

Adding Academic Networks as an External KML Map Layer to the Web Version of the Africa Telecom Transmission Map

UbuntuNet Connect,
Johannesburg 18 November 2010.

Paul Hamilton, Director.
Hamilton Research Ltd.,
Bath Brewery, Toll Bridge Road,
Bath BA1 7DE, UK
Tel: +44 (0)1225 852554
Fax: +44 (0)1225 852558
hamilton.paul@btinternet.com



About us

Hamilton Research is a specialist provider of research, analysis and GIS cartographic services for telecom markets, and maintains a quarterly updated database of Africa's transmission networks.

We recently published the 2010 edition of the Africa Telecom Transmission Map and Datasets, showing the region's terrestrial fibre and microwave, satellite and submarine cable networks as at July 2010.

Hamilton Research undertakes customised research and consulting projects for a range of clients, with projects ranging from the research and production of maps-to-order, demand and feasibility studies, to the development of market metrics.

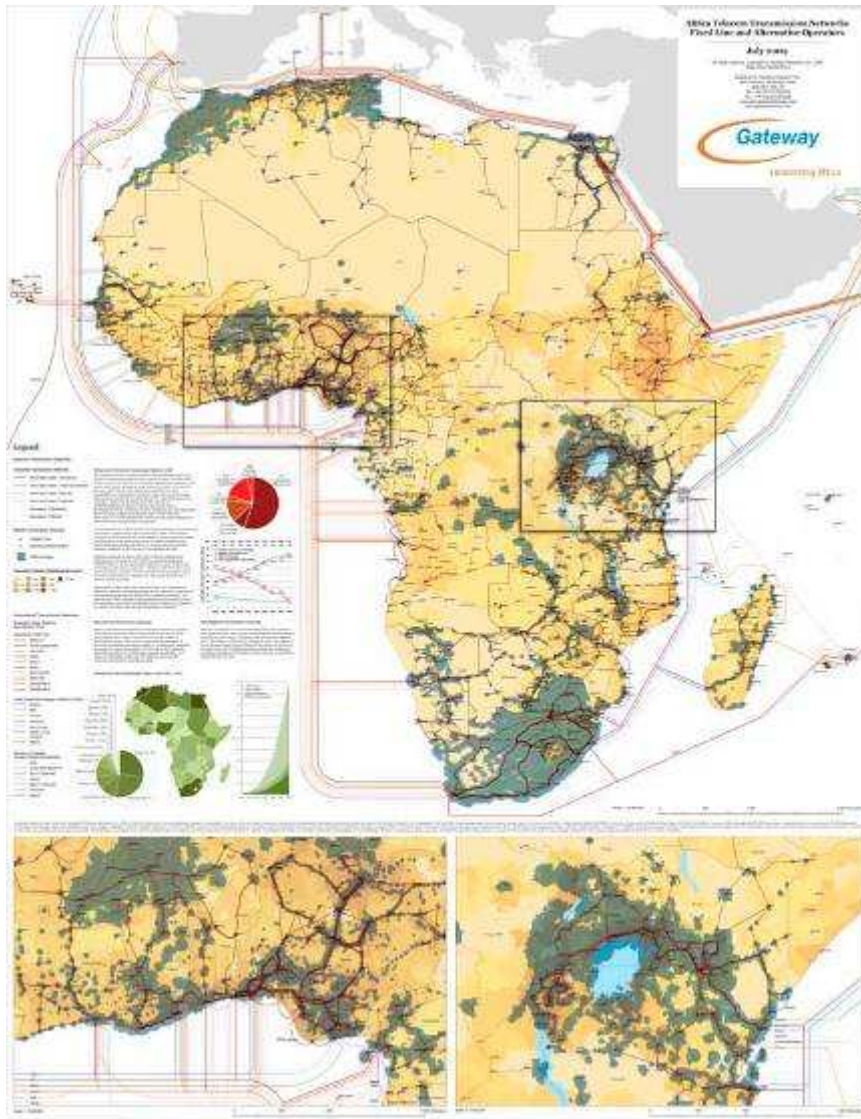
Paul Hamilton, Director.
Hamilton Research Ltd.,
Bath Brewery, Toll Bridge Road,
Bath BA1 7DE, UK
Tel: +44 (0)1225 852554
Fax: +44 (0)1225 852558
hamilton.paul@btinternet.com



