



# BRIEFING NOTE


**DIGITAL TECHNOLOGY AND (FRUGAL)  
INNOVATION IN MARGINALIZED REFUGEE  
COMMUNITIES IN KENYA: AIDING RESILIENCE,  
SELF-RELIANCE AND INCLUSION?**

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This Briefing Note summarizes the main discussion points and insights from the online symposium ‘Technology and (Frugal) Innovation in Marginalized Refugee Communities in Kenya’ held on January 12th 2022 by Dr Holly Ritchie, Thrive Kenya in coordination with the International Centre for Frugal Innovation (ICFI) in Kenya. The symposium explored both recent academic research and participant perspectives related to the evolving use of digital technology and innovation[1] in particular by refugee populations in Kenya, and the influence on refugee resilience and self-reliance[2]. The event was sponsored by the International Institute of Social Studies (ISS), Erasmus University.

## Key points

- **Frugal innovations may be described as ‘products, services and systems that are (re)designed and (re)engineered specifically for users in resource- constrained environments’.** Frugal innovations may be technological, institutional or related to the nature of business models.
- **Despite resource constraints, refugee camps in particular are unexpected hubs of digital innovation.** In these contexts, there are a concentration of young people (typically young men) that are eager to innovate and able to develop digital applications, and new tech-focused NGOs supporting innovation.
- **Refugees are increasingly adopting smartphones and digital technology (i.e. internet and apps) to access communications, information and services, often encouraged by refugee ‘digital champions’.** Yet there are varied digital skills and abilities amongst refugees, or degrees of ‘digital literacy’, influencing digital adoption and use. Access to online or gig work is inhibited by legal issues (lack of access to SIM cards).
- **Appreciating diverse ‘immediate’ needs of refugee communities is critical through rigorous and up-to-date research and analysis.** This includes vulnerable groups, such as women, the disabled and the elderly. Feasibility studies can aid a deeper understanding of local needs, priorities and capacities.
- **Fostering ‘enabling environments’ is crucial for ‘bottom-up’ innovation, and ensuring cooperation and collaboration amongst key actors.** Critical infrastructure including affordable electricity and access to the internet can foster refugee’s own innovation, particularly use/design of digital platforms.



## Background to refugees in Kenya

Approximately 450,000 refugees reside in refugee camps (84 percent of refugees) in Kenya, whilst the capital Nairobi is estimated to host around 82,000 refugees<sup>(3)</sup>. Recognizing the basic human rights of refugees, Kenya is a signatory to all global and regional policy commitments that aim at promoting the social and economic inclusion of refugees. This includes the Global Refugee Compact and the Kampala, Nairobi and Djibouti declarations which have articulated expanding refugee access to ‘livelihoods, durable solutions and integration’ (IRC, 2021). Whilst refugees based in the camps have access to humanitarian support, refugees out of the camps have limited aid assistance, but have been attracted to the urban centres for improved access to economic opportunities. The city reality has been challenging however. Many poor refugees, such as Somali women refugees in Eastleigh remain highly marginalized, eking out a living as ‘survivalist’ traders, and often struggle to meet basic needs. Urban refugees suffer hostility, police intimidation and harassment as a result of xenophobia and a lack of government permits. Meanwhile Somali refugee women traders face additional community-own pressures related to women’s public roles (Ritchie, 2018).

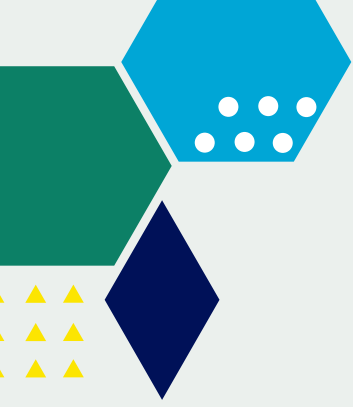
## Technology and (frugal) innovation in the humanitarian sector

