

Mobile is a Lifeline: Research from Nyarugusu Refugee Camp, Tanzania

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MOBILE IS A LIFELINE: RESEARCH FROM NYARUGUSU REFUGEE CAMP, TANZANIA

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The Connectivity for Refugees program was established 2 years ago within UNHCR with the aim to understand better how refugees were connected around the world. The first ever Global Refugee connectivity assessment was carried out, which led to a new strategy direction within UNHCR. Through creative partnerships and smart investments, UNHCR aims to ensure that all refugees, and the communities that host them, are connected to mobile networks and the internet so that they can leverage these technologies to improve their lives. UNHCR recognizes it cannot create a connected refugee population on its own. Partnerships are key – between refugees and host communities, and between governments, civil society and the private sector.

For more please visit:
www.unhcr.org/connectivity-for-refugees.html

UKaid from the British people

This initiative is currently funded by the UK Department for international Development (DFID) and supported by the GSMA and its members.

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1 Executive Summary

By the end of 2016, the number of displaced people worldwide reached a record 65.6 million, including 22.5 million people living as refugees[1], intensifying pressure on the humanitarian sector to find more effective and efficient ways to meet the needs of affected populations. Displaced populations are becoming increasingly connected as the mobile industry continues to extend its coverage, today providing services to 5 billion[2] people across the globe. At the same time, displaced populations continue to be disproportionately affected by affordability and accessibility constraints. The unique needs of refugees can significantly elevate the demand for mobile and internet services. From providing refugees with the means to communicate with separated family members and connect with the wider world, to receiving vital income via remittances and humanitarian cash transfers, mobile technology is addressing these needs.

This report explores the socio-economic impact of connectivity for refugees in a large, rural camp setting in Tanzania. Nyarugusu is one of three large refugee camps in the Kigoma region. Established in 1996, it now hosts more than 136,000 refugees from the Democratic Republic of Congo (DRC) and Burundi. In 2016, Vodacom installed a 3G tower in Nyarugusu camp for the first time, providing an opportunity to assess the impact of mobile connectivity on refugees. Today, Airtel, Halotel and Tigo also provide connectivity to refugees in the camp. Nyarugusu remains the only camp in the Kigoma region with access to 3G.

The purpose of this report is to provide robust evidence of the current use, value and impact of connectivity, and the barriers and challenges that refugees face in accessing and using mobile devices. This research provides mobile network operators (MNOs) and humanitarian agencies with key insights on the opportunities and barriers to enhancing the provision of mobile services to refugees.

1. UNHCR, Global Trends 2016, http://www.unhcr.org/5943e8a34
2. GSMA, Number of mobile subscribers worldwide hits 5 billion, https://www.gsma.com/newsroom/press-release/number-mobile-subscribers-worldwide-hits-5-billion/

Key Insights

There is a significant business case for extending mobile coverage to refugee camps.

Vodacom's tower, currently shared with Tigo and Airtel[3], is reported to be operating at full capacity, with a call volume of up to 180,000 calls per day.[4] Furthermore, refugee mobile phone users report spending an average of 9,856 TSH (4.40 USD)[5] per month on credit and data[6] - a monthly spend which exceeds the estimated average revenue per subscriber in Tanzania (9,744 TSH, 4.35 USD)[7], despite limited income opportunities for refugees in the country. Refugees report making significant sacrifices in order to purchase phones, including long-term saving. These findings therefore suggest that extending coverage to refugee camps can be a sustainable business for MNOs due to the camps' typically high population densities and refugees' considerable demand for connection to the outside world.

Two thirds of households in Nyarugusu have access to at least one mobile device, but access is notably lower for more vulnerable population segments.

In total, two thirds of households have access to at least one mobile device and 56 per cent of respondents report regularly using a phone. The high level of household access to mobile phones provides opportunities for humanitarian agencies to reach a large number of households through mobile communications and services. The disparity of phone access, however, between men (65 per cent) and women (47 per cent), and between Congolese (69 per cent) and Burundian (43 per cent) populations, highlights the importance for all stakeholders to consider approaches to improving affordability and enhancing access to connectivity for vulnerable groups and those without access to mobile devices, given the benefits that mobile and internet can deliver.

Humanitarian agencies are beginning to digitise their services to meet the needs of refugees, but there is great potential to further leverage mobile technology.

As refugees are increasingly connected, every area of humanitarian work can benefit as communication with communities and individuals becomes easier and more reliable[8]. A number of humanitarian organisations are partnering with MNOs to leverage mobile money to deliver cash to refugees, and many more are planning to follow this trend in the near future as focus moves away from in-kind aid to cash disbursements[9]. The World Food Programme (WFP) has partnered with Airtel in Tanzania to deliver humanitarian cash transfers to 10,000 refugees and aims to expand the number of beneficiaries to 80,000 by the end of 2017. Such partnerships provide MNOs with the commercial opportunity to expand their bulk payments offerings while attracting new customers. Digitising services can provide more efficient ways of delivering assistance for humanitarian agencies and more choice and dignity for beneficiaries.

Humanitarian agencies and governments should also consider how they can leverage mobile to more effectively communicate with refugees, particularly given high access rates to mobile phones and confidence levels (over 75 per cent of refugee phone users reported they were confident with calling and using SMS).

3. This shared tower agreement was set up between Vodacom, Tigo and Airtel to enable the MNOs to share sites in different areas of Tanzania to save costs by jointly running cell towers.
4. As reported in the Vodacom Tanzania utility report, June and October 2016.
5. The exchange rate used in this report is 1 TSH to 0.00045 USD, rounded to the nearest 0.10 USD.
6. GSMA survey of 484 refugees in Nyarugusu
7. Average Revenue Per User by subscriber, GSMA Intelligence, Q2, 2017
8. GSMA communication with Alan Vernon, UNHCR
9. World Food Programme, http://www1.wfp.org/cash-based-transfers

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Refugees have specific needs that are being addressed by mobile network operators through their commercial and philanthropic offerings.

Refugees in Nyarugusu face a number of challenges, including separation from family and friends; lack of income and livelihood opportunities; lack of education provision and resources; and the effects of trauma, confinement and boredom on mental health and well-being. They are using mobile devices to address these challenges in four key ways:

1. **Connecting with family:** 96 per cent of users make calls to friends and family members living in the camp and 81 per cent call friends and family outside of the camp. Refugees are using social media to find missing loved ones; connect with friends and family; relay news and information; and as a safety net during emergencies. High demand for communication is the result of the unique and challenging circumstances that refugees find themselves in, with many Congolese refugees having lived in the camp for more than 20 years and mobile connectivity being one of few ways they can communicate with loved ones.

2. **Economic opportunity and mobile money:** Establishing informal business activities can increase resilience and give refugees greater agency and choice. In Nyarugusu, 20 per cent of refugees are engaged in informal trade and connectivity provides them with opportunities for identifying new clients; contacting suppliers; and accessing financial services through mobile money. In addition, 52 per cent of phone users access mobile money for remittances, informal payments, savings, or humanitarian cash transfers, with 49 per cent of mobile money users using the service at least once a month or more frequently. Collaboration with humanitarian agencies in their cash programming can increase the number of mobile money users, facilitate economic opportunity and enhance financial inclusion.

3. **Education:** In 2016, the Vodafone Foundation launched its 'connected classrooms' project in six schools in Nyarugusu, providing a Wi-Fi connection, projector and tablet devices for teachers and children. In addition, 28 per cent of adult internet users are using their phones to access informal education opportunities, including language learning and further education. Reduced smartphone costs, enhanced internet connectivity and the development of accessible, user-friendly applications has the potential to offer far-reaching benefits to refugee populations in terms of education, information and opportunities. MNOs and humanitarian agencies can work together to use digital technology to meet the growing demand for digital education services.

4. **Connectedness and wellbeing:** The importance of news and entertainment for refugees should not be underestimated. Connectivity can facilitate community activities within the camp and enable refugees to feel better connected to their home countries and to the world outside the camp. For example, 65 per cent of internet users go online to search for news and information and 35 per cent to access entertainment. These applications can alleviate the distinct stresses and vulnerabilities experienced by confined camp populations.



The barriers to getting and staying connected are more acute for refugees due to their specific circumstances.

Overall, the research found that the vast majority of respondents would like to increase their use of mobiles and of the internet. 92 per cent of non-users said that the cost of handsets prevents them from owning a phone. Other major barriers include the ability to meet SIM registration identity requirements; cost of credit and phone charging; digital literacy; and poor network quality. Gendered barriers to access also exist, with women significantly less likely to report using or owning a phone (62 per cent of men report owning a phone, compared to 36 per cent of women).

Although each refugee context is unique, a number of the barriers highlighted in this research are similar for refugees in other camp settings. MNOs, humanitarian organisations and governments can overcome barriers and continue to improve the lives of refugees by thinking creatively about how they can collaborate to: extend and improve 3G coverage; achieve enabling policy environments in which refugees can gain reliable connectivity access; and deliver innovative ways of ensuring refugees can use and afford the range of mobile services they demand.

2 Introduction

By the end of 2016, more than 65.6 million people were displaced and 22.5 million were living as refugees.[10] Protracted conflicts and natural disasters have forced many people to leave their home, community and country to seek refuge and safety. While 60 per cent of refugees globally seek asylum in urban areas,[11] a large proportion settle in refugee camps, where governments and humanitarian organisations provide basic necessities, such as food and shelter. The average length of major protracted refugee situations is now estimated to be 26 years.[12] A number of large camps in East Africa have been in operation since the 1990s and continue to serve long-term populations.[13] Even where refugee populations fluctuate, in terms of numbers and country of origin, many camps remain open to support evolving crises.

Often set up in remote and hard to reach areas, close to borders, many refugee camps lack basic mobile infrastructure, and very few have access to 3G connectivity. However, separation from family and loved ones, confinement, lack of opportunity and uncertainty for the future, can significantly elevate the need and demand for mobile and internet services.

Consequently, the role of mobile connectivity for refugees and displaced populations is becoming increasingly important. MNOs can address a range of the unique needs of refugees, including providing them with the means to communicate with separated family members, and connect with the wider world, through to receiving vital income via remittances. The mobile industry is stepping up to the challenge of meeting the needs of these displaced populations by undertaking a range of initiatives utilising mobile technology in innovative ways,[14] and partnering with the humanitarian sector to deliver essential services such as humanitarian cash transfers,[15] examples of which this report will address. However, as highlighted by evidence in this research, the market opportunity to deliver both social and commercial value in serving refugee populations is significant and growing, and more can be done by investing in capital expenditure, operating expenditure and development of partnerships.

The GSMA is working with our MNO members and humanitarian partners, notably UNHCR, to provide robust evidence of the current usage of mobile communication and value of connectivity for refugees. This work seeks to inform and shape mobile network operators' and humanitarian partners' strategies, to support them in delivering mobile connectivity to refugees, and make the case for the commercial value of doing so.

For MNOs the motivation behind the provision of reliable connectivity and mobile services for displaced populations is distinct across displacement contexts and can range from a predominantly corporate social responsibility initiative to being driven by commercial benefit. The ideal scenario is one in which MNOs can move towards profitability in the longer term to ensure initiatives have a viable business model to achieve scalability in order to reach a larger share of the growing number of refugees.

This report captures the socio-economic impact of connectivity for refugees in a large, rural camp setting in Tanzania. It focuses on the experiences and perceptions of the refugee population in Nyarugusu camp in the Kigoma region of north-west Tanzania, and the implications of this for MNOs, humanitarian agencies and governments. Nyarugusu hosts two distinct population groups: a long-term population of more than 70,000 Congolese refugees, and a more recent population of 65,000 Burundian refugees, displaced following the outbreak of conflict in April 2015.[15] Around 250 refugees from other East African countries are also hosted in the camp.

Connectivity in Nyarugusu was significantly improved by Vodacom's installation of a mobile tower within the camp in 2016, providing a valuable opportunity to understand the effects of enhanced mobile and internet connectivity for the refugee population. Airtel and Halotel have also made recent improvements to mobile infrastructure serving the camp, including the construction of an Airtel 'cell on wheels'[17] and a Halotel tower 5km from the camp, covering both the host community and the camp.

