

Booklet on

Rooftop Rainwater Harvesting in Schools of Odisha

Promoting Environmental Stewardship Through Rainwater Harvesting



Rooftop Rainwater Harvesting Structure in
Khairbani Ashram School, Mayurbhanj, Odisha

Introduction

Odisha, like many other regions, faces significant water challenges due to factors such as droughts, floods, and groundwater depletion. The state's groundwater extraction has increased from 30% to 42% between 2013 and 2017¹, leading to a considerable loss of groundwater resources. Additionally, changing rainfall patterns and population growth exacerbate the situation.

According to the Central Ground Water Board (CGWB), Odisha's groundwater volume was estimated to be 16.69 billion cubic meters in 2009². By 2017, this figure had declined to 15.57 billion cubic meters, representing a reduction of 1.12 billion cubic meters, or 6.71 %.

Odisha's groundwater volume has decreased over the years, with 24 out of 30 districts³ have been experiencing depletion between 2009 and 2017 according to a report by the Central Ground Water Board (CGWB) published in 2021⁴. Aquifers have gone dry, affecting both rural and urban areas. Urban centers like Bhubaneswar face immense pressure on water resources. The groundwater level in the greater Bhubaneswar area has dropped significantly, and water consumption has doubled in the last decade.

To combat these challenges, Odisha Government has taken proactive steps. In collaboration with the Centre for Science and Environment, the state has implemented an intensive campaign for rainwater harvesting . As part of this effort, 12,000 Rainwater Harvesting Structures⁵ (RWHS) have been established across 2,035 wards in 114 urban local bodies. These structures aim to conserve water and recharge

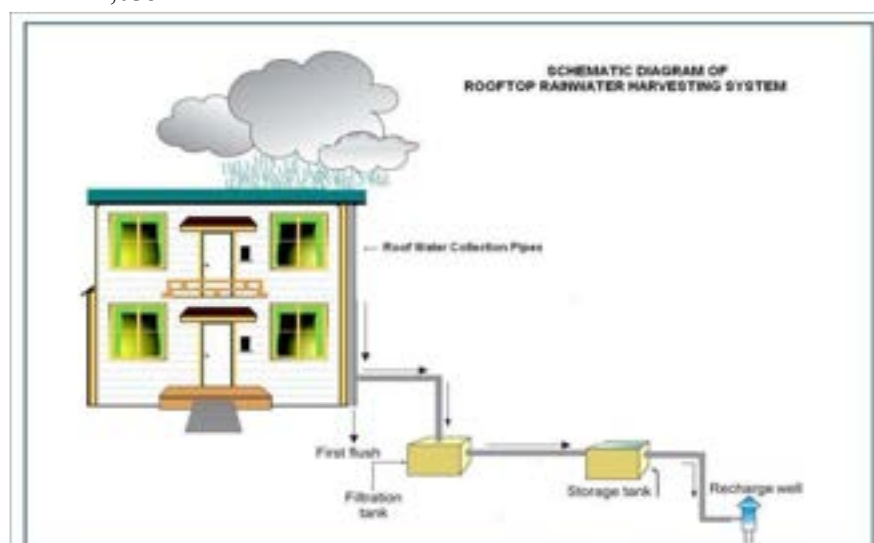


Figure: Components of Rainwater Harvesting- Source: Rainwater Harvesting in a residential campus at Ghaziabad U.P. (Research paper published in International Journal of Research Publication and Reviews, Vol. 5, no. 4, pp 2181-2185 April 2024)

groundwater.

Although rainwater harvesting has been implemented in all the Urban Local Bodies, it has been realised that rural area and schools are interested to have RTRWHS in the communities and schools . The recharge bore wells and open wells have now proved to be more successful to recharge deep fractures, fissures. Hence, the individual households and institutions may be advocated to practice the

methodologies.

¹ <https://www.downtoearth.org.in/climate-change/catch-the-rain-fix-water-crisis-how-odisha-leads-by-example-78583>

² <https://www.downtoearth.org.in/climate-change/catch-the-rain-fix-water-crisis-how-odisha-leads-by-example-78583>

³ <https://www.downtoearth.org.in/climate-change/catch-the-rain-fix-water-crisis-how-odisha-leads-by-example-78583>

⁴ <https://www.tandfonline.com/doi/full/10.1080/07900627.2023.2279962#d1e168>

⁵ <https://www.downtoearth.org.in/climate-change/catch-the-rain-fix-water-crisis-how-odisha-leads-by-example-78583>

In rooftop harvesting, the roof becomes the catchment, and the rainwater is collected from the roof of the house/building. It can either be stored in a tank or diverted to artificial recharge system. This method is less expensive and very effective and if implemented properly helps in augmenting the groundwater level of the area.

