



# ADVANCING BEYOND LIMITATIONS

---

Annual Report 2022

## Table of Content

<b>1. Foreword by the Board Chair .....</b>	<b>2</b>
<b>2. CEO's Remarks .....</b>	<b>3</b>
<b>3. Governance .....</b>	<b>5</b>
<b>4. Network Expansion &amp; Direct Support to NRENs .....</b>	<b>7</b>
<b>5. Network Upgrade, Monitoring and Management .....</b>	<b>10</b>
<b>6. Capacity building .....</b>	<b>10</b>
<b>7. Digital Services .....</b>	<b>11</b>
<b>8. Africa Digital Campus .....</b>	<b>11</b>
<b>9. Membership, Communication &amp; Marketing .....</b>	<b>12</b>
<b>10. WACREN 2022 .....</b>	<b>13</b>
<b>11. Human Resources and Secretariat .....</b>	<b>13</b>
<b>12. Financial Report .....</b>	<b>14</b>
<b>13. Outlook .....</b>	<b>16</b>

## **FOREWORD BY THE BOARD CHAIR**

On behalf of the Board of Directors of WACREN, I welcome you to read this Annual Report for the year 2022. In 2021, we made efforts to progress through resilience, and we stepped into 2022, aiming to consolidate all our gains and make some advancements despite the limitations around us.

In the year under review, we worked hard to optimise the minimal resources at our disposal to create optimal results within the ever-dynamic, fast-paced environment we operate in as an organisation.

In 2023, we will aim to marshal our resources – tangible and intangible – to create more value for our community of stakeholders through targeted activities and provision of tailored services. We will also seek to engage new markets still within the research, science and education community in West and Central Africa.

We will also expand the coverage of our network, which means connecting more countries, upgrading our network and ensuring its availability, accessibility and security for the benefit of our community of users. More importantly, we will seek to add value to our offering by fashioning out innovative digital services and infrastructure to advance research and education in West and Central Africa.

At this point, I would like to request all our stakeholders, especially the national research and education networks, to demonstrate higher levels of commitment and dedication to research and education networking in our region. I guess you will agree with me that the best way to advocate for more support from policy-makers, decision-makers and funders is for us to demonstrate efforts at making our NRENs work at optimal level.

On behalf of my colleagues on the Board, I would like to thank the European Commission (EC) for its continual demonstrated commitment to research, science and education in our region through the AfricaConnect project. Let me also take the opportunity to express gratitude to the French Development Agency (AFD) for supporting the Africa Digital Campus project in our region. Last but not the least, we are grateful to all project's implementation partner organisations for their cordiality and commitment to realising the objectives of our projects.

Thank you.

**Dr. Venant PALANGA**  
Board Chair

## **CEO'S REMARKS**

It's is my pleasure once again to report on the activities and efforts of WACREN in the past year and the impact it has brought to our cherished, ever-growing community.

First of all, allow me to, on behalf of my colleagues at the WACREN secretariat, to express profound gratitude to the Chair and the entire Board of WACREN for the strategic guidance and counsel throughout the year under review.

Our gratitude goes also to the European Commission, particularly the Directorate-General International Partnerships (INTPA), for their unalloyed support and demonstrable commitment to research and education in our region, even at the time when national RENS could not mop up funds to contribute to the AfricaConnect3 project. We cannot forget our sister regional RENS – ASREN, the UbuntuNet Alliance and GEANT for their camaraderie and cordiality in the implementation of the project. We are equally grateful to the Agence Française de Développement and Institut de Recherche pour le Développement for the partnership in implementing activities under the Africa Digital Campus project in Benin and Burkina Faso.

In 2022, WACREN was involved in two main projects –AfricaConnect3 (AC3) and Africa Digital Campus (ADC). Under AC3, much of our efforts were channelled into enhancing the robusticity of the network capacity despite the challenges encountered in securing the counterpart funding. Due to these challenges, in 2022, WACREN was not able to connect any new NREN to its backbone. However, we saw an increase in the use of the network by already-connected NRENs, namely GARNET and NgREN. The two NRENs increased their capacity on our network and subscribed to other services.