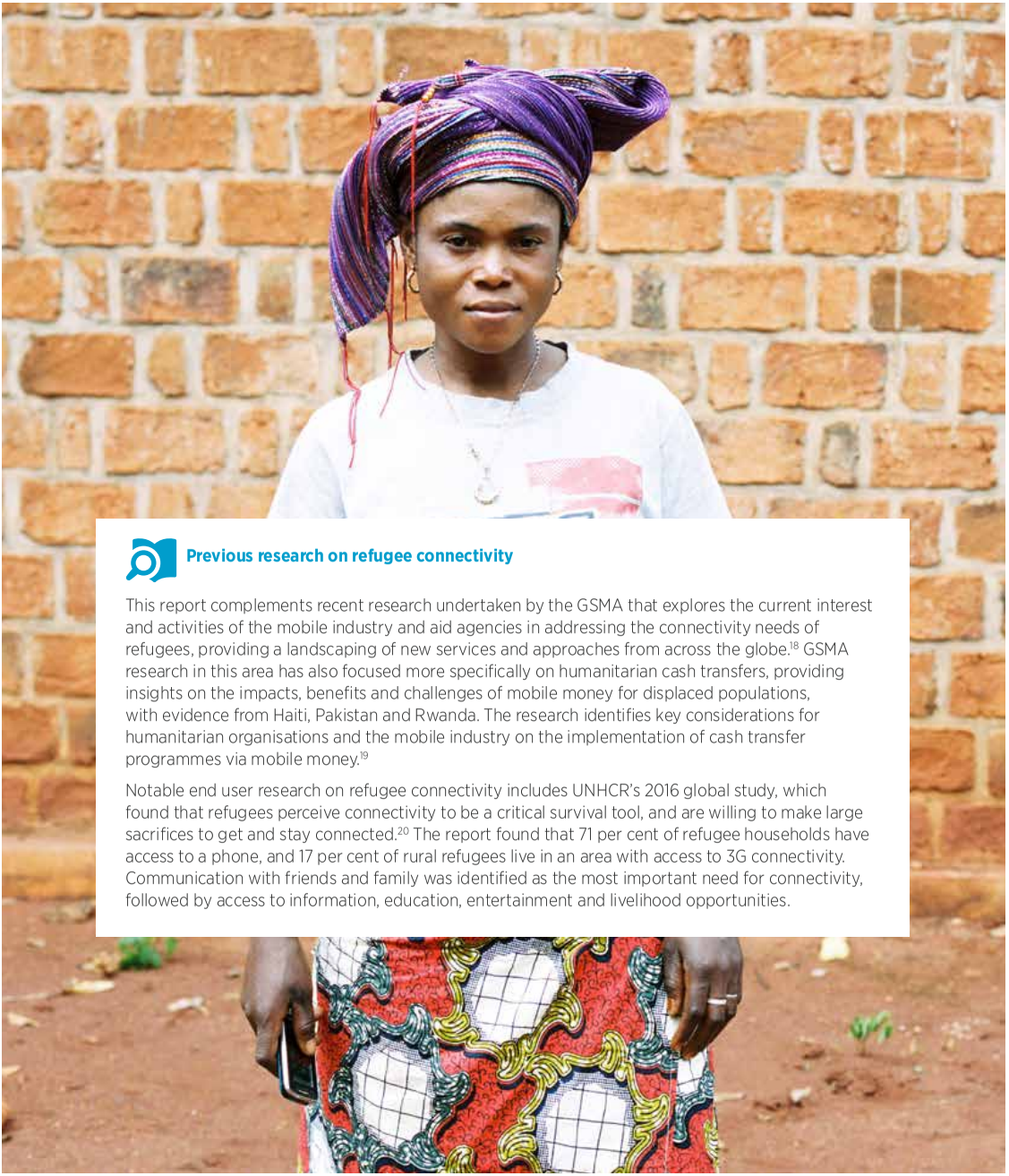
This study provides quantitative and qualitative evidence of the use, value and impact of connectivity, and the barriers and challenges that refugees face in accessing and using devices. Importantly, this research provides MNOs, humanitarian agencies and governments with key insights and recommendations of how they can better address the opportunities and barriers of enhancing the provision of mobile services to refugees.

The objectives of the study in Nyarugusu were to establish:

1. The number of refugees with access to mobile devices and connectivity;
2. The value placed on connectivity by refugees;
3. How refugees use and would like to use mobile phones;
4. The socio-economic impact of mobile phones and connectivity;
5. Drivers and barriers to refugees' access to connectivity; and
6. Recommendations for MNOs, humanitarian agencies and governments to better serve refugees through mobile technology.

Quantitative data was collected through a survey of 484 refugee households, including 244 Burundian households across five zones and 240 Congolese households across six zones. In addition, participatory methods were used to gather qualitative data, including 25 focus group, 21 mobile agent interviews, 10 market observations, key informant interviews with agency staff, and a series of case studies. Further details of the research methodology are provided in Annex 1.

10. UNHCR, Global Trends 2016, http://www.unhcr.org/5943e8a34
11. UNHCR, http://www.unhcr.org/uk/urban-refugees.html
12. UNHCR, Global Trends 2015, http://www.unhcr.org/uk/statistics/unhcrstats/576408cd7/unhcr-global-trends-2015.html
13. For example, Dadaab (1991), Hagadera (1992) and Kakuma (1992) in Kenya, Gihembe (1997) and Kiziba (1996) in Rwanda, and Nyarugusu (1996) in Tanzania.
14. GSMA Refugees and Connectivity Portal: https://www.gsma.com/refugee-connectivity/about/
15. For further information on this topic, see "Landscape Report: Mobile Money, Humanitarian Cash Transfers and Displaced Populations", 2017, GSMA: https://www.gsma.com/mobilefordevelopment/programme/disaster-response/mobile-money-humanitarian-cash-transfers
16. UNHCR, Nyarugusu Camp Profile, April 2017: https://data2.unhcr.org/en/documents/download/57641
17. This was set up in October 2016, but was adversely affected by a storm in early 2017 and is no longer in operation. Airtel is instead sharing the Vodacom tower to provide coverage to the camp population.



Previous research on refugee connectivity

This report complements recent research undertaken by the GSMA that explores the current interest and activities of the mobile industry and aid agencies in addressing the connectivity needs of refugees, providing a landscaping of new services and approaches from across the globe.[18] GSMA research in this area has also focused more specifically on humanitarian cash transfers, providing insights on the impacts, benefits and challenges of mobile money for displaced populations, with evidence from Haiti, Pakistan and Rwanda. The research identifies key considerations for humanitarian organisations and the mobile industry on the implementation of cash transfer programmes via mobile money.[19]

Notable end user research on refugee connectivity includes UNHCR's 2016 global study, which found that refugees perceive connectivity to be a critical survival tool, and are willing to make large sacrifices to get and stay connected.[20] The report found that 71 per cent of refugee households have access to a phone, and 17 per cent of rural refugees live in an area with access to 3G connectivity. Communication with friends and family was identified as the most important need for connectivity, followed by access to information, education, entertainment and livelihood opportunities.

18. GSMA, 2017, "The Importance of Mobile for Refugees: A Landscape of New Services and Approaches"
19. GSMA, 2017, "A Landscape Report: Mobile Money, Humanitarian Cash Transfers and Displaced Populations"
20. UNHCR, 2016, "Connecting Refugees: How Internet and Mobile Connectivity Can Improve Refugee Well-Being and Transform Humanitarian Action"

3 Context

3.1 Nyarugusu refugee camp



Burundian refugees collect food distributions from the WFP distribution centre.

Nyarugusu is one of three large refugee camps in the Kigoma region in north-west Tanzania. The camp is home to more than 136,000 refugees from DRC and Burundi. Refugees live in 142 villages across 28 square kilometres. 53 per cent are under the age of 18.

Nyarugusu camp was established in November 1996 by UNHCR and the Tanzanian government in response to an influx of refugees fleeing conflict in the Democratic Republic of Congo (DRC). In April 2017, the camp was home to more than 136,000 refugees,[21] including 70,000 Congolese refugees, most of whom have been in the camp for 10 to 20 years, and 65,000 Burundian refugees, the majority of whom fled to the camp following the conflict that broke out in April 2015.

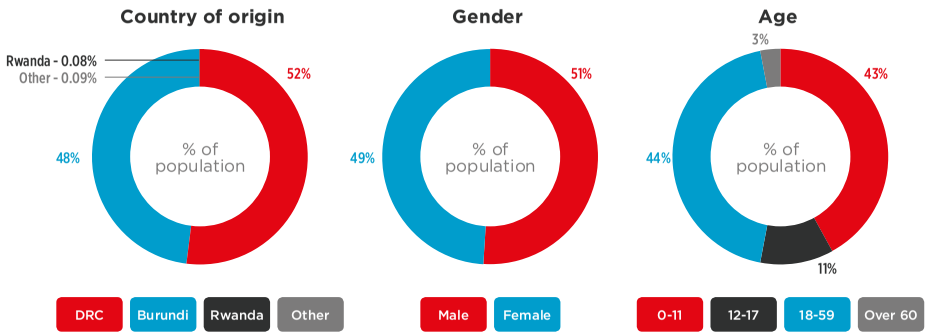
Nyarugusu is one of three camps in the Kigoma region. Mtendeli and Nduta were opened in 2015 to cope with the influx of Burundian refugees into the country. Mtendeli now hosts more than 51,000 Burundian refugees, and Nduta hosts over 125,000. Due to capacity, Nyarugusu is no longer taking new arrivals from Burundi; all new arrivals are being settled in Nduta. Families that crossed the Burundi border at different times may therefore be separated across the three camps. The Tanzania Red Cross Society (TRCS) are working to reunify families that remain separated.

Nyarugusu camp covers 28 square kilometres and is made up of 12 distinct zones comprising 142 villages. The zones are divided by population; Zones 1-7 are largely home to Congolese refugees, and Zones 8-12 house Burundian refugees.

The population is young, with 53 per cent under the age of 18. Primary and secondary education is provided in the camp, coordinated by the International Rescue Committee (IRC). In Tanzania, refugees are taught in the curriculum of their country of origin by refugee teachers. Approximately one third of the adult refugee population is primary educated, while one third is secondary educated and 8 per cent tertiary educated.

21. UNHCR, Nyarugusu Camp Profile, April 2017: https://data2.unhcr.org/en/documents/download/57641

Figure 1: UNHCR Nyarugusu demographics data, April 2017

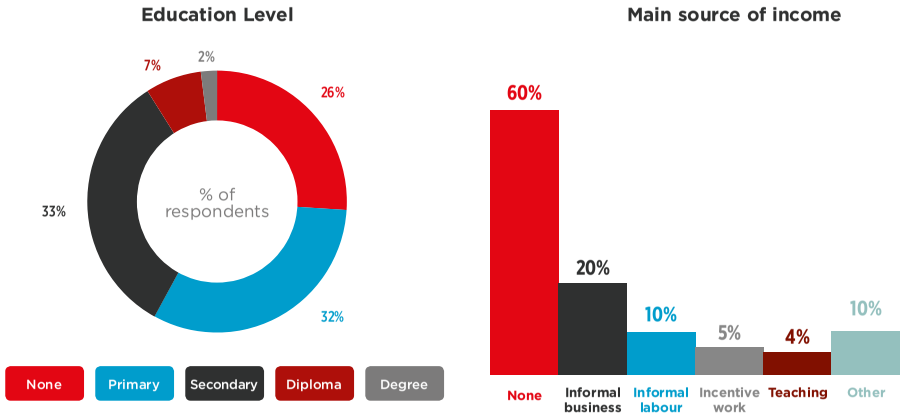


Households receive monthly distributions of food and essential items from the World Food Programme (WFP) and other agencies. In Tanzania, refugees are unable to access formal employment and movement outside of the camp is restricted, leaving them with limited access to markets or income generating opportunities.

Nevertheless, approximately 20 per cent of refugees run informal business activities or participate in petty trade. Other refugees participate in informal labour activities, such as brick making and building houses. Humanitarian agencies also employ paid 'incentive workers' to assist with distributions, building infrastructure, teaching and health work.

The camp's Common Market provides a marketplace at the entrance to the camp where both refugees and host community members are permitted to trade. The thriving marketplace operates on Monday, Wednesday and Friday every week and attracts numerous traders and small business owners, selling food, animals, clothes and electronics.

Figure 2: GSMA Nyarugusu household survey data, May 2017



4 Connectivity for refugees in Tanzania

Two thirds of refugees in Nyarugusu report that their household has access to a mobile device. People make significant sacrifices to purchase handsets and access connectivity.

4.1 The mobile market in Tanzania

Tanzania is a competitive market for the mobile industry, with eight MNOs operating in the country. Vodacom, Airtel, Tigo and Halotel together take up 95 per cent of the market share.[22] In 2016, Tanzania was one of the fastest growing mobile markets globally.[23] Together, MNOs in Tanzania have more than 24.5 million unique subscribers, or 44 per cent of the total population. In 2016, 19.9 million people were using the internet, and 18.1 million were using mobile money.[24] Average revenue per subscriber in Tanzania is approximately 4.35 USD, slightly lower than the East Africa average of 4.65 USD.[25]

Urban areas remain significantly better connected than rural areas, with 4G networks covering large cities such as Dar es Salaam. GSMA's Connected Society team is working together with the Tanzanian Government and MNOs to extend the roll-out of mobile infrastructure to rural areas, to reduce the rural-urban divide and boost access for remote, difficult to access communities.

22. GSMA Intelligence, Q2, 2017
23. GSMA, 2016, "Mobile Economy: Africa"
24. Reuters, 2017, "Tanzania's mobile phone subscribers up 0.9 pct in 2016" http://www.reuters.com/article/tanzania-telecoms-idUSL8N1FZ0YO
25. GSMA Intelligence Q2, 2017

4.2 Connectivity in Nyarugusu

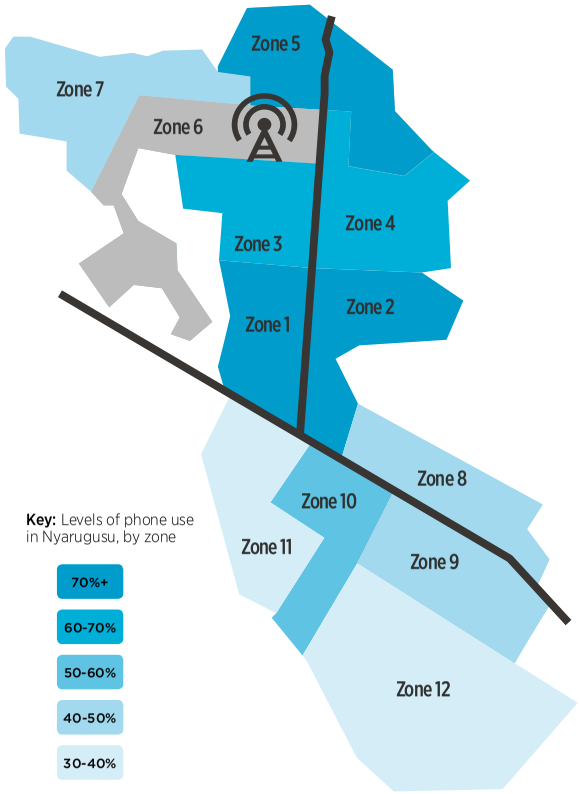
In 2016, Vodacom installed a tower in Nyarugusu camp for the first time, located in Zone 6. The tower is currently shared by Vodacom, Tigo and Airtel, under a shared agreement which enables the MNOs to save costs by jointly running the cell tower. The tower provides 16 square kilometres of 3G coverage across the camp, which is approximately 28 square kilometres in size.

