IMPACT ASSESSMENT REPORT

Environmental and Socio-economic Impact Assessment of Ambuja CSR Initiatives for Increasing Water Availability at Rajasthan

March 2024

Ambuja Cement FOUNDATION

25 Years of Excellence, Resilience & Impact

TARU LEADING EDGE

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On behalf of Ambuja Cement Foundation
Mumbai, India
March 2024

Acknowledgement
We would like to express our gratitude and appreciation to everyone who has contributed to this study. We would also like to acknowledge the insights provided by the government officials and the local community. The development of this study has only been made possible with the effort of Taru and ACF. The primary data was collected from 11 villages in Marwar Mundwa region of Nagaur district and 7 villages in Rabriyawas region of Pali district of Rajasthan. The secondary data for the study was taken from various sources such as DCHB – Census of India, 2011, India - Water Resource Information System (WRIS) and other reports.

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EXECUTIVE SUMMARY

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Ambuja Cements Limited, through its CSR arm, Ambuja Cement Foundation (ACF), has undertaken impactful Water Resource Management (WRM) initiatives in the arid regions of Marwar Mundwa and Rabriyawas in Rajasthan. Targeting chronic water scarcity, ACF's interventions include reviving traditional water structures, implementing rooftop rainwater harvesting, and promoting micro-irrigation techniques. This impact assessment study aimed to comprehensively evaluate the socio-economic and environmental outcomes of these initiatives undertaken during 2019 to 2022, to offer actionable recommendations for program enhancement. Despite challenges such as external factors and data limitations, the study provides valuable insights into the effectiveness and sustainability of ACF's WRM interventions, contributing to community well-being and equitable water access.

Marwar Mundwa and Rabriyawas, facing severe water scarcity due to climatic challenges and historical vulnerabilities, have been the focal points of ACF's sustained efforts. The affected population includes small farmers, landless individuals, women groups, and communities near mining areas. **ACF's strategic interventions, ranging from rooftop rainwater harvesting to farm bunding and micro-irrigation, aim to increase water availability, improve living standards, and empower communities in sustainable water management practices.** The impact assessment's phased and collaborative methodology integrated local traditions, emphasized inclusivity, and aligned with ACF's objectives, to offer a comprehensive understanding of the transformative effects of the WRM initiatives in these regions.

The Impact Assessment Study conducted in **Marwar Mundwa and Rabriyawas regions** covered **88 and 68 beneficiaries** from the year 2019-2022, respectively. The demographic details revealed that households in both regions mostly comprised 5-8 members, with agriculture being the primary source of livelihood for about 90% of respondents. The study highlighted significant improvements in domestic water availability and accessibility post-interventions, with over 90% of respondents experiencing increased productivity and enhanced livelihoods due to the Ambuja CSR water initiatives.

In both Marwar Mundwa and Rabriyawas regions, farmers engage in the cultivation of both Rabi crops like wheat, mustard, cumin, fenugreek, and barley and Kharif crops like pearl millet, sorghum, raira and moong beans being the most common, cultivated by over 80% of respondents. The implementation of ACF water interventions has resulted in a significant increase in the number of farmers opting for both Kharif and Rabi crops, reflecting the positive impact on agricultural production and crop diversification in the surveyed communities. Moreover, the adoption of new water-saving technologies led to increased agricultural produce and crop diversification, particularly in Rabriyawas. Micro-irrigation systems such as drip and sprinkler irrigation resulted in a 50% reduction in water usage,

contributing to enhanced water efficiency and securing agricultural water resources in the region. Despite challenges in maintaining these systems, farmers expressed satisfaction and emphasized future investments in water conservation infrastructure.

The study underscores the transformative impact of the ACF interventions on community livelihoods and agricultural practices, highlighting the importance of continued support for sustainable development initiatives. The Ambuja CSR water initiatives have demonstrated significant positive impact on the communities of Marwar Mundwa and Rabriyawas as follows:

In Marwar Mundwa, more than 95% respondents experienced **reduced financial burden** for obtaining drinking water, improved **climate resilience**, and improved **educational opportunities for children**. The initiatives also enhanced their **social life and community collaboration, productivity, increased income, time savings** and overall **health.**

Increased Irrigated Land: Farmers in both regions expanded their irrigated land area due to ACF interventions. Modern irrigation systems and water conservation measures allowed effective utilization of water resources, enhancing agricultural productivity and promoting sustainable farming practices.

Extended Harvesting Seasons: ACF interventions facilitated double cropping in both regions by extending harvesting seasons. This increased cropping opportunities, enhancing food security and income generation. More farmers engaged in both Rabi and Kharif production post-interventions, indicating successful season extension.

Diversified Crop Cultivation: After ACF interventions, farmers diversified crop cultivation with cash crops like Cotton and Isabgol, alongside staples like Bajra. This diversification enhances resilience to climate variability and creates new income sources, contributing to socio-economic development.

In Rabriyawas, although the impacts varied, positive influences were observed in around 90% of the respondents in terms of **safety** and more than 95% saw **reduced financial burden for water and improved resilience** due to Ambuja CSR. ACF's water initiatives notably **improved economic well-being** with 75% of respondents in Rabriyawas reporting increased **annual farm income**. The project also boosted social life, productivity, and overall health, saving time and enhancing community collaboration.

Increased Income: ACF interventions significantly boosted farmers' income in both Marwar Mundwa and Rabriyawas. In Marwar Mundwa, 88% reported higher annual farming income, with 18% experiencing a rise of INR 20,000 to INR 50,000. In Rabriyawas, around 26% respondents noted income boosts, of more than INR 50,000 till INR 3 lacs annually. Additionally, up to 55% and 47% of women in Marwar Mundwa and Rabriyawas, respectively, reported higher indirect incomes due to time saved.

Furthermore, the project significantly decreased health expenses, with **85% and 50% of respondents in Marwar Mundwa and Rabriyawas, respectively, citing reduced health-related costs.** The overall satisfaction level with drinking water quality facilitated through the ACF water initiatives was high, with nearly all respondents expressing contentment and happiness. Despite some challenges and unintended outcomes, such as concerns about downstream water table impact and ecological consequences of unplanned plantations, the project has been largely successful in improving the quality of life for community members while promoting environmental sustainability and economic resilience.

There is a notable willingness across both regions to participate in future water conservation programs, with farmers and local officials eager to engage in initiatives addressing water scarcity and promoting sustainability. The study underscores the importance of ongoing community involvement and support for sustainable water management practices to ensure the long-term success of the project.

A comprehensive set of recommendations has been proposed to further enhance the impact of the interventions. The success of the current initiatives, aimed at improving water availability in the villages, lays the foundation for broader adoption through strategic measures. The first set of recommendations revolves around knowledge sharing and capacity building. Farmer-to-Farmer Learning sessions, ongoing technical assistance, and regular capacity-building sessions are proposed to empower farmers and communities. Farmer Networks are envisioned to be expanded through awareness demonstrations and quarterly trainings, fostering a network of informed farmers and encouraging widespread water conservation practices.

Community-level awareness campaigns constitute another crucial aspect of the recommendations. Involving local school children in water management awareness activities, conducting monthly behavior change communication campaigns in schools, and organizing student rallies contribute to raising awareness about water conservation practices. Plantation of native species emerges as a strategic recommendation, aiming to enhance environmental resilience through the selection of simple-leaved native plants. This holistic conservation strategy aligns with sustainability goals, promoting biodiversity and community well-being.

Mulching and farm bedding are proposed as essential strategies for water conservation and agricultural productivity. The use of biodegradable materials, organic and agri-waste residue in mulching is emphasized to protect against soil evaporation and enhance moisture retention, contributing to increased crop yields. The maintenance of public interventions, such as check dams and village ponds, is highlighted as crucial for long-term functionality. The establishment of dedicated funds, community ownership, and skill development are recommended to ensure sustained impact and self-sufficiency. The recommendations also address downstream water table impact, water percolation, and aquifer recharge through comprehensive studies and adaptive measures. Extending the impact beyond current boundaries involves collaboration, knowledge-sharing, and careful consideration of resource allocation, community engagement, and impact assessment.

Finally, the **recommendations outline a phased approach for short-term, mid-term, and long-term implementation.** In the short term (0-2 years), the focus is on **knowledge sharing and capacity building, engaging local school children, and expanding Farmer Networks.** School children can be involved in water management by creating awareness campaigns and educational events, promoting knowledge and youth engagement in the community. The mid-term (2-5 years) emphasizes comprehensive strategies such as **mulching, farm bedding, and public intervention maintenance**. The long-term vision (5+ years) involves addressing complex issues like **downstream water table impact, water percolation, and aquifer recharge through scientific studies.** Additionally, expanding interventions in neighboring villages and collaborating with local experts are proposed to enhance overall water availability and community well-being in the broader region. Collectively, these recommendations offer a holistic roadmap for advancing Ambuja CSR's mission for sustainable water resource management in Rajasthan.

Source : Unsplash+

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ABBREVIATIONS

ACF	Ambuja Cement Foundation
ArcGIS	Arc Geographic Information System
BCC	Behavioral Change Communication
CSR	Corporate Social Responsibility
DWDS	Drinking Water Distribution System
FGD	Focused Group Discussions
FPO	Farmer Producer Organization
ft	Feet
HH	Household
HP	Horsepower
hr	Hour
IMSA	Integrated Mission for Sustainable Agriculture
INR	Indian Rupees
JJM	Jal Jeevan Mission
KII	Key Informant Interview
LANDSAT	Land Satellite
MARVI	Managing Aquifer Recharge and Sustaining Groundwater Use through Village-level Intervention
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Schem
NDVI	Normalized Difference Vegetation Index
NGO	Non-governmental Organization
PHED	Public Health Engineering Department
RRWHS	Rooftop Rainwater Harvesting Systems
RSAC	Remote Sensing Application Center
SHG	Self Help Groups
SMART	Specific, Measurable, Achievable, Relevant, and Time-Bound
TOR	Terms of Reference
VMKS	Vagad Mazdoor Kisan Sangathan
WRM	Water Resource Management

01

INTRODUCTION AND OVERVIEW

Source : Unsplash+

1.1. Ambuja CSR Initiatives – A Brief Project Background

Ambuja Cements Limited, guided by its commitment to community development, has undertaken significant initiatives through its CSR arm, Ambuja Cement Foundation (ACF), to address water scarcity challenges in the arid regions of Marwar Mundwa and Rabriyawas in Rajasthan. ACF operates in 500 villages across 13 districts in Rajasthan. ACF primarily focuses on mitigating chronic water scarcity in these regions through a comprehensive approach developed based on the needs of the community. Key interventions include the revival of traditional water structures such as ponds, khadins, and check dams, alongside the construction of rooftop rainwater harvesting systems. The implementation of micro-irrigation techniques and the promotion of sustainable farming practices form integral components of ACF's initiatives. Through these interventions, ACF aims to address water challenges and promote environmental sustainability in the targeted communities.

ACF operates with a mission to increase water availability for communities and agriculture, improve living standards, promote sustainable water management, and empower communities to manage their water resources. The outreach of ACF has positively impacted 200,000 people across 3,000 hectares, achieved through the development of 9,379 water harvesting structures. The selection of interventions is strategic, considering community needs, existing resources, and potential impact, with a specific emphasis on reviving traditional systems for their cost-effectiveness, sustainability, and community ownership.

This impact assessment study was designed to evaluate the effectiveness of ACF's interventions in Water Resource Management (WRM) and highlight the positive outcomes of traditional water management practices in addressing water scarcity in the regions of Rabriyawas and Marwar Mundwa in Rajasthan. The project focuses on various interventions such as roof rainwater harvesting, construction and renovation of water bodies, and the promotion of individual irrigation systems. These efforts collectively aim to enhance surface water availability for domestic use and agriculture, contributing to improved community livelihoods. The assessment will provide a comprehensive understanding of the project's transformative effects on water resources, households, and local ecosystems. Initiated over a decade ago, the project reflects Ambuja's sustained commitment to fostering prosperity in rural communities through sustainable water management practices, as evidenced by the forthcoming impact assessment.

1.2. Location and Context

The project has been conducted in the Rabriyawas region of Pali District and Marwar Mundwa region of Nagaur District in Rajasthan State[1].

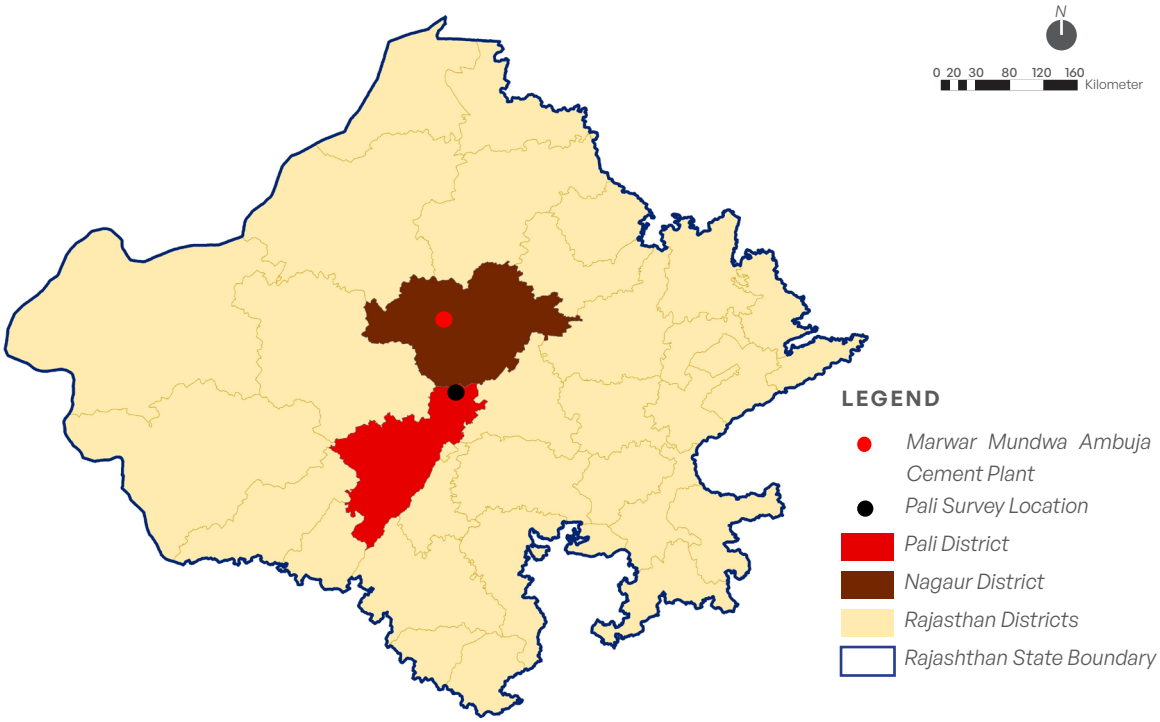


Figure 1: *Ambuja Cement Plant and Project Locations*

[1] *https://www.ambujacementfoundation.org/ngo-rajasthan*

1.2.1. Project Areas

Rabriyawas has a rich historical background, dating back to the 7th century AD. It was once a part of the Malwa kingdom and later came under the rule of the Marwar kingdom. The region is known for its ancient temples, including the Somnath Temple and the Neelkanth Mahadev Temple. Rabriyawas is a tehsil headquarters in the Pali district of Rajasthan[2][3][4]. The town is administered by a sub-divisional magistrate and a panchayat samiti. The region faces a severe water scarcity problem. The main sources of water are rainwater harvesting, borewells, and the Luni River. However, the Luni River is often dry, and the water table in the region is declining. Below map shows survey locations in Rabriyawas region.

Marwar Mundwa has a long and interesting history. The town was founded in the 16th century by Rao Jodha, the founder of Jodhpur. It was an important trading center on the route between Jodhpur and Bikaner. It has a panchayat samiti headquarters in the Nagaur district of Rajasthan. The town is administered by a panchayat samiti president and a panchayat samiti secretary[5]. Marwar Mundwa also faces water scarcity problems. The main sources of water are rainwater harvesting, borewells, and the Indira Gandhi Nahar Pariyojana canal [6]. However, the canal water is often not available, and the borewells are drying up. Below map shows survey locations in Marwar Mundwa region.

Rajasthan faces harsh environmental conditions, frequent droughts, and erratic rainfall, making water a critical resource. Two-thirds of the state lies in the Thar Desert, known for extreme weather and high vulnerability to water scarcity. Groundwater depletion is a major concern, with only 25% of agricultural land under irrigated rabi crops. The areas of Marwar Mundwa and Rabriyawas face challenges related to low and erratic rainfall, high temperatures, and intense solar radiation, contributing to water scarcity and vulnerability of local livelihoods. Frequent droughts and famines have historically affected these regions, emphasizing the need for sustainable water resource management interventions[7].

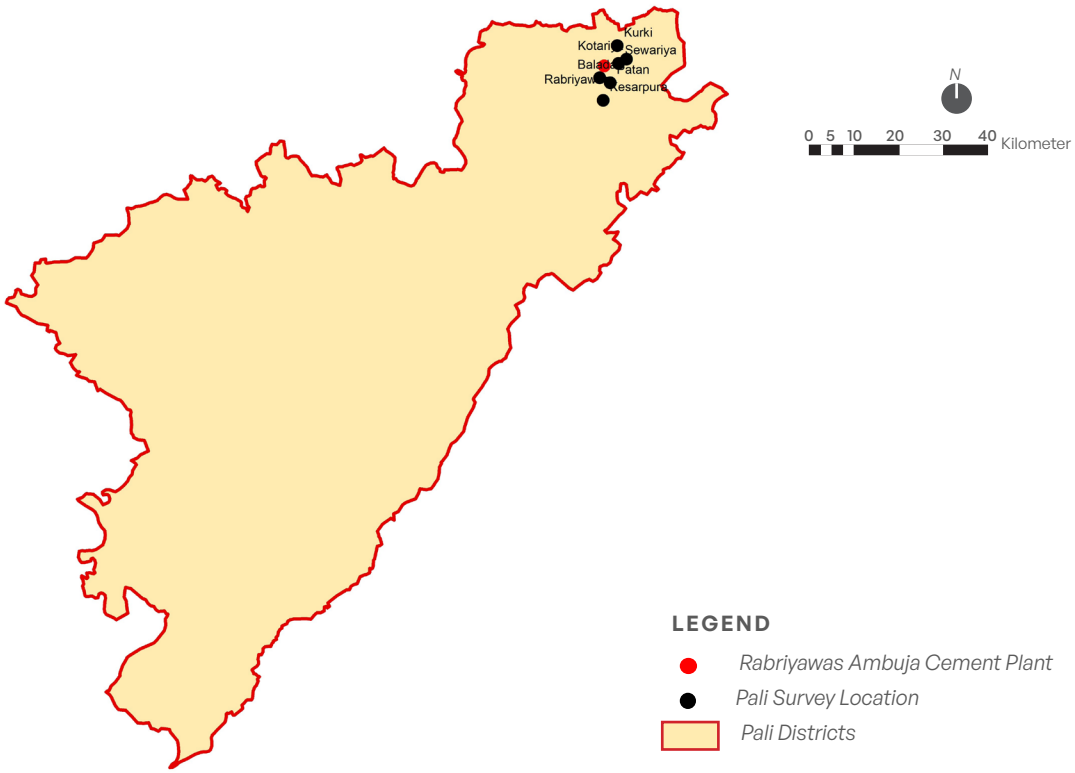


Figure 2: *Survey Locations in Rabriyawas region in Pali District*

[2] https://www.tourism.rajasthan.gov.in/
[3] https://rtdc.tourism.rajasthan.gov.in/Client/PackageTour.aspx
[4] https://asijaipurcircle.nic.in/Neelkanth.html
[5] https://rajasthan.gov.in/pages/state-contact-directory/detail/52/30266
[6] https://en.wikipedia.org/wiki/Indira_Gandhi_Canal
[7] https://environment.rajasthan.gov.in/content/dam/environment/RPCB/Reports%20n%20Papers/ClimateChange_09_04_2012.pdf

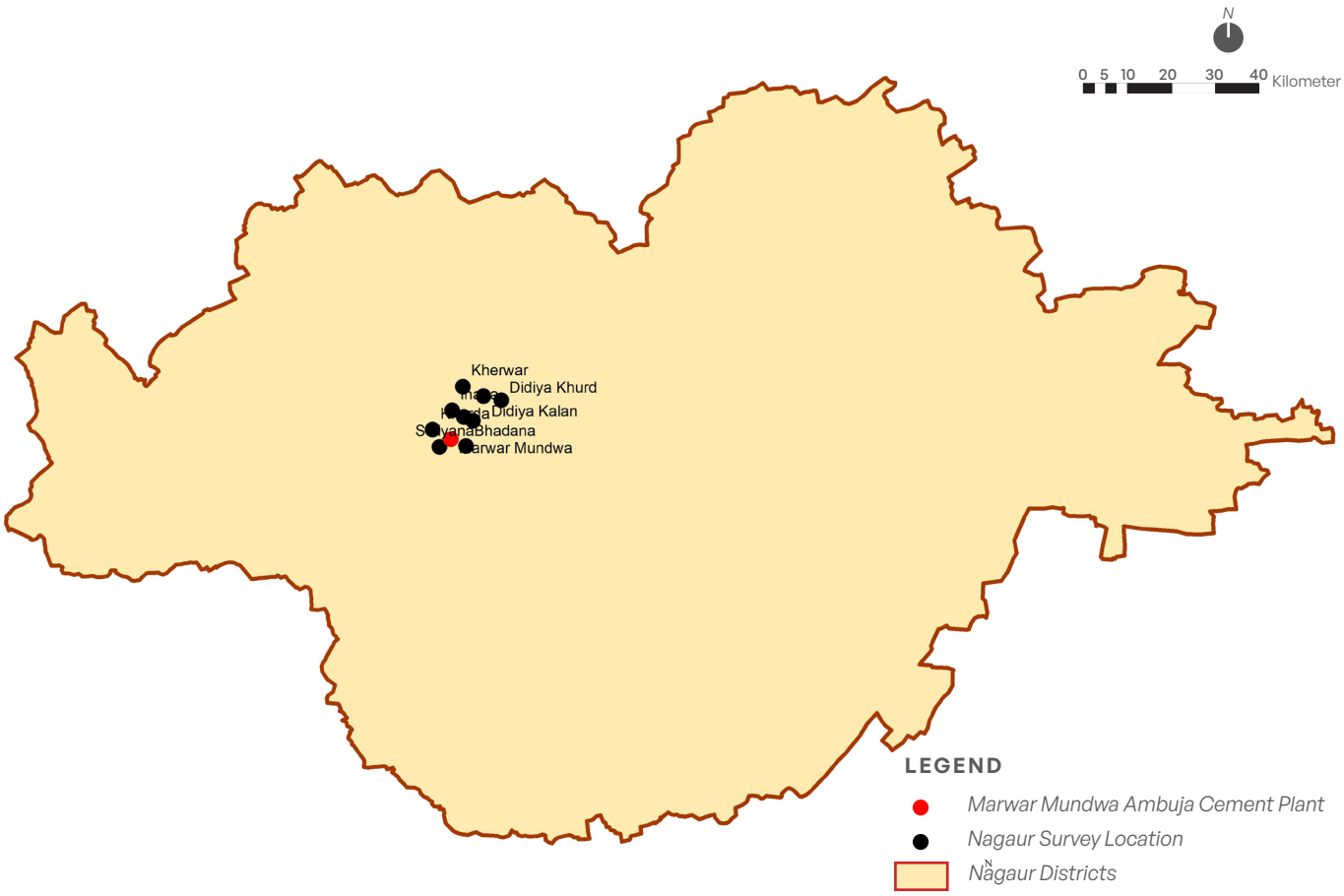


Figure 3: *Survey Location in Marwar Mundwa region in Nagaur District*

The affected population in Marwar Mundwa and Rabriyawas includes small and marginal farmers, landless individuals, women groups, vulnerable communities engaged in labour work, the communities living near the mining areas and households facing challenges related to drinking water security and agricultural water access. The study aimed to capture the nuances of how ACF's interventions have influenced and transformed the lives of these communities, especially the communities living near the mining areas. The focus of the study is to evaluate the impact of ACF's WRM interventions in Marwar Mundwa and Rabriyawas during the years 2019-22. Understanding the effectiveness of these initiatives is crucial for assessing their contribution to increasing surface water availability, groundwater recharge, and overall community well-being.

> Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our water is the principal measure of how we live on the land.
>
> **- LUNA LEOPOLD**
> (HYDROLOGIST)

1.2.2. Demography of the Project Area

District Level

The population of Nagaur district has increased by about 23.7% in rural areas and 19.41% in urban areas from the year 2001 to the year 2011. The population of Pali district has increased by about 12.6% in rural areas and 22.61% in urban areas from the year 2001 to the year 2011[8] . Both the districts show significant increase in their populations putting a stress on the available water resources and emphasizing the need of storing more water in both the regions.

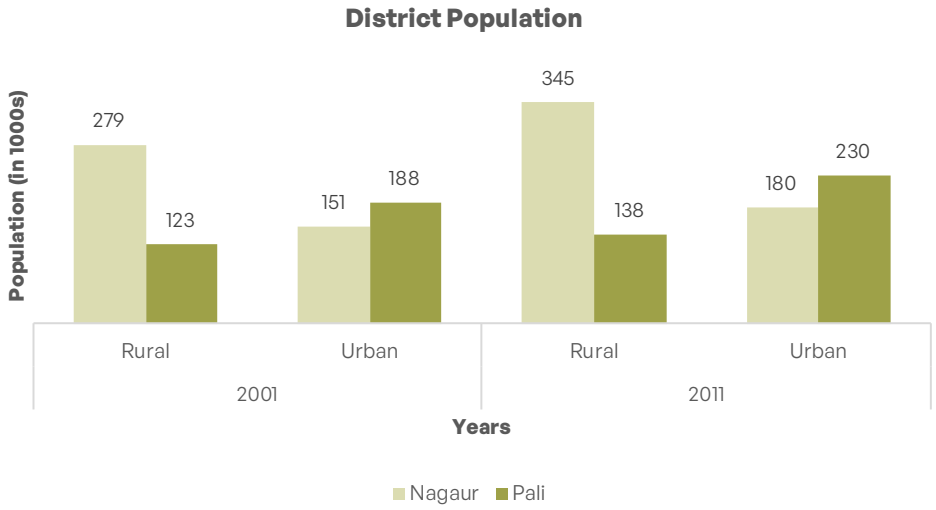
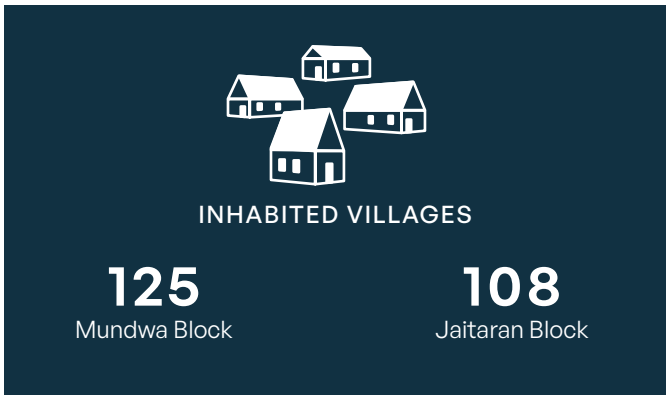
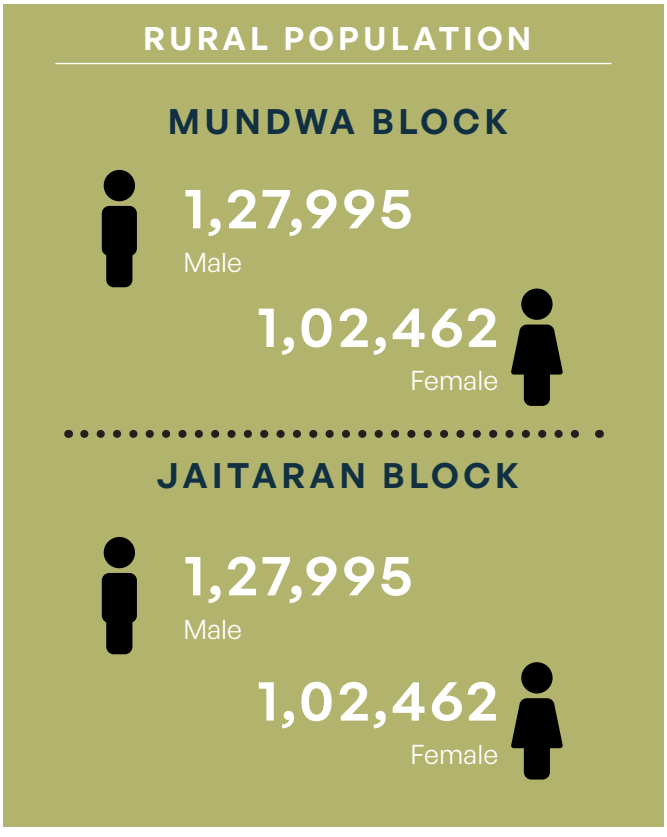


Figure 4: *District Population of Nagaur and Pali Districts of Rajasthan*[8]

Block Level

Rabriyawas region is a part of Pali district's Jaitaran Block. The block has 113 inhabited villages. There are around 1,01,693 female residents and 1,02,462 male residents in the rural region of the block. Marwar Mundwa comes under Mundwa Block of Nagaur district and the total number of inhabited villages in the block were 125 as per the census data for year 2011. The number of males and females residing the rural areas of the block are about 1,27,995 and 1,20,141, respectively[10].





[8] DCHB – Census of India, 2011
[9] DCHB – Census of India, 2011
[10] DCHB – Census of India, 2011
[11] DCHB – Census of India, 2011

1.3. Water Resource Management (WRM) Interventions executed by ACF in Marwar Mundwa and Rabriyawas Regions

Below sections show all the interventions taken or facilitated through Ambuja CSR Initiatives in the 13 districts of Rajasthan. The main focus of this study in on Rabriyawas and Marwar Mundwa regions.

