



Water and Livelihoods in Odisha

JAL KAUSHAL: WATER, LIVES, AND LIVELIHOODS

Apoorva Dhingra and Nidhi Batra

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STATE REPORT

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Abbreviations

BASUDHA	Buxi Jagabandhu Assured Water Supply to Habitations
CSOs	Civil Society Organisations
FHTC	Functional Household Tap Connection
GoO	Government of Odisha
GP	Gram Panchayat
JJM	Jal Jeevan Mission
JJN	JustJobs Network
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NGOs	Non-Governmental Organisations
OWRCP	Odisha Water Resources Consolidation Project
PGWMC	Participatory Groundwater Management Committee
ISA	Implementation Support Agency
ISRA	Implementation Support Research Agency
IWRM	Integrated Water Resource Management
O&M	Operations and Management
PMKSY- IWMP	Pradhan Mantri Krishi Sinchayee Yojana- Integrated Water Management Programme
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
SC	Scheduled Caste
SHG	Self-Help Group
ST	Scheduled Tribe
VC	Village Committee
WUA	Water User Associations

Executive Summary

In India, the world's largest user of groundwater, there are several government and civil society interventions that promote water management with the goal of making India's villages water secure.¹ Most interventions, whether initiated by state and central governments or by civil society, are decentralised, emphasising the role of community members in their implementation and management.² They build on the understanding that water is an essential component of rural economies and is necessary to create and maintain jobs across sectors.³ Integrated water management, which includes managing the source, infrastructure, and water services, is both a job creator as well as a job enabler.

However, despite the understanding that water and water management are job creators and enablers, there is little record of community members' or frontline workers' tasks, responsibilities, training, skills, remuneration, and working conditions. This is further complicated by the fact that water management work at the local level is often part-time, voluntary, or unpaid. Thus, despite consensus that community members perform critical water management tasks, there remains a gap in knowledge about the work they do and the conditions they work in.

To address this, JustJobs Network (JJN) and Arghyam launched Jal Kaushal, a project that examines the jobs-tasks-skills nexus of rural water management. JJN hypothesises that an investigation and understanding of livelihoods engendered by the sector can enhance the sustainability and success of water management. This project draws from both secondary and primary research conducted in five states of focus.

A state-level analysis of Odisha, one of the five states studied as part of the Jal Kaushal project, this report helps ground secondary data through primary research and maps the "who" of the water management sector. However, despite the high demand for water for both household and irrigation purposes, JJN researchers found the following:

- Water supply, for both household and irrigation purposes, is inconsistent and rarely available.
- Most government schemes and missions are yet to be implemented in Odisha's villages. If implemented, there is no enabling environment to sustain these interventions.
- All water management efforts observed were Civil Society Organisation driven and, therefore, limited in scale and reach.
- Traditional systems for water management are being replaced by modern water supply interventions, which are inconsistently provided.
- There are avenues for the cultivation of a water cadre; however, water needs must be met at a more basic level before water management can facilitate job creation.

Chapter 1: Introduction

Odisha, located in eastern India, is the second poorest state in the country.⁴ The state is home to a large Adivasi population (22 percent) that depends greatly on natural resources, and ecological degradation, erratic rainfall, and droughts have significantly undermined livelihood security and enhanced vulnerability within the region.⁵ Odisha also experiences both flooding and drought, creating an urgent need for the effective management of water.

In line with Jal Kaushal project's objectives, this report focuses on water management for household use and irrigation in Odisha. Since water exists as part of an integrated ecosystem, researching household and irrigation management in conjunction allows us to understand convergence or divergence in the two needs, and devise solutions to promote the social and economic welfare of all rural residents.

The State Water Policy 2007 advocates for the integration of irrigation and drinking water systems, which it aims to achieve through interdepartmental coordination and people's participation.⁶ To this end, the Government of Odisha launched the Buxi Jagabandhu Assured Water Supply to Habitations (BASUDHA) scheme in 2018. Implemented by the Panchayati Raj & Drinking Water Department, it is a noteworthy initiative that provides potable drinking water to rural households in the state. The table below maps the various departments working on water management in the state.

