West Africa's Digital and Infrastructure Outlook

This presentation explores the evolving West African digital and infrastructure outlook with emphasis on Connectivity, offering insights for individuals and corporations interested in the region for expansion and investment.

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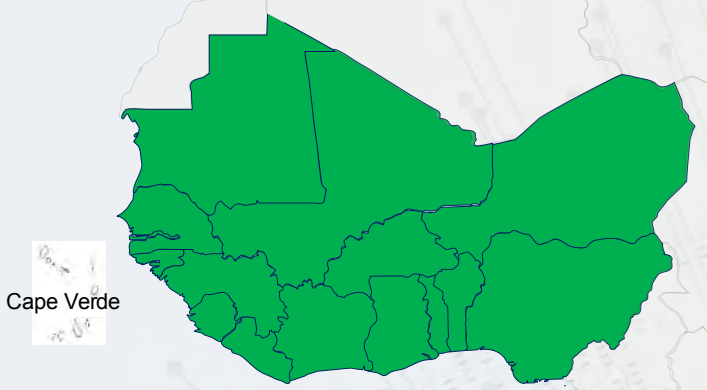
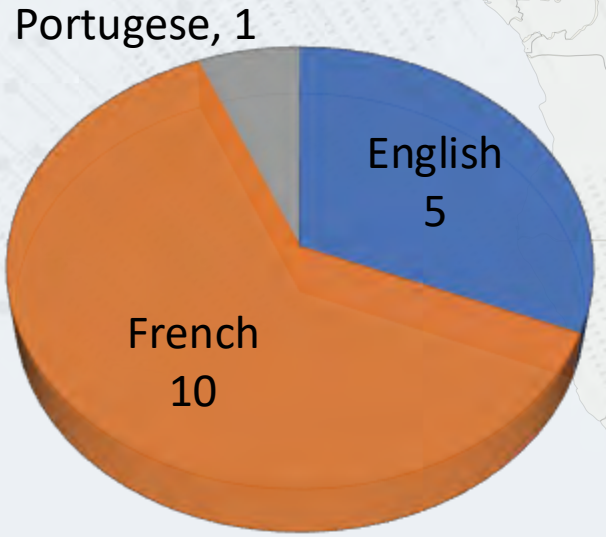
West Africa (W.A) Region Overview





Languages in W.A

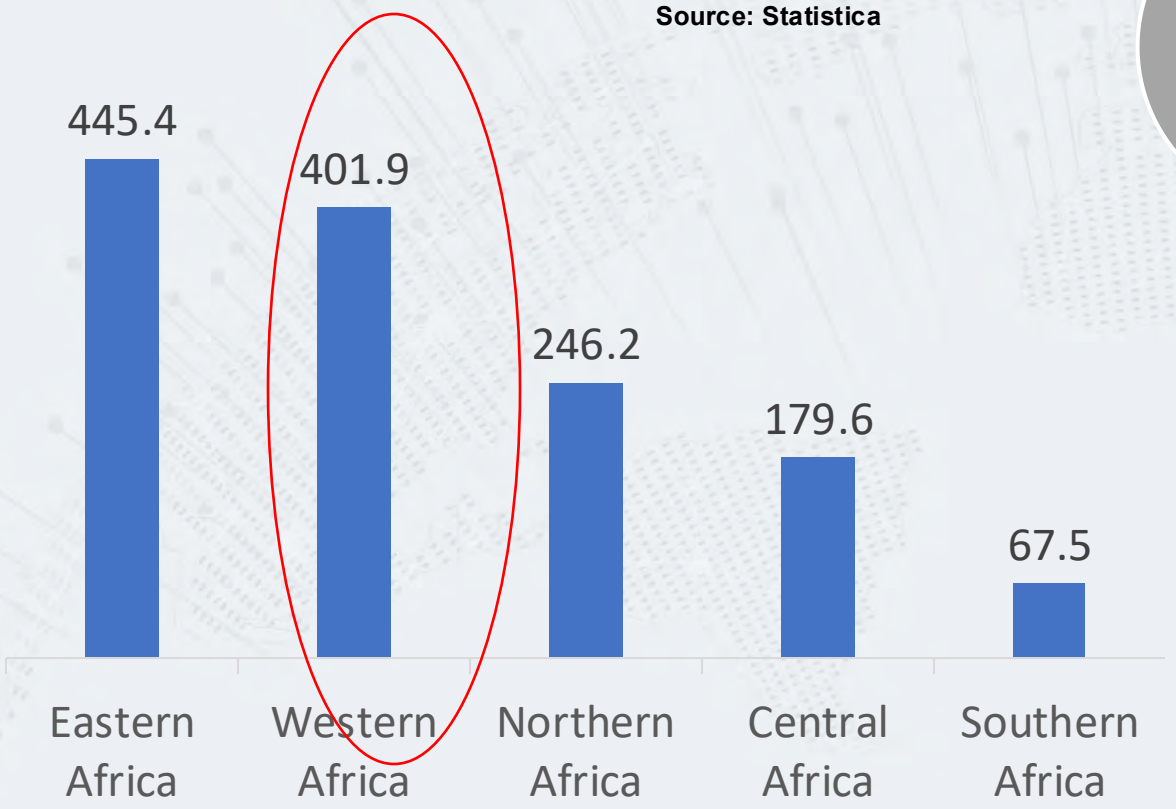
- Benin
- Burkina Faso
- Cape Verde
- The Gambia
- Ghana
- Guinea
- Guinea-Bissau
- Ivory Coast
- Liberia
- Mali
- Mauritania
- Niger
- Nigeria
- Senegal
- Sierra Leone
- Togo

