

Africa's Next Growth Surprise: Infrastructure



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SUB-SAHARA
CAPITAL

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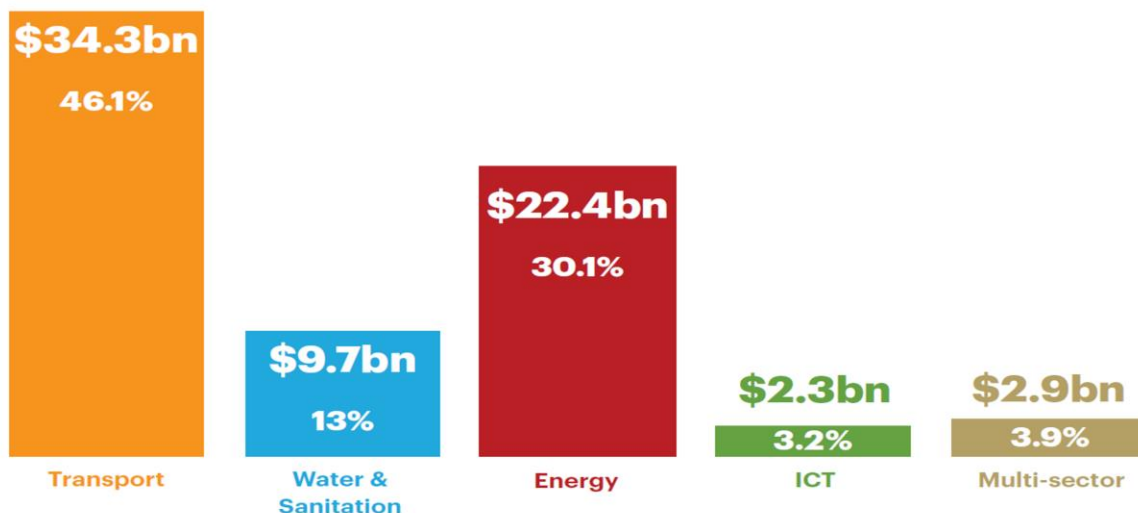
Introduction

The skeptics are back. Africa has been one of the fastest growing regions in the world for the last fifteen years, but as usual nobody believes it can continue. Africa's surprising growth in the late 1990's was explained in hindsight as just the natural result of coming off of a low base. Anybody can grow when you are coming from zero, but it won't continue. Then for the last decade Africa's growth has been attributed to the global commodity boom. The criticism is that Africa just rode the coattails of China's commodity demand. Take away the mining and energy investment and all the associated tax revenues and jobs and Africa has no leg to stand on and will crash. Other than oil and rocks Africa has nothing to offer the world and cannot compete in the modern high tech world. All those young Africans will grow up to find they have no jobs. The stock market reflects this view and African stocks are down 35% over the last two years. Investors are selling out of Africa and are no longer interested. Unfortunately, they are about to miss out on Africa's next growth surprise.

The next driver of Africa's growth is already on the way. Africa is undergoing the largest infrastructure upgrade in its history. All across the continent railroads, airports, roads, container terminals, power stations and fiber optic networks are under construction. In 2014 \$75bn of projects were financed across transportation, energy, water sanitation and technology.

The current projects will have a long-term transformational effect on the economy. Improved transport and power infrastructure will reduce the time and cost to move goods and people within Africa. New industries will grow that could never exist in areas that were previously isolated and without power. Africa's economies will diversify away from mining and oil. Trade within Africa will boom and open up new markets to African companies. Africa will also connect to the rest of the world in a way it never has before.

Total Funding by Sector



Unlocking the interior

Africa's new railroad-port logistic corridors are a game changer. They will unlock the vast interior of Africa and reduce the time and cost of trucking goods long distances on poor roads. For example, it can take a truck 20 days to travel the congested roads from the port of Mombasa to Kampala, or 7 days to travel from Lusaka to Durban. The following are some of the transformational rail and port projects under construction.



Africa's new railroads

Mombasa-Nairobi railroad

China Road and Bridge is constructing a 609km standard gauge railroad between Kenya's Mombasa port and Nairobi. It will be completed in December 2017. The railroad will transport 22mn tons/year and will move 40% of Mombasa Port's expected 2035 throughput. The longer term plan is to connect the railroad Westward to Uganda and Rwanda. This will be Kenya's first new railroad since 1924.

