

# Improving Access to Water Services

by Code for Sierra Leone and The Engine Room



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ENGINE  
ROOM



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# Introduction and Context

## I. INTRODUCTION

In 2017, The Engine Room partnered with Code for Sierra Leone to improve access to and use of information about potable waterpoints in Sierra Leone, with a focus on using information and communication technologies (ICTs). The goals of this research included: facilitating *access* to accurate and reliable waterpoint information, increasing *analysis* of this waterpoint information, and using this information to drive *engagement* among stakeholders.

This report is a summary of our research. It is primarily intended for the WASH community in Sierra Leone and for individuals and organisations working in similar contexts. In the sections that follow, we highlight the project context, methodology, research findings, and three opportunities for improving access to and use of information about waterpoints.

## II. CONTEXT

### A. OVERVIEW

Sierra Leone is situated on basement rock (which should facilitate access to groundwater), has nine large rivers, and sees high rainfall levels each year. Combined, these factors would be expected to serve as a sufficient year-round natural water supply for the country's population of seven million, but that is not the case.

Existing investments in water services infrastructure, which were intended to improve access to potable water, are outdated and dysfunctional. Most are concentrated in Freetown, the nation's capital and major urban center of two million residents. These

investments in water service infrastructure are typically discussed alongside sanitation, hygiene and health under the term WASH (for Water, Sanitation and Hygiene).

### B. PROFILE

WASH-related problems in Sierra Leone are complex. Diverse stakeholders work on different parts of the problem, aiming to create sustainable and responsive solutions but often working in a disjointed manner. Currently, the government has major institutional and policy reform projects underway. Private sector actors, including international and local implementers, typically focus on targeted spot-fixes and for-profit provision of services. Funders and civil society organisations (CSOs) also have their own areas of interest, sometimes working with the government and local communities.

The history of Sierra Leone adds another layer of complexity to the situation. Since 2002, when the country emerged from the civil war that destroyed systems and infrastructure, there have been many distinct waves of WASH investments into Sierra Leone. The UK's Department for International Development (DFID) invested £4 million between 2010-2013, the Freetown WASH Consortium led by Oxfam is investing £25.48 million from 2010-2019 and the Millennium Challenge Corporation (MCC) signed off a \$44.4 million investment into Energy and Water Resources (\$16 million of which is dedicated to the water sector and \$2.6 million of which has been expended to date). Other investments include: the African Development Bank, the Arab Bank for Economic Development in Africa (US\$4m), DFID (£35m), the EU (€7m), the Islamic Development Bank, the Japan International Cooperation Agency, UNICEF (US\$2.9m) and the World Bank (US\$52m).

The degree of coordination among these disparate actors is unclear.

## C. CURRENT CONDITIONS

During the development of the Millennium Development Goals, the United Nations Development Program estimated that halving the population of Sierra Leoneans without access to improved water sources would require an investment of approximately US\$200 million between 2006 and 2015. The in-country investments since 2006 are significant, but it has been difficult to determine their effect on access to improved water sources.

Historically, aid investments have focused on: i) rehabilitating physical water infrastructure and ii) building the government's capacity to own and drive activity in the sector. Unfortunately, the latter focus, on government capacity, is subject to waves of attention and inattention driven by Sierra Leone's five-year election cycle. The last and first year of election cycles typically see government actors focused solely on campaigns and cabinet-formation, respectively. Additionally, although the civil war is long past, it is important to recall that political tensions were a key causal factor. These political tensions continue to shape reality and determine what kind of progress is possible, including for the WASH sector.

## D. INFORMATION AND COMMUNICATION TECHNOLOGIES

Compared to Sierra Leone, other parts of Sub-Saharan Africa are more developed but have had mixed results in using ICTs to tackle water service delivery challenges. An [IDS bulletin](#) highlighted some examples in Uganda, Tanzania, Kenya. The original research was funded by [Making All Voices Count](#), who [noted](#) three criteria to evaluate the success of ICTs aimed at improving water service delivery: i) creation of effective reporting mechanisms, ii) successful processing of reports by the government or service providers and iii) improved water services. Popular solutions identified in Sierra Leone were web portals tracking [waterpoints](#), [learning](#) and [WASH indicators](#).