Technology and innovation are argued to be playing ‘an increasingly transformative role’ (Betts, 2015) across the humanitarian sector, accelerating new approaches to aid and fostering ‘creative’ local income generation. This is perceived to be opening up new pathways to refugee self-reliance and resilience, and broader processes of inclusion and integration. In particular, ‘**frugal innovations**’ relate to innovations or solutions that are low-cost, appropriate and flexible for users in resource-scarce contexts. Frugal innovation may be useful for local producers and consumers as well as for organisations and policy makers, and thus may not necessarily have a commercial objective. Refugee or conflict victim (own) innovation is argued to be a major overlooked area, including for example, 3D printing of prosthetic limbs and creating access to important supplies (Ramadurai and Bhatia, 2019). A key area of attention has been the growing influence of Information Communication Technologies (ICTs)<sup>(4)</sup> such as mobile devices and apps, as digital frugal innovations. Whilst potentially transformative for society, both access and the use of ICTs may be complex, particularly in more marginalized contexts. In these contexts, concerns lie both in the physical ‘digital divide’ as well as the multi-layers of ‘asymmetry’ in ICT design, access, usage and adoption, leading to the exclusion of marginalized groups, and the potential reproduction of existing structural biases. Such exclusion and bias risks aggravating social inequalities that will hinder human security, integration and the achievement of the SDGs (The Earth Institute and Ericsson, 2016). Sustainable Development Goal 5b explicitly highlights the vulnerability of groups such as women.

### ***The Covid-19 pandemic and the growing role of digital technology and innovation***

**Over the Covid-19 pandemic, refugee groups in Kenya have been severely affected by movement restrictions affecting aid delivery but also the suppression of market activities influencing refugee lives and livelihoods.** With limited NGO support outside of the camps, urban refugee communities in particular have been hit hard with a decline in refugee incomes (IRC, 2021) and ‘deteriorating’ household situations (RefugePoint, 2020), exacerbating refugee vulnerability and fragility (Ritchie and Zollmann, 2021; Omata, 2020). Urban refugees have been constrained by a lack of legal status, low trust by local communities and a lack of broad social networks. This has inhibited the adoption of local Kenyan coping strategies during the crisis, including income diversification, access to ‘social’ finance and engagement in agriculture (Zollmann et al., 202). Instead refugee families have turned to increasing numbers of household income earners, reducing rent through relocation and shifting living arrangements through co-habitation in efforts to meet food and rent needs, leading to domestic stresses (including child care issues and risk of GBV). Refugees have also reduced meals and sold household assets (IRC, 2021). Households that were unable to meet basic needs were recommended to move to the camps.

**An interest in digital technology and innovation by both aid agencies and refugee households has been particularly accelerated during the pandemic, with lockdowns and restrictions of movement, and urgent needs at a local level (Ritchie and Zollmann, 2021).** Digital technology has been shown to play a notable role in refugee support both for continuity of NGO assistance, with remote coordination, virtual training/learning and psychosocial support. Meanwhile, within refugee communities, refugees’ own (evolving) use of smartphones and apps has facilitated access to information, security and protection. Digital divide issues – access and usage - require consideration though (Ritchie, 2022).

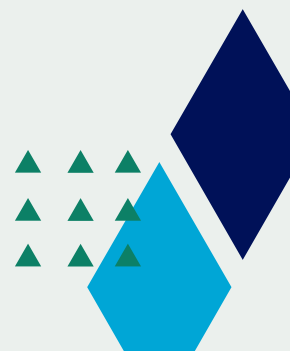


## Symposium:

# Exploring ‘frugal innovations’ in refugee communities in Kenya

**The online symposium ‘Technology and (Frugal) Innovation in Marginalized Refugee Communities in Kenya’ held in January 2022 aimed to distill key insights and emerging lessons from researchers, organisations, civil society groups and donors working in particular on digital technology and innovations with marginalized refugee groups in Kenya. These included successful aid interventions, locally-led initiatives (including by refugee groups) and the broader use of (digital) innovation that have enabled refugee populations to become more resilient, self-reliant and/or integrated into local communities[5].**

The symposium was facilitated by Dr Holly Ritchie, Thrive Kenya[6] in coordination with the International Centre for Frugal Innovation (ICFI) in Kenya, and was sponsored by the International Institute of Social Studies (ISS), Erasmus University. ICFI is a multi-disciplinary academic research centre within the Leiden-Delft-Erasmus Universities alliance in The Netherlands[7] that explores ‘frugal innovation’ processes and their economic, social and environmental impacts. ICFI Kenya conducts locally embedded research to generate insights for Kenya and the region, with a current focus on five strategic domains: energy, health, water, agro-food and urban development.