Rooftop Rainwater Harvesting can be done at any building, large or small, where each of the following form a part of the RWH structure. The RWH system mainly consist of catchment area, transportation, flushing and filter media (Sand gravel filter/Charcoal filter). The roof top rainwater is collected and stored for direct use, or it can be recharged the groundwater level.

Background

Water scarcity is a pressing issue in many regions, including Odisha, India. Schools, as essential institutions in communities, often face challenges in meeting their water needs. To address this problem, UNICEF Odisha, in collaboration with the Odisha State Education Programme Authority (OSEPA), initiated a program to encourage rooftop rainwater harvesting (RTRWH) in schools. This case study evaluates the implementation and effectiveness of RTRWH structures in Odisha schools.

Necessity of rooftop rainwater harvesting

1. To meet the ever-increasing demand for water.
2. To reduce the runoff which chokes storm drains.
3. To avoid flooding of roads.
4. To augment the ground water storage and control decline of water levels.
5. To reduce ground water pollution.
6. To improve the quality of ground water.
7. To reduce soil erosion.
8. To supplement domestic water requirement during summer, drought etc.

Advantages of Rainwater Harvesting

1. Provides self-sufficiency to water supply.
2. Saves the cost for pumping of ground water.
3. Provides high quality water, soft and low in minerals.
4. Improves the quality of ground water through dilution when recharged to ground water.
5. Reduces soil erosion in urban areas as run off gets minimized.
6. The rooftop rainwater harvesting is less expensive.
7. Rainwater harvesting systems are simple which can be adopted by individuals.
8. Rooftop rainwater harvesting systems are easy to construct, operate and maintain.
9. In hilly terrains, rainwater harvesting is preferred.
10. In saline or coastal areas, rainwater provides good quality water and when recharged to ground water, by reducing salinity and helping maintain balance between the fresh-saline water interface.
11. In marine islands, due to limited number of freshwater aquifers, rainwater harvesting is the most preferred source of water for domestic use.

12. In desert, where rain fall is low, rainwater harvesting has been providing relief to people for centuries.

Therefore roof top rain water harvesting should focus on:

1. **Structure and design:** The RTRWH structure should be well-designed and properly installed, covering the entire rooftop area.
2. **Water collection:** The system should collect and store rainwater efficiently, with a capacity of approx 70,000 liters.
3. **Water quality:** The harvested water should be clear and free of contaminants, suitable for non-potable purposes like flushing toilets and washing.
4. **Maintenance:** The system should be well-maintained, with regular cleaning and inspection schedules in place.
5. **Awareness and Education:** Students and staff should be aware of the importance of rainwater harvesting and its benefits.
6. **Integration with Sanitation Facilities:** The harvested water should be connected to the school's sanitation facilities, reducing the demand on groundwater source.

U-DISE PLUS Data: According to the U-DISE PLUS data for 2021-22, only 1457 out of 48542 government schools in Odisha had RTRWH structures. This indicated a significant gap in the implementation of sustainable water harvesting solutions.

Joint Initiative of UNICEF and OSEPA: To address this issue, UNICEF Odisha and OSEPA collaborated to orient engineers from the State and Mass Education Department (S&ME Dept.) on the technical aspects of RTRWH. Training sessions were conducted with the support of IIT Bhubaneswar to provide a comprehensive understanding of RTRWH design, installation, and maintenance.

Implementation Process



Dr. (Prof) R K Panda from IIT, Bhubaneswar delivering speech during Training on RTRWH and WASH in school orientation program- October 2022

Training and Capacity Building: In collaboration with the Odisha School Education Program Authority (OSEPA), UNICEF Odisha organized a training program to equip engineers from the Schools and Mass Education (S&ME) Department with the necessary knowledge and skills to effectively construct or retrofit rooftop rainwater harvesting (RWH) units in schools. With technical support from UNICEF and the Indian Institute of Technology (IIT), Bhubaneswar, a **5 batches each of one-day training** programs were conducted from September 28th to October 2nd, 2022. **A total of**

349 technical personnel from the S&ME Department participated in the training. The aim of the training was to ensure comprehensive understanding on design principles, materials, installation techniques, and maintenance practices of RTRWH structures.

Renowned experts from IIT Bhubaneswar and UNICEF, shared their expertise and insights on RWH structures, tailoring their presentations to the specific geographic regions of Odisha. The training focused on providing participants with a deep understanding of the requirements for RWH structures in schools, considering the unique challenges posed by water scarcity and stress in the state. During the training the technical personnel were asked to work on designs of RWH units suitable for their respective district schools.



