FINAL EVALUATION REPORT

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Summative Evaluation: Improving Access to Safely Managed Water Supply in the Resilience Building Programme for Ethiopia-II Woredas December 2017- December 2023

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Summative Evaluation of Improving Access to Safely Managed Water Supply in the Resilience Building Programme for Ethiopia-II Woredas (December 2017- December 2023)

Final Evaluation Report

UNICEF Ethiopia

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Acronyms

AAP	Accountability to Affected Populations
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CERF	Central Emergency Response Fund
CORDAID	Catholic Organization for Relief and Development
CRC	Convention on the Rights of the Child
CRGE	Climate-Resilient Green Economy
CRPD	Convention on the Rights of Persons with Disabilities
CSA	Central Statistical Agency
CWA	Consolidated Water Supply, Sanitation and Hygiene Account
DIPAS	Disability Inclusion Policy and Strategy
EPO	Ethiopian Prosthetic and Orthotic Service
ERG	Evaluation Reference Group
ERIC	Ethical Research Involving Children
ESARO	Eastern and Southern Africa Regional Office
ESPS	Ethiopia Socioeconomic Panel Survey
ESS	Ethiopian Statistical Service
ETB	Ethiopian Birr
EU	European Union
EU-JRC	EU Joint Research Centre
EWTI	Ethiopian Water Technology Institute
FGD	Focus Group Discussion
GBV	Gender-Based Violence
GEAP	Gender Equality Action Plan
GEROS	Global Evaluation Reports Oversight System
GFFO	German Federal Foreign Office
GW4E	Groundwater Mapping 4 Climate Resilient WASH in Ethiopia
HML IRB	Health Media Lab Institutional Review Board
HRBA	Human Rights-Based Approach
IDP	Internally Displaced Person
IGAD	Intergovernmental Authority on Development
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Programme
KII	Key Informant Interview
LNOB	Leave No One Behind
MAR	Managed Aquifer Recharge
MHH	Menstrual Health and Hygiene
MoE	Ministry of Education
MoF	Ministry of Finance
MoH	Ministry of Health
MoU	Memorandum of Understanding
MoWE	Ministry of Water and Energy
MoWSA	Ministry of Women and Social Affairs
MWML	More Water More Life
NGO	Non-Government Organization
O&M	Operations and Maintenance
OECD-DAC	Development Assistance Committee of the Organisation for Economic Co-operation and Development-Development Assistance Committee

ORDA	Organization for Rehabilitation and Development in Amhara
OWNP	One WASH National Programme
PSEA	Prevention of Sexual Exploitation and Abuse
RESET-II	Resilience Building Programme in Ethiopia Phase II
RS-GIS	Remote Sensing and Geographic Information Systems
RWB	Regional Water Bureaus
SDG	Sustainable Development Goal
SNNP	Southern Nations, Nationalities and Peoples
SWAP/SWAp	Sector-Wide Approach of One WASH National Programme
ToC	Theory of Change
ToR	Terms of Reference
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNDP	United Nations Development Programme
UNEG	United Nations Evaluation Group
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNGA	United Nations General Assembly
USD	United States Dollars
USDA	United States Department of Agriculture
WASH	Water, Sanitation and Hygiene
WASHCOM	Water, Sanitation and Hygiene Committee
WRDF	Water Resources Development Fund
WSP	Water Safety Plans

GLOSSARY

Term / Acronym	Definition
RESET II	Resilience Building Programme – Phase II, water supply component implemented by UNICEF in drought-affected regions of Ethiopia.
WASH	Water, Sanitation and Hygiene – an integrated approach to ensuring basic human rights to safe drinking water and sanitation.
SDGs	Sustainable Development Goals – global goals adopted by the UN; the evaluation contributes especially to SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-being), and SDG 13 (Climate Action).
OECD-DAC Criteria	Evaluation criteria developed by the Development Assistance Committee: relevance, coherence, effectiveness, efficiency, sustainability and impact.
UNEG	United Nations Evaluation Group – sets standards and norms for evaluation quality and ethics.
GEROS	Global Evaluation Reports Oversight System – UNICEF's quality assessment framework for evaluation reports.
KII	Key Informant Interview – qualitative method used to gain expert insights from stakeholders.
FGD	Focus Group Discussion – qualitative group discussion method used for community-level feedback.
UNICEF	United Nations Children's Fund – implementing agency responsible for project coordination and evaluation commissioning.
EU	European Union – donor partner for RESET II.
SNNP	Southern Nations, Nationalities and Peoples – one of Ethiopia's regions covered by the RESET II intervention.
Groundwater Mapping	Technical analysis to identify viable water sources for borehole drilling.
Borehole Development	Engineering work to extract groundwater for public use.
Institutional Strengthening	Component of the intervention aimed at enhancing service providers capacity.
Climate Resilience	The capacity of systems or communities to anticipate, absorb, adapt to and recover from climate-related shocks.
Gender and Disability Inclusion	Evaluation lens focusing on participation and outcomes for women, girls and people with disabilities.
Triangulation	Cross-verification of findings using multiple data sources or methods.
Recall Bias	Limitations in evaluation arising from participants' reliance on memory, especially in absence of baseline data.
Pre-testing	Pilot testing of tools before full-scale data collection to ensure relevance and clarity.
Post drilling	The set of activities carried out after successful borehole drilling to make the water source operational. This includes installation of submersible pumps, construction of storage tanks provision of power supply (e.g., solar, grid or generator), and laying of distribution pipelines from the source to designated water collection points.

Executive Summary

Introduction

This evaluation covers the European Union (EU)-funded Resilience Building Programme in Ethiopia Phase II (RESET-II) Water Supply Component, implemented between 2017 and 2023 by UNICEF Ethiopia in partnership with the Ministry of Water and Energy (MoWE), Regional Water Bureaus (RWBs), woreda administrations and specialised technical agencies. The programme aimed to address chronic water insecurity in drought-prone and food-insecure areas by improving access to safely managed and sustainable groundwater-based water supplies across 41 woredas in Afar, Amhara, Oromia, Somali and Southern Nations, Nationalities and Peoples (SNNP) regions.

RESET-II responded to persistent structural challenges in lowland and pastoralist contexts where recurrent drought, climate variability, weak infrastructure and limited institutional capacity undermine reliable water service delivery. It adopted a phased, systems-oriented and climate-resilient approach. Phase I (2018–2019) focused on hydrogeological mapping using remote sensing, GIS analysis and field verification to strengthen groundwater knowledge and reduce drilling failure. Phase II (2020–2023) supported deep borehole development, post-drilling works and institutional capacity strengthening at federal, regional and woreda levels.

The programme aligned with Ethiopia's One WASH National Programme (OWNP-II), the Climate-Resilient Green Economy (CRGE) Strategy and global commitments under Sustainable Development Goal (SDG) 6. This summative evaluation, commissioned by UNICEF Ethiopia, assessed performance against the Organisation for Economic Co-operation and Development–Development Assistance Committee (OECD-DAC) criteria and United Nations Evaluation Group (UNEG) standards to ensure accountability to the EU and national partners and generate evidence-based learning for future climate-resilient WASH programming.

Purpose, Objectives and Scope of the Evaluation

This summative evaluation provides independent evidence on the relevance, coherence, effectiveness, efficiency, sustainability, and contribution to impact of the RESET-II Project implemented between 2017 and 2023. In line with OECD-DAC criteria, UNEG Norms and Standards, and UNICEF GEROS requirements, the evaluation aims to strengthen accountability to the European Union, UNICEF, and the Government of Ethiopia, while generating actionable learning to inform future climate-resilient, groundwater-based WASH investments in drought-affected and fragile context.

The evaluation objectives were to assess the extent to which the project addressed the water access needs of drought-affected and vulnerable populations and aligned with national WASH and climate priorities; examine coherence with other sector initiatives and policies; analyse the efficiency of resource use and implementation arrangements; determine the achievement of intended outputs and outcomes, including the contribution of advanced hydrogeological approaches; and assess the likelihood that benefits will be sustained beyond the project period across technical, institutional, and financial dimensions. The evaluation covered the full implementation period from 2017 to 2023 across selected woredas in Afar, Amhara, Oromia, Somali, and SNNP regions. Findings are intended to inform strategic, programmatic, and policy decisions by the EU, UNICEF Ethiopia, and government counterparts, while contributing to sector-wide learning on climate-resilient groundwater development in Ethiopia and comparable contexts.

Evaluation Design, Methodology, Limitations and Ethical Considerations

The evaluation applied a theory-based, mixed-methods design, guided by a reconstructed Theory of Change linking groundwater knowledge, infrastructure development, and institutional capacity strengthening to sustainable water access outcomes. Quantitative data were collected through a purposive, multi-stage household survey of 200 households across 10 kebeles in five regions, selected to reflect geographic diversity, hydrogeological conditions, and implementation status. Structured observations were conducted for 10 boreholes, including both functional and incomplete schemes. Qualitative evidence was generated through 32 key informant interviews and 19 focus group discussions with 128 participants, including women, youth, and persons with disabilities. Two regional case studies and a desk review of 38 programme and sector documents supported triangulation. Gender equality, disability inclusion, equity, and climate resilience were integrated throughout, and UNEG-aligned ethical and quality assurance standards were applied.

The absence of a dedicated baseline limited measurement of change over time and required reliance on secondary data and stakeholder recall. Documentation gaps and security constraints in parts of Amhara Region necessitated adaptive sampling and, in some cases, remote data collection. While these factors constrained attribution, their influence was mitigated through triangulation and systematic validation, ensuring the overall credibility of findings. Ethical approval for this evaluation was obtained from HML Institutional Review Board under the Research & Ethics-approval number 2985. Ethical principles of respect for dignity and diversity, rights, and do no harm were observed during data collection activities. Ethical safeguards were applied throughout data collection including informed consent, assent and child safeguarding protocols, ensuring that participation was voluntary, confidential and conducted in accordance with UNICEF's ethical standards.

Key Findings

Relevance: RESET-II was highly relevant in responding to Ethiopia's acute water insecurity. By applying advanced hydrogeological mapping, it achieved a borehole drilling success rate of 87.5 per cent, compared with a national average of 35 to 45 per cent. This directly addressed a long-standing cause of service failure of "dry wells" and provided a reliable technical response to recurrent droughts. RESET-II was well aligned with Ethiopia's OWNP-II, UNICEF's global WASH strategy and EU priorities on resilience. It successfully targeted poor and climate-vulnerable households, with survey data showing 88 per cent of users relying on drought-sensitive farming or livestock and 81 per cent living below 5,000 Ethiopian Birr (ETB) (35 United States Dollars (USD)) monthly income. However, relevance was constrained in some locations, where water quality challenges (fluoride in Erbore, salinity in Mubarek) meant that "access" did not translate into "safe use". The evaluation also found that 68 per cent of users still travelled over 30 minutes to water points, limiting convenience and equity, though responsibility for addressing this was intended to rest with local water bureaus. Women and persons with disabilities were represented in WASH committees, but qualitative evidence revealed that participation was often symbolic due to persistent cultural norms.

Coherence: RESET-II showed strong policy coherence. It complemented national frameworks by embedding climate-resilient groundwater planning and supported Ethiopia's CRGE Strategy. It mobilized additional donor funds and strengthened national technical capacity through the Ethiopian Water Technology Institute (EWTI). At the operational level, coherence was less consistent. RESET-II was not fully integrated into MoWE's catchment area-based Integrated Water Resources Management (IWRM) systems, leading to fragmented uptake. Interviews with local health providers revealed that health facilities were not included in water safety or hygiene promotion planning, reducing coherence across WASH-health systems.

Efficiency: RESET-II utilized 93 per cent of its EUR 5 million budget, with most resources allocated to technical delivery (mapping, drilling, capacity-building). Standardized processes and strong donor oversight supported budget efficiency. The use of advanced technology improved cost-effectiveness

in drilling, reducing failures and optimizing resource use. However, overall delivery efficiency was constrained by procurement delays, weak contractor due diligence and recurrent postponements in borehole completion. Security challenges and COVID-19 disruptions further extended the project by three years, increasing financial strain. Local human resource shortages, particularly in technical roles, also slowed progress. Monitoring was largely input-focused, emphasizing compliance with documentation rather than service outcomes. Strategic communications, sector coordination and evaluation functions were underfunded, limiting opportunities for shared learning, adaptive management and sector-wide uptake.

Effectiveness: RESET-II reached 44,817 direct beneficiaries, of whom 31,817 are currently receiving services, with an additional 13,000 expected to gain access once unfinished boreholes become operational, against the envisaged target of 82,000. Household survey data indicated that 74 per cent of users saved more than one hour per day on water collection, which in turn supported improved school attendance for girls and provided women with more time for income-generating activities. The project also trained 92 professionals in groundwater mapping and drilling supervision and produced 39 woreda-level groundwater suitability maps, enhancing planning accuracy. Communities reported a sense of ownership where WASH committees were active; however, evidence from FGDs indicated that women and persons with disabilities often lacked decision-making power. Nearly half of the boreholes were affected by water quality issues (fluoride or salinity) or low discharge yields, reducing their effective functionality. Moreover, effectiveness was constrained by incomplete post-drilling works, weak contractor performance and boreholes abandoned due to poor water quality. Capacity-building outcomes were also limited by staff turnover and insufficient institutional follow-up.

Sustainability: RESET-II established important foundations for sustainability by embedding groundwater mapping into woreda planning systems and supporting institutional training through EWTI and regional bureaus. Water, Sanitation and Hygiene Committees (WASHCOMs) provided local governance structures, managing fee collection and minor repairs in some communities, which supported ownership. In a few regions, groundwater maps were integrated into planning processes, demonstrating early institutional uptake. However, sustainability remains precarious. Some of the boreholes suffered functionality challenges due to incomplete infrastructure (pumps, tanks, pipelines), weak operations and maintenance (O&M) arrangements and fragile spare-part supply chains. Fiscal sustainability was limited: woreda allocations for post drilling infrastructure remained small and unpredictable, with heavy reliance on external transfers. WASHCOMs lacked stable financing, depending on ad-hoc user fees insufficient for major repairs. Water quality monitoring was rare. Climate adaptation measures such as aquifer recharge and ecosystem protection were not systematically institutionalized, leaving resilience gains vulnerable.

Impact: RESET-II contributed to health improvements, with FGDs reporting fewer cases of water borne diseases in communities served by functional boreholes. School attendance improved, particularly for girls who generally bear the burden of water collection. Overall, households reported safer access to water, while adaptations such as ramps and lower taps enabled some persons with disabilities to use services independently. However, wider transformative impacts were limited. Benefits for livelihoods and livestock survival were observed anecdotally but were not systematically monitored. Broader resilience measures, such as aquifer recharge and watershed management, were absent. At a policy level, RESET-II influenced dialogue on climate-resilient groundwater planning, but institutionalization into Ethiopia's IWRM systems is incomplete.

Conclusions

RESET-II demonstrated that data-driven groundwater mapping, combined with institutional capacity strengthening, can significantly improve water security in fragile and drought-prone contexts. The programme achieved notable technical gains, particularly in reducing drilling failure rates and expanding access to groundwater services for vulnerable populations and generated valuable

evidence to inform future resilience-oriented WASH programming. However, sustainability was constrained by water quality challenges, incomplete post-drilling works, weak operations and maintenance systems and uncertain long-term financing. While RESET-II made strong contributions to access expansion and technical innovation, deeper integration with health systems, livelihoods and ecosystem management remains limited. Nevertheless, RESET-II's hydrogeological planning approach has gained recognition beyond Ethiopia, informing UNICEF's More Water More Life (MWML) initiative and similar applications in Angola, Kenya and Somalia. Future programmes should focus on fully functional service delivery, stronger equity outcomes and systematic climate resilience integration.

Key Learnings

The evaluation identified five transferable lessons that extend beyond RESET-II and hold wider relevance for resilience-based WASH programming and groundwater management in fragile settings. These are:

1. Technological innovation improves reliability only when paired with robust quality assurance, including systematic hydro-chemical testing and water quality monitoring.
2. Renewable energy enhances affordability and reliability but requires regulation and groundwater monitoring to prevent over-extraction.
3. Community ownership supports functionality, but inclusiveness sustains it; meaningful participation of women and persons with disabilities is essential.
4. Institutional and contractor capacity are decisive factors in achieving and sustaining results.
5. Predictable financing and reliable data systems are critical for continuity, accountability and long-term service sustainability.

Recommendations

The recommendations below are intended to support immediate decision-making by the EU, UNICEF and Government partners, with clear differentiation between actions required in the short term to secure functionality and those needed in the medium term to strengthen systems and resilience.

High Priority Recommendations

These actions are critical to ensure functionality, water safety and value for money in ongoing and future groundwater investments.

1. Strengthen contractor accreditation, enforcement and procurement systems by introducing pre-qualification, accreditation and training of drilling firms, conducting early market and capacity analyses and enforcing performance-based clauses with penalties and risk-adjusted procurement.
2. Integrate water quality safeguards throughout design and delivery by mandating hydro-chemical analysis, standardized Water Safety Plans (WSPs), essential treatment technologies and regional laboratories linked to digital reporting systems.
3. Guarantee scheme functionality through secured post-drilling financing by ensuring financial closure for pipelines, storage and energization before contract completion, supported by joint contingency funds and pooled financing models.
4. Deepen inclusion, equity and cross-sector integration by enforcing universal design standards, ensuring gender and disability representation in WASHCOMs, and involving schools and health facilities in planning and monitoring.

Medium Priority Recommendations

These actions are required to consolidate institutional capacity, financial sustainability and climate resilience at system level.

5. Institutionalize digital monitoring and verification through interoperable national dashboards, geo-tagged progress tracking, independent verification of functionality and grievance mechanisms linked to planning systems.
6. Consolidate institutional and human resource capacity by embedding RESET-II training modules in curricula, establishing mentoring and refresher systems, harmonizing mapping frameworks and adopting staff retention policies.
7. Secure sustainable financing and reliable spare-parts supply chains by formalizing WASHCOM funds, piloting pro-poor tariffs, building public-private supply partnerships and creating regional maintenance depots.
8. Enhance climate and conflict resilience by diversifying water sources i.e. rainwater, Managed Aquifer Recharge (MAR), surface water, etc. embedding watershed protection, regulating groundwater abstraction and establishing security contingency frameworks.

1 INTRODUCTION, CONTEXT AND OBJECT OF EVALUATION

1.1. Introduction

This Final Evaluation Report presents the findings, conclusions and lessons learned from the independent summative evaluation of the EU-funded Project on Improving Access to Safely Managed Water Supply under the Resilience Building Programme for Ethiopia Phase II (RESET-II) Woredas (2017-2023). The evaluation was commissioned by UNICEF with financial support from the EU and was independently conducted by the Economic Policy Research Institute (EPRI) in technical partnership with AWF (Pvt) Ltd, in collaboration with the Ministry of Water and Energy (MoWE), Regional Water Bureaus (RWBs) and implementing partners.

The RESET-II Water Supply Component was a multi-regional initiative designed to improve access to safe and sustainable groundwater-based water supply and strengthen institutional capacity for climate-resilient water, sanitation and hygiene (WASH) service delivery. Implemented by UNICEF Ethiopia, in partnership with national and regional governments and technical agencies, the project targeted drought-affected woredas across five regions, Afar, Amhara, Oromia, Somali and Southern Nations, Nationalities and Peoples (SNNP)1, to reduce chronic water insecurity and enhance community resilience.

The purpose of this evaluation is to assess the project's relevance, coherence, effectiveness, efficiency, sustainability and impact, with particular attention to cross-cutting dimensions of equity, gender, disability inclusion and climate resilience. It analyses how the project contributed to Ethiopia's efforts to secure equitable access to water in fragile, drought-prone areas while strengthening the enabling environment for sustainable WASH systems. Evidence was triangulated from household and community surveys, water source observations, key informant interviews (KIIs), focus group discussions (FGDs), case studies and secondary documentation across all five regions. This report is structured into five main sections: (i) Introduction and background; (ii) Purpose, objectives, scope and framework of the evaluation; (iii) Design and methodology; (iv) Key findings under each Economic Co-operation and Development-Development Assistance Committee (OECD-DAC) and United Nations Evaluation Group (UNEG) evaluation criterion, including cross-cutting issues such as gender, disability and climate resilience; and (v) Conclusions, lessons learned and recommendations for future programming.

The evaluation was conducted in accordance with UNEG Norms and Standards (2016), UNEG Ethical Guidelines (2020), and the UNICEF Global Evaluation Reports Oversight System (GEROS) Quality Review Standards (2020), ensuring methodological rigour, independence and accountability in line with international evaluation principles.

[1] The Southern Nations, Nationalities and Peoples (SNNP) region was created in 1992 from the merger of five previous regions (Regions 7 to 11). On August 19, 2023, the region was dissolved and its territory was split into new regions, including the South Ethiopia Region and Central Ethiopia Region.

1.2. Intervention Context

1.2.1. Profile of Ethiopia and Target Regions

Ethiopia, located in the Horn of Africa, is a landlocked country with over 128 million people in 2023 and a landmass exceeding 1.1 million square kilometres (World Bank 2025). Its highlands, home to most of the population, enjoy moderate climates and fertile soils, while the lowlands are marked by harsh climates and greater exposure to drought, flooding and land degradation (World Bank Group 2025). The federal system devolves authority across twelve regions and two chartered city administrations, yet the effectiveness of decentralized service delivery varies due to institutional disparities, conflict and uneven investment (Central Statistical Agency 2013) (Relief Web 2024). Despite rapid economic growth, poverty remains at 22 per cent, with rural populations most affected (World Bank Group 2025). Rising unemployment, inflation and recurrent drought continue to constrain progress, while conflict-induced displacement and global economic pressures have left over 20 million people in need of humanitarian assistance, including more than 4 million internally displaced persons (IDPs); (UN OCHA 2023).

Afar Regional State: Afar, covering 94,760 square kilometres with just over 2 million people, is predominantly pastoralist and among Ethiopia's least developed regions (Ethiopian Environmental Protection Authority 2024). Its arid lowlands and the Danakil Depression make it highly prone to droughts, heatwaves and flash floods, while weak infrastructure and limited institutions constrain services (UNICEF 2019). Livelihoods depend largely on subsistence livestock, with poor access to markets, health and education, while high poverty and gender inequalities continue to undermine resilience (UNDP 2021); (World Bank Group 2020).

Amhara Regional State: Amhara, Ethiopia's second most populous region with over 32 million people across 154,709 square kilometres, is largely agrarian with more than 85 per cent engaged in smallholder farming and livestock (Ethiopian Statistical Service 2024). Despite fertile highlands and Lake Tana, the region faces recurrent droughts, land degradation and food insecurity (Ethiopian Economics Association 2023). Poverty remains widespread, especially in fragmented highland farms, while limited infrastructure and weak extension services restrict market access (World Bank 2020). Educational outcomes lag behind national averages, with girls particularly affected, and child marriage remains prevalent in rural areas (UNICEF 2019); (UN OCHA 2024).

Oromia Regional State: Oromia, Ethiopia's largest region, spans 353,690 square kilometres and has over 42 million people, representing about 35 per cent of the national population (Adugna 2023). It is the country's agricultural heartland, producing coffee and cereals central to food security and exports, yet livelihoods remain highly vulnerable to drought, land degradation and erratic rainfall (USDA 2023); (Climate Data 2025). Persistent poverty, especially in remote lowlands, is compounded by weak infrastructure, limited market access and recurrent conflict, which has displaced over 1.5 million people (UN OCHA 2024). Social inequalities remain stark, with low female school retention and high prevalence of child marriage (UNICEF 2019); (World Bank 2020).

SNNP Regional State: The SNNP region, covering about 112,343 square kilometres with a population of 22.4 million in 2024, is noted for its ethnic diversity and agrarian economy (Ethiopian Statistical Service 2024); (EPO 2024). Despite fertile zones producing coffee, enset and maize, the area faces chronic food insecurity, land degradation and high child undernutrition (Sinore 2024);

(UNICEF 2020). Recent administrative restructuring into four new states has created transitional challenges for governance and service delivery. These are expected to evolve as administrative systems become more fully established, though current limitations in infrastructure and institutional capacity continue to hinder access to water, health and education (World Bank 2022). Women and girls remain disadvantaged due to early marriage, gender-based violence (GBV) and restricted livelihood opportunities (UNICEF 2021).

Somali Regional State: Somali, Ethiopia's second-largest region by area at 350,000 square kilometres, has a population of about 6.7 million, most of whom depend on pastoral and agro-pastoral livelihoods (Climate Data 2025); (International Organization for Migration 2025). The arid climate, erratic rainfall and recurrent droughts make communities highly vulnerable, with weak infrastructure and scarce services exacerbating poverty (UNDP 2023). The region hosts over 1.2 million IDPs displaced due to drought and conflict (UN OCHA 2024). Education and health indicators remain among the lowest in the country, especially for girls, while food insecurity, acute malnutrition and gender inequalities persist (UNICEF 2021); (UNHCR 2025); (World Bank 2020).

1.2.2. Access to WASH and Inequalities

Access to safe WASH remains a central development priority in Ethiopia. The One WASH National Programme (OWNP) is the Government of Ethiopia's flagship, multi-sector programme jointly led by the MoWE, Ministry of Health (MoH), Ministry of Education (MoE) and Ministry of Finance (MoF). It aims to achieve universal, sustainable and climate-resilient WASH access by 2030 through integrated planning, financing and service delivery across rural and urban areas. Despite these sector reforms, rural, pastoralist and conflict-affected populations continue to rely on unimproved sources, exposing them to diarrhoeal disease and undernutrition, while women and girls bear the primary burden of water collection, limiting their education and economic opportunities (UNICEF 2021); (UNICEF 2018). National coverage remains critically low. Only 13 per cent of the population has access to safely managed drinking water, dropping to 6 per cent in rural areas compared to 39 per cent in urban centres. For sanitation, just 7 per cent of the population use safely managed services, while 65 per cent rely on unimproved facilities and 18 per cent still practise open defecation, especially in rural areas where 70 per cent lack even basic services. Hygiene indicators are equally weak, with only 8 per cent of households having basic handwashing facilities, falling to 5 per cent in rural areas (JMP 2022).
These national averages mask stark regional disparities. Piped water coverage is far lower in pastoral and lowland regions such as Afar (46 per cent), Somali (27 per cent) and Amhara (47 per cent), compared with 97 per cent in Addis Ababa. Open defecation rates also remain highest in Afar (57 per cent), Amhara (51 per cent) and Somali (41 per cent), reflecting systemic inequalities in infrastructure, behaviour change and service delivery (Ethiopian Statistical Service (ESS), & World Bank 2022).

