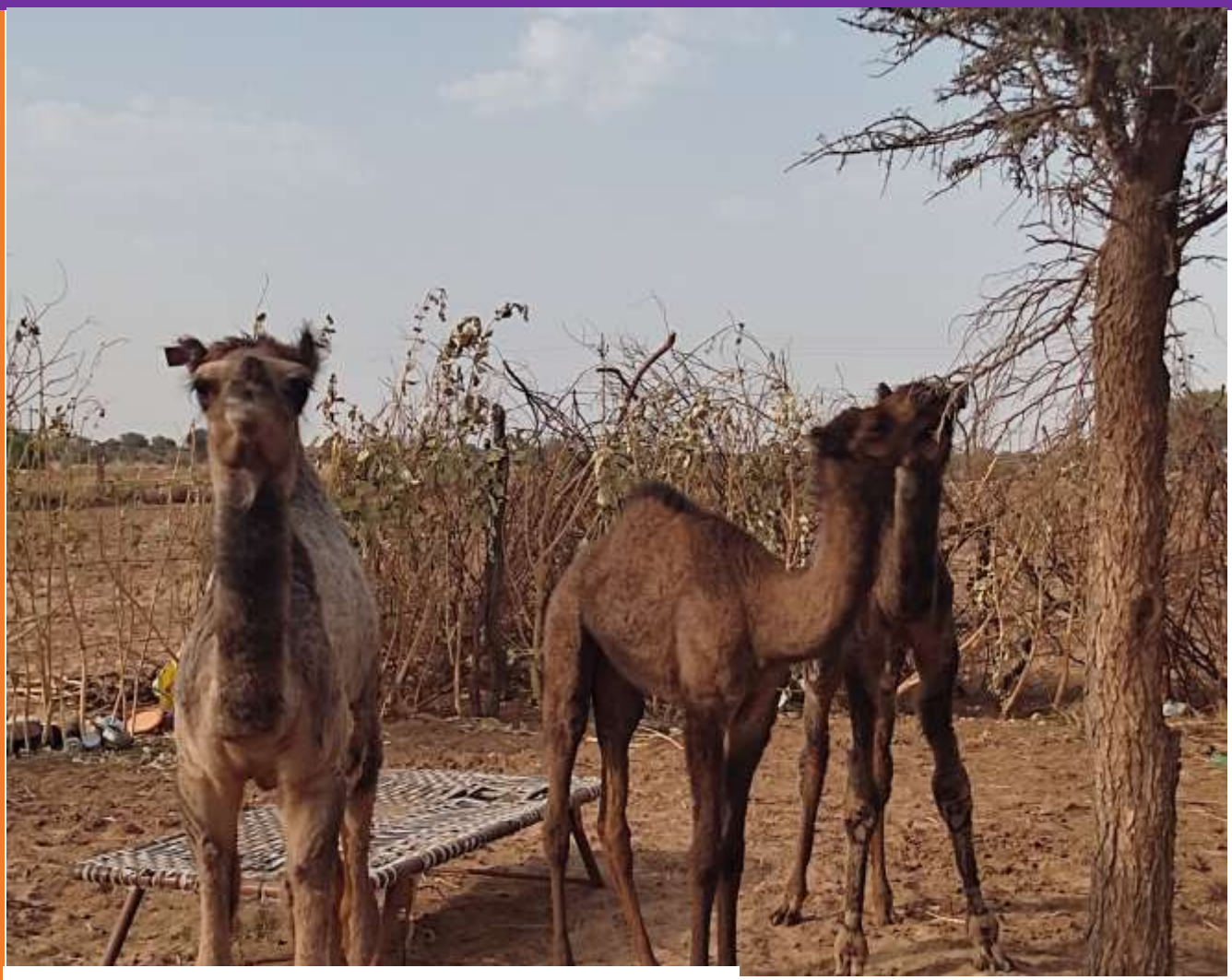
Impact Assessment Study under Holistic Rural Development Programme (HRDP) Jaisalmer, Rajasthan – P0282



Prepared For:

HDFC BANK | PARIVARTAN
A step towards sustainable progress

HDFC Bank Corporate Social Responsibility (CSR)

Prepared By:

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AAVISHKAAR GROUP

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List of Acronyms

APL	**Above Poverty Line**
BPL	Below Poverty Line
BaLA	Building as Learning Aid
CSR	Corporate Social Responsibility
FGD	Focus group discussions
HH	Household
HRDI	Holistic Rural Development Index
HRDP	Holistic Rural Development Programme
IDI	In-depth Interview
KII	Key Informant Interview
NRM	Natural Resource Management
SHG	Self-Help Groups
SMC	School Management Committees
ST&LE	Skill Training & Livelihood Enhancement
PoE	Promotion of Education

Executive Summary

This study evaluates the impact of the Holistic Rural Development Programme (HRDP) implemented by the Urmul Trust with HDFC Bank CSR support in Pokharan block, Jaisalmer district, Rajasthan (April 2019-March 2023). It examines the implementation process, key milestones achieved, program impact, and challenges faced by Urmul and HDFC Bank.

The key focus areas of the intervention were Natural Resource Management (NRM), Skill Training & Livelihood Enhancement (ST&LE), Health and Sanitation (H&S), and Promotion of Education (PoE). The framework used for the impact assessment was an adaptive version of the DAC criteria (Relevance, Effectiveness, and Sustainability). This adaptation likely considered the specific context of the intervention to ensure a more relevant and accurate assessment.

The project employed a mixed-methods evaluation approach, utilising both quantitative and qualitative data collection methods. This participatory approach involved all key stakeholders. A household survey (393 households) and a separate survey for teachers and students (53 participants) were conducted using purposive random sampling. Additionally, qualitative data was gathered through focus group discussions (3), in-depth interviews (7), and key informant interviews (1).

Natural Resource Management

This project addressed water scarcity and a harsh climate in the region by focusing on sustainable water management and agriculture. It revitalised two community water ponds, constructed 75 household rainwater tanks, and promoted seed banks. Additionally, orchards near homes and improved farming techniques enhanced food security and water conservation. Despite initial setbacks with Azolla due to extreme weather, organic farming practices for jowar and bajra crops were successfully adopted by 100 farmers during the monsoon season. Recognising the importance of drought-resistant Sewan grass (Lasiurus scindicus) for livestock, the project planted it in a designated pasture area. Furthermore, the project promoted clean energy solutions, installing 140 solar street lamps and a biogas plant. These initiatives laid the groundwork for a more sustainable future in this challenging environment.

The interventions improved village water access, reducing household water expenditures; however, agricultural income remained unchanged. Conversely, the clean energy component had a significant impact.

Skill Training & Livelihood Enhancement

The project recognised the limitations of a purely agricultural economy and implemented initiatives to diversify livelihoods. A federation of camel herders (240 members) addressed shared challenges and strengthened the milk value chain, while a separate cooperative, *Sri Pabuji Rathora Usthra Doodh Utpadak Sahkari Samithi*, focused on camel milk procurement and marketing. Artisans received training and support through newly established craft centres, promoting traditional skills and creating sustainable livelihoods. Additionally, Self-Help Groups (SHGs) were empowered through training in financial management and connections with banks, allowing them to pursue new income-generating activities. This multifaceted approach aimed to equip the local population with the skills and resources necessary for a more resilient future.

The project fostered significant income growth for participants. **Artisans associated with craft centres saw a remarkable 615% increase, reaching an average annual income of INR 21,981. Livestock activities also experienced a substantial boost, with average monthly**

income rising by 128% to INR 10,984. Camel herders, a crucial part of the livestock sector, have witnessed a notable 119 % increase in their annual income as well.

Health & Sanitation

A harsh desert environment with limited healthcare providers, especially specialists, creates significant access issues in this district. This is reflected in low institutional deliveries, inadequate prenatal care, and a skewed sex ratio. Menstrual health needs are also unmet due to logistical challenges and a lack of water, sanitation, and hygiene facilities. Furthermore, a shortage of veterinary staff hinders access to quality care for livestock, crucial for the livelihoods of many residents. To address these challenges, the project implemented various initiatives: mobile health camps (140) offering free consultations and medicine to improve healthcare accessibility, menstrual hygiene awareness sessions (28) to combat stigma and empower women, COVID-19 support to safeguard residents' well-being, and livestock health camps to improve animal health and the economic stability of communities dependent on animal husbandry. These multifaceted efforts aimed to improve healthcare outcomes and empower residents in this challenging environment.

Mobile health camps for people and livestock showed positive results, but more services are needed. Building capacity within livestock communities to provide basic animal care and promote disease prevention can address local needs. While the district is officially open defecation free, the practice continues in the villages. Promoting water-saving dry toilets that generate usable manure could be a sustainable solution, but requires a change in local habits. Empowering women's groups (SHGs) is crucial to tackle menstrual hygiene challenges in a context of gender discrimination. Continued efforts are needed to improve overall health and sanitation in this challenging environment.

Promotion of Education

Jaisalmer district faces a critical education gap, with a low overall literacy rate and a stark gender disparity (32.3% female vs. 72% male). Child marriage further entrenches the issue. The project implemented a multi-pronged approach to address this challenge. Government schools received upgrades to facilities, teacher training, and empowered management committees. Additionally, seven model schools were supported with improved facilities, improved hygiene (sanitary napkin vending and safe disposal), and engaging learning environments. These interventions aimed to improve education quality, increase enrolment, and empower students, ultimately contributing to the development of the entire community.

The following table outlines the achievements of key income indicators across the baseline and endline of the project.

Table 1: Summary of Key Income Indicators

Income Indicators (based on mean)	Before	After	% Change
Average Income from livestock (INR)	4815	10985	128
Average Income from Camel Cluster activities	13571	29761	119
Average Income from Craft Cluster	3073	21982	615

HRDI Indicators

Table 2: Summary of HRDI Indicators

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Base line	End line	Base line	End line	Base line	End line	Base line	End line	Base line	End line
	0.06	**0.07**	**0.08**	**0.21**	**0.03**	**0.15**	**0.07**	**0.10**	**0.24**	**0.53**
% Change	**16.66%**		**162.5%**		**400%**		**42.8%**		**120.8%**	

The table indicates a remarkable 120.8% increase in the composite HRDI score compared to the baseline scenario. This surge can be attributed to planned interventions in the sample villages, particularly in the ST&LE and H&S sectors. The 400% increase in H&S can be explained by its initial low starting point relative to other areas, alongside the focused activities implemented, notably in improving drinking water access. Conversely, there has been no significant change in NRM due to limited agricultural activities, hindered primarily by water scarcity and adverse climatic conditions.

Recommendations

- Current spacing recommendations for horticultural plants appear inadequate, and this potentially restricts sapling growth. There is a need for re-evaluation of spacing guidelines and practices
- There is a need to promote agro-forestry considering that traditional agroforestry systems have been damaged to a considerable extent due to ever-increasing biotic and abiotic pressure
- Need to be part of advocacy efforts with other like-minded organisations to ensure that the traditional usage rights of communities with respect to pasturelands and other commons are not affected.
- Build up a cadre within cattle herders who can be capacitated on basics of livestock care, including key management aspects, the importance of preventive medicine, vaccination techniques, etc.
- Though no work has been undertaken under toilets, there is a need for these kinds of activities and focus on dry toilets.
- Need for more awareness campaigns about the preservation of groundwater resources and capacity building of communities to protect their traditional water harvesting systems like *tankas* and *naadis*.
- The engagement under MGNREGA needs to be strengthened and there is a very pressing need to build up awareness of people with respect to its provisions for effective implementation.
- An effort should be made to capture the situation at the ground on certain key parameters of the proposed project intervention through a baseline survey.
- Under the SHG related component, programmes targeting holistic development should also be conceptualised and integrated into the HRDP programme from the beginning.
- Need for a concerted focus on climate change aspects considering rural livelihoods are going to be affected by it in coming years.
- The HRDP project duration of three to four years is too short to make a substantial impact on various themes including NRM, livelihoods, health, and education.

- The clean energy component under the HRDP could promote smokeless chulhas to reduce the drudgery of women as also to improve the ambient air quality in the cooking area.

1 Introduction

Though India has made massive strides in human development over the last few decades, the rural areas of the country have not substantially benefited from the growth and development occurring nationwide. Even after seventy-five years of independence, disparities between rural and urban centres in the country have been growing. Agriculture is still the mainstay of the Indian economy due to its high share in employment and livelihood creation, notwithstanding its reduced contribution to the nation's GDP over the last few decades. The challenges in rural areas are diverse, ranging from low productivity in agriculture and a lack of non-farm employment opportunities to the availability of basic amenities like clean drinking water, toilets, and sanitation facilities, to name a few. To mitigate these diverse yet interlinked developmental challenges, HDFC Bank, under its Corporate Social Responsibility (CSR) initiative 'Parivartan,' supports numerous programs that deliver holistic rural development to aid the growth and prosperity of the rural population.

1.1 About HRDP

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

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

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

1.2 Objectives of Impact Assessment

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

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

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

The study seeks to:

- Critically and objectively evaluate implementation and performance

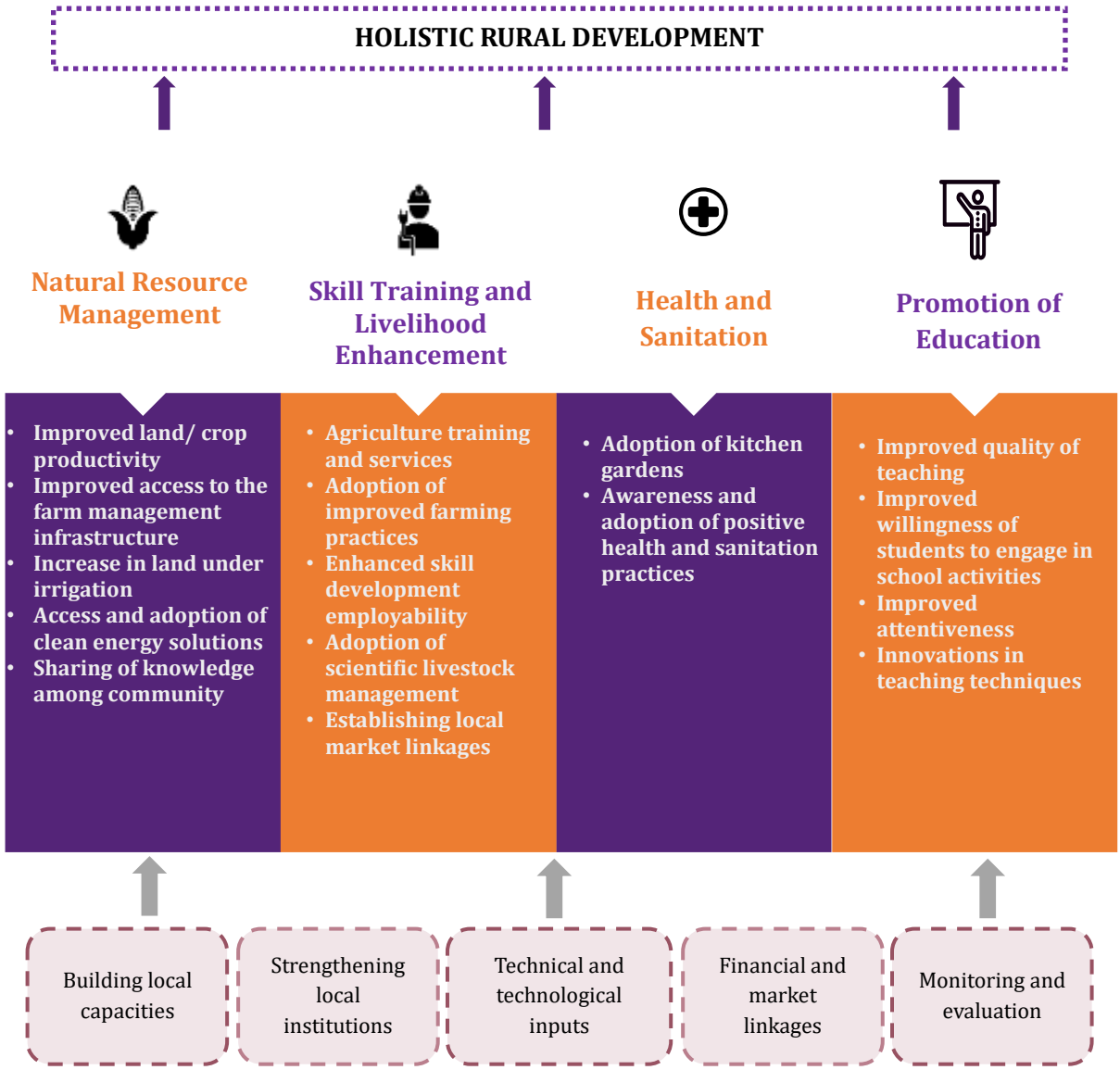
- Determine reasons for certain outcomes or lack thereof
- Derive lessons learned and good practices
- Provide evidence-based findings to inform future operational and strategic decisions while planning and funding partner organisations

