which leads to added inequality. Taboos around menstruation and lack of awareness limits the participation of women and girls in socio-economic platforms. Moreover, village sanitation and hygiene remains neglected with no waste management systems, thus causing the threat of spreading infections and diseases.

Image 4: Overhead water tank

The incidence of diseases like jaundice, malaria, skin infections and diarrhoea was also found high during the assessment done by Gram Vikas which puts extra financial burden on the families. The programme, therefore, made efforts to improve the health and sanitation facilities and undertook multiple interventions to improve accessibility and availability of quality health and sanitation facilities like health camps, holding hygiene and behaviour change sessions for the community in general and students and adolescents in particular, training for Anganwadi workers, and solid (non-biodegradable) waste collection services. Further, the programme villages show poor results when it comes to having access to drinking water and household level sanitation. Women find it difficult to collect water from the community tap which comes for a very short duration during the day. They also have face challenges in defecating in the open. HDFC, therefore, realized the importance of sensitizing the people regarding the need of having toilets and undertook toilet construction in collaboration with the Swachh Bharat Mission and community contribution. It also constructed community soak pits for wastewater management to keep the villages clean and reduce the incidence of water-borne diseases.

Image 5: Play scape

Educational Institutions Development: As per Census 2011, the average literacy rate of Nayagarh district is 80.42, which is higher than the state average[4]. However, when it comes to school infrastructure, the district falls behind. Studies have proven that physical infrastructure does play a significant role in promoting enrolment in primary education level[5]. The classroom related factors though positively influence the enrolment but not significantly. The analysis from RRA found a lack of proper school infrastructure like painted walls, functioning toilets for boys and girls, playscape etc. Therefore, the programme worked on promoting a joyful learning environment in schools by undertaking renovation and upgradation work. Moreover, since Anganwadi centres play an instrumental role in early childhood development, the programme paid special attention towards rejuvenating them and making them appealing for rural children and parents.

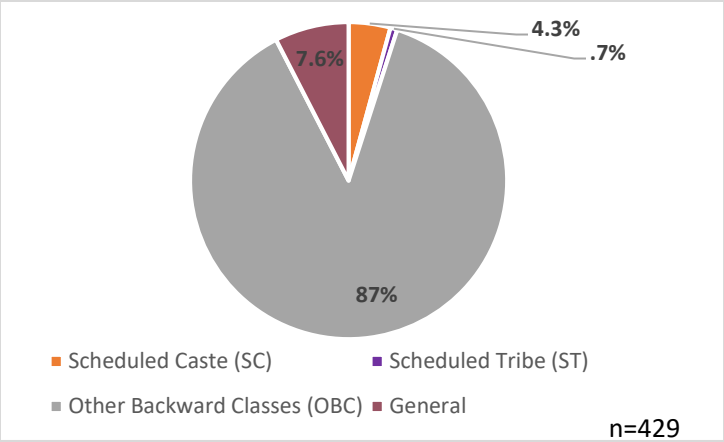
[4] https://www.censusindia.co.in/district/nayagarh-district-odisha-385
[5] Majhi, H., & Mallick, M. (2019). Infrastructural development and enrollment in elementary education in Odisha. *Economic Affairs*, *64*(2), 377–385. https://doi.org/10.30954/0424-2513.2.2019.13

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 Odisha, the assessment was undertaken in the Nayagarh district. Within the district, it focused on the 4 blocks namely, Nuagaon, Nayagarh, Khandapada, Odogoan.

Figure 4: Social profile of the respondents



The sample was representative of both male (63%) and female (37%) and comprised of the marginalized sections of the society (Ref. fig. 4) living mainly in kutcha (55%) and semi-pucca houses (43%).

While 15% of the respondents were illiterate, more than 50% of them had attended certain number of years of school (ref. fig. 5). Moreover, since agriculture is the primary occupation of the people of rural Odisha, 91% of the respondents reported cultivation as their primary source of livelihood (ref. fig. 6).

Figure 6: Literacy level of the respondents

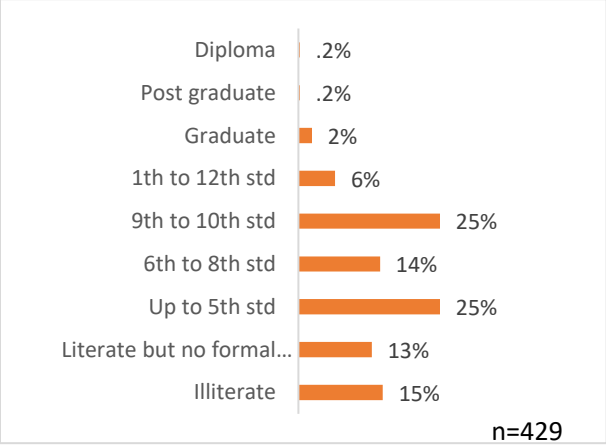
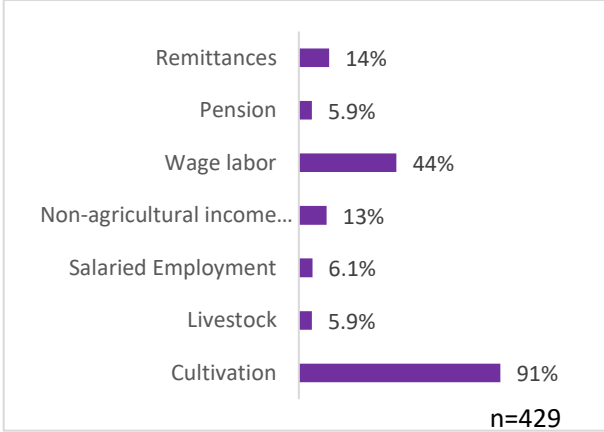


Figure 5: Sources of Income



Firewood remains the main source of cooking (88%) with only 12% of the households using LPG. Further, the main sources of drinking water for the community are – tubewell/ borehole (45%) followed by piped water supply (25%), and public tap or standpipe (21%).

4.2. Natural Resource Management

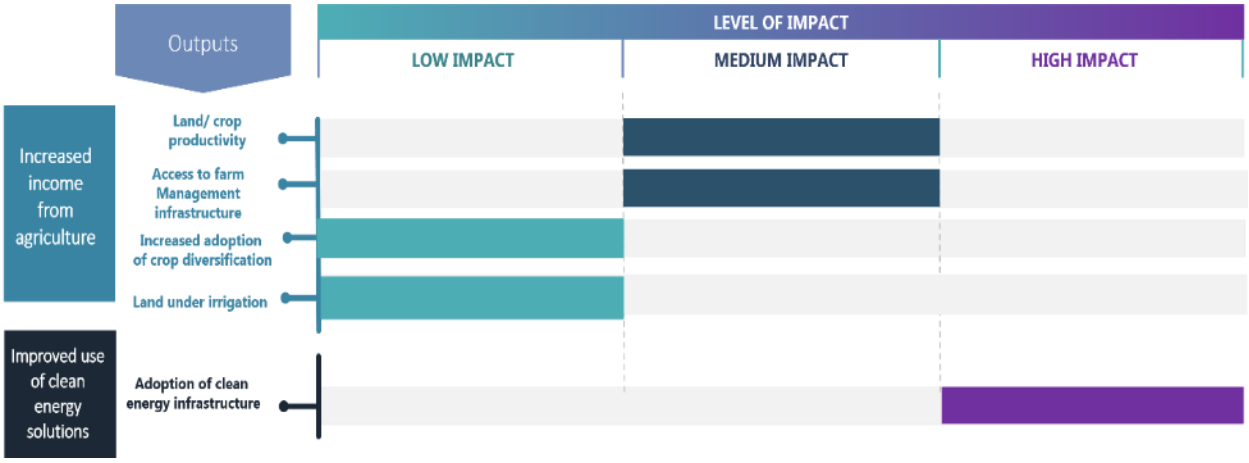
Table 5: Activities under NRM in Odisha

Activity Category	Activities
Irrigation Management	River lift irrigation, dug well/borewell irrigation, canal irrigation
Water Management	Pond Periphery Development
Farm Management	Enhancing soil moisture condition - Renovation of community pond, POP
Clean Energy	Solar Street Lighting with LED Bulbs

4.2.1. Effectiveness and Impact

This section provides an overview of the effectiveness of the project activities and their contributions to the outcomes defined in consultation with HDFC Bank. The figure below highlights the impact level attained for defined outputs. The impact under each category is calculated based on the average of output indicators under each activity category and a detailed overview of the project impact (for all thematic areas) is attached in the Annexure.

Figure 7: An overview of project effectiveness and impact in NRM[6]



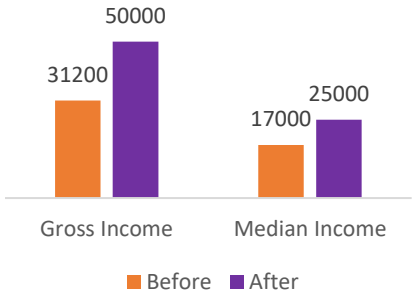
Income from agriculture

In the survey sample, the **benefits from agricultural activities were availed by about 82% of the total respondents.** The interventions around improved package of practice (POP) for rice and green gram, lift irrigation, irrigation canal, organic manure and pesticides/fertilizers have been the most availed and practiced activities among all the agricultural activities conducted under the intervention. As can be seen from the figure below, there has been an **increase in the net[7] median income by about 47%[8] and an increase in the gross[9] median income by 60%[10]** (Ref. Fig. 8). Data also suggests that input price has also increased by 50% (from ₹8000 to ₹12000) but the increase in

[6] 100%-70% - High impact; 40%-70%- Medium impact, <40% - Low impact
[7] Net income was taken deducting the input cost from the total income from production
[8] The increase reported is statistically significant at 95% confidence interval.
[9] Gross income is the total income earned by the farmers without subtracting the input cost
[10] The increase reported is statistically significant at 95% confidence interval.

the gross income is greater than the increase in the input cost, thus leading to a rise in the net income trends.

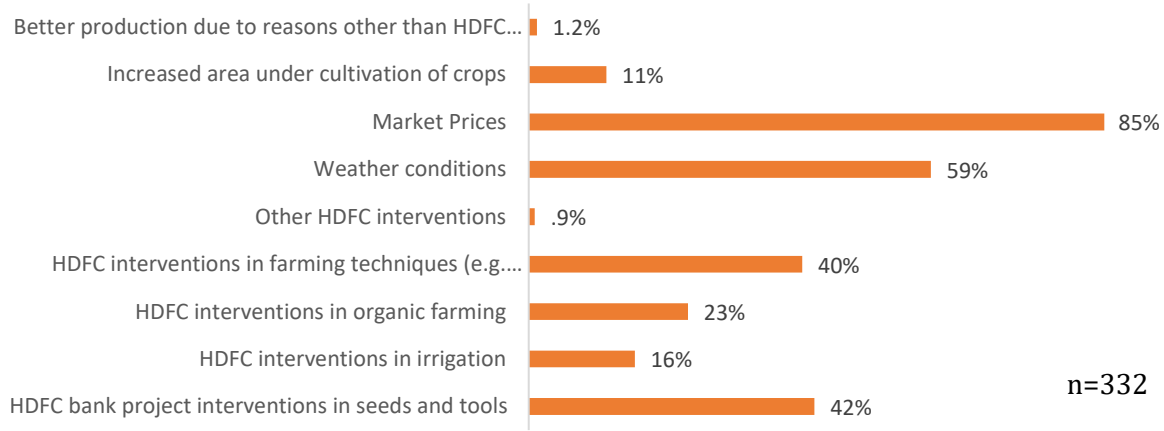
Figure 8: Increase in agricultural income (₹)



In terms of total households reporting change in income, about **96% experienced an increase in income** since the project started. The reasons accredited for the increase were mainly the programme's support in seeds and tools (42%), farming techniques (40%), organic farming (23%), and irrigation (16%) (Ref. Fig. 9). However, **majority of the respondents mentioned market prices (85%) and weather conditions (59%) as the primary reasons for an income increase** since the inception of the programme.