1.2.3. WASH Service Delivery

Policy and Legal Framework

Ethiopia's WASH framework is anchored in the Water Resources Management Proclamation No. 197/2000, the Constitution (1995) and the Ethiopian Drinking Water Quality Standards 2013 (Food and Agriculture Organization of the United Nations 2000). The Water Resources Management Policy 2001 remains the cornerstone, emphasizing integrated resource management, decentralization and community participation (Ministry of Water Resources 2001).This was operationalized through the Water Sector Strategy 2001 and the Water Sector Development Programme 2002-2016. Later, the

Universal Access Plan 2005 and the OWNP 2013 unified sectoral efforts, with OWNP-II 2018-2025 aligning national targets with the Sustainable Development Goals (SDGs) and strengthening focus on climate resilience, gender equity and decentralized implementation (UNICEF 2018).

Institutional Arrangement

Service delivery follows a decentralized model. At the federal level, MoWE leads policy and oversight, while the MoH, MoE and MoF manage WASH in health facilities, schools and financing through the Consolidated Water Supply, Sanitation and Hygiene Account (CWA) and the Water Resources Development Fund (WRDF). RWBs oversee design and contracting, with woreda water offices handling small-scale schemes. Town water utilities manage urban supply and community-level water, sanitation and hygiene committees (WASHCOMs) undertake fee collection and maintenance. Increasingly complex schemes are shifting management toward professionalized woreda or zonal utilities.

Sector Capacity

Sector capacity remains limited, with shortages of skilled staff, weak enforcement of standards and low readiness for climate-informed planning (UNICEF 2018). RESET-II responded by prioritizing technical training: 92 professionals across five regions received training through the Ethiopian Water Technology Institute (EWTI) in partnership with Acacia Water and Aquacon Engineering, focusing on Geographic Information Systems (GIS)-based mapping, drilling supervision and diagnostics (UNICEF 2024). The evaluation assessed whether these investments translated into improved planning, drilling success and institutional confidence in groundwater management.

Gender and Inclusion in WASH

Despite policy frameworks such as the National Gender Equality Strategy and the Disability Inclusion Roadmap, WASH access in Ethiopia remains shaped by gender inequality and disability exclusion, with implementation uneven due to entrenched norms, under-resourced institutions and weak accountability (UNICEF 2021).

1.2.4. Gender Inequality and Social Norms

Women and girls carry the main burden of water and fuelwood collection, with Ethiopia Socioeconomic Panel Survey (ESPS) 2021/22 data showing female members responsible in 57 per cent of households. Long travel reduces time for education, income and childcare, while increasing safety risks, especially in Oromia, Benishangul Gumuz, SNNP and Gambella. In schools, menstrual hygiene gaps i.e., lack of facilities and materials and stigma, remain a major cause of absenteeism and dropout among adolescent girls, with limited integration of menstrual health and hygiene (MHH) into education and child protection systems (Habtegiorgis, et al. 2021).

1.2.5. Disability Inclusion

Around 15 per cent of the population lives with disabilities, though underreported (MoWSA 2022). Barriers include inaccessible infrastructure, absence of inclusive design standards and social discrimination, limiting participation in WASH decision-making. Ethiopia's ratification of the Convention on the Rights of Persons with Disabilities (CRPD) (United Nations 2006) and disability-inclusive guidelines set commitments for equitable services, but integration into planning, monitoring and investment remains weak.

1.2.6. Climate Vulnerability and Resilience in WASH

Ethiopia's WASH systems are increasingly threatened by climate variability, with recurrent droughts, floods and temperature anomalies undermining service reliability, especially in rural and drought-prone areas. These shocks disproportionately affect poor and marginalized groups reliant on fragile water systems (UNICEF 2018); (UNICEF 2021).

National Climate Risk Landscape: Ethiopia is among the world's most climate-exposed countries, having faced five major droughts in the past decade, alongside floods and temperature anomalies. Between 2021 and 2023, climate shocks affected over 24 million people (UN OCHA 2023). National strategies such as the Climate-Resilient Green Economy Strategy 2011, National Adaptation Plan 2019 and the Disaster Risk Management Policy 2013 provide frameworks for resilience, but regional implementation is limited by weak coordination, budget constraints and institutional gaps (World Bank 2020); (Federal Democratic Republic of Ethiopia 2019).

Climate Impacts on WASH: Droughts have dried shallow wells, reduced recharge and stressed basins like the Awash Basin, that supplies water to about 18 million people (Taye 2018). Conversely, floods have damaged WASH infrastructure, disrupting services and increasing health risks. The 2022 La Niña drought left over 8 million pastoralists in Somali, Oromia and SNNP facing acute shortages (UN OCHA 2022).

Regional Vulnerabilities in RESET-II Areas: RESET-II regions show diverse vulnerabilities. Somali suffers from chronic drought, with water trucking a common fallback. Afar faces both drought and groundwater salinity, limiting sustainability despite new boreholes. SNNP contends with droughts and floods in zones like South Omo and Wolayita. Oromia's East Bale and Borena zones experience groundwater stress, with dry boreholes and delayed maintenance. In Amhara, drought and conflict disrupt access, and some boreholes remain incomplete, highlighting institutional and hydrogeological challenges.

1.2.7. Ethiopia's Commitments to the Sustainable Development Goals (SDGs)

Ethiopia has integrated the SDGs into its Ten-Year Development Plan (2021-2030) and sectoral strategies such as OWNP-II, with progress highlighted in its 2022 Voluntary National Review. However, disparities remain, especially in rural and drought-prone areas. RESET-II contributes primarily to SDG 6, while also intersecting with SDGs 3, 5, 13 and 16 through its focus on climate-resilient infrastructure, health, gender and governance. Against this backdrop of strengthened governance and institutional alignment, the project's contributions to Ethiopia's broader commitments under the SDGs can be more clearly understood across the key targets outlined below:

SDG 3: By expanding access to clean water in underserved areas, RESET-II supported reductions in diarrhoeal disease and cholera, though formal hygiene promotion and health integration were limited.

SDG 5: The project reduced time burdens on women and girls, enhanced safety and encouraged participation in WASH structures, indirectly supporting menstrual health and dignity.

SDG 6: RESET-II aligned with universal water access goals through groundwater mapping in 39 woredas, drilling 14 productive boreholes and training 92 professionals, though gaps remain in distribution, operations and maintenance (O&M) and inclusion of persons with disabilities and displaced groups.

SDG 13: GIS-based mapping, drought-focused siting and institutional capacity-building advanced resilience priorities under the CRGE Strategy, though infrastructure adaptation needs further progress.
SDG 16: By strengthening woreda and regional governance and planning, RESET-II promoted accountability and inclusive decision-making, even without a direct peacebuilding mandate.

1.2.8. International Human Rights Instruments

Ethiopia's ratification of key UN conventions provides the normative basis for equitable WASH service delivery, ensuring participation, accessibility and non-discrimination. RESET-II aligns with these commitments by expanding inclusive water access, supporting institutions and easing household water burdens in drought-affected areas.
United Nations General Assembly (UNGA) Human Right to Water and Sanitation: Ethiopia endorsed UNGA Resolution 64/292 and reflected it in national policy frameworks. RESET-II supports this right through reliable groundwater supply in marginalized communities.
Convention on the Rights of the Child (CRC): Ratified in 1991, the CRC underpins children's rights to survival and education. RESET-II contributes by reducing water collection time, particularly for girls, helping remove barriers to school attendance.
Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW): Ratified in 1981, it commits Ethiopia to eliminating discrimination against women. RESET-II supported this by involving women in WASH committees and reducing unpaid domestic labour, though gaps remain in leadership and capacity-building.
CRPD: Ratified in 2010, it guarantees equal access for persons with disabilities. RESET-II integrated disability awareness in training and planning, with some inclusive design measures, though further progress is needed on standards and monitoring.
UNICEF Disability Inclusion Policy and Strategy (DIPAS) (2021): This strategy mainstreams disability inclusion while promoting targeted interventions. The evaluation reviewed RESET-II's responsiveness to these principles in infrastructure, engagement and outcomes.

1.2.9. UNICEF Strategic Commitments to WASH and Climate Resilience

UNICEF's global and regional frameworks guide WASH support in fragile, climate-stressed contexts, emphasizing inclusive, sustainable and resilient service delivery. RESET-II reflects these priorities through groundwater development, capacity-building and climate-adaptive planning.
UNICEF WASH Strategy 2016-2030: This outlines outcomes on safe services, systems strengthening, climate resilience, hygiene and equity (UNICEF 2016). RESET-II contributes through groundwater supply in drought-prone areas, institutional training and mapping, though hygiene behaviour change was not a core focus.
Climate Resilient WASH Strategic Framework 2022: Provides guidance for climate risk assessment and adaptive infrastructure (UNICEF 2022). RESET-II aligns through Remote Sensing and Geographic Information Systems (RS-GIS) mapping, geophysical surveys and collaboration with EWTI and regional bureaus to institutionalize risk-informed planning.
UNICEF Strategic Plan 2022-2025: Positions WASH as key to health, education and resilience (UNICEF 2021). RESET-II supports these shifts by strengthening sub-national institutions, targeting underserved lowland areas and piloting scalable planning tools while generating operational learning for future programming.

1.3. Object of the Evaluation

1.3.1. Overview of the Project

The EU-funded Improving Access to Safely Managed Water Supply in the Resilience Building Programme for Ethiopia RESET-II Woredas was implemented by UNICEF in partnership with the MoWE, RWBs and technical agencies across Afar, Amhara, Oromia, Somali and SNNP regions. Its overall aim was to strengthen resilience in 41 drought-prone and food-insecure woredas by improving access to safe and sustainable groundwater-based water supply, thereby supporting livelihoods and reducing vulnerability to human-induced and natural crises.
The project was structured in two phases: Phase 1 (2018-2019) focused on hydrogeological mapping through satellite-based remote sensing, GIS analysis and ground-truthing surveys and Phase 2 (2020-2023) concentrated on drilling deep boreholes and strengthening institutional capacity. RESET-II was closely aligned with Ethiopia's OWNP, the CRGE Strategy and the National Adaptation Plan, contributing to national goals through risk-informed water resource planning, climate-adaptive infrastructure and institutional strengthening at federal and sub-national levels.

1.3.2. Core Intervention Components

The RESET-II Water Supply Component was designed as a package of interventions to improve groundwater knowledge, expand sustainable access to safe water, and strengthen institutional and community capacity in drought-prone areas. The approach combined advanced hydrogeological mapping, infrastructure development and capacity-building to deliver long-term resilience. The key interventions included:

- Remote sensing and GIS-based overlay analysis, ground verification and development of woreda-level groundwater suitability maps.
- Hydrogeological studies and geophysical surveys to guide the identification of borehole sites and improve drilling success.
- Drilling and development of test productive boreholes, followed by construction of water distribution systems and support to RWBs for scheme expansion.
- Capacity-building of government staff on groundwater feasibility and data management systems.
- Community support for managing newly established water supply schemes.
- Documentation and dissemination of lessons learned alongside annual sustainability checks of UNICEF-supported water and sanitation projects.

1.3.3. Beneficiaries

RESET-II was originally designed to reach 82,000 people in drought-prone areas with improved access to safe and sustainable water supply across 16 woredas in Afar, Oromia, Somali, SNNP and Amhara. According to the project's final report, 46,470 people were reached with water supply services in seven woredas. The evaluation validated 44,817 direct users of project-installed water sources across eight woredas, comprising 31,817 current users and an additional 13,000 expected once two boreholes under post-drilling works are completed. Direct beneficiaries included:

- Communities in kebeles where productive boreholes were drilled and connected to distribution systems.
- Women and girls benefiting from reduced time and risks associated with water collection.
- Persons with disabilities accessing more inclusive water points.
- Pastoralist and remote rural households historically underserved by WASH infrastructure.

- Conflict-affected and displaced communities where secure water access supports resilience and recovery.

In addition, a much larger population benefited indirectly through hydrogeological mapping and institutional capacity-building, which informed groundwater planning and strengthened technical expertise across 39 woredas. Indirect beneficiaries included households and institutions likely to gain from future water investments guided by RESET-II tools and knowledge. The evaluation applies disaggregated analysis by gender, age, disability status and geography to assess equity in project services across drought-affected settings.

1.3.4. Stakeholders

The implementation of the RESET-II Water Supply Component was founded on a multi-layered partnership structure involving international agencies, government institutions, technical firms, development organizations and community representatives. Each stakeholder played a distinct and complementary role in ensuring effective coordination, technical delivery and sustainability of results across federal, regional and local levels. The table below outlines the key stakeholders, their respective roles and responsibilities, and their level of engagement in implementation of RESET-II.

Table 1: Stakeholders Category, Roles/Responsibilities and Contribution

Category	Stakeholder(s)	Roles and Responsibilities	Level of Engagement / Contribution
Development Partner	EU	Provided financial support and strategic oversight through the EU Joint Research Centre (EU-JRC) under the broader RESET-II Resilience Building Programme.	High: Principal funding agency providing financial resources, strategic guidance and oversight of programme alignment with EU resilience priorities.
Lead Implementing Agency	UNICEF Ethiopia	Led overall programme coordination, procurement, technical design, monitoring and evaluation, and donor reporting for the WASH component.	High: Direct implementation, technical leadership and overall management of partnerships and reporting.
Government Counterparts	MoWE Regional and Zonal Water Bureaus Woreda Water Offices	MoWE served as the primary duty bearer overseeing policy and regulatory alignment. Regional and zonal water bureaus led site selection, supervision and quality check. Woreda water offices mobilized communities and managed basic post-construction operations.	High: Core government ownership at federal and sub-national levels, ensuring policy alignment, technical supervision and local implementation.
Technical Partners	Acacia Water AquaCon Engineering PLC	Acacia Water and AquaCon Engineering PLC conducted hydrogeological mapping,	Medium to High: Delivered technical expertise, research and capacity-building inputs to

	EWTI	geophysical surveys and drilling supervision. EWTI provided specialized training to strengthen institutional and technical capacity in groundwater.	enhance the scientific basis of implementation.
Groundwater Mapping 4 Climate Resilient WASH in Ethiopia (GW4E) Consortium Partners	Catholic Organization for Relief and Development (CORDAID), CARE, Action contre la Faim, Vita Ethiopia, Danish Church Aid, Caritas Germany and Save the Children	Supported complementary interventions in resilience building, livelihoods and basic service delivery across overlapping programme areas, ensuring synergy with WASH outcomes.	Medium: Contributed to integrated resilience programming and community development through complementary sectoral initiatives.
Community Structures	WASHCOMs	Engaged in site-level planning, water point management, O&M and community mobilization to ensure sustainability and ownership.	Medium to High: Represented community-level governance and accountability structures ensuring local participation.

1.3.5. Financial Overview of the RESET II WASH Component (2017–2023)

The RESET II WASH component was implemented between December 2017 and December 2023 with a total approved budget of EUR 5,005,448, including a UNICEF cost-share of EUR 55,000. While the Terms of Reference referenced a budget of EUR 4,854,149, certified financial statements confirm total expenditure of EUR 4,667,811, reflecting a utilisation rate exceeding 93 per cent and a claim of 99.5 per cent of the eligible cost ceiling. A residual balance of EUR 20,950.19 was refunded to the European Union. The variance of EUR 337,637 against the approved envelope represents modest underspending, largely attributable to exchange-rate fluctuations and final budget adjustments. Expenditure patterns indicate a strong focus on technical delivery. Contractual services, covering groundwater mapping, borehole drilling, and capacity building, accounted for approximately EUR 3.9 million, representing over 83 per cent of total expenditure and slightly exceeding the original allocation. Personnel costs were contained at EUR 424,528 (around 9 per cent), while expenditure on equipment, monitoring, and indirect costs remained proportionate. This profile reflects a delivery-oriented cost structure with limited administrative overheads.

By contrast, several planned budget lines were underutilised. Allocations for travel, coordination workshops, evaluation, and visibility, originally exceeding EUR 250,000, recorded minimal expenditure. Activities related to the final evaluation, knowledge products, and experience-sharing events were delayed or deferred, particularly during the latter phase of implementation. While these variances did not undermine technical outputs, they warrant clarification to assess completeness of programme closure and accountability functions. Below presents a comparison between the original budget and audited expenditure.

Table 2: Original Budget Vs Audited Expenditures

Budget Line Item	Original Budget- EUR	Audited Expenditure- EUR
Staff and Personnel Costs	481,134	424,528
Equipment, Vehicles and ICT	22,409	15,828
Contractual Services (Technical Delivery incl. Mapping, Drilling, CB)	3,845,407	3,895,153
Travel and Field Monitoring	82,353	31,044
Project Coordination and Evaluation	250,285	26,680
Administrative / Indirect Costs	323,861	301,259

1.3.6. Implementation Arrangements and Framework

The implementation framework was formalized under the 2022 Memorandum of Understanding (MoU) between UNICEF, MoWE, EWTI and development partners. UNICEF Ethiopia led coordination, procurement and technical oversight, with the EU providing funding and strategic support through the EU-JRC.

MoWE with support of regional and zonal water bureaus, ensured policy alignment, reviewed designs, approved implementation plans and supervised execution. At the local level, woreda water offices mobilized communities and managed post-construction operations, while WASHCOMs ensured site-level planning, operation and monitoring.

Technical support was provided by Acacia Water and AquaCon Engineering PLC, whose joint venture strengthened mapping and drilling supervision. The EU Joint Research Centre (EU-JRC) contributed satellite imagery and groundwater analysis, while the EWTI strengthened capacity through institutional gap assessments, tailored training, and support to regional drilling enterprises and rural utilities for O&M.

Other development partners, including the World Bank, WaterAid and JICA, were also signatories to the MoU and aligned their support with the government's broader capacity development framework for sustainable WASH service delivery.

2 PURPOSE, OBJECTIVES, SCOPE AND USES OF EVALUATION

This section outlines the overall purpose, objectives, scope and intended uses of the summative evaluation of the EU-funded RESET-II in Ethiopia. It explains the rationale for conducting the evaluation, the specific questions it aimed to answer and how its findings will inform decision-making by the EU, UNICEF, the Government of Ethiopia and other sector partners. The section also defines the temporal, geographic and thematic boundaries of the assessment, covering drought-prone woredas across five regions from 2017 to 2023, and clarifies its alignment with OECD-DAC and UNEG evaluation criteria. Finally, it highlights how the evaluation findings will be used to strengthen accountability, inform future resilience-oriented WASH programming, and guide the integration of RESET-II innovations such as hydrogeological mapping, solarization and community-based governance into national systems and policies.

2.1 Evaluation Purpose

The purpose of this summative evaluation is to generate credible and independent evidence on the performance, results and sustainability of the RESET-II project, implemented by UNICEF Ethiopia between December 2017 and December 2023. The evaluation aims to draw lessons from project design and implementation to inform national priorities, guide UNICEF and partner strategies, and assess challenges encountered and mitigation measures adopted during implementation (see Terms of References (ToR) in Annex 19). It has a dual focus: to ensure accountability to the EU, UNICEF and national stakeholders through assessment of intended and unintended results, and to generate learning to inform future programme design and the potential scale-up of technical approaches. RESET-II is examined as a proof-of-concept initiative piloting groundwater mapping, improved borehole siting and institutional capacity development, with the evaluation assessing contributions to water access, system resilience and institutional readiness in line with Ethiopia's WASH and climate adaptation priorities.

2.2 Intended Use and Users of the Evaluation

The findings of this evaluation are intended to serve multiple stakeholders across different levels of Ethiopia's WASH sector and resilience programming. The results will support accountability, inform policy dialogue, and guide the design of future groundwater and climate-resilient interventions. The table below outlines the primary intended users of the evaluation and how each is expected to apply the evidence and lessons generated from the RESET-II.

Table 3: Intended Use and Users of the Evaluation

Intended Users	Intended Use
EU	Use evaluation findings to assess the effectiveness, value-for-money and sustainability of RESET-II, informing future EU investment decisions in groundwater-based resilience and WASH interventions in fragile and drought-prone contexts.
UNICEF Ethiopia	Apply lessons to strengthen resilience-focused WASH delivery models, scale up satellite-informed groundwater planning, and

	enhance monitoring, coordination and systems-based approaches across regions.
Government entities (MoWE, MoF, Regional and Zonal Water Bureaus, Woreda Water Offices)	Integrate evaluation findings into national and regional WASH planning, policy dialogue and implementation frameworks such as the OWNP-II and the CRGE Strategy to improve sustainability and institutional capacity.
Technical partners (Acacia Water, AquaCon Engineering PLC and EWTI)	Utilize evidence to refine hydrogeological mapping methodologies, validate geophysical tools, and strengthen institutional training modules for resilient groundwater management and borehole design.
GW4E Consortium Partners (CARE, CORDAID, Save the Children, Danish Church Aid, Vita Ethiopia, and others)	Draw on findings to integrate water supply innovations and resilience lessons into broader livelihoods and community resilience programming in overlapping operational areas.
Regional and Woreda-level WASH Teams and Utilities	Employ evidence to improve operational capacity for borehole monitoring, O&M and inclusive service delivery, ensuring long-term functionality and accountability to users.
Donors, Sector Working Groups, and Humanitarian Clusters	Use results to identify scalable and cross-sector approaches that can inform multi-donor coordination, joint programming and investment in climate-resilient WASH services.
Academic and Research Institutions	Apply data and evidence from the evaluation for policy analysis, case studies and publications, contributing to the knowledge base on climate-resilient groundwater management in Ethiopia.
Rights-Holders and Community Structures (WASH Committees, Women's Groups and Local Leaders)	Validate the accessibility, safety and sustainability of water services and ensure community voices and feedback inform future WASH programming, reinforcing local ownership and accountability.

2.3 Evaluation Objectives

The evaluation objectives have been refined and consolidated to address areas of overlap in the original ToRs and to enhance analytical clarity, while remaining fully aligned with the approved evaluation questions and intent. The original objectives as stated in the ToR are provided in Annex 19.

1. Assess the relevance and responsiveness of the project design and implementation to the water access needs of drought-affected populations and national priorities.
2. Examine coherence with national policies, sector strategies and other water and resilience initiatives, identifying complementarities and gaps.
3. Assess the effectiveness and efficiency of RESET-II in achieving its intended outputs and outcomes, including the contribution of advanced hydrogeological approaches
4. Examine the likelihood that project benefits will be sustained beyond the implementation period, including institutional, technical and financial dimensions.
5. Generate lessons and evidence to inform UNICEF, government and partners in the design, scale-up and monitoring of future climate-resilient WASH interventions.

2.4 Evaluation Scope

Temporal Scope: The evaluation covers the full project period from December 2017 to December 2023, assessing both the mapping phase (2018-2019) and the infrastructure and capacity-building phase (2020-2023), including the one-year no-cost extension.
Geographic Scope: RESET-II was implemented in 16 woredas across the Afar, Amhara, Oromia, SNNP and Somali regions. The evaluation prioritizes seven borehole sites where post-drilling construction was completed,[2] together with three sites where it was not, to enable an in-depth review that reflects regional diversity, climatic conditions and population profiles.
Thematic Scope: The evaluation focuses on RESET-II as a proof-of-concept for advanced groundwater planning in fragile settings. Key areas include hydrogeological mapping, access to safe water, community impacts, knowledge management, capacity-building, and the sustainability of technical and institutional innovations. Cross-cutting issues of gender, disability, equity and climate resilience are considered throughout the evaluation.
Institutional Scope: Stakeholders include the MOWE, regional and zonal water bureaus, woreda water offices and community members. The evaluation assessed ownership of tools, use of capacity-building inputs, accountability mechanisms and collaboration across levels, ensuring inclusive participation of women, girls and persons with disabilities.
Exclusion: The evaluation does not assess sanitation, hygiene promotion, or broader livelihoods, health, nutrition or environmental outcomes except where these are directly linked to water access and service functionality. The evaluation does not include a cost–benefit or economic rate of return analysis, nor does it assess humanitarian water trucking or emergency response modalities outside the scope of RESET-II design.

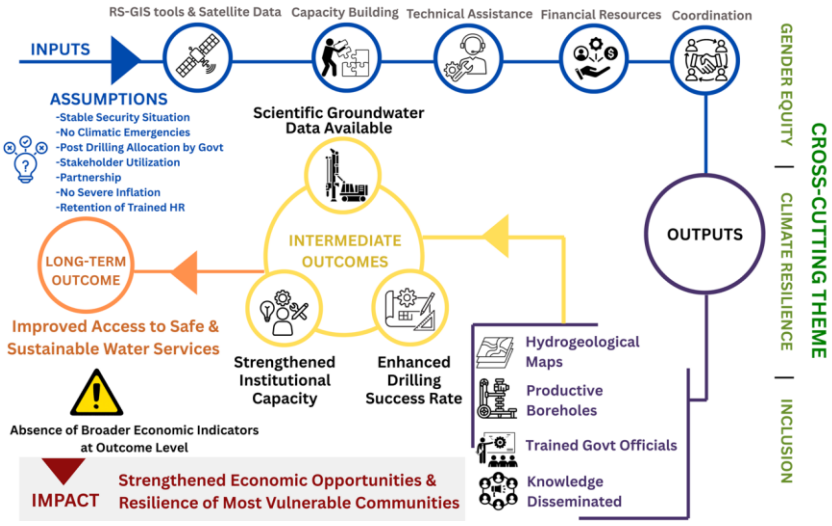
2.5 Theory of Change

2.1.1. Construction of the Theory of Change

The UNICEF-implemented RESET-II Water Supply Component was part of the broader multi-sectoral RESET-II programme, which aimed to strengthen economic opportunities, livelihoods and resilience. While the water supply component was guided by a comprehensive results framework, no explicit Theory of Change (ToC) was developed at the design stage. For this evaluation, the team constructed a refined ToC to articulate the project's causal logic in a more explicit, visual and narrative form. This ToC drew on the approved project documents, logframe, monitoring data, annual and final reports, and technical inputs from stakeholders at federal, regional and woreda levels. It was further informed by national policy frameworks including the OWNP-II as well as UNICEF's global WASH Strategy and Climate-Resilient WASH Framework. The reconstructed ToC was used explicitly to frame evaluation questions, guide indicator selection and structure the analysis across OECD-DAC criteria.

[2] As reported in project final progress report

Figure 1: Constructed Theory of Change (ToC)-Diagram



The refined ToC identifies a central pathway linking three core results:

- Improved groundwater resource knowledge through hydrogeological mapping and surveys, leading to better-informed drilling decisions.
- Higher drilling success and functionality of boreholes, reducing exploration risks and improving reliable access to water.
- Strengthened local capacity through training and knowledge dissemination, enabling more resilient and inclusive water supply systems over the long term.

By integrating these results, RESET-II was expected to contribute to sustainable and equitable access to safe water in fragile, drought-prone areas, thereby supporting resilience at household and community levels. A visual diagram of the constructed ToC is provided below, while a detailed version is included in Annex 1A.