Participants are presenting their project work after group discussion.

Action Plan Development:

Following the completion of the training program, a comprehensive action plan was developed in close collaboration with district officials and UNICEF consultants. This strategic plan outlined the specific steps, timelines, and responsibilities required to construct new or retrofit existing rooftop rainwater harvesting (RWH) structures in schools across Odisha.

Key components of the action plan included:

- **Prioritization of schools:** Identifying schools most vulnerable to water scarcity and those with the greatest potential for RWH implementation.
- **Resource allocation:** Securing necessary funding, materials, and technical support for RWH structure construction.
- **Capacity building:** Providing ongoing training and support to school staff and maintenance personnel on RWH system operation and maintenance.
- **Monitoring and evaluation:** Establishing a framework to track progress, assess the effectiveness of RWH structures, and identify areas for improvement.

By following this well-structured action plan, UNICEF, in partnership with local authorities, aimed to ensure the successful and sustainable implementation of RWH structures in identified schools.

Monitoring and Evaluation:

To ensure the effective implementation and ongoing performance of rooftop rainwater harvesting (RWH) structures in Odisha schools, a comprehensive monitoring and evaluation (M&E) framework was established. A key component of this framework was the Monthly Progress Report (MPR), which provided detailed data on the number of schools equipped with RWH systems. Beyond the simple count of RWH structures, the MPR included additional metrics to assess the effectiveness of the program.

District level Senior Technical Consultants (Sr.TC) under OSEPA played a pivotal role in mobilizing funds and overseeing the construction of rooftop rainwater harvesting (RTRWH) structures in schools. They conducted site assessments to identify optimal locations, ensuring compliance with technical specifications for efficient and sustainable rainwater collection. Their technical expertise, attention to detail, and commitment to sustainability contributed significantly to water conservation efforts. They were the backbone of RTRWH implementation in Schools and are unsung heroes who helped make a tangible difference in schools and communities.

Role of Senior Technical Consultants:

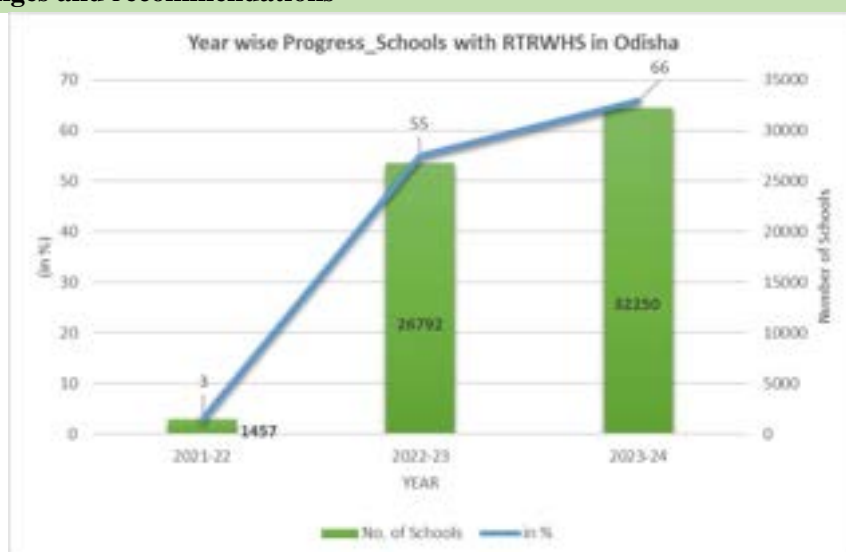
1. **Technical support:** Provided technical guidance on designing and implementing the RTRWH structure, ensuring compliance with industry standards and best practices.
2. **Funding source identification:** Identified funding sources and developed proposals, while facilitating engagement with CSR, line department officials, and school administrators to secure commitments and align projects with stakeholder interests.
4. **Project management:** Oversaw project implementation, ensuring timely completion, quality control, and budget adherence.

By periodically collecting and analyzing this data, UNICEF and its the stakeholder department could identify areas for improvement, address challenges, and ensure that RWH structures were delivering the intended benefits to schools.