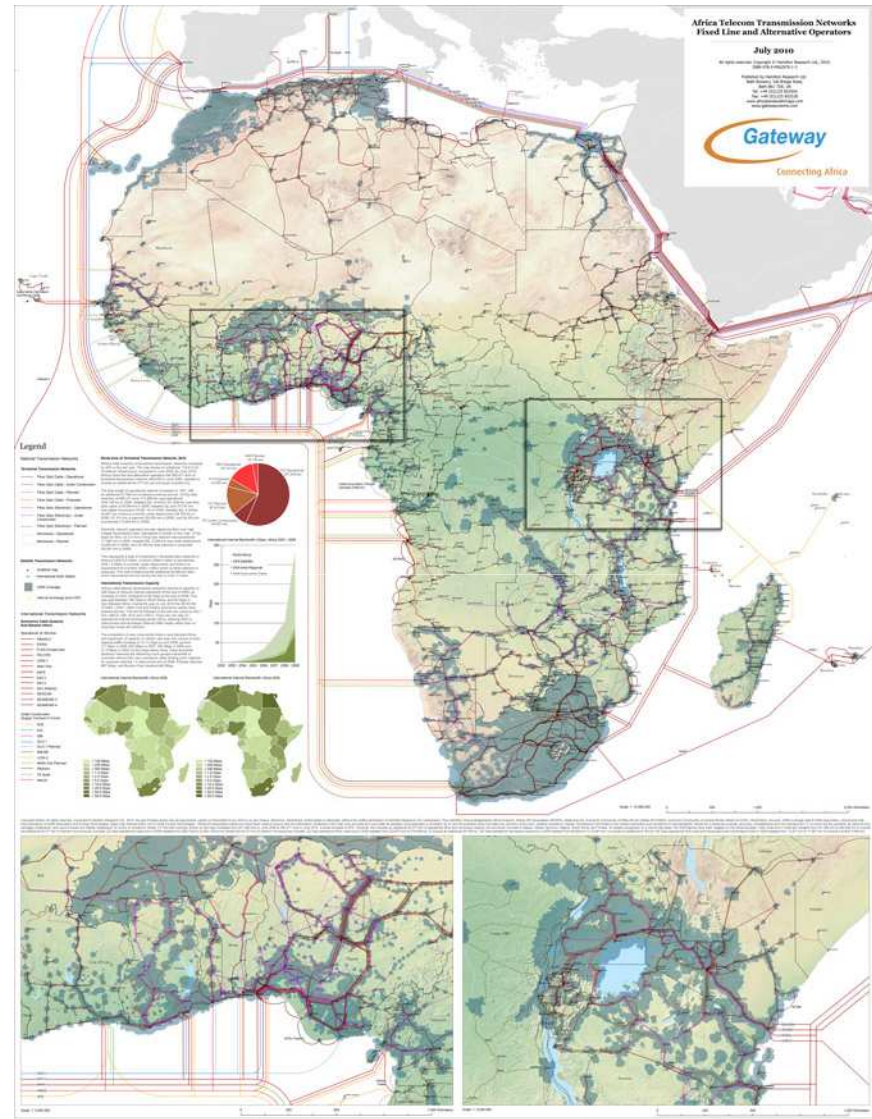
Adding Academic Networks as an External KML Map Layer to the Web Version of the Africa Telecom Transmission Map

1. About the Africa Telecom Transmission Map
2. Web-based Version of the Transmission Map
3. The UbuntuNet Alliance and Mapping
4. Adding KML Layer of Academic Networks as an overlay on the Transmission Map





Source: © Hamilton Research, 2009. www.africabandwidthmaps.com

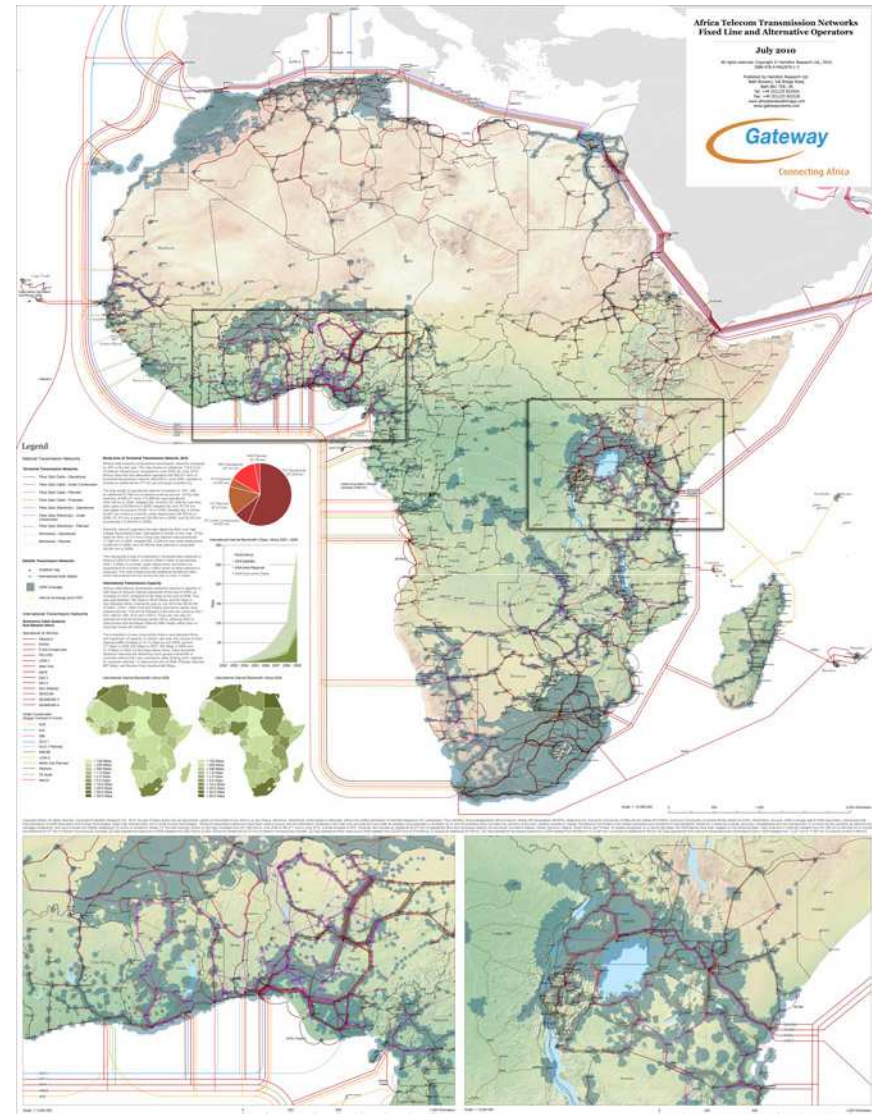


Source: © Hamilton Research, 2010. www.africabandwidthmaps.com

About the Transmission Map

Inventory

- 585,471-kms of terrestrial transmission network by July 2010.
- Laid end-to-end, that is enough to wrap around the earth 14.6 times.
- 465,659-kms in July 2009, a 26% increase in one year.
- In 1987, there was ~ 74,000-kms of microwave network.

