Impact Assessment Report

Project PRAYAS

Essel Mining & Industries Limited
A part of Aditya Birla Group

ADITYA BIRLA
EMIL

Impact
Practice
by CSRBOX

Certificate

This is to certify that the Impact Assessment report titled: **'Project PRAYAS'** is an original study conducted by CSRBOX and is submitted to Essel Mining & Industries Limited, a part of Aditya Birla Group.

The Impact Assessment Study has been conducted as per the requirements of the Companies Act, 2013 and the Companies (Corporate Social Responsibility Policy) Rules, 2014, as amended, and is compliant with the requirements of the law.

This study presents findings by CSRBOX, derived from reviewing secondary sources and conducting primary-level interactions. CSRBOX developed and implemented the impact assessment framework in alignment with the project's objectives and indicators.

Digital Signature

Bhomik Shah

Founder and CEO, CSRBOX

Disclaimer

- The Impact Assessment Study has been conducted according to the requirements laid out in the Companies Act, 2013 and the Companies (Corporate Social Responsibility Policy) Rules, 2014, as amended, ensuring compliance with the applicable legal requirements.
- This report shall be disclosed to those authorised in its entirety only without removing the disclaimers. CSRBOX has not performed an audit and does not express an opinion or any other form of assurance. Further, comments in our report are not intended, nor should they be interpreted as legal advice or opinion.
- This report contains an analysis by CSRBOX considering the publications available from secondary sources and inputs gathered through interactions with the leadership team of Essel Mining & Industries Ltd., Gram Vikas Team, project beneficiaries, and various knowledge partners. While the information obtained from the public domain has not been verified for authenticity, CSRBOX has taken due care to obtain information from sources generally considered to be reliable.
- In preparing this report, CSRBOX has used and relied on data, material gathered through the internet, research reports, and discussions with personnel within CSRBOX as well as personnel in related industries.

With Specific to Impact Assessment of Project Prayas Programme under Essel Mining & Industries Ltd. (FY2024-25):

- CSRBOX has neither conducted an audit or due diligence nor validated the financial statements and projections provided by Essel Mining & Industries Ltd.
- Wherever information was not available in the public domain, suitable assumptions were made to extrapolate values for the same.
- CSRBOX must emphasise that realising the advantages/enhancements resulting from the recommendations set out within this report (based on secondary sources) is dependent on the ongoing validity of the underlying assumptions. The assumptions will need to be reviewed and revised to reflect such changes in business trends, regulatory requirements, or the direction of the business as further clarity emerges. CSRBOX accepts no responsibility for the realisation of the projected benefits.
- The premise of an impact assessment is 'the objectives' of the project along with output and outcome indicators pre-set by the programme design and implementation team. CSRBOX's impact assessment framework was designed and executed in alignment with those objectives and indicators.

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List of Abbreviation

Sr. No.	Abbreviation	Full Form
1.	BRSR	Business Responsibility and Sustainability Report
2.	ESG	Environment Social Governance
3.	FGD	Focus Group Discussions
4.	FTKs	Field Testing Kits
5	IDI	In-Depth Interview
6	KII	Key Informant Interview
7	SDG	Sustainable Development Goals
8	SEBI	Securities and Exchange Board of India
9	VDC	Village Development Committee
10	WASH	Water, Sanitation and Hygiene

Executive Summary

Background

Essel Mining & Industries Ltd. (EMIL) – A part of the Aditya Birla Group actively engages with local communities to enhance societal well-being. As a responsible corporate organisation, EMIL undertakes a wide range of enriching activities and collaborates with community organisations to build a more equitable society. They provide resources to community stakeholders through awareness campaigns, capacity-building initiatives, tools, and infrastructural support.

Connecting with marginalised communities is central to EMIL's core values. They embrace the principle of trusteeship, prioritising the well-being of underserved populations over business interests. Their CSR activities are dedicated to improving the quality of life in rural communities and aim to positively impact their lives.

Project Details

EMIL in partnership with **Gram Vikas**, implemented **Project PRAYAS** which focused on enhancing rural infrastructure and community health through the provision of clean drinking water, improved sanitation, solar lighting solutions, and strengthened water and waste management systems. Additionally, the project fostered sustainable development through community training initiatives.

Alignment with SDG Goals

The project aligns with the below highlighted SDG Goals -

Alignment with BRSR Principles

PRINCIPLE 2. Businesses should provide goods and services in a manner that is sustainable and safe

PRINCIPLE 4. Businesses should respect the interests of and be responsive to all its stakeholders

PRINCIPLE 5. Businesses should respect and promote human rights

Alignment with National Priorities

| Swachh Bharat Mission | Jal Jeevan Mission | Atal Jyoti Yojna |

Alignment with CSR Policy

Ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining the quality of soil, air and water.

Impact Highlights

During the impact assessment, the study team developed an evaluation matrix based on appropriate parameters. The impact of this project was evaluated based on **OECD DAC Framework** components: Relevance, Coherence, Effectiveness, Efficiency, Impact, and Sustainability.

Relevance	• 74% of the beneficiaries were dependent on public hand pumps/tap water and 67% on Surface Water Bodies • 69% of the households faced high costs related to waterborne diseases • 64% of the beneficiaries discarded dry waste in open areas or landfills • 33% of the beneficiaries felt bad taste as in an issue with water quality
Coherence	• The project is closely aligned with SDG 3, SDG 6 and SDG 7 • The programme is in line with ESG Principles 2,4 and 5 • The project aligns with National Missions – Swachh Bharat Missions, Jal Jeevan Mission and Atal Jyoti Yojna
Effectiveness	• 67% of the beneficiaries believed that toilet construction has reduced open defecation • 54% of respondents reported some reduction in waterborne diseases. • 56% of the beneficiaries have regular and reliable access to clean drinking water
Efficiency	• 89% of the respondents highlighted that the installed solar lights are partially operational • 63% of respondents reported that water testing was conducted
Impact	• 83% of respondents confirmed a reduction in water-fetching distances • A weighted average rate of 3.75 out of 5 on the increase in children's study time was provided by the Beneficiaries
Sustainability	• 90% of respondents stated that there is a continued need for solar-based lights. • 44% of the respondents believed that toilet repairs are needed

Chapter 1

Project Overview and CSR Initiatives of EMIL

Chapter 1: Project Overview and CSR Initiatives of EMIL

1.1 CSR Initiatives of EMIL

EMIL, a distinguished member of the Aditya Birla Group, is a prominent figure in the industrial realm, celebrated for its steadfast dedication to excellence and sustainability. Benefiting from a rich heritage of over five decades marked by innovative ventures and ethical business practices, EMIL boasts a diverse portfolio spanning mining, infrastructure development, and related sectors. With an unwavering commitment to innovation and efficiency, EMIL maintains rigorous environmental standards and prioritises corporate social responsibility.

EMIL is dedicated to enhancing social and economic progress in communities, especially those from vulnerable backgrounds. Driven by a vision to generate lasting value for all stakeholders, EMIL is deeply committed to promoting economic prosperity, societal advancement, and environmental welfare throughout its operations. The company's commitment to corporate social responsibility is evident through initiatives spanning five key thematic areas, strategically implemented across its operational regions. These initiatives encompass infrastructure development, sustainable livelihoods, healthcare and family welfare, education, and skill enhancement, coupled with initiatives aimed at empowering women through various social causes.

EMIL is dedicated to enhancing social and economic progress in communities, especially those from vulnerable backgrounds. The company's commitment to corporate social responsibility is evident through initiatives spanning five key thematic areas, strategically implemented across its operational regions-

Healthcare

To render quality health care facilities to people living in the villages and elsewhere through a range of initiatives, including hospitals, primary health care centres, mother and childcare projects, immunisation programmes

Education

To spark the desire for learning and knowledge at every stage

Sustainable Livelihood

To provide livelihood in a locally appropriate and environmentally sustainable manner

Infrastructure Development

To set up essential services that form the foundation of sustainable development

Social Change

To advocate and support Gender equality, espousing basic moral values, run awareness programmes on anti-social issues.

1.2 Programme Overview

EMIL in partnership with **Gram Vikas**, implemented **Project PRAYAS** which focused on enhancing rural infrastructure and community health through the provision of clean drinking water, improved sanitation, solar lighting solutions, and strengthened water and waste management systems. Additionally, the project fostered sustainable development through community training initiatives.

The project's interventions were focused on six villages in the Chhendipada Block of the Angul district of the State Odisha: Phulijhari, Balinali, Korada, Putagadia, Tangirsahi, and Mukundpur. The project aimed to:

- Ensure year-round access to safe drinking water at the household level.
- Equip households with adequate sanitation infrastructure.
- Installation of Solar Lighting Solutions
- Create open defecation-free villages.
- Build the capacities of village-level institutions for better organisation, management, and preparedness.

Safe Drinking Water Supply	**Sanitation Infrastructure**	**Solar Lighting Solutions**

Repair and Augmentation of Existing Drinking Water Sources	**Capacity Building and Training Workshops**
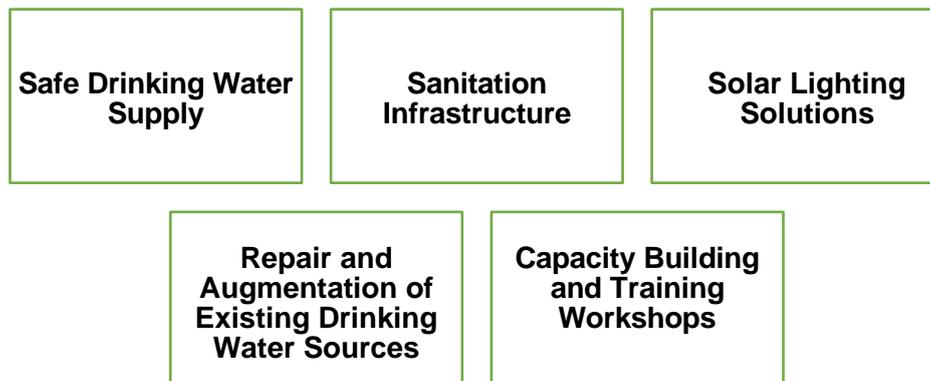
Through these efforts, Project PRAYAS strengthened social systems and community infrastructure by developing WASH (Water, Sanitation, and Hygiene) facilities and promoting healthier living practices.[1].

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[1] Project PRAYAS - Building sustainable and resilient rural communities - Gram Vikas

Chapter 2

Design and Approach for Impact Assessment

Chapter 2: Design and Approach for Impact Assessment

2.1 Objectives of the Study

The EMIL CSR team formed a strategic partnership with **Gram Vikas** to facilitate the implementation of the **Project Prayas** initiative across 6 villages in the Angul District of State Odisha. Recognising the importance of evaluating the impact of their investment, the EMIL-CSR team has commissioned an in-depth impact assessment study.

The objectives of the impact assessment study were as follows:

To assess the project outcomes based on the OECD-DAC framework parameters of relevance, effectiveness, efficiency, coherence, impact, and sustainability

Garner feedback and responses – both qualitative and quantitative – from various stakeholders associated with the projects about the performance and the processes involved

To gather information on experiences and challenges faced by the partner NGO during the implementation of the project

To document impactful human-interest stories among the end beneficiaries of the project

To provide suggestions/recommendations based on the study-related findings

2.2 Evaluation & Framework Indicators

2.2.1 Evaluation Approach

The study's objectives and primary areas of investigation directed the development of the evaluation, with a central focus on learning. In this segment, CSRBOX outlines its strategy for crafting and implementing a rigorous, adaptable, and outcome-driven evaluation framework/design.
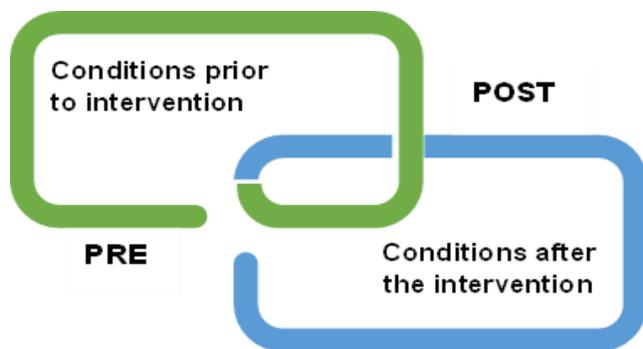
To measure the impact of the project, a **pre-post-project evaluation approach** was adopted for the study. This approach relied on the respondents' recollection ability. With this approach, beneficiaries were queried about their conditions before and after the project intervention. The disparity aided in comprehending the project's contribution to enhancing the intended beneficiary condition.

This approach, at best, could comment on the contribution of the project to improving living standards, though it might not be able to attribute the entire change to the project. Other external factors might also have played a role in bringing positive changes along with the project. Hence, contribution was assessed, but attribution might not have been entirely assigned to the project.

2.2.2 Framework

Given the study's objectives to determine the project's effectiveness, efficiency, impact created and sustainability, the evaluation has used the **OECD-DAC Framework**. Using the criteria of the OECD-DAC framework, the evaluation has assessed EMIL's contribution to the results while keeping in mind the multiplicity of factors that may be affecting the overall outcome. The social impact assessment hinges on the following pillars:

Relevance
Extent to which intervention objectives and design responds to beneficiary needs

Sustainability
Extent to which net benefits of the intervention are likely to continue

Coherence
Compatibility of the intervention with other interventions in a country, sector or institution

Effectiveness
Extent to which intervention objectives and design responds to beneficiary needs

Efficiency
Extent to which the intervention delivers, and how well resources were used

Impact
Extent to which intervention has generated significant positive or negative, intended or unintended, higher-level effects

The impact assessment has aligned itself with the impact parameters as per the criteria mentioned in the Terms of Reference. The following parameters were prioritised to satisfy the criteria of the Impact Assessment – **Relevance, Coherence, Effectiveness, Efficiency, Impact,** and **Sustainability.**

Framework Pillars	Information Indicators
Relevance	• Align with the need for year-round clean drinking water access in the target communities. • Addresses local water supply and the disadvantages of the current sanitation facilities • Address the challenges related to waste management • Address the need for improved electricity supply in the rural areas • Addresses local knowledge gaps in WASH practices
Coherence	• Consistency in the objectives and activities of the project as perceived by various stakeholders (e.g., VDCs, Community Members) • Level of alignment with other initiatives, government programmes, SDGs, and National Priorities
Effectiveness	• Effectiveness of the Project in providing better access to sanitation and clean drinking water facilities along with improved water quality management • Effectiveness of the Project in reducing improper waste disposal facilities • Effectiveness of the Project in ensuring public safety and well-being with reliable electricity • Improved community awareness regarding WASH, and renewable energy resources.
Efficiency	• Effective utilisation of available resources in the current scenario • Assess whether the activities and resources were delivered on time and within the designated schedule
Impact	• Improved health outcomes due to improved WASH infrastructure and water quality • Cleaner communities and reduced pollution due to better waste management • Improved community behaviour due to increased awareness regarding health, hygiene, and nutrition practices • Improved safety and quality of life due to solar-powered electric supply
Sustainability	• Assess the level of ownership and ongoing support from local government institutions in maintaining and sustaining the infrastructural developments • Evaluate the long-term tendency of the trained personnel in monitoring and regulating the WASH, and renewable practices within their community

2.3 Sampling

A two-pronged approach to data collection and review was been chosen for the assessment. The secondary data was obtained through a literature review, while the primary data was collected from qualitative and quantitative data collection methods. This methodology enabled us to gather valuable insights related to the impact from a holistic, 360-degree perspective that includes all pertinent stakeholders necessary for the study.

Primary Study — Quantitative surveys, in-depth interviews, group discussions, field observations

Secondary Study — Review of annual reports, internal data of EMIL and implementation partner
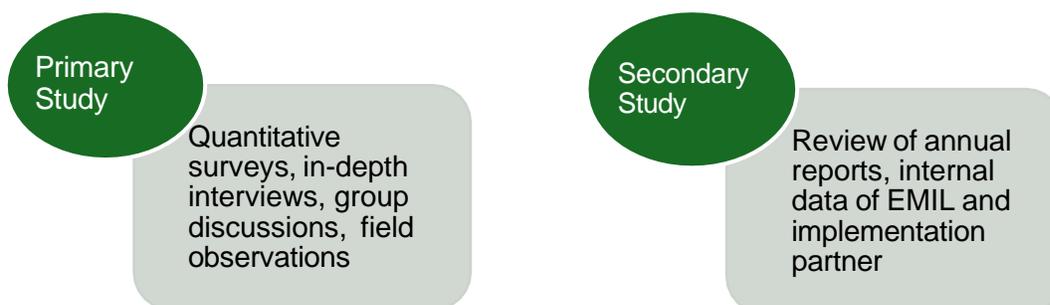
The figure above illustrates the study approach used in data collection and review. The secondary study included a review of annual reports, internal data, monitoring reports, government data & reports, and other studies and research by renowned organisations available in the public domain to draw insights into the situation of the area. The primary study comprised qualitative and quantitative approaches to data collection and analysis. The qualitative aspects included In-depth Interviews (IDIs), group discussions, and observation from the study area.

2.3.1 Quantitative Sampling

The sampling was carried out on the beneficiary level. The sample was calculated in a statistically significant way. Any impact reflected by the sample could be safely assumed to be a reflection of the entire population. The table below shows the sampling strategy where a **Confidence Level of 95% and a 10% Margin of Error** was considered for the project.

Sl. No.	State	District	Village	Stakeholders	Universe	Sample Proposed	Sample Achieved	Mode of Data Collection
1.	Odisha	Angul	Phulijhari	Household	5434	25	34	
			Balinali			26	38	
			Putugadia			20	22	On-Field
			Korada			12	15	
			Tangirsahi			12	19	
Total						**95**	**128**	

2.3.2 Qualitative Sampling

Apart from the quantitative data collection methods, qualitative data was also collected. The list of the qualitative interactions has been mentioned below: -

S No.	Stakeholder	Type of Interaction	Mode of data collection	No. of Interactions
Primary Stakeholders				
1.	Community Members	FGDs	On-Field	3
Secondary Stakeholders				
2.	Village Development Committee (VDC)	FGDs	On-Field	5
3.	Trained Water Cadres	IDIs		3
4.	Women SHGs	FGDs		3
5.	Trainers of Capacity Building Sessions	IDI		1
6.	Panchayat Members	KIIs		3
7.	Gram Vikas Project Management Team	KII		1
Total				**19**

2.4 Challenges Encountered While Conducting the Study

- **Community Availability and Survey Feasibility -** Field visits covered multiple villages based on community availability. However, the unavailability of secondary stakeholders necessitated a shift in focus, making qualitative survey activities unfeasible in specific locations.
- **Capacity-Building Trainer Availability -** Since the project has ended, the availability of the trainer was not possible for physical interaction. However, the team managed to do it virtually.
- **Late-Night Visit to Putugadia -** The visit to Putugadia took place after 8:00 PM due to a delay in the mobilisation of the beneficiaries, by which time most residents had retired for the night. As a result, only seven samples were collected during this visit.

2.5 Ethical Practices for Consideration

- **Ethical Considerations in Data Collection**: As part of the qualitative and quantitative data collection process for the current project, team members adhered to essential ethical protocols by obtaining informed consent from respondents before gathering their responses. Respondents were clearly informed about the purpose of the study, the expected outcomes of data collection, and how their testimonials would be recorded accurately.
- **Sensitivity in Handling Personal Information:** Given that the data collection tools involved gathering personal information that could potentially affect respondents' sentiments if not handled with care, the team took proactive measures to prevent any such issues. A sensitisation session was conducted for all enumerators and team members involved, guiding them on the appropriate procedures for data collection.
- **Assurance of Confidentiality:** Respondents were assured that their personal information would remain confidential and that the data collected would be used strictly for research purposes.