West Africa (W.A) Region Overview

AF-CIX powered by DE CIX

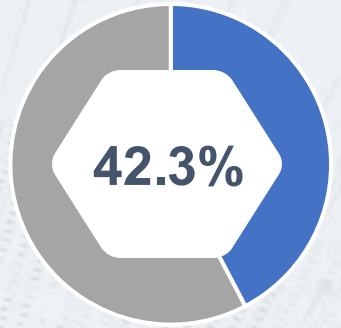
Africa Population by Region

Source: Statistica



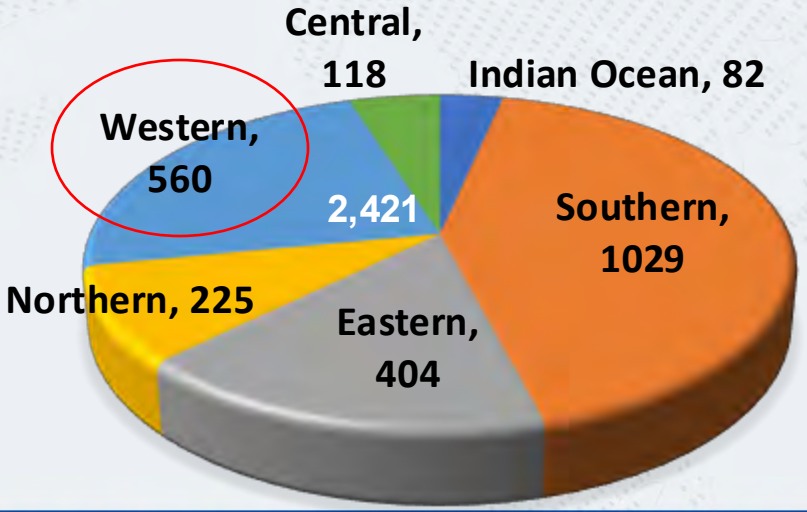
Median Age

Int. Pen. Rate (%)