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

1.3 Conceptual Framework Adopted

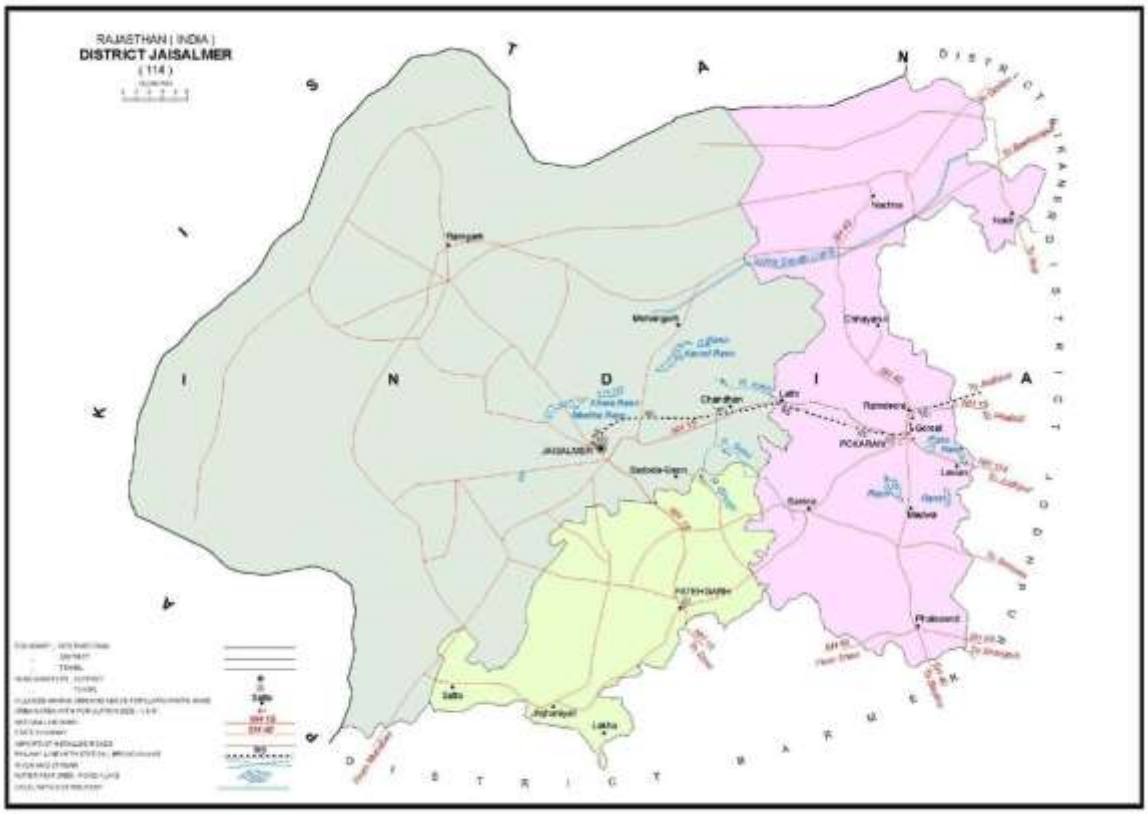
The conceptual framework and the areas covered under the assessment are depicted below. The aim is to build local capacities and strengthen local institutions while providing technical inputs and conducting evaluations across the four thematic areas. The objectives under NRM, ST&LE, H&S and PoE are enumerated in the figure below.

Figure 1: Conceptual Framework



1.4 About the Project Area[1]

Image 1: District Map of Jaisalmer.



Jaisalmer is the biggest district in Rajasthan and the third largest in the country. It has one of the lowest population densities in the state, and a large part of its geographical area is part of the Thar desert. Scheduled Castes and Scheduled Tribes constitute 14.80% and 6.33% of the population, respectively. The majority of the population lives in rural areas. Jaisalmer and Pokharan are the only two urban agglomerations, where most of the urban population resides. The district lags behind on most social indicators, including work participation rate, sex ratio, and literacy.

With scanty rainfall and very high temperatures during the summer months, water has always been a critical issue. Much of the land is unsuitable for agriculture due to climatic, terrain, and soil constraints. The Indira Gandhi Canal Network is slowly expanding its network and provides irrigation in the northern parts of the district. Agriculture (dependent on the meagre rainfall) and livestock rearing are the main sources of livelihood, with mining activities also becoming a recent source of employment. Jowar and Bajra are the main crops grown during the monsoon season, but the yields are very low. Livestock rearing is practiced on a large scale due to the land's suitability for sustaining grasslands.

[1]Source: District Census Handbook, 2011

1.5 Implementing Partner in the District[2]

Founded in Bikaner in 1972 by the URMUL Diary, URMUL Trust represents a family of organizations working towards social and economic change in the lives of the people in the districts in the western Rajasthan part of the arid zone, which receives scanty rainfall, ranging between 250-300 mm annually. Until 1987, Urmul Trust's work focused on health and education. However, the drought that year (one of the worst in the century) severely impacted rural households and put them on the brink of starvation, bringing about a change in the organizational strategy to focus on rural livelihoods too. Three integrated rural development projects were launched, which stand as important landmarks in the growth of the organization. The work expanded from Bikaner to other adjoining districts. In Jaisalmer, their work centred around Pokharan, where they worked with weavers and other marginalized communities in three villages. Through the HRDP program, the work was expanded to another eleven villages.

Image 2 : Camel café on the Jaisalmer Jodhpur Highway

2https://urmul.org/

2 Research Design and Methodology

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

2.1 Criteria for Assessment

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

- Relevance and Convergence
- Impact and Effectiveness
- Sustainability

Under the criterion of relevance and convergence, the team assessed whether the design of the project interventions was:

1. Aligned with the state plans and priorities for rural development.
2. Relevant to the local needs of the most vulnerable groups.
3. Converging with (and making use) of the government's existing resources.
4. Enabling different stakeholders to work together to achieve the intended outcomes of the programme.

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

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

2.2 Primary and Secondary Data Sources

Primary research included a quantitative household survey that was conducted by a survey team consisting of five enumerators and one supervisor. The primary quantitative data was collected using the Computer Assisted Personal Interview (CAPI) method, where we developed a mobile application to collect data. The qualitative research included in-depth interviews (IDIs), Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) with project beneficiaries and secondary stakeholders such as the team members of Urmul Trust, the HDFC Bank programme team, local leaders from the project area, etc. IDIs were conducted with the specific individuals

who were recipients of the project. The qualitative exercise(s) were conducted by our research coordinator.

Secondary data sources included HDFC's CSR Policy, Programme Log Frame (Logical Framework Analysis), Rapid Rural Appraisal Reports, Programme implementation timelines, Communication, and Documentation products, and various reports shared by NGO partner, such as Annual, Impact, Monitoring and Target versus Achievement.

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

2.3 Sample Size and Distribution

From the eight villages of Jaisalmer where the project was implemented, beneficiaries were selected using purposive random sampling, from a list of beneficiaries obtained from URMUL. Since beneficiary selection was undertaken independently for each thematic area, the selection of more than one beneficiary from a single household was probable. Also, there were instances where a single beneficiary received multiple benefits and support across the four thematic areas. The inclusion of beneficiaries in all thematic areas was ensured. The target sample size across eight villages was 400, out of which 446 sample respondents (including teachers and students) were reached. The thematic area-wise sample covered was as follows:

Table3: Quantitative Sample Covered

Village	Theme				
	Total	NRM	ST& LE	PoE	H&S
Barlee Nathusar	55	55	25	16	44
Barlee Manda	36	34	25	02	34
Chacha	53	53	35	09	40
Gomat	56	46	43	31	07
Khetolayi	42	42	35	02	38
Odaniya	48	42	21	15	08
Thaat	50	50	19	06	44
Ujilan	53	50	27	24	36
Total	393	372	230	105	251

Qualitative methods like FGDs (3 nos), KII (2) and IDIs (6) were also used to collect data from the very same villages, covering various themes of the project intervention.

2.4 Training of Enumerators

A survey team, consisting of five enumerators and one supervisor, was part of the quantitative data collection process. Two days of training were provided to the team by the field coordinator and research coordinator, during which they were given detailed orientation on the data collection tool, data collection protocols and also maintaining the quality of the data being

collected. The training included both classroom teaching and mock practice of the survey tool. On the first day of the training, the team members of Urmul Trust, the implementing partner, gave an overview of the interventions carried out under the project to the team. They presented a brief introduction of the villages, including the communities.

Image 3: Training of the enumerators

3 Programme Planning and Implementation

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

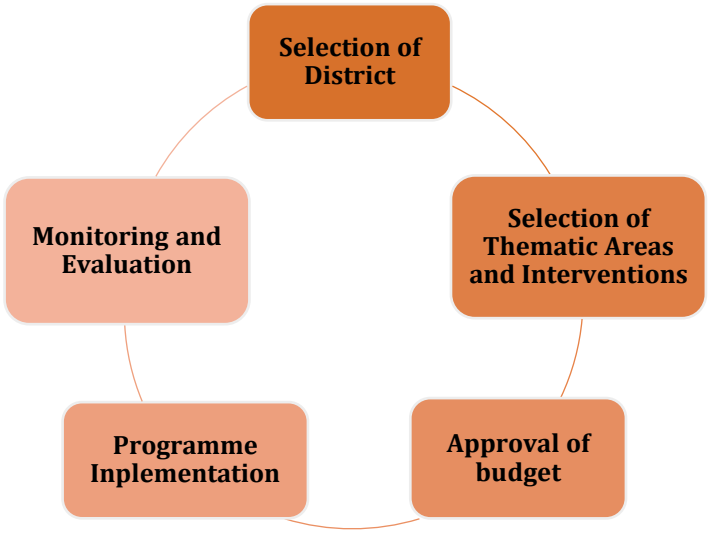


Figure 2: Planning and Implementation Process

3.1 Selection of Project Area

The selection of the project was based on the existing operational area of Urmul Trust, the implementing agency in Jaisalmer district of Rajasthan. The project was implemented in 14 villages' that are part of Pokhran block in the Jaisalmer District of Rajasthan, having a total population of a little over twenty thousand. Major issues in the project villages include:

- Arid zone of the state, and on account of the non-availability of adequate water, the cropping pattern is, by and large, only single. Agriculture is extremely unpredictable and not an assured source of livelihood.
- Drinking water, both for humans and livestock, is a source of major concern for at least 5–6 months of the year. Traditional water harvesting systems have been in a state of disuse due to a lack of maintenance.
- Livestock rearing has been the traditional source of main livelihoods, but its unorganised nature and ineffective connection with the formal economy also hamper its potential as a source of regular livelihoods.
- Traditional artisans had an established livelihood opportunity available locally, as a result of Urmul's efforts in the past. However, currently, even that setup needs to evolve, and technological and craft enhancement are essential to keep it relevant for the next generation and to keep the craft alive in the current market.
- Lack of facilities like toilets, water, and good teachers, combined with socio-cultural factors, have resulted in an increased number of dropouts from the formal education system.

URMUL's objectives in the project were directed toward the above issue, focussing on landless, small and marginal farmer households.

3.2 Selection of Thematic Areas and Interventions

Considering the above challenges in the project area, the URMUL Trust submitted a proposal to HDFC Bank CSR under the HRDP for interventions that addressed not only issues of social inclusion but also livelihoods. Under social inclusion, the focus was on improving the educational system by working with local schools to create a more enabling environment for students, teachers, and others. With respect to education, the interventions aimed at strengthening and filling in the gaps in the formal education system and making it more accessible and enjoyable.

Farm-based livelihoods are extremely vulnerable due to the erratic nature of monsoons and the area being part of the arid zone of the state. Due to the lack of water, agriculture is seasonal and difficult to depend on. One of the focus areas was improving the water storage capacity through the rehabilitation of community water facilities.

A couple of villages in the area had a significant number of households that are camel and goat herders, and work was initiated to improve their income levels from the rearing of these animals. The camel herders of the area were organised into a federation to work on issues concerning them. Two bulk milk chilling centres for the procurement and storage of camel milk and a processing plant for packaging were also set up. Improving the skill base of local artisans, product development in clusters, and strengthening the forward linkages for generating more bulk orders for the crafts cluster formed part of the work undertaken under the craft cluster theme.