According to the State Water Policy, "traditional systems of irrigation such as *munda*, *kata*, *bandha*, tanks and check dams, etc. will be given their due importance. Attempts will be made to enrich these traditional sources by not only renovating them, but also involving people in their planning and management".⁷ However, research conducted for the purpose of this study discovered that Odisha is caught in an interregnum. Its traditional systems of water provision have fallen into disrepair, as is true for the rest of the country, while modern systems of water delivery have not yet arrived.



A defunct well in Koraput

Table 1

State Departments Involved in Rural Water Management

S No	State Departments	Dimensions of Rural Water Management		
		Source	Infrastructure	Services
1	Panchayati Raj & Drinking Water Department			
	This department empowers PRIs in Odisha to provide basic services such as primary education, safe drinking water, primary health, sanitation, environment protection, and common pool resources management. To that end, it implements the BASUDHA scheme and MGNREGS.			
2	ST&SC Development Department			
	This department implements the Odisha Tribal Empowerment and Livelihoods Programme Plus in Koraput and six other districts.			
3	Department of Water Resources			
	This department formulates the state water plan and the state water policy. It also implements major and minor irrigation projects and handles their operation and maintenance.			
4	Department of Agriculture and Farmers' Empowerment			
	This department handles soil conservation and watershed management which includes implementing the Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Pradhan Mantri Kisi Sinchayee Yojana (PMKSY) and Farm Pond +			
5	Department of Mission Shakti			
	This department implements Mission Shakti which aims to help women achieve economic independence by enabling employment and income-generation opportunities. The women form SHGs as part of this mission which also work on water harvesting.			

Household Water Management

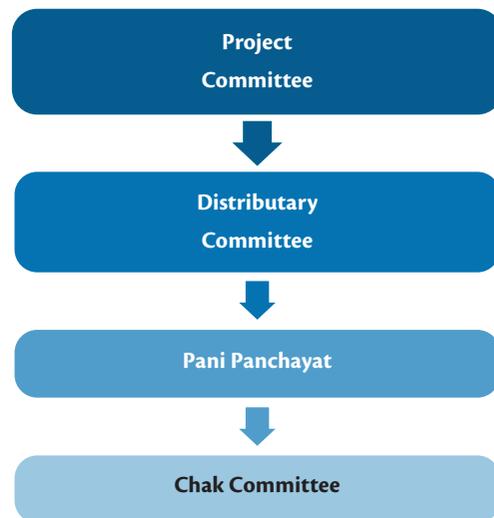
Rural residents in Odisha are faced with many challenges when accessing and using water for household use. These include water contamination, groundwater depletion, dried up springs, and seasonal scarcity. To alleviate these problems, the Government of Odisha (GoO) launched BASUDHA, a renewed version of Odisha Rural Drinking Water Programme (ORDWP) launched in 2014-15 to enable universal access to drinking and domestic water for all rural people on a sustainable basis.⁸ The scheme is implemented in the form of single village schemes that are groundwater-dependent, and mega piped water schemes that draw water from nearby rivers. However, functioning household tap connections were only present in four among the ten Gram Panchayats (GPs) surveyed across Koraput and Mayurbhanj. Where present, water supply was provided under the BASUDHA scheme as the national Jal Jeevan Mission is yet to be implemented in Odisha. Primary research also revealed that residents are unable to consistently access water even in places with water supply infrastructure due to routine electricity shortages. This is despite BASUDHA's emphasis on solar pumps to provide continued water supply to energy starved areas.

