ResilientAfrica Network's COVID-19 Response
A Case Study on the Integral Role Higher Education Institutions Can and Should Play Within Development

INTRODUCTION

The COVID-19 pandemic has presented extraordinary challenges to international development. With more than 3 million deaths worldwide[1], countries of all income levels have experienced economic downturns, resource shortages, and overcrowded hospitals, creating a truly global crisis. However, the COVID-19 pandemic also presents an opportunity to call attention to the contributions of Higher Education Institutions (HEIs) as under-utilized actors in the international development sector. This case study focuses on the example of the ResilientAfrica Network (RAN) - a program based at the Makerere University in Kampala, Uganda originally established with USAID support - and illustrates how RAN's multifaceted response to the COVID-19 pandemic highlights the unique, crucial role that HEIs play within national and international development, particularly during times of crisis.

RAN is an ever-evolving partnership currently among 20 universities across 13 African countries with the mission to "strengthen resilience in Africa through university-led local solutions using evidence-based approaches."[2] Through financial and in-kind support, RAN seeks to scale up existing innovations and test new approaches, all with a particular focus on engaging local, regional, and international communities.[3] Because the successful adoption of solutions depends on cultural, political, and social factors, the network's research arm focuses on understanding local end-users' needs to produce innovations tailored to that specific context.[4] Originally established in 2012 as a development lab under USAID's Higher Education

KEY FEATURES

Location: Uganda

Project/Program Name: ResilientAfrica Network (RAN)

Funder(s): USAID

Implementing Partner: Makerere University

Case Themes: Research & Innovation, Higher Education Partnerships, COVID-19, Resilience

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[1] "Covid-19 Dashboard," Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU), accessed February 2, 2021, https://coronavirus.jhu.edu/map.html.

[2] Joe Amick and Leo Amanya "University Led Innovation in Uganda: Resilient Africa Network (RAN)," USAID Development Experience Clearinghouse, September 2020, https://pdf.usaid.gov/pdf_docs/PA00XC4B.pdf.

[3] "What is RAN?," ResilientAfrica Network, accessed February 15, 2021, http://www.ranlab.org/about-us/what-is-ran.

[4] Amick, 13

[Solutions Network,](#) the network's reach has since expanded, diversifying its pool of funding partners and inspiring the Ugandan government to commit a total of $18 million to further support Ugandan research and innovation.

HIGHER EDUCATION INSTITUTIONS IN CONTEXT AND IN CRISIS

In October 2020, USAID released a [Higher Education Program Framework](#) centered around the idea that "higher education has the potential to advance development because of its broad reach across sectors, communities, and intersecting systems." The Framework names the higher education system's three main functions as **1) providing quality and relevant education and training, 2) advancing knowledge and research, and 3) engaging and strengthening networks and communities**. HEIs are unique in that they serve not only as places of pedagogy, but also as repositories of knowledge and innovative ideas, as well as community connection hubs. This combination of functions enables individual HEIs and the higher education system as a whole to achieve the three outcomes highlighted by the USAID Framework: **1) capacity development, 2) strong partnerships and transnational relationships, and 3) serving as central actors in developing local solutions to local problems.**

Times of crises demand immediate responses, including resource mobilization and coordination across sectors. Uganda has a history of responding to viral outbreaks. For example, during the Ebola and Zika outbreaks, RAN learned the importance of convening researchers to co-create innovations to respond to the most pressing issues.[5] The global nature of the COVID-19 pandemic has stretched the response capacity of traditional aid actors, opening up the field for new approaches and partners. Ultimately, the COVID-19 pandemic provided an acute opportunity for RAN, with prior experience in viral outbreak response, to expand upon lessons learned. As illustrated in Figure 1, RAN's quick and robust actions across the three higher education system functions led to positive outcomes and provide a strong case study that confirms HEIs are integral development partners. RAN's sustained, long-term efforts with respect to making connections within and across various communities enabled the organization to overcome challenges and successfully execute this multifaceted response to the COVID-19 crisis.

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[5] Dr. Roy William Mayega, e-mail message to Celia Laskowski, December 14, 2021.

Example inputs:

Technical Assistance

International Partnerships

Local/Regional Partnerships

Financial Support

Strengthening Higher Education Systems

- Advancing knowledge and research
- Providing relevant education and training
- Engaging networks and communities

Example outcomes:

Increasing scientific capacity

Building resilience to shocks

Integrating digital tools for development

Mobilizing resources for local challenges

Figure 1. Initial USAID investments in RAN helped enable an effective response to the COVID-19 pandemic. The establishment of RAN with USAID support formalized and strengthened local, regional and international partnerships. During the COVID-19 pandemic, those partnerships were leveraged to rapidly provide technical assistance and financial support to create local solutions.

