eLearning AFRICA REPORT 2015

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The trajectory of change

Next steps for education

Firoze Manji • Emmanuel Jal • Bobana Badisang • Aida Opoku-Mensah

55 country profiles

The eLearning AFRICA REPORT 2015

Editorial

The dangers of gradual change

There is a newspaper cartoon, which lampoons the traditional political position of liberals everywhere. It shows a group of serious but sad, bearded men on a demonstration.

"What do we want?" they are chanting.

"Gradual change," comes the reply.

"When do we want it?"

"In due course!"

Sometimes, gradual change just isn't enough. When the pace of technological change is moving at ever giddier and more alarming speeds, gradual change in society begins to look not merely anachronistic but dangerous.

Technology is driving change in Africa and fuelling the economic growth of African economies. There is now an urgent need for radical change. Africa is at a 'tipping point.' The upward momentum of the continent's economies can continue or they can start to slip back. Much will depend on the nature of the change the continent is now prepared to embrace.

Education is the key to Africa's future and, if it is to do what is expected of it, technology has to be at the heart of it. With a growing population and a higher percentage of young people than anywhere else on the planet, "what is necessary," as one of our columnists, Guy Pfeffermann, says, "in order to meet the need for skills and employment is radical, not gradual, change."

African and international leaders understand the importance of education and technology in shaping the continent's future. An ambitious target was set for universal primary education as one of the UN's Millennium Development Goals and the African Union has repeatedly stressed the importance of the combination of technology and education for achieving its '2063 Vision' of a transformed continent.

Yet, the Millennium Development Goals for universal primary education will not be met in Africa by the end of this year – despite some notable achievements. If we are to remain 'on track' for realising the AU's vision, it is clear that what is required is radical change.

In September, at the UN General Assembly, world leaders will move on from the Millennium Development Goals to adopt a new set of targets. This time, they will be called the "Sustainable Development Goals" or SDGs. The fourth of these goals, which is entirely laudable, is to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."

If they are to have a chance of success, as Aida Opoku-Mensah of the UN Economic Commission for Africa argues in these pages, "African governments, namely ministries of education, need to work hard on the integration approach to ICT in the education sector... An eLearning strategy would, for instance, assist countries to address the education deficit whilst honouring their commitments to their citizens."

More attention also needs to be given to the forgotten child of African education – the higher education sector. Here too, eLearning has an important role to play. It is perhaps, as Pfeffermann says, "the only way... of scaling up the reach of good and relevant higher education."

It is time to put eLearning at the forefront of the radical change Africa needs.

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Acronyms

ADSL	Asymmetric Digital Subscriber Line
CC	Creative Commons
CMS	Content Management System
COL	Commonwealth of Learning
DRC	Democratic Republic of Congo
EFA	Education for All
FLOSS	Free/Libre/Open-Source Software
FOSSFA	Free Software and Open Source Foundation for Africa
GSM	Global System for Mobile Communications
ICT	Information Communication Technologies
ICT4Ag	Information Communication Technologies for Agriculture
ICT4D	Information Communication Technologies for Development
ISP	Internet Service Provider
ITU	International Telecommunication Union
LTE	Long-Term Evolution (a 4G mobile communications standard)
MDG	Millennium Development Goal
MOOC	Massive Open Online Course
NGO	Non-Governmental Organisation
OER	Open Educational Resource
OLPC	One Laptop Per Child
SDG	Sustainable Development Goal
SME	Small or Medium-sized Enterprise
TEL	Technology-Enhanced Learning
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VoIP	Voice over Internet Protocol
WAPA	Wireless Access Providers' Association
WHO	World Health Organisation

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Photo: Natasha Bomba

Teacher in Class, One too Many (Zambia)

The state of eLearning readiness in Africa

The eLearning industry has grown in leaps and bounds and eLearning culture is becoming very much part and parcel of education throughout the world.

Whilst eLearning services and products are freely on offer in Africa, with many interesting initiatives and projects in place, the real question is whether the continent is ready fully to benefit from this revolution.

Global eLearning growth

The global eLearning market will most likely reach $107 billion by 2015, compared to $56.2 billion in 2014. Others have predicted that by 2018 the global market will be valued at $169 billion .

Amongst the industry's sub-sectors, the mobile market is of particular interest to Africa given the significance of mobile and as a more affordable form of technology for millions of African children. It was valued at $5.3 billion in 2012 and is estimated to reach $8.7 in 2015, and $12.2 by 2018.

eLearning kick-started with the support of UNECA when it began assisting countries in the development of national ICT policies, which included looking at ICTs in the education sector. However, beyond those national policies, what kind of strategies have countries put in place specifically for eLearning?

From policy to practice: Where countries are placed

eLearning initiatives are certainly underway in many African countries, particularly in higher education institutions. For instance, in Kenya, Kenyatta University provides a wide-range of eLearning and online materials. The United States International University has progressed further still, building a system that provides online access to all its courses.

However, university initiatives such as these have generally evolved without much guidance from a national framework. And, without a coherent policy framework on eLearning, many African countries will not benefit from the entire eLearning experience. A more consistent policy framework can facilitate the creation of local industry to support eLearning. Simply put, there are opportunities for local businesses to provide education in remote areas of Africa, where there is no educational infrastructure. Such ventures need to be stimulated and identified by government policies as a means to increased access to education.

Whilst many eLearning initiatives can be found on the continent, it is clear that countries are still a long way from readiness. A 2007 InfoDEV survey of ICT and education in 53 African countries noted that even though the majority of countries had national ICT policies, "there was a great deal of variance among the policies relating to the use of ICT in education."

Variance apart, the rhetoric about policies is failing to translate into action within the education sector. This is because the implementation of national ICT policies within sectors has not been consistent. Moreover, national ICT policies serve as a guide for sector-specific action-oriented strategies, which is not happening at a fast pace.

What we've seen in Nigeria and Ghana

Nigeria's Federal Ministry of Education launched a ministerial initiative in 2004 for which e-education (electronic education) was part of the strategy for the attainment of Education for All (EFA) and the Millennium Development Goals (MDGs).

Under its ICTs in education pillar of NICI 2, Rwanda's Ministry of Education set out to "transform Rwanda into an IT-literate nation by transforming the educational system using ICTs with the aim of improving accessibility, quality and relevance to the development needs of Rwanda." Initiatives such as the NEPAD e-Schools programme and the KIST Academic exchanges of students with German Universities, were launched. Furthermore, the One Laptop per Child programme led to the distribution of 100,000 computers across various primary schools, and eLearning and distance learning were introduced in secondary schools. The Rwandan example shows that several strategies are needed to roll out a national eLearning agenda for each segment of the educational system.

By Dr Aida Opoku-Mensah, Special Adviser Post-2015 Development Agenda, United Nations Economic Commission for Africa (UNECA), Addis Ababa, Ethiopia

In March 2015, one of Nigeria's renowned ICT experts, Chris Uwaje, observed "the poor state of ICT in education with respect to IT infrastructure, curriculum, teachers' intensive training and capacity building." This is despite the fact that Nigeria launched an ICT for development policy on May 18, 2010.

Policies backed by partnerships

Taking a closer look at Nigeria, the Federal Ministry has connected 1.4 million students across 27 federal universities to the internet, according to recent reports in local newspapers, as a result of the Connect Nigeria Initiative. This includes equipping 1,552 secondary schools with access to the internet. However, such initiatives nearly always come with outside assistance. In Nigeria's case, this is a partnership between the Communication and Education ministries, the World Bank's STEP-B project, and the Nigerian Research and Education Network (NG-REN).

Meanwhile, the Ghanaian tertiary education sector has accelerated its deployment and use of ICTs, owing to the implementation of the national ICT for


Photo: Istvan Csakany

Accelerated Development (ICT4AD) policy. All the country's major universities have their own separate ICT policy, which includes an ICT levy for students. This enables students to have access to 24-hour computer laboratories with broadband internet connection. With funding support from the World Bank through the Teaching and Learning Innovation Fund (TALIF), the Ghana Education Trust Fund (GETFund) and other funding agencies, they have been able to provide infrastructural and capacity building support to distance learning programmes in public universities.

The Report of the First African Ministerial Forum on ICT integration in Education and Training states that innovative integration of ICT in education and training requires the formulation and implementation of policies and plans for change driven by education system managers, teachers, pupils and parents in:

- the planning and guidance of change
- promotion of systemic curricular reforms for the digital age: knowledge, skills and values
- endowment of schools, teachers and learners with appropriate digital devices (PC, tablet, interactive whiteboard, cell phone, etc.).
- the development of learner and learning-centered teaching approaches.

It also noted the importance of capacity building for teachers according to training models that make use of technological and methodological innovations to lead trainers and other stakeholders (academic advisers, inspectors, principals, etc.) not only to learn to use ICT, but also to know how to integrate it in an innovative way.

Digital content was highlighted, with interactive eLearning, bilingual teaching and using technology to connect teachers and learners amongst its priorities.

Breaking down a successful strategy

These examples notwithstanding, the key question is whether governments are providing a centrally coordinated eLearning implementation programme that aligns national goals to educational reform and the use of effective technology. Without such an intervention, ICT in education initiatives will continue to be scattered and disparate. Therefore, an eLearning strategy should be a subset of an ICT in Education policy that:

- lays out a roadmap for countries with an eLearning architecture
- addresses curriculum issues
- provides for capacity development for teachers across a nation
- supports administration and the management of systems

Other important aspects of such a strategy should be:

- infrastructure development that provides affordable connectivity for education
- content development especially when it comes to procurement of eLearning content, including its contextualisation
- exploring the prospect of developing a local eLearning business support sector that can sustain any eLearning environment, whilst nurturing innovation and creativity in this sector.

Left unregulated, the spread of eLearning and its attendant culture will be stilted, resulting in a divide - the 'digital haves' can access and afford online learning and education, whilst the 'digital have-nots' perish. It has to be a government strategy that allows eLearning to spread as evenly as possible within African countries despite the infrastructural challenges.

Is integration the key to eLearning success in Africa?

eLearning becomes possible when there is an integration of ICTs in the education system, which requires a policy and strategy of its own. It may be derived from marrying a national ICT policy with national education goals and strategy. Without this approach, African countries are not and will not be ready.

This is why the First African Ministerial Forum on ICT Integration in Education and Training held in Tunisia in December 2013 was timely; it called for national policies on ICT integration in education and training. Issues discussed included the formulation, financing, implementation and monitoring of ICT policies; ICTs applied to teacher development and improvement in teaching practices; development and sharing of digital content; deployment of ICT infrastructure and connectivity issues; the challenges of scaling up ICT integration practices; learning opportunities via cell phone; the use of ICT to broaden the learning opportunities of marginalised peoples; and public-private partnerships for ICT in education.

The Forum found that the integration of ICT in education and training requires a new approach to education, which countries need to embark on quickly. It will also require a fair amount of creativity and innovation in the approach to integration. There have to be investments in ICTs specifically for the education sector, as well as research into adapting to suitable technologies, their impact and sustainability. To some extent this is happening in a few countries.

Furthermore, the targets specifically state that by 2030 there should be an "increase by x% of the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship." In doing so, countries are expected by 2030 to: "build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all."

In the case of Africa, eLearning becomes a viable option for implementing SDGs. Whilst the 'Education for All' goal does not explicitly call for the use of innovative approaches such as technology, the SDGs do, stating: "By 2020, expand by x% globally the number of scholarships for developing countries in particular LDCs, SIDS and African countries to enrol in higher education, including vocational training, ICT, technical, engineering and scientific programmes in developed countries and other developing countries."

Is Africa ready?

Progress under MDGs

According to UNESCO, 15 years after the setting of education targets for all countries, only half have succeeded in ensuring universal enrolment in primary education. However, according to the Africa MDG Report, **Africa is on track to meet the primary school enrolment target**, and 25 countries have achieved net enrolment ratios of 80% or above. These achievements are a reflection of an improvement in educational infrastructure among other things, but more can be done.

Way Forward: Implementing SDGs

African governments, namely ministries of education, need to work hard on the integration approach to ICT in the education sector. It must be based on sound investments in sector reform, curriculum development, teacher training and content development to get countries to a decent stage of eLearning readiness. An eLearning strategy would, for instance, assist countries to address their education deficit whilst honouring their commitments to their citizens.

In September of this year, during the 70th UN General Assembly, world leaders will adopt the UN Sustainable Development Goals (SDGs) as part of the Post-2015 Development Agenda package. Goal 4 of the SDGs on education states: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."

The SDGs have set targets for countries to achieve all the goals. One such target for education is by 2030 to:

- Ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.
- Ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.
- Ensure equal access for all women and men to affordable quality technical, vocational and tertiary education, including university.

Emmanuel Jal

'Education is the first step towards peaceful societies'

South Sudan is a new country – and no country is easy to start. In a new country, there will be corruption. A new country will be behind in so many things. African countries that have the best education and technology are the ones that will prosper. Any country that does not invest in these things is heading towards a dead end. As a child of war, born in a village called Tonj in southern Sudan where we couldn't access books and writing, much of my history was transmitted orally – in the songs of my village and by my mother's tongue. My mother told me that education is how you earn respect and a place in the world. Every child in south Sudan dreams of being educated, as I did.