Open Science was a key highlight in 2022. The LIBSENSE programme led by WACREN was a shining example of our efforts at driving open science in our region and beyond. LIBSENSE is fast becoming a household name in Africa and beyond in pro-African efforts at advancing open science. It organised national open science symposiums in Ghana and Botswana, and played a key role in similar activities in Côte d'Ivoire and Nigeria.

On identity and access management, WACREN played an instrumental role in eduID.africa joining the eduGAIN federation.

Under the ADC project, WACREN also played a key role in the launch events in Burkina Faso and Benin. Since then, WACREN has developed efforts to deliver the needed digital learning infrastructure and capacity building for network administrators in the beneficiary countries. Our efforts were also channelled through campus network assessment and revamp to ensure that the project is delivered on a robust network infrastructure and conducive environment.

As we all know, the COVID-19 pandemic caused many challenges to establishments across the world; the WACREN region was not an exception. Due to shift of priorities that prevented governments from committing to contributions towards AC3, many members defaulted because their members did not pay their fees, universities having been closed in some instances for more than a year.

Considering the ever-dynamic nature of our environment, WACREN and its members will need to work more closely to create an unsurpassed value to higher education and research institutions in West and Central Africa.

I call on all stakeholders of our community to join hands with us to create, maintain and enhance a world class research and education network and services to deliver value and contribute to the development of our region.

Thank you.

**Dr. Boubakar BARRY**  
CEO

## 1. Governance

### **BOARD MEMBERS**

Dr. Eyouléki T. G. Palanga	Chair, CEO TogoREN
Dr. Ousmane Moussa Tessa	CEO NigerREN
Prof. Souleymane Oumtanaga	Board Member
Dr. Joshua Attah	MD NgREN
Mr. Lucas Chigabatia	CEO GARNET
Mr. Pierre C.B. Bakoroba	CEO MaliREN
Dr. Boubakar Barry	CEO

### **WACREN SECRETARIAT**

1. Dr. Boubakar Barry (Senegal) – Chief Executive Officer
2. Omo Oaiya (Nigeria) – Chief Strategy Officer
3. Edward Banjo (Nigeria) – Senior Network & Infrastructure Engineer
4. Ivan Yeboah (Ghana) - Finance and Administration Officer
5. Eric Attou (Benin) - Network and Systems Engineer
6. Tiguidanké Bah (Guinea) - Executive Assistant
7. Kwaku Effah Amponsah (Ghana) - Communication and Marketing Officer
8. Sefakor Ankora (Ghana) – DevOps Engineer
9. Jessie K. Odei Asamoah (Ghana) – DevOps Engineer
10. Koudoussou Outtara (Burkina Faso) – NOC Engineer
11. Olalekan Allade (Benin) – NOC Engineer

### **WACREN SECRETARIAT CONTACTS**

WACREN, VCG Office Complex, IPS Road  
P.O. BOX LG1279, Accra - Ghana  
Tel: +233 302942873  
Email: [info@wacren.net](mailto:info@wacren.net)  
Website: <https://www.wacren.net>

### **INDEPENDENT AUDITORS**

K. Asante Wiredu Consultancy  
Chartered Accountants  
P.O. Box AN 19196  
Accra - North

### **BANKERS**

Ecobank Ghana  
Silver Star Towers Branch  
Airport City St, Ground Floor Silver Star Towers

## 2. Network Expansion & Direct Support to NRENs

### NgREN increased subscription on WACREN

In 2022, Nigerian NREN (NgREN) moved some of its loads to the WACREN network. Hence, there was an increase in subscription from one (1) Gigabyte to two (2) Gigabytes.