The activities specific to each village under the project were decided after in-depth consultation with the respective stakeholders. Except for three villages, all the other eleven villages had not been part of Urmul's intervention in the area earlier. Camel herders and women, who were the key focus of the project intervention, were formed into groups. Activities under each of the four thematic areas are as follows:

3.3 Project Implementation

Table 4: Activities under Four Thematic Areas in Jaisalmer

Activity Category	Activities	Output Indicators
NRM		
Water Management	Community Ponds, Household Rainwater Harvesting, Pitcher Irrigation	Income from Agriculture
Farm Management	Improve Traditional Agriculture technique /practices, Seed Bank, Azolla, Climate Grow Houses (Hydroponics)	
Clean Energy	Solar Street Lights, Community Biogas Plant	Clean Energy
ST&LE		
Camel Cluster &Camel Milk Enterprise	Camel Milk based value chain consolidation	Skill and Entrepreneurship Development
SHG-Based Women Empowerment	Craft Cluster Activities	
Skill Training	External Resource Support/IEC Material, Training/Awareness Program for CIG and	

	Panchayat Members, Exposure Visit for CIG Members	
Livestock Management	Animal Health Camps/Vaccinations, Training on improved camel/goat rearing practices, external resource support/IEC material	Livestock Management
H&S		
Sanitation	Training on Menstrual Hygiene,	Sanitation Infrastructure and Services
Health	Health Camps, Hygiene related awareness sessions	Health Infrastructure and Services
Kitchen Garden	Seeds, training, demonstrations	
PoE		
Educational Institutions Development	Wall projector, sports kit, toilet repair, BaLA, Smart Classroom	Infrastructure in Educational Institutions

3.4 Project Implementation

Based on the needs of the area, the project was designed with the below mentioned objectives:

- Improvement with respect to the drinking water situation can be achieved by reviving community water management structures as well as creating structures at household levels.
- Improvement in the livelihoods of the households by developing a milk value chain for camel/goat milk as well as creating opportunities for work in the handicraft sector for women.
- Improvement with respect to the education aspect by working on the infrastructural aspects as well as building up the capacities of the SMCs.
- Improvement in the health situation of the villages by building up awareness on WASH, menstrual hygiene, etc

This project aimed to improve the lives of residents in villages in Pokharan block by addressing challenges in NRM, ST&LE, H&S, and PoE themes.

Project Interventions:

- **NRM:** This included the construction of rainwater harvesting (tankas), the desilting of community water harvesting structures (Naadis), promoting water-efficient irrigation practices (pitcher irrigation), and creating awareness about water conservation.

- **ST&LE:** Women's craft centres provided training in weaving, applique work, etc., empowering them to generate income and contribute to household finances. Camel and goat herders received support through a package of services and marketing networks to establish a milk value chain.

- **H&S:** Annual health camps provided free consultations, screenings for common diseases, and essential medications.

- **PoE:** Renovations improved the learning environment in Anganwadis and schools. Interactive whiteboards or tablets were introduced in classrooms as part of the "smart class" initiative. New furniture, books, and separate toilets for boys and girls were provided. Building as Learning Aid (BaLA) paintings and lab equipment were also made available.

The project was implemented by a dedicated team with the support of community-level functionaries, who played a crucial role in mobilizing communities and ensuring their active participation in project activities.

3.5 Monitoring and Evaluation

The HRDP adhered to a standardised monitoring and evaluation methodology, as endorsed by the implementing partners. This included the periodic submission of progress reports on project implementation to HDFC Bank. Furthermore, the programme implementation team from the bank conducted scheduled visits to the project villages, reviewed the project work sites, and interacted with project beneficiaries.

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

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

4 Study Findings

This chapter gives a brief overview of the sample households as well as a detailed overview of the findings from the four thematic areas.

4.1 Demographic Profile

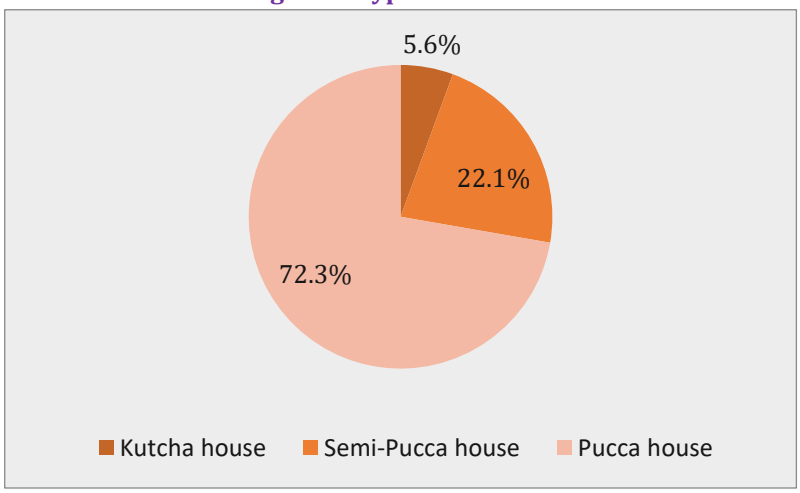
This section provides an overview of the demographic composition of households surveyed in eight villages in Pokharan Block, Jaisalmer district. Wage labour and livestock rearing are the primary sources of income, with agriculture contributing slightly more than half. Nearly a third of the respondents (35.6%) are illiterate, reflecting the district's overall situation. In terms of caste, all respondents belong to Other Backward Classes (OBCs) or Scheduled Castes (SCs). More than 75% of the households belong to the Above Poverty Line (APL) category in the public distribution system, indicating their non-eligibility for subsidized food grains.

Table5: Distribution of the sample (all figures in percentages)

Age of the respondent		Social Category		Status of Education		Sources of Income	
18-25 yrs	20.6	Scheduled Caste (SC)	48.9	Illiterate	35.6	Agriculture	55.7
26-35 yrs	34.9	General	0.0	Literate but no formal education	13.7	Wage labour	78.6
36-45 yrs	23.9	Other Backward Classes (OBC)	51.1	Up to 5th std	14.0	Pension Old Age	16.3
46-55 yrs	12.0	**Ration Card**		6th to 8th std	16.0	Livestock	77.6
Above 55 years	8.7	Antyodaya	1.0	9th to 10th std	6.9	Non-agricultural income & Salary	18.3
		BPL	23.7	11th to 12th std	4.8	**Gender of the respondent**	
		APL	75.3	Graduate	4.8	Male	32.8
		Do not have ration card	-	Post graduate	3.6	Female	67.2

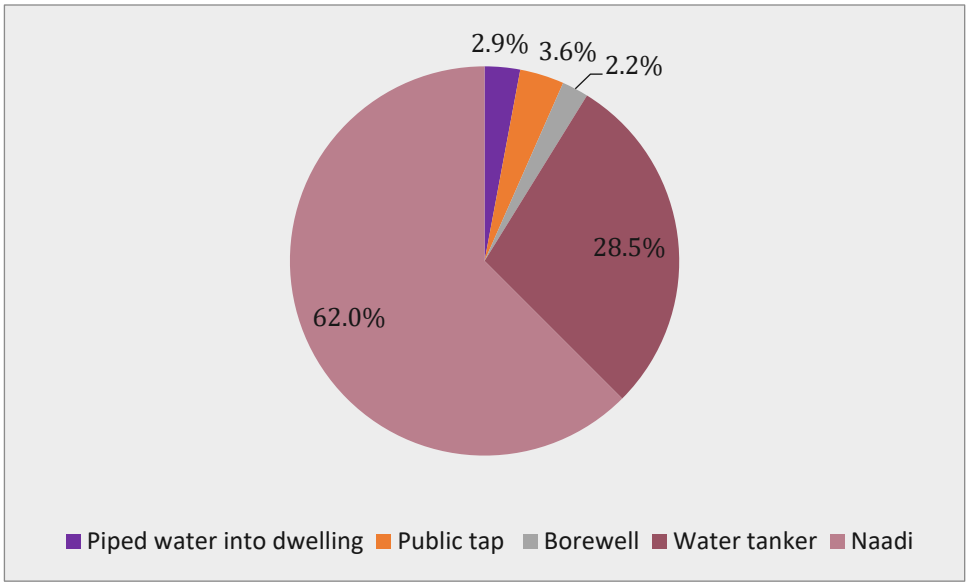
Despite the availability of both state and central government schemes related to housing, there is still a substantial proportion of households (27%) living in either semi-*pucca* or *kutcha* houses, as can be seen in the figure below.

Figure3: Types of Houses



Drinking water for household use comes from multiple, often unreliable, sources like water tankers (during the summer months) and community water sources like *tankas* and *Naadis.* Government piped water supply schemes haven't reached most villages yet. Firewood remains the primary cooking fuel for the majority (97.2%) of households, and the penetration of LPG is very small. (See figure below.)

Figure4: Source of Drinking Water



While the above analysis represents the nature and status of the sample, the below table represents the summary and quantum of activities carried out under each intervention category of the four thematic areas.

Table6: Quantum of Activities under the Thematic Areas

Activity Category	Activities	Nos
NRM		
Water Management	Renovation of Community Ponds - Naadis	04
	Rainwater Harvesting Tankas	75
Farm Management	Seed Bank	01
	Climate Grow House	02
	Improve Traditional Agricultural Techniques	100
	Support for Orchards	70
Clean Energy	Solar street light installation	140
	Community Biogas	04
ST&LE		
Skill Training	Training on improved camel rearing practice	09
	Training on Tourism Hospitality	15
	Infrastructure Development for Eco Tourism	03
	Craft Centre Cluster Training	10
SHG-Based Women Empowerment	Linkages with Designers	10
	Development of Craft Centre	05
	Support for enterprise development, consolidation and material development	04

Livestock Management	Camel Cluster & Camel Milk Enterprise Unit	01
	Animal Health Camps/Sessions	21
H&S		
Sanitation	Menstrual hygiene Awareness	28
Health	Health Camps, Hygiene related awareness sessions	140
	Training of PRIs , SMCs members on WASH	14
Kitchen Garden	Seeds, training, demonstrations	84
PoE		
Educational Institutions Development	Developing model school on concept of BaLA	1
	Anganwadi Renovation	1
	Constructing Sanitary chambers for girls	1
	Smart/digital classes construction/ renovation	3
	Strengthening and handholding School Development Management Committee	168
	Specialists / consultation from domain experts/ Guest lecturers for trainings	20
	Bridge Courses	03
	Equipping School Libraries with Relevant Reading Material	168
	Provision of Sports Material	28

(Source: Project MIS from Urmul Trust)

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

4.2 Natural Resource Management

Recognizing the region's limited water resources (average rainfall of only 160 mm) and harsh climate (high temperatures and strong winds), the project prioritised sustainable water management and agricultural adaptation. The initiatives included renovating community water ponds, constructing rainwater harvesting tanks for households, and establishing seed banks with climate-resilient crop varieties.

Additionally, the project supported the creation of orchards near homes and improvements in traditional agricultural techniques to promote long-term food security and responsible water use. Azolla was promoted, however was given up due to the extremely harsh weather conditions. Organic farming practices were promoted among hundred farmers in the Kharif season for crops like *jowar* and *bajra.* Thriving on minimal rain, Sewan grass, a drought-resistant perennial, is vital for livestock grazing in arid regions. To promote its use, the project included planting slips of Sewan grass in a designated pastureland area within a village. Efforts were also made under the project to raise awareness as well as increase the adoption of clean energy solutions such as solar street lamps and biogas plants.

Image 4:Desilting work done on a Naadi in Barli Manda village

4.2.1 Irrigation Management

Image 5: Pitcher Irrigation

Households were provided with saplings of various tree species, offering a wide range of benefits like fruits, forage, and more. To ensure their survival in the initial years and demonstrate efficient water use in this water-scarce environment, pitcher irrigation was introduced.
It is an ancient, but very efficient irrigation system used in many arid and semiarid regions in which porous pots slowly release water through their walls, ensuring plants receive just the right amount they need. As the water level in the pot decreases, more seeps out, maintaining a consistent supply and minimizing waste through evaporation. While best suited for smaller plants and specific soil conditions, pitcher irrigation provides a simple yet effective solution for watering in areas with limited water resources[3].

4.2.2 Income from Agriculture

Despite project interventions aimed at improving agricultural income, climatic factors and limited irrigation facilities have presented significant challenges. Potentially exploring alternative strategies such as drought-resistant crops or micro-irrigation techniques could be crucial for future success.

Table 7: Income from Agriculture (Pre & Post Project) (n=28)

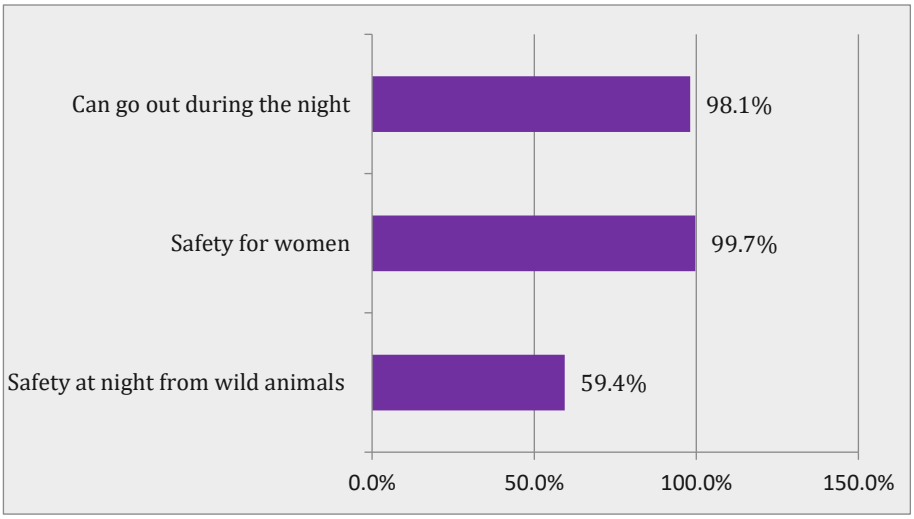
Input cost	Before	11696.4
	After	14910.7
Gross Income	Before	9410.7
	After	12167.9

4.2.3 Use of Clean Energy Solutions

As part of an entry point activity, interventions such as installation of street lights and a community biogas plant were initiated in different villages of the project area. More than half of the sample households (52.3%) have reported that the solar street lamps are currently functional. This has resulted in multiple benefits for households, with safety being the most significant aspect for women. Feeling more secure at night allows for greater ease of mobility within the village, potentially leading to increased economic activity, educational opportunities for children attending night classes, and a stronger sense of community.

3https://www.fao.org/family-farming/detail/en/c/1401660/

Figure 6: Benefits of Solar Street Lamps



In Khetolai, a village known for its large livestock population, biogas plants were provided to four households to showcase their effectiveness. These innovative plants convert farmyard manure into clean cooking fuel, while also generating nutrient-rich slurry for agriculture. The participating households reported substantial benefits. They not only saved nearly ₹ 8,500 annually on fuel expenses, but they also gained high-quality manure, a valuable fertilizer. This initiative has the potential to significantly reduce household fuel costs and workload, particularly for women, who traditionally bear the responsibility of collecting firewood for cooking.

4.2.4 Impact Observations

Prioritising water security: Recognizing water as a critical resource, the project prioritized enhancing its availability. Traditional water harvesting structures like Naadis were desilted in four villages, benefiting households from adjoining villages. Additionally, tankas, another form of rainwater harvesting, were constructed across various villages. While these efforts have had a moderate impact, a significant number of households still lack access to improved water resources. The project presents a significant opportunity for further work under MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act**). By facilitating effective planning, awareness generation, and mobilizing MGNREGA resources, the project can significantly enhance soil and water conservation efforts in the region.**

Limited impact in agriculture: While the project included various agricultural initiatives like azolla cultivation, climate-controlled greenhouses, promoting organic farming practices for traditional rain-fed crops, and establishing horticultural orchards, the overall impact in this sector was low. This can be primarily attributed to climatic factors. **Agroforestry is a promising approach for climate-resilient agriculture in the region. By considering local conditions and promoting these plantations, the project can enhance agricultural sustainability to some extent.**

Promoting clean energy solutions: The project made significant strides in promoting clean energy by installing solar lamps in various villages. Additionally, a community biogas plant was constructed in one village to showcase the potential of using farmyard manure for cooking purposes. This intervention has demonstrated a high impact and can be further amplified by introducing a program to distribute improved chullahs (stoves) throughout the area.