"We ended up walking hundreds of miles in search of an education, but we were lied to. Instead, we were sent by the Sudan People's Liberation Army (SPLA) to military camps for training to fight in a bloody war!"

When I was seven years old and growing up in a war-torn area that is now part of South Sudan, thousands of children like myself were told by soldiers that we should travel with them to Ethiopia because schools awaited us there. At that age, education to me was like a dream, a mystery. It meant that maybe I could learn how to fly a plane, or learn how to fly like a bird. I figured if I could study and learn about the inner workings of a plane, and the technology that enabled such a large object to lift off the ground, then I could use it properly to fight in the war. I wanted to know how bombs are made. We ended up walking hundreds of miles in search of an education, but we were lied to. Instead, we were sent by the Sudan People's Liberation Army (SPLA) to military camps for training to fight in a bloody war.

I thought I would be given a chance to flee Sudan's civil war in return for schooling in Ethiopia but, instead, I ended up in a war, witnessing friends and family members of mine being raped, seeing companions killed and even being so hungry that I was once tempted to eat my friend, out of fear of starvation. I was one of the lucky ones and I believe I survived the war for a purpose. I have always fought to give young people in South Sudan and around the world an education because my own childhood was stolen by war. Wars have been manufactured between north and south, between Islam and Christianity. Peace to me is education because those who know will always exploit those who don't know. Whilst some of your most vivid childhood memories might be of playing in the schoolyard, studying history and geography with your friends, mine are of bombs falling from the sky and burning villages.

My business partner Paul Lindley and I founded the social enterprise The Key Is E to support African entrepreneurs whose businesses positively impact children for a very specific purpose –

The conflict in South Sudan today

South Sudan, Africa's youngest nation, broke away from Sudan in July 2011 – the outcome of a peace deal that ended Africa's longest civil war. But not long afterwards the country was back in the throes of crisis, spurred by a December 2013 power struggle between President Salva Kiir and former Vice President Riek Machar; aggravating ethnic tensions and igniting clashes between government troops and rebel factions which continue to cause widespread warfare today.

The conflict has killed tens of thousands of people; two million have been forced to flee their homes, while another four million face starvation. Entire towns have been pillaged and burned, and swathes of rural areas lie abandoned. An estimated 12,000 child soldiers have been thrust into battle in the country's civil war. UNICEF says in many areas of conflict boys are being rounded up and sent to the frontline to fight.

children are the future and they should have equal access to resources, education and good nutrition. We are using our website and blog as a one-stop shop of information for our global supporters and fellow entrepreneurs to help provide new progressive solutions for education and/or entrepreneurship and to find social entrepreneurs to invest in. The positive impact social enterprises are having on their communities is something worth supporting in a concrete, tangible way.

One of the most powerful songs I've ever recorded (and I perform it at every one of my concerts around the world) was the self-titled song from my 2008 Warchild album. It is an ode to a British aid worker named Emma McCune who taught me English and had me taken to Kenya for school that she paid for – my first school was Sawa Sawa Academy in a place called Meru. I was 13 years old and had to be put in a class with eight and nine year olds (after pleading not to be put in a class with five year olds, based on my literacy levels). Many years later, after much struggle and strife, my educational journey has been one filled with joy (I graduated from Brookhouse school) and sorrow (after attending the University of Westminster for the first semester, I was denied a VISA to come back to London). As a university dropout, access to technology has improved my life because it has made the world small. The amount of things I learned about life, business or nutrition from Wikipedia is astonishing. My five year old son can barely read and write but he knows how to go on the internet and find cartoons he enjoys.

While I was denied the full education that I craved, when one door closes, another opens. That's how I became a musician. When I tell my story through music, there's less pain in it. I started recording music not just for relief but to support educational initiatives. Education is the first step towards peaceful societies. When we talk about education as a concept, there is a technical aspect to it, and then there is an emotional aspect. The emotional aspect is people telling stories, people learning from one another, and then they can open up more as human beings. I'm a strong advocate and practitioner of social emotional learning, which is a strong part of education. When I do school tours around Canada, the United States of America and the rest of the world as a peace promoter, I see that the biggest battle young people need to fight now is to educate themselves. And technology is the biggest aid to that process.

I think that if you educate a child, you can develop a nation – but the reality is that a large number of people don't have access to technology. In my country, you have to buy a mobile phone that is compatible with Facebook to increase your prospects of corresponding with loved ones over family issues and business. But when you're living on one meal a day, Facebook is not a priority. When the internet is more easily accessible, my community members will be able to communicate cheaply. In my travels for peace work I've seen firsthand how access to good mobile devices can positively affect business, how people can open online bank accounts, and send money through texts. I've seen people buy goods from other villages and make transactions happen.

When you introduce more communication technologies to poor societies, it creates a big divide between the haves and the have-nots. While this is a problem, it is also an opportunity to address the problem. I try to focus my energies on finding solutions.

I see that the biggest battle young people need to fight now is to educate themselves. And technology is the biggest aid to that process.

About the author

Emmanuel Jal was born into the life of a child soldier in the war-torn region of Southern Sudan. He managed to emerge from his struggles with the help of aid workers to become an internationally acclaimed activist, actor and recording artist, renowned for his unique style of hip hop with its message of peace and reconciliation. The award-winning documentary War Child and book of the same name chronicles his shocking, but inspiring story.

Amongst his countless campaigns, Jal has worked closely with Amnesty International and founded his own movement We Want Peace, recently awarded by the UN for its powerful humanitarian efforts. He founded the charity Gua Africa in 2006, which promotes education in Africa through academic sponsorships to refugees who have survived war and genocide. His most recent project, The Key is E, is a social enterprise that supports African entrepreneurs who focus their work around youth and children's rights.

Opinion

Photo: CEHURD

Higher education in sub-Saharan Africa:

Why the neglect?

I am an economist, not an ICT specialist.

So, I am focusing on the context in which African eLearning is evolving. Why is eLearning "exploding" in Africa faster than anywhere else?

Africa has the fastest growing population in the world and its size is expected at least to double between now and 2050. Some 40% of Africans are under the age of 15 (compared to a world average of 26%) but government spending is severely limited. No wonder that the supply of quality higher education is being outstripped by the growth of demand for university education.

I tried to find recent Africa-wide data, but they don't seem to exist. Neither UNESCO, nor the World Bank, nor the African Development Bank, nor even individual African countries seem to be keeping recent statistics about higher education as basic as enrolment. The most recent enrolment data I found are for 2008. The lack of statistics is symptomatic of neglect of higher education by the "development community".

Why this neglect? The crafters of the 2000 United Nations' Millennium Devel-

opment Goals, which governed much of the development agenda until this year, bear a heavy responsibility for exacerbating today's crisis of higher education in most of Africa. Only primary education is part of the MDGs. Not even secondary education is included, let alone higher education. This makes no sense to me, if only because teacher training is needed in order for primary schools to function. Because they were excluded from the MDGs, African universities have been starved of funding these past 15 years - and their finances were already precarious before the MDGs kicked in.

The fragmentary data that are available paint a dramatic picture. According to UNESCO, whilst fewer than 200,000 tertiary students enrolled in the region in 1970, this number soared to over 4.5 million in 2008, faster than in any other region in the world. So, for example, enrolment has grown hugely at the "Legacy Universities" established by colonial powers, which used to be (and may still be) the best in their sub-regions. Today's numbers are staggering: University of Dakar (over 60,000 students); University of Ghana (40,000); Uganda's Makerere (over 40,000); University of Nairobi (more than 60,000). From an intake of 131 students in 1962, enrolment in the University of Lagos has grown to over 40,000, while Kenyatta University teaches over 70,000 students. In most countries, politicians are still mandating public universities to enrol even more students. In spite of this extraordinary growth, Africa's gross enrolment ratio still lags way behind that in the rest of the developing world.

Because funding has not kept pace with enrolment growth, it is not surprising that quality is a huge challenge. A recent survey lists the following top challenges to quality:

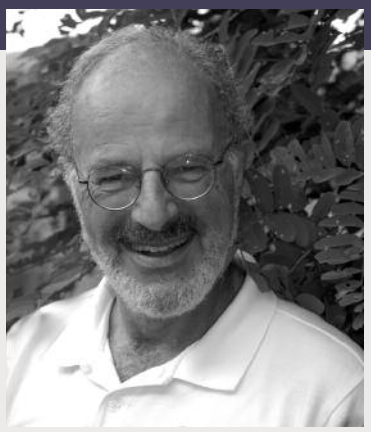
1. Depreciating quality of higher education teachers
2. Research capacity deficit
3. Infrastructure/facilities inadequacies

Other fundamental challenges include a mismatch between skills acquired and the demands of employers, gender imbalances, rigid admission criteria and limited opportunities for credit transfer.

Pressure of demand for university education against severe funding constraints led governments, starting in the 1990s, to make space for greater private participation in higher education. Today, in many countries, private higher education institutions range in proportion of the total from 15% in Ghana and Ethiopia, through to 20% in Kenya, to one-third in Nigeria and Senegal. In the area of business education, with the exception of South Africa, most of the highest-quality schools are private, including a number of excellent faith-based universities.

After decades of neglect, higher education is finally back on the development agenda. A number of African initiatives are striving to strengthen existing universities and to establish new "centres of excellence".

I fear that such improvements will not be enough to meet aspirations for education and jobs. Reform of public universities is, perhaps by necessity, very slow and starts from a low baseline. Some extraordinary private universities and schools, such as Ghana's Ashesi University, Lagos's Pan-Atlantic University, Nairobi's Strathmore University and United States International University show what can be achieved but their reach is limited.



By Guy Pfeffermann, Founder and CEO of the Global Business School Network

What is necessary in order to meet the need for skills and employment is radical, not gradual, change. eLearning is therefore the only way I can see of scaling up the reach of good and relevant higher education. Some African universities have introduced ICT into their modus operandi but, until now, more for registration and other administrative functions than for teaching. Ideally, mobile phones should become prime instruments of learning, just as across Africa they have become tools for banking. The dual challenge is to reach students with useful content and to develop business plans, which make mobile education sustainable.

Funding has not kept pace with enrolment growth, it is not surprising that quality is a huge challenge.

Ethiopia

An Emperor's vision becomes reality

By Harold Elletson

Emperor Menelik II

Returning to Europe in 1909 after a visit to the Abyssinian Empire, today's Federal Republic of Ethiopia, the Belgian aristocrat and explorer, Baron de Jarlsburg, gave a correspondent of the New York Times his impressions of the country's ruler, the great Emperor Menelik II.

"Menelik," he said, "is himself an altogether unique figure among African potentates. As a diplomat, as a financier and as a sovereign, he can hold his own with the most up-to-date of his brother sovereigns."

The Baron was particularly impressed by the Emperor's versatility ("an accomplished linguist, he speaks French, English and Italian fluently"), his library of 10,000 volumes and, above all, by his devotion to education.

"Menelik's one aim," he said, "has been to introduce European civilisation into his country. The Emperor, after abolishing the feudal laws still extant in the empire and emancipating the slaves, established compulsory free education throughout his dominions. As a result, in another generation, education will be as widespread in Abyssinia as in several European countries."

Abyssinia had a rich tradition of education. The country's Christian church began a programme of comprehensive education as early, by some accounts, as the fourth century. According to the British academic Richard Pankhurst, the traditional religious education provided by the Ethiopian church began with the learning of the alphabet "or more properly, syllabary, made up of 26 base characters, each with seven forms, indicating the various vowels." Students were then required to commit

Photo: Stijn Debrouwere

Ethiopian fourth graders

the first chapter of the First Epistle of St John to memory before studying the Acts of the Apostles, the Psalms of David and the Song of Solomon. The Muslim community too began to offer education very soon after the arrival of Islam in southern and south-eastern Ethiopia.

Menelik hoped to build on this tradition but also to secularise education and to drag his country into the modern world. A man of great vision, who made a fortune from his investments in American railways and Belgian mining interests, he was also a distinguished soldier whose armies defeated the Italians at the battles of Amba-Alagi, Mekele and Adwa. 'Conquering Lion of the Tribe of Juda', 'Elect of the Saviour', 'King of Kings of Ethiopia', were just some of the grandiloquent titles he held. If anyone could transform education and use it to bring Ethiopia into the modern world, it was surely Menelik II.

It was Menelik who sent young Ethiopians abroad to study military science, agriculture, engineering and other professions. Modern education officially began in Ethiopia in 1908 with the opening of the Menelik II School in Addis Ababa. Soon afterwards the Emperor himself opened other schools in Harar, Dessie and Ankober.

Since the end of the Derg regime, Ethiopia has at last made steady progress in building a modern education system.

For a while, it must have looked to outsiders as though Abyssinia might soon take a great leap forward and become the engine of a new African civilisation. Yet, the vision of a new era of progress, fuelled by education, was soon dashed.

In 1936, Fascist Italy invaded Ethiopia and the education system suffered greatly at the hands of the country's new rulers. Many existing schools were converted into Italian-only schools and new schools, supposedly created for Ethiopian children, were largely just an exercise in propaganda.