While income has increased, **input cost has also increased for 98%** of the respondents for reasons like increased use of fertilizers and pesticides (62%) and increase in price of inputs (54%).

Figure 9: Reasons reported for increase in income



Respondents reported **an increase in the productivity of the crops that were supported under the interventions of the HDFC programme, mainly due to HDFCs intervention in farming techniques, seeds and tools, and also favourable weather.** Qualitative findings also highlight weather playing an immense role in influencing productivity. Some farmers also expressed their liking for the farming techniques and the lift and canal irrigation facilities made available to them. However, the benefit of the irrigation facilities reached only a few farmers and the farmers expressed the need for more support in irrigation as availability of water remains the main concern for them and the water table is too low in programme areas.

During the duration of the project, there has **only been a 0.5% increase in the percentage of farmers having irrigated land as the numbers increased from 67% to 67.5%.** This was mainly because the intervention in irrigation only focused a few villages and mostly one lift irrigation system was installed in most villages. Rain and private water pumps still remain the primary sources of

irrigation. Further, the interventions around the promotion of use of natural fertilizers have led to an increase in the adoption of natural fertilizers but this **hasn't brought down the usage of chemical fertilizers**. While 12% reported using natural fertilizers in the last season**, 42% and 46% reported using chemical fertilizers and both respectively.** However, those using natural fertilizers have noticed benefit in terms of improved production (47%), improved quality of produce (44%), and improved soil health (36%). Since paddy is the main crop cultivated in the area, weather conditions and market prices have been largely responsible for an increase in farmers' income. However, as found from qualitative analysis, HDFC interventions in organic farming, irrigation, and seeds and tools have been very helpful in increasing the income from vegetables (saru). The concretized canal has greatly benefitted farmers as highlighted during the qualitative discussions who now enjoy perennial water for irrigation throughout the year. Their only concern is further expansion of the canal to get more land area under its coverage.

Respondents reported an increase in crop production. For instance, **89% of the farmers reported increase in paddy production** followed by **100% and 87% of the farmers reporting an increase in gram and moong** production respectively. The reasons reported for the increase as per the farmers' own understanding can be seen in fig. 10.

Table 6: Average production of 3 main crops[11]

Crop Name	Average Production (kg) Before	Average Production (kg) After
Paddy	2000	2800
Moong	70	100
Gram	65	85

Figure 10: HRDP interventions that contributed to an increase in crop production

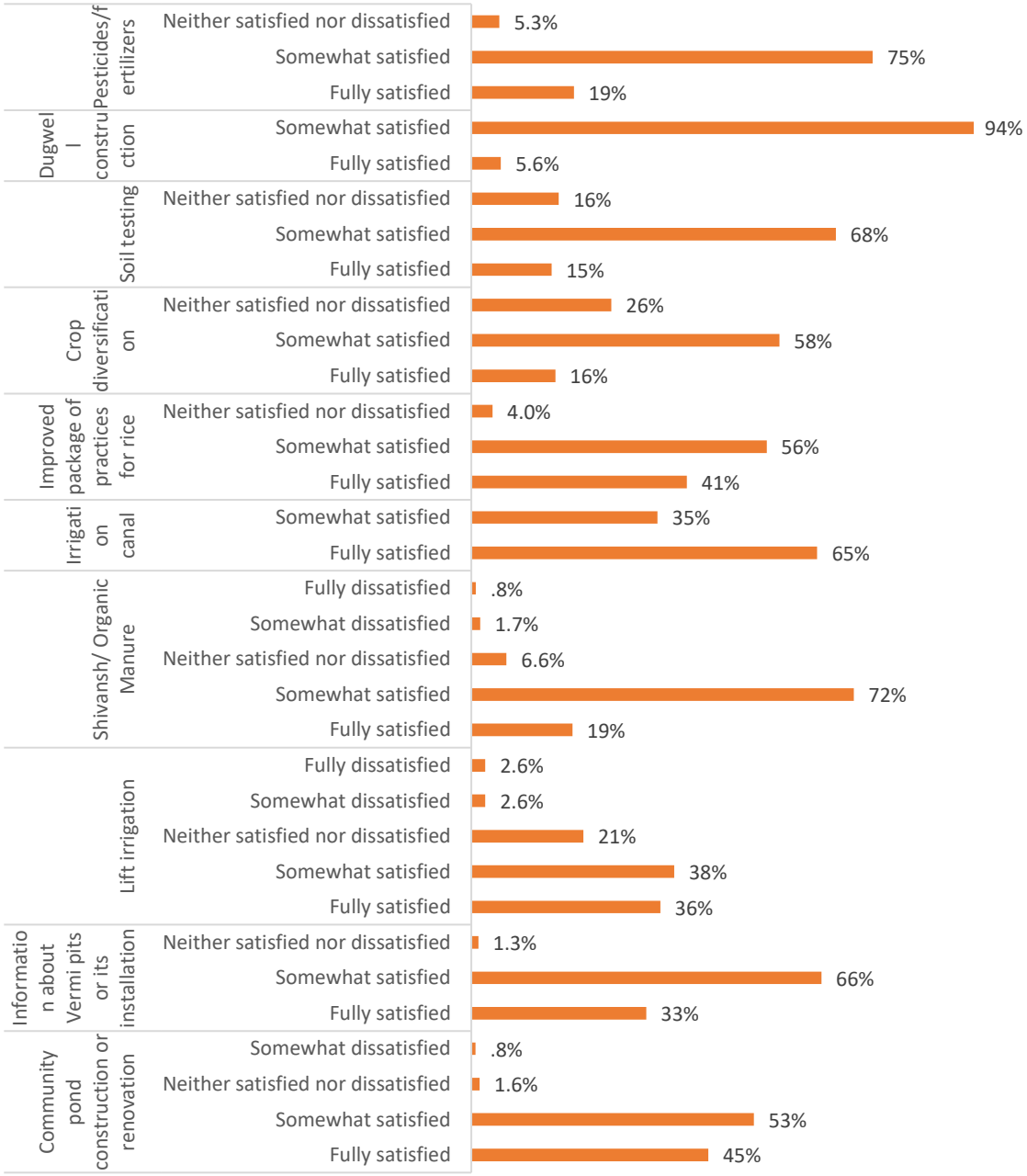
Crop / Intervention	Rice	Moong	Gram
HDFC bank project interventions in seeds and tools	44%	35%	6.3%
HDFC interventions in irrigation	20%	14%	0.0%
HDFC interventions in organic farming	25%	16%	0.0%
HDFC interventions in farming techniques (e.g. transplantation, hand-tool weeding, ridge planting, seed treatment, finger weeding, etc.)	48%	51%	12.5%
HDFC interventions in agricultural installations (e.g. green nets, farm bunding)	2.0%	1.2%	0.0%
Weather	69%	74%	81%
Increased area under cultivation of crops	17%	14%	6.3%

The median productivity for 3 major crops (paddy, moong, and gram) has increased from 553 kg/acre to 678 kg/acre (23% increase).

[11] Only the farmers who reported cultivating the crop both before and after the programme have been considered. Moreover, median values have been reported.

Further, the renovation of community ponds has promoted pisciculture and as reported by the President of one of the VDC, the community fishery is fetching around ₹1, 00,000 income per annum after distributing 3-4 kg to the village farmers. However, since the activity is at a community level, individual income benefits cannot be reported.

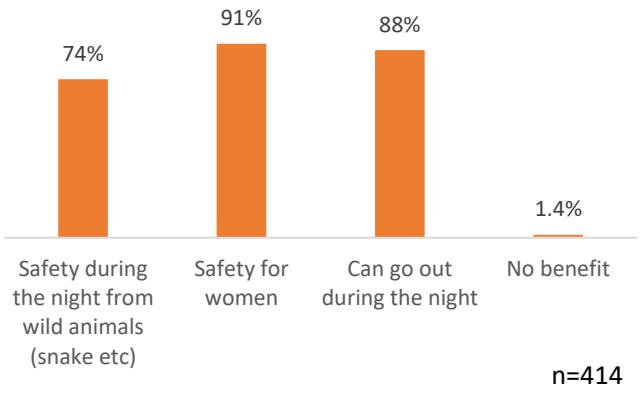
Figure 11: Level of satisfaction with HRDP NRM interventions



Use of clean energy solutions

The villages of the district lacked any source of lighting on the streets, and therefore, the programme installed solar street lights and 98% of the respondents reported benefitting from the same. Of this percent, 93% of the respondents had solar street lights near their houses but 29% of them reported the lights being nonfunctional. Qualitative analysis also highlights community's discontentment with the status of the lights.

Figure 12: Perceived benefits of solar street lights (n=414)



Nevertheless, the solar street lights (have brought benefits for village people in the form of providing safety during the night from wild animals, safety for women, and ease in going out during the night.

4.2.2. Case Study

Blue Revolution in Kantabania

Kantabania is a small village in Nayagarh Tehsil in Nayagarh District of Odisha. The village is home to 263 families, most of which are dependent on agriculture for their income. For years, the village committee had been requesting the local authorities to construct a concrete canal to irrigate their fields but their efforts saw no success. The Sambaria check dam near the village, constructed many years ago, was a mud check dam. When it rained heavily, the water washed away the mud on the sides of the channel. It had a height of about 20 ft. and during heavy rains muddy water overflowed. Every year people from 2 villages used to come together to desilt the canal so they could use the water for agriculture. This process took about 400-500 man days and resulted in wastage of time and labour. Seeing this, the village community decided to take matters in their own hands and sent a proposal to Gram Vikas to provide support for the revival of the irrigation canal. Gram Vikas partnered with the community to renovate the canal. HDFC Bank funded the initiative. More than 700 volunteers came together to clean the canal and build the concrete walls along the length of the canal.

Started in 2017, the renovation work for the canal was completed in September, 2020. This water channel does not only benefit the people of Kantabania and Malatipurpatna villages but also other neighboring villages like Jemadeipur, Gudi patna and more. The renovated canal irrigates 600 acres of land round the year which wasn't the case before as water did not reach most of the fields except during monsoons. "We can now plan our cultivation practices all-round the year. Earlier, due to scarcity of water, we could only cultivate our fields in the Kharif season," says, president of the VDC.