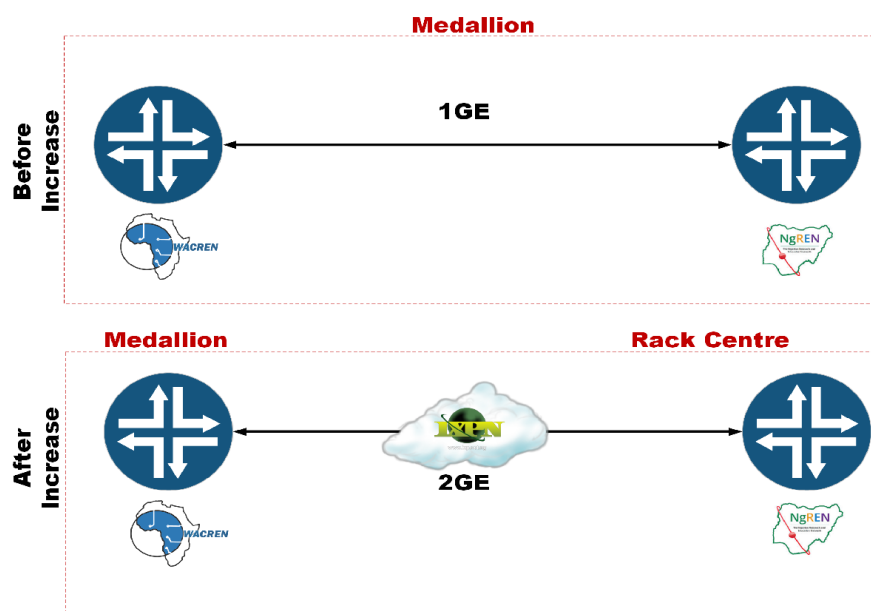


Figure 1: Shows before and after scenario of NgREN increasing their subscription on the WACREN network

### Burkina Faso BGP Peering with WACREN

FasoREN officially secured their ASN and Public IP address, with the assistance of WACREN. This enabled FasoREN to fully utilise the service from WACREN.

WACREN is the only provider announcing the ASN and Public IP of FasoREN to the internet, as they are not currently subscribed to an alternative provider. The WACREN link has been utilised more, since the activation of FasoREN's peering.

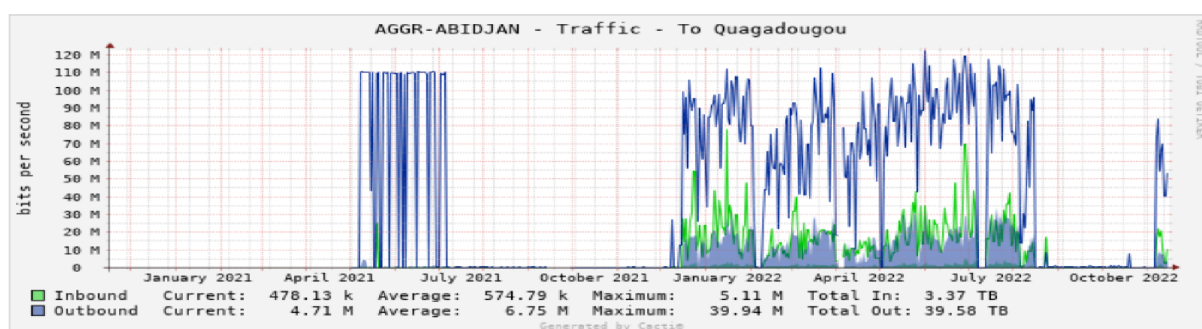


Figure 2: FasoREN utilisation in 2022

### WACREN Capacity Increase in Ghana

In the bid to make the network redundant an extra 10G capacity on the WACREN network was subscribed to. WACREN already has a 10G subscription at the London POP, with Cogent. The additional subscription in 2022 was at the WACREN Accra NITA POP. The provider is Dolphin



Telecoms. A BGP peering was established between both parties, and a one week test phase was carried out. Utilisation has been experienced on the service since the activation.