In such cases, as well as in places without any supply infrastructure, village residents must manually fetch water from rivers and springs wherever available. In the past, springs were a consistent and revered source of water for rural residents in Odisha, especially Adivasis. However, climate change has caused springs to dry up over the years, leading to a reduction in vegetation cover, and severe drinking water and irrigation shortages.⁹

Irrigation Management

Participatory Irrigation Management (PIM) was introduced in Odisha on a pilot basis in 1995 as part of the Odisha Water Resources Consolidation Project (OWRCP).¹⁰ The Water User Associations (WUAs) were renamed Pani Panchayats and empowered by the Orissa Pani Panchayat Act, 2002. Across medium and minor irrigation projects, they operate at four levels: Chak committees, organised at the lowest level, which comprises at least three farmers; Pani Panchayats; a distributary committee that is a federation of all Pani Panchayats in a certain command area; and a project committee, which is a federation of all distributary committees.¹¹

Figure 1
PIM Institutions



According to the act, Pani Panchayats are made up of farmers who own between 300 and 600 hectares of land in a certain command area.¹² This condition precludes the participation of those who do not own land, especially irrigated land. For instance, even though women are guaranteed one-third reservation in Pani Panchayats, most women do not own land and therefore cannot participate. This is also true for Dalit, Adivasi, and Bahujan individuals, who are disproportionately landless.¹³ This emphasis on agricultural land ownership, then, enshrines gender and caste inequality in the membership of Pani Panchayats.

Primary research in Koraput and Mayurbhanj revealed the absence of available irrigation mechanisms and, consequently, of Pani Panchayats. In both districts, village residents are engaged in rain-fed agriculture. In one village, a farm pond was constructed as part of the Farm Pond scheme by the GoO; however, it quickly fell into disuse without adequate maintenance. It has since been infamously referred to as the “malaria tank” owing to its stagnant water becoming a breeding ground for mosquitoes.

However, in other districts, Pani Panchayats have played a critical role in facilitating irrigation management. In Usuma, Cuttack, for instance, Pani Panchayat ensured the equitable delivery of water for irrigation among 250 households.¹⁴ By engaging farmers in a dialogue and organising chak committees, the Pani Panchayat aided in the reduction of intra-village conflict and in the promotion of crop diversification.

Chapter 2: Water Management – whose responsibility?

The water management universe in the state is made up of a variety of schemes and missions under the GoO, supposed to be implemented with the involvement of rural communities, in keeping with the State Water Policy. However, primary research in Koraput and Mayurbhanj revealed that nearly all schemes and missions remain unimplemented in the

two districts surveyed, painting a dire picture of water management in the state.

The table below details the intended missions and schemes by the Government of Odisha. Beyond the occasional taps present under the BASUDHA scheme and a single farm pond observed by JIN researchers, these missions and schemes were entirely absent.

Table 2
Community Involvement in Water Management Initiatives

Mission/Scheme/ Resolution/ Acts	Relevant purposes	Community's role	GP-level actors
BASUDHA	Functional Household Tap Connection (FHTC) provision	Planning, implementation, operations, and maintenance	GP officials, Pump Operator
Pani Panchayats Act (2002) and Rule-2003, with necessary amendments in 2006, 2008 and 2014	Provides for farmers' participation in the management of irrigation systems by way of forming Pani Panchayat	Maintenance of irrigation system, cropping programme, regulate the use of water among the various pipe outlets, resolve the disputes, empowered to collect water rate & retention of the same for O&M and take up the O&M of Head works including the distributary system	WUA/Pani Panchayats at primary level consisting of several chak committees
PMKSY-IWMP	Soil and water conservation	Planning, budgeting, implementation, and management	Watershed Committees, SHGs, User Groups, Gram Sabhas
Farm Pond	Capturing rainwater to supplement irrigation and create employment opportunities for semi-skilled workers	Implementation	Women SHGs, MGNREGS workers, Gram Sabha
Odisha Tribal Empowerment & Livelihoods Programme Plus	Improving quality of life of Adivasis by offering livelihood support and food security through watershed management	Implementation	Village Development Committee, Village Level Sub Committee, SHGs, volunteers
Mahatma Gandhi National Rural Employment Guarantee Scheme	100 days of guaranteed employment per household	Natural resource management (NRM) asset construction including ponds, dug wells, check dams, embankments, farm ponds, soak pits, and compost pits	MGNREGS workers, GP members, GP officials
Mission Shakti	Empowering women through self-help groups (SHGs) that provide credit and offer market linkages	Implementation and nurturing livelihood generating opportunities	SHGs, GPs