4.3. Skill Training and Livelihood Enhancement

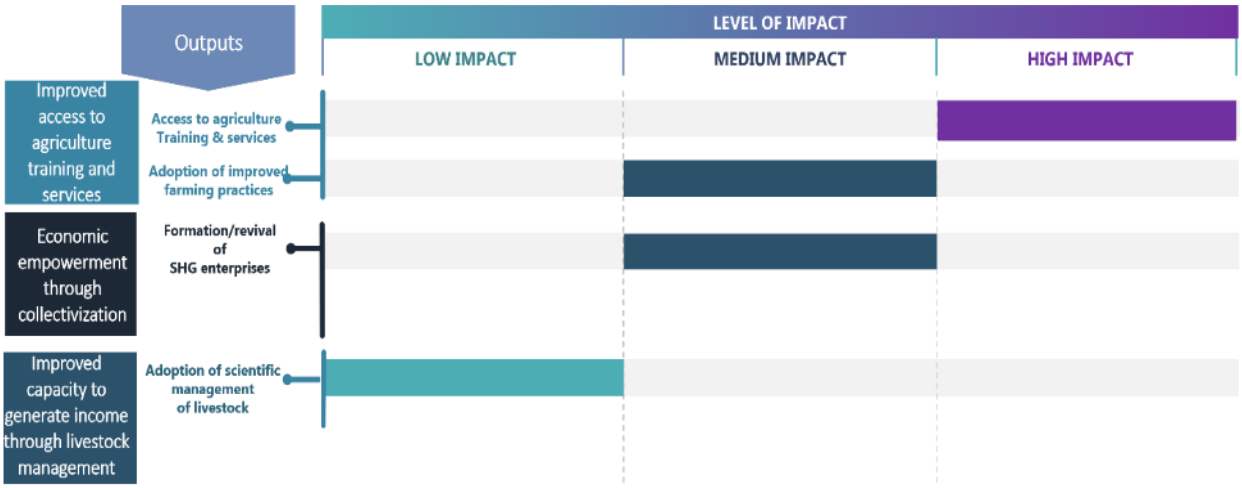
Table 7: Activities under skill training and livelihood enhancement in Odisha

Activity Category	Activities
Agriculture Training and Support	Improved package of practices in rice and green gram cultivation, common implements for Farmers Club, Automatic Weather Station with Agro-advisory services, Promotion of Producer Collectives, Nylon wire & fruit net support, Support for nursery raising tray, Formation & strengthening of FPC
SHG-Based Women Empowerment	Promotion of income generation for SHG, Leadership Training for Women SHG
Livestock Management	Animal Health Camps

4.3.1. Effectiveness and Impact

Under skill training and livelihood enhancement, the project was successful skilling farmers in improved farming practices and establishing farmer collectives. The figure below is a pictorial representation of the project's impact on skill training and livelihood enhancement.

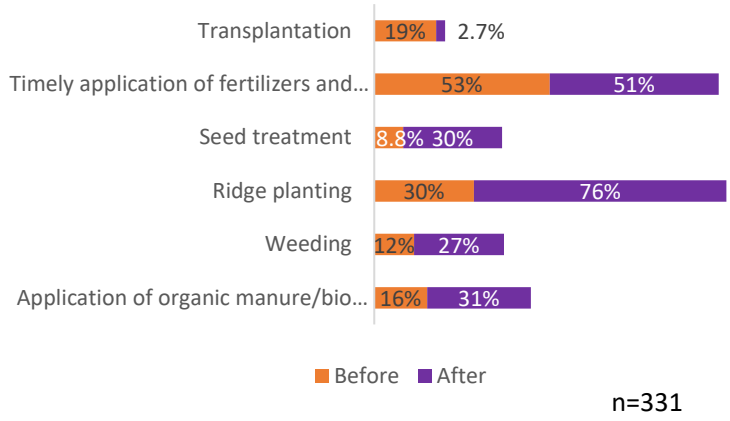
Figure 13: An overview of project effectiveness and impact and skill training and livelihood enhancement



Agriculture training and services

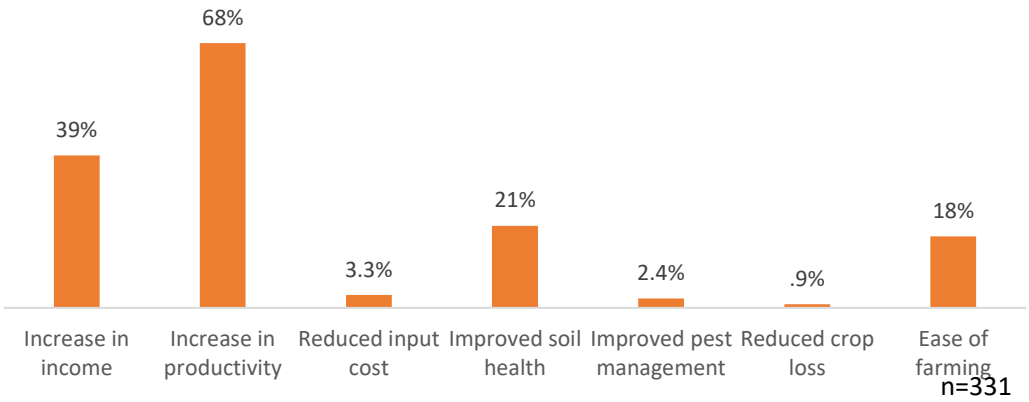
Surveyed households have benefited from **training on agriculture practices (88%), and support for farmer producer groups and clubs (46%).** Moreover, the reach of the intervention was good as 78% of the total sampled beneficiaries received benefits under agriculture training and support. HDFC bank trainings and demonstrations have made the farmers **aware of sustainable farming practices like ridge planting (85%), timely application of fertilizers and insecticides (56%), application of organic manure (45%),** weeding (33%), and seed treatment (36%). Various training sessions were organized to build/enhance farmers' skills and those who reported receiving the **training found it useful as it improved their capacity to increase productivity (70%), and improved their awareness of sustainable farming practices.** However, the trainings were **not helpful in reducing the input cost (9.7%).**

Figure 14: Respondents performing different farming practices



Moreover, there has been an **improvement in the practices done before vis a vis the practices adopted after** the intervention, especially for ridge planting. This was even pointed out in the field interactions with the farmers who are increasingly using the techniques to maximize production. Qualitative findings show that ridge planting has helped farmers in pest control and increasing production.

Figure 15: Perceived improvements due to adoption of agricultural practices



As shown in the figure, farmers who adopted the new **practices have noticed improvements in the form of an increase in productivity (68%), increase in income (39%), and improved soil health (21%).** Benefits in the form of **reduced input cost, improved pest management and reduced crop loss were not observed by most farmers**.

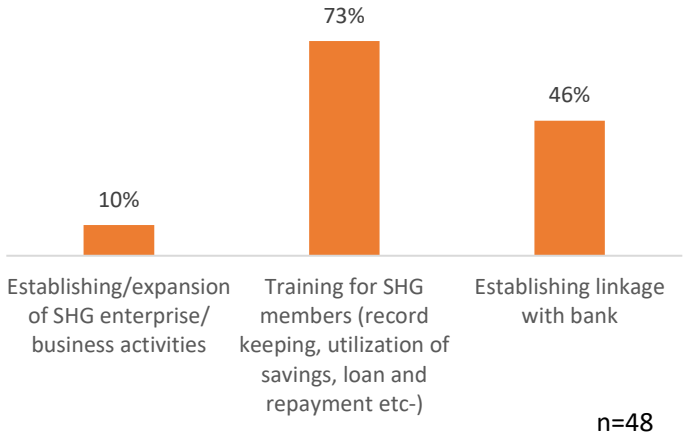
Data shows that the median annual income increased due to the skills learned to ₹18,000. Moreover, as found out during the survey, some **farmer groups have also been established in the intervened villages** and 42% of the respondents highlighted that they were members of a farmer group/association, of which 33% percent said that the group was established under the HRDP project. The group members reported receiving support from the programme mainly in the form of mobilization for group formation (87%), registration (77%), group training (60%), bank linkages (69%), financial support (50%), and market linkages (18%). **Farmer producer groups were provided seed money** after taking a membership fee from the farmers. **Being a member of a farmer producer group helped them in tackling the problem of high interest rates.** They are now being able to borrow money at low interest rates. As per quantitative findings, availability of

information (63%), easy availability of inputs (32%), improved input efficiency (22%), and market information and linkages (28%) were highlighted as some benefits of being project supported group member. However, the figures for other forms of benefits like additional source of income (9.4%), and reduced risks in farming (5%) were reported low.

Moreover, farmer clubs formed were supported with common farm instruments like weeder and sprayer but qualitative analysis reports less usage of the same. Similarly, it was also found that not everyone is continuing with improved package of practices for rice as irrigation still remains a problem for many farmers and the demonstration was provided on a small area of land and farmers were unable to reap the benefits of the practices taught on large lands.

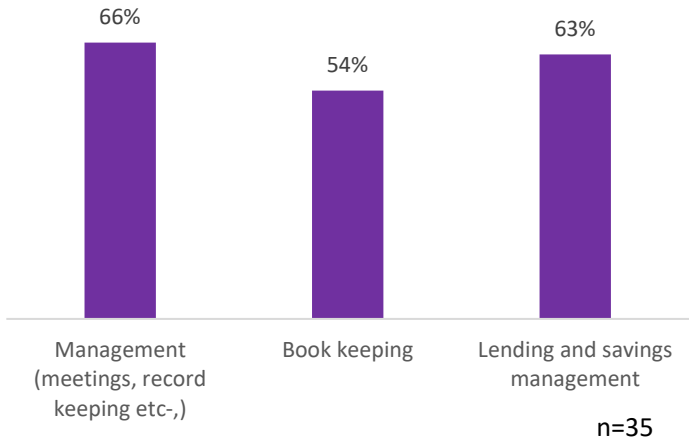
Skill Training and Enterprise Development

Figure 16: Project support provided to SHG members under HRDP



The state has seen the establishment of SHGs under the Odisha Livelihood Promotion Mission. SHG members were involved in lending and borrowing. The effort of Gram Vikas as part of the project was to provide better management skills to the SHG members. Therefore, **the president and the vice president of the SHGs were given business training, training on bookkeeping, function of their role, etc.** and few SHGs were even supported in constructing vermi pits by providing training and financial support. Further, other SHGs were also supported in making bio floc tanks and received fishlings, feed and inverter.

Figure 17: SHG trainings received under the project



The trainings were found useful as it helped in **improved awareness of financial management (58%), improved confidence (73%).** Almost **all groups have savings now (98%),** and 97% even reported an **increase in the group's savings** since the project started due to better knowledge about functioning of SHGs (40%), and improved saving and repayment behavior of members (43%).

Findings show that very few members are continuing with vermi compost and bio floc production and sale and therefore no significant income was reported.