Table 1: *Various Interventions taken by ACF from 2019-2022* [12]

Region	Marwar Mundwa			Rabriyawas			Total
Activities	2019-20	2020-21	2021-22	2019-20	2020-21	2021-22	
HH RRWHS constructed	232	180	242	235	153	265	1307
Community RRWHS constructed	0	1	3	0	1	4	9
Drinking water ponds constructed/ revived	1	2	2	0	0	0	5
Ponds/ doha constructed/ revived	0	0	0	5	8	23	36
Check dams constructed/ revived	0	0	0	5	0	0	5
Khadins	0	0	0	7	0	0	7
Dug wells created/revived	0	0	0	0	1	0	1
Farmers adopted individual drip irrigation	17	9	9	17	16	23	91
Farmers adopted individual sprinkler system	4	0	35	160	125	120	444
Farm ponds constructed	3	10	18	11	15	20	77
Area under farm bunds (in Ha.)	168	185	216	142	278	167	1155

The interventions improved water access for marginalized farmers. A significant portion (62%) of the households benefiting from Household RRWHS were landless, marginal, or small farmers. There was also a significant increase in potential harvesting capacity across various structures. This included 19839.803 m^3 for HH RRWHS, 171.78 m^3 for community RRWHS, and 498110.25 m^3 for check dams, ponds, dohas, and farm ponds. The interventions also resulted in the creation/revival of drinking water sources benefiting 1873 households and the coverage of a large area (147.76 Ha under individual drip irrigation and 988.06 Ha under sprinkler irrigation), contributing to enhanced agricultural productivity[13].

1.3.1. Rooftop Rainwater Harvesting System (RRWHS)

RRWHS involves the collection and storage of rainwater from rooftops for later use. It includes drain channels, downspout pipes (drainpipe), and storage tanks to capture and store rainwater. It helps individual households to collect and utilize precious rainwater for drinking purpose, reducing dependence on depleting groundwater resources. The basic cost for constructing one RRWHS is Rs 5 to 6 per liter including labour and all material cost. The capacity of RRWHS tank varies as per the family size and surface area of the roof. Though the size of RRWHS differs depending upon the preference of the family, financial support by ACF is standardized.

[12] *RFP Documents*
[13] *RFP Documents*

Figure 5: *RRWHS tank at a beneficiary house in Rabriyawas village (left) and Bhadana village (right)*

Figure 6: *RRWHS system at a beneficiary house in Didiya Kala village, Marwar Mundwa (left and middle) and RRWHS beneficiary in Balada village, Rabriyawas (right)*

45% of total irrigation and 80% of domestic water come from ground water reserve.

Source : The Asian Development Research Institute (ADRI)

1.3.2. Community RRWHS

The Community RRWHS is a communal water collection infrastructure utilizing artificial catchment surfaces, typically tank surfaces in this context, designed with a downward slope towards the center. Constructed with cement, these surfaces channel rainwater into a tank beneath. The tank is lined with lime to preserve water quality, and a central structure with opening with a filter ensures debris-free water collection. This system provides communities with a reliable and clean water supply, contributing to sustainable water management.

Figure 7: *Community Level RRWHS at Rabriyawas*

1.3.3. Drinking Water Distribution System (DWDS)

DWDS is a system designed to store and distribute potable PHED supplied water to households, ensuring a safe, reliable and constant supply of water. In this context, water is stored in tanks at a higher level from where the water is drawn through taps. DWDS helps in efficient distribution of clean water to communities, addressing water scarcity concerns.

Figure 8: *DWDS System at Rabriyawas*

Over **97%** of Earth's water is in the oceans, making it saline and unsuitable for drinking.

Source : Bureau of Reclamation

1.3.4. Ground Level Reservoir

A Ground Level Reservoir is a water storage structure located above ground, designed to hold and retain water. Typically constructed with durable materials like concrete or metal, these tanks collect and store water, providing a readily available supply for various purposes such as irrigation, livestock, or domestic use. Surface level reservoir tanks contribute to effective water management, ensuring access to water resources for communities and agricultural activities.

Figure 9: *Ground level water reservoir at Rabriyawas*

1.3.5. Village Level Ponds

Village-level ponds are small water bodies at the village level, serving as storage for rainwater or other water sources, supporting agriculture and provide a water source for livestock and domestic use. In the Ambuja CSR project, village-level ponds have been restored and deepened to enhance local water availability, water quality and support sustainable development. There are climatic instances when the lakes get dry due to lesser rainfall.

Figure 10: *Restored and deepened Village level ponds at Mundwa (Lakholav Talav on left) and Didiya Kala (Vishnadi Talav on right)*

Figure 11: *Village level ponds which have been dry due to lesser annual rainfall at Rabriyawas*

1.3.6. Farms Ponds

Farm ponds are on-farm water storage structures designed to capture and retain rainwater or runoff. They provide a localized water source for agricultural irrigation. The implementation of farm ponds in the project aims to support individual farmers in managing water resources efficiently for crop cultivation. ACF facilitates farm ponds by providing certain amount of funds to farmers to create the ponds. Farmers place high-density polyethylene plastic sheet placed below the pond surface to prevent water seepage.

Figure 12: *Farm ponds facilitated through ACF at Mundwa (left) and Balada, Rabriyawas (right)*

1.3.7. Sprinkler and Drip Irrigation

Sprinkler and drip irrigation are micro-irrigation techniques that deliver water directly to crops. Sprinklers disperse water over the crops, while drip systems provide water at or near the roots while minimizing water waste. The adoption of sprinkler and drip irrigation methods enhances water use efficiency in agriculture, reducing water wastage and promoting sustainable farming practices. ACF facilitates both the irrigation systems by providing certain amount of funds to the farmers to adopt these systems.

Figure 13: *Drip Irrigation System facilitated through ACF in a farm at Didiya Kala in Marwar Mundwa region*

1.3.8. Farm Bunding

Farm bunding involves the construction of Earthen soil embankments or bunds to conserve water, control soil erosion, and facilitate water infiltration into the soil to prevent soil erosion, enhance water retention, and promote overall soil health in agricultural areas. ACF facilitates the farm bunding by providing certain amount of funds per bigha till a cap limit to the farmers to create farm bunding using JCBs before sowing period.

Figure 14: *Farm Bunding facilitated through ACF at Patan Village (left and mid) and at Balada Village (right) in Rabriyawas region*

1.3.9. Kheli Structure

Kheli structures are designed to provide water access for the community as well as for the livestock. A water storage tank which can be used for drinking water for human and kheli attached to it is used by livestock for drinking water. These structures prevent soil erosion and contamination of water sources by animals. It provides readily available and safe drinking water for livestock, improving their health and productivity.

Figure 15: *Kheli Structure at Patan Village in Rabriyawas region*

1.3.10. Check Dams

Check dams are small barriers constructed across water channels to slow down the flow of water, encourage sediment deposition, and recharge groundwater. It helps to control soil erosion, improves water availability downstream, and contributes to groundwater recharge.

Figure 16: *Check Dam on a stream at Patan Village, Rabriyawas*

1.3.11. Dyke Structure

Dyke structures are underground embankments or barriers constructed along water bodies to regulate water flow, prevent flooding, and enhance water conservation. It provides water storage for irrigation and other uses, mitigates floods, and promotes groundwater recharge of nearby areas.

Figure 17: *Signage for dyke structure under a river near Patan Village, Rabriyawas*

1.3.12. Khadin Structure

Khadin structures are traditional earther water harvesting systems involving terraced fields and embankments to capture and retain rainwater for agricultural use. They revitalize traditional water management practices, promoting community ownership and sustainable water use leading to enhanced water availability for irrigation and other uses, potential for improved agricultural productivity and community food security.

Figure 18: *Khadin Structure in a farm at Patan village in Rabriyawas region*

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02

PROJECT APPROACH AND METHODOLOGY


अम्बुजा सीमेट फाउण्डेशन राबड़ियावास
डाईक निर्माण कार्य-पाटन
2.53 मीटर
4.57 मीटर

2.1. Brief of Terms of Reference

Table 2: *Brief of Terms of Reference*

Parameters	Details
Organization	Ambuja Cements Limited; CSR arm: Ambuja Cement Foundation (ACF)
Objective	Impact assessment of Water Resource Management (WRM) interventions in Marwar Mundwa and Rabriyawas, Rajasthan
Interventions	Increasing surface water availability for domestic use; Improving access to water for crop production; Creation/strengthening of village-level institutions
Geographical Focus	Marwar Mundwa and Rabriyawas, Rajasthan
Period of Interventions	2019-2022
Expected Outcomes	Effectiveness of drinking water efforts; Outcomes of WRM interventions; Impact on domestic water supply accessibility; Socio-economic outcomes
Deliverables	Consolidated Impact Document; Professionally designed presentation; Access to study tools and data; Brief presentation to senior management; Three hard copies and soft copy of the final report
Position and Responsibilities	
Project Lead (Neeraj Verma)	Overall project management; Coordination with Ambuja CSR, Field team coordination
Technical Expert (Priyesh Salunke)	Quantitative analysis; Water resource assessment; Technical evaluations
Social and Environmental Expert (Arijit Chaudhary)	Qualitative analysis; Community engagement; Stakeholder consultations
Research Associate (Gauri Gawande)	Impact assessment; Fieldwork coordination, Data collection and analysis; Designing and preparing the presentation of key findings, Report writing
Translator (Indian Translators Group)	Translation of study tools and documents into local language

2.2. Objectives of the Impact Assessment Study

ACF has dedicated substantial efforts to enhance water availability in Rajasthan's Marwar Mundwa and Rabriyawas areas through a range of Water Resource Management (WRM) interventions. These encompass water harvesting systems, renovation of existing sources, and promoting efficient water management practices. ACF's work has positively impacted communities, livelihoods, and health.

In this context, a comprehensive impact assessment that aims to evaluate the initiatives undertaken, specifically from a socio-impact and environmental lens, is to be undertaken. The assessment will also provide actionable recommendations that will further enhance the program delivery and envisaged outcomes. The assessment will empower the stakeholders to make evidence-based choices for equitable water access, environmental preservation, and rural well-being in Rajasthan.

2.3. Approach & Methodology

Taru's approach for the Environmental and Socio-economic Impact Assessment of Ambuja CSR Initiatives for Increasing Water Availability at Rajasthan is rooted in a participative and collaborative methodology. The team conducted a thorough review of the Terms of Reference (TOR) to align the strategy with ACF's programmatic objectives, ensuring clarity on the scope and approach.

The high-level, research-based approach focused on achieving program objectives, understanding the cultural context in Rajasthan, and integrating local traditions. The impact assessment comprehensively assessed the extent of impact across stakeholders, emphasizing gender equality, inclusion factors, regional and cultural context, and the social and political situation.

Taru's approach stressed close coordination with the ACF team for meaningful insights, cost-effectiveness, operational efficiency, and environmental and socio-economic impact. The preparatory phase involved establishing a collaborative working relationship, gaining a profound understanding of the initiative, refining the impact assessment methodology, and finalizing research tools for stakeholder administration. The Inception Report was submitted, marking progress toward a comprehensive impact assessment aligned with the project's objectives and TOR.

Taru team has adopted both consultative and collaborative approaches involving Brainstorming/ consultations with the ACF team to undertake the assignment in a phased manner. A tailor-made phased methodology envisaged to undertake this assignment is given below:

Project Methodology

01

Nov-Dec'23

INCEPTION PHASE

TASKS

- Project Commencement – 20th Nov'23
- Kick-off meeting
- Preliminary Literature Review
- Research Design for Impact Assessment Study
- Stakeholder Identification
- Preparation of the Inception report

OUTPUTS

- Inception report

02

Dec'23-Jan'24

DATA COLLECTION

TASKS

- Develop Research Tools
- Finalization & Translation of Research Tools
- On-boarding and training of field team
- Preparing the Field Movement Plan
- Sampling Plan for Consultations
- Roll-out of the Consultations

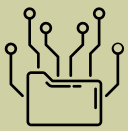
03

Jan-Feb'24

DATA ANALYSIS

TASKS

- Analysis of Information



04

Jan-Mar'24

FINAL REPORT PREPARATION

TASKS

- Preparation of the Draft Impact Assessment Report
- Presentation for dissemination, validation and review of the report
- Preparation of the final report with key findings, recommendations, way forward, executive summary, and references
- Final handover of the deliverables

OUTPUT

- Draft Impact Assessment Report
- Brief PPT of key elements of report and final results
- Professionally designed and Consolidated Impact Assessment Report and PPT
- All other deliverables

2.4. Scope and Limitations

The scope of the Impact Assessment project is comprehensive, aiming to evaluate the holistic impact of ACF's WRM interventions in the Marwar Mundwa and Rabriyawas regions of Rajasthan. The study encompasses the assessment of various water management interventions, including the construction and maintenance of water harvesting structures, individual drip irrigation and sprinkler systems, and initiatives for safe drinking water. It also involves understanding the cultural context and socio-economic impact, ensuring inclusivity by considering gender equality and regional nuances.

The project's scope extends to formulating SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) recommendations for program enhancement and offering insights into the achievement of program objectives. The study is expected to provide a detailed understanding of the project's effectiveness, sustainability, and overall contribution to the well-being of the communities. Additionally, external factors such as climatic variations and socio-political changes influence the project's outcomes, and these could be challenging to isolate completely.

The study relies on available data, and any gaps or inaccuracies in the existing information may impact the depth of the assessment. Lastly, the study's success depends on the willingness and accuracy of information provided by stakeholders, and any potential biases in their responses could impact the overall findings.

The study needs to be completed within limited timeline, potentially limiting the level of stakeholder engagement, as all the beneficiaries' stakeholders cannot be covered during the field surveys. Isolating the specific impact of Ambuja's interventions amidst other influencing factors might be challenging. The study primarily focuses on immediate impacts and its timeframe restricts the ability to capture long-term impacts fully. Overall, the study offers a valuable opportunity to assess the impact of Ambuja's WRM interventions. Despite these limitations, efforts will be made to mitigate potential biases and ensure a robust and insightful impact assessment.

2.5. Stakeholders and Sampling

Our identified stakeholders and their sampling have been given below. These beneficiaries were selected from the year 2019 till the year 2022.

Table 3: *Stakeholder wise Sample Size*

SN.	Stakeholder Groups	Total Sample Size		Tools Administered	Meeting
		Marwar Mundwa	Rabriyawas		
1.	Household level Beneficiaries	88	68	Survey Questionnaire	Face to Face
2.	Farmers Beneficiaries	4	4	FGDs	Face to Face
3.	Gram Panchayat Members/ Village level committees	3	4	In-depth interviews	Face to Face
4.	Block Level Officials	2	2	In-depth interviews	Face to Face
5.	ACF Project Staff	1		KII	Face to Face
	Total	**175**			

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03

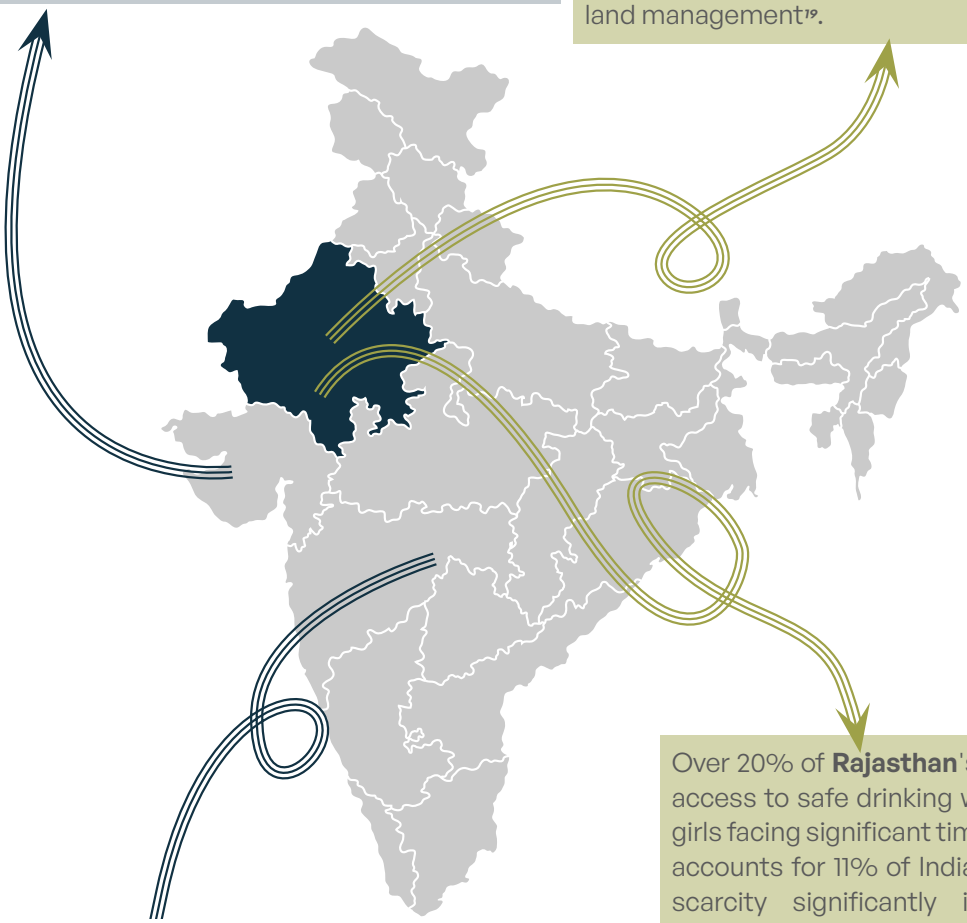
LITERATURE REVIEW

3.1. Background of the water resources and watersheds in India and Rajasthan

3.1.1. Background of the Water Resources and Watershed

India faces a severe water crisis, ranked 13th globally in water scarcity[14]. With only 4% of global freshwater resources catering to 17% of the global population, per capita water availability has declined by 80% since 1950. Water resources are unevenly distributed, with the Ganges and Brahmaputra basins holding nearly half the utilizable water, while vast regions like Rajasthan struggle with aridity[15]. Watershed management plays a crucial role in conserving water, soil, and biodiversity. India has identified 30 major river basins and their associated watersheds for comprehensive management[16].

Rajasthan, with only 1.16% of India's surface water and 1.70% of groundwater, faces immense water scarcity[17]. Two-thirds of the state lies in the Thar Desert, experiencing erratic rainfall and high evaporation rates. Overexploitation of groundwater resources has led to alarming depletion, with 174 out of 237 blocks categorized as "over-exploited" or "critical"[18]. Recognizing the gravity, Rajasthan has implemented various watershed development programs like the Desert Development Program and Integrated Wasteland Development Program to promote water conservation and sustainable land management[19].



3.1.2. Current Water Dependency for Household, Livestock and Irrigation purposes

India's Nearly 18% of rural households lack basic drinking water facilities[20]. Women and girls bear the brunt, spending significant time fetching water, impacting their time for education and income generation. Animal husbandry contributes significantly to rural livelihoods, but water scarcity poses a major challenge. Over 40% of livestock deaths are attributed to water scarcity and related diseases[21]. Agriculture, employing over 50% of the workforce, heavily depends on irrigation. However, over 60% of irrigation is groundwater-based, contributing to overexploitation[22].

Over 20% of **Rajasthan**'s rural population lacks access to safe drinking water, with women and girls facing significant time burdens[23]. Rajasthan accounts for 11% of India's livestock, but water scarcity significantly impacts their health and productivity, affecting rural livelihoods[24]. Over 80% of Rajasthan's agriculture is rainfed and vulnerable to droughts. Groundwater overexploitation for irrigation further exacerbates the crisis[25].

[14] *https://www.wri.org/data/water-stress-country*
[15] *https://cwc.gov.in/water-resource-estimation*
[16] *https://jalshakti.gov.in/*
[17] *https://water.rajasthan.gov.in/wr/*
[18] *https://cgwb.gov.in/*
[19] *https://dolr.gov.in/en/desert-development-programme-ddp*
[20] *https://niti.gov.in/*
[21] *https://dahd.nic.in/documents/statistics/livestock-census*
[22] *https://cwc.gov.in/water-resource-estimation*
[23] *https://niti.gov.in/*
[24] *https://dahd.nic.in/documents/statistics/livestock-census*
[25] *https://cwc.gov.in/water-resource-estimation*

3.2. Status of Geographical and Natural Resources

Land degradation affects nearly 30% of India's land, impacting agricultural productivity and soil health[26]. Over 80% of Rajasthan's land is degraded due to wind erosion, overgrazing, and deforestation, jeopardizing agricultural potential[27]. The Government of India has launched the Integrated Mission for Sustainable Agriculture (IMSA) to map and manage all 30 major river basins[28]. The Rajasthan State Remote Sensing Application Center (RSAC) has prepared thematic maps of various resources, including watersheds, for informed decision-making[29]. Despite water scarcity, India ranks second in global farm output. However, water use efficiency in agriculture remains low, with significant scope for improvement through technologies and practices[30].

3.3. Case Studies

The stated case studies provide a comprehensive understanding of WRM interventions implemented in similar geographic and socio-economic settings and serve as valuable sources of best practices, innovations, and lessons learned from comparable projects, contributing to the assessment of ACF initiatives in Marwar Mundwa and Rabriyawas. The selected case studies not only validate the significance of ACF's work but also provide supporting evidence, enhance the report's credibility, and offer policy insights that contribute to a more nuanced and informed analysis.

3.3.1. Participatory Rural Groundwater Monitoring Program through the MARVI Project

The 'Managing Aquifer Recharge and Sustaining Groundwater Use through Village-level Intervention' (MARVI) project, initiated in 2012, is a pioneering effort in India focused on enhancing groundwater management at the village level. Utilizing a transdisciplinary research approach, MARVI engages citizens, termed Bhujal Jankaars, to monitor groundwater levels and quality. This citizen-scientist model ensures local communities actively participate in understanding and managing their groundwater resources. Through innovative techniques like PhotoVoice, the project captures villagers' perspectives on water challenges and solutions.

MARVI's case study in Rajasthan and Gujarat demonstrates a unique approach to sustainable water use. The engagement of Bhujal Jankaars empowers communities to monitor and interpret groundwater availability, promoting water literacy. The project's comprehensive efforts encompass hydrogeology, agronomy, socio-economic analysis, and the development of practical tools like the MyWell app and village groundwater cooperatives. By focusing on participatory groundwater management, MARVI provides valuable insights into effective, community-driven strategies for addressing water challenges. This case study's emphasis on grassroots engagement aligns with Ambuja's CSR initiatives, particularly in regions facing water scarcity like Rajasthan[31].

[26] *https://cwc.gov.in/water-resource-estimation*
[27] *https://dolr.gov.in/en/desert-development-programme-ddp*
[28] *https://jalshakti.gov.in/*
[29] *http://www.geocities.ws/srsacjodhpur/*
[30] *https://www.worldbank.org/en/topic/water-in-agriculture*
[31] *https://www.indiawaterportal.org/articles/developing-effective-participatory-groundwater-monitoring-program-village-level*

3.3.2. Local Democracy to solve water issues in Southern Rajasthan

Figure 19: *A Community Pond in Doja*

A compelling case study in Dungarpur, southern Rajasthan, showcases the efficacy of community-driven initiatives in mitigating water scarcity. In response to the region's challenges, the Vagad Mazdoor Kisan Sangathan (VMKS), a farmer's collective, actively engaged local communities in addressing water issues. Encouraged by VMKS, village assemblies in Kodiyagun, Rampur Mewara, Mandwa, Dolwar upli, Lolakpur, and Doja spearheaded the construction of community ponds to enhance rainwater harvesting and groundwater recharge. The participatory approach involved Gaon Sabha members in the entire process, fostering a sense of ownership and community-led sustainability. These ponds, when filled during the monsoon, contributed to increased groundwater levels, supporting multiple crop cultivations and ensuring a more reliable water supply for both agriculture and human consumption.

Figure 20: *Another Community Pond in Doja*

Despite its success, the case study also highlights challenges, such as the need for ongoing maintenance to ensure the longevity of the ponds. Nevertheless, the model's affordability and significant benefits have garnered interest from other Gaon Sabhas, exemplifying the potential for community-led initiatives to address water scarcity issues. This localized, participatory approach aligns with the overarching theme of the RFP, emphasizing the socio-economic impact of water resource management interventions. The Dungarpur case study underscores the importance of community involvement and ownership in achieving sustainable water conservation, offering valuable insights for the proposed assessment of Ambuja's CSR initiatives in Rajasthan[32].

[32] *https://www.indiawaterportal.org/articles/how-local-democracy-solving-water-issues-southern-rajasthan*

3.3.3. Unlocking Ecosystem Potential: Rajasthan's Livelihood and Ecology Nexus

In Rajasthan, the intricate relationship between land use, ecology, and livelihoods takes a center stage by focusing on the water resource management, dissecting the impact on rural life. The terrain's unique drainage systems, particularly the divide between the West and East of the Aravallis, play a pivotal role, influencing everything from agricultural practices to wildlife habitats. The historical utilization of Indus river waters and post-Independence developments, such as the Jal Jeevan Mission, underscore the delicate balance between water needs, infrastructure, and sustainable employment in this arid landscape. The challenges include the invasive spread of Prosopis juliflora, disrupting ecosystems and local breeds.

The dilemma surrounding the promotion of cross-breeds over indigenous livestock breeds for milk production is scrutinized, raising questions about the intersection of animal husbandry policies, land use, and biodiversity conservation. Highlighting the significance of Orans (sacred groves) as community conserved areas, the need for a multidisciplinary approach to ecosystem governance is important. The legal ambiguity surrounding Orans and the potential for decentralized governance emerge as critical considerations. As Rajasthan grapples with its energy policy focusing on industrialization, the policy brief advocates for a holistic approach, acknowledging the interplay between land use, ecology, and livelihoods for a sustainable future[33].

3.3.4. Empowering Rural India: Water Management and Livelihood Success Stories

Figure 21: *Fostering rural jobs amidst water security initiatives*

In the heart of rural India, where water scarcity poses multifaceted challenges, empowering communities through effective water resource management becomes a beacon of hope. The Jal Jeevan Mission (JJM) is a transformative initiative addressing employment and water security. This mission not only creates jobs during construction but also ensures ongoing employment for the operation and maintenance of water infrastructure. Another shining example emerges from the impactful role of women trained in water quality testing under JJM. These empowered individuals play a pivotal role in securing water quality for agriculture, health, and more.

Beyond centralized efforts, the narrative shifts to grassroots heroes—the “first-mile” actors. Trained in government and donor-supported programs, these individuals actively engage in local water management, with a call to establish a comprehensive database to sustain their involvement. Real-world cases from Karnataka and Udaipur district demonstrate the tangible impact of leveraging Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) funds. Through community-driven initiatives, these areas witness the revival of commons, leading to improved water availability and enriched rural livelihoods. These narratives collectively illuminate the symbiotic relationship between water management and skill development, echoing a promising future for rural India[34].

[33] *https://ielaind.org/wp-content/uploads/2017/05/Ecosystems-approach-to-land-use-ecology-and-livelihoods-in-Rajasthan_A-policy-brief.pdf*

[34] *https://www.indiawaterportal.org/articles/managing-water-resources-and-generating-livelihood-opportunities-rural-india*

04

KEY FINDINGS FROM THE IMPACT ASSESSMENT STUDY

Source : Unsplash+

4.1. Background (About the Field Study)

Field surveys were conducted during December, 2023 and January, 2024 in the regions of Rabriyawas and Marwar Mundwa. The study covered 88 beneficiaries in Marwar Mundwa region (Inana, Didiya Kala, Mundwa, Bhadana, Didiya Khurd, Kharda, Khen, Kherwara, Naradhana, Roopasar and Soliyana villages) and 68 beneficiaries in Rabriyawas region (Balada, Kesarpura, Kotariya, Kurki, Patan, Rabriyawas and Sevariya villages). These villages were selected on the basis of maximum number of beneficiaries of RRWHS interventions in those regions and villages.

Figure 22: Beneficiary Interviews in both the regions

Around 4 focused groups discussions (FGDs) of farmer beneficiaries were conducted in Mundwa, Inana, Didiya Kala and Didiya Khurd villages of Marwar Mundwa and similarly, 4 FGDs were conducted in Balada, Rabriyawas, Patan and Kesarpura villages of Rabriyawas regions.

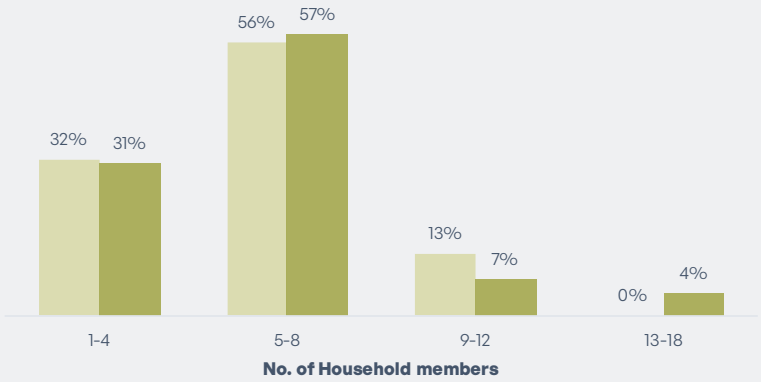
Figure 23: *FGDs conducted with beneficiary farmer groups and women SHG members*

In-depth interviews of Panchayat Samiti Members and Block level officials were also conducted during the field surveys. Four members from each region were covered.

Figure 24: *Interviews with Panchayat Samiti Member at Inana village (left), Chairman of Agricultural Research Centre at Nagaur (mid), and Medical Officer at Marwar Mundwa (right)*

4.2. Demographic Details of the Respondents

4.2.1. Household Members



In the conducted study, findings indicate that over 50% of households surveyed in Marwar Mundwa and Rabriyawas comprised 5-8 members, while slightly over 30% of households in both regions consisted of 1-4 members. Notably, a minority of households in Rabriyawas reported having 13-18 members.