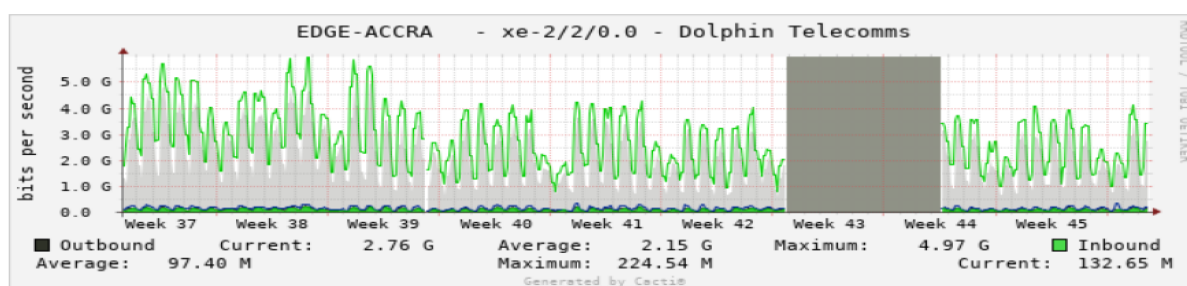


Figure 3: Utilisation on Dolphin Telecoms

### Connections under AC3 in Year 3

There was no connection under the AC3 project. Consequently, Senegal, Equatorial Guinea, Guinea, Liberia, Sierra Leone or countries in Central Africa were not connected to the network as initially planned. The identified main reasons were the lack of readiness of these countries, the non-availability of funding and administrative bottlenecks with Cluster 2 regional procurement strategy.

### UVCI connects to WACREN backbone

The Université Virtuelle de Côte d'Ivoire (UVCI) connected successfully to the WACREN backbone in 2022. The digital education institution is on a one (1) Gbps capacity subscription at WACREN. With the connection a colocation and internet break-out service are being offered to the fast-growing University at the WACREN's Orange KM4 POP in Abidjan.

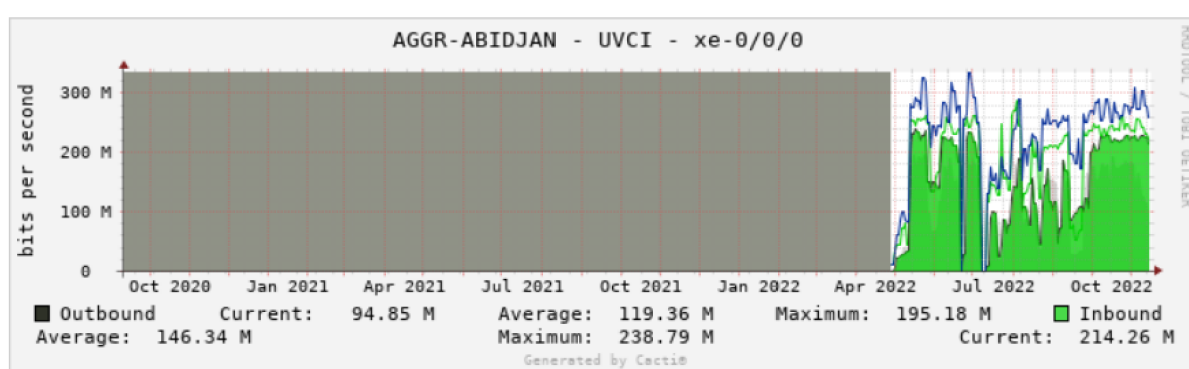


Figure 4: UVCI utilisation in 2022

### Completion of RBER Integration

WACREN connected RBER in 2020, but it was only in 2022 that traffic on the link began. Currently, WACREN provides the RBER capacity concurrently with another service provider.