Livestock Management

The organization organized animal health camps, however, the beneficiaries were insufficient and only 4% of the total surveyed households reported benefitting from the livestock management interventions. Field analysis shows that livestock was not very common in the intervened villages as field observations did not find many households with livestock. Moreover, only about 6% of the total sampled beneficiaries reported livestock as their main source of income.

4.3.2. Case Study 1

Farmer Producer Groups

Data suggests that the majority of the people living in the Nayagarh district are small and marginal farmers dependent on agriculture either directly or indirectly as labourers to earn a daily wage. As farm sizes shrink because of rise in rural population, farmers find it difficult to generate enough income.

Gram Vikas, with the support of HDFC Parivartan has been working with more than 2000 farmers in 17 villages of Nayagarh district and has formed 51 Farmer Producer Groups (FPGs) of farmers from 10 out of 17 villages to help them increase their income and confidence. Gram Vikas conducted an assessment prior to the formation of the FPGs and certain findings came out. Farmers bought inputs at higher rates, seeds were of inferior quality, lack of knowledge regarding proper planting systems, sold produce individually and lacked ability to bargain market rates from wholesalers, etc.

Thus, in the year 2021, farmers were mobilized into producer groups. The members of the group own and run the group. A farmer can become a member of the group by depositing a one-time fee of ₹1000 and ₹100 every month. Each group has a savings account in its name at a local bank. The members save the collected money in this account. From the savings, members get credit at very low-interest rates (2%- as decided by the group). The programme also provided each farmer ₹3000 share capital in the Producer Company. The ₹1000 deposited by the farmer and ₹3000 deposited by HDFC help the members in maintaining a savings pool.
Through the strength of its members, the collective can purchase agricultural inputs like seeds, fertiliser, and pesticides in bulk quantities at lower rates. They approach wholesalers and retailers and bargain prices for their products according to prevailing market prices.

Farmers coming together under a group has brought benefits with it says Neeranjan Patra. “Earlier we had to borrow at high-interest rates of 5-10% which really crushed the farmers. This has changed as now we can easily borrow from the group at minimal rates and meet our expenses. I once had a pest infection in my field. I went to the expert to show the problem and was given an estimate of 2000 for the treatment. I did not have that much money to spend so I went to the group and took a loan easily.”

4.3.3. Case Study 2

Micro- Automatic weather stations for farmers

The impact of climate change is very real and is being felt all around the world. It will push millions into poverty. Since agriculture is the primary source of livelihood for the people of India and for the majority population in Nayagarh district, farmers are particularly vulnerable to its impact as they are highly dependent on favourable climatic conditions. Equipping them with the right tools to predict weather conditions helps them in better crop planning and to adopt water smart farming practices to grow resilience towards climate.

The Micro-Automatic weather station (mAWS) has turned out to be a boon for farmers of village, helping them prevent crop losses. "Up until now we only used to depend on the TV news to see what climatic changes are happening and what will be the weather forecast for the coming days, however, the forecast using this device is exactly the same and at times more accurate," says .

The solar powered micro automatic weather stations provide real time weather alerts, temperature, wind direction, humidity, and rain and disease advisories. The data is collected from a cloud and once collected is sent to an agronomist who compares it and provides weekly advice for the village with the weather stations. "We get the weekly weather advisories on the weatherboard in the village and on our mobile phone via SMS and WhatsApp messages. The weather predictions warn us of rains and a rise in the river water which helps a lot of farmers in saving fuel and electricity cost as we don't have to irrigate our crops a week before."

Since many farmers did not have a mobile phone, the Weather Board was a blessing for small farmers. The board was maintained by a village level cadre who manually put all the information on parameters such as soil moisture, temperature, humidity, pressure and rainfall in the weather board which is a dedicated concrete wall at a centrally located space within the village. "The weekly advisory changed my life. It has given me a sense of security and confidence to cultivate vegetables."

4.4. Health and Sanitation

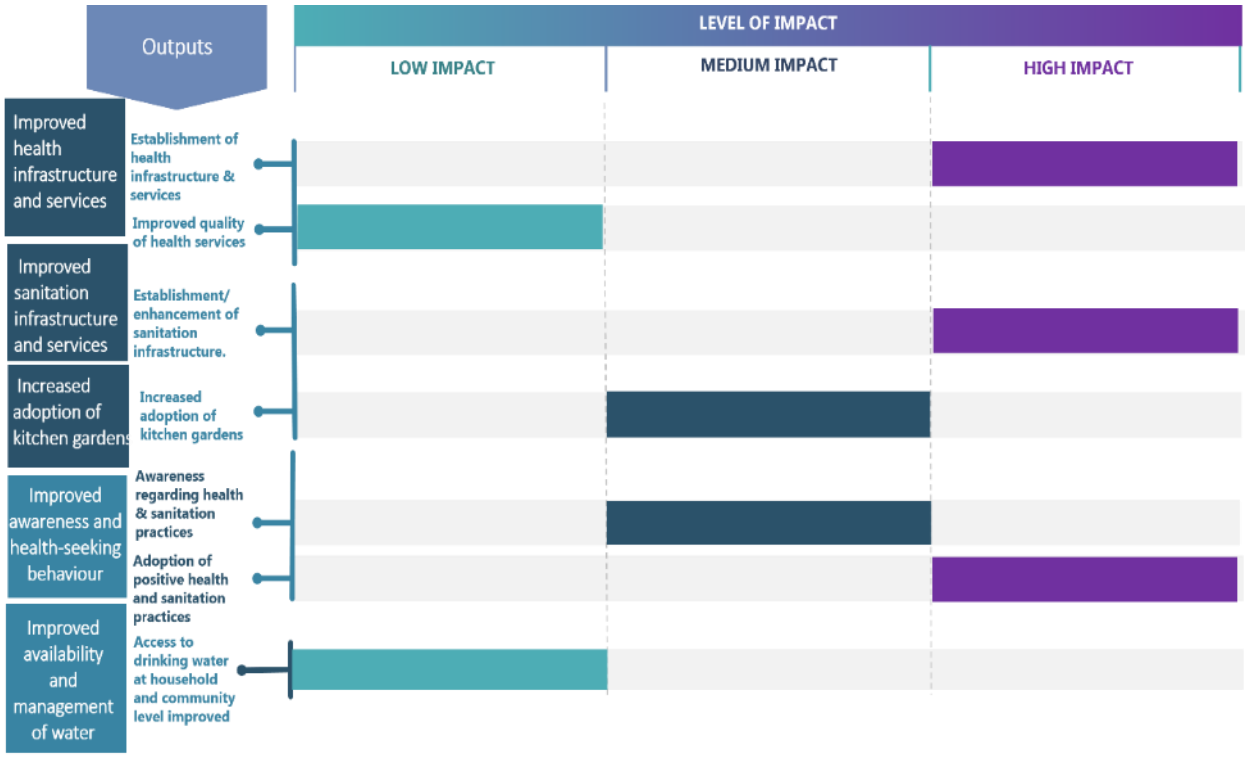
Table 8: activities under health and sanitation in Odisha

Activity Category	Activities
Health	One day training of ASHA and Anganwadi workers, First-Aid Training: for youths, Annual Human Health Camp, Food safety and kitchen hygiene sessions with women, Personal hygiene and protective health sessions for adolescent girls
Sanitation	Model Toilet and Bathing Room Units, Piped water supply system, Higher platform & Soak pit for Tube well, SWM: Establishing Waste Sorting Centre
Drinking Water Management	Overhead tank for water storage and with adequate water purification measures, Piped water supply system
Kitchen Garden	Kitchen Garden Promotion

4.4.1. Effectiveness and Impact

The figure below is a pictorial representation of the project's impact on health and sanitation.

Figure 18: An overview of project effectiveness and impact on health and sanitation

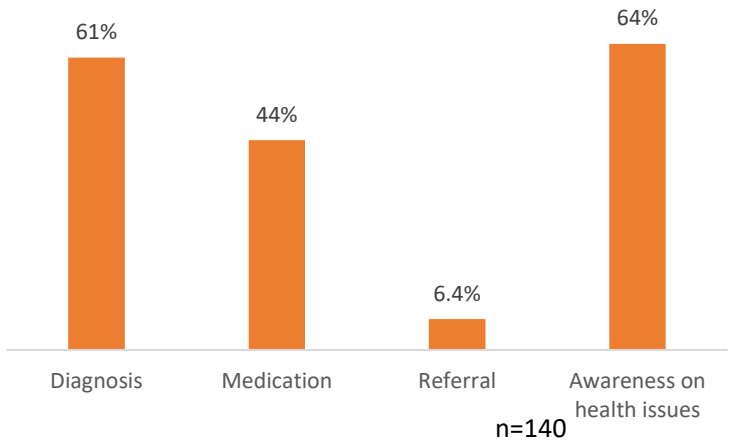


Health infrastructure and services

The programme had a component of creating awareness around health to increase health-seeking behaviour among the community and also to provide health services to the community. Health camps were facilitated in the project villages of Nayagarh, where the activity of health check-ups was

organized. The health camps undertook awareness raising work around health-related concerns and also provided referrals, medications, and performed diagnoses.

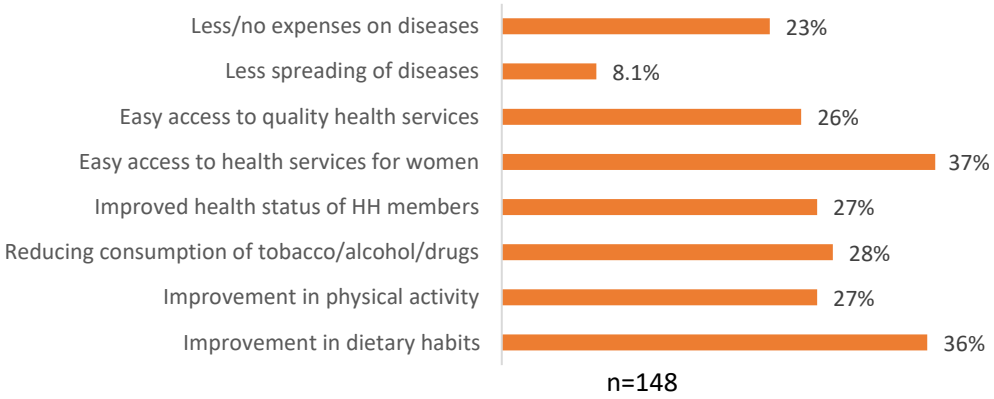
Figure 19: Services availed at HDFC supported camps



The survey shows that **37% of the sampled beneficiaries availed of health services under the programme**. Of this percentage, **87% of the respondents availed health camps and hygiene related awareness sessions** (6.3%) in the last year under the HDFC intervention.

The respondents surveyed stated that they or someone in their household has observed change in lifestyle after attending the health camps and awareness sessions like improvements in dietary habits and improved health status, however, the figures reported are still low which shows scope for improvement (Ref. Fig. 20).