AFRICA ASN DISTRIBUTION

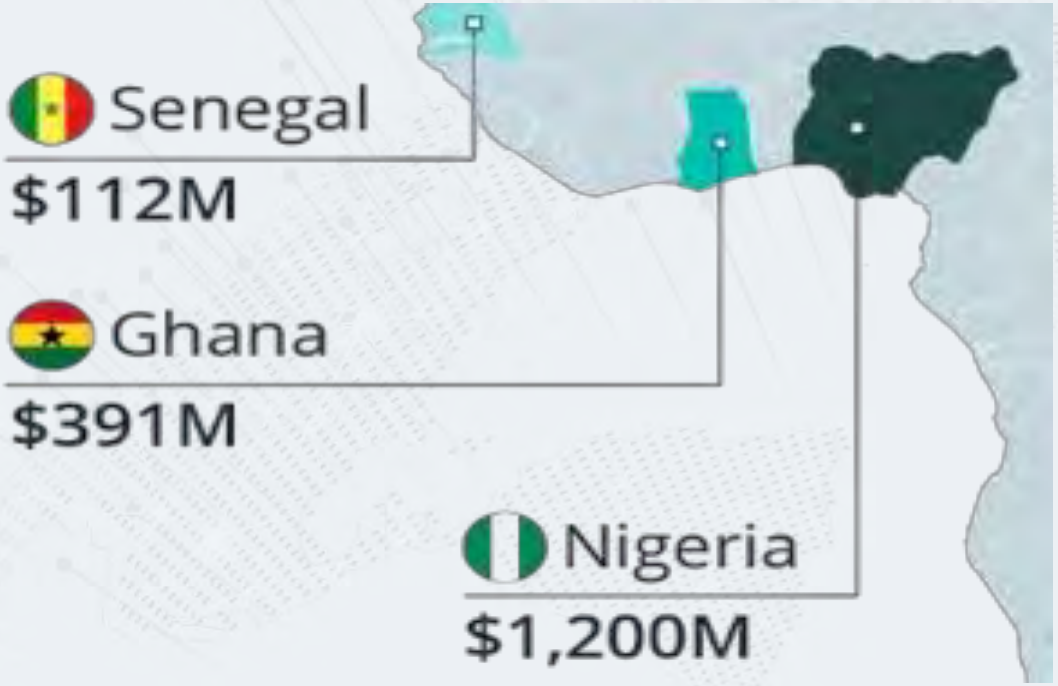
SOURCE: AFRINIC



West Africa Startup Investment outlook

Source Founders Factory

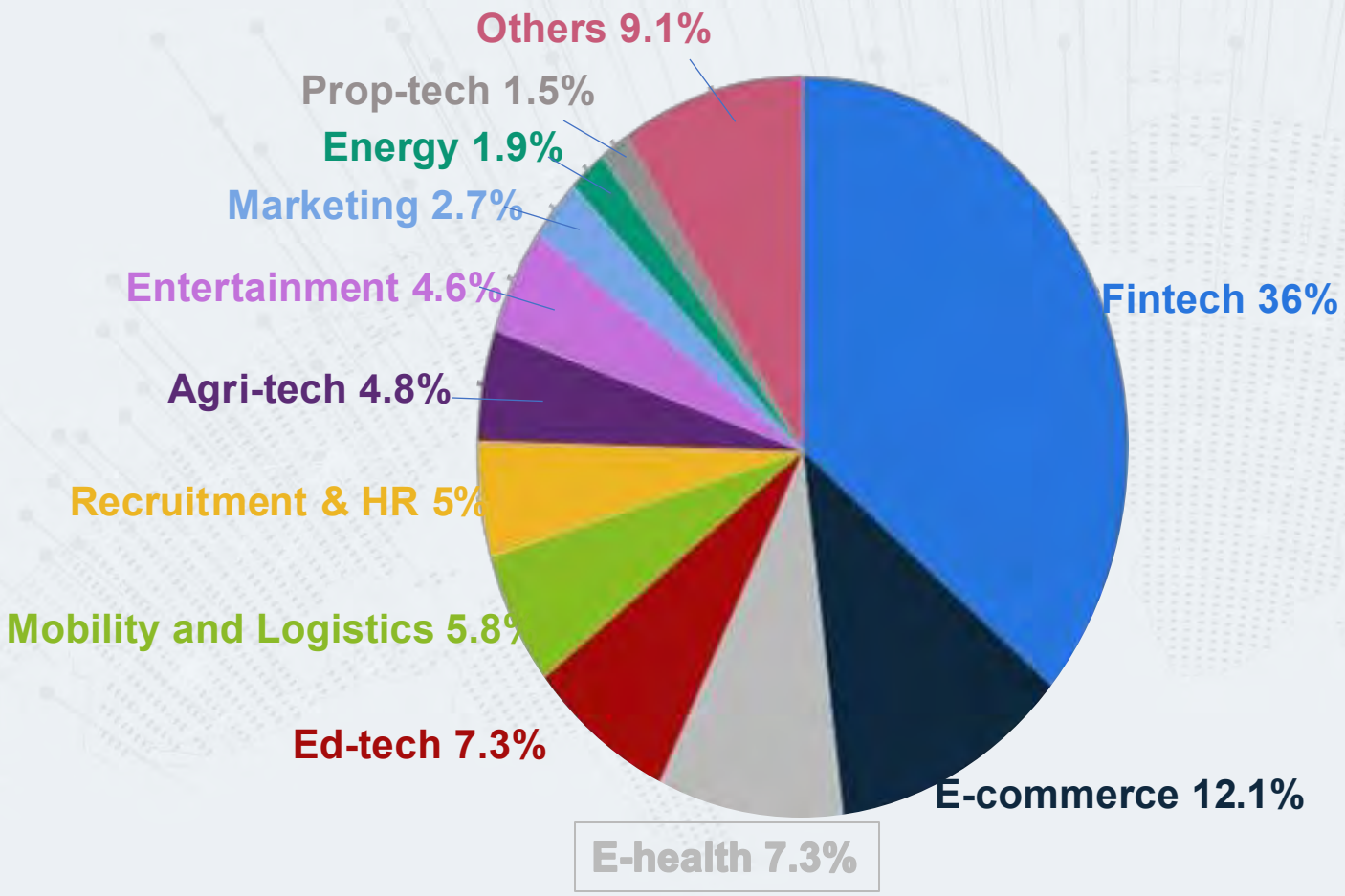
Top Funding Destinations



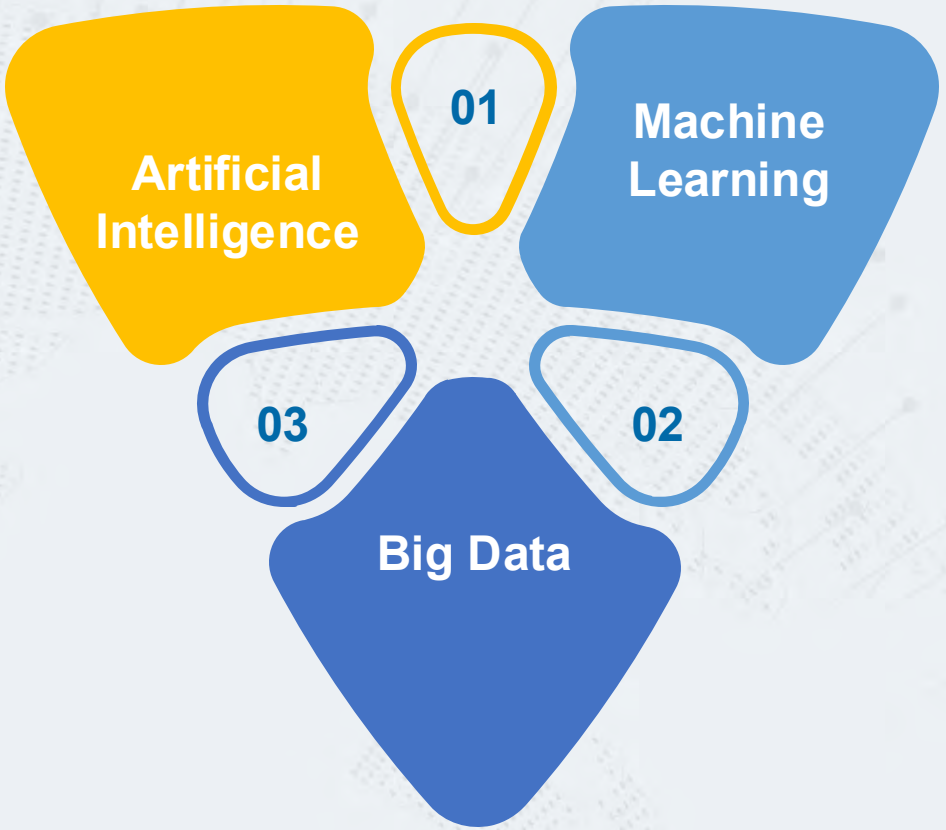
New Startup development in Francophone W.A (2020 – 2022)