2.6 Theory of Change

Activity	Output	Outcome	Impact
Piped water supply in villages to ensure year-round access to clean drinking water	Installation of piped water supply systems in 2 villages through installed 27000 litres capacity borewell catering to 185 families across villages	Year-round availability of clean drinking water for households	Improved health, reduced water-borne diseases, and enhanced quality of life in the villages
Repair & augmentation of existing drinking water sources	Repaired and upgraded water sources in 6 villages catering to 25 families	Increased reliability and accessibility of drinking water.	Enhanced community resilience to water scarcity and improved public health.
Capacity building and technical support for Water Quality Management	Training sessions were conducted for training 10 water cadres on water quality monitoring and management.	Improved capacity to monitor and maintain water quality.	Sustainable access to safe drinking water and improved public health.
Repair & augmentation of toilets & bathing rooms (TBR)	Renovation and enhancement of existing toilets and bathing rooms catering to 256 families	Improved sanitation facilities for villagers.	Reduced open defecation and improved hygiene practices, leading to better health outcomes.
Capacity building and technical support for Solid-	Training programmes on effective solid and liquid waste management were	Villagers equipped with skills to manage waste sustainably.	Cleaner village environment and reduced health risks

Liquid Waste Management	conducted. Distribution of 30 dustbins across 4 villages		from improper waste disposal.
Provisioning solar street lighting in villages	Installation of 222 solar-powered streetlights in 6 villages.	Villages equipped with reliable, sustainable street lighting.	Enhanced safety and security, and promotion of renewable energy use.
Provisioning solar home lighting facilities	500 Solar home lighting systems provided to households.	Households gain access to clean and sustainable lighting solutions.	Improved living conditions, reduced dependency on kerosene and support for education and work activities.
Capacity building of village institutions (village committees, women SHGs)	Training sessions and workshops for village committees and women SHGs.	Strengthened the capacity of local institutions to manage community systems sustainably.	Empowered communities with improved governance, economic opportunities and long-term sustainability.

Chapter 3

Findings of Impact Assessment Study

Chapter 3: Findings of Impact Assessment Study

The following report section indicates key findings and insights drawn from the impact assessment study based on field interactions and the **OECD DAC** standard parameters outlined in the study framework. Insights were drawn by adopting a 360-degree approach to data collection by gathering data from the quantitative and qualitative methods by engaging with different programme stakeholders.

3.1 Relevance

The following section focuses on the relevance and necessity of the intervention, detailing socio-demographic indicators and other factors that highlight the need for support. The examination of these factors helps in understanding the impact of the project.

74% of the beneficiaries were dependent on public hand pumps/tap water and 67% on Surface Water bodies	64% of the beneficiaries discarded dry waste in open areas or landfills	70% of the households faced high costs related to waterborne diseases	33% of the beneficiaries felt bad taste as in issue with water quality
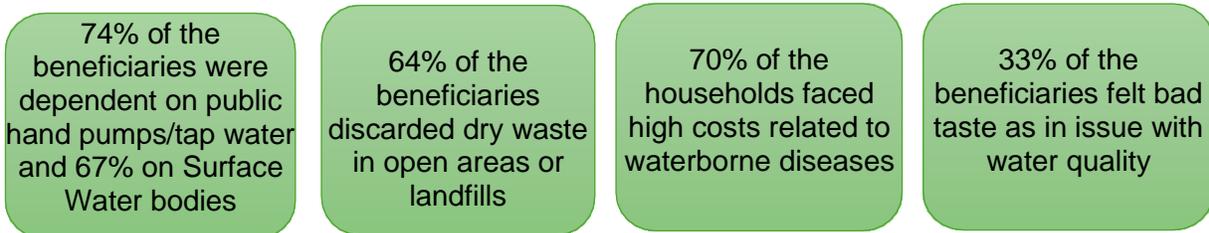
Geographic and Age Profile
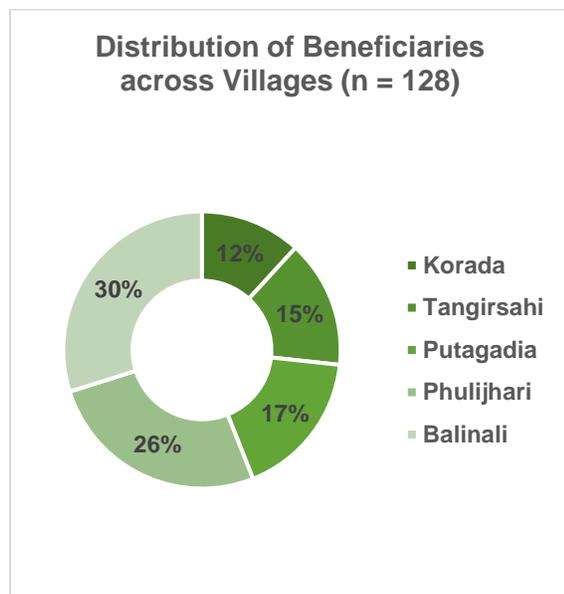
Graph 1: Distribution of Beneficiaries across Villages
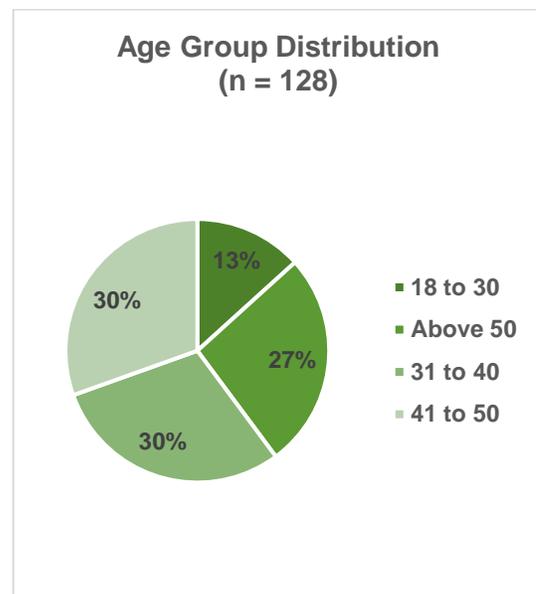
Graph 2: Age Group Distribution

The Primary beneficiaries of the project were the **Community members** from the **Angul District of Odisha.** In the survey, **57%** of beneficiary interactions were community-based in **Balinali** and **Phulijhari** Villages, while the remaining interactions took place in **Korada**, **Tangirsahi** and **Putugadia** villages.

The survey included beneficiaries from a wide range of age groups, all of whom have benefited from the project. The survey data reveal that about **60% of the beneficiaries** were within the **age range of 31 to 50 years**, which represents that the project was primarily benefiting middle-aged individuals, who are likely to be actively involved in household and community responsibilities. Consequently, about **27% of beneficiaries** belonged to older age to avail of the multi-benefits generated from the project. This distribution highlights the critical need for ongoing support and adaptation to the evolving needs of the community.

Demographic and Educational Profile
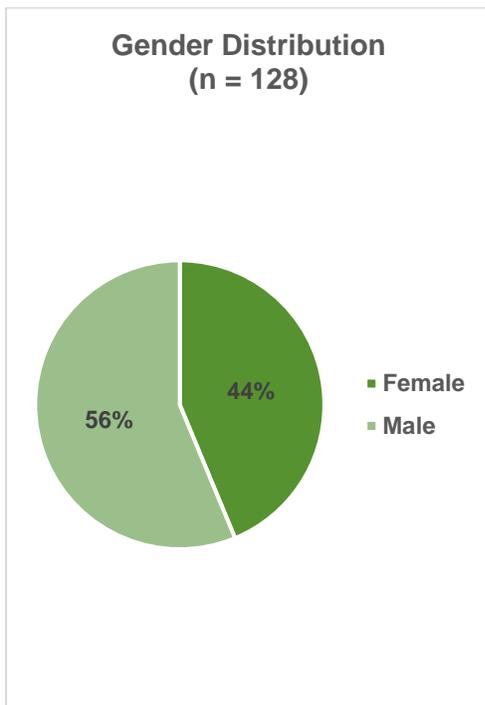
Graph 3: Gender Distribution
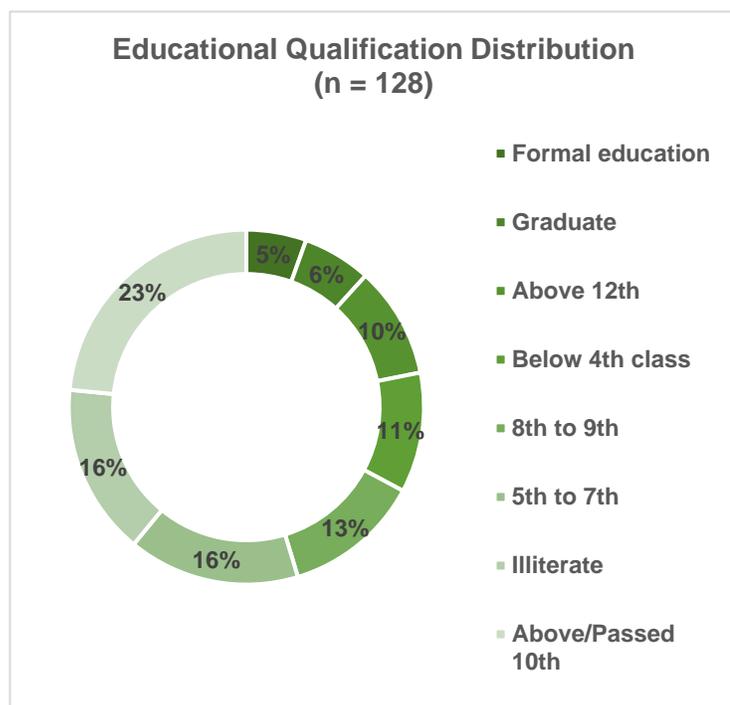
Graph 4: Educational Qualification Distribution

The field study ensured a proportionate representation of both male and female beneficiaries, reflecting the programme's equitable outreach throughout the project. This balance reflects an equitable distribution of benefits generated from the project, showcasing the project's commitment to gender inclusivity and empowerment.

Education levels among beneficiaries were varied, with a notable **23%** having completed only **above the 10th standard**. Below 4th class and formal education categories make up **11%** and **5%** respectively, reflecting **low literacy levels** in the region. Graduates and those with education beyond the 12th standard constitute 6% and 10%, respectively. This highlights a need for capacity-building and awareness initiatives as part of the project to improve literacy and employability.

Marital Status and Household Income

Martial Status Distribution
(n = 128)

5%

15%

80%

- Widowed
- Unmarried
- Married

Graph 5: Martial Status Distribution

Household Income Distribution
(n = 128)

1% 2%

97%

- More than Rs. 4,00,000
- Rs. 1,00,001 to Rs. 2,00,000
- Upto Rs. 1,00,000
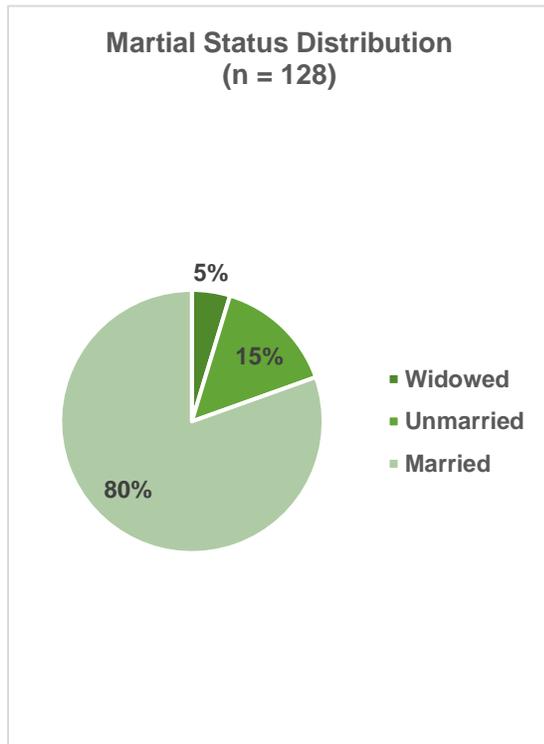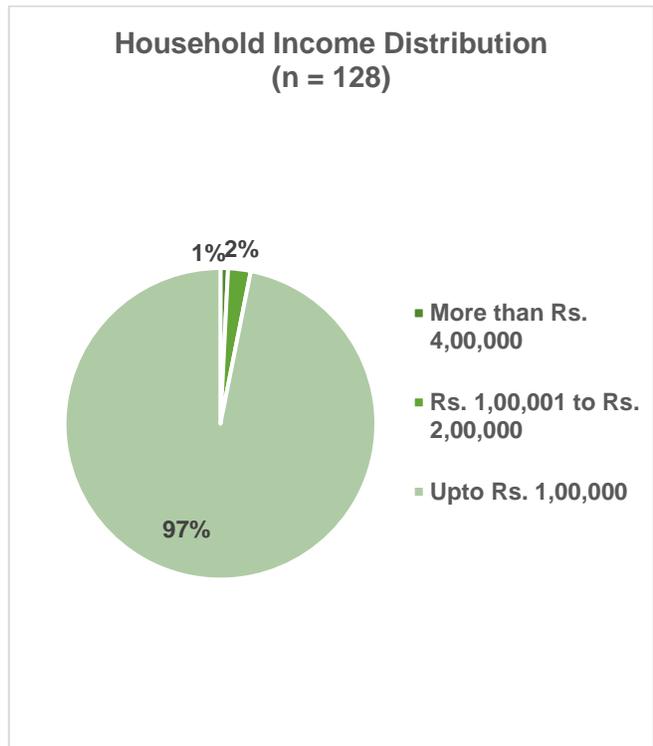
Graph 6: Household Income Distribution

A majority of the beneficiaries (**80%) are married**, while **15% are unmarried** and **5% are widowed**. The predominance of married individuals suggests that the interventions impacted entire households rather than just individuals, which could enhance the long-term benefits of the project.

A staggering **97% of the beneficiaries** fall within the **lowest income bracket** (below Rs. 1,00,000 annually), with only 2% earning between Rs. 1,00,001 to Rs. 2,00,000, and a mere 1% exceeding Rs. 4,00,000. This indicates that the project was effectively reaching economically disadvantaged communities, aligning well with rural development and poverty alleviation objectives.

Family and Housing Type

Family Size Distribution (n = 128)

2% 2%

8%

88%

- 1
- 2
- 3
- More than 3
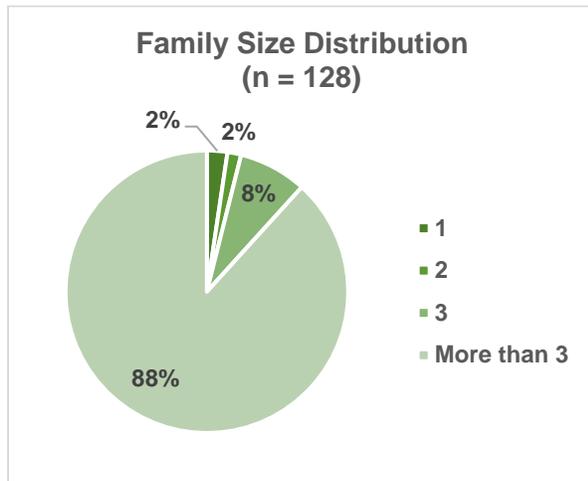
Graph 7: Family Size Distribution

Housing Type Distribution (n = 128)

1%

13%

86%

- Semi-Pucca
- Kuccha
- Pucca
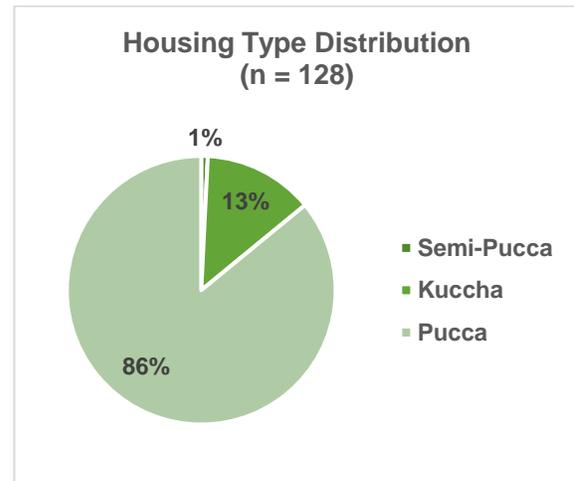
Graph 8: Housing Type Distribution

The majority **(88%) of beneficiary** households have more than three members, while 8% have a family size of three. Small families, consisting of one or two members, make up only 4% collectively. This highlights the need for holistic interventions that cater to larger family units in rural settings.

A significant **86% of households** reside in pucca houses, indicating improved housing infrastructure. However, 13% live in semi-pucca structures, and 1% in kuccha houses, suggesting pockets of inadequate housing that may require targeted infrastructural support.

Electricity Duration per day (n = 100)

1%

5%

10%

10%

74%

- More than 12 hours
- 3-6 hours
- 6-9 hours
- 9-12 hours
- 0-3 hours
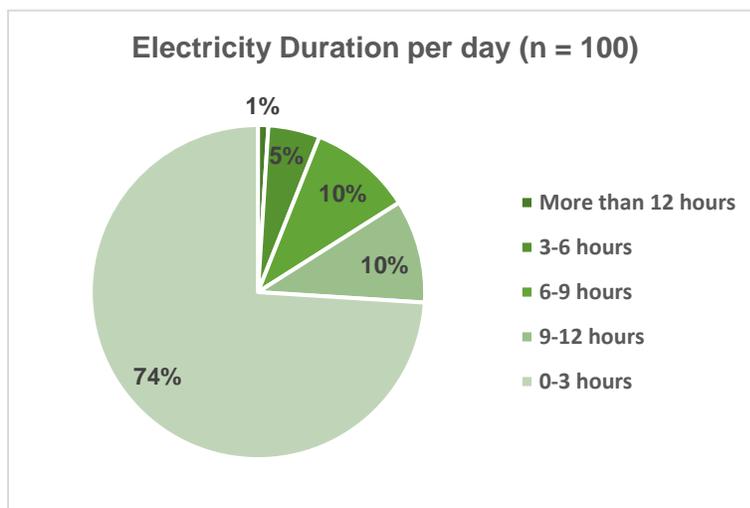
Graph 9: Electricity Duration per day

Electricity Deficit

A concerning **74% of households** received electricity for only 0–3 hours per day, highlighting a severe energy deficit. Limited access of 6–9 hours and 9–12 hours was experienced by 10% each, while only 1% enjoyed more than 12 hours of electricity. This reinforced the critical role of solar-based electrification interventions in bridging the electricity access gap.

