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TECHNICAL REPORT

AI4WaterPolicy: AI-Assisted Qualitative Feedback for Community Water Security in Rajasthan, India

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Front cover photo: A Pani Mitra during the AI-assisted interview. (*photo*: CmF)
Back cover photo: Wall Painting by CmF to raise awareness on fluorosis symptoms caused by contaminated water (*photo:* Suchiradipta Bhattacharjee/IWMI)

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Contents

Acronyms

AI	Artificial intelligence
COM-B	Capability–Opportunity–Motivation–Behavior model
CmF	Centre for Microfinance
FGD	Focus group discussion
GPDP	Gram Panchayat Development Plan
IDS	Institute of Development Studies
IWMI	International Water Management Institute
JJM	Jal Jeevan Mission
MIS	Management Information System
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act (scheme)
NPS	CGIAR National Policies and Strategies initiative
WASH	Water, sanitation and hygiene
WSP	Water Security Planning

Summary

AI4WaterPolicy is an action-research pilot implemented in Rajasthan by IWMI, CmF, Colectiv, and IDS. The initiative tested whether AI-assisted interviewing via WhatsApp, utilizing both voice notes and text, could capture timely, actionable qualitative feedback from frontline actors at scale without replacing human facilitation or judgment. Over the course of the project, the team engaged four distinct cohorts, including 37 CmF frontline staff, 105 Pani Mitras, 113 Panchayat representatives, and a follow-up group of 97 Pani Mitras, generating a structured qualitative dataset designed to complement routine program monitoring.

Key findings from the pilot highlight the complex "portfolio" nature of Pani Mitra work, which spans community mobilization, promoting technical practices, and institutional liaison duties, thus driving the vision of water-secure villages. The data reveals that sustained engagement is driven primarily by active stewardship, visible on-the-ground improvements, consistent training, and formal recognition. Conversely, drops in participation are most often linked to challenges regarding legitimacy or trust, friction within the process, and competing commitments, which notably affect women more significantly than men.

Crucially, the report demonstrates that closing the feedback loop (returning findings to the community through reflection sessions and follow-up support) produced intermediate implementation outcomes, including practical follow-up support to the Pani Mitras and stronger capability to engage with officials and navigate scheme processes. Participants reported increased confidence, greater direct engagement with government officials, and an improved ability to navigate scheme processes. Alongside these behavioral shifts, the pilot study recorded strong positive signals regarding the usability and acceptance of the WhatsApp channel itself.

The project emphasizes that learnings from the implementation experience are as important as the findings it produces. Ensuring inclusion requires active facilitation, such as support with connectivity, device access, and suitable scheduling, demonstrating that technology alone does not remove barriers. Responsible use also depends on practical safeguards and human oversight, particularly to manage transcription and translation risks. Finally, insights create value only when institutions have clear processes to route these insights into decision-making, as CmF has clearly demonstrated in rethinking the capacity development component of the enabling environment.

Finally, this research should be read as a feasibility and learning pilot, not an impact evaluation. The findings reflect cohort-specific, largely self-reported perspectives. Given the known risks in AI transcription and translation across local dialects, the data also required human review and triangulation with other sources. At the same time, the pilot shows clear practical value. CmF could pinpoint that Pani Mitras needed a stronger understanding of Panchayat systems and relevant schemes, and the implementation was then adjusted to include Panchayati Raj orientation/training and structured engagement with Panchayat/line-department officials to improve scheme navigation and micro irrigation demand signaling. It also enabled practical adjustments, such as targeted coaching for Pani Mitras, additional support in low-engagement areas, and troubleshooting specific process bottlenecks. Closing the loop visibly (sharing what was heard and what actions followed), CmF could also build trust with the Pani Mitras, which is critical in their long-term voluntary engagement.

1. Context and Rationale

Water security in India is increasingly shaped by a combination of hydro-climatic stress, heavy dependence on groundwater, and the everyday realities of local service delivery and collective action. National assessments and policy discussions have repeatedly flagged the scale of water stress and the importance of strengthening last-mile implementation so that program resources translate into reliable and locally appropriate outcomes (PIB, 2019). Groundwater is particularly central to both livelihoods and drinking water security. Recent national summaries note its large contribution to irrigation and to rural and urban water supply, alongside growing concerns about depletion and over-extraction in multiple states (Ambast, 2025). In this context, community water initiatives go beyond technical delivery. They can also transform behaviors and institutions by addressing the complex web of local norms, incentives, and coordination challenges.

India has made significant progress in strengthening rural water governance through major national initiatives such as the Jal Jeevan Mission, Atal Bhujal Yojana, and decentralized planning through Panchayati Raj institutions. Programs such as MGNREGA have also supported water conservation and natural resource management at the community level. Efforts such as Water Security Planning and community mobilization build on these policy frameworks by strengthening local participation and expanding implementation capacity.

At the same time, community water security programs depend on more than the completion of planned activities or physical works. They require repeated, day-to-day problem-solving, households adopting and sustaining safer practices, volunteers maintaining credibility and motivation, and local institutions coordinating to move from plans to sanctioned and executed actions. A large body of governance research shows that collective outcomes in shared-resource settings hinge on local institutions, trust, and the ability to coordinate, often unevenly across places (Agrawal, 2001; Cox et al., 2010; Dietz et al., 2003; Ostrom, 1990; Pretty, 2003; Wade, 1988). Similarly, major service-delivery frameworks underline that the “last mile” of implementation is where many programs succeed or stall, because outcomes depend on accountability relationships, responsiveness, and feedback from citizens and frontline actors (World Bank, 2004).

Strengthening routine monitoring systems offers a promising opportunity to make these implementation dynamics more visible and actionable. In many programs, reporting has understandably focused on what is most readily measurable - events held, participants reached, and activities completed - while the qualitative insights behind uneven uptake, stalled plans, and drop-offs in participation remain fragmented or anecdotal. This is a well-known challenge in evaluation and performance management. This is a well-recognized opportunity in evaluation and performance management. Broadening the evidence base beyond quantitative indicators creates space to attend to the harder-to-measure processes that often drive real-world change (Campbell, 1976). For complex programs operating in uncertain environments, learning-oriented monitoring and adaptive management approaches offer practical tools for capturing experience and context in ways that support timely, informed mid-course improvements (Pasanen & Barnett, 2021; UNDP, 2021).