West Africa Startup Investment outlook

Source Founders Factory



Startup Growth Driver

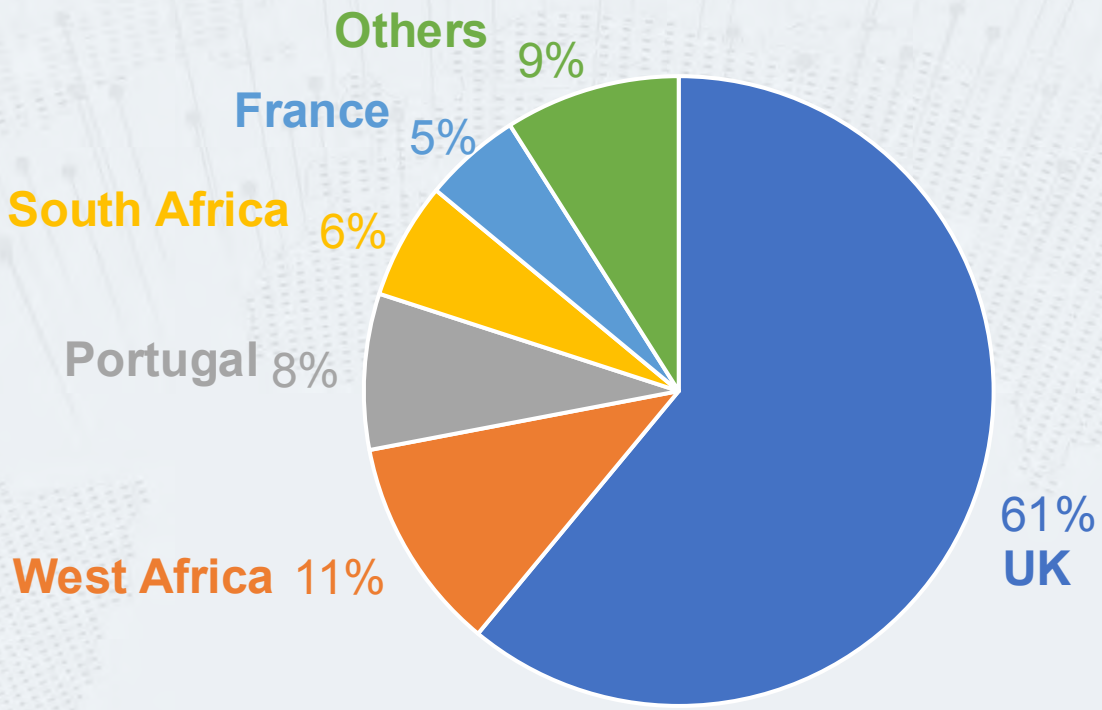


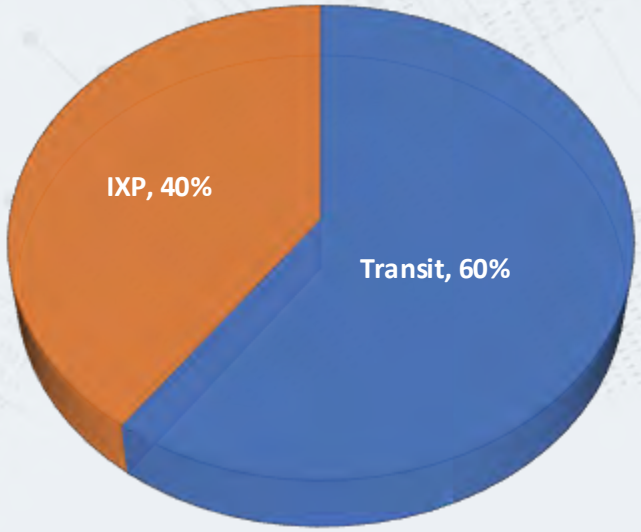
Traffic Direction Overview

Source: Telegeography

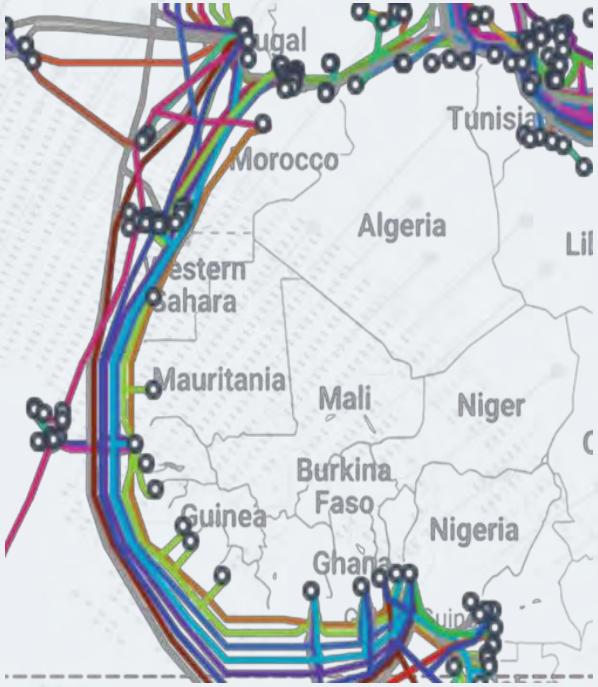
AF-CIX powered by DE CIX

International IP Traffic





Transit vs Peering



International Submarine cables

Source: Telegeography

SAT 3
2002 – 1.8Tbps
Benin - Cote D'Ivoire- Ghana-Nigeria- Senegal → Portugal

Mainone
2010- 8Tbps
Cote D'Ivoire- Ghana-Nigeria- Senegal → Portugal

Glo 1
2010 – 16Tbps
Nigeria- Ghana - Senegal → London

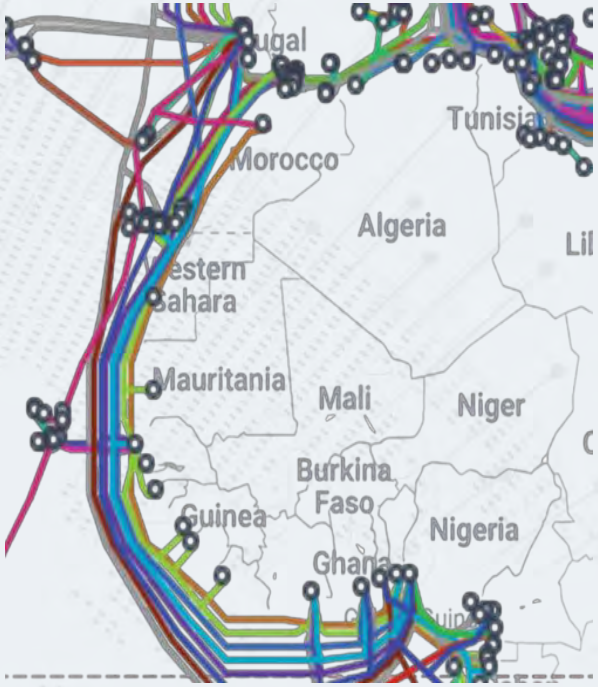
ACE
2012 – 20Tbps
Nigeria - Togo - Benin - Ghana - Cote D'Ivoire - Liberia - Guinea - Guinea-Bissau - Senegal - Mauritania → Portugal

WASC
2012 – 14.5Tbps
Cote D'Ivoire- Ghana-Nigeria- Senegal → Portugal

Elalink
2021-72Tbps
Cape Verde → Portugal

Equiano
2022 – 144Tbps
Nigeria - Togo → Portugal

2Africa
2025 – 180Tbps
Nigeria(Kwa Ibo – Lagos) - Ghana - Cote D'Ivoire - Senegal → Europe