Below is a summary of key components:

Inputs and activities: Hydrogeological mapping, borehole drilling and training of government staff on groundwater planning and supervision.
Outputs: Availability of groundwater maps, functional boreholes in targeted woredas and enhanced institutional capacity for groundwater management.
Outcomes: Improved planning and drilling success, improved functioning and equitably used water points, and increased local ownership and system resilience.
Impact: Drought-prone communities gain sustainable and climate-resilient access to safe water, contributing to resilience and reduced vulnerability to crises.
The ToC rests on assumptions of stable security, favourable climatic conditions, availability of skilled contractors and technical personnel, government commitment to allocate post-drilling budgets, and sustained engagement with EU-JRC and other partners. Risks include climate shocks, rising costs and institutional turnover. By articulating these linkages alongside their assumptions and associated risks, the constructed ToC provides a transparent foundation for judging the plausibility of the design, the strength of implementation pathways and the prospects for sustaining results.

2.6 Validation of the Theory of Change

The constructed ToC was validated during the evaluation through a triangulated and participatory approach:

Stakeholder engagement: Consultations at national, regional and woreda levels verified whether the pathways reflected implementation realities and identified any missing linkages.

Field-based evidence: Household surveys, water source observations and community consultations tested whether mapping improved siting, whether training translated into practice and whether boreholes were functional and equitably used.

Comparative analysis: Evidence from other groundwater-focused WASH interventions in Ethiopia and similar fragile contexts was reviewed to assess the transferability of the causal model.

Assumption testing: The evaluation assessed which assumptions held, which only partially materialized, and which did not, and how these affected implementation and results. Validation was iterative, with feedback from stakeholder consultations and fieldwork continuously feeding into refinements of the ToC. By constructing and validating this model, the evaluation ensured that findings and recommendations are grounded in a clear understanding of how change was expected to occur, how it actually unfolded in practice and what this implies for future climate-resilient WASH programming in Ethiopia.

3 EVALUATION DESIGN AND METHODOLOGY

This section outlines the evaluation design, methodology and ethical framework applied in the summative evaluation of the EU-funded RESET-II Water Supply Component in Ethiopia. It explains how the evaluation was structured, the approaches and tools used to collect and analyse data, and the measures taken to ensure credibility, validity and ethical compliance. This section summarizes the theory-based, mixed-methods design adopted to assess both the results achieved and the mechanisms through which technical and institutional changes occurred. It defines the key data sources including household surveys, KIIs, FGDs, case studies and document reviews, and describes how evidence was triangulated across quantitative and qualitative strands. It also highlights the integration of cross-cutting dimensions of gender equality, disability inclusion, equity, climate resilience and human rights-based programming across all stages of data collection and analysis. Finally, it outlines the quality assurance procedures, ethical safeguards and limitations management strategies that ensured methodological rigour, impartiality and compliance with OECD-DAC, UNEG and UNICEF evaluation standards.

3.1 Evaluation Criteria and Key Questions

The evaluation applies the OECD-DAC and UNEG criteria, namely relevance, coherence, effectiveness, efficiency, impact (assessed through contribution analysis) and sustainability, integrated with cross-cutting principles of gender equality, equity, disability inclusion and a human rights-based approach (HRBA). Evaluation questions have been refined, revised and structured in alignment with the constructed ToC and the project's logical framework. The basis for the revision and merging of questions is provided in Annex 2. The evaluation addresses the following key questions:

Relevance: To what extent is the RESET-II project design and implementation relevant in increasing access to safe and sustainable water for drought affected people, considering responsiveness to specific and evolving local needs changing in times of crisis? To what extent has the project addressed WASH relevant gaps for children, especially the most marginalized such as children with disabilities, girls and out-of-school children, in the current context?

Coherence: To what extent is the project aligned with EU and UNICEF priorities with respect to securing equitable access to water? How well does the project complement other initiatives in the same sector working to provide secure water access to vulnerable populations, such as the ONE-WASH UNICEF program? Are there any synergies or conflicts with other projects or policies?

Efficiency: To what extent have the outputs of the project been achieved with the appropriate number of resources (funds, expertise, time, procedures, rules and regulations, administrative costs, etc.)? Were financial and human resources used optimally to deliver the project, and were there cost-effective alternatives that could have achieved similar or better results? How has the project's results-based approach facilitated linkages and multiplied value between sectors and actors to accelerate access to safe and sustainable water? Was the project implemented within the planned timeframe, and if not, what were the reasons for any delays or cost overruns?

Effectiveness: To what extent has the project achieved its preset objectives, outputs and outcomes among the target population? What were the key enabling or hindering factors affecting the successful implementation of WASH interventions, and how were challenges addressed? To what extent did the use of advanced technology aid the efforts to improve access to safe and sustainable water supply for drought-affected populations in the selected woredas?

Sustainability: To what extent will the benefits of the project be sustained after the end of the RESET-II project period, in terms of water point functionality and maintenance? What benefits of the RESET-II project are likely to last in the lives of individuals, families, communities and the broader environment? Have lessons learned through monitoring been sufficiently incorporated continuously to inform better achievement of results and sustainability of the project? Which measures that have been put in place are actively contributing to the sustainability of the project? Are the gains made through this project, especially the use of innovative approaches and laying the ground for local capacity to utilize these technologies, scalable at large?

Impact: To which intended and unintended long-term results have the RESET-II project contributed, and to what extent? To what extent and in what ways has the EU-RESET project contributed to sustained improvements in the lives of its intended beneficiaries, particularly men, women, girls and boys from marginalized groups, including persons with disabilities through enhanced gender equality, social inclusion, empowerment and equitable access to and decision-making over WASH services? To what extent and how has the project influenced systems, policies and institutional capacities, both intentionally and unintentionally across sectors and at local levels, to support safely managed water supply, strengthen local governance and enhance community ownership of WASH infrastructure and services?

3.2 Evaluation Design and Approach

The evaluation of the EU-funded RESET-II Water Supply Component adopted a theory-based, mixed-methods design to systematically assess how and why change occurred across multiple intervention pathways. This design reflected the project's complexity as a multi-regional initiative integrating groundwater mapping, infrastructure development and institutional capacity-building within Ethiopia's drought-prone and climate-vulnerable contexts. By reconstructing and validating the project's ToC, the design enabled testing of causal linkages between inputs, outputs and outcomes, as well as verification of key assumptions regarding service functionality, institutional strengthening and climate-resilient WASH delivery. Therefore, the theory-based approach was essential for evaluating both results and the mechanisms through which technical and institutional innovations influenced effectiveness, efficiency and sustainability.

The evaluation employed a participatory and utilization-focused approach, ensuring that findings were relevant, credible and actionable for the EU, UNICEF, government counterparts and implementing partners. This approach was justified by the evaluation's dual objectives i.e., to promote accountability to the donor and national partners, and to generate learning for adaptive programming and future scale-up. Stakeholder engagement was embedded throughout the process, involving national, regional, zonal and woreda-level actors, technical agencies, and community representatives through inception consultations, validation workshops and participatory field assessments. Engagement with WASHCOMs, school management committees and community

groups ensured inclusion of women, adolescents and persons with disabilities, thereby strengthening credibility, inclusiveness and ownership of findings.

This participatory and theory-driven design enhanced triangulation and transparency, key GEROS quality indicators for methodological rigour. It ensured that evidence from household surveys, KIIs, FGDs and water source observations was systematically cross-verified and contextualized within Ethiopia's broader WASH and resilience policy frameworks. The following section details the evaluation methodology, including data sources, sampling framework, analytical techniques and ethical safeguards applied to ensure robustness, impartiality and alignment with UNEG Norms and Standards (2016) and the UNEG Ethical Guidelines (2020).

3.3 Evaluation Methodology, Methods and Data Collection

The evaluation of the EU-funded RESET-II Water Supply Component adopted a mixed-methods approach combining quantitative and qualitative evidence to assess project performance, results and processes. Quantitative data measured access to water services, functionality of infrastructure, institutional capacity and household-level outcomes, while qualitative insights captured community perceptions, behavioural change, inclusion and governance mechanisms. This design enabled the evaluation to assess not only what results were achieved but also how and why they occurred within diverse contextual realities across five drought-prone regions.

Stakeholder engagement was integral to the methodology. National, regional and woreda-level authorities, service providers, technical partners and communities were actively involved through inception consultations, validation workshops and participatory field assessments. Engagement with WASHCOMs, school management committees and local leaders ensured that findings reflected local realities and strengthened ownership of results and recommendations.

3.3.1 Evaluation Matrix

The evaluation was structured around the OECD-DAC criteria of relevance, coherence, effectiveness, efficiency, sustainability and impact, with the addition of cross-cutting dimensions including gender equality, disability inclusion, climate resilience and equity. The evaluation matrix was developed during the inception phase and applied consistently throughout data collection and analysis. It linked each evaluation question to corresponding indicators, methods and data sources to ensure methodological rigour and analytical depth. The matrix drew directly from the constructed ToC and the RESET-II results framework, enabling systematic alignment between evidence and expected outcomes. The full matrix is provided in Annex 3 of the report.

3.3.2 Data Collection Methods

A comprehensive mixed-methods data collection framework was applied to gather quantitative and qualitative evidence across the five project regions i.e., Afar, Amhara, Oromia, Somali and SNNP. The design combined structured surveys, water source observations and participatory consultations to ensure inclusivity and triangulation across stakeholder levels. All tools, including questionnaires, checklists, interview guides and observation templates were validated, pre-tested and aligned with the evaluation matrix.

Document Review: A systematic review of 38 key project, policy and strategy documents was undertaken, including project proposals, results frameworks, annual progress reports, monitoring data and national WASH and climate resilience strategies. The review established the strategic and operational context for the evaluation, guided refinement of the evaluation matrix, and informed the development of field tools. The document sample covered the full project period (2017-2023) and cross-referenced sectoral and policy frameworks. The list of reviewed documents is provided in Annex 7.

Sampling Strategy and Rationale: The evaluation applied a purposive–probability hybrid sampling approach appropriate for a multi-region programme with a limited number of completed sites and security constraints. Regions were included to reflect RESET-II's geographic coverage and diversity of hydrogeological and service-delivery conditions. Within each region, kebeles and water points were purposively selected to capture both completed and incomplete post-drilling scenarios, while households were selected using systematic random sampling from locally validated lists. The sampling design prioritized analytical depth, equity disaggregation and contextual diversity rather than statistical inference to all RESET-II woredas. Findings are therefore representative of the sampled kebeles and indicative of wider patterns but are not generalisable to the full programme area.

Household Survey: The household survey sample size was estimated assuming 30 per cent coverage in control sites and 80 per cent in intervention sites, with a 95 per cent confidence level, 80 per cent power, a design effect of 1.5 and a 10 per cent non-response adjustment, resulting in 20 households per cluster. A total of 200 households were surveyed across 10 kebeles in the five programme regions (40 households per region), enabling regionally balanced descriptive analysis and disaggregation by sex, age and disability status. A two-stage sampling approach was applied, involving purposive selection of kebeles followed by systematic random sampling of households. The survey captured data on access to safe water, service reliability, affordability, infrastructure functionality, time savings, gendered impacts and inclusion of persons with disabilities. Data were collected digitally using Kobo Toolbox with built-in validation, skip logic and consistency checks to ensure data quality. Further details on household survey sampling and instruments are provided in Annex 5 and Annex 9.

Water Source Observation: Water source observations were conducted in 10 kebeles using purposive sampling. All seven sites where drilling had been completed and beneficiaries were present were included, while three sites without post-drilling infrastructure and no beneficiaries were purposively selected for comparison. Observation templates captured technical aspects such as discharge yield, water quality, energy system type (solar, grid, or generator), O&M arrangements and infrastructure condition. Sites included both functional and non-functional water points to enable comparative analysis. Observations were supplemented with photo and video documentation. See Annex 4 for the list of kebeles selected for water source observations, and Annex 8 for the corresponding observation checklist and tool.

KIIs and FGDs: Purposive sampling identified information-rich participants, including woreda and kebele officials, service providers, community leaders and programme beneficiaries. KIIs engaged key stakeholders at federal, regional and local levels, while FGDs captured perspectives from caregivers, adolescents, women and vulnerable groups.

A total of 32 KIIs were conducted with stakeholders at national, regional and woreda levels, including UNICEF staff, MoWE officials, RWBs, implementing partners and community leaders. Only six per cent of KII participants were females. Respondents were purposively selected for their roles in project management, supervision and technical implementation. Semi-structured guides aligned with the evaluation matrix explored relevance, effectiveness, efficiency, sustainability and cross-cutting themes such as gender, disability inclusion and climate resilience. The distribution and list of KIIs is provided in Annex 6 and Annex 10 respectively.

Nineteen FGDs were held with 128 participants, including women, caregivers, youth, persons with disabilities, WASHCOM members and teachers. Discussions explored perceptions of service quality, access, gender equity, inclusion and behavioural change. Participatory facilitation techniques were used to ensure balanced participation and inclusion of marginalized voices. Sixty per cent of FGD participants were females and 9 per cent of participants were persons with disabilities. Of the FGD participants who were persons with disabilities, 45 per cent were women. The distribution and FGD guide are detailed in Annex 6 and Annex 11 respectively.

Case Studies: Four case studies from Afar, Amhara, SNNP and Somali regions were developed to capture community-level experiences and learning related to sustainability, inclusion and local innovation. Each case documented context-specific lessons on groundwater management, community mobilization and local governance, triangulated through KIIs and FGDs. Case study templates are provided in Annex 12.

3.3.3 Data Analysis

Data analysis combined quantitative and qualitative procedures aligned with the evaluation matrix and ToC. Quantitative data from household surveys and water source observations were analysed using SPSS and Microsoft Excel, generating descriptive statistics (frequencies, means/medians) and cross-tabulations to assess coverage, service reliability and user satisfaction. Water source observation data were summarized using structured performance and functionality indicators. Qualitative data from KIIs and FGDs were transcribed and analysed using a structured thematic coding framework derived from the evaluation questions, OECD-DAC criteria and cross-cutting commitments. Coding combined deductive categories (pre-defined codes) with inductive sub-codes emerging from the data. Coded extracts were synthesized into evidence tables by criterion and region, and patterns were validated through team review to reduce interpretive bias.

Triangulation was operationalized through systematic comparison across at least three sources i.e. survey results, qualitative accounts and observation/document evidence before confirming findings. Divergent evidence was documented and resolved through follow-up verification or reported as contextual variation. Conclusions were drawn using contribution analysis logic, assessing plausibility of the project's role against the reconstructed ToC and observed contextual factors. Analysed household and facility data are presented in Annex 16 and Annex 17.

Table 4: Summary of Data Sources and Respondents by Region

Method	Respondents / Units	Afar	Amhara	Oromia	Somali	SNNP	Total / Purpose
Household Survey	200 individuals (caregivers, women, persons with disabilities)	40	40	40	40	40	Quantitative outcome data on access, use and equity
Key Informant Interviews	32 officials and partners	6	7	7	6	6	Institutional and policy perspectives
Focus Group Discussions	19 groups (women, youth, persons with disabilities, WASHCOMs)	4	4	4	3	4	Perceptions of service quality and inclusion
Water Source Observation	10 boreholes	2	2	2	2	2	Infrastructure functionality and performance

This structured and participatory methodology ensured methodological rigour, inclusivity and ethical compliance, enabling a credible and comprehensive assessment of RESET-II's relevance, effectiveness, efficiency, sustainability and impact within Ethiopia's climate-resilient WASH programming context.

3.4 Integration of Human Rights-Based Approach, Gender Equality and Equity

Human rights-based programming and the Leave No One Behind (LNOB) agenda were operationalized throughout the evaluation design, data collection and analysis. This was achieved through: (i) sampling that ensured the inclusion of women and persons with disabilities across all five regions; (ii) data collection tools that incorporated accessibility, safety and participation indicators, including application of the Washington Group Short Set of Questions in household surveys; and (iii) analysis that disaggregated findings by equity-related differences where feasible. Qualitative sampling intentionally included women, youth and persons with disabilities in FGDs, while KIIs explored duty-bearer accountability for inclusive and equitable service delivery.

Each OECD-DAC evaluation criterion integrated sub-questions and indicators related to equity, participation, accessibility and climate resilience. Gender, disability and climate dimensions were explicitly mapped within the evaluation matrix, particularly under relevance, effectiveness and sustainability, ensuring systematic assessment of inclusion and risk mitigation within RESET-II water supply interventions.

Gender-sensitive questions examined women's participation in WASH Committees (WASHCOMs), involvement in site selection, and the extent to which improved water access reduced time burdens and safety risks. Disability-related questions assessed physical accessibility of borehole sites, including the presence of ramps and adapted taps, and participation of persons with disabilities in

management and monitoring. Climate-related questions examined how hydrogeological mapping, borehole siting and solar-powered systems enhanced service reliability under drought and environmental stress.

Safeguarding and prevention of sexual exploitation and abuse (PSEA) were integrated across the evaluation process. Enumerators were trained on UNICEF's Ethical Research and Evaluation Standards (2015), including safe engagement, confidentiality and referral pathways for safeguarding concerns. Interview and discussion guides included questions on awareness of grievance mechanisms, accountability channels and community feedback related to water service provision.

The evaluation ensured meaningful participation of marginalized and high-vulnerability groups, including women, adolescent girls and boys, female-headed households, pastoralist communities, IDPs and persons with disabilities. Participation was achieved across Afar, Amhara, Oromia, Somali and SNNP regions through household surveys, KIIs and FGDs. Overall, approximately 61 per cent of participants were women and 9 per cent identified as persons with disabilities, with disaggregation by sex, age and location. The respondent pool included both rights-holders (community members, women, youth and persons with disabilities) and duty-bearers (government officials, technical staff and implementing partners), supporting balanced assessment of access, accountability and inclusion. Additional disaggregated data are presented in Annex 6.

By applying a human rights-based and equity-focused lens in a systematic and operational manner, the evaluation assessed not only outcomes but also the extent to which RESET-II contributed to inclusive, accountable and climate-resilient WASH services for communities in Ethiopia's drought-affected regions.

3.5 Quality Assurance Approach

A comprehensive and multi-layered quality assurance framework was implemented to ensure that all evaluation processes, fieldwork and deliverables adhered to UNICEF-adapted UNEG Evaluation Report Standards and the GEROS Quality Assessment Criteria. The framework upheld the UNEG principles of credibility, integrity, transparency and accountability, guaranteeing that all stages of data collection, analysis and reporting met the highest professional and ethical standards.

To maintain methodological rigour, both quantitative and qualitative data were subject to continuous verification and systematic rechecking. Each individual survey question was reviewed for accuracy, internal consistency and logical coherence. Geographic verification of sampled locations was carried out to ensure that field data accurately reflected on-the-ground realities. Peer review of tools, daily debriefings with field teams and close technical supervision during fieldwork further enhanced data reliability and validity. Rigorous data cleaning, triangulation and validation procedures were applied before analysis, ensuring methodological consistency and reliability throughout the evaluation cycle.

Enumerator capacity was strengthened through a two-day training followed by a one-day pre-test in comparable non-sample sites held from 1-4 July 2025. Training sessions combined virtual facilitation by international evaluation specialists with in-person sessions led by national technical leads, reinforcing understanding of evaluation objectives, tool content, ethical standards and disability-

inclusive approaches. The pre-test enabled refinement of instruments to improve clarity, sequencing, contextual relevance and accuracy of response capture. Special emphasis was placed on ethical engagement, safeguarding, gender and disability inclusion, and adherence to sampling protocols. This blended training model enhanced enumerators' proficiency in applying tools consistently, protecting respondent confidentiality and ensuring high-quality data collection.

Quality assurance was also maintained through independent peer review and iterative validation of all evaluation outputs. Data collection instruments, datasets and report drafts were reviewed by UNICEF Ethiopia and the Evaluation Reference Group (ERG) to ensure alignment with evaluation standards and objectivity of findings. Feedback from these reviews was systematically incorporated into subsequent iterations of tools and reports, reinforcing both methodological robustness and impartiality. The final cleaned dataset and coded qualitative transcripts were submitted to UNICEF, establishing a transparent audit trail and supporting future evidence use, verification and learning.

3.6 Compliance with Ethical Considerations, Norms and Standards

The evaluation was conducted in full compliance with the UNEG Ethical Guidelines (2020) and UNICEF's Ethical Standards for Research, Evaluation, Data Collection and Analysis (2015). The evaluation team upheld UNEG's obligations of independence, impartiality, credibility and accountability by maintaining full separation from both the funder and implementing agency, applying transparent and systematic criteria for data collection and analysis, and ensuring balanced representation of stakeholder perspectives. All findings were based on verifiable evidence, triangulated across multiple sources, and limitations were disclosed transparently. The evaluation followed UNEG's ethical principles of integrity, respect, beneficence and accountability, which guided all stages of planning, fieldwork and reporting, as summarized below.

1. Integrity and Impartiality: The team acted with professional independence, ensuring objectivity and avoiding bias or conflicts of interest. Conclusions were derived solely from verifiable evidence and validated through systematic triangulation.
2. Ethical Clearance: The evaluation protocol was reviewed and approved by the Health Media Lab Institutional Review Board (HML IRB), Washington D.C., on 30 May 2025. The approval certificate, confirming compliance with international ethical standards, is attached as Annex 13.
3. Informed Consent and Respect for Participants: All participants were fully informed of the evaluation's purpose, voluntary nature and confidentiality provisions. Written or verbal consent, depending on literacy levels, was obtained before participation, with additional consent for audio or photographic documentation. Copies of consent and assent forms are provided in Annex 14.
4. Beneficence and Protection of Vulnerable Groups: The evaluation ensured that participation caused no harm or distress. Special measures supported the safe and respectful inclusion of women, children, persons with disabilities and other vulnerable groups. Interview protocols were adapted by age, gender and functional ability, following Ethical Research Involving Children (ERIC) guidelines.
5. Data Confidentiality and Accountability: All data including personal identifies (IDs) were anonymized at source, securely stored and reported only in aggregate form. Access to raw data was restricted to authorized team members under confidentiality agreements, with peer review reinforcing transparency and accountability.

6. Data protection: All digital data were encrypted and stored on password-protected devices, with controlled access limited to authorized evaluation staff. Identifiers were removed during cleaning and transcription, and reporting uses aggregated results and anonymized quotations. Data transfer to UNICEF followed secure channels and an agreed data management protocol.
7. Cultural Sensitivity and Local Protocols: Field teams were trained in ethical and culturally sensitive engagement, obtaining relevant permissions from local authorities and community leaders. Respect for local customs and gender-sensitive communication was maintained throughout.
8. Do No Harm and Safeguarding: A 'do no harm' approach was applied throughout, with referral mechanisms established for any observed or reported child protection, GBV or safeguarding concerns. Enumerators were trained in PSEA procedures and required to report incidents through UNICEF's safeguarding channels.

By adhering to these principles, the evaluation maintained the highest standards of ethical integrity, inclusivity and professionalism, ensuring that all processes and outputs were methodologically robust, ethically sound and contextually appropriate for Ethiopia's drought-affected and fragile settings.

3.7 Evaluation Limitations and Mitigation Measures

The evaluation identified a number of methodological and contextual risks that may influence the interpretation of findings. These risks were systematically assessed in terms of their potential effects on validity, reliability and analytical confidence. Where limitations were identified, appropriate mitigation measures were applied to minimize bias, strengthen triangulation and support credible evidence-based conclusions. Table 4 summarizes the key risks, their implications for interpretation, and the measures adopted to address them, in line with UNEG norms and GEROS quality requirements.

Table 5: Key Limitations and Mitigation Measures for the Evaluation

Key Risk / Limitation	Implications for Validity and Interpretation	Mitigation Measures Applied
Absence of a project-specific baseline	Limited ability to measure change over time and attribute observed outcomes directly to RESET-II; potential over- or under-estimation of improvements, particularly for time savings and perceived service quality.	Reconstruction of baseline conditions using secondary datasets (including OWNP monitoring data), stakeholder recall and perception-based indicators; triangulation across surveys, KIIs, FGDs and observations; enumerator training to manage recall bias through probing and cross-checking.
Non-experimental evaluation design	Inability to establish definitive causal attribution between project interventions and observed outcomes.	Application of a theory-based approach and contribution analysis, supported by systematic triangulation, to assess plausible influence rather than causal impact.
Gaps in project documentation and datasets	Weaker evidence base for assessing capacity-building outcomes, institutional learning and some inclusion results.	Validation of findings through extensive KIIs, field verification and document triangulation; treatment of documentation gaps as evidence constraints in relevant findings.

Reliance on self-reported data	Risk of recall and social desirability bias affecting accuracy of household-level and qualitative responses.	Use of neutral phrasing, observation techniques and cross-validation across respondents and data sources; triangulation with water source observations and document review.
Variability in quality and availability of secondary data	Reduced opportunities for cross-validation of groundwater monitoring and gender- and disability-disaggregated data in some regions.	Collection and use of primary data through household surveys, FGDs, KIIs and water source observations to strengthen evidence where secondary data were weak or unavailable.
Accessibility and security constraints in Amhara Region	Reduced breadth of community-level perspectives, particularly from WASHCOM members, potentially affecting regional comparability.	Substitution of planned FGDs with KIIs involving WASHCOM duty-bearers; cautious interpretation of Amhara-specific findings in analysis and conclusions.
Challenges in identifying persons with disabilities	Possible under-identification or misclassification of disability status, affecting precision of inclusion analysis.	Application of the Washington Group Short Set in household surveys; triangulation of quantitative data with qualitative findings from FGDs and KIIs to enhance accuracy.

Overall, the evaluation team adapted its approach to address these limitations through triangulation, adaptive sampling and transparent documentation. All constraints and corresponding mitigation strategies were reported in the final outputs, ensuring credibility and methodological integrity in line with UNEG and GEROS quality standards.

3.8 Evaluation Management and Oversight

3.8.1 Evaluation Timeline

The evaluation was implemented in phased stages from 5 May to 15 October 2025, following a structured and consultative process to ensure quality and adherence to ethical and methodological standards. The inception phase (5 May-5 June 2025) focused on framework development, tool design and securing ethical approval from the IRB. Field data collection was carried out between 7 July and 15 August 2025 across the five project regions i.e., Afar, Amhara, Oromia, Somali and SNNP, followed by data analysis and synthesis from 18 August to 1 September 2025. The first draft report was completed on 15 September 2025 and shared with UNICEF and the ERG for feedback. A validation workshop was subsequently held with national and regional stakeholders to review findings and conclusions, and the final report was submitted on 15 October 2025, incorporating all comments and agreed revisions.

3.8.2 Evaluation Reference Group (ERG)

An ERG was established to provide strategic oversight, technical guidance and ensure alignment with UNICEF's Evaluation Policy, UNEG Norms and Standards, and national sector priorities. The ERG reviewed and endorsed evaluation tools, facilitated access to key stakeholders and documentation, and provided substantive feedback during data analysis and validation workshops. It was chaired by Dr. Mussarrat Youssuf, Evaluation Manager at UNICEF Ethiopia, with operational and technical

support from Ms. Maryamawit Solomon Assefa, Evaluation Officer and other ERG members (see Annex 18).