MOMBASA RAILWAY STATION



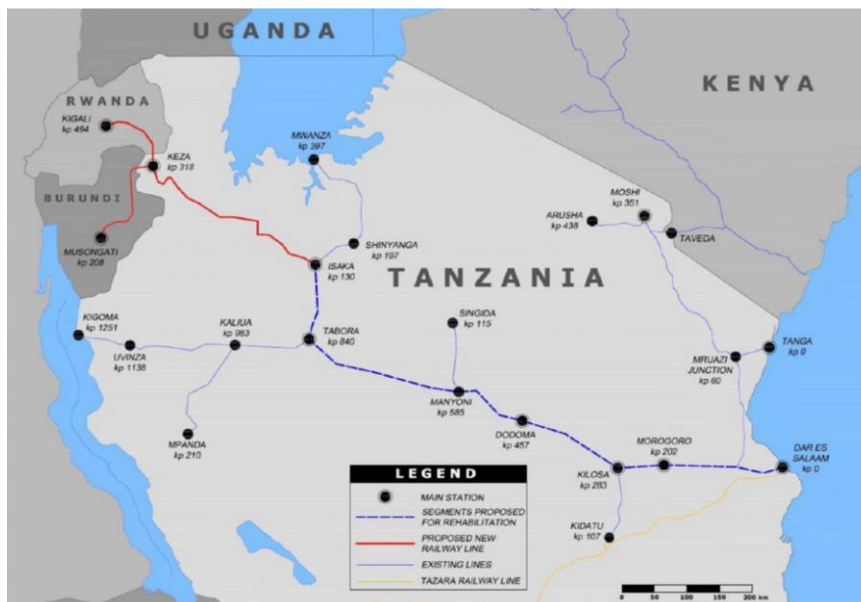
Addis Ababa-Djibouti railroad

Ethiopia just completed the construction of a 756km railway from the capital of Addis Ababa to the port of Djibouti. The railroad was built in 36 months by China Railway Group (CREC).



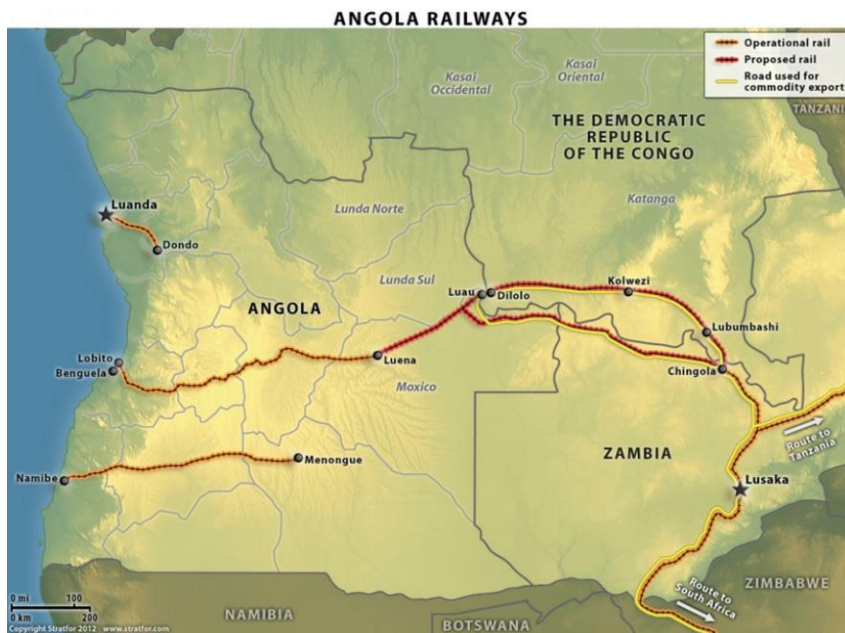
Dar es Salaam-Isaka railroad

Tanzania is accepting indications of interest to build a modern 1,600km railroad connecting the port of Dar es Salaam with the interior city of Isaka. The railroad will eventually extend further to Burundi and Rwanda. Like Kenya it is also Tanzania's goal to become a logistics hub for Eastern Africa.



Benguela-Luau railroad

Angola's recently completed 1,300km Benguela railroad connects the port of Lobito to the town of Luau on the border of Angola and The DRC. The railroad was constructed by China Railways Group. The goal is to connect the Benguela railroad to Zambia and eventually all the way across to Tanzania creating a new coast to coast transport corridor in Southern Africa. If connected with Zambia the Benguela railroad would be a much faster way to move copper out of Zambia. Zambian copper is currently trucked an enormous 2,400km to the port of Durban.



Nacala-Moatize railroad

Brazilian mining firm Vale has completed a 912km railroad linking the port of Nacala in Mozambique to the inland coal fields in Moatize. The railroad cost \$4.5bn and will transport 22mn tons of cargo a year of which 18mn will be coal. The railroad opens up the potential to expand west and connect to Zimbabwe.



Tangier-Kenitra high speed railway

In 2018 Morocco is expected to complete its 200km high speed railway connecting Tangier, Rabat and Kenitra. The new railroad is meant to provide extra capacity to Morocco's extensive rail network. Passenger traffic growth has been especially strong and ONCF the rail operator has had to limit freight traffic to nighttime hours.