Figure 25: *Number of Household Members of the respondents (% Respondents)*

4.2.2. Gender and Age of the Respondents

Regarding gender distribution within households, the data reveals that 90% of households in Marwar Mundwa included male members, with up to 4 males per household. Among these households, 49% contained 3-4 male members. Similarly, in Rabriyawas, 87% of households comprised male members, also up to 4 per household. When examining female representation, 90% of households in Rabriyawas had up to 4 female members, mirroring a comparable trend observed in Marwar Mundwa, where 87% of households had up to 4 female members. In Rabriyawas, a notable observation is that 3% of households featured an equal representation of male and female members, with both genders numbering between 9 and 10 individuals per household.

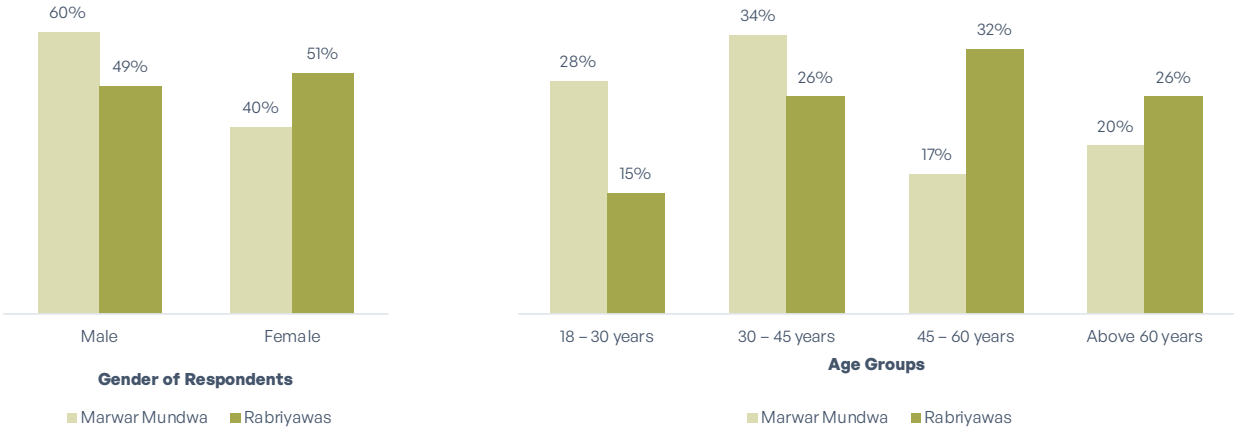


Figure 26: *Gender and Age of the respondents (% Respondents)*

When analyzing the gender distribution of respondents, it was found that in Marwar Mundwa, over half of the total respondents (60%) were male. Conversely, in Rabriyawas, the distribution was nearly equal between genders, with a comparable percentage of male and female respondents. In Marwar Mundwa, the majority of respondents, comprising almost two-thirds (62%), were within the age range of 18-45 years, with 34% falling specifically within the 30-45 age bracket. Notably, a significant representation of youth, aged 17-30, was observed, accounting for 28% of the respondents, a proportion notably higher than that recorded in Rabriyawas, where the youth demographic constituted only 15% of respondents. Alternatively, in Rabriyawas, a different age distribution was observed, with approximately 58% of respondents falling within the 30-60 age bracket. Moreover, a noteworthy proportion of 26% comprised respondents aged 60 and above.

4.2.3. Socio-economic Status of the Respondents

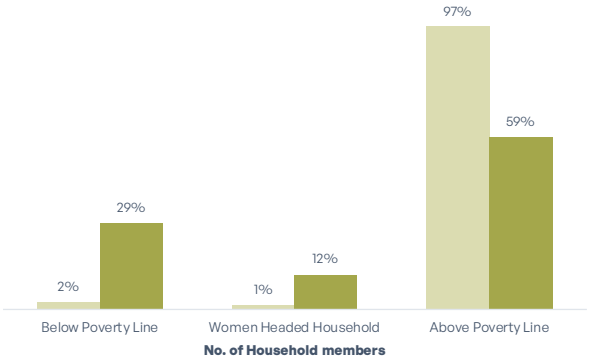


Figure 27: *Economic and Social Class based on government ration card (% Respondents)*

Upon examining the socioeconomic status of the respondents, it was evident that in the Marwar Mundwa region, the vast majority (97%) belonged to the Above Poverty Line category. In contrast, in Rabriyawas, this percentage was notably lower, with only 59% of respondents falling into the Above Poverty Line category. Furthermore, the representation of female-headed households differed significantly between the two regions, with only 1% of households in Marwar Mundwa being headed by women, whereas in Rabriyawas, this figure was notably higher at 12%.

4.2.4. Education Level of the Respondents

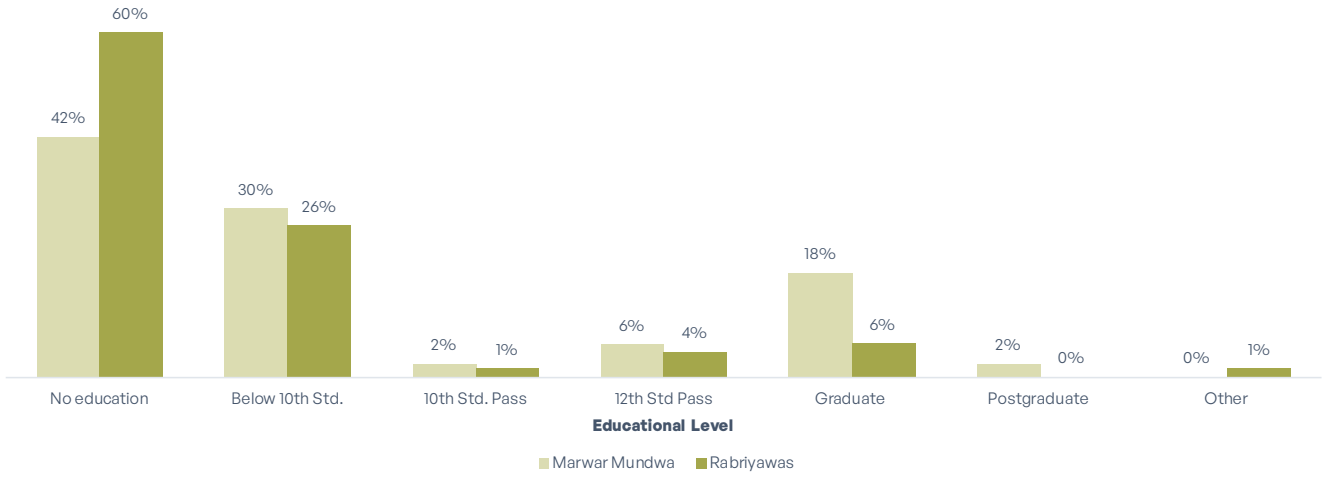


Figure 28: *Highest level of Education of the Respondents in percentage*

In Marwar Mundwa, the highest educational attainment observed among respondents was post-graduation, representing 2% of the total. Approximately 30% of respondents from both regions reported education up to the 10th grade. Notably, a considerable portion of respondents, constituting 60%, lacked any formal education in Rabriyawas. In comparison, the percentage of respondents with no formal education in Marwar Mundwa was around 42%.

4.2.5. Agricultural Landholding of the Respondents

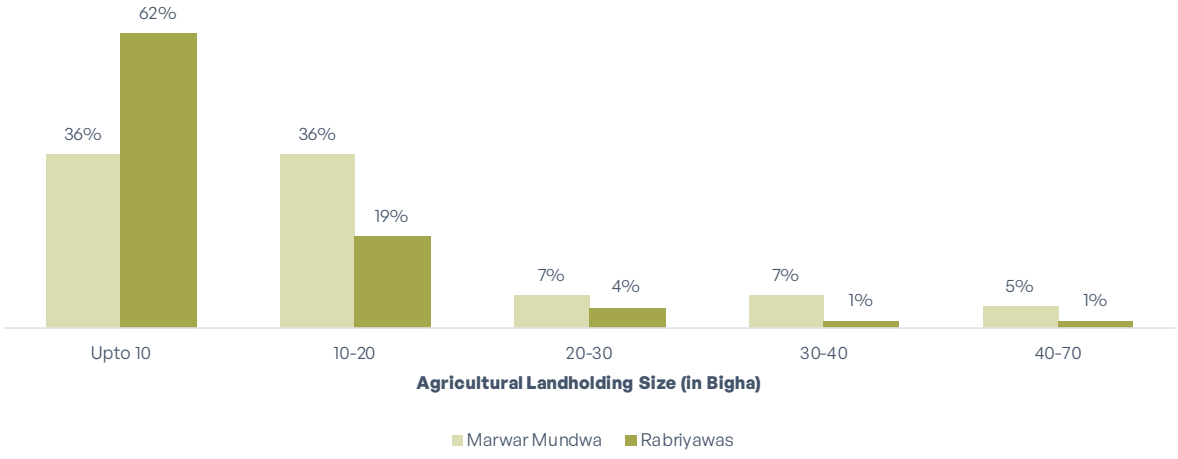


Figure 29: *Availability of Agricultural Land and Landholding Size of the respondents in percentage*

Agriculture emerged as the predominant source of livelihood in both regions, with approximately 90% of respondents citing it as their primary occupation. In Rabriyawas, the subsequent significant source of livelihood was livestock rearing, reported by 47% of respondents. Conversely, in Marwar Mundwa, labor work constituted the secondary main source of livelihood, accounting for 30% of respondents. The respondents mentioned a variety of secondary sources of livelihood. These include animal rearing, working as labourers,

engaging in farming activities, holding government jobs, pursuing various jobs, having labour cards, and Among the total respondents surveyed, over 90% from both regions indicated ownership of land while the others were working as labourers mostly. Specifically, in Rabriyawas, 81% of respondents reported landholdings of up to 20 bighas, while in Marwar Mundwa, 72% reported landholdings within the same range. A minority of respondents possessed landholdings exceeding 20 bighas (19% in Marwar Mundwa and only 6% in Rabriyawas).

4.2.6. Livelihood Dependency of the Respondents

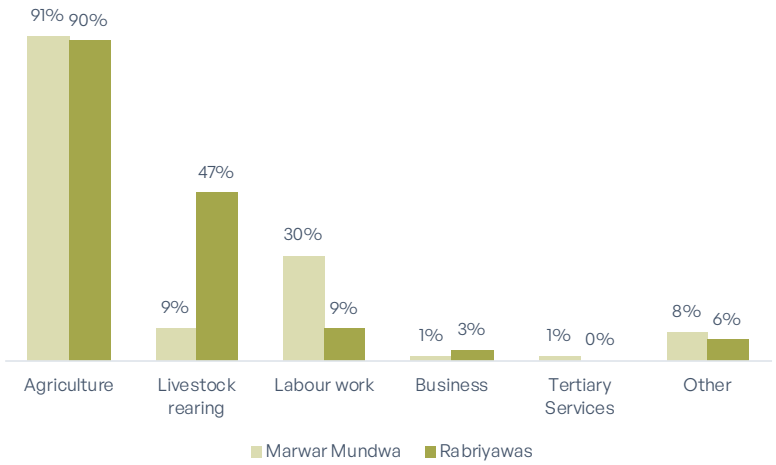


Figure 30: *Main source of livelihood of the respondent's household in percentage*

Agriculture emerged as the predominant source of livelihood in both regions, with approximately 90% of respondents citing it as their primary occupation. In Rabriyawas, the subsequent significant source of livelihood was livestock rearing, reported by 47% of respondents. Conversely, in Marwar Mundwa, labor work constituted the secondary main source of livelihood, accounting for 30% of respondents. The respondents mentioned a variety of secondary sources of livelihood. These include animal rearing, working as labourers, engaging in farming activities, holding government jobs, pursuing various jobs, having labour cards, and being involved in shopkeeping. Some individuals mentioned activities like Pashu Bhan (animal husbandry), Pasu Palan (livestock farming), and working as a vehicle driver. Additionally, there are mentions of labour and wages, indicating that some individuals may be involved in manual labour for additional income. The diversity of secondary livelihood sources suggests a range of occupations and economic activities that individuals in the surveyed group are engaged in beyond their primary occupations.

4.2.7. Average Annual Income of the Respondents

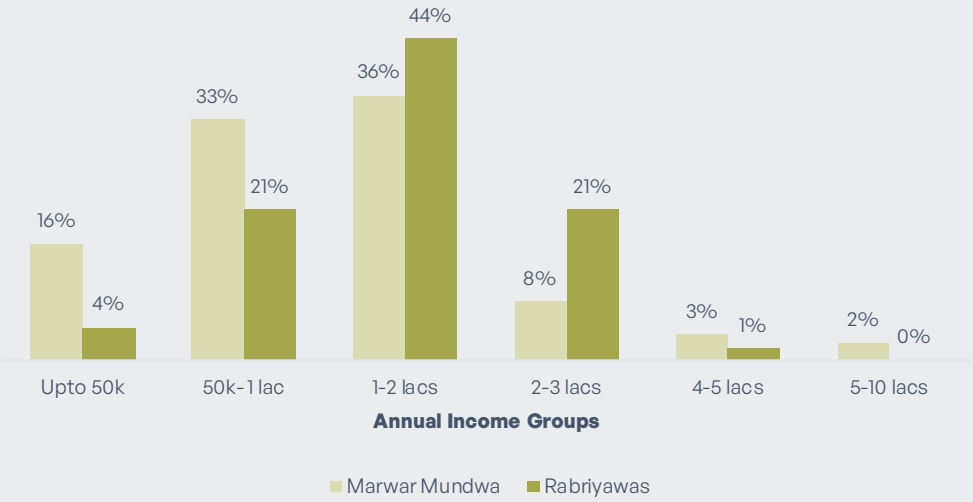


Figure 31: *Average Annual income of household (₹) (% respondents)*

The majority of respondents in both Marwar Mundwa (36%) and Rabriyawas (44%) reported an annual income falling within the range of INR 1,00,000 to INR 2,00,000. Notably, in Rabriyawas, a substantial portion of respondents (21%) indicated an annual income within the range of INR 4,00,000 to INR 5,00,000. Meanwhile, approximately one-third of respondents in Marwar Mundwa reported an annual income between INR 50,000 and INR 1,00,000.

4.3. Impact of ACF Interventions

4.3.1. Domestic Water Availability and Accessibility

Prior to the project, respondents utilized various sources for accessing drinking water, including wells, hand pumps, and open wells. The primary survey revealed that a significant majority of respondents from the Marwar Mundwa region (88%) relied on lakes/ponds for drinking water before the ACF interventions. Conversely, in Rabriyawas, more than half of the respondents predominantly utilized tankers, with an additional portion selecting the 'others' option, which included wells and hand pumps among other sources. After the ACF interventions of RRWHS tanks for the beneficiaries, all of the respondents solely depend upon the stored water in tanks throughout the year for drinking purpose along with a few other ACF interventions such as DWDS, Dug wells, Check dams, ponds and Community RRWHS.

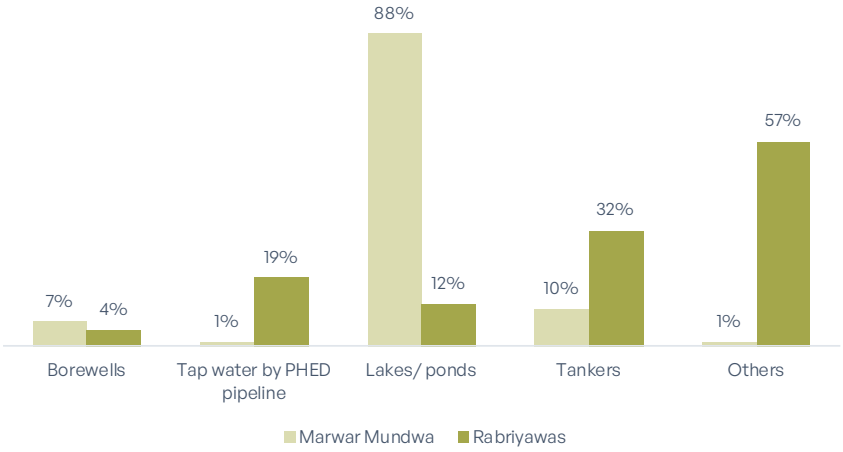


Figure 32: *Accessing drinking water before the ACF interventions (% in respondents)*

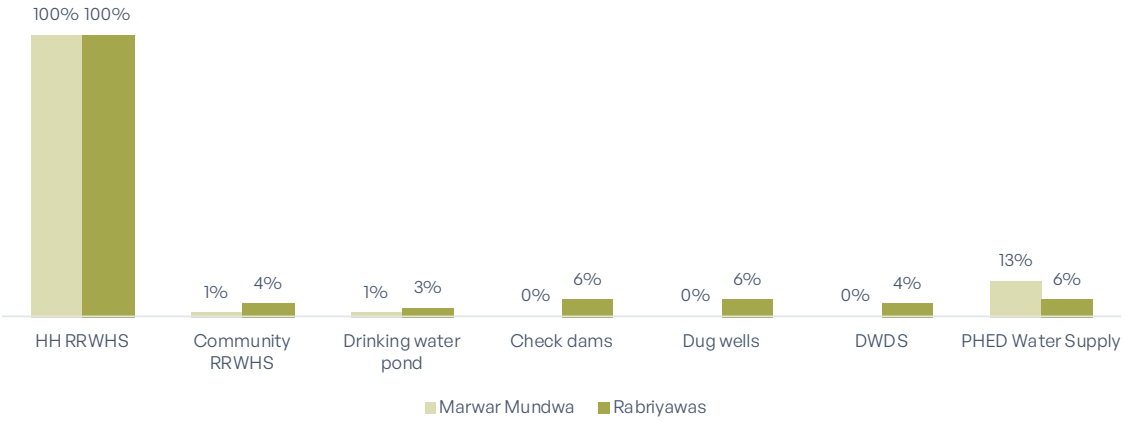


Figure 33: *Accessing drinking water after the ACF interventions (% in respondents)*

According to the respondents from both the regions, only **one-sixth** of the respondents mentioned about facing **acute water shortages**, especially in the months of **May, June and July**, i.e. at the end of summer seasons. This means the **water stored in the RRWHS tanks**, used for drinking purpose, lasts for about **9-11 months**, after which people have to rely upon **tanker water.**

Community members mentioned both individual and collective wells as sources of water, with some specifically noting the use of hand pumps. These responses underscore the reliance on traditional water sources such as wells, highlighting the importance of these local structures in the community's pre-project access to drinking water. Almost all respondents reported year-round availability of water in their selected sources for drinking purposes. However, disparities in water shortage were observed between the two regions, with 89% of respondents from Marwar Mundwa reporting acute water shortages during certain seasons, compared to 72% of respondents from Rabriyawas facing similar challenges due to seasonal changes. When asked about the current source of drinking water which has been facilitated through ACF, almost all the respondents are using drinking water from HH RRWHS in both the regions. A minority of respondents fetch drinking water from PHED water supply, dug wells, check dams, drinking water pond etc.

Variation in the Frequency of Fetching Water: Before and After the ACF interventions

In the summer season, prior to the interventions, over 90% of respondents in both regions reported fetching drinking water twice or more than twice a day. This pattern of frequency remained consistent during the winter and rainy seasons, with approximately 90% responding in a similar manner across all seasons. Graphical representations depicting these differences in the frequency of water fetching during different seasons are provided below:

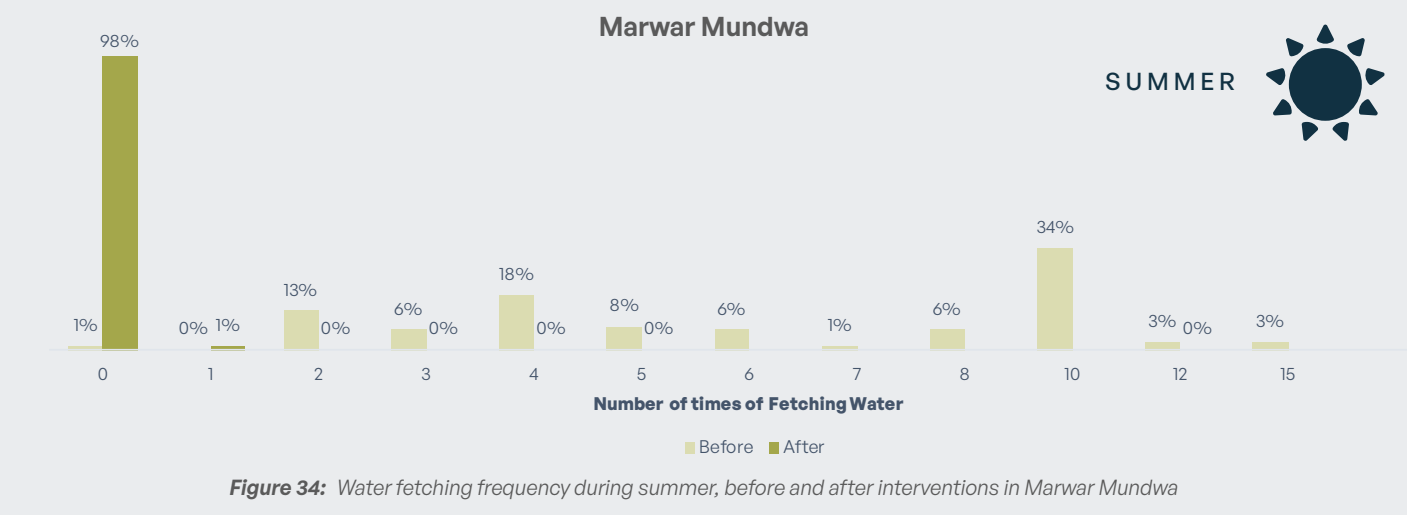


Figure 34: *Water fetching frequency during summer, before and after interventions in Marwar Mundwa*

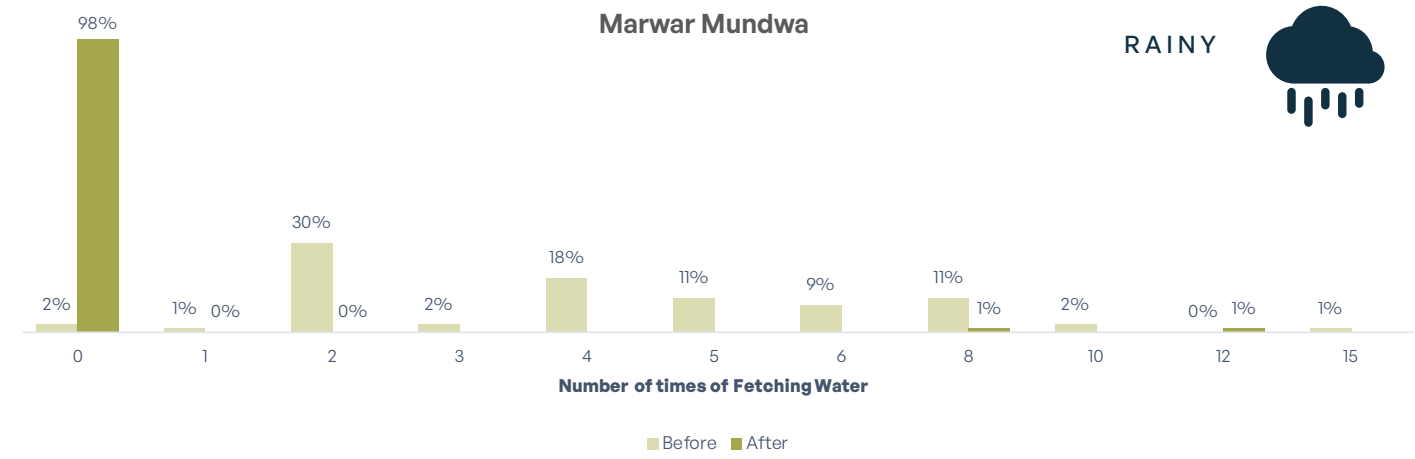


Figure 35: *Water fetching frequency during Rainy season, before and after interventions in Marwar Mundwa*

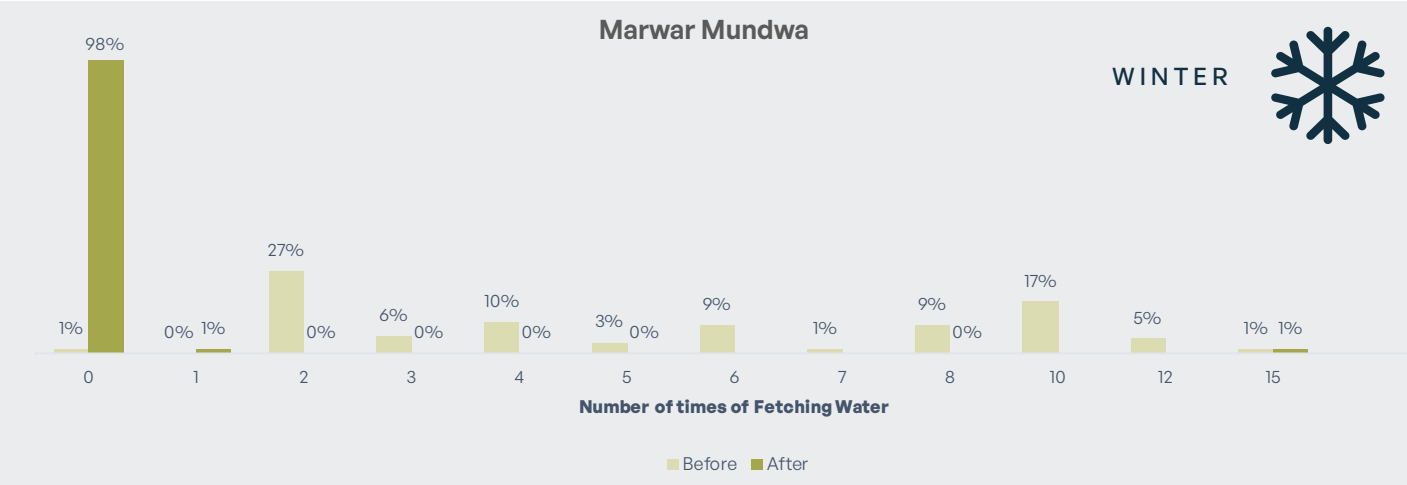


Figure 36: *Water fetching frequency during the Winter season, before and after interventions in Marwar Mundwa*

In Marwar Mundwa, earlier, at least 97% respondents had to fetch water more than once a day in every season; whereas after the intervention, ***98% residents did not have to fetch water even once.***

In Rabriyawas, earlier, at least 96% respondents had to fetch water more than once a day in every season; whereas after the intervention, ***80% residents did not have to fetch water more than once a day,*** *as observed in the below graphs.*

From the primary survey, a notable decrease in the frequency of water fetching was observed during the summer season. Prior to the ACF interventions, respondents reported fetching water up to 12-15 times a day. However, following the interventions, there was a significant reduction in this frequency.