Within the Centre for MicroFinance’s (CmF) Safe and Sustainable Drinking Water program in Rajasthan, Water Security Planning (WSP) is implemented through participatory processes that include village-level institutions, multi-day WSP exercises, and volunteer leadership through *Pani Mitras* (water champions). The program works across multiple villages and blocks in Sirohi and Pali districts, where outcomes depend on community mobilization, continuity of volunteer leadership, and the conversion of plans into sanctioned and implemented works. However, the program’s own learning needs to reflect this gap. While training and participation may be strong, existing evaluation approaches often primarily capture quantitative metrics (e.g., number of sessions, participation, adoption counts), limiting the ability to diagnose barriers at the household level, understand why some village leaders remain active while others disengage, and make timely adjustments to training design and mobilization strategies.

The project AI4WaterPolicy was therefore designed as an action-research pilot to test whether emerging AI tools could help implement policy by synthesizing qualitative feedback more regularly and at a larger scale without displacing human judgment. The goal is not to “automate understanding,” but to reduce the friction and time costs of turning dispersed field experiences into structured, decision-relevant insights that teams can interrogate, validate, and, most crucially, act on. Recent research on large language models in qualitative workflows suggests they can support tasks such as summarization, classification, and pattern-finding, but also highlights the need for careful design, transparency, and human-led interpretation to avoid overconfidence and loss of nuance (De Paoli, 2024; Fischer & Biemann, 2024). Consistent with widely used responsible-AI frameworks, the pilot adopted a human-centered, risk-managed approach. AI tools were used to assist with data collection, transcription/translation, summarization, and thematic structuring, while interpretation and decisions remained

with program teams and participants. Governance choices reflected established principles of human oversight, transparency, privacy and data governance, fairness/inclusion, and accountability (OECD, 2019; UNESCO, 2021; EU High-Level Expert Group on AI, 2019; NIST, 2023). Data handling was designed to follow consent- and purpose-limited processing and data minimization expectations, consistent with India's data protection framework (Government of India, 2023).

What is the qualitative feedback gap?

A gap between (a) what routine monitoring systems can readily count and report, and (b) the lived experience, motivations, barriers, and local dynamics that determine implementation quality. Closing this gap requires feedback mechanisms that make qualitative insights visible, comparable over time, and deployable.

Wall paintings depicting water availability, spending, and water balance of Telpur Village Panchayat, Sirohi (*photo*: Suchiradipta Bhattacharjee/IWMI)

2. Partnership and Approach

2.1 Project Design and Implementation Partners

The pilot was implemented through a partnership between IWMI, CmF, Colectiv, and IDS (detailed roles are discussed in Table 1). The work was conducted in Rajasthan, India, between April and December 2025.

Table 1. Roles and contributions of the project partners

Partner	Primary role
International Water Management Institute (IWMI)	Research Lead. Overall coordination, research design, synthesis, and learning leadership; convening partners and stakeholders.
Centre for MicroFinance (CmF)	Community engagement and facilitation, field assistance and troubleshooting in conducting interviews, organizing feedback sessions, and implementing field-level activities based on feedback received.
Colectiv	AI interviewing system development and deployment via WhatsApp; transcript/translation pipeline; thematic analysis, dashboard generation and support.
Institute of Development Studies (IDS)	Research partnership on qualitative framing and political economy sensitivity; support on learning articulation and scale considerations.

2.2 Action Research Principles

AI4WaterPolicy was implemented as an action-research pilot. The aim was to test the feasibility and value of more regular qualitative feedback within an ongoing program, and to refine the approach through practical implementation. Four principles guided the work.

2.2.1 Co-design with implementers

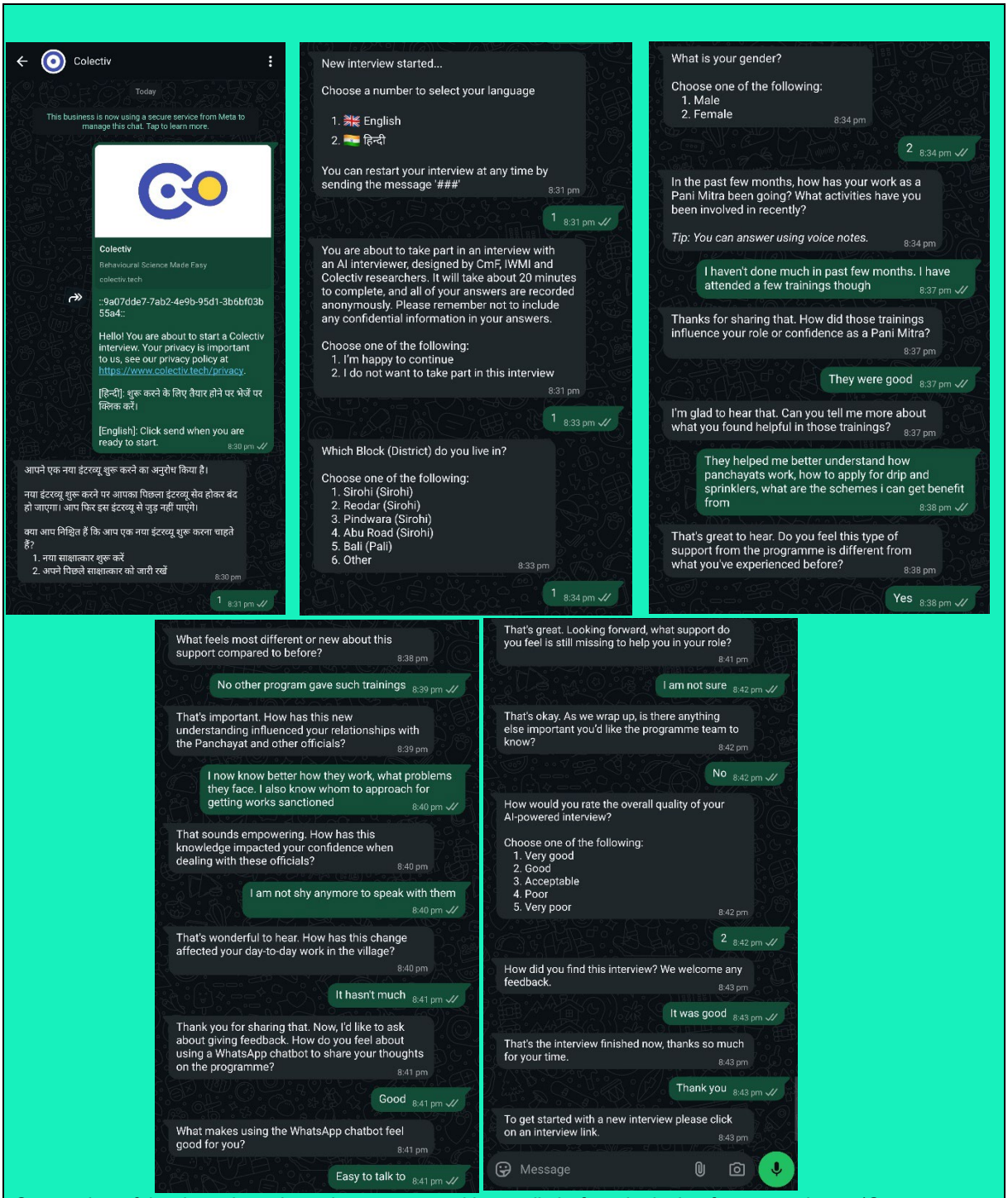
The pilot was developed in close collaboration with program teams to ensure that both the inquiry and the outputs reflected field realities. Interview prompts and their sequencing were refined through repeated interaction with field partners, ensuring the content remained grounded in local priorities and what could realistically be addressed in implementation design. Language and participation methods were adapted to local preferences, such as the use of voice-based responses rather than text. Output formats, including summaries and reflection prompts, were tailored to what teams could practically use for review, training, and follow-up.