Lagos-Kano railway and Lagos-Calabar railway

Nigeria has two mega rail projects connecting the port city of Lagos to Kano in the North and Calabar in the Southeast. The Lagos-Calabar line is 1,400km and will cost \$12bn. China Railway Construction President Zhang Zongyan says the Calabar line is the largest overseas Chinese construction project ever contracted. The Lagos-Kano link is 1,300 km and will cost \$8.3bn. The 186km segment from Abuja to Kaduna was just completed.



Port Expansions

Africa is also upgrading and expanding its crowded and inefficient ports. Bigger ships will be able to access the ports and turnaround times will fall, further reducing transport costs in Africa.

Lekki Deep Sea Port

Anyone who has been to Nigeria's chaotic Apapa port will appreciate the significance of this new 2.5mn container/year port. The project will cost \$1.5bn and is expected to be completed by 2018. Financing is approved and the port is expected to be completed by 2018. The port will connect to the Kano and Calabar rail lines to create a modern logistics hub.



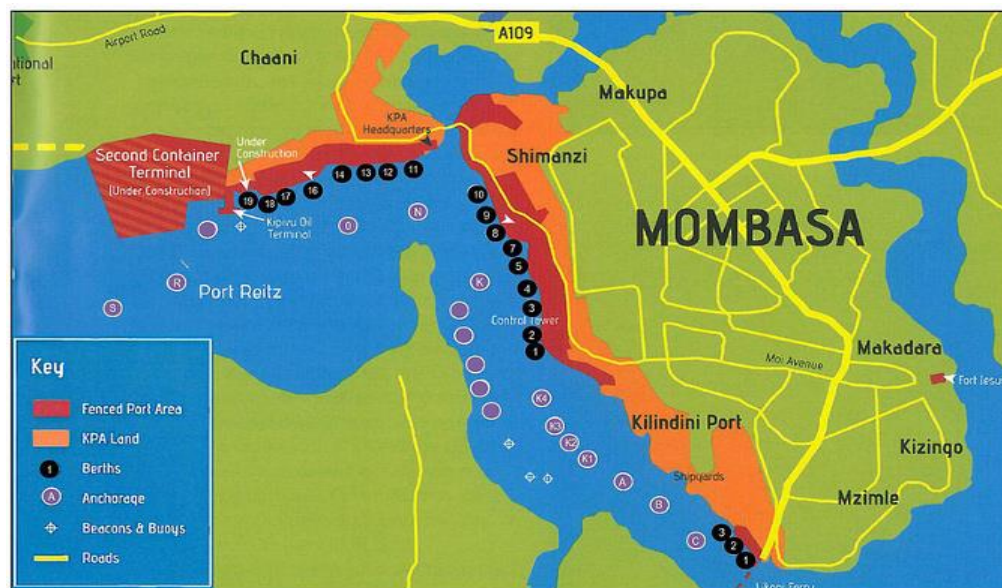
Walvis Bay expansion

In Namibia the Walvis Bay port servicing Southern Africa is expanding from 250,000 TEU to 600,000 TEU. Walvis Bay is positioning itself to be a leading logistics corridor for shipments to Botswana, Zimbabwe and Zambia.



Mombasa port expansion

Kenya's Mombasa port is the key port serving a vast region 140mn people in East Africa. But the port is at full capacity. Kenya Port Authority has obtained \$324mn in financing to deepen the port and add a new quay. By 2018 the port will be able to handle Panamax ships and throughput will increase from 1.6mn TEU to 2mn TEU. The port will also connect to Kenya's soon to be completed standard gauge railroad.



Bagamoyo Mega Port

Tanzania has just started construction on a new \$10bn mega-port in the fishing village of Bagamoyo 75km north of Dar es Salaam. When completed the port will be the biggest port in Eastern Africa and is expected to eventually handle an ambitious 20mn TEU/year by 2045. For reference the Port of Los Angeles handled 7.9mn TEU in 2013. The combination of the port and Tanzania's new rail network is intended to create the dominant logistics hub in East Africa. Financing was provided by the Oman government and China Merchants Holding International.



Suez Canal expansion

Egypt just completed an \$8bn expansion of the Suez Canal. The expansion will add 72km of new channels and bypasses which should eventually increase capacity from 49 to 97 ships a day by 2023. Waiting times will fall from 11 hours to 3.