Source: Telegeography

Regional Submarine cables

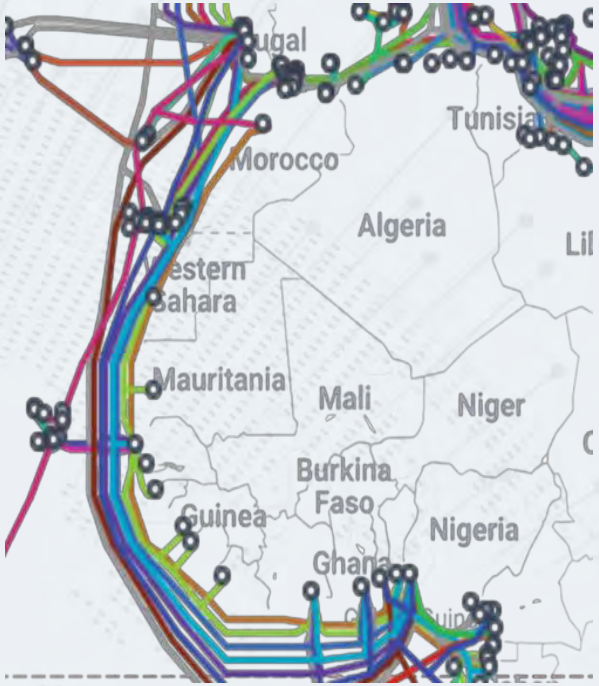
Source: Telegeography

Regional Submarine Cables

Marco Telecom | **2021** Benin – Togo – Abidjan → Morocco

NCSCS | **2021** Nigeria → Cameroon

SHARE | **2021** Cape Verde → Senegal



Intra-Country Submarine Cables

Cabo Verde

Phase 1 -- 1997
Phase 2 -- 2002
Phase 3 -- 2011

Terrestrial Connectivity

AF-CIX
powered by DE CIX

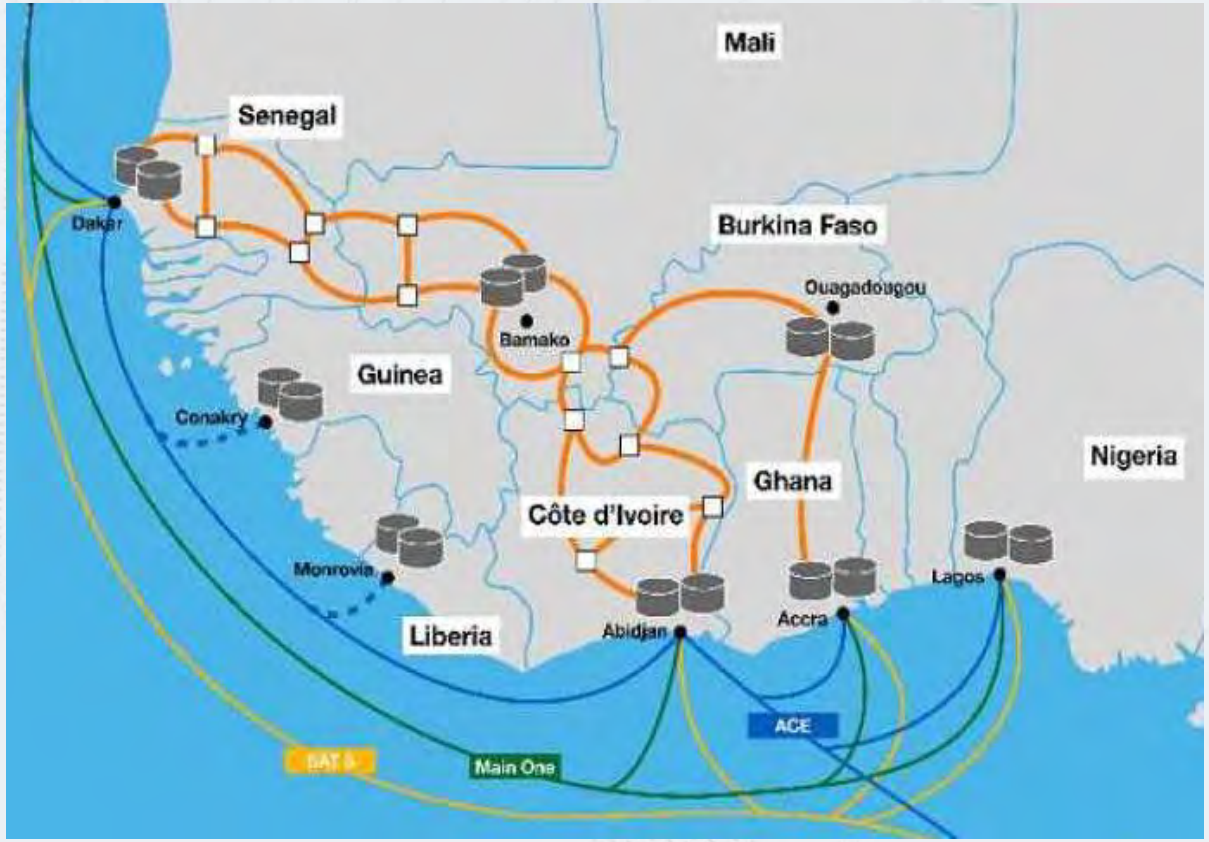
Challenges of Terrestrial Connectivity

- No regional terrestrial cable system
- Ease of doing business across boarders
- Politics

Solutions in Play

- Ongoing discussion among policy makers.
- Recurring stakeholders' engagement.
- Some individual efforts.

More Collaboration is encouraged



West Africa Communication Outlook: Nigeria

Mobile Communications

- 220 Million Subscribers
- 34,862 Base stations
- 127,294 Base Stations
- 289,270KM of microwave links
- 96,198KM terrestrial Optic Fiber
- 45%, Internet Penetration
- 50%, FTTx Coverage in Lagos
- FTTx, in **Lagos**, Abuja, Kano, Ibadan

MNO Subscribers

>85M MTN

61M glo

60M airtel

13M 9mobile

West Africa Communication Outlook: Nigeria

AF-CIX powered by DE CIX

Data Centers

- Uptime certified DCs
- tier –iv → 2
- tier-iii → 5
- Tier-ii → 1
- Uncertified

Lagos – Abuja – PH – Enugu - Kano

RACKCENTRE

Open Access DATA CENTRES

EQUINIX

DIGITAL REALTY

Terrestrial Backbone/ Access

- MNO dominated
- Government Infra.
- Broadband providers
- FTTH Available in Major Cities