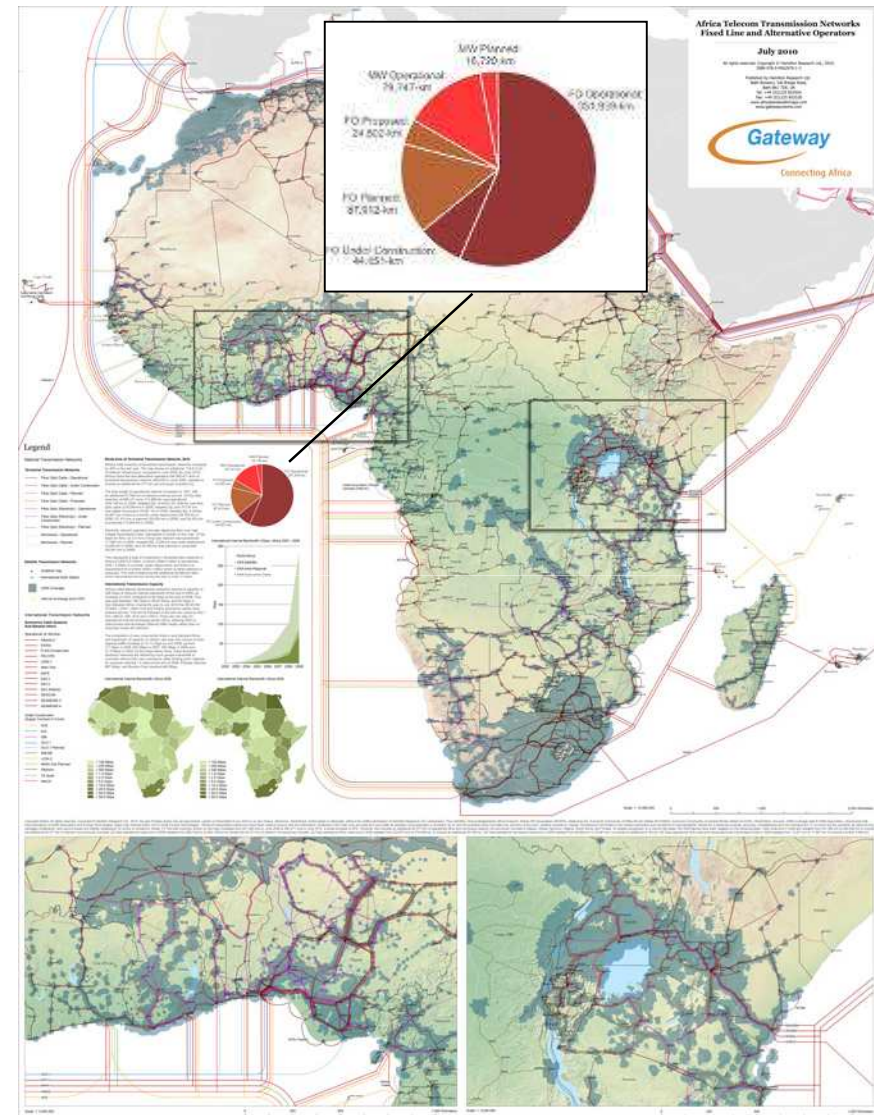


Source: © Hamilton Research, 2010. www.africabandwidthmaps.com

About the Transmission Map

Inventory

- Total length of operational network (rather than under construction, planned or proposed): 411,686-kms
- This was an increase of 57,560-kms compared to July 2009.
- Laid end-to-end, that is enough to wrap around the earth 1.5 times.
- In addition, a further 44,651-km was under deployment, at least 5,000-kms of which entered service during the third quarter.

