

CASE STUDY

# Saving Money, Saving Lives

A Case Study on the Benefits of  
Digitizing Payments to Ebola  
Response Workers in Sierra Leone

MAY 2016





#### AUTHOR

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## EBOLA RESPONSE

### CASE STUDY

At the height of the Ebola crisis, Sierra Leone turned to mobile wallets to make fast, accurate, and secure payments to Response Workers. Before digitization, cash payments were slow, inaccurate, and open to graft and theft.

Digitization cut payment times from over one month to around one week, putting an end to payment-related strikes. In doing so, digital payments strengthened Sierra Leone's capacity to contain the Ebola disease, treat those infected, and ultimately save lives.

In the process, digitizing payments also delivered cost savings of more than US\$10 million by eliminating double-payment, reducing fraud, removing the costs of physical cash transportation and security, and cutting travel costs for Response Workers.

This case study sets out key lessons from Sierra Leone's experience using digital payments to help combat Ebola. In particular, with health epidemics, natural disasters, and conflicts on the rise, governments need to take early action, in partnership with the humanitarian and development community and the private sector. Specifically, this case study shows how putting in place critical infrastructure and public education before a crisis hits can have a major impact in saving money, and more importantly, saving lives.

## TABLE OF CONTENTS

1. EXECUTIVE SUMMARY  
/4

2. THE EBOLA CRISIS  
IN SIERRA LEONE  
/12

3. ASSESSING SIERRA  
LEONE'S PREPAREDNESS  
FOR DIGITAL PAYMENTS  
/20

4. FROM PROBLEMS  
TO SOLUTIONS  
/23

5. STRONGER TOGETHER:  
COLLABORATING TO BEAT EBOLA  
/27

6. GETTING RESULTS THROUGH  
DIGITAL: SAVING MONEY AND  
SAVING LIVES  
/30

7. LESSONS FROM SIERRA LEONE  
/31

8. WHERE TO FROM HERE?  
/36

**ANNEX**

ACRONYMS /38

INTERVIEWEES /39

METHODOLOGIES /40

# 1. EXECUTIVE SUMMARY

Ebola proved to be one of the deadliest viruses of the modern era, with Sierra Leone among the countries hardest hit: More than 14,000 people in Sierra Leone were infected with the virus, and nearly 4,000 people died as a result. The Ebola crisis also inflicted major economic losses, reducing economic growth in the country from a projected growth rate of 11.5 percent in 2014 to actual growth of 4 percent in 2014 and a contraction of 21 percent in 2015. However, amidst this large-scale loss of life, human suffering, and economic devastation, the response to the Ebola crisis demonstrates the vast potential of digital payments to improve humanitarian response capabilities and to save human lives in large numbers.

By turning to digital payments during the Ebola crisis, Sierra Leone was also able to substantially improve the security, transparency, and efficiency of paying Ebola Response Workers (“Response Workers”). Sierra Leone also generated major cost savings, compared to the expense of moving cash around during an extremely dangerous time in the country. The combination of these two benefits – saving lives *and* saving money – stands as a remarkable achievement in the humanitarian field.

Indeed, the rapid deployment of digital payments to Response Workers can lay claim to some impressive achievements which merit the attention of governments, donors, and international organizations.

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## DIGITAL PAYMENTS

**Avoided  
the loss of 800 working days  
Ebola Response Workforce During the Initial Months**

Digital payments enabled Response Workers to remain on the front lines and help save lives by preventing strikes that were severely reducing Sierra Leone’s Ebola response workforce prior to the digitization of payments. Specifically, the improved speed and accuracy of payments following the transition from cash to digital payments reduced strikes from an average of eight per month to zero. With an average of 100 people taking part in each strike, this prevented the loss of around 800 working days from Sierra Leone’s Ebola response workforce during the initial months after digitization.<sup>1</sup> As a result, digital payments enabled Response Workers to remain at work on the front lines combating the Ebola virus and its impacts.

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## DIGITAL PAYMENTS

**Delivered a cost saving of**

**us \$10.7 million**

This case study calculates that digital payments delivered a cost saving of US\$10.7 million over the 13 month period that payments were digitized from December 2014 to January 2016.<sup>2</sup> To put this in perspective, this saving is equivalent to the annual cost of funding Sierra Leone's Free Health Care Program that caters for 1.4 million children under 5 years and 250,000 pregnant women.

This saving was achieved by a combination of removing incorrectly or fraudulently registered payment recipients, digitally updating changes to recipients' roles and payment categories, removing costs associated with cash payment operations, and substantially cutting travel costs for recipients who no longer needed to travel to designated cash payment centers once digital payments were implemented.

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## DIGITAL PAYMENTS

**Shortened payment time for Response Workers from over one month to**

**ONE WEEK**

As one of the most contagious and deadly diseases the world has seen in modern times, the Ebola virus presented grave threats to people in the affected countries. However, Ebola presented a particularly acute threat to the thousands of Response Workers who were so critical to stopping the spread of the disease and saving the lives of those infected. This made the work of Response Workers highly dangerous. Indeed, the ultimate success of Response Workers in combating Ebola came at a very heavy price: Across the three countries principally affected – Guinea, Liberia, and Sierra Leone – there were 881 cases of Ebola reported among medical staff by the end of 2015, and 512 deaths.

Prior to digital payments being deployed, this workforce was substantially reduced by strike actions when cash payments proved slow, unreliable, and open to graft and theft. However, digital payments shortened the delivery time of payments to Response Workers from over one month on average for cash payments to one week on average for digital payments. As a result, after digitization of payments, strike actions practically ceased, giving Sierra Leone the full workforce it needed to screen the population at large and identify, isolate, and treat carriers of the disease.

## **DIGITIZING RESPONSE WORKER PAYMENTS: Sierra Leone's Core Strategy to Deploy a Workforce Equal to the Task of Combating Ebola**

The alarming speed with which Ebola spread – exacerbated by chronically underdeveloped health systems in the affected countries – demanded that Response Workers be deployed as rapidly as possible and in very large numbers. Yet the alarming rates of infection and death meant there was an urgent need to compensate Response Workers for the risks they were taking, and to incentivize them to join and remain in the fight against Ebola. Central to fulfilling this need was providing secure, reliable, and immediate salary payments to Response Workers on the front lines.

In response to these huge challenges, the United Nations Development Program (UNDP) was requested by UNMEER's Special Representative to the Secretary General to lead work on hazard payments, with technical assistance from the United Nations Capital Development Fund (UNCDF). UNCDF agreed to send a technical specialist to Freetown, Sierra Leone to lead the Payments Programme for Ebola Response Workers (PPERW) team. UNDP then asked the Better Than Cash Alliance (BTCA), hosted by UNCDF, to support UNDP's work with the authorities in Guinea, Liberia, and Sierra Leone to coordinate payments for thousands of treatment center staff, lab technicians, contact tracers, and burial teams. BTCA provided expert personnel to help design and implement digital payments to Response Workers, and brought together bilateral partners such as USAID with private sector partners such as Visa and MasterCard and international organizations such as Mercy Corps, to ensure the best possible expertise and resources were available.

Under the UN Mission for Ebola Emergency Response (UNMEER), UNDP helped to track payments and improve the existing systems through which they were being delivered to the Response Workers. In Sierra Leone, policymakers put digital payments at the center of the country's response to the Ebola Crisis. UNMEER implemented the Payments Programme for Ebola Response Workers ("the Payments Programme"), which digitized hazard payments to over 15,000 Response Workers in Sierra Leone over the course of just two weeks during the height of the crisis in December 2015, eventually expanding to 26,600 by the end of March 2015.

The use of digital payments to incentivize and compensate Response Workers helped ensure Sierra Leone was able to deploy a workforce equal to the task of combating Ebola.



## Digital payments: boosting transparency of payments and reducing theft

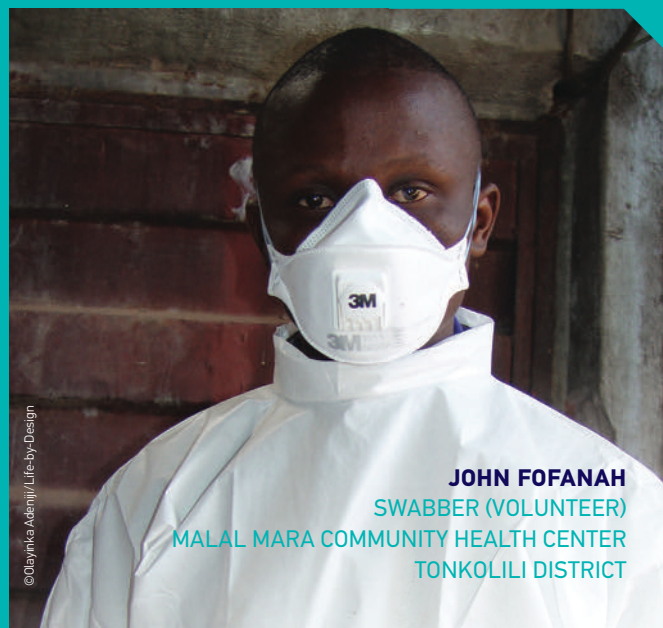
The decision of the government of Sierra Leone to swab all corpses during the crisis led John to apply to be a Response Worker in return for hazard payments for his work. As a “swabber,” John was aware that he could contract Ebola through this work but wanted to serve his country during the crisis. He had lost a sister to the Ebola virus and had become the primary caretaker for her two children. Like many people from poor communities, he was also incentivized by the monthly hazard payment of SLL 800,000 (approximately US\$250). As John was previously unemployed, hazard payments were the only means through which he could support his parents, his wife, and the two children of his deceased sister.

John’s work took place almost 100 miles from the District Health Management Team where his initial payments – to be delivered in cash – were scheduled to take place. It was difficult for him to get accurate information about the dates of his scheduled payments, with the result that he was not able to plan his travels to arrive on payday. Consequently, someone else claimed his monthly hazard payments in October and

November. It is reported that large crowds made it difficult for payment officials to check identification, so cash payments were disbursed with minimal verification of the correct recipient.

John noted: “I am a victim of such fraud cases.” He reported the matter to his manager – the Community Health Officer and the District Medical Officer (DMO), who investigated and compensated John, although the culprit was never identified or charged. John said such incidents happened in many other cases.

However, from December to March, John was paid into a mobile wallet, dramatically increasing the security, efficiency, and transparency of his payments, and hence reducing theft. In April, he opened a bank account and subsequently received his monthly hazard payments in his bank account. John also noted that he was able to save because senior officials were not able to make unauthorized deductions from his digital payments: “When payments were made on the table, I always lost some of my money to my bosses.”



**JOHN FOFANAH**  
SWABBER (VOLUNTEER)  
MALAL MARA COMMUNITY HEALTH CENTER  
TONKOLILI DISTRICT

## The Importance of Establishing Infrastructure Today and Digitizing Payments in a Way that Advances Long-Term Financial Inclusion

Sierra Leone was the only country among the Ebola epicenters where digitization of hazard payments was a realistic option because of pre-existing conditions. This case study examines these conditions, and Sierra Leone's experiences using digital payments as a central plank of its humanitarian crisis response, in order to help other governments be better prepared.