Community Engagement

While BASUDHA emphasises community involvement in the form of GP consultations, its operational guidelines do not outline institutional arrangements for designing, managing or implementing water supply schemes at the habitation, village or GP levels.¹⁵ As a result, water supply schemes that exist in some villages are a result of departmental intervention and not due to the involvement of village residents, who are the recipients of these schemes. Additionally, GPs are expected to bear all costs associated with the operation and maintenance of water supply systems. This includes maintenance of tube wells, costs associated with electricity, spare parts, and replacements of taps and pumps, among other things.

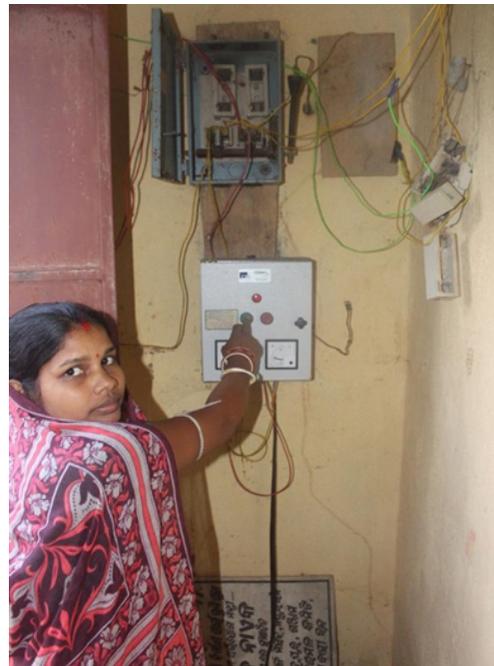
This research revealed that pump operators were responsible for the operation and maintenance of water pumps in three GPs. However, only one of them was paid and nearly all complained about inadequate electricity supply, which made pump operation impossible.

In some places, solar lifting pumps were installed to alleviate the issue, and basic training was made available to pump operators. However, most pumps were of substandard quality and quickly became dysfunctional.

Other frontline workers were observed under the Farm Pond + scheme implemented by the Department of Agriculture and Farmers' Empowerment, which converges with the MGNREGS. However, apart from the single farm pond observed, MGNREGS workers' involvement was also limited in Koraput and Mayurbhanj.

Like JIN's findings in Bihar, it is clear that despite traditional modes of water management being popular and community-driven, current models are government-led and delivered. Communities are only assigned the management of the systems, and do not receive adequate financial and skilling support. This brings into question the effectiveness and sustainability of these initiatives and water management as a whole.

In the absence of governmental interventions, Civil Society Organisations (CSOs) such as Gram Vikas play a pivotal role in facilitating water management in the state. Gram Vikas launched the Water Secure Gram Panchayat Programme, which aims to enable community-led water resource management and



A pump operator

foster resilient, sustainable, and gender equitable institutions.¹⁶ As a result of its efforts, over 2000 households received FHTCs and over 20,600 benefitted from water source sustainability actions. The CSO achieved this in two ways, by:

- **Restructuring and empowering Village Development Communities (VDCs)**

VDCs are a crucial village-level institution in Odisha. Over the years, Gram Vikas has helped form the committee in some villages and strengthened existing ones in others. They did this by involving village youth, and training and motivating them to pursue leadership roles.