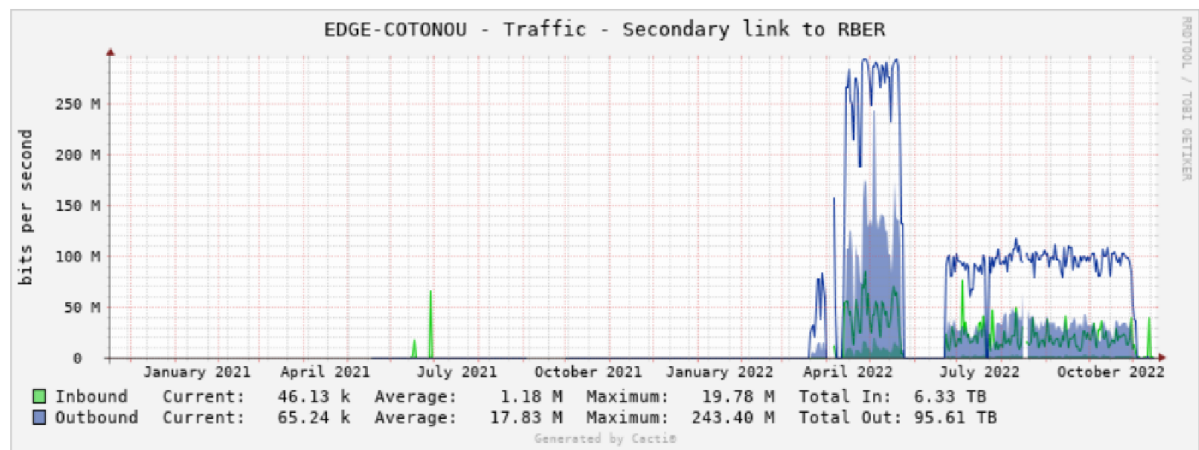


Figure 5: RBER utilisation in 2022

### Update on other connected NRENs

Due to Togocom's lingering issues, TogoRER was served majorly with IP transit connectivity, and not conventionally integrated into the WACREN network. WACREN currently is dealing with the Togocom issue legally.

RITER connection to WACREN was also integrated in 2020, but as at the end of 2022, there was no active utilisation on the link.

### Network Peering with GEANT

In the third quarter of 2022, WACREN added to the existing peering with GEANT to be able to receive multicast traffic from The European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). EUMETSAT provides a range of meteorological services to Europe and the rest of the world. This meant WACREN was to receive data and information related to weather forecasting, climate monitoring, and other meteorological applications. This information is transmitted over the internet through multicast transmission, which allows many receivers to receive the same data simultaneously.

### Current topology of the WACREN network

The diagram in Figure 6 below depicts the current topology of the WACREN network, taking into account the fact that the redundant link from Abidjan to Marseille is yet to be procured.