The war knocked the heart out of Ethiopia's drive for education-led growth. There were shortages of everything – particularly buildings, books and teachers. Attendance rates at schools were low and the numbers of dropouts were high. The situation was so bad that the Government was forced to recruit foreign teachers to staff many primary

and secondary schools. In May 1961, when Ethiopia hosted the UN Conference of African States on the Development of Education, the country's system of primary and secondary education was ranked the worst in Africa.

By the time of the revolution in 1974, despite determined efforts by the Government to improve the situation, fewer than 10% of the population were even literate.

A campaign to improve rates of literacy marked the early years of the new Marxist 'Derg' regime. The Government mobilised 60,000 students for its 'national literacy campaign' and sent them all over the country for two-year stints.

If anyone could transform education and use it to bring Ethiopia into the modern world, it was surely Menelik II.

The campaign, however, had only limited success. The students were treated with suspicion, particularly in rural areas where people imagined they were Government spies sent to root out opposition.

The right of every citizen to a free primary education was at the heart of the Derg's political programme but, despite this noble aim, education soon became a victim of Marxist-Leninist ideology, as the regime's policy advisers from fraternal regimes in Eastern Europe urged the development of a curriculum based on their own systems. Soon famine, drought and civil war ensured that whatever improvements the Derg had made to Ethiopia's education system were undermined. In 1991, when the Ethiopian People's Revolutionary Democratic Front overthrew the Derg, there was widespread poverty, many schools were in ruins and few people had access to education.

Since the end of the Derg regime, Ethiopia has at last made steady progress in building a modern education system. Access to primary schools has increased significantly. Between 2008 and 2013, the number of primary schools in the country increased by over 5,000. Innovative new solutions, such as the use of mobile schools and the increasing availability of new technology for learning, are helping to extend the spread of education provision – particularly among disadvantaged groups and in rural areas.

Much remains to be done. More primary schools are needed if the Government's targets are to be met and several regions still suffer from a conspicuous lack of provision in certain areas. A lack of secondary schools means that continuing access to education for many young people is still a problem. Foreign observers also note the patchy quality of education provision. US Aid, for example, described improving quality as "the single biggest challenge and priority facing the Ethiopian education system." The organisation funded Ethiopia's Early Grade Reading Assessment in 2010, which showed very low reading performance levels for first to third grade students across the country.

Nevertheless, the Government recognises the central importance of education to economic growth and has set about improving both levels of provision and standards with determination, often working with foreign partners to achieve dramatic improvements.

Currently, for example, the Ministry of Education is working with USAID on an $86 million project to improve and measure early grade reading in seven of Ethiopia's most commonly used languages. The programme aims to improve the reading skills of 15 million primary school children in Ethiopia.

The Ethiopian Government also recognises the power of technology to transform education. Ministers are convinced that investment in the country's communications infrastructure will bring long-term benefits for the education system. An ambitious new telecommunications network is being planned, which should transform the country's prospects.

Dr Debretson Gebremichael, Deputy Prime Minister and Minister of Communication and Information Technology explains:

"We... are implementing the National ICT Infrastructure Master Plan, aimed at connecting all major towns within the country to an optical Fibre-Optic Network. This will lead to reduced cost of access to reliable internet for institutions of learning, among other entities, especially when last-mile solutions are implemented."

With a population of 87 million, Ethiopia is one of Africa's largest countries. It is also one of the world's fastest growing economies and its GDP grew by over 10% in 2013. Spurred by investment in technology, communications infrastructure and education, the future is beginning to look bright for Ethiopia.

It may be that Menelik II's vision of a modern, prosperous, educated Ethiopia is starting to become reality.

Interview

M-Pesa pioneer: 'There's room for great innovation in Africa'

The story of the M-Pesa phenomenon is the kind of disruptive technology a business can only dream of – and today it provides a case study for managing innovation in emerging markets. Launched by Safaricom CEO Michael Joseph in partnership with Vodafone in 2007, the mobile money service was originally conceived as a welfare project that was only intended to break even.

Despite the disbelief of many, Joseph convinced Safaricom's stakeholders to stick to the idea of a solution aimed at the market 'at the bottom of the pyramid'. And, due to little regulation and monitoring, as well as Safaricom's popularity and strong market demand, what emerged was a hugely successful product that not only brought long-term profitability but huge social change. After just six months, the service had 20,000 active users in Kenya; by 2013 M-Pesa had created a mobile wallet revolution with a staggering 17 million people on board.

The success of the service paved the way for a landscape of new tech innovation that leverages the mobile payment system; Kenya soon became known as a 'tech centre' adopting the name 'Silicon Savannah'. **Julia Manske** asked Michael Joseph, who is now Vodafone's Director of Mobile Money, about Africa's new business landscape and why he's setting his sights on education.

Michael Joseph

Vodafone's Director of Mobile Money, Former **Safaricom** CEO

How would you describe the current landscape for business innovation in Africa?

The business landscape in Africa has changed a lot. Ten years ago Africa was regarded as a frontier market; it was seen as a risky business. Nowadays, people talk about it in many terms, rather as an emerging market. Is there no risk anymore? Certainly not, but there is less risk, and the landscape has definitely changed.

What are the biggest business challenges for innovators and business in Africa at the moment?

There are a number of challenges, but the biggest challenge in Africa is the uncertainty. Not the uncertainty of business but the uncertainty of the environment, in terms of both insecurity and infrastructure. Those are the things that worry business people a lot. People do good business despite corruption and those kinds of obstacles, but the uncertainties like insecurity, lack of power, lack of decent roads, and lack of a decent airport, this is what holds many success stories back.

Today, what is the role of mobile phones versus the internet in African countries; and what is the difference when compared to Europe?

Definitely, mobile is still the dominant way of communicating. The influence of the mobile phone on Africa is as great as the industrial revolution once was to Europe; it brings so much more to the African environment. Things are still dominant on mobile, because of the lack of fixed bandwidth. If you look at Africa now, every day there are new things coming up which are all mobile-based. In regard to awards, for example, all of those winners come up with mobile-based innovation.

Kenya is now called the 'Silicon Savannah'. What is your take on that?

You have to put this into context. Kenya is seen as such an innovative country in

terms of mobile technology. If you look at any innovation coming out of Kenya, every single thing that is interesting is based on mobile phone technology. If Safaricom had not been so dominant and had not invested so heavily in its network, and the scale of its network, you would not have the term Silicon Savannah. If we hadn't spent $10 million promoting something that we were not sure worked, would it be called the Silicon Savannah? Probably not. There are a lot of great innovations now based on M-Pesa, like iCow or M-Kopa. Safaricom has opened up its door to support those ideas.

I know the difficulties and obstacles. There is no way that you do that without those risks and those investments.

What are the biggest opportunities and challenges that you see for education in Africa at the moment?

There is a lot of opportunity to improve education in Africa to create a more rounded education. If you go to universities in Kenya today they are still teaching the same way as when I was an undergraduate. But education has moved on a lot since back then. Today it requires a lot more than taking notes and passing an examination. Education in Africa has to shift from the idea of purely "producing" - and I use this word on purpose - graduates to a more holistic approach of personal development. This is lacking in Africa, and here there are huge opportunities to innovate and to change people's mindset.

The M-Pesa Foundation is building a high quality high school, focusing on IT, following the Kenyan education approach. However, it will be taught in a way that it will produce much more rounded students. We want to form people who have the ability to think.

It needs hands-on education and a stronger exchange between potential employers and academic institutions. For example, when I went to Kenya in 2001, engineers that we were getting from Kenyan universities were so ill-prepared; we needed to do something about it. We made agreements with various universities where we integrated lectures into Safaricom and vice versa. We invited people to come to Safaricom and sent people from Safaricom to the universities to get them to change their way of thinking. And in the end the engineers that we got were more suitable.

What advice would you give local technology innovators and entrepreneurs?

You have to stick with it, you have to be patient and you have to be determined. And, most importantly, you have to put out of your mind the thought of becoming a millionaire overnight. So many people come up and say "look, I have this great app and I want to make one million dollars tomorrow so I can drive a big Mercedes Benz." That's not going to happen. You need to get your foot in the door, you need to work, you need to speak well, and you need to be patient. And then for sure there is enough room for great innovation in Africa.

The M-Pesa Academy

The M-Pesa Foundation, a charity organisation established by Safaricom in 2010, recently announced that it is constructing a state of the art, mixed boarding high school, which will provide first-class education to gifted but economically disadvantaged children from throughout Kenya. The M-Pesa Academy will be built on a 50-acre piece of land in Thika, and will accommodate nearly 1,000 students. It will be based on a model that enables disadvantaged children to attend with little or no fees. It will employ the latest technology to aid learning and equip students with technological skills to meet the future demands of business in Africa.

Opinion

Firoze Manji:

“We are at a point where we have to contest this”

The pan-African community inventing the future

Governments more accountable to international corporations than to their own citizens, declining living standards and the systematic elimination of African writing and history in education.

These are just some of the many “dispossessions”, which Dr Firoze Manji says Africans are facing in this “period of discontent” – a discontent that, he says, has emerged primarily from decades of neo-liberal economic and social policies.

Dr Manji is the Director of the Pan-African Baraza, an initiative of ‘ThoughtWorks’, which is aimed at “reclaiming the past, contesting the present and inventing the future.” The Baraza brings together African intellectuals and activists from across the continent and the rest of the world to form a safe space within which to share experiences and ideas.

Here Dr Manji discusses the foundations of the Baraza, its activities and the stark realities of Africa’s social systems today.

The motivation for the Pan-African Baraza community arises from an analysis of what has been happening in Africa over the last 30 years or so. What I see is a period of massive dispossessions that people face as a result of the implementation of neo-liberal policies across the continent. It’s a set of policies in which our governments have been entirely complicit. It’s not enough to blame the banks and the IMF – they have of course been major players in this but it is our governments who have conceded.

One of the things I think people forget is that in the period after independence in most countries from the 50s onwards, or the mid-60s onwards, there were major social transformations. Where there was no healthcare, no education, no access to water and our governments, no matter how corrupt and despotic they might have been, managed to transform the social environment. We had univer-

Photo: UNMEER

Mobile clinic in Liberia

sal healthcare, universal education, and so on. There were major transformations including the development of industrial production in Africa. These were the fruits of our independence.

With the implementation of neo-liberal policies from the late 1970s and early 1980s, nearly all of these had been reversed. Whereas before we had a right to healthcare and education, by virtue of our citizenship, today we have to beg for that from the NGOs.

The dispossessions taking place I think many people know about. For instance, the material dispossessions – dispossessions of land as a result of land grabbing; dispossessions of our natural resources, essentially an amputation of non-renewable natural resources; flourishing of mining that has destroyed our environment and poisoned our waters, and has disposed huge numbers of people from access to land around those areas. There's been dispossession of jobs and dispossession of living. But there are two other dispossessions that people rarely talk about: one is that our governments today are more accountable to international financial institutions – for example, banks – and multinationals than they are to the citizens who elected them. Secondly, there is a dispossession of memory which is a very serious one. If you want to conquer a people, all you have to do is rewrite their books, rewrite their culture, destroy their memories. What you face is a whole generation of young people who have no memory of their past or of their struggles for independence, and no memories of those who led these struggles.

If you want to conquer a people, all you have to do is rewrite their books, rewrite their culture, destroy their memories.

We are at a point where we have to contest this. So we have come up with the Baraza – Baraza in Swahili means 'a meeting place', 'a forum' – which has three legs to stand on.

1) **Reclaiming the past** – the memories, rekindling an understanding of the past. Without history, without those memories, we have no future.

2) **Contesting the present** – we want to be a platform for amplifying the voices of those who are contesting the present; those who are organising to contest the domination of corporations and the collusion of our governments in these policies.

3) **Inventing the future** – inventing the future is not just dreaming, although of course one has to dream, but it is as Cabral put it "a necessity for constructing the future that we want to have today." The process starts today,

Actions of the Baraza

The Baraza is in the process of finalising a website which will be a space for the narrative, as well as a forum for discussion and debate around these issues. It will be a space where people who are organising campaigns can amplify their voices and create their own interest groups online.

In the meantime, the organisation has been conducting courses on pan-African intellectuals and African literature, which will resume again throughout the year. Courses focus on the full history of Africa, dating back to pre-colonial Africa, and include a study of people like Frantz Fanon, Walter Rodney and C.L.R. James.

We have also been organising public meetings. An event in January 2015, in Nairobi, marked the 90th anniversary of the birth of Frantz Fanon. It drew more than 200 people. In March, a meeting was held to commemorate the 50th anniversary of the assassination of Pio Gama Pinto, one of the leaders of the nationalist movement in Kenya who was assassinated by the Kenyatta Government soon after independence.

Franz Fanton

not tomorrow. Tomorrow exists only in our minds. Materially we need to invent the future for this continent.

The distant education system

There's a systematic elimination of African writing and history in education. What we are being fed is a nationalist view which supports the existing regimes – justification for their positions. If one looks at the educational literature, it's dominated by a handful of corporations who put out material that is essentially mimicking Europe. There are very few books and materials in education that help people grasp and contend with their own histories, and I think that is something very important for us to overcome. A core element of education has unfortunately become, as a result of current social relations, an 'othering' of Africans.