2.2.2 Iteration as a feature

Rather than treating the project as a fixed deployment, early rounds served as learning cycles to identify constraints and improve the system incrementally. Initial implementation surfaced participation hurdles like connectivity limits, time burdens, and varying familiarity with digital tools, which informed the structure of subsequent rounds. Learning from each cycle shaped adjustments to both the AI workflow (including translation and synthesis steps) and facilitation practices. Implementation plans remained flexible across different cohorts and villages, acknowledging that engagement patterns and operational constraints varied by context.

2.2.3 Non-extractive learning

It was ensured that the feedback collection was beneficial for both the implementing team and the respondents. To ensure the latter had agency over how their feedback was being translated into program design, feedback was synthesized into accessible formats and discussed with them during the pause-and-reflect workshops. These structured feedback sessions provided a space to validate the interpretations by the implementing team and identify the implications for program delivery. This helped make concrete adjustments to training content, support arrangements, and engagement processes.



Screenshot of the demo interviews that were tested internally before deploying for respondents. (*Source:* Suchiradipta Bhattacharjee/IWMI)

2.2.4 Human oversight

While AI supported interviewing and rapid synthesis, interpretation and decision-making were human-led. AI outputs were treated as provisional support tools rather than authoritative conclusions; program teams reviewed all summaries and themes for accuracy, nuance, and relevance. Choices regarding prioritization, communication of findings, and follow-up actions remained the responsibility of program actors and partners, ensuring that accountability and judgment were not delegated to the technology.

2.2.5 Feedback loop logic used in the pilot

The pilot treated AI interviewing as one component of a wider learning cycle. The diagram below (Figure 1) summarizes the implementation logic.

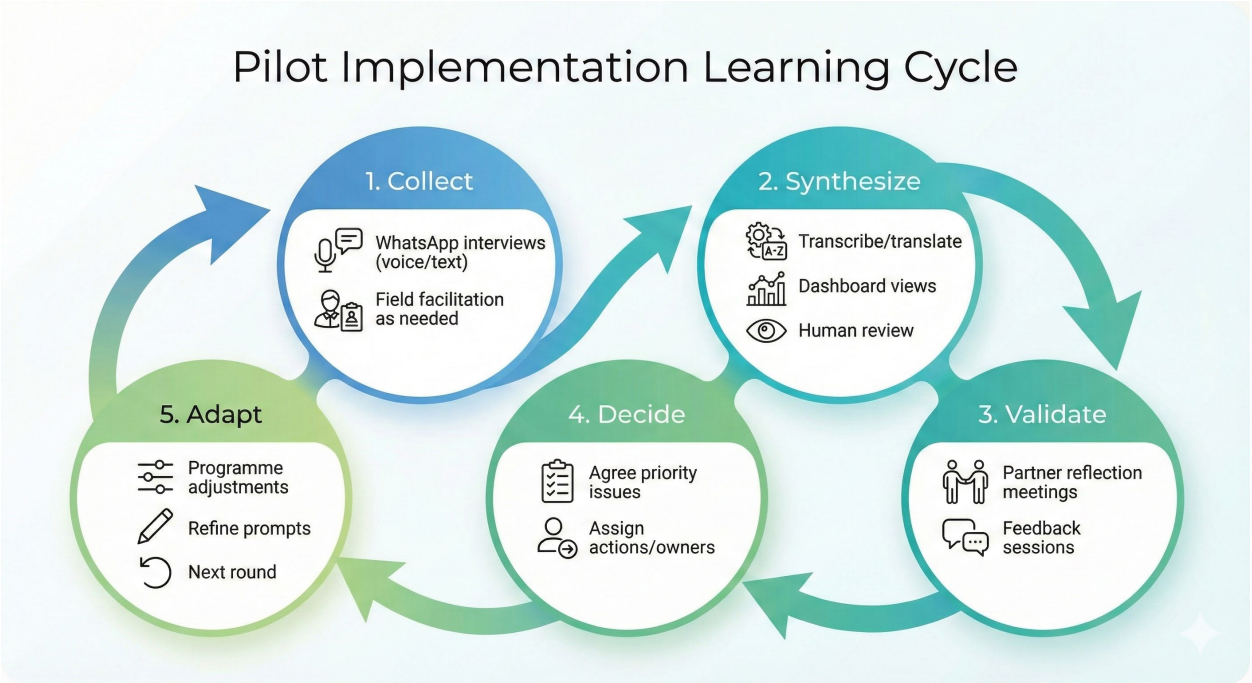


Figure 1. Implementation learning cycle used in the pilot (*Source*: developed by authors using Gemini)

2.3 Ethics-in-Practice Safeguards

The pilot adopted practical safeguards intended to protect participants and uphold trust, especially given the use of AI for interviewing and translation. These safeguards were applied in both the interview design and the way findings were shared.

- Clear purpose and consent: participants were informed about what the interviews were for and that participation was voluntary.
- Confidentiality and anonymity: reporting focuses on themes and does not attribute any statements to identifiable individuals.
- Non-judgement framing: interviews were positioned as learning conversations, and outputs were used for collective reflection.
- Data minimization and stewardship: data collection focused on program-relevant themes; access to anonymized raw data was restricted to the project team.
- Responsible use of AI: AI outputs (transcription, translation, clustering) were treated as assistive and were reviewed through human reading and reflection.

3. Pilot Design and Implementation

AI4WaterPolicy operationalized a feedback loop through WhatsApp-based interviewing (voice note and text), rapid translation and organization of responses, and structured synthesis outputs used in reflection sessions. The pilot was implemented across approximately 50 villages in five blocks of Rajasthan, India within CmF's WSP program context. Table 2 highlights the activity schedule.