Along with a discussion of implementation issues and key results in Sierra Leone, the case study offers important lessons for governments, the private sector, and the international development community about how to leverage digital payments in humanitarian crises and to do so in a way that can advance long-term financial inclusion.

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Given the massive challenges facing the humanitarian sector around the world, including conflicts that lead to massive migrations and the potential for major pandemics to spread rapidly, the capacity of digital payments to improve response outcomes is highly compelling.

The Sierra Leone experience demonstrates that digital payments can mobilize a large-scale workforce quickly, effectively, and sustainably. However, to fully leverage the power of digital payments in crisis situations, governments, the private sector, and international organizations need to develop critical infrastructure today in order for digital payments to be deployed as quickly as possible when a crisis strikes. This case study is intended to provide support for that cooperation and dialogue, so that the lessons of a tragic time in Sierra Leone's history can be put to good use in better preparing for future crises, wherever they may occur in the world.





# Key learnings from the journey from cash to digital payments during the Ebola crisis in Sierra Leone

## Digital payments can deliver major reductions to payment times and dramatically improve the accuracy of payments during crises.

Ensuring that Response Workers receive their payments in full and on time substantially reduces strike actions that can severely reduce crisis response workforces and impede a country's capacity to contain pandemics and care for those affected. As a result, using digital payments to ensure a strong workforce can have a major impact in terms of saving lives, as was the case in Sierra Leone where this case study calculates digital payments helped save 2,095 lives.

## In order to realize these and other benefits, governments need to show leadership in preparing early for humanitarian crises, particularly by developing and implementing national policy frameworks that drive effective and flexible digital payments ecosystems.

Typically, emergency payment cash transfers are supported by national payment policies that stipulate by whom, in what amounts, and how frequently cash payments can be made. During crises, these policies often need rapid and drastic revisions. It is vital that governments establish clear roles and responsibilities between implementing agencies, particularly those with financial regulatory responsibilities. In particular, it is crucial that implementing agencies are able to accurately identify and verify payment recipients in order to maximize the cost efficiency of digital payments and build public confidence in digital payments as an alternative to cash.

## Governments need to provide clear operational guidelines and resources to support implementation of digital payments in order to reduce delays and resistance to change from those who are responsible for distributing payments.

Due to successful global advocacy for digitizing payments by organizations like the Better Than Cash Alliance, the government of Sierra Leone understood the potential benefits of digital payments. However, Sierra Leone still encountered resistance to new digital processes from a range of stakeholders (for example, some program participants objected to no longer requiring written signatures for funds). Resistance to new digital processes in various forms is calculated to have delayed the transition to digital payments during the Ebola crisis by around 30 days. Providing clear guidelines and resources – including targeted education of non-traditional stakeholders like local fiduciary agents and audit firms – can reduce this resistance by highlighting alternative checks and balances built into the new digital processes, and hence can smooth the transition to digital payments.

## Digital payments can deliver major cost savings both to governments and to payment recipients.

In the case of Sierra Leone, digital payments delivered a total cost saving of \$10.7 million over the 13 months from December 2014 to January 2016. These savings can be generated in particular through far greater efficiency in making payments, and preventing double-payments and payments to fraudulently registered recipients. Correctly registered recipients also share in these cost savings because costs associated with traveling long distances to designated cash payment centers are dramatically reduced or eliminated.

## Having a digital payments infrastructure in place prior to a crisis striking dramatically improves the deployment of digital payments and delivers better outcomes for all stakeholders.

Sierra Leone entered the crisis with 90 percent mobile phone access and coverage across the country, and a strong national network of mobile payment agents. This infrastructure proved an advantage in deploying digital payments during the crisis. However, in other areas, underdeveloped infrastructure held back this deployment and the ongoing adoption of digital payments after the crisis. A key lesson from Sierra Leone is that it is vital to put in place financially inclusive accounts and other infrastructure that enables recipients of digital payments to use those funds to pay for food and other basic goods and services digitally. Without this infrastructure, digital payments will nearly always be converted to cash, curtailing the larger and long-term benefits of shifting to digital payments, and limiting the outcome of sustained financial inclusion. By contrast, having these systems in place well before the onset of any crisis ensures that payments infrastructure is functioning effectively. If payers, recipients, and acceptance networks are already familiar with using digital payments, the transition is easier, faster, and smoother.

## Digitizing the preliminary processes for Government to People (G2P) and Development Agency/Donor to People (D2P) payments expedites the deployment and expands the benefits of digital payments in crisis situations.

Without digitization of preliminary processes like worker identification, registration, and payee list management, digitization of payments alone cannot solve the major challenges of leakage and double-payments, ghost workers, inefficiencies due to duplication of processes, and timely payments to the correct recipients. This was the clear conclusion of all stakeholders involved in the Payments Programme during the Ebola crisis in Sierra Leone.

### **Key principles of responsible digital payments proved crucial for widespread and sustained adoption of digital payments during and after humanitarian crises.**

The extent to which digital payments are widely adopted during and after crises – by policymakers and general populations – will depend on how well financial inclusion stakeholders are able to create responsible and inclusive digital payments capabilities. Making responsible and inclusive capabilities available to the broader community is vital to building public trust in digital payments, and in turn, improving adoption and acceptance rates. Among the broader principles of responsible financial inclusion,<sup>3</sup> key insights emerging from the Ebola crisis in Sierra Leone include:

- **Managing risks and providing redress mechanisms:** While many recipients reported high levels of satisfaction with digital payments, there was clear evidence of network management issues that created financial risks for recipients, such as unlawful or excessive agent fees. Such risks can heavily impact people with very low incomes, particularly women and children who are often more vulnerable to adverse financial events like unexpected costs. Educating recipients about these financial risks and providing accessible, practical, and effective redress mechanisms is crucial to boosting acceptance of digital payments in a sustained way.
- **Designing products and services to meet specific needs:** Low levels of literacy and numeracy among some payment recipients can present a challenge to implementing digital payments in many developing economies. Technology is helping surmount these and other challenges. For example, voice-operated devices can often be used to address problems relating to low literacy. Biometric technology, such as fingerprint scanning, can be used to address problems associated with a lack of identification documents. However, in Sierra Leone, the risk of transmission of the Ebola virus by physical contact meant fingerprint scanning was problematic, but facial recognition software proved effective in its place. The Sierra Leone experience demonstrates how tailored products and services are essential to facilitating adoption.

### **Partnerships are crucial to the effectiveness of digital payments during crises and as an ongoing driver of financial inclusion after crises have passed.**

The Sierra Leone experience highlights two partnerships that are foundational to success. The first is the partnership between the government and the private sector. The second is the partnership needed between the humanitarian sector and digital financial inclusion stakeholders.

- **Commitment from, and partnership with, the private sector is vital.** Existing private sector networks, infrastructure, and expertise can help deliver digital payment solutions faster and support sustained adoption of digital payments platforms after crises pass. Cooperation among government, the private sector, and international organizations is particularly crucial to building up infrastructure prior to a crisis, so that digital payments can be deployed with minimal delay when the need arises.
- **The humanitarian sector and digital financial inclusion stakeholders should partner more systematically.** By working together, there is a higher chance of implementing digital payments quickly and effectively, and of developing processes that promote financial inclusion and drive economic opportunities after the crisis has passed, particularly for women and girls, who make up the majority of the world's population of people excluded from formal economies and financial systems. Both the humanitarian sector and financial inclusion stakeholders need to incorporate each other's perspectives and experiences to drive more robust policymaking and better outcomes.

## 2. THE EBOLA CRISIS IN SIERRA LEONE

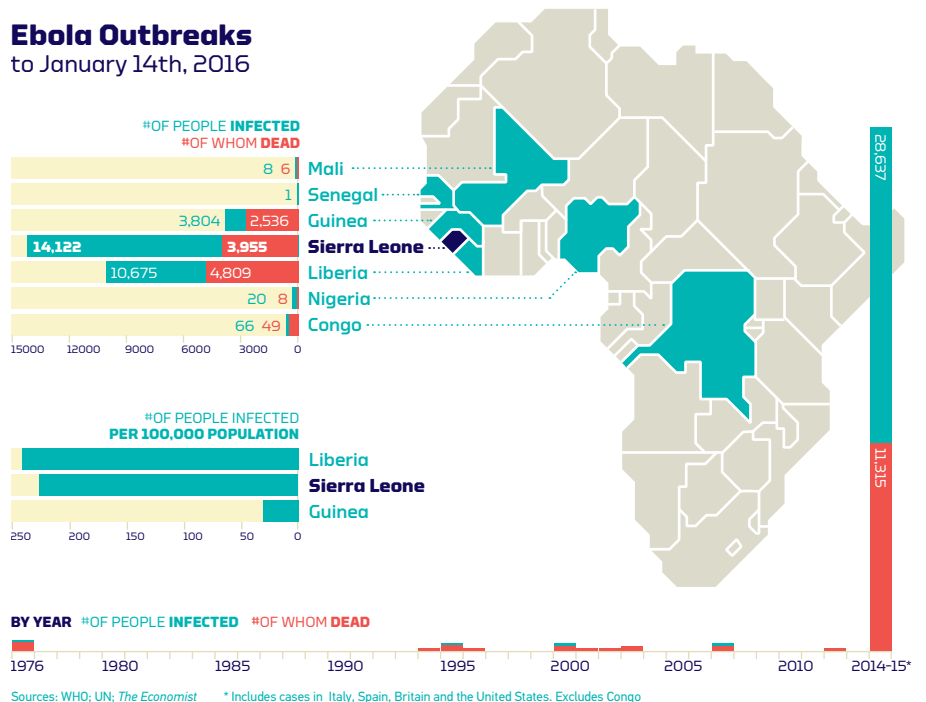
### A Deadly Virus, a Digital Response

The Ebola Virus Disease (EVD) outbreak that ravaged large parts of West Africa over the course of 2014-2015 was by far the worst Ebola outbreak the world has ever seen. The first reported case of this outbreak dates back to December 2013, in Guéckédou, a forested area of Guinea near the border with Liberia and Sierra Leone. Travelers took the disease across the borders, and by late March 2014, Liberia had reported eight suspected cases and Sierra Leone six. By the end of June that same year, 759 people had been infected and 467 people had died from the disease. As of 26 January 2016, 28,637 cases and 11,315 deaths have been reported worldwide, the vast majority of them in Guinea, Liberia, and Sierra Leone.