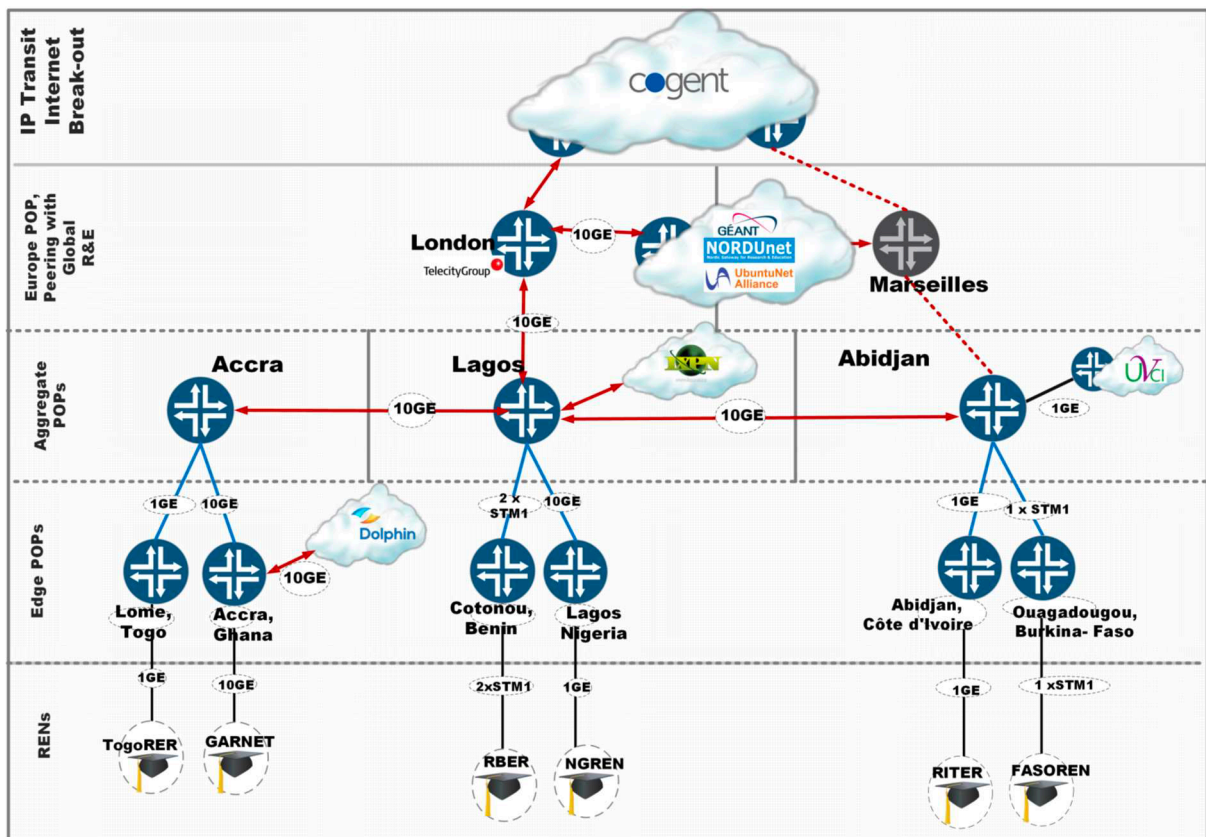


Figure 6: Current topology of the WACREN network.

### 3. Network Upgrade, Monitoring and Management

WACREN NOC conducted day-to-day network operations involving network monitoring, configuration, fault, security, performance and accounting management to ensure that the network performed as expected. The daily tasks included Service Desk operations – handling incidents from service providers and NRENs through a [ticket management system](#) that tracks incidents and responses.

The WACREN technical team continued to run the network and, in order to monitor the network, WACREN kept deploying a PerfSONAR infrastructure.

### 4. Capacity building

On the capacity building front, technical workshops were held in Côte d'Ivoire. Others that were planned in Burkina Faso and Benin in the framework of the Africa Digital Campus project had to be postponed to early 2023.

A series of webinars were held in the framework of WACREN's NREN Academy programme as well as under the LIBSENSE initiatives. These webinars, as all WACREN capacity building activities, were open to participants from our sister regional RENs.

## **5. Digital Services**

With the support of NORDUNET, WACREN continued to offer the zoom video conferencing services to its members using public meeting connectors. Close to a million users were on the Zoom service across the region: this greatly enhanced the delivery and continuity of digital education in WACREN connected countries.

To increase the quality of service, WACREN has started procuring Zoom servers to be installed in the POPs of all connected members. The first Zoom server has been delivered to WACREN and will serve the GARNET community. Other servers will be delivered and installed in other POPs in 2023.

## **6. Africa Digital Campus**

The ADC project was successfully launched in Burkina Faso (March) and Benin (October), respectively. The NOC team visited Ouagadougou to carry out a network infrastructure readiness survey and assessment to ascertain the readiness of Université Joseph Ki-Zerbo to host the equipment as the POP of FasoREN, Université Virtuelle du Burkina Faso (UVBF) being however the primary beneficiary of the project. Specifically, the NOC discovered issues including bottle-neck internet penetration, lack of WIFI internet access across the campus, lack of visibility of network infrastructure and overall modernisation of the campus network.

After the survey, the NOC advised WACREN to commence a process to help revamp the network infrastructure of the university so that the latter will be ready to better deliver digital education to its students.

After the successful launch of the project in Cotonou, the NOC team conducted a network audit to ascertain the status at Université de Lokossa, primary beneficiary of the project. The WACREN team discovered many issues that have to be dealt with for the successful implementation of the project in Benin. Actions will have to be taken in collaboration with the colleagues in Benin to upgrade the campus network infrastructure. The work, including procurement, has started and should lead to an effective implementation in the first half of 2023.

## 7. Membership, Communication & Marketing

### Membership

The National Computing Centre of Côte d'Ivoire (CNCCI) joined WACREN, bringing to 18 the number of WACREN members. The Ivorian state organisation was formally accepted into the WACREN family after satisfying all requirements for membership.