- **Engaging a cadre of Jal Bandhus**

Gram Vikas engages frontline workers called Jal Bandhus in a year-long, paid fellowship. They assist with creating water plans, leading field-level programme implementation, and undertaking hydrogeological mapping of micro watersheds and springs, among other things. In some cases, Jal Bandhus have gone on to become microentrepreneurs, establishing their own nurseries or other small businesses, a testament to the empowering skill-based trainings offered by Gram Vikas.¹⁸



The daily practice of fetching water in Mahalibasa, Mayurbhanj

Since hilly areas in Odisha are dependent on springs, the UNDP, in partnership with Gram Vikas, also helped replenish 1000 springs across the state. This initiative identified and rejuvenated natural springs which could support communities in the improvement of sanitation, nutrition, and livelihoods. It also empowered local communities by entrusting them with the stewardship of the natural springs.¹⁹ As part of the 1000 springs initiative, youths from indigenous tribal communities were trained as barefoot hydrologists and both traditional and scientific knowledge were leveraged for the purpose. These trained para-hydrologists identified and mapped potential springs in their own and neighbouring habitations using a mobile application.²⁰

While some water workers are identified and trained in the state, it is also exceedingly common for skilled workers in the state to migrate out of Odisha in search of more lucrative job opportunities. JN researchers observed that even plumbers and electricians were not present in most villages; upon skilling, these workers migrated out of their villages. This creates a unique situation in which many villages, especially in Koraput and Mayurbhanj, are women-dominated. As sole labouring members of the family, women are then disproportionately burdened with tasks such as fetching water from great distances.

The Government of Odisha attempted to address women's disempowerment by launching Mission Shakti, a state-wide initiative to establish SHGs that offer credit and facilitate market linkages. As part of this mission, the state also empaneled Krishi Mitras, agriculture extension workers who promote organic farming and other resource-efficient agricultural practices. Trained by the Foundation for Ecological Society (FES), these workers are educated about seed germination, soil health, disease management, storage, and data collection.²¹

Chapter 3: Findings and Call to Action

Water management is in a dire state in Odisha. Despite the urgent need for household and irrigation water, state schemes and missions do not reach village residents. While water management has the potential to create jobs, a robust focus on making water available is currently key to supporting existing livelihoods. To that end, JJN suggests the following:

- There needs to be an emphasis on, and revival of, traditional water management practices. As outlined in the State Water Policy, structures such as *bandh*, *mundas*, *kata*, *chahala*, and *sagar* should be developed to enable rainwater harvesting and aquifer recharge. Village residents in Odisha have relied on these structures in the past, which means that the human capital to build, maintain, and revive these systems already exists, which the Odisha government should promptly leverage.
 - Water supply cannot be straitjacketed and government led. The BASUDHA scheme needs to institutionalise the role of community members in designing and implementing these schemes. Only then can water supply systems scale and become sustainable.
 - Unlike Karnataka, where people took matters in their own hands and became entrepreneurs owing to a vacuum in government presence in water delivery, there is no private market in Odisha. This is not merely because of a lack of skills; livelihood and entrepreneurship opportunities within the villages are few and far between, even resulting in many male members migrating to nearby cities or outside the state for employment. Without government intervention, water management cannot become an income-generating activity.
- The GoO needs support in implementing its ambitious schemes and increasing access to water. Designing schemes that imagine communities as partners and operationalise active, empowered community involvement is a step towards this. To this end, it is imperative that community representatives are engaged to liaise between government agencies and communities.
 - In addition to ramping up FHTC across the state, operation and maintenance need to be streamlined. The research showed that although pump operators existed, they did not have the requisite skills to handle minor electrical and plumbing repair work – something that pump operators in other states routinely engage in. Additionally, almost no pump operator received remuneration.
 - It is imperative that an enabling ecosystem be constructed for water management at large and water supply in particular. Existing infrastructure becomes defunct in the absence of regular electricity supply. While solar-powered pumps were introduced to surmount this challenge, the initiative quickly failed because the quality of the hardware was poor, and people were not adequately trained in their use and repair. It is only by creating enabling conditions that water supply can become steadily and widely available for rural residents.