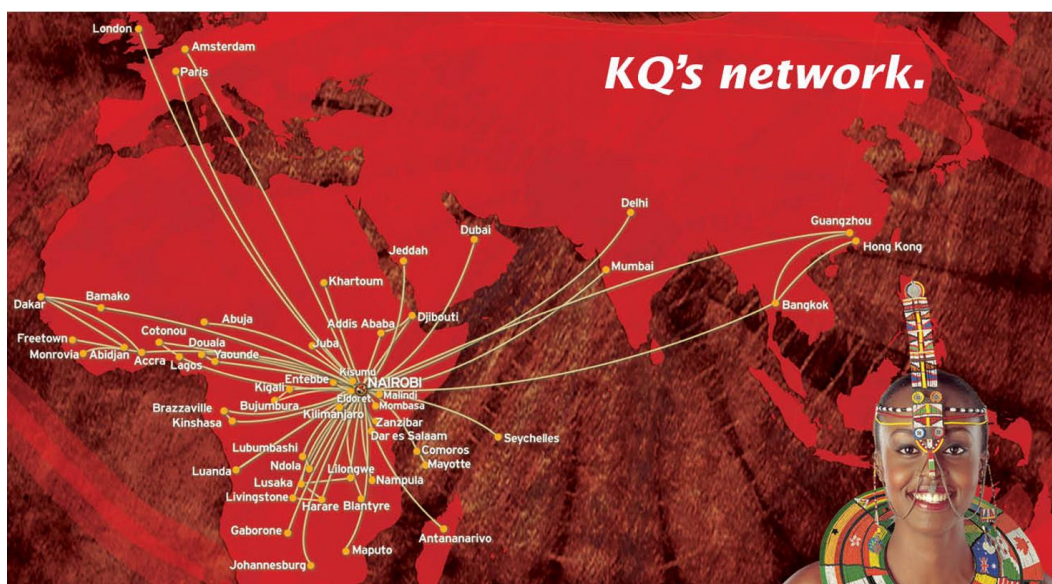


Africa's airport hub networks

Africa is also modernizing and expanding its airports. Cities such as Addis Ababa, Nairobi and Johannesburg are becoming regional hub networks with an increased number of direct connections between African cities. This is a big transformation for African air travel. Connecting between cities in Africa used to be difficult and might involve connecting to a hub outside Africa such as London, Dubai or Istanbul. The development of direct routes within Africa will lower the cost and increase the frequency of air travel. The following are a few of the new airports under construction.

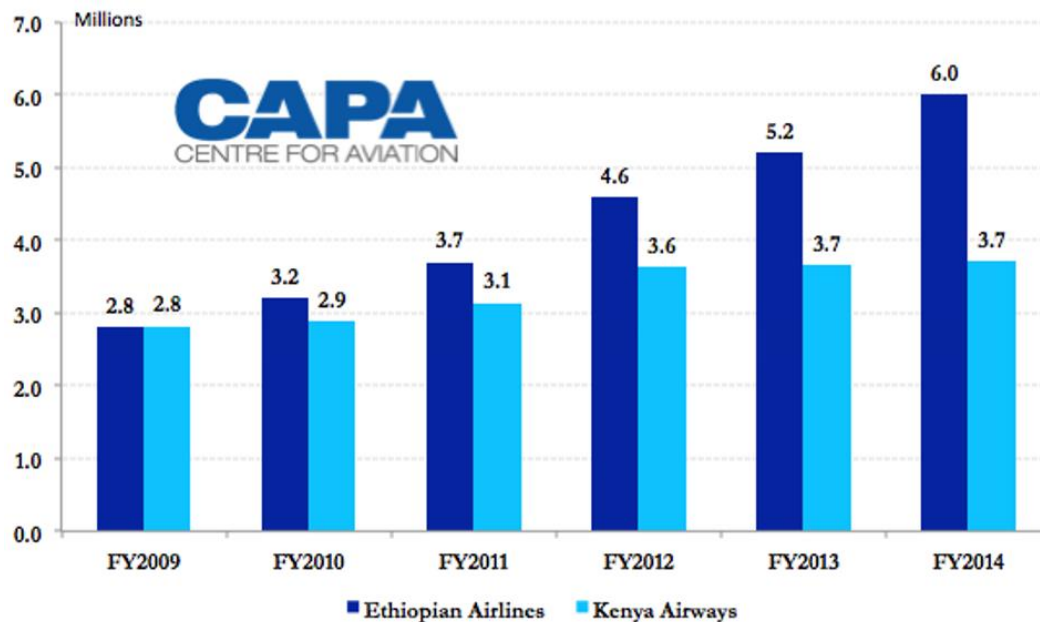
New Jomo Kenyatta Airport

This new airport in Nairobi is expected to handle 20mn passengers a year making it the second biggest airport in Africa and will be completed in 2016. The airport is part of Kenya's 2030 Vision to be a logistics hub for Eastern Africa. Anhui Civil Engineering is constructing the airport.



New Addis Ababa International Airport

Not to be outdone by Kenya, rival Ethiopia is planning a \$4bn mega airport with four runways capable of handling 120mn passengers a year. For reference Heathrow airport handles 73mn passengers a year. The facility will include an airport city with nearby hotels, shopping, logistics, office buildings and apartments. Kenya Airways and Ethiopian airways are competing to be the dominant hub network for East Africa. Ethiopian Air is winning the battle and in the last five years has doubled its passengers to 6mn/year.