APPROACH

> *"We attribute all our achievements thus far to hard work, commitment to positively impacting the communities, persistence, focus, creativity among others but also the power of partnership."*
> - Statement from RAN's Innovative Response to the COVID-19 Pandemic Web Page[6]

Due to a sudden lockdown in mid-March 2020, RAN initially halted all activities. However, based on prior experience with Ebola and Zika, RAN's technical team quickly convened a virtual co-creation meeting to determine how to adapt to the new reality of COVID-19. The team identified two priorities: **1) identify and execute "low-hanging fruit" actions that address urgent needs** and **2) adapt regular RAN activities, such as innovation support, research, and capacity building, to fit within the new pandemic realities.** Low-hanging fruit included areas of need with RAN solutions already in progress, areas of need that required low-cost solutions, and immediate capacity-building needs. Below, RAN's response is outlined according to how the actions fit within the three functions of the USAID Higher Education Program Framework.

PROVIDES QUALITY AND RELEVANT EDUCATION AND TRAINING

RAN serves as an innovation incubation hub that "teaches user-centered design, business, legal, and other skills."[7] The network runs a co-creation program to help provide feedback to innovators in the development stage of a project. When faced with widespread restrictions on in-person gatherings due to

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[6] "RAN's Innovative Response to the COVID-19 Pandemic," *ResilientAfrica Network,* accessed February 16, 2021, http://www.ranlab.org/14311-2.

[7] Amick, 8.

the COVID-19 pandemic, RAN moved their programming to a virtual setting. For example, RAN continued to offer an online version of its weekly "Pitch Tuesdays,"[8] which provide a publicly-accessible space for innovators to improve their ideas and to engage with interested parties. RAN also moved public seminars, dissemination workshops, co-creation workshops, and training/teaching sessions online. To address digital inclusion challenges, RAN acquired a Zoom subscription to accommodate 500 users, wireless routers for core staff to use at home, and data coupons for internet-less student innovators.[9]

ADVANCES KNOWLEDGE AND RESEARCH

At the first COVID-19 pandemic response virtual meeting, RAN's technical team commented that the network was "established essentially to source innovations to respond to situations exactly as these."[10] Since SARS-CoV-2 (the virus that causes COVID-19) is a novel coronavirus, this particular pandemic logically spurred a series of new innovations. RAN supported new innovations aimed to detect the virus, reduce its spread, and/or treat the resulting disease. For example, RAN, due to its long-standing interdisciplinary collaborations, convened representatives from various colleges within Makerere University, Kiira Motors Corporation, and Uganda's Ministry of Science, Technology and Innovation to design low-cost ventilators with local materials. The ventilator is based on two open designs from other HEIs (Massachusetts Institute of Technology and University of Florida) and relies on technologies from Kiira Motors Company, which are similar to those used in clinical ventilator designs.[11] In this case, RAN utilized its HEI connections as well as those with a national enterprise and the government to quickly adapt existing designs from elsewhere to work within the specific local context.

RAN members also adapted previous innovations from its network to support its COVID-19 response. The EpiTent was initially designed in 2015 as a humane auxiliary healthcare space to address the Ebola pandemic.[12] The EpiTent caters to the hot Ugandan environment by passively decreasing the air temperature and humidity inside, while also including windows to combat social isolation.[13] With the onset of COVID-19, RAN sought and obtained special travel permits for core staff that allowed them to conduct emergency meetings with manufacturers. These meetings resulted in multiple successful partnerships with respect to EpiTent production for COVID-19 use.[14]

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[8] "RAN's Innovative Response to the COVID-19 Pandemic."

[9] Mayega, e-mail message.

[10] Ibid.

[11] "RAN's Innovative Response to the COVID-19 Pandemic."

[12] Ibid.

[13] "Scaling EpiTent (a tent that breathes), *ResilientAfrica Network,* accessed February 16, 2021, https://www.ranlab.org/expanding-the-manufacturing-of-the-next-generation-tent-to-provide-treatment-and-isolation-units-for-covid-19.

[14] Mayega, e-mail message.

