Netherlands Enterprise Agency

THE SCALE PROJECT RWANDA / CASE STUDY 2019–2025

Scaling Universal Access to Safe and Climate-Resilient Water Services

VEI
Dutch Water Operators

CONTENT

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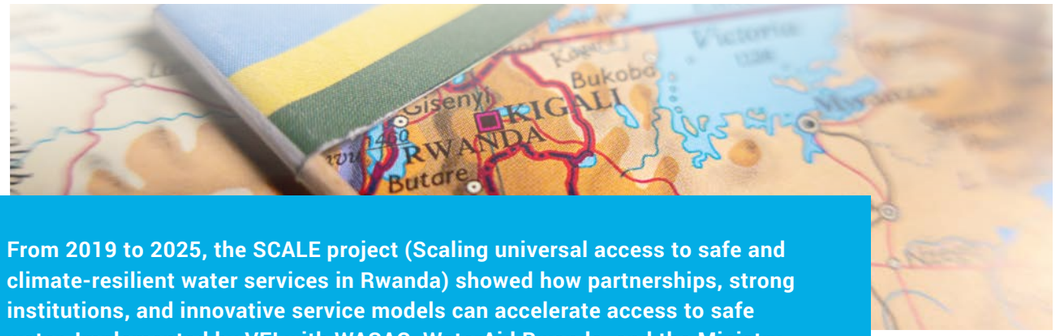
BACKGROUND



From 2019 to 2025, the SCALE project (Scaling universal access to safe and climate-resilient water services in Rwanda) showed how partnerships, strong institutions, and innovative service models can accelerate access to safe water. Implemented by VEI with WASAC, WaterAid Rwanda, and the Ministry of Infrastructure of Rwanda (MININFRA), SCALE combined infrastructure, operational improvements, and climate-resilient planning. The project was financed by the Government of the Netherlands through the Netherlands Enterprise Agency (RVO).

The project reached over 160,000 people. Twelve schools gained rainwater harvesting systems (1,080 m³ storage), benefiting nearly 20,000 students and supporting hygiene and feeding programs. At the utility level, SCALE introduced prepaid public water dispensers, strengthened non-revenue water management, improved billing, and supported WASAC in developing climate risk–based planning.

SCALE proves that lasting progress requires more than infrastructure—it depends on resilient institutions, aligned incentives, and inclusive operations. Its approaches offer practical, replicable models for Rwanda and beyond.

This case study tells the story of how a long-term partnership between a national water utility, international and local organizations, and public institutions helped transform water service delivery in some of Rwanda's most underserved areas. It highlights how practical solutions, institutional strengthening, and climate-resilient planning were combined to expand access to safe water, improve utility performance, and build foundations for sustainable and inclusive growth.

RWANDA'S WATER CHALLENGE
AND NATIONAL CONTEXT

Rwanda has made impressive strides in expanding access to water and sanitation over the past two decades. Yet rapid population growth, urbanization, climate variability, and aging infrastructure continue to place pressure on water services—particularly in rural and peri-urban areas.

The Government of Rwanda has committed to achieving Sustainable Development Goal 6: universal and equitable access to safe and affordable drinking water for all. This ambition is embedded in national frameworks such as Vision 2050 and the National Strategy for Transformation (NST2). WASAC, as the national water utility, plays a central role in translating these policy commitments into service delivery on the ground.

However, WASAC faces multiple challenges: High levels of non-revenue water in many systems, limited financial resources for network rehabilitation, increasing climate risks (including droughts and floods), and the need to professionalize utility operations and modernize systems. The SCALE project was designed as a response to these challenges, focusing on both access and performance.

Furthermore, it is important to note that during the implementation period, WASAC underwent a major restructuring process, which had a significant impact on both the organization and the project. Despite these challenges, the partnership continued to perform strongly and achieved visible, tangible results.

THE SCALE PARTNERSHIP

The SCALE project, financed by the Government of the Netherlands through the Netherlands Enterprise Agency (RVO), was implemented through a strong multi-actor partnership:

- **VEI (Netherlands)**
  — Project lead and technical partner, providing peer-to-peer utility support, Short Term Experts and overall coordination.
- **WASAC Utility Ltd (Rwanda)**
  — Implementing partner and owner of infrastructure and operational improvements.
- **WaterAid Rwanda**
  — Lead for school-based rainwater harvesting and hygiene promotion.
- **Ministry of Infrastructure of Rwanda (MININFRA)**
  — Policy alignment and strategic oversight.
- **Water for Life Foundation (WfL)**
  — Financing pro-poor connections and rural network extensions.