Nigeria's five new terminals

Nigeria's airports are a national embarrassment. One poll rated Port Harcourt the worst airport in the world. This bad image is about to change though. There are five new international airport terminals under construction in Lagos, Abuja, Kano, Port Harcourt and Enugu. The new international terminal in Lagos will increase capacity from 7mn to 25mn passengers/year. Financing for the terminals was provided by the Export and Import Bank of China.





Cairo Terminal 2

Egypt has an ambitious plan to expand passenger traffic from 54mn passengers to 75mn by 2020. Cairo's new Terminal 2 set to open in March 2016 will add 7mn passengers/year of new capacity.



Broadband Fiber Networks

Modern day business is about moving data as well as goods. Africa's fiber optic communication networks are increasing rapidly. New underwater cables are connecting Africa to the rest of the world while regional and city wide loops are connecting the last mile to Africa's homes and businesses.

Undersea cables

In 2009 there was just one undersea cable connecting the West Coast of Africa to Portugal. Since 2009 \$3bn has been invested in seven new cables on both coasts adding 20 terabits of new capacity. New cables are also under construction.

Liquid Sea: Liquid Telecom's new 10,000 km cable will add another 20 terabits of capacity.

ACE II: The ACE consortium is also planning to complete Phase 2 of its cable increasing capacity from 5 terabits to 12 terabits.

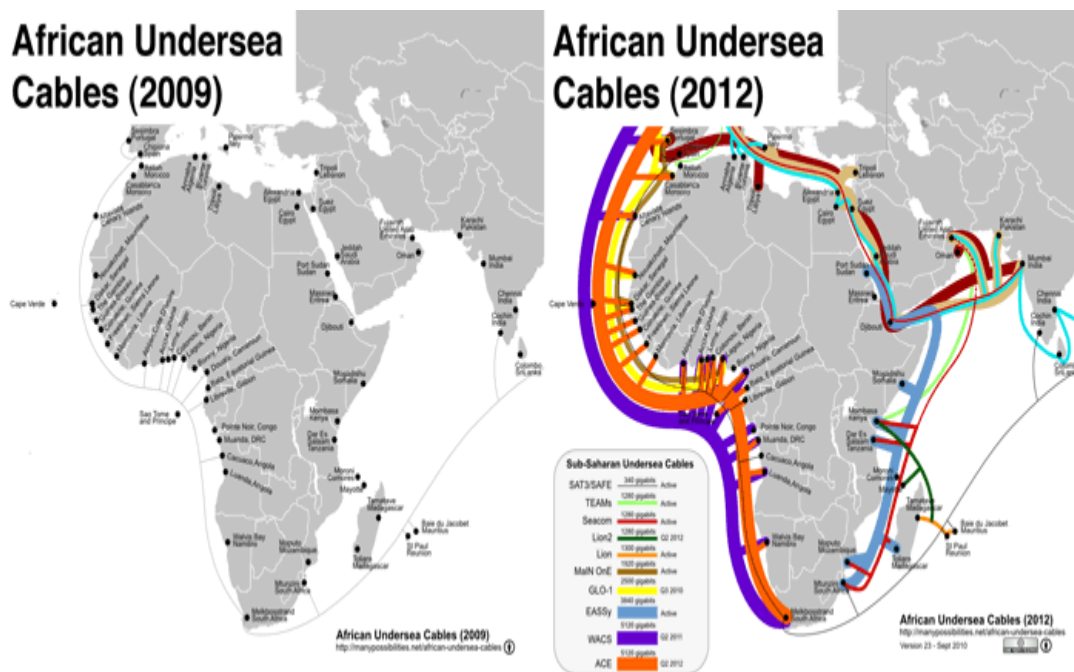


Table: African submarine cables

System	Route	Countries	Ownership	Cost, \$ m	In-service	Capacity ¹
ACE	France-S. Africa	18	Consortium	700	2012	5.12 tbps
WACS	U.K.-S. Africa	10	Consortium	600	2011	5.12 tbps
EASSy	Sudan-S. Africa	7	Consortium	265	2010	4.72 tbps
Main One	Portugal-Nigeria	2	Private	240	2010	1.92 tbps
GLO-1	U.K.-Nigeria	5	Private	800	2010	2.50 tbps
TEAMS	Kenya-UAE	1	Public partnership	130	2009	1.28 tbps
SEACOM	France-S. Africa	5	Private	650	2009	1.28 tbps
SAT-3	Portugal-S. Africa	11	Consortium	N/A	2002	340.00 gbps

Source: Submarine cable websites.

¹Capacity abbreviations: terabits per second (tbps) and gigabits per second (gbps)



Terrestrial fiber networks

National Telecoms: Telecom companies across Africa such as Safaricom, MTN, Vodacom, Telecom Egypt, Etisalat, Access Kenya and Telkom are building out fiber networks to homes and businesses to offer a combined package of mobile communications, high speed broadband fiber and cloud hosting services.