## Keynote presentations:



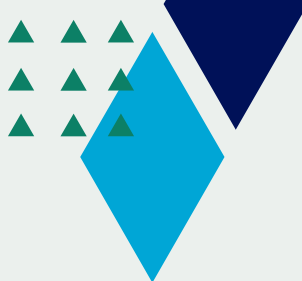
# Frugal innovation in low resource settings, and refugee women insights

Keynote presentations were given by Dr Elsie Onsongo from ICFI Kenya, and Dr Holly Ritchie from THRIVE Kenya (and a research affiliate with ICFI in the Netherlands). Dr Elsie Onsongo expanded on the concept of ‘frugal innovation’, and discussed ICFI’s involvement in ‘locally embedded research’ on frugal innovation in Kenya. Drawing on a research case study in Eastleigh, Dr Holly Ritchie then highlighted empirical research related to Somali women refugees in Kenya, and the influence of ICTs as ‘digital’ frugal innovations in marginalized urban contexts.

“ There is an ever-growing need for innovations to meet basic needs, inclusive livelihoods and to strengthen local coping strategies by ‘creating value’ in low resource settings ”

Dr Elsie Onsongo, ICFI

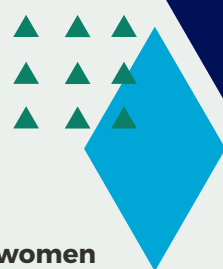
**Dr Elsie Onsongo drew attention to the core focus of ICFI in Kenya in exploring frugal innovation around the ‘Technology-Entrepreneurship-Development (TED)’ nexus.** Linked to twenty partner organisations around the world, ICFI facilitates Kenyan-based research and is engaged in cross-country exchange and learning on frugal innovation. In light of major global challenges including climate change, population pressures, poverty, conflict and recent crises such as the Covid-19 pandemic, Onsongo highlighted that there is an ‘ever-growing need’ for innovations to meet basic needs, support inclusive livelihoods and to strengthen local coping strategies by ‘creating value’ in low resource settings. Towards a more descriptive definition of frugal innovation, frugal innovations may be described as ‘products, services and systems that can be (re)designed and (re)engineered specifically for users in resource-constrained environments’ (as elaborated in Box 1). At the product level, innovations may be affordable, simple, low-tech, robust, compact, appropriate, and user-friendly: ‘using less to do more’. Meanwhile at the societal level, innovations may be accessible, inclusive, disruptive, and ‘sustainable’. For example, in the energy sector, examples of frugal innovation include home solar systems, e.g. M-Kopa in Kenya – minigrids for energy access and pre-paid electricity systems. In the finance sector, frugal innovations include M-Pesa for personal banking and money transfer, microfinance and micro-credit solutions, and peer-to-peer lending solutions. In the health sector, frugal innovations include mobile clinics, off-grid solar powered facilities, and low-cost medical equipment. In the agricultural sector, frugal innovations may include clean cookstoves that economise on energy, fabricated milking machines for dairy farming and harvesters.



Frugal innovations may be described as **products, services and systems** that can be (re)designed and (re)engineered specifically for users in resource-constrained environments. Frugal innovation may be technological, i.e. digital technologies and digital services, or combinations of physical components (including reuse of components) such as hardware, machinery, artifacts. Frugal innovation can refer to the nature of business models, i.e. frugal ways of delivering products and services, new value propositions, and networks. Frugal innovation can also be institutional, i.e. societal arrangements including new configurations of people and organisations, new governance structures, and new collaborations.

***BOX 1: ELABORATING FRUGAL INNOVATIONS (ICFI KENYA)***





**Dr Holly Ritchie** briefly presented a small research case study in Eastleigh of Somali women refugees and the use and experience of ICTs in processes of digital inclusion (Ritchie, 2022). Whilst use of ICTs and digital devices may be influenced by various factors from access and affordability to ability to use devices ('e-skills') and adopt it (Bowles, 2013), Ritchie argued that understanding ICT adoption and influence requires looking closer at cultural norms and local contexts. Over 2018-2021, empirical research explored refugee engagement in smartphones in challenging urban contexts in Kenya, drawing on a small project-based case study of a group of Somali women refugees in the district of Eastleigh in Nairobi(8). A 'trial' WhatsApp group was set up to facilitate project coordination with the refugee women's group in Eastleigh, despite initial limited smartphone ownership. Whilst refugee women were largely illiterate, women used voice messages and pictures to communicate on the platform and share videos. As the women assumed greater ownership of the new group, the WhatsApp group took on a new social and cultural dimension, with refugee women sharing inspirational Islamic and cultural messages. Later as refugee women began a small tie-dye business, progress and designs started to be shared on the platform stimulating (collective) economic activities. During the Covid-19 pandemic, the WhatsApp group provided a critical health and protection dimension, supporting Covid-19 information dissemination, and local security updates.