Prior to the installation of the tower, refugees were able to connect via towers located in villages outside the camp. The signal tended to be weak and unreliable, and often required refugees to walk to elevated areas or nearby villages to connect. The other two camps in the region, Mtendeli and Nduta, remain unconnected to 3G and rely on mobile networks or 2G from towers located in nearby villages. For refugees in Nduta, the nearest tower is 18km away.

The installation of the tower in Nyarugusu has improved the network coverage and quality in the camp, enabling the majority of users to access a good network signal in their zone, if not in their home.

Moreover, demand is high. The tower is reported to be operating at full capacity, with a record call volume of 180,000 per day. The high demand can limit the strength and usability of the network during the day. Phone users report waiting until night to make use of the more reliable network.

Figure 3: Mobile phone use in Nyarugusu refugee camp



4.3 Mobile ownership and usage

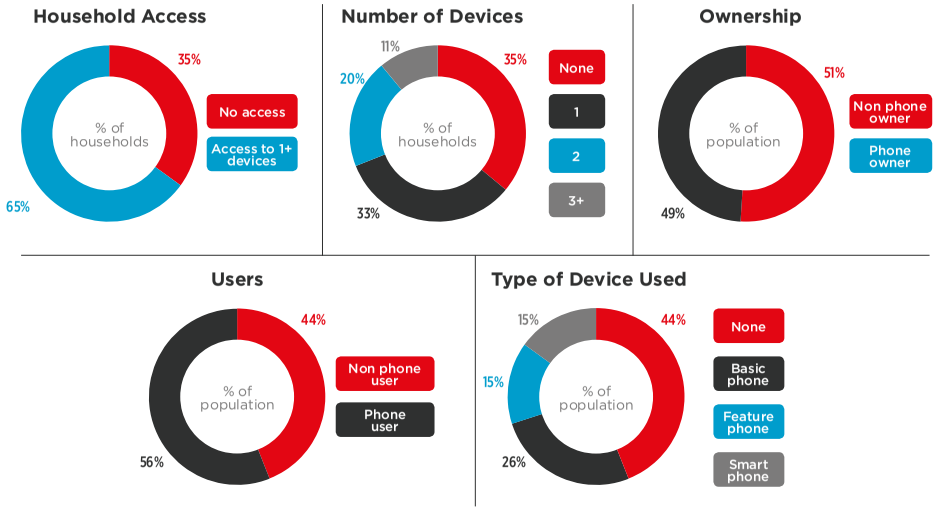
Figure 4 illustrates phone ownership and access among the population in Nyarugusu. Household access to phones is high, with two thirds of refugee respondents reporting that their household has access to at least one mobile device. Of households with mobile access, 61 per cent have access to one or more basic phones, 30 per cent one or more feature phones and 31 per cent one or more smart phones.[26]

Almost half of the respondents report owning at least one device and 56 per cent report using a phone regularly. This is most commonly a basic phone (47 per cent of users), while 26 per cent use a feature phone as their main device and 26 per cent a smart phone. There is a high demand for internet-enabled phones that allow refugees to access news, information and social media. The major barriers to connectivity, including handset costs, are discussed in Section 9 of this report.

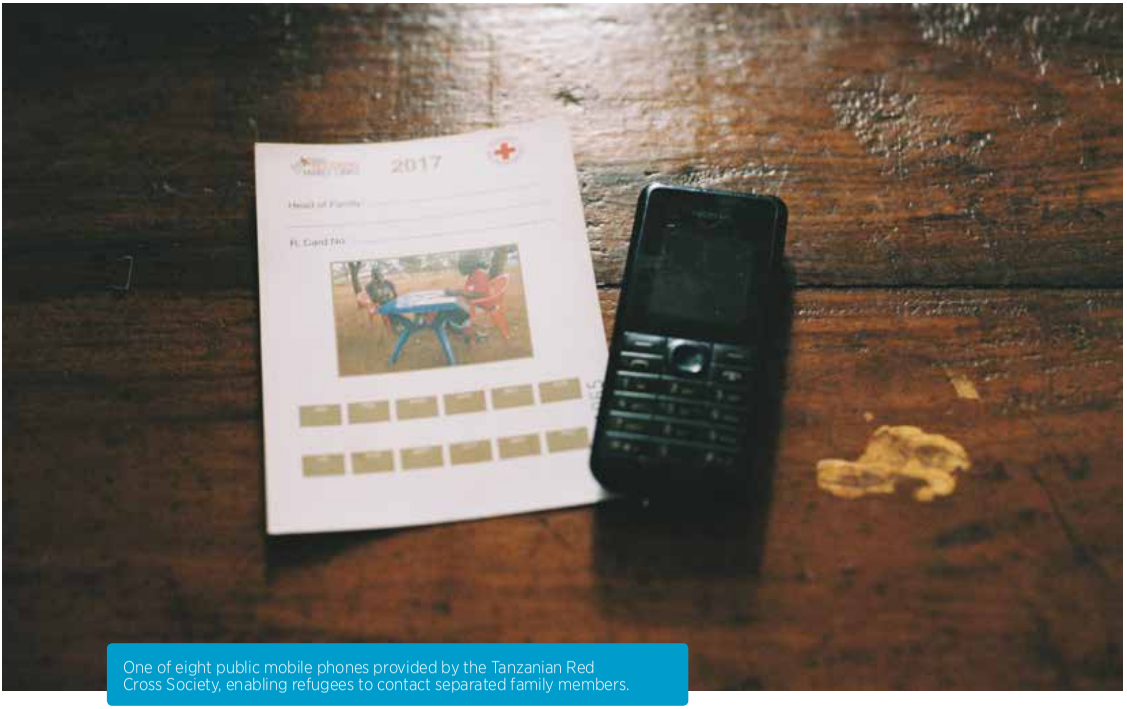
In total, combining expenditure on both credit and data, phone users report an average spend of 9,856 TSH per month (4.40 USD[27]), while internet users spend on average 14,773 TSH (6.60 USD) - a monthly spend which exceeds the wider Tanzanian population (4.35 USD).[28] On average, surveyed phone users spend 6,807 TSH on credit each month (3 USD), which is approximately 10 per cent of their reported household expenditure. Internet users spend on average 7,440 TSH on data each month (3.30 USD).

Phone users charge their phones using personal solar powered chargers or by taking their phone to a charging station. Charging stations operate in the marketplace and refugees' homes, using solar panels. The usual price for one charge is 200 TSH, but most operators charge extra for smartphones. UNHCR recently launched an initiative providing secure charging stations at different locations around the camp, equipped with solar panels and plug sockets. The initiative is being implemented by Good Neighbours Tanzania (GNT), and stations are managed by trained refugee entrepreneurs, who charge 100 TSH (0.05 USD) to charge a basic phone and 200 TSH (0.10 USD) for a smartphone. On average, phone users reported spending 1,765 TSH (0.80 USD) on charging per month.

Figure 4: Levels of phone access and ownership in Nyarugusu



26. A basic phone is defined as a non-internet enabled phone. A feature phone is an internet-enabled phone that may have access to basic features such as a camera. A smart phone is defined as an internet-enabled phone with an operating system capable of running downloaded applications.
27. The exchange rate used in this report is 1 TSH to 0.00045 USD, rounded to the nearest 0.10 USD.
28. GSMA Intelligence, Q2, 2017



One of eight public mobile phones provided by the Tanzanian Red Cross Society, enabling refugees to contact separated family members.

4.4 Value of connectivity

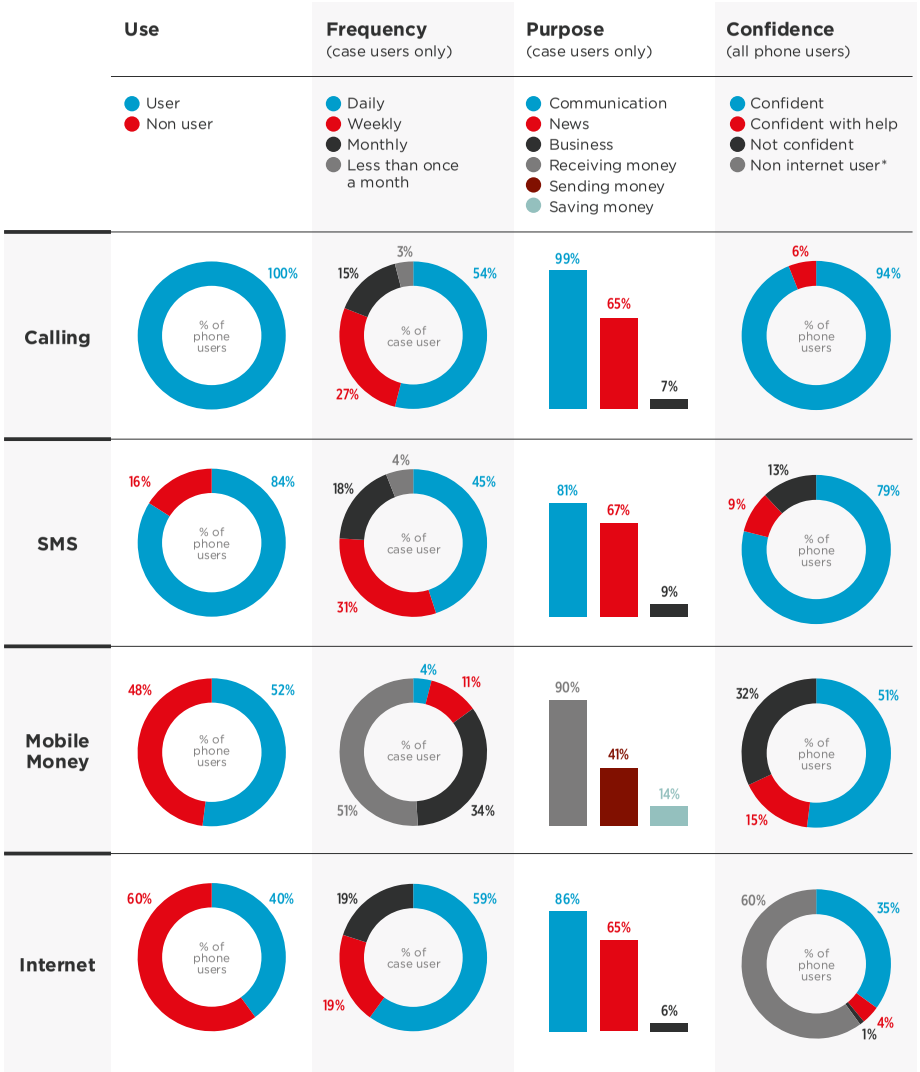
Phones are seen as important, valuable items, and for many, a necessity. People make significant sacrifices in order to purchase phones, including long-term saving and selling food. Refugees place value on the time and money saved by using a phone to communicate with loved ones, call for help in an emergency, make business calls and transactions, receive remittances from relatives, and more. When phones are lost, broken or stolen, saving for and purchasing a new phone is important. Phone users feel that not having a phone would be upsetting and problematic.

"Not having a phone would be very troublesome! A phone should be among the distributions - it is just as important as the food and other items that are distributed."
Female, 25-50, Burundian basic phone user

There is a high demand for connectivity among non-users: 97 per cent of non-users desire access to a phone and 57 per cent desire access to the internet. Non-users are able to describe why they would like access to connectivity, including to communicate with family and friends within and outside the camp and to access news, information, educational content and entertainment.

"I have many friends and children who are still in Congo. I'd like to make calls to communicate information and know what is happening with them; their needs and their situation."
Male, 25-50, Congolese non-user

Figure 5: User frequency, purpose and confidence across four key uses of mobile phones in Nyarugusu.



*Non internet users were not asked their confidence in using the internet



Box 1. Perspectives of agencies and MNOs

"As we achieve a reliably connected refugee population, the impact on humanitarian service delivery will be enormous. Enhanced information sharing, communication and delivery of services will be possible in a way that will both empower refugees and improve effectiveness and efficiency. Every area of humanitarian work will benefit as communication with communities and individuals will be easier and more reliable."

Alan Vernon, Project Lead, Connectivity for Refugees Programme, UNHCR

"Connectivity has become a necessity – there is a clear business case. Staying connected with family members is everything. When the conflict broke out, many ran in different directions, and don't know where their family and friends have ended up. For their emotional health, it is so important for them to know where their children are, where their family is, to settle their minds."

Carolyne Akello, Tanzania Connectivity Officer, UNHCR

"Refugees face major issues of communication, both within the country and outside the country. We find many of them are using phones. There are particular benefits for students; they can really learn from internet connectivity."

Nyarugusu Camp Commandant, Tanzania Ministry of Home Affairs

"Internet connectivity and smartphones are like a lifeline for refugees, providing an essential means for them to give and receive vital information, communicate with separated family members, gain access to essential services, and reconnect to the local, national and global communities around them. Vodacom has played a greater role in ensuring that refugees around Nyarugusu camp have access to mobile connectivity ... As Vodacom, we see a bright future for refugees, as connectivity can help broaden the opportunities for them to improve their own lives and pursue a vision of a future that would otherwise be denied to them."