Results and Impact

- **Significant Increase in RTRWH Structures:** As per UDISE+ 2021-22, Odisha had only 1,457 schools (3.1%) with rainwater harvesting facilities, which was significantly below the national average of 18.2% for government schools, however, with substantial improvements over the past two years, the state has achieved remarkable progress, increasing rainwater harvesting coverage to 32,250 schools (66%) as per UDISE+ 2023-24. According to U-DISE PLUS data for 2023-24, 32250 schools in Odisha now have RTRWH structures (See Chart-1 & Table 1).
- **Improved Water Security:** The RTRWH structures have helped to improve water security in schools, reducing reliance on external water sources and ensuring a more sustainable supply.
- **Environmental Benefits:** RTRWH contributes to environmental sustainability by reducing water consumption and runoff, mitigating the impacts of climate change.

Challenges and recommendations



- **Operation and maintenance:** While the number of RTRWH structures has increased, ensuring their proper operation and maintenance is crucial for long-term sustainability. Regular cleaning, inspections, and repairs are essential to prevent clogging and contamination.
- **Awareness and education:** Raising awareness among school staff and students about the importance of RTRWH and its benefits is essential for promoting its adoption and effective use.
- **Expansion and replication:** The success of RTRWH in Odisha schools can be replicated in other regions facing similar water scarcity challenges. Expanding the program to include more schools and exploring innovative RTRWH technologies can further contribute to sustainable water management.
- **Planning:** The construction of RTRWH structures in schools faces challenges related to site selection and fund availability. In fact, there is no dedicated funding for this purpose. However, through coordination with various line departments, the construction can be initiated. In schools with a higher number of students, a portion of the composite grant can be allocated for this purpose.
- **Construction quality:** Although technical personnel are involved in the construction process, there is a need for capacity building and further orientation to ensure the structures are built according to site specifications. In 2022, UNICEF, in collaboration with OSEPA, organized an orientation program, which enhanced the visibility of the RTRWH structures. However, continued orientation and skill development are necessary to improve construction quality and maintenance practices.

Key Learning:

- Regular checks, cleaning, and repairs ensure sustained functionality of RTRWHs.
- Knowledge dissemination is crucial for successful implementation.
- Linking the harvested water to sanitation facilities is a smart move. It not only reduces groundwater demand but also promotes a holistic approach to water management.
- Continuously educating students, staff, and the community about the benefits of RTRWH is vital.

Way Forward:

Nearly 16292 schools are yet to construct rooftop rainwater harvesting structures in the State. It is proposed that an orientation should be conducted for all technical personnel in the S&ME department to provide the opportunity to complete the retrofitting or new construction of RTRWH in the schools alongwith ensuring better operational maintenance of the structure. This would ensure the sustainability of the rooftop rainwater harvesting structure in schools.

Involving the school cabinet and eco clubs during the construction of the RTRWH structure can be highly beneficial. Although the action plan for this structure is outlined in the CR-SAP, each school needs tailored support to develop its own plan. Additionally, the School Management Committee (SMC) and School Development and Monitoring Committee (SDMC) should be involved in consultation with technical experts before the construction begins. Efforts should also be made to seek financial assistance from the Gram Panchayat (GP) or Urban Local Body (ULB) to support the creation of the structure within their respective areas.

To solve water scarcity and promote sustainable water management, the installation of RTRWH structures in Odisha schools has been a landmark step. The program has resulted in a significant rise in the number of schools having RTRWH facilities through capacity building and monitoring. However, ongoing efforts are required to ensure the proper operation and maintenance of these structures and to expand their reach to more schools in the state. RTRWH structures in Odisha schools have proven to be effective water conservation and sustainability tools. By addressing challenges such as maintenance and

awareness, their impact can be further enhanced. Odisha can continue to lead the way in sustainable water management for its schools and communities.

ANNEXURE 1

Table: 1 DISTRICT WISE DATA OF ROOFTOP RAINWATER HARVESTING STRUCTURES (RTRWHS) AS PER OSEPA

Sl. No.	District	Total Number of Govt Schools (Elementary and Secondary)	Year-wise increase in the Number of Schools with RTRWHS		
			2021-22	2022-23	2023-24
1	Angul	1377	31	603	639
2	Balasore	2312	44	802	811
3	Baragarh	1464	33	609	642
4	Bhadrak	1529	42	869	1186
5	Bolangir	2071	29	1534	1667
6	Boudh	669	57	218	227
7	Cuttack	1935	85	1123	1212
8	Deogarh	479	11	226	238
9	Dhenkanal	1287	34	733	902
10	Gajapati	894	38	573	851
11	Ganjam	3043	143	2330	2872
12	Jagatsinghpur	973	37	427	675
13	Jajpur	1769	23	962	1037
14	Jharsuguda	578	22	448	575
15	Kalahandi	2167	70	1025	1931
16	Kandhamal	1659	68	1176	1208
17	Kendrapara	1522	41	797	808
18	Keonjhar	2524	33	1856	1905
19	Khurdha	1204	78	693	936
20	Koraput	2261	41	692	810
21	Malkangiri	1283	45	287	549
22	Mayurbhanj	3939	83	2134	2766
23	Nabarangpur	1808	46	1448	1673
24	Nayagarh	1038	23	572	838
25	Nuapada	899	25	683	728
26	Puri	1895	37	417	546
27	Rayagada	1817	61	1236	1328
28	Sambalpur	1194	50	877	1000
29	Sonepur	812	28	387	417
30	Sundergarh	2140	99	1055	1273
Odisha		48542	1457	26792	32250