Figure 9: Overview of Project Effectiveness and Impact of Interventions

4.2.5 Case Study

Traditional Wisdom Meets Modern Solutions: Tankas & Water Management in Barli Manda

For centuries, residents of western Rajasthan have relied on tankas, large, traditionally built cisterns located near their homes, to collect and store rainwater. These essential structures provided drinking water and met other household needs throughout the year in this arid region. Tankas were often communal resources, shared by families or entire villages. These are impressive feats of traditional engineering, large, underground water storage units built with stone, brick, or even concrete and plastered with lime mortar or cement. Tankas represent a sustainable water management system, capturing and storing a precious resource for future use. While tankas remain a vital water source, factors like erratic rainfall patterns and increased water demand pose challenges for their long-term sustainability.

Barli Manda, a typical village in the area, where water is a scarce resource during the summer months and people have to depend on a combination of sources for meeting their water needs, which include; **Tankas:** Traditionally built cisterns for rainwater collection. **Naadis:** Large, earthen reservoirs that collect rainwater runoff. These serve as the primary source for 7-8 villages most of the year. However, water scarcity becomes an issue in the summer when *Naadi's* water level drops. During these critical months, the communities only let the livestock use the water. **Private Water Tankers:** Used during scarcity, but expensive (INR 2,000-4,000 per month in summer for a household).

There is no public water supply system in the village and people have to depend on the above for their water needs. Ground water is non-potable with highly saline water. While some households had tankas from earlier times that were being used to store rainwater, majority of the others had to depend on private tankers and the Naadis for their water requirements. The primary responsibility of bringing the water from the Naadis was that of the women, and they had to spend long hours on this task, affecting their health.

Project intervention

To address the water shortage problem, the project helped fifteen households construct tankas in Barli Manda. These tankas, typically costing Rs 60,000-70,000, were built for Rs 35,000 with the households contributing labour. Each *tanka* has a capacity of around 15,000 litres, which has helped in significantly improve the water availability for the households for a couple of months. Kalsum, one of the beneficiaries under the project said that these *tankas* have significantly reduced her family's dependence on private water tankers during dry periods, and they have been able to save on an average monthly of INR 3000. She also has fewer trips to make to Naadis because of this intervention.

4.3 Skill Training and Livelihood Enhancement

While the ST&LE initiative focused on building capacity beyond agriculture (including some agricultural training), the emphasis was on strengthening livestock rearing by forming a federation of camel herders in the region. This federation works collaboratively to address common challenges faced by camel herders with respect to animal health, fodder management, grazing land access, etc., and develop the milk value chain. A cooperative, Sri Pabuji Rathora Usthra Doodh Utpadak Sahkari Samithi, was set up to handle camel milk and by-products procurement and marketing. In addition, to ensure sustainable livelihoods beyond agriculture, the initiative prioritized establishing sustainable livelihoods for artisans through the creation of five craft centres and the provision of training. Marugandha Crafts Agri Milk and Food Private Limited, a company, was set up to market the products from the crafts cluster as well as from the camel cluster. SHGs were provided with training in various aspects like financial management and record-keeping, as well as establishing linkages with banks to enhance their financial access.

4.3.1 Livestock Management

The figure below gives an overview of the households (88) that benefited from the intervention, the animals they own, the average herd size, and the kind of project activity the animals benefited from.

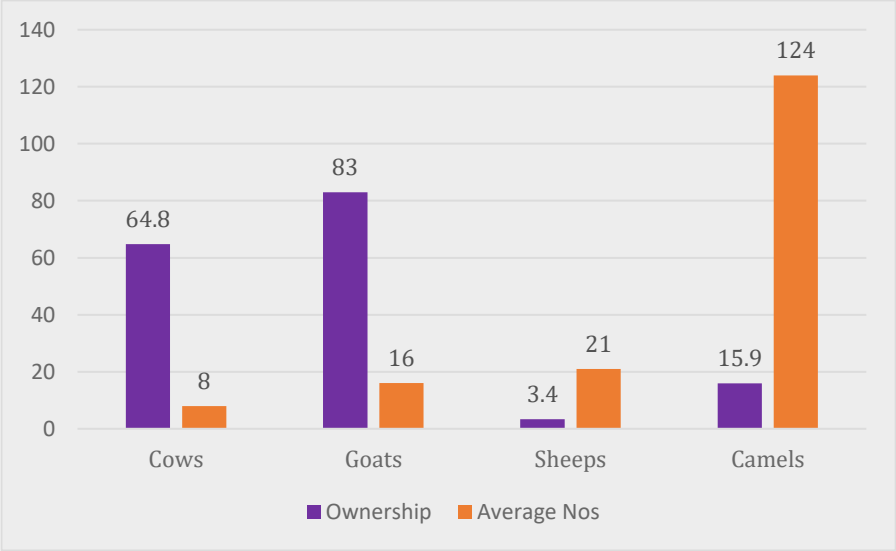
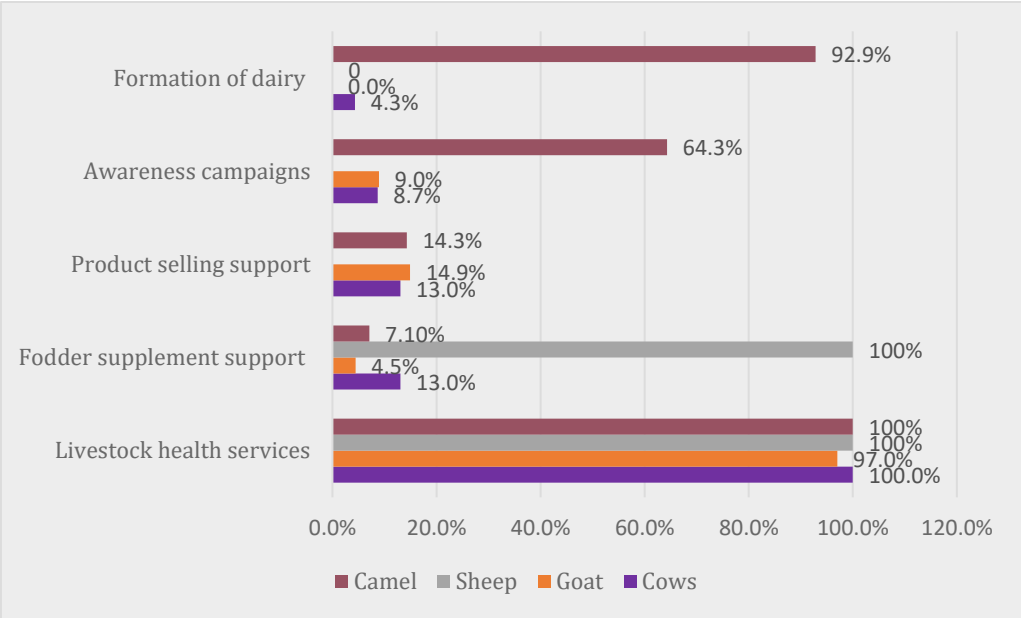
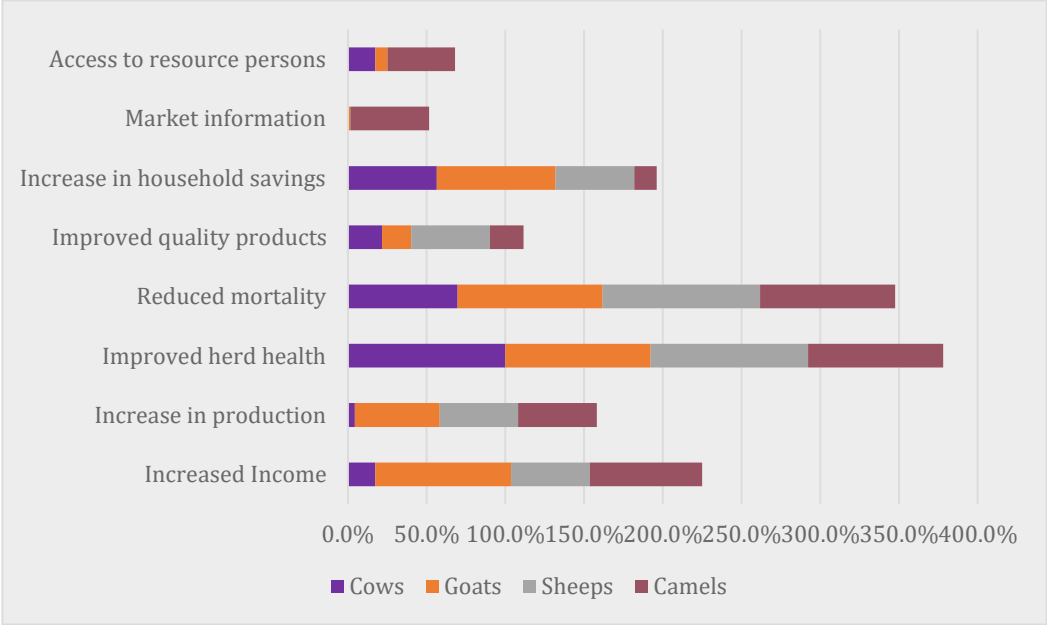


Figure 7:Activities undertaken (n-88)



The animal health camps in the villages proved to be the most impactful intervention, with activities recorded across all animal categories.

Figure 8:Perceived benefits from intervention (n-88)



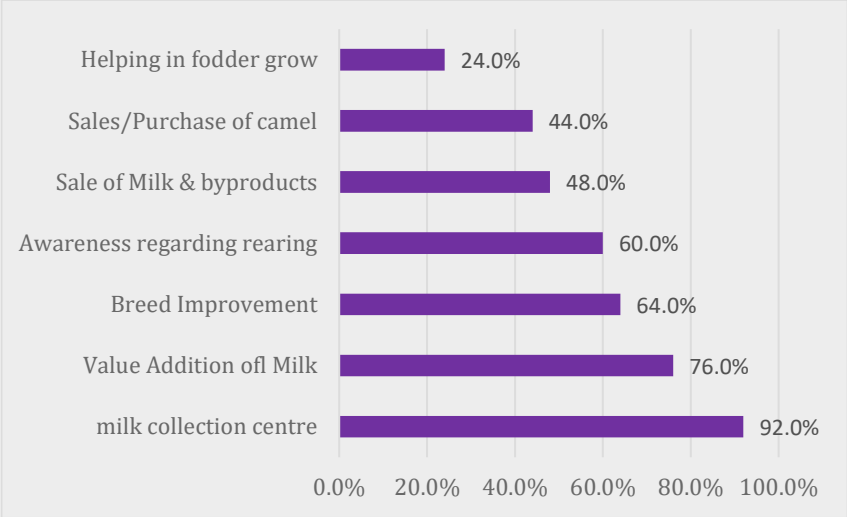
Building on the positive impact of animal health camps, the above figure illustrates the perceived benefits different animal groups receive, according to their owners, from various interventions. Notably, improved herd health and reduced mortality top the list of these benefits.

The activities undertaken have resulted in a positive impact, with the average monthly income rising by 128% from INR 4,815 to INR 10,984 (**upon conducting a z-test, a p-value of 0.069734 (<0.05) was found against a z-statistic of 4.7172 (at 95% confidence level), indicating that it is a significant change)**. Camel herders, a crucial part of the livestock sector, have witnessed a notable increase in their annual income at 119 % from INR 13,571 to INR 29,762.

4.3.2 Camel Cluster

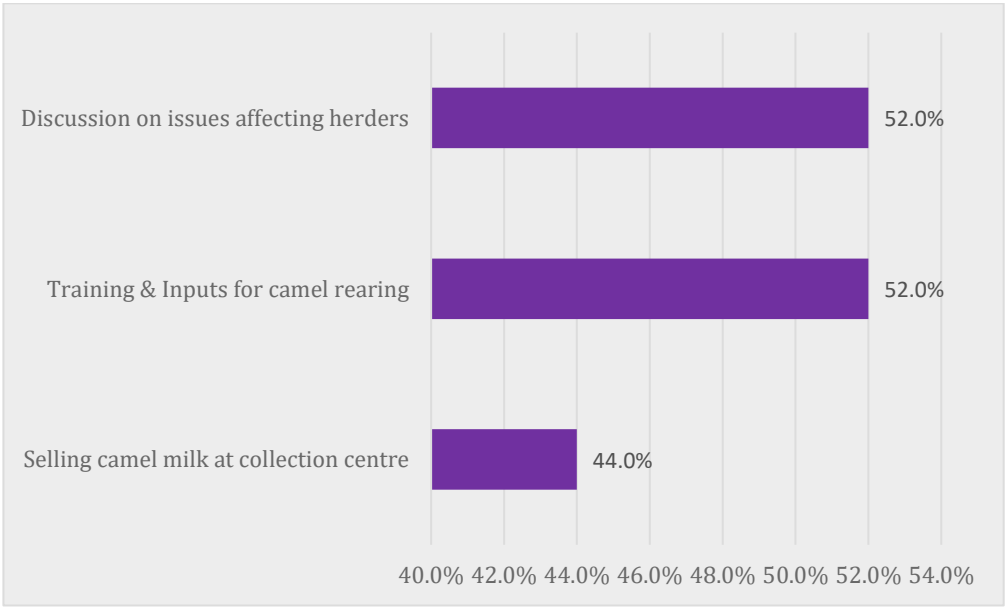
The above figure shows the collection centres of camel milk and value addition to camel milk, which are the key activities identified by the respondents, followed by breed improvement activities as well as awareness generation regarding camel rearing.

Figure 9: Activities undertaken under camel cluster (n-25)



The ability to generate income by selling milk to the collection centre was a major benefit for a majority of respondents in the camel milk cluster. Additionally, half of the respondents valued the training provided on camel rearing and the establishment of a forum for communication and collaboration.

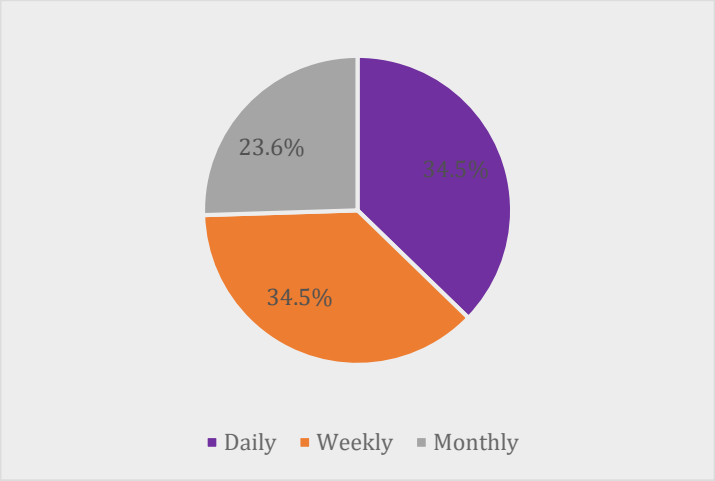
Figure 10: Perceived Benefits from camel cluster intervention (n-25)



4.3.3 Craft Cluster

The figure reveals high engagement in craft cluster activities, with 34.5% of women participating daily and another 34.5% participating weekly. Additionally, 23.6% participate monthly.