The epidemic struck where health systems were among the weakest in the world. The three affected countries – Guinea, Liberia, and Sierra Leone – had healthcare workforces around 10-20 percent of the size internationally recommended for those countries at the time that the outbreak began.<sup>4</sup>

The inadequacies of healthcare systems in this region help to explain how the Ebola outbreak became so deadly. For example, Spain spends over US\$3,000 per person (on a purchasing-power parity basis) on healthcare; in Sierra Leone, this figure is just under US\$300. The United States has 245 doctors per 100,000 people; Sierra Leone has 2. The particular vulnerability of health workers and Ebola volunteers mobilized by health centers has

**Ebola Outbreaks**  
to January 14th, 2016



“When UNCDF came on board the Payment Team, they brought in a lot of expertise. Having someone like that in the lead was one of the biggest successes of the shift to digitization in Sierra Leone.”



© John Terry/UNDP

**PARVATHY RAMASWAMI**

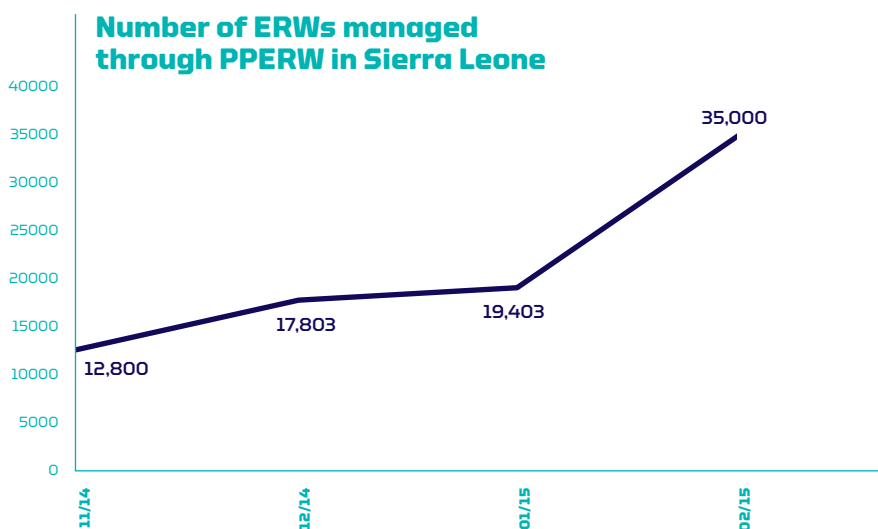
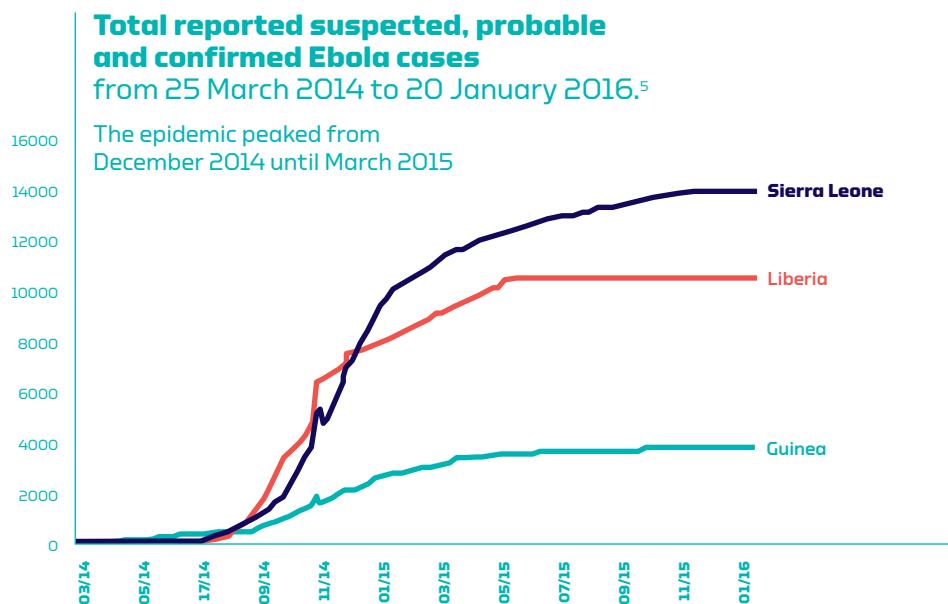
Director of the United Nations Mission for Ebola Emergency Response from November 2014 – February 2015, with Steve Ngaojia (second from right) Coordinator for the National Ebola Response Center and members of IDT Lab (software developers who worked on Sierra Leone's information management system and biometric verification capabilities).

therefore been doubly tragic: By the end of the outbreak in December 2015, there had been 881 cases among medical staff in the three West African countries, and 512 deaths.

Ensuring a steady supply of trained, motivated, and compensated Response Workers – composed of health workers and Ebola volunteers – in the face of increasing risks was critical to stemming the EVD epidemic. Response Workers proved to be the cornerstone of the response. Over 60,000 Response Workers, of which 55 percent represent Ebola volunteers and 45 percent health workers, were at the front lines – educating communities in epidemic zones, tracing and monitoring those exposed, transporting and caring for the sick, and providing safe and dignified burials.

The outbreak catalyzed an international response, including from UN agencies, development partners, NGOs, the private sector, and the affected communities. The United Nations Mission for Ebola Emergency Response (UNMEER) was endorsed by the General Assembly on 19 September 2014 to lead the international development community's response in West Africa. In the early stages of the international response, the UN Overview of Needs and Requirements document<sup>6</sup> noted cash payments to workers were an essential service, with a projected funding need of only US\$2.5 million for payments. The evolving payments landscape for UNMEER and partners was outlined and updated in a Concept of Operations working document, as it became clear that the earlier estimates of resource needs for payments were insufficient.

Payments to Response Workers were redefined as a significant area of concern within the overall response, as reports of health workers striking or threatening to strike due to non-payment, under-payment, or late payment became increasingly frequent. According to a World Health Organization (WHO) report (entitled *One year into the Ebola epidemic: a deadly, tenacious and unforgiving virus*<sup>7</sup>), strikes by hospital staff and burial



teams impeded control efforts. Most strikes occurred after staff were left unpaid for weeks or months, had not received the promised hazard pay, or were asked to work under unsafe conditions associated with the deaths of other Response Workers.

At a meeting of the Mano River Union (MRU) – (an intergovernmental organization established to facilitate closer economic and social integration among Sierra Leone, Liberia, Guinea, and Cote d'Ivoire) the three countries most affected by the epidemic – Guinea, Liberia, and Sierra Leone – agreed in September 2014 to provide “risk allowances,” colloquially referred to as “hazard payments,” for all Response Workers. A triple challenge soon emerged of (1) a fast-increasing number of health sector workers (2) demanding a higher volume of hazard payments (3) in a system that needed strengthening in order to handle this increased financial throughput. The international community raised concerns while also recognizing the need to ensure the sovereignty of the affected countries to pay their own



“The Sierra Leone experience highlighted that digital transfers in humanitarian settings require a value-chain approach. The negative publicity of paying the wrong Response Workers due to list management issues directly impacts the benefits that digital payments can deliver.”



**TENZIN KEYZOM MASSALLY**  
PPERW Team Leader/UNCDF Technical  
Specialist with Helen Clark (middle front)  
United Nations Development Programme  
Administrator, and members of the Payments  
Programme team in Freetown, Sierra Leone.

workers under their own domestically negotiated policy frameworks.<sup>8</sup> In October 2014, UNMEER's Special Representative to the Secretary General requested formal commitments from UN heads of agencies on roles and responsibilities for a division of labor for UN partners within the emergency response. UNDP was requested and agreed to lead work on hazard payments, with technical assistance from UNCDF.

At the Operational Conference for Scaling Up the UN System Approach to the Ebola Response in Accra, Ghana (15-18 October, 2014), UNDP pledged to all partners that it would guarantee that all Response Workers would be paid fully and on time from 1 December 2014 onwards. UNMEER planning at the Accra Operational Conference was on the basis of a projected upper limit caseload of 5,000-10,000 new Ebola cases per week by 1 December 2015. Across the three countries, this translated to a projected workforce requirement of around 150,000 Response Workers and a staffing structure of seven to eight defined worker cadres.

However, the trajectory of the epidemic diverged from projections, ultimately rendering this upper staffing total too high. At the height of the crisis, a total of 72,712 Response Workers were active in the three countries.<sup>9</sup> Designing and mobilizing a large-scale payment response was a daunting and complex challenge. In weak systems, such as those in the affected countries, ensuring payments in a transparent and accountable manner is demanding even under normal conditions. But during a crisis, and given an incomplete picture of the coverage and functioning of public payroll mechanisms and private sector payment modalities, the logistical scale and speed needed escalated the task to a complex, international, and multifaceted challenge.

Hazard payments in the health sector generally entailed a three- to four-fold increase on usual individual payment amounts, depending on the country, paying institution, and exact cadre of worker. The fear of contagion

also extended beyond the health sector, for example to security personnel who guarded quarantined areas or borders and were thus also at risk. This “inflationary effect” outside the health sector created the need for even more hazard payments.

In all three countries, the Payments Programme collaborated closely with the Ministries of Health and Ebola Coordination Units to ensure that, through smart deployment of innovative technologies, together with private sector partnerships and unprecedented collaboration between humanitarian payment organizations and the financial services sector, Response Workers had control over their pay, that the right workers got paid the correct amount, and that payments were delivered on time.

In Sierra Leone, hazard payment implementation was first initiated through an urgent arrangement between the Ministry of Health and Sanitation (MoHS) and the Ministry of Finance and Economic Development (MoFED) in September 2014. It was then shifted to the National Ebola Response Center (NERC) in November 2014 after difficulties the MoHS faced in managing large-scale payments, such that Response Workers were not being paid or were receiving their payments late. In addition, donors – notably the World Bank and African Development Bank who were funding hazard payments – were not able to verify lists of Response Workers, leading to a significant lack of confidence in the payee lists generated for funding support.

The exponential growth of the Ebola epidemic during the emergency phase of the response challenged the traditional model of managing a crisis response workforce. EVD transmission patterns can – and did – change and flare within a matter of hours. As new transmission chains are identified in a crisis, and as new epicenters emerge, surge support with specific skills is required to contain the spread of the disease. “Getting to zero,” that is – breaking all known transmission chains – depends on Response Workers’

### Phases of Digitization

#### PHASE 1 DECEMBER 2014

Focus: Shift to digital payments (payments through mobile money and bank accounts)

*17,803 Response Workers*

#### PHASE 2 JANUARY 2015

Focus: Shift to digital identification (creating unique identification numbers for all Response Workers) in addition to digital payments

*19,403 Response Workers*

#### PHASE 3 FEBRUARY 2015 ONWARDS

Shift to shared digital information management system among government agencies, development partners, and NGOs paying hazard pay to Response Workers

*35,000 Response Workers*

# Challenges in Sierra Leone

## NETWORK INFRASTRUCTURE

When the Ebola crisis struck Sierra Leone, technology and network infrastructure was already reaching farther than ever before, but was not always accessible or reliable, particularly in rural and remote communities. For example, Response Workers in the northern district of Koinadugu in Sierra Leone who lived away from the town center faced difficulties receiving text message notifications of their digital payments due to poor network coverage.