3.8.3 Evaluation Team and Role

The external evaluation team was led by Mr. Niaz Ullah Khan (Team Leader), who oversaw the evaluation design, methodological integrity, report writing and overall quality assurance, drawing on his specialization in WASH systems and safeguarding. He was supported by Mr. Sajid Zaman (Thematic and Data Management Expert), Dr. Mussie Alemayehu (Local Lead Coordinator), and three Young Evaluators i.e. Ms. Maham Faraz Abbasi, Ms. Eman Fatima and Mr. Aleem Feroz who contributed to qualitative research design, social inclusion analysis and contextual interpretation. Field data collection was undertaken by trained enumerators and young evaluators recruited locally and supervised by Dr. Mussie Alemayehu, ensuring compliance with ethical requirements and real-time quality control. UNICEF Ethiopia's WASH Section coordinated operational support, field logistics and engagement with government counterparts. The team also facilitated access to regional authorities and implementing partners and ensured the integration of stakeholder feedback throughout the evaluation process.

3.8.4 Dissemination and Communication

Dissemination and communication were integral to the evaluation, supporting accountability, transparency and learning. Following completion of data analysis, a virtual preliminary findings meeting was held with UNICEF Ethiopia and key stakeholders to present early results and gather feedback from federal and regional governments, UNICEF, the EU, non-governmental organizations and community stakeholders to review and validate the draft findings and recommendations. To strengthen knowledge management and utilization, the evaluation team also developed a concise evaluation brief as a dedicated dissemination product. The brief distils key findings, conclusions and priority recommendations in an accessible format for policymakers, sector leaders and development partners, supporting evidence-informed dialogue and learning across the WASH and resilience sectors.

4 FINDINGS

This chapter presents the core analytical findings of the summative evaluation of the EU-funded RESET-II Water Supply Component in Ethiopia. It assesses project performance against the OECD-DAC and UNEG evaluation criteria i.e., relevance, coherence, efficiency, effectiveness, sustainability and impact while integrating cross-cutting dimensions of gender equality, equity, disability inclusion, climate resilience and human rights-based programming. Drawing on triangulated quantitative and qualitative evidence from household surveys, FGDs, KIIs, water source observations and regional case studies across five drought-prone regions (Afar, Amhara, Oromia, Somali and SNNP), the chapter examines how RESET-II's groundwater-based and resilience-focused model performed in fragile, lowland contexts. It analyses what worked well, what challenges constrained progress, and which contextual, institutional, and technical factors influenced results. Collectively, these findings form the evidence base for the conclusions, lessons and strategic recommendations presented in Chapter 5.

4.1 Relevance

This section assesses relevance against the reconstructed Theory of Change (ToC), which posits that improved groundwater knowledge, combined with appropriate infrastructure and inclusive governance arrangements, plausibly leads to increased access to safe and sustainable water in drought-prone contexts. The analysis examines the extent to which RESET-II project design and implementation were relevant to the needs of drought-affected populations in Ethiopia and responsive to evolving crisis dynamics. Specifically, it assesses the project's contribution to increasing access to safe and sustainable water in drought-prone areas (EQ1) and its responsiveness to WASH-related gaps affecting children and other disadvantaged groups, including girls, out-of-school children and children with disabilities (EQ2). Evidence is triangulated from household surveys, FGDs, KIIs and secondary sources, including national policy frameworks, UNICEF strategies and project documentation.

4.1.1 Access and Responsiveness to Local Needs

Revised EQ 1: To what extent is the RESET-II project design and implementation relevant in increasing access to safe and sustainable water for drought-affected people, considering responsiveness to specific and evolving local needs in times of crisis?

Finding 1: RESET-II addressed Ethiopia's structural water insecurity through evidence-based groundwater mapping, though incomplete water quality safeguards constrained aspects of its responsiveness.

RESET-II was implemented in Ethiopia's most drought-affected regions i.e. Afar, Somali, Oromia, Amhara and SNNP where recurrent droughts between 2016 and 2023 exposed nearly 24 million people to acute water stress and approximately 11 million to food insecurity (UNOCHA, 2023). Ethiopia's national renewable freshwater availability stands at 1,109 m^3 per person annually, placing the country below the global water-stress threshold. Although groundwater potential is comparatively high, its utilisation has historically been constrained by limited mapping, weak regulation and inadequate monitoring. National studies further indicate that nearly 30 per cent of groundwater in the Rift Valley is unsuitable for drinking due to salinity and fluoride contamination

(Water Security Hub, 2023; Mengistu et al., 2019). These conditions underlined the urgent need for a technically robust and science-based approach to groundwater development.

RESET-II responded directly to these systemic constraints through groundwater suitability mapping supported by EU-JRC satellite analytics and woreda-level field validation. This approach aligns with the ToC pathway linking improved groundwater knowledge to higher drilling success and more reliable access. The project achieved a drilling success rate of 87.5 per cent, compared with a national average of 35–45 per cent, substantially improving the reliability of borehole siting. This finding is triangulated across household survey data, KIIs with regional engineers and RWBs, FGDs with users and project drilling records, all of which confirm reduced drilling failures and improved planning accuracy.

Household survey results indicate that 68 per cent of households in kebeles with functional project-supported water sources regularly used these services, reporting significantly higher satisfaction (73 per cent) than non-users (12 per cent). FGDs corroborated these findings, with users citing improved reliability and reduced seasonal water stress. However, physical accessibility remained a challenge: 68 per cent of users continued to travel more than 30 minutes to reach water collection points. This indicates that, while RESET-II plausibly contributed to improved access, the ToC assumption that improved siting alone would ensure proximity was only partially realised.
Responsiveness was further constrained by limited integration of hydro-chemical testing and post-drilling water-quality management. Triangulated evidence from engineers' KIIs, water-source observations and community FGDs indicates that approximately 20 per cent of boreholes did not reach planned depths or were affected by water-quality issues. In Erbore, a borehole was abandoned due to high fluoride concentrations, while in Mubarek, elevated salinity rendered water unfit for consumption. These outcomes represent unintended negative effects arising from prioritising availability without systematically embedding water-quality safeguards, thereby limiting the project's relevance for safe water access in specific locations.

Overall, RESET-II demonstrated high relevance in addressing chronic water insecurity through scientific and climate-resilient groundwater planning. Nevertheless, responsiveness was only partially achieved in areas where proximity, hydro-chemical analysis and community-level water-quality management mechanisms were not consistently integrated into project design and implementation.

Finding 2: RESET-II effectively targeted poor and climate-vulnerable populations, though limited cross-sectoral integration and equity mechanisms reduced responsiveness to evolving needs.

RESET-II was explicitly designed to reach low-income and climate-vulnerable households. Household survey data indicate that 81 per cent of beneficiary households reported monthly incomes below 5,000 ETB (approximately USD 35), while 88 per cent depended on drought-sensitive livelihoods such as small-scale farming or livestock rearing. By prioritising multi-village groundwater schemes in lowland and pastoralist communities, the project aligned with the LNOB agenda and national resilience priorities articulated in OWNP-II and the CRGE Strategy.

KIIs and FGDs confirm that participatory mechanisms, particularly WASHCOMs, supported community engagement in site selection and scheme oversight. However, triangulated evidence from FGDs with women, KIIs with woreda officials and committee records indicates that participation

was often nominal rather than influential, particularly for women and persons with disabilities. While representation targets were formally met, decision-making authority frequently remained concentrated among male community leaders, reflecting entrenched socio-cultural norms and limited targeted capacity-building.

RESET-II enhanced technical relevance through the deployment of solar-powered boreholes, improving operational efficiency and reducing reliance on diesel. However, cross-sectoral integration particularly with health and environmental actors remained limited. KIIs with health-facility staff and FGDs with users consistently reported weak coordination, constraining the project's relevance for public health outcomes. In Mubarek and Deka Suftu, health facilities were not included in water-safety planning or hygiene-promotion activities. A local health officer noted: "*The project did not include our facility in any hygiene or risk communication sessions.*" This gap limited the project's potential contribution to reducing water-borne diseases and strengthening household-level resilience.

Equity analysis indicates that relevance gains were uneven. While poor households benefited from improved access, women's leadership and disability inclusion depended largely on local practice rather than systematic enforcement. This suggests that responsiveness to evolving community needs was mediated by institutional capacity and social norms, rather than design intent alone.

4.1.2 Inclusion of Marginalized Groups and Children

Revised EQ 2: To what extent did the project address WASH gaps for children, especially the most marginalized such as children with disabilities, girls and out-of-school children, in the current context?

Finding 3: RESET-II reduced women's and children's water collection burden by improving proximity and reliability of groundwater services, which created opportunities for empowerment, though meaningful participation and girl-friendly WASH facilities remained limited.

RESET-II substantially reduced the time and physical burden associated with water collection, a responsibility borne primarily by women and children across all project areas. Household survey data confirm that 74 per cent of user households saved more than one hour per day, enabling reallocation of time towards education, livelihoods and domestic activities. These findings are triangulated with FGDs and KIIs, which consistently reported reduced physical strain, shorter travel distances and improved daily routines. Women-headed households, representing 18 per cent of users, particularly benefited through reduced workloads and lower reliance on informal water vendors.

The observed time savings plausibly contributed to improved school attendance and household productivity, aligning with the ToC pathway linking improved access to enhanced well-being. However, empowerment outcomes were uneven. Although women's representation in WASHCOMs increased, qualitative evidence indicates that participation often remained symbolic rather than influential. In Amhara, women committee members frequently deferred operational responsibilities to men due to entrenched gender norms, limited technical confidence and the absence of targeted leadership training. This suggests that inclusion mechanisms were present in design but insufficiently reinforced through structured capacity development, systematic monitoring or gender-accountability measures.

Evidence from schools in Deka Suftu, Warite Balaka and Erbore highlights persistent gaps in girl-friendly WASH facilities. FGDs and school profiling confirm that most schools lacked private toilets, disposal bins and functional handwashing stations. Teachers reported that the absence of MHH facilities contributed to absenteeism, discomfort and reduced confidence among adolescent girls. While school WASH infrastructure was not a core component of RESET-II, the project implicitly assumed that improved community-level water access would indirectly support girls' school attendance. This assumption proved only partially valid: while reduced domestic water-collection burdens benefited girls, MHH-specific barriers within schools remained unaddressed.

Overall, RESET-II achieved measurable gender-related gains through improved water access and significant time savings. However, its potential to advance women's leadership and adolescent girls' well-being was only partially realised due to the absence of explicit institutional WASH investments, structured empowerment measures and dedicated MHH considerations.

Finding 4: RESET-II demonstrated that disability inclusion in WASH can be achieved through community leadership and adaptive infrastructure; however, outcomes remained inconsistent in the absence of standard design guidance and institutional enforcement.

RESET-II aligned with Ethiopia's Disability Inclusion Policy and Strategy (DIPAS, 2021) and demonstrated that inclusive WASH services are feasible in resource-constrained, drought-affected settings. In Mubarek kebele, ramps, lowered taps and community-awareness initiatives enabled children with mobility impairments to collect water independently, while a hearing-impaired WASHCOM member actively contributed to scheme management. This evidence, triangulated through direct observation, FGDs and KIIs with community members and duty-bearers, illustrates how local leadership and adaptive construction enhanced accessibility when inclusion was intentionally prioritised.

Across most sites, however, inclusion outcomes were inconsistent. Triangulated evidence from site observations, KIIs with regional engineers and FGDs with users with disabilities indicates that steep platforms, uneven terrain and heavy hand pumps limited access for wheelchair users and persons with physical or visual impairments. A respondent from Hado kebele stated: *"I cannot reach the tap handle, which makes it hard for a wheelchair user."* Regional engineers confirmed the absence of standardised technical specifications, budget allocations or monitoring indicators for accessibility. This lack of institutional guidance constituted a causal constraint, as inclusion depended largely on contractor discretion and community initiative, resulting in uneven and unpredictable outcomes. Participation of persons with disabilities in WASHCOMs also varied. While some committees included members with disabilities, their involvement in planning and governance was often consultative rather than decision-making, reflecting limited guidance, training and accountability mechanisms. These constraints reduced the likelihood that accessibility considerations would be systematically addressed throughout the project cycle.

Overall, RESET-II demonstrated the feasibility of disability inclusion where community commitment, adaptive design and awareness converged. However, the absence of formal standards, institutional capacity and routine monitoring prevented these practices from being embedded systematically, rendering inclusion largely ad hoc and context-dependent.

BOX R1– A WOMAN WITH VISION IMPAIRMENT GAINS SAFER ACCESS IN GUNAGUNA KEBELE, AMHARA REGION

Before RESET-II, a woman with visual impairment in Gunaguna walked over 40 minutes on uneven paths to collect water, relying on her daughter and often using contaminated sources. The new borehole, located within 20 minutes of her home, provided safer access due to the open terrain and community-led measures that improved the surrounding area. The presence of sex-segregated queues made the environment more comfortable for her, reducing crowding and enabling her daughter to support her more easily. Small user fees contributed to minor maintenance, helping to keep the water point functional. However, the absence of tactile markers and adequate lighting continued to limit her ability to use the facility independently during the evening. The case highlights both the practical improvements achieved and the ongoing gaps in inclusive and disability-responsive design.

4.1.3 Theory of Change: Assessment and Updates

In addition to assessing relevance and alignment with national and local priorities, the evaluation reviewed the reconstructed ToC developed during the inception phase to test its internal logic, assumptions and causal pathways to results. The ToC was used as an analytical framework to examine whether planned inputs and outputs plausibly contributed to observed outcomes and emerging impacts. Evidence from project documentation, KIIs, the validation workshop and field observations was triangulated to assess whether the ToC was sufficiently robust to deliver sustainable outcomes in Ethiopia's drought-affected and institutionally varied contexts. Triangulation was applied by systematically comparing ToC assumptions with (i) quantitative household survey findings, (ii) qualitative evidence from FGDs and KIIs, and (iii) technical and administrative records, allowing assessment of causal plausibility rather than attribution, in line with UNEG and GEROS expectations.

Finding 5: The RESET-II reconstructed ToC was technically sound and policy-aligned; however, over-optimistic assumptions related to sustainability, inclusion and system capacity reduced its overall robustness.

The reconstructed ToC introduced innovative and technically credible approaches to groundwater management, particularly through groundwater suitability mapping supported by EU-JRC remote sensing and field validation. This approach achieved a drilling success rate of 87.5 per cent, far exceeding national averages and providing empirical confirmation of the ToC's causal pathway linking evidence-based planning to improved drilling outcomes. The ToC further aligned with EU and UNICEF strategic priorities by bridging humanitarian and development objectives and supporting OWNP-II through its emphasis on resilience and multi-village schemes.

However, triangulated evidence indicates that several core ToC assumptions did not consistently hold in practice. Design assumptions regarding contractor capacity, timely government financing for post-drilling works and sustained institutional engagement proved overly optimistic. KIIs with regional bureaus, contractors and UNICEF staff, corroborated by field verification, indicate that these constraints contributed to delays, incomplete systems and shortfalls against output targets. Water quality was insufficiently integrated into the causal pathway, with salinity and fluoride contamination leading to abandonment or under-utilisation of several boreholes. Social inclusion pathways were

weakly articulated, with inconsistent engagement of women, children and persons with disabilities reflecting limited attention to socio-cultural and institutional determinants of inclusion.

Additionally, livelihood and resilience linkages were underdeveloped. While household survey data and FGDs suggest time savings and livestock-related benefits, these outcomes were not systematically captured by indicators, limiting accountability for broader resilience impacts. Climate resilience was narrowly conceptualised around groundwater extraction, without complementary measures such as aquifer recharge, abstraction monitoring or watershed management.
Overall, causal analysis confirms that while the reconstructed ToC was technically sound and policy-aligned, it was insufficiently comprehensive to sustain resilience outcomes in complex and fragile contexts, as it under-represented critical systemic enablers including water-quality assurance, institutional capacity, financial sustainability and inclusive governance.

Overall, causal analysis confirms that while the reconstructed ToC was technically sound and policy-aligned, it was insufficiently comprehensive to sustain resilience outcomes in complex and fragile contexts. Its emphasis on infrastructure outputs, rather than systemic enablers such as institutional capacity, water quality assurance, financial sustainability and inclusion, limited its robustness and explanatory strength.

Table 6: Assessment of Constructed ToC (2017-2023) & Suggestions for Future Programming

ToC Element	Assessment of Reconstructed ToC	Recommendations for Future Programming
Impact: Strengthened resilience and improved livelihoods of vulnerable communities in drought-affected woredas through increased access to safe water	Partially achieved Household survey data indicated that 68% of users accessed improved water sources and 74% reported time savings exceeding one hour daily. FGDs confirmed benefits in reduced burden for women and improved livestock watering. However, the ToC did not explicitly link water access to livelihood or economic outcomes, and no indicators tracked these changes.	Update impact indicators to capture livelihood resilience, time saved for productive use and household economic benefits alongside access and service reliability.
Outcome: Improved access to safe and sustainable water supply	Achieved with significant gaps Drilling success reached 87.5%, far above the national average, but sustainability was undermined by incomplete post-drilling works and poor-quality assurance. Field verification confirmed 20% of boreholes had salinity or fluoride contamination, and community FGDs cited limited post-construction follow-up.	Strengthen sustainability, equity and water safety components in future designs, with explicit quality monitoring frameworks and post-drilling O&M financing.
Output 1: Hydrogeological suitability maps for RESET-II woredas	Achieved with limitations The maps significantly improved site selection accuracy and reduced drilling failures. However, KIIs with engineers confirmed that hydro-chemical data were not integrated, leading to usability constraints in areas such as Erbore and Mubarek.	Systematically integrate hydro-chemical testing into groundwater mapping, ensuring all site selection includes water quality validation prior to drilling.

Output 2: Productive boreholes drilled based on the recommendation of the study	Partially achieved Only 14 of 20 planned boreholes were fully functional at the time of evaluation. KIIs with contractors and regional water offices cited weak due diligence, delayed mobilization and under-performance due to insufficient technical capacity.	Apply rigorous contractor accreditation and mentoring, improve supervision protocols and enforce adherence to design depths and standards.
Output 3: Knowledge from hydrogeological study disseminated	Partially effective Technical training reached regional engineers and woreda staff through EWTI workshops, yet coverage was limited. KIIs revealed high staff turnover and weak follow-up, and water quality and climate resilience were not included in training modules.	Consolidate training by embedding water quality, water safety planning and climate-smart WASH modules within EWTI curricula, coupled with refresher sessions.
Activities: GIS/remote sensing, field validation, drilling, mobilization, dissemination	Largely achieved but with inclusion gaps Activity completion was confirmed through project reports and site visits. However, FGDs indicated women and persons with disabilities were rarely engaged in mobilization or oversight, and procurement delays caused by contractor constraints affected implementation timelines.	Enforce inclusive participation standards in WASHCOM structures and strengthen procurement oversight to ensure timely, quality delivery.
Assumptions: Government ownership, adequate contractors, accurate mapping, stable security	Partially held Hydrogeological data were accurate, but contractor capacity and post-drilling government financing proved inadequate. KIIs with regional officials highlighted budget shortages for O&M and security disruptions in Amhara, leading to skipped validation visits.	Develop contingency measures for contractor shortfalls, institutionalize O&M funding within woreda budgets and ensure adaptive management in fragile settings.

Overall Assessment: Relevance

RESET-II was highly relevant in addressing Ethiopia's acute water scarcity in drought-affected regions. Its innovative groundwater suitability mapping achieved an 87.5 per cent drilling success rate, far exceeding national averages and validating the ToC's core technical assumption that data-driven planning improves drilling outcomes. Triangulated evidence across household surveys, FGDs and KIIs supports a plausible causal link between improved access, reduced water-collection burdens for women and children, and gains in well-being, productivity and education. However, relevance and responsiveness were constrained by water-quality challenges, long collection distances and incomplete post-drilling works, which weakened sustainability assumptions. Inclusion of women, persons with disabilities and children remained uneven, reflecting persistent social barriers and limited institutional enforcement. Overall, RESET-II demonstrated strong technical and policy relevance, but its ToC only partially accounted for the institutional, social and environmental conditions required to translate relevance into sustained, safe and equitable water access.

4.2 Coherence

This section examines the extent to which RESET-II was designed and implemented in alignment with broader sectoral priorities and whether it operated coherently alongside other initiatives seeking to secure equitable and resilient water access for vulnerable populations. The analysis addresses three dimensions of coherence: alignment with EU and UNICEF strategic priorities on equitable water access (Revised EQ3); complementarity with national frameworks and parallel initiatives, particularly the One WASH National Programme (OWNP) (Revised EQ4); and the presence of synergies or conflicts with other projects, policies and institutional systems at national, regional and local levels (Revised EQ5). Coherence was assessed through triangulation of policy and document review with qualitative evidence from KIIs and FGDs, allowing examination of both strategic alignment and operational consistency across levels.

4.2.1 Alignment with EU and UNICEF Priorities

Revised EQ 3: To what extent is the RESET-II project aligned with EU and UNICEF priorities with respect to securing equitable access to water?

Finding 1: RESET-II achieved strong strategic coherence by integrating resilience-focused groundwater mapping and community partnership models that aligned closely with EU and UNICEF priorities on equitable, climate-resilient water access, including SDG 6.

RESET-II was designed within the EU–Ethiopia Strategic Engagement Framework and strongly reflected the EU's resilience agenda, which prioritises basic service delivery, recovery and risk-informed development in fragile and drought-affected contexts. By focusing on groundwater development in chronically water-stressed woredas, the project directly addressed food and water insecurity while contributing to SDG 6.1 on universal and equitable access to safe drinking water. The project was equally coherent with UNICEF's Ethiopia Country Programme Documents (2016–2030), which emphasise climate-resilient rural WASH, systems strengthening and integration with health, nutrition and education outcomes. RESET-II's promotion of hydrogeological mapping, solar-powered water schemes and community-based governance arrangements aligned closely with UNICEF's WASH Strategy 2016–2030, the Climate Action Plan and the Gender Equality Action Plan (GEAP). These design choices reflect a shared strategic emphasis on sustainability, resilience and equity.

Triangulated evidence from KIIs with UNICEF staff and regional water bureau officials, complemented by FGDs with WASH committees, confirms that RESET-II contributed to strengthening both national and subnational capacities. Through partnerships with RWBs and development actors, the project reinforced SDG 6.a and SDG 6.b, which promote international cooperation and community participation in water management. UNICEF staff observed that *"RESET-II helped put resilience on the table in Ethiopia's WASH dialogue,"* indicating a plausible influence pathway from project-level innovation to broader sectoral discourse and planning practice.

Table 7: RESET-II Alignment with the SDG Framework and UNICEF Strategic Priorities

RESET-II Component / Focus Area	Relevant SDG Targets	Alignment with UNICEF / EU Frameworks
Groundwater mapping and exploration in drought-prone woredas	SDG 6.1: Universal and equitable access to safe and affordable drinking water for all. SDG 13.1: Strengthen resilience and adaptive capacity to climate-related hazards.	Aligns with UNICEF WASH Strategy (2016-2030) on climate-resilient WASH and the EU-Ethiopia Resilience Agenda, which focuses on risk-informed water security in fragile areas.
Solar-powered water supply schemes	SDG 7.2: Increase renewable energy share in the global energy mix.	Coherent with UNICEF Climate Action Plan (2016-2030) promoting renewable, low-carbon WASH solutions.
Institutional capacity-building for RWBs	SDG 6.a: Expand international cooperation and strengthen capacity-building in water and sanitation sectors.	Supports UNICEF's WASH Systems Strengthening Approach and Country Programme 2025-30, Outputs 5.1-5.4, enhancing institutional management and coordination.
Community engagement and WASHCOM formation	SDG 6.b: Support and strengthen community participation in WASH management.	Reflects UNICEF's Accountability to Affected Populations (AAP) and GEAP promoting inclusive governance and local ownership.
Partnerships and donor coordination (EU-Ethiopia Strategic Engagement)	SDG 17.17: Encourage effective public, public-private and civil society partnerships.	Mirrors the UNICEF approach of promoting joint investment and sector collaboration.

Finding 2: RESET-II maintained strong policy alignment with EU and UNICEF frameworks; however, operational coherence was weakened where design assumptions did not hold, particularly regarding post-drilling financing, water-quality assurance and inclusive governance.

While RESET-II was conceptually aligned with EU and UNICEF strategies, field-level triangulation across site inspections, FGDs and KIIs revealed gaps between strategic intent and operational delivery. The project assumed that boreholes completed under RESET-II would be connected to distribution systems through subsequent government or partner investment. In practice, this reliance on external post-drilling financing was not consistently realised, leaving several boreholes incomplete or under-utilised and constraining progress towards SDG 6.1 requirements for safe and reliable water services.

Technical reviews and site inspections further confirmed that salinity and fluoride contamination affected water quality in multiple locations. This challenged the implicit design assumption that groundwater availability equated to usability and weakened coherence with EU and UNICEF expectations for climate-smart, quality-assured service delivery. The absence of systematic treatment measures and post-drilling water-quality monitoring reduced alignment between policy commitments and service outcomes.

Evidence from FGDs and KIIs also indicates inconsistent inclusion of women and persons with disabilities in WASH governance structures. In Mubarek kebele, community members reported frustration with delays, unsafe water and decision-making processes dominated by men. These

findings illustrate a causal disconnect between policy commitments to equity under SDG 6.b and GEAP and their practical enforcement at community level.

Overall, RESET-II demonstrated high policy coherence with EU and UNICEF priorities. However, operational coherence was moderate, as institutional, technical and social constraints limited the translation of strategic alignment into equitable, resilient and quality-assured service delivery.

4.2.2 Complementing Other WASH Initiatives

Revised EQ 4: How well does the project complement other initiatives in the same sector working to provide secure water access to vulnerable populations, such as OWNP?

Finding 3: RESET-II complemented national WASH frameworks by operationalizing climate-resilient priorities through data-driven groundwater mapping and evidence-based planning, but limited integration into OWNP systems and local budgets reduced systematic coherence.

RESET-II reinforced the OWNP-II vision of universal, equitable and climate-resilient water access by applying GIS-based hydrogeological mapping to improve borehole siting and reliability. KIIs with MoWE and RWBs consistently attributed reductions in drilling failure to RESET-II's mapping approach, supporting a plausible contribution to SDG 6.1 outcomes. The project also aligned with the Climate Resilient WASH Framework (2022) and the draft Ethiopia Water Policy (2025) by promoting evidence-based water-resource management and climate risk-informed planning.

