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PRoICT: STRENGTHENING THE CORE CAPABILITIES OF THE LIBERIAN TELECOMMUNICATIONS AUTHORITY (LTA)

OPTIMIZATION OF THE LIBERIAN UNIVERSAL ACCESS FUND (UAF) REPORT AND RECOMMENDATIONS

May 2021

ProICT: Strengthening the Core Capabilities of the Liberian Telecommunications Authority (LTA)

Optimization of the Liberian Universal Access Fund (UAF) Report and Recommendations

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ACRONYMS

A4AI	Alliance for Affordable Internet
ACE	Africa Coast to Europe
AU	African Union
BOO	Build, Own, Operate
ECOWAS	Economic Community of West African States
EIU	Economic Intelligence Unit
GSM	Global System for Mobile Communications
ICT	Information Communication Technology
IFC	International Finance Corporation
ISP	Internet Service Provider
ITU	International Telecommunication Union
Km	Kilometer
LibTelCo	Liberian Telecommunication Corporation
LTA	Liberia Telecom Authority
LTRTIP	Liberian Rural Telephony Infrastructure Project
MNO	Mobile Network Operator
MoPT	Ministry of Post and Telecommunications
OFC	Optic Fiber Cable
OL	Orange Liberia
PIU	Project Implementation Unit
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TVWS	Television White Space
UAF	Universal Access Fund

VSAT   Very Small Aperture Terminal

WEF   World Economic Forum

WWWF   World Wide Web Foundation

EXECUTIVE SUMMARY

Under the United States Agency for International Development (USAID) Digital Frontiers Project, Promoting American Approaches to Information and Communications Technology (ICT) Policy and Regulation (ProICT) Activity, this report aims to strengthen the core capabilities of the Liberian Telecommunications Authority (LTA) by providing regulatory and technical expertise to challenges identified by LTA officials and USAID. In particular, this report aims to assist LTA's administration in the optimization, implementation, and strategy development of the Liberian Universal Access Fund (UAF).

The purpose of this UAF Report is three-fold:

1. Document the current state and constraints of UAF Liberia.

2. Conduct strengths, weaknesses, opportunities, and threats (SWOT) analysis.

3. Present recommendations for optimizing UAF operation and governance for LTA's consideration.

Mobile connections in Liberia have shown 32 percent growth between January 2019 and January 2020, and internet penetration stood at 12 percent in January 2020. Liberia's telecommunications sector experienced improvement through the addition of access to the international fiber optic submarine cable (ACE). The telecommunication operators and the underlying infrastructure face major constraints including the high cost of electricity, poor roadways, high taxation, insufficient customer base, inadequately skilled manpower, problems in ensuring network security, and the ensuing high cost of network operations and maintenance. All these factors limit the expansion of telecommunication services to the unserved areas of Liberia.

The Liberian ICT Policy 2019-2024 demonstrates that for the first time the Government of Liberia (GoL) is strongly acknowledging the importance of the ICT sector in general, and the UAF in particular, as an enabler of digital access. It is a positive sign that UAF is considered as a vehicle to propagate the interventions identified in the policy.

METHODOLOGY

The methodology adopted for this workstream comprised of a mix of two types of research. Initially, the research was based on desk-based internet scans of the Liberian digital ecosystem consisting of the LTA, UAF, mobile network operators (MNOs), internet service providers (ISPs), and other stakeholders. Subsequently, several online meetings were held with the honorable commissioners of LTA, and the officials related to UAF. Particularly challenging was the issue of meeting face-to-face and getting first-hand information, due to Covid-19 related travel restrictions.

GOVERNMENT ROLE IN ICT SECTOR

The GoL plays its role in the ICT sector through the Ministry of Post and Telecommunications (MoPT), and the LTA. UAF Liberia is housed within LTA. The governance structure of UAF comprises a Governing Board, an Implementation Committee, and the Project Implementation Unit (PIU). UAF is entrusted to support the provision of telecommunication services to the unserved populations of

Liberia. Since its inception in 2015 by LTA Order 0012-01-05-15[1], it has largely been inactive, as quoted in a World Bank report. After a slow start, UAF initiated projects beginning in 2017.

The principal project under implementation by the Fund is the "proof of concept" for the Liberian Rural Telephony Infrastructure Project (LRTIP). The LRTIP project scope consists of setting up two base station towers in two counties. The project was awarded to an infrastructure provider, K-Net. However, there have been delays with the implementation due to the COVID-19 pandemic, and the base stations setup is reportedly not fully complete.

CONSTRAINTS FACED BY UAF

UAF is facing multiple constraints, the most significant ones hampering UAF's ability to function effectively are: 1) the industry apparently defying the regulator by not submitting their UAF levy, 2) lack of affordability on the part of consumers and citizens due to high prices for telecommunications services in general in Liberia compared to peer West African countries, and 3) lack of clear strategic direction of the UAF fund, particularly after the promulgation of the Liberia ICT Policy (2019-2024).

SUMMARY OF SWOT ANALYSIS

Table 1 identifies the key strengths and weaknesses, as well as opportunities and threats that inform potential paths for the development of UAF.

TABLE 1. SWOT ANALYSIS	
STRENGTHS	**WEAKNESSES**
• UAF is recognized as a key player by the GOL, and its role is defined by the Broadband Policy 2019-2024 • Available framework supporting UAF current operations, including the Manual, Rules, and Regulations	• Unpaid UAF contributions • Apathy demonstrated by the telecommunications operations • Limited human capacity in UAF to manage / monitor current projects • Inadequate emphasis on transparent processes[2]
OPPORTUNITIES	**THREATS**
• Huge demand for broadband in unserved/under-served areas that can be catered through UAF • Proliferation of broadband in the country could	• Affordability of services in rural areas • Investment in obsolete technologies by UAF (e.g. 2G and 3g)

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[1] LTA-ORDER-0012-10-05-15." Liberia Telecommunications Authority. Accessed May 25, 2021. https://www.lta.gov.lr/download/2112/.