Water Sources Availability

Available Water Sources before the project (n = 27)

Water Source	Percentage
Public Handpump/ public tap water	74%
Surface water -pond, lake	67%
Personal Hand pump	52%
Well/ borewell/Dug wells	22%
Water tankers	7%
Piped water supply - Household level	7%
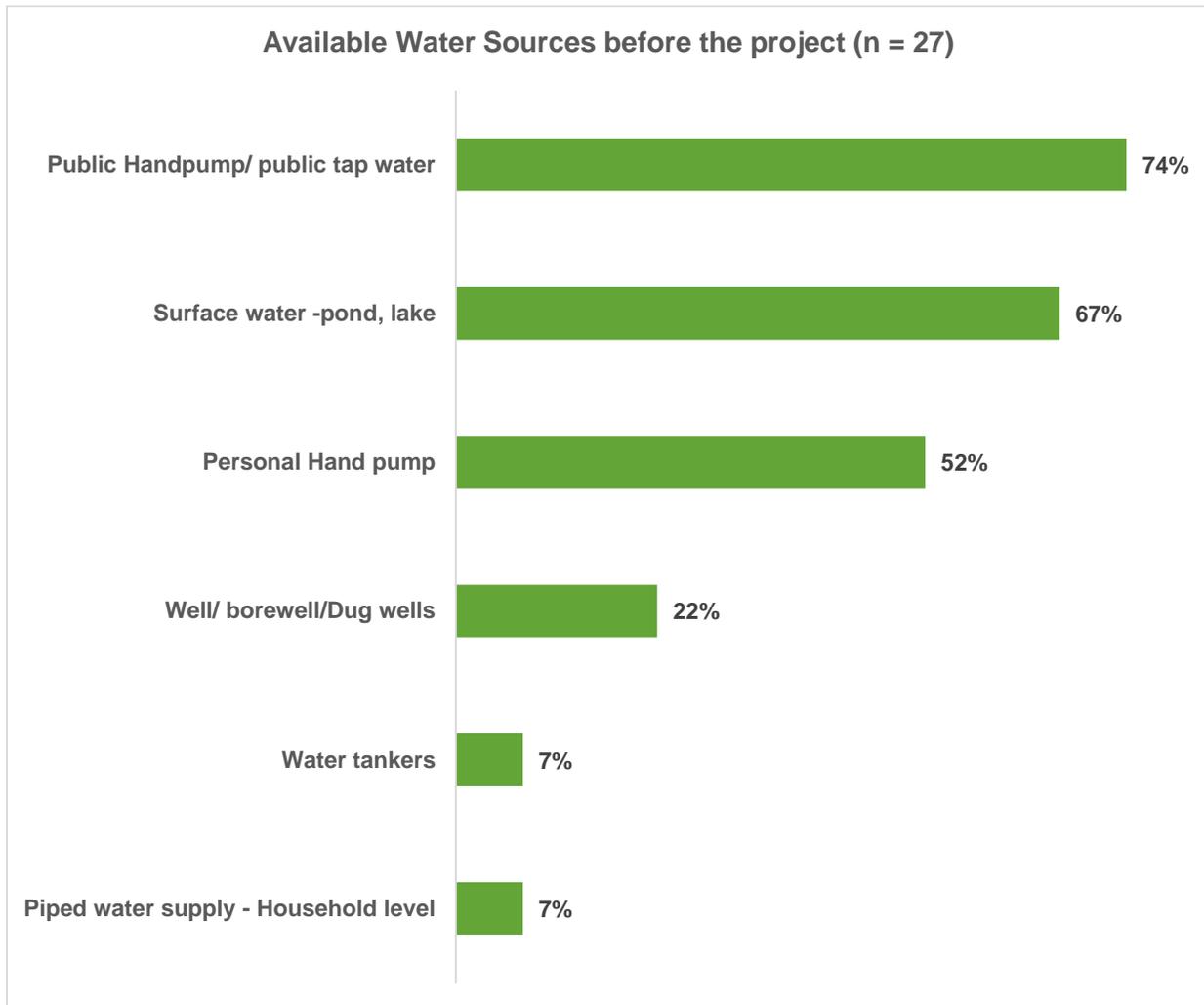
Graph 10: Available Water Sources before the project

The highest dependency was on **public hand pumps/tap water (74%)** and **surface water (ponds, lakes) (67%)**. **Personal Hand pumps accounted for 52%,** while **wells/borewells stood at 24%**. Water tankers and household piped supply were the least available sources at 7% each. The reliance on non-piped sources highlights the vulnerability of water access before the project. Limited household-level piped connections (only 2%) further highlight the need for infrastructure improvements.

Water Utilisation Pattern

Distribution of Water Utilisation (n = 27)

Category	Percentage
Cooking	85%
Cleaning	85%
Drinking	85%
Toilets/Bathrooms	70%
Agriculture	11%
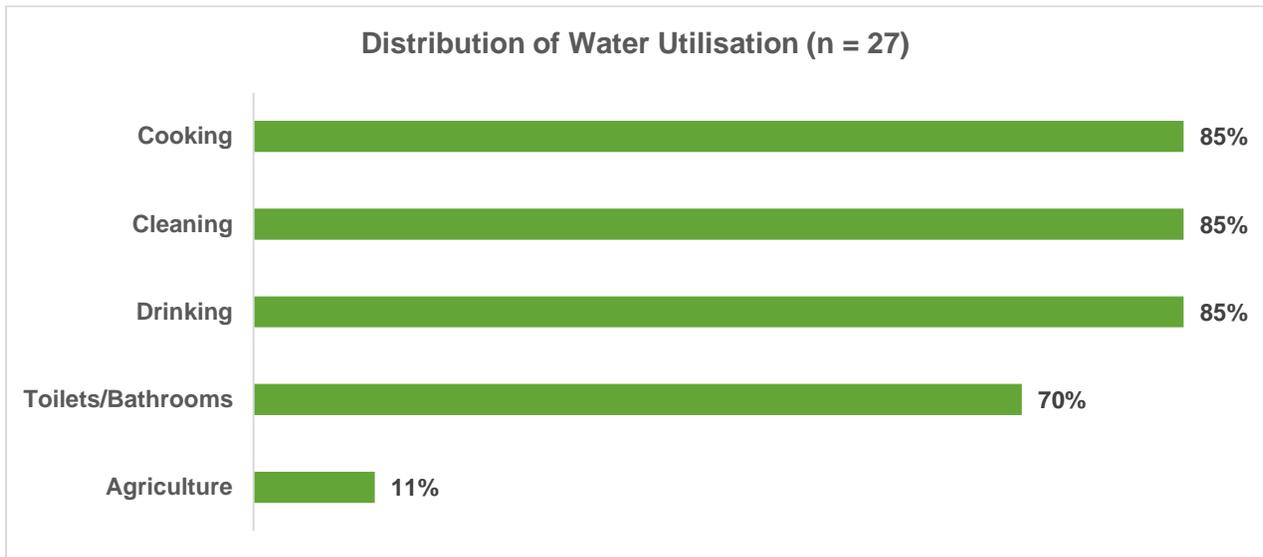
Graph 11: Distribution of Water Utilisation Pattern

Water usage is **evenly distributed** across **cooking, cleaning, and drinking (each 85%)**, highlighting their equal importance. **Toilets/bathrooms account for 70%**, indicating a substantial share of water consumption for sanitation purposes. Agricultural water use is minimal (11%), suggesting limited reliance on project water for farming.

Prevalent Water Quality Issues

Perceived Drinking Water Quality Issues before the project (n = 18)

Issue	Percentage
Bad colour	6%
Bad odor	11%
Bad taste	33%
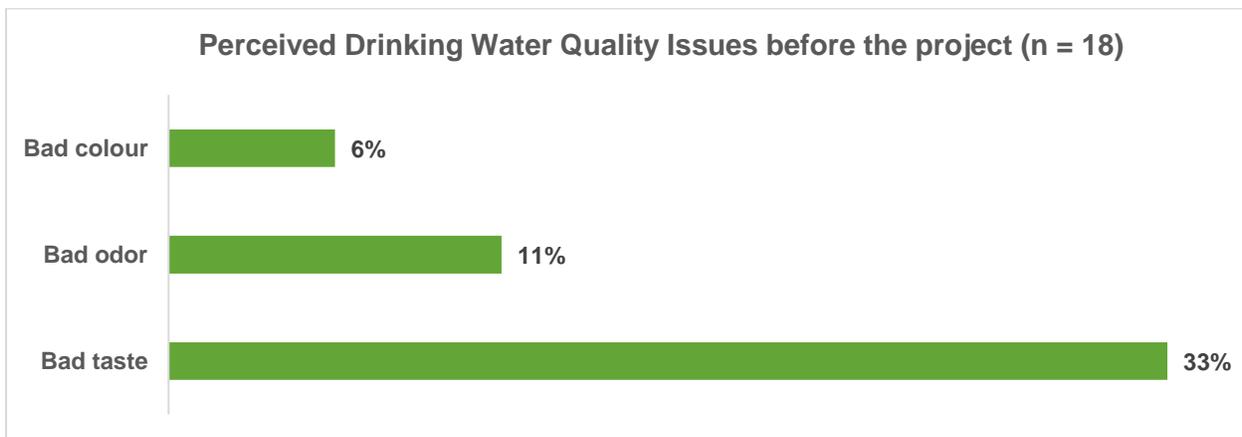
Graph 12: Perceived Drinking Water Quality Issues before the project

33% of the beneficiaries experienced bad taste, 11% faced bad odour and 6% reported bad colour. These issues indicated concerns regarding water quality before the execution of the project.

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Types of Waste Generation

Types of Waste Generation (n = 11)

Category	Percentage
Farm waste	9%
Domestic hazardous waste (Metals, Sanitary Pads, Glass, Medical Waste etc.)	18%
Dry (Plastic, paper, cardboard, etc)	64%
Wet (Vegetable and fruit peels, food, etc.)	100%
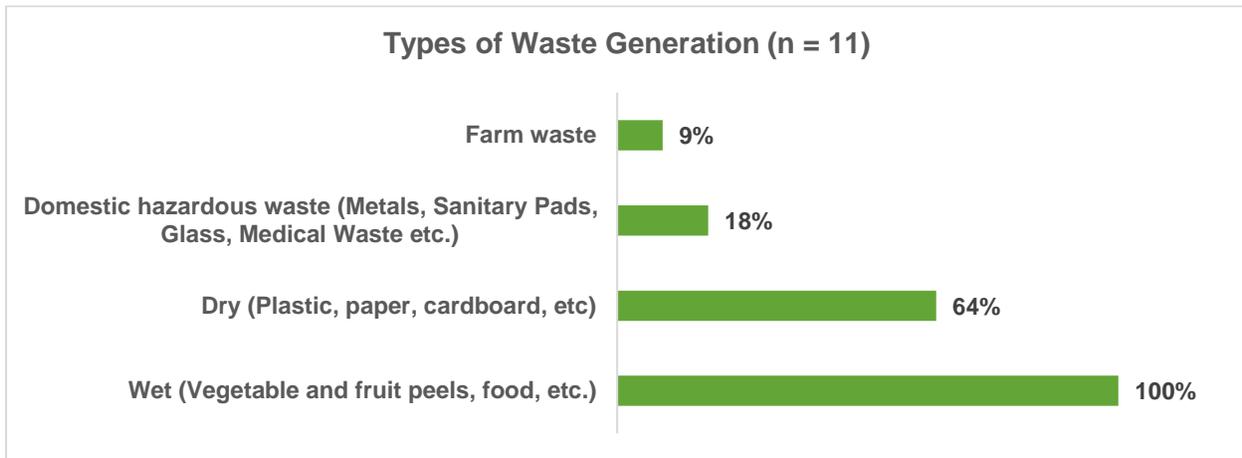
Graph 13: Types of Waste Generation

The predominant type of waste generated by households is **wet waste (100%)**, which includes vegetable peels, food scraps, and organic matter. This suggests a strong potential for composting initiatives. **Dry waste (64%)**, consisting of plastic, paper, and cardboard, is also significant. This indicates the necessity for proper recycling mechanisms. **Domestic hazardous waste (18%)**, such as metals, sanitary pads, and medical waste, is relatively low but still requires dedicated disposal measures to prevent contamination. **Farm waste (9%)** is the least generated category, implying that agricultural waste management may not be a primary concern for these households.

Improper Dry Waste Disposal Mechanisms

Ways of Dry Waste Disposal before the project (n = 11)

Category	Percentage
Discard it in the open area / landfill	64%
Trade it with scrap dealer for Money	27%
Discard it in sewerage	18%

Graph 14: Ways of Dry Waste Disposal before the project

The majority **(64%)** of dry waste was discarded in **open areas or landfills**, highlighting poor waste management practices and potential environmental hazards. **Sewer disposal (18%)** of dry waste suggests improper disposal habits that could lead to drainage blockages and sanitation issues. Only **27% of households traded their dry waste with scrap dealers**, indicating a lack of awareness or accessibility to recycling opportunities.

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WASH and Waste Management Challenges

Challenges from Poor WASH and Waste Management before the project (n = 11)

Category	Percentage
Waterborne Diseases (Cholera, Diarrhea, Typhoid, Jaundice)	73%
Pollution	27%
Don't Know	9%
Contaminated surface and groundwater	9%
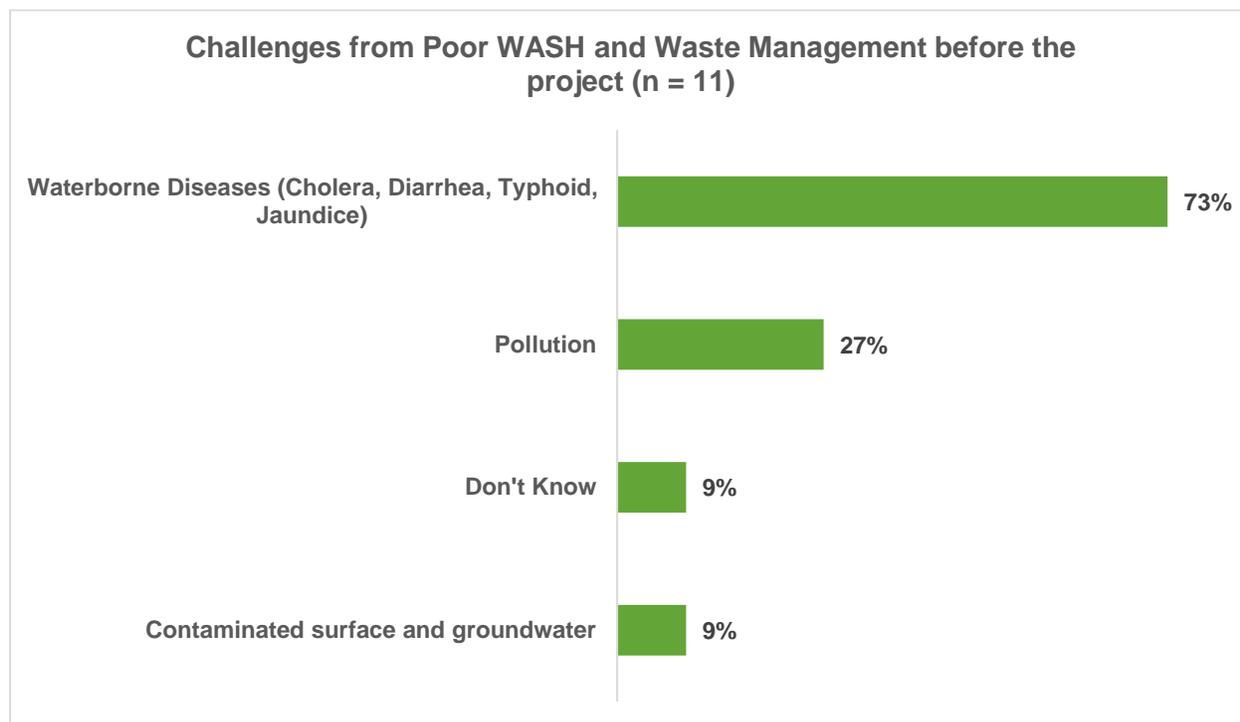
Graph 15: Challenges from Poor WASH and Waste Management before the project

1. **Waterborne Diseases (73%) -** The most significant issue linked to poor WASH (Water, Sanitation, and Hygiene) and waste management was waterborne diseases such as cholera, diarrhoea, typhoid, and jaundice. This indicates contaminated drinking water sources and poor sanitation facilities, likely exacerbated by open defecation, improper waste disposal, and lack of clean water access.

2. **Pollution (27%) -** Environmental pollution, caused by improper waste disposal, open dumping, and possible burning of waste, was also a concern. This suggests the need for waste collection systems, proper disposal methods, and community awareness programmes on pollution control.

3. **Contaminated Surface and Groundwater (9%) -** A small percentage of respondents identified water contamination as a direct result of poor waste management. This reinforces the need for safe waste disposal practices to prevent leaching of hazardous substances into water sources.

4. **Lack of Awareness (9%) -** Some respondents were unaware of the challenges posed by inadequate waste and sanitation systems. This highlights the need for awareness campaigns on the health and environmental risks associated with poor WASH practices.

Cost incurred on Water Borne Diseases (per year) before the project (n = 128)

- Below Rs 100
- Rs 501- 700
- Rs 701- 900
- More than Rs 900

15%

15%

39%

31%
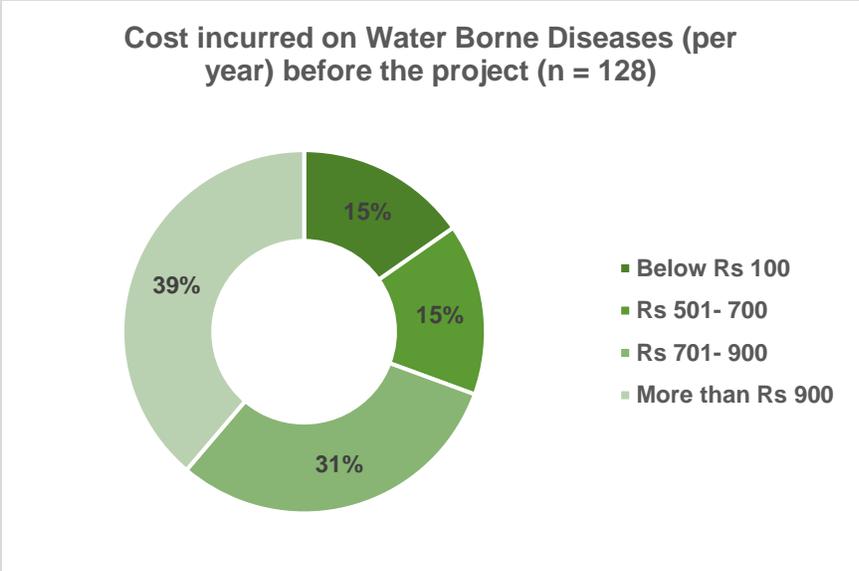
Graph 16: Cost incurred on Water Borne Diseases (per year) before the project

High Medical Costs

A substantial proportion of **households (about 70%)** incurred **greater than Rs. 700** for the treatment of waterborne diseases before the project. This highlights the economic burden of inadequate water quality and highlights the importance of sustained water and sanitation improvements.

3.2 Coherence

The Coherence section of the report checks the alignment of the programme with other interventions in the country, i.e., with similar programmes which were being run by other institutions.