Ahmed Akbarali, Territory Manager – Kigoma, Vodacom

"We at Airtel remain committed to our communities to provide products and services that increase convenience, affordability, ease and financial inclusion. In the particular case of Nyarugusu our aim is to better refugees' lives ... [In particular] we believe the innovative 'TapTap' card gives them a sense of normalcy through convenient access to financial services."

Beatrice Singano, Regulatory and Corporate Communications Director, Airtel

5 Communicating with friends and family

For most refugees, communicating with friends and family inside and outside Nyarugusu is the most important use of a phone. Refugees report using voice and video calls, messaging applications and social media regularly. This section explores the ways that refugees are connecting with family and friends to relay news and information, and as a safety net during emergencies.

Previous research has established that refugees primarily use mobile devices to communicate with their families.[29] For example, research in camps in Greece and Germany identified that refugees maintain connections through calls, Facebook and WhatsApp.[30]

Similarly, this study has confirmed the importance of mobile connectivity in Nyarugusu to allow refugees to communicate with their families and friends. It can take up to an hour to walk between distant zones, and 96 per cent of users said they make calls to family members living in the camp. 81 per cent said they call family and friends outside of the camp, including family members who stayed in Burundi or DRC, were resettled by UNHCR to the USA or Canada,[31] or who live as refugees in third countries.[32] Calling family is a priority for 94 per cent of the non-users who desire phone access.

In focus groups, participants emphasised six factors that drive the use of mobile connectivity for communicating:

1. Mobile communication is fast and reliable.

"The phone helps so much. A letter may get lost, but not a text!"

Female, 51+, Burundian basic phone user

Mobile communication is used to share important information, find family members or request help in an emergency. Refugees repeatedly emphasised the speed and reliability of mobile communication compared to word-of-mouth or letters, which are delivered by the Tanzania Red Cross Society, but can take several weeks to arrive and may get lost on route.

29. Betts, Bloom, Kaplan and Omata, 2014, "Refugee Economies: Rethinking popular assumptions", Humanitarian Innovation Project, University of Oxford
30. BBC, 2016, "Voices of Refugees: Information and Communication Needs of Refugees in Greece and Germany"
31. For more information on resettlement see https://tanzania.iom.int/programmes/resettlement
32. Third country resettlement is defined by UNHCR as a process 'in which refugees are selected and transferred from the country of refuge to a third State which has agreed to admit them as refugees with permanent residence status'. http://www.unhcr.org/46f7c0ee2.pdf

2. Social media allows refugees to search for missing family members.

Facebook and other social media platforms are regularly used to locate missing friends and family. Refugees use Facebook to search for family members from whom they were separated while fleeing their homes. Mothers and fathers reported using Facebook to locate missing teenage children, and young people talked about searching for siblings, parents, cousins and friends.

Mobile communications are increasingly being utilised to facilitate family reunification services.

For example, REFUNITE is a mobile platform, established in 2008 and supported by Ericsson and MNO partners, where refugees are able to register and search for missing family. REFUNITE is used globally, with a database of more than 680,000 members. In Nyarugusu, the platform is available online and for free via Free Basics by Facebook. In Tanzania, the service was launched on Free Basics with Tigo in 2015, and Airtel and Vodacom in 2016, and is available in both English and Kiswahili.

3. With phones, refugees can maintain close family relationships.

> *"My family is between Burundi and the other camps - if I didn't have a phone I would feel like I didn't have family members ... not having a phone in the camp is like not having friends or family members."*
> **Female, 25-50, Burundian non-user**

People older than 25 particularly emphasised the importance of calling children who were living, studying or working in other countries in the region or who had stayed behind in Congo or Burundi.

Younger people frequently talked of communicating with parents or siblings who had stayed in the home country or of speaking with friends or cousins resettled in the US or Europe.

> *"It has been a long time since war broke out and people separated, but now they can use their phone to call and see videos and pictures of each other. People can be comforted by this - it is as though they are together."*
> **Mobile agent**

4. Social media allows family members to share photos and video.

The majority of users have basic phones and purchase international call vouchers to communicate with family living in other countries. However, those with internet-enabled phones can send messages, photographs or video by email or social media. Refugees emphasised the affordable cost of social media for international messaging.

Video calls and photos also allow refugees to see family members face-to-face:

> *"I love using the video calls. I haven't seen my relatives for 2 years so when I communicate through video I feel closer to her or him."*
> **Female, 18-25, Congolese internet-enabled phone user**

5. Mobiles allow refugees to relay critical news.

Refugees talked about using phones to relay important information between family and friends, including information of attacks in home locations, news of sickness or death in the family, and information about the safety of family members who have also fled. Close family members who have been separated use their phones to communicate news about children or make decisions together.

For example:

> *"If I have a problem I communicate with my husband on the other side [in Burundi]. I can talk to my husband and he can give the solution; if he has a problem he communicates with me and we try to find a solution."* **Female, 25-50, Burundian internet-enabled phone user**

6. Mobile provides a safety net during emergencies.

> *"I feel more safe with a phone."*
> **Female, 18-25, Congolese basic phone user**

Refugees emphasised that phones give them confidence of security in an emergency. Refugees describe calling friends in other parts of the camp to help care for sick family members. Pregnant women said they will call for help to reach hospital if they go into labour while collecting firewood outside of the camp. Others talked of contacting family members in Tanzania or elsewhere if they need money for purchasing medicine or other urgent items. Community leaders also talked of using their phones to provide advice or help to households experiencing difficulties.

> *"To make the family stable, you need assistance from every corner. When I have a phone my mind is stable, because I know, if there is an emergency, I can call someone to get help."*
> **Male, 18-25, Burundian basic phone user**

Together, these factors highlight the need for better connectivity among the refugee population. Making video calls with distant relatives, for example, relies on high-speed internet. At present, the video is often pixelated and calls often end abruptly. Increasing network quality would therefore improve video calling applications and customer satisfaction.

Moreover, for the majority of refugees using basic phones there is a case for offering special deals for international calls. In Lebanon, for example, local MNO Touch observed a similarly high demand for international calls among Syrian refugees. Touch saw an opportunity both to deliver the humanitarian aims of their CSR programme, and to reach out to a new and growing customer base, offering refugees a special bundle for 11 USD per month that included extra international call time. This represented a significant saving compared to the standard 25 USD bundle. The project was a success from both a commercial and CSR perspective.[33]

33. GSMA, "Al Tawasol, Lebanon - Developing and marketing refugee specific products: Case study", https://www.gsma.com/refugee-connectivity/case-study-al-tawasol-lebanon-developing-and-marketing-refugee-specific-products/



Refugees queue to use the TRCS calling station in the main hospital in Nyarugusu.

Box 2. Tanzania Red Cross Society (TRCS) calling stations

The TRCS is responsible for family link services, including family reunification, across the three camps in Tanzania. Among other tools, TRCS provides calling services in each camp. The service was launched in 2013, offering every refugee family two minutes of free call time per month to family members anywhere in the world.

There are eight outreach family link stations in Nyarugusu, equipped with a basic mobile phone and operating using either a Vodacom or Airtel SIM card, depending on the best network at the station location. The station is managed by a refugee recruited by TRCS. When a successful call has been made, a mark is made on the family call card for the month. In addition to calling, refugees can also go to the station to write a letter to a relative or friend, or file for a missing person. The stations are open from 9am–3.30pm on working days.

Between January and April 2017, 18,952 successful calls were made; an average of 5 hours 15 minutes every day. Refugees sometimes queue for several hours in order to reach loved ones, and each month have to prioritise who to phone. For many refugees, the calling stations are a priority service, and there is high demand for longer and more frequent calls.

There is scope for increased collaboration between MNOs and humanitarian agencies providing these types of services, to offer special rates for international calls to increase the frequency of users and calls, and reach vulnerable groups without access to a personal device. This would not only positively impact refugees by expanding the service to a larger population, but would also provide MNOs with a consistent stream of revenue. For example, TRCS currently spends over 20 million TSH (9,000 USD USD) per month on 23 phones available across the three camps in Tanzania.

MOBILE IS A LIFELINE: RESEARCH FROM NYARUGUSU REFUGEE CAMP, TANZANIA



Case study 1.

Devices

Services

Uses

Isaya fled Burundi in June 2015, crossing the border with his wife and six of his children. His sixteen-year old son was not able to travel to Tanzania at the same time as his family. When his son crossed the border in October 2016, he was moved to Mtendeli camp and is yet to be reunited with the family. A mason by trade, Isaya works informally in the camp, building houses for refugees.

Isaya uses a feature phone, which has access to the Facebook Free Basics service. He describes the phone as being shared between the whole family.

In the morning, when he first wakes up, he checks for missed calls and messages, and throughout the day, he uses Facebook to chat and communicate with friends and look at the news and information being shared.

In the evening, Isaya phones his son. He waits until the evening so that the whole family is together and he is able to pass the phone to his wife and children. Isaya describes how difficult his separation from his son has been: *"The love between a son and father is so strong – my heart is burning – I need him to be here with the family."*

When he does not have enough airtime, Isaya uses the Red Cross phone service to call his son. However, the queues tend to be long and there is a tight time limit on the call. Using his own phone allows him to communicate at any given time and for as long as he needs to.

In the late evening, before going to sleep, Isaya checks Facebook for updates. He enjoys sharing photos with friends and families to feel more closely connected. Isaya describes how he has used Facebook to reconnect with friends and relatives he was separated from many years ago, simply by entering their name and finding their profile.

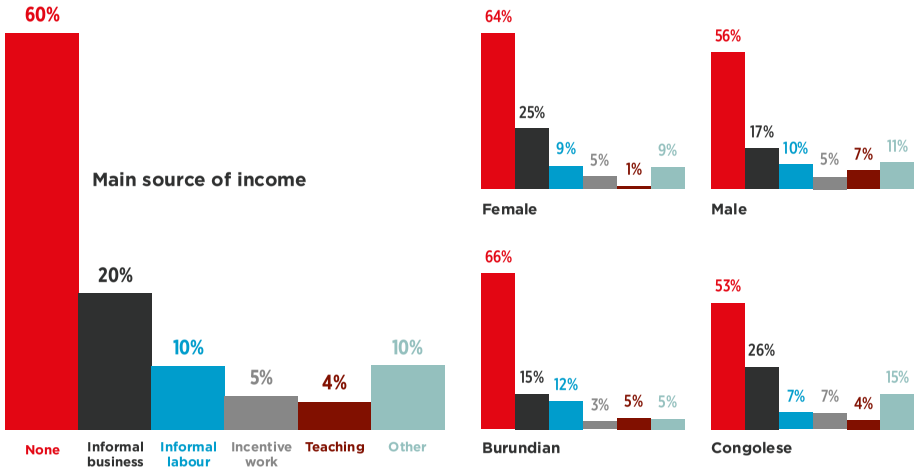
6 Livelihoods and mobile money

Access to a mobile phone can provide significant economic benefit for refugee households. Small business owners can communicate with suppliers and customers and access market information. More broadly, mobile money also facilitates international remittances, person-to-person (P2P) payments, and humanitarian cash payments.

6.1 Economic opportunity

Economic opportunities are limited for refugees in Nyaragusu. Refugees are unable to seek formal employment and have restricted movement outside the borders of the camp. The majority of respondents (60 per cent) said that they do not have a regular source of income, while 20 per cent gain their main income through running informal businesses and a further 20 per cent depend on domestic and international remittances, informal labour, or incentive work for humanitarian agencies. Respondents reported average household expenditure of 78,501 TSH (35.30 USD) per month, with the average household consisting of 2.7 adults (any person 18 years and above).

Figure 6: Main sources of income for people in Nyarugusu



Focus group participants identified three important ways that mobile can increase their economic opportunity:

1. Business owners use their phones to communicate with suppliers and search for market information.

In Nyarugusu, 20 per cent of refugees run informal businesses or participate in the informal economy. They most commonly trade in fish, sugarcane, fruit and vegetables, and clothing. Others sell services such as hairdressing, phone charging, and tailoring, or work in the host community.

Previous research has established that refugees worldwide use mobile phones to gain access to market information, transfer money and communicate with customers and suppliers (Betts 2014). In Nyarugusu, 7 per cent of phone users report regularly using their phones to support income-generating activities. For example, traders describe using their phones to make purchases, talk to suppliers about stock and prices, and connect with new customers. Savings groups use phones to discuss and provide loans. Communication allows them to make more informed decisions and facilitates greater economic opportunity:

> *"I bring fish from Mwanza [town] to the camp. The price of fish is fluctuating in Mwanza compared to in the camp, so first you must make a phone call to ask about the price of the fish, so that you can make sure it matches the price in the camp before you buy it."*
> **Male, 25-50, Burundian smartphone user**

2. Refugee entrepreneurs use their phones to identify and connect with new customers.

Internet connectivity is used to identify new clients and markets and to search for information. This is especially valuable for skilled traders such as welders, tailors and others engaged in entrepreneurial activities. In focus groups, entrepreneurs discussed promoting clothing and crafts on social media, searching for images of welding or carpentry designs, and posting images of handcrafted and tailored products online. Products sold to online customers can be sent from the post office, a one-hour drive from the camp that requires special permission.