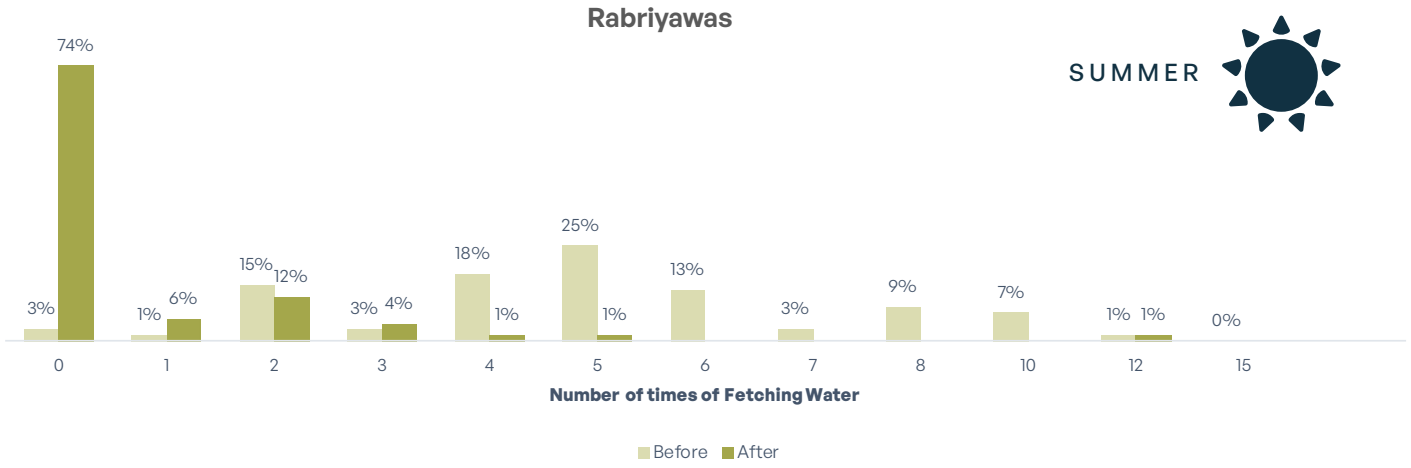


Figure 37: *Water fetching frequency during summer, before and after interventions in Rabriyawas*

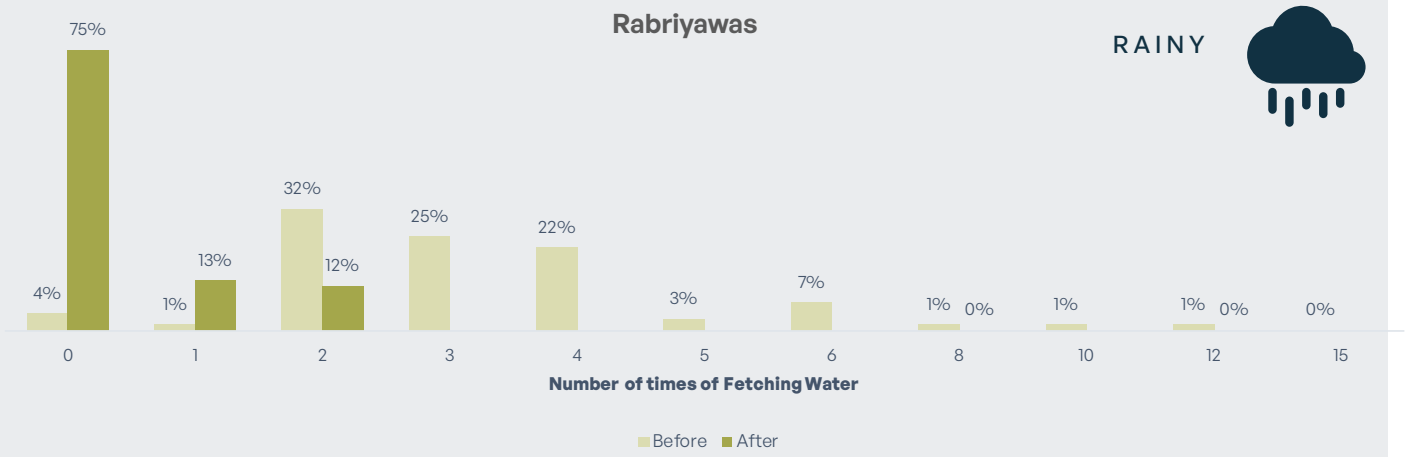


Figure 38: *Water fetching frequency during Rainy season, before and after interventions in Rabriyawas*

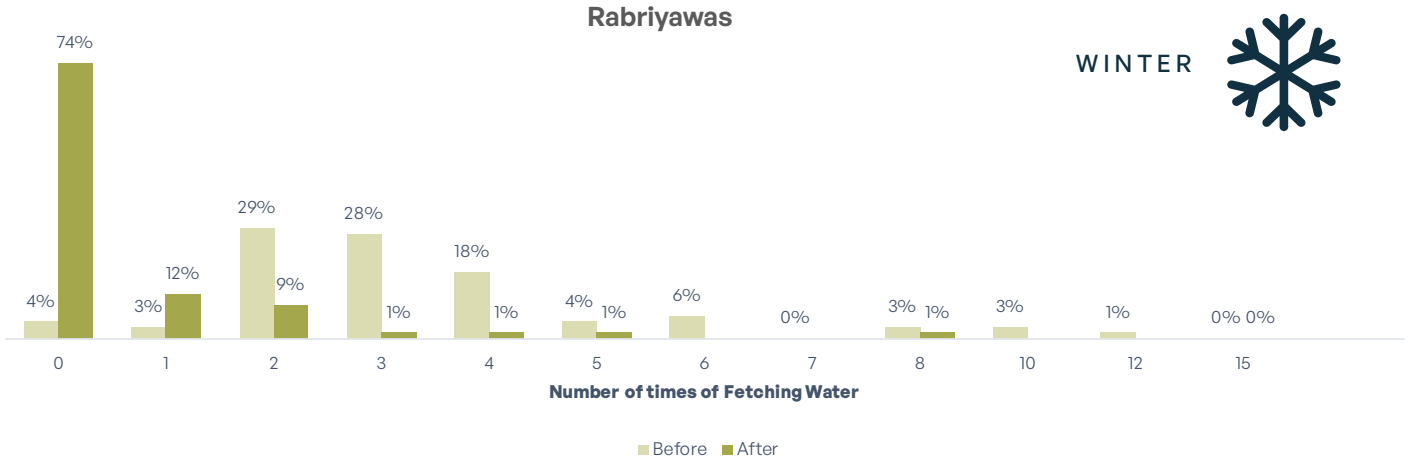


Figure 39: *Water fetching frequency during winter, before and after interventions in Rabriyawas*

Variation of Average Time taken to Fetch Water: Before and After the ACF interventions

Based on the primary survey conducted among beneficiaries of the ACF interventions, it became apparent that the average time required to fetch water each time **noticeably decreased after the intervention** compared to before. Approximately 68% of respondents from both regions reported a significant reduction in the average time taken to fetch drinking water since the implementation of ACF interventions. This trend was consistently observed across all seasons—summer, winter, and rainy—in both Marwar Mundwa and Rabriyawas. The data suggests that households benefited from the CSR interventions by ACF, resulting in **saved time and effort in fetching water**, thus enabling them to allocate more attention to o**ther tasks and household activities**. Graphical representations illustrating these differences before and after in terms of the average time taken to fetch water during various seasons are provided below:

Table 4: *Time taken to fetch water in each season before and after the interventions*

Time taken to fetch water	Marwar Mundwa						Rabriyawas					
	Rainy Season		Winter Season		Summer Season		Rainy Season		Winter Season		Summer Season	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Less than an hour	16%	100%	15%	99%	17%	97%	25%	78%	24%	79%	22%	78%
1-2 hr	30%	0%	22%	1%	11%	1%	37%	19%	37%	16%	16%	15%
2-3 hr	25%	0%	25%	0%	22%	0%	24%	1%	22%	4%	26%	6%
3-4 hr	14%	0%	10%	0%	7%	0%	10%	1%	10%	0%	16%	1%
4-5 hr	10%	0%	7%	0%	13%	0%	1%	0%	3%	0%	9%	0%
5-6 hr	6%	0%	14%	0%	18%	0%	1%	0%	3%	0%	4%	0%
More than 6 hr	0%	0%	8%	0%	10%	0%	0%	0%	0%	0%	4%	0%

ACF Interventions: Transformative Impact on Beneficiaries

Findings from the primary survey indicate that **ACF CSR interventions have produced various positive impacts on the lives of program beneficiaries.** The top impacts chosen by respondents across both regions include **improved health, enhanced safety, and time savings related to water fetching**, with over 90% of respondents selecting these options. In the Marwar Mundwa region, nearly all respondents also identified other impact areas such as improved social interactions, community collaboration, enhanced climate resilience, reduced financial burdens, and increased safety. Conversely, in Rabriyawas, only a minority of respondents cited improved climate resilience (4%) and reduced financial burdens (12%) as impacts of the ACF interventions.

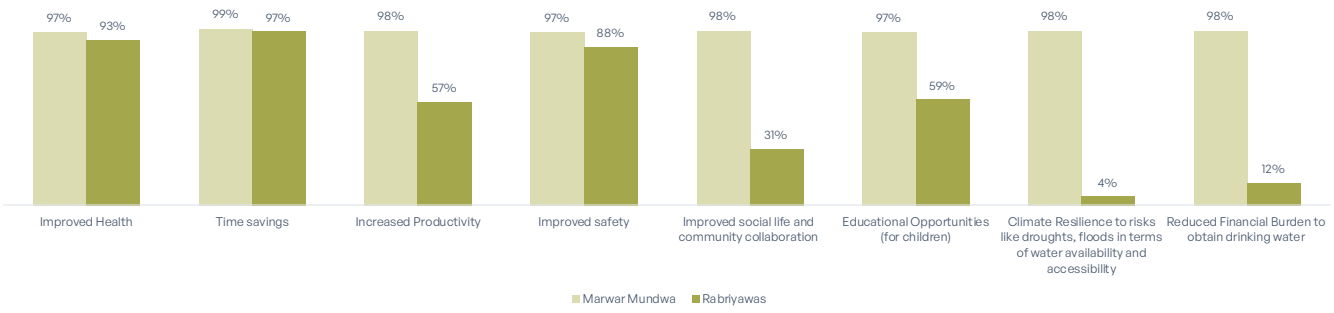


Figure 40: *Impact of Ambuja CSR water initiatives on community's life (% Respondents)*

Moreover, the percentage of respondents selecting increased productivity, improved social interactions, and expanded educational opportunities for children due to the interventions was comparatively lower in Rabriyawas than in the Marwar Mundwa region.

The majority of respondents in both regions, comprising more than 80%, indicated that they had not encountered acute water shortages since the implementation of ACF interventions. Among those respondents who still experienced water scarcity even after the interventions, residents of Marwar Mundwa identified May, June, and July as the months during which they faced this issue. Similarly, residents of Rabriyawas mentioned May and June as the months affected by water shortages.

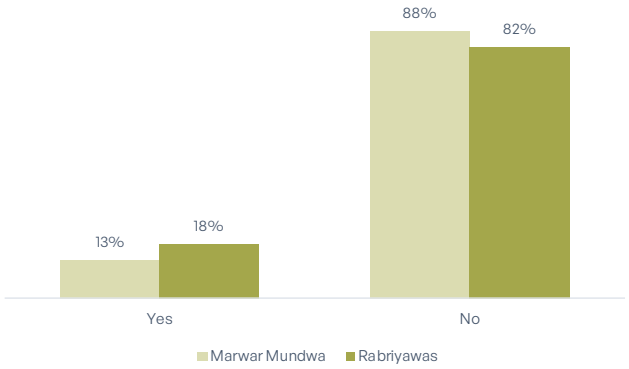


Figure 41: *Experience of any acute water shortages since the project start (% Respondents)*

The project has significantly impacted the amount of time women and girls spend fetching water in the Marwar Mundwa and Rabriyawas region of Rajasthan. The responses indicate a transformative change, emphasizing that now, with the convenience of clean water available at home, there is a substantial time saving. Women express relief from the earlier need to go out for water, highlighting that this convenience has not only saved time but also improved security and made a considerable difference in their daily lives. The consistent message across the responses is that the project has brought about a positive change by reducing the time spent on water-related chores, allowing women and girls to focus on other activities and household work.

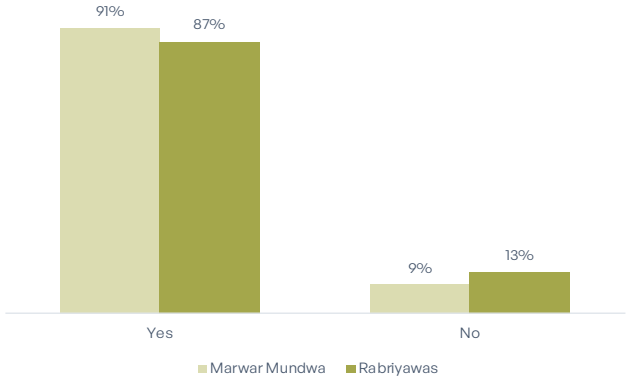


Figure 42: *% Respondents who noticed any changes in the duration the water lasts in your source*

Majority of the respondents of both regions (approximately 90%) stated that they had noticed the **water last longer in their sources since the ACF interventions took place.** The responses from the primary survey exhibit a mixed perception of the project's impact on livestock water availability. While some respondents report significant improvements, with increased quantities of water mentioned, others express minimal change or no perceived impact. Positive sentiments suggest an overall beneficial outcome, emphasizing convenience and positive differences. However, diverse responses highlight the need for a nuanced understanding of the specific factors influencing livestock water availability in the surveyed community.

Formation of Pani Samiti for Maintenance of WRM Structures

The Pani Samiti is a crucial community-led body established to ensure the sustainability of ACF's water initiatives in Rajasthan. Formed by the villagers themselves, this committee plays a key role in overseeing the management of WRM structures built by ACF. Its responsibility lies in supervising the day-to-day operations and ensuring proper utilization of these water resources. They achieve this by hiring technicians to handle maintenance tasks, promoting responsible water use within the community, and potentially collecting user fees to ensure long-term financial viability.

> *Water links us to our neighbor in a way more profound and complex than any other.*
>
> -John Thorson
> (cofounder of Dividing the water)

4.3.2. Water Use and Impact on Livelihoods

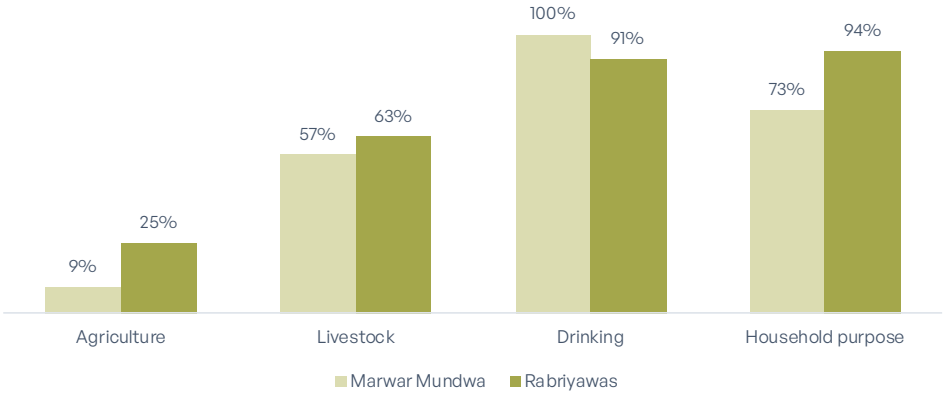


Figure 43: *Benefits of WRM interventions experienced by community members*

When inquired about the activities supported by the water initiatives of the ACF, the majority of respondents prioritized drinking and household purposes. Notably, **respondents from the Marwar Mundwa region were found to be entirely reliant on the water initiatives for drinking water.** In Rabriyawas, 91% of respondents utilized the water primarily for drinking purposes. Additionally, it was observed from the primary data that a significant majority of respondents (94%) in Rabriyawas depended on the water for household uses compared to those in Marwar Mundwa. Similarly, **for agriculture and livestock purposes, respondents from Rabriyawas demonstrated a higher dependency on the water initiatives by ACF in comparison to those in the Marwar Mundwa region.**

The responses gathered from the primary survey highlight several benefits attributed to the adoption of new water-saving technologies as a result of the project. **Nearly 100% of respondents from both regions reported adopting rooftop water harvesting as a result of the ACF project.** In Rabriyawas, some respondents also adopted additional technologies such as the DWDS, farm tanks, sprinkler, and drip irrigation. However, the adoption of these technologies was almost nonexistent among residents of Marwar Mundwa. Participants mentioned increased water availability emphasizing the construction of tanks or installation of pumps as key contributors.

Positive outcomes include economic benefits from rainwater harvesting, enhanced farming activities, and improved water quality. The convenience of having sufficient and clean drinking water is repeatedly noted, leading to time savings. The adoption of water-saving technologies is associated with positive economic impacts, such as reduced water expenses and increased agricultural productivity. The sentiment is largely favorable, with respondents recognizing the importance of these technologies in improving their standard of living and fostering sustainable water use practices. Overall, the project's impact is perceived as multifaceted, encompassing economic, agricultural, and health-related benefits.

4.3.3. Agriculture, Allied Activities and Irrigation

Challenges associated with Access to Water

The primary survey responses highlight various challenges in accessing and using water for agricultural purposes. Several participants express concerns about the scarcity of water, emphasizing instances of less rainfall and the absence of water on earth. Lack of awareness and information is identified as a challenge, with respondents noting that people listen less and there is a general lack of knowledge about efficient water use practices. The need for periodic repair of stitches suggests maintenance challenges with existing water infrastructure.

Distance is cited as an obstacle, making water sources too far for convenient access. Additionally, there are mentions of challenges related to water problems, delayed water availability, and the perceived indifference of individuals or authorities in addressing these issues. Overall, the challenges encompass environmental factors, awareness gaps, and logistical issues, underscoring the multifaceted nature of difficulties faced in accessing and utilizing water for agricultural purposes in the surveyed community.

Increase in Agricultural Produce and Harvesting Seasons

During the primary survey, it was observed that respondents in both regions engage in the cultivation of both Rabi and Kharif crops, depending on the seasons, with Kharif crops being the most commonly produced (more than 80% of respondents in both regions). Earlier, rabi crops were significantly less but the cultivation has significantly increased in the Rabriyawas region while Kharif crops have significantly increased in the Marwar Mundwa region. Analysis of the difference in crop production before and after the ACF water interventions reveals a significant increase in the number of farmers opting for both Kharif and Rabi crops.

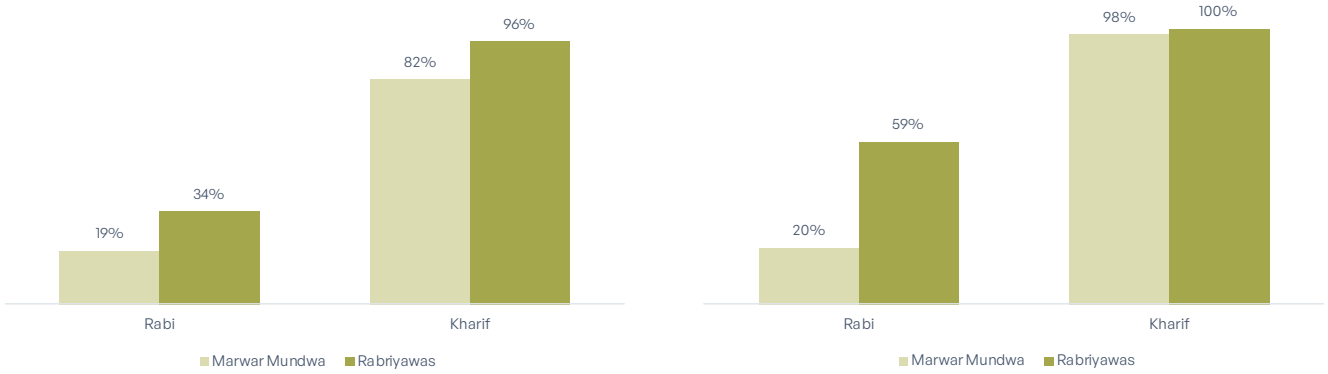


Figure 44: *% of Farmer respondents producing seasonal crops before and after the intervention*

For instance, in Rabriyawas, the percentage of respondents producing Rabi crops increased from 34% before the interventions to 59% after the interventions. Similarly, in the Marwar Mundwa region, the percentage of respondents engaged in Kharif production rose from 82% before the interventions to 98% after the interventions. These findings underscore the positive impact of the ACF water interventions on agricultural production. A small percentage of respondents (13%) from Rabriyawas adopted horticulture practices as well with lemon being the most adopted horticulture crop among them.

Crops Produced Before and After Intervention: Rabi

Before the intervention, the rabi crops specified by participants in the primary survey encompass a diverse range of agricultural produce. These include commonly cultivated crops such as wheat, mustard, cumin, fenugreek, and barley. Additionally, some respondents mention the cultivation of pulses like moong and lentils, along with jowar (sorghum) and bajra (pearl millet). The list extends to include diverse crops like isabgol (Psyllium husk), palak (spinach), pyaaj (onion), and mirchi (chilli). The cultivation mix reflects a variety of grains, oilseeds, and spices, showcasing the agricultural diversity in the surveyed community before the implementation of any intervention.

After the intervention, the specified rabi crops in the surveyed community have undergone some changes, reflecting a diverse mix of agricultural produce. **Cotton emerged as a notable addition to the cultivation practices, suggesting a potential diversification in cash crops. Around 2% and 3% of the respondents from Marwar Mundwa and Rabriyawas mentioned cultivation of cash crops like cotton which was not cultivated earlier.** Additionally, there is a continued cultivation of various grains, including wheat, barley, and millet. The mix also includes oilseeds like mustard and cumin, along with fenugreek and isabgol. Some respondents mentioned the cultivation of pulses such as moong and lentils. **The post-intervention scenario showcases a blend of traditional staple crops and new additions, indicating potential shifts in agricultural practices and crop variety and choices influenced by the implemented interventions.**

Figure 45: *Cultivation of Isabgol (Psyllium Husk) at Marwar Mundwa*

Figure 46: *Cultivation of Saunf (Fennel seeds - left) and Jeera (Cumin Seeds - right) at Marwar Mundwa*

Crops Produced Before and After Intervention: Kharif

Before the intervention, the kharif cropping pattern in the surveyed community comprised a diverse array of crops. bajra (Pearl millet), jowar (sorghum), raira and moong (moong beans) were prominently cultivated, reflecting the traditional mix of staple grains and legumes. Additionally, there was a cultivation of gwar (cluster beans), til (sesame), and kapas (cotton), indicating a varied agricultural landscape. Farmers also engaged in mixed cropping practices, combining crops like bajra, moong, and jawar in the same fields. Some respondents mentioned the cultivation of market-oriented crops, such as cotton and sesame. The kharif season showcased a blend of food and cash crops, emphasizing the community's reliance on a diversified cropping system for sustenance and livelihoods before the implemented interventions.

Post-intervention, the kharif cropping pattern witnessed a continuation of diverse crops in the surveyed community. bajra (Pearl millet), jowar (sorghum) and moong (moong beans) remained prominent staples in the agricultural landscape. The cultivation of gwar (cluster beans), til (sesame), and kapas (cotton) continued, reflecting the community's sustained engagement with a variety of crops. Farmers maintained mixed cropping practices, combining crops like bajra, moong, jawar, and till in their fields. Some respondents introduced market-oriented crops such as cotton and sesame, showcasing an increased focus on cash crops. Overall, **the post-intervention kharif season retained its diversity, emphasizing the community's commitment to a varied cropping system that aligns with their livelihood needs and sustenance.**

Crop Diversification and Adoption of New Techniques

Farmers across villages in both the regions unanimously reported significant improvements in crop yields and agricultural practices after adopting new irrigation systems and farm ponds. In Inana, Didiya Kalan, Didiya Khurd, and Mundwa, increased yields and improved overall farm income were noted. Specific crops like Kasoori Methi, Sauf, Isabgol, Kapas, and Bajra in Inana showcased increased production. Similar trends were observed in other villages, where farmers reported enhanced crop quality, reduced labor requirements, and increased crop diversity. The adoption of new irrigation techniques empowered farmers to diversify crops, with the cultivation of cash crops becoming more prevalent, such as Jeera, Wheat, Moong, and more. Additionally, the project facilitated a shift towards multi-crop farming, overcoming previous water limitations and allowing for experimentation with new crops. The positive impact extended to pest and disease control, with healthier crops requiring fewer pesticides. Overall, the adoption of modern irrigation systems has transformed agricultural practices, leading to increased yields, crop diversity, and improved farm income across the surveyed villages. Graphical representations illustrating these differences in annual electricity bills before and after the intervention during various seasons are provided below:

Usage of pumps in agriculture and average annual electricity bill

Pump usage was exclusively observed in Rabriyawas, with **34% of respondents utilizing pumps**. Among pump users, the most common horsepower (HP) ratings were 1 HP, followed by 5 HP. When queried about the disparity in electricity charges between annual bills before and after the intervention, it was noted that there was a significant increase in annual electricity bills across all seasons for pump users. However, the highest electricity bills were observed during the summer season compared to the winter and rainy seasons. **The reason behind is the dependency of beneficiary farmers on electric pumps is only limited to drawing water from farm ponds for irrigation purpose and even wells as per the survey.**

Data shows rise in electricity bills especially during summer season. This could be potentially linked with additional land brought under irrigation through WRM interventions and any changes in electricity tariff during the project period. It is recommended that campaigns promoting the judicious use of water be promoted among farmers. These campaigns can emphasize efficient water management techniques, such as drip irrigation and scheduling irrigation based on crop needs, to optimize water usage and minimize electricity costs. Additionally, education on the importance of sustainable water practices and the adoption of energy-efficient irrigation technologies can help mitigate the financial burden on farmers while conserving precious resources.

The average annual electricity bills across the seasons before and after the ACF interventions have been shown here:

	SUMMER	RAINY	WINTER	
₹	1,529	1,654	1,389	BEFORE
	2,833	1,784	1,469	AFTER

Livestock

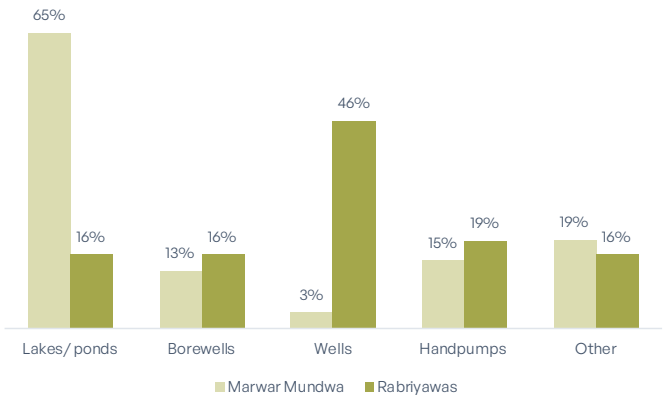


Figure 47: *Nearest source of water used for livestock*

The livestock species reared by the respondents include cattle, goats, sheep, and hens among others in both the regions. In terms of the number of livestock reared by respondents before and after the ACF interventions, only a slight increase was observed, primarily in Rabriyawas. However, the species of animals reared remained largely unchanged in both regions regardless of the interventions but the access to water for livestock has improved. Over 90% of respondents from both regions utilized livestock for their own purposes.

Additionally, approximately 43% of respondents in Marwar Mundwa and 62% in Rabriyawas also engaged in selling livestock produce to generate income. Among those who sold livestock produce, more than 50% earned between INR 20,000 to INR 50,000 annually. Approximately 10% of respondents in Rabriyawas earned between INR 1,00,000 and INR 1,25,000 annually, while this percentage was only 1% in Marwar Mundwa. While over 60% of respondents in Marwar Mundwa utilized water from lakes or ponds for livestock rearing purposes, nearly half of the respondents in Rabriyawas relied on wells for the same. Comparable percentages of respondents in both regions also used borewells, handpumps, etc., for rearing livestock, with figures ranging from approximately 16-19%.

Farming Practices

There was no significant difference in the adoption of mixed farming practices among the respondents when comparing the scenarios before and after the interventions. Approximately 25% of respondents from both regions engaged in mixed farming practices. However, the adoption of organic farming specifically showed a different trend, particularly in the Rabriyawas region. After the ACF interventions, the percentage of respondents practicing organic farming increased by 4%. There was a slight reduction in the percentage of farmers practicing organic farming in Marwar Mundwa. Two of the possible explanations for this could be increase in the nuisance of pests and dependence on chemical fertilizers.

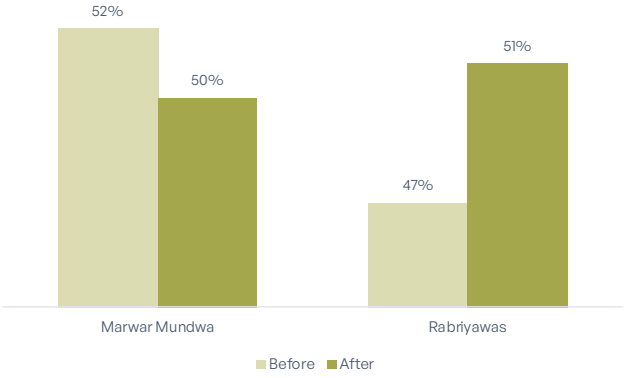


Figure 48: *Organic farming practices before and after the interventions*

Based on the survey findings, respondents from the Marwar Mundwa and Rabriyawas regions identified the nearest marketplaces (mandis) to be within a range of 10-30 kilometers. Respondents from v mentioned Anandpur, Kalu, Beawar, Merta City, and Jaitaran as the nearest mandis, while those from Marwar Mundwa cited Nagaur, Mundwa, and Pisangan. It is evident from the data that farmers would benefit most if mandis were located within a 15-kilometer radius. This proximity would facilitate better access to markets for farmers, ensuring efficient linkage between crops and marketplaces.

Micro-irrigation

Farmers in Inana, Didiya Kalan, Didiya Khurd, and Mundwa have reported a 50% reduction in water usage by adopting and efficiently distributing the drip or sprinkler irrigation systems connected to the farm ponds compared to traditional methods, effectively addressing water scarcity issues. This adoption has allowed for the collection and utilization of natural rainwater in the farm ponds, benefiting agricultural activities. Notably, in Didiya Kalan, farmers estimated saving Rs. 700 per bigha of land for irrigation. Balada and Rabriyawas witnessed improved water availability and enhanced crop production through the implementation of these systems. However, in Patan, challenges posed by sandy soil and geographic conditions limit the feasibility of drip and sprinkler systems. Kesarpura, on the other hand, achieved substantial water conservation, with drip irrigation saving nearly 70% of water and a 50% reduction by sprinkler systems. **Overall, the project has showcased positive environmental and economic outcomes, contributing to enhanced water efficiency and securing agricultural water resources in the Rabriyawas region.**

As per the discussions with the farmer beneficiaries an increase in the land under irrigation has been observed. Many beneficiaries mentioned they have received support from the ACF team regarding techniques to conserve water, financial support to take interventions such as farm ponds, installation of sprinkler and drip irrigation systems at their farmers, solar panels, etc.

In Inana, Didiya Kalan, Didiya Khurd, and Mundwa, farmers faced challenges in maintaining the new irrigation systems, specifically issues with pipe blockages and occasional damage by animals. However, they emphasized the importance of water conservation and expressed plans for future investments in constructing new ponds, check dams, and water recharge systems to safeguard water resources for agriculture. In Balada and Rabriyawas, farmers reported no challenges with the new irrigation systems and suggested additional infrastructure like check dams, water taps in schools, and the need for more ponds and water recharge systems. Patan farmers also faced no issues but highlighted the necessity for boundaries in ponds, khadins, and water recharge systems. In Kesarpura, farmers identified fluoride in water as a challenge but expressed satisfaction overall. They emphasized the need for more ponds, farm ponds, check dams, tankas, water recharge systems, and roofed tanks for future water conservation efforts.