There is also a tendency to think that education is the same as technical training rather than the means by which people gain an authority over their own experience. Education too must be about contesting the present as well as inventing the future. I think that there are real problems with the philosophy of education, which approaches human beings as if they are empty bins that need to be filled. There has to be a change in that. The current form of education is really trying to fill people's heads with a view of the world that originates from outside.

Importance of offline meetings

The big problem we have is, if one looks at the continent as a whole, something like less than 14% of the population has access to the internet. If you exclude Morocco, Algeria, Tunisia, Egypt and South Africa, you are left with 4% with access to the internet. You are, therefore, only reaching a tiny minority by doing it this way.

There has been a lot of romanticism about telephones, and the reality is that the majority of people who do have phones in Africa really only use them for text messaging. The cost of sending messages, although it has come down significantly in some countries, in many places costs anywhere between 20 and 35 cents. If you're on less than a dollar a day then that's a large proportion. I am very sceptical about the mobile phone brigades and their propaganda. In reality, if you go to any city in Africa, you'll find that there is more than one network operating and these networks don't communicate with each other easily. As a result, you find that in the middle classes they all have a minimum of two phones, sometimes four – one for each network, one for private and one for work. This means the figures about penetration of mobile phones have to be quantified and maybe divided by four to get a better idea about penetration.

About the Author

Firoze Manji has more than 40 years' experience in international development, health and human rights. He is the founder and former editor-in-chief of the prize-winning pan-African social justice newsletter and website Pambazuka News and Pambazuka Press/ Fahamu Books. He is also the founder and former executive director (1997-2010) of Fahamu – Networks for Social Justice.

The Cruise of a Thousand Clicks

The eLearning Africa Report encourages the promotion of literary works by writers with a particular interest in education and technology. Last year, one of Africa's leading writers, Binyavanga Wainaina, contributed a collection of 'eLearning aphorisms'. This year, Bobana Badisang, a poet and prominent librarian from Botswana, takes us on her 'Cruise of A Thousand Clicks.'

Torrents hit arid precincts
The desert is flooded
Dunes are navigable
Pans of salt contain puddles
Pula has arrived, the winds are tame
Desert damsel wades in abundance
Shouting at the showers to aid her growth
Pula nkgonkgodisa, ke tlaa gola leng
She yells at toddler siblings to sidestep raindrops
It's her calling to protect them from losing their click
It is taboo for toddlers to play in the rain
For they misplace their tongue and use
baby gibberish forever

Once she went to school
Was terrorised because of her casing
Yellow-bone her iniquity
The hacking game went mental
She swapped her slate
For beads to weave her heritage
To posterity
She lives on berries when abundance has come her way
Under safe sanctuary of her people
Rain signals lavishness
Never has she seen so much rain

One glittery day
Upon the geo-spectrum, cyber lands in Tju/'ho
The village reading room is connected
She joins the world, pursues her dream
She clicks on letters and sums
Amazed that clicking has become the global lingua franca
On the internet no one teases her of her clicking

Elsewhere
The once opulent fields of progress are barren
Crops have slipped away
Aquifers have lost the sponge
Dams are waterless, while desert water-table
bursts its seams
Beasts so mixed up and diverse
Elephants trample peri-urban landscapes
For a glimpse of city lights
Sensing their centuries ago path back home, they say
Cattle take the last breath in dehydration

Kimberlitic pipes are dwindling, goldfields exhausted
Coals decline to fan embers to sustain life
Global warmth goes viral on and offline
With tempers at volcanic level
Pots have stubbornly refused to melt
Siblings no longer clique up
Those accustomed to abundance
Terrified of redundancy
In Difaqane style, hacking goes corporeal
The mouse-click cleanses the land
Clicking is no longer the shy dialectal
As in clicking songs – Iqiga, Nkqo-nkqo, Qaphela,
Nconcotha ezulwini
Clicking is the global lingua franca
As if sheltered in her mother's womb, safety haven is cyberspace
Clicking gives the learning space back to the damsel
With neither districts nor borders as barriers to knowledge
She surfs the global knowledge galaxy through a thousand clicks
Going on a voyage around the world
Tab on her lap, she peddles her tapestry on virtual reality

Mothers of the world, ever-clicking buddies
Consort to build a library without walls
Othered on terrestrial space and mothered on the information superhighway

The rains have come
The sandbanks thrive in wealth
The presence of Pula remains contemporary.

Bobana Badisang, 2015

Want a true education revolution?

It's time for affordable internet for all

By Nnenna Nwakanma, Africa Regional Coordinator, World Wide Web Foundation

After more than 50 years of independence, for many African countries, the education quality gap – the difference in attainment and learning outcomes between rich and poor and male and female – remains severe. The average number of years of schooling among the adult population is almost 14 years in the UK, but less than one year in Burkina Faso. In South Africa, which is one of the most advanced countries on the continent, fewer than half the Grade 4 students in disadvantaged schools can read at all, while almost all of those in better-off schools are reading fluently.

Mobile learning to the rescue

Accelerating well-designed mobile learning programmes is critical to help close these gaps. At the Web Foundation, we publish an annual report called the Web Index on the health and social impact of the Web in 86 countries. We now know that:

1. "Add technology and stir" approach does not work. The failure to understand the needs of frontline users, such as teachers, women and girls, and their non-involvement in the design of programmes, have only led to failed projects.
2. Schools and students have to pay to use and download educational materials because of a lack of open educational resource policies and "fair use" copyright exemptions for schools and libraries. 25% of African countries and 57% of Asian countries surveyed by UNESCO in 2012 said they had a policy requiring textbooks and other learning materials developed with public funds to be made freely accessible online without charges for use.
3. Young people value and derive great benefit from the internet above all as a safe, private and 'permission-less' space to explore new ideas, sensitive topics and alternative identities. This is especially critical for girls, who often face enormous social pressure to limit their horizons and conform to discriminatory norms. However, an increasing number of countries are censoring and spying on what people do online.

Bridging the divide

While working to bridge the digital divide for schools in Africa, it is important to note that internet access is either non-existent or prohibitively expensive for both schools and households.

- In Egypt, for example, only 25% of primary schools that have PCs also have an internet connection.
- Only one-third of people in the developing world are covered by a 3G mobile internet signal.
- Internet access is priced as a luxury good. Overall, in emerging and developing countries, the cost of entry-level broadband (averaging across mobile and fixed line access) exceeds 40% of average income (in many countries it is over 100% of monthly income).
- 500 MB per month is the minimum needed to access two or three educational videos a week, and fewer than 3% of Africans, 25% of Asians and 30% of Latin Americans, can afford a 500 MB mobile data package.
- In some cases, schools are trying to meet the costs of eLearning programmes by introducing additional student fees, thus clearly discriminating against the poor.

Nnenna Nwakanma is a FLOSS activist, community organiser, development adviser and development consultant originally from Ivory Coast in Africa. She is the co-founder of The Free Software and Open Source Foundation for Africa, which she also co-chairs.

Equal opportunities for women

The high cost to connect limits access to information and distance learning opportunities for women in the developing world, which is particularly worrying because the overwhelming majority of adults excluded from formal schooling are women.

- Women's chances of benefiting from the advantages of ICTs are one-third less than men's.
- Studies suggest that women in Africa and Asia earn on average 30-50% less than men.
- Exorbitant internet costs drastically affect the potential for women to benefit from the increased access to information and empowerment that the internet offers.

Setting a good example

South Korea, the top performing non-Western country in the Web Index, overcame poverty and achieved rapid economic growth through a twin track strategy of investment in education and investment in ICTs. Not only did the government build the most advanced IT infrastructure in the world, it also offered internet and computer literacy programmes to marginalised groups, including women, reaching 21% of the population, set up free internet access points across the country and connected all schools at free or discounted rates.

The push to introduce ICTs into schools created not only a huge demand and market for the ICT industry, helping to make it the single most important engine of growth for Korea's economy, it also helped to create the vital human infrastructure to make economic growth equitable and sustainable.

The high cost to connect limits access to information and distance learning opportunities for women in the developing world.

Photo: Duke Mwancha

Learning on tablets in a Dadaab Refugee Camp, Kenya

What next?

Whilst free access to services like Facebook and Wikipedia for those who sign up with a particular mobile operator may provide a stopgap solution, to unlock the internet revolution in access to knowledge and empowerment we need to ensure that all people can access all of the internet all of the time – can use it freely to express their views and seek information without political restrictions. Affordable and universal access is very achievable if our political leaders commit to making it a reality. The Alliance for Affordable internet – A4AI – is working tirelessly to achieve this goal, and I invite all of you to join us and add your experience and influence to this cause.

The Web Foundation is advocating policy reforms that bring costs down, allow both profit-making and non-profit innovations in areas like community WiFi, and stimulate healthy competition across all layers of the ICT market. When Colombia reduced taxes on PCs, internet penetration increased almost fivefold in only three years. Kenya experienced similar growth in mobile phone use when it opened the door to greater competition among mobile operators. We hope to see a similar impact after the recent elimination of import taxes on smartphones in Ghana — a move which the A4AI Ghana Coalition worked hard to achieve.

We need to ensure that all people can access all of the internet all of the time – can use it freely to express their views and seek information without political restrictions.

Globally, the Sustainable Development Goals (SDGs) should include a commitment to achieving universal and affordable access to broadband internet, including the expansion of free public access facilities, as part of a larger commitment on access to infrastructure. The SDGs must also commit to upholding the rights of all to freedom of expression, information and association, both online and offline.

Mobile learning is here to stay and needs to be further enhanced. Its potential to fast-track learning and teaching are huge for developing countries. Coupled with Open Education Resources, both will put us on the threshold of a true revolution in education.

Interview

The power of open knowledge

How Wikimedia is transforming education

Photo: Lane Hartwell on behalf of the Wikimedia Foundation Lila Tretikov

Wikipedia describes itself as: "a free-access, free content internet encyclopaedia, supported and hosted by the non-profit Wikimedia Foundation."

Since it was launched in 2001, Wikipedia has become one of the most popular websites in the world; championing freedom of expression and acting as a major facilitator of the open knowledge movement.

Through its various worldwide projects and initiatives, the Wikimedia Foundation has helped to spread the power of the knowledge movement to where it is perhaps most important: education. Lila Tretikov, Executive Director of the Wikimedia Foundation, explains how the organisation is breaking down language, digital literacy and access barriers, so that more people throughout Africa and the rest of the world can take advantage of the unlimited supply of collective knowledge.

What role do you think the open knowledge movement will play in the future of education?

We believe in education as a basic human right. The open knowledge movement is uniquely positioned to impact the future of education and, through it, the future of humanity. This movement has the potential to greatly improve availability, access, reuse and redistribution of knowledge, and encourage universal participation.

We see examples of open knowledge's impact in education: Wikipedia is often the first reference destination for most people in the world who have access to it, especially for students. In 2013 a group of students from the Joe Slovo Park Township, outside Cape Town, actually wrote an open letter to mobile operators requesting free access to Wikipedia on their mobile phones.

The letter detailed the challenges they faced accessing knowledge through libraries and computer labs, saying, "Our education system needs help, and having access to Wikipedia would make a very positive difference." A few months later, mobile network operator MTN South Africa announced Wikipedia would be available for free for their 20 million users.

The Joe Slovo Park Township, outside Cape Town, actually wrote an open letter to mobile operators requesting free access to Wikipedia on their mobile phones.

Open knowledge is also spreading beyond the reach of the internet. Projects like the One Laptop Per Child, WorldPossible and Worldreader bundle Wikipedia on devices and into media they produce for the use of people without reliable access to internet. We look forward to being a part of the open knowledge movement's impact on education moving forward.

What do you see as the main priorities in this area?

We believe in participation in knowledge, not just consumption. To that end, our main priorities in education relate to supporting educators and students as they learn how to make quality contributions to Wikipedia as part of their curriculum or school work. For example, we've seen very promising results from our Wikipedia Education Program, which helps students and educators learn to contribute quality content to Wikipedia in an academic setting and beyond.

The programme works with volunteers and educators in more than 70 countries worldwide to ensure that students' voices are heard on Wikipedia through the Wikipedia Education Program. This programme has also helped grow local language content, which is critical to accessibility. In 2014, we increased online content in local languages through work with education programmes worldwide, for example through the Arabic Wikipedia Education Program. Nearly 10% of Arabic Wikipedia's 'featured article' content was added by education programme students in Egypt, Jordan and Algeria.

Do you think the knowledge movement will continue to filter into the mainstream, or do you see significant challenges that need to be overcome?

When an idea becomes mainstream, it is no longer an isolated movement. And I certainly believe that open education and open knowledge are becoming mainstream. It is mainstream in places with inexpensive, high-quality internet access. Wikipedia is one of the most popular sites in the world, with nearly half a billion visitors every month, and we're seeing the most growth come from places in the world that are still in the process of gaining regular access to internet.