3.2.1 Alignment with SDG Goals

The **Sustainable Development Goals (SDGs)**, also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

SDG Goal	SDG Target	Alignment
3 Good Health & Well Being	Ensure healthy lives and promote well-being for all at all ages.	**The SDG 3 closely aligns with the Project.** The project aims to enhance health and well-being by promoting proper sanitation and hygiene practices through capacity-building initiatives and training workshops. Additionally, it raises community awareness of effective waste management, segregation, and disposal while emphasising regular water quality monitoring to help reduce waterborne diseases. The project also includes the distribution of dustbins and the construction of toilets to ensure improved hygiene in villages.
6 CLEAN WATER AND SANITATION	Ensure availability and sustainable management of water and sanitation for all.	**The SDG 6 closely aligns with the Project.** The project ensures a reliable and consistent supply of clean drinking water to the community, promoting water affordability, accessibility, and sustainability for all. By constructing toilets, it helps reduce open defecation while fostering

		improved sanitation and hygiene practices. Additionally, Village Development Committees (VDCs) play an active role in implementing and enhancing sanitation and hygiene conditions in the villages.
7 AFFORDABLE AND CLEAN ENERGY	Ensure access to affordable, reliable, sustainable and modern energy for all.	**The SDG 7 closely aligns with the Project.** By installing solar-powered streetlights and home lighting for the community, the project promotes the adoption of sustainable solar energy solutions.

3.2.2 Alignment with BRSR Principles

The project's intervention also aligns with the ESG Sustainability Report of the corporate. Particularly, concerning the **Business Responsibility & Sustainability Reporting Format (BRSR)** shared by the **Securities & Exchange Board of India (SEBI)**, the project aligns with the principles mentioned below:

ESG Principle	Alignment with the Project
PRINCIPLE 2. Businesses should provide goods and services in a manner that is sustainable and safe	The project closely aligns with ESG Principle 2. The project aims to establish a sustainable socio-technical model system, which directly contributes to providing a service (solar electrification, clean drinking water supply, waste management and WASH) sustainably (clean drinking water source, reducing open defecation) and safely (preventing water scarcity, contamination and health hazards).
PRINCIPLE 4. Businesses should respect the interests of and be responsive to all its stakeholders	The project closely aligns with ESG Principle 4. The project demonstrates responsiveness to stakeholders, including local communities, VDCs, and PRIs, by addressing the critical need for proper management. This enhances hygiene, cleanliness, water and power availability and overall well-being in the rural regions of the project geography.
PRINCIPLE 5. Businesses should respect and promote human rights	The project closely aligns with ESG Principle 5. Implementation of the project contributes to human rights by reducing environmental pollution, improving public health, and creating safer and healthier living conditions for individuals in the project locations.

3.2.3 Alignment with National Priorities

Scheme Name	Alignment with the Project
Swachh Bharat Mission[2]	The project aligns closely with the objectives of the Swachh Bharat Mission, which aims to achieve open defecation-free (ODF) status, improve waste management practices and promote cleanliness and hygiene.
Jal Jeevan Mission[3]	The project closely aligns with the objectives of the Jal Jeevan Mission, which seeks to provide safe and adequate drinking water through individual household tap connections in rural India.
Atal Jyoti Yojna[4]	The project closely aligns with the Atal Jyoti Yojana, which aims to provide illumination in areas with limited grid power access through solar street lighting systems.

3.2.4 Alignment with CSR Policy

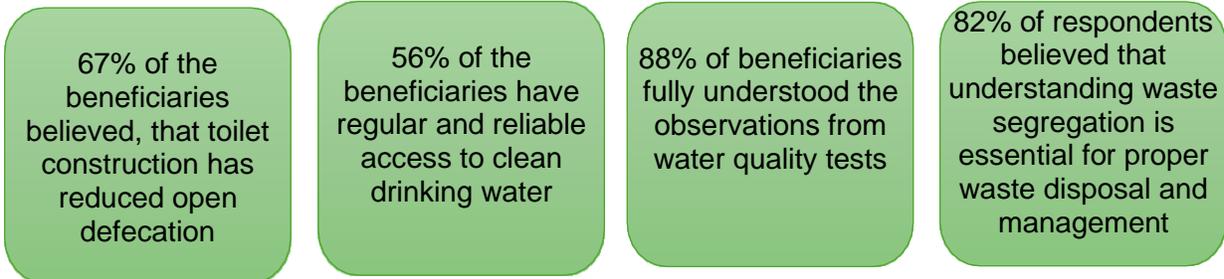| Activity	Description	Alignment with the Project
(iv)	Ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining the quality of soil, air and water.	The project aims to establish a sustainable socio-technical model system, which directly contributes to providing solar electrification, clean drinking water supply, waste management and WASH practices through providing clean drinking water sources and reducing open defecation thereby preventing water scarcity, contamination and health hazards.

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[2] Swachh Bharat Mission : Ministry of Housing and Urban Affairs, Government of India (mohua.gov.in)
[3] Jal Jeevan Mission
[4] Solar Off Grid | MINISTRY OF NEW AND RENEWABLE ENERGY | India

3.3 Effectiveness

The project's effectiveness measures the extent to which objectives have been achieved and identifies the supporting processes and systems that influence the achievement of these objectives. The assessment team's observations relating to project effectiveness are stated below.

67% of the beneficiaries believed, that toilet construction has reduced open defecation	56% of the beneficiaries have regular and reliable access to clean drinking water	88% of beneficiaries fully understood the observations from water quality tests	82% of respondents believed that understanding waste segregation is essential for proper waste disposal and management

Solar Based Intervention

Availed Benefits

Availed Benefits from Solar Street Lights (n = 100)

Safety and security at nights	98%
Safe commuting on roads at nights	98%
Hosting of night meetings	96%
Decrease in thefts	95%
Decrease in accidents	94%
No benefits	2%
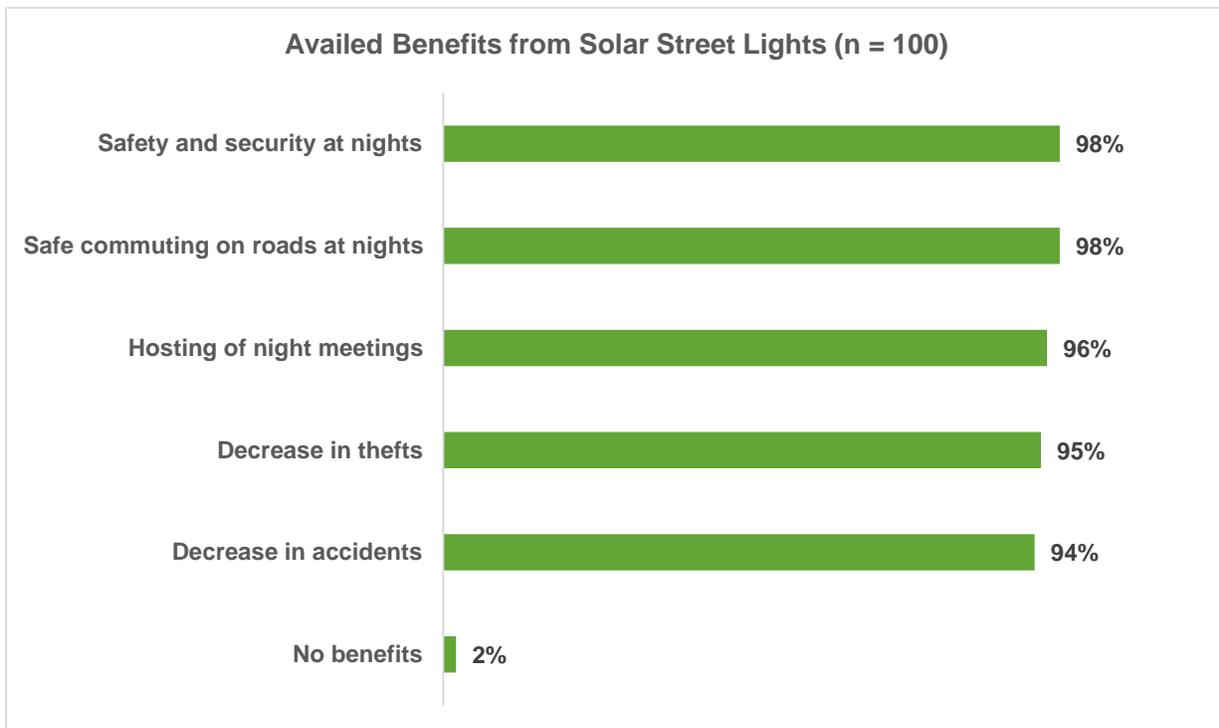
Graph 17: Availed Benefits from Solar Street Lights

The primary benefits derived from solar streetlights include **enhanced safety and security (98%)**, **safer commuting at night (98%)**, and improved conditions for **hosting night-time events (96%)**. Additionally, **reductions in theft (95%)** and **accidents (94%)** indicate the broader socio-economic impact of these installations.

Figure 1: Solar Street Lights installed in the Village

The solar streetlights enhanced the ability of villagers to move safely at night, reducing the risks of accidents and wildlife encounters. Farmers benefited from extended working hours during harvest seasons.
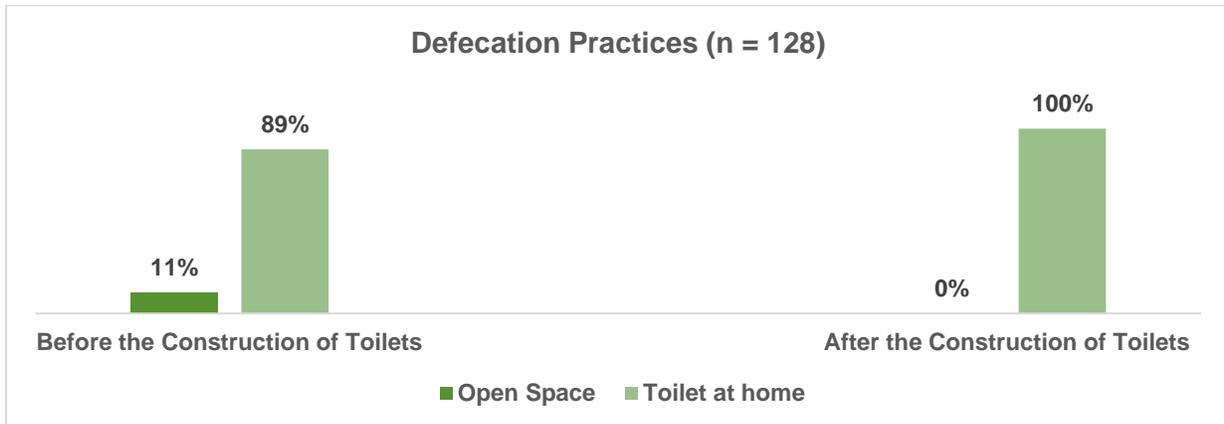
"We, the villagers, lit up our own streets! This project shows what we can do when we work together." - Biren Sahu, Ward member, Korada Village

Toilet Constructions

Reduction in Open Defecation

Defecation Practices (n = 128)

89%

100%

11%

0%

Before the Construction of Toilets

After the Construction of Toilets
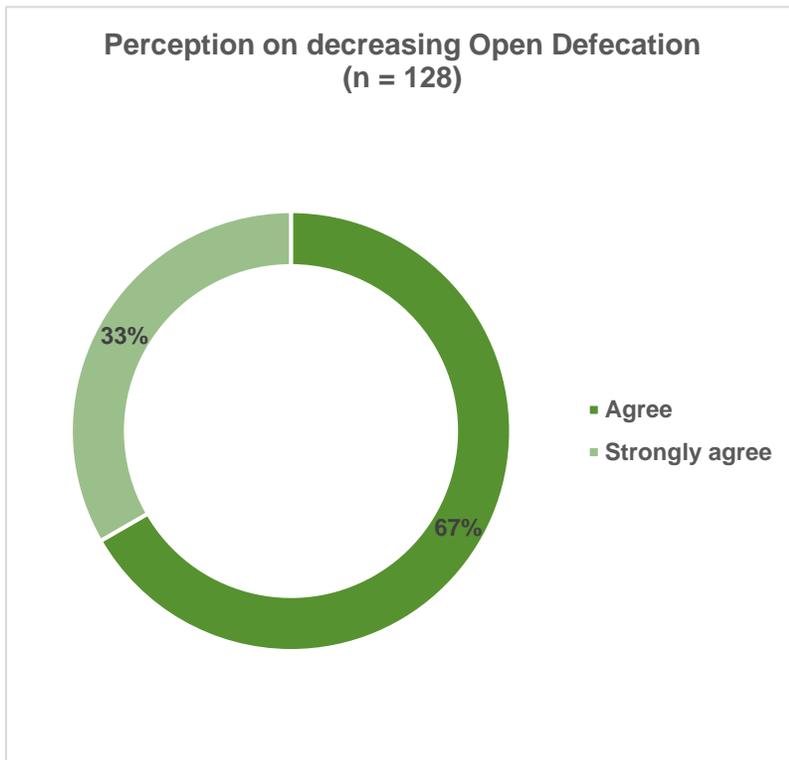
■ Open Space   ■ Toilet at home

Graph 18: Defecation Practices

Before the construction of toilets, **11% defecated in open spaces**, while **89% used home toilets**. Although 89% of households had home toilets and used them, the community highlighted that defecation often occurred in poor sanitary conditions, with many toilets requiring repairs and maintenance with episodes of frequent blockages. Following the construction of new toilets and the repair of existing ones, 100% of households reported using home toilets, demonstrating the complete elimination of open defecation. This significant impact of 11% highlights the effectiveness of the project and suggests that sustained access to sanitation facilities is critical for long-term behavioural change.

Figure 2: Constructed Toilet and Bathroom

The project has significantly improved the hygiene and sanitation of the community. Prior to the project, residents often defecated and bathed in the open, near wells and tube wells. This posed serious health risks, especially for women and children. The SHGs highlighted that with access to toilets and bathrooms within their homes, residents have improved their privacy, dignity, and overall health. They no longer have to worry about open defecation and the associated risks of disease.

Perception on decreasing Open Defecation (n = 128)

33%

67%

- Agree
- Strongly agree

Graph 19: Perception on decreasing Open Defecation

Perception of decreasing Open Defecation

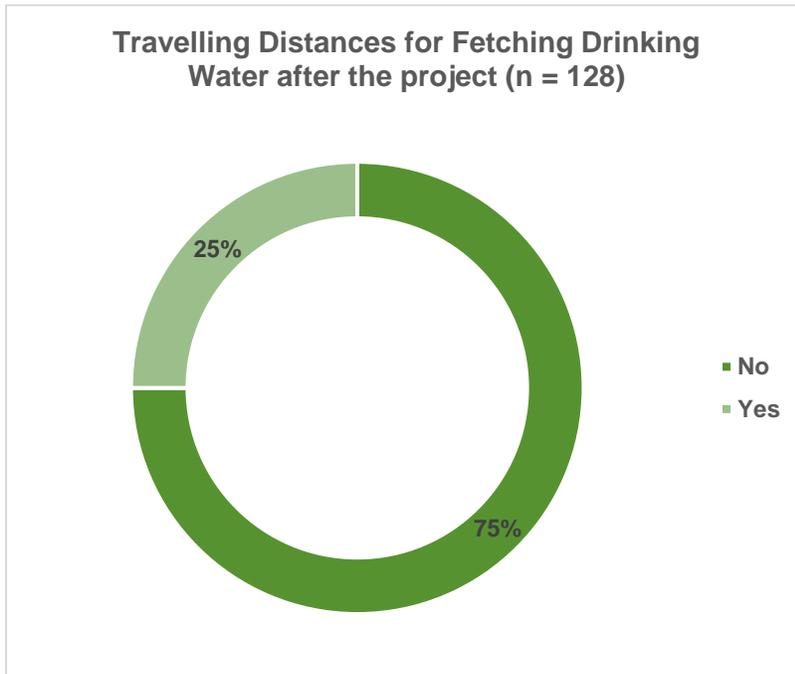**67% of the beneficiaries agree, and 33% of the beneficiaries strongly agree** that the construction and repair of toilets have reduced open defecation in their villages. The high level of agreement indicates **strong community endorsement of sanitation improvements**. Continuous **monitoring and awareness programmes** could further reinforce behavioural change.

Figure 3: Constructed Toilet

Water Based Intervention

Travelling Distances for Fetching Drinking Water after the project (n = 128)

25%

75%

- No
- Yes

Graph 20: Travelling Distances for Fetching Drinking Water after the project

Reduction in travelling distances for Fetching Drinking Water

75% of the beneficiaries reported reduced travel distances for fetching drinking water, indicating a major convenience improvement. However, the 25% of the beneficiaries who still travel distances to fetch drinking water hints for identifying areas still requiring long-distance water collection for resolving and ensuring equitable access to drinking water.

Perceived Reduction in Waterborne Diseases (n = 128)

46%

54%

- No
- Yes, to some extent
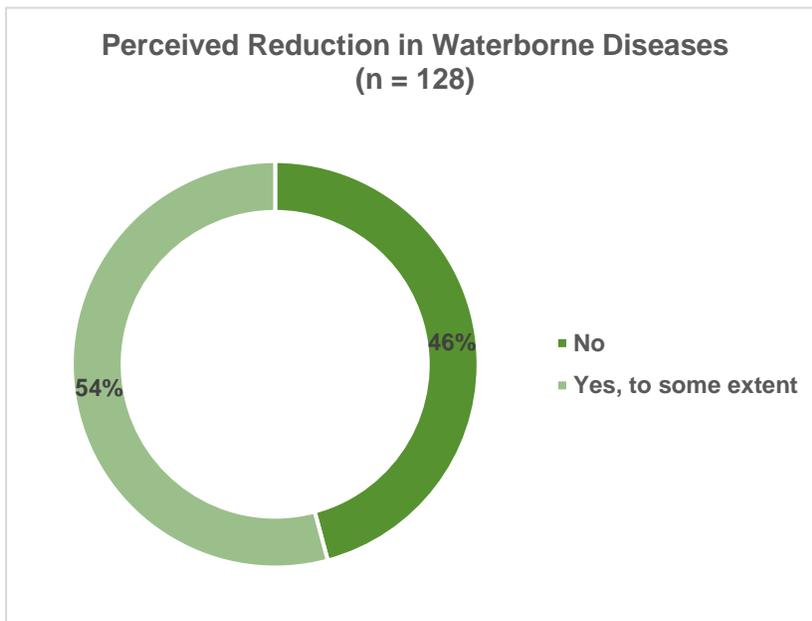
Graph 21: Perceived Reduction in Waterborne Diseases

Reduction in Water Borne Diseases

54% of respondents reported some reduction in waterborne diseases. 46% reported no reduction. While the intervention has had a positive effect, the fact that nearly half of the respondents saw no change suggests that additional measures (such as improved water treatment, sanitation, and hygiene education) may be needed.