4.3.4. Health, Hygiene and Wellbeing

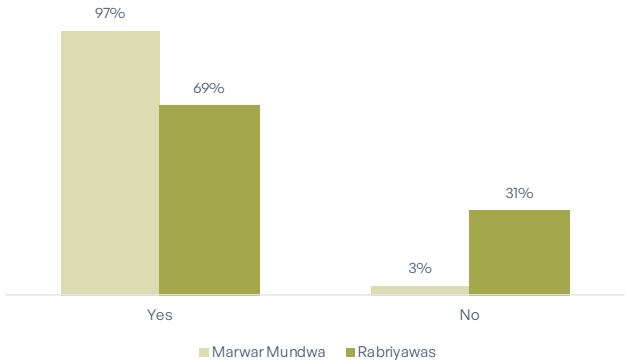


Figure 49: Improvement in access to sanitation facilities

The responses indicate that the project has **significantly improved access to clean water, positively impacting the health and hygiene of the community members**. Many respondents reported a reduction in various health issues, such as joint pain, headaches, leg pain, and stomach problems. **The availability of clean water has contributed to a decrease in diseases, and overall better health.** Participants highlighted the dual benefits of having clean water – it not only prevents illnesses but also saves time previously spent on seeking water and allows for increased focus on cleanliness. **The project's impact extends beyond health, fostering a sense of cleanliness and hygiene within the community, thus contributing to an overall improvement in well-being.**

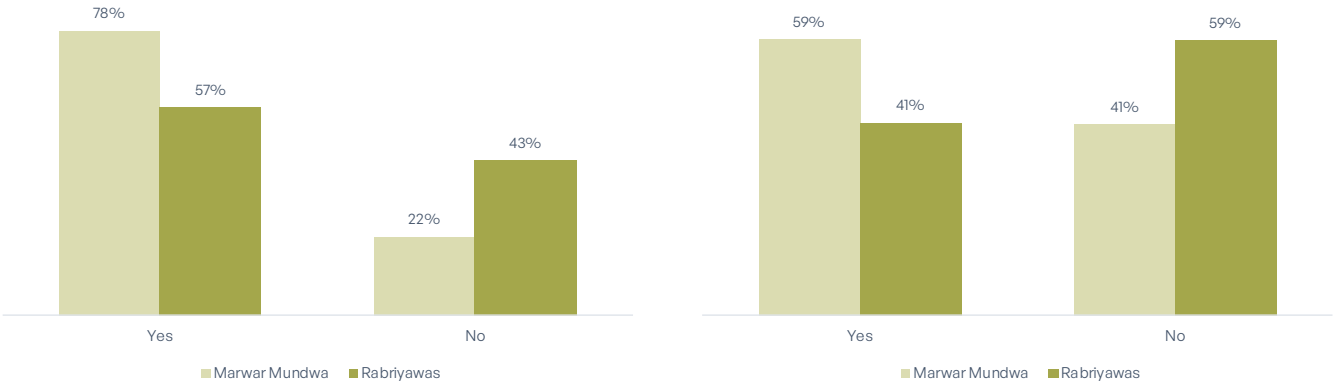


Figure 50: Changes observed in the prevalence of waterborne or other diseases at the community and the HH level

The responses suggest a **notable positive impact of the project on the health of the community, with a reduction in the prevalence of various diseases**. Several participants reported improvements, including a decrease in diseases like cholera, dengue, malaria, typhoid, and gastrointestinal issues such as diarrhea. Some respondents mentioned relief from specific ailments like leg pain, stomach pain, and respiratory problems. The availability of clean water is highlighted as a contributing factor to the overall health improvement, indicating that the **project has successfully addressed waterborne diseases and positively influenced the well-being of the community members.** Additionally, the **community members expressed a sense of satisfaction, with some noting that they are no longer falling ill, affirming the positive impact of the project on disease prevention.**

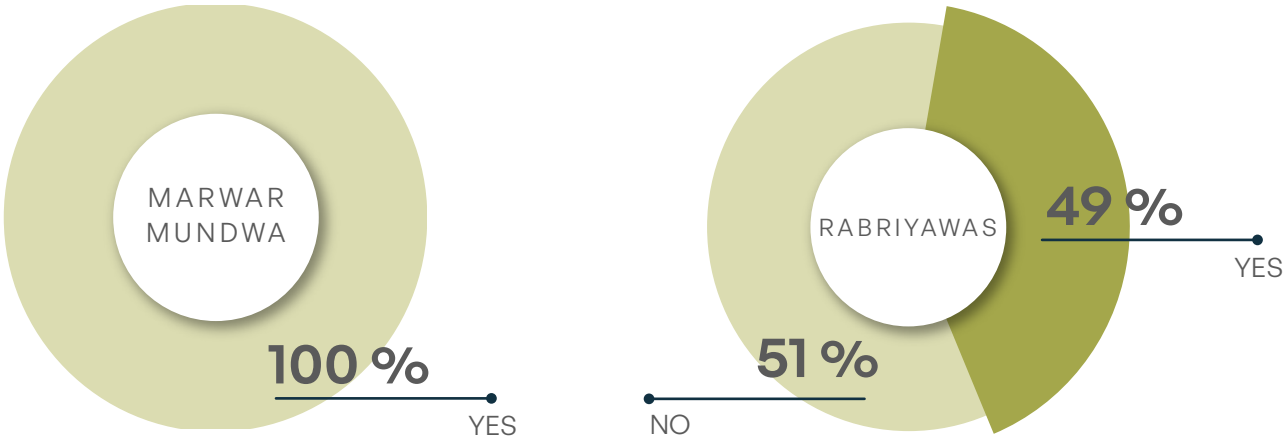


Figure 51: Improvement in the hygiene practices of the HHs and community

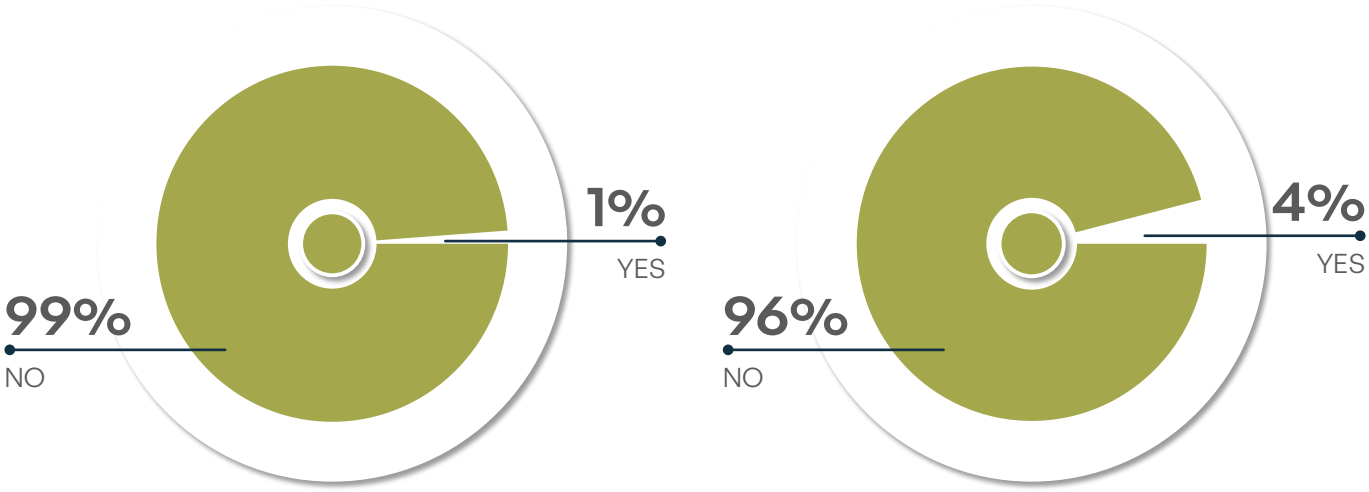


Figure 52: *Access to soap and other hygiene essentials*

The responses indicate a **significant positive impact of the project on the hygiene practices of the community.** Participants highlighted improvements such as the availability of clean water, leading to a reduction in waterborne diseases. The project has contributed to enhanced cleanliness, with mentions of clean water being accessible and efforts to keep water and surroundings clean. **Community members expressed awareness about the importance of sanitation and cleanliness, linking it directly to improved health outcomes.** The availability of clean water as well as soap is noted as a facilitator for maintaining hygiene practices, saving time, and preventing diseases. Overall, the project has positively influenced hygiene practices in the community, fostering a cleaner and healthier living environment.

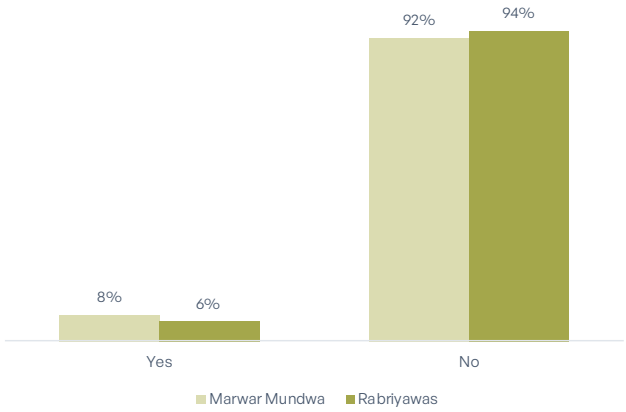


Figure 53: *Challenges in maintaining good hygiene at the community level*

Overall, respondents indicated that they do not face challenges in maintaining good hygiene, particularly at the community level. Sanitation has also improved significantly. A holistic approach that combines community education, environmental advocacy, and collaborative efforts with relevant authorities can be adopted to improve overall hygiene conditions.

Time Savings by Women

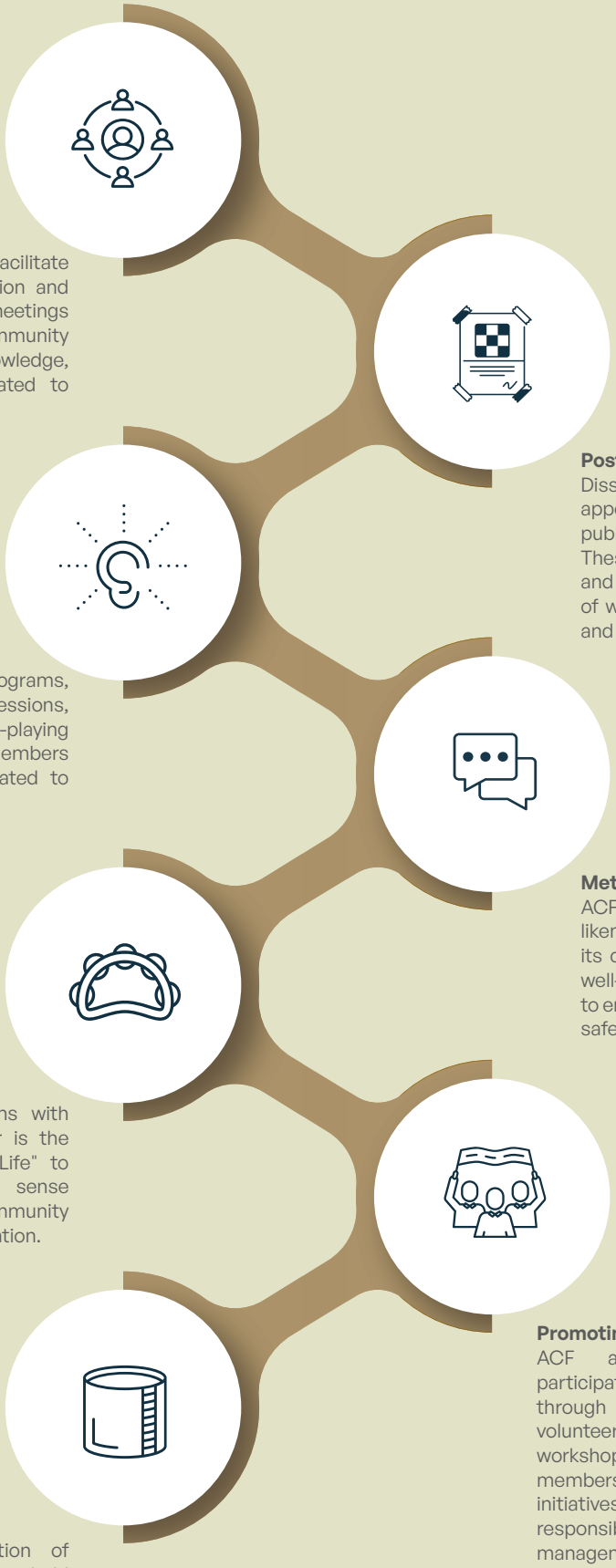
Ambuja CSR Initiatives for Increasing Water Availability at Rajasthan has significantly improved the lives of women and girls in the Marwar Mundwa and Rabriyawas region by implementing a system that brings clean water directly to their homes. After the interventions in nearly all the seasons, most of the women need less than an hour to fetch water as shown in the graphs. This intervention has not only saved considerable time (around 3-4 hours) for women, eliminating the need for arduous journeys to distant water sources but has also had a ripple effect on various aspects of their lives. The time savings have allowed women to prioritize activities such as household work, education, and income generation through participation in various SHGs involved in preparing khichiya papad, papad, haldi powder and packaging of products like nagauri methi, jeera, dhaniya contributing to their overall well-being and empowerment. Additionally, the project addresses safety concerns by eliminating the need for women and girls to travel to isolated water sources, enhancing their sense of security. The overwhelmingly positive feedback from the community underscores the transformative impact of this initiative, demonstrating how addressing the fundamental need for water access can empower women and girls, opening doors to opportunities that were previously limited by the time-consuming task of water collection.

Behavioral change communication interventions by ACF

ACF implemented a multifaceted Behavioral Change Communication (BCC) strategy in the surveyed region to promote awareness and sustainable water practices. The approach involved organizing community meetings, disseminating information through posters, and conducting awareness programs. The community actively participated in meetings, expressing an increased understanding of water-saving techniques and the significance of clean water. ACF also spread awareness about the RRWHS construction at the household level and its benefits among the community. The community acknowledged the positive impact of these interventions, emphasizing behavioral changes in water usage and hygiene practices. Additionally, ACF's efforts were evident in promoting organic cotton growth by linking water initiatives to agricultural practices. The comprehensive BCC interventions orchestrated by ACF successfully engaged the community, fostering a sense of ownership and awareness regarding water-related issues.

Figure 54: *BCC slogans in Didiya Kala village, Marwar Mundwa as a part of WRM awareness campaigns*

Specific BCC Interventions conducted by ACF



Community Meetings
Regular community meetings to facilitate discussions on water conservation and hygiene practices. These meetings provided a platform for community members to share their knowledge, experiences, and concerns related to water management.

Poster Campaigns
Disseminated information through visually appealing posters placed strategically in public spaces and community centres. These posters featured key messages and visuals emphasizing the importance of water conservation, proper sanitation, and hygiene practices.

Awareness Programs
Interactive awareness programs, incorporating educational sessions, demonstrations, and role-playing activities to engage community members and reinforce key concepts related to water conservation and hygiene.

Metaphorical Messaging
ACF utilized metaphorical messaging, likening water to a doctor, to underscore its critical role in maintaining health and well-being. This creative approach helped to emphasize the importance of clean and safe water for overall community health.

Slogan Campaigns:
ACF launched slogan campaigns with catchy phrases such as "Water is the Cure" and "Save Water, Save Life" to raise awareness and instil a sense of responsibility among community members towards water conservation.

Promoting Participation
ACF actively encouraged community participation in water conservation efforts through community mobilization activities, volunteer programs, and capacity-building workshops. By empowering community members to take ownership of water-related initiatives, ACF fostered a sense of collective responsibility towards sustainable water management practices.

Tanka Construction
ACF promoted the construction of 'tankas' (water tanks) in every household for water storage.

Through this comprehensive campaign, ACF is effectively raising awareness, building knowledge, and inspiring action, leading to a more water-secure future for communities in Rajasthan.

4.3.5. Environmental Impact

Groundwater Recharge/ Water level in wells

As per the Gram Panchayat members and the Block Level officials, notable improvements have been observed in the water availability across both the regions. The storage of water in various ponds has led to increased water levels, contributing to groundwater recharge only around the areas where the interventions like restoration of village level ponds, check dams and dykes have been created and this impact is particularly noticeable in wells and bore-wells only close to them. In Balada, despite a 30% reduction in rainwater causing water crises, every household now has access to drinking water through village level pond and RRWHS tanks.

Since, the water is continuously drawn from tubewells for various purposes, groundwater level has not increased that much. Groundwater recharge takes place only in Rabriyawas region due to the geological structure of soil while in Marwar Mundwa it is very less due to rocky geological structure of soil. Below images show the comparison of groundwater level in Jan'19 and Dec '22 for both the Nagaur and Pali Districts respectively. Marwar Mundwa region has groundwater level above 40 metres below ground level (m bgl) while in Rabriyawas, it ranges from 5-20 m bgl. No change in the groundwater level has been observed for both the regions from Jan'19 to Dec'2022.

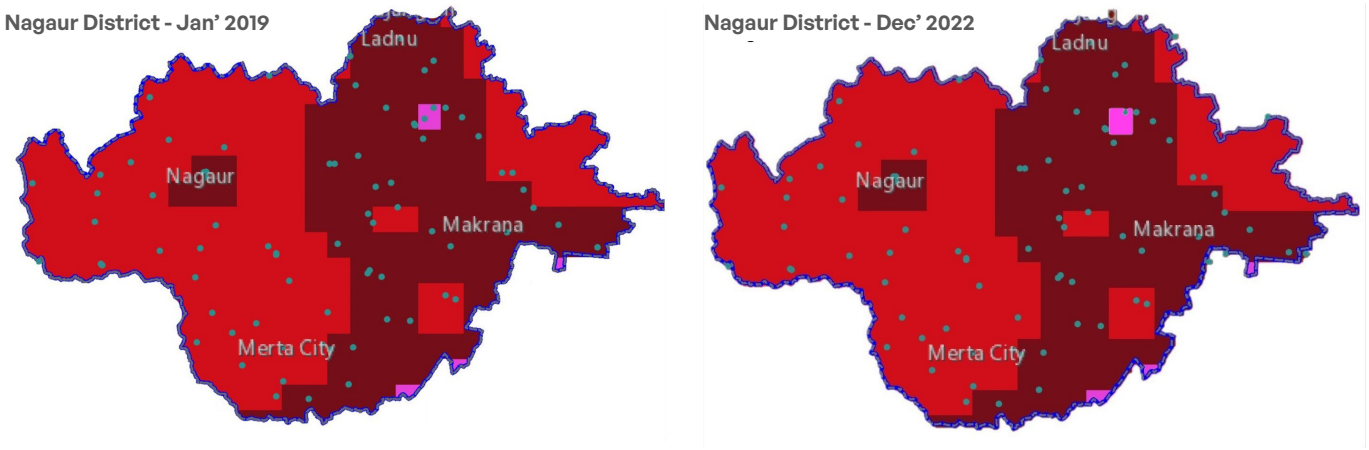


Figure 55: *Groundwater level (Jan'19 and Dec'22) of Nagaur District* [35]

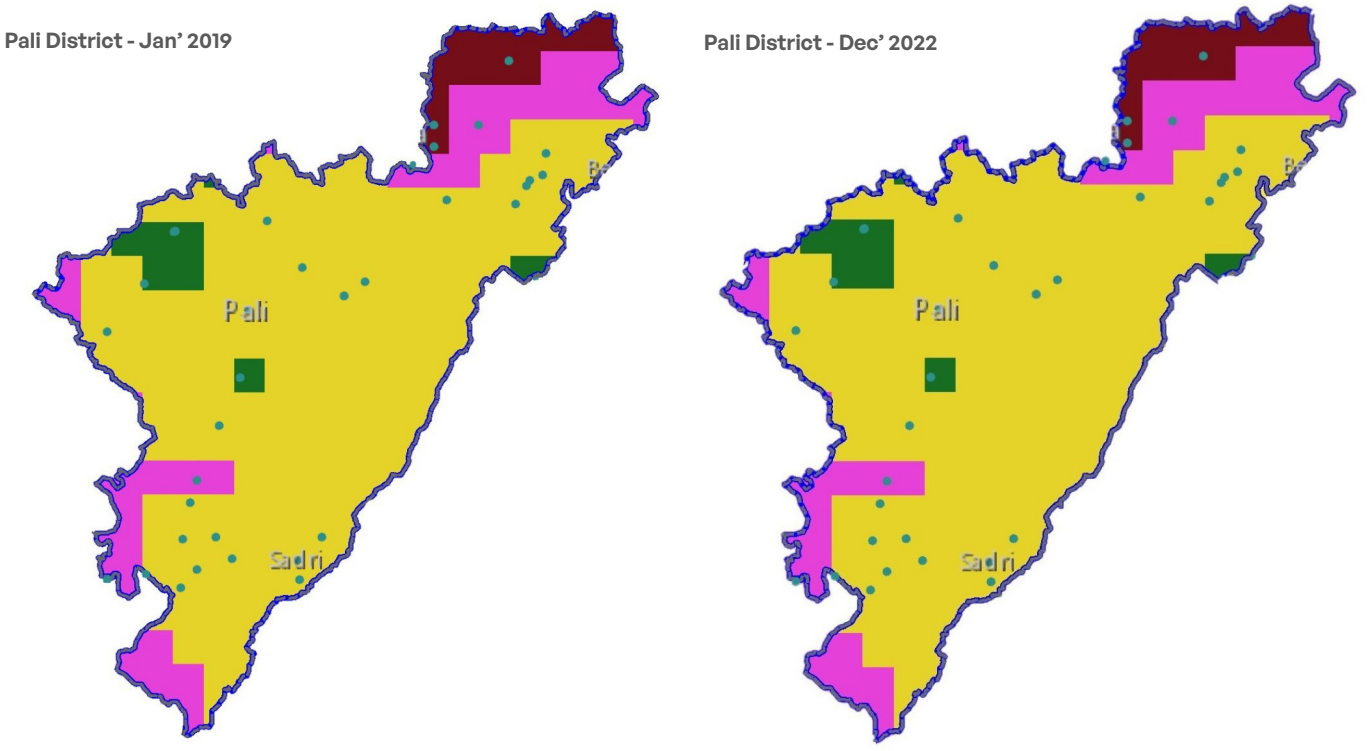


Figure 56: *Groundwater level (Jan'19 and Dec'22) of Pali District* [36]

[35] https://indiawris.gov.in/wris/#/groundWater

[36] https://indiawris.gov.in/wris/#/groundWater

In villages like Patan and Kesarpura, the implementation of the project has brought transformative changes, ensuring universal access to drinking water. Rabriyawas witnessed an increase in well numbers to approximately 500, with enhanced water levels due to water harvesting systems, benefiting both drinking water access and agricultural activities only around the interventions. But the groundwater levels have decreased significantly. In Mundwa, where wells were initially absent, the project has positively impacted pond water levels. Despite challenges like poor rainfall in Didiya Kalan and Didiya Khurd, the project's implementation has resulted in increased water levels in ponds and improved overall water availability. **The findings underscore the project's success in mitigating water scarcity and ensuring sustainable water access for the communities involved but there is still a need to look into the usage of groundwater due to the depleting groundwater levels.**

Rooftop RWHS and village level ponds likely led to the net water positivity at the household level. No significant changes were observed in the increase in groundwater level after the interventions as per the groundwater level data. Interventions like Dykes under riverbeds led to the increase in the groundwater but at a very level only near the dykes. In order to calculate exact Water Positivity Index future studies need to be done since particular data is not available.

Impact on Environment, Flora and Fauna

The community members consistently observe positive environmental changes in the project areas following the implementation of Ambuja CSR Initiatives. Across Balada, Patan, Kesarpura, Rabriyawas, Mundwa, Didiya Kalan, and Didiya Khurd, there is a unanimous sentiment that the environment has improved compared to pre-project conditions. The introduction of water management initiatives has contributed to increased greenery and an overall enhancement of the surroundings. This positive transformation is particularly notable in villages like Balada and Patan, where the project has not only improved environmental conditions like improved water availability and quality for plants and birds, but also correlated with an increase in household income. ACF interventions, particularly the **construction of check dams such as the one in Patan Village, Rabriyawas, have positively impacted environmental conditions.** This is evident in the increased presence of **riparian flora, such as reeds and cat tails, creating small ecological niches.** These niches serve as shelters for aquatic birds and small animals, contributing to a notable increase in their population.

The availability and utilization of clean water for agricultural activities have positively impacted soil moisture, leading to enhanced crop production. This, in turn, has contributed to an increase in household income. Additionally, the community has observed changes in the health of ponds, wells, and other water bodies. The construction of structures like dyke, farm ponds, and RRWHS has led to a rise in water levels and improved water quality, demonstrating the project's effectiveness in addressing water-related challenges. These improvements not only signify the success of the initiative in enhancing water availability but also highlight the broader positive impact on agricultural productivity and environmental sustainability.

Farmers in both the regions universally reported improved soil quality and increased fertility after adopting new irrigation systems. The availability of quality water through these systems has directly led to enhanced crop yields and production. This positive impact on soil health underscores the success of the project in promoting sustainable agriculture and contributing to the prosperity of the farming communities in both the regions.

The feedback from Gram Panchayat members and Block level officials indicates no observed negative environmental impacts associated with the Ambuja CSR Initiatives. In these areas, land outside the villages is dedicated to pasture land for animals, providing a sustainable environment. The project has contributed to increased green cover, observed in land areas surrounding the villages. The disposal of dead animals is managed responsibly, with municipal bodies handling the process. Major animals and birds in these regions include cows, buffalos, goats, sheep, neelgaye, pigeons, peacocks, and more. The interventions have led to positive changes, such as increased bird movement and the introduction of new birds and animals. While the Babool plant population has increased, villagers harvest it responsibly for domestic fuel use. **Overall, the project has enhanced environmental sustainability without causing adverse effects.**

NDVI Analysis

NDVI, or Normalized Difference Vegetation Index, is a metric that assesses vegetation density and health through satellite imagery by analyzing the contrast between near-infrared and red-light reflectance. In this project, NDVI serves as a valuable tool for comparing vegetation conditions before and after implementing water conservation interventions such as check dams, village level ponds, farm ponds and so on. Changes in vegetation health and density can be assessed by examining satellite imagery captured pre- and post-intervention. A rise in NDVI values post-intervention signifies enhanced vegetation growth, indicating the positive influence of the project on local ecosystem health. This analysis enables the evaluation of intervention effectiveness in bolstering vegetation cover and overall ecological well-being within the project area.

Below maps show the comparative NDVI (Normalized Difference Vegetation Index) analysis of both Pali and Nagaur districts for the month of December, 2019 and 2022. The analysis has been done using ArcGIS and LANDSAT – 8 imageries from USGS . Surveyed villages from Marwar Mundwa region (Nagaur) and Rabriyawas region (Pali) have been marked. The NDVI values for both Marwar Mundwa and Rabriyawas regions from the year 2019 and 2022 are relatively low representing scope for further interventions to improve the environmental conditions.