However, there are still real challenges that go along with this. For people readily to access most of Wikipedia's content, they need to have regular access to internet-enabled devices as well as to inexpensive and reliable internet connections. For people really to immerse themselves in free knowledge, they need to be literate. To contribute free knowledge content on Wikipedia, they need to be able to write clearly on reference topics. And in order to think critically about things they learn on Wikipedia, they should also be able to access original or secondary sources.

We've started addressing these challenges through projects that provide free access to Wikipedia on mobile phones without data charges, our continued support for offline versions of Wikipedia, as well as our support of initiatives designed to help develop local language content and improve digital literacy.

What do you think are the threats to the expansion of open knowledge?

For open knowledge to be truly inclusive and relevant to everyone, it needs to be created by people from all over the world, reflecting a variety of perspectives and understanding, languages and cultures. Right now, the majority of open knowledge is still made and used by people from places like Europe and the United States. This concentration risks unintentionally introducing or reinforcing systemic bias. One big challenge is breaking down that divide.

We are also paying attention to other challenges. Global censorship is on the rise around the world. While the Wikimedia Foundation will always fight against censorship of Wikipedia, several governments do block select articles on Wikipedia and even attempt to silence Wikipedia contributors, often inhibiting their freedom of expression and people's ability to speak and discover truth. We work with our communities in the future to address some of these threats to the open knowledge movement and keep Wikipedia's knowledge base truly open and accessible to all humans around the world.

In 2014, we increased online content in local languages through work with education programmes worldwide

What plans does Wikimedia have for Africa?

Africa, with 54 countries and dozens of widely-spoken languages, is massive and diverse. No single plan for all of Africa would do it justice, but we're very interested in supporting emerging knowledge communities in specific countries where we're seeing growth in Wikipedia users.

There are several active groups of volunteers in a number of North African countries, and some regular editors distributed across sub-Saharan Africa. The Wikimedia Foundation has programmes to support these volunteers and their off-wiki activities, including making small grant resources available. These programmes help support editing workshops, contribution contests and awareness campaigns, among other things.

Every year, Wikipedians run *Wiki Loves*

Photo: Pamrob3 Wikireaders in Sinenjongo High School, Milnerton, Cape Town, South Africa

The Wikimedia Foundation will always fight against censorship of Wikipedia

Monuments, the world's largest photography contest. This past year, Wikipedians in Africa built on that success by organising "Wiki Loves Africa," a photography contest for images of African cuisine. Nine country teams organised 27 events, including cooking contests, social events and more, in countries from Cote d'Ivoire to Tunisia to Ghana. We expect this is just the beginning of successful campaigns across the continent.

In many countries, Wikimedians work with museums and other institutions to help advance their work. We are interested in helping them partner with these organisations and, when appropriate, with their governments to help spread awareness of Wikipedia and to help improve access to knowledge. In North Africa and parts of the Middle East, there have been some ongoing programmes incorporating Wikipedia article-writing into university curricula, where students contribute articles as part of their academic duties.

On my recent trip to Tunisia I met many of these contributors at WikiArabia, the first-ever community-initiated gathering of Wikipedians from across the Middle East and North Africa. Later this year, I'll be travelling to sub-Saharan Africa to meet some of these volunteers and others involved in the open knowledge movement. They know the most about what their communities need to support open knowledge and how we can best help facilitate that at the WMF.

Is Wikimedia having a quantifiable effect on governance in Africa and elsewhere?

Evidence shows that countries with better access to education, freedom of expression and freedom of information are more likely to be happy, wealthy and have greater measures of freedom and rule of law.[1] All of these are important to improving governance anywhere, including African nations.

Apart from internet access, what do you think is the key to connecting and multiplying the community in Africa, the region of the world with the lowest Wikipedia coverage?

We're social beings, we like connecting with other people. Wikipedians connect around knowledge – both in-person and online. We'll continue to support bringing our active volunteers together at events and workshops, and engage other like-minded groups of creators and curators in the free and open knowledge world.

We know that there's a strong correlation between education and becoming a Wikipedia editor. As increasing numbers of African nations are posting – and rates of higher education and the number of middle class citizens continues to grow – more people will have the freedom of time and resources to pursue intellectual and cultural interests.

People become Wikipedia editors organically and access, awareness and education all take time. In the meantime, we will continue to support the existing Wikipedia communities through grants, best practices and technology. We can also continue to raise awareness among governments, public sectors and other civic organisations across Africa about free knowledge, free licenses and the value of reuse. The better the ecosystem, the more people will be interested in becoming Wikipedia editors, allowing open knowledge to grow and thrive.

[1] http://www.lyondeclaration.org/; http://unsdsn.org/wpcontent/uploads/2014/02/WorldHappinessReport2013_online.pdf

Tuning in to Malawi's ICT4Ag success

On the airwaves, on the farm and in laboratories, Catherine Mloza Banda is strengthening the voice of women in agriculture. An agricultural value chain officer at Farm Radio Trust (FRT) Malawi, Mloza Banda was among the winners of the 2015 African Women in Agricultural Research and Development (AWARD) fellowship, an initiative that aims to recognise women's vital contribution to science and research. Although women comprise more than half the continent's farmers, only one in four agricultural researchers is female.

Together with her colleagues, Mloza Banda is working on various projects that recognise the need for a different approach to ICT for agriculture for women and men, listening to the needs of farmers, and creating innovative solutions to break through the digital divide which prevents knowledge being transferred to rural communities through mobile phones, radio and other ICTs.

Mloza Banda caught up with Annika

Burgess to share how FRT, a non-profit organisation, is educating and empowering around 2 million Malawian farmers.

"Over 60% of the population has access to radio on a daily basis and, right now, we have about 6 million mobile subscribers, which presents very big opportunities for us at Farm Radio and for ICT for agriculture in the country." Mloza Banda explains some of the most recent projects she has been involved in – one of which teaches farmers about climate smart technologies – with real enthusiasm.

"We took them through a process of identifying their agricultural challenges and needs, and what they want to learn. They wanted to learn about climate smart agriculture and compost manure which is a good agricultural innovation that improves soil structure and fertility."

We have about 6 million mobile subscribers, which presents very big opportunities for us at Farm Radio.

Input from the farmers doesn't stop there; how the information is communicated is also a process of collaboration. Mloza Banda and her colleagues spoke with extension workers and land management experts to develop radio messages on compost manure that explained how to make compost and how compost manure should be applied within the area they were working in.

Another FRT project aimed to improve household nutrition. This one took some experimentation. Realising that nutrition was perceived as a women's issue, they were faced with the problem of how to reach women.

"When we looked at issues about access to radio and control, women did not have the same access to radio as men, nor were they able to control the radio as much as men. When we sat down and we were analysing our data, we found that if we wanted to improve household nutrition there would be two problems: firstly, men would not listen to nutritional issues because it was perceived as being a women's issue; secondly, women would struggle to listen due to access and control. We had to devise strategies that enabled both men and women to use that information and to have more or less the same access or control over the radio or mobile phone."

PhotoJean-paul Lwesso

The solution: take a family-centred approach. They decided to highlight issues such as men's involvement in childcare and avoided skewing household roles towards either gender. These messages were then spread through radio listening clubs, where men were encouraged to attend; around 15,000 text messages were also sent to farmers raising awareness about the importance of women and men working together.

In regard to what was broadcast on radio, here women and men also played an equal role: "We made sure that both women and men had an opportunity to contribute to the radio programme. We would make sure there would be a specific number of men who would comment on the issue and a specific number of women. We also made it very entertaining. We infused theatre and brought in a storyline in the hope of changing attitudes. We would then give people the opportunity to comment on the drama – what was wrong? What was the man or woman in the context of the drama supposed to do?"

Enhancing programmes with mobile

As Mloza Banda mentioned early on, the growing use of mobiles opens doors to exciting new ICT4Ag possibilities, but she admits these are often just an "add-on" to engage listeners further and let them participate.

"We installed a system that allowed farmers to give feedback, ask questions and basically just to comment on what they are learning in order to see whether they are able to follow the broadcast. Sometimes we had debates or polls that people could participate in. Basically we use radio to get the message out and use mobile phones to receive feedback from the farmers."

Broadcasters also take the time to

Photo: Rud Dundasi SingisiCoffee-IPad

visit farmers to learn about what they are doing – these visits are often broadcast on air.

"When we sit down to write the messages, they can also let us know what they want: if they want debates, drama, panel discussions, community dialogue. Whatever they want, we sit down together and plan for that to happen."

For the many smallholder farmers living on between one and two dollars a day, they have also come up with a beep-to-vote mechanism that allows farmers to participate in a radio programme by beeping and not having to call in. Beeping is free of charge.

The '3-2-1' mobile service

As one of the first organisations in the country to carry out ICT4Ag projects, there has been a need to develop private-public partnerships to roll out programmes on mobile.

"We have different donors and we have devised platforms that have a private-public partnership approach. We are learning as we go along and have been recently participating in an initiative by Self Help Africa and Airtel, together with the Ministry of Agriculture and other partners. It's the '3-2-1' platform, which basically allows subscribers to access agricultural information on their mobile line. Kind of like a search engine for those without access to the internet."

She says experience has taught them that "ICTs cannot operate in a vacuum"; there needs to be a strong institutional framework to support ICT4Ag. "It calls for strong collaboration, strong coordination, and partnerships with sectors such as research, marketing and finance."

In addition, one needs to be wary of one-size-fits all solutions. When developing ICT4Ag initiatives or interventions, there needs to be a strong understanding of the target group.

"The hype and excitement for ICT4Ag is there, but one thing organisations need to guard against is ill-placed innovation. What I have noticed when interacting with other ICT4Ag organisations or those implementing it, is that there's a huge tendency, in the spirit of learning from each other, to basically pick a model from somewhere and just expect it to work in Malawi. It's like giving a six-year-old the shoe of a 40-year-old; it doesn't fit. The context is different. The outlook of the farmers is different."

FRT's future projects: "Our hopes are big"

- We hope our work will go regional, that we can expand our scope and work with other countries to be able to rollout what we've done.
- We are trying to come up with a project that specifically zeros in on gender and women. Women will be given the opportunity to have a voice on-air - empowering them to record and use ICTs to be able to voice whatever challenges they have.
- We are looking at rolling out agricultural call centres for people to call in and seek expert advice on agriculture.
- We want to establish a framework to develop ICT hubs for farmers in the rural centres. They should be able to access more than just the information that they get on radio, and be able to do so at a specific place within their community.
- We are also looking to influence not just the smallholder farmers but the policy; influence the national policy in order to make considerations for ICT in agriculture.
- We also want to reach universities by introducing ICT4Ag concepts into the curricula. Within the next 10 years everything will be mobile based so we need to prepare students and the nation for that.

Photo: Felix Warom Okello

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If education is the key to development, TVET is the master key

By Shyamal Majumdar, Head of the UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training

Never before have skills development and Technical Vocational Education & Training (TVET) been so high on the policy agenda and so central in international development dialogue. Around the world, there is a general consensus that a well-educated and trained population is the key to a country's competitiveness, prosperity and social inclusion. Conversely, with a poorly skilled population, skills mismatches and gaps are increasingly costly as they translate into lost opportunities for personal, national and global development; economic disadvantages; political instability; and high unemployment – particularly high unemployment for youth – with negative consequences for social cohesion. Recognising the importance of TVET and skills development for the world of work, the UNESCO-UNEVOC Bonn Declaration rightly stated that, "If education is the key to development, TVET is the master key". This is generally true in the post-2015 debate for the world and especially for the Africa region now.

Why prioritise TVET?

Africa is in the midst of a 'youth bulge', owing in part to low life expectancy. For example, in some 'fragile states' in Africa – such as Angola, the DRC and Somalia – nearly one half of the population is aged 15 - 29, whilst almost three-quarters is below 30 years of age (Lin, 2012).[1] In sub-Saharan Africa, where 33 of the region's 47 countries fall into the low or lower-middle income brackets, there is limited capacity to protect populations from the impact of youth unemployment. As the youth population is expected to expand further, especially in urban areas, over the next 40 years (Agbor et al, 2012), the region needs long-term solutions to this problem.

The need for the poor, including poor youth, to work in order to survive has led to the growth of a large informal sector in many African countries.[2] According to the African Development Bank, "9 in 10 rural and urban workers have informal jobs in [sub-Saharan] Africa and most employees are women

Photo: Land Rover & Red Cross Sierra Leone
Vocational training

and youth." Although the informal sector is providing opportunities, many workers are left without secure income and limited access to social security.

There are, however, positive signs for Africa, which has emerged as one of the fastest-growing regions in the world. While global growth declined by 2.7% in 2012, Africa grew by 5%. Notably, all of the African sub-regions grew faster than the global average; in turn, drawing attention to the importance of TVET to ensure sustainable development. If the youth and workforce are skilled and educated, countries can harness this growth not only to develop the informal jobs sector, but also to open doors for job seekers to enter the formal market and attain economically and socially rewarding jobs.

Unanimous call for public-private partnerships

At the Africa Regional Network Forum, which was organised by the UNESCO-UNEVOC International Centre in Abuja, Nigeria, in September 2013, speaker after speaker highlighted the importance of TVET in facing youth unemployment and sustainable development. Altogether, 157 delegates from 15 countries across the region came together to discuss how to: address the skill mismatch; promote skills for work and entrepreneurship; achieve women's economic empowerment; and transition to green-oriented growth through TVET. In spite of their specificities, the answer was clear – by building synergies between TVET providers, students and employers.