## LIST MANAGEMENT TECHNOLOGY

Dealing with up to 30,000 Response Workers' individual records from 14 districts and over 1,000 Medical Units across the country meant that the payee lists needed to be managed in a highly systematic way. In addition, the turnover rate for Response Workers was 30 percent, with significant numbers moving across districts and work cadres. Therefore, it was critical to ensure that all eligible Response Workers were included in payee lists on time, before payment amounts were submitted for approval to the World Bank and the African Development Bank.

## DIGITAL IDENTIFICATION

The use of digital payments required registration of around 30,000 Response Workers in a shared digital identification system. In a country where around 70 percent of the population share the top 10 most common surnames, the lack of a unique identifier for each payee was initially a challenge. In addition, Sierra Leone's national identification system covers only 15 percent of the population. In order to ensure that duplicate records of the same person were not being created, a unique identification regime had to be established to track payments and workers as they changed their Response Worker category or work cadre (with subsequent impact on their eligibility for hazard pay and rates of pay).

## INTER-AGENCY COORDINATION

In addition to the government of Sierra Leone, other UN agencies and international NGOs were involved in paying Response Workers within the government's hazard payment policy. Efforts were made to delineate roles and responsibilities across agencies, for example the United Nations Population Fund (UNFPA) paid Response Workers falling within the contact tracing category. Even so, there were significant risks of the same Response Worker claiming hazard payments under two categories. For example, over 150 cases of "double dippers" were caught when all hazard payment programs started using a common list management infrastructure provided by the Payments Programme.

## CONSUMER PROTECTION

Financial service providers were not always protecting consumers adequately. As a result, Response Workers, particularly those with low levels of literacy, were not treated fairly in some cases. This tended to erode trust in digital financial services.

## PAYMENT COMPLAINT REDRESS MECHANISMS

Before systems were put in place to resolve payment issues, Response Workers often either went on strike or crowded NERC Offices when they encountered payment issues (typically non-payment, under-payment, or late payment). Indeed, NERC management reported that at one point it was spending more than 70 percent of its time trying to resolve payment issues. Consequently, a complaint redress mechanism was introduced, including Help Desks where payment issues could be dealt with within 24 hours. Between 2 January 2015 and 28 February 2015, the Help Desk resolved over 4,000 payment issues – close to a 100 percent resolution rate – thereby substantially reducing strikes.

### 5 MAJOR TYPES OF COMPLAINTS:

1. Transaction reversal if wrong phone number or incorrect bank account captured
2. Change in worker category impacting pay rates
3. Remove Response Worker from payee list
4. Add Response Worker to payee list
5. Backlog of payments owed to Response Workers

The PPERW was developed and managed by the first Development Solutions Team to be established in UNDP. It brought together cross-bureau expertise from the Responsive and Accountable Institutions and HIV, Health, and Development Teams within the Governance and Peacebuilding Group; the Sustainable Development Cluster of the Bureau for Policy and Programme Support; the Crisis Response Unit; the Regional Bureau for Africa; The Better Than Cash Alliance and UNCDF.

ability to respond quickly within small windows of opportunity. As a result, the response workforce – including contact tracers, staff working in Ebola Treatment Units (ETUs), and burial teams, among others – was highly fluid, growing 25 percent every two weeks during the height of the epidemic, and experiencing 20 percent turnover in the same period.

In December 2014, the Payments Programme worked with NERC in Sierra Leone to shift hazard payments from cash to digital. The transition was conducted in three phases over three months; however at the time, the Programme's activities were in direct response to the challenge of paying all eligible Response Workers on time, in the correct amounts, and to the correct beneficiaries. While Phase 1 aimed to leverage digital financial services to pay Response Workers on time, Phase 2 and 3 addressed the challenge of ghost workers and those receiving pay from more than one hazard payment program. The Payments Programme soon realized during Phase 1 that digitization of payments alone would not generate confidence in the hazard payment scheme being implemented.

In Sierra Leone, several digital payments challenges impacted both the immediate goal of ensuring that eligible recipients received their payments efficiently, securely, and transparently, and the medium- to long-term goal of effectively leveraging digital payments to build resilient financial ecosystems in disaster-prone and protracted crisis areas.

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## STREAMLINING BENEFITS

### The Experience from Syria and other Crisis Settings

Creating individual digital identities also allows various transfer payments to be streamlined and, where appropriate, bundled together into a single payment. To illustrate this benefit, it is instructive to consider the situation in Syria where refugees can benefit from over 30 distinct cash transfer programs, including aid for children's winter clothes, legal assistance, and hygiene kits. Most cash transfer programs have issued cards for their respective programs, with the result that households often have multiple cards, each for a different purpose. Similar experiences from around the world and in other crisis settings show that while digitizing humanitarian payments delivers substantial benefits, it can also generate a patchwork of small, poorly coordinated programs, many of which reach the same beneficiaries but with substantial duplication of processes, reducing efficiency and the overall intended impact of the programs.

## Digital Payments: Giving Health Workers More Time with Patients

“I am a trained nurse and was attached to a treatment center during the Ebola crisis. Although the risks were high, I was dedicated to my oath as a health worker. The hazard payment of SLL 2,000,000 that I received was great motivation because I was able to help my family during this difficult time in the history of our country. I was also able to help other people with their basic needs so that they could stay home and reduce their movement, thus avoiding unnecessary exposure and risks of EVD.

When I received my payments over the counter in cash, it was tough as most of the time I had to abandon my patients and stand in line so that I could receive my payment.

When my payments shifted to payments via mobile wallets, it was much more efficient and allowed me to receive and carry money in our mobile wallets which could be cashed out at any identified cash-out post. This new development meant we did not have to leave patients unattended and there was never a rush to go queue for salary payments.

I didn't need to worry about keeping a huge amount of cash at home. Even up until now I still have money in my mobile wallet and I never once had an issue with remembering my MNO's pin code.”



# 3. ASSESSING SIERRA LEONE'S PREPAREDNESS FOR DIGITAL PAYMENTS

Sierra Leone was the only country among the Ebola epicenters where digitization of hazard payments was a realistic option, largely due to three factors, discussed in this section.

## **Regulatory environment supporting digital payments**

Prior to the Ebola crisis, there was no legal framework for mobile money, however as a result of the successful hazard payments implementation, the Bank of Sierra Leone (the country's central bank) issued mobile money guidelines for the first time in November 2015.<sup>10</sup>

At the time of the crisis, the National Telecommunications Commission had been licensing MNOs and third parties to provide mobile financial services as a value-added service (VAS). There was no formal working relationship with the Bank of Sierra Leone to develop regulations or jointly supervise MNO and third party mobile money providers. However, non-bank players were advised to demonstrate their service to the BSL before being issued with "letters of no objection."

Initially, the Bank of Sierra Leone leaned toward a bank-centric model, meaning that MNOs and third-party providers could only operate in partnership with a licensed bank partner. However, in practice third parties and/or MNOs were actually driving digital payments activity. In addition, partnerships between banks and third parties/MNOs were yet to mature.<sup>11</sup> Due to the critical nature of the Ebola crisis and the need for urgent action, the Bank of Sierra Leone allowed for the digitizing of payments through the use of mobile wallets. The Bank of Sierra Leone had already implemented the Automatic Clearing House (ACH), and subsequently took the lead in ensuring that hazard payments could be transmitted to bank accounts after March 2015.

## **Ubiquity of mobile phones among Response Workers & network coverage**

In the battle against Ebola, mobile phones proved invaluable – not only for sending people public-health information or enabling them to call Help Desks, but also as "wallets" to receive payments. This was possible due to nearly 95 percent network coverage across the country and over 90 percent of Response Workers owning and using a mobile phone. However, only 15 percent of the Response Workers were registered for mobile money before the transition. The urgency of the Ebola crisis generated very focused discussions and willing partners, and the Payments Programme worked with the MNOs to fast-track minimum KYC requirements so that Response Workers could be quickly registered and start receiving digital payments.



“Urgency of need was a powerful motivating factor, which helped overcome inertia in terms of trying something that had never been attempted in the country. However, the analysis stood on its own merits.”

**JUAN COSTAIN**  
**WORLD BANK**  
**PAYMENTS SPECIALIST**

## Liquidity & cash management

Since Response Workers were spread across Sierra Leone’s 14 districts, including in rurally located health units, liquidity had to be actively managed to ensure that Response Workers could cash-out as and when they needed. Making this task more difficult, there are fewer than 50 ATMs in Sierra Leone and less than 50 point-of-sale (POS) terminals in the country, 30 of which are deployed by one commercial bank, Ecobank. Most POS terminals are located in hotels and supermarkets (and also limited to Freetown and a few other urban centers) that are not readily accessible by low-income groups that constitute the vast majority of Response Workers. However, a network of nearly 5,000 agents plus the staff of the Bank of Sierra Leone’s 13 community banks were able to compensate for the limited infrastructure through their geographic coverage and through adequate liquidity to support cashing-out by Response Workers.

## Comparison to Liberia and Guinea

At the time of the Ebola crisis, **Liberia** was unable to fully digitize hazard payments for the following key reasons:

- Mobile money payment is at its early stages. Only MTN (a large mobile phone operator in Liberia) had a mobile money platform, however it is facing several challenging issues including high transaction costs, primarily due to low volumes: cash-in upfront cost is 7 percent of total transaction value and cash-out cost is 2-3 percent – all paid by the recipient. This high cost to the recipients discourages the use of mobile money.
- MTN has been required to make some expensive investment in its mobile money platform to enable it to operate with multi-currency (US\$ and Liberian Dollar). The cost of these investments, coupled with low transaction volumes, is keeping transaction costs high.
- A lack of a substantial agent network to support large-scale mobile money payments.
- Low liquidity in the formal financial system outside the capital city Monrovia, such that many merchants prefer to keep their money at home in cash.

At the time of the Ebola crisis, **Guinea** was unable to fully digitize hazard payments for the following key reasons:

- Mobile penetration in Guinea is at 71 percent, compared to 95 percent in Sierra Leone.
- Mobile money payment is at its early stages – only MTN and Orange have a mobile money platform. However the lack of a robust agent network and low agent interoperability makes mobile money expensive in Guinea.
- A lack of a substantial agent network to support large-scale mobile money payments.
- Low liquidity in the nation’s banks, combined with the absence of mobile money agents outside of the capital city Conakry.
- The regulatory framework for mobile money, and other types of electronic payments, is still under development.

## Digital Payments Deliver Security and Efficiency

"I hid from my family the fact that I worked in an Ebola ward due to the social stigma attached to EVD, and also because they would not have allowed me to work in the ward. The risk allowance of SLL 800,000 was important for me to help my family during this difficult time.

I was receiving SLL 800,000 in monthly hazard payments. Receiving my payment in cash was ok, although sometimes I didn't get it in full because of some games played by some of our bosses at the hospital. But with the transition to mobile and bank payments, I started receiving my payment more securely, in full, and I was also able to open a bank account which helped me to save some of my hazard payments.