The partnership operated as a Water Operators' Partnership (WOP), emphasizing knowledge exchange rather than consultancy. VEI staff and Short-Term Experts worked alongside WASAC colleagues, supporting practical problem-solving, coaching, and institutional learning.

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WASAC Water & Sanitation Corporation

WaterAid

Water for life®

PROJECT AREAS
IN RWANDA

The SCALE project was implemented primarily in Rwanda's Eastern Province, focusing on the districts of Rwamagana, Kayonza, Nyagatare, and Gatsibo. These areas are characterized by dispersed rural settlements, emerging peri-urban centers, and relatively high poverty levels, making the extension and maintenance of piped water networks both technically complex and financially challenging.

In addition, suburban areas of Kigali City were included in the project scope, where demand for safe water is high and the potential for sustainable financial returns is stronger.

Together, these project areas represent a diverse range of contexts—rural, peri-urban, and suburban—enabling SCALE to test and demonstrate solutions applicable across different service environments in Rwanda.

THE PROJECT GOALS
AND RESULTS

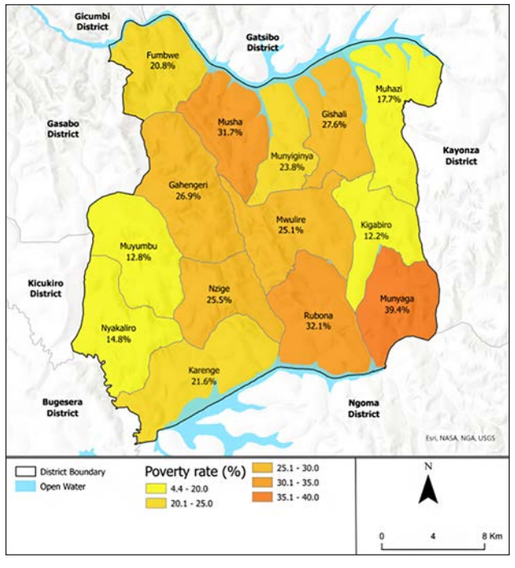
The SCALE project was built around three mutually reinforcing goals:

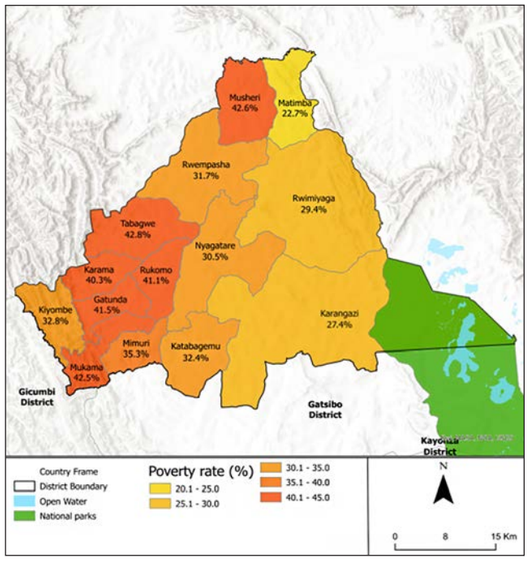
1. Expanding equitable access to safe and affordable water services.
2. Strengthening the operational and financial performance of the national water utility.
3. Embedding climate resilience and social inclusiveness into sector planning and investment.

1 **To achieve the first goal**, SCALE supported large-scale network expansion, rehabilitation of existing infrastructure, and targeted pro-poor connections in rural, peri-urban, and suburban areas. As a result, more than 160,000 people gained access to improved water services—far exceeding the original target—including over 75,000 people through new or improved household connections and approximately 84,000 people through public standpipes. In parallel, twelve schools without access to piped water were equipped with rainwater harvesting systems, benefiting nearly 20,000 students and improving hygiene conditions, school feeding programs, and overall learning environments. These achievements translated into reduced time spent collecting water, lower household expenditure on water, and improved health and wellbeing for thousands of families.

2 **A second core goal** of SCALE was to enhance WASAC's operational efficiency and financial sustainability so that service improvements could be maintained and scaled. The project introduced prepaid water dispensers at public taps, eliminating arrears, guaranteeing upfront payment, and enabling 24/7 access while integrating seamlessly with mobile money platforms. At the same time, targeted support on non-revenue water management, asset management, billing systems, and customer management helped modernize utility operations. These efforts resulted in measurable reductions in non-revenue water—up to nine percentage points in Rwamagana and four percentage points in Nyagatare—and significant improvements in operating ratios in both service areas. Collectively, these gains strengthened WASAC's revenue base, improved cash flow, and increased the utility's capacity to reinvest in network maintenance and expansion.