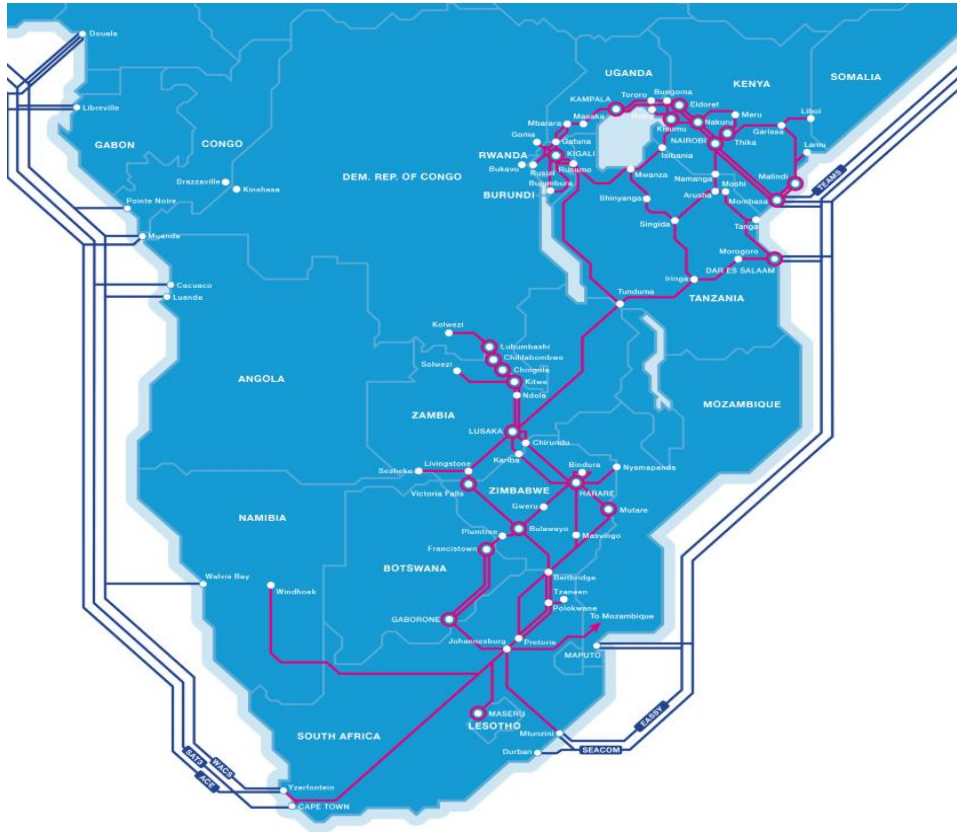
Dark Fiber Africa: Dark Fiber Africa has added 17 more metros to its 8,000km network in South Africa.

Google Project Link

As part of its philanthropic goal to connect more people to the internet, Google built a 700km fiber network in the 3 million person city of Kampala, Uganda. Google plans to continue the project and build a 1,000 km network in Accra, Ghana.



Liquid Telecom: Liquid Telecom continues to expand their 20,000km fiber network, the largest in Africa. Liquid's next step to connect more towns in the northern region of South Africa to its regional network.



Power

Africa is famous for power outages. These power outages will not be solved in the near-term but there are many projects underway to significantly increase generation capacity. Below are some of the bigger power projects under construction that will come on line and start to make a difference.

Kusile and Medupi

The construction of these two mega coal fired power plants will add 9,600 MW to the South African grid by 2017 and increase the country's generation capacity 22% to 51,600 MW. Kusile and Medupi will be the 10th and 11th largest coal fired plants in the world.



Ghana 1000

An investor consortium including GE, Endeavour Energy and Sage Petroleum are developing a gas fired power project which will generate 750MW by 2018. The additional power will be a substantial addition to Ghana's current 2,400MW of generation capacity.



Grand Ethiopian Renaissance Dam

This \$4.8bn dam on the Blue Nile River will generate 6,000 MW of power when it is completed in 2018. It will be the largest dam in Africa and will more than double Ethiopia's current generation capacity of 5,000 MW.



Nigeria Integrated Power Project

Nigeria's power situation is abysmal with just 4,000 MW of electricity for 170 million people, but behind the scenes there has been progress. Six power stations started by former President Goodluck Jonathan with a capacity of 2,900 MW are finally complete. Unfortunately, due to problems with vandalism of the transmission towers and inconsistent gas supplies the power plants are intermittently generating just 1,200 MW. The next steps of addressing the gas supply and transmission infrastructure are underway.