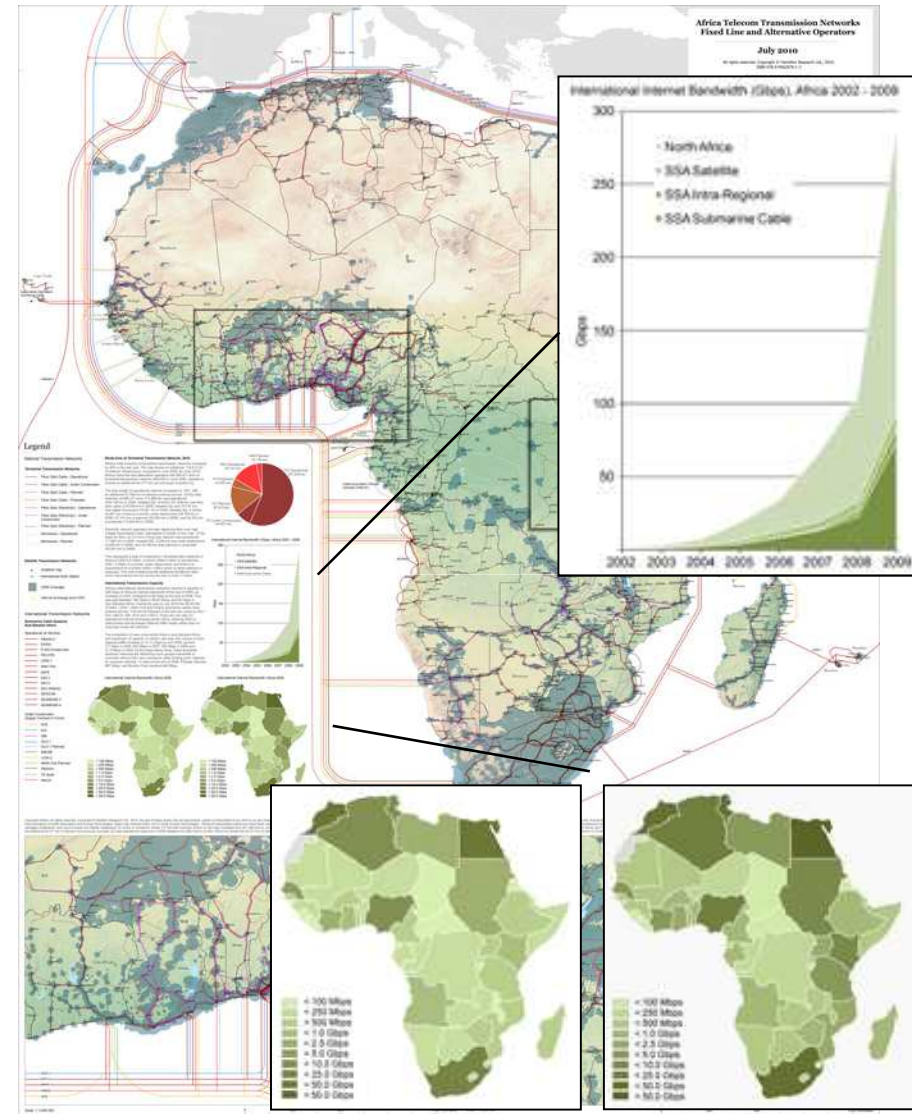


Source: © Hamilton Research, 2010. www.africabandwidthmaps.com

About the Transmission Map

Capacity

- Africa's international bandwidth > 300 Gbps Q1 2010, sub-Saharan Africa > 100 Gbps
- Cross-border networks more than doubled to > 10 Gbps by end 2009.
- Cross-border: STM-1s becoming 2 x STM-1, becoming STM-4 and beyond.
- Increased supply of international bandwidth bringing wholesale pricing down, as this lowers retail tariffs for fixed broadband and 3G is driving subscriber growth.



Source: © Hamilton Research, 2010. www.africabandwidthmaps.com

About the Transmission Map

A Brief Potted History...

- AITEC African Communications Infrastructure and Services Report 2002/3

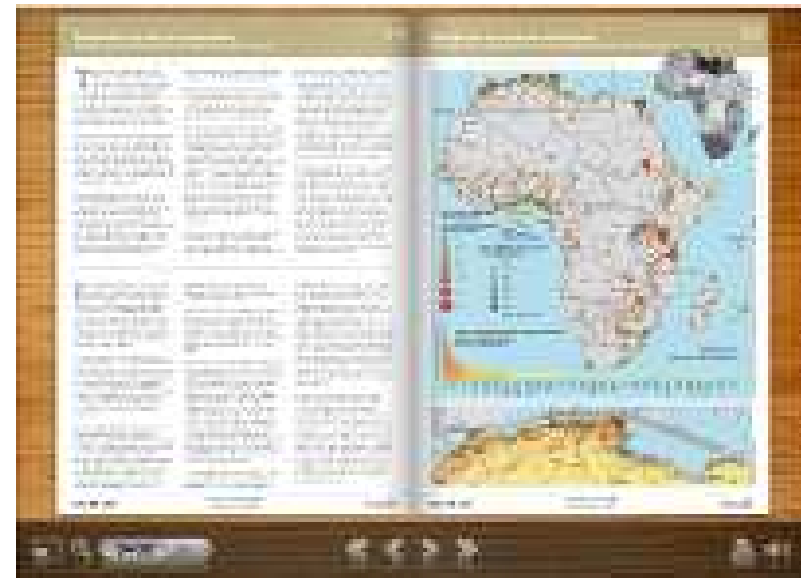
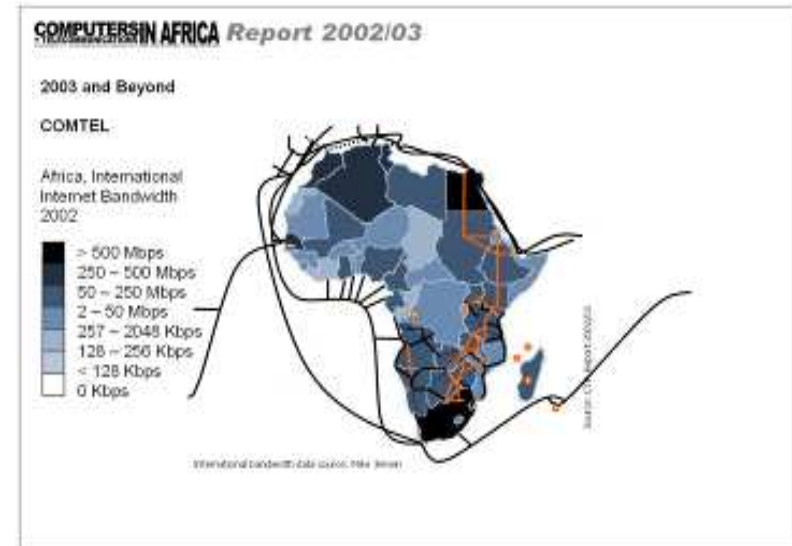
<http://www.africabandwidthmaps.com/downloads/Africa%20Connectivity%20Model%202003/>

- IDRC Acacia Atlas 2005

<http://www.idrc.ca/acacia>

Also available at

http://www.africabandwidthmaps.com/?page_id=78



Web-based Version of the Transmission Map

- We do not publish a high resolution electronic version of the map.
- Published an OpenLayers Javascript API version in Q3 2009.
- There are at least 9 different APIs, each with different functionality, and terms of service.
- The web version has been updated quarterly since Q3 2009.
- On average, each quarter there are several hundred changes to the underlying database.



All rights reserved. Copyright © Hamilton Research Ltd., 2009. Full citation and list of sources.

- Capacity ○ Fibre Long Haul ○ Fibre Metro ○ General ○ IXP
- Submarine Cable ○ Transmission Map

○ 2009, Q3

- Ghana: ZTE Awarded Contract To Build Globacom's National Transmission Backbone
- Mozambique: Vodacom Mozambique Deploys Fibre Backbone From Maputo to Beira
- South Africa: Dark Fibre Africa Completes Fibre From Mtunzini – Durban
- Zambia: Zamnet Establishes Cross Fibre Link With Telecom Namibia

○ 2009, Q4

- Burkina Faso: Ghana and Burkina Faso Sign Agreement To Close Cross-Border Fibre Connection
- Cameroon: Government Begins Deployment Of 3,200-km National Fibre Backbone Project
- Equatorial Guinea: GETESA Completes Submarine Cable Connecting Malabo to Mainland
- Ghana: Suburban West Africa Commissions Fibre Link Between Nigeria and Ghana

Web-based Version of the Transmission Map

We publish three versions in the client area of the [Africabandwidthmaps](http://Africabandwidthmaps.com) site:

➤ Rolling transmission map

Contains:

- Category transmission map
- News items streamed through the map

➤ Silver transmission map and dataset subscription.