Galaxy Backbone

MTN

airtel

21st Century

Broadbased

glo

KKONTech

WIOCC

EQUINIX

Cedarview

Internet via Satellite

- Starlink
- Coolliknk via Eutelsat
- Azercosmos via iSAT Africa
- Hyperia via YaClick by Hughes
- Phase3 via YaClick by Hughes

coollink.ng HIGH-SPEED INTERNET

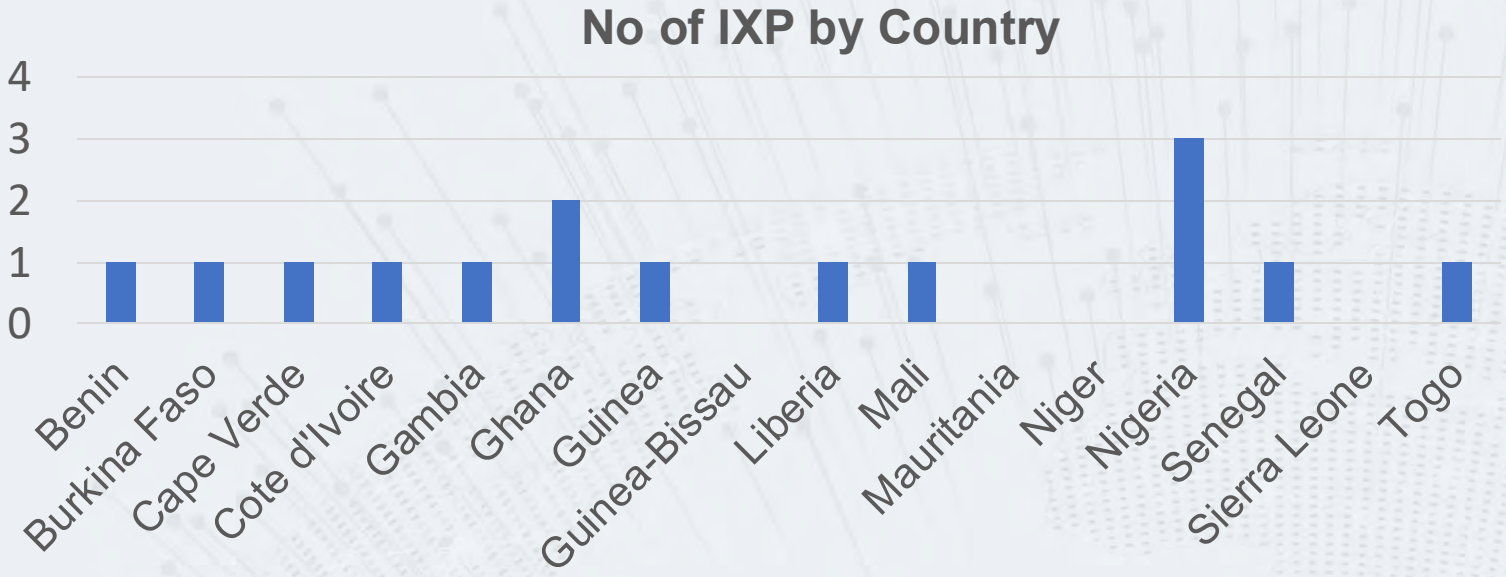
HYPERIA

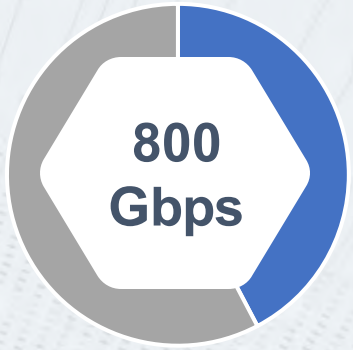
STARLINK

Phase3 telecom

azercosmos customized excellence

West Africa Internet Exchange Outlook





W.A Total IX Traffic

Driver for IXPs

- Low Latency
- Localization
- Reliability
- Sub-sea cut risk mitigation
- Cost

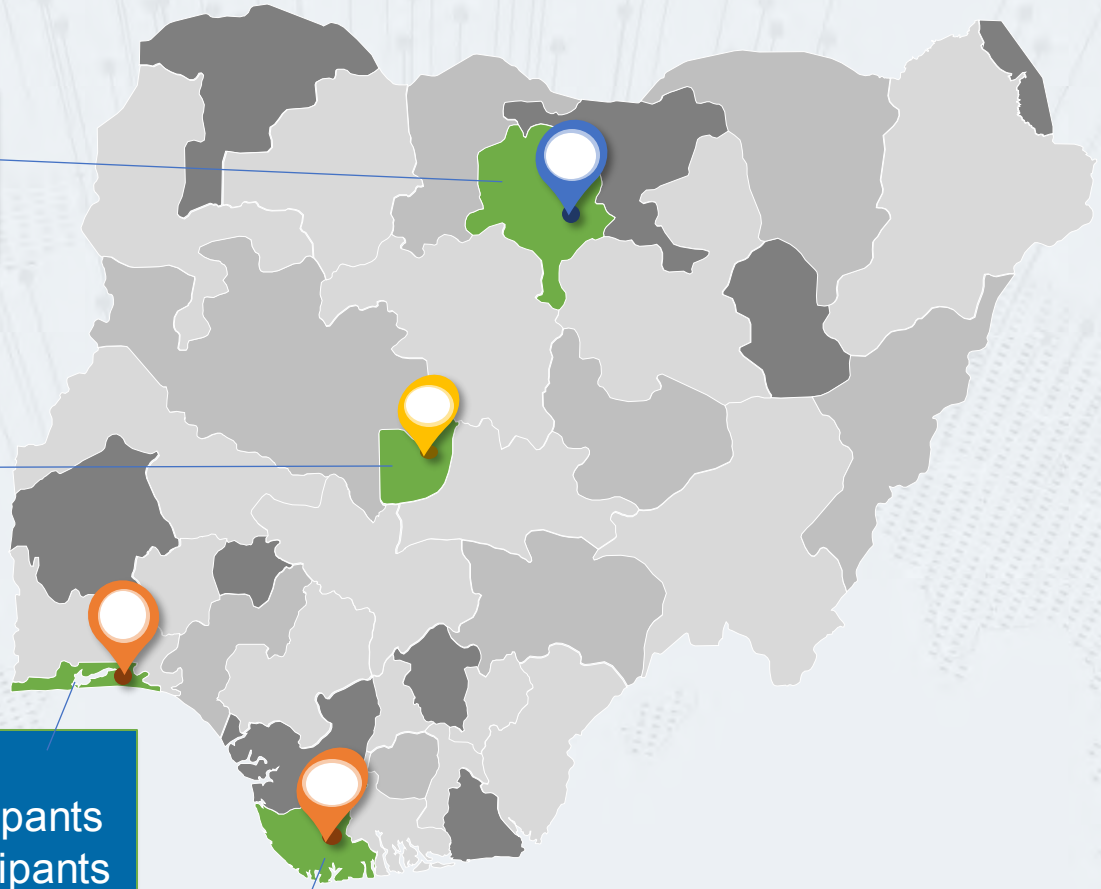
Content Dynamics

- E-commerce
- Social media
- Streaming
- Cloud
- Online Gaming/Betting
- Software and OS update