Ouarzazate

Solar projects are taking off in Africa. The Noor-Ouarzazate complex, located 200 kilometers from Marrakesh, Morocco at the edge of the desert, will be the largest concentrated solar power (CSP) plant in the world. It is scheduled to be completed in 2017 and will generate 500MW of electricity, enough to supply 1.1 million Moroccans. Noor 1, the first of its four plants, should be switched on in December 2015.



Egypt Sky Power- IGD

Middle East investment group SkyPower- IGD committed to a \$5bn project to build 3,000 MW of solar power projects in Egypt by 2019 as well as build a 600MW solar panel fabrication and assembly plant.

Tera Sola Project

The Tera Sola consortium agreed to a \$3.5bn project in Egypt to build 2,000 MW of solar power capacity as well as construct a factory capable of producing 200MW/year of modules and inverters.



Turkana Wind Farm

This 365 turbine wind farm in Lake Turkana, Kenya will add 300MW of power to Kenya's 2,300 MW of installed capacity. Kenya is increasing the share of geothermal and wind power in its generation mix. The target is to reach 5,000 MW by 2017.



Menengai Geothermal Project

The African development bank has financed a \$746mn project in Kenya to build a 110MW geothermal power plant. The completion date is December 2016. Kenya's KenGen has already developed 400MW of geothermal power plants at the Olkaria complex and is rapidly becoming a world leader in geothermal projects.



Kariba Dam South Expansion project

Zimbabwe's power situation is dire, but there are two projects in the works which will start to improve the situation. The completion of the Kariba Dam South Expansion project in 2018 will add 300MW to Zimbabwe's current 900MW of generation. Sino Hydro is handling the construction and \$533mn in financing was provided by the China Import and Export Bank.



Hwange power plant expansion

During his December visit to Zimbabwe Chinese president Xi Jinping promised \$1.2bn of funding to add two new coal fired generators to Zimbabwe's dilapidated Hwange power plant. The generators will add a substantial 600MW to the grid. Sino Hydro was awarded the construction of the project.



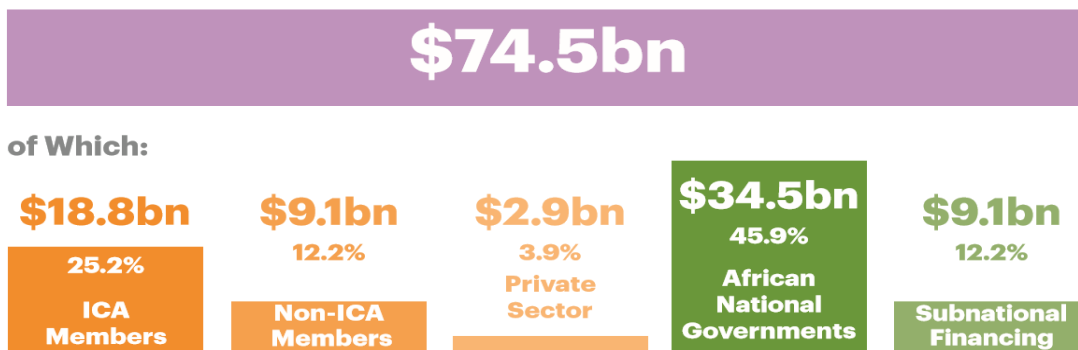
Why is this happening?

Why is Africa finally developing infrastructure after decades of neglect? Will this newfound commitment to infrastructure continue? Yes. There are three reasons.

A Government Priority

First, African governments themselves realize infrastructure is key to further growth and account for almost half of all infrastructure financing. Kenya's Vision 2030 has a major focus on infrastructure. Egypt's 2030 plan has 50 projects worth \$35bn. Tanzania's "Big Results Now" initiative is modeled after the development of Malaysia with a strong emphasis on infrastructure. The Emerging Senegal 2035 plan involves 18 construction projects to help boost growth including ports, railroads and business parks. Nigeria is also increasing government spending on infrastructure to try and diversify the economy away from oil. Within governments across Africa infrastructure has become a priority for future growth.