ANNEXURE 1: Jobs and Tasks in Water Management

Table 3

Technical Water Jobs

S No	Job/Role	Formal/ Informal	Paid/ Unpaid	Work hours	Tasks	Skills and Training
VILLAGE LEVEL						
1	Pump Operator	Informal	Occasionally paid	Sporadic work	<ul style="list-style-type: none"> Release water Conduct water quality tests Minor repair work 	None
2	Jala Bandhus	Informal	Paid, INR 8000 annually	Sporadic work	<ul style="list-style-type: none"> Create water plans Lead field-level programme implementation undertake hydrogeological mapping of micro watersheds 	Trained by Gram Vikas
3	Chak committee farmers	Informal	Paid, INR 8000 annually	Sporadic work	<ul style="list-style-type: none"> Release and monitor water Clean the canal's mouth when needed 	Trained by Department of Water Resources
4	Barefoot Hydrologists	Informal	Unpaid	Sporadic work	<ul style="list-style-type: none"> Identify and map springs 	Trained by UNDP

Table 4

Institutional/Administrative Water Jobs

S No	Job/Role	Formal/ Informal	Paid/ Unpaid	Work hours	Tasks	Skills and Training
DISTRICT LEVEL						
1	District Water and Sanitation Mission	Formal	Paid		<ul style="list-style-type: none"> Prepare the District Water Plan 	

ANNEXURE 2: Survey Methodology and Selection Criteria

District Selection

JJN researchers selected Koraput and Mayurbhanj districts for their primary research. These districts were chosen due to their geographical location, distinct hydrogeological profiles, water security context, canonical water management practices, and active missions, schemes, programmes, and resolutions.

Mayurbhanj

Mayurbhanj is the third most populous district in Odisha²² with a population of 2,519,738, of which 58.7 percent belong to the Scheduled Tribes.²³ Some of the major tribal communities in the district includes Santal, Kolha, Ho, Mahali, Bhumiji, Munda, and Gond. Besides, the district is also home to three particularly vulnerable tribal groups – Lodha, Mankidia and Hill Kharia.



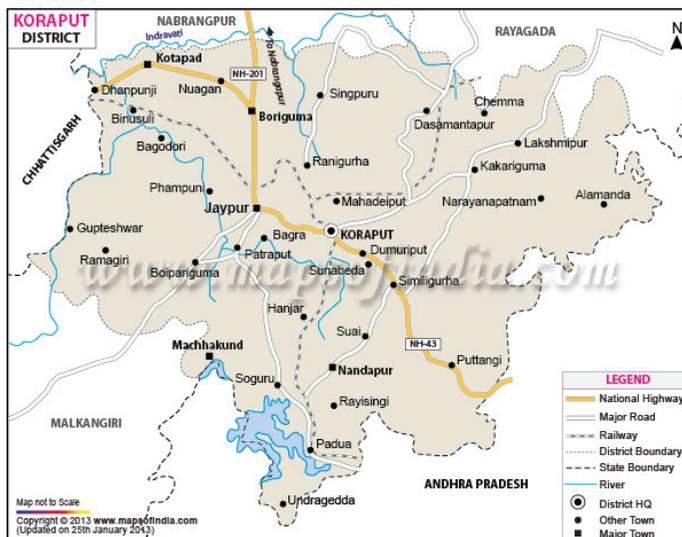
A political map of Mayurbhanj

Certain blocks of Mayurbhanj, such as Khunta, Jashipur, and Shyamakunta, have witnessed illegal mining, blasting and stone crushing for years. This has depleted the ground water table in the area. In the rural areas of the district, villagers mostly depend on community handpumps for drinking water. However, during the rainy season, water in these tube wells becomes muddy and unfit for consumption. Summers see a substantial decrease in water level in these handpumps, compelling villagers to rely on shallow wells and dilapidated community wells in which the water quality is poor.