I didn't face any challenge with accessing my mobile money because I called up the Help Desk and they walked me through the steps of how to access my money. It was quite easy, efficient and simple to use."





## 4. FROM PROBLEMS TO SOLUTIONS

The Payments Programme's original scope of work was centered on digitizing cash payments to Response Workers and improving program elements such as user education, and effectively managing liquidity at the agent level. However, low levels of familiarity with digital payments, and poor implementation of some aspects of the hazard payment policy made it more difficult for the Payments Programme to pay all eligible Response Workers on time, discussed in this section.

### Financial education

In January 2015, the World Bank completed a field mission to Sierra Leone to conduct a diagnostic assessment of financial education needs in support of hazard payments. There was broad consensus on the immediate need to develop financial education messages that would help Response Workers to better understand payments received via mobile phones and through bank accounts, as well as to communicate to Response Workers any changes to hazard pay policy. As a result of this urgency, the World Bank diagnostic team designed and implemented a financial education tool in the form of a leaflet and accompanying poster, with support from the Payments Programme team who organized focus group discussions with Response Workers and helped with printing and distributing the materials to all Response Workers. The focus group discussions revealed that many Response Workers had limited understanding of the cashing-out process, in particular, security issues (e.g., PIN codes), as well as grievance handling mechanisms and troubleshooting steps.

Ten tailored SMS/text messages to Response Workers were also developed as part of follow-up financial education support. With cooperation from the Payments Programme, NERC, and mobile network operators, the text messages were delivered in May 2015 to Response Workers who were scheduled to receive hazard payments. The text messages provided tips for Response Workers about how to effectively manage hazard payments, and also highlighted the temporary nature of the payments, in order to help manage Response Workers' expectations and financial planning for the conclusion of the Payments Programme.

“The bane of the response has been the implementation of the hazard payments.”

**STEVE GAOJIA**  
NERC, PRIOR TO DIGITIZATION  
OF PAYMENTS

## List management

As Response Workers came from all parts of the country, and performed a range of different functions, the fluid nature of payee lists, combined with a lack of robust policy and protocol to update lists, presented a major challenge. In particular, difficulties collecting and cross-referencing information led to inaccurate lists for disbursement of digital payments. Exclusion from lists, or incorrect categorization of Response Workers, impacted on morale and frequently gave rise to strike actions. In many cases, list management procedures were not being followed, resulting in Response Workers transferring to different facilities and being double-registered.

List management challenges were further complicated by instances of fraudulent behaviour, as large quantities of hazard payments became available in a country where the legally mandated minimum wage is US\$115 per month,<sup>12</sup> while hazard payments ranged from US\$100 to US\$400 per month.

In response to these challenges, and other errors of incorrect inclusions and exclusion from payee lists, the Payments Programme organized policy consultations with development partners, the Ministry of Health and Sanitation, and Response Workers. The purpose of these consultations was to clarify worker categories, and define pay rates based on levels of risks and EVD occurrences. The policy revisions also focused on the process of list management and approval.

### List Management Challenges

EXCLUSION	INCLUSION / DUPLICATION	INCORRECT INFORMATION
ERW are added on a daily basis at some of the centers and not updated properly in the system	Many ERWs leave their duty stations with the fear of contracting the disease, these ERWs in many cases still tend to be on the list	The position of ERWs also changes, this results in incorrect categorization of ERWs and results in wrong payment
UNDP team does not have the authority to update the list	Few centers have also lost ERWs due to death	Backlog of payments has also resulted in angry ERWs
The role and rights of DMO/ supervisors is not properly defined	ERWs also move across from Government Hospitals to DHMTs, these results in them being list on both the lists	

"I don't like mobile money. I like cash. If someone taught me how to use mobile money, I wouldn't mind using it because there are agents close to where I live."

ANONYMOUS EBOLA  
RESPONSE WORKER



**SALTON MASSALLY,**  
CHIEF TECHNOLOGY OFFICER FOR  
IDT LABS, AT WORK.

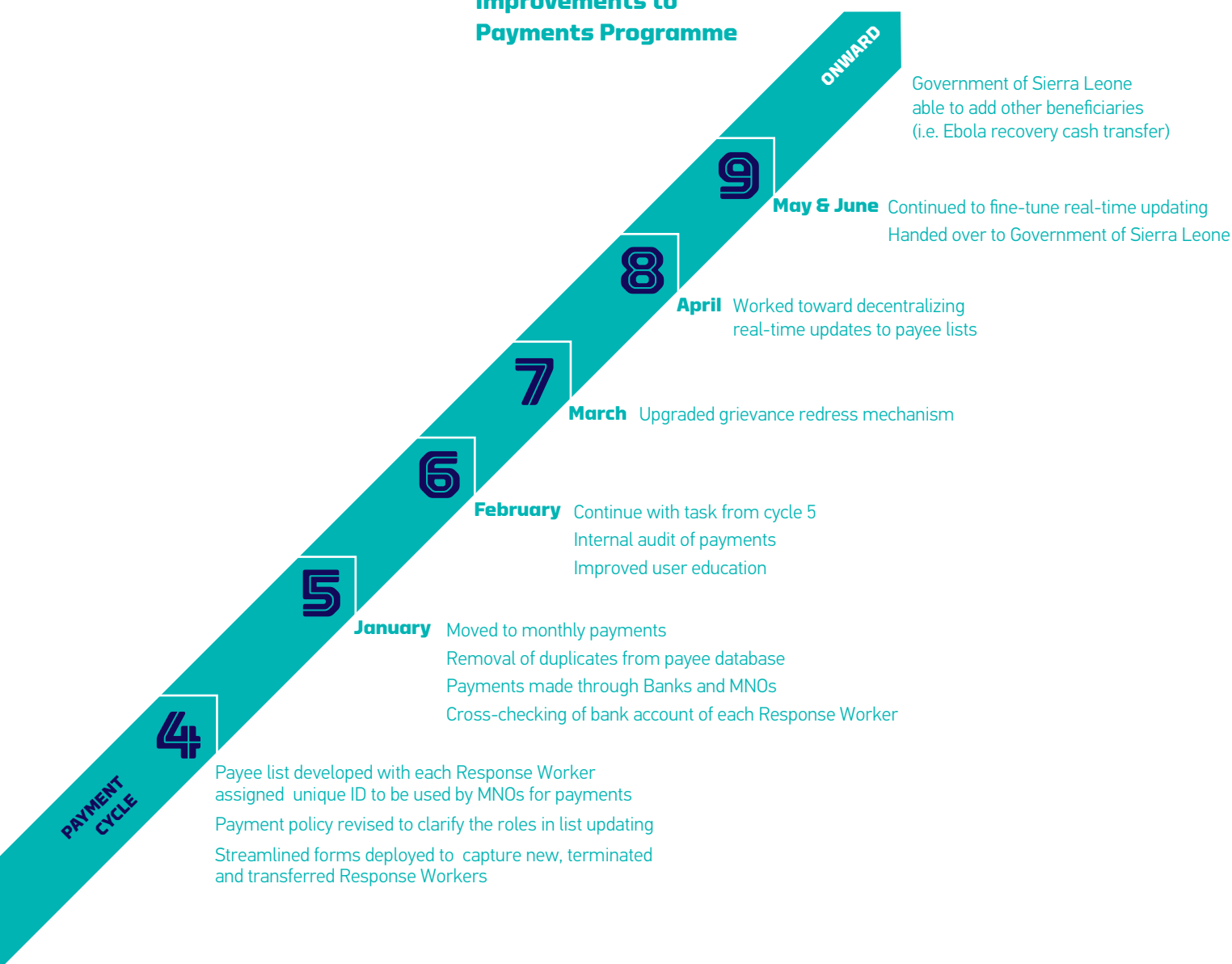
## Audit compliance

Compliance with the hazard policy audit requirements was also a substantial challenge given that the mandated process for verifying workers and days worked was frequently not followed. For example, at least in the first cycle of digital payments in December 2014, the Payments Programme was not able to verify whether Response Workers actually worked during the pay period.

## Steps taken to address implementation challenges

As a result of these and other challenges, the Payments Programme worked on establishing an effective set of policies and processes to resolve challenges and manage hazard payments efficiently and effectively. The graphic below provides an overview of the improvements put in place across digital payment cycles by the Payments Programme.

## Improvements to Payments Programme



## Open Source Solutions to Key Technical Challenges

PROBLEM	COMPLICATIONS	OPEN SOURCE SOLUTION
<b>No Response Worker identity verification capabilities</b>	<p>Disease contamination risks prevented fingerprint-based biometrics</p> <p>90 percent of Sierra Leone population shares same 10 surnames</p>	<p>Open Data Kit (ODK) streamlined enrollments</p> <p>Open source facial recognition solutions avoided contamination risks</p> <p>Unique Response Worker numbers used to verify Response Workers' identities</p>
<b>No central administration among pay partners and agencies</b>	Multiple levels of administration across multiple organizations at the international, regional, national, and local levels	Customization of open source solutions (Openerp/Odoo) to ensure that various partners could be separately identified and payments reviewed
<b>High levels of worker churn</b>	Workers frequently changed categories, with different roles and pay entitlements	<p>Worker registration addressed by ODK</p> <p>Duplication addressed by Dedupe – a software-based deduplication library that uses machine learning</p>
<b>Multiple levels of approval of hazard pay and reporting required</b>	Multiple stakeholders all requiring different reporting	Reporting capabilities built into Odoo to meet the requirements of all pay partners
<b>Leakages, system gaming and patronage</b>	Corrupt practices	Designed audit modules and codes to audit for exceptions

# 5. STRONGER TOGETHER: COLLABORATING TO BEAT EBOLA

Collaboration was key to creating the right partnership mix and new ways of working together during the Ebola crisis that Sierra Leone had not seen before. This lesson reinforces a growing body of evidence gathered by the Better Than Cash Alliance and other bodies indicating that collaboration across stakeholder groups and sectors, including the private sector, is crucial to building well-functioning and accessible digital payments ecosystems, particularly in the context of humanitarian crises.

In the case of Sierra Leone during the Ebola crisis, the United Nations played a critical role as a convener, trusted by government, the private sector, and NGOs. Meaningful collaboration meant that as challenges arose in a volatile environment, stakeholders were aware of each other's roles and strengths, and could come together to resolve issues related to hazard payments within a matter of hours or days. This role as a convener was integrated into the UN Payment Team providing technical assistance on-site to NERC, and was instrumental in resolving new and unforeseen challenges.

At the same time, the technical independence of the PPERW, and the trust afforded to it by the government of Sierra Leone, meant that the assessment of the need to digitize was not influenced by political considerations. The government of Sierra Leone was committed to ensuring that all eligible Response Workers were paid the funds due to them on time. This commitment, and its effective implementation, were critical to the overall Ebola response.