[2] There is a published manual of UAF processes (in the UAF Operations Manual), and after several requests, we did not see evidence of how these several to many of these processes were being transparently followed.

give a significant boost to Liberia's economy	• Low digital literacy may suppress broadband internet's adoption
• Broadband can serve as a vehicle to deliver social services to the masses, like health and education	• Limited locally relevant digital content
• Strong donor support for the telecommunications sector	• Insufficient infrastructure (e.g., power, roads, etc.) to support cost-effective service expansion

RECOMMENDATIONS

Based on the environmental scan, and SWOT analysis, the following recommendations are proposed.

1. Aligned to the role assigned in ICT Policy 2019-24, a fresh Strategic Plan should be prepared. The strategic planning process should not be done in isolation, but rather it should include the buy-in of all key stakeholders, including MoPT and the LTA in particular. We recommend the UAF Fund itself should lead the strategic planning process, led by the MoPT Minister and the LTA Chair as the Chair and the Secretary to the UAF Board respectively.

2. Given that funds available to UAF are limited, the optimal utilization of available resources is even more important. Strengthening the following three areas can help in resource optimization: 1) financial management, 2) monitoring and evaluation (M&E), and 3) communication.

3. MoPT and the LTA should foster collaboration between the UAF and key members of the Liberian ICT ecosystem including international players such as Google, Facebook, Microsoft, local ISPs, CSquared, and more. This also includes organizations in the private, public or social sectors that can help UAF to achieve its goals.

4. The UAF Board should mobilize and enforce receiving UAF contributions from the operators against their obligations. Further financial resources from the GoL should be mobilized by the UAF Board to undertake the identified projects. Furthermore, the UAF Board should seek the support of international donors for technical assistance in the areas of project planning and implementation, capacity building of UAF: the LTA has clearly sought and won the support from donors like USAID and the World Bank in the last five years.

5. It is recommended that both UAF's strategic direction and scope be further strengthened through; inclusion of OFC and unlicensed/light-licensed/dynamic spectrum technologies (e.g., including TVWS) in the scope for UAF investments, and avoid investments in older mobile technology, and invest in demand side projects:

6. The Strategic Plan should be designed to include a series of key programs for UAF to implement. It is recommended that the aforementioned programs should be considered as priorities. Scaling up of the current pilot project after thorough evaluation and calibrations, National Optic Fiber Program, and projects that can stimulate demand for telecom services.

CONCLUSION

Adoption of these proposed recommendations by UAF is expected to help bridge the digital gap for unserved populations of Liberia. Recommended fiber optic deployment will facilitate telecom service

providers in delivering affordable voice and internet services, and the resulting adoption of broadband internet will catalyze socioeconomic development process, promote ICT based industry, and provide a delivery mechanism for interventions in the field of health, education, governance, commerce, etc.

1. INTRODUCTION

Under the United States Agency for International Development (USAID) Digital Frontiers Project, DAI Global subcontracted Integra Government Services International LLC (Integra) in partnership with Atlantic-TM to implement the Promoting American Approaches to Information and Communications Technology (ICT) Policy and Regulation (ProICT) Activity. The effort is structured to strengthen the core capabilities of the Liberian Telecommunications Authority (LTA) by providing regulatory and technical expertise to challenges identified by the organization. In consultation with USAID and subsequent conversations with the technical team, a series of workstreams reflect the challenges and opportunities that ProICT Liberia is addressing:

1. Modernizing regulations governing the deployment of fiber optic cables.

2. Development of regulatory standards for TV Whitespace (TVWS) and related rural access technology.

3. Assisting LTA's administration in the optimization, implementation, and strategy development of the Liberian Universal Access Fund (UAF).

4. Providing advisory and technical assistance to the LTA to help strengthen its role in transitioning the Liberian Internet eXchange Point (LIXP) to an independent and sustainable management structure.

5. Strengthening the Network Type Approval regime at the LTA.

6. Assisting the reorganization of Liberia's FM radio spectrum to allow for the highest and best use of these critical radio frequencies.

This report specifically concerns the third workstream highlighted above, assisting LTA's administration in the optimization, implementation, and strategy development of the Liberian UAF.

PURPOSE OF THIS REPORT

UAF Liberia is entrusted with the responsibility to support the provision of telecommunication services that bridge the digital gap for unserved populations of Liberia. Optimizing the UAF will expand affordable access to those services across the country and will set a strategy to maximize the impact of future projects and investments.

 The purpose of this Liberia UAF Optimization Report is three-fold:

1. Document the current state and constraints of UAF Liberia.

2. Conduct a strengths, weaknesses, opportunities, and threats (SWOT) analysis.

3. Present recommendations for optimizing UAF Fund's operation and governance for the LTA's consideration.

This report takes stock of the UAF Liberia progress from its initial inception more than five years ago, outlines opportunities and risks, suggests a forward path to maximize impact, and provides the basis for training the LTA on the recommendations herein.

UAF OPTIMIZATION REPORT STRUCTURE

The structure of this report is as follows:

- Section 1: Introduction outlines the methodology adopted for the collection of information to compile this report and summarized key background information such as the telecommunications providers and infrastructure, level of market penetration, and government regulation structure;

- Section 2: UAF Situational Assessment including implementation progress since inception, as well as the constraints that limit impact;

- Section 3: UAF SWOT analysis serving as a baseline for future UAF progress and recommendations;

- Section 4: UAF Optimization providing recommendations based on the situational analysis, strategic assessment, and international best practices;

- Section 5: Conclusion captures the projected outcomes once proposed recommendations are adopted;

- Annex 1. References: Provides a list of references used for the compilation of the report; and

- Annexes II and III, respectively, reference the Draft Operations Manual for UAF and UAF Regulations of 2014 (Creation, Management and Deployment) (attached separately).

METHODOLOGY

The methodology adopted for this workstream is comprised of a mix of primary and secondary research. The primary research was principally derived from a scan of the Liberian digital ecosystem consisting of the Ministry of Posts and Telecommunications (MoPT), the LTA, UAF Liberia, mobile network operators (MNOs), internet service providers (ISPs), and other key stakeholders. The secondary research was based on public information related to the roles and responsibilities of key stakeholders. The sources consulted for information informing the reviews and assessments included websites explicitly documented in Section 6. References.