Contains the above plus:

- Labels for nodes (> 5,000)
- Route-km dataset
- Investment requirement dataset
- Network reach dataset

➤ Gold transmission map and dataset subscription.

Contains the above plus:

- Labels for operators (> 5,000)
- Int'l Internet bandwidth dataset



All rights reserved. Copyright © Hamilton Research Ltd., 2009. Full citation and list of sources.

- Capacity ○ Fibre Long Haul ○ Fibre Metro ○ General ○ IXP
- Submarine Cable ○ **Transmission Map**

○ 2009, Q3

- Ghana: ZTE Awarded Contract To Build Globacom's National Transmission Backbone
- Mozambique: Vodacom Mozambique Deploys Fibre Backbone From Maputo to Beira
- South Africa: Dark Fibre Africa Completes Fibre From Mtunzini – Durban
- Zambia: Zamnet Establishes Cross Fibre Link With Telecom Namibia

○ 2009, Q4

- Burkina Faso: Ghana and Burkina Faso Sign Agreement To Close Cross-Border Fibre Connection
- Cameroon: Government Begins Deployment Of 3,200-km National Fibre Backbone Project
- Equatorial Guinea: GETESA Completes Submarine Cable Connecting Malabo to Mainland
- Ghana: Suburban West Africa Commissions Fibre Link Between Nigeria and Ghana

Africa Bandwidth Maps

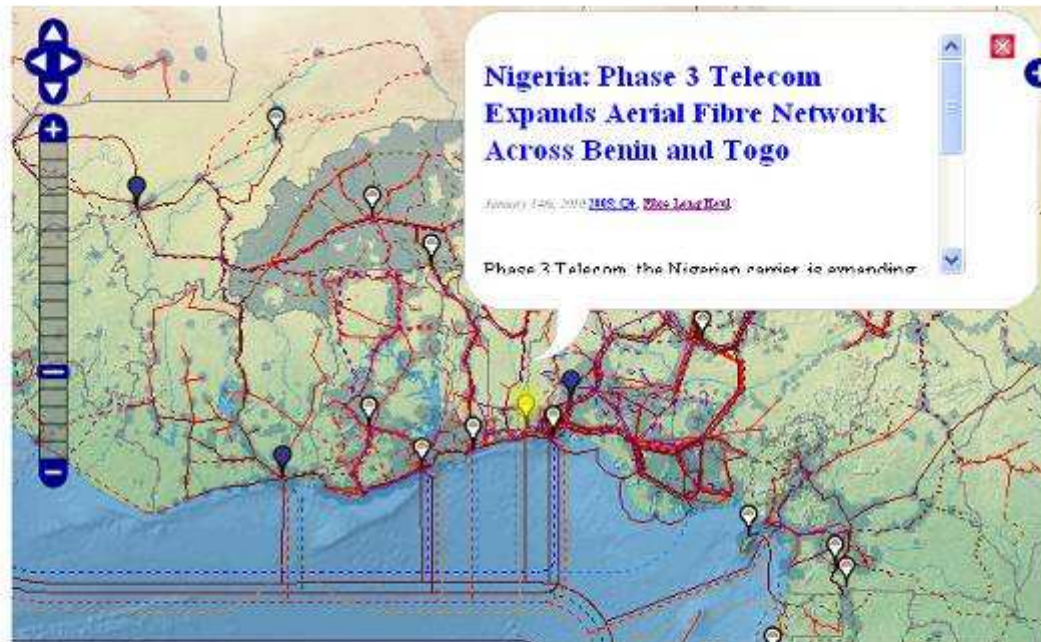


[home](#) [blog](#) [map library](#) [research](#) [products](#) [client access](#) [about us](#) [contact](#)

Rolling Transmission Map

search

- Home
- Africa Transmission Map
 - Large Map
 - Contents
 - Features
 - Order
 - Terms and Conditions
 - Web Version
 - Silver Map and Dataset
 - Gold Map and Dataset
- My Services
 - Articles
 - Rolling Transmission Map
 - Silver Transmission Map
 - Gold Transmission Map
 - Category Transmission Map
 - Route-Kms (2010)
 - Route-Kms Analysis
 - Recent Contracts
 - Investment
 - Bandwidth Summary
 - Fibre Reach (Operational)
 - Fibre Reach (Under Const)
 - Fibre Reach (Planned)
 - Bandwidth (Total)
 - Bandwidth (Sub-Cable)
 - Bandwidth (Cross Border)
 - Bandwidth (Satellite)
 - Sources



All rights reserved. Copyright © Hamilton Research Ltd., 2009. Full citation and list of sources:

Legend

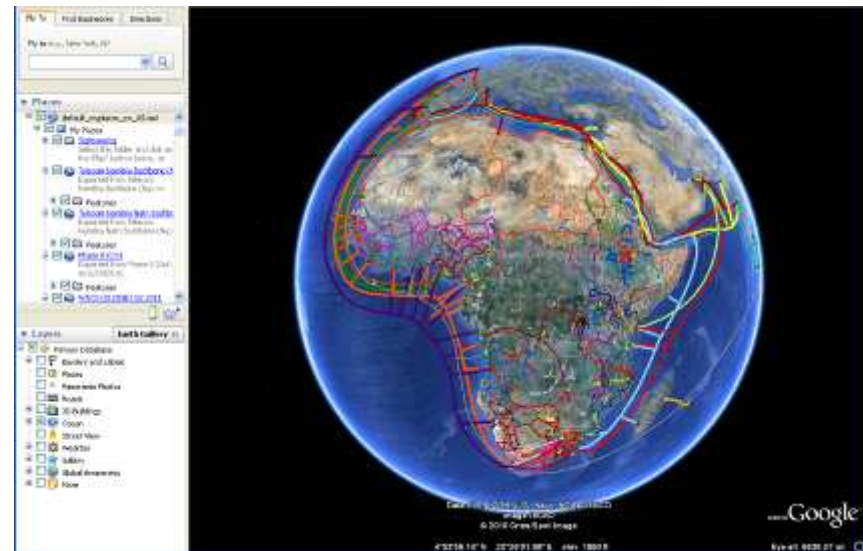
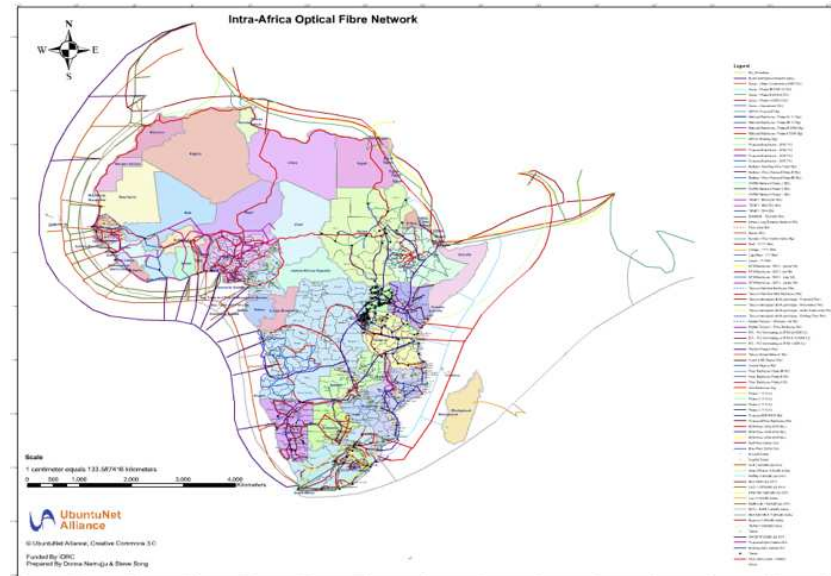
- 2010, Q3
- Fibre Long Haul
- Submarine Cable
- Fibre Metro

List of Articles Shown in Current Map View

- Cameroon: CAMTEL Completes 450-Km Southern Fibre Optic Route To Kye Osi
- Nigeria: MTN Nigera Completes Backbone From Maidugun to Gombe
- Niger: UEMOA Announces Fibre Link To Be Built Between Niger and Burkina

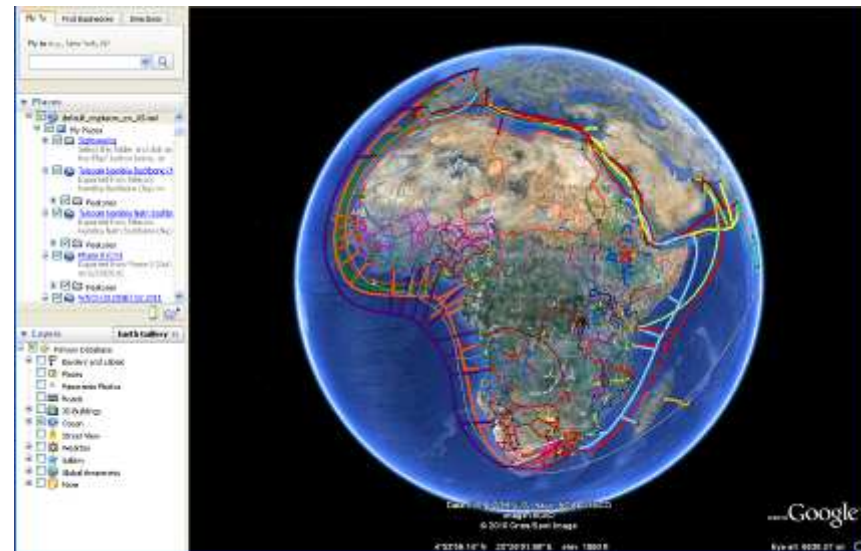
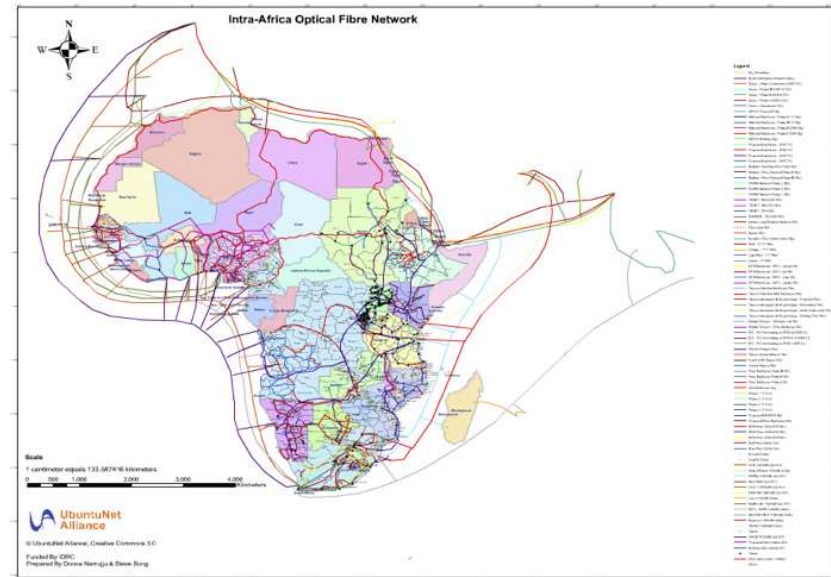
The UbuntuNet Alliance and Mapping

- The development of this RREN and NREN networks depends on the availability of fibre transmission networks within and between different countries in order to interconnect Higher Education Institutions (HEIs), NRENs, and RRENs to each other.
- Developed fibre map of Africa, published in July 2010 in KML and PDF format.