Figure 20: Perceived benefits of HDFC bank-supported health camps



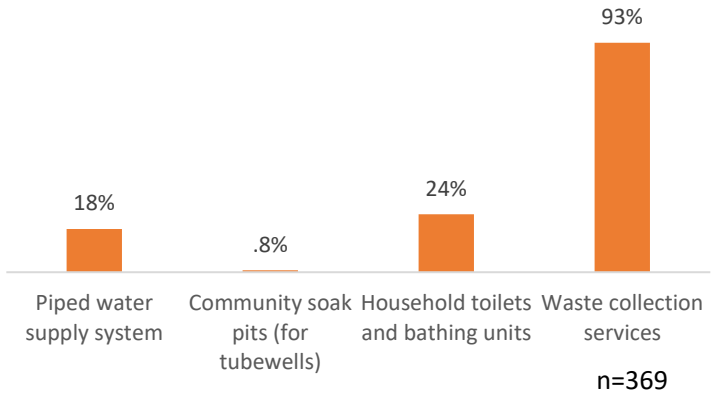
Sanitation infrastructure and services

The programme supported the community with sanitation facilities and **87% of the sampled beneficiaries benefitted under this category**. Of this percentage, about **24% of the respondents were provided household toilet and bathing units**, **16% with piped water supply system, and 93% with waste collection services**. The programme undertook the construction of toilets and bathing rooms (TBR) in convergence with the Swachh Bharat Mission and community participation and only partial payment for construction was provided. However, the implementing agency has a policy of 100% coverage and completion of toilet construction before connecting the toilets with the water supply. Since a major part of the intervention depends on community participation in terms of

financial resources, the construction of TBRs has not been undertaken by all households, thus depriving them of access to piped water supply.

Further, training on types of waste and its segregation was also provided along with distribution of garbage disposal bags.

Figure 21: HDFC bank supported sanitation services

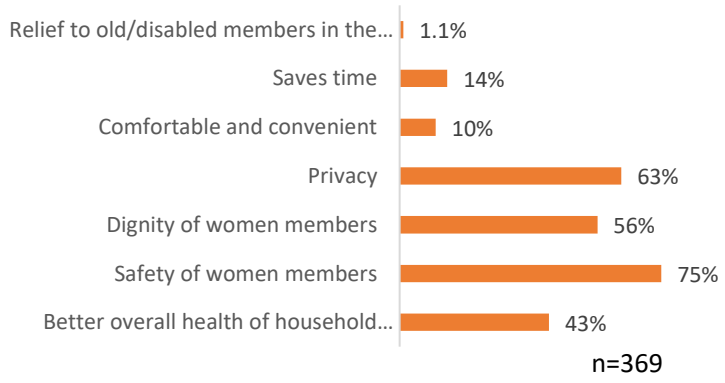


Before the intervention, 49% of the households practiced open defecation. However, after the initiative of HRDP, **92% of the households reported using individual toilets as compared to 50%, before the intervention**. However, as found out during the qualitative discussions, the community still practices open defecation which highlights the need to make more efforts for sensitizing community towards the importance of using toilets. Further, 69% of the respondents did not have enclosed bathing spaces and bathed outdoors with curtains. There has been an improvement in this area as well since **89% of the respondents are now using individual bathing units.**

Further, the programme also constructed community soak pits/ raised platforms for hand pumps but the response captured was negligible (0.8%).

Due to the sanitation units made available to them, the beneficiaries have reported several benefits as can be seen in figure 22. Basis qualitative analysis, the beneficiaries are also satisfied with the services they received and the quality of the sanitation facilities made available to them.

Figure 22: Perceived benefits of HH sanitation units

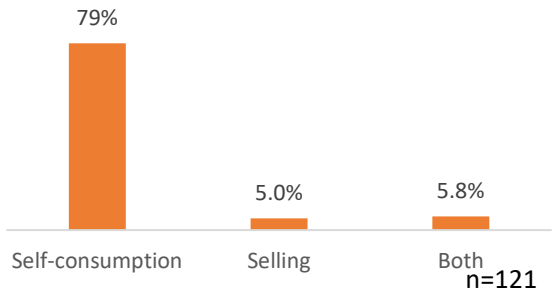


Moreover, the **practice of solid waste management has improved as 58% of the community members are disposing solid waste by giving it to the waste collection services after segregating dry and wet waste.**

Kitchen Garden

To improve the nutritional status of the community and tackle the problem of malnutrition, especially in the ultra-poor households, the project supported the community with kitchen gardens and 29% of the surveyed households received seeds (84%), and training (25%) under the intervention.

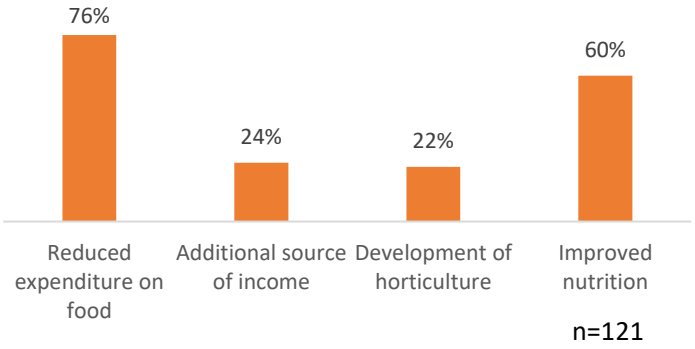
Figure 23: Utilization of kitchen garden produce



They received support for a variety of vegetables such as beans, brinjal, tomato, lady finger, pumpkin, etc. **A majority of the respondents were found using the produce from their gardens for self-consumption (79%), and very few were selling the produce** (Ref. fig. 23). **95% of the beneficiaries observed an increase in the quantity of consumption of fruits/vegetables from the kitchen garden since the project started.** The ones involved in selling the produce reported a median monthly income of ₹1000.

The **respondents saved around ₹250 every week** on buying fruits/vegetables. Where vegetables were sold, respondents **earned a median weekly income of about ₹275**. Moreover, the community is even aware of the benefits of having a kitchen garden as can be inferred from figure 24 and beneficiaries seemed satisfied with the intervention.

Figure 24: Perceived benefits of HRDP supported kitchen gardens

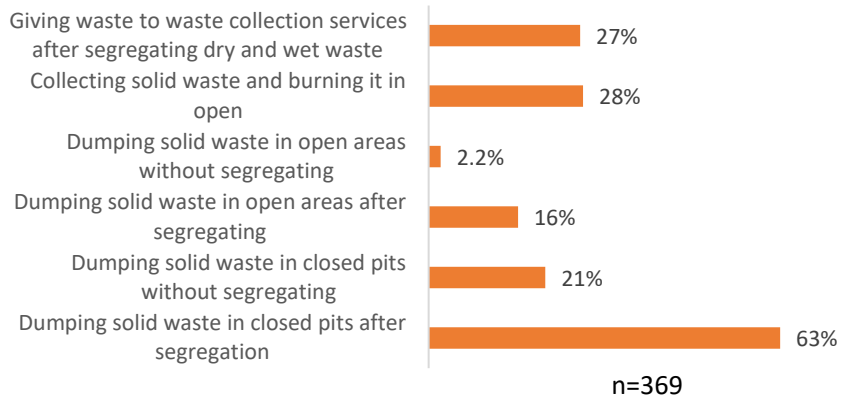


Awareness and health seeking behavior

The programme undertook interventions for improving awareness on menstruation and menstrual hygiene, solid waste management and cleanliness practices one must practice daily. **56% of the respondents stated using toilets instead of open defecation and 86% reported washing hands** using soap after using toilets as a cleanliness practice to be followed daily. **HDFC awareness sessions (86%) have been the primary source from where the community learned about the same.**

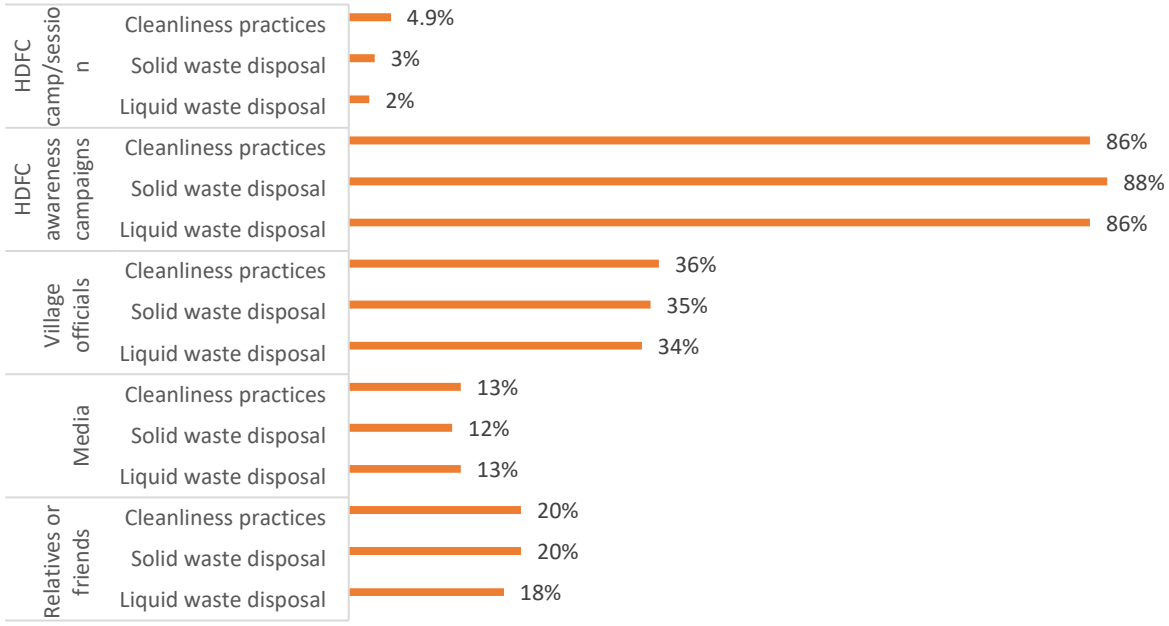
Awareness sessions for adolescent girls on menstrual hygiene management have been effective as found during the qualitative interactions. Girls received knowledge on menstrual cycle, how to tackle period cramps and maintain hygiene. Moreover, due to the efforts under the programme, menstruation is less of a taboo in the villages as women and girls are talking about it freely.

Figure 25: Best methods for solid waste disposal



Moreover, regarding knowledge about the best methods for solid waste management, there has been **a behavioral change as 63% of the respondents reported dumping solid waste in closed pits after segregation** and **27% reported giving waste to waste collection services after segregating dry and wet waste as the best methods for solid waste disposal** (Ref. fig. 25). Awareness regarding releasing liquid waste into soak pits was also found among 60% of the respondents**.** Here as well, the main sources of information regarding these methods have been the awareness campaigns organized under the programme.