The JIN researcher travelled to Mayurbhanj, Odisha in the month of June 2022 to conduct field work in nine GPs namely, Laxmansahi, Bangara, Basipitha, Bahanada, Badapheni, Khadisal, Paruli, Bisoi and Durdura. These panchayats are located in Khunta, Baripada, Kuliana, Bisoi and Jashipur blocks and selected for fieldwork owing to their remote locations, diverse tribal communities, FHTC connection status, and the availability of respondents.

Koraput

Located in the Eastern Ghats, Koraput district is known for its hilly terrain and rich and diverse tribal culture. 50.6 percent of total population in the district belongs to tribal communities such as Gadhba, Kondh, Paroja, Saura, Didayi, etc. Rural households often face a water crisis due to the undulating terrain, highly variable rainfall and long dry seasons. Only about 45 percent of the households in rural Odisha receive piped water supply (PWS), according to the Panchayati Raj and Drinking Water Department.²⁴ Of the total 88.33 lakh rural households in state, only 40.23 lakh have received PWS connections. Coverage of PWS connection in tribal-dominated districts like Sundargarh, Rayagada, Nabarangpur, Mayurbhanj, Malkangiri, Kandhamal and Koraput is very low.²⁵



A political map of Koraput

Primary Research Methodology

Mayurbhanj

The JIN researcher adopted a qualitative method approach for this study. In Mayurbhanj district, the researcher visited five blocks namely Khunta, Baripada, Kuliana, Bisoi and Jashipur. Initially, the researcher conducted a pilot study in Khunta block, covering five panchayats and reaching out to five villages. In this pilot study, five focused groups discussions were organised with 124 village residents, and individual semi-structured interviews were also conducted with the local sarpanch, ward members, pump operators, and NGO representatives. At the block level, semi-structured interviews were conducted with relevant government officials including the Block Development Officer, Junior Engineer at RWSS and MGNREGA Block Coordinator. This pilot study helped the researcher understand the administration of the qualitative study and effectively utilise different approaches to collect primary information in the target area. Additionally, it allowed for deeper insight into water management practices in Mayurbhanj.

After completing the pilot study in Khunta, the researcher covered the remaining four blocks. From each block, one panchayat and two villages were selected, covering four panchayats, eight villages and 189 village residents. The researcher conducted five semi-structured interviews with the sarpanch, four semi-structured interviews with ward members, and two semi-structured interviews with NGO representatives. In addition, the researcher conducted in-depth interviews with frontline workers like pump operators in four villagers. These discussions were

conducted in Odia, the researcher's mother tongue. On a block level and district level, the researcher conducted semi-structured interview with the Block Development Officer, Junior Engineer- RWSS, Assistant Executive Engineer-RWSS and MGNREGA Coordinator.

In Mayurbhanj, the visit to the GP, as well as the meeting with relevant government officials at the block and district level was facilitated by Srinibas Das, Block Programme Manager, Odisha Livelihood Mission, Khunta. The researcher owes his sincere gratitude to Ramchandra Dalai, Aswini Kumar Das, Urvashi Das and Madhav Soren for their guidance, support, and care.

Koraput

In Koraput district, five blocks were covered, with the researcher reaching out to five panchayats. In each panchayat, two villages were covered. A total of 10 villages were visited by the research team in the district. Focused groups discussions were conducted with women's and men's groups in all the target villages to ascertain the conditions surrounding access to drinking water. Personal interviews with pump operators and PRI members were also conducted in the village. Special focus was given on assessing the skill building and requirement of capacity building programmes at the community level with respect to water management and operation. The researcher met government officials working in the RWSS district headquarter in Koraput and collected information regarding the ongoing programme related to providing access to piped drinking water. A discussion was also held to understand new schemes/ programmes launched by the state government in rural/tribal areas on access to piped drinking water.

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