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Improved Drinking Water Availability

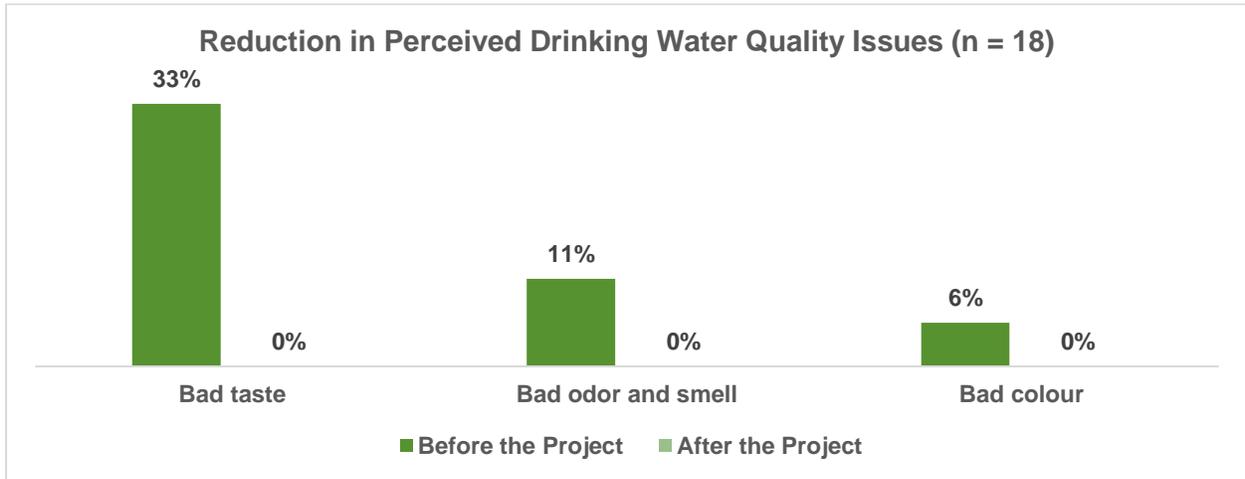*Graph 22: Improved Drinking Water Availability*

Before the intervention, **94%** of respondents reported that drinking water was only a few times, highlighting severe water accessibility challenges due to the non-presence of permanent drinking water supply in their homes. **Post-intervention**, this figure dropped to **44%**, indicating that water supply reliability was improved significantly due to the installation of water tanks through the project in their villages. However, the fact that 44% of beneficiaries still access the water supply only a few times can be attributed to challenges highlighted by the community. These challenges primarily include the inaccessibility of water supply connections due to geographic and land ownership constraints, financial limitations, and conflicts among residents. Additionally, before the project, only **6% of respondents had consistent access to drinking water** and this figure **rose dramatically to 56%**. This jump of about 50% showcases the project's effectiveness in **enhancing water security**.

Community water tanks ensured reliable water availability, particularly during summer. Villagers expressed satisfaction with the improved water supply. Additionally, the water tank facilities have significantly improved the lives of villagers. Previously, they faced severe water scarcity due to limited access to water sources, such as wells. This often resulted in challenges in obtaining and accessing water. However, with the new water tank facility, the villagers now have direct access to water through taps within their homes.

Figure 4: Water Tank installed in the village through the project

Reduction in Water Quality Issues

Reduction in Perceived Drinking Water Quality Issues (n = 18)

Graph 23: Reduction in Perceived Drinking Water Quality Issues

Before the project, **33% of respondents reported bad taste**, **11% noticed bad odour and smell**, and **6% observed bad colour** in drinking water. **After the intervention**, all these **issues dropped to 0%**, indicating a complete elimination of reported water quality concerns. This indicates that the project has successfully addressed all major quality issues related to drinking water. The elimination of bad taste, odour, and colour suggests enhanced filtration, purification, and treatment efforts.

Waste Management Based Intervention

Perception on Waste Segregation (n = 128)

Graph 24: Perception on Waste Segregation
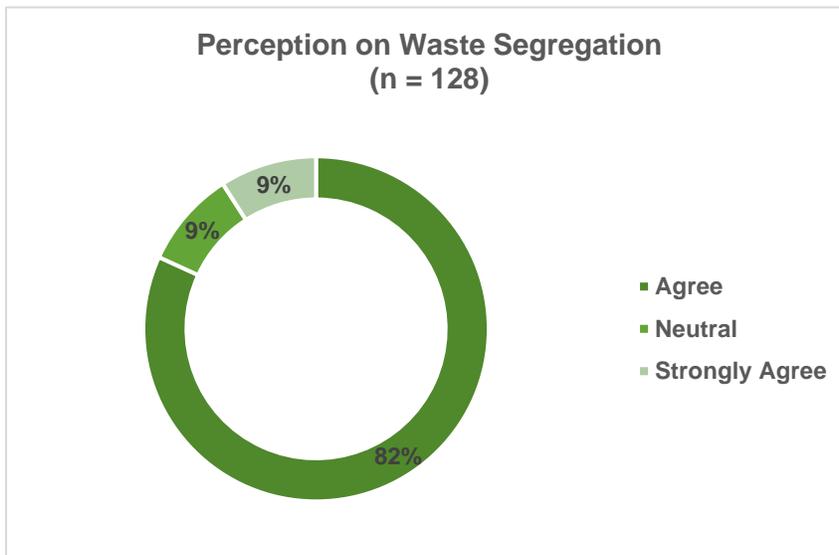
Awareness of Waste Segregation

A significant **82% of respondents believed** that understanding waste segregation is essential for proper waste disposal and management. This indicates **high awareness levels** and suggests that households **recognise the benefits** of separating waste for effective disposal and recycling.

Figure 5: Community Dustbin installed through the Project

3.4 Efficiency

This section assesses the extent to which the intervention delivered results in an economical and timely manner.

89% of the respondents highlighted that the installed solar lights are partially operational	75% of beneficiaries use the provided drinking water facility regularly	63% of respondents reported that water testing was conducted	80% of beneficiaries reported that water quality test results were shared with them

The project, implemented across multiple villages, addressed critical gaps in infrastructure, sanitation, waste management, water access, and community capacity. Key activities included:

- **Installation of Solar Infrastructure:** Solar streetlights and home lights were introduced to enhance night-time safety, mobility, and energy access.
- **Water Supply Improvements:** Community water tanks with solar-powered pumping systems were constructed to ensure reliable water availability. Platforms of wells and tube wells were raised to improve hygiene.
- **Sanitation and Hygiene:** Households received financial and material support for constructing toilets, reducing open defecation and improving overall health.
- **Waste Management Systems:** Dustbins were installed in strategic locations to promote segregation and proper disposal of waste.
- **Capacity Building and Awareness Campaigns:** Regular training and awareness programmes focused on leadership development, water quality, and waste management.

The interventions were executed with active involvement from Village Development Committees (VDCs) and community participation, promoting a sense of ownership and sustainability.
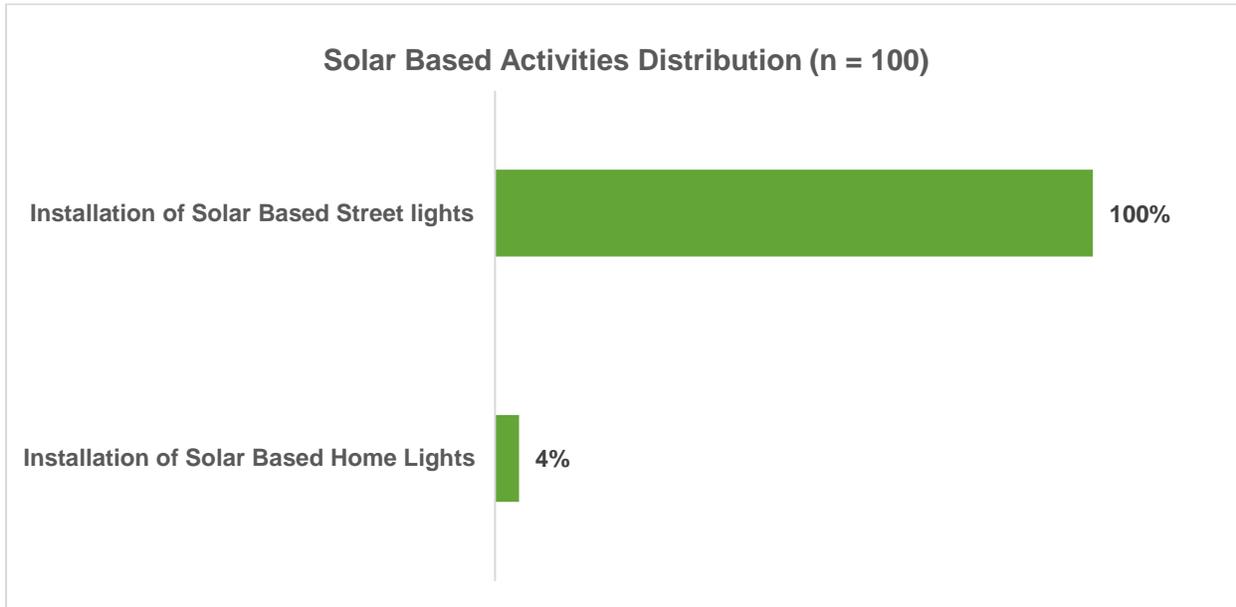
Solar Based Intervention

Solar streetlights were installed across villages to address night-time darkness and safety concerns. Despite their initial impact, many lights are currently non-functional or operate for only 1-3 hours during the night mainly due to the:

- Poor battery quality and inadequate maintenance.
- Placement under tree canopies, reducing solar exposure.
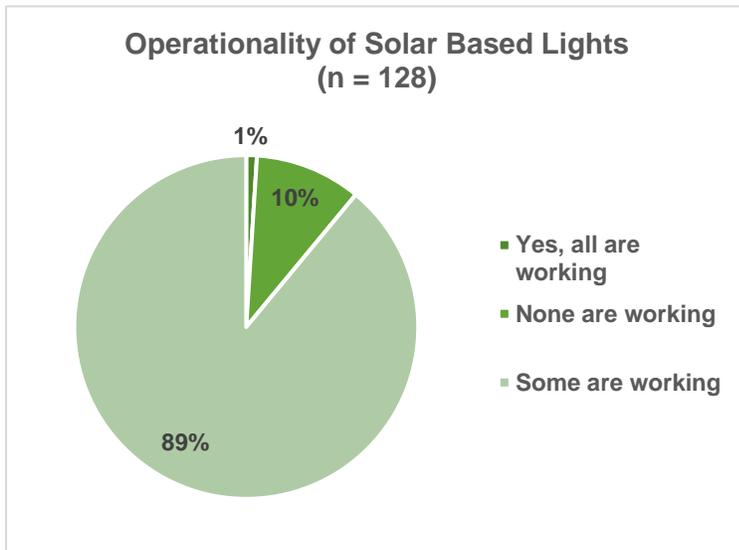- Limited community awareness about maintenance responsibilities.

Villagers however expressed a desire for functional and longer-lasting solar solutions, especially in areas with significant night-time activity, such as markets and roads.

Solar-Based Activities Distribution

Solar Based Activities Distribution (n = 100)

Installation of Solar Based Street lights — 100%

Installation of Solar Based Home Lights — 4%

Graph 25: Solar Based Activities Distribution

All the solar-based interventions **(100%) focused on streetlight installation**, with 4% catered to home lighting solutions. This suggests a prioritisation of public infrastructure improvements over individual household electrification.

Operationality of Solar Based Lights (n = 128)

- 1%
- 10%
- 89%

Legend:
- Yes, all are working
- None are working
- Some are working

Graph 26: Operationality of Solar Based Lights

Solar-Based Lights Operationality

A substantial **89% of the respondents** highlighted that the installed solar lights are partially operational, while 10% indicated that they are non-functional. This indicates maintenance concerns that need to be addressed to ensure long-term functionality.

Perception Ratings on Solar-based Lights Functioning (n = 128)

- 2
- 3
- 4

13%
38%
49%
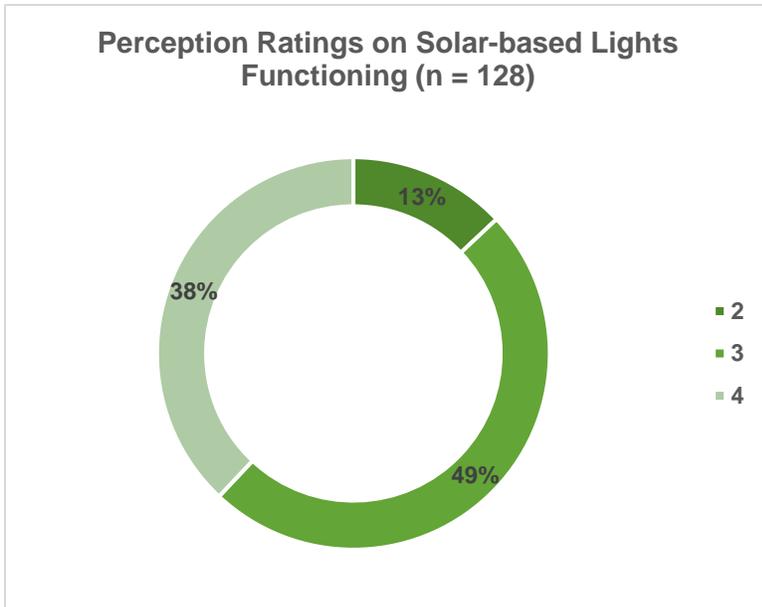
Graph 27: Perception Ratings on Solar-based Lights Functioning

Solar-Based Lights Functionality

While the majority of respondents perceived the solar lights as functioning reasonably well, the beneficiaries provided a **weighted average rating of 3.25 out of 5** to the functionality of light indicating potential operational issues. This suggests a need for regular maintenance and monitoring to ensure optimal performance.

Perception Ratings on Cleaning of Solar-based Lights (n = 128)

- 1
- 2
- 3
- 4
- 5

1%
5%
6%
42%
46%
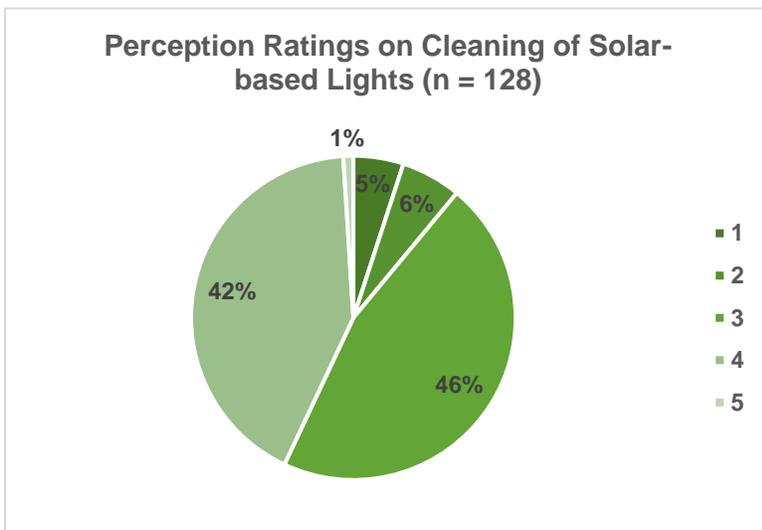
Graph 28: Perception Ratings on Cleaning of Solar-based Lights
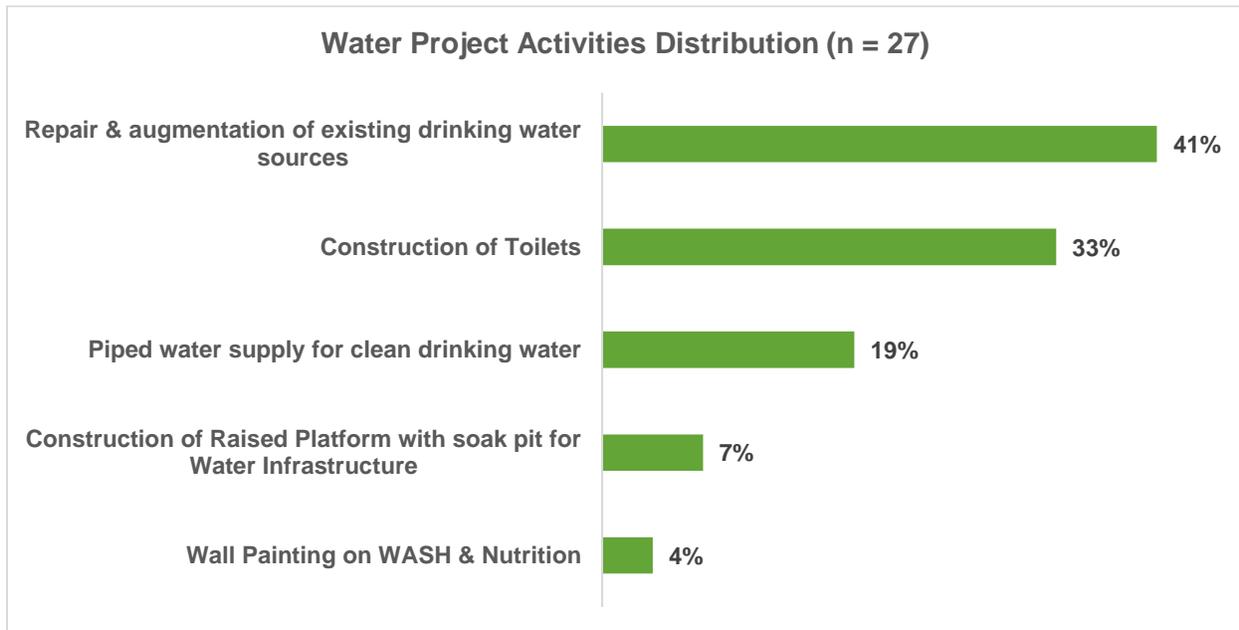
Solar-Based Lights Cleaning

The beneficiaries provided a **weighted average rating of 3.28 out of 5** on regular cleaning of solar lights indicating the minor gaps in cleaning consistency.

Water Based Intervention

Large water tanks, with capacities ranging from **27,000–30,000 litres**, provided a steady supply of water during summer months, alleviating seasonal shortages. However, the Solar-powered pumps frequently underperformed, which often required manual operation.

In one of the village, innovative use of tank rooftops as rental spaces generated additional income for VDCs. The beneficiaries highlighted satisfaction with water quality, although regular testing and follow-up were lacking.

Water Project Activities Distribution

Water Project Activities Distribution (n = 27)

Activity	Percentage
Repair & augmentation of existing drinking water sources	41%
Construction of Toilets	33%
Piped water supply for clean drinking water	19%
Construction of Raised Platform with soak pit for Water Infrastructure	7%
Wall Painting on WASH & Nutrition	4%

Graph 29: Water Project Activities Distribution

The highest activity undertaken was the **repair and augmentation of drinking water sources (41%)**. **Construction of toilets accounted for 33%.** The piped water supply for clean drinking water was at 19%. Raised platform construction with soak pit accounted for 7%. Wall painting on WASH & Nutrition had the lowest allocation at 4%. This highlights the effectiveness of the project in improving water sources and sanitation.

Water Quality Awareness

Leadership and water quality training empowered committee members where sessions focused on importance of hygienic practices and waste segregation. As part of the project, the trained Water Cadres conducted water quality monitoring in the project-specific villages. The community was informed about the monitoring process, and the observations from the testing were shared with them to enhance their understanding.

The Water Quality Testing covered basic parameters such as **nitrate, fluoride, and bacterial contamination**, along with testing methods. However, testing frequency and access to Field Testing Kits (FTKs) were inadequate, with kits often held by external teams.