Due to COVID-19 travel restrictions and precautions, in-person interaction with the respondents was limited. The primary research was conducted via email, as well as online interviews with the LTA Commissioners; most notably Commissioner Israel Akinsanya, Mr. James Lynch Monbo[3], Mr. Elijah Glay[4], and Mr. Moses Blonkanjay Jackson[5]. The interviews and other feedback provided valuable pieces of information and insight.

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[3] Mr. James Monbo is the Project Coordinator of the Project Implementation Unit (PIU), at UAF within the LTA current as of March 2021.

[4] Mr. Elijah Glay is the Coordinator of UAF, current as of March 2021.

The USAID-funded "Liberia Broadband Technical Assistance" report, conducted in part by members of the existing ProICT technical team, was an additional key resource[6]. Under this earlier effort, the team visited post-Ebola Liberia in May 2015, as part of the "Liberia Post-Ebola Recovery Program", to support the GoL to modernize its telecommunications policy, legal and regulatory policy frameworks to expedite the build out and uptake of broadband internet and related telecommunication services.

The desk research encompassed a portfolio document from USAID, the GoL, the LTA, the International Telecom Union (ITU), GSMA, the World Bank, the World Economic Forum (WEF), the United States International Trade Administration, the World Wide Web Foundation (WWWF), the Economist Intelligence Unit (EIU), and Alliance for Affordable Internet (A4AI), among other sources. A detailed list of the above alongside links to the sources is given in Section 6.

Regional telecommunication experts and consultants with information about Liberia Telecom were contacted[7] for independent insights. The experts provided background on activities and strategies adopted in other countries across Africa, a valuable resource for informing recommendations.

The broader ProICT effort included a data collection exercise lead by Millennium Survey Group (MSG) that produced the most current picture of telecommunications and digital access in Liberia. The currency of the information highlighted the continuing growth and limitations to digital access.

The 2014 World Bank (WARCIP) project to set up UAF in Liberia just before the Ebola Virus Disease (EVD) crisis provided valuable context for the assessment. Under that project, draft Regulations of the Fund were formulated, discussed with the stakeholders, and comments were incorporated. Subsequently, the relevant information was mapped via a SWOT analysis with reference to UAF Liberia to produce the draft recommendations proposed.

BACKGROUND ON LIBERIA'S TELECOMMUNICATIONS INFRASTRUCTURE

The Republic of Liberia, on the West African coast, has a population of more than five million people and covers an area of 111,369 square kilometers (43,000 square miles). The country is divided into fifteen counties, which, in turn, are subdivided into a total of 90 districts. The landscape is characterized by mostly flat to rolling coastal plains, and the country's capital and largest city is Monrovia.

According to Digital Liberia 2020, the number of mobile connections increased by 995,000 or 32 percent between January 2019 and January 2020. The internet penetration was 12 percent in January 2020 i.e., 624,000 internet users in the country with 12 percent internet penetration nationwide.[8]

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[5] Mr. Moses Blonkanjay Jackson is the Market Research Analyst who works as an integral part of the PIU (Project Implementation Unit)

[6] Nethope. 2015. "Liberia Broadband Technical Assessment (Components 2 & 3) Backbone & Last Mile Details." United States Agency for International Development. https://1e8q3q16vyc81g8l3h3md6q5f5e-wpengine.netdna-ssl.com/wp-content/uploads/2015/06/Liberia-Broadband-Technical-Assessment-NetHope.pdf.

[7] For example, Mr. Steve Song of the Mozilla Foundation.

Liberia's telecommunications sector experienced substantial improvement through the addition of access to the international fiber optic submarine cable (ACE). However, the benefits of the high speed and large bandwidth cable are limited to Monrovia; the rest of the country has yet to harness its dividends as fiber infrastructure expansion outside the capital has been extremely limited (see Figure 1).
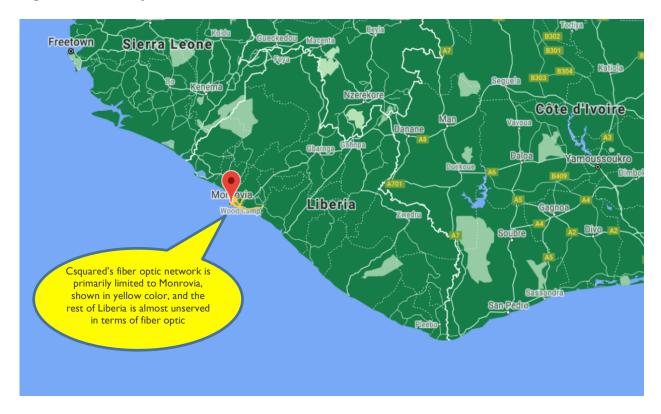
Figure 1. Fiber Optic Links in Liberia

The telecommunication operators and the underlying infrastructure face major constraints including the high cost of electricity, poor roadways, high taxation, insufficient customer base, inadequately skilled manpower, problems in ensuring network security, and the ensuing high cost of network operations and maintenance. All these factors limit the expansion of telecommunication services to the unserved areas of Liberia.[9]

Digital access is provided by a limited number of telecommunications companies providing services via wired and wireless technologies. Liberia's civil war destroyed most of its limited fixed telecommunications infrastructure, leaving Liberia to operate as an almost entirely wireless market. As a result, digital access is dominated by two mobile and largely wireless operators: Orange Liberia (OL) and Lonestar Cell-MTN (LC-MTN).

[8] "Digital 2020: Liberia." DataReportal – Global Digital Insights. Accessed May 25, 2021. https://datareportal.com/reports/digital-2020-liberia.

[9] "Liberia - Country Commercial Guide: Telecommunication." International Trade Administration. September 18, 2020. https://www.trade.gov/country-commercial-guides/liberia-telecommunication.