Table 2. Project timeline

Phase	Period	Implementation highlights
Inception and co-design	Mar–May 2025	Partner alignment, research design, tool adaptation, and field scoping; initial field visit to understand context and feasibility.
Pilot interviews (CmF Fellows)	Jun 2025	Frontline staff interviews to test question flow, language, and operational process.
Pilot interviews (Pani Mitras)	Jul 2025	First full community volunteer cohort (Pani Mitras); parallel feedback sessions to capture interview experience and inclusion constraints.
Stakeholder interviews (Panchayat leaders)	Aug 2025	Panchayat representative cohort to surface system-level constraints, opportunities, and interfaces with community-led water security work.
Synthesis and feedback loop	Sep–Oct 2025	Iterative analysis, internal reflection meetings, and refinement of dashboard outputs and facilitation approach. Pause-and-reflect sessions were organized with the Pani Mitras to understand their experiences and discuss the collective responses.
Action taken based on feedback	Oct-Nov 2025	Pani Mitra exposure and orientation workshop with Block-level officials from the Rural Development department, the agriculture and horticulture departments, Water Resources department officials, and Panchayat Samiti members
Follow-up interviews (Pani Mitras)	Dec 2025	Second Pani Mitra round to revisit themes, track changes, and test the feasibility of a recurring feedback cycle.

3.1 Respondent Cohorts

Across the pilot, qualitative interviews were conducted in four main cohorts. Interviews were conducted via WhatsApp (voice notes and/or text), with field facilitation provided where needed. Interview schedule and participation details are addressed in Table 3.

Table 3. Qualitative interviews conducted, and respondent profile

Round	Cohort	Respondents	Women (%)	Interview format
June 2025	CmF Fellows and Cluster Coordinators (frontline staff)	37	not reported	9-question interview
July 2025	Pani Mitras (community volunteers)	105	41	12-question interview
Aug 2025	Panchayat representatives (elected/local government)	113	27	16-question interview
Dec 2025	Pani Mitras (follow-up round)	97	45	13-question interview

Pani Mitras during the AI-assisted interview process, where some did it independently, and some required assistance either to read the questions or needed a shared device. (*photo:* CmF)

3.2 Interview Design

Interviewing was tailored to each cohort but did not rely on a fixed, fully scripted questionnaire. Instead, the team provided the AI interviewer with a short contextual brief (a one-page note) describing the program setting, broad topic, and the specific information the interviews were intended to elicit. Based on this brief, the AI generated and sequenced questions dynamically during each conversation, adapting its phrasing and follow-ups to the respondent's role, responses, and comfort. As a result, while the interviews were guided by consistent thematic priorities, the exact questions varied slightly across individuals.

The underlying structure, however, remained focused on practical implementation realities rather than generic opinion. Prompts were oriented towards what people do in practice, what enables action, what gets in the way, and what forms of support would be most useful. For volunteers and frontline staff, the AI explored roles and responsibilities, achievements, motivations and recognition, time use, barriers to sustained engagement, and support needs. For Panchayat representatives, the conversation focused on local water management challenges, planning and budgeting processes, scheme delivery constraints, and interactions with community actors involved in water security planning and implementation.

3.3 Facilitating WhatsApp/Voice Interviews

Interviews were conducted using a conversational AI agent deployed through WhatsApp. Participants could respond via voice notes or text, depending on literacy, comfort, and device constraints. Where needed, CmF staff supported participants to access the interview on a shared device. This support was especially important in early rounds, when participants were unfamiliar with the interaction format. Limited access and connectivity brought up various challenges; their solutions, as implemented by the project, are discussed in Table 4.

Table 4. Strategies used to ensure inclusive participation in the AI-assisted interviews

Barrier	Practical strategy used in the pilot
Limited smartphone access	Shared devices (including CmF staff phones) used during facilitated sessions; scheduling interviews when devices were available.
Connectivity constraints	Using WhatsApp messaging and voice notes, which tolerate intermittent connectivity through automatic message delivery once signal resumes; repeating prompts; conducting interviews from locations with stronger network could be accessed
Language comprehension	Simplifying prompts; avoiding technical terms; using familiar phrasing; allowing voice-based questions and responses.
Hesitation in face-to-face settings	Using WhatsApp voice interaction, which some participants found less intimidating than in-person questioning (reflected in feedback)

3.4 Adaptive Implementation Changes Triggered by Feedback

A critical design adjustment emerged directly from the first round of interviews and the subsequent Pause and Reflect session. Pani Mitras consistently indicated that while they could mobilize communities and support water security planning, they were not sufficiently familiar with the workings of the Panchayat system or with the range of relevant schemes across departments (e.g., agriculture, horticulture, rural development). Respondents emphasized that this limited their ability to follow plans through when WSPs were delayed, not sanctioned, or required procedural navigation. They also noted that better understanding Panchayat leaders' constraints would help volunteers collaborate more effectively, shifting engagement from requests to problem-solving partnerships.

In response, the implementation design was modified to include a Panchayati Raj orientation/training and structured engagement with Panchayat leaders and line-department officials, explicitly aimed at improving scheme navigation, clarifying escalation pathways, and strengthening demand signaling, particularly for micro-irrigation, so that articulated demand could be matched with available departmental support. This pivot was not anticipated in the original design, but the rapid turnaround from AI-assisted synthesis made it possible to introduce the change within the pilot cycle. A second follow-up interview with Pani Mitras was then conducted after this training to assess perceived changes in confidence, institutional engagement, and the practical ability to translate plans into sanctioned actions.

3.5 Data Management and Analysis

Interview responses were stored as transcripts in their original language and translated into English to enable joint analysis across partners. The Colectiv Mosaic dashboard was used to organize responses, monitor completion, and support thematic exploration. Analysis followed a mixed workflow. Interview responses were stored as transcripts in the Colectiv backend where AI-assisted analysis was run to organize responses and generate initial thematic outputs. These outputs were surfaced through the Colectiv Mosaic dashboard enabling partners to track response coverage and explore emerging patterns. Project partners then reviewed the dashboard outputs in detail to contextualize responses and check interpretation. Where issues were identified, such as translation discrepancies, loss of nuance, or mis-contextualization, these were flagged and corrected to ensure the synthesis reflected respondent intent and local meaning. Findings were subsequently discussed in team reflection sessions to validate interpretations against field realities and to agree which insights were most decision relevant. Final outputs were compiled into structured synthesis products like key themes, illustrative examples, etc. to directly inform program reflection and action planning.