# Findings

## III. FINDINGS

The following are findings from our contextual inquiry.

### A. WATER ASSETS ARE DIVERSE, MIXED AND DIFFICULT TO COORDINATE



Credits: Parliament by [Vadim Miskyj](#) and Users by [Lliso](#)

Addressing water access challenges in Sierra Leone is a collective and difficult to coordinate effort. It involves Ministry of Water resources, private sector funds, community managers and citizens all chiming in at different points. This complexity often results in instances where efforts counteract one another. For example, it is common for citizens to organise and repair public water infrastructure out of pocket in their immediate community. This can encourage continued disregard for responsible government agencies, who have a history of institutional negligence.

### B. WATER SERVICE DELIVERY INCLUDES DECENTRALISED INFORMAL SOLUTIONS

Spurred to improvise by the absence of public services, citizens often alternate between damaging



Credits: Water Bottle by [Makarenko Andrey](#), Carrying Water Container by [Gan Khoon Lay](#), Carrying Water by [Luis Prado](#), PIPE Extension by [Ben Davis](#), Watertap by [Abdulkarim](#), Water bottle by [Simon Farkas](#)

public infrastructure – e.g. cutting into pipes, if that is something that will enable them to access water – and paying for other repairs themselves. It is common to find intentionally severed pipes gushing water in street gutters on one corner, and severed pipes getting mended by the community on another.

The average citizen relies on a mix of waterpoints at different times, including:

- i) piped connections** (managed by government authorities such as ministry of water, Guma Valley, etc)
- ii) street taps** (installed and managed by individuals, communities and politicians; it's important to note that their water is sourced from piped connections)
- iii) fetchers** (micro businesses of one to three persons who source water from street taps, haul them by cars, motorbikes, carts or hand and sell to households)
- iv) packed water** (small to medium business who sell water in sachet or bottles with a promise of

increased attention to hygiene)

### **C. INFORMAL SOLUTIONS ARE CRITICAL IN FREETOWN'S WATER STRATEGY**

The governance of water service delivery is a work in progress. It is limited in part by the lack of understanding and harnessing informal solutions, which could be seen as complementary strategies that add value. Instead, international aid and local government actors are concentrated on piped connections, the formal waterpoint of the four primary waterpoints. Citizens, however, demonstrate reliance upon and trust in the other three, depending on them for a significant part of their water transactions (measured by volume of water, amount of money exchanged and level of human interaction). Harnessing these informal waterpoints will be important for future water provision strategies.

### **D. WATER HYGIENE IS IMPORTANT BUT TYPICALLY FOLLOWS BASIC WATER NEEDS**

Water, sanitation and hygiene challenges are intertwined, as are the strategies used by international development and government actors to tackle them. However, citizens typically experience these challenges in a disaggregated manner, assigning differing levels of priority to each. In uncontrolled conditions, people think about sanitation and hygiene only after they have satisfied access to potable water. Frontline WASH actors should acknowledge this prioritisation by disaggregating their approaches to water, sanitation and hygiene challenges.

# Opportunities

## IV. OPPORTUNITIES

Water in Sierra Leone is a complicated issue. Availability is high. The country has access to a significant water mass, has high rainfall and boasts some strong infrastructure, including dams. However, access is low. In the capital city of Freetown, water is a scarce commodity, and the situation is worse in rural areas. While there are innovative approaches to close the gap between availability and limited access, some opportunities may have been missed.

As previously outlined, there are four major water providers in Sierra Leone's water service delivery ecosystem: i) piped connections from the public water company ii) street taps installed by donors, politicians or local CSOs iii) fetchers, economic intermediaries hurling kegs for a fee, and iv) packed water companies, providing more expensive, and potentially safer, drinking water.