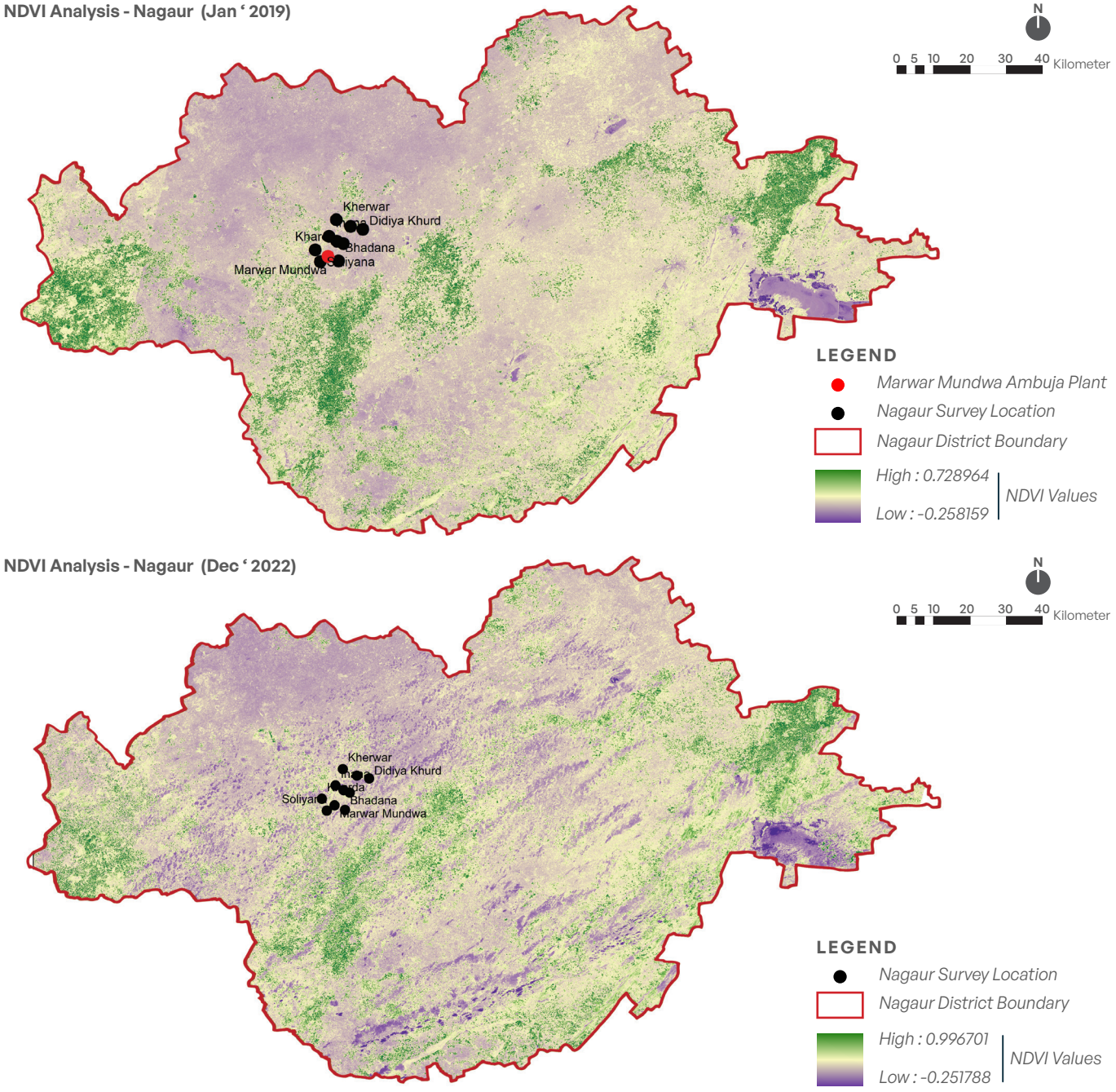


Figure 57: *Comparison of NDVI Analysis of Nagaur District – Dec'19 and Dec'2022*

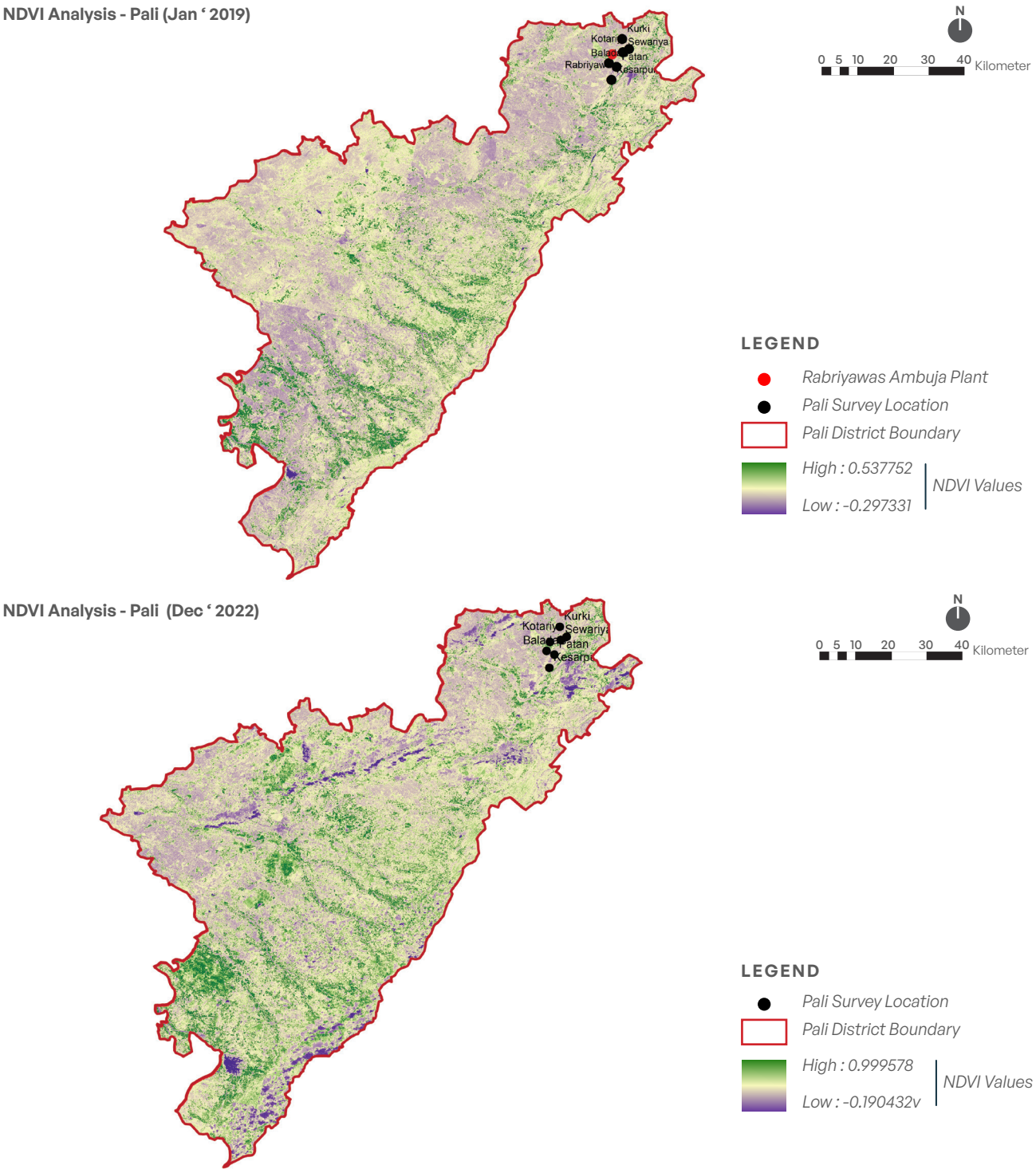


Figure 59: *Comparison of NDVI Analysis of Pali District – Dec'19 and Dec'2022*

4.3.6. Socio-economic Aspect

Impact on Community

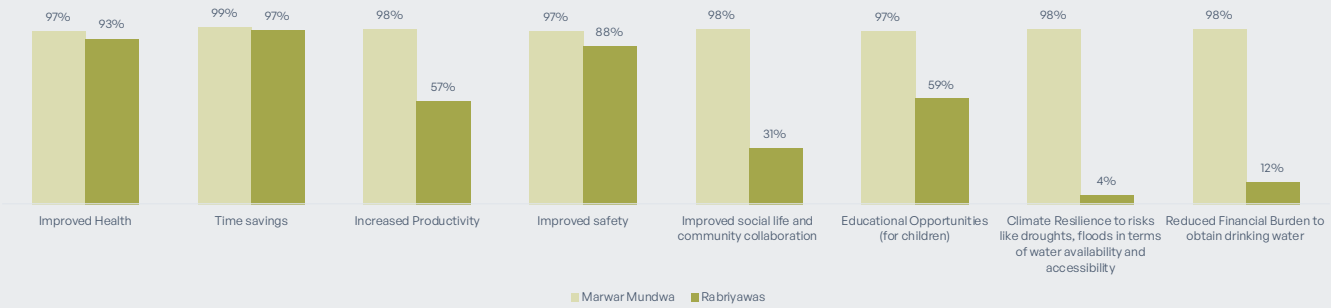


Figure 58: *Impact of Ambuja CSR water initiatives on community's life*

Ambuja CSR water initiatives have had a profound impact on the communities of Marwar Mundwa and Rabriyawas, with notable variations in their experiences. In Marwar Mundwa, the initiatives have significantly reduced the financial burden of obtaining drinking water for almost everyone (98%), fostering climate resilience to risks like droughts and floods (98%), and improving educational opportunities for children (97%). Furthermore, the initiatives have remarkably enhanced social life and community collaboration (98%), safety perceptions (97%), productivity (98%), time savings (99%), and overall health and productivity (97%). On the other hand, in Rabriyawas, while there is still a positive impact, the responses are more varied. A smaller proportion reported financial benefits for obtaining drinking water (12%) and climate resilience (4%), and a lower percentage acknowledged improvements in educational opportunities (59%) and community collaboration (31%). Despite these differences, both communities recognized the initiatives' positive influence on safety (88% in Rabriyawas) and productivity (57% in Rabriyawas), demonstrating the multifaceted positive effects of Ambuja CSR water initiatives on the well-being and livelihoods of the communities.

Impact on Vulnerable Communities

The project has significantly addressed the needs of all villagers, demonstrating a positive impact across diverse groups and areas within the communities. In Balada and Patan, women have notably benefited from reduced physical strain and time-consuming water-fetching tasks, leading to improved well-being and enhanced school attendance for children. Similar benefits were observed in Kesarpura, Rabriyawas, Mundwa, Didiya Kalan, and Didiya Khurd, where the entire spectrum of society, including lower income groups, experienced positive outcomes. As per the block level health officials, the availability of clean water has resulted in reduced fluoride content, alleviating joint pain and contributing to overall health improvements. Additionally, the conservation and utilization of natural rainwater have emerged as valuable resources for quality water supply. The project's holistic approach has effectively catered to the diverse needs of villagers, fostering inclusivity, and improving the overall socio-economic fabric of the communities.

Livelihoods

Increase in direct annual income from different sources (Overall income)

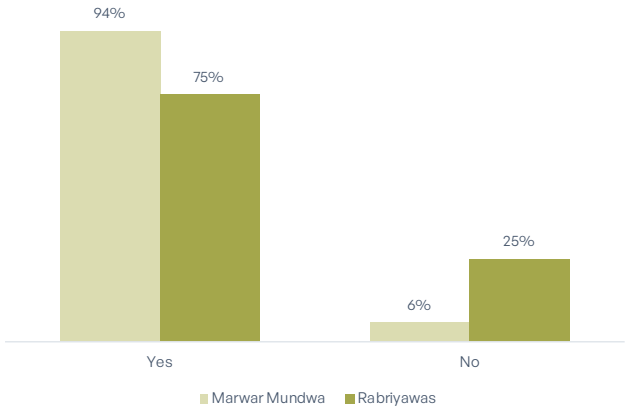


Figure 60: *Observed changes in the income or livelihood as a result of the project*

The WRM initiatives by ACF had a significant positive economic impact in Marwar Mundwa and Rabriyawas communities. A majority of respondents reported improved income or livelihoods from farming and other income sources, with 94% in Marwar Mundwa and 75% in Rabriyawas acknowledging positive changes in annual income. Even those without direct financial gains recognized the broader economic benefits, indicating the project's contribution to positive economic shifts beyond individual wealth generation. Overall, Ambuja CSR's water initiatives have demonstrably enhanced economic well-being in both communities.

Increase in direct annual income from farming

The results show that a significantly higher percentage of farmers in Marwar Mundwa reported an increase in annual income from farming compared to those in Rabriyawas. In Marwar Mundwa, 88% of respondents mentioned their income had increased, while in Rabriyawas, around 57% mentioned the same.

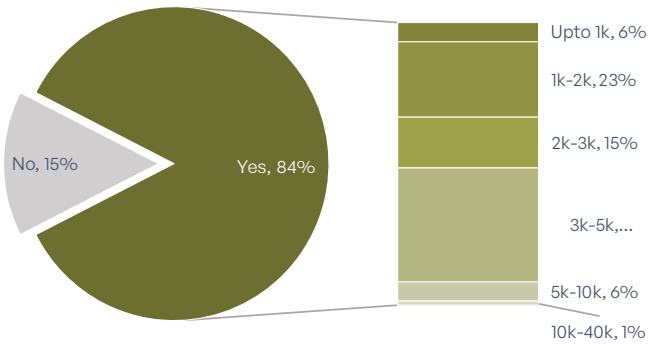


Figure 61: *Increase in direct annual income from farm for Marwar Mundwa*

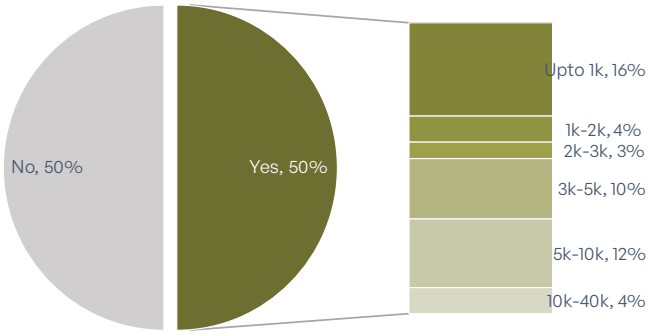


Figure 62: *Increase in direct annual income from farm for Rabriyawas*

The survey indicates a positive impact on the direct income of farmers in both Marwar Mundwa and Rabriyawas due to Ambuja CSR Initiatives, with a more pronounced effect in Marwar Mundwa. In Marwar Mundwa, 32% experienced an annual income increase of INR 5,000 to INR 10,000, while 10% reported an increase of INR 20,000 to INR 35,000, and no one reported a decrease. In Rabriyawas, 10% saw an income increase of over INR 1 lakh annually, and 13% reported an increase of INR 20,000 to INR 35,000 annually. Overall, the initiative positively influenced farmers' incomes in both regions, with varied degrees of impact.

Increase in indirect income from other sources through time saving for women

The survey underscores the initiative's significant contribution to both women's empowerment and economic well-being in Rajasthan.

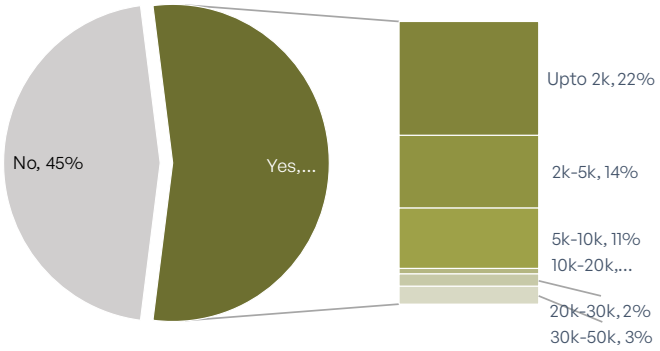


Figure 63: *Increase in indirect income from other sources where women folk can focus due to time saved for Marwar Mundwa*

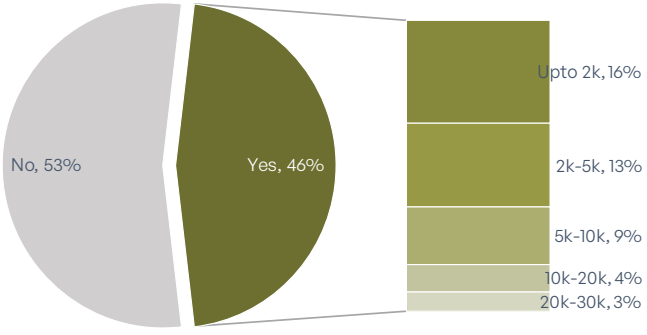


Figure 64: *Increase in indirect income from other sources where women folk can focus due to time saved for Rabriyawas*

Up to 55% and 47% of women reported increased indirect income from time saved due to the initiatives in Marwar Mundwa and Rabriyawas regions, respectively, depending on income bracket. Despite different income types, both sources suggest positive impacts on women's income due to time saved and improved well-being. Around 2/5th and 1/3rd of the respondents from both the regions recorded an annual increase of upto ₹2,000 and ₹2,000-₹5,000 in **indirect** income of women folks, respectively.

Decrease in health expenses due to better and treated source of drinking water

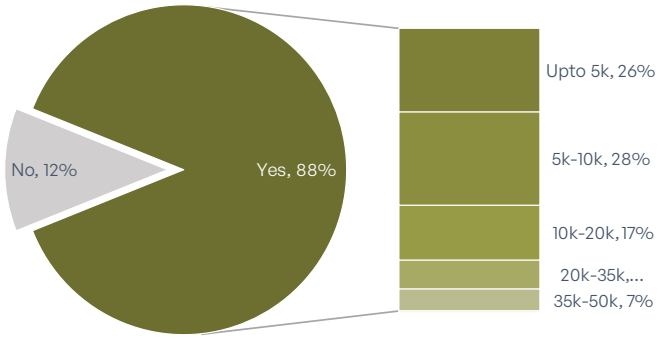


Figure 65: *Decrease in health expenses due to better and treated source of drinking water for Marwar Mundwa*

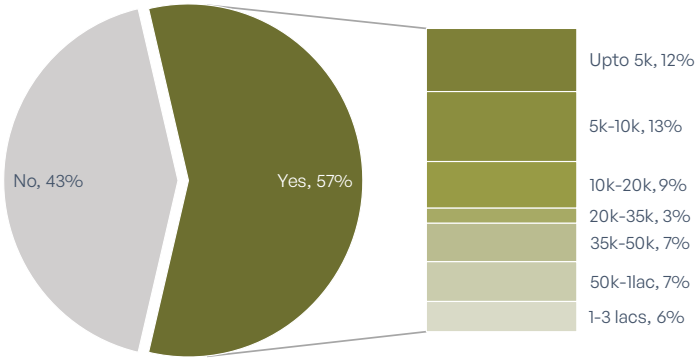


Figure 66: *Decrease in health expenses due to better and treated source of drinking water for Rabriyawas*

Overall, 85% (74 out of 88) and 50% (34 out of 60) respondents in Marwar Mundwa and Rabriyawas, respectively, mentioned decrease in the health-related expenses. In response to the water scarcity challenge in Marwar Mundwa and Rabriyawas, Rajasthan, Ambuja Cement initiated CSR efforts to enhance water availability and quality. The positive impact is evident in various aspects. Firstly, families are relieved from the financial burden of treating waterborne illnesses, redirecting resources to essential needs like education and nutrition. Secondly, improved health results in reduced absenteeism due to sickness, leading to increased school attendance and enhanced productivity, contributing to overall economic growth. This comprehensive approach to better water quality is positioned as an investment in the current and future prosperity of the community.

Addition to Livelihood Sources

The survey reveals that many respondents initiated small-scale farming activities and adopted sustainable practices such as rainwater harvesting, showcasing the project's significance for sustainable agriculture. Participants engaged in diverse activities beyond farming, including sewing, indicating the project's potential to extend beyond traditional livelihoods. These practices resulted in time and cost savings, diversified income sources, and reduced dependence on conventional jobs, enhancing economic resilience. **A notably higher percentage in Marwar Mundwa (26%) reported adopting new livelihood sources related to water availability compared to Rabriyawas (21%).** Overall, the findings suggest a positive impact of ACF's water initiatives on livelihoods in both Marwar Mundwa and Rabriyawas, although not uniformly benefiting everyone.

Economic Migration

Only a few sections of the community belonging to the BPL section, usually migrate to the other regions to work as labourers throughout the year or for some months of the year. Due to this, sometimes women have to accompany their husbands to work as labourers or to take care of the family. This affects the level of participation of women into SHG activities.

The Banjara community in Mundwa has experienced significant economic migration, with some members opting to leave the group and working as migrant laborers for 6-7 months each year. Migration is predominantly directed towards Ganganagar and Hanuman Nagar, where numerous brick kilns offer employment opportunities. This migration has led to irregular participation in the community group. The Economic Weaker Sections (EWS) and Dalit community, particularly the Bhawri and Chaukidar, face challenges as they travel to various locations in search of water and job opportunities. Availability and access to water does play a role in migration but economic opportunities is the prime reason for migration.

However, positive developments have occurred with the support of ACF. Many families in the Banjara community have received homes on Nagarpalika Land through the Indira Awas Yojana (IAY). ACF played a pivotal role in ensuring that nearly all households have RRWHS. The implementation of WRM interventions, including RRWHS tanks and the rejuvenation of village-level ponds, has significantly contributed to providing the community with access to clean water consistently throughout the year.

Despite economic challenges and migration patterns, ACF has facilitated the formation of Self-Help Groups (SHGs) for women through its Social Saheli initiative. This not only empowers the women within the community but also strengthens social bonds and resilience. Consequently, the provision of houses through IAY and the implementation of water-related interventions by ACF have been instrumental in encouraging the Banjara community to settle in the village, contributing to improved economic stability and overall well-being.

4.4. Interventions' Effectiveness and Satisfaction Level of the Community towards the Interventions

4.4.1. Satisfaction Level with the Drinking Water Quality Facilitated through the ACF Water Initiatives

The responses gathered from the primary survey reflect a **high level of satisfaction among the community members regarding the quality of drinking water** facilitated through the water initiatives of the project. Participants consistently express contentment and happiness, highlighting the significant benefits derived from the project, such as time savings and convenience. The availability of clean and pure drinking water at home is widely acknowledged as a source of joy and improved well-being. **Many respondents emphasize the positive impact on health, attributing the absence of diseases to the accessibility of clean water.** Additionally, the convenience of having water readily available, without the need to travel or fetch water, is repeatedly emphasized as a key factor contributing to overall satisfaction. The sentiment of satisfaction is further reinforced by expressions of gratitude, optimism, and a sense of improved living standards due to the project's water initiatives. Overall, the feedback underscores the project's success in meeting the community's expectations and enhancing their quality of life through reliable and clean water access. However, the level of satisfaction among the respondents in Rabriyawas found to be on a lower side than the Marwar Mundwa region.

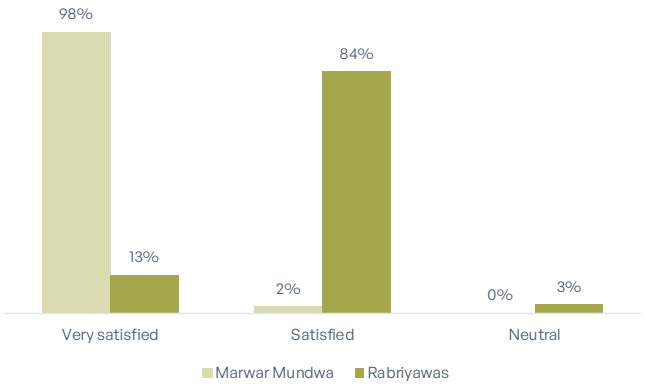


Figure 67: *Satisfaction level with the drinking water quality facilitated through the ACF water initiatives*

The ACF water initiatives have been successful in improving drinking water quality in the Marwar Mundwa region and in the Rabriyawas region. Almost all the respondents mentioned they have benefitted from the WRM interventions by ACF.

The community expressed a few concerns about the sustainability of the project, fearing exacerbation of water scarcity issues if the project discontinues. They seek continuous support and commitment to ensure lasting impact. Concerns about future water availability center around dwindling water sources, emphasizing the need for proactive measures like the construction of anicuts and ponds. The community highlighted worries about insufficient rainfall affecting water availability and advocates for the construction of tanks and borewells. Emphasis was placed on water conservation measures, cleanliness, and maintenance activities to address anticipated water scarcity issues in the future.

A minority of respondents, expressed concerns regarding water quality, noting that these issues were particularly prevalent from April to July. Additionally, more than 80% of respondents in the Marwar Mundwa region reported that water was not wasted during collection or usage. However, this percentage was slightly lower in Rabriyawas, where 68% of respondents made the same assertion.

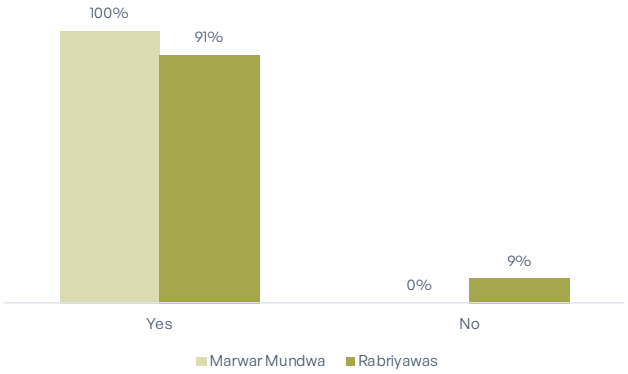


Figure 68: *Benefits of the project to the community*

>6 in 10 housholds report that thay do no treat their water prior to drinking

Source: NFHS- 4 (2015-16)

163 Mn people do not have access to safe drinking water

Source: Aid Report

India loses **73 Mn** working days due to water - borne diseases

Source: IndiaSpend report 2016

21% of the disease reported in the country are water

Source: World Bank Report

66 Mn people in 20 state are at risk because of the excessive fluoride in water

Source: MDWS Report

443 Mn School days are lost each year from water related illness

Source: Human Development Report 2006

Arsenic is the other big killer putting at risk nearly **-10 Mn**

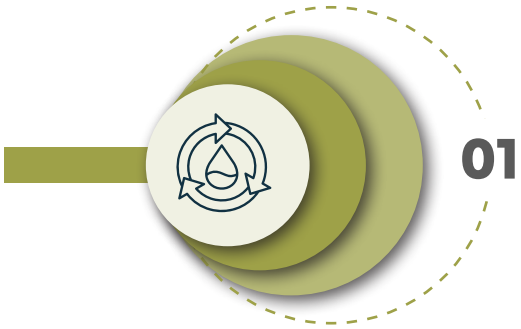
Source: Worl Bank Report

6 Mn children below age 14 suffer from dental, skeletal and non-skeletal fluorosis

Source: Flurosis Research and Rural Devlopment Foundatation

4.5. Unintended Outcomes of the Project WRM Interventions

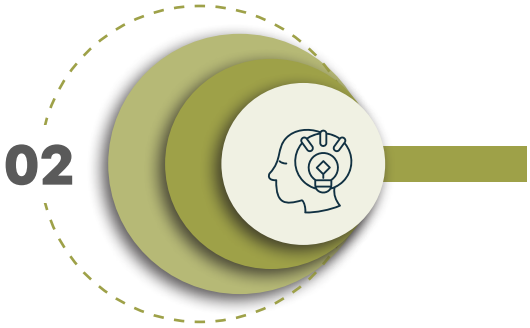
Below are the challenges and unintended outcomes (positive as well as negative) of the project interventions:



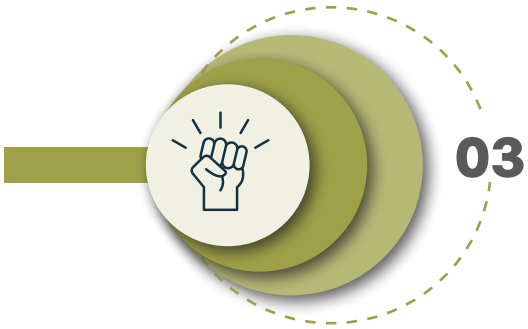
Downstream Water Table Impact

There is a concern amongst downstream users about the potential impact of interventions (in upstream areas) on the downstream water table, water availability and flow of water. A thorough study needs to be conducted in the future to assess whether the downstream water table has decreased or been adversely affected by the implemented WRM interventions. Around 13 beneficiaries from Patan village were consulted who can be considered as the downstream users. Most of them had expressed this apprehension. It is natural for such interventions to impact downstream as the water is conserved earlier on in the upstream process which can have some certain consequences on the downstream users. This can be solved through a sustained service and a study needs to done using tools like GIS over a long period of time.

In the evaluation by Gram Panchayat members and Block Level officials, Balada, Patan, Rabriyawas, and Kesarpura reported no significant challenges. Mundwa and Didiya Kalan initially faced issues like check dam breakdowns and farm ponds drying up. Mundwa dealt with seasonal water storage challenges, and Didiya Kalan initially struggled with tank construction concepts. However, increased awareness and community involvement successfully addressed these challenges, highlighting the project's adaptability and resilience in managing water resources.



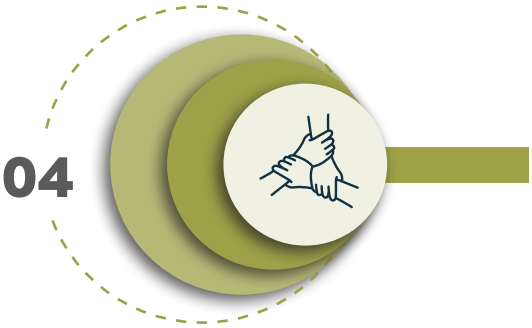
Adaptability and Resilience in Water Management



Empowerment of Women

The implementation of RRWHS tanks has resulted in a significant reduction in the time spent by women and girls fetching water multiple times a day. With the availability of drinking water in RRWHS tanks, women can now actively participate in self-help groups, contributing to their empowerment and providing them with the opportunity to engage in other productive activities.

The collaboration with ACF has led to the creation of FPOs in both regions. These FPOs actively engage in the collection of biomass from farmers at a predetermined rate. Improved irrigation facilities have increased agricultural produce, and the collected biomass is sold to the Ambuja Cement Plant, serving as a renewable and eco-friendly fuel source. This strategic initiative not only provides economic benefits to farmers but also contributes to environmental sustainability by efficiently utilizing biomass and reducing carbon emissions. The unintended positive outcome showcases the multifaceted impact of water resource management interventions on local communities and the environment.



Economic Opportunities through FPO Collaboration

4.6. ACF Interventions and their Observed Benefits

ACF Water Management Interventions and Beneficiary Impacts in Marwar Mundwa & Rabriyawas Regions:

Table 5: *ACF Interventions and their observed benefits*

Intervention	Beneficiaries	Specific Benefits	% of Beneficiaries Reporting Benefits (if available)	Region-Specific Observations
Rooftop Rainwater Harvesting System (RRWHS)	Individual households (women & girls) Communities	• Increased water availability for drinking and domestic purposes • Improved drinking water quality • Reduced time spent fetching water (less than an hour in most seasons)	• Over 90% (both regions) for drinking water • Almost all respondents reported time savings in water collection	• All Marwar Mundwa respondents rely on RRWHS for drinking water • 91% of Rabriyawas respondents rely on RRWHS for drinking water
Community RRWHS	Communities	• Improved water security for communities • Reliable and clean water supply for multiple uses		
Drinking Water Distribution System (DWDS)	Communities	• Improved access to safe drinking water • Reduced drudgery of water collection • More convenient water source		Adopted by some respondents in Rabriyawas only
Farm Ponds	Individual farmers Communities	• Improved water availability for irrigation • Increased agricultural productivity and income generation • Reduced dependence on rainfall • Increased land area under irrigation		• Adopted by some respondents in Rabriyawas only • Increased cultivation of both Rabi and Kharif crops after interventions • Introduction of cash crops like cotton
Sprinkler and Drip Irrigation Systems	Individual farmers	• Improved water use efficiency • Reduced water wastage • Enhanced crop yields		Adopted by some respondents in Rabriyawas only
Micro-Irrigation (Drip & Sprinkler Systems)	Farmers in Inana, Didiya Kalan, Didiya Khurd & Mundwa	• 50% reduction in water usage compared to traditional methods • Collection and utilization of rainwater • Improved water availability and crop production	Up to 70% water savings reported in some villages	Challenges with maintaining systems reported in some villages

Intervention	Beneficiaries	Specific Benefits	% of Beneficiaries Reporting Benefits (if available)	Region-Specific Observations
Water Access and Availability	• Individual households (women & girls) • Communities	• Increased water availability for drinking and domestic purposes • Improved drinking water quality • Reduced time spent fetching water (less than an hour in most seasons) • Enhanced water security	• Over 90% (both regions) for drinking water • Almost all respondents reported time savings in water collection	• All Marwar Mundwa respondents rely on RRWHS for drinking water • 91% of Rabriyawas respondents rely on RRWHS for drinking water
Agriculture	• Individual farmers • Communities	Increased agricultural productivity and income generation		• Increased cultivation of both Rabi and Kharif crops after interventions • Introduction of cash crops like cotton
Livestock	• Communities • Individual farmers	Improved access to water for livestock	Over 90% of respondents used livestock for their own purposes	• No significant increase in number of livestock reared • Some increase in income generation from livestock sales in Rabriyawas
Health and Hygiene	Community members	• Reduced prevalence of waterborne diseases (cholera, dengue, malaria, typhoid, diarrhoea) • Improved overall health and well-being • Enhanced hygiene practices		• Reduction in various health issues reported (joint pain, headaches, leg pain, stomach problems) • Sense of satisfaction expressed by community regarding health improvements
Time Savings by Women	Women and girls	Reduced time spent fetching water (less than an hour in most seasons)		• Saved time allows women to focus on household work, education, and income generation. • Improved safety by eliminating travel to distant water sources.
Behavioral Change Communication (BCC)	Communities	• Increased awareness of water-saving techniques and importance of clean water • Improved water usage and hygiene practices • Sense of ownership regarding water management		• Community actively participated in BCC initiatives

Intervention	Beneficiaries	Specific Benefits	% of Beneficiaries Reporting Benefits (if available)	Region-Specific Observations
Empowerment of Women	Women	• Reduced time spent fetching water • Opportunity to participate in self-help groups and other income-generating activities	Up to 55% and 47% of women reported increased indirect income in Marwar Mundwa and Rabriyawas	
Economic Opportunities through FPO Collaboration	Farmers	Increased income from selling agricultural produce to Ambuja Cement Plant		FPOs collect biomass from farmers and sell it as fuel to the Ambuja Cement Plant
Environmental Impact		Increased greenery and overall environmental improvement	• Increased bird population due to creation of small ecological niches • Improved soil quality and fertility	Potential for further interventions to improve environmental conditions

05

PROJECT SUSTAINABILITY AND STAKEHOLDER COLLABORATION


Ambuja Cement FOUNDATION
प्यासा ही जाने पानी का मोल।
जल की हर बूंद है अनमोल॥
Ambuja Cement FOUNDATION
शिशु का मल
शौचालय में निपटायें,
संक्रामक रोगों से
सुरक्षा पायें
खुले में शौच मुक्त गांव
में आपका स्वागत है
हम गांव को रखने हेतु प्रतिबद्ध हैं

5.1. Project Participation and Community Engagement

A significantly larger proportion of people in Marwar Mundwa participated in the project's planning or execution compared to those in Rabriyawas, according to the initial survey results. While 90% of respondents in Marwar Mundwa reported involvement, only 24% in Rabriyawas did the same. This suggests a potential difference in community engagement between the two locations, which might be worth exploring further.