Content Opportunities

- Sports Streaming
- Live events
- Dedicated Local Movie streaming services
- Health care services
- e-Education platforms

West Africa Internet Exchange Outlook: Nigeria



Kano
IXPN
7 Participants

Abuja
IXPN
27 Participants

AF-CIX
- IXP
- Cloud OnRamp
- Cloud Interconnect

Lagos
AF-CIX – 34 Participants
AMS-IX – 38 Participants
IXPN – 126 Participants

Port Harcourt
IXPN
5 Participants

Lagos Traffic
≈700Gbps

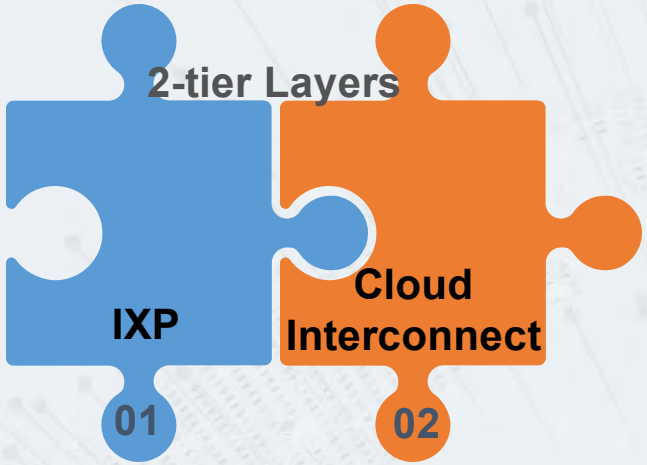
Abuja Traffic
≈5.6Gbps

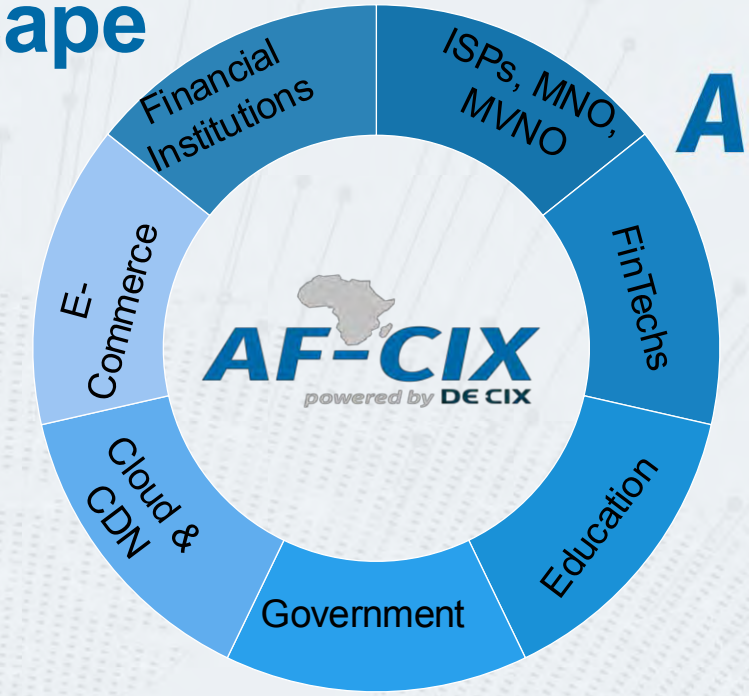
Kano Traffic
≈0.6Gbps

Largest IXP in West Africa

Fastest Growing

Expanding Interconnection Landscape





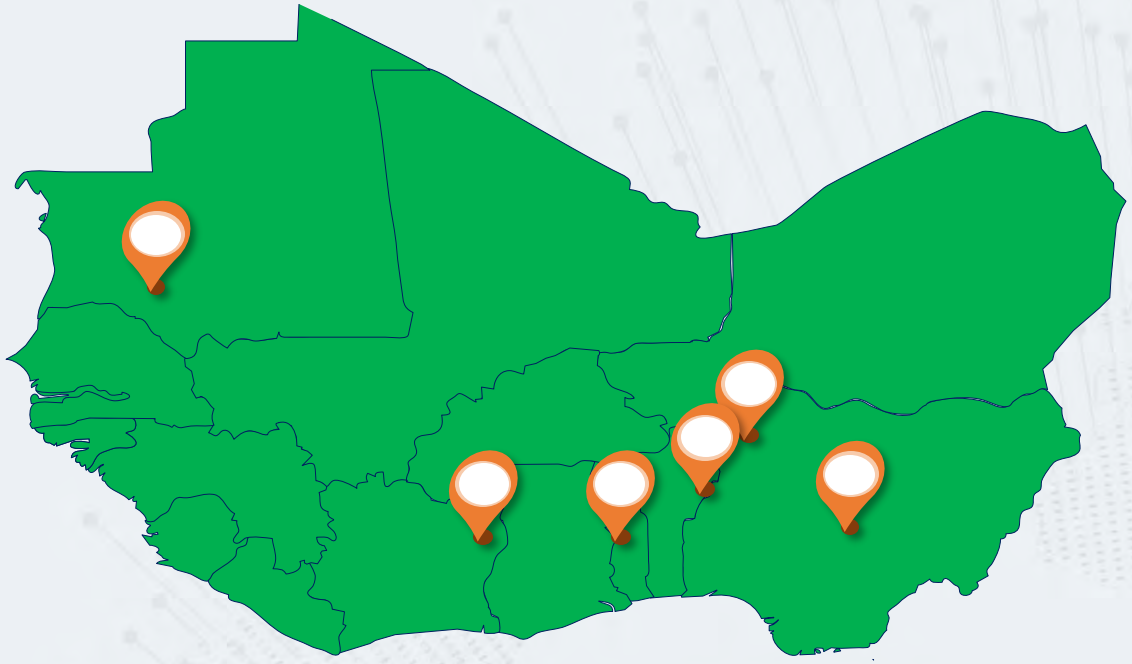
Infrastructure and Connectivity:

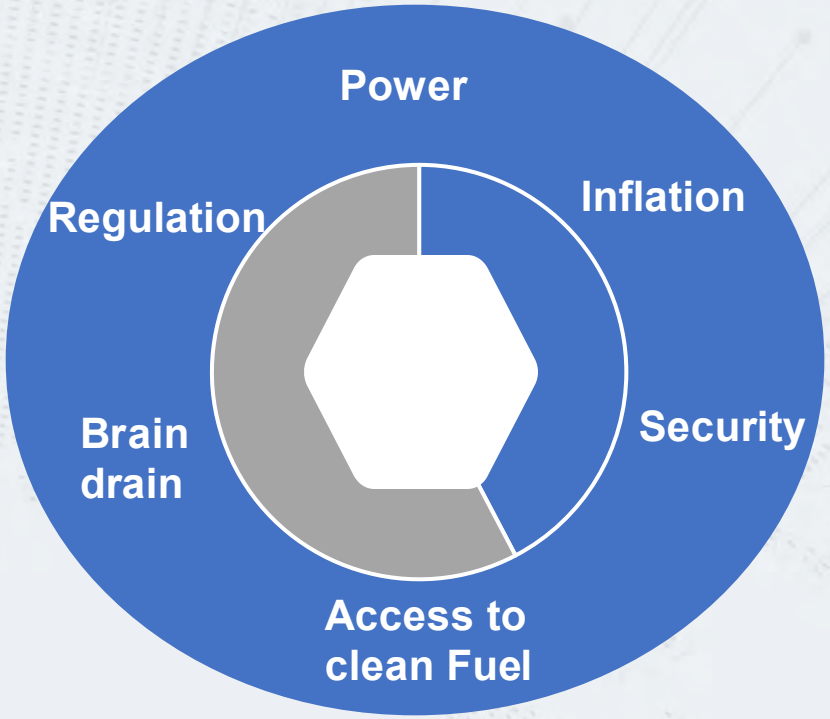
Grow National and Regional Access	Grow Local Content and Distribution	Create Resiliency and Redundancy

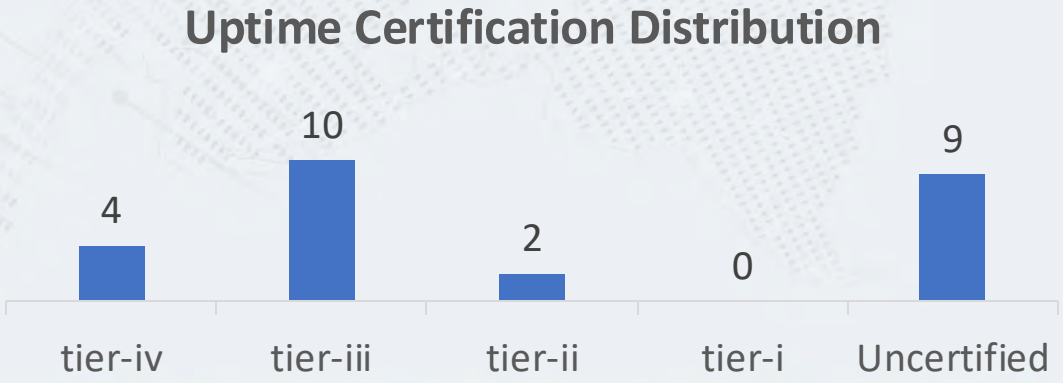
Create Incentives for Content Growth

Build Demand for Local Users

West Africa Data Center Overview







West Africa Data Center Overview

AF-CIX powered by DE CIX

DC Power Options in W.A

Grid

- Cheap
- Unavailable
- Unreliable

Gas

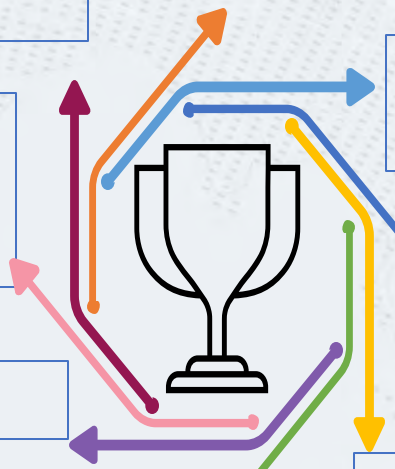
- Cost effective
- Green
- Reliable
- High Maintenance

Diesel

- Expensive
- Reliable
- High carbon
- High maintenance

Some DC Developments

- ST Digital - Togo & Cote DI'Voire DC
- Paix – Cote DI'Voire & Dakar DC
- ADC Ghana
- MTN tier-iv DC Park
- Rackcentre 12MW A.I Hyperscale RFS 2024
- Digital Realty 60MW expansion
- OADC $500M Exp.
- Airtel(Nxtra) 34MW



Challenges and Solutions

AF-CIX powered by DE CIX

Challenges

- LACK OF INFORMATION
- VANDALISM
- LACK OF CONTENT
- INTERNET OUTAGE
- CONNECTIVITY COST
- REGULATION
- LICENSING

Solutions

- KNOWLEDGE SHARING ACTIVITIES (NOGs)
- SHARED INFRASTRUCTURE
- IMPROVED COMMUNICATION AND COLLABORATION
- IMPROVED POLITICAL AWARENESS AND WILL
- NEW INFRASTRUCTURE AND HEALTHY COMPETITION
- STREAMLINING LICENSING MODEL

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