At woreda level, planners confirmed that RESET-II mapping tools supported scheme prioritisation. A Somali Region water officer shared that "*the maps made it easier to decide where new boreholes should go, especially where failures were common before.*" However, triangulated evidence from MoWE interviews and regional KIIs indicates that these outputs were not systematically absorbed into OWNP planning, budgeting and monitoring systems. As a result, RESET-II's contribution remained projectised rather than institutionalised. A MoWE representative observed: "*What UNICEF implements should be documented within the Ministry; otherwise, we don't know what has been done where.*"

Although national dissemination events showcased project results, uptake varied across regions due to limited technical capacity, lack of GIS software and high staff turnover. RWBs expressed willingness to integrate the mapping approach into routine planning but cited resource constraints as a barrier. These findings explain why RESET-II complemented OWNP in principle but did not consistently influence national investment cycles or financing decisions.

Finding 4: RESET-II complemented UNICEF's global WASH strategy and the OWNP Sector-Wide Approach by targeting underserved communities and strengthening technical capacity; however, weak cross-sectoral and utility integration constrained long-term system coherence.

RESET-II's focus on equity and drought-prone woredas was coherent with UNICEF's WASH Strategy 2016–2030, SDG 6.b and OWNP-II's system-strengthening pillar. FGDs and KIIs confirm that communities, particularly women experienced reduced water-collection burdens and improved safety, while RWBs valued technical training and support provided through EWTI. These outcomes plausibly link RESET-II's capacity-building investments with improved service planning and local ownership.

However, cross-sectoral integration remained limited. Health facility staff in Somali and Oromia Regions reported exclusion from planning and water-safety activities, weakening coherence with OWNP's institutional WASH objectives and UNICEF's child health and well-being agenda. Similarly, groundwater schemes were not systematically linked to OWNP utility clustering or cost-recovery models, constraining alignment between infrastructure development and long-term service delivery systems.

As a result, RESET-II's innovations were complementary but not embedded within national service-delivery architectures. While the project demonstrated how resilience-based planning can operate alongside OWNP, incomplete integration reduced its contribution to sustained system coherence under SDG 6.a.

4.2.3 Sectoral Synergies

Revised EQ 5: Are there any synergies or conflicts with other projects or policies?

Finding 5: RESET-II generated meaningful sectoral synergies through joint financing, technical harmonisation and expanded national groundwater expertise, reinforcing Ethiopia's climate-resilient WASH agenda and SDG 6 commitments.

RESET-II generated multi-level synergies by mobilising financial, technical and institutional collaboration across the WASH sector. By leveraging over USD 3.1 million from bilateral donors, UN partners and national NGOs for post-drilling works, the project enabled eight additional schemes to become operational. Financial records triangulated with KIIs confirm that this co-financing extended service delivery beyond RESET-II's original scope, demonstrating a plausible contribution pathway from coordination to expanded access. This collective mobilisation aligns with SDG 6.a and complements the OWNP SWAp's emphasis on coordinated investment.

KIIs with UNICEF, MoWE and EWTI officials further confirm that RESET-II strengthened technical learning and standardisation. UNICEF convened universities, consultants and groundwater specialists under the RESET platform to address methodological inconsistencies in recharge modelling, parameter estimation and aquifer characterisation. These exchanges strengthened institutional linkages between EWTI and its network of universities, establishing a functional community of practice that plausibly improved consistency and quality in groundwater assessments beyond the project lifecycle.

Evidence from field verification and KIIs indicates that these synergies stimulated wider adoption of RESET-II methodologies. EWTI leadership confirmed expansion of groundwater mapping to additional regions using RESET-II templates, while MoWE officials reported incorporation of solarisation and geospatial suitability analysis into other national initiatives. This diffusion of practices represents an unintended but positive systemic effect, indicating that RESET-II acted as a catalyst for scaling climate-resilient groundwater planning.

Finding 6: RESET-II achieved broad technical and financial synergies; however, methodological divergence and weak institutional embedding limited full integration into government systems and strategies.

RESET-II's mapping methodology, structured around administrative (woreda) boundaries, diverged from MoWE's catchment- and basin-based planning approach under Ethiopia's IWRM framework. This divergence reflects a structural tension between demand-driven service delivery and resource-based sustainability planning, rather than an isolated design weakness. RESET-II prioritised immediate community needs, while MoWE emphasised basin-scale management to safeguard long-term groundwater resources.

Triangulated evidence from KIIs and document review indicates that this methodological divergence constrained full integration of RESET-II outputs into national groundwater monitoring systems, including abstraction registers and digital water-information platforms. Although datasets were disseminated, they were not systematically institutionalised within MoWE planning and reporting architectures, creating risks of parallel systems and fragmented data use.

National stakeholders acknowledged the value of RESET-II outputs but noted their limited formal status. As one MoWE hydrologist stated, "*We use the outputs informally, but they are not part of our main database, so they cannot yet guide policy decisions."* This highlights a causal constraint: without formal institutional anchoring, technical synergies remain dependent on individual uptake rather than systemic adoption.

Overall Assessment: Coherence

RESET-II demonstrated strong policy coherence, aligning closely with the EU's resilience agenda, UNICEF's child-centred WASH mandate, OWNP-II and Ethiopia's emerging Water Policy and Climate Resilience frameworks. Through groundwater mapping, solar-powered systems and participatory governance models, the project reinforced the OWNP SWAp and mobilised over USD 3.1 million in co-financing, advancing SDG 6.a on partnerships and SDG 6.b on community participation. Triangulated financial, institutional and qualitative evidence confirms that RESET-II generated meaningful sectoral synergies, particularly in financing coordination and technical standardisation. Operational coherence was weaker. Incomplete post-drilling works, unresolved water-quality challenges and uneven inclusion of women and persons with disabilities constrained alignment with EU–UNICEF equity commitments. While knowledge products were disseminated, they were not systematically embedded within OWNP planning cycles or MoWE digital systems, and the use of administrative rather than catchment-based mapping limited harmonisation with national IWRM strategies. Health-sector and utility linkages also remained limited, reducing cross-sector collaboration. Overall, RESET-II was highly coherent in policy intent and design and moderately coherent in implementation. Sustaining and deepening coherence will require institutionalising RESET-II tools within government systems, harmonising data frameworks with national methodologies and strengthening intersectoral coordination to translate strategic alignment into durable, system-wide outcomes.

4.3 Efficiency

This section examines how RESET-II utilised financial, human and technical resources to deliver outputs and outcomes cost-effectively and within the planned timeframe. It assesses whether resources were proportionate to results achieved, whether alternative approaches could have generated greater value, and how implementation arrangements leveraged partnerships to optimise

returns. The analysis further examines factors contributing to delays, under-utilisation of resources and administrative inefficiencies. Four evaluation questions guide the assessment: EQ6 on adequacy of resources relative to outputs; EQ7 on cost-effectiveness and optimisation of financial and human resources; EQ8 on the extent to which synergies multiplied value across sectors and actors; and EQ9 on timeliness and reasons for delays. Evidence is triangulated across financial records, monitoring data, KIIs, FGDs and secondary sources to assess both design-level and operational efficiency.

4.3.1 Efficient Use of Resources in Terms of Outputs

Revised EQ 6: *To what extent have the outputs of the project been achieved with the appropriate number of resources (funds, expertise, time, procedures, rules and regulations, administrative costs, etc.)?*

Finding 1: RESET-II utilised financial and human resources efficiently by maintaining competitive unit costs and proportionate overheads; however, drilling underperformance constrained full budget absorption and delayed delivery of planned outputs.

RESET-II managed its EUR 5,005,448 budget with sound fiscal discipline, expending EUR 4,667,811 (93 per cent) between December 2017 and December 2023. The unspent balance of EUR 337,637 (7 per cent) was primarily attributable to underachievement in drilling depth i.e. 3,932 metres completed against 5,320 metres planned rather than weaknesses in financial management. Financial records triangulated with KIIs confirm that reduced drilling performance directly constrained expenditure in the project's largest cost category.

Contractual services accounted for the majority of expenditure (EUR 3,895,152), of which EUR 3,775,042 was disbursed directly to implementing partners, including engineering firms, drilling contractors and the EWTI. UNICEF retained a limited share for monitoring, visibility and evaluation, reflecting a delivery-focused cost structure with proportionate overheads.

Per-unit cost analysis demonstrates competitive efficiency relative to national benchmarks:

- EUR 24,591 per woreda hydrogeological map
- EUR 649 per metre of drilling (USD 762 at the final report exchange rate), below the national average of approximately USD 900
- EUR 240 per person per training day, consistent with specialised technical content and equipment requirements

Triangulation of financial data with national benchmarks and KIIs supports the conclusion that RESET-II achieved strong cost-efficiency in converting financial inputs into outputs.

Staff costs amounted to EUR 424,527.8 (just under 10 per cent of total expenditure), covering technical and administrative expertise. Equipment and ICT costs were minimal (EUR 15,828), consistent with the field-based nature of activities, while travel and monitoring costs (EUR 31,044) remained modest given the multi-regional scope. Indirect costs were capped at 7 per cent (EUR 301,259), ensuring administrative expenditure remained proportionate.

Table 8: Per Unit Cost Analysis of Key Outputs of Project

Sr. #	Contractual Service/ Results	Total Cost	Output Achieved				Average Per Unit Output Cost
1	Contractual Services for result # 1 - Groundwater assessment and hydrogeological mapping	EUR 959,056	Hydrological maps of 39 woreda				EUR 24,591 per woreda map
2	Contractual Services for result # 2 – Drilling contract (there will 16 boreholes to be drilled in five lots)	EUR 2,550,308	3,932 metres drilling				EUR 649 per meter
3	Contractual Services for result #3 – Capacity-Building contracts (for all the capacity-building activities, including communication and visibility)	EUR 265,679	Training Topic	Persons	Days	Man Days	EUR 240 per person per day
			Fluid Engineering	27	20	540	
			Troubleshooting Drilling problems	30	6	180	
			Sound Diagnosis and rehab	35	11	385	
			Total	92	-	1105	

Causal analysis indicates that the principal efficiency constraint was operational rather than financial. Slow drilling progress, limited contractor capacity and geological complexity reduced output delivery and, in turn, full budget utilisation. Overall, RESET-II demonstrated strong financial management and cost-efficiency in design, although operational bottlenecks reduced the full realisation of efficiency gains.

Finding 2: By introducing hydrogeological mapping and solarization, RESET-II enhanced cost-efficiency and environmental sustainability, though drilling delays, contractor capacity gaps and saline yields constrained overall resource efficiency.

RESET-II improved resource efficiency by applying hydrogeological mapping to guide drilling towards high-potential sites, reducing failed boreholes and optimising financial and environmental resources. The project achieved an 87.5 per cent drilling success rate, substantially exceeding the national average of 35–45 per cent. Evidence triangulated from project data, KIIs and field verification confirms a causal link between mapping-led siting and reduced exploration losses, translating into savings in fuel, time and operational costs.

Solar-powered pumping further enhanced efficiency by lowering recurrent fuel expenditure and reducing greenhouse gas emissions. As noted by an Acacia Water technical expert, "*This mapping exercise avoids unnecessary area investigations… it saves cost and reduces wasted effort,"* corroborating observed quantitative efficiency gains.

However, these gains were undermined by persistent drilling delays and weak contractor performance. KIIs with contractors and regional officials revealed frequent machinery breakdowns, shortages of skilled labour and limited access to spare parts due to foreign-currency constraints. Average drilling penetration rates were low (1.8 metres per day), with nearly 60 per cent of wells advancing less than two metres daily, directly contributing to extended timelines and reduced productivity.

Efficiency losses were compounded by water-quality challenges. in Hammer (Erbore woreda), two boreholes were abandoned due to salinity and fluoride contamination, despite adequate yields. A RWB expert explained: *"In South Omo, in Hammer, the yield is good in terms of getting water, but salinity was a challenge… one borehole was guaranteed saline, another marginal."* This illustrates an unintended efficiency loss where financial inputs produced technically successful but unusable outputs due to under-integrated hydro-chemical analysis in site selection and design.

Overall, RESET-II's technical innovations significantly improved cost-effectiveness and environmental sustainability. Nevertheless, structural bottlenecks in drilling capacity and water-quality management weakened the conversion of inputs into fully functional services, moderating overall efficiency outcomes.

Overall, RESET-II's mapping and solarization innovations improved cost-effectiveness, environmental sustainability and technical precision. However, efficiency was partially constrained by slow drilling rates, limited contractor capacity and hydro-chemical challenges. These structural bottlenecks weakened the conversion of inputs into functional services, moderating overall efficiency outcomes.

BOX E1– CLIMATE RESILIENCE: REDUCING CARBON EMISSIONS AND BUILDING ADAPTIVE CAPACITY

RESET-II demonstrated that climate-resilient WASH interventions can deliver both mitigation and adaptation benefits. By introducing solar-powered pumping systems in several boreholes, the project reduced dependence on diesel generators, cutting recurrent fuel costs and avoiding greenhouse gas emissions. This shift not only lowered the programme's carbon footprint but also ensured more predictable operations in remote areas where fuel supply chains are unreliable. On the adaptation side, groundwater mapping improved siting accuracy and reduced the prevalence of "dry wells," strengthening resilience to recurrent droughts. Functional schemes shortened water collection times by more than an hour daily, particularly for women and girls, freeing time for education and livelihoods. Improved access to safe water reduced reliance on unsafe, open sources during dry seasons, thereby lowering exposure to climate-sensitive health risks and water borne diseases. RESET-II also generated system-level resilience dividends by embedding hydrogeological data into woreda planning, training government staff and piloting digital groundwater tools. These investments strengthened institutional capacity to anticipate, plan and respond to climate variability. However, the absence of systematic water quality monitoring, managed aquifer recharge (MAR) and watershed protection limits the long-term efficiency and resilience of these investments, leaving gains vulnerable to depletion and contamination risks.

4.3.2 Optimal Use of Financial and Human Resources

Revised EQ 7: Were financial and human resources used optimally to deliver the project, and were there cost-effective alternatives that could have achieved similar or better results?

Finding 3: RESET-II optimised scarce technical capacity through multi-level partnerships that enhanced mapping accuracy and institutional learning; however, structural weaknesses in the domestic drilling market reduced operational efficiency and delayed delivery.

RESET-II adopted a partnership model that maximised limited national expertise by combining international technical leadership with domestic institutional capacity. Collaboration between Acacia Water and Aquacon Engineering PLC improved mapping accuracy, strengthened drilling supervision and facilitated knowledge transfer. The partnership with the EU-JRC enabled access to advanced satellite imagery and remote sensing, enhancing spatial precision and resource targeting. Simultaneously, EWTI institutionalised training delivery for government engineers, while RWBs provided contextual oversight.
Triangulated evidence from KIIs confirms that this partnership architecture reduced duplication, improved supervision quality and enabled efficient deployment of high-cost international expertise within national systems. As a result, RESET-II achieved high technical efficiency in mapping and planning.

However, efficiency was undermined by structural weaknesses in the domestic drilling market. Contractors lacked experience with deep and complex aquifers and faced recurrent equipment failures, high staff turnover and spare-part shortages. These constraints directly contributed to slow drilling rates, delayed outputs and under-utilisation of allocated funds. Procurement procedures

under MoWE, which restricted transactions to local currency and limited access to international contractors, further constrained efficiency. Although UNICEF's Drilling Landscape Analysis (2023) later identified stronger market options, the findings came too late to influence RESET-II procurement decisions.

Overall, RESET-II was highly efficient in technical design and coordination, but only moderately efficient in operational execution due to systemic market and procurement constraints beyond the project's direct control.

Finding 4: RESET-II maximised human resource efficiency by integrating international expertise with national institutions and community participation, enhancing value for money and sustainability.

RESET-II used human resources strategically by embedding international expertise within national and subnational systems, ensuring technical rigour while strengthening local ownership. The structured role of EWTI institutionalised capacity development rather than relying on ad-hoc training, contributing to a durable national skills base for groundwater management under MoWE oversight. At community level, RESET-II leveraged voluntary contributions that extended project value without additional financial cost. FGDs confirm that communities provided in-kind labour, materials handling and site security. As one participant stated, "*We carried sand and stones, helped dig trenches and guarded materials at night.*" KIIs corroborate that these contributions reduced labour costs, improved material protection and strengthened community oversight. This participatory approach plausibly contributed to improved functionality and reduced vandalism, reinforcing the ToC assumption linking ownership to sustainability. Overall, the combination of professional expertise, institutional collaboration and community participation enabled RESET-II to achieve significant outputs with limited human resources, strengthening both efficiency and sustainability.

4.3.3 Multiplied Value Between Sectors and Actors

Revised EQ 8: How has the project result's approach facilitated linkages and multiplied value between sectors and actors to accelerate access to safe and sustainable water?

Finding 5:.RESET-II multiplied value across sectors and actors by strengthening supervision, financing and coordination mechanisms; however, weak contractor accountability and uneven data integration constrained sustained efficiency gains.

RESET-II strengthened cross-sector collaboration through joint supervision and monitoring arrangements involving UNICEF, RWBs and technical partners. Regional engineers conducted joint site inspections and progress reviews, improving accountability and enabling real-time problem identification. KIIs confirm that this model enhanced on-the-job learning and institutional capacity beyond immediate outputs.

The project also demonstrated strong financial leverage. By mobilising over USD 3.1 million in post-drilling financing from bilateral donors, UN agencies and government sources, RESET-II enabled eight additional schemes to become operational. Triangulated financial evidence confirms a clear causal link between hydrogeological mapping, donor confidence and co-financing, reinforcing the OWNP SWAp and SDG 6.a.

However, contractor accountability mechanisms were inconsistently enforced. Penalty clauses were rarely applied, weakening performance incentives. A representative from RWB Oromia observed, *"Delaying contractors were only warned; penalties weren't applied."* This weakened the incentive structure and diluted efficiency gains from joint supervision. Community leaders expressed frustration, describing this as a *"disregard for community needs and technical expertise."* In addition, fragmented data-sharing and limited interoperability reduced the timeliness of decision-making, constraining operational efficiency.

Coordination challenges also hindered timely data sharing. Zonal officials reported limited access to mapping outputs, delaying responses to borehole collapses and low-yield sites. Although multiple data sources were generated, weak interoperability and informal data-sharing protocols constrained real-time decision-making and reduced operational efficiency. Overall, RESET-II's multi-actor model successfully multiplied value and attracted additional resources, but efficiency gains were moderated by weak enforcement and coordination challenges.

Table 9: Leverage External Financial Support for Post Drilling Work

Sr. #	Region	Zone	Woreda & Kebele	Donors for post drilling	Budget -Post Drilling (In USD)
1	SNNP	Wolayita	Damot Pulsa - Warite Balaka	○ Denmark for solarization and expansion (USD 92,788.29) ○ German/GFFO (German Federal Foreign Office) SM 240004, for solarization (USD 111,360.63)	204,148.92
2	SNNP	Wolayita	Boloso Sore-*Legama*	Denmark, for solarization and expansion	330,752.09
3	SNNP	South Omo	Dasenech - *Oldemo*	○ Denmark (USD 68,359.98) ○ German/GFFO SM 240004 for solarization (USD 170,899.95) ○ CERF Anticipatory Action-SM240510 for expansion (USD 130,524.27)	369,784.20
4	Somali	Liben	Liben-Deka Suftu2	○ Government through UNICEF Fund	673,503.19
5	Somali	Siti	Mieso-Hawanile	○ Government (OWNP)	456,200.00
6	Somali	Liben	Moyale - *Mubarek*	○ Government and UNICEF/CERF (USD 51,300.57) ○ UNICEF (CERF UNOCHA) through RWB (USD 20,277.46)	71,578.03
7	Afar	Zone 1	Adear-*Hado*	○ UNOCHA for solarization (USD 253,000.20 ○ Denmark for the civil work (USD 303,321.91)	596,910.42

				○ Government matching fund for civil works (USD 40,588.31)	
8	Amhara	East Gojjam	Enerji Enauga-*Mertolemariam*	○ Government for storage unit (USD 180,257.60) ○ Organization for Rehabilitation and Development in Amhara (ORDA) for electric metering and system expansion (USD 225,120.80)	405,378.40
Total Donor Support for Post Drilling Work					3,108,255.25

4.3.4 Delivery Timeframe and Reasons for Delays

Revised EQ 9: Was the project implemented within the planned timeframe, and if not, what were the reasons for any delays or cost overruns?

Finding 6: RESET-II exceeded its original timeframe due to procurement bottlenecks, security disruptions and the COVID-19 related constraints that slowed implementation, however, adaptive phasing and stakeholder engagement enabled completion of core outputs.

RESET-II was implemented between December 2017 and December 2023 in two sequential phases: hydrogeological mapping (2018–2019) followed by drilling and capacity-building (2020–2023). The second phase required a one-year no-cost extension beyond the initial schedule. Delays were primarily driven by procurement bottlenecks and market constraints. As one RWB representative explained, *"Delays in the implementation process… were often due to logistical issues, procurement processes and coordination challenges among stakeholders"*. Competitive bidding processes for deep-drilling contracts took longer than anticipated, reflecting limited contractor availability and specialized technical requirements. These challenges were compounded by COVID-19–related supply-chain disruptions, which delayed the mobilization of drilling rigs, spare parts and technical personnel.

Security conditions further constrained implementation. In Afar, Amhara and border areas, conflict and restricted movement limited access to sites and disrupted supervision. A key informant from the Afar RWB noted, *"There were delays during the borehole drilling process; the main cause was the ongoing conflict in the area, which affected the timely delivery of drilling equipment and restricted movement of technical staff"*. Similarly, heavy rains and travel restrictions during 2021–2022 further reduced field presence in remote locations.

Despite these constraints, RESET-II adopted a phased and adaptive implementation approach that allowed mapping, training and drilling activities to proceed sequentially. This flexibility helped preserve technical quality and institutional engagement. Regional stakeholders confirmed that continued coordination between UNICEF, consultants and regional engineers enabled progress despite disruptions, particularly in maintaining drilling standards and supervision where access permitted. As confirmed by one Somali RWB official, *"Despite these challenges, the combined efforts*

of our regional supervisor and engineer were instrumental in maintaining the quality of the drilling activities".

Overall, RESET-II demonstrated flexibility and commitment to its resilience objectives, completing all core components though beyond the original timeline.

Finding 7: Implementation delays were compounded by contractor inefficiencies, geological and financial pressures, and conflict-related barriers, revealing systemic weaknesses in accountability, procurement and risk management.

Beyond exogenous shocks, internal implementation challenges intensified delays. KIIs highlighted prolonged contractor under-performance and weak adherence to timelines. A senior official from the Oromia RWB reported, *"Our drilling machine remained idle at the project site for an entire year… a tremendous waste and financial strain for the Bureau"*. In Somali Region, one borehole required nearly three years to complete due to repeated contractor delays and slow corrective action. Technical difficulties such as collapsing formations, circulation losses and frequent equipment breakdowns further extended drilling timelines, reflecting limited contractor capacity for deep and complex aquifers.

Technical complications, including collapsing formations, circulation losses and equipment breakdowns, further extended timelines. The general manager of one of the key consultancy firms observed, *"Frequent breakdown of drilling machineries had a great impact on performance rate… lack of skilled manpower and shortage of foreign currency for spare parts were among the problems that affected drilling performance"*.

Financial pressures also affected delivery. Contractors reported rising drilling costs, shortages of foreign currency for spare parts and limited access to skilled labour, all of which reduced productivity. A contractor mentioned, *"Over the last two years, the price of drilling has doubled… it has become very expensive and not affordable"*.

Conflict and insecurity across Amhara, Afar and border regions intermittently halted operations and limited site verification. One Amhara RWB official confirmed that *"some sites could not be drilled due to conflict between the Tigray region and the government, and the rainy season also made the project difficult to run"*.

These factors exposed broader systemic weaknesses, including limited enforcement of performance-based contracts, insufficient contingency planning and fragmented communication among UNICEF, consultants and regional bureaus. Community members and local authorities often lacked clear information on timelines for incomplete works, reducing transparency and accountability.

Overall, RESET-II exceeded its original timeframe by nearly three years but ultimately delivered its major technical outputs. While delays were largely driven by external shocks i.e. security instability, the COVID-19 pandemic and market constraints, they were exacerbated by contractor under-performance, procurement inefficiencies and limited risk mitigation. The experience underscores the need for stronger performance management, early contractor due diligence, clearer accountability mechanisms and adaptive risk planning in future climate-resilient WASH programmes.

Overall Assessment: Efficiency
RESET-II demonstrated strong financial and design efficiency, maintaining competitive unit costs, proportionate overheads and high technical value for money in a complex operating environment. Hydrogeological mapping, solarisation and partnership-based delivery enhanced cost-effectiveness, environmental sustainability and institutional learning, while mobilising over USD 3.1 million in complementary financing. However, operational efficiency was constrained by drilling underperformance, limited contractor capacity, water-quality challenges, procurement bottlenecks and exogenous shocks, extending implementation by nearly three years. Overall, RESET-II achieved high efficiency in design and financial management but moderate efficiency in execution, highlighting the need for stronger market-based procurement, performance enforcement and proactive risk management in future climate-resilient WASH programmes.

4.4 Effectiveness

The effectiveness section reviews how far RESET-II achieved its intended outputs and outcomes in expanding safe, sustainable water access for drought-affected populations. It addresses three questions: EQ10 on achievement of objectives and results among target groups; EQ11 on enabling and hindering factors and responses to challenges; and EQ12 on the role of advanced technology, including hydrogeological mapping, GIS tools and solarization, in improving access. Findings are assessed against the reconstructed ToC, which links hydrogeological mapping and capacity development to improved drilling success, functional water systems and sustained access. Contribution analysis is applied to assess whether these causal pathways plausibly materialized in practice, recognizing contextual constraints and external factors. Evidence is drawn from household surveys, source observations, KIIs, FGDs and project monitoring, triangulated with secondary data and disaggregated by region, gender, age and disability where relevant.

4.4.1 Progress in Achieving Project Results

Revised EQ 10: To what extent has the project achieved its preset objectives, outputs and outcomes among the target population?

Finding 1: RESET-II achieved substantial technical progress through near-complete hydrogeological mapping and high drilling success enabled by data-driven planning, however, limited system functionality, untreated water quality and delayed post-drilling completion constrained overall beneficiary reach.