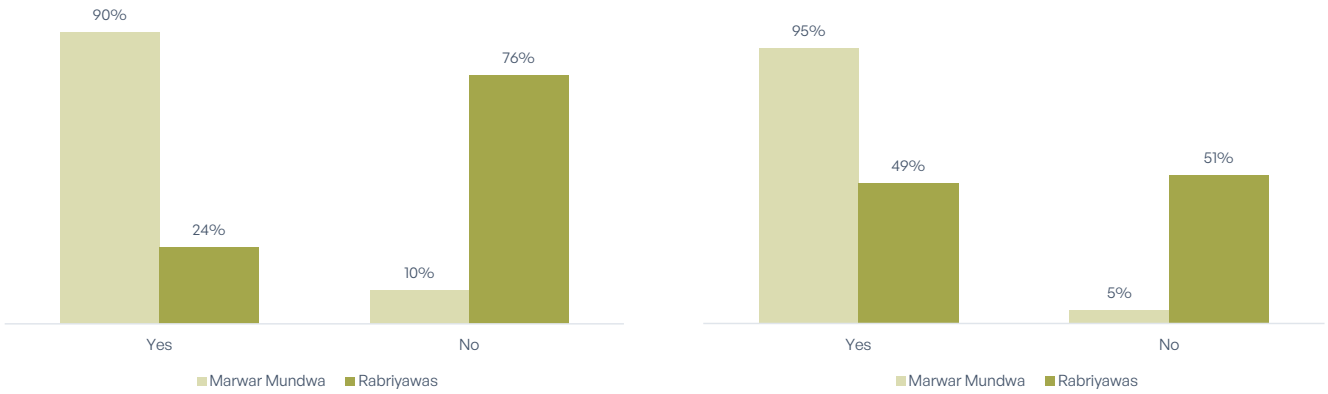


Figure 69: *Involvement in the planning or implementation of the project interventions and information about the project and its goals*

From the response gathered from a primary survey, a significant difference in community involvement was observed between Marwar Mundwa and Rabriyawas. Residents of Marwar Mundwa (95%) actively participated in the project, while engagement in Rabriyawas (49%) remained considerably lower. This disparity highlights potential gaps in community outreach and awareness of the project's goals between the two locations.

Training on water conservation or water management practices

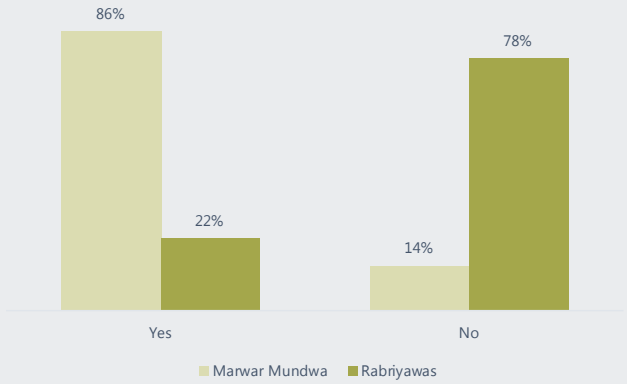


Figure 70: *Training received on water conservation or water management practices*

Nearly 86% respondents from Marwar Mundwa and only about one-fifth respondents from Rabriyawas regions mentioned that they have received formal training by ACF regarding water conservation and its management practices. The community emphasized the need for active engagement and improvements in project communication. Suggestions include holding regular meetings and organizing awareness campaigns through posters to disseminate information effectively. The community expressed a desire for increased participation and understanding, emphasizing the importance of ongoing meetings and continuous updates on schemes and plans. To enhance community engagement, the project could consider adopting strategies like conducting regular meetings and ensuring transparent communication to address the community's concerns effectively.

Community Expectations from the ACF Team

There is a call for more tangible actions, such as building bigger tanks, constructing ponds, and increasing assistance amounts from the community. Additionally, the community advocated for the expansion of the project's reach and continuous support for new schemes. In order to improve community involvement, the project may consider implementing impactful projects (such as larger tanks and ponds), to address the community issues.

5.2. Project Alignment with Local Development, Infrastructure Development and Service Delivery

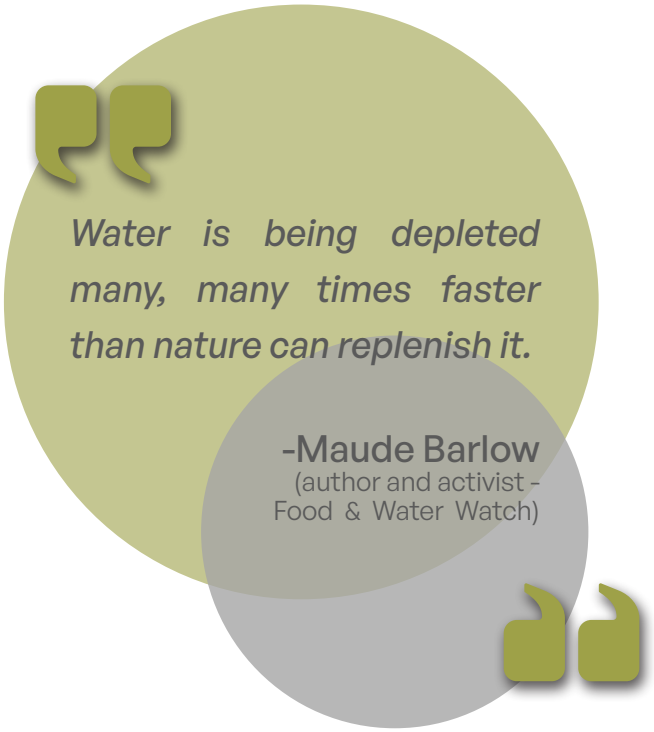
The sustainability and future expectations of the Ambuja CSR Initiatives for Increasing Water Availability in Rajasthan project hinge on the active engagement and commitment of the community in Marwar Munda and Rabriyawas regions. The community plays a vital role in maintaining and enhancing existing water management systems. According to the primary survey, the community actively participates in various activities, demonstrating a commitment to cleanliness, awareness, and proper infrastructure connection. Their vision for the future includes robust water infrastructure, sustainable practices, and universal access to clean water. They anticipate building anicuts, personal ponds, and expanding tanks, emphasizing the importance of good water management and conservation practices. The community envisions every household having access to clean water through individual tanks. Their expectations for future water programs include additional water storage infrastructure, continued engagement and education through meetings and awareness campaigns, access to clean water for all households, and ongoing support for project sustainability. The community's commitment to active participation ensures the comprehensive success of the project in the long term.

Farmers in both the Marwar Mundwa and Rabriyawas regions actively participated in the planning and implementation of water-related projects facilitated by ACF. A collaborative approach ensured transparency and accountability, with ACF officials engaging farmers through excursions, meetings, and committee formations. Women received training in water conservation, although the extent varied across villages. Traditional water techniques were limited before ACF interventions. Concerns about long-term maintenance and sustainability include the need for additional infrastructure, water storage, and ongoing awareness campaigns. Farmers stress the importance of community engagement, continuous monitoring, and infrastructure expansion for future project success, underscoring their commitment to sustainable water management practices for future generations.

Gram Panchayat members and Block level officials expressed positive sentiments regarding the sustainability of the Ambuja CSR Initiatives. They emphasized the importance of continuous awareness campaigns, regular meetings, and monitoring to ensure the long-term success of the water management projects. Traditional water sources in these areas included wells and ponds, but the implementation of rainwater harvesting systems by ACF has significantly improved water availability. The Gram Panchayats play a vital role in creating awareness about clean and safe water, encouraging water conservation, and taking initiatives such as plantation drives. Villagers express the need for ongoing support, including the construction of more water reservoirs, ponds, khadins, and the continuation of practices like drip irrigation and sprinkle systems. Overall, the community is committed to sustaining the positive impacts of the project and recognizes the importance of ongoing efforts for water management and environmental conservation.

5.3. Willingness to Participate in Future Programs

Community showed a strong desire to collaborate and participate in future programs. They recognized the need for diverse initiatives, encompassing infrastructure development with increased tank capacity (bigger tanks), sustainable practices like rainwater harvesting, and inclusive solutions catering to both human and animal needs. Their willingness to organize meetings, put up posters, and actively engage in activities makes them ideal partners for driving positive change. It's clear that the community is eager to work together on water management solutions that are effective, sustainable, and benefit everyone. There are some instances in Rabriyawas where respondents recorded their unwillingness to participate in the interventions as they did want any further augmentation in these RRWHS structures while some were genuinely not willing to participate.



Some of the beneficial initiatives as highlighted by the community and the block level officials where they can take part and the expectations for future water management and sustainability programs:

Promotion of Water Conservation: Emphasizing the importance of water conservation through various means such as holding meetings, awareness campaigns, and educational initiatives

Community Engagement and Collaboration: Collaborating with local communities and stakeholders, and encouraging community participation to achieve sustainable water management goals.

Infrastructure Development: Constructing bigger tanks or reservoirs, and improving more water infrastructure to ensure adequate water availability

Training and Support: Offering training and demo sessions, workshops, and continuous support for water conservation practices, along with financial incentives where applicable

Holistic Approach: Promoting multi-sectoral approaches to water management, considering its interconnectedness with agriculture, livelihood, and health-related aspects

Farmers in both the regions expressed a strong willingness to participate in future water-related programs. They highlighted their satisfaction with the current water irrigation system and express readiness to engage in initiatives addressing water scarcity. Farmers expected future programs to focus on increasing the number of water ponds, implementing check dams, constructing wells, and promoting overall water conservation. The collective responses underscored their proactive stance and desire for sustained efforts in water management and sustainability.

Gram Panchayat members and Block level officials expressed a strong willingness to support future water-related initiatives in their villages. They are interested in actively participating in the planning, implementation, and monitoring of such projects. The key priorities for future water management efforts include the construction of ponds, wells, khadins, check dams, and farm ponds, with a focus on rainwater collection through water recharge systems. They emphasized the importance of addressing the water crisis, ensuring every household has access to water, and enhancing water conservation efforts. They expect Ambuja to continue contributing to these initiatives, adding infrastructure such as ponds, tube wells, and implementing drip and sprinkle systems. They also expressed the need for more plantations to support environmental sustainability. Overall, they are committed to active participation and looks forward to ongoing support for the welfare of the villages.

5.4. Success Stories

Banjara Village Community, Mundwa

The Banjara Community in Mundwa, faced challenges with seasonal migration in search of water and jobs affecting group participation. The community, including EWS, Dalit, and Chaukidar members, comprising families of landless farmers with a daily wage ranging from ₹250-300, received homes through the IAY on Nagarpalika Land. ACF's pivotal role included implementing RRWHS and rejuvenating village-level ponds, contributing to water resource management. ACF facilitated the formation of Self-Help Groups for women through the Social Saheli initiative. WRM interventions by ACF ensured improved living conditions and sustainable water management, empowering the Banjara Community in Mundwa.

Banjara Village Community, Mundwa

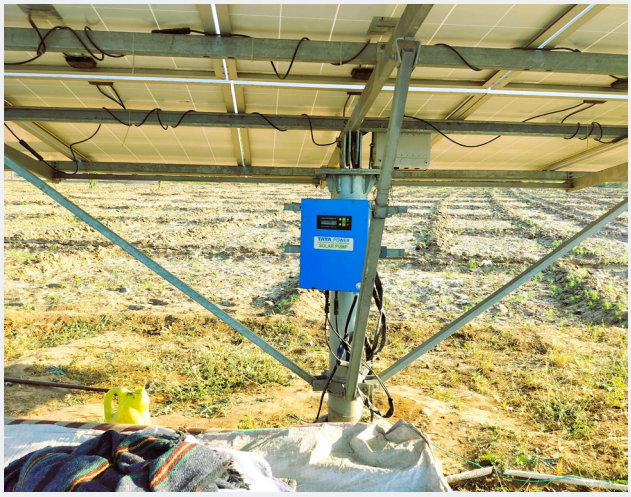


Figure 71: *Visit to Bhati Krushi Farm in Balada Village*

In 2022, the ACF's funding for the implementation of farm ponds and solar panels in Balada Village, Rabriyawas, resulted in a substantial improvement in the annual income of Bhati Krushi Farm. Before the project, the farm's income ranged from 40,000 to 50,000 annually. However, with the introduction of farm ponds and solar panels, the profit skyrocketed to an impressive 2 lakhs per year. The farmer cultivated a diverse range of crops, including jeera, raira, moong, moth, sarso, bajra, amla, boonda, and karvandi. The strategic use of the Kisan Card facilitated the funding for the farm pond, showcasing the project's financial support. The implementation of a sprinkler system, costing ₹46,200, optimized irrigation practices. Additionally, the integration of 20 solar panels within an on-grid system revolutionized energy usage. These solar panels, directly linked to the sprinkler irrigation system, utilized stored water from the farm ponds, showcasing a sustainable synergy between renewable energy and water management. The success of Bhati Krushi Farm stands as a tangible testament to the positive impact of Ambuja's CSR initiatives on community livelihoods.

Green Desert FPO: A Beacon of Agricultural Prosperity and Environmental Sustainability (Unintended outcome of the WRM farm level interventions)

The inception of the Green Desert Farmers Producer Organization (FPO) in Marwar Mundwa, under the visionary leadership of Chairman Parsharam Chaudhary, stands as a sterling success story catalyzed by ACF's interventions. Since its establishment in April 2021, this FPO, comprising ten dedicated members has emerged as a pivotal force in enhancing both farmer income and environmental sustainability. Collaborating with ACF through various schemes, the FPO actively engages in the collection and sale of biomass to the Ambuja Cement Plant, serving as a renewable and eco-friendly fuel source. This strategic initiative not only benefits the farmers economically, with a substantial profit of ₹13,00,000 accrued since inception but also contributes to reducing carbon emissions by utilizing biomass efficiently. The FPO's success is underscored by its robust financial model, with 160 shareholder farmers contributing ₹1,000 each per month, totaling ₹1,60,000, fostering financial stability and inclusivity. Monthly meetings, meticulous record-keeping, and the responsible utilization of resources, including machineries shared with stakeholders, underscore the FPO's commitment to sustainable practices. The Green Desert FPO exemplifies ACF's transformative impact, seamlessly blending agricultural prosperity with environmental stewardship.

Dharmendra Mandel – Empowering Agriculture through Farm Pond Interventions

Figure 72: *Visit to the farm in Marwar Mundwa*

Dharmendra Mandel's success story within the Ambuja CSR initiative unfolds as a paradigm of agricultural prosperity. The ACF funding for the implementation of a meticulously designed farm pond, spanning 125 ft. by 104 ft. with a total investment of ₹2,64,000, resulted in a substantial increase in annual income from ₹22,00,000 to ₹27,00,000, showcasing an impressive 50% profit margin. Dharmendra provides water from the farm pond to neighboring farmers for irrigation, supporting up to 110 acres with some charges per acre. Through organic farming practices, including crops like Methi, cotton, saunf, and groundnut, he is also able to practice sustainable agriculture. The farm pond, equipped with an energy-efficient sprinkler system and three bore wells, reflects the project's commitment to technological advancement and environmental stewardship. ACF's interventions shows comprehensive impact on Dharmendra's annual income and agricultural productivity, intertwining economic gains, community support, and ecological sustainability.

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06

CONCLUSION AND RECOMMENDATIONS

Ambuja Cement FOUNDATION

जल को हमें बचाना है।
सुरक्षित जीवन पाना है॥

सौजन्य-अंबुजा सीमेंट फाउंडेशन, मा. मूण्डवा

अपनी सरकार स्वयं चुनूँगा
मैं मतदान जरूर करूँगा

सौजन्य अंबुजा सीमेंट

6.1. Conclusions

The conclusions of the impact assessment study are as follows:

6.1.1. Assessing the Effectiveness and Efficiency of Ambuja's Drinking Water Initiatives in Enhancing Water Security

The impact assessment study of Ambuja CSR Initiatives for Increasing Water Availability in Marwar Mundwa and Rabriyawas regions reveals a nuanced understanding of the project's effectiveness and efficiency. Disparities in community engagement between the two regions, with higher participation in Marwar Mundwa, underscore the need for enhanced outreach and communication strategies in Rabriyawas. Varied levels of formal training received further highlight the importance of refining implementation strategies to ensure uniform coverage and understanding of water conservation practices. Despite these challenges, **the project aligns well with local development goals, garnering positive sentiments from Gram Panchayat members and Block level officials.**

The study showed the positive impacts of Ambuja's interventions, ranging from improved domestic water availability and accessibility to transformative effects on livelihoods, agriculture, health, and the environment. Success stories from Bhati Krushi Farm and Green Desert FPO showcase the tangible benefits, including increased income, sustainable agriculture practices, and environmental stewardship. High levels of willingness to participate in future programs among the communities indicate the perceived value and positive reception of Ambuja's initiatives. While the study acknowledges challenges and areas for improvement, the **overall assessment reflects the comprehensive positive impact on the well-being and sustainability of the communities in Marwar Mundwa and Rabriyawas.**

6.1.2. Outcomes of WRM Interventions in terms of Augmenting Surface Water Harvesting and Ground Water Recharge

The impact assessment study reveals significant positive outcomes of WRM interventions in terms of augmenting surface water harvesting and groundwater recharge in the Marwar Mundwa and Rabriyawas regions. The study focused on RRWHS and other water initiatives, providing comprehensive insights into the effectiveness of these interventions.

The report highlights the success of RRWHS in addressing acute water shortages, with only one-sixth of respondents facing such shortages, mainly during specific months. This indicates the effectiveness of surface water harvesting mechanisms, such as RRWHS, in capturing and storing rainwater to mitigate scarcity issues during critical periods. The positive community impact, including financial benefits, improved educational opportunities, enhanced social life, and collaboration, further underscores the success of surface water harvesting initiatives. The study evaluates the impact on groundwater recharge, data indicated positive changes in water levels in wells. The document notes that concerns about downstream water table impact were raised, indicating a focus on the intricate balance of groundwater resources. Additionally, the **positive linkage between environmental improvements and increased household income suggests that the interventions have positively influenced the overall water ecosystem, contributing to sustainable groundwater recharge.**

Specific success stories, such as the rejuvenation of village-level ponds and the establishment of RRWHS, showcase tangible benefits in terms of augmented surface water availability. The case of Bhati Krushi Farm in Rabriyawas, where ACF's funding for farm ponds and solar panels resulted in increased income, exemplifies the success of interventions in creating a synergy between renewable energy and water management. These success stories serve as practical examples of how WRM interventions contribute to enhancing surface water availability and, consequently, the overall well-being of the communities. The implementation of RRWHS and other sustainable water initiatives has effectively addressed acute water shortages, improved groundwater levels, and contributed to the overall enhancement of water availability in the Marwar Mundwa and Rabriyawas regions.

6.1.3. Impact on Accessibility of the Domestic Water Supply

Following the implementation of RRWHS and other water-saving technologies, there is a **notable reduction in both the frequency and time required for water fetching activities**. This success underscores the effectiveness of the interventions, particularly in mitigating acute water shortages, as only a minority of respondents faced such challenges post-implementation. The **transformative impact is evident in the enhanced health, safety, and overall well-being of the beneficiaries**, showcasing the holistic benefits of Ambuja CSR's initiatives on the daily lives of community members.

The report delves into water use patterns and livelihoods, revealing a prioritization of drinking and household purposes supported by water initiatives. This prioritization contributes to improved living standards and well-being. Moreover, the dependency on water initiatives for agriculture and livestock, coupled with the adoption of water-saving technologies like rooftop water harvesting, demonstrates positive economic impacts on agriculture and livelihoods. The interventions not only address immediate water needs but also foster sustainable practices that positively impact the socio-economic fabric of the communities involved.

Health, hygiene, and well-being are significantly enhanced through improved water quality resulting from Ambuja CSR's interventions. The reduction in waterborne diseases and the overall improvement in health contribute to a sense of cleanliness and prosperity among the beneficiaries. Importantly, time savings for women in water-fetching activities contribute to their empowerment and safety, emphasizing the broader socio-economic benefits that extend beyond water accessibility.

The report also underscores the success of BCC interventions, emphasizing community engagement through meetings, awareness programs, and slogan campaigns. This engagement fosters a sense of responsibility among the community towards sustainable water management practices. The interventions have not only addressed water challenges but have brought about transformative changes, positively impacting health, livelihoods, and overall well-being in the Rabriyawas and Marwar Mundwa regions.

6.1.4. Socio-economic Outcomes of Ambuja's WRM Interventions and their Influence on Health and Livelihood in the Regions

The study highlights a **substantial percentage of respondents reporting improved income and livelihoods from farming, directly attributing these improvements to Ambuja's interventions.** However, a notable disparity exists, with Marwar Mundwa experiencing a higher percentage of farmers reporting an increase in annual income compared to Rabriyawas, indicating regional variations in economic outcomes. **Agricultural productivity witnesses a considerable boost post-implementation, with increased production in both Rabi and Kharif crops.** The interventions contribute to positive changes in crop production, fostering agricultural productivity. Farmers also report crop diversification, cultivating cash crops like Jeera, Wheat, and Moong, along with horticulture practices such as lemon cultivation. This diversification signifies the positive influence of WRM interventions on agricultural practices, promoting sustainability and variety.

The adoption of modern farming practices, such as micro-irrigation and farm ponds, showcases a positive influence on water use efficiency in agriculture. Despite challenges in maintaining these systems, the overall impact is a 50% reduction in water usage through drip or sprinkler irrigation. The adoption of farm ponds contributes to improved water storage for agricultural purposes, highlighting the successful integration of sustainable water management practices in farming. Improved water quality resulting from Ambuja's interventions directly influences health outcomes in the communities. There is a notable decrease in waterborne diseases, leading to reduced health expenses. This reduction allows resources to be redirected towards education and nutrition, emphasizing the broader socio-economic impact on community prosperity. The interventions also bring about positive socio-economic changes in terms of time savings for women, contributing to their overall well-being, empowerment, and safety. Women engage in diverse activities beyond farming, showcasing the broader socio-economic significance of WRM interventions for sustainable agriculture and community well-being.

At the community level, the impact is evident in enhanced safety perceptions, productivity, and collaboration. The interventions contribute to climate resilience, addressing environmental challenges related to water scarcity and climate variability in both regions. However, challenges related to downstream water table impact, poor water percolation, ecological impact, and control of invasive species are acknowledged. Community concerns about sustainability emphasize the importance of continuous support, proactive measures for water availability, and water conservation. The multifaceted positive outcomes underscore the success of Ambuja's WRM initiatives in creating sustainable and transformative changes in Marwar Mundwa and Rabriyawas. Ongoing efforts to address challenges and community concerns are crucial for the continued success and sustainability of these impactful initiatives.

6.1.5. Unintended Outcomes of the Initiative for the Families and Local Communities

WRM initiatives have yielded diverse and unintended positive outcomes for families and local communities. The collaboration with ACF has led to the establishment of FPOs, engaging in the collection of biomass as a renewable fuel source for the Ambuja Cement Plant. This unintended economic opportunity not only **benefits farmers but also contributes to environmental sustainability, showcasing the multifaceted impact of water resource management on local economies.**

Empowerment of women emerges as a significant unintended outcome, with the implementation of RRWHS reducing the time spent by women and girls fetching water. This positive shift allows women to actively participate in self-help groups, contributing to their empowerment and enabling engagement in additional productive activities. The adaptability and resilience of local communities are evident in their involvement in problem-solving, addressing challenges such as check dam breakdowns and seasonal water storage issues. This underscores the initiative's **positive impact on community development and its ability to empower locals to address and overcome challenges related to water resource management.**

Ecological benefits also surface as unintended positive outcomes, with recommendations for strategic plantations of native species and the management of invasive species like Bilyati Babool. These approaches not only mitigate ecological consequences but also offer economic opportunities to the community. Additionally, the initiative emphasizes the importance of collaboration with medical officers to address potential health risks associated with increased water bodies. Overall, Ambuja's WRM initiatives exhibit a holistic impact, transcending their primary objectives to bring about economic, social, and environmental benefits to families and local communities.

6.2. Recommendations

The report highlights the success of Ambuja CSR's interventions in improving water availability in several Rajasthani villages. To further amplify this impact and encourage wider adoption, the following recommendations are proposed:

6.2.1. Knowledge Sharing and Capacity Building

Farmer-to-Farmer Learning and demonstration sessions (including training materials, videos, and photo-voiceovers) can be organized in intervention areas for farmers and communities yet to participate. This allows direct observation of benefits and fosters peer-to-peer learning. **Ongoing technical assistance and handholding can be provided to the farmers** who have adopted interventions, ensuring their continued success and addressing specific challenges. **Regular capacity-building and training sessions** can be conducted on water conservation and management techniques, ideally on an annual, half-yearly, or quarterly basis and **engaging training modules** should be developed (e.g., videos, photos) to enhance knowledge retention and adoption.

Farmer Network Expansion by conducting awareness demonstrations and quarterly trainings for farmers residing near those who have already adopted interventions. This creates a network of informed farmers, encouraging wider water conservation practices. Benefits of awareness campaigns and capacity building include sharing knowledge, providing ongoing support, engaging schools, and building farmer networks can significantly expand the reach and sustainability of Ambuja's water conservation initiatives.

6.2.2. Community-Level Awareness Campaigns

ACF may consider involving the **local school children in the intervention areas on water management, use, hygiene etc. and raising their awareness. Arrangements can be done for screening water intervention documentaries, best management practices etc., sit and draw competitions, slogan writing competitions etc. School-Based Education** should be organized monthly water-related behavior change communication (BCC) campaigns in schools, utilizing videos and photo-voiceovers of 15-20 minutes to educate students about water conservation and its importance. Student Engagement can be done through student rallies once or twice a year to raise awareness about water management practices in nearby villages. This fosters youth involvement and community-wide engagement.

6.2.3. Mulching and Farm Bedding

In water-scarce regions like Rajasthan, ACF can champion mulching as a holistic approach to water conservation and agricultural improvement. Mulch acts as a protective layer, minimizing soil evaporation and maximizing moisture retention. Studies suggest potential yield increases of up to 30% for certain crops. Beyond water conservation, mulching offers a multitude of benefits. It suppresses weeds, reducing reliance on herbicides. Improved soil moisture leads to enhanced fertilizer efficiency. Mulching can even enable a second crop after the initial harvest. Additionally, raised farm beds can be created to optimize water infiltration and drainage, while preventing soil compaction. These advantages collectively promote sustainable practices, maximize land use, and mitigate water scarcity challenges.

Figure 73: *Farm Mulching and Raised farm bedding* [38] [39]

The implementation strategies outlined for mulching emphasize the use of biodegradable materials such as organic substances or environmentally friendly plastic sheets. Encouraging the adoption of less water-intensive crops like millets alongside mulching practices adds another layer of diversification to the agricultural landscape. Furthermore, capacity-building initiatives, such as training programs and workshops, play a pivotal role in educating farmers on the benefits and proper techniques of mulching, utilizing both biodegradable materials and locally available resources. Ambuja CSR can play a pivotal role in fostering improved water management, increased crop yields, and sustainable agricultural practices, thereby addressing water scarcity issues and empowering local farmers for enhanced income and food security by incorporating these strategies.

ACF's current efforts include training and capacity building and raising awareness about farm mulching among the farmers. To further empower the community and incentivize widespread adoption, ACF can consider allocating dedicated funds towards this initiative, similar to the existing budgetary approach for farm bunding. This capped fund could be used to support activities like organizing workshops, training programs, and demonstrations on mulching techniques. A particular focus should be placed on promoting the use of readily available organic and agri-waste residue like straw, leaves, and composted grass clippings. ACF can significantly benefit local farmers by providing financial support to adopt these cost-effective and environmentally friendly mulching methods. This will lead to increased crop yields, improved income, and enhanced food security in the long run.