Figure 26: Health and sanitation practices learned through different sources



Water Management- Drinking Water

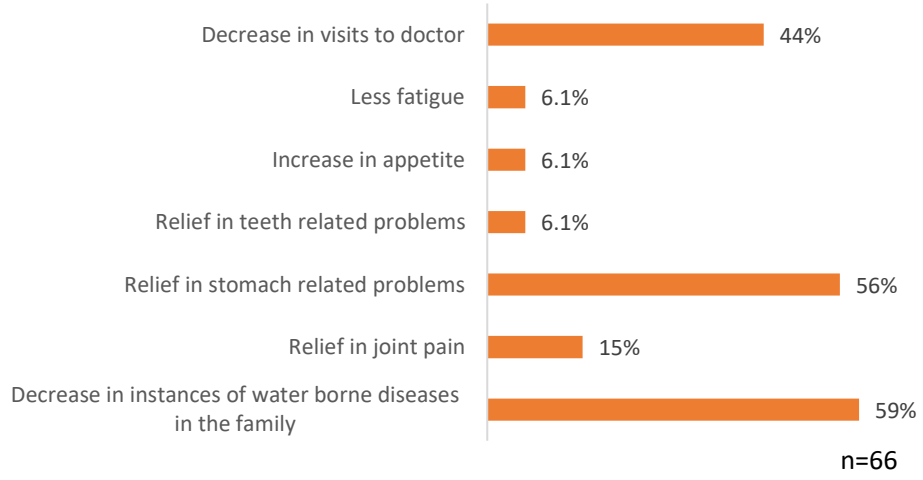
Since programme villages experienced a shortage of safe drinking water, overhead tanks were set up in some villages along with piped water connections to cater to the demand for safe drinking water. As the intervention was limited to only a certain villages and people from Simlisahi village hadn't received the water supply despite the installation of the water tank on account of failure of the electric transformer, **only 16% of the total sampled households reported benefiting from**

drinking water management where they received piped water supply to their houses. The beneficiaries had installed a tap outside their houses/toilet and bathing rooms with a water meter and used the water for both purposes (Also see page 30)

Prior to the programme, the main source of drinking water remained tube well (29%) and dug well (33%) which was causing gastric issues in the community. Some are even receiving water through the government piped water supply (35%).

Majority of the beneficiaries have been consuming the water for about 2 or more than 2 years. Field observation attests to the fact that the piped water supply is reaching the community and members are extremely pleased with the intervention except where it's not functional. The change in the source of drinking water has brought a change in household health with relief in stomach related problems, a decrease in instances of water-borne diseases, and a decrease in visits to doctor (ref. fig. 27). It has greatly benefitted the women by helping them save time in fetching water (80%).

Figure 27: Changes observed in health due to change in source of drinking water



4.4.2. Case Study

Sorting Centre- A New Hope towards Waste Management

The village of Kantabania is making its way towards gaining the benefits of a clean environment. A waste sorting centre established at Kantabania sorts waste from thousands of households from neighbouring villages of Biridihi, Kusumitara, and Subalaya.

This has been a result of the meetings and the awareness programmes held with the VDC members, SHGs and community leaders on waste management. The programme trained the participants on primary waste segregation of waste at the household level and composting biodegradable waste in pits. Participants were taught to identify biodegradable, non-biodegradable, hazardous, and recyclable waste. Every household was provided with bags to collect dry waste and arrangements were made to collect the waste and transport it to the sorting centre in a mini truck.

The sorting centre receives an income from selling the solid waste collected. "I sort out the dry solid waste for selling. Till now, we have done waste collection 3-4 times and had collected 30-40 quintals of waste," says Abhimanyu Nayak, a resident of the village who is responsible for sorting the solid waste. He performs his job 8 days a month and earns an income of 300 per day. He informs that there has been a change in the community as people were first indifferent and ignorant towards the activity and preferred giving their waste to local scrap vendors who took their waste in return for a sweet. However, there is some change now as people have started to give their waste but they need to be more careful towards what they are putting in the bag. He has often got cuts because of the glass pieces found in the waste.

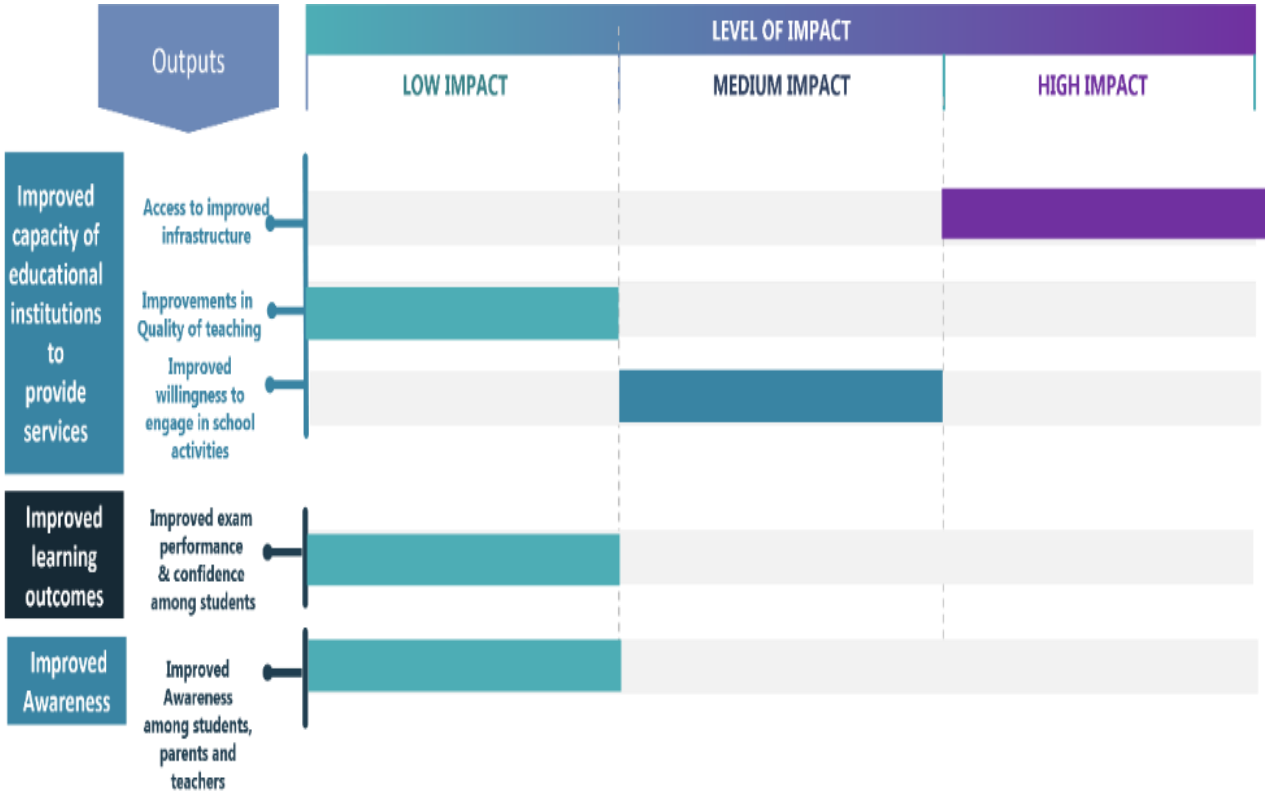
4.5. Promotion of Education

Table 9: Activities under education in Odisha

Activity Category	Activities
Educational Institutions Development	Re-furbishing of Anganwadi Centres, School Library, Support for Sports Kit & First Aid Box with necessary preventive medicine, Smart Classrooms & E-learning Program, Kitchen Up-gradation for AWCs, School up-gradation program, Toilets for Schools, Positive-health behaviour and Self-development for adolescents, School Children's Parliament - Strengthening Bal Sansad, Health and hygiene session for school children

4.5.1. Effectiveness and Impact

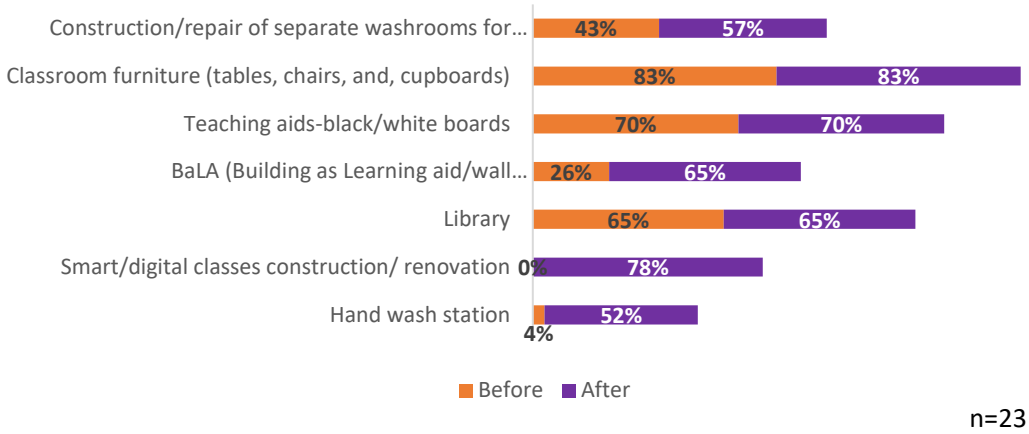
Figure 28: An overview of project effectiveness and impact on Education



Educational Institutions

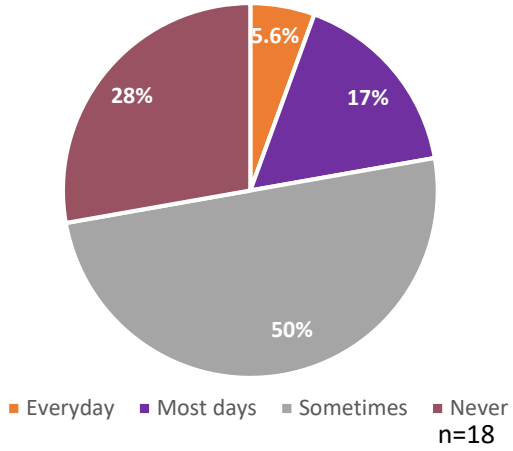
A combination of multiple activities targeted towards improving enrolment, attendance, and learning outcomes were undertaken in the programme area. The programme focused on equipping schools with infrastructure such as – basic furniture, smart-class, separate washrooms for boys and girls, and renovation based on the need of the school. The programme has also helped in providing training and supporting teachers in improving learning outcomes.

Figure 29: Infrastructural services available before and after project inception



As highlighted in figure 29, the smart class was the only intervention that was completely new for the project areas. However, when looking at the effects the intervention had on children's education, the results were unsatisfactory as **50% of the teachers reported using smart classes only sometimes and 28% reported not using it ever.** The reasons for poor usage as stated by the teachers were not being in a habit of using it (100%), they were not sure how to operate it (64%) and other reasons (50%) like not enough time/lack of a computer teacher/lack of a separate classroom to take the class. These findings were seconded by the students who said smart classes were used only sometimes (94%). However, the students who did have a chance to use smart class liked learning from the same as according to them, it made the lessons more interesting (97%), and easier to understand (94%) and remember (77%) and syllabus gets covered faster (92%).