4.4.1.1 Project Data and Achievements

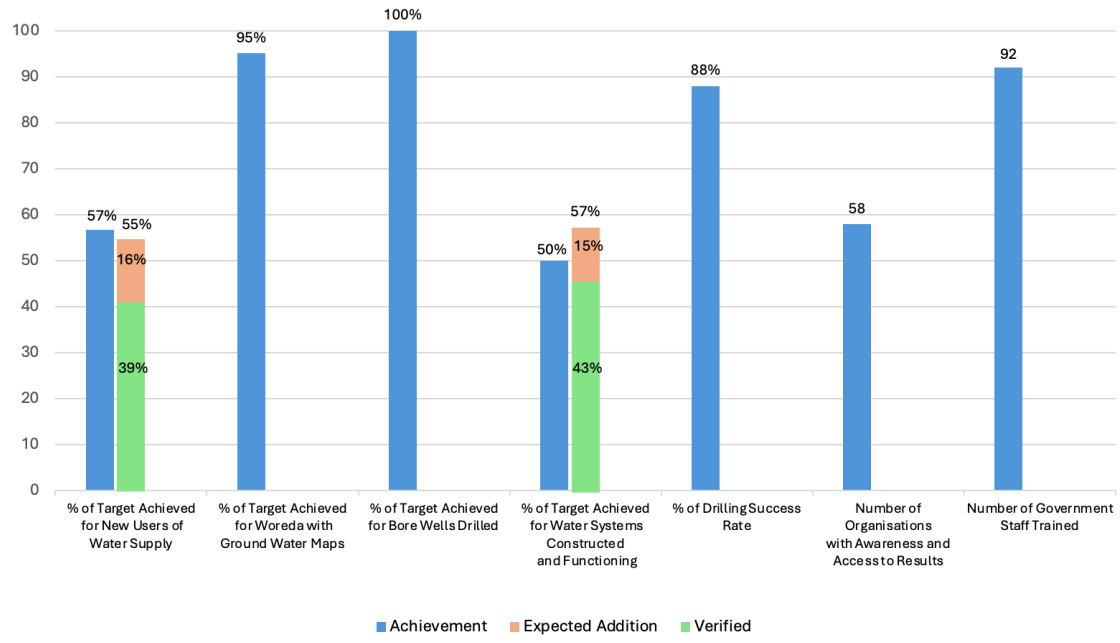
RESET-II made significant progress in strengthening Ethiopia's groundwater evidence base and initiating climate-resilient water interventions. Project records and field verification indicate that, at the time of evaluation, 55 per cent of the target for new users and 39 per cent of existing users had gained access to improved water services, with an additional 16 per cent expected once post-drilling works were completed. Hydrogeological mapping reached 96 per cent of the planned target (39 of 41 woredas), while 80 per cent of planned boreholes were drilled. The overall drilling success rate reached 87.5 per cent, exceeding the 80 per cent target and far surpassing the national average of 35–45 per cent. This confirms the technical effectiveness of RESET-II's groundwater-led approach.

However, only around half of the water systems were fully functional at the time of evaluation, with a further 15 per cent expected to become operational upon completion of outstanding works.

Functionality gaps were primarily attributable to untreated salinity and fluoride contamination, incomplete post-drilling infrastructure and contractor under-performance. On the institutional side, 58 organisations were sensitised to groundwater mapping tools and 86 government staff were trained in data interpretation, laying a foundation for sustained technical capacity. These findings are consistently triangulated across project monitoring data, source observations, household surveys and KIIs with regional engineers and community leaders, which collectively confirm high technical success alongside delayed service delivery.

Overall, RESET-II demonstrated strong effectiveness in delivering planned technical outputs, particularly in mapping and drilling success. However, outcome-level effectiveness in terms of functional, safe and equitable water access was only partially achieved, reflecting breaks in the ToC between outputs and sustained service outcomes.

Figure 2: RESET II Achievements - Project Reports and Evaluation Data



4.4.1.2 Output-Level Effectiveness

Output 1: Hydrogeological Mapping – Achieved with Gaps
RESET-II produced hydrogeological maps for 39 of 41 woredas, representing one of its most tangible achievements. The mapping significantly improved borehole siting accuracy, reduced drilling failures and enhanced cost-efficiency. However, integration of mapping outputs into woreda planning systems and OWNP-II investment cycles remained limited, and hydro-chemical parameters were not incorporated. As a result, mapping contributed more strongly to drilling success than to long-term planning or water-safety assurance, reflecting partial fulfilment of the ToC assumption that improved groundwater knowledge would automatically translate into sustained and safe service delivery.

Output 2: Borehole Drilling and Water Systems – Partially Achieved

RESET-II achieved its target of 16 boreholes, of which 14 were productive, resulting in an 87.5 per cent success rate. However, three boreholes yielded less than five litres per second, and four were affected by salinity or fluoride contamination, rendering them unsuitable for multi-village schemes. Drilling depth reached 3,932 metres of the 5,320 metres planned (73.9 per cent). Field observations, KIIs and water-quality data consistently show that technical drilling success did not always translate into usable water services, underlining a break in the ToC between infrastructure outputs and access outcomes.

Output 3: Capacity-Building and Dissemination – Numerically Exceeded, Limited in Depth
RESET-II delivered training and awareness-raising activities to 138 participants from 58 organisations, including 92 government staff. The involvement of the EWTI supported institutionalisation of training delivery. However, qualitative evidence indicates that training remained largely theoretical and insufficiently addressed water-quality monitoring, climate-smart practices and water-safety planning. While awareness increased, behavioural and institutional change remained limited, weakening outcome-level effectiveness.

4.4.1.3 Outcome-Level Effectiveness

RESET-II's final report estimated 46,470 beneficiaries against a target of 82,000. Field verification confirmed 31,817 active users across six functional schemes, with an additional 13,000 expected upon completion of pending systems. The project substantially reduced water-collection time for women and children, with many households saving over one hour per day. This time-saving effect is consistently triangulated across household surveys, FGDs and KIIs, supporting a plausible contribution to improved wellbeing, productivity and school attendance.

An unintended outcome emerged in locations where saline or fluoride-contaminated boreholes raised community expectations without delivering safe water, resulting in frustration and continued reliance on costly private vendors. This portrays the importance of integrating water-quality assurance into effectiveness pathways.

4.4.2 Water Access, Quality and Affordability

Finding 2: RESET-II expanded physical access to improved water supply and reduced household expenditure by operationalizing deep and solar-powered boreholes; however, inequities in distribution, poor water quality and high transport costs constrained the project's overall effectiveness and equity outcomes.

RESET-II improved access to water through deep, solar-powered boreholes and community-based management. However, service outcomes varied considerably across sites due to differences in scheme capacity, storage and distribution networks. In several locations, limited infrastructure coverage resulted in long queues and partial household uptake, indicating that infrastructure functionality did not automatically translate into equitable access. *"The amount of time women and girls used to spend fetching water has now decreased. However, during times of crowding at the water point, it can still take them a long time to return,"* explained a WASHCOM member from Oldemo (SNNP). In Oldemo (SNNP), only half of surveyed households used project-installed water because of long queues and limited storage capacity, while in Gunaguna (Amhara), one borehole served approximately 520 of more than 1,000 households, leaving the remainder dependent on

unsafe sources. These disparities reflected design limitations and incomplete distribution networks, which restricted equitable service delivery.

System functionality was generally positive, with 88 per cent of users reporting water availability on the day of household survey. Nevertheless, recurrent breakdowns exposed weaknesses in O&M systems. *"When minor problems occur, we usually resolve them quickly without outside assistance, but major repairs are difficult because we lack resources,"* reported WASHCOM members in Hawanle (Somali).

Water-quality perceptions varied sharply: while a majority of users rated water as good, communities in salinity-affected areas reported poor taste and usability. Only one site reported routine water-quality testing, highlighting major gaps in safety monitoring. *"The water tastes saline. It has a salty or briny flavour, which is a bit unusual compared to what we used to drink before,"* said adolescent boys from Mubarek (Somali). Women in Erbore (SNNP) similarly observed, *"It is salty and feels heavy to drink… it has an odour once settled for one day,"* reflecting persistent quality concerns.
A
ffordability improved overall as reliance on private vendors declined as average monthly household payments declining from 1,418 ETB before the project to 555 ETB after completion. Nevertheless, high transport costs eroded these gains in remote areas. In Hado kebele (Afar), for example, water was free at source, yet households spent an average of 591 ETB per month on transport because of distances of three to five kilometres. A woman in the community stated, *"We are happy that clean water is available, but paying for transport every week is difficult for poor families."* In Deka Suftu (Somali), the project-installed borehole served five urban kebeles where WASHCOMs charged 20 ETB per 20-litre jerrycan or 2,000 ETB per tanker, but resellers in peripheral kebeles charged up to 100 ETB per jerrycan and 10,000 ETB per tanker, indicating steep mark-ups by private transporters.

Disaggregated analysis shows that women-headed households, pastoralist communities and persons with limited mobility faced disproportionately higher transport and waiting-time burdens, indicating that affordability and access gains were not evenly distributed. These findings demonstrate that RESET-II improved access and affordability in aggregate, but effectiveness was constrained by inconsistent coverage, inadequate water-quality assurance and unregulated transport costs.

4.4.3 Capacity Development and Knowledge Dissemination

Finding 3: RESET-II strengthened technical capacity and institutional awareness; however, uneven coverage, weak skill retention and limited resourcing constrained the consolidation of effectiveness gains.

RESET-II enhanced technical capacity among government staff, WASHCOMs and academic institutions. Participants reported improved confidence in interpreting hydrogeological data and planning borehole development. However, coverage was uneven, particularly in Afar and parts of Somali Region, and high staff turnover undermined retention of skills. RWBs and EWTI lacked dedicated resources to refresh or replicate training systematically. As one Somali RWB engineer shared, *"the training helped us understand how to read maps and identify productive sites for drilling, something we had not done before"*. Similarly, trainees in Oromia highlighted the relevance

of the practical sessions, stating, *"Before RESET-II, site selection was guesswork; now we use the data and layers to plan better"*.

However, these capacity gains were unevenly distributed. In Afar and some areas of Somali, several woreda officials and technicians reported not having participated in any formal training. High staff turnover further undermined knowledge retention, as trained officers were frequently reassigned. The EWTI lacked dedicated financial and human resources to update training modules or systematically replicate RESET-II methodologies. One EWTI respondent explained, *"We trained staff during the project, but there was no follow-up budget to refresh or expand the programme"*.

RWBs also faced constraints in applying the new knowledge. Although groundwater maps were widely disseminated, their practical use was hindered by the absence of GIS software, limited skilled personnel and lack of water-quality integration. In several regions, officers reported that mapping products remained "hard copies on shelves" rather than tools for planning. Consequently, the institutional uptake of training outputs was limited, and knowledge gains did not consistently translate into stronger system performance or service delivery outcomes. The evidencd from KIIs, FGDs and institutional records indicates that capacity development was most effective where training coincided with functional schemes and on-the-job application, suggesting that learning-by-doing strengthened outcomes.

At the national level, RESET-II achieved more lasting results. The project institutionalized learning by embedding mapping approaches within the MoWE and academic partners, including universities and the EWTI. It also influenced regional and global replication through UNICEF's More Water More Life (MWML) initiative, which builds directly on RESET-II's groundwater exploration model. This replication has extended to Angola, Kenya and Somalia, where the same GIS-overlay and hydrogeological methods are used to improve drilling success rates. RESET-II's methodology has also contributed to complementary regional initiatives such as the World Bank's Groundwater for Resilience (GW4R) programme and Intergovernmental Authority on Development (IGAD)-led groundwater assessments, reinforcing its legacy as a scalable innovation in resilience-based WASH programming. This represents a positive unintended outcome, extending RESET-II's contribution beyond its original geographic scope and beneficiary targets.

BOX F1– SCALING RESET-II INNOVATIONS ACROSS AFRICA

The RESET-II project model is replicated through the MWML initiative, led by UNICEF's Sustainable WASH Innovation Hub and the Eastern and Southern Africa Regional Office (ESARO), in countries where drill success rates remain critically low, such as Angola (7 per cent), Kenya (50 per cent) and Somalia (50 per cent). The MWML initiative specifically targets deep aquifers by combining GIS overlay analysis, hydrogeological investigations and stakeholder engagement to improve access to sustainable groundwater in arid and semi-arid lands. The initiative also complements larger regional groundwater programmes, such as the World Bank's GW4R and IGAD-led efforts, further embedding RESET-II's innovations into broader resilience strategies.

4.4.4 Enablers and Barriers to Effective Implementation

Revised EQ 11: What were the key enabling or hindering factors affecting the successful implementation of WASH interventions, and how were challenges addressed?

Finding 4: RESET-II's effectiveness was shaped by strong community demand, adaptive supervision and technical partnerships, while security constraints, weak contractor capacity and insufficient post-drilling financing limited sustained service outcomes.

RESET-II's implementation trajectory reflected both strong enabling conditions and persistent structural barriers. Analysis against the reconstructed ToC indicates that while enabling factors supported the delivery of technical outputs, constraining factors disrupted the transition from infrastructure completion to sustained service outcomes. The project's ability to deliver complex groundwater operations across remote and drought-affected woredas depended on community participation, adaptive management and cross-sector partnerships. However, these strengths were counterbalanced by weak market capacity, fragile institutions and logistical constraints that hindered sustained functionality and service equity.

4.4.4.1 Enabling Factors

High Community Demand and Ownership: RESET-II responded to chronic water scarcity in drought-prone areas where communities were highly motivated to participate. FGDs confirmed reduced travel times for water collection and collective contributions to construction and site protection. As one participant in Oldemo (SNNP) explained, *"We carried sand and stones, helped dig trenches and guarded materials at night because we wanted the project to succeed."* This community ownership strengthened accountability through local WASHCOMs, which played a critical role in maintenance and monitoring. Triangulation across FGDs, household survey findings on time savings and KIIs with WASHCOM members confirms that community engagement was a key enabling factor for initial functionality.

Adaptive Supervision and Localized Monitoring: RWBs used adaptive mechanisms such as deploying local staff and mobile-based supervision to maintain standards despite delays. In Somali region, an RWB official remarked, *"Despite delays, our engineers stayed in the field to supervise drilling and ensured work continued safely."* This flexibility helped sustain oversight when external consultants faced travel restrictions. Such adaptive supervision partially mitigated security and mobility risks, supporting continuity of implementation under fragile conditions.

Leveraging Donor and Government Resources: When government budgets were constrained, UNICEF successfully mobilized over USD 3 million from bilateral and multilateral partners (see Coherence, Section 4.2.3) to complete post-drilling works. This additional funding enabled eight boreholes to become functional, partly offsetting the design limitation of excluding post-drilling budgets. Financial triangulation confirms that this mobilization was directly triggered by RESET-II's mapping evidence, reinforcing the contribution pathway between data-driven planning and resource leverage.

Technical Partnerships and Knowledge Collaboration: RESET-II's collaboration with the EU-JRC, EWTI, universities and regional bureaus strengthened planning, knowledge transfer and capacity development. *"The technical support from Acacia and the training from EWTI helped us improve how we use hydrogeological data for decision-making,"* elaborated a RWB hydrogeologist from Oromia. These partnerships enhanced institutional capacity and established foundations for ongoing sectoral learning. These partnerships operationalized the ToC assumption that external technical expertise would strengthen national systems, particularly at federal and regional levels.

Policy and Systemic Learning: The UNICEF Drilling Landscape Analysis (2023) served as a platform for sector dialogue on systemic bottlenecks, including contractor performance, foreign currency shortages and equipment maintenance challenges. It reinforced awareness of market limitations and informed future procurement strategies for resilience-focused WASH programmes. This represents a positive unintended effect, contributing to sector-wide learning beyond RESET-II's immediate scope.

4.4.4.2 Hindering Factors

Security and Logistical Constraints: Field operations were frequently disrupted by conflict, poor road infrastructure and spare-part shortages. In Afar and Oromia, insecurity restricted staff movement and delayed drilling schedules. One RWB informant observed, *"Our team could not access some areas for months; equipment was stuck because of road blockages and security issues."* These disruptions weakened the ToC assumption of stable access and supervision, delaying output completion and service delivery.

Weak Contractor Capacity: Several drilling companies lacked technical depth, equipment maintenance systems and qualified personnel. Frequent machinery breakdowns and foreign currency shortages constrained access to spare parts. As a contractor from Aquacon explained, *"Frequent breakdown of drilling machineries had a great impact on performance… shortage of skilled manpower and spare parts slowed the work."* These deficiencies led to shallow drilling, abandoned sites and poor timeliness. Triangulated evidence from contractors, RWBs and field observations confirms contractor capacity as a primary bottleneck affecting effectiveness and efficiency.

Institutional and Technical Gaps: Regional and zonal bureaus suffered from staff shortages in hydrogeology and GIS, weak transport facilities and inadequate groundwater monitoring systems. High staff turnover further eroded training retention. One official noted, *"We send staff for training, but most get transferred soon after; the knowledge doesn't stay."* This constrained institutionalization of RESET-II methodologies, limiting the sustainability of capacity gains.

Uneven Coordination and Local Exclusion: Coordination between regional and zonal levels was inconsistent. Local actors in FGDs reported limited access to groundwater data and decision-making authority. In Somali region, a community member explained, *"They asked us to help with labour but didn't consider our advice on where to drill; the well ended up far from households."* Such experiences undermined local trust and reduced responsiveness. This reflects a partial failure of the ToC's participation pathway, where inclusion mechanisms were present but not consistently applied.

Insufficient Post-Drilling Support: The exclusion of post-drilling funding from the initial budget placed an unrealistic burden on regional governments, many of which lacked fiscal capacity to complete schemes. Despite donor mobilization, several boreholes remained incomplete or non-functional 18 months after project closure, constraining overall effectiveness. This structural gap represents a critical break between outputs and outcomes within the ToC.

4.4.5 Use of Advanced Technologies

Revised EQ 12: To what extent did the use of advanced technology aid the efforts to improve access to safe and sustainable water supply for drought-affected populations in the selected woredas?

Finding 5: Advanced technologies significantly improved drilling precision and success rates through GIS and remote-sensing methods, however, inadequate integration of hydro-chemical analysis constrained overall water quality and effectiveness.

RESET-II introduced a suite of advanced technologies including remote sensing, GIS-based overlay analysis and hydrogeological mapping that transformed groundwater exploration from a "trial-and-error" approach into a more evidence-based process. These tools enabled identification of productive aquifers up to 400 metres deep across Somali, SNNP and Oromia, markedly improving efficiency in drought-prone zones.

Respondents from MoWE, Acacia Water, Aquacon Engineering and RWBs affirmed the robustness of the methodology, noting that it effectively blended modern mapping with local validation. An Acacia Water specialist observed, *"The GIS overlay model allowed us to predict high-potential zones with remarkable accuracy; our drilling success confirms its value."* Similarly, an engineer from Oromia RWB remarked, *"Before RESET-II, site selection depended on experience. Now we have data to show where to drill and why."* This structural gap represents a critical break between outputs and outcomes within the ToC.

RESET-II surpassed its target drilling success rate (87.5 per cent achieved vs. 80 per cent planned), demonstrating the tangible benefits of technology-driven site selection. However, water quality limitations substantially reduced effective utilization. Aquacon reported that 64 per cent of boreholes exhibited mild to high salinity, forcing several to be abandoned. Experts from MoWE and EWTI reiterated that *"availability without potability equates to failure"*, a sentiment echoed by end users in multiple regions. During FGDs, women in Erbore (SNNP) described the water as *"salty and heavy to drink,"* while adolescent boys in Mubarek (Somali) noted, *"It looks clean, but it tastes bitter, and we don't drink it unless we must."*

These findings underline that GIS-based mapping, remote sensing and hydrogeological analysis transformed groundwater exploration, achieving drilling success rates well above national norms. These technologies improved efficiency and reduced exploration risk. However, the absence of systematic water-quality testing and hydro-chemical modelling resulted in technically productive but unsafe water sources in several locations, constraining effectiveness.

Finding 6: Solar-powered pumping enhanced operational reliability and affordability through lower energy costs, simplified maintenance and improved service reliability. Absence of integrated monitoring, conservation and water treatment systems constrained long-term sustainability and groundwater protection.

Approximately half of RESET-II's functional boreholes utilized solar-powered pumping, reducing dependence on diesel and lowering recurrent operational costs for communities. The use of energy-efficient pumps contributed to more predictable service delivery and reduced exposure to fuel supply disruptions. In Hado (Afar), community members highlighted the affordability gains, stating: "*The solar pump made the water cheaper; before, we could not afford the diesel costs."* These findings, triangulated across household surveys, FGDs and KIIs, indicate that solarization improved short-term affordability and reliability, particularly in remote areas.

However, renewable energy adoption was not complemented by adequate water safety or conservation technologies. Only two boreholes i.e., Gunaguna (Amhara) and Hado (Afar) were equipped with bulk meters, and only one remained functional at the time of evaluation. None of the boreholes had chlorination units or reverse osmosis systems, leaving saline or fluoride-affected sources underutilized. In Somali region, Mubarek and Hawanile developed localized water safety

plans (WSPs), but these were limited to basic operation and maintenance, excluding systematic water-quality testing, recharge monitoring or abstraction controls.

While solar pumping improved service reliability, it also removed the economic disincentive associated with fuel-based systems. In the absence of metering or regulation, continuous daytime pumping was reported, increasing the risk of over-abstraction and groundwater depletion, particularly in drought-prone areas with shallow or weakly recharged aquifers. This represents an unintended sustainability risk that was not sufficiently anticipated in the project design or monitoring framework.

As one regional technician noted, *"We know where to find groundwater now, but not enough about how to keep it safe or use it sustainably."* This observation encapsulates a central limitation of RESET-II's technological approach: innovation prioritized exploration and abstraction efficiency, while integrated groundwater management, quality assurance and long-term resource protection received limited attention.

Overall, advanced technologies significantly improved drilling precision, success rates and short-term affordability. However, their transformational potential remained underrealized due to the absence of embedded water-quality monitoring, treatment systems and regulatory oversight. Integrating hydro-chemical analysis, water safety planning, metering and solar energy management tools would be essential for future resilience-oriented WASH programmes to deliver not only access, but safe sustainable and climate-smart water services.

Overall Assessment: Effectiveness

RESET-II demonstrated strong technical effectiveness in advancing groundwater exploration, drilling success and institutional capacity. The project substantially improved borehole siting accuracy through GIS-based mapping and achieved an 87.5 per cent drilling success rate, far exceeding national averages. Solar-powered systems enhanced affordability and reliability, while capacity-building strengthened national and regional technical expertise. However, overall effectiveness in delivering safe, equitable and sustained water services was only moderate. Persistent water-quality challenges, incomplete post-drilling works, weak contractor performance and uneven distribution coverage constrained beneficiary reach. The absence of systematic water-quality monitoring, treatment and abstraction controls further limited sustainability. Overall, RESET-II was highly effective in technical innovation and knowledge generation, but only moderately effective in translating these gains into inclusive and durable service outcomes. The groundwater-based resilience interventions in Ethiopia will require stronger integration of water-quality management, secured post-construction financing and routine monitoring to consolidate effectiveness and sustain long-term impact.

4.5 Sustainability

The sustainability analysis examines the likelihood that RESET-II's results, behaviours and practices This section assesses the likelihood that RESET-II's results, behaviours and practices will be maintained and scaled beyond the project period. It examines sustainability against the reconstructed ToC, which assumes that technically sound groundwater development, effective community management and institutional follow-up would jointly sustain services over time. The

analysis addresses five evaluation questions: EQ13 on water-point functionality and maintenance; EQ14 on the durability of benefits for individuals, communities and the environment; EQ15 on monitoring, learning and adaptation; EQ16 on the financial, institutional and technical measures supporting service continuity; and EQ17 on the scalability of innovative approaches such as hydrogeological mapping, RS-GIS tools and solarisation. Evidence is drawn from household surveys, water-source observations, KIIs and FGDs across regions and woredas, with attention to technical quality, financial resilience and inclusion of marginalised groups.

4.5.1 Water Points Functionality and Maintenance

Revised EQ 13: To what extent will the benefits of the project be sustained after the end of the RESET-II project period, in terms of water point functionality and maintenance?

Finding 1: RESET-II strengthened local water service functionality by combining donor-financed completion works, community-led operation and oversight, which helped maintain several boreholes in working condition. Incomplete civil works, poor drainage design and limited preventive maintenance capacity continue to undermine long-term sustainability by accelerating wear and increasing repair needs.

Of the 16 boreholes drilled, eight received post-drilling investments based on yield and water quality. At the time of evaluation, six were functional, while two remained incomplete due to pending storage and distribution connections. Field verification revealed inconsistencies between reported and observed functionality: Erbore (SNNP), listed as functional, had been abandoned due to high fluoride levels, whereas Gunaguna (Amhara) and Hado (Afar) became operational only after additional donor-financed completion works.

Among the six functional systems, two-thirds of superstructures were in good condition, while one-third were assessed as fair or poor. However, two-thirds exhibited leakage, half lacked drainage and only Oldemo (SNNP) had adequate wastewater disposal. In Deka Suftu (Somali), the absence of a storage tank necessitated frequent pump start–stop cycles, accelerating mechanical wear. Woreda maintenance officers confirmed that such operational stress shortens pump lifespan and increases future repair costs. A woreda maintenance officer explained that *"continuous start-stop operation without a tank puts heavy strain on the motor and shortens its life."*

These observations demonstrate a clear causal link between incomplete civil works, weak design standards and declining asset longevity. While adaptive management and donor co-financing enabled some delayed systems to reach operational status, the persistence of design and maintenance gaps constitutes a material risk to long-term sustainability once external support diminishes. Evidence is triangulated across water-source observations, household survey responses and KIIs with WASHCOM members and woreda technicians.

Finding 2: Community-based management and shared government responsibility were established, however limited technical capacity, irregular supervision, and weak spare-parts supply chains undermine reliability and continuity of service.

All functional schemes were managed by WASHCOMs with varying degrees of support from woreda and regional authorities. Maintenance responsibilities were nominally shared between communities (40 per cent), government teams (40 per cent) and contractors (20 per cent). While some zones,

notably South Omo (SNNP), provided targeted training to WASHCOMs, incomplete construction and inconsistent supervision elsewhere limited committees' ability to perform preventive maintenance. Household survey data indicate that 59 per cent of users experienced frequent service interruptions, while others cited poor water quality, maintenance delays and long waiting times. WASHCOMs consistently reported the ability to collect tariffs but not to procure appropriate spare parts or tools. A WASHCOM chairperson in Legama (SNNP) noted, *"We can collect fees, but we cannot find the right fittings when the pipe breaks; we wait for the woreda team."*

Regional and zonal officers corroborated these challenges, reporting that maintenance typically relied on informal coordination between WASHCOMs and government technicians. In Afar and Amhara, limited transport, insufficient pipeline materials, and lack of inspection schedules further delayed repairs. Weak spare-parts supply chains and irregular supervision directly constrained the ability of WASHCOMs to translate fee collection into timely repairs, reducing service reliability despite the presence of management structures.

Sustainability impacts were uneven across social groups. Female-headed households faced higher coping costs during breakdowns, while persons with disabilities experienced prolonged access barriers when damaged infrastructure remained unrepaired. These equity effects illustrate how weak O&M systems disproportionately affect marginalised users, undermining the LNOB principle Overall, RESET-II established foundational management structures and shared accountability mechanisms. However, the absence of reliable technical backstopping, spare-parts supply chains and routine supervision significantly weakens the likelihood that functionality will be sustained over time.