RTRWHS SC&ST School Huma, Ganjam
Flush Valve SC&ST School Huma, Ganjam



RTRWHS Palur Garh UPS, Ganjam



Sundergarh District Administration has taken initiatives on Awareness Programme of Roof Top Rain Water Harvesting Structure in Institutions, Community and Public Buildings

Link:- <https://podcasters.spotify.com/pod/show/district-administration-sundargarh/episodes/Episode-19--Rooftop-Rain-Water-Harvesting-in-Sundargarh-e10ghe4/a-a5gj4qr>

ANNEXURE 2

Success stories from schools of Odisha

1. Khairbani Ashram School – National Water Awardee school in Mayurbhanj district, Odisha

School Name: Khairbani Ashram School

Type: Co-educational, Single Shift, Residential Upper primary School.

Village: Khairbani

Block: Betnoti

District: Mayurbhanj

State: Odisha

Enrolment: 427 (Boys -252, Girls -175)



Students in front of Khairbani School main gate

This is a story of Khairbani ashram school in Mayurbhanj district in Odisha. Founded in 1951, it is one of the oldest schools in the Betnoti block. The school is managed by the ST & SC Development Department (SSD), and most of the students live on campus. Approximately 90% of the students belong to the Schedule Tribe (ST) community and come from underprivileged backgrounds. The process of instilling health and hygiene habits among them was not as easy as it might seem, due to the fact that they been brought up in families secluded from mainstream of development . As a result of the continuous and pin staking efforts of teachers to instill good hygienic behaviours, the school achieved the Swachh Vidyalaya Puraskar (SVP) State level award in 2019. Teaching staff, non-teaching staff and School Management Committee (SMC) members were trained and have collaborated to sustain the practice with proper guidance from school & Mass Education Department & UNICEF. The school was awarded with the SVP State level award in 2021-22 and 3rd position in the prestigious National Water Awards 2023. Notably the SVP includes indicator on rainwater harvesting

Glory of Khairbani Ashram School

This school has its own Swachhata Action Plan (SAP) to identify and fill up the gaps regarding WASH components notably UNICEF played a role in helping the school develop this plan.. This school has piped water connection, functional water taps, reverse osmosis (RO) water filter and covered water containers for all educational blocks and hostels. Drinking water samples are tested quarterly on a regular basis and total dissolved solids (TDS) of drinking water is monitored by trained teachers. The school cabinet is aware of their duties and responsibilities regarding health and hygienic practices, hand washing and other WASH facilities. The adolescent girls are well trained by the teachers regarding menstrual health and hygiene and proper use of electric and brick incinerators. Almost all walls, corners, pillars of the school are painted and displayed with pictorial messages (IEC) to promote the importance of clean drinking water, sanitation, hand washing, cleanliness, COVID-19 awareness, life skill habits, etc.

The teachers regularly motivate students to practice correct handling of water, use of toilets, washing hands; usage of masks and maintaining social distance is practiced during critical situations. The school has 5 group hand wash stations and 5 water taps in different corners to meet the requirement of students. The SMC is oriented on WASH during the monthly meetings. Also, during COVID-19 times, the school installed a minimal touch hand wash Stations with technical guidance of UNICEF.

The school has a separate system for solid and liquid waste management and rainwater harvesting system using the composite grant and school maintenance funds. Near about 1.25 lakh has been mobilised for RTRWH in schools. The teaching, non-teaching staff and students been reached through capacity building trainings on WASH. Last but not the least the school has a beautiful evergreen kitchen garden, beautiful flower garden and neat and clean environment which imparts a positive attitude among the students.

Khairbani Ashram School gets the 5th National Water Awards 2023

This school has achieved a remarkable milestone by securing third place in the Best school or college category at the 5th National Water Awards 2023. This recognition was a result of the school's outstanding water conservation efforts, including the installation of a rooftop rainwater harvesting system and the development of a 4,000-square-foot kitchen garden on its campus. These initiatives not only promoted sustainability but also served as practical learning tools for the students.