As of June 2019, the telecommunication market breakdown[10] was as follows:

Overall:	OL 66.3 percent, LC-MTN 33.7 percent
3G Market shares:	OL 75.4 percent, LC-MTN 24.6 percent
4G:	OL 100 percent

The following metrics contrast the Liberian telecommunications market with the broader Sub-Saharan African region[11]:

Liberian wireless subscribers (June 2019):	3,047,979
Liberian population penetration:	67.4 percent
Regional population penetration:	84.1 percent
Liberian household broadband subscribers[12]:	9,625
Liberian household broadband penetration:	1.1 percent
Regional household broadband penetration:	7.6 percent
Liberian Public Switched Telephone Network (PSTN) and Voice over IP (VoIP) subscribers	8,800
Liberian household PSTN and VoIP penetration:	0.0 percent
Regional household PSTN and VoIP penetration	9.0 percent

From the data it is clear that Liberia is underperforming in the Sub-Saharan African region.

Internet access is available principally through the two main mobile operators, but also from the Liberia Telecommunications Corporation (LibTelCo) and several internet service providers (ISPs) including K3 Telecom, Electro Shack, PowerNet, and NAS Global. Internet access costs and prices are high and bandwidths/data rates are slow. Despite having several ISPs in the market, a duopoly of the largest ISPs exists by a large margin, and the small ISPs are yet to be competitive. The duopoly has little incentive to innovate and move further into data services as they can continue to make greater margins from voice/SMS services. This in turn means the supply of data services is significantly lower than demand leading to higher prices without the incentive to provide higher quality services. Further, though Liberia is served by the ACE landing station, which provides much-needed international capacity, substantial investment is still required in domestic fixed-line backbone infrastructure to make effective use of this ACE cable.

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[10] "LTA Order: 0016-02-25-19, Establishing Price Floors for On-Net Voice and Data Services and a Regulatory Fee on Telecommunications Goods and Services". Accessed August 2020. https://www.orange.com.lr/personal/1/287/psa-for-lta-new-regulatory-order-0016022519-on-floor-prices--orange-liberia-3139.html.

[11] Loda, A, and K Cameron. "Liberia Divestiture Assessment Final Report." United States Agency for International Development (USAID) INVEST Project.

[12] Includes all segments (residential, corporate, institutions)

Currently, LibTelCo is the main broadband internet fixed retail player with an estimated 25 kilometers (kms) of fiber infrastructure and approximately 6,800 broadband customers representing a 1.1 percent household penetration.[13] LibTelCo provides telephone, internet, fax, and radio services mostly to Government offices and facilities in the Monrovia area. LibTelCo is the only provider of fixed line service to the GoL, also having a license to offer GSM-based mobile services[14].

In 2017, Google entered into a joint venture with Mitsui and Co. (Japan), Convergence Partners (South Africa), and the World Bank International Finance Corporation (IFC) to create an independent company called "CSquared". The GoL, in partnership with USAID and Google, has continued to invest in building a fiber ring around Monrovia and its environs to increase broadband penetration[15].

Generally, the availability of mobile and fixed line services outside Greater Monrovia is poor.

ROLE OF GOVERNMENT IN LIBERIAN ICT SECTOR

The GoL plays its role in the ICT sector through MoPT and the LTA.

1. The MoPT, through the Department of Telecommunications and Technical Services, is responsible for the formulation of broad ICT policy and strategies. The Department promotes the harmonization of ICT policies and regulatory frameworks with national and international stakeholders— including but not limited to ECOWAS, the African Union (AU), and the ITU.

2. The LTA is a statutory regulatory body created under the Telecommunications ACT of 2007 to regulate the telecommunications sector and to facilitate the provision of accessible and affordable services for all Liberians.

The office of UAF is housed within the Regulator LTA.

UAF GOVERNANCE STRUCTURE

The governance structure of UAF comprises a Governing Board, an Implementation Committee, and the Project Implementation Unit (PIU). A brief account of the aforementioned fora is given below.

UNIVERSAL ACCESS GOVERNING BOARD

As defined in UAF Regulations[16] the UAF Governing Board derives its authority from UAF regulations and is responsible for strategic guidance, resource approval, and progress monitoring of UAF.

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[13] Loda, A and Cameron, K (2020), *Id.*

[14] "LTA Issues Mobile Operator's Licence to LIBTELCO." https://www.telegeography.com. Accessed May 27, 2021. https://www.commsupdate.com/articles/2020/10/16/lta-issues-mobile-operators-licence-to-libtelco/.

[15] "Liberia – CSquared." CSquared, 2021. https://csquared.com/services/liberian-market/.

[16] "Regulations." Liberia Telecommuniations Authority. Accessed May 25, 2021. https://www.lta.gov.lr/universal-access/regulations/.

According to Section 4 of the UAF Regulations, the Board shall be established on the appointment by the Minister of eight members, with members being nominated by:

- The Ministry of Posts and Telecommunications, which shall act as chair;

- LTA, which shall act as secretary;

- The Ministry of Finance;

- The Ministry of Internal Affairs;

- The Liberia Chamber of Commerce; and

- Licensed service providers (three members).

Additionally, the Board is responsible for representing UAF and contributing towards enhancing the organization's visibility by publicizing its accomplishments.

UAF IMPLEMENTATION COMMITTEE

The role of the UAF Implementation Committee is to serve as the main management body for UAF with direct oversight responsibility for the development and implementation of UAF-related plans, programs, and projects, as well as financial management and stakeholder relations.

According to Section 5 of the UAF Regulations:

The Board shall appoint the Committee, which shall consist of no more than seven members:

- The Chairperson of the Committee shall be the LTA's nominated member of the Board and should also be a member of the Board of Commissioners of the LTA (BoC).

- The Committee members shall be constituted as follows:

    a) One other member of the BoC shall be a member of the Committee;

    b) At least three members shall be nominated by licensed service providers; and, where feasible, should not be the same entities represented on the Board;

    c) At least one member shall be nominated by an organization that represents telecommunication users or the interests of civil society in Liberia; and

- Each member of the Committee shall hold office for two years, which term may be renewed no more than twice.