Why translation mattered

The project team spanned organisations and geographies. Translation into English enabled joint sense-making, while field teams validated meaning against local context. This dual process was important to reduce misinterpretation when moving from local idioms to program and policy language.

Discussion with Pani Mitras in Sirohi help understand their perception of the AI-assisted interview (*photo*: Suchiradipta Bhattacharjee/IWMI)

Indigenous women key informants from a village in Sirohi where the village water committee restored a well (pictured behind) that now supplies water to about a hundred households. (*photo*: Suchiradipta Bhattacharjee/IWMI)

4. Key Findings

The findings in this section draw on AI-assisted qualitative interviews conducted across three respondent groups—Pani Mitras (July; n=105), Panchayat representatives (August; n=113), and a follow-up round with Pani Mitras after subsequent engagement and training (Nov–Dec; n=97). Responses were captured through WhatsApp-based voice and text interactions and synthesized via the dashboard workflow, with partner review to correct translations and contextual interpretations. The results are presented as recurring themes and indicative proportions (percentages in parentheses reflect the share of respondents whose responses were tagged to a theme). They are intended to surface implementation-relevant signals on how and why engagement is sustained or constrained, what local governance actors observe as changes on the ground, and what becomes possible when feedback is returned and acted upon.

A. Learnings from the interviews: Pani Mitra engagement and on-ground change

4.1 What Pani Mitras do in practice: a portfolio of roles

Pani Mitra activity is best understood as a portfolio spanning mobilization, driving the vision of water-secure villages, promoting technical practice, and liaising with institutions. Based on the interviews with CmF field staff, the most commonly described findings were: (i) mobilizing communities through meetings, trainings, site visits, and awareness work (62%); (ii) demonstrating irrigation options and promoting micro-irrigation/low-water crops (59%); and (iii) collaborating with local government bodies/committees to advance water conservation initiatives (32%).

> *"I have been working with the people of my village on sprinklers, drip irrigation, organic farming, and linking these activities to the tasks undertaken at the Gram Sabha at the panchayat level."*
>
> \- Pani Mitra on the diverse roles they play

Based on Pani Mitra interviews, this portfolio can be further disaggregated into three major areas: technical and infrastructure practices, governance and institutional processes, and community outreach (Table 5).

Table 5. Reported Pani Mitra activity areas

Activity area	Examples of activities
Technical and infrastructure practices	Organic/sustainable farming combined with micro-irrigation (51%) Combining sprinkler/drip with small-scale harvesting to improve water use efficiency (42%) Rainwater harvesting and storage structures (41%) Operations & maintenance/monitoring tasks (23%)
Governance and institutional processes	Collaborating with NGOs and Panchayat bodies to advocate/implement initiatives (28%) Drafting WSPs and engaging Gram Panchayats[1] for approvals (23%) Coordinating with diverse institutional partners (22%) Organizing Gram Panchayat meetings to help farmers access schemes (12%)
Community mobilization and outreach	Organizing meetings/home visits/demonstrations/events on water conservation and micro-irrigation (72%) Sustained personalized outreach (38%) and community outreach (18%) Farming outreach/support (22%) Mobilizing meetings for Panchayat/CmF/others (18%) Ensuring equal participation of men and women (14%)
Participation friction noted	Low meeting attendance despite individual calls (5%)

[1] Gram Panchayat is the governing body at the village level in India's local government system. It's the foundational tier of the three-tier Panchayati Raj system, below the Panchayat Samiti (block) and Zilla Parishad (district). It's a political institution for villages, responsible for sanitation, agriculture, education, and other local needs, with members elected by the villagers.

Note: Numbers in parentheses indicate the percentage of respondents who mentioned the activities.

4.2 What Sustains Engagement: Capability, Opportunity, Motivation

Across interviews, engagement was most consistently sustained by (i) a sense of stewardship and duty shaped by local water stress and visible improvements, (ii) practical training and ongoing support that enables day-to-day problem solving, and (iii) institutional backing and public recognition that legitimizes the role (Table 6).

Table 6. Drivers of sustained engagement

Drivers of engagement	Illustrative description	% respondents
Stewardship/duty and visible improvements	Duty to conserve water reinforced by seeing village-level change	78
Training and ongoing interactive support	Timely technical inputs and continued guidance	51
Institutional support and recognition	Assistance/public recognition legitimizing the role	27

Further, sustained engagement appears to rest on three reinforcing elements: capability (practical skills and confidence), opportunity (time, enabling support structures, and reduced friction), and motivation (stewardship, pride, civic duty, and recognition) (table 7). The findings also show that motivation is not only internal, but it is also shaped by whether volunteers can see progress, receive institutional backing, and access timely support.

"I felt the proudest when the sprinklers were installed in the village because they save water, time, and increase production."

- Pani Mitra on what motivates them to continue this voluntary leadership

Table 7. Capability, opportunity, and motivation signals (Pani Mitra interviews)

Domain	What respondents emphasized	% respondents
Capability	Water management skills	62
	Institutional training and community capacity building	43
	Individual training and skill development (including agronomic skills)	39
Opportunity	Balancing duties with domestic/farm/social responsibilities	74
	Local committees, frequent well-publicized meetings, outreach activities strengthen engagement	49
	Sustained organizational/institutional/community support enables work; fragmented backing/delays restrict progress	48
	Travel/permission restrictions, poor connectivity, and skepticism constrain field access/practice uptake	21
Motivation	Pride in water conservation	67
	Civic duty and future security	65
	Community engagement and collective action	54
	Intrinsic fulfilment/personal drive	41
	Community recognition	35
	Aspirations for village development	6

Pani Mitras most frequently described capability gains as practical water management skills, institutional training, community capacity-building exposure, and individual skill development, including agronomic skills. The dominant challenge was balancing Pani Mitra responsibilities with domestic, farm, and social obligations, resulting in scheduling conflicts and low attendance. Motivation was most strongly associated with pride in water conservation, civic duty, and future security, and community engagement/collective action.

"*Farmers in the village face a lot of financial difficulties, which prevent them from getting sprinklers. So, they could be provided loans through the organization.*"

- Pani Mitra on the barriers that hinder their work

4.3 Why Engagement Drops: Legitimacy, Competing Commitments, and Process Friction

A recurring lesson is that disengagement (Table 8) is often driven by legitimacy and relational dynamics (trust, appreciation, committee cohesion, and perceived responsiveness of institutions). Competing commitments, especially for women, also shape continuity. These constraints matter because they directly influence whether training translates into sustained mobilization and follow-through.