“ Digital experiences have boosted refugee women’s confidence and independence in a conservative and often hostile displacement context” ”

Dr Holly Ritchie, Thrive

The WhatsApp group has proved crucial for refugee women, bringing both social and economic benefits. Ritchie highlighted that digital experiences have boosted refugee women’s confidence and independence in a conservative and often hostile displacement context. This has strengthened evolving norms related to mobility and work, and the social acceptability of women’s trading and business. Digital exchange has further opened up new dimensions to refugee women’s socio-cultural and work life through online interaction. Yet whilst some women struggled to adopt and use the technology, the research drew attention to the crucial role of women’s civil society groups, and group members, as ‘digital champions’ in encouraging smartphone adoption and participation in online platforms. During the pandemic, the WhatsApp group became a ‘lifeline’ for group members as physical interaction was restricted and women were often isolated at home.

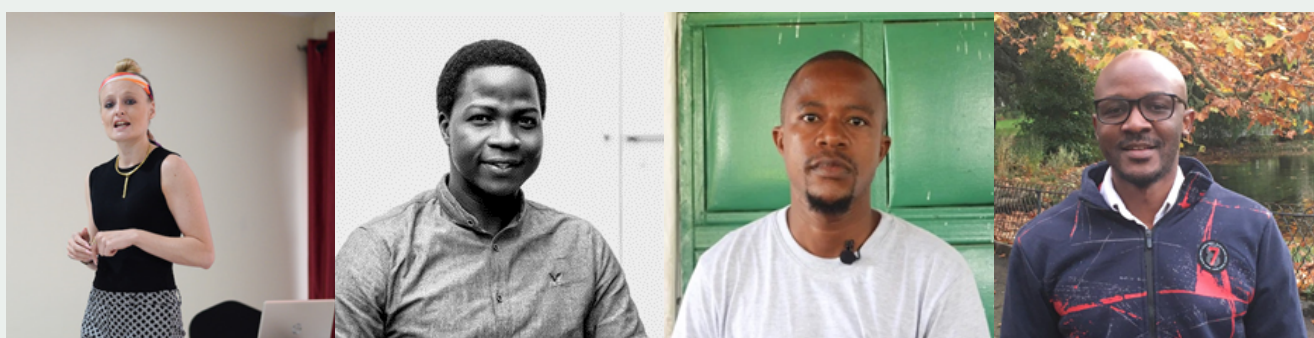


The study highlighted the notable role that mobile devices and remote coordination can play in challenging displacement contexts and during times of crisis, reducing vulnerability and enhancing resilience through online support/exchange, and facilitating physical outreach. Ritchie emphasized that it was now crucial for development agencies to look closer at the evolving role and use of ICTs, and the influence of local civil society and community conditions to better support the inclusion of vulnerable groups, particularly with the rise in online services, support and opportunities.

**FIGURE 1:** INCREASE IN REFUGEE USE OF DIGITAL TECHNOLOGY IN EASTLEIGH, NAIROBI WITH ACCESS TO NEW CHINESE SMARTPHONES AND PEER GROUP SUPPORT

## Symposium panel:

# Frugal innovation and digital technology revolutionising refugee lives?



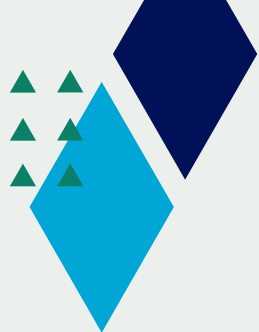
**FIGURE 2:** PANEL PARTICIPANTS: FROM LEFT, GEMMA MAY (TECHFUGEES), JARED OWUOR (SAMUEL HALL), PASCAL ZIGASHANE (ACTION POUR LE PROGRES) AND INNOCENT TSHILOMBO (KAKUMA VENTURES).

**A panel of experts, researchers and practitioners discussed key thematic technology and (frugal) innovations at both an aid level as well as emerging locally-based initiatives.** The panelists included: Gemma May from Techfugees(9), an organisation facilitating technology-based solutions for displaced people; Jared Owuor from Samuel Hall(10), a research group based in East Africa; Pascal Zigashane from Action Pour le Progres(11), a refugee-led community-based organization in Kakuma Refugee camp; and Innocent Tshilombo from Kakuma Ventures(12), a refugee-led enterprise that supports refugees to develop and grow their businesses.