3. Connectivity has increased business opportunities for mobile agents.

The introduction of connectivity has presented new opportunities for refugees working as mobile agents and charging station operators. In the past two years, the number of mobile agents working in the camp has rapidly increased in line with the growing refugee population and a greater demand for data bundles. A male mobile agent reported:

> *"For agents, the new tower has caused an increase in customers. They used to buy voice call credit, but now they buy data – it has been very good for business."* **Male, Mobile agent**

6.2 Mobile money and financial inclusion

Mobile money is widely used in Tanzania, where the majority of the population (92 per cent)[34] are unbanked. In Nyarugusu, just over half of phone users surveyed (52 per cent) reported using mobile money. Of these users, 90 per cent reported using mobile money to receive money, 41 per cent to send money and 14 per cent to save.

GSMA's State of the Industry report on mobile money found that when citizens gain access to life-enhancing financial products and services, they are better able to manage financial setbacks and shocks and, ultimately, transition out of poverty[35]. Mobile money services have the potential to provide financial inclusion for refugees living in camps, where movement and liquidity of money are especially limited.

The research highlights four areas of opportunity for mobile money providers to serve this market segment:

1. Domestic and international remittances

Refugees in camp settings often have limited means to earn an income. In Nyarugusu, 31 per cent of phone users report that they have received domestic remittances, and 22 per cent report that they have received international remittances via a mobile phone. Money is most commonly received through remittances sent by friends or family living in Tanzania (67 per cent of receivers) or living abroad (47 per cent of receivers). Cash is transferred directly through mobile money, or indirectly via global money transfer operators (MTOs) and Western Union.

Remittances are usually sent from family members who have remained at home, or who are themselves displaced or resettled refugees. For example, women describe their husbands sending mobile money from their country of origin in order to provide for children living in the camp. Young people similarly describe being sent money by their parents. The remittances tend to be irregular - the majority of mobile money users (51 per cent) said that they receive mobile money less than once a month. Focus group participants reported that cash is used to meet immediate needs - such as for medicines - as well as to purchase food to substitute the WFP distributions, including small fish (Dagaa) and vegetables, clothes, and mobile credit. For many refugees, mobile money also provides an important safety net in emergency situations.

> *"If I fall sick and am home alone, I can call someone inside or outside the camp to send money, and then I can go to the hospital or the pharmacy to get the medication."*
> **Female, 25-50, Burundian phone user**

Interoperability agreements between mobile money providers in Tanzania make it easy for mobile money users to send money across domestic networks (Vodafone, Tigo and Airtel).[36] This makes refugees' lives easier as it avoids them having to use multiple SIM cards and register for multiple mobile money accounts. For international remittances, new cross-border inter-MNO partnerships are allowing money to be sent via mobile money services across a growing number of international corridors. For example, MTN Group and Vodafone Group entered into a partnership in 2015[37] in which they committed to enable international remittances between M-Pesa customers in Kenya, Tanzania, the Democratic Republic of Congo and Mozambique, benefitting refugees in all four markets.

Mobile money is driving a price revolution in the cost of international remittances. On average, using mobile money for international remittance transfers is more than 50 per cent cheaper than global MTOs (not including the cash out fee) and mobile money is the cheaper option in 39 of 45 corridors.[38] According to the World Bank Group, despite being the world's poorest region, Sub-Saharan Africa remains the most expensive place to send money to.[39] This presents a significant opportunity for MNOs to continue to evolve their mobile money offerings to include international remittances, increasing competition and ultimately reducing remittance fees for customers, not least for refugees.

34. Financial Inclusion Insights (FII) (2015)
35. GSMA, 2016, "State of the Industry Report on Mobile Money, Decade Edition: 2006 – 2016"
36. Interoperability arrangements in Tanzania include arrangements between Tigo and Airtel in September 2014, Zantel and Tigo in December 2014, and Vodacom, Airtel and Tigo in 2016.
37. Vodafone: http://www.vodafone.com/content/index/media/vodafone-group-releases/2015/m-pesa-mtn.html
38. GSMA, 2016, "Driving a price revolution: Mobile money in international remittances"
39. World Bank, 13 April 2015, "Migration and Remittances: Recent Developments and Outlook. Special Topic: Financing for Development", Migration Development Brief 24,

2. Informal merchant payments (small business payments)

Traders in focus group discussions reported using mobile money to make purchases from suppliers and receive money from customers and described using their devices as 'a bank'. For this group, mobile money also facilitates improved management of money, by recording transactions and tracking payments.

> *"I can do a lot of business from my phone. People are making payments to me using mobile money, and I am also using it to pay for the goods and materials that I purchase for the business. It reduces cost and time – I don't have to travel; I simply make a call or make the payment directly."*
> **Male, 25-50, Congolese smartphone user and entrepreneur**

3. Savings and loans

A review of livelihoods in the three Tanzanian camps found that the primary barriers to income generating activities are lack of capital, lack of tools, lack of land for crop production, lack of employment opportunities, and restriction of movement beyond the camp borders.[40]

Humanitarian agencies are responding to the first of these needs – the need for capital - by establishing saving groups including women's savings groups. MNOs can build on these initiatives by investing in the marketing of their financial services including savings and loans. Vodacom Tanzania, Airtel and Tigo all offer savings products in Tanzania. Already, 14 per cent of mobile money users report that they use mobile money accounts for savings. In focus groups, refugees emphasised that mobile money accounts allow households to avoid carrying or storing cash and that the money is safe even if the phone is stolen. For example, refugees described using M-Pawa (Vodacom Tanzania's savings products) to save, record their transactions, and avoiding having cash in hand, which could be more easily misspent.

> *"When I have cash in hand I use it purposelessly, but in mobile money I can save and use it well."*
> **Male, 25-50, Congolese smartphone user**

40. Baseline assessment of livelihoods, skills gaps and market opportunities in Nduta and Mtendeli refugee camps, Tanzania, 2016

4. Bulk payments – humanitarian cash transfers



A mobile agent assists a customer in one of the central market areas in the camp.

Box 3. WFP cash transfers and Airtel Tap Tap

At the World Humanitarian Summit in 2016, donors committed to increase the use and coordination of cash-based programming and GSMA made a commitment to expand the remit of the Humanitarian Connectivity Charter to include a focus on this emerging topic. Cash transfers give refugees greater control over when purchases are made, the food and and Non Food Items (NFIs) they choose to buy and the choice to save.[41] In May, GSMA launched a report on this topic that explored the potential for cash disbursement via mobile money and the added benefits of a functioning mobile money payments ecosystem.[42]

In Nyarugusu, the World Food Programme (WFP) is completing a pilot programme to provide cash to 10,000 of the most vulnerable individuals replacing food distributions. Cash transfers are only effective where refugees have access to a functioning market. In Nyaragusu, each houshold is given 20,000 TSH per person (9 USD) each month to replace distributions of maize flour, salt and pulses. The local markets for fortified oil and corn soya blend are poorly developed and therefore WFP has continued to distribute these commodities in-kind.

The cash is distributed via Airtel's Tap Tap solution, an NFC enabled card linked to a mobile money account. Recipients do not require a mobile device because the money is loaded onto the Airtel 'Tap Tap' card each month. Recipients can then use their card, along with a unique PIN, to cash-out funds at an Airtel mobile money agent. Maintaining a liquid agent network is a challenge for Airtel, which delivers cash and dedicated agents into the camp in order to ensure successful distribution of WFP funds to its beneficiaries. Other implementation challenges have included low literacy levels among women from Burundi in particular, charges for refugees checking their balance, and security. However, refugees have been very positive about the cash programme and post-distribution monitoring has found that over 90 per cent of the cash is used to purchase food.

41. ODI, 2016, "Cash transfers: what does the evidence say? A rigorous review of programme impact and of the role of design and implementation features"
42. GSMA, 2017, "A Landscape Report: Mobile Money, Humanitarian Cash Transfers and Displaced Populations"

MOBILE IS A LIFELINE: RESEARCH FROM NYARUGUSU REFUGEE CAMP, TANZANIA



Case study 2.

Devices

Services

Uses

Msambya is originally from DRC. He lived in Lugufu refugee camp from 1997-2009 and was resettled to Nyarugusu in 2009. Msambya trained as a tailor at a young age and was able to continue this trade in Lugufu and Nyarugusu.

In Nyarugusu, Msambya is part of a Village Savings and Loans Group (VSLG) run by Good Neighbours, and is currently training two apprentices. He owns a feature phone and a smart phone, both of which play an important role in doing business.

During the morning, Msambya uses his phone to communicate with customers and members of the VSLG over voice calls. If he needs to make business transactions, he uses his phone to access M-Pesa. At the close of business, he may go to a mobile money agent to withdraw money from his M-Pesa account.

In the early evening, Msambya uses his smartphone to search the internet for news and information. He looks up information about different tailoring materials and equipment, and uses applications downloaded from the Play Store to look at images of the latest fashion designs.

Later in the evening, Msambya uses IMO and WhatsApp to communicate with family and friends and share photos. This includes friends in Belgium and the UK, and his brother, who was resettled to the US in September 2016. Due to the time difference, Msambya waits until 10.00pm to talk to friends and relatives living overseas.

7 Education

Students and adults are using connectivity to help them learn. Adult refugees report using dictionary applications and language websites to learn French and English. Recent graduates report searching the internet to find new educational content, refresh knowledge, and continue their studies. Access to learning materials is associated with aspiration and hope for the future - for finding a job and resettlement.

7.1 Connectivity in the classroom

"Making internet available [to refugees] is very important. It will enable access to education that is tailor-made to them." **Sandra Oswald, Vodacom Tanzania Foundation**



Two INS coaches use the tablet devices outside the INS classroom in Amani Secondary School.

Box 4. Vodafone Foundation Instant Network School classroom

In 2016, Vodafone Foundation launched its Instant Network Schools (INS) initiative in Nyarugusu, establishing six connected classrooms in three primary schools and three secondary schools in Congolese zones of the camp.

The INS classroom provides a VSAT Wi-Fi connection, laptop, projector, 25 tablets and charging equipment, together with a solar powered battery. Each classroom is managed by an INS coach, a refugee recruited to oversee the use of the classroom, train teachers and offer daily support to teachers and students.

Each class is scheduled one or more lessons in the INS classroom per week. Before the class, the teacher is able to use the tablet to search for and download content to incorporate into their lesson plan, such as images, audio clips, videos or reading materials. During the lesson, this content is then displayed using the projector. Teachers can also hand out tablets to students to search for their own content online.

The launch of the INS classrooms has brought connectivity into the classroom for the first time in Nyarugusu. Schools in Nyarugusu suffer from a lack of resources and textbooks, and teachers experience daily challenges of large class sizes and limited time. The initiative is intended to make lesson planning easier and to increase the resources available to teachers, to enhance lesson content.

Teachers and students are positive about the programme, describing how connectivity has made lessons more enjoyable and interesting. The introduction of visual content that goes beyond the confines of the camp, such as maps and photographs, is of particular value, especially for students born in the camp. Students describe how visual content has made concepts easier to grasp, in particular for specialist subjects at higher secondary level, such as engineering, agriculture or sciences.

> *"There's an improvement because we used to learn and not see, but now we can see what we're learning about. Especially for veterinary studies and agriculture I can look at the plants and animals, and it is much easier learning through this method."* **Female student, Secondary school**

The Vodafone Foundation has scheduled an independent evaluation of the programme to assess the effectiveness of the INS programme. Teachers interviewed during this study reported that students were more engaged in INS lessons and that access to technology had increased confidence in teaching unfamiliar content.

7.2 Access to informal education opportunities

Beyond secondary school there is no formal provision of education in refugee camps in Tanzania. While agencies such as Good Neighbours Tanzania (GNT) provide vocational training to selected groups, many other adults are keen to access educational resources and learn new skills. Mobile phones and the internet can be useful tools for doing this. 36 per cent of phone users consider education to be one of the most important uses of their phone, and a further 28 per cent feel it is important. Of internet users, 28 per cent report using their device to access educational content.

In focus groups, refugees emphasised using mobile devices for learning languages. In Nyarugusu, refugees speak Kiswahili, French, Kirundi (Burundian), Bembe (Congolese) and a range of local dialects, while agencies operate largely in Kiswahili, French and English. A number of refugees are keen to develop their French and English skills, and report using dictionary applications on their phone, as well as other language learning websites and applications, such as vocabulary and grammar focussed sites.

Recent secondary school graduates also report using their phone and the internet to retain knowledge and continue their education. In the final years of secondary school, students specialise in a particular subject. Graduates report searching online to continue building skills and learning in these subjects.

> *"I access information through a navigation search for the subject I am interested in. If I need to read from a specific book I can search for it. I study because I don't want to forget what I learnt from school."* **Female, 25-50, Congolese smartphone user**

In addition to using phones for education, refugees are able to use the tablets available at the six INS classrooms set up in primary and secondary schools in the Congolese part of the camp (see Box 4). Twice a day, the classroom is open to members of the public, who use the tablets for communication, entertainment and educational purposes.

One user describes using a tablet to continue his studies following his Bachelor's and Master's degrees, which he completed in Tanzania as a DAFI Scholar, one of several refugees sponsored to complete higher education courses outside the camp (see Box 5).[43] He is now using the tablet to apply for further study in Business Administration in the US. Visiting the INS classroom on a daily basis, he searches the internet to find materials relating to business administration, such as reading materials and video content.

43. For more information: http://www.unhcr.org/uk/dafi-scholarships.html



DAFI scholar and Masters graduate, using internet at the INS classroom to continue his studies.

Box 5.