Figure 30: Usage of smart class as reported by teachers



The **furniture received** by the programme for the e-learning room was also reported to be in **working condition by the teachers (100%),** however, teachers expressed the **need for more furniture that will be in proportion to the strength of the class.** A separate room in schools is designated for a library but **28% of the students reported making use of the library every day**, while 31% and 41% of the students reported its usage most days and sometimes respectively. The library has benefitted a few children in improving reading habits (79%) and in reading material beyond the syllabus (97%).

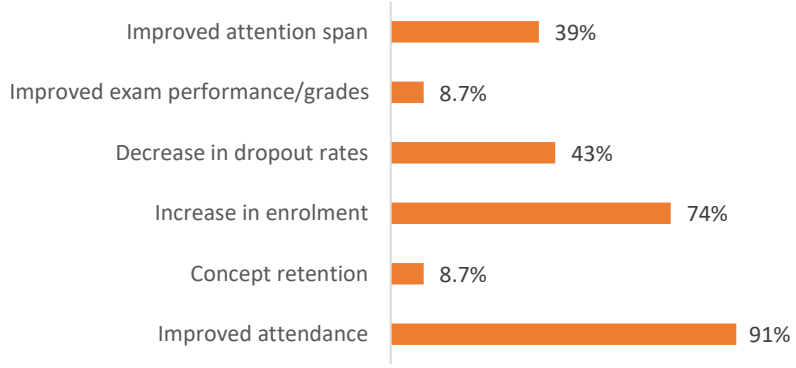
Having proper sanitation facility is a crucial factor in maintaining school attendance. As highlighted by the students, the construction/renovation of toilets in school has helped them in attending school regularly (100%) and the toilets are being used by them every day. Although, water supply in the toilets is still an issue in certain schools as there is no bore well in the school and water from the

government water line is insufficient. Moreover, there is no provision for soaps for children to wash their hands after using the toilets and before eating food.

In terms of receiving learning and play materials, schools reported receiving play materials and also received support for development of a playscape for the students to help in the overall development of the children. Field observations show children being extremely satisfied with the play area and making full use of it. The renovation of the Anganwadi centres gave a new look the centre with a well-constructed kitchen, water purifier, wall paintings, solar panel for electricity and toys. Interaction with anganwadi workers expressed their satisfaction with the same.

In terms of capacity building support for the teachers, **65% of the teachers reported no capacity building support** and 35% of the teachers reported receiving training on teaching material development and only 4.3% reported receiving computer/digital training.

Figure 31: Changes observed in students due to project infrastructure developments



Teachers have observed changes in their students in the form of attendance, enrolment, and dropout rates due to the infrastructural development taken place under the project as can be seen in figure 28. Qualitative analysis with mothers highlights their satisfaction with the changes that have occurred in the schools and they say that "now the schools look good from afar".

4.6. Sustainability

The sustainability of the interventions is looked at from the criteria of structures established, technical know-how, usage, and maintenance. The **support provided for irrigation has resulted in the continued usage of the facilities in most villages**, however, the **number of irrigation facilities are not sufficient to cater to the needs of all farmers**. The Paani Panchayat in villages have fixed water price according to the crop and land size. However, the lack of electricity connection has impeded the use of lift irrigation in certain programme villages. Further, the **ponds renovated are being used for community fishery** and the community has greatly benefitted from pisciculture. Although, adoption of **organic fertilizer** was promoted by the programme, **its adoption and usage by the farmers has been limited**. A **considerable number of solar street lights installed**, which had a huge role in easing movement of the community at night, **are barely working.**

The **knowledge for financial management of SHGs has been retained by the SHG leaders** but **not much has been passed onto the other members of the group**. Moreover, women and SHG members are not involved in any business activity for additional source of livelihood and income. Further, the animal health camp for the upkeep of livestock ensure awareness among the community and the importance of livestock health, however, livestock rearing is not widely practiced amongst the community.

The **agriculture training and support** provided to farmers have been effective with an **increase in their knowledge of improved agriculture practices but the adoption is slow**. Moreover, the **farmer groups and clubs formed are still functioning.**

With regard to education, **assets like the library, smart class, sports equipment, and furniture provided to the school have been handed over to the schools**. However, **very few e-learning classes are being held in schools** either because teachers do not seem confident in their skills to operate the device or because of lack of time. Moreover, **sports equipment were handed over to the school but some of them have got damaged over time**. Further, the development of the **playscape has brought a huge change and the area is being used regularly during recess.** The **toilets are functional** but some schools face water shortages as the government water supply that comes twice a day is insufficient to meet the needs of all students.

The health camps and behavioral change sessions have helped in increasing the community's **awareness regarding nutrition, basic health and menstrual hygiene**. Moreover, the knowledge provided has stayed with them to a certain expect and has brought a noticeable change in the community. Further, **although the piped water supply has reached most villages, technical problems like transformer failure has hampered its supply in Simlisahi**. The **convergence with the Swachh Bharat Mission for toilet and bathing unit construction has resulted in establishment of various such units**. Moreover, the majority contribution coming from the community shows the sustainability of the intervention in sensitizing the community. Further, the renovation of Anganwadi centres and training to ASHA and Anganwadi workers also ensures that sustainable benefits reach the village community.

4.7. Holistic Rural Development Index (HRDI)

According to the World Bank, there are multiple dimensions involved in achieving the goals of rural development and the resulting mixture raises agricultural production, generates new jobs, enhances health, increases communication, and provides better living infrastructure. Rural development is defined by the World Bank as the improvement in the social and economic environment of the rural population. Thus, the fundamental aims of rural development include planning, creating, and using the resources such as land, water, and manpower to promote equal opportunity for the population reliant on them.

HDFC Bank in its document explaining HRDI stated that since HRDP aimed 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. Since the index aimed to create comparability across the various blocks, similar indicators were used for the calculation of HRDI in Odisha. Based on our calculation, the HRDI for the studied clusters is presented in the table below.

Table 10: Holistic Rural Development Index for Odisha

Domain	NRM		Skill and Livelihood		Health and Sanitation		Education		Overall HRDI	
HRDI Score % Change	Baseline	Endline	Base line	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
	0.15	**0.17**	**0.20**	**0.22**	**0.06**	**0.16**	**0.09**	**0.15**	**0.50**	**0.70**
	13%		**14%**		**167%**		**67%**		**40%**	

Since the program did not have an available baseline, the baseline was captured through the recall method. The indicators were selected and assigned weights based on their relative contribution to the final expected outcome across all domain-wise interventions. While most of the indicators were found to be relevant for the study in Odisha, some needed modifications in accordance with the program and also in accordance with the study design, and the information collected. **The detailed methodology and indicators selected can be accessed in Annexure 6.3.**

Further, the thematic-wise indicators were assigned weights to arrive at the composite HRDI score of **0.70** indicating **a notable positive change toward the desired impact** from the baseline score of 0.50.

5. Conclusion

5.1. Summary of Findings

The HRDP project is aimed to support the lives of poor and vulnerable communities by adopting a holistic approach toward development. This involved providing necessary inputs on issues like shaping economic independence through skilling, providing basic infrastructural development, and entrepreneurship support. The development of human capital, natural resources, and infrastructure in poor and backward villages was expected to bring about their socio-economic transformation. In the **assessed HRD program in the Nayagarh district, Odisha**, the major focus areas for intervention were Natural Resource Management (NRM), Skill Development & Livelihood Enhancement, Promotion of Education, and Healthcare & Hygiene.

The project interventions have been **effective in bringing about some changes in the income of farmers through improved productivity, provision of seeds and irrigation facilities, and improved agricultural practices**. However, income has also increased because of a change in market prices and **irrigation remains a problem** for a number of farmers.

Within skill and livelihood enhancement, the project activities worked on providing improved cultivation practices to paddy and green gram farmers and farmers were given demonstrations. Although, **farmers were found using some of the practices taught, they are mainly following the techniques to cultivate on a small land area** and are unable to expand the practices on large farmlands. Further, the **producer groups formed were functioning** and fulfilling their purpose. Moreover, the **financial management training given to SHG women leaders was found useful** but the knowledge hasn't been transferred to other members of the groups. The programme did not work towards providing concrete business opportunities and employment for the community and the little support provided for vermi compost and bio floc production hasn't translated into a source of income and is barely being continued. The monetary support given to the extra vulnerable families helped in bringing some financial respite but many households continue to be stuck in abject poverty.

The health interventions aimed at facilitating access to health and sanitation services have been effective in terms of **improving household health status** and **reducing the practice of open defecation and bathing in open spaces**. Although, the community is **still not open defecation free**. Moreover, while **the piped water supply is reaching households** and people are satisfied with its quality, there are villages that lack access (due to logistical and technical reasons) despite the provision of an overhead tank.

Lastly, to bring about positive learning outcomes in schools, **the project undertook the task of improving/enhancing the infrastructural and learning environment at schools and Anganwadi centres**. Several project interventions were undertaken including the installation of smart classes, library, playscape and construction/renovation of separate washrooms for boys and girls, etc. Where **school renovation works have been appreciated** by the school authorities, parents and students greatly, interventions like smart classes require **more work towards teacher**

training to make full usage of the device. Moreover, **schools require more teachers and furniture to be able to hold the classes efficiently.**

5.2. Recommendations

NRM

- A follow-up by agriculture experts is needed to ensure farmers are making use of the practices taught and assist them in their problems.
- Increase in budget for installation of more lift irrigation systems as irrigation continues to be a problem in the area.
- Repair and replacement of solar streetlights

Promotion of Education

- Capacitating the school teachers and staff for operating smart class and making efficient use of the resource.

Health and Sanitation

- Assisting the communities in repair of electric transformers hindering the piped water supply to houses.
- Expanding the coverage of piped water supply to more villages as the problem of safe and accessible drinking water continues.

Skill Training and Livelihood Enhancement

- More income-earning opportunities and business related training for women and youth

6. Annexures

6.1. Sampling Methodology

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

6.1.1. Quantitative Sample Size Calculation

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

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

Where,

N= sample size

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

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

S_e= margin of error, set at 5%;

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

Thus, the estimated maximum sample size is *400.*

Quantitative Sampling Methodology

10 programme villages with the highest number of beneficiaries were selected for the study. The stages of sampling are explained as follows:

Stage 1 – Selection of beneficiaries:

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

Stage 2- Sampling for villages:

Sampling for each village was done using the Probability Proportionate to Size (PPS) method. The percentage of the total number of beneficiaries in a village was taken out from the total beneficiaries. This percentage was then converted into a sample per village. 5 villages with the lowest sample size were merged with other villages to make a total of 10 villages to be covered under the survey.

Stage 3- Sampling for activities:

The total sample of 400 was then distributed amongst various themes depending on the significance of activities done.