The UbuntuNet Alliance and Mapping

- Higher Education Institutions (HEIs) as a point layer (nodes)
- National Research and Education Networks (NRENs) as a line layer
- Regional Research and Education Networks (RRENs) as a line layer



Out of the 51 HEIs surveyed:

- 14 are in cities already served by submarine cable
- 27 are in cities connected by fibre optic networks to submarine cable
- 10 are located beyond reach of fibre, can be served by satellite only

2008

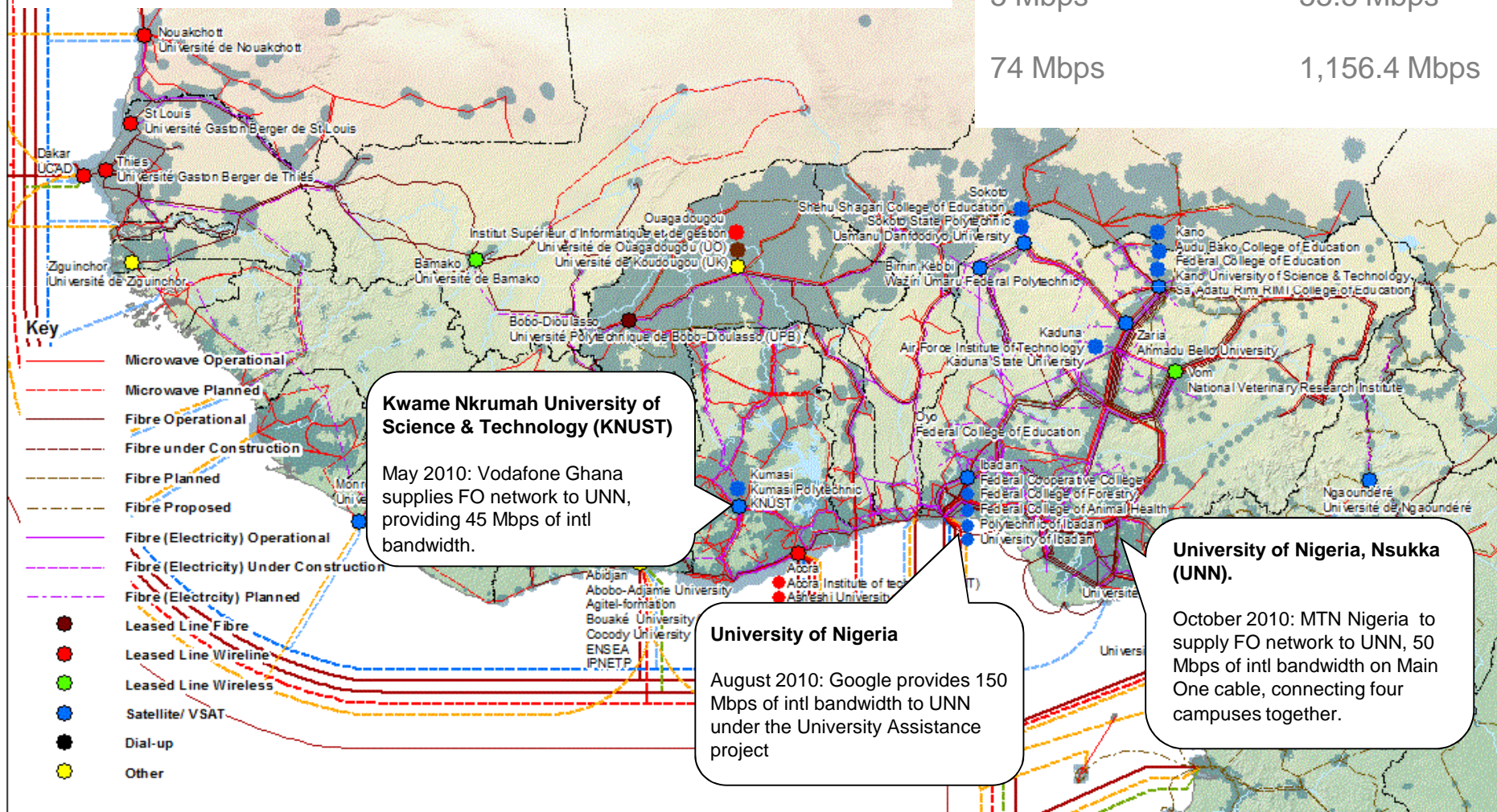
2013

24.3 Mbps
44.4 Mbps
5 Mbps

482.1 Mbps
620.8 Mbps
55.5 Mbps

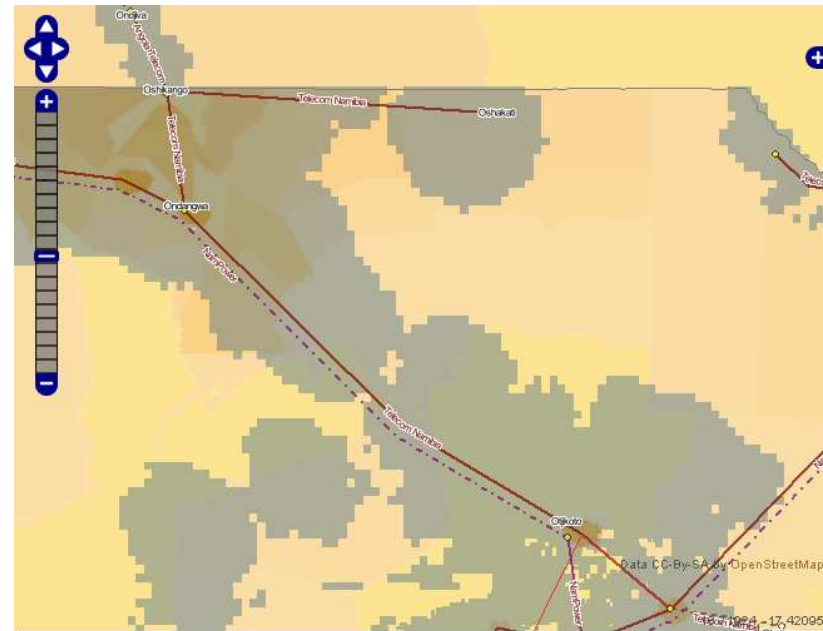
74 Mbps

1,156.4 Mbps



Adding KML Layer of Academic Networks as an overlay on the Transmission Map

- Web version supports the loading of KML files as selectable map overlay(s).
- These KML files can be hosted on our web server, or pulled in from another server.
- External KML layer can therefore be maintained externally.
- KML supports a number of features, so you can attach and display data on links or nodes for example.



All rights reserved. Copyright © Hamilton Research Ltd., 2010. Full citation and list of sources

- Capacity ○ Fibre Long Haul ○ Fibre Metro ○ General ○ IXP
- Submarine Cable ○ Transmission Map

○ 2009, Q3