Table 8. Drivers of disengagement and constraints (frontline staff interviews)

Constraint or disengagement driver	% respondents
Distrust, disinterest, lack of appreciation; committee disunity; perceived departmental neglect	81
Competing commitments (household/health/environment/travel), especially affecting women	32
Procedural timelines and coordination challenges across departments; farmers' limited irrigation funds	14
Work–life and gender dynamics affecting participation	
Gender-based mobility restrictions and family support shape the ability to balance duties	20
Women schedule duties around household, farm, and social obligations; domestic demands hinder meeting attendance and can lead to conflict	48

"*As a Pani Mitra, I am proud that after talking to some people about water, they have understood its importance. That is a matter of pride for me.*"

- One Pani Mitra on what motivates them to take up this additional voluntary responsibility

"*As women, we have to do household work, take care of children, and also spend time on farming. Then, with the little time left, we conduct meetings and motivate people as Pani Mitra.*"

- Pani Mitra (woman) on the gender constraints that act as participation barriers

"*Water issues often affect women the most, as they are the ones who fetch water and deal with related problems." "Previously, tribal women had to walk about two kilometers to fetch water from a hand pump.*"

- Pani Mitra (woman) on why women's voice matters in water conservation

4.4 What Panchayat Leaders Observe: Collaboration and Changes in Water Governance Practice

Panchayat interviews provide an external lens on how volunteer-led mobilization and planning look from the local governance perspective (Table 9). Leaders most frequently described Pani Mitras and committees as useful collaborators in planning and community engagement, including in water budgeting and scheme awareness. Importantly, Panchayat interviews also highlight that these contributions take place within broader operational conditions, including resource availability, staffing capacity, infrastructure limitations, and coordination processes that influence follow-up.

Table 9. Panchayat perspectives on Pani Mitras

What Panchayat representatives reported	% respondents

Panchayat's views on the implications of partnerships with Pani Mitras	
Pani Mitras and committees collaborate with Panchayats to strengthen community support, knowledge sharing, and planning	73
Gender-balanced committees, Pani Mitras, and local authorities coordinate engagement/resources/training	60
Pani Mitras effectively selected; attend Panchayat meetings and assist in governance efforts	7
Panchayat-reported changes in governance-related practice	
Collaborative mapping/drafting/approval of village water budgets supports transparency and community support	50
Pani Mitra-led multi-day workshops improved understanding of schemes and water budgeting methods	34
Micro-irrigation adoption improved use efficiency, reflected in subsequent budgets	15
Panchayat-reported constraints shaping implementation	
Environmental/resource scarcity driving persistent irrigation and drinking water stress	50
Farmers' technical/financial/landholding constraints; power instability; infrastructure shortcomings	37
Resource and staffing constraints; procedural timelines in fund disbursement; administrative coordination requirements; and limited availability of community-level financial resources	33
Irregular attendance; lack of follow-up; limited understanding impeding water management	30
Remote settlements/terrain; land conflicts restrict water harvesting sites; access to offices	23

"*The standard of living of people has improved, leading to increased interest in the construction of water-related institutions, and many demands are coming in the Gram Sabha*[2]."

- Panchayat perspectives highlighting collaboration opportunities

The interviews suggest that sustained Pani Mitra engagement is shaped by a combination of motivation, enabling conditions, and legitimacy. Volunteers remain active when they can see tangible progress, feel recognized and trusted, and have practical pathways to convert effort into outcomes. Where engagement weakens, it is often because time burdens, social skepticism, and institutional processes that may be unclear or take time to navigate reduce volunteers' ability to demonstrate results and maintain credibility. Panchayat perspectives reinforce that community volunteers can add value to local planning and mobilization, but their effectiveness is mediated by broader constraints of scarcity, budgets, staffing, and uneven follow-through.

B. Learnings about closing feedback loops and effects on implementation

4.5 Closing the Feedback Loop

A central finding of the project is that closing the loop (returning findings to teams and stakeholders and linking them to follow-up support) appears to generate measurable implementation-facing shifts. Follow-up interviews with Pani Mitras (Nov–Dec) provide the most direct evidence of this, including signals of responsiveness by local institutions, practical support, increased confidence to engage officials, and improved navigation of scheme processes (Table 10).

Table 10. Reported changes after reflection and follow-up (Pani Mitra follow-up interviews)

[2] *Gram Sabha* consists of all persons registered in the electoral rolls of a Panchayat at the village level. As the direct, grassroots-level democratic assembly, it functions as a body of voters responsible for planning, monitoring, and auditing village development. It is a primary, permanent, and foundational body of the Panchayati Raj system in India.

What respondents reported after loop closure	% respondents
Feedback prompted committees/departments/Panchayat to act faster	25
Feedback led to training, practical agronomic guidance, and local administrative assistance	41

4.6 Implementation-Relevant Capability and Confidence Shifts

The follow-up round suggests that closing the feedback loop contributed to changes that matter for program delivery: more direct engagement with officials, improved communication and confidence, stronger ability to advocate for infrastructure, and better understanding of scheme processes (including digital application skills). These are best read as intermediate implementation outcomes (responsiveness, capability to navigate systems), rather than "final impacts" on water security indicators (table 11).

Table 11. Capability and confidence outcomes reported in follow-up (Pani Mitra)

Implementation-relevant change reported	% respondents
Engaged officials directly after training; improved communication, trust, and access to scheme benefits	55
Advocated for water infrastructure and collaborated effectively with local officials	52
Improved communication skills and confidence	40
Improved understanding of scheme processes and digital application skills	40
Improved water management knowledge	38

4.7 Institutional Support and Collaboration Signals

Follow-up interviews also capture the importance of institutional interaction quality (Table 12). Respondents described increased confidence when Panchayat bodies recognized their role and when government interactions were respectful. At the same time, they noted that support is most effective when it is timely and sustained, and that inclusion in collective activities remains uneven, suggesting that loop closure improves conditions for implementation but does not automatically resolve equity and access constraints.

Table 12. Institutional support and collaboration outcomes (Pani Mitra follow-up interview)

Institutional support/collaboration signal	% respondents
Recognition/support from Panchayat bodies and respectful government interactions increased confidence/empowerment	58
Official visits/training enabled subsidies/equipment/approvals, but highlighted need for ongoing timely support	55
Joint meetings/training/exposure visits improved collaboration and benefited farmers, though inclusion remained uneven	36

> *"All the Pani Mitra and water committee members in our panchayat work together, and whenever we have meetings or village gatherings in the panchayat, we discuss this one issue."*
>
> - Panchayat Official on collaboration with Pani Mitra

4.8 Experience of the AI-Enabled WhatsApp Chatbot as a Feedback Channel

Finally, follow-up responses indicate that the channel itself shaped participation (Table 13). A third or more of respondents described the WhatsApp chatbot as easy to use, enabling voice-based interaction in Hindi, and more

convenient than conventional surveys or interviews. These experience signals matter because they affect feasibility at scale and the likelihood of repeated feedback cycles.