[CNCCI](#) is a government agency that provides the academic research community with modern means of intensive computing and data processing to facilitate research work and publications in order to reinforce the visibility and attractiveness of the universities of Côte d'Ivoire.

By joining WACREN, the Centre gained the right to participate in all WACREN activities including events and capacity building sessions. It is expected that the relationship will have various benefits including the availability and accessibility of CNCCI's HPC to other NRENs, research centres and higher education institutions in the region.

### NRENs SDGs Initiative

WACREN in collaboration with its sister regional RENs and GEANT commenced the African NRENs-SDGs initiative. The key objective of the community-focused initiative was to highlight the collective contribution of African NRENs to achieving the Sustainable Development Goals (SDGs). The strategy was to discover concrete examples (direct and indirect) of what NRENs have done and are doing to help meet the SDGs. The project kicked off with a [webinar](#) organised for all NRENs in Africa. This was followed up with a [workshop](#) in Gaborone, Botswana, as part of UbuntuNet Connect 2022. The objective of the workshop was to meet, curate and showcase concrete examples.

Overall, WACREN and its NRENs contributed to achieving SDGs 4 (Quality Education), SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation & Infrastructure), SDG 10 (Improved Inequalities) and SDG 17 (Partnerships for Goals). WACREN sourced examples from the activities of GARNET, Eko-Konnnect, SLREN, RBER, LIBSENSE and WACREN's own initiatives. Find the curation of all discovered examples of WACREN and other NRENs examples on the [AfricaConnect3 project website](#).

### NREN Country Fiches

At the time of submitting this report, [seven](#) out of 16 NRENs had submitted their country fiches that are key for tracking progress of members. The Communication and Marketing Officer sends regular reminders to the NREN CEOs for them to get the fiches sent to WACREN for compilation and sharing with the AC3 partners as well as with development partners.

### **NREN Comms Capacity Building**

WACREN conducted two workshops for NRENs in the region: [Marketing NREN Services](#) and [Stakeholder Communication](#). In all, there were 33 participants, including some NREN CEOs. The feedback from participants was very positive.

WACREN supported some NRENs with enhancing the visibility of their activities. The NRENs include GARNET, NgREN and Eko-Konnect. Similarly, WACREN syndicated social media posts of sister regional RENs – ASREN and the Ubuntunet Alliance.

## **8. WACREN 2022**

The 7<sup>th</sup> flagship Conference themed – ‘*Open Science in Africa – Connecting the Dots*’, was held in the week of April 25, 2022 in Abidjan. The Conference received great support from UVCI and RITER. About 450 participants from 18 countries (on-site and online) attended the Conference. Three workshops and nine sessions were held, and more than 40 panellists and speakers participated in this annual event. WACREN leveraged the Conference to build on new relationships with new stakeholders and partners.

Despite the challenges encountered at the Conference, WACREN was satisfied with the decision to come closer to its user communities by holding the Conference on a university campus. Many insights and lessons were learnt from that initiative; these will serve in the future. One of the key outcomes of the Conference was the bridging of the gap between the funders, decision-makers, implementors and users of the WACREN network.

In future, WACREN will still consider a model in which part of the conference week activities are held within a higher education / research environment.

## **9. Human Resources and Secretariat**

The contracts of the Communication and Marketing Officer, the Networks and Systems Engineer and the Finance and Administrative Officer were successfully renewed after the expiry of their previous contracts. WACREN has successfully recruited four (4) new staff made up of two (2) Dev-Ops and two (2) NOC engineers who will primarily support the ADC project. There was also a plan to hire a Senior Network Engineer as well as Project and Procurement Officer but the process was not successful. The terms of reference and adverts to fill these two positions as well as an Accountant position are being finalized and will be published in Q1 / 2023 for the recruitment process to be completed by end of Q2 / 2023.

At the end of the year under review, WACREN had eleven (11) staff members, working from different locations.