Perceived Presence of Water Testing
(n = 128)

- No
- Yes
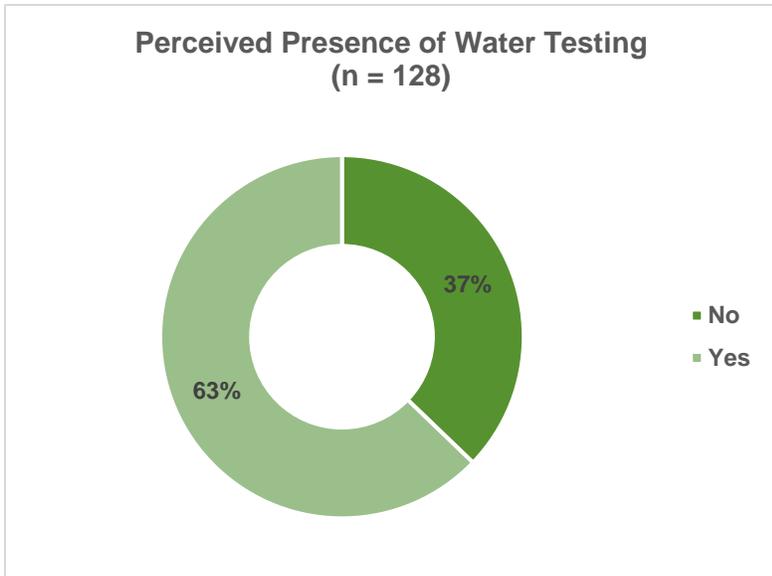
Graph 30: Perceived Presence of Water Testing

Presence of Water Testing

A significant portion (37%) of respondents believed that water testing was not conducted due to the limited availability of Field-Testing Kits (FTKs). While **63% perceived that water testing took place**, this suggests that more than a third of the community remains uninformed or unconvinced about the process. If testing was occurring, transparency and community engagement needed improvement.

Perceived Frequency of Water Testing
(n = 128)

- Don't Know
- Monthy
- Six Monthly
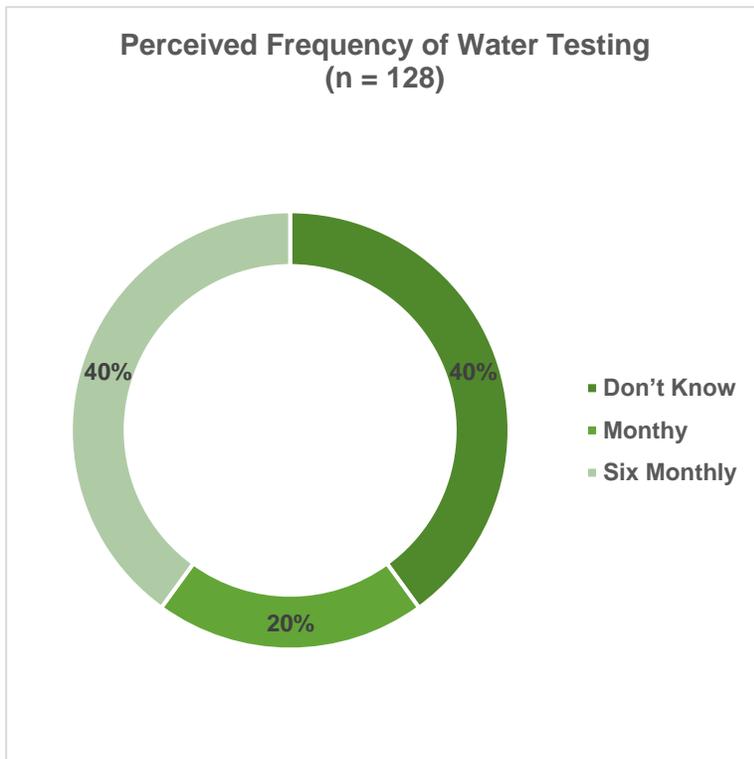
Graph 31: Perceived Frequency of Water Testing

Water Testing Frequency

A large proportion of respondents **(40%) were unaware of the water testing frequency**. This suggested a lack of awareness regarding monitoring practices, which might reduce confidence in water quality and safety. **20% believed testing was conducted monthly**, indicating that some beneficiaries recognised regular monitoring efforts. **40% perceived testing occurred every six months**, which might reflect an actual testing schedule.

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Awareness on Water Quality Test Results
**(n = 128)**

- Partly
- Yes

12%
88%
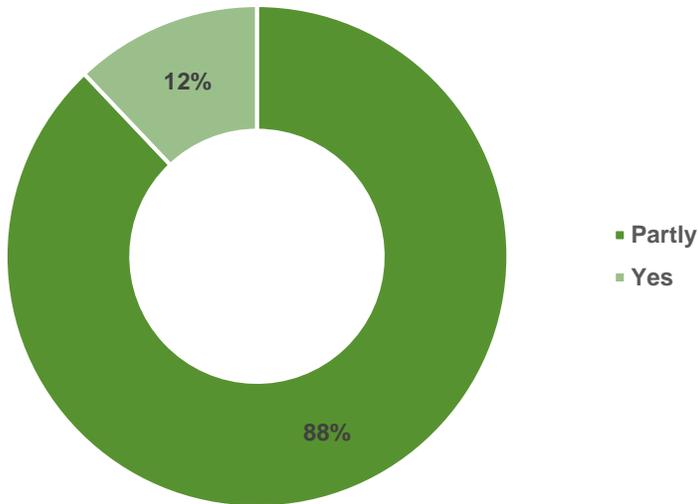
Water Quality Awareness

Although 12% of beneficiaries fully understood the observations from water quality tests, indicating a strong knowledge base, the other **88% reported partial understanding of the observations from water quality tests**, which suggests significant gaps in awareness.

Additionally, the Beneficiaries were likely more informed about water quality indicators, contamination risks, and necessary corrective actions.

Water Quality Test Results Sharing
(n = 128)

- No
- Yes

20%
80%

Graph 33: Water Quality Test Results Sharing
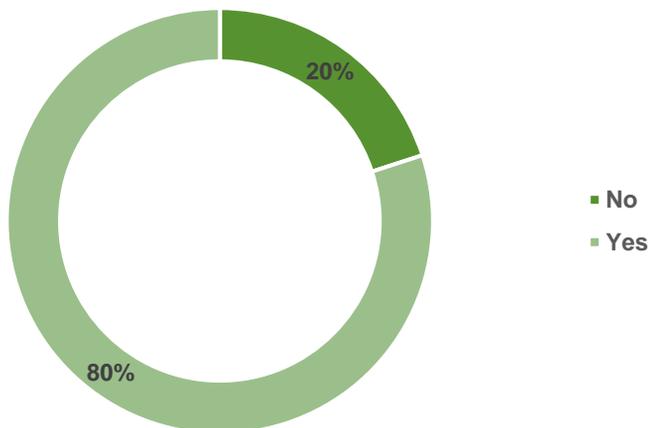
Sharing of Water Quality Test Results

80% of beneficiaries reported that water quality test results were shared with them assuring a positive indicator, fostering community trust and engagement in water safety. However, 20% stated they were not informed about test results which suggests a need for improved outreach, ensuring all beneficiaries receive this critical information.

Perception Ratings on Drinking Water Quality
(n = 128)


- 2
- 3
- 4
- 5

6% 6%
31%
57%
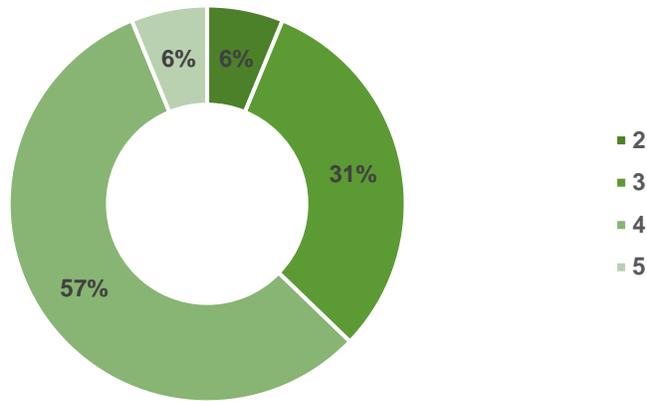
Graph 34: Perception Ratings on Drinking Water Quality

Improved Drinking Water Quality

Beneficiaries provided the **weighted average ratings of 3.59 out of 5** towards the intervention in improving the quality of water. This rating indicates the large positive impact of the project, with a significant majority perceiving notable improvements in drinking water quality.

Perception Ratings on Water Project Services
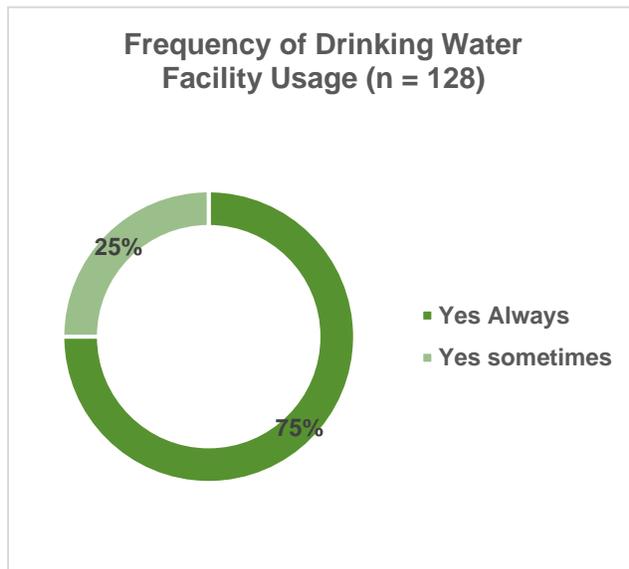### (n = 128)

- 2
- 3
- 4
- 5

4%
21%
29%
46%
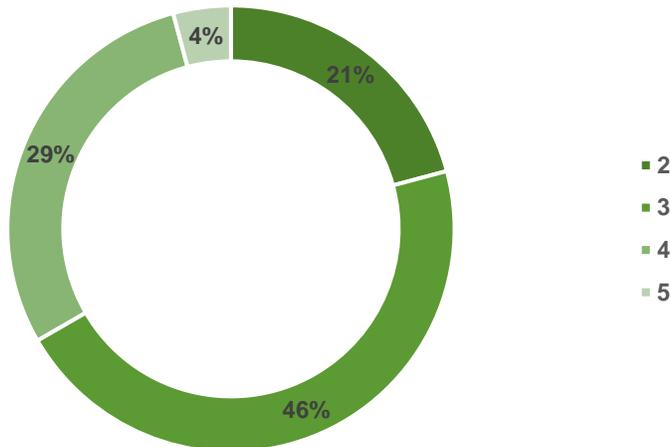
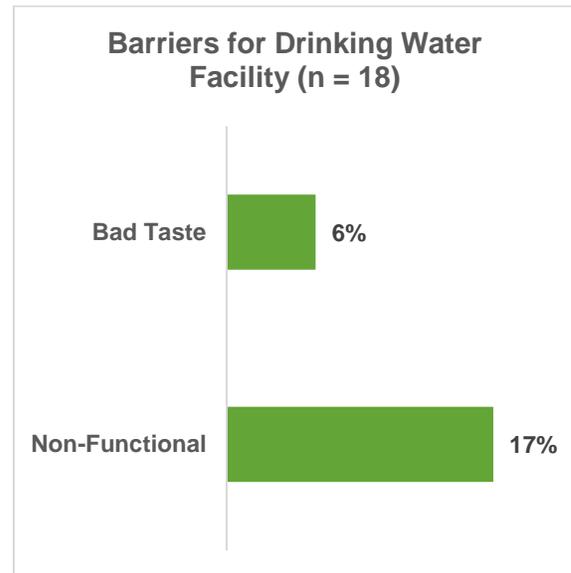*Graph 35: Perception Ratings on Water Project Services*

Water-Based Intervention Services

Beneficiaries provided **weighted average ratings of 3.16 out of 5** towards the services availed through Water-based intervention. This rating will help in identifying specific concerns of this group that could help refine future interventions.

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Drinking Water Facility Usage

Frequency of Drinking Water Facility Usage (n = 128)

25%

■ Yes Always

■ Yes sometimes

75%

Barriers for Drinking Water Facility (n = 18)

Bad Taste   6%

Non-Functional   17%

*Graph 36: Frequency of Drinking Water Facility Usage* *Graph 37: Barriers to Drinking Water Facility Usage*

75% of beneficiaries use the drinking water facility regularly, indicating a high level of reliability and acceptance of the infrastructure. This suggested that the water source was generally accessible, functional, and meets quality expectations. 25% of beneficiaries use the facility only sometimes, which may indicate barriers to consistent access. This could be due to intermittent water supply (17%) maintenance issues or concerns over water quality or taste (6%).

Toilet Construction

Financial assistance of ₹10,000, along with **materials worth ₹5,000**, incentivised households to construct toilets and bathrooms. As a result, open defecation decreased significantly, improving hygiene and reducing the prevalence of waterborne diseases. Solar home lights were distributed as rewards for households completing or progressing in construction, further encouraging participation.

**Perception Ratings on Toilets resulting in Open Defecation Reduction (n = 128)**

- 11%
- 33%
- 56%

Legend:
- 2
- 3
- 4

Graph 38: Perception Ratings on Toilets resulting in Open Defecation Reduction
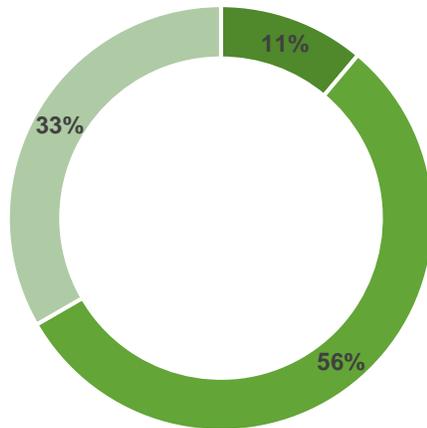
Toilets reducing Open Defecation.

Beneficiaries provided the **weighted average ratings of 3.22 out of 5** towards the role of toilets in reducing open defecation in their villages. This rating highlights the further need for engagement of the intervention on proper usage, maintenance, and community ownership which could eventually solidify progress.

Perception Ratings on the Quality of Services (n = 128)

- 33%
- 67%

Legend:
- 3
- 4

Graph 39: Perception Ratings on the Quality of Services
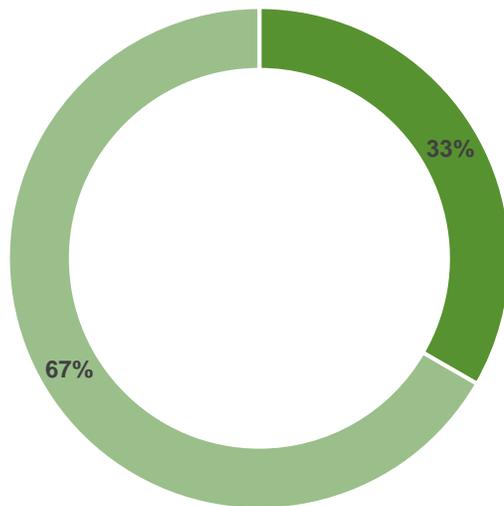
Quality of Services from Toilets

Beneficiaries provided the **weighted average ratings of 3.67 out of 5** towards the quality of services availed through the construction of toilets. This rating highlights the potential areas of improvement and fulfilling the gaps through proper usage, maintenance, and community ownership which could eventually solidify progress.

Waste Management Based Intervention

Dustbins were installed with reinforced concrete rings to facilitate waste segregation and collection. However, in the present scenario, dry waste is often burned, with ash used as bio-fertiliser in agricultural fields. Mixed waste disposal is prevalent, with plastics, paper, and bottles frequently added to the bins. The beneficiaries reported 2 of the major gaps in the waste management system –

- Lack of a structured waste collection system or vehicles
- Panchayati Raj Institutions (PRIs) were not actively involved in waste management oversight.

Community Waste Disposal Provisions

Graph 40: Community Waste Disposal Provisions

The data suggests a **significant gap in proper waste disposal provisions**. The high proportion of **64% of beneficiaries** disposing of wastes on community dump sites indicates the need for improved waste management facilities, including regular waste collection services and increased placement of common dustbins to enhance hygiene and environmental sustainability. Although the practice of the disposal of waste in **common dustbins is about 36%,** this proportion needs to increase for effective waste management.

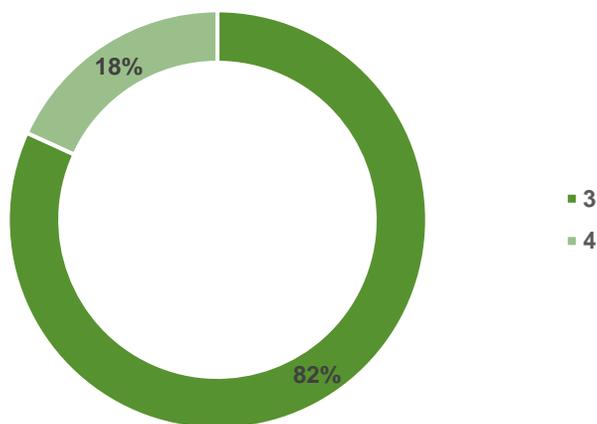## Perception Ratings on the awareness about health hazards associated with waste management (n = 128)

Legend:
- 2
- 3
- 4

Values shown: 9%, 27%, 64%
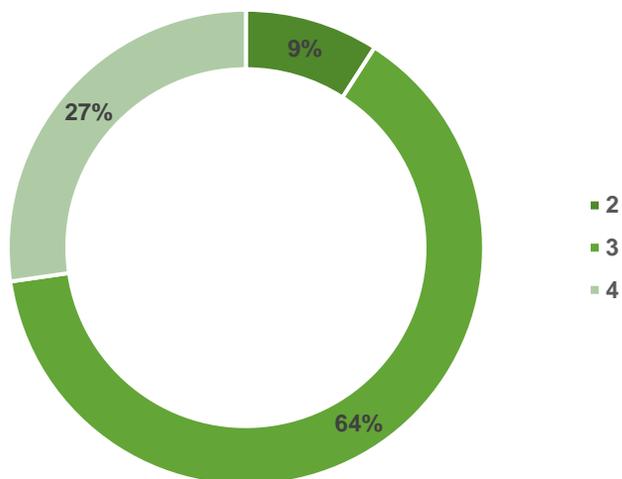
Graph 41: Perception Ratings on the awareness about health hazards associated with waste management

Waste Management Hazards Awareness

Beneficiaries provided the **weighted average ratings of 3.18 out of 5** towards the project in developing their understanding and knowledge about health hazards associated with waste management indicating a strong perception of knowledge gained through the project's interventions. This suggests that the awareness and training components have been largely effective. While the beneficiaries have gained knowledge, there may still be gaps requiring further reinforcement through additional training or interactive learning approaches.

Perception Ratings on awareness on Waste Management (n = 128)

Legend:
- 3
- 4

Values shown: 18%, 82%

Graph 42: Perception Ratings on awareness on Waste Management

Waste Management Awareness

Beneficiaries provided **weighted average ratings of 3.18 out of 5** towards the project in developing their awareness and knowledge on proper waste collection, segregation and recycling. This suggests that the awareness and training components have been largely effective. While the beneficiaries have gained knowledge, there may still be gaps requiring further reinforcement through additional training or interactive learning approaches.

WASH and Awareness Sessions

Weekly sessions on Water, Sanitation, and Hygiene (WASH) and waste management encouraged behavioural changes. Key topics included waste segregation, safe drinking water practices, and the health benefits of sanitation. VDCs collaborated with the project management team to ensure consistent campaign execution.

Awareness Sessions Topics

Topics of Awareness and Training Sessions (n = 11)

Topic	Percentage
Waste Management	91%
Hygiene Maintenance	73%
Personal hygiene	18%
Regular and Good Toilet Usage Practices	9%
Water quality and Monitoring	9%
Water borne-diseases	9%
Menstrual hygiene management	9%
Keeping toilets clean	9%
Regular and Good Handwashing Practices	9%

Graph 43: Topics of Awareness and Training Sessions

Waste management (91%) and hygiene maintenance (73%) were the most extensively covered topics, indicating that these areas were prioritised in the programme. This aligns well with the broader objectives of the project, which emphasises sustainable waste practices and public health improvements.