Table 13. User experience with the WhatsApp chatbot (Pani Mitra and Panchayat leaders)

User experience signal	% respondents
Easy to use; made them feel valued/confident; supported open feedback	38
Simple interface added with Hindi/Marwari response option convenient/effective compared to in-person survey/interviews	37
Engaging, user-friendly platform; functioned without technical issues	33

Across feedback discussions, participants frequently described the WhatsApp-based interaction as less intimidating than face-to-face questioning. Not knowing 'who is on the other side' was sometimes experienced as freeing, supporting more candid responses. This suggests that the medium can shape the quality of qualitative data.

> *"I was able to talk without fear."*
>
> *"When a person is in front of you, you feel a bit hesitant, but on your own personal mobile, there's no hesitation, and you can answer openly."*
>
> - Respondents on the experience of using WhatsApp-based interviews

The follow-up findings suggest that closing the feedback loop—capturing frontline experience, synthesizing it quickly, and returning it through deliberation and targeted support—can produce observable intermediate shifts in implementation conditions. These shifts are visible as improved confidence to engage institutions, clearer navigation of scheme processes, and perceptions of increased responsiveness from local actors. At this stage, the evidence should be interpreted as signals of strengthened program learning and system interaction (rather than definitive impact on water outcomes), but it demonstrates that faster, structured qualitative feedback can enable timely course correction within a pilot cycle.

> *"Now we are able to understand the scheme, and people have also gained clarity on how to complete the application process and how to move their work forward."*
>
> - A Pani Mitra on the learnings from the trainings organized based on their feedback

5. Limitations and Responsible Interpretation

AI4WaterPolicy was designed as a feasibility and learning pilot, not as an impact evaluation. The findings should therefore be interpreted as implementation-relevant signals that are useful for diagnosing constraints, incentives, and system frictions, rather than as population estimates or causal claims about program outcomes.

1. **Scope of the findings**: The conclusions drawn in this report are shaped by whom we interviewed. We selected specific groups such as Pani Mitras and Panchayat representatives, because of their direct role in Water Security Planning. Therefore, the findings represent the views of these specific cohorts. The percentages presented should be understood as the share of these interviewees who expressed a certain view, not as a statistic that applies to the general population.

2. **Nature of the data**: The evidence collected is primarily based on what participants told us (self-reported). This approach is essential for understanding why implementation succeeds or fails, as it captures people's lived experiences and perceptions. However, these interviews are not a substitute for independent verification. Where stronger claims are required, this data would need to be cross-checked (triangulated) against administrative records or direct field observations.

3. **Quality risks with AI and translation**: Using AI for transcription, translation, and thematic grouping creates speed and efficiency but introduces risks. Automated tools can sometimes miss nuances, misinterpret local idioms, or struggle with dialects. Consequently, AI outputs should never be treated as final. To ensure reliability, human review is essential. The synthesis process must always allow for the correction of context and allow researchers to trace findings back to the original responses.

4. **Time constraints of the pilot**: The short duration of the pilot limits what we could observe. Institutional change and improvements in water security typically take a long time to materialize. Therefore, the follow-up interviews in this study capture "intermediate signals," such as a participant's increased confidence in approaching officials or a perception that responsiveness has improved. These are positive early signs, but they do not yet represent long-term, sustained outcomes.

5. **Technology as a gatekeeper:** To take this approach forward, it cannot be assumed that a WhatsApp/voice channel will be equally accessible to everyone. Participation will depend on practical conditions like smartphone access (often shared), reliable connectivity, basic digital confidence, and time and privacy to respond. To avoid systematically missing lower-access voices, implementation will need deliberate facilitation: troubleshooting support, flexible scheduling, options for shared or assisted devices, and (where required) ways to respond from locations with better network coverage. This should be treated as a core part of delivery, with clear protocols and resources, and with routine monitoring of who is not participating so the digital divide does not become a feedback divide.

6. **Ethical safeguards and reciprocity:** For feedback systems to work, they must operate within strict ethical boundaries.

> *Non-Punitive Use*: Feedback must never be used for surveillance or to "grade" individuals' performance. If participants feel they are being judged, they will stop being honest. The primary purpose must remain learning and improvement.
>
> *Reciprocity*: There is a risk of "extractive learning," where researchers benefit from the data through publications while participants bear the costs of time and effort. To avoid this, we have an ethical obligation to ensure reciprocity. This means sharing findings with the community and demonstrating how their input was used to improve the program, rather than just extracting data for compliance.

The pilot surfaced a set of practical risks (Table 14) that should be addressed if AI-assisted qualitative feedback is institutionalized. The table below summarizes common risks and the corresponding mitigation choices used or recommended.

Table 14. Practical risks in the implementation of similar projects and their potential mitigation options	
Risk	**Mitigation recommendation**
Feedback becomes perceived as performance grading	Explicitly position interviews as learning; avoid individual scoring; report themes in aggregate; communicate acceptable use; ensure anonymous response
Exclusion of low-access or low-literacy participants	Budget for facilitation and shared devices; prioritize voice notes; keep prompts short; offer offline support where needed.
AI translation or summarization distorts meaning	Keep humans in the loop; spot-check translations; validate interpretations in reflection meetings with field teams.
Over-reliance on 'dashboard metrics' without context	Treat dashboards as navigation aids; pair with qualitative reading and discussion; document uncertainties.
Sensitive information inadvertently captured	Use clear guidance to avoid personal identifiers; apply data minimization; restrict access to raw transcripts; apply automated PII redaction
Low actionability (insights collected but not used)	Create a recurring decision forum; maintain an action log; feed actions back into subsequent interview rounds.
Tool fatigue or declining participation over time	Keep interviews short; show 'what changed' from previous feedback; integrate participation into existing programme rhythms.
Institutional ownership unclear (who maintains and uses the system)	Define governance and roles early; plan integration with existing monitoring/review routines; invest in capacity and stewardship.

A wall painting by CmF at Sirohi, highlighting the groundwater extraction crisis, contextualising it in local culture and norms (*photo:* Suchiradipta Bhattacharjee/IWMI)

6. Policy and Program Implications

The project indicates that AI-assisted qualitative feedback is most useful when it supports existing review, learning, and accountability routines, rather than creating a parallel reporting system. Its main value is speed: it can surface implementation dynamics in near-real time on, for example, why participation drops, where plans stall, what frontline actors need to convert intent into action, and which constraints are institutional rather than motivational. The implications below are framed for stakeholders engaged in building adaptive programs without turning feedback into an additional compliance burden.