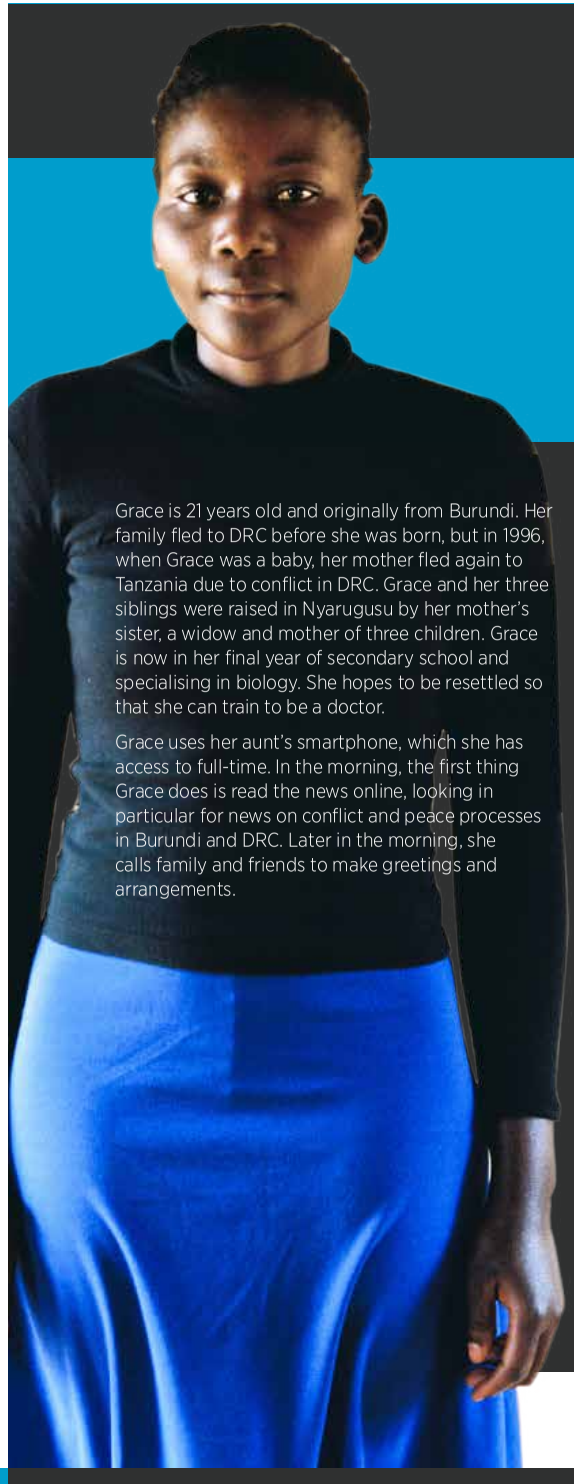
"UNHCR has been running a [DAFI Scholar] programme where they select 2 or 3 outstanding refugees who have completed Form 6, and they are sponsored to go to one of the universities in Tanzania. These students are now qualified, and have formed an association in the camp. They have been accessing the internet at the INS centres, and using it to do research and market proposals for community work. They are coming up with proposals and want to access funding online." Paul Timothy Mwebe, International Rescue Committee (IRC)

Access to education is closely associated with hope and aspiration for the future. It is talked about in connection with resettlement opportunities and finding a job.

> *"I want to be a journalist. [The internet] is helping me to achieve this by teaching me about the world, and being able to access news and information about different countries."*
> **Male, secondary school student**

For the last 3-4 years, UNHCR's resettlement programme has resettled Congolese refugees in third countries including the US and Canada. The ability to get online to improve language skills, learn computer skills and gain vocational certificates, is particularly sought after by refugees that hope to be resettled. Staff at the IRC, responsible for education in the camp, describe:

> *"Young people are interested in online study and online skills training. Many young people have expressed interest in computer skills, because they feel this will be an asset when they are resettled. They have expressed interest in online courses, including computer training and getting certificates."*



Case study 3.

Devices

Services

Uses

Grace is 21 years old and originally from Burundi. Her family fled to DRC before she was born, but in 1996, when Grace was a baby, her mother fled again to Tanzania due to conflict in DRC. Grace and her three siblings were raised in Nyarugusu by her mother's sister, a widow and mother of three children. Grace is now in her final year of secondary school and specialising in biology. She hopes to be resettled so that she can train to be a doctor.

Grace uses her aunt's smartphone, which she has access to full-time. In the morning, the first thing Grace does is read the news online, looking in particular for news on conflict and peace processes in Burundi and DRC. Later in the morning, she calls family and friends to make greetings and arrangements.

At midday, Grace goes to school. Before school starts she spends 45 minutes in the INS classroom using the tablets. She uses the Wi-Fi connection to listen to gospel music, watch music videos and look at new fashion designs on the Fashion Africa app.

In the afternoon, Grace attends lessons from 1-5pm. If she has an INS lesson, the class is able to use the tablets to search for images, information and reading materials. She describes using the tablet in biology class to read about different health issues and look at images and videos of internal organs and the human body.

After school, in the evening, Grace uses her phone to help with homework, using Google to do extra research. Once her homework is complete, she uses Facebook to chat to her friends living in Burundi, and friends who have been resettled to the US. Before going to sleep, she checks YouTube to watch the news from the day.

"I would like to become a surgical doctor specialising with the head. Surgical operations are very expensive, and many poor families cannot afford it. If I become a doctor, I would like to be able to assist those people. Using the tablet, I can search for materials relating to the brain and the head, so it facilitates my learning towards this goal. I would like to have my own tablet, so that I can study in my own time."

8 Connectedness and well-being

Confinement to the camp and separation from family, friends and neighbours can have a negative impact on refugees' well-being. Refugees are interested in what is happening in the 'wider world' outside the camp and report using their phones to search for global news, and information on religion, politics, music, fashion, and sports. They also download and share music and movies for relaxation.

1. Access to connectivity can contribute to the formation and preservation of community groups, such as religious groups, sports groups and other community networks.

Pre-flight trauma, confinement to the camp, and separation from family, friends and neighbours can have a profoundly negative impact on refugees' health and well-being during a protracted crisis. Activating social networks and traditional community support systems plays an important role in refugee psychosocial well-being. The establishment of meaningful relationships and participation in community activities has been found to have a positive impact on the mental health of encamped populations, alongside specialist social support services.[44]

Community leaders describe using their phones to pass on information and mobilise group meetings.

Other refugees report using voice calls and messaging apps to contact church members to coordinate church meetings and organise welcome groups for new members, as well as forming networks with church groups in the host community.

> *"We give our phone numbers to community members and so if they have any concerns or an emergency they can call or text us so we can advise over the phone or make a visit if necessary."* **Congolese community leader**

> *"With a phone I feel able to do a better job as a community leader - I can provide for my community."* **Congolese community leader**

2. Connectivity can also enable refugees to connect to networks outside the camp.

In addition to being able to communicate with friends and family outside the camp, as described in Section 5, connectivity can help people access international networks through mutual interests and associations. Young people, for example, particularly value social media for access to information about fashion, sports and music. One 25 year old Congolese man, who grew up in the camp and is part of a refugee football team, describes using 3G data each week to read news about the football matches that have taken place around the world over the weekend.

> *"Social media has connected the whole world and brought it into my hands."*
> **Male, 25-50, Burundian smartphone user**

44. Meyers, S., 2016, "Health and well-being in refugee camps", in Thomas, F., Handbook of Migration and Health, Edward Elgar. https://books.google.co.uk/books?id=cxWIDQAAQBAJ

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3. Stakeholders should not underestimate the importance of entertainment for this customer base.

Entertainment, such as listening to music, watching movies and playing games, is also used by refugees to relax. Phones are used for entertainment by 14 per cent of phone users, and 35 per cent of internet users go online to access entertainment. For phone users, 30 per cent feel that entertainment is one of the most important uses of their phone, and a further 29 per cent report it to be important. Male users and young people value entertainment particularly highly.

People reported that listening to religious music, for example, helped to take their mind off worries and concerns. One woman described how this had helped her to relax while she was recovering:

> *"I was paralysed on one side and had to stay in my home on my own. The worry was worsening the condition - the doctor advised that I needed to relax and not worry. Using my phone I was able to listen to music and it relaxed me - I enjoyed it and I stopped worrying about my condition. I think it is what cured me."*
> **Female, 25-50, Congolese feature phone user**

Phones and memory cards preloaded with music and movies can be purchased in the camp. Friends and family also use memory cards and Bluetooth to share downloads, and people can go to mobile agents and other market vendors to exchange content.

> *"Many people buy phones to enjoy it even without airtime, enjoying the music or games on it. The reason is because people have experienced many difficulties and trouble before they came to the camp, and so a phone and memory card full of music and entertainment can help to entertain him or her, and help to relax and forget the trouble from the past."*
> **Female, 25-50, Congolese feature phone user**

4. Refugees also express the importance of accessing news and information about the wider world.

In Nyarugusu, most refugees do not have access to TV, and instead rely on word of mouth, radio, or their phone for news and information. Among phone users, 65 per cent report using voice calls and 57 per cent report using SMS to find out news from family and friends. Among internet users, 65 per cent go online to search for news and information.

Reading and watching news from the country of asylum, country of origin and other countries around the world can help refugees to feel more connected with the outside world. 62 per cent of phone users report that accessing news and information is one of the most important uses of their phone, and a further 20 per cent report that it is important.

In summary, news, information and entertainment are important services for refugees and present an emerging opportunity for MNOs. Among non-phone users, 56 per cent of those who desire access to a phone, and 68 per cent of those who desire access to the internet, said they would use it to find out news and information. Similarly, 30 per cent of non-phone users report that they would use a phone to access entertainment.

For humanitarian agencies, the findings indicate that access to connectivity can support existing social networks and traditional community support systems. Humanitarian agencies should explore options for using mobile to increase the news and information available to refugees, such as collaborating with technology vendors to disseminate information through bulk SMS messaging and Instant Voice Recognition (IVR). Section 10 highlights how MNOs and agencies can support the most vulnerable groups to access mobile services.

Case study 4.

Devices | **Services** | **Uses**



Fatuma settled in Nyarugusu in September 2015 after crossing the Burundian border with her three children. In Burundi, Fatuma worked as a tailor, but was not able to bring her equipment with her when she fled, so is not able to work in the camp.

Fatuma uses an Itel feature phone, which gives her access to the Facebook free basics service. Fatuma describes how her phone is always near her, so that she can use it whenever she needs it.

In the morning, she uses her phone to check the time, so that she can plan for the day. She checks missed calls and messages, and if she has enough airtime, she also makes calls to greet family and friends living in other parts of the camp. Fatuma describes how important it is for her to be able to keep in touch with family and friends even within the camp, as she is not able to walk to visit them easily.

In the afternoon, after lunch, Fatuma uses her phone to relax. She listens to music and watches videos that she has saved on her phone. Her and her friends use Bluetooth to share music and videos with one another. She also looks at news and information that has been shared by friends on Facebook.

In the early evening, Fatuma uses Facebook to message loved ones and share photos. Fatuma has a friend that has been resettled to the US and a nephew living in Dar es Salaam, who she has not seen for more than five years. She describes the joy of sharing and receiving pictures from them.

At night, Fatuma continues to keep her phone close, so that she can use it as a torch if she needs to get up and move around the house.

9 Barriers and challenges

Use of mobile devices is limited by costs related to ownership and use, including the cost of handsets, credit, data and charging. Refugees also identified issues from poor network quality, literacy levels, internet literacy and safety, identification and SIM cards, and liquidity for mobile money services.

9.1 Handset cost

92 per cent of non-users reported that the cost of handsets prevents them from owning or using a phone. Similarly, 78 per cent of non-internet users said the cost of a feature or smartphone prevents them from accessing the internet.

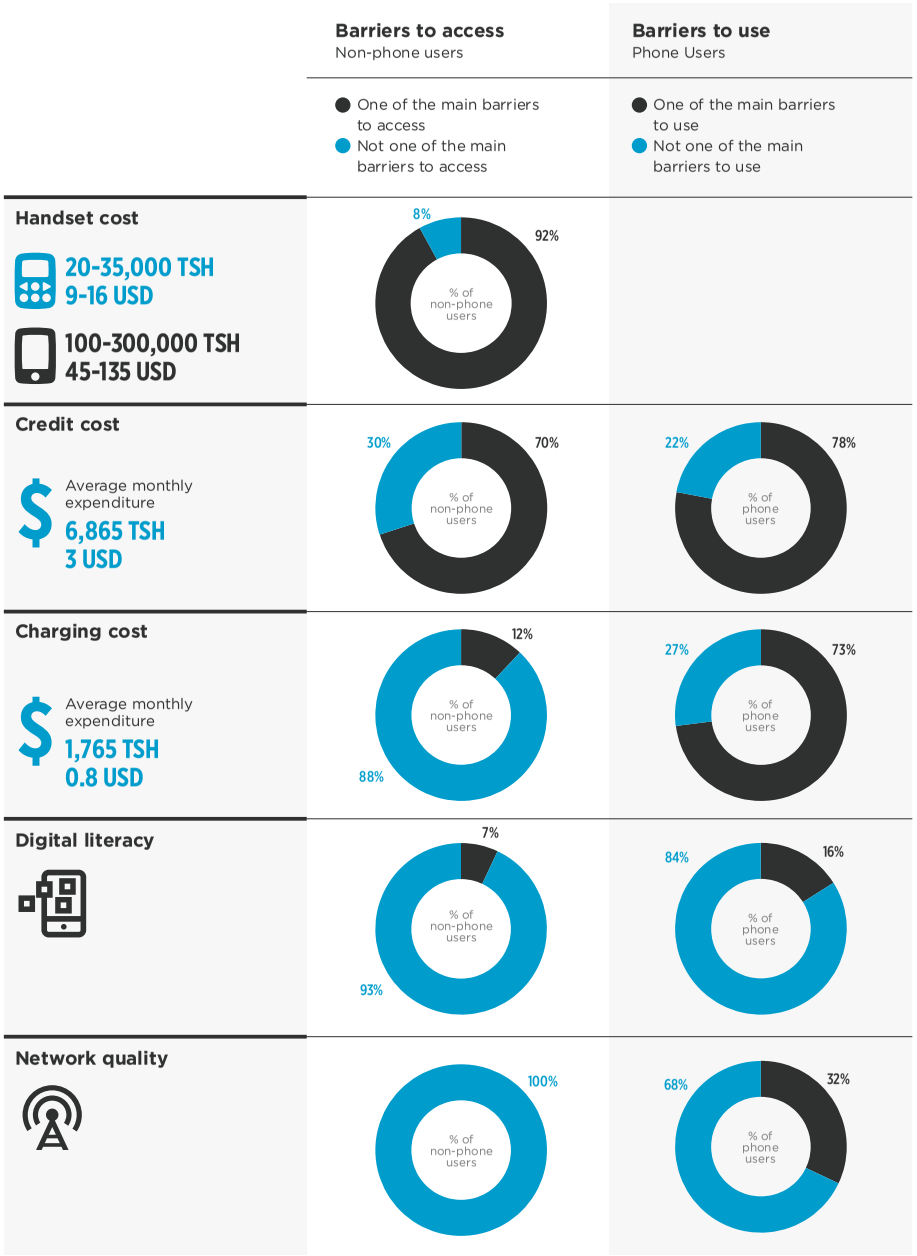
> *"We have to cut the ration and sell some of the ration to buy a phone.... You can sell half of the beans, half of the flour and the oil, but even then it will still take some time to get enough for a phone."* **Burundian, Community leader**

This is supported by survey data, which illustrates that households with a higher average monthly household expenditure are more likely to own a device. Households with no device report an average monthly expenditure of 67,765 TSH (30.50 USD), while households with one, two or three devices report an average expenditure of 74,811 TSH (33.70 USD), 87,985 TSH (39.60 USD), and 105,455 TSH (47.50 USD) respectively.