Figure 11: Engagement under the craft cluster (n-59)



The figure reveals the valuable support provided by the intervention to empower women in craftwork. Access to essential resources, including raw materials, craft equipment, and dedicated workspace, was identified as the most significant form of support. Training opportunities for group members and connections to resource people were also well-received, highlighting the importance of both practical skills development and professional networking.

Figure 12: Support provided for intervention under the craft cluster (n-59)

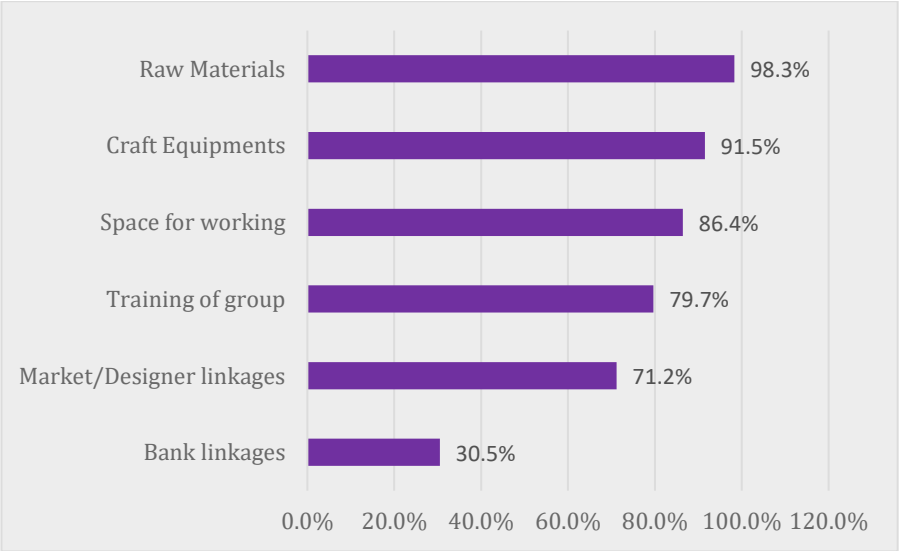
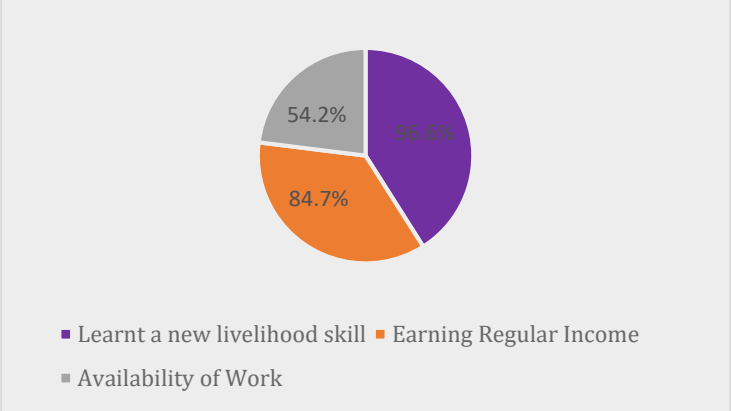


Figure 13: Perceived benefits from interventions under the craft cluster (n-59)



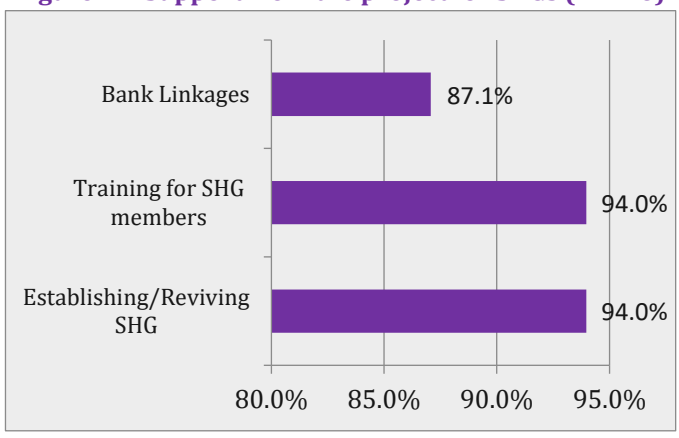
Learning a new skill is the most commonly reported benefit, with nearly all (96.6%) of the women stating this benefit. Regular income is reported less consistently, with only 54.2% of the women reporting this benefit.

The activities undertaken have resulted in a remarkable 615% increase, reaching an average annual income of INR 21,981**(upon conducting a z-test, a p-value of 0.05016 (<0.05) was found against a z-statistic of 15.5424 (at 95% confidence level), indicating that it is a significant change)**.

4.3.4 Economic Empowerment through Collectivization

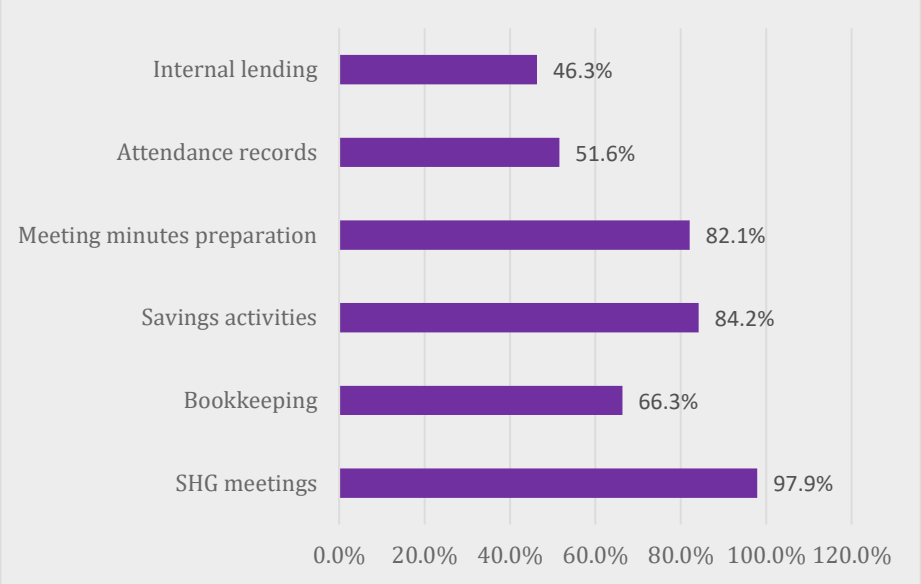
As demonstrated in the figure below, one of the significant supports provided by the project involved facilitating the linkage of Women's Self-Help Groups (WSHGs) with banks by assisting them in opening accounts. The project also played a crucial role in reviving many WSHGs that had been established previously but had ceased to operate over time. Additionally, training the SHGs on various aspects was a major component of the project support, ensuring they received the necessary skills and knowledge to function effectively.

Figure 14: Support from the project for SHGs (n=116)



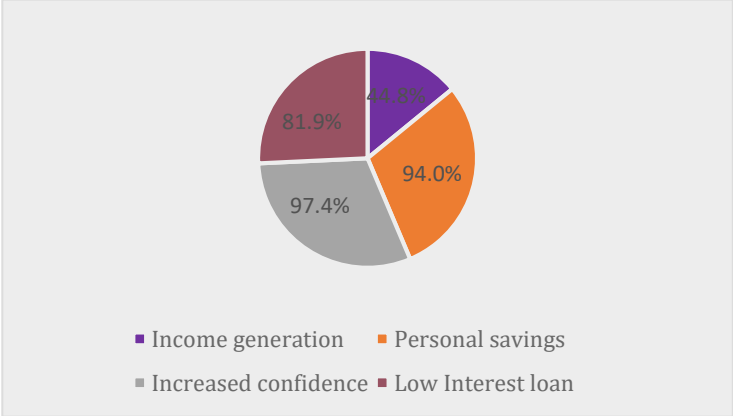
Meetings of the SHGs are being held regularly, and so is the regular updating of account books as well as the minutes, as can be seen in the below figures. But less than half of the members have taken loans from these groups, which indicates substantial scope for improvement.

Figure 15: Activities undertaken by SHGs (n=95)



The members reported experiencing various benefits from being part of the SHGs, including improved confidence levels due to their participation in activities. Their personal savings have increased, and they have been able to secure loans at reduced interest rates compared to other sources. However, as illustrated in the figure below, less than half of the respondents indicated that they have been able to generate income from their association with SHGs.

Figure 16: Perceived Benefits from Intervention (n-116)



4.3.5 Impact Observations

This project revitalized the craft industry by establishing five craft centres, forming a collaborative cluster. This supportive network allows artisans to share expertise and hone their skills together. Financial empowerment is another key outcome, particularly for women in local communities. The project's market access initiatives, including participation in exhibitions and online marketplaces, have increased demand for handcrafted goods, resulting in higher incomes for artisans. This empowers the women to better support their families and improves their overall standard of living. The project has strengthened the local craft industry and is securing a brighter future for the artisans. There are challenges galore, and steps would have to be taken to address them.

Once a traditional livelihood, camel herding is under increasing pressure due to several factors. These include the high cost of maintaining a herd, diseases that are depleting camel populations, a lack of available grazing land, and a near-total ban on camel sales due to their status as a state animal. The project facilitated the formation of a federation of 240 camel herders in the area. This initiative aims to address shared challenges and generate income from camel herding. While camel milk procurement has begun in the villages, inadequate demand currently hinders the project from fully realizing its potential.

The project provided training to SHGs in financial management and record-keeping, and facilitated establishing linkages with banks by opening accounts for the members. However, access to credit remains a significant hurdle. Despite the need for loans at lower rates, groups have been unable to secure them from banks, and internal lending within the groups also remains limited.

Figure 17: Overview of Project Effectiveness and Impact of Interventions (ST&LE)

Image 6 : Camel Milk Processing & Packaging Unit, Pokharan

Image 7: Discussion with women weavers at Thaat Craft Centre

4.3.6 Case Study

Milking a Brighter Future: Empowering Camel Herders and Reviving a Tradition in Pokharan

Changing Landscapes and Livelihoods: Transportation advancements and road development have reduced reliance on camels. Unfavourable legislation and limited grazing grounds have negatively impacted the camel population. Development projects like highways, railways, fencing of agricultural lands, and encroachments of public lands are obstructing their traditional migration routes. The changing attitudes of the host communities towards herders are also adding to their difficulties. With increased irrigation in the Indira Gandhi canal command area, land use has shifted towards crops unsuitable for grazing, further limiting access to traditional feeding grounds for camels. Camels have the potential to be a significant source of milk, from trained herds. Data suggests that of the total camels kept by the breeders, 30-35% are lactating females, and on average, 3.5 litres of milk is produced per day by a lactating female. Camel milk is believed to possess medicinal properties due to the camels' diet, potentially benefiting people with diabetes and autism.

It is in such a context that the project started intervening on this issue of ensuring a means of sustainable livelihoods for the camel herders by facilitating the process of setting up the Sri Pabuji Rathora Usthra Doodh Utpadak Sahkari Samithi. This body not only procures milk from the herders but also is a forum for discussing issues relating to camel rearing.

Challenges and Solutions: Traditional milking methods need improvement and are unable to realise the full potential of milk Training programs have been conducted to enhance milk production. Raw camel milk has a short shelf life. The project's pasteurization facility extends shelf life to 72 hours. Obtaining FSSAI licensing was initially slow due to a lack of established regulations for camel milk. Collaboration with research institutions helped overcome this hurdle. The camel milk market is nascent. The project has increased sales from 20 to 100 pouches daily and plans to expand distribution to major cities. Efforts are underway to develop products with a longer shelf life, such as sweets and ice cream.

Building a Sustainable Future: Currently, the cooperative procures camel milk from the project villages at two bulk milk collection centres, where it is chilled and then transported to Pokharan for further processing and packaging at the main centre. Marugandha Crafts, the company registered under the project, is collaborating with the camel milk producer federation to improve marketing and provide sustainable livelihoods for herders. Milk is being procured from herders at ₹40 per litre. Processing and transportation costs add ₹17.60 per litre. The current market price for camel milk is ₹100 per litre. The cooperative federation is in talks with several cooperatives and private diaries for bulk sales of milk, which will help generate more income for the members.

Empowering Women Artisans Through Craft Centres

Traditional handicrafts like weaving, stitching, applique work, embroidery, and quilting are deeply ingrained in the cultural heritage of rural Rajasthan. However, these crafts face challenges due to a lack of skilled artisans, limited market access, and competition from mass-produced goods. This project aimed to address these issues and empower women artisans to become economically self-sufficient.

Intervention:
The project implemented a multi-pronged approach:
Training programs were organized to equip women with enhanced skills in traditional crafts. The curriculum covered not only basic techniques but also introduced new product designs to cater to contemporary market trends.
Five handicraft centres were established in villages to serve as hubs for training, production, and community meetings. These centres provided a dedicated space for the women to work, collaborate, and share knowledge.
The project established **market linkages** to connect the artisans directly with customers. This involved participation in exhibitions, online marketplaces, and collaboration with fair-trade organizations. Additionally, to enhance recognition and marketability, a unified brand identity, Marugandha, and a company, Marugandha Crafts, were created for the artisans' crafts.

Challenges Encountered:
The project faced several challenges during implementation. The majority of the women were novices in specific crafts, which meant that they required a longer training period to achieve proficiency. A lack of resources like looms limited the number of women who could practise simultaneously, hindering the overall training pace. A high trainee-to-trainer ratio made it difficult to provide adequate individual attention, slowing down the learning process. The initial focus on basic techniques resulted in a surplus of simple woven products with limited marketability. The women lacked confidence to pursue more intricate and market-demanded weaves, necessitating further upskilling. Most women also worked in MGNREGA and agricultural fields too, impacting their time commitment to weaving because they were able to earn higher wages than what they would have earned from craft work.

Outcomes:
Within a 6–7-month period, the women successfully learned basic weaving techniques. Several women have started earning income (INR 6,000-7,000) from weaving, demonstrating the potential for financial gain. Around 10 women continue to be actively involved in weaving, indicating a degree of project sustainability. Recognizing the need for advanced skills, the project has initiated efforts to train the women in high-demand intricate weaves, potentially leading to better market opportunities. Currently, the weaving work has slowed down because a lot of the stock is lying unsold.

Conclusion:
By addressing skill gaps through targeted training programs, facilitating market access through diverse linkages, and providing infrastructure support with the establishment of handicraft centres, the project has created a sustainable source of income for some women artisans (a nearly 600% increase for participating women) and revitalized traditional crafts. By incorporating the learnings from this project, such as the importance of tailored training and diversified marketing strategies, future initiatives can be further strengthened to create a larger and more sustainable impact on the lives of a greater number of women artisans, ultimately contributing to the preservation of the state's cultural heritage.

4.4 Health and Sanitation

The desert district faces considerable topographical and logistical challenges that severely impact access to healthcare. The harsh desert terrain, expansive distances, and extreme weather conditions create substantial barriers for residents seeking medical care. This is further compounded by a severe shortage of healthcare providers, particularly specialists at secondary and tertiary levels, forcing residents to travel great distances for specialized medical care. Key health indicators, such as low rates of institutional deliveries, inadequate antenatal and postnatal care, and an imbalanced sex ratio, paint a distressing picture of the region's healthcare status.