Perception Ratings on the usefulness of the Capacity Building Sessions (n = 128)

- 3
- 4

36%

64%
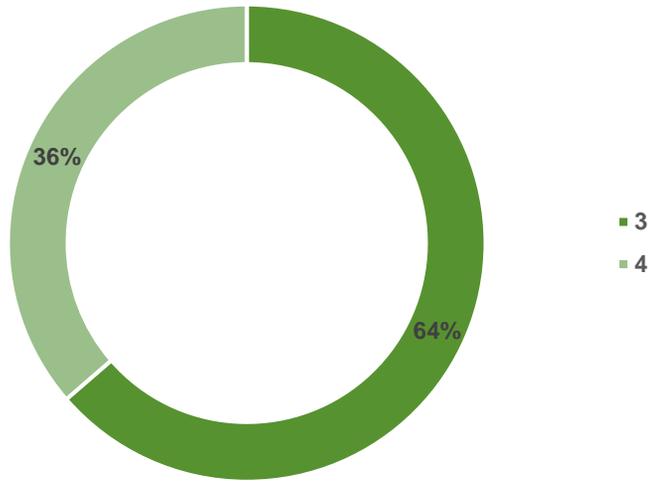
Graph 44: Perception Ratings on the usefulness of the Capacity Building Sessions

The Usefulness of Capacity Building Sessions

Beneficiaries provided **weighted average ratings of 3.36 out of 5** towards the usefulness of the Capacity Building Sessions hosted as part of the project. This suggests that the content and delivery of these sessions were effective to a large extent. However, the ratings also highlight the areas where further enhancement is required—such as refining the training methodology, incorporating more interactive elements, or addressing specific community needs more effectively.

Perception Ratings on the Improvement in Sanitation and Hygiene (n = 128)

- 3
- 4

44%

56%

Graph 45: Perception Ratings on the Improvement in Sanitation and Hygiene

Improvement in Sanitation and Hygiene

Beneficiaries provided a **weighted average rating of 3.44 out of 5** towards the project in improving Sanitation and Hygiene in their villages. This can be majorly attributed to the capacity building, training and awareness sessions hosted to develop beneficiaries' awareness, knowledge and understanding towards these critical issues.

Role of Village Development Committees (VDCs)

The VDCs were formed through consensus during community meetings. Their responsibilities mainly encompassed:

- Monitoring the implementation of solar and water infrastructure.
- Facilitating labour contributions from villagers.
- Resolving conflicts during project execution, particularly regarding resource allocation.

There were leadership trainings for VDC Members hosted which focused on leadership principles, communication skills, conflict resolution, and community mobilisation. Participants consistently rated the training high, finding it engaging, informative, and practical for addressing village needs thereby resulting in improved coordination between VDC members and villagers.
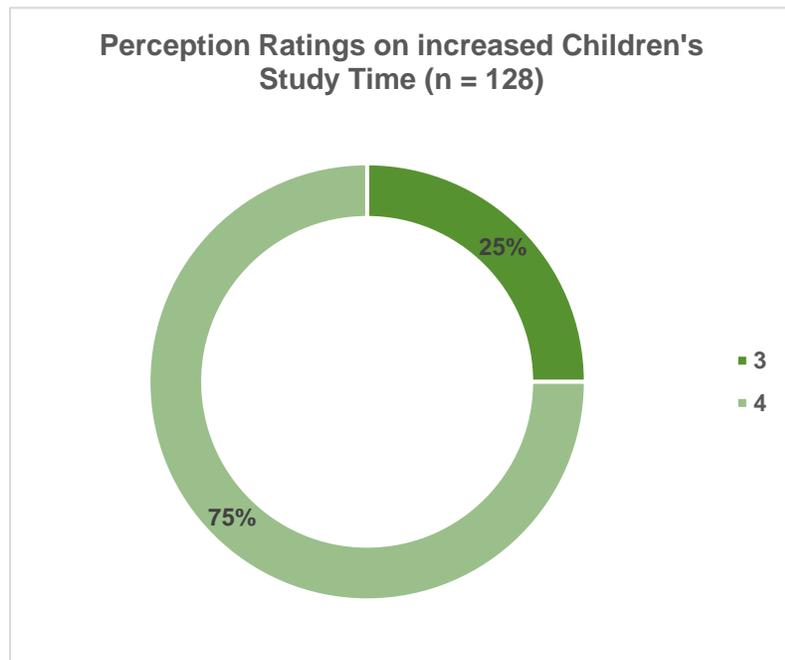
3.5 Impact000000000

To attain a comprehensive assessment of the project's impact, we delve into its profound and potentially transformative effects on the social ecosystem. This section meticulously examines the indirect, secondary, and prospective impact arising from the project.

A weighted average rate of 3.75 out of 5 on the increase in children's study time was provided by the Beneficiaries	A weighted average rate of 3.4 out of 5 on the improvement in sense of safety at nights was provided by the Beneficiaries	83% of respondents confirmed a reduction in water-fetching distances

Solar Based Intervention

Perception Ratings on increased Children's Study Time (n = 128)

- 3
- 4

25%

75%

*Graph 46: Perception Ratings on increased Children's Study Time*

Increased Children's Study Time

Beneficiaries rated the increase in children's study time through the introduction of Solar Home lights with a **weighted average rating of 3.75 out of 5.** The introduction of solar home lights has had a notable impact on study time for children, with most beneficiaries perceiving a significant improvement. However, while the intervention was beneficial, there might still be room for further enhancement in lighting efficiency or availability.

Figure 6: Children studying in the dark under Solar Home Light

Perception Ratings on improvement in Sense of Safety (n = 128)

- 2
- 3
- 4
- 5
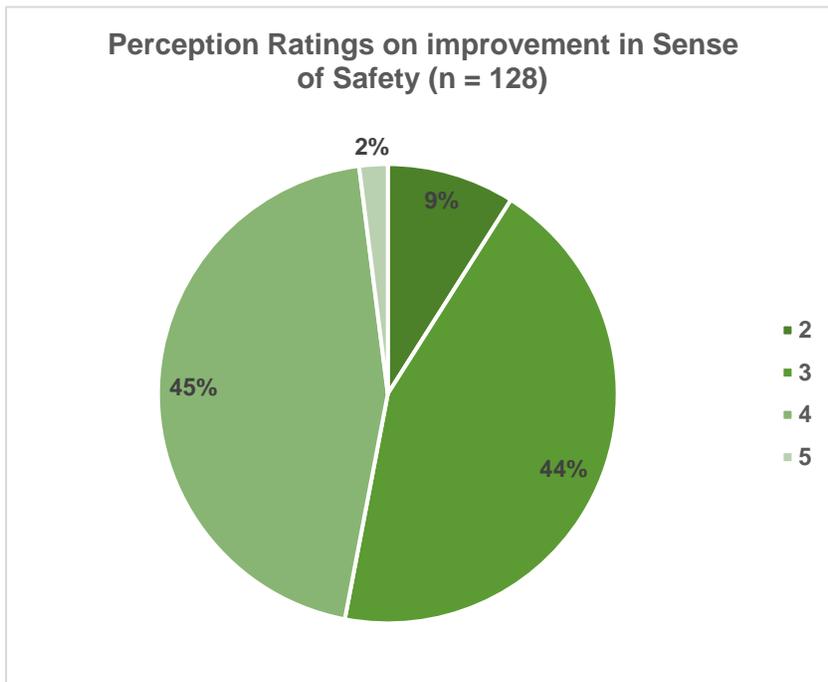
Graph 47: Perception Ratings on improvement in Sense of Safety
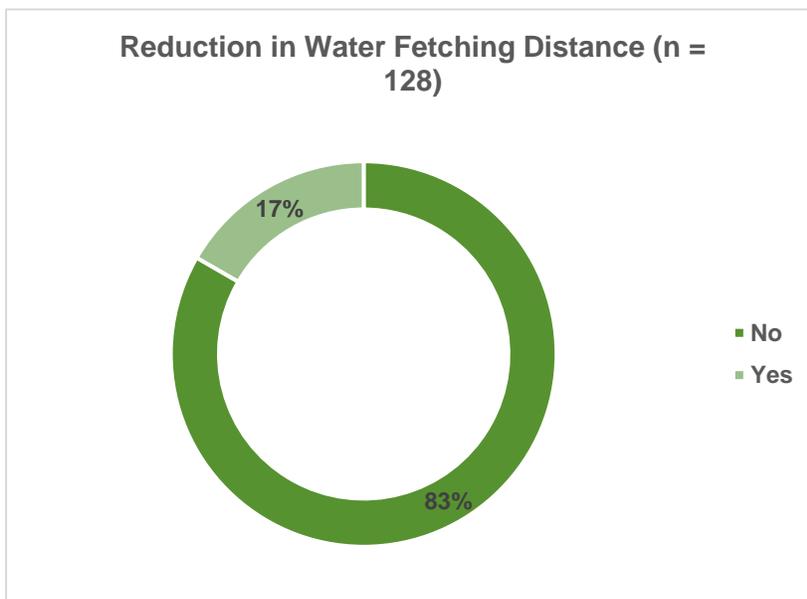
Improvement in Sense of Safety

The installation of solar streetlights has had a significant impact on improving beneficiaries' safety at night. The **weighted average rating of 3.4 out of 5** by the beneficiaries suggests that this initiative has addressed concerns regarding safety in public spaces to a certain extent.

Figure 7: Interaction with the Community at Night

"Before, darkness and water shortages defined our village. Now, thanks to the community water tank, we have light and water—a true blessing!" - Jagannath Bagh, VDC member and Operator of the water tank, Phulijhari Village

Water Based Intervention

Reduction in Water Fetching Distance (n = 128)

17%

83%

- No
- Yes

Reduced Water Fetching Distances

83% of respondents confirmed a reduction in water-fetching distances indicating that a significant majority experienced easier access to water, suggesting that the interventions have successfully reduced the burden of long-distance water collection, particularly benefiting women and children.

Graph 48: Reduction in Water Fetching Distance

"This water tank isn't just a source of water; it's a source of pride. We built it, and it's ours!" - Sarita Sahu, SHG Member

59

3.6 Sustainability

This section addresses the extent to which the benefits of the intervention are likely to be sustained and continue over time.
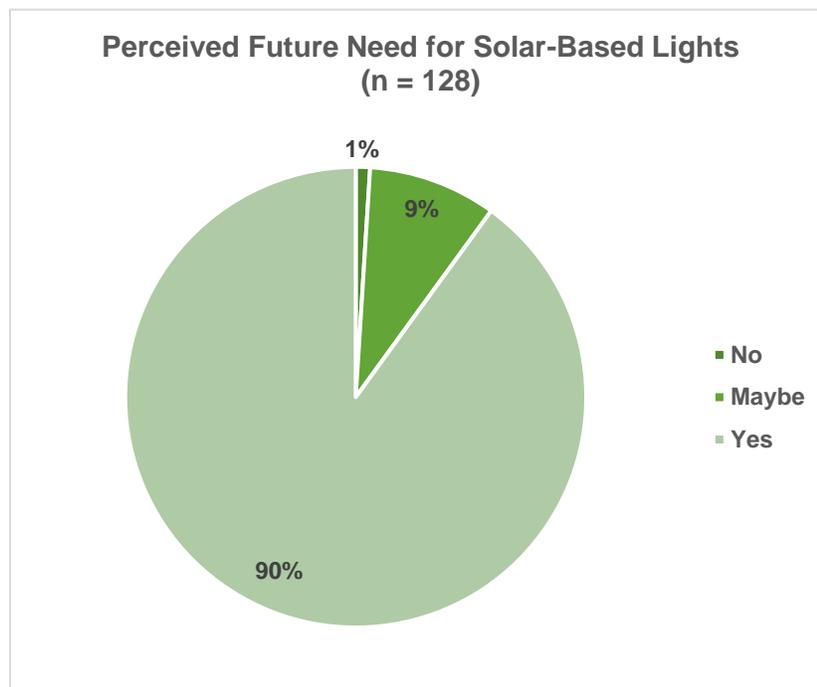
90% of respondents stated that there is a continued need for solar-based lights.	44% of the respondents believed that toilet repairs are needed	73% of households dispose wet waste through community composting and 18% of the households practice individual composting	82% of respondents believe that waste segregation should be a self-driven practice

Solar Based Intervention

Perceived Future Need for Solar-Based Lights (n = 128)

- No
- Maybe
- Yes

1%
9%
90%

Graph 49: Perceived Future Need for Solar-Based Lights

Future of Solar-Based Lights

An overwhelming **90% of respondents stated that there is a continued need for solar-based lights**. This high demand for solar-based lights suggests that beneficiaries recognise their long-term value and are advocates of sustainability. This strong endorsement indicates the need for further expansion of such initiatives.

Figure 8: Interaction with the Community

Toilet Construction

Perceived Need of Repairs in Constructed Toilets (n = 128)

- 44%
- 56%
- ■ No
- ■ Yes
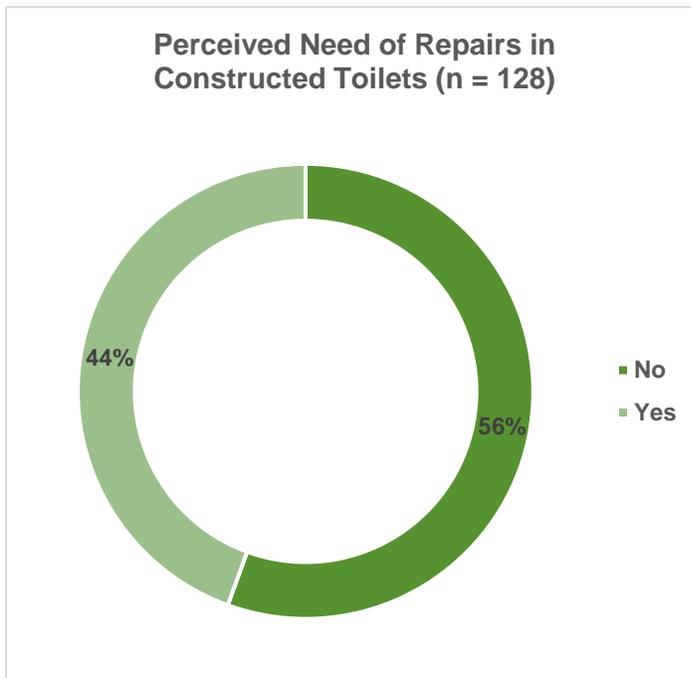
Graph 50: Perceived Need of Repairs in Constructed Toilets

Toilet Repairs

44% believed toilet repairs were needed, indicating potential structural issues or lack of maintenance. **56% feel repairs are not required**, suggesting that a majority find the toilets functional. Although the construction and repair of toilets were carried out by Gram Vikas, their future maintenance was the responsibility of the community. However, a lack of community ownership and contribution led to inadequate maintenance of the toilets built through the initiative. Future interventions should include regular maintenance plans to ensure sustained usability.

Waste Management Based Intervention

**Wet Waste Disposal Mechanisms**
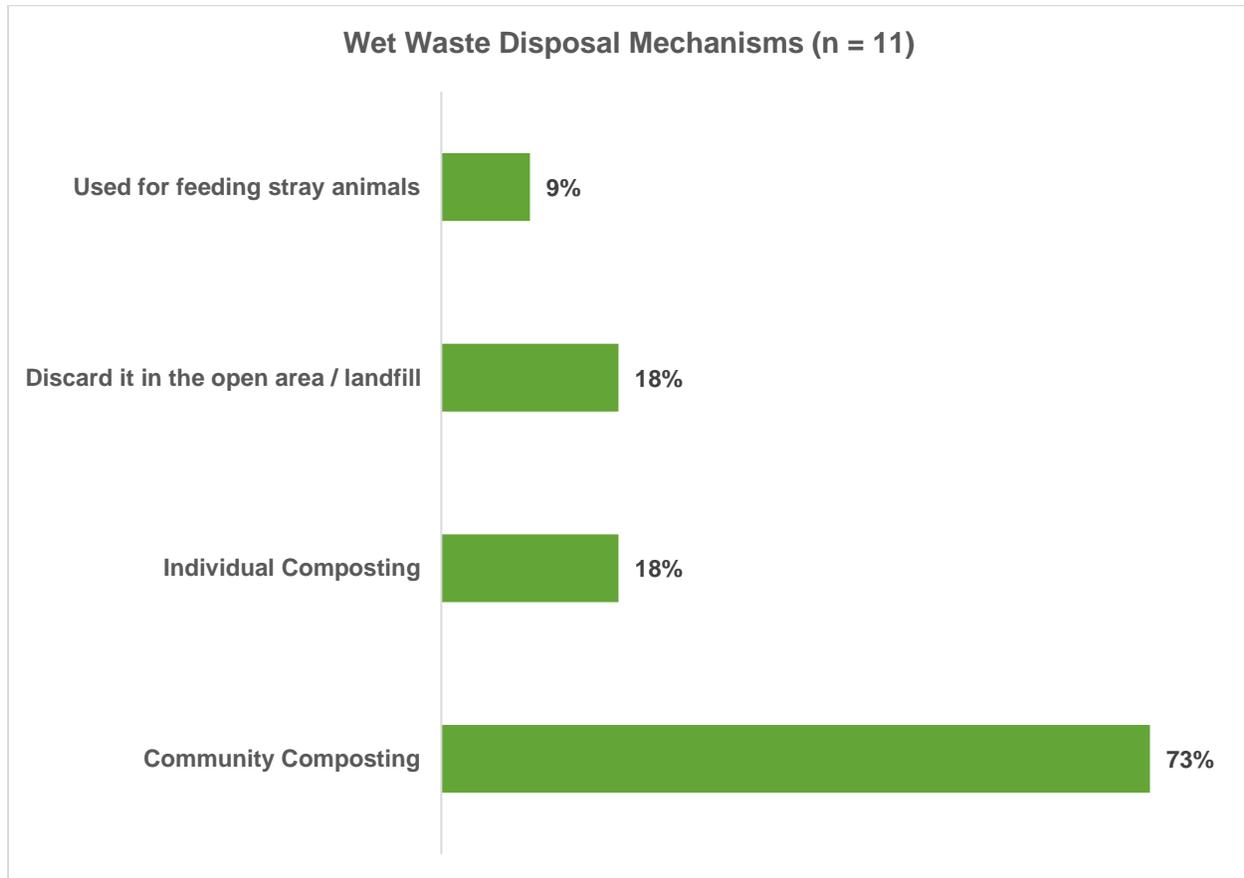
Graph 51: Wet Waste Disposal Mechanisms

73% of households dispose of wet waste through **community composting**, the most preferred method. This suggests that community-level waste management systems are in place and functioning effectively.

Only **18% of households** practice **individual composting**, indicating potential barriers such as lack of space, knowledge, or motivation. Encouraging more households to adopt home composting could further reduce organic waste disposal in landfills.

18% of households still **discard wet waste in open areas or landfills**, indicating that improper disposal is partly prevalent and hence complete elimination of open dumping should remain a focus.