## 10. Financial Report

WACREN Revenue invoices including Member's subscription, WACREN Connect, WACREN Zoom invoices, conference related invoices were processed, distributed and followed up with the respective members for payments. The WACREN Systems Audit that commenced in quarter 4 of 2021 was continued in the early part of the year under review. The review with management comments of the second audit report update has been completed and awaiting final audit report from the auditors.

WACREN prepared a quarterly project report along with the annual AC3 Year 3 financial report while undergoing an expenditure audit towards the request for Tranche 3 funding from the European Commission.

The financial year was quite eventful with various effects in the business environment from the economic decline in Ghana's economy from hyperinflation to very high exchange rate and debt restructuring of bonds which staff pensions has a link to. However, WACREN was successful financially as we managed to use project funds and Internally Generated Funds judiciously to run operations for the year.

WACREN renewed its license as an NGO in Ghana after successfully meeting all statutory requirements. WACREN also successfully updated the Beneficiary Ownership form and change of Directors requirement at the Registrar General's department, Ghana as mandated by law.

WACREN adjusted to demands of a managerial change at the Vice Chancellors Ghana (VCG) Office Complex and had interactions with the new management on several key matters, including tenancy agreement. The discussions are still ongoing.



## Statement of Accounts

### WEST AND CENTRAL AFRICAN RESEARCH AND EDUCATION NETWORK

#### (WACREN)

#### STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR

#### ENDED 31ST DECEMBER, 2022

	<b>2022</b>	<b>2021</b>
	<b>US\$</b>	<b>US\$</b>
<b>Revenue</b>		
Members Subscriptions	9,450	18,984
AfricaConnect2 Claims	-	304,575
Grant European Commission	600,730	574,838
Grant AFD - IRD	177,274	-
Grant FCDO	24,116	-
Members Backbone Contribution	498,012	970,883
Other Donations	37,257	516
	<u>1,346,839</u>	<u>1,869,797</u>
<b>Expenditure</b>		
Project Development Expenditure	67,499	260,602
Project Co-Funding (AC3)	-	236,600
Travel & Transport - (Researchers)	27,809	53,815
Workshop and Conference	130,689	61,488
Seminal and Symposium - FCDO	16,460	-
Personnel & Researchers Cost	639,623	549,971
Peering & Transit Cost	189,268	165,982
Other Administrative Expenses	40,048	90,915
Depreciation	4,083	8,891
	<u>1,115,479</u>	<u>1,428,265</u>
Surplus/(Deficit)	<u><b>231,360</b></u>	<u><b>441,532</b></u>



## 11. Outlook

WACREN is conscious that at the heart of its mandate it must contribute significantly in the creation of a digital society and a knowledge economy both seen as two important aspects that impact positively on the educational landscape in West and Central Africa.

In the coming year, WACREN will use its skillset and competencies to bring technology and its use more within the reach of our NRENS and the R&E institutions, putting educators and learners in our region in a good stead for content development and research. The WACREN cloud platforms will certainly play an important role in supporting this ambition.

An ethical business environment is a magnet for investment, and by implication growth and sustainability. No efforts will be spared going into the future to build, promote, and enforce an ethically compliant organization represented by all its stakeholders and employees.

Infrastructure modernization and upgrade throughout the value chain will be key to our efforts in the coming year. The roll-out of more advanced network infrastructure and the expansion of cloud technology are two key investments with immense benefits. The realisation of this vision will be dependent on the implementation of quality, scalable services for our NRENS and on building their capacity to optimise and maximise the benefit of the services.

In response to the fast-changing macro environment, WACREN will be required to be proactive and focused on building core and relevant competencies to drive a more agile and forward-looking organisation. Capacity-building programmes will have a sharp focus in order to add value to our core business.

In the coming year, we will strive to be SDG-focused and aligned in all our endeavours. From the recruitment of new staff to our business processes and activities we will aim to take decisions and actions that will support the achievement of the SDGs.

Under the AC3 project, we will focus on our tasks and activities, top on the priority being securing counter-funding to facilitate new connections to the WACREN network.

Under the ADC project, WACREN, in collaboration with the project partners, will continue its capacity building drive, advocacy and infrastructure provision, to realise the objectives of the project.