RAN's model has also encouraged the establishment of development funding for new research. Due to RAN's successful example of managing and utilizing finances to support research and innovation, the Ministry of Information and Communications Technology provided funds to create the Makerere University Research and Innovations Fund (RIF) in 2019.[15] Through the RIF, the Ugandan government dedicated $8 million in both 2019 and 2020. This funding was expanded to include a specific round of $2 million to support innovations aimed at addressing the COVID-19 pandemic. The RIF was used to conduct clinical trials for a possible COVID-19 treatment using convalescent plasma along with many other pandemic related innovation and research needs.[16]

ENGAGES AND STRENGTHENS NETWORKS AND COMMUNITIES

RAN sits within Makerere's School of Public Health, which has an underlying goal to "bring academics, entrepreneurs, and communities together to address specific development challenges."[17] Prior to the official formation of the School of Public Health, professors and researchers at Makerere University had already begun establishing connections with their counterparts at universities throughout Africa, with the understanding that public health concerns span borders and, thus, a unified network would be needed for effective response. This already-established foundation of partnerships enabled a smooth and successful creation of RAN, as it formalized pre-existing connections and strengthened HEI ties.

RAN's community only continued to strengthen in response to COVID-19, as the organization collaborated with existing partners to discuss, problem-solve, and implement solutions. For example, RAN worked with representatives from the Uganda People's Defense Force Science and Technology Office to determine the minimum acceptable standards that local manufacturers would need to adhere to in producing personal protection equipment (PPE) for mass distribution.[18]

Aside from partnering to produce solutions for challenges associated with the pandemic, RAN also disseminated relevant information to the wider community via radio and the internet. They utilized the RootIO community radio network, previously incubated through RAN, to spread messages supporting effective public health behaviors across Northern Uganda.

Finally, RAN's location within an HEI allows access to informal networks among professional colleagues that can lead to innovation benefits. For example, Moses Joloba's Lab at Makerere University was able to secure materials to produce 20,000 COVID-19 test kits from his collaborator, Henry Boom, at Case Western

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[15] Amick, 58.

[16] Julius Businge, "Makerere scientists' big move on COVID-19 treatment" *The Independent,* September 16, 2020, https://www.independent.co.ug/makerere-scientists-big-move-on-covid-19-treatment/.

[17] Amick, 7.

[18] "RAN's Innovative Response to the COVID-19 Pandemic."

Reserve University in late March of 2020.[19] At a time when the entire world clamored for supplies, this relationship between researchers enabled Joloba's lab to carry out almost one quarter of Uganda's tests at the time, significantly increasing testing capacity.

CHALLENGES

Many challenges emerged as various actors attempted to search for a treatment and mitigate the effects of the pandemic. With respect to continuing to provide quality and relevant education and training during the pandemic, RAN faced challenges including lack of internet access, bandwidth levels, security of information, and difficulty engaging participants virtually. With respect to advancing knowledge and research, RAN faced challenges disseminating the most current, clear, and relevant information to its members while media outlets across the globe released almost constant updates on COVID-19. Additionally, decreased access to physical research spaces, as well as competition over globally-scarce resources during a worldwide economic downturn, presented obstacles. With respect to engaging and strengthening networks and communities, RAN faced the challenge of lockdown mandates preventing physical gatherings - which proved important for establishing manufacturing Memoranda of Understandings - as well as equity of access to online platforms.

Despite obstacles to strengthening networks and communities, RAN engaged this exact channel to mitigate challenges to responding to COVID-19. RAN representatives were invited by the Ugandan Ministry of Health and the Presidential Initiative on Epidemic Response to consult on COVID-19 response efforts.[20] RAN's location in the Makerere University School of Public Health, which already had an e-learning platform, facilitated a transition to virtual convenings. Similarly, RAN's relationship with Makerere University provided easy access to COVID-19 information tailored to the Ugandan context, as well as formal and informal connections to university researchers across the globe. Additionally, RAN's connections to innovations such as the RootIO community radio network, enabled dissemination of this knowledge, research and information.