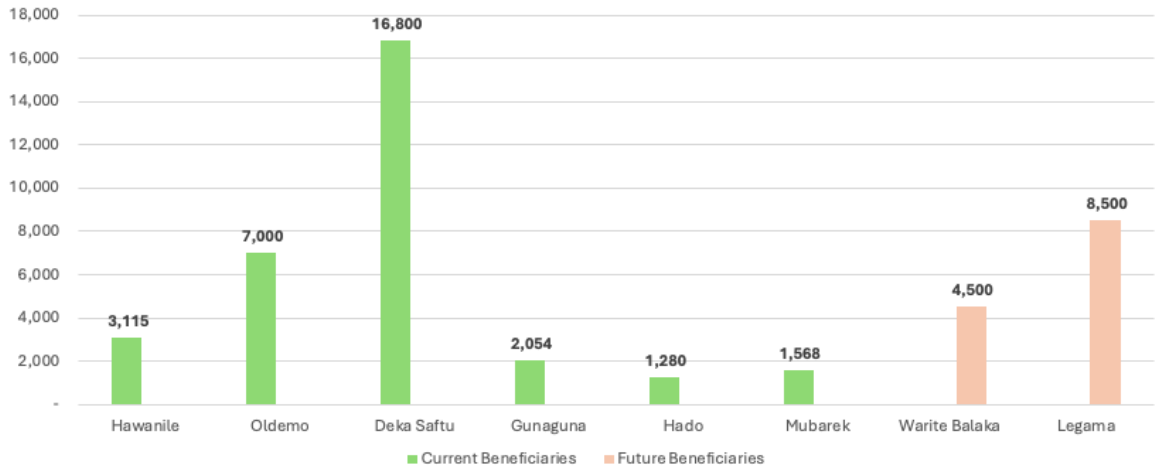
4.5.2 Lasting Benefits

Revised EQ 14: What benefits of the RESET-II project are likely to last in the lives of individuals, families, communities and the broader environment?

Finding 3: RESET-II generated tangible and potentially lasting improvements in water access, time savings and household well-being where systems remained functional; however, infrastructure fragility and water-quality constraints limit durability across sites.

The six functional boreholes served an estimated 31,870 people, with an additional 13,000 expected once incomplete schemes become operational. Deka Suftu (Somali) supplied the largest number of users (16,800), followed by Oldemo (SNNP) with 7,000, and Hawanile (Somali) with 3,115. Household surveys confirmed that project water was used for drinking, cooking (85 per cent), personal hygiene (79 per cent), cleaning (74 per cent) and livestock (50 per cent), reflecting RESET-II's contribution to household well-being and livelihoods (Figure 03).

Figure 3: Beneficiaries of Project Installed Water Sources- Evaluation Data



FGDs and KIIs reinforced these gains. Health workers in Deka Suftu reported reductions in diarrhoeal and dysentery cases, while teachers in Oldemo observed improved school attendance where water supply was reliable. Women and girls consistently cited time savings that enabled greater childcare, domestic productivity and income-generating activities, findings aligned with those reported under Relevance (Section 4.1.2) and Effectiveness (Section 4.4.2).

However, benefits proved fragile in sites affected by fluoride contamination or incomplete distribution networks. In Erbore (SNNP), abandonment of the borehole forced communities back to unsafe sources, reversing gains in health and productivity. These cases demonstrate how unresolved quality and infrastructure gaps can rapidly erode otherwise durable benefits.

Overall, RESET-II delivered lasting benefits where technical quality and functionality were assured. Where these conditions were absent, gains were temporary, highlighting the dependence of sustainability on post-construction completeness and water safety. Overall, RESET-II delivered sustained benefits where functionality and water quality were assured, but uneven system reliability constrained equitable and long-term impact.

Finding 4: RESET-II strengthened community empowerment, local economic resilience and environmental protection through inclusive WASH governance and reduced reliance on unsafe or resource-intensive sources. However, persistent gaps in technical reliability, water quality and accessibility threaten the continuity and equity of these gains.

Community management structures enhanced local empowerment and adaptive coping during droughts. In several sites like Mubarak from Somali, reduced reliance on unsafe or fuel-intensive water sources lowered household costs and environmental pressure. Women reported reduced fuelwood use and improved daily routines, illustrating links between water access, household economies and ecosystem protection.

Nevertheless, the durability of these benefits was undermined by frequent technical failures, incomplete pipelines and limited inclusive design. Accessibility features remained limited, and FGDs revealed that children with disabilities and younger users faced difficulties at crowded or damaged

water points. These findings indicate that without inclusive infrastructure and reliable technical performance, social and environmental benefits risk diminishing over time.

4.5.3 Monitoring, Learning, and Adaptation for Sustainability

Revised EQ 15: Have lessons learned through monitoring been sufficiently incorporated continuously to inform better achievement of results and sustainability of the project?

Finding 5: RESET-II established multi-level monitoring and supervision systems that generated timely corrective actions in some regions, however, inconsistent coverage, weak data accessibility and limited formal complaint mechanisms constrained their overall effectiveness and limited systematic learning for sustainability.

RESET-II introduced monitoring arrangements that enabled zonal and woreda offices to inspect systems, respond to faults and include minor repairs within routine maintenance plans. In SNNP and Amhara, officials confirmed that structural cracks and leakages were resolved through planned interventions, while WASHCOMs in Hawanile and Mubarek maintained repair logs and engaged engineers for technical issues demonstrating localized learning-by-doing and emerging accountability at community level.

However, accessibility and responsiveness remained uneven. Household survey results showed that only 32 per cent of users could report complaints, and among these, 73 per cent waited longer than two weeks for action. *"We tell the WASHCOM when water stops, but it takes long before they fix it,"* noted a woman in Erbore, highlighting delayed fault response. FGDs in Legama and Deka Suftu similarly revealed reliance on informal verbal reporting, with schools excluded from inspection schedules, indicating gaps in institutional feedback loops and rights-holder accountability.

Water quality monitoring was minimal: testing occurred only in Hawanile (April 2025) and Mubarek (July 2025). Data verification also revealed inconsistencies. While the final progress report cited 56,470 beneficiaries, subsequent clarification confirmed the actual figure was 46,470, reflecting limited data validation. The absence of integrated digital monitoring tools, complaint registries, and sex- and disability-disaggregated indicators constrained transparency, learning and adaptive decision-making.

Overall, while RESET-II built monitoring structures that improved oversight in some regions, the lack of standardized data systems, formal grievance mechanisms and routine water-quality monitoring limited their contribution to long-term sustainability and institutional learning.

Finding 6: RESET-II demonstrated adaptive learning through improved contractor supervision and problem-solving, while systematic integration of lessons on water quality, inclusion and community engagement remained limited.

The project applied adaptive management to technical supervision, the regional bureaus in Somali and SNNP working with UNICEF and consultants, to enforce contractor compliance and adjust work plans. This facilitated mid-course corrections to address drilling delays and construction flaws, demonstrating causal learning between supervision findings and operational adjustments, and illustrating the value of collaborative oversight.

However, flexibility in design remained weak. Once drilling sites were confirmed, adaptation was constrained, even when subsequent hydro-chemical analysis revealed salinity or fluoride contamination. According to Aquacon Engineering, *"64 per cent of boreholes showed mild to high salinity,"* while EWTI experts emphasized that water chemistry was not fully integrated into mapping. This disconnect between hydrogeological learning and design adaptation reduced the effectiveness of corrective feedback loops.

At the community level, adaptation mechanisms were largely reactive. Adolescents in Mubarek reported that households reverted to pond water when borehole water became too saline, indicating coping strategies rather than planned, system-supported adaptation.
These findings indicate partial learning within technical supervision, but limited systemic learning across design, monitoring and community engagement dimensions necessary for sustaining outcomes.

4.5.4 Financial, Institutional and Technical Measures Supporting Sustainability

Revised EQ 16: Which measures that have been put in place are actively contributing to the sustainability of the project?

Finding 7: RESET-II strengthened financial and institutional continuity by introducing tariff-based cost recovery and formalized coordination between WASHCOMs and local governments, which helped maintain basic operations and provided early signals of financial viability, while weak financial reserves and limited integration of water quality safeguards continue to threaten long-term service reliability.

Across the six functional schemes, four WASHCOMs collected user tariffs and kept written records, though only two maintained formal bank accounts. Preparedness levels varied significantly: Deka Suftu reported savings of nearly 100,000 ETB, reflecting a strong recovery model, while others had balances below 1,500 ETB, insufficient for even minor repairs. Household survey data and KIIs triangulate these findings, indicating that higher savings levels were associated with more reliable service hours and faster fault response. In Mubarek (Somali), the introduction of livestock-based tariffs aligned payment with household livelihoods, improving cost recovery and user compliance. In SNNP, a system of tariff approval and quarterly reporting was introduced, which increased transparency and accountability.

Institutional mechanisms further supported sustainability. Zonal and woreda offices conducted regular site verification, reviewed handover documents and facilitated joint coordination meetings with UNICEF and RWBs. KIIs with woreda officials confirmed that these mechanisms improved clarity of roles and reduced response times for breakdowns. In South Omo Zone (SNNP), regional funds were mobilized to cover breakdowns, while the training of 92 government staff in mapping and groundwater monitoring strengthened technical readiness (see *Effectiveness, Section 7.4.3*). The hydrogeological maps produced for 39 woredas remain a durable institutional asset that reduces dependence on "trial-and-error" drilling and are now being integrated into planning by local authorities in Wolayita Zone.

Overall, RESET-II established foundational financial and institutional mechanisms for continuity, but sustainability remains constrained by uneven preparedness, inconsistent WASHCOM capacity and incomplete integration of water quality management. The causal pathway between tariffs, reserves and long-term functionality remains fragile without minimum savings thresholds, predictable government co-financing and routine quality safeguards. Without stronger reserve accumulation and systematic water-quality safeguards, service reliability will remain fragile.

BOX S1 – Woreda Water Office, Coordinated Oversight Supports Sustained O&M In Hado Kebele

Before the intervention, local community in Hado Kebele of Afar region, relied on seasonal and distant sources. With RESET-II, the woreda water office put routine oversight in place with formalized WASHCOM. Roles for O&M and tariff handling were clarified, minor faults were handled locally, and issues beyond community capacity were escalated to woreda technicians through simple and predictable reporting lines. Regular supervision visits and basic records, for example fee ledgers and maintenance notes, shortened downtime and made supply hours more predictable. Women and children reported spending less time fetching water as reliance on seasonal sources declined. This case illustrates a plausible causal link between institutional oversight, financial discipline and sustained functionality Ongoing monitoring and water quality checks are still required for the functional boreholes; however, the case shows how a functioning woreda office and local committee interface, can sustain day-to-day operations after construction.

Finding 8: Solarisation and regional technical backstopping improved operational resilience and reduced recurrent costs; however, inconsistent spare-part supply and weak tariff enforcement constrain long-term sustainability.

Half of the functional boreholes used solar-powered systems, reducing fuel dependency and ensuring predictable operations (see *Efficiency, Sections 7.3.3 and 7.3.4*). Household survey results and FGDs portrayed that solarized schemes experienced fewer service interruptions and lower user fees than diesel-based systems. WASHCOMs carried out daily checks and managed minor repairs, while major issues were escalated to woreda or regional engineers. In Mubarek, operator-led preventive maintenance ensured service reliability through a clear escalation chain to external technicians. Regional and zonal teams provided technical backstopping, including supervision of contractors and targeted training in GIS mapping and groundwater development, with these skills now applied in other regional projects.

Authorities demonstrated adaptability by mobilizing regional contingency funds or leveraging NGO contributions for major repairs. Communities also organized ad hoc collections and opened local accounts for maintenance savings. Regular review meetings involving UNICEF, RWBs and local governments reinforced coordination and shared accountability. Despite these enabling measures, the absence of standardized spare-part supply chains, enforceable tariff policies and dedicated rehabilitation funds weakens the sustainability pathway from technical functionality to long-term resilience. These operational limitations mirror earlier efficiency challenges (see *Section 7.3.2*) and pose continuing risks to sustained service continuity.

4.5.5 Scalability of Innovations

Revised EQ 17: Are the gains made through this project, especially the use of innovative approaches and laying the ground for local capacity to utilize these technologies, scalable at large?

Finding 9: RESET-II's hydrogeological mapping and RS-GIS innovations demonstrated clear scalability by reducing drilling failures and strengthening data-driven planning. Uptake and integration varied by region due to uneven technical capacity and data accessibility.

RESET-II introduced remote sensing, GIS-based hydrogeological mapping and standardized site selection protocols that minimized trial-and-error drilling and improved resource equity (see *Effectiveness, Section 7.4.5*). Triangulated evidence from KIIs, document review and field verification confirms that these tools directly contributed to improved drilling success and more rational investment decisions. These innovations were widely recognized as transformative by regional authorities. In SNNP and Afar, RWBs reported routine use of groundwater suitability maps in annual planning, while solar pumping standards introduced under the project were adopted for new schemes in SNNP. Staff trained under RESET-II also applied mapping tools for site prioritization, demonstrating institutional learning and partial absorption into routine practice.

However, adoption was inconsistent. In Somali, limited data-sharing mechanisms and technical barriers prevented full access to maps. Oromia officials confirmed that while the tools were relevant and technically sound, their application remained incomplete due to lack of field demonstration and training continuity. This uneven uptake reflects a break in the ToC pathway between innovation dissemination and sustained institutional utilization, particularly where enabling systems such as software access, refresher training and technical backstopping were absent. Across all regions, stakeholders acknowledged the value of RESET-II's mapping approach for improving siting precision but stressed the need for institutional integration and capacity reinforcement for consistent application. These findings confirm that RESET-II's innovations were technically sound and could be replicated more widely. However, their full potential for scale-up will only be realized if current challenges such as weak data sharing, limited local technical capacity and unclear institutional ownership are effectively addressed.

BOX S2 – UKAID GROUNDWATER MAPPING PROJECT IN 53 WOREDAS

In 2021, the Government of Ethiopia, supported by UKAID, launched a groundwater mapping project modelled on RESET-II's technical approach. Implemented by DH Consult (Ethiopia) and Golder Associates (UK), it expanded hydrogeological investigations across 53 drought-prone woredas using remote sensing, GIS overlay analysis and geophysical surveys. Over 60 national and regional experts were trained in mapping and data interpretation, enhancing Ethiopia's evidence base for water resource planning. Document review and KIIs confirm that RESET-II directly informed the methodological design of this initiative, demonstrating a clear scaling pathway from pilot innovation to nationally anchored programming. By mainstreaming techniques first piloted under RESET-II, the UKAID initiative advanced IWRM and strengthened the national climate-resilient WASH framework demonstrating how RESET-II's innovations can be scaled within formal government systems and international programming.

Finding 10: RESET-II created a replicable foundation for national scale-up through technical innovation and institutional learning; however, limited resource diversification and weak community management systems restrict broader sustainability and replication.

RESET-II's use of data-driven groundwater exploration enabled access in previously unserved, drought-affected zones, showing that science-based planning can expand resilience in fragile areas. Evidence from field observations and KIIs indicates a plausible causal link between mapping-led siting and improved service viability, where post-drilling investments were secured. However, its scalability was constrained by the absence of complementary measures such as recharge systems, surface water management and wastewater reuse. For example, in Gunaguna (Amhara) and Warite Balaka and Legama (SNNP), boreholes were drilled close to river systems, but surface water options were not developed, reducing the potential for integrated resource management.

Stakeholders across Somali, Oromia and SNNP noted that although WASHCOMs adopted some operational practices, water safety planning and structured governance systems were rarely institutionalized. As one regional engineer explained, *"The technology is scalable, but communities still need the management structure to sustain it."* This finding highlights that scalability depends not only on technical replication, but on the parallel scaling of financial, governance and social systems embedded in the ToC.

Overall, RESET-II provided robust tools, technical methodologies and institutional experience with demonstrable potential for national and regional uptake. However, without investment in resource diversification, systematic training, digital data integration and community management frameworks, scale will remain partial and dependent on external support rather than embedded local capacity.

Overall Assessment: Sustainability

RESET-II established important foundations for sustainable water services through community management, institutional coordination and technically sound innovations. Solar-powered systems, hydrogeological mapping and woreda-level oversight enhanced short-term continuity and resilience in several locations. Where systems were complete and water quality assured, benefits in time savings, health and livelihoods were sustained. However, sustainability outcomes varied significantly. Weak preventive maintenance, limited spare-parts supply chains, inconsistent supervision and insufficient financial reserves pose ongoing risks to functionality. Water-quality safeguards were inconsistently applied, particularly in saline and fluoride-affected areas, undermining long-term service viability. Monitoring systems supported oversight but were insufficiently institutionalised to drive adaptive learning. While RESET-II innovations are scalable and already influencing wider programming, sustained impact will depend on embedding these approaches within national systems, securing predictable post-construction financing and strengthening community and institutional capacities. Overall, sustainability is moderately likely, contingent on targeted system strengthening beyond the project lifecycle.

4.6 Impact

This section assesses RESET-II's contribution to longer-term and systemic change beyond immediate outputs, including both intended and unintended effects. Drawing explicitly on the reconstructed ToC, the analysis examines whether observed changes along the access–wellbeing–resilience pathway can be plausibly linked to RESET-II interventions. The section addresses three evaluation questions: EQ18 on intended and unintended long-term results; EQ19 on differential impacts by gender, age and disability; and EQ20 on system-level and institutional change. Evidence is derived from a mixed-methods approach, including household surveys, KIIs with sector institutions and service providers, FGDs with women, men, adolescents and persons with disabilities, direct source observations and case studies across five regions. Impact-level findings are based on contribution analysis, triangulating user-reported outcomes with service functionality data, health and education proxy indicators and institutional narratives, rather than experimental attribution.

4.6.1 Intended and Unintended Long-Term Results

Revised EQ 18: To which intended and unintended long-term results have the RESET-II project contributed, and to what extent?

Finding 1: RESET-II generated sustained social and human development benefits in communities where water systems remained functional and safe, contributing to reduced drudgery, improved health practices, enhanced educational participation and strengthened household resilience.

This finding is based on triangulated evidence from household surveys, FGDs, KIIs and source observations in six locations where schemes were functional at the time of evaluation. Survey data confirmed substantial time savings in water collection, particularly for women and girls. FGDs consistently linked these time savings to increased participation in schooling, childcare and livelihood activities. These behavioural shifts align with the ToC assumption that reliable, proximate water access reduces opportunity costs and improves wellbeing.

In Hado, Oldemo and Deka Suftu, women and girls reported significant reductions in physical burden, enabling greater engagement in income-generating activities and education. Focus groups described improved access as restoring "*dignity, safety and better living conditions*". Teachers observed that girls were "*less tired and more attentive*" following the commissioning of nearby boreholes. Health workers reported reductions in water-related illnesses; a nurse in Deka Suftu noted that "*we now see fewer waterborne illnesses; children are cleaner and healthier".* These perceptions were reinforced by source observations showing reduced reliance on open ponds and seasonal sources.

Persons with disabilities in Mubarek and Hado reported improved independence and dignity where ramps and adapted access points were provided. As one wheelchair user explained, "*Now I can reach the tap without help."* While such outcomes were not universal, they demonstrate that RESET-II plausibly contributed to longer-term social inclusion and resilience outcomes where technical functionality and inclusive design conditions were met.

Finding 2: RESET-II's long-term impact was uneven and constrained by incomplete systems, untreated water quality and weak post-construction monitoring, which limited reach, reversed gains in some locations and affected community trust.

This finding draws on negative cases and unintended effects, identified through triangulated analysis of FGDs, KIIs, household survey outliers and field verification. Although RESET-II targeted 82,000 beneficiaries, verified access at the time of evaluation remained below half of this figure (see Effectiveness, Section 4.4.1). Contribution analysis indicates that this shortfall stemmed largely from over-optimistic ToC assumptions, particularly the expectation that post-drilling investments would be secured through government or partner financing without formal commitments.

In several kebeles, boreholes affected by salinity or fluoride contamination were abandoned, forcing households to revert to unsafe surface water sources. FGDs in Mubarek and Erbore revealed dissatisfaction and declining trust in formal water services, representing a significant unintended social outcome. Health workers in Warite Balaka and parts of Oromia confirmed recurring diarrhoeal outbreaks following reversion to unsafe sources, illustrating how technical failures translated into negative health externalities.

Community frustration was most pronounced where infrastructure remained visibly incomplete. In Warite Balaka, participants stated, "*We can see the solar panels, but no water flows. People feel forgotten."* Similarly, key informants in Mubarek described water that was "*too salty to drink"*, while officials in Oromia reported boreholes that "*ran dry after only a few hours of pumping".* These cases demonstrate how incomplete systems and untreated water quality not only reduced service coverage but also undermined confidence in institutional delivery and resilience investments. Conversely, in sites where post-drilling works were later mobilized such as Gunaguna and parts of Warite Balaka, KIIs confirmed that RESET-II infrastructure continued to function as a platform for recovery and expansion. This indicates latent impact potential rather than permanent failure, suggesting that technical investments retained value where enabling conditions were subsequently addressed.

Overall, RESET-II made a credible contribution to long-term resilience and wellbeing in locations where systems were functional, safe and supported by follow-on investment. However, untreated water quality, incomplete infrastructure and weak post-construction monitoring significantly constrained the scale, equity and durability of impact. This underscores the importance of integrating water-quality assurance, secured post-construction financing and monitoring mechanisms into resilience-oriented WASH programming to avoid reversals and unintended harm.

4.6.2 Sustained Improvement in Lives

Revised EQ 19: To what extent and in what ways has the EU-RESET project contributed to sustained improvements in the lives of its intended beneficiaries, particularly men, women, girls and boys from marginalized groups, and persons with disabilities through enhanced gender equality, social inclusion, empowerment and equitable access to and decision-making over WASH services?

Finding 3: Where water systems remained functional and were inclusively managed, RESET-II contributed to sustained improvements in well-being, empowerment and social participation, particularly among women, girls and persons with disabilities.

Triangulated household survey data, FGDs, KIIs and case studies show clear differences between users and non-users of project water. Users reported higher satisfaction and fewer recent illness episodes, findings corroborated through FGDs in Oldemo and Deka Suftu, where participants linked nearby water access to improved hygiene practices and school attendance. These outcomes are consistent with the ToC assumption that reliable and proximate water access reduces health risks and frees time for productive and social activities.

Women and girls reported reduced physical fatigue and improved personal safety, enabling greater participation in education, childcare and income-generating activities. Quantitative survey data showed that women reallocated time previously spent on water collection to income generation (38 per cent), domestic care (26 per cent), children's education (15 per cent) and community participation (11 per cent). FGDs confirmed increased female engagement in WASHCOM activities and local governance, indicating strengthened agency and social capital.

BOX I1 – From Long Walks to Nearby Water for Pregnant Women: Oldemo Kebele in SNNP

Before RESET-II, a pregnant woman in Oldemo walked long distances to collect unsafe water, often relying on her children, who consequently missed school. Following installation of a nearby borehole, her journeys became shorter and safer, allowing more time for rest, childcare and household management, while her children returned to school regularly. She reported increased confidence, participation in community meetings and a stronger voice in local decision-making. A functional WASHCOM oversees routine maintenance, although fee collection weakens during drought periods. Persistent challenges remain, including lack of night-time lighting, limited livestock watering arrangements and uneven access paths, which continue to affect older people and persons with disabilities.

Quantitative survey data further showed that women reallocated time previously spent on water collection to income generation (38 per cent), domestic care (26 per cent), children's education (15 per cent) and community participation (11 per cent). FGDs in Deka Suftu confirmed greater female engagement in local governance, while WASHCOM members in Oldemo described expanding leadership roles in tariff setting and user regulation, indicating strengthened agency and social capital.

Persons with disabilities experienced positive change where inclusive design measures were applied. In Hado (Afar), ramps and modified tap heights enabled independent access, while in Somali region flexible meeting arrangements supported safer participation. These adaptations extended inclusion beyond physical access to social participation and decision-making, illustrating the broader empowerment effects of inclusive WASH infrastructure. Overall, RESET-II demonstrably improved well-being, participation and gender equity in locations where systems were reliable and inclusivity was embedded in design and governance.

Finding 4: Sustained improvements were uneven across regions, with exclusion, poor water quality and governance gaps constraining equity and empowerment outcomes.

Evidence from non-functional or partially functional sites illustrates the limits of impact where ToC assumptions did not hold. In Mubarek, saline water discouraged use, while in Kere Tule, abandoned drilling forced reliance on unsafe sources. In Warite Balaka, incomplete works left schools and

health posts without supply, preventing the expected health and education improvements (see *Sustainability, Section 7.5.2*). These cases demonstrate how service unreliability directly weakened social and empowerment outcomes, despite initial access gains.

Governance and participation gaps further constrained inclusion. FGDs in Erbore and Hado revealed that persons with disabilities were often excluded from WASH committees, while in other kebeles committees were inactive or male dominated. Persons with disabilities expressed frustration, stating, *"We are never included in the WASH committee; people think we cannot contribute."* Teachers in Oldemo confirmed that schools were not consulted during site selection and that facilities lacked disability-friendly features, echoing inclusion gaps identified under Relevance (Section 4.1.2).

Although overall user satisfaction remained higher in project areas, KIIs and survey data confirmed that waterborne illnesses persisted in several sites, underscoring that improved access alone was insufficient without systematic water-quality monitoring and treatment *(see Sustainability, Section 4.5.3)*. Women in multiple kebeles also reported long queues and safety concerns, while in areas without schools, time savings did not consistently translate into educational outcomes.

In summary, RESET-II advanced gender equality, disability inclusion and empowerment where systems were functional, safe and inclusively governed. However, these gains remained partial and spatially uneven, constrained by structural inequalities, service gaps, weak accountability mechanisms and insufficient integration of inclusion standards. The findings confirm that equity and empowerment outcomes are contingent on sustained functionality, water quality assurance and meaningful participation, rather than access alone.

4.6.3 Influence on WASH Sector

Revised EQ 20: To what extent and how has the project influenced systems, policies and institutional capacities, both intentionally and unintentionally across sectors and at local levels, to support safely managed water supply, strengthen local governance, and enhance community ownership of WASH infrastructure and services?

Methodological note: Sectoral influence was assessed through contribution analysis, drawing on KIIs with federal, regional and woreda institutions, review of planning and training documents, comparative analysis of pre- and post-project practices, and triangulation with community-level evidence on governance and service management.

Finding 5: RESET-II catalysed system shifts in planning, governance and community ownership by mainstreaming hydrogeological mapping, promoting climate-resilient technologies and formalizing WASHCOM practices that improved accountability and service reliability.