6.1.2. Qualitative Sample Size Calculation

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

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

6.2. Sustainability Thematic wise matrix

The project support provided demonstrated the capability to continue even after the program ended. The project's support to sustain improved outcomes are demonstrated below:

Support provided	Structures established	Technical Know-how	Usage	Maintenance
NRM				
Water Management- Irrigation	✓		✓	✓
Farm Management	✓		✓	
Clean Energy	✓		✓	
Skill Training and Livelihood Enhancement				
Agriculture Training and Support		✓	✓	X
SHG-Based Women Empowerment		✓	✓	
Livestock Management		✓	✓	
Health and Sanitation				
Health		✓	✓	
Sanitation	✓		✓	✓
Water Management - Drinking	✓	✓	✓	✓
Education				
Educational Institutions Development	✓		✓	

6.3. HRDI Methodology

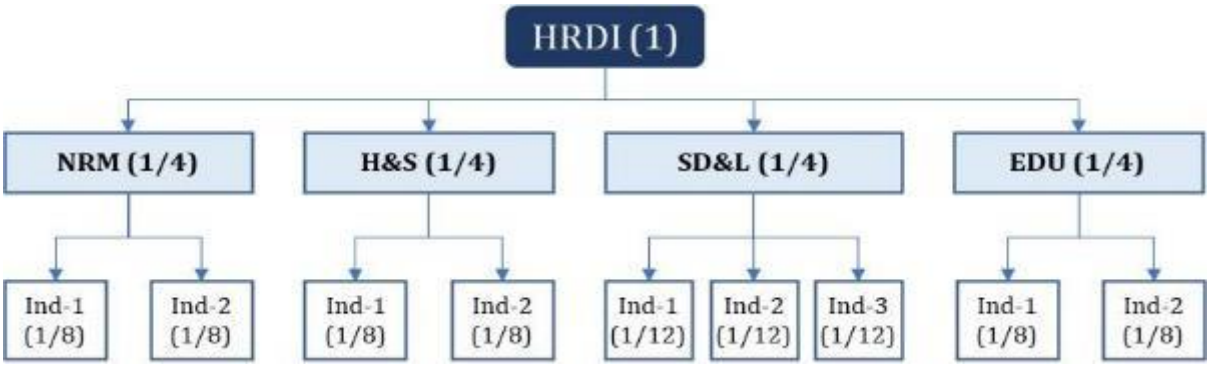
The outcome indicators included in the HRDI were obtained from different domains and are consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables such that the indicators could be measured between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

Indicator Weights

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

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

Domain and indicator weights[12]



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		
Natural Resource Management	The proportion of farmers with net income above median	(1/4) x (1/2) = 0.125
	Percentage of farmers reporting access to irrigation	(1/4) x (1/2) = 0.125
Health and Sanitation	Percentage of households with access to improved drinking water facility	(1/4) x (1/3) = 0.083
	Percentage of households with access to improved toilet facility	(1/4) x (1/3) = 0.083
	Percentage of households with individual bathing unit	(1/4) x (1/3) = 0.083
	Percentage of SHG members reporting their groups having savings	(1/4) x (1/2) = 0.125
Livelihoods and Skill development	Percentage of households with improved skills in Agriculture	(1/4) x (1/2) = 0.125
	Percentage of students reporting increased access to functional learning infrastructure (library, smart class, BALA etc.)	(1/4) x (1/2) = 0.125
Education	Percentage of students reporting increased access to functional school physical	(1/4) x (1/2) = 0.125

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

infrastructure (handwash station, separate washrooms, etc.)	

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

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

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	HRDI	End line	HRDI	% Change
NRM	Proportion of farmers with net income above median	0.26	0.15	0.33	0.17	13%
NRM	Percentage of farmers reporting access to irrigation	0.34		0.34		

H&S	Percentage of households with access to improved drinking water facility	0.02	0.06	0.04	0.16	167%
H&S	Percentage of households with access to improved toilet facility	0.17		0.31		
H&S	Percentage of households with individual bathing unit	0.6		0.30		
Skill	Percentage of SHG members reporting their groups having savings	0.41	0.20	0.49	0.22	10%
Skill	Percentage of households with improved skills in Agriculture	0.39		0.39		
ED	Percentage of students reporting increased access to functional learning infrastructure (library, science labs, learning aids, etc.)	0.15	0.09	0.32	0.15	67%
ED	Percentage of students reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, etc.)	0.20		0.28		
Total		0.50		0.70		40%

6.4. Overview of Impact Calculation

Table 11: An overview of project impact in NRM[13]

Goal: Effective utilization of local resources and adequate access to water for various purposes				
Outputs	**Output Indicators**		**Ouput Avg**	**Impact level**
Increased income from agriculture				
Land/ crop productivity	(a) Proportion of farmers reporting increase in production of crops that were supported under HRDP (paddy)	89%		
	(b) Proportion of farmers reporting increased income from crops that were supported under HRDP.	96%		
	(c) Average increase in income from crops that were supported under HRDP (% change)	47%		
	(d) Average increase in productivity from crops that were supported under HRDP(% change)	23%		
	(e) Average decrease in input cost(% change)	-50%	41%	Medium
Access to farm management infrastructure	(a) Proportion of beneficiaries satisfied with quality of available services (in farm management)	91%		
	(b) Proportion of farmers reporting project interventions leading to increase in income (average of top 4-5 crops)	30%		
	(c) Proportion of farmers currently practicing organic farming	18%		
	(d) Proportion of farmers reporting an increase in the use of natural fertilizers?	82%	55%	Medium
Increased adoption of crop diversification	(a) Proportion of farmers diversified their crops with project support?	35.0%		
	(b) Proportion of farmers who report income increase due to crop diversification (base = farmers who adopted crop diversification)	38%	36.5%	Low
Land under irrigation	(a) Increased area under irrigation	-20%		
	(b). The proportion of farmers who received support for irrigation	39%	10%	Low
Increased use of clean energy solutions				
Adoption of clean energy infrastructure	(a) Proportion of HHs using clean energy infrastructure (Base=all)	71%		
	(b)Proportion of households reporting benefits from using clean energy infrastructure (Base=clean energy beneficiaries)	99%	85%	High

[13] 100%-70% - High impact; 40%-70%- Medium impact, <40% - Low impact

Table 12: An overview of project impact on skill training and livelihood enhancement

Goal: More Income for the HHs through Diverse income sources locally to farmers, youth and women				
Outputs	**Output Indicators**		**Ouput Avg**	**Impact level**
Improved access to agricultural training and services				
Access to Agriculture training and services	(a) Proportion of farmers who reported project training services are useful	100%		
	(b) Proportion of farmers who demonstrate awareness regarding sustainable farming practices	55%	78%	High
Adoption of improved farming practices	(a) Proportion of farmers who adopt scientific agricultural practices	36%		
	(b) Proportion of beneficiaries reporting increase in productivity due to better farm management	68%		
	(c) Proportion of farmers reporting increased income	39%	48%	Medium
Economic empowerment through collectivization (Only for SHG members)				
(i) Formation/ revival of SHG based Enterprises	(a) Proportion of members who received support with establishing/reviving SHGs	15%		
	(b) Proportion of SHG members who received training (record keeping, utilization of savings, loan and repayment etc-)	73%		
	(b) Proportion of members whose SHGs are currently functioning	98%	62%	Medium
Improved capacity to generate income through livestock management				
(i) Adoption of scientific management of livestock	(a) Proportion of beneficiaries who received support in livestock management services	4%		
	(b) Proportion of beneficiaries reporting increase in income from livestock management (base= people who received support in livestock management)	2%		
	(c)Proportion of beneficiaries reporting improved livestock health	3%	3%	Low

Table 13: An overview of project impact on health and sanitation

Goal: Healthy lives and good hygiene practices				
Outputs	**Output Indicators**		**Ouput Avg**	**Impact level**
Improved health infrastructure and services				
(i) Establishment/ enhancement of health infrastructure and services	(a) Proportion of beneficiaries who gained access to health services	37%		
	(b) Proportion of beneficiaries reporting lifestyle changes due to improved access	100%		
	(c) Proportion of beneficiaries who consulted medical references from camps	79%	72%	High
(ii). Improved quality of health services	(a) Increase in no. of beneficiaries reporting improved quality of available services	26%	26%	Low
Improved sanitation infrastructure and services				
(i) Establishment/ enhancement of sanitation infrastructure.	(a) Proportion of beneficiaries who gained access to sanitation services	87%		
	(b) Increase in no of HHs with access to sanitation infrastructure/ facilities	84%		
	(c) Proportion of beneficiaries reporting benefits due to improved access	100%	90%	High
Development of Kitchen gardens				
(i) Increased adoption of kitchen gardens	(a) Proportion of HHs reporting income gains from kitchen gardens	24%		
	(b) No of HHs received seeds/training in kitchen garden	29%		
	(c) No of HHs with improved vegetable/fruit consumption due to kitchen gardens	95%		
	(d) Proportion of HHs reporting improved nutrition	60%	52%	Medium
Improved awareness and health seeking behaviour				
(i) Awareness regarding health and sanitation practices	(a) Improved dietary practices/reduced tobacco consumption/improved physical exercise	36%		
	(b) Improved awareness regarding cleanliness and sanitation practices	99%		
	(c) Improved awareness regarding waste management	63%	66%	Medium
(ii) Adoption of positive health and sanitation practices	(a) Increase in no of HHs demonstrating adoption of WASH practices	92%		
	(b) Increase in no. of HHs adopting proper solid waste management practices	58%		
	(c) Increase in no of HHs adopting proper liquid waste management practices	97%	82%	High
Improved availability and management of water				
Access to drinking water at household	(a)Proportion of households reporting decreased instances of water borne diseases	59%	33%	Low

and community level improved	(b)Proportion of households reporting reduced time for fetching water	6%		

Table 14: An overview of project impact on Education

Goal: Active participation and effective learning of children in quality education centres				
Outputs	**Output Indicators**		**Ouput Avg**	**Impact level**
Improved capacity of educational institutions to provide services				
(i) Access to improved physical infrastructure	(a) Proportion of students/schools who report gaining access to functioning smart class rooms	100%	78%	High
	(b) Proportion of schools who gained access to clean and functioning sanitation units/drinking water posts at education institutions	56%		
(ii)Improvements in quality of teaching	(a) Proportion of teachers regularly utilizing smart class	6%	30%	Low
	(b) Proportion of students who prefer/regularly use libraries	28%		
	(c) Proportion of students who report improvements in teaching quality (classes are more interesting)	76%		
	(d) Proportion of teachers reporting improved capacity to adopt innovative teaching methods (Base= teachers who received training)	26%		
	(e) Awareness among teachers regarding child development (Base= teachers who received training)	13%		
(iii) Improved willingness to engage in school activities	(a) Teachers reporting improvements in attendance due to improved infrastructure	91%	69%	Medium
	(b) Proportion of teachers reporting increase in enrolment post infrastructure development	74%		
	(c) Proportion of teachers reporting decrease in drop-out rates post infrastructure development	43%		
Improved learning outcomes				
(i) Improved exam performance and subject confidence among students	(a) Proportion of teachers reporting improvements in learning outcomes due to infrastructural facilities at institutions (concept retention, attention span and exam performance)	19%	19%	Low
Improved Awareness				
(i) Improved Awareness among students, parents and teachers	(a) Awareness activities conducted	35%	35%	Low

***