UNICEF has played a pivotal role in supporting Khairbani ashram school and other institutions in Odisha. Through its technical guidance and in collaboration with the Odisha school education programme authority (OSEPA), UNICEF has oriented 102 schools across the state in sustainable water management practices. As part of this initiative, 52 schools from Odisha applied for the National Water Awards, with Khairbani Ashram School emerging as a national leader in water conservation.



“Rooftop rainwater harvesting is not just about collecting water; it’s about nurturing a sustainable future. By capturing rain, we empower our schools and students to conserve resources, enhance learning, and take charge of their environment.”

Binita Dash

Headmistress

2. Collective Efforts Deliver Success at Langleswar High School, Humma, Ganjam district, Odisha: how this school overcame challenge posed by a high-water table for rain water harvesting

Langleswar High School, located near NH-5, Ganjam district is a government-aided institution having both boys' and girls' students. The school has undergone infrastructural transformation, particularly in Water, Sanitation, and Hygiene (WASH) facilities including RTRWH. This school now has separate toilets for boys and girls, as well as a designated toilet for Children with Special Needs (CWSN). Recently, with support from the Ground Water Division of the Water Resource Department in Berhampur, the school has successfully installed a rooftop rainwater harvesting system (RTRWHS).

Overcoming Challenges in a Cyclone-Prone Areas



School students in front of Langleswar High School

Located in Ganjam district's coastal and cyclone-prone region, the school's high-water table posed challenges for implementing rainwater harvesting. The School Management Committee (SMC) and staff were initially hesitant, concerned that the collected rainwater would not recharge the ground due to the high water table, potentially submerging the recharge pit and limiting the area for student activities. However, Mr. Nilakantha Sundray, Senior Technical Consultant at the District Project Office of Samagra Siksha, convinced the SMC and Headmaster that the school's large catchment area made it ideal for rainwater harvesting.

Community Collaboration and Support

Mr. Ramesh Chandra Sahu, the Sarpanch of Langleswar Gram Panchayat, and Mr. Prafulla Ku Dalai, the Headmaster, collaborated with Mr. Sundray to secure funding from the Ground Water Division, Water Resource Department, Berhampur, for the installation. Their persistence, along with community involvement, played a key role in realizing the project.

Generating awareness among students

As a result of the school's awareness programs on rainwater harvesting, led by both staff and community members, students became enthusiastic about the project. Many expressed a desire to implement similar systems in their own villages.

Successful Installation of the RTRWHS

During a site visit by UNICEF, the following key components of the system were highlighted:

Structure and Design: The rooftop rainwater harvesting system was expertly designed and installed in the year 2022, utilizing the entire rooftop as a catchment area. Fencing ensures that rainwater is efficiently collected and directed to a recharge pit with a capacity of 70,000 liters.

Water Collection: The roof was properly graded, and PVC pipes were fitted to collect rainwater, which is then directed to a 70-foot-deep percolation shaft to recharge the ground.

Installation of Flush Filter: A flush filter was installed on the wall to ensure that the initial runoff from the roof is filtered before being stored.

Water Quality: Regular tests are conducted to monitor the biological and chemical safety of the harvested water.

Maintenance: The system is well-maintained, with regular cleaning and inspection protocols in place.

Awareness and Education: Both students and staff have gained a deep understanding of the benefits of rainwater harvesting.

Moving Forward

The success of this project is largely attributed to the training and awareness programs on rainwater harvesting, facilitated by UNICEF and Mr. Sundray's persistent efforts during SMC meetings. Thanks to their collective work, Langeswar High School is now a model for sustainable water management in the community.



RTRWHS Recharge Pit Langeswar High School Humma Burudi Ganjam

3. Enhancing school hygiene through roof top rainwater harvesting in Sambalpur district, Odisha

Background

Panchayat Government High School, is located in Jamankira Block, Sambalpur district, Odisha serves as a secondary school for students in 9th and 10th grades. Established in 1966, the school has 154 enrolled students, of which 38 are girls and 116 are boys. With a dedicated teaching staff of 10 and two non-teaching staff members, the school has made significant strides in providing essential facilities, including separate functional toilets for boys and girls, eight hand wash stations with running water, and the provision of sanitary napkins for girl students. Despite these efforts, challenges related to waste management and water conservation persisted.