6.1 Designing for Learning Loops

A recurring lesson from the pilot is that qualitative feedback is only valuable if it drives decision-making. Merely collecting feedback is insufficient; it must be anchored in a clear process. In practice, this requires establishing a regular forum where implementers and officials review key themes, validate their context, and agree on specific follow-up actions. Without this structured space for review, qualitative insights, however interesting, often remain unused and fail to translate into actual program improvements.

The pilot also suggests that feedback is most effective when implementors focus on a manageable set of adjustments rather than trying to fix everything at once. Programs benefit from identifying a few feasible changes for the next cycle, such as targeted training for volunteers, extra support for low-engagement areas, or troubleshooting specific process bottlenecks. This approach prevents feedback from becoming overwhelming and converts it into a practical tool for routine management.

A further advantage is fast iteration. Because the approach is relatively lightweight, programs can adjust the questions quickly based on what is emerging, then testing, refining, and retesting within a short time window. In practice, this means the feedback system can evolve from asking “what happened” to “what is stopping progress right now” and “what would make the next step easier.”

Equally important is the principle of *visibly closing the loop*. Informing participants about what was heard and what changed is an operational necessity. When participants see that their input leads to acknowledgement or action, their trust grows, as does their willingness to engage in future cycles. Over time, this shifts the culture, making feedback a normal part of how the program functions rather than just a one-off survey.

Finally, the pilot demonstrates that qualitative feedback allows programs to target support more intelligently. Instead of applying a "one-size-fits-all" approach, implementors can use recurring feedback signals to identify exactly which volunteer groups, themes, or geographies require extra help. This improves efficiency by directing limited time and resources to where they are needed most, acknowledging that different locations face different constraints.

6.2 Institutionalizing Qualitative Feedback Responsibly

If AI-assisted qualitative feedback is to become a permanent part of public programs, strong governance is essential. Programs must establish clear rules regarding who can access raw data, how confidentiality is protected, and how the findings will be used. A critical safeguard is separating learning from performance evaluation. Qualitative feedback should never be used to grade volunteers or frontline workers. Using it for evaluation can discourage honesty; instead, the focus must remain strictly on diagnosis, learning, and improvement.

The pilot also confirms that software cannot replace skill. Making feedback actionable requires staff who can facilitate discussions, interpret findings, and translate them into decisions. If programs do not invest in building these skills, especially within frontline teams, they risk creating dashboards that are viewed but never used. Responsible implementation, therefore, involves clarifying roles and building staff confidence to work with qualitative data.

Digital inclusion requires deliberate design. Without specific safeguards, digital feedback systems will naturally favor those with better phones, access to data, connectivity, literacy, or confidence. To scale responsibly,

programs must budget for human support, e.g., shared devices, troubleshooting, language assistance, and local scheduling, rather than assuming digital tools will automatically lower costs for everyone. While technology can streamline data collection, ensuring digital inclusivity still requires human effort.

Finally, keeping humans in the loop is essential for quality control. AI can accelerate the organization and synthesis of data, but it should function as a support tool, not a decision-maker. Human review is necessary to catch translation errors, understand context, and ensure that subtle but important meanings are not lost in broad categories. Accountability for interpretation and action must always remain with program staff, not the technology.

6.3 Implications for Using AI in Policy/Program Implementation

A practical contribution of AI4WaterPolicy is demonstrating how qualitative monitoring can become a regular operational habit rather than a sporadic study. This approach allows monitoring to inform course corrections without requiring the heavy time and resource investment of traditional methods including mid-term reviews. It creates a practical bridge between research and implementation, embedding light-touch inquiry (low-effort, frequent, and minimally disruptive to daily operations) directly into ongoing operations. For large-scale programs, this could be more relevant, as it would enable listening at scale and mid-course corrections.

A practical advantage is cost and effort. Compared with traditional surveys or frequent field studies, which require enumerator teams, travel, supervision, data entry, and long turnaround times, AI-assisted voice/text workflows can reduce the marginal cost of each additional round of listening for implementers. This makes it possible to *listen often* without commissioning a new study each time. That said, low cost for implementers should not be confused with “free”. Responsible implementation still requires resources for facilitation, inclusion support (connectivity, devices, scheduling), safeguards, and human review to manage transcription/translation risk. The cost question therefore becomes not just whether it is cheaper, but how costs and effort are distributed, and whether inclusion is properly budgeted.

Schemes such as Jal Jeevan Mission, Atal Bhujal Yojana, and MGNREGA are useful examples because they involve behavior change, local institutions, and inter-department coordination, but the principle is broader. The approach can sit inside any national program as a structured, human-oversighted feedback loop that strengthens routine reviews, improves responsiveness, and helps translate intent into action on the ground.

However, the pilot highlights that this is only feasible under specific conditions. AI-assisted monitoring adds value only when it is integrated into operational routines with clear timelines, defined responsibilities for review, and a clear path from identifying themes to making decisions. Without this structure, AI risks producing sophisticated-looking outputs that fail to change actual practice. Ultimately, responsible implementation research depends less on the complexity of the AI model and more on the design of the institutional process surrounding it.

6.4 Speed, Efficiency, and Iteration as the Main Implementation Advantage

Compared to periodic surveys or evaluation-heavy approaches, this model enables faster cycles of learning at relatively lower operational burden: short, routine check-ins; rapid synthesis; and quick decisions on what to adjust next. This speed matters because implementation problems are time-sensitive—if delays, confusion, or trust gaps are identified late, the program window to respond is often lost.

Just as importantly, the approach supports adaptive questioning. Programs can update prompts quickly based on emerging bottlenecks—moving from broad questions to sharper diagnostics over successive cycles. In effect, it enables a “test–learn–adapt” rhythm that strengthens reflexivity in day-to-day programming.

6.5 Replicability Across Sectors

Although piloted in a water security context, this feedback loop design is relevant anywhere implementation depends on behavior change and local coordination. Many public programs face a common challenge - their data systems track numbers but cannot explain why uptake varies, why delivery stalls, or what frontline staff need to solve problems. In sectors like agriculture extension, nutrition, sanitation, and climate adaptation, routine qualitative feedback can complement quantitative data by clarifying the "why" behind performance trends.

The broader implication is not that every program needs an AI chatbot, but that many could benefit from a structured mechanism to capture frontline experience, synthesize it quickly, and bring it into routine decision-making. Where systems already have review meetings or social audits, AI-assisted feedback can serve as an enabling layer, reducing the effort required to organize thousands of voices into clear signals while keeping interpretation and accountability firmly human-led.

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