Waste Segregation Monitoring
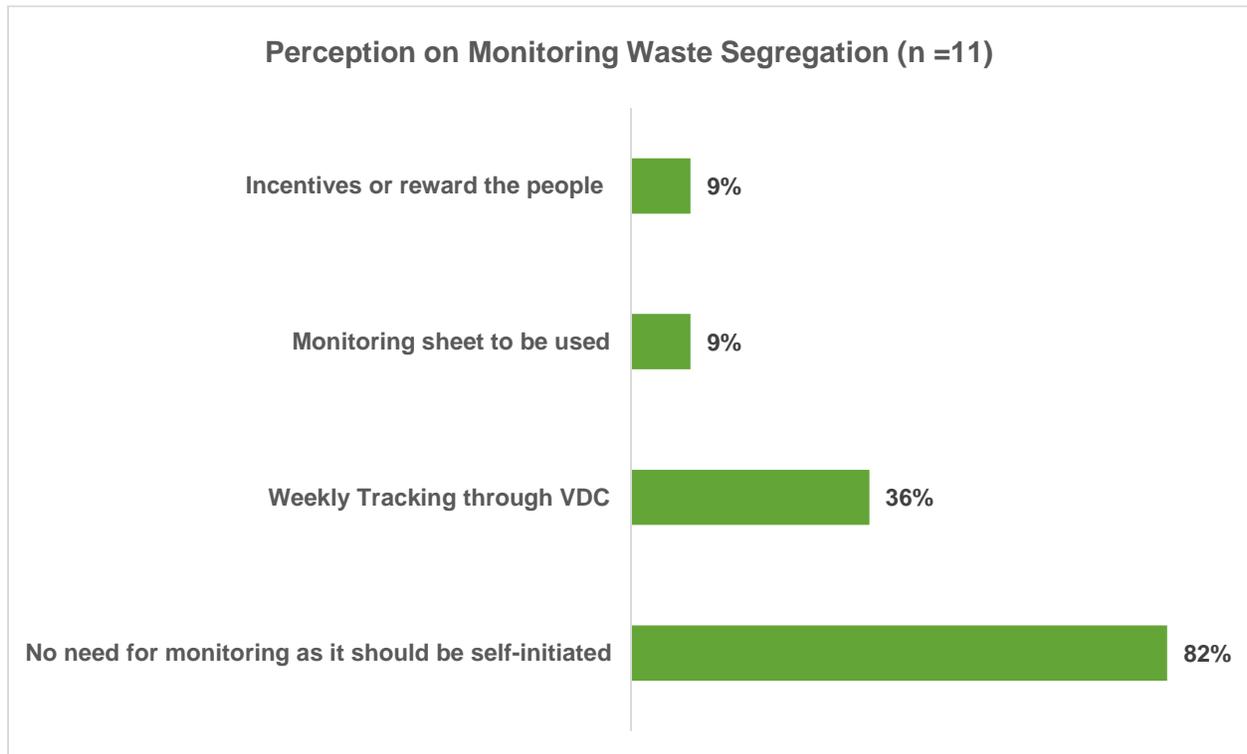
Graph 52: Perception of Monitoring Waste Segregation

The majority (**82% of respondents**) believe **no monitoring of waste segregation is needed** as waste segregation should be a self-driven practice. **36% of the beneficiaries** believed that there should be a process of weekly tracking on monitoring the segregation of waste through VDC. This suggests a **high level of awareness and responsibility** but may also indicate a lack of structured enforcement mechanisms.

Chapter 4

Impact Stories

Chapter 4: Impact Stories

Lighting Up Lives: The Story of Balinali

In the village of Balinali, where darkness once dictated daily life, the installation of solar streetlights brought a new sense of safety and freedom. For years, residents hesitated to step outside after sunset, fearing both accidents and security threats. However, with 45 solar streetlights illuminating the pathways, the village experienced a transformation.

Sita Devi, a resident, shared her heartfelt experience: *"Earlier, we used to finish all our work before sundown. Walking outside was risky, especially for women and children. Now, with the streetlights, our village feels alive even at night. We can attend community gatherings, visit neighbours, and even work on small household tasks after dark."*

While challenges remain with the maintenance of the lights, the community, through the Village Development Committee (VDC), has begun taking ownership of repairs, ensuring sustainability. This project has not only provided physical light but has also ignited a sense of community responsibility and empowerment.

Water for All: Phulijhari's Journey to Clean Water

In Phulijhari, the struggle for clean drinking water was a daily ordeal. Women walked miles to fetch water, often from unreliable and unsafe sources. The construction of a 27,000-litre water tank, powered by a solar pump, changed everything.

Rekha, a mother of three, expressed her relief: *"We no longer wake up at dawn to fetch water. Our children can now drink clean water without the fear of falling sick. It has truly improved our quality of life."*

Beyond just convenience, access to clean water has improved hygiene, reduced waterborne diseases, and allowed children to attend school without the burden of water collection. The villagers' voluntary labour in constructing the tank showcases their commitment to a healthier future.

From Open Fields to Dignity: Sanitation in Tangirisahi

For decades, the people of Tangirisahi had no choice but to practice open defecation, exposing them to health hazards and social stigma. Thanks to the sanitation initiative, 64 households now have access to toilets and bathrooms. To encourage participation, families who built their toilets were provided with solar home lights as an incentive.

For women like Meena, the change has been life-altering: *"Having a toilet at home has given us dignity and safety. We no longer have to go out in the dark, worrying about our safety. Our daughters are growing up in a cleaner and safer environment."*

The initiative has not only improved sanitation but also instilled a sense of pride and hygiene awareness within the community.

Waste to Worth: Managing Waste in Putagadia

Managing waste was a persistent challenge in Putagadia. With no designated disposal system, garbage was strewn around, leading to unhygienic conditions. Through the project, ten dustbins were strategically placed, encouraging waste collection and segregation.

Villagers have now adopted better waste management practices. Some even use the burnt ash as bio-fertiliser for their crops. *"Earlier, our surroundings were littered with waste. Now, we collect and dispose of it properly. It's a small but meaningful change in our village,"* says Suraj, a VDC member.

Chapter 5

Brand Equity

Chapter 5: Brand Equity

Brand Equity refers to a value premium that a company generates from a product or service through its name recognition. Organisations can enhance their brand value and reputation by providing service that is reliable, efficient, memorable, and of superior quality. In this study, we have determined the brand equity of **EMIL – a part of the Aditya Birla Group**.
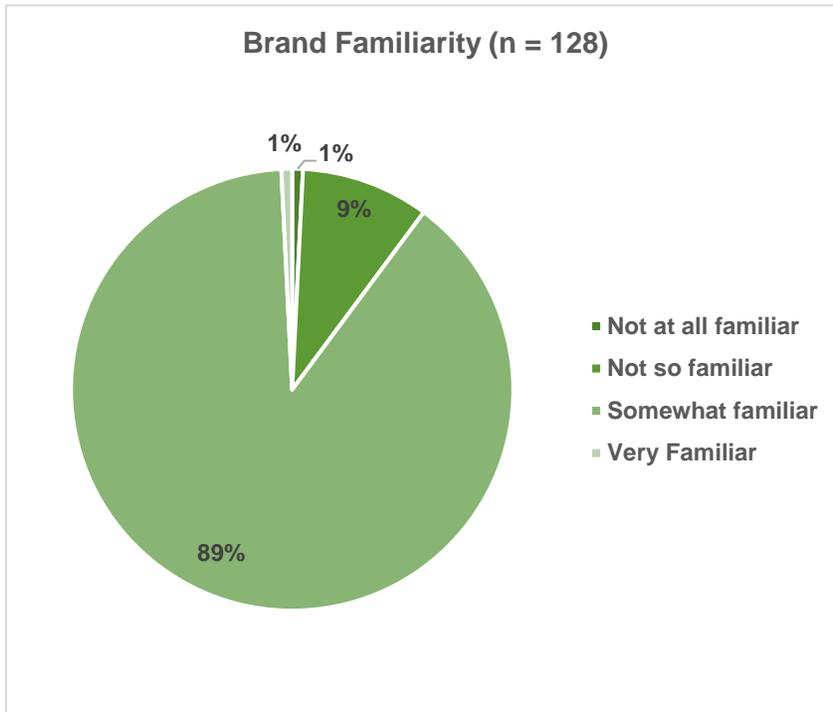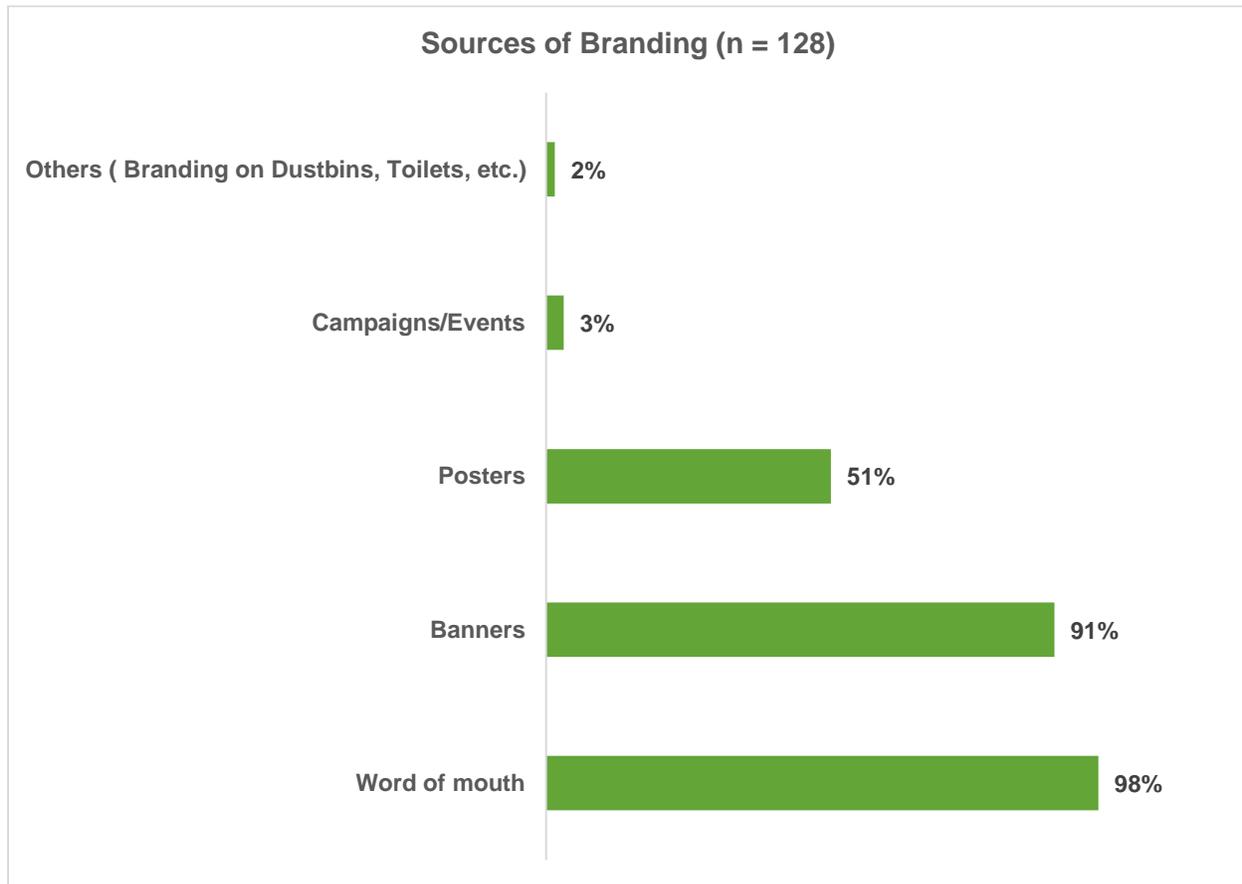

Graph 53: Brand Familiarity

Brand Familiarity

89% of the respondents have some level of awareness about EMIL. The data suggests that while brand awareness was relatively high, deep familiarity remains low. Further engagement strategies could help strengthen brand recognition and foster a stronger connection with the audience.
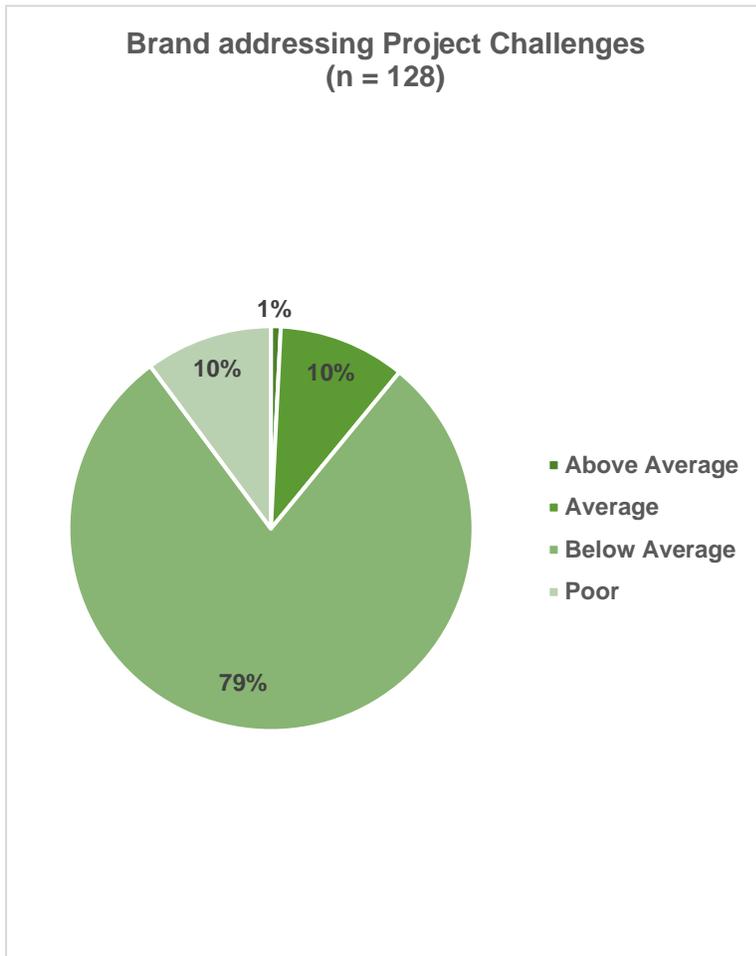
Sources of Branding

Graph 54: Sources of Branding

98% - Word of Mouth: The most dominant source of branding, indicating a strong reliance on personal recommendations and community discussions.

91% - Banners: A significant portion of respondents identified banners as a major branding source, highlighting their effectiveness in visibility.

51% - Posters: More than half of the respondents acknowledged posters as a branding medium, though their impact is lower than banners.

This highlights that word of mouth and banners were the most effective branding strategies, while alternative methods such as campaigns and infrastructure branding had a relatively limited reach.

Brand addressing Project Challenges (n = 128)

Above Average
Average
Below Average
Poor

Graph 55: Brand addressing Project Challenges

**Brand Addressing Project Challenges**

Average: 10% of respondents rated the brand's performance as average, indicating that while the brand meets expectations, there may be opportunities for further improvement.

79% - Below Average: A major proportion of the beneficiaries felt that the brand's effectiveness was below average. This can be attributed to a low level of awareness about the recognition of the fact of EMIL implementing the project. Additionally, the challenges highlighted in the recommendations section complement this attribution.

10% - Poor: A minimal proportion of respondents rated the brand poorly, reflecting a very low level of dissatisfaction.

This highlights that while the brand was generally meeting expectations, there was scope to enhance its impact and move more perceptions from "average" to "above average."

Brand Perception for Future Association
(n = 128)

3%

97%

- No
- Yes
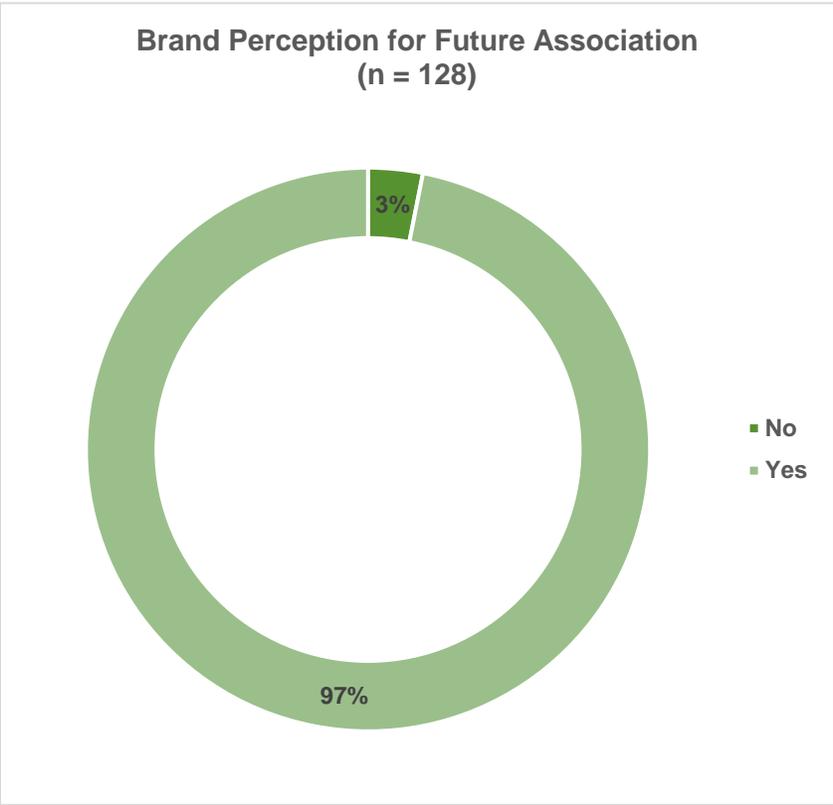
Graph 56: Brand Perception for Future Association

Future Collaborations

97% - Yes - An overwhelming majority of respondents expressed a positive perception, indicating strong trust and confidence in the brand and highlighting a highly favourable brand perception, reinforcing the project's credibility and impact among beneficiaries.

Chapter 6

Recommendations

Chapter 6: Recommendations

Project Areas	Challenges Encountered	Recommendations
Solar Based Lightings	**89% of the beneficiaries** highlighted that the installed solar lights are partially operational and are operating only for 1–3 hours a day. Other challenges encountered were – • Poor battery quality and inadequate maintenance • The beneficiaries provided a **weighted average rating of 3.28 out of 5** on regular cleaning of solar lights indicating the gaps in cleaning consistency. • Placement of lights under tree canopies, reduced solar exposure. • Lack of community awareness on maintenance responsibilities.	• Conducting periodic maintenance training for Village Development Committees (VDCs). • Providing high-quality batteries and ensuring optimal placement of solar panels for maximum sunlight exposure. • Establishing a community-led maintenance fund for repair costs.
Drinking Water Supply	• Solar-powered water pumps underperform, requiring frequent manual operation. • A significant portion **(37%)** of respondents believed that water testing was not conducted due to limited access to Field Testing Kits (FTKs). • Limited availability of trained water cadres for water monitoring.	• Training and equipping local VDC members to conduct regular water testing. • Providing dedicated FTKs to each village with scheduled quarterly testing. • Implementing a structured maintenance protocol for solar-powered water pumps.
Waste Management	• Limited waste segregation; dry waste is often mixed with plastics and other materials. • No designated waste collection system or vehicles. • Burning of waste remains a common disposal method.	• Implementing a structured waste collection and disposal mechanism in collaboration with PRI. • Providing waste collection vehicles and designating trained personnel for regular collection.

		• Strengthening awareness campaigns on waste segregation and discouraging open burning.
PRI Involvement	• Limited participation of PRIs in project planning and decision-making.	• Increasing the involvement of Panchayats in infrastructure planning and implementation.

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