Solutions that acknowledge and coordinate all four providers, with a nuanced understanding, are uncommon. Instead, solutions are excessively focused on piped connections. By ignoring the reality of the other three "unofficial" providers, international development investments create a blindspot in their approach. These three providers offer solutions to clients, and are arguably more tailored to citizen (the user in this case) needs and experiences.

To improve water services, all providers need to be strategically brought into focus and coordination. Unofficial providers can serve as an interface to citizens, reducing the number of citizens that authorities need to coordinate with. As such, a good starting point should be to enumerate, map, support, formalise, track and manage providers in order to better serve citizens.

The unofficial providers are generally profit-seeking entities, and relevant support should be designed with that in mind. If properly leveraged, these providers can spark sustainable and year-round forms of water supply. This potential should be taken into consideration before pursuing projects to improve water service delivery in Sierra Leone.

A downside of overemphasis on 'official' piped connections is that government actors are often slowed by limited resources, bureaucratic processes and an ever-changing political-economy. The argument to focus on these official providers stems in part from the idea that every home should get water running from in-house taps. This approach is proving to be a poor fit for meeting current daily needs, and is too disruptive to the ecosystem balance that currently delivers potable water services.

Each provider contributes uniquely to the ecosystem of water provision. The best strategies for improving access focus on each actor's unique capabilities, and collaborate with and evolve all of them into the future.

The overarching opportunity at hand is to integrate unofficial providers into Sierra Leone's water governance and management strategy. ICTs can help. Specific opportunities could include improving stakeholders business processes and client engagement practices, creating hubs of accurate and real-time data, or empowering journalist and CSO activities in citizen engagement.

# Ideas

## V. IDEAS

The following ICT-based solutions came out of a process of research, synthesis and ideation. They reinforce one another and can also be implemented as standalone initiatives.

### A. “FREETOWN WATER PROVIDERS SUPPORT”

**What is the idea?** A support programme<sup>1</sup> for providers, comprised of a catalogue<sup>2</sup> of unofficial providers, a communication channel<sup>3</sup> for them to use and a process for prioritising<sup>4</sup> support.

**Where in design research is it based?** Freetown residents rely on unofficial providers for potable water, and we found no policy or strategy targeting or supporting them.

**How does it work?** Catalogued<sup>5</sup> providers are able to interact<sup>6</sup> with the support programme through a dedicated communication channel. Communications are logged and prioritised to decide where resources should be dedicated per unit of time.

**What does it accomplish?** It's a first step towards integrating unofficial providers in Freetown's strategy for potable water, as it will help inform decision-making and assessments.

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1 Can be initiated by a donor but is ultimately owned and coordinated by the Ministry of Water resources.

2 A database of unofficial providers with basic information, like business address and contact details.

3 A touchpoint between the programme managers and providers, where they can lodge complaints and get support.

4 Requests for support might require categorisation to address important and urgent issues as they arise.

5 Can be conducted by local and international WASH NGOs to increase independence in the process.

6 Appropriateness of channels was not explored. We recommend a mix of channels including lo-fi options.

**What assumptions are made?** That the Ministry buys into the strategic value of unofficial providers and does not consider them competition or incompetent. For example, the Ministry now sees how providers could improve coverage or contribute tax revenue in the future.

**What else needs to be done?** Identify and convince local and international NGOs to engage with the Ministry of Water resources and support the cataloguing exercise.<sup>7</sup>

### B. “WATAMITA”

**What is the idea?** A platform that enables communities (both households and providers) to periodically score<sup>8</sup> their representatives' and responsible agencies' performance based on water services.<sup>9</sup>

**Where in design research is it based?** Water is political leverage: citizens demand water services in exchange for votes and politicians in turn deliver water palliatives and promises to manage their public perception.

**How does it work?** Community scores are collected<sup>10</sup>

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7 This would involve determining and developing the parameters and strategy for cataloguing and hosting the database.

8 The design for the scores deserve further inquiry to understand what the communities can reasonably provide and what will resonate with public officials and agencies.

9 If the support programme is implemented before this, service experience with the “unofficial providers” can be a part of the scoring scope.