Steve Gaojia (above left), Coordinator of the National Ebola Response Center, with His Excellency Ernest Bai Koroma, President of Sierra Leone on a Social Mobilisation Tour and with Major Pallo Conteh (retired), CEO of the National Ebola Response Center (below).

The service architecture of identifying eligible Response Workers, digitizing and tracking their changing roles and daily attendance, and paying them the right amount on time, was made possible by the partnership brokered by the Payments Programme between the government of Sierra Leone and global, regional, and domestic private sector companies such as Airtel, Africell, Splash Money, and local company iDT Labs. The value chain approach to digitizing payments allowed this partnership to quickly transform the challenge, helping the government of Sierra Leone deliver scale, efficiency, and transparency of payments in a crisis environment. This success has also subsequently opened up new opportunities for collaboration across various sectors in crisis response.

Collaboration was also crucial in addressing complex challenges relating to the fiscal sustainability of the Payments Programme, as the number of Response Workers rapidly grew to combat the rapid spread of the disease. At the same time, the Ebola crisis had seriously affected many sources of economic activity in Sierra Leone, such that the large quantities of funds flowing into the country to help combat the crisis gave rise to new forms of economic activity that became known colloquially as “the Ebola Economy.” To address these complex challenges, a Hazard Payment Committee was established to address these issues, along with unforeseen challenges, and take decisions quickly and cohesively. It consisted of implementing development partners and NGOs, and was convened by the government of Sierra Leone and the United Nations through the Payments Programme.

## Stakeholder Roles

	IDENTITY	ACCOUNTING: KEEPING TRACK OF TRANSACTIONS	MESSAGING: CONVEYING TRANSACTION INFORMATION SECURELY
<b>Government</b>	Payments Programme for Ebola Response Workers  Ministry of Health and Sanitation  National Ebola Response Centre  Anti Corruption Commission	Payments Programme for Ebola Response Workers  Ministry of Finance and Economic Development  Bank of Sierra Leone (Central Bank)  Community Banks	Payments Programme for Ebola Response Workers  National Telecommunications Commission
<b>Donors</b>	United Nations Development Programme	United Nations Capital Development Fund/ Better Than Cash Alliance	United Nations Development Programme  United Nations Capital Development Fund/ Better Than Cash Alliance
<b>Private Sector</b>	iDT Labs	Commercial Banks Splash Money BDO (Auditor)	Mobile Network Operators

## Key Implementation Stakeholders

	INSTITUTION	ROLE
<b>Government of Sierra Leone</b>	<b>National Ebola Response Center</b>	Fulfilling Government's commitment to pay hazard payments to Response Workers
	<b>Ministry of Finance &amp; Planning</b>	Supporting NERC on its fiduciary compliance for all Ebola donor funds, including for hazard payments
	<b>Ministry of Health &amp; Sanitation</b>	Organizing health centers to follow procedures for approving Response Workers on payee lists
	<b>Anti-Corruption Commission</b>	Supporting NERC by investigating any claims of corruption for hazard payments
	<b>Bank of Sierra Leone</b>	Supporting NERC to ensure cooperation of the financial sector to make digital payments
	<b>National Telecommunications Commission (NATCOM)</b>	Supporting NERC and Bank of Sierra Leone to ensure cooperation of MNOs in case of regulatory roadblocks
<b>Donors</b>	<b>United Nations Mission for Ebola Emergency Response (UNMEER)</b>	Representing the UN in all meetings related to hazard payments
	<b>United Nations Development Programme United Nations Capital Development Fund and Better Than Cash Alliance</b>	Providing technical assistance and implementation support to NERC
	<b>United Kingdom Government Ebola Response</b>	Coordinating all the NGOs supported by the Department for International Development (DFID) (United Kingdom) for hazard payments to ensure that the same Response Workers are not paid by Government and by DFID-funded NGOs
	<b>World Bank</b>	Funding agency for hazard payments; Providing technical assistance on financial education outreach initiatives and bank transfer implementation, implemented through the Payments Programme
	<b>African Development Bank</b>	Funding agency for hazard payments
<b>NGOs</b>	<b>All partners paying Response Workers not paid by NERC</b>	Paying Response Workers and coordinating with NERC through the Payments Programme to utilize a common information management system for digital identification to mitigate overpayments
<b>Private Sector</b>	<b>Airtel</b>	Contracted by NERC through the Payments Programme to digitally pay Response Workers
	<b>Africell</b>	Contracted by NERC through the Payments Programme to digitally pay Response Workers
	<b>Splash Money</b>	Contracted by NERC through the Payments Programme to digitally pay Response Workers, expand the agent network, and manage liquidity for hazard payments to Response Workers
	<b>All major commercial banks</b>	Partnered with NERC through the Payments Programme to move hazard payments from mobile money to direct bank account transfers
	<b>BDO (auditor)</b>	Hired by World Bank and African Development Bank to ensure fiduciary compliance in respect of all World Bank funds, including hazard payment financing
	<b>iDT Labs</b>	Hired by government of Sierra Leone to develop digital identity database



## 6. GETTING RESULTS THROUGH DIGITAL: SAVING MONEY AND SAVING LIVES

### **Timely payments to eligible Response Workers reduced the number of strikes related to payment delay from an average of eight per month to zero within three months**

Digitization of hazard payments meant that payments could be made instantaneously and eligible Response Workers on payee lists were paid on time. When the Payments Programme was operating optimally, 98 percent of the 30,000 Response Workers were paid on time and in the correct amount. This led to a rapid cessation of strikes related to timing and amount of payments from eight strikes per month on average (which took approximately 800 workers out of the Ebola response workforce per month for on average one day each).<sup>13</sup> Importantly, it also helped donors develop trust in the Sierra Leone hazard payment system, underpinning continued support for the Payments Programme.

### **Digitizing payments helped improve operational efficiency and reduce leakage, reducing costs, and ultimately saving US\$10.7 million**

Despite skepticism about mobile money commissions at 5 percent of total transfer amounts, the hidden costs of inefficient service provision often far exceeded the amount of these commissions. In Sierra Leone, digitization activities led to an estimated cost savings of US\$10.7 million for the government and taxpayers, development partners, and Response Workers from December 2014 until December 2015 [see Methodologies Annex]. The largest proportion of cost savings emerged from digitization of (and other improvements to) list management infrastructure.

To put this cost saving in perspective, US\$10.7 million is equivalent to the annual cost of funding Sierra Leone's Free Health Care Program that caters for 1.4 million children under 5 years and 250,000 pregnant women, providing check-ups, ongoing treatment, medications, and surgery.<sup>14</sup>

This \$10.7 million cost saving does not include the countless Response Workers who testify that digital payments gave them control over their pay and put an end to unauthorized deductions by managers – equivalent of up to 50 percent of their hazard payments when payments were made in cash.

“There was a direct correlation between digitizing payments and the cessation of strikes.”

**STEVE GAOJIA**  
COO, NERC



## 7. LESSONS FROM SIERRA LEONE

The Sierra Leone Payments Programme for Response Workers has had a clear impact on global dialogue about how to best prepare for and deliver humanitarian response payments. The ability to distribute money to people digitally has the potential to change both the logic and practice of humanitarian crisis payments. It allows stakeholders to act with unprecedented speed to help affected populations during or after natural disasters and other kinds of crises. In Sierra Leone's case, the transition from distributing hazard payments in cash to distributing them digitally also reduced the incidence of both fraud and ghost recipients.

As a result of these and other benefits of digital payment demonstrated clearly during the Ebola crisis, the government of Sierra Leone joined the Better Than Cash Alliance in June 2015. By becoming a member of the Alliance, the government of Sierra Leone aims to improve the efficiency of its payments to social welfare recipients and government employees, delivering substantial cost savings and efficiency gains, as well as supporting the development of a stronger digital payments ecosystem to boost financial inclusion and drive new forms of economic activity.

Beyond Sierra Leone, governments and the international development community are increasingly harnessing digital payments to deliver public transfers and salaries, particularly during crises when speed is critical. This serves both to drive efficiency gains and to encourage beneficiaries' entry into, and use of, digital networks as a gateway to greater financial inclusion. However, significant work remains to build partnerships and infrastructure that can sustainably include targeted population segments, which are often found in vulnerable and disadvantaged communities. This work is vital to strengthening social and economic resilience in these communities, and extending to more people the broader economic opportunities afforded by digital payments. Key challenges to greater uptake of digital payments – and hence greater financial inclusion – as observed in Sierra Leone during the Ebola crisis are set out below.

## Increasing demand for digital payments in humanitarian crises

### Improving financial literacy reduces resistance to digital payment products and channels

Extending the reach of services does not guarantee usage without complementary efforts to address consumer education. Without appropriately designed products and consumer education, the benefits of avoiding cash transactions can be short-lived. As an example, during the Ebola crisis in Sierra Leone, Response Workers often cashed-out immediately upon receipt of digital payments and then continued to transact in cash. As a result, Response Workers were generally not using their electronic accounts either to save or access other financial services.

When the Payments Programme, in partnership with the World Bank, introduced consumer education for Response Workers in February 2015, at least 20 percent of Response Workers started maintaining balances in their accounts.

### Providing appropriate protections and recourse mechanisms increases trust in digital payments

Enabling users to understand and mitigate risks, and minimize potential losses, when using new digital products and services is critical for digital financial services to meet users' expectations and needs and, in turn, drive sustained financial inclusion. In the Sierra Leone experience, Response Workers encountered common problems that opened them up to risks including financial risks. These included:

- An inability to transact due to network/service downtime
- Insufficient agent liquidity or float, which also affects the ability to transact
- User interfaces that many find complex and confusing
- Poor customer recourse options
- Non-transparent fees and other terms
- Fraud

The Sierra Leone experience builds on a fast-growing body of evidence indicating that addressing the above problems is critical in order to build trust in digital payments ecosystems and products, which in turn lifts rates of adoption of digital payments by first-time users and accelerates sustained usage. Similarly, Sierra Leone's experience demonstrated that failure to provide a consistent user experience across devices and channels can have a negative impact on user uptake.

## **Building stronger digital payment systems**

### **Supporting collaboration among MNOs, agent networks, and commercial banks helps deliver more effective and inclusive digital payments ecosystems**

For digital financial services to reach scale, broad partnerships are needed across sectors to establish and develop an inclusive digital payments ecosystem. At the beginning of the Sierra Leone digitization process, MNOs, agent networks, and commercial banks saw each other as competitors, rather than peers. By recognizing a clear alignment of interests through the United Nation's neutral convening role, these stakeholders ultimately came together and collaborated as much as possible from a regulatory and technical point of view.

### **Vulnerable population segments should be taken into account when designing and marketing digital payments**

Not just in Sierra Leone, but in many developing countries, digital applications often do not recognize low levels of literacy and numeracy in vulnerable population segments. In many instances, technological innovations such as voice command functionality have proved effective for users with low levels of literacy or numeracy.