- Ghana: ZTE Awarded Contract To Build Globacom's National Transmission Backbone
- Mozambique: Vodacom Mozambique Deploys Fibre Backbone From Maputo to Beira
- South Africa: Dark Fibre Africa Completes Fibre From Mtunzini – Durban
- Zambia: Zamnet Establishes Cross Fibre Link With Telecom Namibia

○ 2009, Q4

- Burkina Faso: Ghana and Burkina Faso Sign Agreement To Close Cross-Border Fibre Connection
- Cameroon: Government Begins Deployment Of 3,200-km National Fibre Backbone Project
- Equatorial Guinea: GETESA Completes Submarine Cable Connecting Malabo to Mainland

○ Ghana: Suburban West Africa Commissions Fibre Link Between Nigeria and Ghana

Adding KML Layer of Academic Networks as an overlay on the Transmission Map

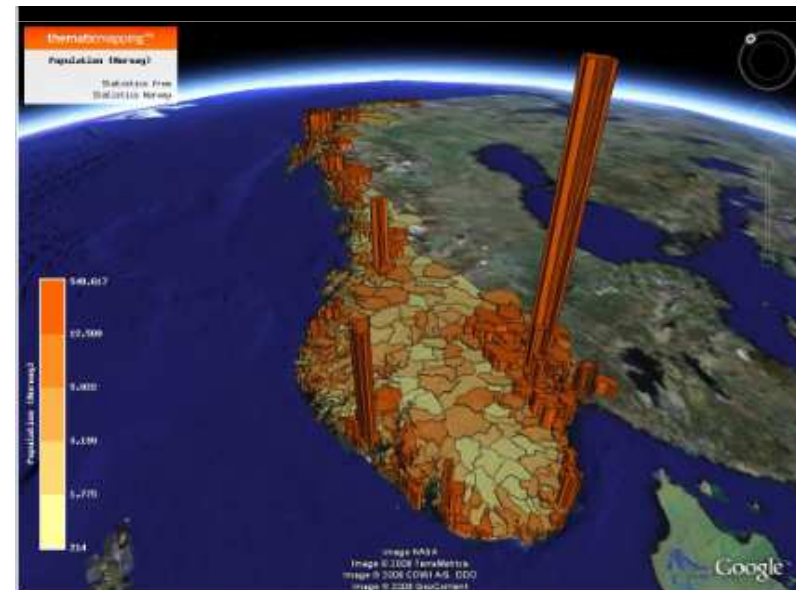
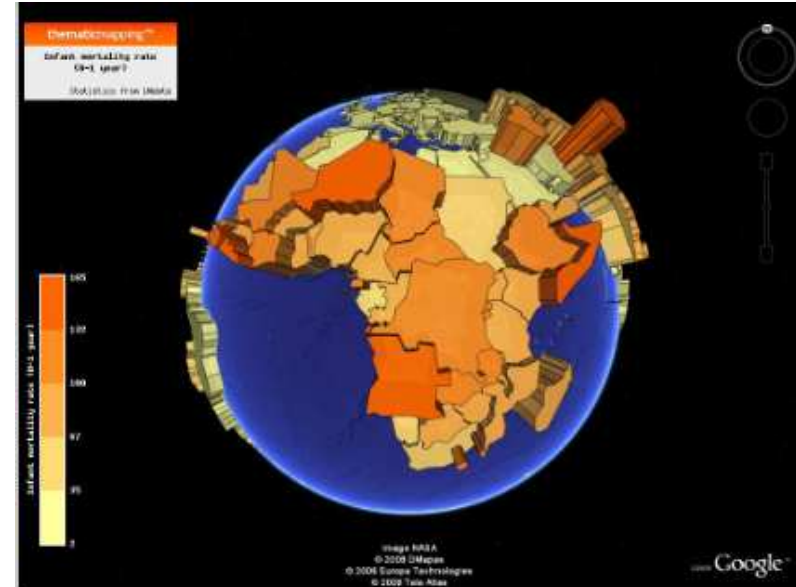
Plus lots of other cool KML stuff too..

- Prism maps
- Chloropleth maps
- Scalable image icons

Other tools in OpenLayers:

- Measure distances
- Search map for places, HEIs, links etc
- Add drawing tools to sketch and share plans

And so on..



www.africabandwidthmaps.com

Paul Hamilton, Director.
Hamilton Research Ltd.,
Bath Brewery, Toll Bridge Road,
Bath BA1 7DE, UK
Tel: +44 (0)1225 852554
Fax: +44 (0)1225 852558
hamilton.paul@btinternet.com



www.africabandwidthmaps.com