10 This can be designed to be a short-lived “campaign style”, as it might be resource-intensive to drive collection and analysis of scores for extended periods. In this case, infomediaries can be

via mobile phones<sup>11</sup> and analysed for use in public interest dialogues<sup>12</sup> on diverse platforms,<sup>13</sup> which can be compared across communities and over time.

**What does it accomplish?** Creates a water-specific participatory dialogue<sup>14</sup> to heighten the stakes<sup>15</sup> on water palliatives and promises (includes naming, shaming and praising), and crowdsources situation reports for strategic planning.

**What assumptions are made?** That the cost of driving a critical mass of household and provider participation is manageable. Also, that politicians will read and act upon these performance assessments.

**What else needs to be done?** Develop technological and programmatic components, including scoring systems informed by information relevant to institutions and communities. Create platforms, media programmes and media partnerships to drive engagement.

## C. “PACKED WATER FOR ALL”

**What is the idea?** Customers who can afford packed water pay extra so that packed water companies donate packed water to communities<sup>16</sup> that need it but can't afford it.

**Where in design research is it based?** Hygiene concerns trump price when the buying decision for packed water is made. Some households even boil purchased packed water before use.

**How does it work?** Companies and households sign up to a platform<sup>17</sup> that records donations and distribution. The donation is integrated through a new price regime<sup>18</sup> and communicated accordingly.

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trained to collect and upload scores.

11 If the design uses smartphones as a self-selecting mechanism, it can install prompts that pop-up around water-needing hours of the day.

12 Local NGOs such as WASH.net can anchor such dialogues, as they have other research that can be enriched by the scores.

13 Potential considerations include online and offline dashboards for display and on radio. They could also perhaps include a dedicated potable water radio show or a network of journalists who use the scores to support stories.

14 Sample dialogues can center on advocating for “unofficial providers” to be mainstreamed and meaningful ways to generate citizen water tax.

15 Quantity, quality and completion of palliatives and promises

16 Local and international NGOs to lead the identification and interactions with these communities in order to be able to responsibly share data with companies.

17 It could be a database tracking donations and distribution.

18 This simplifies the transaction model but raises complications

Companies that sign up can receive endorsements and hygiene facility support as a potential sales and marketing boost.

**What does it accomplish?** Provides an opportunity to people to help and have their support go directly to the most needy. It leverages distribution infrastructure of the private sector, which reaches where piped connections may not get to for decades.

**What assumptions are made?** Companies will be interested in maintaining an open book as part of a “donation community” and will redesign their marketing and distribution plan.

**What else needs to be done?** Identify partner companies, develop the community platform, and promote “packed water for all” initiative.

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for tracking the size of donations made without meddling into the companies books.

# Methodology

## VI. METHODOLOGY

We developed a three-part research framework consisting of contextual analysis, user research and institutional analysis. This framework enables us to understand the context, experiences, constraints and capabilities of water service agencies, and identify opportunities for improvement. We conducted the contextual analysis using a combination of methods: a review of relevant literature, contextual inquiries with households and business, and experience-mapping activities. This report is focused on the contextual analysis, as the user research and institutional analysis have not yet been conducted.

The review of relevant literature helped us take the pulse of the environment at a macro level. We assessed information on water services and examined other resource-related challenges in the region and how they are being addressed. Particular attention was paid to instances that involved the use of ICTs. Specific to Sierra Leone, the intersection with historical, socio-cultural, ecological and political factors was considered. It was also of interest to get a snapshot of the agencies, organisations, policies and programmes contributing solutions to the sector.

The contextual inquiry relied on interviews that focused on individual settlements' history, context around water services, enablers and inhibitors they have encountered, and interest and participation in public goods and services-related issues. The geographic area covered approximately 2000 households within which we selected and interviewed 28 respondents. In the respondent selection, we considered: level of exposure to ICTs, types of waterpoints and related challenges, socio-economic status, presence of water agency activities, diverse topographic layout and accessibility for our

researchers. We started with two broad respondents categories based on two primary waterpoint types (free and paid). We organised collected data by level of access to and assessment of water service delivery information.

Future research phases will include the user research and institutional analysis.