3 **The third goal** focused on ensuring that Rwanda's water services are resilient to climate change and inclusive of vulnerable groups. SCALE supported WASAC in developing a climate risk and impact–based planning framework, GIS-linked risk mapping, and the utility's first Climate Resilient Strategy and Action Plan. Staff across multiple departments were trained on climate resilience and social inclusiveness, enabling them to integrate these considerations into everyday decision-making. As a result, future investments can now be prioritized based on vulnerability to droughts, floods, and other climate hazards, helping to safeguard infrastructure and ensure continuity of services. Together, the achievements across these three goals demonstrate how SCALE translated strategic ambitions into concrete, measurable, and lasting results.





RESULTS
IN A NUTSHELL

1. 160,230 people gained access to **improved water services**:
   - 75,730 people gained access through household connections
   - 84,500 people gained access through public standpipes.
2. Nearly 20,000 students benefited from **rainwater harvesting systems** in twelve schools.
3. 200 **prepaid water dispensers** were installed, achieving 100% collection efficiency at equipped kiosks.
4. **Non-revenue water was reduced**, and operating ratios improved significantly in targeted WASAC service areas.
5. WASAC developed and began implementing its first **Climate Resilient Strategy** and Action Plan.

1. IMPROVED WATER SERVICES

a) WASAC-Led Network Expansion

WASAC constructed and rehabilitated extensive infrastructure: over 131 km of pipelines, nine new reservoirs (2,400 m³ capacity), rehabilitation of existing reservoirs (2,114 m³) and rehabilitation of ten water springs. These investments enabled thousands of new household connections and communal taps.

b) Water for Life Foundation Support

Through grants from the Water for Life Foundation, managed by VEI, additional rural communities were connected in Rwamagana and Nyagatare. Nearly 25,000 pro-poor people gained access through extensions of distribution networks, household connections, and communal taps. Several schools and a health post were connected for the first time. For many families, this meant the end of long walks to distant water points and reduced dependence on expensive water vendors.

REACHING THE MOST VULNERABLE

Before the project, many households in the project area relied on unprotected springs or purchased water at high prices. Women and children often spent hours each day fetching water. With the new connections in place, households gained reliable access to water close to their homes, reducing their dependence on distant or unsafe sources. Water expenditure decreased as families no longer needed to purchase water from private vendors, while the time saved from daily water collection enabled children to attend school more regularly and allowed adults to devote more time to income-generating activities and household livelihoods. Community engagement and hygiene promotion sessions led by WaterAid Rwanda reinforced safe water handling and hygiene practices.

2. SCHOOLS AND RAINWATER HARVESTING

Twelve schools without piped water were equipped with rainwater harvesting (RWH) systems, providing a total of 1,080 m³ storage capacity (990 m³ functional due to one damaged tank).

Results

- Nearly **20,000 students** benefit from improved water availability
- Improved hygiene in toilets and handwashing stations
- Support to school feeding programs
- Reduced school expenditure on purchased water

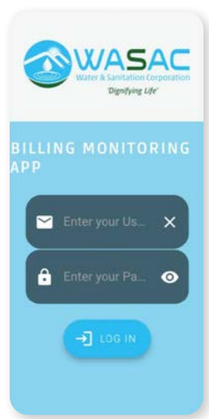
Sustainability Measures

- 15-year operation and maintenance plans developed
- 54 people trained on management and maintenance
- Standard RWH construction and O&M guidelines developed

Lessons

The experience showed that RWH is a viable solution, but sustainability requires: – **Clear maintenance responsibilities** – **Dedicated budgets** – **Regular refresher training**.

These lessons informed a national policy brief and contributed to Rwanda's updated Water and Sanitation Policy.



3. INNOVATION: PREPAID WATER DISPENSERS

SCALE introduced 200 prepaid water dispensers at public taps to modernize service delivery and strengthen financial sustainability. The prepaid model eliminates arrears by ensuring that water is paid for before it is consumed, guarantees upfront payment to the utility, and enables customers to access water 24 hours a day whenever it is available in the system. In addition, the dispensers are integrated with mobile money platforms, making payments simple, transparent, and accessible for users.

Results

- 100% collection efficiency at equipped kiosks
- Collection ratio increased by:
  - 37% in Nyagatare
  - 54% in Rwamagana
  - 18% in Kigali
- High user satisfaction (98%)

Prepaid meters emerged as one of SCALE's most successful innovations.

4. STRENGTHENING UTILITY PERFORMANCE

Strengthening utility performance was a central pillar of the SCALE project. Significant reductions in non-revenue water were achieved, with losses decreasing by nine percentage points in Rwamagana and four percentage points in Nyagatare. At the same time, billing and customer management systems were modernized through the introduction of improved billing applications, targeted training of meter readers, and the sealing of meters to reduce tampering and illegal connections.