The conference analysed various aspects of the private-public partnership (PPP), including the role of apprenticeships, on-the-job training, school to work transition and dual training system. It was highlighted that often the weak financial basis of the state means countries are faced with the problem of how to finance their TVET systems and how to invest in further development. It is obvious that the challenges cannot be met by pure public investment. There was, therefore, a call for evidence-based promising practices, involving PPP models, to be shared and discussed.

[1] According to the Economic Commission for Africa's (ECA's) Africa Youth Report 2011, Africa is a continent of the young, with more than 60% of the population below the age of 30. This poses peculiar challenges, in terms of education provision for young people and the possibility of employment.

[2] In addition, the NEET (Not in Education, Employment, or Training) rate among young people in the region is high, reaching 23% in the West Africa sub-region and nearly three times that rate among young women in Niger (Roubaud and Torelli, 2013; PRB, 2013).

Promising practices from around the world

Germany: The Dual System

The Dual System model is characterised by training, which is mainly provided in the company and supported by teaching in part-time vocational schools. Learning in both environments is governed by different bodies but coordinated under regulations and is financed by a public-private partnership – the companies finance the in-company training and the state finances the schools. The responsibilities are divided between the Federal Government, the 'Länder' (Germany's federal regions), industry (employers and unions) and the chambers. There are about 350 training regulations based on the dual model. Figures from the BIBB Datenreport 2014 showed that around 1.4 million people are trained every year.

The model is also comprised of programmes that target specific groups:

- In order to support companies that offer dual training opportunities or would like to do so, the German Ministry for Education and Research (BMBF) created the Jobstarter Programme. Under the programme, various projects are implemented, inter alia, by chambers of trade and industry, local and regional institutions, education providers and companies. They advise and support companies to design and manage apprenticeship training within the company, and find qualified people for the positions.

- The programme directly targeted at young people is the training scheme programme (Berufsorientierungsprogramm). It aims to identify the potentialities of secondary school students who do not strive for a place at university, and provides short-haul training in plants and companies. Results of the programme show that young people who participated have become more secure in choosing their career and aware of their strengths and weaknesses.

Mauritius: Sustaining the financing of training

The Mauritian example of introducing the Levi-Grant system shows that the later integration of a PPP can also be very effective in advancing a TVET system.

Mauritius was suffering from a labour mismatch and skills shortages as it moved into its second cycle of economic development – one that focused on the textile sector and related industries. In response, in the early 1990s, the Mauritius Employers Federation (MEF) established the Industrial and Vocational Training Board (IVTB) as a joint venture between the private and public sectors. It proposed a training levy of 1%, to be paid by all employers, which was soon followed by a levy-grant system, whereby a certain percentage of the costs incurred in investing in the training of employees was refunded. The amount of funding for training increased substantially and, by paying a levy, employers became more interested in the outcomes, as well as active members in all levels of the IVTB.

Although some weaknesses have been identified, nearly 400,000 people, more than 50% of the Mauritian labour force, have today benefited from training under the levy-grant system. The IVTB is considered an effective model for that part of the world to reach a high level of development.

Emphasis was placed on:

- Assisting companies in providing training, upgrading and re-skilling their employees.
- Assisting companies in identifying their training needs and preparing their annual or multi-annual training plans to make training more responsive and effective.
- Assisting registered training centres in the modernisation of their delivery systems through investment in multimedia facilities.
- Encouraging more employees to upgrade their qualifications by providing them with seed funding for master's degree courses, with a view to enhancing their management skills.

The way forward

The three promising practices from different regions, with different stages of TVET development, demonstrate that PPPs are successful models for taking the TVET system forward. Apart from the positive financial effect of sharing costs, the most important fact of a PPP is to make different groups within the society realise that investment in TVET is a key factor contributing to high quality education, employment and economic and social development of the countries. This is even truer for the sub-Saharan region in Africa where the need for investment through PPP models in education, particularly in TVET, is essential to overcome poverty and to support economic and social development.

Programme information sourced from the UNESCO-UNEVOC TVET Promising Practices Database

India: Making modern poultry markets work for the poor

The Indian example of creating a co-operative environment within a specific sector set an example of how a PPP model can be implemented in other fields.

As the fastest growing agricultural enterprise in India, poultry development is seen as a major contributor to reducing poverty. However, due to factors such as rigid entry barriers, a low skill base, and limited access to appropriate technology, small producers represented only 8% of the sector.

The NGO PRADAN (Professional Assistance for Development Action) initiated a home-based broiler farming pilot in 1997. Its theory was that it was possible for a larger conglomerate of small-producers to overcome commercial poultry entry barriers if their production practices, quality orientation and veterinary inputs were entwined into a cost effective system.

It organised women from tribal and other poor families into cooperatives to serve the growing needs of small town and urban markets. At present, PRADAN works with 5,320 families organised into 15 cooperatives, the largest conglomeration of small-holder poultry in India. Through the cooperatives, PRADAN provides women with hands-on training – addressing production efficiency as well as marketing live broilers – and assistance in securing finances from banks or government programmes.

Teaching teacher trainers to teach online

Photo: IICD Flickr creative commons

Before you bring in the technology, you first need to build teachers' capacities.

This is one of the most important lessons for anyone who wants to introduce ICT into education in Africa.

Increasingly, both to improve the quality of education in teachers' colleges and schools, and to equip educators with the skills they need to use ICTs in their teaching, digital literacy has become a priority. But as the fast-moving ICT sector demands continuous capacity building, the integration of ICTs in education and training still remains a challenge. According to the eLearning Africa Report survey, 74% of teachers say there is not enough support in their country or region for teachers to increase their digital literacy. When asked what they would like to see happen in the coming years to enhance the use of ICT in education, the most common answer was to improve ICT training for teachers and students, implement capacity building programmes and make ICT use compulsory.

Annika Burgess spoke with primary and university-level teacher trainers from Kenya to find out what approaches are working for them.

Dr Speranza Ndege is a Senior Lecturer at Kenyatta University (KU) in Nairobi, where she has held various directorial positions over the past 11 years. Currently the head of Television and Radio Services, she was previously the Director of the Institute of Open Distance & e-Learning (ODeL) (2009-2014). In this role, she oversaw the training of 73,134 university students in online learning, 695 university lecturers in online facilitation, and the digitisation of 801 units.

KU has been involved in online education since 1997, as a participating institution in the African Virtual University (AVU) – a World Bank project designed as a technology-based distance education network to bridge the digital divide in Africa. Dr Ndege says these well-established education networks, as well as the Kenyan Government's commitment to ICT in education, for instance offering computer studies as a subject in secondary schools, has made it much easier for educators to implement ICT.

As KU provides a number of virtual and open learning programmes, as a basic requirement, all lecturers, students and administrators must sharpen their digital skills.

"Once the students come to the university, the first thing we do is place them in computer laboratories and we train them in computer literacy. The next thing we do is train them in internet technology. After they have been trained in internet technology we teach them how to use our eLearning platform. We use the Moodle platform."

The university's eLearning platform allows students and teachers to access materials online, conduct and mark assignments, and take part in discussions. Dr Ndege says, although most teachers who come to the university "are computer literate and know how to use mobiles for eLearning", often they don't have the same attitude towards online education.

"We need to do something about the teachers who don't want to go online; who are afraid of technology. Sometimes things don't work or the internet is slow, or when the classes are big they think they are spending too much time online. What we have done is make it compulsory for online teaching to take place. If you are teaching face-to-face then you also need to have at least one course online. Not many other universities make that compulsory. The university is investing a lot in training our lecturers on how to teach online."

We need to do something about the teachers who don't want to go online; who are afraid of technology.

Through the university's Digital School of Virtual and Open Learning, a wide range of quality programmes are provided at diploma, undergraduate and post-graduate levels through open and distance learning modes. All newly enrolled students at the KU Digital School receive a free tablet uploaded with registered units, especially benefitting those in rural areas who may not have access to a computer. Of the approximately 6,000 distance learning students, Dr Ndege says: "What's interesting is that most of the people who come to us for distance learning are teachers in high school."

With demand from teachers looking to upgrade their skills at a high, the university also offers a special Institutional Based Programme, which takes place on-campus in the school holidays allowing for teachers who want a degree to take part.

"They come and we teach them in the laboratory, and we train them in ICT and how to access the materials online so then they are able to do courses when they go back – we are able to assess the materials online. There are about 2,000 students in that programme."

"Refresher courses are the backbone of content mastery and delivery. That is to say, practice makes perfect." This is the philosophy of Noah Okidia, an ICT tutor at Bondo Teachers' Training College in Kenya, where they are constantly upgrading lecturers' ICT skills.

"We employ continuous learning in that at the beginning of every term we employ a refresher programme for new tutors and even the non-teaching staff. The refresher course is crowned by the Teaching Practice seminar, which every tutor must attend. Head teachers of our teaching practice schools are also invited to attend. We refresh on basic ICT skills, applications and the internet."

Doubling as the Deputy Teaching Practice Director, Okidia has held these positions at the college for the last eight years. At the college they train pre-service P1 teachers – student teachers who are yet to undertake any teaching. Okidia says that not only are students taught how to use ICTs for teaching, they are also encouraged to incorporate them into the learning process.

"The teachers in the college are trained in ICT as soon as they join our staff. The ICT department has developed a termly ICT training programme for both the teaching and non-teaching staff. The curriculum covers computer basics, word processing, spreadsheets, internet and email. One fundamental part is lesson presentations using PowerPoint."

We employ continuous learning in that at the beginning of every term we employ a refresher programme for new tutors and even the non-teaching staff.

Although the college makes ICT training a priority, it faces similar challenges to many educational institutions across the continent: "Inadequate equipment – we do not have enough computers, laboratories and even connections. Internet connectivity is also a problem; we had to use our personal phones as hotspots to connect to our computers for internet for lessons before we got a Safaricom connection."

Despite this, the college has been achieving its goals; receiving positive feedback from alumni now using ICTs in their teaching. Okidia says this this feedback is their "strength and motivation".

"They teach using the very same skills they acquire in college. They stay in contact, and call or email to get to know even more about content delivery using ICTs."

Stop the education blame game and start looking at the bigger picture

Education is everyone's concern and, as such, everyone has something to say about it. Parents, teachers, policymakers and economic operators, as well as the business people and religious institutions that invest in private education, all want their voices heard.

By Professor Sozinho Francisco Matsinhe,

PhD, Executive Secretary African Academy of Languages (ACALAN) African Union Commission

Education continues to dominate the agendas of international and regional organisations, inspiring campaigns and programmes such as the United Nations' Education for All (EFA) and the African Union's Second Decade of Education for Africa, both due to end in 2015. This adds emphasis to the notion that education is regarded as the engine of change, propelling countries into development and a better life. It is therefore not surprising that education takes the lion's share in most national budgets, particularly in Africa, as efforts and resources in the post-independence decades have been directed towards bringing about sustainable development to improve citizens' quality of life.

However, without any attempt to undermine the impact of such campaigns, in terms of deepening the debate on the challenges facing education and raising the awareness of the need to strengthen the link between education and sustainable development, what seems to be undeniable is that the outcomes of education are not commensurate with efforts, resources and investments.

This is also despite eLearning coming into the equation. The introduction of Information and Communication Technologies (ICT) into education has brought with it simplified learning processes, allowing learners to acquire knowledge at their own pace and in any place. It also provides opportunities for education to

Photo: Bright Ayisi

become more affordable. Many countries have, therefore, been harnessing the power of ICT to improve the quality of education, taking part in projects such as the ubiquitous One Laptop Per Child scheme. So, what is holding back education from becoming the catalyst for change?

Chief among the challenges is the top-down approach to education that gives rise to the blaming chain and paradox in education.

Parents tend to blame decision-makers for failing to provide good and quality education that secures jobs and a better future for their children. They hold the decision-makers responsible for employing anyone as a teacher, without having the minimum teacher training, and therefore undermining the prestige of the profession.

The decision-makers blame the parents for alienating themselves from the education process. The tertiary level teachers hold secondary teachers responsible for high dropout rates, saying they allow learners to pass without having the necessary aptitude that would allow them to cope with the demands of tertiary level education. Secondary school teachers blame primary level teachers for not preparing the learners for secondary education; while primary teachers blame teachers in foundation grades for not preparing the learners for primary education.

What seems to be unwittingly forgotten here is that, as suggested above, education is a cross-cutting issue. As such, programmes and strategies, as is the case of eLearning or otherwise, should adopt a holistic approach, which does not alienate any stakeholder. The curriculum of education systems and its content should be informed and inspired by the learning environment, as well as the socio-linguistic reality of the learner. This will reduce the gap between home and school, allowing parents to participate in the education of their children and, by so doing, break the blaming chain and paradox.

Education systems should include vigorous teacher training sub-systems, which also take the socio-linguistic reality of the learner into account. For instance, in most African countries, education systems envisage the use of African languages as a medium of instruction in foundation grades. However, the teachers are not provided with any training in L1 or mother tongue methodologies that could enable them to teach in the language of the learners. They cannot, therefore, deliver.