The committee is solely responsible for managing project implementation through the PIU as defined below. The UAF Implementation Committee serves as a supervising body and bridge between the Governing Board and the PIU.

UAF PROJECT IMPLEMENTATION UNIT (PIU)

The role of the PIU is to undertake the day-to-day implementation tasks necessary to accomplish UAF's objectives and to ensure effective and flexible coordination and implementation of UAF projects under the management of the Implementation Committee. The PIU is the functional arm of the Implementation Committee in all substantive matters; preparing reports, documents, and advisory inputs as directed.

2. UAF SITUATIONAL ASSESSMENT

UAF Liberia is entrusted with the responsibility to support the provision of telecommunication services to the unserved populations of Liberia. Since its inception in 2014, the following key developments have occurred as detailed below.

WORLD BANK 2017 REPORT OF UAF DECLARED IT "INACTIVE"

A World Bank "Implementation Completion and Results Report"[17] acknowledged that UAF has prepared regulations and an operating manual for the operation of the Fund. The report notes that with reference to operational performance, UAF Liberia is primarily inactive with 0.47 million US$ of unspent funds and limited information available regarding its performance[18].

THE UAF K-NET "PROOF OF CONCEPT" PROJECT

Despite the slow start, UAF initiated a number of projects beginning in 2017. The principal project under implementation by the Fund is the "proof of concept"[19] for the Liberian Rural Telephony Infrastructure Project (LRTIP). The LRTIP project scope consists of setting up two base station towers in two counties. The project was awarded to an infrastructure provider, K-Net [20], who will offer the infrastructure along with the microwave backhaul, including remote maintenance, to licensed mobile network operators without any charges or at a very nominal cost, as Opex will be taken over by UAF as per UAF subsidy contract.

K-Net will operate the infrastructure for three years, after which K-Net is expected to become financially self-sufficient. If K-Net is unable to attain financial self-sufficiency, UAF may continue to subsidize the operation for a period of time. There are concerns that K-Net lacks the incentive to make the operation self-sufficient. After three years, UAF may also hand over the infrastructure and award the subsidy to another infrastructure provider.

The proof of concept will be evaluated for its results. If the results are satisfactory then K-NET will be awarded the contract for another thirteen counties.

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[17] Implementation Completion and Results Report (IDA-48550 and IDA-48560). World Bank. December 30, 2017. Accessed May 25, 2021. documents1.worldbank.org/curated/en/661221514405908388/pdf/ICR-Main-Document-P116273-12302017.pdf.

[18] "Universal Service & Access Funds | an Untapped Resource to Close the Gender Digital Divide." World Wide Web Foundation. Accessed May 26, 2021. webfoundation.org/research/closing-gender-digital-divide-in-africa/.

[19] "Universal Access Archives." Liberia Telecommunications Authority. Accessed May 28, 2021. www.lta.gov.lr/tag/universal-access/.

[20] "Liberia: K-Net Aims to Cover Gbekuta under Govt LRTIP Programme | Balancing Act - Africa." Balancing Act Africa. Accessed May 25, 2021. www.balancingact-africa.com/news/telecoms-en/46942/liberia-k-net-aims-to-cover-gbekuta-under-govt-lrtip-programme.

There have been delays with the implementation due to the COVID-19 pandemic[21] and the base station set-up is not fully completed. At the time of this writing, the project is at standstill due to Covid-19.

THE LIBERIA ICT POLICY: A TURNING POINT FOR THE ICT SECTOR OF LIBERIA

The ICT policy 2019-2024[22] demonstrates for the first time that the Government is really acknowledging the importance of the ICT sector and the UAF as an enabler of digital access. One of the salient features of the Policy is the holistic approach that has been adopted to address the developmental issues, and ICT is acknowledged to be a key for socio-economic development, not just a development intervention.

It is a positive sign that UAF is considered as a vehicle to propagate the interventions identified in the policy. This appears at three different places in the ICT Policy 2019-2024, as follows:

1. Section 5.2 IV Affordable Universal Access to ICT (page 19):

    "…The Universal Access Fund managed by the LTA will support initiatives to ensure that voice and Internet access is available to every Liberian citizen, including through the provision of affordable public access through Wi-Fi hotspots and public access facilities where needed, especially in rural areas."

2. Section 5.9 Mainstreaming ICT and Persons with Disabilities / 5.9.2 Strategies (page 29)

    "Use the USF to support the access and use of assistive technologies where required."

3. Section 8. Resource Mobilization (page 49)

    "An assessment would also be made of the potential for raising the necessary resources through a specific levy applied to the ICT sector or through the UAF to provide support for the action items."

Dedicated sections in the policy address the constraints and bottlenecks that resulted in the failure of earlier endeavors in the ICT sector.

CONSTRAINTS FACED BY UAF

The Liberian ICT Policy 2019-2024, interviews, and other research surfaced a number of constraints that have both historically and currently limits the impact of the UAF. The most significant factors hampering UAF's ability to function effectively are outlined below.

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[21] "In Forpoh-Paluken, Grand Kru County First Phone Call Made for the First Time in 36 Years." Heritagenewslib.com. Accessed May 20, 2021. heritagenewslib.com/index.php/people-places/item/2052-in-forpoh-paluken-grand-kru-county-first-phone-call-made-for-the-first-time-in-36-years.

[22] "Liberia Information and Communications Technology (ICT) Policy (2019-2024)." Government of Liberia, 2019.

INDUSTRY DEFYING THEIR REGULATOR

A lack of financial resources appears to be – at least in part – the result of the telecommunication operators failing to pay their full UAF dues. The LTA should ensure operators comply with the T&Cs of their licenses.

LACK OF POLITICAL BACKING

Historically, UAF has lacked ownership by the highest level of Government. The lack of ownership appears to have changed recently. An increased level of commitment and at the highest Government level can be witnessed in the ICT Policy 2019-24.