Menstrual health and hygiene are crucial for the well-being and empowerment of women and adolescent girls. Effective management of menstruation requires access to water, sanitation, and hygiene (WASH) facilities, affordable and appropriate menstrual hygiene materials, information on good practices, and a supportive environment free from embarrassment or stigma. In this district, these needs are often unmet due to the logistical and infrastructural challenges present.

The region's significant population of livestock and the dependence of households on these animals for their livelihoods make access to veterinary services critical. Livestock herders need to be aware of good livestock management practices and require access to critical care during times of disease. However, a significant shortage of staff in the veterinary department hampers the provision of affordable and quality veterinary services, negatively affecting the health and productivity of livestock.

In response to these challenges, various health and sanitation initiatives have been implemented, focusing on organizing health camps in different villages within the project area. These camps offered free consultations and medicines, aiming to improve healthcare accessibility and reduce preventable diseases. Additionally, 28 menstrual hygiene awareness sessions were organized in the project village to educate women and girls about proper menstrual health practices. These sessions are crucial for breaking the silence and stigma surrounding menstruation and providing the necessary knowledge and resources for effective menstrual management.

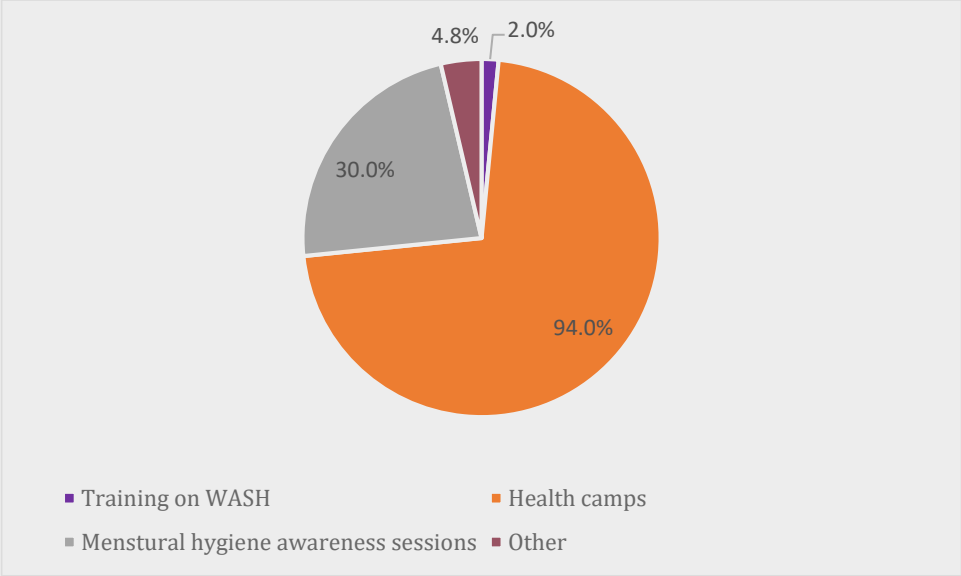
During the COVID-19 pandemic, additional support was provided to households to mitigate the pandemic's impacts, ensuring that the health and well-being of residents were safeguarded during this critical period.

Livestock health camps were also conducted to address common ailments and educate herders on disease prevention. These camps are vital for improving the overall health outcomes for livestock, which are essential for the community's livelihood. By enhancing the health and productivity of livestock, these initiatives helped sustain the economic stability of households that depend on animal husbandry.

4.4.1 Health Infrastructure and Services

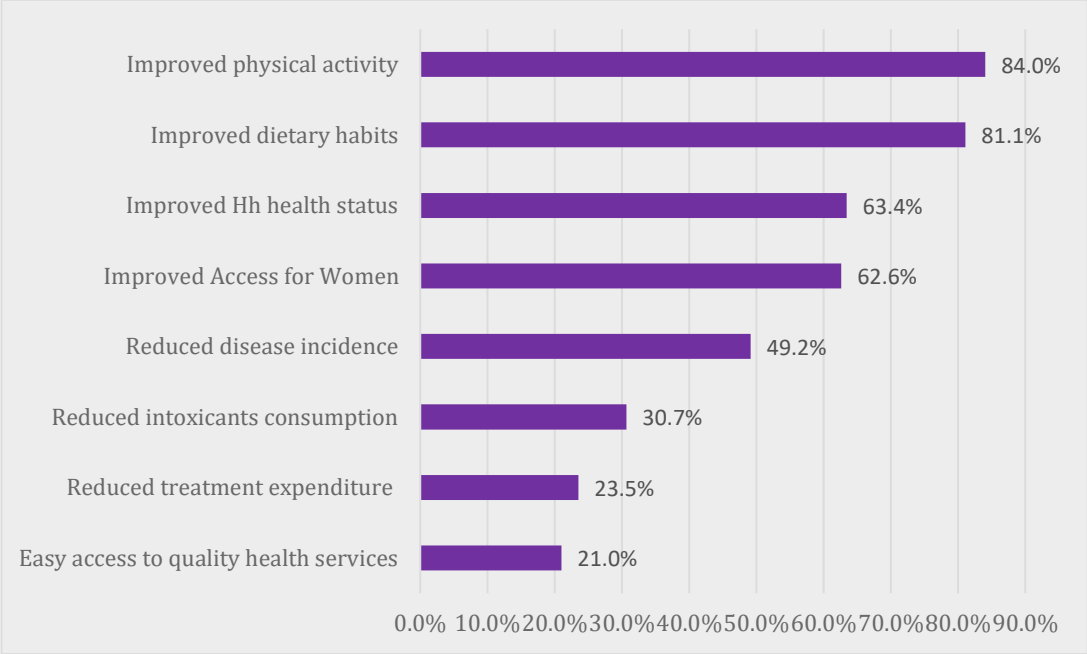
The majority of respondents who availed themselves of services under this theme participated in the health camps organized at the village level. This was followed by menstrual hygiene related awareness sessions for girls/women and training on WASH related aspects.

Figure 18:Type of activity participation (N=250)



While the health interventions have demonstrably improved dietary habits and physical activity, the impact on reducing intoxicant consumption, access to health services, and healthcare expenses has been less pronounced.

Figure 19: Perceived benefits from health activities (N=238)



4.4.2 Kitchen Gardens

Fresh vegetables are essential for a healthy diet, but for many families, affording them can be a challenge. To address this, women from marginal farming and landless households were supported to grow vegetables in their backyards or on the front side of their homes. Almost all

participants received seeds of various vegetables, and half of them attended training sessions organized for this purpose. This initiative has not only reduced their weekly expenditure on vegetables by nearly INR180, but also provided households with fresh and nutritious produce from their own gardens. Despite these benefits, the program's reach has been limited, with only about 7 households reporting participation.

4.4.3 Drinking Water Management

Water management initiatives, including the rehabilitation of Naadis (natural streams or ponds), have demonstrably reduced water scarcity concerns, leading to significant improvements in community health. Households report relief from stomach problems, increased energy levels, and a reduced incidence of waterborne diseases. As shown in the figures below, Naadis rehabilitation stands out as a particularly impactful activity. These efforts contribute significantly to improved water availability and, consequently, better health for communities.

Figure 20: Activities which helped drinking water (n-137)

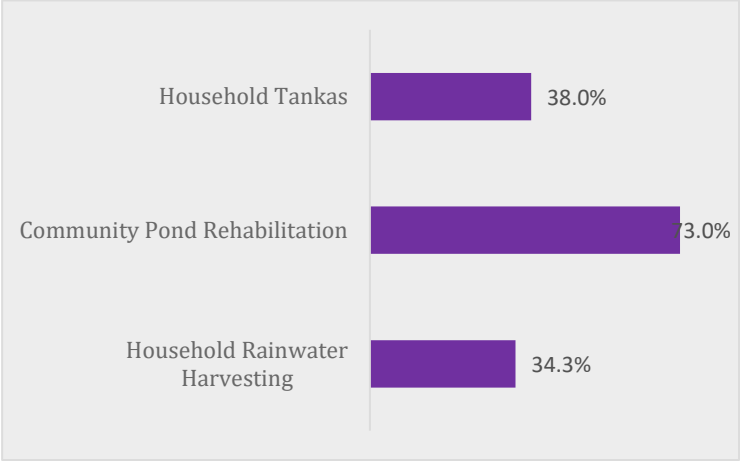
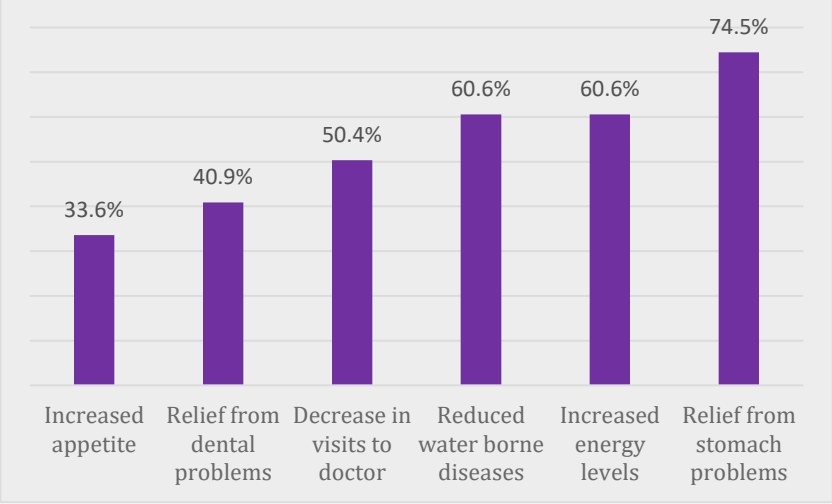


Figure 21: Percieved benefits from activities



4.4.4 Impact Observations

The interventions under the health and sanitation theme have led to a medium level impact, particularly with regards to health infrastructure limitations. The health camps organized for both people and livestock have received a good response. However, the demand for these services

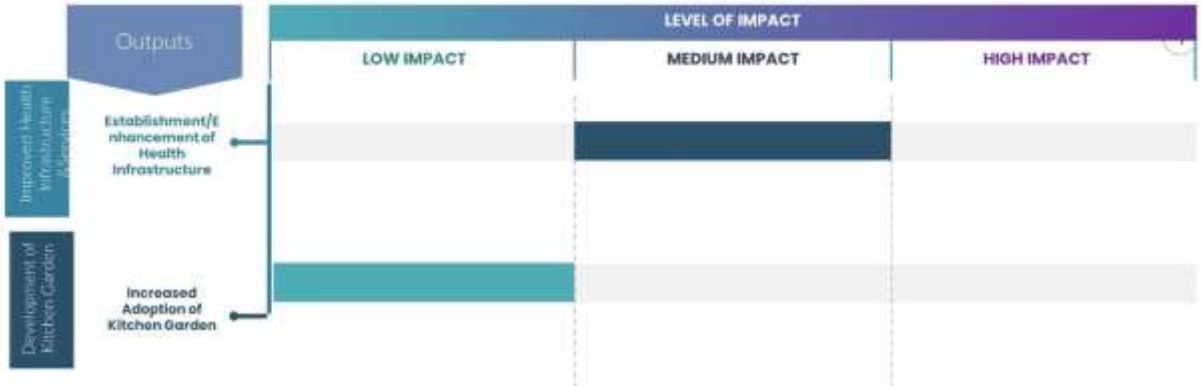
far outstrips the current delivery due to severe understaffing in the government health department. There is a critical need to build up the capacities of people within the livestock herder community who could provide essential services and generate awareness regarding disease prevention, livestock management, and government schemes.

While the government has declared the district open defecation free, the practice is still widely prevalent. Considering the water scarcity in the area, promoting dry toilets instead of conventional toilets could be a more sustainable solution. These toilets can also generate manure, providing an additional benefit. However, such a shift would require a change in mindset among the people.

Finally, menstrual hygiene and awareness about it are especially important in an area where gender discrimination is prevalent. Empowering Self-Help Groups (SHGs) can play a crucial role in promoting awareness and access to menstrual hygiene products. More work needs to be done to address this critical issue.

While the intervention has demonstrably improved the drinking water situation in the villages, further efforts are required to ensure everyone has access to clean water.

Figure 22: Overview of Project Effectiveness and Impact of Interventions (H&S)



4.5 Promotion of Education

Despite national progress in education, Jaisalmer district in Rajasthan faces a critical situation with literacy and access. The 2011 census revealed a stark gender gap, with a female literacy rate [32.3] significantly lower than the male rate [72.04]. Child marriage prevalence further exacerbates the issue, pressuring girls to drop out of school at puberty. The project area faces a significant challenge: public schools suffer from severe underdevelopment. Shortages of teachers, a lack of basic amenities like drinking water and sanitation facilities, and a non-conducive learning environment create substantial barriers to education.

To address these issues, the project interventions aimed to improve school facilities, fostering a more positive learning environment. Additionally, there was an emphasis on capacity building for school management committees, empowering them to play a more active role in supporting education.

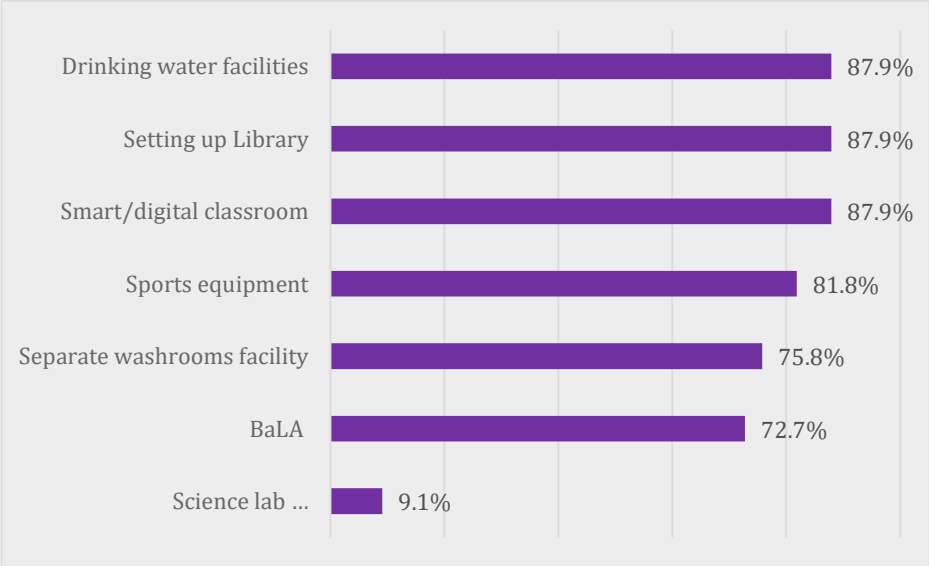
The intervention also prioritized innovative approaches to enhance the quality of education and increase student enrolment. Seven model schools were established, showcasing these approaches and featuring modern amenities like smart LED panels for enhanced learning, proper drinking water facilities and toilets for student well-being, and playgrounds to encourage

physical activity and social interaction. To promote menstrual hygiene management, a sanitary napkin disposal machine was installed in the schools, ensuring safe and hygienic disposal of used products. These upgrades are designed to create a supportive learning environment that encourages active engagement and fosters academic success. By improving the quality of education, the intervention strives to enhance the prospects and opportunities of students, ultimately contributing to the overall development of the local community.