[38] *https://agriculturegurujl.com/mulching/*

[39] *https://tractorexport.com/raised-bed-farming/*

6.2.4. Plantation of Native Species

Strategic plantation of native species of plants like Bilayti Babul and other indigenous plants, along lakes and dykes through CSR initiatives. The rationale behind this proposal is rooted in the adaptability of native species to the local climatic conditions, fostering a more sustainable ecosystem. By choosing simple-leaved native species over alien horticultural plants, the initiative can aim to enhance environmental resilience and reduce the reliance on coal, consequently minimizing the carbon footprint. The selected species, including fruit-bearing and religious trees like neem, not only contribute to ecological balance but also hold economic and medicinal significance. This approach can align with a holistic conservation strategy, promoting biodiversity, environmental health, and community well-being.

6.2.5. Maintenance of Community Based Interventions

Ensuring the long-term functionality of community-based interventions, such as check dams and village ponds, necessitates a multifaceted approach. Firstly, the establishment of dedicated funds is crucial, involving sustained financial commitments for maintenance and repair. This could be facilitated through community contributions, collaboration with local government or NGOs, or the creation of specific CSR budgets. Additionally, fostering a sense of community ownership is vital; encouraging active participation in maintenance activities and establishing local committees for oversight and decision-making instills responsibility. Moreover, investing in skill development through training initiatives empowers community members with the capabilities for basic maintenance tasks, reducing dependence on external expertise and promoting self-sufficiency in the upkeep of these critical water management interventions.

Stakeholders can be involved through participatory approach in planning and implementation and maintenance, ensuring transparency through data sharing, and advocating for a long-term vision that considers climate change and population growth. This collaborative and forward-looking approach aims to enhance the effectiveness and sustainability of water resource management initiatives.

6.2.6. Downstream Water Table Impact

To assess the impact of upstream interventions on downstream water tables, a comprehensive approach is recommended. This involves conducting thorough hydrological studies that consider seasonal variations, local geology, and water extraction patterns influenced by interventions like check dams. Establishing a systematic well water level monitoring system before and after interventions is crucial, especially in areas observed during site visits with almost dried up wells and large village ponds. The collected data can provide insights into potential impacts, guiding adaptive management strategies. In response to study results, adaptive measures may be implemented, including adjustments to dam structures or prioritizing rainwater harvesting in downstream areas to address any observed impacts on the water table.

6.2.7. Water Percolation and Aquifer Recharge in Rocky Areas

The existing rock structure poses a challenge to effective water percolation. To address concerns related to water percolation and aquifer recharge in areas with rock structures, it is recommended to undertake comprehensive scientific studies. A scientific study is required in the future to quantify the current rate of percolation and explore strategies to enhance it, considering the geological constraints of the region. Conduct geological surveys and utilize hydrological modeling to assess how the local rock structure influences these processes. Evaluate current percolation rates in various areas to gauge the effectiveness of existing interventions and identify any limitations. The findings can inform the exploration of enhancement strategies, such as recharge pits, biochar amendment, or changes in land management practices, aiming to optimize water infiltration and aquifer recharge for sustainable water resource management.

6.2.8. Extending Impact Beyond Boundaries

Extending the impact of water management initiatives beyond Ambuja's current boundaries involves replicating successful models, establishing knowledge-sharing platforms, and collaborating with local experts. By sharing best practices, providing training, and partnering with organizations familiar with specific regions, Ambuja aims to address water challenges in neighboring communities. However, challenges such as resource allocation, community engagement, and robust impact assessment must be carefully navigated to ensure the sustainability and success of these expanded interventions.

6.2.9. Increasing Interventions in Neighboring Villages

Responding to requests from neighboring villages, ACF can explore the potential for wider water management interventions. Acknowledging spillover effects and shared water sources, this approach aims to address holistic water challenges in the broader region. The key considerations involve a phased expansion, prioritizing villages with critical water scarcity, conducting thorough impact assessments, and adapting proven intervention models to suit the unique needs of each community. By gradually scaling up impact, involving communities in planning, and ensuring adaptability, Ambuja aims to enhance overall water availability and community well-being in neighboring areas.

6.3. Way Forward (Short term, Mid-term, Long Term)

Ambuja CSR's impactful interventions in Rajasthan have significantly improved water availability in several villages, marking a successful endeavor. The recommendations for the way forward aim to build upon this success and foster broader adoption of sustainable water management practices. In the short term (0-2 years), emphasis is placed on knowledge sharing and capacity building through Farmer-to-Farmer Learning sessions, technical assistance, and awareness campaigns. Engaging local school children and expanding Farmer Networks will contribute to wider adoption of water conservation practices.

Moving into the mid-term (2-5 years), attention shifts to more comprehensive strategies. Initiatives like mulching and farm bedding, along with the maintenance of public interventions, become focal points. Mulching, with an emphasis on biodegradable materials and organic and agri-waste residue, is suggested to protect against soil evaporation and enhance agricultural productivity. Long-term functionality of public interventions requires dedicated funds, community ownership, and skill development, ensuring self-sufficiency and sustained impact.

The long-term vision (5+ years) involves addressing complex issues such as downstream water table impact, water percolation, and aquifer recharge. Scientific studies and continuous evaluation will guide the effectiveness of interventions. Extending impact beyond current boundaries and increasing interventions in neighboring villages require collaboration, knowledge-sharing, and thorough impact assessments. The phased expansion and prioritization of critical areas align with Ambuja's commitment to enhancing overall water availability and community well-being in the broader region. These recommendations collectively form a holistic approach to advancing Ambuja CSR's mission for sustainable water resource management in Rajasthan.

ANNEXURES


Ambuja Cement FOUNDATION
अंबुजा सीमेन्ट फाउण्डेशन
राबड़ियावास-जैतारण, पाली-306709 (राजस्थान)
Ambuja Cement FOUNDATION
अंबुजा सीमेंट फाउण्डेशन
NO MASK NO ENTRY
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ANNEXURES

Research Tools

Beneficiary Survey

Objective: To assess Ambuja's WRM initiatives, focusing on enhancing drinking water security, quantifying outcomes in surface water and groundwater recharge, evaluating socio-economic impacts on the beneficiaries, uncovering unintended consequences, documenting successful practices, and providing recommendations for future improvement and community development strategies.

Background Demographic Information

SN.	Questions	Response	
1.	Investigator/ Surveyor Name		
2.	Name of the Region		
3.	Village Name		
4.	Name of household head		
5.	Number of family members		
		• No. of males: _____	• No. of females: _____
6.	Gender of Respondents	• Male • Other	• Female
7.	Economic and Social Class based on government ration card	• Below Poverty Line • Womenw Headed Household	• Above Poverty Line
8.	Age of the Respondent	• 18 – 30 years • 30 – 45 years	• 45 – 60 years • Above 60 years
9.	Highest level of education of the respondent	• No education • Below 10th Std. • 10th Std. Pass • 12th Std Pass	• Vocational / ITI Training • Graduate • Postgraduate • Other _____
10.	Overall Agricultural Landholding and holding size (if applicable)	_____	• No landholding
11.	Main source of livelihood of the respondent's household	• Agriculture • Livestock rearing • Food Packaging and Manufacturing	• Labour work • Business • Tertiary Services • Other, _____
12.	Secondary sources of livelihood, if any		
13.	Average Annual income of household (₹)		

Water Availability and Accessibility (In the presence of women members of the family)

SN.	Questions	Response	
1.	Before the project, how did you access drinking water? (Multiple options can be chosen)	• Borewells • Wells • Tap water by PHED pipeline	• Lakes/ ponds • Tankers • Other, specify _____

2.	Was the water available round the year at the mentioned source?	Yes	No
3.	Were there any seasons when you faced acute water shortage?	Yes	No
	If so, when did you experienced the shortage? (mention the months)		
4.	What is your current source of drinking water which has been facilitated through Ambuja CSR initiatives?	• HH RRWHS • Community RRWHS • Drinking water pond • Village level desilting ponds • Ground water Reservoirs	• Check dams • Dug wells • DWDS (Drinking Water Distribution System) • PHED Water Supply • Other, _____
	Frequency of fetching water (Provide season wise details)		
5.	Frequency of fetching water in Summer season before the interventions?	• Once a day • Twice per day • More than twice per day • Once in 2 days	• Once a week • 2-3 times a week • Once in 2 weeks • Other, _____
6.	Frequency of fetching water in Summer season after the interventions?	• Once a day • Twice per day • More than twice per day • Once in 2 days	• Once a week • 2-3 times a week • Once in 2 weeks • Other, _____
7.	Frequency of fetching water in Winter season before the interventions?	• Once a day • Twice per day • More than twice per day • Once in 2 days	• Once a week • 2-3 times a week • Once in 2 weeks • Other, _____
8.	Frequency of fetching water in Winter season after the interventions?	• Once a day • Twice per day • More than twice per day • Once in 2 days	• Once a week • 2-3 times a week • Once in 2 weeks • Other, _____
9.	Frequency of fetching water in Rainy season before the interventions?	• Once a day • Twice per day • More than twice per day • Once in 2 days	• Once a week • 2-3 times a week • Once in 2 weeks • Other, _____
10.	Frequency of fetching water in Rainy season after the interventions?	• Once a day • Twice per day • More than twice per day • Once in 2 days	• Once a week • 2-3 times a week • Once in 2 weeks • Other, _____
	How many times is the water fetched in a day?		
11.	Number of time water was fetched in a day in Summer season before the interventions		
12.	Number of time water is fetched in a day in Summer season after the interventions		
13.	Number of time water was fetched in a day in Winter season before the interventions		
14.	Number of time water is fetched in a day in Winter season after the interventions		

15.	Number of time water was fetched in a day in Rainy season before the interventions		
16.	Number of time water is fetched in a day in Rainy season after the interventions		
	How long does it take, on average, to fetch water each time? (in minutes) (Provide season wise details)		
17.	Average time taken to fetch water each time in Summer season before the interventions (in minutes)		
18.	Average time taken to fetch water each time in Summer season after the interventions (in minutes)		
19.	Average time taken to fetch water each time in Winter season before the interventions (in minutes)		
20.	Average time taken to fetch water each time in Winter season after the interventions (in minutes)		
21.	Average time taken to fetch water each time in Rainy season before the interventions (in minutes)		
22.	Average time taken to fetch water each time in Rainy season after the interventions (in minutes)		
23.	Have you noticed any variations in the time taken to fetch water during different months?	Yes	No
24.	What variations have you noticed in the time taken to fetch water during Summer season after the interventions? (also mention the month).		
25.	What variations have you noticed in the time taken to fetch water during Winter season after the interventions? (also mention the month).		
26.	What variations have you noticed in the time taken to fetch water during Rainy season after the interventions? (also mention the month).		
27.	How have the Ambuja CSR water initiatives impacted your life? (multiple options can be chosen)	• Improved Health • Time savings • Increased Productivity • Improved safety • Improved social life and community collaboration • Educational Opportunities (for children)	• Climate Resilience to risks like droughts, floods in terms of water availability and accessibility • Reduced Financial Burden to obtain drinking water • None
28.	Have you experienced any acute water shortages since the project began?	Yes	No
	If so, when did you experienced the shortage? (mention the months)		
29.	How has the project impacted the amount of time women and girls spend fetching water?		
30.	Have you noticed any changes in how long the water lasts in your source since the project started?	Yes	No

31.	How has the project impacted the availability of water for livestock?		
32.	Are you satisfied with the quality of drinking water facilitated through water initiatives of the project?	• Very satisfied • Satisfied • Neutral	• Dissatisfied • Very dissatisfied
33.	Explain, why?		
34.	Do you have any concerns about the quality of drinking water in some seasons?	Yes	No
	If yes, specify the months.		
	If yes, please explain your concerns.		
35.	Is the water wasted due to some reasons?	Yes	No
36.	How much water is wasted daily? (On an average in litres)		
37.	Do you use energy pumps to draw the water?	Yes	No
38.	If yes, what is the power of pump in HP (horse power)		
39.	If pumps used, what is the average annual bill to use the pump?	**Before the intervention:**	**After the intervention:**
	Summer Season		
	Winter Season		
	Rainy Season		

Water Use and Impact on Livelihoods

SN.	Questions	Response	
1.	What all activities have been supported for sufficient water access through the water initiatives of the project?	• Agriculture • Livestock • Drinking	• Household purpose • All of the above • None
2.	Have you adopted any new water-saving technologies as a result of the project?	• Rooftop Harvesting • Well • Farm Pond • Sprinkler/Drip • Check Dam	• Farm Tank • DWDS (Drinking Water Distribution System) • Any other • None
3.	If yes, please explain their benefits.		
4.	Have there been any changes in your income or livelihood as a result of the project?	Yes	No
	If yes, please describe the below aspects before the intervention and the changes that you have observed in your income or livelihood since the project started?		**After the intervention:**
	a) increase in direct income from farm by annually,		
	b) increase in indirect income from other sources where women folk can focus due to time saved,		
	c) decrease in health expenses due to better and treated source of drinking water		
	d) additional livelihood source added		
	e) any other (please specify)		
5.	What are the main challenges in accessing and using water for agricultural purposes?		

6.	What are the animals that you rear?	• Cattle • Goat • Sheep • Honey Bees	• Poultry • Fishes • Others, specify
		Before the intervention:	**After the intervention:**
7.	What are number of livestock that you own?	**Before the intervention:**	**After the intervention:**
8.	Purpose of dependency on livestock	• For own consumption	• For sale • Both
9.	If for sale, what is the annual income generated from it?		
10.	What is the nearest source of water used for livestock?	• Lakes/ ponds • Borewells • Wells	• Handpumps • Other, specify
11.	Have you adopted any horticultural practices?	Yes	No
	If yes, name the fruits or produce?	• Flowers • Guava • Lemon	• Amla • Other
12.	What are the crops that you produce?	**Before the intervention:**	**After the intervention:**
		Rabi	Kharif
13.	Specify, rabi crops	**Before the intervention:**	**After the intervention:**
14.	Specify, kharif crops	**Before the intervention:**	**After the intervention:**
15.	Do you practice mix farming?	**Before the intervention:**	**After the intervention:**
		Yes	No
16.	Do you practice organic farming?	**Before the intervention:**	**After the intervention:**
		Yes	No
17.	Where is the nearest mandi for selling your products?		
18.	Distance of the mandi (in kms)		

Health and Hygiene

SN.	Questions	Response	
1.	Has the project improved your access to sanitation facilities?	Yes	No
2.	If yes, how has this impacted your health and hygiene?		
3.	Have you noticed any changes in the prevalence of waterborne or other diseases like cholera, dengue, malaria, typhoid, silicosis, worm infections or other in your household?	Yes	No
4.	If yes, what changes have you observed?		
5.	Have there been any changes in the prevalence of waterborne diseases in your community since the project began?	Yes	No
6.	What all behavioral change communication (BCC) interventions were taken by ACF in your region (eg. awareness building around issues of water quality and remedial measures)?		
7.	Were the messages on cleaning/ safe drinking water a key component of the BCC interventions?		

8.	Has the project improved the hygiene practices of your family and community?	Yes	No
9.	If yes, how?		
10.	Do you have access to soap and other hygiene essentials?	Yes	No
11.	What are the main challenges you face in maintaining good hygiene in your community?		
12.	If yes, please describe the challenges		

Project Participation and Community Engagement

SN.	Questions	Response	
1.	Were you involved in the planning or implementation of the water project?	Yes	No
2.	If yes, please describe your involvement.		
3.	Do you feel informed about the project and its goals?	Yes	No
4.	Have you received any training on water conservation or water management practices?	Yes	No
5.	Do you feel that your voice is heard in the decision-making processes related to water management in your community?	Yes	No
6.	How can the project be improved to better engage with the community?		
7.	What do you think how can the project ensure the long-term sustainability of its interventions?		
8.	Do you have any suggestions for improving the project?		
9.	Do you feel that the project has benefited your community?	Yes	No
10.	If yes, please explain how.		

Sustainability and Future Expectations

SN.	Questions	Response	
1.	Do you believe that the water project is sustainable in the long term?	Yes	No
2.	What are your concerns about the sustainability of the project?		
3.	What are your concerns about the future water availability in your community?		
4.	Do you know any traditional water techniques previously prevalent in your region other than the ones implemented by ACF?	Yes	No
5.	If yes, please mention and explain.		
6.	What role do you see yourself playing in ensuring water project sustainability?		
7.	What are your hopes for the future of water management in your community?		

Willingness to Participate in Further Programs

SN.	Questions	Response	
1.	Would you be willing to participate in future water-related programs or initiatives offered by ACF or other organizations?	Yes	No
2.	If yes, what type of programs or initiatives would be most beneficial to you?		
3.	What are your expectations for future programs related to water management and sustainability?		

Farmers (In Depth Interviews or Focused Group Discussion)

Objective: To understand the project's impact on the socio-economic conditions of targeted groups, identify challenges and opportunities related to water use and management and gather feedback and suggestions for improving future water-related initiatives.

Background of the Respondents

SN.	Questions		Response		
1.	Name of the Investigator/Surveyor				
2.	Name of the Region				
3.	Village Name				
4.	Category of Respondents		Women Headed Households		Farmers
5.	**Name**	**Landholding (Yes/No)**	**If yes, Landholding Size**	**Main Source of Livelihood**	**Income Range**

Impact on Agriculture and Livelihoods

SN.	Questions	Response	
1.	How has the project impacted your household income and food security?	• Improved significantly • Somewhat improved • No significant change	• Slightly decreased • Significantly decreased
2.	Have you noticed any changes in your health or well-being related to improved water access?	• Yes	• No
	If yes, what changes have you observed?		
	For Farmers		
3.	How many of you have adopted the individual drip or sprinkler irrigation systems or have a farm pond?		
4.	What are the benefits of using these systems?	• Increased Water Efficiency • Improved Crop Yield • Reduced Weed Growth • Suitable for Uneven Terrain • Water Storage and Security	• Increased Crop Diversity • Improved Soil Quality • Cost-Effective Maintenance • Others
5.	How have your crop yields and agricultural practices changed since adopting the new irrigation system or using the farm pond?	• Increased Yield • Water Efficiency • Crop Quality • Increase / Decrease of Labor Requirements	• Crop Diversity • Yield Variability • Pest and Disease Control • Overall Farm Income • Others
6.	What specific crops have shown increased yields due to improved water availability?		
7.	Have you been able to diversify your crops or adopt new agricultural practices since the project began?	• Yes	• No
	If yes, please explain.		
8.	Has your household income increased since the project began?	• Yes	• No

9.	If yes, can you mention the percentage of increase in income?	• <10% • 10-25%	• 25-50% • >50%
10.	How much water do you save using drip or sprinkler irrigation systems compared to traditional methods?		
11.	Have you noticed any changes in the soil quality or fertility since using the new irrigation systems?	Yes	No
12.	Any challenges faced by you in using or maintaining the new irrigation systems		
13.	What are your plans for future investments in water-saving technologies?		
14.	Have you experienced any negative impacts on your farm or crops since the water project began?	Yes	No
15.	Have there been any other positive impacts on your livelihood from the project?	Yes	No
	If yes, please describe the impacts.		

Project Implementation and Sustainability

SN.	Questions	Response	
1.	Were you involved in the planning or implementation of the project? Were you consulted about the project initiatives before it began?	Yes	No
	If yes, mention the water-related initiatives you were involved in, during the planning and implementation stage.		
2.	Do you feel that the project has been implemented in a transparent and accountable manner?	Yes	No
3.	Did the project provide any training or support to women on water conservation or management practices?	Yes	No
4.	Do you know any traditional water techniques previously prevalent in your region other than the ones implemented by ACF?	Yes	No
	If yes, please mention and explain.		
5.	What are your concerns about the long-term maintenance of the project infrastructure and benefits?		
6.	What suggestions do you have for ensuring the sustainability of the project's project implementation, community engagement and benefits for future generations?		

Project Implementation and Sustainability

SN.	Questions	Response	
1.	Would you be willing to participate in future water-related programs or initiatives offered by Ambuja or other organizations?	Yes	No
2.	If yes, what type of programs or initiatives would be most beneficial to you?		
3.	What are your expectations for future programs related to water management and sustainability?		

Gram Panchayat Members/ Village level committees (Focused Group Discussions)

Objective: To assess the impact of the Ambuja CSR water availability initiatives on villages within the project area, focusing on the perspectives and experiences of Gram Panchayat members and VLCs

Background Information

SN.	Questions	Response
1.	Name of the Investigator/Surveyor	
2.	Name of the Region	
3.	Village Name	
4.	Names of the Respondents, Role (Designation) if any, age and mobile number	

Water Availability and Accessibility

SN.	Questions	Response
1.	How has the Ambuja CSR project impacted water availability in your village?	
2.	What changes did you notice in the levels of water sources (ponds, wells, etc.) since the project began?	
3.	How has the project improved access to drinking water for residents?	
4.	Before the project, how frequently did villagers experience water shortages?	
5.	How has the project impacted the time required for fetching water?	
6.	Any changes which you observed in water quality since the project began.	
7.	Do you feel that the project has adequately addressed the needs of all villagers, including women, children, and marginalized groups?	
8.	Are there any specific groups or areas within the village that have benefited more than others?	
9.	Have there been any challenges or unintended consequences related to water resource management?	

Environmental Impact

SN.	Questions	Responses
1.	What are your observations on the impact of the project on the environment?	
2.	Any improvements in water quality and soil health?	
3.	Any improvements in the health of ponds, wells, and other water bodies.	
4.	Any changes in the groundwater recharge due to the water conservation interventions.	
5.	Are there any concerns about the sustainability of the project's environmental impact?	
6.	Have you observed any negative environmental impacts associated with the project?	
7.	Is there a presence of any dry grasslands or forest area in the area?	
8.	How are dead animals/ cattle disposed?	
9.	What were the major animals and birds seen in the area?	
10.	Whether there has been any increase in the number of animals and birds after the interventions (check dams)?	
11.	Did you seen any new birds and animals in the area that were not seen earlier (before project was implemented)?	
12.	Is there any increase in the number of alien floral species like Bilayati babool (Prosopsis julifera) or any other after the project has been implemented?	
13.	Whether there has been increase in green cover in the area post the project implementation?	
14.	Do you regularly harvest bilyati babool or only during a particular season?	

SN.	Question	Response
15.	What is the average kg of wood harvested per season?	
16.	How much money is generated by the sale of the wood?	

Socio-economic Impact

SN.	Questions	Response
1.	How has the project impacted the livelihoods of villagers?	
2.	Have you noticed any changes in agricultural production or income levels?	
3.	Has the project contributed to improved overall health and well-being in the community?	
4.	Have you observed any changes in the prevalence of waterborne diseases?	
5.	Has the project empowered women to participate more actively in water management and decision-making processes?	
6.	Are there any vulnerable groups in the community who have not benefited from the project?	

Community Engagement and Participation

SN.	Questions	Response
1.	How has Ambuja involved the Gram Panchayat and villagers in the project?	
2.	Do you feel that the project has been transparent and accountable to the community?	
3.	What are your suggestions for improving community engagement in future water-related initiatives?	

Sustainability and Future Plans

SN.	Questions	Response
1.	What are your concerns about the long-term sustainability of the project's benefits?	
2.	Do you know any traditional water techniques previously prevalent in your region other than the ones implemented by ACF? If yes, please explain.	
3.	What role do you see the Gram Panchayat playing in ensuring the sustainability of the water resources?	
4.	What are your hopes for the future of water management in your village?	
5.	What additional support or resources will be useful for your village?	

Willingness to Participate and Support Such Programs in Future

SN.	Questions	Response
1.	Would you be willing to support future water-related initiatives in your village?	
2.	Would you be interested in participating in planning, implementation, or monitoring of future projects?	
3.	What are the most important priorities for future water management efforts in your village?	
4.	What are your expectations for Ambuja's role in supporting water security in your village?	

Block Level Officials

Objective: To assess the impact of the Ambuja CSR water availability initiatives on a broader level within the block, focusing on the perspectives and experiences of block level officials

Background Information

SN.	Questions	Response
1.	Name of the Investigator/Surveyor	
2.	Name of the Region	
3.	Block Name	
4.	Names of the Respondent along with Role (Designation)	

Project Alignment with Local Development Goals

SN.	Questions	Response	
1.	Are there any micro watershed plans at the block level?	Yes	No
	If yes, please mention.		
2.	How does the Ambuja CSR project align with the water resource management priorities of the Block Development Plan?		
3.	Are there any micro-watershed plans at the block level?	Yes	No
	If yes, what are they?		
4.	Has the project contributed to achieving any specific development goals or targets set by the Block administration?		
5.	Are there any areas where the project's activities could be better aligned with local development plans and strategies?		
6.	Does the project address any specific water resource management priorities identified in the Block Development Plan?	Yes	No
	If yes, please specify the relevant goals and targets.		
7.	How effectively has the project contributed to achieving these goals and targets?		

Infrastructure Development and Service Delivery

SN.	Questions	Response
1.	How has the project impacted the infrastructure related to water resource management in the Block?	
2.	How has the project impacted the reliability and quality of water supply services in the Block?	
3.	Are there any specific communities or areas within the Block that have benefited more than others from the project's infrastructure development?	
4.	How have the Block administration and local communities collaborated to maintain and manage the project infrastructure?	
5.	What specific infrastructure improvements have been implemented through the project?	
6.	Are there any challenges related to the operation and maintenance of the project infrastructure?	
7.	How can these challenges be addressed to ensure the long-term sustainability of the infrastructure?	

Surface Water Harvesting and Groundwater Recharge

SN.	Questions	Response
1.	How effective has the project been in increasing surface water availability through rainwater harvesting and other techniques?	
2.	Has the project contributed to improved groundwater recharge levels in the Block?	
3.	What types of surface water harvesting techniques has the project implemented?	
4.	Have these techniques been effective in increasing water availability?	
5.	What is your assessment of the project's impact on groundwater recharge levels?	
6.	What are the main challenges and opportunities for scaling up these interventions in other areas of the Block?	
7.	What role can the Block administration play in promoting sustainable water management practices among communities?	
8.	Have you observed any increase in agricultural yield and any changes in the agricultural practices?	
9.	Have you observed any change in the natural vegetation and whether there is decrease of native flora in the areas where the projects have been implemented?	

Impact on Health and Livelihoods

SN.	Questions	Response
1.	What are your observations on the impact of the project on the health and well-being of residents in the Block?	
2.	Have you noticed any reductions in waterborne diseases since the project began?	
3.	How has the project impacted access to sanitation facilities in the Block?	
4.	How has the project impacted agricultural productivity and income levels in the Block?	
5.	What are the key factors contributing to the project's impact on agricultural productivity and income levels?	
6.	Are there any specific groups or communities that have benefited more than others from the project's impact on livelihoods?	
7.	Are there any vulnerable groups within the Block who have not benefited from the project's impact on livelihoods?	

Collaboration and Partnership

SN.	Questions	Response
1.	How effectively has Ambuja collaborated with the Block administration in implementing the project?	
2.	Has there been sufficient communication and coordination between Ambuja and relevant government departments?	
3.	Has there been sufficient opportunity for the Block administration to provide input and feedback on the project?	
4.	What are your suggestions for improving collaboration and partnership between stakeholders in future water management initiatives?	

Recommendations and Future Plans

SN.	Questions	Response
1.	What are your recommendations for strengthening the sustainability and long-term impact of the project?	
2.	What additional resources or support do you need to achieve water security objectives in the Block?	
3.	What are your priorities for future water management initiatives in the Block?	
4.	How can we ensure that future projects are implemented in a way that maximizes benefits and minimizes risks to the environment and local communities?	

ACF Project Staff

Objective: To assess the effectiveness and sustainability of the Ambuja CSR water availability initiatives through the lens of the ACF project team, responsible for project implementation.

Project Implementation and Management

SN.	Questions	Response
1.	Describe the key challenges and successes you have encountered during project implementation.	
2.	How effectively have you been able to adapt the project design to address unforeseen challenges or changing circumstances?	
3.	How has Ambuja's internal monitoring and evaluation system helped to track progress and identify areas for improvement?	

Community Engagement and Participation

SN.	Questions	Response
1.	Explain the strategies you have used to engage with communities and to overcome challenges throughout the project lifecycle.	
2.	What are your observations on the level of community ownership and participation in project activities?	
3.	Have there been any instances where community feedback or suggestions have led to changes in project design or implementation?	

Environmental and Social Safeguards

SN.	Questions	Response
1.	Is there a presence of any dry grasslands or forest area in the area?	
2.	Is there a presence / sighting / reporting of any faunal species in and around the project locations that were not found earlier especially where check dams have been implemented?	
3.	How has ACF ensured that the project complies with relevant environmental and social safeguards standards?	
4.	What were the main environmental and social risks identified during project planning?	
5.	How did ACF address these risks and ensure compliance with relevant safeguards standards?	
6.	Have there been any negative environmental or social impacts associated with the project? If so, how have these been addressed?	
7.	What measures are in place to monitor and mitigate potential risks in the long term?	
8.	How much quantity of fire wood is bought from the farmers in a year?	
9.	How much coal is used in a month in average for running the operations?	
10.	What is the average cost of energy saved per year due to partial use of fire wood?	

Capacity Building and Skills Development

SN.	Questions	Response
1.	Describe the capacity building activities offered to project staff and community members.	
2.	How have these activities contributed to improved skills and knowledge related to water conservation and management?	
3.	Are there any additional capacity building needs that have not been addressed?	
4.	What are your recommendations for strengthening the capacity building component of future initiatives?	

Sustainability and Long-term Impact

SN.	Questions	Response
1.	What are your plans for ensuring the sustainability of the project's benefits beyond the immediate implementation period?	
2.	How will ACF or other stakeholders continue to support communities in managing and maintaining the project infrastructure?	
3.	What are the potential risks and challenges to the project's long-term sustainability?	
4.	What are your long-term expectations for the project's impact on water security and livelihoods in the region?	

Notes

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