Recent research from GSMA[45] states that there is ample opportunity for the mobile industry and ecosystem players to improve smartphone affordability for the many millions of people currently unable to afford a device, with recommendations of ways to spread the financial load outlined in Section 10.

45. GSMA, 2017, Accelerating affordable smartphone ownership in emerging markets

Figure 7: Barriers to access and usage of mobile phones for people in Nyarugusu



9.2 Credit and charging

Among survey respondents, 78 per cent of users and 70 per cent of non-users describe the cost of credit as a significant barrier to use and ownership respectively. In particular, the cost of international calls is prohibitively expensive and prevents people from speaking to family members living in other countries.

> *"I have many relatives abroad but I can't afford to call them."* **Male, 51+, Congolese basic phone user**

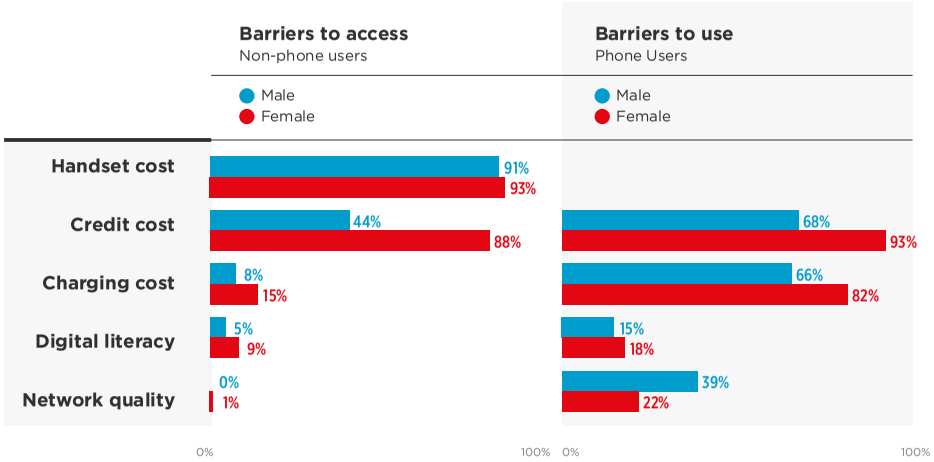
73 per cent of users report charging as a barrier to frequent phone use. Most homes in Nyarugusu have no electricity and so refugees charge their phones in the market or at a local solar-charging site for a cost of 200 TSH for basic phones and 500 TSH for smartphones. Reliance on solar power can make charging slow during the rainy season.

One way to provide affordable off-grid energy services to refugees is to collaborate with pay-as-you-go solar providers to provide lease-to-own solar home system products that can be paid for in instalments via mobile money, scratch cards or airtime (see Section 10). It will be important to invest in further research in this area to understand the tailored business models that can unlock this opportunity for refugee populations.

Access to cash is particularly limited for women. For example, 93 per cent of women said the cost of credit was a barrier to use, compared to 68 per cent of men. Some men access cash by participating in physical incentive work for NGOs, such as unloading vehicles, digging latrines, or constructing houses. Other men may do informal labour in areas outside the camp or purchase fish to sell in the market. Greater access to cash enables men to spend slightly more on average for phone credit and charging - 7,183 TSH (3.20 USD) on credit and 2,199 TSH (1.00 USD) on charging per month - compared to 6,423 TSH (2.90 USD) and 1,176 TSH (0.50 USD) respectively for women.

Partnerships between MNOs and humanitarian agencies can increase refugee access to mobile financial services, and boost access to cash across the population. For example, MNOs already play an important role in delivering digital humanitarian cash transfers. New collaborations with agencies that establish refugee savings groups could increase access to loans and savings services for vulnerable groups.

Figure 8: Barriers to access and usage of mobile phones for people in Nyarugusu with gender breakdown



9.3 Internet connectivity

The cost of data was cited as a barrier to use by 76 per cent of internet-users and 53 per cent of non-internet users. In focus groups the majority of participants talked of purchasing data intermittently rather than regularly. For example:

> *"Sometimes I purchase no data bundles for two months, because there is no way of getting money."* **Female, 25-50, smartphone user**

To overcome such cost barriers, Vodacom Tanzania are planning to provide special offers whereby refugees can call their families and friends, and access internet at an affordable price. This will increase competition, helping to drive costs down.

9.4 Network quality

One quarter of phone users report network coverage as one of the main barriers to using their phone, and 32 per cent report network quality as a barrier. Refugees' homes are arranged in twelve zones, and basic coverage extends to the majority of zones. However, most people are unable to make phone calls from their own homes during the day: refugees described 'walking up a hill', 'climbing trees' and 'waving the phone in the air' in order to make a call or send an SMS. Some also raised problems with weakened signals inside the home, due to brick walls and iron sheeting.

Younger people (18-25 year olds) and internet users were most concerned about network coverage and quality. Data bundles are sold with time limits that may expire before signal strength improves. In focus groups, young people said they would stay awake to access the internet between midnight and 5am, when demand is lower. During the day, recorded download speeds ranged between 0.4Mbps (indoors in Zone 1) and 19.2Mbps (next to the tower).

9.5 SIMs and identification

64 per cent of non-users mentioned the cost of a SIM card as a barrier to phone ownership, and 6 per cent mentioned problems with identity documents.[46] SIM card registration requires a photo, personal information, and scan of an official identification document to meet mandatory SIM registration requirements involving proof-of-identity. UNHCR identity documents are provided to all refugees but are no longer recognised as legitimate registration documents for SIM cards. SIM cards purchased within the last year (since 16th June 2016) function temporarily without official registration (for 30 days), but are then deactivated. Users must then either re-register as a temporary user or purchase a new temporary SIM card. During five of the ten market observations, customers approached mobile agents with deactivated SIM cards in order to re-register, one agent commenting that he was seeing an "alarming rate of turn over". Some agents spent a long time (more than 10 minutes per user) on the phone to customer support in an attempt to resolve the issue, and did not themselves have a good understanding of the problem.

> *"Once it is deactivated… I have to buy another temporary SIM and I might not have the money to buy it"* **Male, 25-50, Burundian, basic phone user**

46. It is possible that most non-users have not attempted to purchase a SIM card, due to other barriers, and therefore are not aware of the registration issues.

The Tanzanian Government's recent decision in June 2017 to roll out National ID Numbers (NID) to refugees, which they can use for KYC purposes, is a significant step towards closing the identification gap among refugees enabling mobile access for refugees in Tanzania. The initial NID roll out aims to register 9,000 refugees in Nyarugusu.

These developments are an example of how humanitarian organisations and governments can work collaboratively to navigate identity-related KYC barriers and ensure that refugees have access to a mobile SIM card and a range of value-added identity-linked mobile services.

9.6 Digital skills, literacy and safety online

> *"I bought a phone in January this year. It has internet, which I didn't have before. But I don't use it - I don't know how to use it. I would like to though, mainly to get information about what is happening in Burundi."*
> **Female, 51+, Burundian feature phone user**

Digital literacy is a particular challenge for older people (51 years and above). 14 per cent of older non-users said that poor digital skills prevent them from using a phone compared to just 4 per cent of under-25s. Among phone users, 35 per cent of older users report digital skills as a challenge, compared to 11 per cent of under-25 users. In focus groups, community leaders and older people frequently said that they don't understand how to search for news and information on the internet and are unable to use social media.

The rate of phone use increases with a refugee's education level. For example, 27 per cent of non-educated respondents report using a phone, compared to 75 per cent of secondary school educated respondents. Similarly, 27 per cent of non literate respondents report using a phone, compared to 66 per cent of literate users. This may be a contributing factor to the higher levels of access among younger people and men, who tend to have higher levels of education.

Introducing digital literacy into the school curriculum and adult education programmes has the potential to improve the number of people able to benefit from mobile connectivity. MNOs can partner with NGOs and UN agencies to deliver digital education services, as evidenced by Vodafone Foundation's Instant Network Schools (Box 4). Such philanthropic investments can improve the lives of refugees, however further monitoring and evaluation of such projects is needed to quantify the impacts.[47]

Some participants express concern about access to harmful content online, including violent images from home. Young girls said they had received unwanted communication and images from strangers that made them feel upset or worried. Older people said they would like more information and education on how to use the internet safely.

> *"If someone has run from war, then they have been through bad experiences. If they go online, they may see things in videos or pictures that builds emotions and angers or upsets them, and it can make them depressed or make them act out. It can make them lose hope about their country and whether they can ever go back – it makes them think they have no country left to go back to."* **Male mobile agent**

The Tanzania Communications Regulatory Authority (TCRA) has provided UNHCR with a short leaflet on internet safety, which has been translated into Kiswahili and Kirundi and distributed to 4,000 refugees across the three camps in the Kigoma region. Facebook has also produced an internet safety guide, which will also be distributed by UNHCR.

47. A large research study assessing the impact of Vodafone Foundation's INS schools in refugee camps across East Africa is currently being conducted. The findings of the study will be published in December 2017.

9.7 Liquidity

Retrieving cash at mobile money agent locations was not a problem reported by many refugees in survey responses. However, during market observations, five of the ten observed agents had insufficient cash for their customers to make requested mobile money withdrawals. As the use of mobile money increases and UN agencies and NGOs expand their deployment of humanitarian cash transfer projects, ensuring liquidity in the camp will become increasingly challenging. There are a number of methods that MNOs and humanitarian organisations can adopt to ensure liquidity, including strengthening the master agent model, deploying more agents – including fixed and roving agents - and staggering payments.[48]

10 Refugee connectivity and the future

The research provides evidence that there is a market opportunity to deliver both social and commercial value in serving refugee populations, and investing in the capital expenditure, operating expenditure and partnerships required.

Although each refugee context is unique, a number of key takeaways from this report can be applied to other refugee settings. The growing number of refugees worldwide and their unique needs - which significantly elevate their demand for mobile and internet services - suggests that the social and commercial opportunities and challenges of providing these services are likely here to stay. Stakeholders must redouble efforts to collaborate and innovate to deliver services that have viable business models which can achieve scalability in order to reach a larger share of the growing refugee population, thereby extending digital inclusion and improving the delivery of dignified humanitarian assistance.

To realise the opportunity and benefits of improved connectivity for refugees, MNOs, humanitarian organisations and Governments should consider the following recommendations:

48. GSMA, 2017, "A Landscape Report: Mobile Money, Humanitarian Cash Transfers and Displaced Populations"

10.1 Recommendations

For Mobile Network Operators

- **Recognise that there is significant market demand from refugee populations. Think creatively about how to extend coverage to refugee populations including exploring ways to share commercial risk.**
  Evidence from Nyarugusu refugee camp suggests that there can be a significant business case for extending mobile coverage to refugee camps. The presence of refugees adds significant market size to locations that otherwise might not be considered commercially sustainable for MNOs, as has been borne out in the case of Nyarugusu camp in Tanzania.

  In cases where the capital expenditure may be deemed too high to build a tower due to perceived low returns on investment, MNOs should consider collaborating with interested stakeholders to explore innovative ways to extend coverage. Examples include United Nations Capital Development Fund (UNCDF's) collaboration with an MNO in Uganda to embark on a 'Loss Guarantee' agreement approach. The promise of a loss guarantee, by which the UNCDF would reimburse the MNO for any losses suffered through the site on a quarterly basis, for a set period of time, enabled the MNO to invest without financial risk. No reimbursement was required, as the site became immediately profitable.[49]

  As part of the GSMA Connected Society programme's rural connectivity project, three MNOs in Tanzania (Airtel, Millicom and Vodacom) have embarked on a tripartite national roaming agreement. In this model, pilot sites jointly provide broadband connectivity to all operator customers from a single tower, allowing subscribers to roam on each other's networks in selected rural locations.[50] Such a model could be applied in areas where refugees reside.