4.5.1 Infrastructure in Educational Institutions

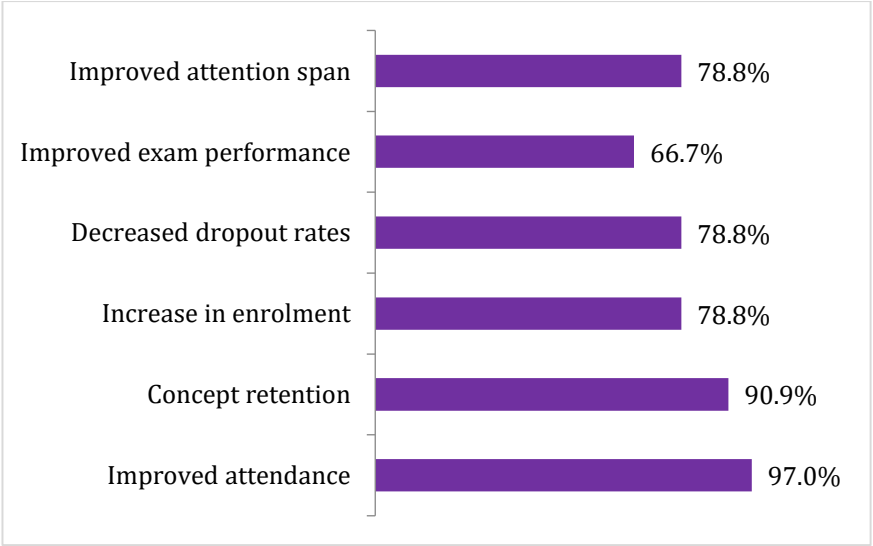
The intervention yielded the most significant improvements in drinking water access, library facilities, and smart classrooms. While positive impacts were also observed in the provision of sports equipment, separate washrooms, and BaLA paintings, the initial focus areas yielded the most transformative results.

Figure23:Areas which have seen improvements (n=58)



Teachers reported significant improvements in student attendance and concept retention. Additionally, attention span has demonstrably increased, dropout rates have decreased, and enrolment figures have risen.

Figure 24:Changes observed in students post project intervention (n-33)



4.5.2 Impact Observations

Project interventions in schools and anganwadis within the villages yielded positive results. BaLA paintings brightened learning spaces, though some require upkeep. Smart classrooms enhanced teaching, but internet and power issues need solutions. Additionally, teacher training on this new technology is crucial. Improved facilities, higher attendance, and increased student engagement highlight the project's impact. However, addressing girl student dropouts, particularly in higher grades, requires ongoing community efforts to change mindsets. School Management Committees can play a vital role in achieving this.

Figure 25: Overview of Project Effectiveness and Impact of Interventions

Image: BaLA painting in Government School, Gomat

4.5.3 Case Study

Bridging the Gap: Can Government Schools Compete? The Case of Gomat

School Profile: The Government Higher Secondary School, located in Gomat, Pokharan Block, caters to 710 students from grades 1 to 12. It is one of the biggest schools in the area. The student body primarily reflects the village's demographics, with students coming from Meghwal and Muslim communities. Parents are typically engaged in livestock rearing, agriculture and wage labour.

Infrastructure Improvements supported by Project: Library racks were purchased, sanitary vending machines were installed, and school toilets were upgraded. A boundary wall was constructed, a well was dug, and a garden was developed with saplings. the project provided support for digital touch panel boards, classroom maintenance, furniture, and smart classroom resources. These initiatives have fostered a more interactive learning environment.

Challenges and Opportunities

Teacher availability is a primary concern. Teachers are burdened with non-teaching responsibilities like data collection for the government and ensuring student well-being, reducing time dedicated to core instruction. Nearly half of their time is spent on non-teaching activities.

The Right to Education (RTE) Act's automatic promotion policy makes it difficult to address student progress and hold them accountable for attendance, potentially hindering a strong learning environment. There is a need to explore an alternative method for student evaluation.

High dropout rates among girls, particularly after high school due to early marriage and lack of interest in further education, were identified as a key concern. Despite the construction of a boundary wall, damage to the school garden by goats and vandalism during summer breaks remain a challenge

Despite these challenges, teachers believe that with reduced distractions for them, government schools could outperform private schools due to the higher teacher qualifications and improved infrastructure. The School Management Committee (SMC) too is playing a vital role with monthly meetings and a membership of around 15 people, with 50% women's representation. They are actively involved in school development activities.

4.6 Holistic Rural Development Index

There are multiple dimensions involved in achieving the goals of HRDP, which include increased agricultural production, the generation of new jobs, enhanced health, and the provision of better living infrastructure, among others.

Based on the design of the HRDP programme, a composite index called the Holistic Rural Development Index (HRDI) has been developed that indicates the achievements of the HRDP interventions that lead to overall improvement in the result indicators. As the programme interventions varied across projects and geographies, it was not possible to assign a single impact indicator that might be able to accurately capture the overall performance of HRDP. Thus, HRDI serves the purpose of quantifying the impact through the blending of the results of various indicators grouped into four thematic areas.

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

The HRDI calculation for project P0282 implemented in Jaisalmer is given in the following table:

Table 8: HRDI calculation for Jaisalmer, Rajasthan

Domain	NRM		ST&LE		H&S		PoE		Total	
HRDI Score	Base line	End line	Base line	End line	Base line	End line	Base line	End line	Base line	End line
	0.06	**0.07**	**0.08**	**0.21**	**0.03**	**0.15**	**0.07**	**0.10**	**0.24**	**0.53**
% Change	**16.66**		**162.5**		**400**		**42.8**		**120.8**	

The table indicates a remarkable 120.8% increase in the composite HRDI score compared to the baseline scenario. This surge can be attributed to planned interventions in the sample villages, particularly in the ST&LE and H&S sectors. The 400% increase in H&S can be explained by its initial low starting point relative to other areas, alongside the focused activities implemented, notably in improving drinking water access. Conversely, there has been no significant change in NRM (Natural Resource Management) due to limited agricultural activities, hindered primarily by water scarcity and adverse climatic conditions.

5 Analysis of Assessment Criteria

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

- Relevance and Convergence
- Impact and Effectiveness
- Sustainability

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

5.1 Relevance and Convergence

Once lagging behind on many development indicators, Rajasthan has made significant progress in education, health, and poverty reduction over the past two decades. However, vast disparities exist within the state. Districts like Jaisalmer in western Rajasthan face harsher realities due to extreme weather and geographical constraints. Pokharan block, within Jaisalmer, is where the project aimed to address some of these challenges.

This arid region of Rajasthan receives scarce rainfall (average 200-300mm annually), making agriculture a risky proposition. With only one cropping season possible in most years, farming offers an unreliable source of income. Traditionally, livestock rearing has been the mainstay, but the sector remains unorganized and lacks linkages to formal markets. Camel herders, in particular, face significant challenges. Government restrictions due to the camel's status as a state animal limit herders' ability to sell the animals and earn an income, while development projects have disrupted traditional migration routes and grazing grounds. In this context, the efforts to establish a federation of camel herders and a cooperative for camel milk and by-products are crucial. The cooperative aims to improve their livelihoods by securing fair prices and better market access for camel milk and its by-products.

Drinking water scarcity is a major concern for both humans and livestock for at least 5-6 months a year. Traditional water harvesting systems like *tankas* and *naadis* fell into disuse due to a breakdown in community management and a lack of maintenance. This resulted in a significant dependence on private water tankers, placing an increased financial burden on households (e.g., average monthly water expense increased by INR 3000 during the critical summer months). The project's intervention in desilting *naadis*, which provide water for over 8 villages, was particularly relevant. To ensure the long-term sustainability of this solution, the project also included efforts to mobilise the community through *shramdan* and contributions towards cost-sharing. This will empower the community to properly manage and maintain the desilted *naadis*, providing a reliable water source for years to come.

One of the focus areas under the project intervention was setting up craft centres in the villages, specifically empowering women by empowering them with new skills and opportunities for earning regular income. Traditionally, weaving in this area is a male domain, with women playing a supportive role. The project aimed to build upon Urmul's past success in working with weavers. The centres aim to focus on both technical advancement (new weaving techniques)and craft improvement (design workshops) and some initiative has been taken in this regard.

Lack of facilities like toilets, water, and interactive learning tools, combined with socio-cultural factors, has resulted in an increased number of dropouts from the formal education system, particularly with respect to girls in this region. Therefore, efforts with respect to education and improving the overall learning environment in government schools are timely and well needed.

Interactive learning tools and improved facilities, along with a focus on creating a positive learning environment, have resulted in improved attendance levels and students becoming more interested in learning.

Convergence between the governmental and non-governmental sectors improves service delivery, encourages beneficiaries, and brings services closer to the community, fostering alliances that enhance overall outcomes. While some of the interventions, particularly with respect to education, have converged seamlessly with the government programmes, in many others more effort needs to be put in, particularly with respect to NRM aspects like water management, soil and water conservation, pastureland development, etc. The project needs to build up the capability of the Panchayati Raj Institutions with respect to planning programmes under MGNREGA and others related to horticulture, agriculture and health among others.

5.2 Sustainability

While it is important for an NGO to aim for social change, it is just as important to be able to sustain their programs to maintain the continuity of work, for without sustainability, it becomes increasingly difficult for them to bring about lasting social change. An inbuilt model of sustainability is a crucial feature for an NGO to create impact in the communities and sectors they work in.

Material support provided under the project was accompanied by awareness campaigns and training, educating beneficiaries on the need and relevance of the work, ensuring their willing adoption of the interventions. The impact of these interventions was measured to ensure their continued use. This resulted in sustained positive results, even a year after the project ended (see Annexure E). This indicates that the majority of the project activities achieved sustainability and continue to benefit the population.

The project focused on various aspects of socio-economic growth and development for different stakeholders, which included children, women, and camel herders. As part of the project, Community Interest Groups (CIGs), Farmer Producer Organizations (FPOs) and federation were promoted which are now operating independently to sustain the various initiatives. Interventions done with respect to education, such as model schools and community water ponds are now managed by local governing bodies such as Panchayati Raj Institutions and Social Mobilization and Sensitization Committees (SMSC).

The project's sustainability plan is centred on ensuring ongoing growth and development in beneficiary areas. Urmul has transferred the responsibility for managing resources to local governing bodies. An effort has been made to empower them to maintain and oversee these assets for the community's benefit. The project has also focused on capacity building and raising awareness among local communities about sustainable practices for managing their natural resources. Urmul’s approach aims to build strong partnerships with local communities and governing bodies, which develop ownership and a sense of responsibility to sustain these initiatives in the years to come.

6 Recommendations

To further improve the outcomes of HRDP in Jaisalmer district of Rajasthan, the following recommendations are made for the HDFC Bank's Parivartan and HRDP teams and the implementing partner:

A. Sustain Project Initiatives

- Since women in the project area bear the primary responsibility for collecting firewood and cooking with traditional *chullahs* poses a significant health risk. Switching to low-cost, smokeless *chullahs* offers a compelling solution, for they are not only environmentally friendly but can also significantly improve household health by reducing indoor air pollution. Furthermore, their higher efficiency can lead to reduced drudgery for women, as smokeless *chullahs* are estimated to cut annual firewood consumption by nearly 4 tonnes.
- There is a need to boost the confidence of the women weavers and train them in more intricate weaves, for which there is more demand. Master trainers, who could be engaged for a long time, should hand hold the women in the next phase. The organisation is already working on this aspect in another project that is being supported in the same village.
- To ensure the long-term sustainability of the intervention with respect to community biogas plants, consider incorporating training on biogas plant maintenance and management aspects.
- The current spacing of saplings, under orchards, at a couple of metres falls short of the recommended spacing. Denser planting restricts access to sunlight, water, and nutrients, ultimately hindering their growth and survival. To address water conservation, the project's adoption of the pitcher irrigation system is a commendable strategy. This water-saving technique, coupled with proper plant spacing, can significantly improve the success rate of the tree-planting initiative. We recommend promoting wider adoption of both proper spacing practices and the pitcher irrigation system throughout the area.
- Traditional agroforestry systems in this region have been significantly degraded due to increasing biotic pressure, abiotic stress, and growing resource demands. Promoting agroforestry offers a comprehensive solution, addressing multiple challenges. Planting native species like *Prosopis cineraria*, *Ziziphus mauritiana*, and exotics like *Acacia tortilis* in appropriate locations can not only meet the need for fuel wood, timber, and livestock fodder but also effectively combat wind erosion, a major cause of soil degradation here. Furthermore, agroforestry practices can improve soil health, promote biodiversity, and provide additional income opportunities through fruit, nut, or fodder production. Successful promotion of agroforestry will require active community participation in selecting planting locations and establishing sustainable management practices.
- The availability of grazing land, crucial for camel herders, has become a major concern in recent years. A significant portion of these traditional grazing grounds have been converted for purposes like industrial sites, solar/wind parks and military use. These seemingly barren lands support a surprisingly diverse range of plant and animal species adapted to the harsh desert climate, making their conversion ecologically detrimental. The project should consider participating in advocacy efforts with other like-minded organizations to raise awareness among policymakers and lobby for regulations that protect community land use rights.
- Considering the understaffed livestock department and the resulting gap in service delivery, there's an opportunity to empower camel herders by building their capacity in basic livestock care. Training a group of herders on key management aspects, the importance of preventive

medicine, and vaccination techniques can yield significant benefits. This could equip them to identify potential health issues early on, improve animal health and productivity, and ultimately reduce livestock mortality rates. Empowering herders with practical skills in animal care can make them more self-sufficient and contribute to the overall sustainability of camel rearing in the region. The training program could involve a series of workshops facilitated by qualified veterinarians, focusing on practical skills and knowledge application.

- The district and the region suffer from a severe water shortage. The project should continue with **awareness campaigns about preserving groundwater resources and building community capacity** to protect their traditional water harvesting systems like *tankas* and *naadis*. Lack of community participation in their maintenance and the absence of local governance have left these systems in a dilapidated condition.
- With respect to craft, the training programs should be adapted to the existing skill level and interests of the participants. Securing additional resources like looms and trainers can expedite skill development. Implementing strategies like mentoring sessions and community recognition events can improve the artisans' confidence. And there is a need to conduct thorough market research to identify trending designs and consumer preferences that can guide product development.
- There's a need to strengthen engagement with MGNREGA, and like most other places, faces challenges like transparency in activity selection and limited awareness among community members. To address these and ensure effective program implementation, engagement with Panchayati Raj Institutions (PRIs) is crucial and can lead to improved planning that better reflects local needs, increased transparency and accountability, and ultimately, more effective utilization of MGNREGA resources for creating sustainable livelihood opportunities. Furthermore, building awareness among community members about their entitlements and participation rights under MGNREGA is essential. This could be achieved through community outreach programs, information dissemination through local media channels, and utilizing local self-help groups (SHGs) for peer-to-peer education.