**In terms of technical assistance, there have been significant efforts in the design and development of platform-based aid innovations by Techfugees.** Gemma May elaborated on Techfugees' approach that co-designs technological innovations 'with and for refugees' in coordination with local CBOs and NGOs. For example, Techfugees worked with the Red Cross in Kakuma camp and facilitated a digital hackathon(13), resulting in the launch of a platform in early 2020 for 'E-health' to help with disease outbreak mapping, quarantine and response(14). The platform proved timely for use during the subsequent Covid-19 pandemic.

**Addressing information gaps and 'informing the discourse', Samuel Hall has been involved with various studies, base line surveys and research that have investigated refugees and migration.** Jared Owuor elaborated on Samuel Hall's various thematic areas of focus including migration (including issues related to reintegration, human trafficking and smuggling), resilience and social protection(15). In identifying innovations and 'solutions' to local challenges, Owuor emphasized the importance of the involvement of refugees themselves 'who have their own ideas and know what support they need'. To support the uptake of research findings, Samuel Hall pursues partnerships where relevant to encourage the scaling up of ideas and recommendations.





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[In the refugee camps ], there is fast increasing demand to connect online to access information, skills and enterprise opportunities

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Innocent Tshilombo, Kakuma Ventures)

**Local refugee initiatives in Kakuma were shared by Pascal Zigashane from Action Pour le Progres and Innocent Tshilombo from Kakuma Ventures.** Zigashane drew attention to local innovations such as the development of ‘solar-powered freezers’, enabling the market sale of high demand goods (such as cool drinks) in Kakuma camp (16). Meanwhile with support of the social enterprise, Tunapanda(17), low-cost WIFI community networks have been set up with WIFI hotspots established in Kakuma (drawing on regional experience with networks set up in counties such as Kilifi). This enables refugee communities to get online for low-cost communications, for example, through WhatsApp; and access online learning including computer classes, and courses from abroad (English, digital literacy). Besides local hotspots, Tshilombo elaborated on their own designed [web portal](#) (that facilitates refugee access to affordable internet (through internet vouchers). Tshilombo emphasised that there is a ‘fast increasing demand’ by refugees in the camps to connect online to access information, skills and enterprise. Action Pour le Progres is further coordinating with Amnesty to develop a digital justice-related platform to facilitate community reporting on human rights violations in the camps.

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“‘Information is power’: [we, refugees] can communicate [more easily] with those back in our home countries, get [up-to-date] information, and better understand opportunities ”

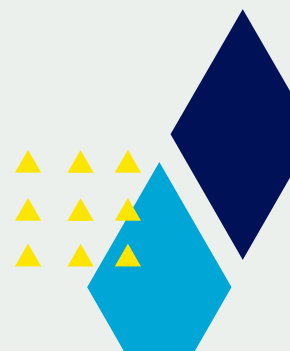
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(Pascal Zigashane, Action Pour le Progres)

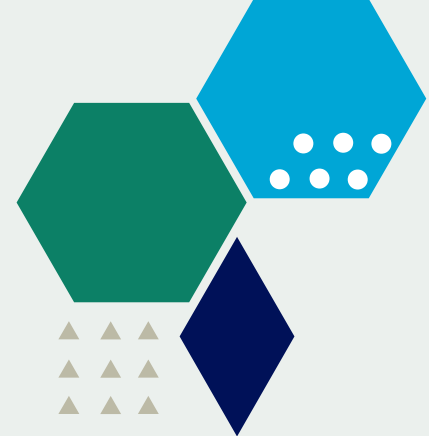
**In terms of the emerging influence of technology and (frugal) innovations on refugee resilience, self-reliance and inclusion, panel members drew attention to costs saved through solar power, and accessing online information, skills, jobs and social assistance through digital technology.** In Kakuma, Zigashane underscored the importance of access to basic amenities such as (affordable) electricity, particularly in the marketplace. Solar-powered freezers have allowed individual shopkeepers to save an estimated 5,000 KSH per month on power (generators). Meanwhile digital technology is described to be now crucial to refugee lives, citing ‘information is power’. Through the community network, refugees can communicate with their home communities, get up-to date information and better understand available opportunities. Access to information and skills was emphasized as critically important for work and educational opportunities. In particular, refugees originating from French-speaking countries such as the DRC need English language training to both access local and online work, as well as apply for educational scholarships.