As Education International, a global federation of teachers' unions based in Brussels reminds us, "No education system is better than its teachers." So without a proper training of teachers, learning cannot take place in those grades.

Education is about enabling the learner to be an agent of change in his life and environment. As the world enters into a new phase in the debate on education, following the end of EFA and the Second Decade of Education for Africa, there is a need to bring a holistic approach to the centre of this debate. This will allow all stakeholders to provide input and be part and parcel of the process, allowing education to indeed become an engine of change and a propeller of sustainable development.

ACALAN Projects

There are approximately 2,000 African languages spoken on the continent, but still the former colonial languages like English, French and Portuguese are taking the lead when it comes to education, administration and politics. ACALAN fights for more equity for the African mother languages in all domains of society.

In regard to education, its projects include training the trainers of teachers of African languages in L1 methodologies; ACALAN is also working towards developing a methodological framework for developing terminology in African languages, as well as increasing the presence of African languages in cyber space. It is starting with a prototype domain in Swahili which will then be emulated for other languages.

Local innovation

Spotlight on eLearning in Egypt

With the largest education system in the Middle East, Egypt has taken advantage of the digital revolution to improve the quality of the education it offers and lead the way as a regional eLearning hub.

The Egyptian Government places strong emphasis on developing this sector; under the ICT Strategy 2012-2017, for instance, it aims to provide high speed internet for all schools and educational institutions, and produce over 20 million tablets for students and the learning community. There are currently ICT initiatives in place at every level of education. Local innovators and entrepreneurs also increasingly contribute to new digital solutions, which augment the Egyptian school curriculum.

One such venture is the successful K-12 educational video platform Nafham, which is linked to the mandated public curricula in five Arab countries. Since it was founded in 2012, the platform has built up a database of 23,000 educational videos, all of which are crowd-sourced and revised by professionals. Using 5 – 20 minute videos, it provides simplified explanations of concepts, which are often difficult to grasp, serving students, parents and educators. It is a popular approach: the site has received more than 25 million views, with over 10,000 viewers daily.

Recognised for its contribution not only to the development of individuals within Arab communities, but also for creating an awareness of the importance of access to education, Nafham has won several regional and international awards.

Photo: TIEC

It was awarded the 2015 Arab Social Media Influencers Award (ASMIA) for its influence on social and academic engagement amongst students. It also won 1st place in the Samsung Egypt Award in 2014 for its educational value to the community, as well as the H.H. Sheikh Salem Al-Ali Al Sabah Informatics Award in 2013 for best Arabic website.

In 2010 the Technology Innovation and Entrepreneurship Center (TIEC) was launched. An affiliate of the Information Technology Industry Development Agency (ITIDA), an organisation mandated by the Government to boost the development of the Egyptian IT sector and increase its global competitiveness.

The TIEC supports talented ICT entrepreneurs through programmes and initiatives, for example by providing start-ups with location, equipment, mentorship and consultancy services in areas such as legal, accounting and project management. Amongst its many success stories, InterAct is a start-up making waves in the edtech scene. Its Intelligent Education System (IES) won 4th place at the Intel Business Challenge MENA 2014, held in Bahrain, and represented Egypt and the MENA region at Intel Global at UC Berkeley. InterAct's innovative technology converts a projected area on a wall into an interactive surface that can be used as interactive whiteboard for educational purposes.

Aiming to stimulate the start-up sector even more, in December 2014, the Egyptian Government announced a public-private partnership, the EGP10 billion (US$1.4 billion) Ayadi Company for Development and Investment, an incubator designed to support entrepreneurs.

At the launch, Prime Minister Ibrahim Mahlab said small and medium-sized enterprises (SMEs) would be crucial in the future and will play an important role in dealing with the increasing size of the workforce.

Underwater networks leapfrogging Africa into the future

A networked underwater world of fibre-optic cables has been revolutionising the internet throughout Africa. Buried in the sea bed, these cables stretch between continents, reaching all corners of the globe. They bring with them the faster, and often cheaper, internet that's powering the digital age.

In 2009, sub-Saharan Africa began to see its first international submarine fibre-optic cable connections. Now the region has multiple cable systems on both coasts, with more countries being connected each year. To put things into perspective, 14 years ago in Accra, Ghana, orbiting satellites were providing snail-speed internet, but today it is linked to Europe and Asia through five undersea fibre cables, allowing 4 million citizens to access 3G mobile data.

Through his website manypossibilities.net, social entrepreneur Steve Song has been working with the online community to map the history and development of African undersea cables. He has shared with us his continuously updated African Undersea Cables map – April 2015 version – as well as his review of the continent's 2014 telecom infrastructure development, to paint a picture of where and how the continent is getting connected.

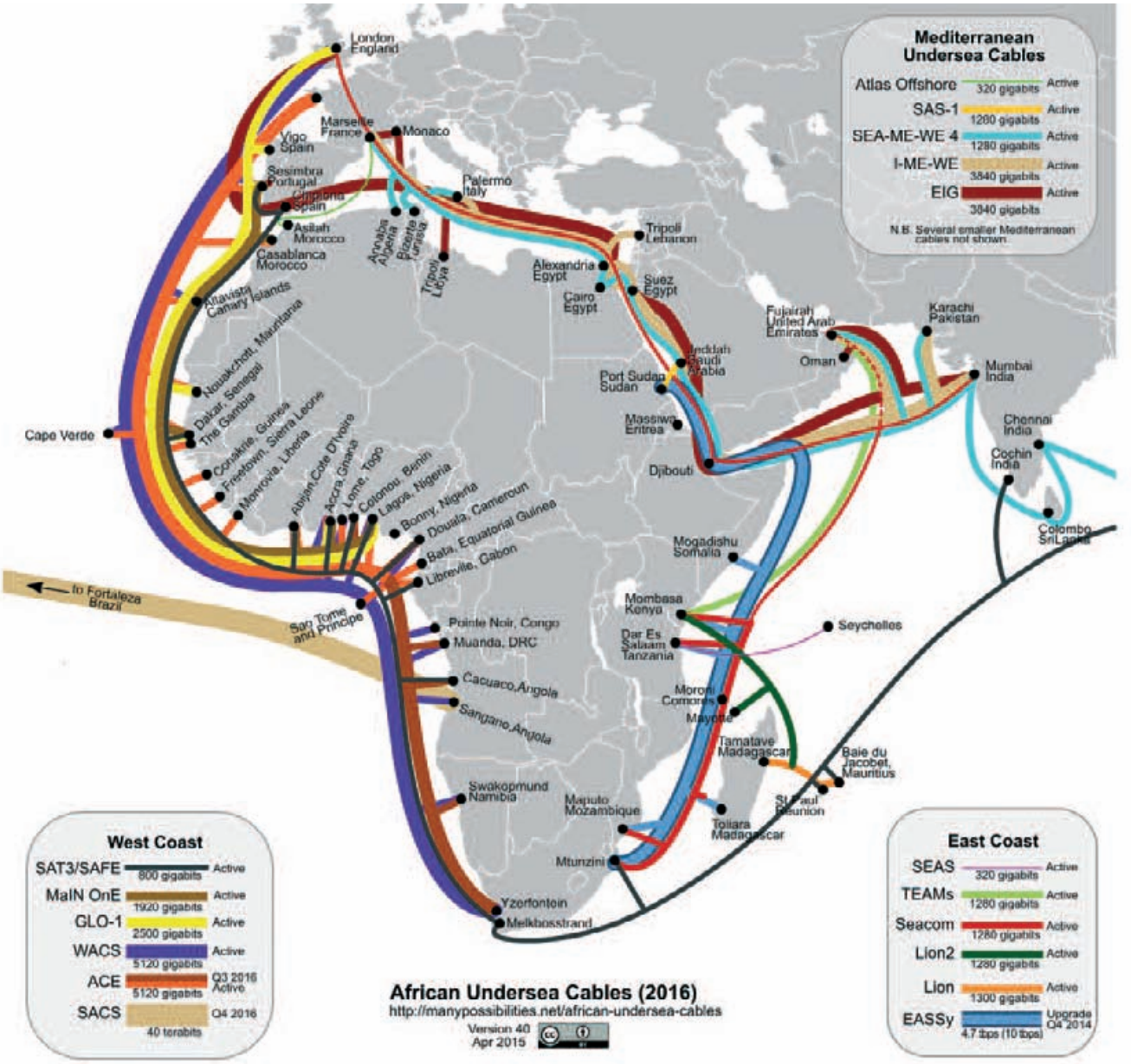
By Steve Song, manypossibilities.net

Undersea Cables

Perhaps the most noticeable thing about undersea fibre-optic cable development around Africa in 2014 was the soundless popping of project bubbles that failed to gain traction. Developments for WASACE, BRICS, SAeX and the southern leg of the ACE cable were all touted at one time but it seems that the continent is approaching saturation in at least the number of undersea projects required to provide capacity.

A notable exception to this is the South Atlantic Cable System (SACS), which will connect Angola with Brazil and link the rest of Africa with Latin America for the first time. The likelihood of SACS going live seems certain, although perhaps not as soon as might have been hoped (Q4 2016).

Two existing African undersea cables saw upgrade projects initiated in 2014. The design capacity of SAT3 more than doubled to 920 Gbps – also referred to as the South Atlantic 3/West Africa Submarine Cable, it links Portugal and Spain to South Africa, with connections to several West African countries along the route. EASSy cable, which connects countries in Eastern Africa to the rest of the world, also announced a planned doubling of its design capacity from 4720 Gbps to more than 10 Tbps – EASSy runs from Mtunzini in South Africa to Port Sudan in Sudan, with landing points in nine countries. Meanwhile, in North Africa, new undersea capacity linking Tunisia and Italy was announced.



The African undersea fibre revolution which began in 2009 with the launch of the Seacom cable is now maturing. We are seeing the fruit of this in the development of terrestrial fibre infrastructure to take advantage of this huge latent capacity.

Terrestrial Fibre Backbones

The development of terrestrial fibre networks in Africa is perhaps the most significant and most under-appreciated change in African telecoms in the last five years. In 2014 alone, at least a dozen new fibre backbone projects made the news. Interestingly, most of the announcements came from countries that are far down the leader board in terms of telecom infrastructure development. This is because most African countries have already had terrestrial fibre backbone initiatives underway for a few years now. Indeed, one recent estimate suggests that 44% of Africa's population is now within reach of a fibre network.

Fibre to the Home (FTTH)

Also significant in 2014 was the announcement of Fibre to the Home (FTTH) projects in a number of countries. FTTH is not new in Africa; Kenya's Jamii Telecom announced a FTTH service in Nairobi back in 2011. The deal with Chinese equipment manufacturer ZTE to connect 100,000 homes to its fibre-optic network made it the first internet service provider in the country to connect residential subscribers directly to fibre. However, 2014 was different in a couple of respects.

2014 fibre-optic project news

Gabon, October 2014: The authorities awarded a long-awaited contract for the installation of the country's first cross-country fibre-optic connection. The cable will form the backbone of a future fibre-optic network, while also playing a key role in a wider inter-regional broadband initiative.

Cameroon, December 2014: Cameroon Telecommunications (Camtel) announced plans to extend its fibre optic network to meet growing technological demands in the country. The loan agreement between the government and Exim Bank China would see the building of 10,000 km of fibre loops in several towns and cities, expanding the existing fibre network estimated to cover 6,000 km.

Zimbabwe, December 2014: The Zimbabwe Electricity Supply Authority (ZESA) holdings announced plans to initiate a $32 million fibre optic backbone network project – it is expected to be completed over the next year through its subsidiary Powertel.

Senegal, September 2014: Senegal's national fixed line PTO Sonatel announced it would deploy around 371km of new fibre-optic cabling between Tambacounda, Kedougou and Moussala, at a cost of around $3.93 million, to improve connectivity in the interior regions of the country.

Democratic Republic of Congo, July 2014: Construction underway on a 34,000km fibre-optic cable that will connect the whole country to the Muanda landing station.

South Sudan, April 2014: EASSy plans deployment for South Sudan. EASSy is a 10,000km submarine fibre-optic cable system installed along the east and south coast of Africa.

Kenya, December 2014: Liquid Telecom announces it has completed 4,200 km of fibre infrastructure connecting 39 counties in Kenya.

Cote D'Ivoire, December 2014: Construction underway of a 2,000km fibre-optic network that will connect western and north-western parts of the country, and 600km to interlink cities and towns located in the north-eastern regions.

Most of the announcements were related in one way or another to Liquid Telecom. Liquid operate the largest terrestrial fibre network in Africa with close to 20,000km of fibre networks. The fact that they have been aggressively pursuing FTTH suggests that the urban telecom landscape in Africa may be shifting even faster than expected.

The other significant news was the launch of the first grassroots FTTH initiatives in Africa. Consumers' associations in the Johannesburg suburbs of Parkhurst and Parkview banded together to take the quality and price of connectivity into their own hands. Whilst these are comparatively wealthy suburbs for South Africa, and South Africa has comparatively well-developed infrastructure, it is a sign of an alternative possible future where telecom infrastructure becomes cheap enough for communities to determine their own solutions. To quote William Gibson, "The future is already here — it's just not very evenly distributed."