B. Improve Project Design and Efficiency

- To ensure project effectiveness, **conducting a baseline survey is crucial. This initial assessment, capturing data on specific parameters like household income levels, access to clean water, and sanitation facilities, will provide a near realistic picture of the ground realities and areas requiring focused interventions.** The baseline data will serve two key purposes: first, it will inform the project design process by highlighting priority areas; second, it will establish a benchmark against which to measure the changes brought about by the project interventions. Relying solely on beneficiary recall of their situation 3-4 years ago can lead to inaccurate estimations and hinder impact assessment. A well-designed baseline survey will address this challenge by providing reliable data for project design and robust monitoring and evaluation.
- Self-help groups (SHGs) play a crucial role in empowering communities, but their focus should extend beyond just economic empowerment. The HRDP program should also address social and developmental issues that significantly impact the quality of life for the poor, like gender equality, child education, social inclusion, environmental protection, and access to healthcare. By integrating holistic development programs into HRDP from the outset, SHGs can be empowered to tackle these broader challenges. This could involve incorporating capacity building workshops on relevant social topics alongside economic training. A multi-

pronged approach that fosters both economic empowerment and social development will contribute more effectively to improving the overall well-being of the target population.

- Rural livelihoods, intrinsically connected to agriculture, livestock, and allied sectors, have been significantly impacted by climate change over the last decade. While the project has components that indirectly address climate change, a more focused effort is needed. To strengthen the project's response to climate change, **interventions could target promoting drought-resistant crop varieties and water management practices, supporting livelihood diversification to reduce dependence on agriculture, introducing climate-resilient livestock breeds and improved management techniques, and building capacity for early warning systems and disaster preparedness.** By directly addressing climate challenges, the project can contribute to the long-term sustainability of rural livelihoods.
- The 3–4-year timeframe for the HRDP project presents a challenge for achieving substantial impact across diverse themes like natural resource management (NRM), livelihoods, health, and education. Each of these areas requires a focused approach built on deep understanding, which comes from years of experience. **Smaller organizations may struggle to address so many issues at once. To maximize effectiveness within the given timeframe, a phased approach focusing on core thematic areas for immediate impact could be considered.** Subsequent phases could address other themes based on progress and capacity building.
- Building capacity is crucial to long-term sustainability. The project **should invest in training staff to develop expertise in specific focus areas.** Additionally, empowering community members through capacity building programs equips them to address challenges beyond the project's duration. Smaller organizations, with their niche expertise, can play a vital role by collaborating with each other. The project can facilitate these collaborations to ensure comprehensive interventions and maximize the positive impact on the target communities.
- A significant portion of rural households still depend on firewood and other local sources for cooking due to various reasons. **The clean energy component under the HRDP can effectively address this gap by promoting smokeless *chulhas* which reduce not only the drudgery of fuel collection for women but also improve the ambient air quality in kitchens.** Furthermore, smokeless chulhas can contribute to environmental protection by reducing fuel consumption, and consequently, deforestation. The improved health of women and children due to reduced smoke inhalation is another significant benefit.

Annexure

A Sampling Methodology

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

Quantitative Sample Size Calculation

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

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

Where,

N= sample size

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

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

S_e= margin of error, set at 5%;

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

Thus, the estimated maximum sample size is 400.

Quantitative Sampling Methodology

Sampling methodology to be added

Stage 1 – Selection of villages:

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

Stage 2 – Selection of beneficiaries:

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

Qualitative Sample Size Calculation

Qualitative tools such as in-depth interviews (IDI) and focus group discussions (FGD) were administered to obtain information about the remaining themes and enrich the household survey information with a deeper understanding. Since there was no baseline available for this evaluation, the recall method was used in the household survey to assess the change that has occurred over time. For this purpose, respondents were asked to recall the value of critical indicators at the start of the programme.

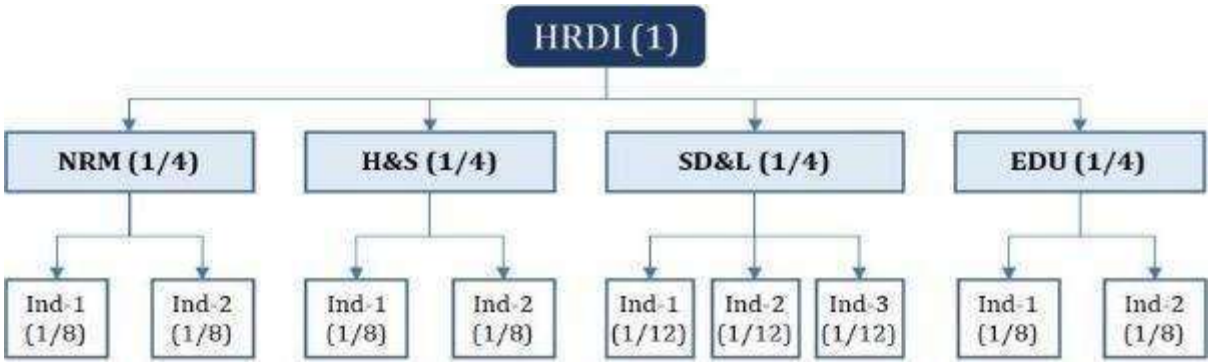
B HRDI Methodology

The outcome indicators included in the HRDI were obtained from different domains and consequently measured on different scales. Therefore, to ensure the comparability of these indicators, all the indicators were converted into discrete variables so that they 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, similar to the HRDI calculation. Equal weights were attributed to all the domains to create a standard HRDI for each cluster. Equal weights were assigned to each of the four domains. Furthermore, the domain weight was equally distributed among the indicators of that domain, thereby ensuring that the overall equal weightage of the domains was maintained.

Figure26: Domain and Indicator Weights[4]



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.

Table9: Example of HRDI Calculation

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

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

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 infrastructure (hand wash station, separate washrooms, etc.)	(1/4) x (1/2) = 0.125

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

Analysis Plan

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

Method to Calculate HRDI

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

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

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

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

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

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

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

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

Table10: HRDI Calculation for P0282

Domain	Indicators	Baseline	HRDI	End line	HRDI
NRM	Proportion of farmers with net income above median	0.15	0.06	0.18	0.07
	Proportion of farmers reporting increased productivity of three main crops above median (before and after)	0.09		0.11	
	Percentage of farmers reporting access to irrigation	0.00		0.00	
ST&LE	Percentage of SHG members reporting income above median from rural enterprises	0.13	0.08	0.28	0.21
	Percentage of households who getting skill training and reporting increase in income from job/enterprise/self-employment	0.05		0.31	
	Percentage of HH reporting income above median from livestock	0.13		0.24	
H&S	Percentage of households reporting increase in use of fruits/vegetables from the nutrition garden	0.05	0.03	0.28	0.15
	Percentage of households reporting increase availability of drinking water facility	0.08		0.32	
	Percentage of households with access to improved toilet facility	0.00		0.00	
EDU	Percentage of respondents reporting increased access to functional school physical infrastructure (drinking water posts, separate washrooms, furniture etc.)	0.20	0.07	0.23	0.10
	Percentage of respondents reporting increased access to functional learning infrastructure (library, science labs, smart class, etc.)	0.60		0.19	
	Total		**0.24**		**0.53**

C Overview of Impact Calculation

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

Low: 0% - 40% change

Medium: >40% - 70% change

High: >70% - 100% change

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

Table 11 : Overview of Impact Calculation

Outputs	Output Indicators	Output Avg.	Impact Level	
Increased income from agriculture				
Land/ crop productivity	Proportion of farmers reporting an increase in production of crops supported under HRDP	-	9.8	**Low**
	Proportion of farmers reporting increased income from crops that were supported under HRDP.	39.3		
	Average increase in income from crops that were supported under HRDP (% change)	-		
	Average increase in productivity from crops that were supported under HRDP (% change)	-		
Increased adoption of crop diversification	Proportion of beneficiaries satisfied with quality of available services	-	-	**Low**
	Proportion of farmers that are able to access farm machinery	-		
Land under irrigation	Proportion of farmers who received support for irrigation	-	-	**Low**
	Increased area under irrigation	-		
Adoption of clean energy infrastructure	Proportion of HHs using clean energy infrastructure	93.4	89.5	**High**
	Proportion of households reporting benefits from using clean energy infrastructure	85.7		
Improved access to agricultural training and services				
Access to Agriculture training and services	Proportion of farmers who accessed project training services	-	-	**Low**
	Proportion of farmers who demonstrate awareness regarding sustainable farming practices	-		
	Proportion of farmers who adopt scientific agricultural practices	-		

Outputs	Output Indicators	Output Avg.	Impact Level	
Adoption of improved farming practices	Proportion of beneficiaries reporting increase in productivity due to better farm management	-	-	**Low**
	Proportion of farmers reporting increased income	-		
Economic empowerment through collectivization (Only for SHG members)				
Formation/ revival of SHG based Enterprises	Proportion of members who received support with establishing/reviving SHGs	29.5	36.9	**Low**
	Proportion of members who received support with establishing/reviving SHG enterprise	-		
	Proportion of members whose SHGs are currently functioning	81.9		
Development of entrepreneurship	Proportion of SHG members who received training	94.0	52.3	**Medium**
	Proportion of HHs with increase in income from entrepreneurial activities	-		
	Proportion of SHGs with increased savings	70.4		
	Proportion of HHs with increase in income from entrepreneurial activities	44.8		
Improved Capacity to Generate Income through Livestock Management				
Adoption of Scientific Livestock Management	Proportion of beneficiaries who received support in livestock management services	22.4	70.7	**High**
	Proportion of beneficiaries reporting an increase in income from livestock management	56.2		
	Proportion of beneficiaries reporting improved livestock health	78.4		
	Proportionate increase in average income from livestock	126		
Improved Health Infrastructure and Services				
Establishment/ enhancement of health infrastructure and services	Proportion of beneficiaries who gained access to health services	63.6	65.8	**Medium**
	Proportion of beneficiaries reporting lifestyle changes due to improved access	65.2		
	Proportion of beneficiaries who availed free medications at camps	95.3		
	Proportion of beneficiaries who consulted medical references from camps	39.1		
Development of Kitchen Garden				
Increased adoption of kitchen gardens	Proportion of HHs reporting income gains from kitchen garden	0.0	38.5	**Low**
	No of HHs received seeds/training in the kitchen garden	1.8		
	No of HHs with improved vegetable/fruit consumption due to kitchen gardens	66.7		

Outputs	Output Indicators	Output Avg.	Impact Level	
	Proportion of HHs reporting improved nutrition	85.7		
Improved capacity of educational institutions to provide services				
Access to improved physical infrastructure	Proportion of students/schools who gained access to functioning smart class rooms/ BaLA/science labs/libraries/learning aid/furniture/sports equipment	37.0	41.0	**Medium**
	Proportion of schools who gained access to clean and functioning sanitation units/drinking water posts at education institutions	45.1		
Improved willingness to engage in school activities	Improvements in attendance due to improved infrastructure	97.0	84.8	**High**
	Proportion of institutions reporting increase in enrolment post infrastructure development	78.0		
	Proportion of institutions reporting improved interest of students to engage in classroom activities	78.8		
Strengthening the School Management Committees				
Establishment and strengthening of SMCs	No of schools with SMC that are functioning Regularly	93.9	56.7	**Medium**
	Proportion of beneficiaries who actively engage in SMCs	-		
	Perceived benefits of SMC	76.4		

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

D Two Sample Proportions Z Test

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

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

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

p1 is the proportion in the first sample
p2 is the proportion in the second sample
p is the pooled proportion, calculated as (p1n1 + p2n2)/ (n1 + n2)
n1 is the sample size of the first sample
n2 is the sample size of the second sample

The z-statistic is then compared to the standard normal distribution to determine the p-value of the test. A p-value less than alpha (typically 0.05) indicates that the null hypothesis can be rejected, and there is evidence to suggest that the two proportions are different.

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

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

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

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

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

Assumptions:

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

The z-test conducted for two indicators- Percentage of craft group members reporting increased income above median and Percentage of households reporting increased income from livestock (above median) is shown below.

Table12: Z-test Conducted for P0282

Indicator	Percentage of craft group members reporting increased income above median (above median)

p1 (proportion of first sample-end line)	93.22
n1 (sample size of p1)	73
p2 (proportion of second sample-baseline)	15.25
n2 (sample size of p2)	59
P	1
Calculation	0.0501658592
z statistic	15.54244285
	Statistically significant at 95% confidence level (or p<0.05)
p-value for the z statistic	<0.00001

Indicator	Percentage of households reporting increased income from livestock (above median)
p1 (proportion of first sample-end line)	72.6
n1 (sample size of p1)	73
p2 (proportion of second sample-baseline)	39.7
n2 (sample size of p2)	73
P	1
Calculation	0.0697437894
z statistic	4.7172659045
	Statistically significant at 95% confidence level (or p<0.05)
p-value for the z statistic	< 0.00001

E Theme-wise Sustainability Matrix

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

Table13 : Sustainability Matrix

Support provided (Enter relevant activity categories)	Structures established	Technical Know-how	Usage	Maintenance
NRM				
Water Management	✓	✓	✓	✓
Farm Management	✓	✓	✓	✓
Clean Energy	✓	✓	✓	
Skill Training and Livelihood Enhancement				
Camel Cluster & Camel Milk Enterprise	✓	✓	✓	✓
SHG-Based Women Empowerment		✓	✓	✓
Skill Training		✓		

Health and Sanitation				
Health		✓		
Kitchen Garden	✓	✓	✓	✓
Promotion of Education				
Educational Institutions Development	✓	✓	✓	✓

F Details of Water Structures

Table 14 : Water Structures[5]

Village	Nos	Cost Sharing			Beneficiaries
		People	MGNREGA	HRDP	
Barlee Nathusar Naadi	1	112,920	187,361	45,000	Households from multiple villages
Barli Manda Naadi	1	43,000	390,260	45,000	
Thaat Naadi	1	-	120,000	56,600	
Odhaniya Naadi	1	-	100,000	100,000	

G Educational Infrastructure

Name of the School: Government Higher Secondary School

Name of the Village: Gomat

Name of the Block/ District: Pokharan/Jaisalmer

Types of Educational Infrastructures Created	Status	Observations/ Comments
Smart Classroom Equipment (Laptop, Projector, Screen, UPS etc.)	Functional/ Partially Functional/ Non-Functional/ Not available in School	Functional
BALA Painting (Informative painting targeted to children on the inside and outside wall of the classroom)	Clearly Visible/ Colour Faded but visible/ Not Visible/ Not available	Clearly Visible
Solar Electrification	Functional/ Partially Functional/ Non-Functional/ Not available in School	Not Available
Additional Classroom	Constructed and used as classroom/ Constructed and not used as classroom/ Under construction/ Not constructed	Not Constructed
Sports Equipment	Available and used by students/ available but not used by students/ available but not in a usable condition/ not available	Available and used by students

[5] Dimensions are not available

Library	Available and used by students/ available but not used by students/ available but not in a usable condition/ not available	Available and used by students
Laptop/ Computer	Functional/ Partially Functional/ Non-Functional/ Not available in School	Functional