**Summarizing the overall benefits of frugal innovations in refugee areas, particularly digital technology, these include indicative economic, physical and social gains for refugees.** Innovations were highlighted to reduce costs through access to affordable services, facilitate access to online skills and information, aid links to educational facilities and universities, permit local and regional business exchange, create jobs, and improve access to social assistance. Whilst challenging due to legal issues (see below), access to online work is cited to be a crucial area for diversifying incomes but also for reducing the 'stress of daily life' in the camps(18).

**Barriers and obstacles that hinder the use, development and scaling up of digital technology and innovation were also touched upon. These included refugee literacy and digital skills, access to appropriate and sufficient technology, and legality issues.** Vulnerable groups such as the women, the disabled, and older people may be illiterate and lack digital skills, and thus struggle to access and use phones. Gemma May drew attention to the capacity of many cheap (or old) smart phones, with limited storage for new information and Apps. Meanwhile, it is clear that there needs to be a deeper of appreciation of the formal and informal economy, and legal rights to work. In particular, participation in the gig economy requires access to registered SIM cards, not readily available to refugees in Kenya(19). Yet as highlighted by Hackl (2021), access to 'decent work' through the gig economy will remain limited for refugees and host communities alike unless fundamental changes are made to business models in the platform economy, with online work described as 'low quality and precarious'.



# Reflections and lessons learnt



**Reflecting on the potential of technology and innovation to promote opportunity and change in refugee contexts, it is important to consider diverse needs of refugee groups.** Jared Owuor emphasized the importance of developing a conceptual understanding of 'immediate refugee needs' in light of challenges of displacement and local conditions (Samuel Hall, 2018). In the Samuel Hall study, basic needs identified by refugees included (in this order): access to cash, resettlement opportunities,

education and upskilling, food and water, and air time. Yet 'internet-based' needs may differ. In this case, respondents highlighted needs related to improved platforms for cash transfer (within country and across borders), virtual skills opportunities and entrepreneurship, and online family tracing and reunification options.

**From a (new) technology perspective, feasibility studies are deemed vital to ensure an analysis of different groups, and 'human centred design' in coordination with refugee organisations.** Gemma May further highlighted the significance of the introduction of technology itself, implementing 'quick tests' and iterating the project in 'agile project management'. A better understanding of diverse needs, and spheres of needs, can aid the development of appropriate solutions and avoid assumptions by donors or aid organisations.

**Overall Elsie Onsongo from ICFI Kenya was 'really encouraged' by the level of digital innovation in Kenya's refugee camps, particularly as these environments may be both challenging and restrained, and noted the growing importance of access to the internet for refugees (for innovations and online activity).** 'Digital technology champions' in the refugee camps - such as panel members, Zigashane and Tshilombo - were described as particularly impressive in facilitating access to connectivity, emerging platforms and services (solar power). Refugee camps themselves were indicated to be unusual sites of innovation, with product growth dependant on access to the internet (with limited refugee access to outside markets). As a leader in exploring frugal innovation in Kenya, Onsongo expressed interest in engaging more closely with local initiatives, possibly through training or partnerships. Owuor drew attention to the notion of 'shared responsibility' in the Global Compact of Refugees(20) and highlighted that it is indeed incumbent upon organisations to jointly work together to support refugees, including in access to digital innovations and technology.

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We need to better understand immediate needs [of refugees] and response options before we speak of [enabling] technology and innovations

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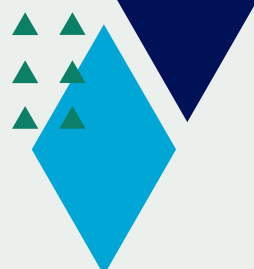
(Jared Owuor, Samuel Hall)

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Feasibility studies [are vital to appreciate] both the situation of different groups and to ensure 'human centred design' [in innovation processes].