AFFORDABILITY

Research by the A4AI shows that the country does not meet the UN Broadband Commission's affordability threshold. This is important because whilst USF funds typically address supply-side market failures, demand-side failures like consumers and citizens not being able to afford telecommunications services are also critical. In Liberia, whilst the highest 20 percent of income earners on average pay 8 percent of their monthly income for 1 GB of data, it costs the lowest 20 percent of earners a staggering 47.56 percent of their monthly income to access the same — far above the two percent target[23]. In such a scenario, providing affordable service in unserved areas truly required a UAF fund with a clear strategic plan and set of programs as recommended in this report.

APPARENT LACK OF CLEAR STRATEGIC DIRECTION

It appears that the strategic direction for UAF has been lacking, as this needs revisiting perhaps every three years. This is evident from the fact that it took several years, after the implementation of regulations in 2014 to start a proof-of-concept project in 2019. Unfortunately, the COVID-19 pandemic has further delayed the completion of the project and the validation of an approach designed to incubate and expand the impact of new service providers.

To be fair to the UAF, the Ebola Virus Disease (EVD) and the more recent Covid-19 pandemic provide plausibly good reasons for a largely inactive fund over the last five years. Nevertheless, a new strategic direction is required for at least three reasons: (i) between 2014 to 2021, the telecoms world has transitioned from a voice-centric to a largely data-centric one; (ii) we requested but did not receive a UAF strategic plan to drive the fund's activities and (iii) the GoL has promulgated a new ICT Policy (2019-2024) with the fiber backbone and addressing last mile challenges as its top two policy objectives, and the UAF strategic plan must arguably reflect such recent policy priorities.

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[23] "The Internet Is Unaffordable in Liberia: Action Is Needed to 'SET' the Agenda for Positive Change." Alliance for Affordable Internet. December 16, 2020. Accessed 28 May 2021. a4ai.org/the-internet-is-unaffordable-in-liberia-action-is-needed-to-set-the-agenda-for-positive-change/.

3. UAF SWOT ANALYSIS

The current situational analysis and SOW assessment for the UAF are summarized in Table 2 below. It identifies the key strengths and weaknesses, as well as opportunities and threats that inform potential paths for the development of the UAF.

TABLE 2. SWOT ANALYSIS	
STRENGTHS	**WEAKNESSES**
• UAF is recognized as a key player by the GOL, and its role is defined by the Broadband Policy 2019-2024 • Available framework supporting UAF current operations, including the Manual, Rules, and Regulations	• Unpaid UAF contributions • Apathy demonstrated by telecommunications operators • Limited human capacity in UAF to manage / monitor current projects • Inadequate emphasis on transparent processes
OPPORTUNITIES	**THREATS**
• Huge demand for broadband in unserved / under-served areas that can be catered through UAF • Proliferation of broadband in the country could give a significant boost to Liberia's economy • Broadband can serve as a vehicle to deliver social services to the masses, like health and education • Strong donor support for the telecommunications sector	• Affordability of services in rural areas • Investment in obsolete technologies by UAF (e.g. 2G and 3g) • Low digital literacy may suppress broadband internet's adoption • Limited locally relevant digital content • Insufficient infrastructure (e.g., power, roads, etc.) to support cost-effective service expansion

The areas identified above are further elaborated in the sections below.

STRENGTHS

1. **Recognition from the GoL:** As is evident from roles assigned to UAF by the Government in the Liberia ICT Policy 2019-24 (2019), UAF Liberia is acknowledged as a key player by the GoL in the ICT ecosystem of the country.

2. **A Supportive Framework:** A framework is available that supports UAF's current operations, the framework includes Manuals, Rules, and Regulations.

WEAKNESSES

1. **Unpaid UAF Contributions:** Several telecom service providers have not paid their UAF contributions (some are outstanding for years). The regulator (the LTA) has requested them to

pay repeatedly but that effort has not yielded a positive result to date. This results in a crippling lack of financial resources for the UAF, inhibiting its ability to achieve its mandate.

2. **Apathy Demonstrated by Telecommunications Operators:** The operators' reluctance to contribute to UAF also reflects their disinterest in and resistance to accepting responsibility for promoting universal access goals and complying with the dictates of the ICT Policy.

3. **Limited Human Capacity:** Institutionally, UAF appears to be weak in terms of the availability of trained manpower dedicated to UAF activities. UAF mainly relies on LTA resources for which UAF is a secondary priority.

4. **Lack of Transparency:** In UAF, inadequate importance is given to transparency. This is evident from the fact that no financial information is available to the public or stakeholders from the USAF website.

OPPORTUNITIES

1. **Large Demand for Broadband:** Major urban and rural populations and land masses of Liberia outside greater Monrovia or Montserrado County are without coverage of broadband, so there is a huge latent demand for it, particularly in unserved / underserved areas, which can be tapped to add to revenue streams of the telecom service providers. Innovative practices to serve the unserved and underserved territories[24] through UAF can help in the provision of broadband at more affordable prices.

2. **Potential to Boost Liberia's Economy:** The proliferation of broadband in the country could give a significant boost to the nation's economy. Current low optic fiber penetration and therefore, low broadband penetration is a challenge, but also indicates the significant opportunity for socio-economic improvement if this infrastructure is rapidly expanded. Reportedly, except for Montserrado County, which hosts the central offices of Orange and MTN, and to an extent Orange's deployment of about 200 kms of fiber on the route to Buchanan, Grand Bassa County, the rest of the country is not connected via fiber. Currently, even the financial institutions[25], like banks, along with other concessionaries, must use costly VSAT[26] technology for data connectivity. ITU studies prove the importance of broadband: It has

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[24] "Closing the Access Gap: Innovation to Accelerate Universal Service Adoption." United States Agency for International Development, Caribou Digital and the Digital Impact Alliance. February 2017.

[25] Financial institutions such as banks that are operating in various parts of the country, for the most part use VSAT for their networks. They transmit their data via VSAT to and from their respective head offices in Monrovia. Internally, within the banks, these VSAT are capable of facilitating and integrating with small local area networks. This network option is very useful in such hard to reach terrains. Basically, they use satellite to backhauled their data streams.