Problem Statement & Challenges

In addition to waste issues, the school has been facing problems with water drainage during the rainy season. Rainwater would accumulate, causing waterlogging and submergence of surrounding areas. Though the school recognized the potential of harvesting rainwater for both environmental and water conservation purposes, the lack of resources delayed implementation.

Description of Intervention

In 2023, through the determined efforts of the Senior Technical Consultant at the District Project Office (DPO), Samagra Shiksha, Sambalpur, a Roof Top Rainwater Harvesting System (RTRWHS) was successfully installed at the school. This system, implemented under the technical supervision of the DPO, has significantly alleviated the issue of waterlogging and allowed for the harvesting of rainwater, which is now used to recharge groundwater.

Beyond water conservation, the school has also invested in improving the overall hygiene and sanitation for students. An RO water facility has been installed to provide safe drinking water, with regular maintenance to ensure it remains in good working condition. Teachers have taken an active role in promoting water conservation and hygiene among students, conducting awareness programs on health, Water, Sanitation, and Hygiene (WASH) practices. Regular meetings have also been held to educate girl students on the proper disposal of sanitary napkins.

Abstract of the RTRWHS in Sambalpur (2024-25)

The installation at Panchayat Government High School is part of a broader initiative to implement RTRWHS in schools and Anganwadi Centers (AWCs) across Sambalpur district. Below is a summary of the systems installed:

SI No	Name of the Block	School	AWC	Total
1	Bamra	49	143	192
2	Dhankauda	9	35	44
3	Jamankira	1	109	110
4	Jujomura	0	89	89
5	Kuchinda	58	170	228
6	Maneswar	46	73	119
7	Rairakhol	38	39	77
8	Rengali	7	69	76
9	Naktideul	68	105	173
Total		276	832	1108

The RTRWHS installed across the district is a crucial step towards addressing water conservation challenges and creating a sustainable environment for students and staff.

Way Forward

While Panchayat Government High School has made remarkable progress in WASH initiatives, there are still unmet needs. Furthermore, the installation of separate tanks for biodegradable and non-biodegradable waste is essential for better waste segregation. To maintain hygiene standards, a full-time sweeper is needed to clean the toilets regularly.

In addition to infrastructure improvements, child cabinet meetings will be organized to further enhance students' understanding of WASH practices and ensure good operation and maintenance of RWH unit .

“Rooftop rainwater harvesting systems transform our schools into sustainable havens. By capturing and utilizing rainwater, we instil the values of conservation and resource management in our students. This practice promotes a healthier environment and empowers our school communities to actively participate in sustainability efforts.” – Sujata Behera, Headmistress.



Discussion with S Behera HM Panchayat High School Jamankira Sambalpur



RTRWHS rechargeable pit Pancyat High School Jamankira Sambalpur

4. Sustainable Water Solutions for Remote Schools in Rayagada district, Odisha

Background

Nestled 55 kilometers from the Rayagada district headquarters, Badamaribhata Ashram School in Kashipur, Rayagada, has been providing education to students from 1st to 8th grade since its establishment in 1953. [Water scarcity in Rayagada](#) remains a pressing issue, with defunct water supply projects and drying tube wells causing acute shortages in numerous villages. Many tribal communities in

the district still face difficulties accessing clean drinking water, particularly in remote areas. As a residential school, it accommodates 235 boys and 178 girls, offering both education and shelter to children from rural and underprivileged backgrounds. Despite the challenges of its remote location, the school has shown great resilience in addressing its water needs through a sustainable approach.

The Initiative

In March 2022, with the persistent efforts of Sri Sanjay Kumar Padhi, Senior Technical Consultant at the District Project Office (DPO), Samagra Shiksha, Rayagada, the school received critical support from the

Sl	Primary Information	Description
1	Name of the School	Badamaribhata Ashram School, Kashipur Rayagada
2	Roof Top Rain Water Harvesting	Implemented by :- ICICI Foundation March 2022
3	Residential 1 st to 8 th Class	Boys:- 235 Girls :- 178
4	Name of the Head Master	Siva Prasad Panda
5	Date of Establishment	1953

ICICI Foundation's CSR initiative. Through this collaboration, a Roof Top Rain Water Harvesting System (RTRWHS) was installed in the hostel building, providing a vital source of water for the students and staff. This project was part of a broader effort to implement sustainable water solutions in schools across Rayagada, where rainfall is often erratic, and access to clean water can be limited.