- **Consider a blended model of commercial and philanthropic offerings that can co-exist to meet the unique needs of refugee populations, including those in the most vulnerable segments of the population.**
  The socio-economic impact of mobile services through the investment of towers can be significant. However, MNOs should also consider how to ensure mobile access and usage for marginalised groups through investing in philanthropic initiatives such as the provision of education or welfare services, ensuring that all groups can benefit from the same services. Vodacom Tanzania has achieved this blended model, investing in a tower in Nyarugusu camp that delivers 3G connectivity, as well as offering philanthropic initiatives, such as the Instant Network Schools, which provide digital learning to students and free internet access to members of the wider refugee community. Such enterprises can deliver social impact resulting in wide-ranging advocacy benefits for MNOs.

49. To find out more about this Loss Guarantee see: GSMA, 2017, "A Landscape Report: Mobile Money, Humanitarian Cash Transfers and Displaced Populations
50. GSMA announces Tanzania rural connectivity project, https://www.gsma.com/newsroom/press-release/gsma-announces-tanzania-rural-connectivity-project/

- **Align with donors and humanitarian agencies to address barriers to maximising mobile financial services in refugee contexts.**
  52 per cent of phone users in Nyarugusu have used mobile money to receive remittances and humanitarian cash transfers, make payments, save, or manage money. Usage of mobile money in Nyarugusu suggests that MNOs should focus on promoting their remittance services to refugees (domestic and international), while also investing in savings and loans products.

  As humanitarian organisations increasingly seek to digitise cash payments, MNOs should offer their bulk payment services, advocating the value of mobile money over cards, which can offer refugees access to a whole suite of financial services that can help them to build more sustainable livelihoods.[51] MNOs should seek to collaborate with donors and regulators early to assess project feasibility,[52] and address regulatory and logistical barriers, in order to create and support the infrastructure required to serve those in need, in a timely manner.

- **Consider providing special bundle services to meet the particular needs of refugees and humanitarian organisations while expanding the customer base.**
  Contacting and staying in touch with family and friends is a priority for refugees confined to a camp setting. Refugees with basic phones report that the costs of international calls are prohibitively expensive, preventing them from speaking with family members in other countries. MNOs should consider developing specific products explicitly targeting refugees, to include a set amount of international call minutes and SMS, for example. Operating in Lebanon, MNO Touch catered to the needs of Syrian refugees, seeing an opportunity both to deliver the humanitarian aims of their CSR program, and to reach out to a new and growing customer base. Touch launched Al Tawasol, a bundle priced at 11 USD per month which included 40 call minutes and 30 SMS to Syria, in addition to local Lebanese calls and SMS.

  Similarly, MNOs should consider collaborating with NGOs who are providing call services for refugees, to offer them special bundles. This would not only positively impact refugees by expanding the service to a larger population, but would also provide MNOs with a consistent stream of revenue.

51. GSMA, 2017, "A Landscape Report: Mobile Money, Humanitarian Cash Transfers and Displaced Populations"
52. Project feasibility considerations include: Network and agent coverage, agent liquidity, device ownership, gender gaps and the lead time required to establish effective partnerships must be taken into consideration by both parties.

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For Humanitarian Organisations

- **Ensure there is organisational capacity and sufficient knowledge to successfully implement mobile technology into programme design.**
  As humanitarian operations become more digitised, partnerships with MNOs and technology players become increasingly necessary and having sufficient in-house technical knowledge becomes more important. With humanitarian cash transfer programmes, for example, a common and realistic understanding of the challenges, opportunities and costs associated with serving displaced populations via mobile money will help determine project feasibility, as well as operational and financial sustainability. Humanitarian organisations and their payment partners must be aligned on their objectives – a process that can be made smoother if there is sufficient expertise within humanitarian organisations of the private sector and the complexities of mobile money ecosystems.

- **Consider collaborating with technology vendors to enhance engagement, including two-way communication, with refugees.**
  The high level of household access to mobile phones among refugees provides an opportunity to reach a large number of households with key information through bulk SMS messaging and IVR (Instant Voice Recognition). Through mobile-based platforms, humanitarian agencies can also send out voice questionnaires to refugees in order to collect basic information about refugees and their families, to better understand their short-term and longer-term needs, whilst reducing the literacy barrier to participation. Call centres, designed specifically to provide humanitarian information, can provide a channel for refugees to proactively request the information or advice they deem important to themselves.[53] The humanitarian community should approach such initiatives in a coordinated and efficient manner to avoid duplicating efforts.

- **Explore options for boosting digital skills and literacy.**
  Phone use in Nyarugusu increases with education level (27 per cent of non-educated respondents report using a phone, compared to 75 per cent of secondary school educated respondents), and digital literacy was reported as a barrier to phone use by 16 per cent of phone users and a barrier to internet use by 22 per cent of basic phone users. Given the socio-economic benefits that mobile technology can provide refugees, humanitarian agencies running educational programmes could consider options for enhancing digital literacy among the refugee population, such as integrating digital skills training into existing education technology programmes (such as INS) and offering training sessions to users of community technology access centres.

- **Consider ways to co-develop and increase access to appropriate internet safety information.**
  Although staying safe online is a worldwide issue, refugee populations can be particularly at risk, due to limited education opportunities, low digital literacy and limited access to the outside world. In Nyarugusu, refugees reported receiving inappropriate content on social media platforms. Humanitarian organisations should work with stakeholders such as regulators and social media providers to develop key messages tailored to a refugee audience on how to stay safe online. Agencies should seek to disseminate these messages though training sessions, community discussion groups and distribution of written information and guidance.

53. See example of call centre in Iraq: Relief Web, 2015, "UN agencies launch call centre to provide displaced communities across Iraq with information on humanitarian assistance"

For Governments

- **Work with the mobile industry and other stakeholders to ensure the regulatory environment and policies enable refugees to have reliable access to mobile services.**
  Having a more connected refugee population could have significant benefits for host Governments including; cost savings, as a result of migrating certain refugee activities online[54]; a two-way communication channel with refugees; and increased compliance with government requirements for registration and monitoring.[55]

  Governments should seek to:

  Create an enabling environment to extend mobile coverage to areas where refugees reside:
  Governments can accelerate broadband coverage by releasing low-frequency spectrum, incentivising commercial sharing arrangements to facilitate infrastructure roll-out, while creating an enabling taxation environment in order to deliver connectivity to challenging places.

  Ensure easy access for MNOs to establish and maintain services:
  Infrastructure maintenance is key for delivering reliable services to customers. MNOs in Nyarugusu have experienced infrastructure damage due to storms. It is essential that Governments ensure that engineers can gain easy access to refugee camps to fix and maintain their services as quickly as possible.

  Implement special Know Your Customer (KYC) processes to ensure refugees can benefit from mobile services:
  Where mobile SIM registration is mandatory, regulators may need to prioritise implementing formal identification processes for refugees or adopt a more relaxed approach to 'proof-of-identity' requirements to ensure persons without formal identification are able to benefit from mobile services. In Tanzania, the impact of UNHCR ID documentation no longer being legally acceptable for SIM registration created significant challenges for refugees to stay connected. The Government's recent decision to roll out National ID Numbers (NID) to refugees, which they can use for SIM registration/KYC purposes, is a significant step towards mitigating the risk of refugees being excluded from mobile services. It is an example of how humanitarian organisations and governments can work collaboratively to navigate identity-related KYC barriers and ensure that refugees have access to a range of mobile services. In other markets such as Haiti and Iraq, the adoption of tiered KYC frameworks has eased the registration process for disaster affected populations.[56] The power of harmonised advocacy messaging from interested stakeholders can also result in positive changes in policy and regulation.

54. UNHCR, 2016, "Connecting Refugees"
55. ibid
56. GSMA, 2017, "Refugees and Identity: Considerations for Mobile-enabled Registration and Aid Delivery"

For all stakeholders (MNOs, mobile money providers, humanitarian organisations, governments, service providers, financial institutions).

- **Support refugees to spread the financial load of purchasing handsets**
  Affordability of handsets was reported as one of the major barriers to phone ownership and usage in Nyarugusu, and particularly problematic for more vulnerable groups. Recent GSMA research into the smartphone ecosystem landscape identified key strategies for how the mobile industry and ecosystem players can improve smartphone affordability for the many millions of people currently unable to afford a device. For example:
  - Partnering with microfinance institutions, banks and other financial institutions to offer device loans to a broader group of people. These could for instance be offered in partnership with an MNO's mobile money platform, with the credit specialist backing the scheme and providing the capital but the mobile money platform providing the channel for payments.
  - Enhancing consumers' ability to save towards a handset. Design simple savings products that are easy to implement and compel customers to put away funds for a specific product. Leverage the power of savings groups and/or Savings and Credit Co-operative Organisations, often active in refugee camp environments, which can support disciplined saving.
- **Partner with service providers to deliver affordable mobile-enabled off grid energy services to refugees.**
  Of mobile users in Nyarugusu, 73 per cent report that the cost of charging is a barrier to frequent phone use, spending up to 500 TSH (0.20 USD) for a smartphone to be fully charged. Refugee homes commonly have no electricity, leaving refugees with limited options for charging phones. There is an opportunity for pay-as-you-go solar providers to provide lease-to-own solar home system products that can be paid for in instalments via mobile money, scratch cards and sometimes airtime, in partnership with MNOs. These systems can provide lighting, charging facilities, radios, TVs and even hair cutters, providing entrepreneurial opportunities for refugees. The benefits for refugees of having access to clean energy are clear.[57] Partnering with service providers also enables MNOs to pursue new ecosystem opportunities and expand revenue streams through mobile money, while also ensuring customers increase their phone use due to a charged battery.[58]

  Looking ahead, it will be important to understand what the offering of mobile-enabled off grid energy services could mean in terms of supporting connectivity by improving charging and more broadly supporting livelihoods and income generating activities for refugees. Building on research[59] in this area should be a priority for humanitarian organisations to understand how exactly to unlock this opportunity.

57. Reuters, 2017, http://news.trust.org/item/20170623120212-ystkp/
58. GSMA, 2016, "Mobisol: Pay-as-you-go Solar for Entrepreneurs in Rwanda"
59. Chatham House, 2015, "Heat, Light and Power for Refugees Saving Lives, Reducing Costs"

Annex 1

Research methodology

GSMA would like to thank Jigsaw Consult for their collaboration on this project and for their invaluable contributions to the design, implementation, and analysis of the research.

The quantitative and qualitative data presented in this report was gathered by Jigsaw Consult in April and May 2017. A mixed methods approach was used to gather the perceptions and experiences of different stakeholders, including the refugee population, mobile agents and humanitarian agency staff.

Prior to conducting field research, a kick-off workshop was conducted by the Jigsaw Consult team together with members of the GSMA team to discuss priority research questions, identify existing research materials and finalise the methodological approach. A desk review and series of remote interviews with MNOs, UNHCR and partner agencies was conducted to understand the insights and priorities of key stakeholders, and gaps in current knowledge and research.

Field research was conducted by the Jigsaw Consult team in Nyarugusu camp in May 2017, facilitated by UNHCR. The approach consisted of the following methods:

Twenty-five focus group discussions of six to ten participants, grouped by gender, nationality and phone use. Through a series of open questions and group activities, the discussions explored the viewpoints and experiences of different phone users. The group was facilitated to enable participants to discuss and feedback on different areas, such as types of phone use, the value of connectivity, and the barriers and challenges they experience. The mobilisation of participants was coordinated by UNHCR together with IRC and Good Neighbours Tanzania. In total, 154 members of the refugee population participated in discussion groups.

The following mobile phone user groups were included in individual focus groups. All groups were separated by gender and nationality.

- Non-internet enabled phone users, young people
- Non-internet enabled phone users, adults
- Non-internet enabled phone users, elderly
- Internet enabled phone users, young people
- Internet enabled phone users, adults
- Internet enabled phone users, elderly
- Non-phone users, all ages

In addition, the research team facilitated discussions with the following special user groups:

- Community leaders
- VSLG group members and entrepreneurs
- Mobile agents
- Charging station operators
- INS school students, aged 12-18
- INS school teachers

Household survey of 484 refugee households, including 244 Burundian refugees, 240 Congolese refugees, 243 men and 241 women, across 11 of the 12 camp zones. A stratified random sample was used to ensure a representative sample of gender, age and nationality. All respondents were over the age of 18. Responses were gathered from three age strata, including 176 18-25 year olds (36 per cent), 240 26-50 year olds (50 per cent) and 68 51 years and over (14 per cent), corresponding to the age demographic of the total camp population. The survey collected quantitative data on household and personal access to, use of and ownership of mobile devices, as well as use cases, expenditure and confidence. The survey was administered digitally by a team of eight trained local researchers, over five consecutive days.

Mobile agent survey of 21 refugee agents operating in the camp and Common Market. The survey collected the demographics and business experiences of agents, their perceptions of the use and demand for mobile and internet connectivity among the refugee population, and their understanding of the associated barriers. Administered digitally by a trained local researcher, the survey was conducted to gather insights from operators interacting with phone users on a daily basis, to supplement and triangulate findings from focus group discussions and the household survey.

Market observations of 10 mobile agent stalls. Locations were selected at random, and included 5 of the 12 camp zones, and the Common Market area. The observation was conducted by a trained local researcher. Over a period of 45 minutes, the researcher recorded observations about public phone use in the surrounding area, the demographic, frequency and expenditure of customers at the mobile agent stall, and questions asked to the agent. The observation tool facilitates insights into the lived experiences of the refugee population and phone users outside a controlled environment.



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