These community connections do not materialize overnight, but strengthen with meaningful participation over time. RAN emphasizes the use of "needsfinding," when working with its innovators. Needsfinding is a process derived from ethnography that focuses on interacting with community members and understanding daily life in the community. This process aims to identify challenges from the viewpoint of the target audience in order to determine appropriate solutions. By encouraging innovators and partners to immerse themselves in their target communities, RAN has been working to establish deep community connections
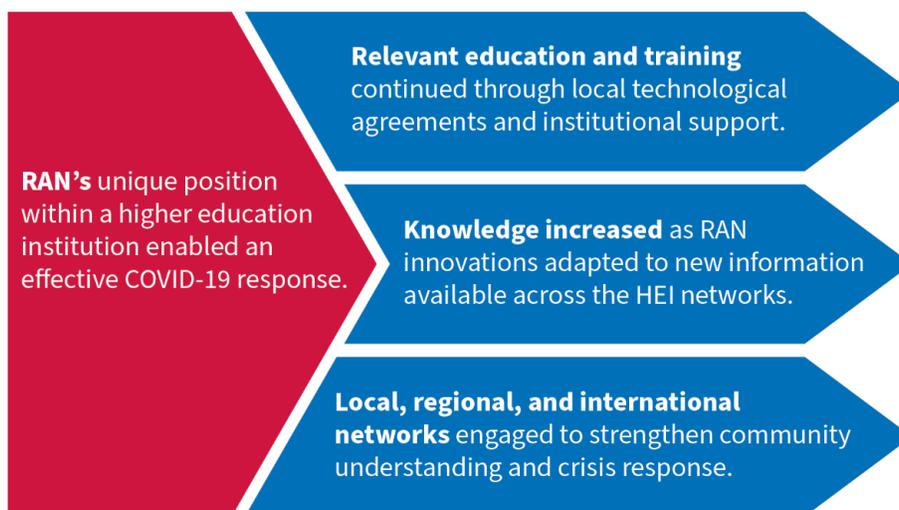
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[19] Linda Nordling, "Scientific networks are helping African countries to access coronavirus lab supplies," *Nature*, May 26,2020, https://www.nature.com/articles/d41586-020-01496-1.

[20] Mayega, e-mail message.

over time. It is precisely these connections that assisted RAN in overcoming challenges posed by the COVID-19 pandemic.

LESSONS LEARNED

As illustrated by Figure 2, RAN's location within Makerere University and its past experiences and expertise enabled it to respond quickly and effectively to challenges created by COVID-19. HEIs - like Makerere University- focus on research and innovation, meaning faculty and staff bring specialized knowledge across multiple sectors and disciplines.[21] This makes HEIs uniquely positioned to respond quickly and effectively in times of crisis through various types of institutional support. They also have the appropriate equipment, skill sets, and mechanisms to research and innovate around a new problem. For example, RAN has access to the oversight mechanisms (such as the Institutional Review Board for human subject research) to ensure program pilots do no harm.[22] This type of access to regulatory and safety mechanisms helps ensure the quickest innovation process possible, while maintaining safety. Additionally, since HEIs span multiple disciplines, they are more likely to have various types of laboratory equipment potentially necessary in an unpredicted crisis. Finally, HEIs have a flexible and wide-reaching convening power consisting of formal research connections, informal friendships between colleagues, and a reputable place within the wider community. RAN works with faculty at Makerere University and other HEIs, with local and regional innovators, with government representatives, and community members, making it an integral player in both producing and disseminating solutions in a crisis.

RAN's unique position within a higher education institution enabled an effective COVID-19 response.

Relevant education and training continued through local technological agreements and institutional support.

Knowledge increased as RAN innovations adapted to new information available across the HEI networks.

Local, regional, and international networks engaged to strengthen community understanding and crisis response.

Figure 2. Why should we invest in higher education? Higher education institutions serve to provide relevant education and training, increase knowledge and research and strengthen local, regional and international networks.

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[21] Amick, 21.

[22] Ibid., 62.

RAN's effective COVID-19 response shows how these three HEI functions combine to strengthen a country's resilience to unexpected shocks.

RAN and the HEIs that it works with are central development actors all the time, but they become even more important during times of crisis. The varied and multifaceted approach that RAN executed during the COVID-19 pandemic is an extension of RAN's normal operations. RAN already provides quality and relevant education and training, advances knowledge and research, and engages and strengthens networks and communities. The global pandemic only presented an opportunity for RAN to further innovate and adapt its day-to-day operations to fit a specific context. Crucially, RAN has also consistently emphasized and fostered connections within and among various communities. It is through these strategic community-building efforts that RAN was able to overcome considerable challenges to its COVID-19 response. It is critical that RAN and other HEI-affiliated hubs be considered central development actors both before and after times of crisis and on both the demand and supply side of development needs: HEIs must claim this space through strategic decision-making and community-building, and the donor community must support these efforts. Ensuring HEIs have this seat at the table benefits local and international development, regardless of unexpected crises.

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USAID is actively assisting countries that are affected by or at risk of the novel coronavirus disease, COVID-19. USAID is working directly with host country governments and through organizations responding on the ground to contain and combat the COVID-19 pandemic. For additional resources, please visit: https://www.edu-links.org/COVID-19.