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(Gemma May, Techfugees)



# Learning lessons in digital technology and innovation from refugee communities

Participants in the symposium drew attention to critical insights and emerging lessons related to digital technology and frugal innovation in refugee communities:

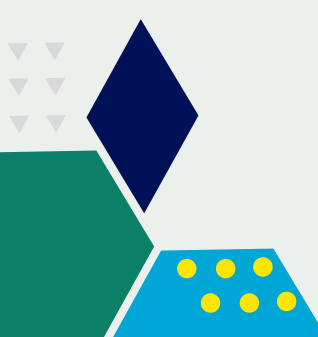
- **Refugee communities are using ‘less to do more’ in a diverse array of innovations.** (Digital) technology and innovation is increasingly visible in refugee communities, with the local installation of WiFi hotspots, widespread use of digital platforms such as WhatsApp, and new emerging e-health and justice platforms. Meanwhile, partial-digital innovations include solar technology such as solar freezers (with payment via mobile money). Refugee camps in particular were described as unexpected hubs of innovation with a concentration of young people (typically young men) eager to innovate and able to programme.
- **Use of mobile technology is significant in refugee communities and interest is rapidly growing.** Whilst digital technology has been shown to play a growing role during the pandemic from an organizational level with virtual training/learning and psychosocial support through Google Classroom and WhatsApp, refugee own use of digital innovations is also notable. Refugees increasingly adopt smartphones and use digital technology for access to communications, information and services although digital divides warrant attention (physical as well as social divides) and legal issues (access to registered SIM cards).
- **Aid actors need to appreciate diverse ‘immediate’ needs and local constraints through rigorous and up-to-date studies and analysis.** Refugee needs change and evolve, and may depend on the geographical and institutional context, social and ethnic factors, and sphere of need (‘basic needs’ versus ‘digital needs’). Physical constraints may include local infrastructure, access to devices, and capacity of digital devices. Understanding social dynamics is vital for the incorporation of vulnerable groups, including women, the disabled and the elderly, and appreciating the scope of digital skills and abilities, or ‘digital literacy’ (Ritchie, 2022). Feasibility studies and research can aid a deeper understanding of local needs and context. This can facilitate the development of a clear framework of local refugee needs which is imperative both in the design and introduction of appropriate (frugal) innovations and technology, but also in fostering local uptake.
- **Ensuring ‘enabling environments’ is critical for local grassroots innovation.** Access to basic services and infrastructure - including affordable electricity and internet - can boost refugee own innovation, in particular digital platforms.
- **Cooperation and collaboration amongst key actors can aid the design and implementation of appropriate innovations.** Whilst there have been welcome partnerships and coordination between actors (for example, between NGOs, technical groups such as Techfugees, and Samuel Hall), there is still a major disconnect between facilitating organisations engaged in refugee support and innovation.



# Unleashing change through technology and ‘frugal’ innovation in refugee communities

Digital technology and innovation are indicated to play a significant role in refugee communities in Kenya as refugees struggle to meet basic needs, obtain necessary skills and engage in uncertain livelihoods in often highly-restrained environments. Digital technologies in particular are allowing communities to retain and nurture transnational linkages, interact in outside (online) markets, and access relevant language and enterprise skills. Digital divides persist however, and institutional-level constraints remain challenging.

It is clear that there is a fast-moving frontier of digital technology, and it is incumbent upon the assistance community in Kenya to work together and stay abreast of global innovations that can be appropriately introduced into refugee communities. This can ensure equitable access of refugees to innovations and technology as part of the agreed ‘shared responsibility’ in the Global Refugee Compact. Yet from a bottom-up perspective, refugee-own initiatives - and ‘technology champions’ - warrant greater recognition and support (Amnesty, 2020), and refugee contexts as potential hubs of front-line innovation, if technology is to play a major role in refugee resilience, self-reliance and inclusion in situations of displacement.





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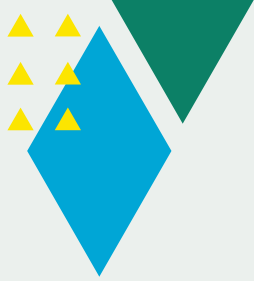
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## Endnotes

[1] In this report, 'digital technology' may apply to existing internet platforms and digital apps typically accessed through smartphones and digital devices. 'Digital innovation' may refer to the novel use of digital technologies and/or design of new digital platforms.