[26] These VSATs are mainly owned by Lebanese and Indian traders with shops.

been proven in several studies that increased broadband penetration boosts economic growth[27], especially in less developed countries[28].

3. **Ability to Deliver / Extend Services:** Broadband can serve as a vehicle to deliver social services, like health and education, to the masses: Similarly, the opportunity exists to expand and improve the delivery of services in the domains of health, education, governance, livelihood, financial inclusion, etc. as national broadband infrastructure and services are rolled out.

4. **Strong Donor Support:** There has been a strong interest of donors in the strengthening of Liberian telecom infrastructure for a long time. This interest has increased many-fold ever since the COVID-19 pandemic in 2020. Increased donors' interest can be transformed into funding commitment to the UAF.

THREATS

1. **Affordability:** Even if the supply side of broadband were ensured, affordability would remain another challenge.[29] This would be even more pronounced in rural areas where the available disposable income is even less.

2. **Investment in Obsolete Technologies:** Investments made in obsolete technologies (2G / 3G) that UAF is currently still supporting, may render the whole investment useless in the near term[30]. Both the technologies are outdated, and the investment should only be made in 4G and beyond.

3. **Low Digital Literacy:** The low digital literacy in Liberia may also suppress the adoption of broadband internet. Low digital literacy[31] has been identified as the key factor in inhibiting the demand for broadband all over the world. To date, the UAF has no demand side programs/plans to address the issue of digital literacy.

4. **A Lack of Relevant Content:** A lack of digital content[32] that is relevant to citizens, is another major impediment towards the adoption and use of broadband internet. That is why the GoL/UAF has to initially cater for the creation of useful locally relevant content to attract creators and generate demand.

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[27] Lomborg, Bjorn. "Is Broadband a Road out of Poverty?" World Economic Forum. January 15, 2020. https://www.weforum.org/agenda/2015/01/is-broadband-a-road-out-of-poverty/.

[28] "Economic Contribution of Broadband, Digitization and ICT Regulation: Econometric Modelling for Africa.", International Telecommunication Union, 2019, www.itu.int/pub/D-PREF-EF.BDT_AFR-2019. Accessed 28 May 2021.

[29] Alliance for Affordable Internet, *Id.*

[30] Remmert, Harald. "2G, 3G, 4G LTE Network Shutdown Updates." DIGI, 10 June 2020, www.digi.com/blog/post/2g-3g-4g-lte-network-shutdown-updates. Accessed 27 May 2021.

[31] Digital Inclusion. GSMA, 2014.

[32] Ibid.

5. **Insufficient Infrastructure:** There is not sufficient infrastructure (e.g. power) to support cost effective service expansion. Investments in telecom networks will also depend upon access to the power grid, as well as potentially roads and other infrastructure. Ideally, these should be addressed in a coordinated manner for broadband network development to be efficient.

4. RECOMMENDATIONS

The following recommendations suggest action that may be adopted by UAF to strengthen its operational effectiveness.

RECOMMENDATION 1: UAF STRATEGIC PLAN 2021 TO 2024

Aligned to the role assigned in ICT Policy 2019-24, a UAF Strategic Plan should be prepared, covering the following areas and complimenting the ICT Policy:

1. Identify the locations that are unserved or underserved:

    •   Select locations where projects should be implemented in the next five years and prioritize them;

    •   Then select projects to be implemented there, *(see Recommended Programs, below)*

    •   Calculate the financial resources required for the implementation of the projects;

    •   Identify funding sources for projects— including available and projected sources; and

    •   Prepare an annual development plan whereby projects for each of the five years are identified.

2. The strategic planning process should not be done in isolation, but rather it should include the buy-in of key stakeholders.

RECOMMENDATION 2: UAF INSTITUTIONAL STRENGTHENING

Given that funding available to UAF is limited, the optimal utilization of available resources is even more important. Strengthening the following three areas can help in resource optimization: 1) financial management, 2) M&E, and 3) communication, described as follows:

STRENGTHENING FINANCIAL MANAGEMENT THROUGH TRANSPARENCY

Transparency in financial management is essential for developing the confidence of the stakeholders who have either funded, or can fund, UAF's interventions. This can be achieved if UAF improves its:

1. **Vendor Selection:** Vendors should be selected strictly through an open competitive bidding process. The procedure adopted for selection, and results of the process, should be displayed on UAF's website.

2. **Public Information:** Make public the quarterly/yearly inflows and outflows of the Fund, via UAF's website as well as regular reports.

3. **Annual Audit:** Have an annual audit conducted and share the results of the audit with all stakeholders. If some audit findings are negative, they should be shared with the stakeholders and UAF should communicate how it intends to avoid such happenings in the future.

STRENGTHENING MONITORING AND EVALUATION

An M&E framework should be prepared and implemented that primarily addresses the following:

1. Monitoring project activities regularly in terms of their schedule, scope, and cost.

2. Documenting lessons learned during the project implementation.

3. Evaluating the results of the projects, and its impact, at regular intervals.

4. Integrating lessons learned in the future projects' design.

STRENGTHENING COMMUNICATION

The visibility of efforts made by UAF needs to be enhanced and communicated to a wider audience so that it attracts the attention of key players in the ICT ecosystem. For strengthening the communication UAF needs to:

1. Assign a staff resource (an official) within UAF responsible for public communications.

2. Decide on what is to be communicated, e.g. progress updates, reports, resource mobilization requests, etc.

3. Decide how frequently to communicate (e.g. monthly, quarterly, etc.) in addition to the activity-based communication that needs to be done as and when activities take place (e.g.: bidding, awarding of contracts).

4. Identify the types of media to be used for communication, in addition to regular website updates, e.g. electronic newsletters, seminars, press releases, etc.

5. Conduct periodic public relations events linked to the implementation and opening of UAF projects.

RECOMMENDATION 3: COLLABORATE WITH ICT ECOSYSTEM

Due to the limited financial resources available to UAF, it is recommended to collaborate with key members of the Liberian ICT ecosystem including international players. This includes organizations in the private, public or social sectors that can help UAF to achieve its goals. For example, social media companies like Google and Facebook, and entities that benefit commercially from the proliferation of broadband, etc.