## **Building inclusive and integrated infrastructure**

### **Accessible and reliable technology and network infrastructure is crucial**

While technology and network infrastructure is reaching farther than ever, it is not always accessible or reliable, particularly in rural and remote communities. Improving technology and network infrastructure will lead to greater adoption and sustained usage of digital payments, and in turn drive greater financial inclusion and economic opportunity.

### **Interoperability and policy integration between the banking and telecom sectors is crucial**

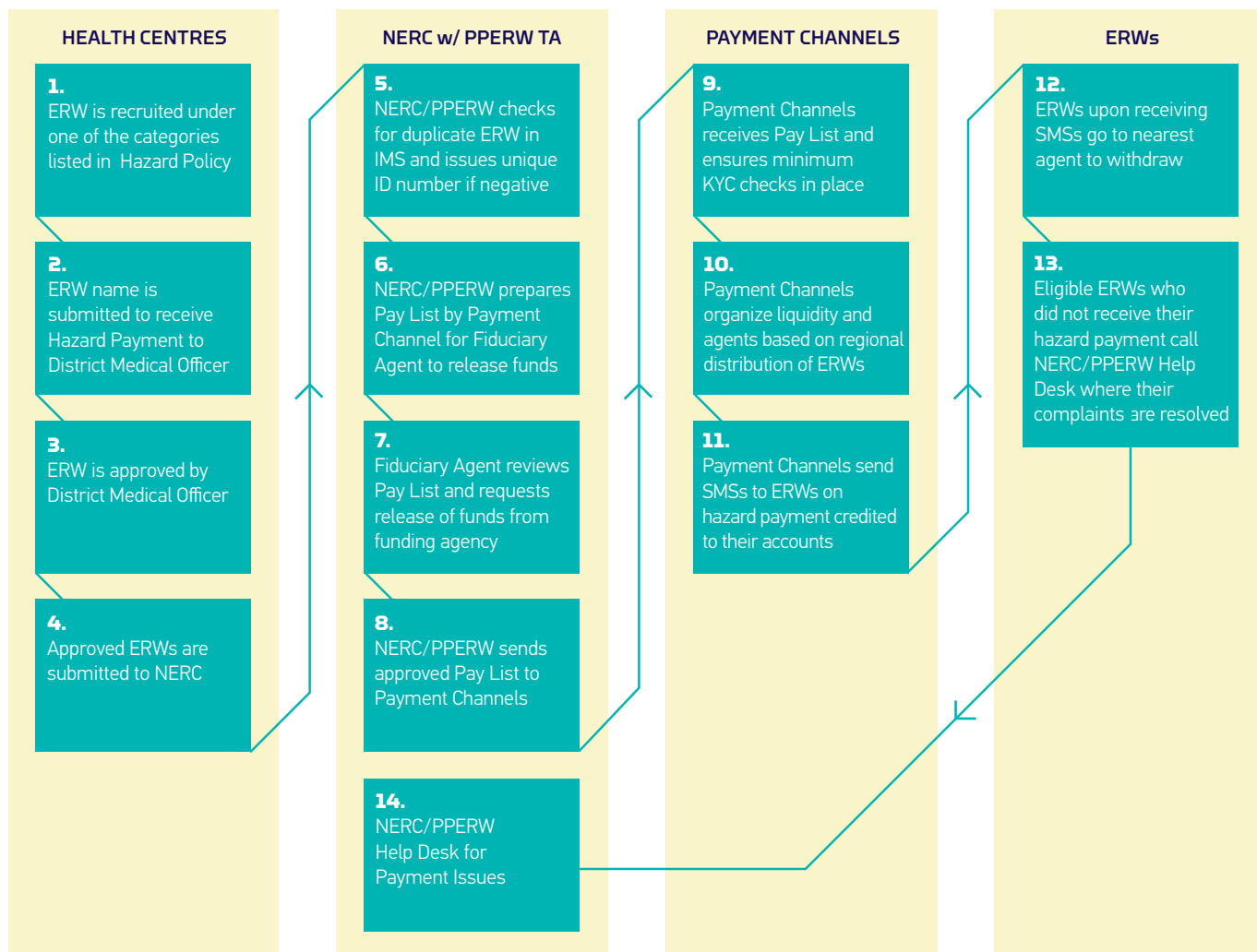
In Sierra Leone, digital payment and mobile technology allowed hazard payments to flow from payer to payee in real time and at as low a cost as possible. However, payments received could only be used for a limited number of transactions such as airtime top-ups and Person to Person (P2P) transfers within the closed network. This meant the vast majority of payments made into mobile wallets were usually withdrawn immediately upon receipt of funds by the Response Worker.

## Creating a **payment value chain**

### Digitizing as extensively as possible along the **payment value chain is crucial**

The success of digital payments to end-recipients (in Sierra Leone's case, Response Workers) depended to a large extent on digitizing upstream activities such as identification and registration of recipients, and effective information management systems to coordinate various cash transfer programs targeting the same beneficiaries. Without digitization throughout the value chain, efforts to make last-mile payments can fail because (a) the wrong recipients get paid; and/or (b) recipients receive payment for the same work from more than one source. A robust value chain approach in crisis situations is vital to preventing this overpayment and fraud. This approach also minimizes errors of exclusion from payee lists that can lead to strike actions, severely impeding crisis relief capabilities.

### Hazard Payment Value Chain



## Fostering collaboration between the humanitarian and financial inclusion sectors

### Improving dialogue is key to better preparation for crises and better outcomes from digital payments

The need for rapid solutions in traditional areas of development – such as e-governance and identification systems – presents a unique opportunity for the humanitarian and financial services sectors to collaborate more systematically to better prepare for future crises and deliver better financial inclusion outcomes after crises pass.

When talking about crisis and preparedness, it is important to recognize the need for more intentional dialogue and designated spaces (virtual or otherwise) for the humanitarian sector to articulate its needs, and for financial inclusion stakeholders to address those needs in their policy development processes. It will be interesting to observe to what extent the preparedness lessons arising from the humanitarian sector – particularly from such events as the Ebola crisis – will be incorporated into current and future financial inclusions programs.<sup>15</sup> Key questions are how to build stronger and wider partnerships across the sectors and include other stakeholders during policy development cycles, and who should bear the costs associated with closer collaboration.



## 8. WHERE TO FROM HERE?

### Strategies to Drive Digital Payments in Crisis Scenarios

Following the Payments Programme's experience during the Ebola crisis, UNDP and UNCDF are planning deeper engagements in the fragile states of Guinea, Liberia, and Sierra Leone, with the aim of increasing digital access to financial services and making that access cost effective, sustainable, and transformational.

There are clearly compelling reasons to advance digital financial services in fragile states that are vulnerable to crises and often face a triple burden:

**A FINANCIAL SECTOR UNDER DEVELOPMENT:** Financial sector performance in fragile states already significantly lags the rest of Africa and the world across a number of key indicators (including financial inclusion, bank credit to the private sector as a percentage of GDP, bank overhead costs, and bank branch and channel coverage, among others).

**HIGH LEVELS OF POVERTY:** For the first time in history, it is estimated that the majority of the world's poor now live in fragile states.<sup>16</sup>

**A CHALLENGING OPERATING ENVIRONMENT:** Fragile states are where financial sector development work is most difficult, partly because interventions can be hampered by weak market infrastructure, unsupportive and often highly under-developed regulatory regimes, and complex political economies.

There is now a fast-growing body of evidence showing that digital payments can accelerate greater financial and social inclusion in the context of crisis scenarios, as well as new economic opportunities in fragile states where on average only 14 percent of adults are banked, compared to 23 percent across the African region. Globally, financial sector policymakers increasingly recognize the game-changing potential of digital payments as part of crisis payments preparedness. Stakeholders note that institutions including the G20 and global financial regulators have the opportunity – and indeed the responsibility – to prepare the global policymaking community for both the risks and the rewards of digitization.<sup>17</sup>

This section outlines the specific actions that governments, the private sector, NGOs, and the international development community can take to address barriers to advancing digital payments, with a view to supporting greater ongoing financial inclusion before, during, and after crises.

**In general, there is a need for:**

- Better design of digital payments in a variety of contexts
- More research on what is working (or not), for whom, and to what ends
- More global dialogue and alignment across traditionally disparate disciplines and fields, leading to more effective partnerships, smarter investments, and better leveraging of resources to reduce duplication and accelerate innovation

**Actions governments can take:**

- Lead by example in digitizing government payments
- Adopt, promote, and enforce financial consumer protections
- Leverage new technologies such as biometrics to overcome low levels of financial literacy
- Create a robust digital financial identification system
- Implement regulatory policies that allow digital financial services to be offered and meaningfully accessed

**Actions the financial services industry can take:**

- Collaborate with other firms to increase the use of digital financial transactions while lowering the costs of these transactions
- Contribute to financial customer protection frameworks to ensure that beneficiaries are treated fairly, building trust in digital financial services and driving adoption
- Provide a robust and reliable network for financial transactions

**Actions the humanitarian sector can take:**

- Leverage roles as large payers and payees to increase access to, and adoption of, digital payments, helping build inclusive digital payments ecosystems and trust in digital payments
- Invest in providing services through mobile phones or the Internet that could contribute to bridging socio-economic gaps in ownership of digital devices and services

**Actions international donors, funders, and other multilateral stakeholders can take:**

- Advocate for a policy environment that supports digitization of humanitarian payments, helping improve sustainable access to financial services
- Support sector-wide and/or multilateral partnerships to influence, design, and implement digital channels used in crisis response and recovery
- Foster and participate in global dialogue and agenda-setting across global stakeholders working in this field
- Fund market infrastructure
- Support appropriate consumer protection frameworks at the regulatory and industry levels



## Acronyms

<b>ACH</b>	Automatic Clearing House
<b>ATM</b>	Automatic Teller Machine
<b>BSL</b>	Bank of Sierra Leone
<b>D2P</b>	Development Agency/Donor to Person
<b>DERC</b>	District Ebola Response Center
<b>DFID</b>	Department for International Development
<b>DFS</b>	Digital Financial Services
<b>DMO</b>	District Medical Officer
<b>DPE</b>	Digital Payments Ecosystem
<b>ETU</b>	Ebola Treatment Unit
<b>ERW</b>	Ebola Response Worker
<b>EVD</b>	Ebola Virus Disease
<b>G2P</b>	Government to Person
<b>GOSL</b>	Government of Sierra Leone
<b>IMS</b>	Information Management System
<b>KYC</b>	Know Your Customer
<b>MNO</b>	Mobile Network Operator
<b>MOFED</b>	Ministry of Finance and Economic Development
<b>MOHS</b>	Ministry of Health and Sanitation
<b>MRU</b>	Mano River Union
<b>NATCOM</b>	National Telecommunications Commission
<b>NERC</b>	National Ebola Response Center
<b>NGO</b>	Nongovernmental Organization
<b>ODK</b>	Open Data Kit
<b>P2P</b>	Person to Person
<b>POS</b>	Point-of-Sale
<b>PPERW</b>	Payments Programme for Ebola Response Workers
<b>SMS</b>	Short Message System
<b>UN</b>	United Nations
<b>UNMEER</b>	United Nations Mission for Ebola Emergency Response
<b>UNFPA</b>	United Nations Population Fund
<b>UNDP</b>	United Nations Development Program
<b>UNCDF</b>	United Nations Capital Development Fund
<b>VAS</b>	Value Added Service
<b>WHO</b>	World Health Organization