RESET-II's introduction of hydrogeological mapping and RS–GIS tools represented a significant shift towards evidence-based planning in Ethiopia's WASH sector (see Coherence, Section 4.2.2). This influence was identified through KIIs with regional and zonal water bureaus, which confirmed routine use of groundwater suitability maps to prioritize new schemes in Afar and SNNP. As one SNNP RWB engineer explained, *"Before RESET, we drilled by estimation; now we have maps that guide us. It changed how we plan."*

At the federal level, MoWE officials reported that RESET-II demonstrated the operational feasibility of integrating geophysical and hydrogeological analysis into public-sector planning, contributing to more transparent allocation of drilling investments. A senior hydrogeologist noted, *"RESET showed that groundwater mapping can work. We are now applying the same approach in other drought-prone regions."* This indicates vertical influence from project-level innovation to national planning practice, further corroborated by replication under subsequent programmes (see Scalability, Section 4.5.5).

At community level, RESET-II strengthened local governance by formalizing WASHCOM structures and clarifying operational roles. In Gunaguna, Hawanile, Deka Suftu and Mubarek, committees held regular meetings, maintained basic records and collected tariffs. FGDs and KIIs confirmed that women's participation in financial management roles improved transparency and user confidence, while clearer responsibility lines enabled faster response to minor breakdowns. These findings were triangulated across community discussions, WASHCOM records and woreda interviews.
Overall, RESET-II exerted a catalytic influence on planning norms, participatory governance and community ownership, establishing practical models for more accountable and structured WASH management.

BOX I2 – WASHCOM GOVERNANCE SHIFT STRENGTHENS LOCAL O&M – HAWANILE KEBELE (SOMALI)

In Hawanile kebele, RESET-II formalized the WASHCOM, defining roles such as chairperson, cashier, operator and spare-parts custodian. Monthly meetings and simple ledgers improved transparency, while women managing funds increased accountability. "After we started keeping records and meetings, people trust us more. They know where the money goes," remarked the WASHCOM treasurer, reflecting enhanced community confidence. These practices shortened repair turnaround times, raised tariff compliance and strengthened hygiene promotion. Before RESET-II, water management was fragmented and reactive. After the intervention, WASHCOMs became focal points for mobilization and problem-solving, illustrating how structured local governance can sustain daily operations. Continued mentoring, simple by-laws and access to spare parts remain essential to maintain these gains.

Finding 6: While RESET-II enhanced planning capacity and local governance, systemic limitations in institutional capacity, incomplete handovers and lack of groundwater safeguards constrained deeper sectoral transformation and the transition to safely managed services.

Despite observable shifts in planning culture and governance practices, RESET-II's sectoral influence remained partial and uneven. KIIs and capacity assessments revealed persistent shortages of GIS specialists, hydrogeologists and laboratory facilities in Somali and Afar, which limited consistent application of mapping tools (see Effectiveness, Section 4.4.3). Training activities were largely one-off, without structured mentoring or refresher mechanisms, constraining institutionalization of skills.
From a service standard perspective, RESET-II schemes did not consistently meet the Joint Monitoring Programme (JMP) definition of safely managed drinking water, as routine water-quality testing, treatment systems and regulated abstraction were largely absent (see Sustainability, Section 4.5.3). Households in several sites continued to travel long distances, and salinity and fluoride concerns persisted in Mubarek and Erbore due to the lack of chlorination or reverse-osmosis treatment.

At system level, MoWE officials confirmed that abstraction registers, recharge mapping and monitoring wells were not introduced under RESET-II, limiting contributions to long-term groundwater governance. Governance outcomes were also uneven. In Warite Balaka and Kere Tule, WASHCOMs were inactive, and FGDs revealed frustration with visible but non-functional infrastructure, which undermined trust in local institutions.

In summary, RESET-II influenced planning norms, technical approaches and community governance, but did not achieve full system transformation. Its principal legacy lies in establishing foundational tools, practices and governance models that now require institutionalization, regulatory follow-up and sustained investment to support safely managed water services and long-term sector resilience.

Overall Assessment: Impact

RESET-II delivered meaningful but uneven impacts, broadly consistent with the reconstructed ToC linking data-driven groundwater development, community management and institutional strengthening to improved resilience and wellbeing. Where systems remained functional and safe, the project reduced women's and girls' drudgery, improved health and hygiene outcomes and supported more regular school attendance, strengthening dignity, safety and household resilience. Persons with disabilities benefited from improved access where inclusive features were applied, while strengthened WASHCOMs enhanced accountability and local ownership. At institutional level, RESET-II exerted a catalytic influence by advancing hydrogeological mapping, solar-powered systems and participatory governance, contributing to more climate-resilient and evidence-based WASH planning. However, breaks along the ToC causal chain—notably incomplete post-drilling works, untreated water quality and weak monitoring—constrained impact at scale. As a result, the project did not reach its intended beneficiary target, and most schemes did not meet SDG 6.1 standards for safely managed drinking water. RESET-II's impact is best characterised as catalytic but partial: it validated core ToC assumptions on technical feasibility and institutional influence, while demonstrating that long-term and equitable impact depends on secured post-construction financing, water-quality safeguards, regulatory oversight and sustained government leadership.

5 CONCLUSIONS, LESSONS LEARNT, FUTURE MODEL AND RECOMMENDATIONS

This chapter consolidates the key conclusions, lessons and forward-looking recommendations from the summative evaluation of the EU-funded RESET-II Water Supply Component (2017-2023). It synthesizes evidence across all OECD-DAC and UNEG evaluation criteria, highlighting what worked well, what factors constrained effectiveness, efficiency and sustainability, and what strategic directions can strengthen future resilience-oriented WASH programming. The conclusions draw directly from the analytical findings presented in Chapter 4, the lessons distil cross-cutting insights on technology, governance, financing and inclusion for sector-wide learning, and the recommendations translate these insights into practical, time-bound actions for the Government of Ethiopia, UNICEF, the EU and sector partners. Collectively, they aim to guide the institutionalization of inclusive, accountable and climate-resilient groundwater and WASH service delivery within Ethiopia's decentralized systems and inform similar resilience initiatives in other drought-prone and fragile contexts.

5.1 Conclusions

RESET-II made a significant contribution to addressing chronic water insecurity in Ethiopia's drought-prone regions through a combination of technical innovation, institutional capacity-building and community engagement. The project demonstrated that groundwater suitability mapping, when combined with inclusive governance and renewable energy, can substantially reduce reliance on "trial-and-error" drilling and improve access to sustainable water sources. However, progress towards intended outcomes was constrained by design assumptions that proved unrealistic particularly expectations of near-universal drilling success, timely post-drilling financing and consistent contractor performance. The conclusions below are derived from evidence across all OECD-DAC criteria and are forward-looking, identifying key strengths, limitations and strategic lessons for future WASH resilience programming.

5.1.1 Relevance

RESET-II was highly relevant to Ethiopia's water-stressed context and directly targeted poor, rural and drought-affected communities. Its hydrogeological mapping and remote-sensing tools provided an innovative, science-based response to decades of failed borehole drilling. The project addressed an urgent humanitarian-development gap by improving groundwater reliability and promoting resilience. However, its responsiveness was only partial. Water quality safeguards were inconsistently applied; WASH in schools, menstrual hygiene and disability accessibility were inadequately integrated; and the focus on hardware outpaced social inclusion and behaviour change measures. Future phases should strengthen participatory planning and systematically integrate water safety, school WASH and universal design standards to ensure equity of access and use.

5.1.2 Coherence

RESET-II was strongly coherent with national priorities under the OWNP, the Climate-Resilient WASH Framework, and EU and UNICEF strategies on resilience, localization and equity. The project

successfully linked humanitarian and development approaches by operationalizing groundwater mapping and solarization in fragile regions. However, tensions arose from reliance on administrative rather than catchment-based mapping, which limited full alignment with the MoWR's IWRM approach. Limited engagement of the health sector and utilities further reduced cross-sector integration. To improve coherence, future programming should embed multi-sector coordination platforms at planning stage and align spatial mapping with IWRM units and health surveillance systems.

5.1.3 Efficiency

RESET-II applied its resources prudently, disbursing 93 per cent of its EUR 5 million budget, maintaining low unit costs and achieving efficiencies through hydrogeological mapping, which reduced failed drilling. Community contributions and local oversight enhanced value for money. However, these gains were offset by slow drilling performance, weak contractor accountability, procurement bottlenecks and untreated water quality that reduced returns on investment. Efficiency was also affected by limited absorptive capacity in the national drilling market. For future implementation, efficiency could be strengthened by introducing contractor accreditation, performance-linked contracting and multi-year procurement frameworks that reduce delays and ensure consistent technical quality.

5.1.4 Effectiveness

RESET-II achieved strong technical outputs but modest outcome-level results. It produced 39 groundwater maps, trained 92 government staff and piloted solar systems across multiple regions. However, only six water systems were fully functional at evaluation, serving approximately 31,800 users against a target of 82,000. Persistent salinity, fluoride contamination and incomplete post-drilling works hindered achievement of safe and reliable service delivery. While mapping improved drilling success rates, limited uptake into routine planning and weak post-construction financing constrained outcome sustainability. Future projects should ensure that hydro-chemical testing, post-drilling infrastructure and government budget allocations are embedded from the outset to bridge the design-implementation gap.

5.1.5 Sustainability

RESET-II introduced key elements of sustainability through solarization, tariff collection and formalization of WASHCOMs, supported by woreda and regional offices. Hydrogeological maps remain a durable institutional asset and are already being used for planning in several regions. However, sustainability remains moderately likely due to weak supply chains for spare parts, irregular technical supervision and limited financial reserves. Diesel-dependent schemes remain vulnerable to fuel price fluctuations. Routine water-quality monitoring and preventive maintenance were not institutionalized. Future phases should focus on building woreda-level maintenance units, strengthening spare-parts distribution systems and introducing digital monitoring tools for real-time functionality tracking.

5.1.6 Impact

Where systems remained functional, RESET-II contributed to visible impact like reducing women's and girls' workloads, improving hygiene, lowering waterborne disease incidence and supporting girls' school attendance. Persons with disabilities reported improved safety and independence through accessible infrastructure. However, fewer than half of intended beneficiaries were reached, and incomplete schemes eroded community trust. Despite these gaps, RESET-II demonstrated strong catalytic influence: its hydrogeological mapping methodology and data-led approach have been replicated under UNICEF's MWML initiative in Angola, Kenya and Somalia, evidencing its broader global relevance. Sustained impact will depend on consistent national adoption of these methodologies, coupled with regulatory frameworks for groundwater management.

5.1.7 Cross-cutting Issues (Inclusion, Equity and Climate Resilience)

RESET-II made progress in reducing gendered water burdens and promoting women's representation in WASHCOMs, though participation often remained symbolic. MHH and disability access were inconsistently addressed, and inclusive infrastructure depended on local initiative rather than systematic standards. Climate resilience was approached primarily through solarization and deep groundwater exploration, yet lacked integrated measures such as aquifer recharge, watershed management or abstraction control. Future interventions should adopt a holistic climate-resilient WASH framework, linking water safety, equity and environmental protection within a single operational model.

5.1.8 Theory of Change (ToC) Validation

RESET-II's reconstructed ToC was technically valid, demonstrating clear linkages between mapping, drilling success and resilience outcomes. However, critical assumptions on financing, contractor capacity, inclusion and water quality were over-optimistic. Livelihood linkages, ecosystem restoration and cross-sector outcomes were insufficiently articulated. Nonetheless, the ToC proved adaptable as a learning framework for resilience-based water programming and should be revised to incorporate financial contingency measures, water safety planning and livelihood indicators for future replication.

5.1.9 Forward-Looking Synthesis

RESET-II's overall performance demonstrates that innovation can succeed in fragile contexts when supported by institutional ownership and adaptive learning. Its catalytic effects on planning culture, local governance and gender inclusion provide a credible model for scale-up under national and regional frameworks. However, the programme's limitations—particularly water quality risks, incomplete post-drilling works and weak systemic follow-up—underline the need for more integrated, inclusive and climate-smart design in future phases. For sustained impact, subsequent programming should focus on:

- Institutionalizing groundwater mapping and solarization within the OWNP.
- Ensuring predictable financing for post-drilling works.
- Embedding inclusion and water quality monitoring in national WASH standards.
- Establishing groundwater abstraction and recharge regulations to safeguard long-term sustainability.

RESET-II thus represents a technically sound but partially realized model that laid the foundations for climate-resilient, equitable and system-strengthening WASH services in Ethiopia. Its learning should inform the design of future EU and UNICEF-supported resilience programmes in similar fragile and drought-affected contexts.

5.2 Lessons Learnt

RESET-II provided valuable lessons on how technology, partnerships and governance can be leveraged to expand climate-resilient WASH services in fragile and drought-affected settings. These lessons emerge directly from the evaluation's findings and hold wider relevance for similar resilience and groundwater programmes in Ethiopia and beyond.

1. Technological innovation enhances reliability when coupled with systematic quality assurance. The use of hydrogeological mapping and RS-GIS tools improved drilling accuracy and reduced the long-standing problem of failed boreholes, demonstrating that data-driven planning can transform groundwater development. However, high fluoride and salinity levels in several boreholes revealed that increased availability does not guarantee safe consumption. The experience illustrates that groundwater exploration must always be paired with hydro-chemical analysis and long-term water-quality monitoring to ensure reliability and health safety. This insight is transferable to any context where technological solutions risk overlooking basic water-quality safeguards.
2. Renewable energy can improve affordability and resilience but also increases extraction pressures if unregulated. Solar-powered systems made water more affordable and reliable by removing dependence on diesel, a major operational constraint in remote areas. The availability of free energy encouraged continuous pumping, placing pressure on fragile aquifers. The RESET-II experience demonstrates that renewable technologies, while economically advantageous, must be balanced by regulatory oversight, user awareness and resource monitoring to prevent unintended environmental impacts, an issue relevant to many arid regions expanding solar-based WASH services.
3. Community ownership enhances functionality, but inclusiveness determines legitimacy and durability. RESET-II showed that communities actively involved in tariff collection, record keeping and maintenance achieved greater functionality and local accountability. However, women's participation was often nominal, and persons with disabilities were rarely included. The key learning is that service ownership alone does not ensure sustainability unless supported by inclusive governance structures reflecting social diversity. This applies broadly to WASH governance reforms seeking both efficiency and equity.
4. Institutional and contractor capacity are decisive for sustaining service delivery. RESET-II's technical progress was limited by weak institutional systems, contractor underperformance and high staff turnover, leading to inefficiencies and delayed implementation. The evaluation underlines that lasting WASH results depend less on technology itself and more on the institutional ability to manage, supervise and maintain it. This lesson holds global relevance for resilience projects that depend on local market systems and public-sector capacities for execution.
5. Financial predictability and reliable data systems underpin sustained outcomes and accountability. RESET-II's dependence on delayed external financing for post-drilling works and inconsistent monitoring led to prolonged service gaps and uncertainty about results. The

experience highlights that predictable financing and accurate, transparent monitoring are mutually reinforcing foundations of sustainable service delivery. Inconsistent data systems can mask financial inefficiencies, while stable financing supports timely corrective actions. This lesson extends beyond RESET-II, reflecting a central challenge for many multi-donor WASH programmes.

Overall, RESET-II confirmed that lasting resilience in WASH depends on the integration of technology, inclusion, capacity and accountability. Technological innovations alone are insufficient without the institutional systems and social frameworks to sustain them. The programme's experience reinforces the importance of a balanced approach where technical precision, community inclusiveness and financial reliability advance together to achieve equitable, climate-resilient and sustainable water services.

5.3 Future Suggested Programme Model

Towards a Climate-Resilient and Inclusive Water Supply Model – Future Programme Model

Future programmes building on RESET should retain proven approaches such as groundwater suitability mapping, solar-powered schemes and community-based management while addressing systemic gaps in sustainability, inclusivity and institutionalization. A shift is required towards a broader, climate-smart water supply model based on five interlinked pillars:

Diversified and climate-resilient water resources: RESET must move beyond a groundwater-only model. Future interventions should pilot surface water treatment, rainwater harvesting and recharge systems to reduce pressure on aquifers. Integration into catchment-based planning frameworks would ensure resilience and sustainability at scale.

Safe and potable water through integrated quality assurance: Hydrogeological mapping should be systematically combined with hydro-chemical analysis and treatment solutions, including reverse osmosis, chlorination and water safety planning. This would guarantee that water is not only available but also consistently safe and fit for human consumption.

Strengthened drilling capacity and contractor accountability: The UNICEF drilling landscape analysis should inform prequalification, ensuring engagement only with firms demonstrating proven capacity and reliability. Accreditation systems, mentoring partnerships and structured training through EWTI and universities should be established. Procurement processes must enforce contractor accountability, reduce delays and improve quality.

Inclusive and accountable community governance: Community ownership must go beyond symbolic participation. All future infrastructure should comply with universal design standards, ensuring accessibility for persons with disabilities. Representation of women and adolescent girls in WASH committees should be mandatory, and girl-friendly facilities in schools institutionalized. Governance structures must be better linked to woreda and regional systems to strengthen accountability and ensure sustainability.

Sustainable financing, regulation and monitoring: Dedicated contingency financing should be embedded in project design to prevent reliance on ad hoc donor mobilization. Groundwater abstraction must be regulated and monitored through enforceable legislation aligned with the Government of Ethiopia's emerging water policy. Digital dashboards should be institutionalized to provide real-time monitoring of drilling progress, functionality, and gender- and disability-disaggregated data. These measures will improve transparency, strengthen regulatory oversight and maximize sustainability.

In summary, a future phase of RESET should maintain proven technical and community-based foundations but evolve into a climate-resilient, inclusive and institutionally embedded model. By diversifying resources, assuring quality, strengthening contractor capacity, embedding inclusivity, and reinforcing financing and regulatory frameworks, RESET can deliver durable, equitable and scalable contributions to the Government of Ethiopia's OWNP and national climate resilience strategies.

5.4 Recommendations

The recommendations presented in this summative evaluation are directly grounded in triangulated evidence from the evaluation findings, conclusions and validated lessons, and are aligned with the evaluation purpose of strengthening accountability, learning and future programming. They distinguish between minimum, non-negotiable actions required to secure functionality and safety in the short term, and medium-term system reforms necessary to consolidate institutional capacity, resilience and sustainability. The recommendations are informed by a systematic review of programme documentation, primary data collection, and structured consultations with UNICEF programme teams, government duty-bearers at federal and regional levels, implementing partners and rights-holders, including women and persons with disabilities.

Each recommendation specifies priority level, responsible duty-bearers, indicative timeframes and links to evaluation questions, enabling clear accountability and monitoring of uptake. The findings and recommendations were formally validated with the Evaluation Reference Group in October 2025, during an online validation meeting. These Recommendations (1–8) operationalize the Future Programme Model proposed in this report, translating evaluation evidence into sequenced and feasible actions for a climate-resilient, inclusive and system-embedded WASH approach aligned with national priorities and OWNP frameworks.

#	Recommendation	Priority	Responsible & Timeframe	Linked Findings
High-priority recommendations (1–4) represent minimum conditions for functionality, water safety and value for money (“no-regret actions”) that should be applied in all future groundwater investments, including fragile and conflict-affected contexts.				
1	Strengthen contractor accreditation, procurement and accountability systems to address persistent drilling underperformance and protect value for money by: (i) Establishing a national drilling contractor accreditation and performance grading framework led by MoWE that includes technical competence, compliance with labour standards and adherence to gender-sensitive, PSEA and disability-inclusive site practices. (ii) Conducting drilling market and capacity assessments at programme inception to identify gaps in technical skills, geographic coverage, and ability to operate in fragile and conflict-affected contexts (iii) Enforcing performance-based payments linked to independently verified drilling depth, yield, water quality	High	UNICEF, MoWE, RWBs, EU Time Frame: 2025-2027	Relevance EQ1: Protracted drilling market and contractor capacity constraints reduced responsiveness in fragile contexts. Efficiency EQ6–EQ8: Low drilling productivity, weak contract enforcement and cost inefficiencies linked to contractor underperformance. Effectiveness EQ9: Delays and incomplete outputs directly attributable to procurement bottlenecks and weak accountability mechanisms.

	compliance, and timely completion of post-drilling works (iv) Introducing procurement risk buffers, including spare-parts availability, foreign-exchange contingencies, and penalties for non-performance, to protect service delivery in high-risk environments.			
2	Integrate water quality safeguards across all stages of design and implementation by: (i) Mandating hydro-chemical analysis during groundwater mapping, drilling, and commissioning with explicit linkage to national drinking-water standards and child health risk thresholds (ii) Operationalising Water Safety Plans with standard protocols for fluoride, salinity, and bacteriological risks, including clear roles for health, water, and community actors. (iii) Deploying appropriate treatment technologies proportionate to identified risks, with community awareness on safe water use. (iv) Linking regional water-quality laboratories to routine reporting and decision-making systems to ensure timely corrective action.	High	UNICEF, MoWE, Regional & Zonal Bureaus, EWTI Time Frame: 2025-2028	Relevance EQ1: Hydro-chemical risks insufficiently addressed at design stage. Effectiveness EQ10: Unsafe water reduced usability despite drilling success. Efficiency EQ12: Advanced exploration technologies not matched with treatment systems. Impact EQ18: Water-quality failures reversed health and trust gains in several communities.
3	Guarantee scheme functionality through secured post-drilling financing (“no drill and leave” principle) as a binding design requirement rather than a post-hoc corrective measure by: (i) Requiring confirmed financial closure for storage, distribution, and energisation before drilling contracts are finalised. (ii) Establishing joint UNICEF–MoWE contingency financing mechanisms for partially completed schemes serving high-vulnerability communities. (iii) Integrating post-drilling budgets and completion milestones into OWNP III planning, tracking, and	High	UNICEF, EU, Regional Governments Time Frame: 2025-2027	Coherence EQ3: Reliance on uncommitted external financing weakened alignment between design and delivery. Sustainability EQ14: Incomplete post-drilling works interrupted service continuity. Impact EQ18: Over-optimistic ToC assumptions on financing constrained scale and long-term outcomes.

	accountability systems to ensure continuity of services.			
4	Deepen inclusion, equity and cross-sector integration by: (i) Enforcing universal design standards and ensuring meaningful participation of women and persons with disabilities in WASHCOM decision-making, including leadership roles. (ii) Embedding gender, disability, and LNOB indicators within OWNP monitoring frameworks. (iii) Integrating schools and health facilities into water safety planning to protect children and frontline service users. (iv) Linking WASH outcomes with education, livelihoods, and time-use indicators to better capture differential impacts across population groups. (v) Requiring documentation and verification of inclusive design and participation standards as a condition for scheme commissioning and handover.	High	UNICEF, MoWE, MoE, MoH, Regional Bureaus Time Frame: 2025-2028	Relevance EQ2: Gender, disability and adolescent needs insufficiently embedded beyond access. Effectiveness EQ10: Weak cross-sector integration limited outcome depth. Impact EQ19: Exclusion from governance constrained empowerment and equitable benefits.
Medium-priority recommendations (5–8) support longer-term system strengthening, resilience and scalability and may be phased based on institutional readiness and security conditions.				
5	Institutionalize digital monitoring, verification and grievance systems by: (i) Developing an interoperable national dashboard capturing drilling progress, functionality, and water quality, with data disaggregated by sex, age, disability, and location with clear data-ownership arrangements and protocols for government use and maintenance beyond project life (ii) Introducing third-party verification and geo-tagging of infrastructure to strengthen transparency. (iii) Strengthening woreda-level reporting and grievance-handling mechanisms that are accessible, confidential, and responsive to	Medium	UNICEF, MoWE, Regional Bureaus, EWTI Time Frame: 2025-2028	Sustainability EQ15: Paper-based monitoring and weak feedback loops limited adaptive learning. Impact EQ20: Absence of real-time data weakened accountability and system oversight.

	women, adolescents, and persons with disabilities.			
6	Consolidate institutional and human resource capacity within national systems by: (i) Embedding groundwater mapping and climate-resilient WASH modules, including HRBA, GEEW, and disability inclusion, into EWTI and university curricula. (ii) Establishing national mentoring and refresher programmes with incentives for staff retention in hardship and remote postings to reduce the effects of staff turnover. (iii) Harmonising project-based mapping tools with MoWE's catchment-based IWRM framework to strengthen institutional ownership and coherence.	Medium	MoWE, EWTI, Regional Bureaus, Universities Time Frame: 2025-2028	Effectiveness EQ10: Uneven training coverage and high staff turnover reduced applied capacity. Coherence EQ5: Fragmented integration of mapping tools with national systems. Sustainability EQ16: Institutional and technical readiness varied across regions.
7	Secure sustainable financing and reliable spare-parts supply chains by: (i) Formalising WASHCOM repair funds and financial management arrangements with with clear affordability safeguards for female-headed households and households with persons with disabilities (ii) Piloting pro-poor tariffs and targeted subsidies to protect vulnerable households. (iii) Developing public–private partnerships for spare-parts supply (iv) Establishing regional maintenance hubs to reduce downtime and reliance on emergency repairs	Medium	Regional Governments, Local Private Sector Time Frame: 2025-2029	Sustainability EQ13: Service interruptions linked to spare-parts gaps and weak reserves. Effectiveness EQ10: High user costs and transport dependence reduced affordability. Impact EQ18: Financial fragility contributed to reversion to unsafe sources.
8	Enhance climate and conflict resilience through diversified water resources and groundwater governance by: (i) Integrating rainwater harvesting, surface water treatment, and managed aquifer recharge to reduce pressure on groundwater.	Medium	MoWE, Regional Governments, UNICEF, EU Time Frame: 2025-2029	Relevance EQ1: Limited ecosystem /diversification measures increased climate vulnerability. Sustainability EQ17: Heavy reliance on groundwater without abstraction safeguards risks depletion.

	(ii) (iii) (iv)	Embedding watershed protection and abstraction controls within planning processes Introducing groundwater abstraction registers and monitoring well. Developing security contingency measures for fragile and conflict-affected areas through participatory risk screening, local conflict analysis and community-validated mitigation plans.			Effectiveness EQ11: Conflict and logistical shocks disrupted service continuity. Impact EQ20: Absence of groundwater governance constrained systemic resilience.

Uptake of these recommendations can be monitored through indicators such as: (i) proportion of boreholes commissioned with verified water-quality testing; (ii) percentage of drilling contracts using performance-based payments; (iii) functionality rates reported through national dashboards; and (iv) proportion of WASHCOMs meeting gender and disability representation standards.

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7 Annexures

The following annexes are included in Volume 2: Annexes of the Summative Evaluation of Improving Access to Safely Managed Water Supply in the Resilience Building Programme for Ethiopia-II Woredas (December 2017- December 2023) for clarity and ease of reference

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