These operational improvements translated into substantial gains in financial performance: the operating ratio improved by 65 percent in Nyagatare and by 79 percent in Rwamagana. Together, these results have strengthened WASAC's financial sustainability and enhanced its ability to reinvest in service improvements.

5. CLIMATE RESILIENCE AND INCLUSIVE PLANNING

SCALE supported WASAC to develop:

- A climate risk and impact-based planning framework
- GIS-linked risk mapping
- WASAC's first Climate Resilient Strategy and Action Plan

Staff were trained on Climate Resilience and Social Inclusiveness (CRSI) concepts. The framework helps prioritize investments based on risk, ensuring that future infrastructure is better prepared for droughts, floods, and other climate impacts.

The SCALE project ensured sustainability by embedding capacity development within WASAC's existing structures and workforce. Rather than creating parallel implementation mechanisms, the project strengthened the competencies of WASAC staff who are responsible for long-term service delivery. This approach institutionalized knowledge, enhanced local ownership, and created a foundation for continued implementation and scaling of project innovations after external project support ends.

VEI'S ROLE
IN THE PARTNERSHIP

VEI acted as facilitator, technical partner, and long-term coach throughout the SCALE project. Its key contributions included embedding short-term experts within WASAC, providing peer-to-peer support on non-revenue water management, asset management, climate resilience, and billing, coordinating partnerships and funding streams, managing Water for Life Foundation grants, and supporting documentation, learning, and knowledge sharing. VEI's approach consistently emphasized strengthening WASAC's internal capacity rather than delivering parallel systems, ensuring that improvements were owned and sustained by the utility itself.

KEY LESSONS LEARNED

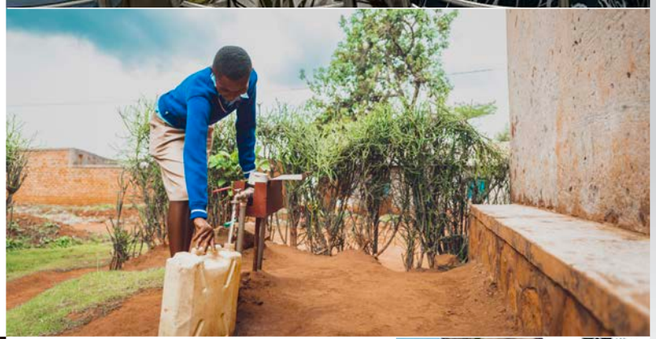
The SCALE project demonstrated that infrastructure investments alone are not sufficient to achieve sustainable water services. Physical assets such as pipes, reservoirs, and water points deliver lasting impact only when they are supported by strong institutions, skilled staff, and effective management systems. By combining construction with capacity building, operational reform, and organizational strengthening, SCALE ensured that improvements could be maintained and expanded over time.

Prepaid water metering emerged as a powerful tool for transforming revenue collection and accountability. By eliminating arrears and guaranteeing upfront payment, prepaid systems directly address one of the most persistent challenges faced by utilities. Beyond financial benefits, prepaid meters also improve transparency, reduce disputes, and increase customer confidence in the service, creating a positive cycle between users and the utility.

Experience with rainwater harvesting in schools showed that decentralized systems can provide reliable water access, but only when long-term operation and maintenance are properly financed and managed. Clear responsibilities, realistic budgets, and regular training are essential to prevent systems from falling into disrepair. Sustainability must therefore be designed into school water systems from the start.

The project further highlighted the importance of **embedding climate resilience** from the earliest stages of planning and investment. Climate risks such as droughts, floods, and extreme rainfall already affect water availability and infrastructure integrity. Integrating risk-based planning, asset management, and climate-resilient design helps utilities anticipate these challenges rather than react to them, protecting both infrastructure and service continuity.

Finally, SCALE confirmed that long-term partnerships consistently outperform short, fragmented projects. **Trust-based collaboration** sustained technical support, and shared learning over multiple years to allow partners to address complex institutional and systemic challenges. Such partnerships create the conditions for meaningful, lasting change rather than isolated, short-term results.



CONCLUSION

The SCALE project demonstrates that universal access to safe and climate-resilient water services is achievable when infrastructure investments are combined with strong institutions, innovation, and partnership. By strengthening WASAC's operational performance and expanding services to the most vulnerable, SCALE has contributed meaningfully to Rwanda's journey toward SDG 6.

The models developed under SCALE provide a strong foundation for scaling up across Rwanda and offer valuable lessons for other countries facing similar challenges.

This is a publication of VEI B.V.. Look for more information at www.vei.nl.

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