## Interviewees

ORGANIZATION	NAME
Africell SL	<b>Shadi Gerjawi</b> <i>CEO</i>
Airtel SL	<b>Sudipto Chaudhary</b> <i>CEO</i>
BDO	<b>Chris George</b> <i>Senior Auditor for Ebola Response Funds</i>
iDT Labs	<b>Salton Massally</b> <i>Chief Technology Officer</i>
NERC	<b>Steve Gaojia</b> <i>Chief Operating Officer</i> <b>Abdul Wurie Rahman</b> <i>Planning Director</i>
Splash Cash	<b>Daniel Osei-Antwi</b> <i>CEO</i>
UNCDF	<b>T. Keyzom Massally</b> <i>PPERW Team Leader December '14 – March '15</i>
UNDP	<b>Ghulam Sherani</b> <i>PPERW Team Leader March '15 – Dec '15</i> <b>Lorisa Canillas</b> <i>PPERW Consultant November '14 – June '15</i> <b>Alain Koffi</b> <i>Liberia Hazard Payment Team</i>
UNMEER	<b>Parvathy Ramaswami</b> <i>Seconded from World Food Programme</i>
World Bank	<b>Shun Mabuchi</b> <i>Ebola Response Team Leader</i> <b>Juan Costain</b> <i>Senior Financial Sector Specialist</i> <b>Balakrishnan Mahadevan</b> <i>Financial Sector Specialist</i> <b>Julie Lee</b> <i>Consultant – Financial Education</i>

## Methodologies

### Methodology of Cost Saving Calculation

The cost saving calculation in this Case Study compares the cost of payments in cash versus cost savings generated through the interrelated activities involved in digitizing payments, namely:

- Phase 1 – the shift to digital payments
- Phase 2 – the shift to digital identification
- Phase 3 – the adoption of shared digital identities infrastructure

**During the period of cash payments prior to digitization, the government of Sierra Leone incurred the following costs per month:**

- Daily Subsistence Allowance and transport paid to cash payment teams going out to districts/health units to make over-the-counter payments: US\$120,000.
- Total monthly salaries of all cash payment agents: US\$21,000.
- Total costs for cash payments per month: US\$141,000. With the digital Payment Programme continuing from December 2014 – December 2015, the costs of cash payments per month is multiplied by 13 to calculate total costs for cash payments that were avoided (i.e., delivering a net saving) due to digital payments of US\$1,833,000.

**During the digitization activities, the following costs and savings were generated per month:**

Phase 1:

- Fees paid to Mobile Network Operators and digital payment platforms of 5 percent of an average total payment amount of US\$4 million per month: US\$200,000.
- Assuming an average of 20,000 Response Workers spending US\$4 per payment cycle to travel to receive cash payments in centralized locations within each district, the total amount saved for Response Workers per month: US\$80,000.
- In Phase 1: digitization had a net cost of \$120,000 per month, or US\$1,560,000 in total.

Phase 2:

- Cost saving from removing 3,054 Response Worker ghost accounts from payee lists, receiving an average hazard payment of US\$250 per month, generating monthly savings: US\$763,500, or US\$9,925,500 in total.

Phase 3:

- Cost savings from removing 150 Response Workers receiving double-payments from payee lists, receiving a total of US\$250,000 additional hazard payments, generating monthly savings of US\$37,500, or US\$487,500 in total.

**Combined, these savings, deducting the net costs of digital payments in Phase 1, delivered a net total saving of US\$10,868,000.**

## Cost Savings from Shifting from Cash to Digital Payments

(over 13 month period December 2014 to December 2015 inclusive)

Cost savings are expressed as positive values; costs of digital payments are expressed as negative values.

SOURCE OF SAVING / COST	CASH PAYMENT COSTS FOREGONE	DIGITAL PHASE 1	DIGITAL PHASE 2	DIGITAL PHASE 3	TOTAL SAVINGS FROM SHIFTING FROM CASH TO DIGITAL
Monthly fees paid to Ministry of Finance Team (direct) during cash phase (saved during digital payment)	120,000				
Monthly salary of cash payment agents (indirect) during cash phase (saved during digital payment)	21,000				
Fees to Mobile Network Operators (5% of average US\$4 million per month)		-200,000			
Savings Per Response Worker (US\$4 per average ERW of 20,000)		80,000			
Savings by removing Ghost Accounts (3,054 ghost Response Workers with average monthly hazard payment of US\$250)			763,500		
Savings from Removing "Double Dippers" (150 with average monthly hazard pay of US\$250)				37,500	
<b>Total monthly saving</b>	<b>141,000</b>	<b>-120,000</b>	<b>763,500</b>	<b>37,500</b>	<b>822,000</b>
<b>Total saving over 13 months of digital payments</b>	<b>1,833,000</b>	<b>-1,560,000</b>	<b>9,925,500</b>	<b>487,500</b>	<b>10,686,000</b>

### One Possible Approach to Estimating the Number of Lives Saved by Digitizing Payments to Ebola Response Workers

- One possible approach for estimating how digital payments could have enabled Ebola Response Workers (ERW) to save lives is by looking at the impact of strikes on the ERW workforce prior to the digitization of payments.
- The improved speed and accuracy of payments following the transition from cash to digital payments reduced strikes from an average of eight per month to zero.
- With a conservative estimate of 100 people taking part in each strike, this prevented the loss of around 800 working days from Sierra Leone's crisis response workforce during the initial months after digitization.
- Based on an assessment of the average daily number of points of contact (or "touchpoints") that Response Workers had with individuals in the community which either reduced the risk of transmission or the risk of death among those infected, digitizing payments could have prevented the loss of approximate 7,500 touchpoints in total over the duration of the crisis.
- The Case Fatality Rate for Ebola in Sierra Leone was around 28 percent. (This is a conservative estimate as according to the WHO, the average EVD case fatality rate is around 50 percent. Case fatality rates have varied from 25 percent to 90 percent in past outbreaks)
- The World Health Organization calculates the number of Ebola-related deaths as a proportion of the number of Ebola infections.
- While various factors contribute to the Case Fatality Rate, the functions carried out by Response Workers were critical among them.
- This approach estimates that digitizing payments helped prevent 2,100 deaths over the course of the Ebola crisis by preventing strikes.
- Importantly, this figure represents a conservative estimate, as it is based on an average of eight strikes per month prior to digitization of payments. When strike actions were at their peak, there were substantially more than eight strikes per month. This calculation also uses conservative assumptions about the number of Response Workers participating in each strike (100), whereas many strikes involved considerably more Response Workers.
- Digital payments are just one factor among a variety of factors that is likely to have made an impact on cost reduction and lives saved. Additional techniques, such as regression analysis, could be used to test the impact of this and other variables.
- Recognizing that there are a range of possible options for this particular approach, we welcome feedback on how to improve estimating the number of lives saved.

## Endnotes

1. For details on the methodology, please refer to the annex on page 42
2. For details on the methodology, please refer to the annex on page 40.
3. The key principles of financial inclusion are a body of knowledge undergoing rapid development, however commonly cited principles are set out at <https://www.betterthancash.org/news/media-releases/forum-highlights-global-standards-for-responsible-digital-finance>
4. World Health Organization, Global Health Observatory data repository, data by country. Available at: <http://apps.who.int/gho/data/node.country>
5. <http://www.who.int/csr/disease/ebola/situation-reports/en/>
6. OCHA/UN (2014) Ebola virus disease outbreak: Overview of Needs and Requirements, September 2014, Geneva
7. <http://www.who.int/csr/disease/ebola/one-year-report/factors/en/>
8. This was especially pertinent in Liberia, where negotiations on pay scales between workers' unions and the government pre-dated the Ebola crisis.
9. PPERW Guinea, Liberia, Sierra Leone
10. <http://www.undp.org/content/sierraleone/en/home/presscenter/pressreleases/2015/11/17/sierra-leone-launches-first-mobile-financial-services-guidelines.html>
11. GT Bank, Zenith Bank and Ecobank customers can link their bank accounts to Airtel mobile money, however partnership was limited to bank-centric services such as balance inquiries.
12. [http://www.switsalone.com/20627\\_sierra-leone-raises-minimum-wage-to-sll-500000-115/](http://www.switsalone.com/20627_sierra-leone-raises-minimum-wage-to-sll-500000-115/)
13. Issues related to errors of exclusion from payee lists continued to result in strikes, but at significantly lower levels than before the shift to digital payments.
14. This \$10.7 million cost saving was spread across the government of Sierra Leone and Response Workers.
15. In order to fully leverage the lessons learned during the Ebola crisis, the World Bank's Finance & Markets Global Practice is conducting an assessment of the prevailing levels of financial capability of health workers involved in the Ebola response, including analysis of their experience with the hazard payment mechanisms in Sierra Leone, Guinea, and Liberia. The study will also identify the successes and challenges of the broader communications program on hazard payments, including grievance-handling mechanisms. The overall aim of the study is to understand what worked well and what did not in the hazard payment system and to draw practical lessons for the government to manage similar systems in the future. The assessment will employ both quantitative and qualitative research methods including the analysis of management information system data, quantitative and qualitative surveys with health workers, as well as interviews with key informants in the hazard payment process.
16. <http://www.g7plus.org/en/resources/making-financing-development-work-fragile-and-conflict-affected-countries>
17. For example, key opportunities are set out in a report entitled The Opportunities of Digitizing Payments, prepared by the World Bank Development Research Group, the Better Than Cash Alliance, and the Bill & Melinda Gates Foundation to the G20 Global Partnership for Financial Inclusion. [https://docs.gatesfoundation.org/documents/G20%20Report\\_Final.pdf](https://docs.gatesfoundation.org/documents/G20%20Report_Final.pdf)

## The Better Than Cash Alliance Case Study Series

The Better Than Cash Alliance case studies seek to highlight specific examples of shifts to digital payments by governments, companies and international organizations. Each case study aims to provide insights for a wide audience on the factors that have helped or hindered the digitization process, and also present key results and benefits of the transition away from cash. We hope that readers will be able to adapt the lessons from these cases to their own contexts and local conditions.

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## About The Better Than Cash Alliance

The Better Than Cash Alliance is a partnership of governments, companies, and international organizations that accelerates the transition from cash to digital payments in order to reduce poverty and drive inclusive growth. Based at the United Nations, the Alliance has over 50 members, works closely with other global organizations, and is an implementing partner for the G20 Global Partnership for Financial Inclusion.

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