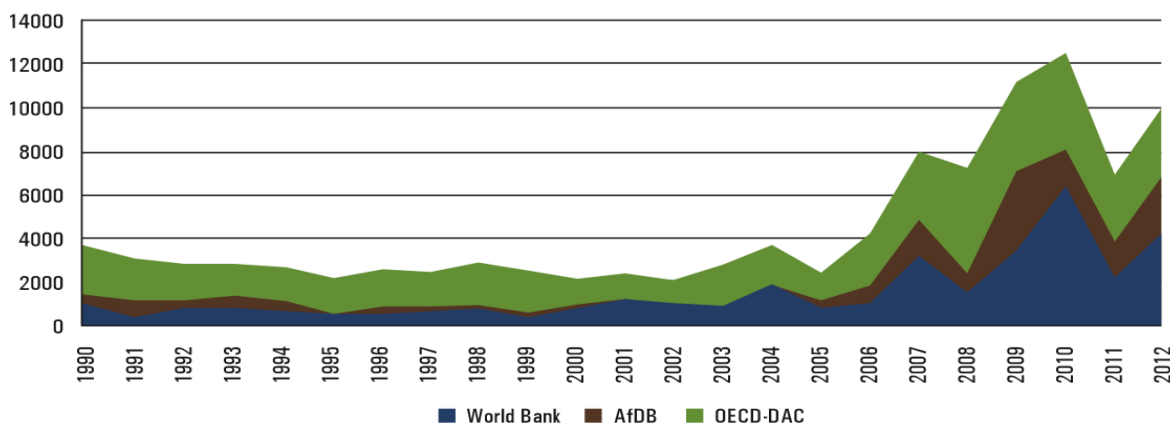
Total Funding in 2014



World Banks

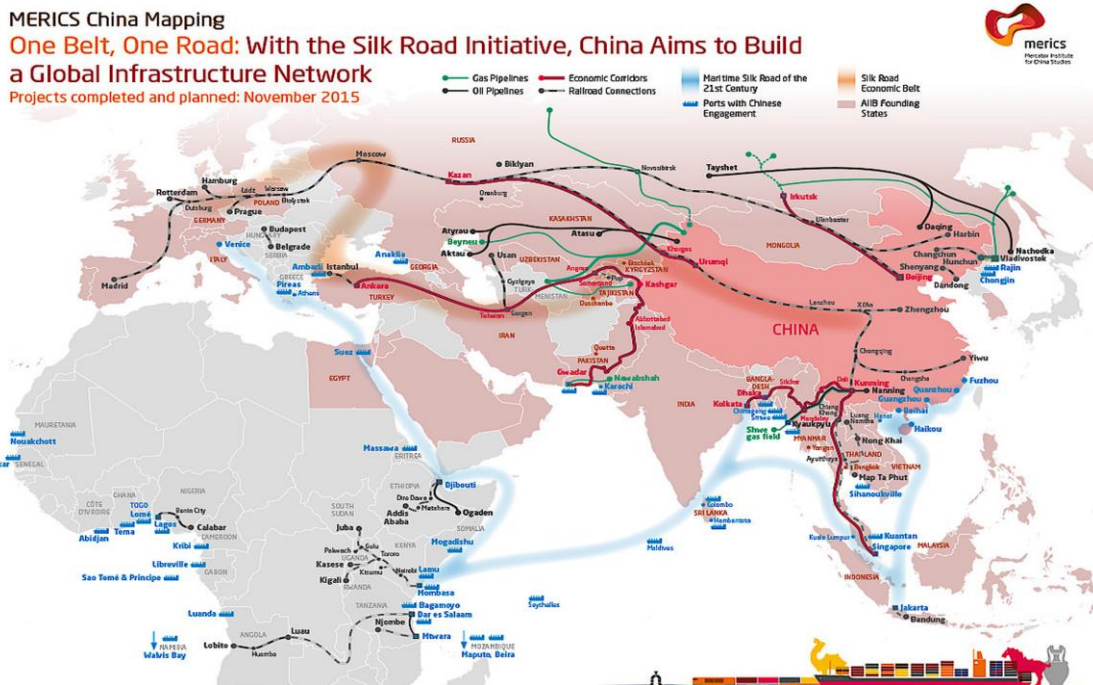
Second, the world development banks are also spending more on infrastructure. Financing from the World Bank, the African Development and OECD donor countries has increased over 200% from less than \$3bn in 2000 to now \$10bn a year. The World Bank now allocates 38% of its annual financing to infrastructure up from 28% in 2000.

Figure 6: ODF Infrastructure Investment Commitments in Sub-Saharan Africa, by Financing Sources, 2000-2012, in US\$ Millions (Current)



One Belt, One Road

The third reason for Africa's infrastructure surge is China. China's long-term One Belt One Road strategy is to invest in infrastructure and open up African markets to China. On President Xi Jinping's recent 5 day tour of Africa he signed \$60bn of project commitments. China's combination of money, and construction expertise is super charging the transformation of African infrastructure like never before. Mega projects that would traditionally suffer years of delays and might not even be possible are completed on time and on budget.



Conclusion

The wave of infrastructure projects being completed over the next five years will generate a long-term growth trend that will only be appreciated in hindsight. The Africa infrastructure projects of 2020 will transform Africa in the same way the Trans-Continental Railroad opened up the American West or how Jebel Ali Port and Dubai International Airport transformed a dusty city in the UAE into a global logistics hub. Future economists will write about how the combined effect of the new railroads, airports, power plants, ports and broadband fiber lowered the cost of business in Africa and enabled the economies to diversify and grow. At the moment sentiment is negative, but Africa's next growth era is under construction and will be ready shortly.



Nigeria's Eko Atlantic City