[2] According to UNHCR (2017), 'self-reliance refers to the ability of individuals, households or communities to meet their essential needs and enjoy their human rights in a sustainable manner and to live with dignity. Self-reliant persons of concern lead independent and productive lives and are better able to enjoy their rights, while also contributing to their host societies'. Meanwhile 'resilience refers to the ability of individuals, households, communities, national institutions and systems to prevent, absorb and recover from shocks, while continuing to function and adapt in a way that supports long-term prospects for sustainable development, peace and security, and the attainment of human rights'. <https://www.unhcr.org/58ca4f827.pdf>

[3] <https://www.unhcr.org/ke/wp-content/uploads/sites/2/2021/11/Kenya-Infographics-31-October-2021.pdf>

[4] The term is generally described to refer to 'all devices, networking components, applications and systems that combined allow people and organizations (i.e., businesses, non-profit agencies, governments and criminal enterprises) to interact in the digital world'. This may include smartphones as well as computers and other digital devices. <http://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies>

[5] The symposium aimed to follow an earlier symposium, and related briefing note, sponsored by Tufts University in 2021 on refugees and coping strategies during the Covid-19 pandemic (Ritchie and Zolmann, 2021)

[6] THRIVE is a social enterprise based in Kenya that aims to support the professional development and empowerment of women in the aid sector through the provision of short training courses. Proceeds support wellbeing & economic development projects for refugee women in Nairobi ([www.thriveforchange.org](http://www.thriveforchange.org)).

[7] <https://www.icfi.nl/kenya-hub>

[8] THRIVE runs a 'wellbeing, leadership and enterprise' project supporting a small group of Somali refugee women (20 women) in Eastleigh, Nairobi ('Sisterhood Group'), with outreach to their families, friends and networks (2018-present). Refer to <https://www.thriveforchange.org/refugee-projects> for more information.

[9] Notably, Techfugees is an impact driven global organisation that aims to nurture a sustainable ecosystem and is mostly run by mostly volunteers in 7 countries. Techfugees' local chapter in Kenya, started in early 2017. Gemma May is the Voluntary Fundraising Manager who is an experienced partnerships and fundraising expert, raising over \$25 million.

[10] Samuel Hall conducts research, evaluates programmes and designs policies in contexts of migration and displacement. Samuel Hall's migration and displacement work focuses on the protection, contributions, and aspirations of migrant and displaced persons. As the lead research officer at Samuel Hall, Jared Orwor explores the impact of emerging technologies on refugees and social assistance.

[11] Set up in 2020, APLP is part of Tunapanda's (<https://tunapanda.org>) community networks mentorship programme which seeks to build capacity for communities to build low-cost connectivity infrastructure. Pascal Zigershane is the Executive Director at APLP and a refugee from Kakuma camp. Passionate about refugee empowerment, Zigershane currently works with the Jesuit Refugee Service (JRS) organization as an IT Assistant

[13] <https://techfugees.com/get-involved/summing-techfugees-first-hackathon-in-africa-up/>

[14] [https://techfugees.com/all\\_news/community/faceless-hackers-kakuma-refugees-healthcare/](https://techfugees.com/all_news/community/faceless-hackers-kakuma-refugees-healthcare/)

[15] Other areas include children and youth (including child protection, child labour, child trafficking, and youth employment), mobile/digital technologies and data standards

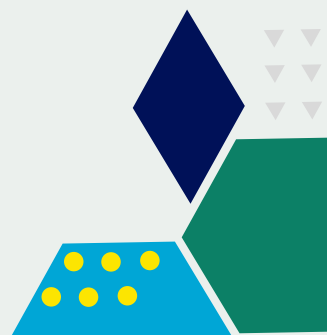
[16] <https://ashden.org/winners/solar-freeze/> “Solar Freeze has developed a business model tailored to the needs of camp residents, offering people affordable cooling through small solar-powered freezers, as well as technical training that helps them find jobs connected to renewable energy”. In Kakuma, freezers are sold as a ‘pay-as-you-go model’, thus making them affordable to local customers. The power source can then be used at their owner’s convenience for use for solar freezers or for lights at night.

[17] Tunapanda supports training courses in technology and entrepreneurship (<https://tunapanda.org>)

[18] Pascal Zigershane from Action Pour le Progres.

[19] <https://www.codastory.com/authoritarian-tech/kenya-biometrics-double-registration/>

[20] <https://www.unhcr.org/the-global-compact-on-refugees.html> ‘The Global Compact on Refugees is a framework for more predictable and equitable responsibility-sharing, recognizing that a sustainable solution to refugee situations cannot be achieved without international cooperation’.





## THRIVE

THRIVE is registered in Kenya as a Company Limited by Guarantee (No. CLG-YXFLYB), THRIVE - Women Socio-preneurs for Change.

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