Scaling the Impact

The success of the RTRWHS at Badamaribhata Ashram School is part of a larger initiative led by the ICICI Foundation in collaboration with the Ground Water Division and DPO, Samagra Shiksha Rayagada. Over the years, they have installed numerous rainwater harvesting structures in schools throughout the district. The results are as follows:

- In 2022, 59 structures were installed across various schools.
- In 2023, the number rose to 75 structures.
- By 2024, an additional 16 structures had been constructed.

As confirmed by the DPO, all installed structures are fully operational, with regular maintenance being carried out by the schools themselves.

Sustainability and Long-Term Impact

Beyond just a one-time installation, the ICICI Foundation's approach emphasizes sustainability. The 1,328 RTRWHS structures documented in schools by the 2023-24 academic year reflect the long-term commitment to addressing water scarcity in Rayagada. These structures not only provide essential water resources but also serve as educational tools, teaching students the importance of water conservation and environmental stewardship.

Conclusion

The transformation of Badamaribhata Ashram School is a testament to the power of community-driven solutions and effective partnerships. The dedication of individuals like Sri Sanjay Kumar Padhi and the support from the ICICI Foundation have paved the way for a sustainable future, where access to clean water is no longer a barrier to education. Through these efforts, the students of Rayagada are learning that a dedicated approach can indeed make sustainable change attainable.



RTRWHS Badamadhibhata Ashram School Rayagada



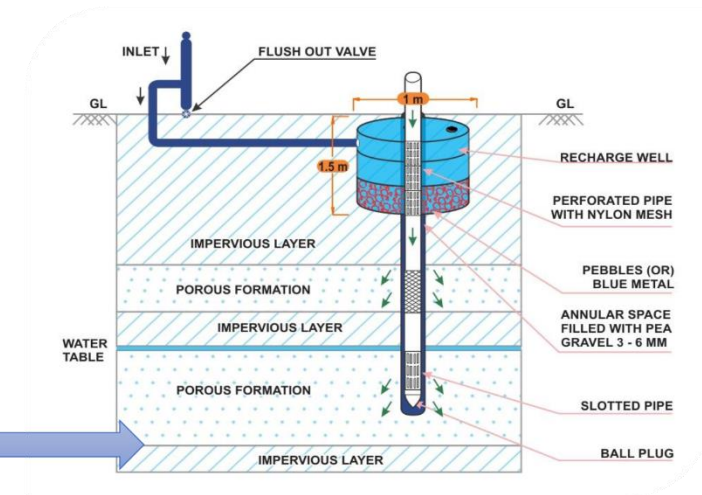
Flush Valve with filter assembly RTRWHS Badamadhibhata Ashram School Rayagada



RTRWHS Palur High School Ganjam with Rechargeable Pit

Annexure 3: Fund Leverage for documented districts on the RTRWHS in Schools

SlNo	District	Name of the School	Catchment Area (sqm)	Annual Rain Fall (mm)	Harvesting Co-efficient	Total water harvesting potential (litre)	Estimated Cost	Implementing Agency
1	Ganjam	Langeswar High School H Bududi	311	1462	0.8	363745.6	2,85,000.00	Ground Water Division Berhampur W.R Dept GOO
2	Ganjam	SC & ST HighSchool Humma 1 st Building	238	1462	0.8	278364.8	2,59,000.00	
3	Ganjam	SC & ST HighSchool Humma 2 nd Building	239	1462	0.8	279534.4	2,59,000.00	
4	Ganjam	Primary School Belpada	104	1462	0.8	121638.4	1,65,000.00	
5	Ganjam	PUPS Palurgarh	225	1462	0.8	263160	2,34,000.00	
6	Ganjam	High School Palurgarh.	204	1462	0.8	238598.4	2,24,000.00	
7	Rayagada	Govt High School Kashipur Rayagada 1st Building	223	1462	0.8	260820.8	2,20,000.00	ICCI Foundation Rayagada
8	Rayagada	Ashram School Badamaribhata Rayagada	225	1462	0.8	263160	2,20,000.00	ICCI Foundation Rayagada
9	Rayagada	Govt High School Kashipur Rayagada 2nd Building	240	1462	0.8	280704	2,48,000.00	GW Division Rayagada WR Depat
10	Sambalpur	Panchayat Govt High School Jamankira	98	1462	0.8	114620.8	75,000.00	NRGES, Zilla Parishad Sambalpur
11	Sambalpur	Panchayat Govt High School Kenadhipa	90	1540	0.8	110880	56,000.00	NRGES, Zilla Parishad Sambalpur
12	Total					25,75,227.20	22,45,000.00	



RECHARGE PIT WITH
FILTER AND PERCOLATED
PVC SHAFT



FLUSH TAP WITH FILTER
ASSEMBLY.