As an example, once UAF has successfully implemented the first ongoing rural telecom infrastructure project, the impact of the project should be properly documented and shared among all the

stakeholders, as well as the public. This will also help in setting the stage for resource mobilization for projects that can stimulate demand for telecom services.

RECOMMENDATION 4: RESOURCE MOBILIZATION

Without resources, no amount of strengthening UAF is going to be of any use. Resources should be mobilized to:

1. Make the best use of current GoL support to get UAF contributions from the operators against their obligations.

2. Muster additional financial resources from the GoL to undertake the identified projects.

3. Utilize international donors for technical assistance in the areas of project planning and implementation, capacity building of UAF, and funding demand side projects.

RECOMMENDATION 5: STRENGTHENING OF UAF STRATEGIC DIRECTION AND SCOPE

It is recommended that both UAF's strategic direction and scope be further strengthened through the official adoption of the following general principles and approaches:

1. **Include OFC and TVWS in the Scope for UAF Investments:** Strategically, UAF should invest more in optic fiber cables (OFCs) and TV White Spaces (TVWS) equipment because it will help increase broadband coverage to remote areas and help in making broadband affordable for the masses (the current use of VSAT is exorbitantly costly, with no long-term assets created).

2. **Minimize Investment in Old Mobile Technologies:** UAF should not make any further investment in the outdated 2G or 3G last-mile technologies, as these are obsolete, and unable to deliver high speed broadband, which is needed to provide almost all the modern services to Liberian citizens.

3. **Invest in Demand Side Projects:** UAF should also invest in projects, which enhance the adoption of the internet and promote its usage. Increased demand for broadband will motivate telecom operators to expand their operations in those regions.

RECOMMENDATION 6: RECOMMENDED PROGRAMS FOR UAF

The Strategic Plan recommended above should be designed to include a series of key programs for UAF to implement. We recommend that the following programs should be considered as priorities. Each program will consist of several projects:

CURRENT PILOT INFRASTRUCTURE PROJECTS

All efforts should be made to complete the ongoing pilot project (the two cell sites in Paluken, Grand Kru, and in Gbanga Gbaquoita in Gbarpolu County constructed under the K-Net proof of concept) as

fast as possible. The pandemic should not be an excuse as the current situation is going to remain as the "new normal".

To make it successful, discussions should be held with the cellular operators, and corresponding steps taken, to make the best use of the deployed infrastructure. Reports that Orange has refused to integrate its services with the two pilot sites are extremely alarming. Although it was a great idea to award a subsidy to a neutral infrastructure provider, perhaps the process of award of contract to K-Net was not sufficiently open to competitive bidding. If so, cellular operators must be satisfied regarding the future course of action of UAF.

The pilot project must be thoroughly evaluated, and the lessons learned must be integrated into the project design for the future of Rural Telecom (not just telephony, rather Telecom) Infrastructure "Programs".

NATIONAL OPTIC FIBER PROGRAM

The deployment of national optic fiber should be assigned top priority, as its implementation will provide cost effective backhaul and will help bring broadband to remote areas. Even in those rural parts of the country that have some semblance of commercial activities. For example, in Ganta in Nimba County, Gbarnga in Bong County, and Kakata in Margibi County, the broadband is still backhauled via microwave.

The deployment of OFCs should be achieved through a phased implementation. The rollout priority can be established through a consultative process depending on resource availability.

As a first step, a pilot project should be initiated in at least one county of Liberia where the deployment of optic fiber is relatively easy and least expensive (e.g.: close to Monrovia). Optic fiber deployment can also be done on Build, Own, and Operate (BOO) basis — where a suitably qualified infrastructure provider should be selected for deployment of OFCs. The responsibility of the OFC infrastructure provider should include deploying and operating the network in a way that every service provider gets equal access to the laid OFCs without discrimination.

The infrastructure provider should be given free "right of way" on public facilities. The network deployed should be made available to the telecom service providers, on a mutually agreed terms and tariff structure. The project should then be evaluated, and those results should be widely circulated to attract the attention and interest of key players in the ICT ecosystem.

A full-scale project should then be designed after incorporating the lessons learned during the implementation of the pilot.

DEMAND SIDE PROJECTS

To encourage the proliferation of broadband in rural areas, a coordinated effort is required, focusing on interventions — referred to as demand side projects - that can create demand for broadband and promote its meaningful usage. This is because unlike voice telephony, the adoption of internet needs some stimulation, so that use of internet is productive.

In several cases, this can be done in collaboration with leading IT companies like Facebook, Google, etc.

Demand side projects should focus on:

1. Skill enhancement and awareness about how to use the internet for productive purposes, aimed at enhancing digital literacy.

2. The creation of content, particularly content, which is also relevant and/or useful for people living in remote or rural areas, e.g., improvements in practices related to agriculture/farming, better health, hygiene, etc.

3. Zero-rated content in the domains of education, health, governance, and others that can be an evolving list

4. Shared access points in locations like community centers, public community Wi-Fi, and schools.

5. Making smartphones affordable through consumer financing with the help of development finance institutions.

5. CONCLUSION

As recommended via this report, the adoption of proposed recommendations by UAF will result in the following outcomes:

- Bridge the digital gap for unserved populations of Liberia;

- Fiber optic deployment to facilitate telecom service providers in delivering affordable voice and internet services;

- Add revenue streams for telecom/internet service providers;

- Adoption of broadband internet to catalyze socio-economic development process;

- Promote ICT based industry; and

- Provide a delivery mechanism for interventions in the field of health, education, governance, commerce, etc.

ANNEX 1. REFERENCES

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ANNEX II. DRAFT OPERATIONS MANUAL FOR UAF

Please see attached separately the Draft Operations Manual for UAF.

ANNEX III. REGULATIONS ON THE UAF (CREATION, MANAGEMENT, AND DEPLOYMENT) 2014 LTA-REG-0006

Please see attached separately the Regulations on the UAF (Creation, Management, and Deployment) 2014 LTA-REG-0006.