LTE

(Long-term evolution - a 4G mobile communications standard)

Last year saw 12 new LTE networks launched across 10 countries, bringing the total number of LTE networks on the continent up to 29 from a total of 17 at the end of 2013. With few exceptions, these deployments were in urban areas providing high-speed access to the most lucrative telecom markets.

Earlier African LTE deployments tended to be in the 1800MHz band, as a result of incumbents re-utilising their existing spectrum assignments. In 2014, 2.6GHz and 800MHz dominated the deployments. Again, most of these deployments were incumbents recycling their previous WiMax and CDMA spectrum assignments respectively.

LTE networks present challenges to African regulators and operators alike. Demand for spectrum now significantly exceeds current availability meaning

Spectrum auction:

A process whereby a government uses an auction system to sell the rights (licences) to transmit signals over specific bands of the electromagnetic spectrum and to assign scarce spectrum resources. Depending on the specific auction format used, a spectrum auction can last from a single day to several months from the opening bid to the final winning bid. With a well-designed auction, resources are allocated efficiently to the parties that value them the most, the government securing revenue in the process. Spectrum auctions are a step toward market-based spectrum management and privatisation of public airwaves, and are a way for governments to allocate scarce resources.

that regulators need to implement equitable and just mechanisms for giving out spectrum licenses. Nigeria stands out on the continent as the only country to have successfully implemented spectrum auctions. However, it is an open question whether spectrum auctions are the most appropriate mechanism for poor countries where high auction pay-outs may ultimately raise costs for consumers. Standing in contrast to Nigeria, Kenya recently handed out a 800 Mhz spectrum for LTE to majority incumbent Safaricom in exchange for $US75 million and a contract to develop a police communication network. This approach may have both efficiency and cost-savings benefits over spectrum auctions but does little to promote a competitive market.

Unlicensed Spectrum (WiFi)

Perhaps the most notable thing about WiFi across the continent has been its general absence from the news. While WiFi offloading of mobile data traffic is now approaching 80% in many parts of the world and WiFi is now embedded in everything from lightbulbs to refrigerators, never mind smartphones and tablets, it somehow remains the poor cousin of connectivity in Africa. One might argue that WiFi offloading in rich countries is enabled by extensive wireline infrastructure that simply doesn't exist in most of Africa. Yet even this is changing with the development of extensive metro fibre networks in most African capitals. Disappointingly, commercial WiFi services are banned in some African countries, such as Zimbabwe and Namibia, or attract licensing fees annually that exceed the cost of the equipment itself, for instance in Malawi.

However, there are some bright exceptions. Project Isiswe in South Africa has launched successful WiFi networks in Stellenbosch and Pretoria. In Rwanda, the Smart Kigali programme now offers WiFi in public spaces in Kigali.

Photo: Wallace Mawire

Dynamic Spectrum

Last but not least is the Television White Spaces spectrum or now more generically referred to as Dynamic Spectrum. In Africa, Microsoft and their 4Afrika programme stand way out in front as the leader in this space. Not only are they supporting active pilots in Kenya, Tanzania and Ghana, but have new ones planned for both Namibia and Botswana. In addition, they have championed the establishment of the Dynamic Spectrum Alliance (DSA), an industry association with the mission of increasing dynamic access to unused radio frequencies. Google has also been active in the development of the DSA and, more recently, Facebook has joined as well.

Somewhat frustratingly, there are still no countries in Africa that have introduced formal regulation on dynamic spectrum. South Africa and Malawi are probably closest to this but at the current pace it will likely be 2016 before we see published regulations. Why are things moving so slowly? There are some key contributing factors. First, as yet there is no mass manufacturing of dynamic spectrum devices, which is essential to bringing costs down. It is something of a catch-22 as manufacturers are awaiting a strong signal from regulators to gear up manufacturing, whilst regulators seem to be awaiting mass market production. Second, the International Telecommunication Union (ITU), in spite of sanctioning dynamic spectrum at the World Radio Congress in 2012, have been spreading fear, uncertainty and doubt about dynamic spectrum. They are prone to asking questions like: "What is the business model for dynamic spectrum?" I don't remember anyone asking that question about WiFi in its infancy. Third, broadcasters who currently have rights to television spectrum, and telecom incumbents who want more spectrum, are reluctant to encourage the unknown impact that dynamic spectrum may have.

Interestingly, the most significant impact that dynamic spectrum in Africa had in 2014, was in the United States where evidence from trials in South Africa and Ghana led the Federal Communications Commission (FCC) to develop more progressive regulation of dynamic spectrum in the US. Mediatek, the third-largest manufacturer of WiFi chips in the world, have announced that they will bring a dynamic spectrum chipset to mass market by Q4 of 2015. Hopefully that will move things along a little faster.

About the author

Steve Song is the Founder of Village Telco, a social enterprise that builds low-cost WiFi mesh VoIP technologies to deliver affordable voice and internet in underserviced areas. He is also a passionate advocate for cheaper, more pervasive access to communication infrastructure in Africa.

What is "appropriate technology" for eLearning in Africa?

By Dr Niall Winters, Associate Professor of Learning and New Technologies at the Department of Education, University of Oxford and a Fellow of Kellogg College.

What does it really mean to use technology for education and learning in Africa? For many, it is an opportunity to provide students with the skills they need to take part in the knowledge economy of the 21st Century, a chance for teachers to improve their teaching practice and a means by which self-guided informal learning will flourish.

Each of these positions is problematic if technology and technology use are not conceptualised in a nuanced and in-depth manner. In this brief position piece, I will critique each of the above framings of technology-enhanced learning (TEL) and point out ways in which they can be 'problematised' and, thereby, strengthened as a way of thinking about appropriate uses of technology in an African context.

A skills-based approach to TEL

Here, TEL is framed as a means by which learners can improve their skills to make them "job-ready". It is often underpinned theoretically by a human capital approach to education. This framing has a strong focus on economic development and the role technology can play in supporting it. There is thus a keen interest in how technology can be used in various sectors to prepare populations for the "knowledge economy" and in particular how solutions can be aligned to business needs and the development of life skills.

The choices regarding how technology is used in education are often made with respect to a potential return on investment. However, this view can mean that a blinkered focus on TEL is adopted in which the main (or even only) question addressed is: how can technology improve learning outcomes? The challenge is to open up this viewpoint to a set of wider perspectives that raise fundamental questions about the role of technology in development: who is it for and whose interests does it serve?

A chance for teachers to improve their practice

One of the most popular rationales for the use of technology in education is: As current teaching and formal education systems are weak, technology can play a strong role in bridging this gap - in particular, for reaching the millions of children not in formal education.

However, the viewpoint is problematic, particularly for the case of mobile learning. Its definition – often promoted by vendors – is concerned primarily with the provision of content on phones. This ignores a key understanding of access as the provision of a longitudinal developmental opportunity. By re-framing access as information dissemination, longitudinal opportunities can be ignored and solutions that require little technical or pedagogical expertise can become the focus. From a commercial perspective, this information-centric view is beneficial because it is extremely easy to scale and so potentially very lucrative. As such, mobile operators have a strong motivation to frame the use of technology in education as the promotion of marginalised communities' access to information.

While highlighting the issue of access is laudable, from an educational perspective, how vendors have done this is conceptually weak and is unlikely to have any major effect on improving educational systems, thereby undermining long-term sustainability. Paradoxically, the growth of mobile learning interventions will require the skills of teachers, which implies a strong focus on teacher training and classroom experience – all elements of the formal education system. Therefore, framing mobile learning as an adjunct to the formal system does not seem to be sustainable.

Photo: Fred Gaghauna

Self-guided learners

Two key examples of an approach to self-guided learning are the One Laptop per Child (OLPC) programme and the Hole in the Wall (Mitra & Rana, 2001) project. Whilst neither can be said to have implemented an appropriate solution successfully, they do provide sites for deeper critique.

Framing mobile learning as an adjunct to the formal system does not seem to be sustainable.

Are constructionist theories of learning well understood as exemplified by their implementation in projects? Constructionism proposes that children learn by engaging in social learning environments where they create computational objects that act as concrete representations of their cognitive development. A common misunderstanding is the implication that because a constructionist approach is used, this means that the teacher can only play a peripheral role. To be clear, this claim is simply not true. However, this 'minimalist' interpretation is the one that underpins both of these projects and, as a result, they position themselves very much outside of the formal structures of education.

In previous work, we have detailed how the OLPC relies on the learner as the agent of change. Through the 'Hole-in-the-Wall' projects, Mitra and colleagues have developed the concept of "minimally invasive education" (Mitra & Rana, 2001) to define the ways in which learners living in marginalised communities can teach themselves to engage in simple interactions with a computer, without any formal intervention. Minimally invasive education is highly contested amongst educational researchers and practitioners. While noting that the idea has some potential, Arora (2010) is clear that if it is to be embedded within communities and become socially accepted, it will need to negotiate significant challenges with respect to its "relationships with the school, the teacher as a mediator, and the kinds of content, instruction and curriculum" (p. 700).

Techno-centric or even solely content-based solutions alone will not be able to address key educational challenges. Arora's research, in the case of the Hole-in-the-Wall projects, showed that a small number of boys usually dominate kiosk use and were very selective when choosing with whom to engage for peer learning. Thus, even within communities, the members of which are all supposed to benefit, marginalisation occurred. Moreover, without proper embedding into the social context, the kiosks went unused after project funding ended.

This short piece has raised three key issues regarding the use of technology in education. It is only by discussing and addressing them in the specific contexts in which they arise, that TEL in Africa will continue to move forward.

Reference

Mitra S. and Rana, V. (2001) Children and the Internet: Experiments with minimally invasive education in India, British Journal of Educational Technology, 32 (2), p. 221-232.

Dr Winters' main research interest is in the participatory design of mobile interventions for medical and healthcare training. The current focus of this research is two-fold: supporting the training of Kenyan community health volunteers in child development and investigating the use of mobile technology to support postgraduate medical education in London teaching hospitals.

Putting mobile learning into context

Mobile learning has played a vital role in the use of technology in education by providing supplementary learning resources to children in schools across the world. However, the role of mobile learning in classrooms has at times been displaced because of a lack of contextualisation in the environment in which it is used.

Dr Mmaki Jantjies is the Information Systems Department Head at North-West University in South Africa. She was involved in the development of innovative software that helps make multilingual STEM mobile learning possible, and here shares the results of studies into how learning can be contextualised, through language and content, to support learning in South African schools.

The bilingual mLearning experience

In the first study, involving high school students from South Africa's North West province, a mobile learning tool called M-Thuto was developed in collaboration with education experts specialising in STEM related subjects. M is the abbreviation for 'Mobile' and Thuto meaning 'education' when directly translated into the Setswana language. The content of the learning tool was taken from teachers, the textbooks and other learning material used in the South African curriculum.

Working with teachers, we established the content employed in daily classroom lessons. This content was then transformed into various mobile learning activities. These included mathematics exercises, notes and quizzes used by teachers in the classroom to supplement text books and other paper-based learning resources. In addition, the content was translated into the regional South African language Setswana, appropriate to where the study was conducted.

Each page of mobile content enabled the learners to switch between English and a Setswana view of the application in order to enable pupils to acquire a greater understanding of content. The

Study 1: Who was involved?

- 90 learners within four high schools in the North West province of South Africa.
- Schools differed in terms of resources - the first school situated in an urban area was well equipped, the second school was situated in a low income urban area and the final two schools were situated in a rural area.
- The last three schools faced the same resource challenges in terms of infrastructure and funding.

Background of participants

- All the participants in the study were second or third language speakers of the language used for teaching and learning.
- All of the participants either owned or had access to mobile phones.

Photo: Inusa Blessing Mwanyali

teachers allowed learners to use this application both during class sessions and at home.

Did the application appeal to students?

Out of the 90 learners, 61% used both the English and Setswana view for the various activities, while the remaining learners used only the English view. The majority of the learners who did not use the Setswana translated view were learners from urban schools. The learners were also quizzed on their motivation for spending learning time on their mobile devices. Here, 89% of learners reflected upon an increase in the time dedicated to their studies as a result of being motivated by the use of mobile devices.

Bilingual content creation

In the second study, in their own time learners would create audio clips of what they understood during their physical science class. The clips, which were created in their mother tongue and English, were then uploaded onto the M-Thuto portal to act as a lesson diary.

The teacher was able to download the clips in order to monitor the level of the learners' understanding of a particular subject.

Leaner engagement

When asked about the frequency with which they uploaded clips, 62% of learners said they uploaded the clips onto the system on a weekly basis, while 38% of them uploaded the clips daily. Regarding the languages they used to create the clips, all of the participants used their home languages or the languages common to that province; these were all official South African languages.

The learners offered different perspectives when asked about their bilingual mobile learning experience within the parameters of the study. It was interesting to note that, while the learners were excited about the mobile phone providing a ubiquitous technology learning platform, they still viewed it as a supplementary tool to their everyday text books and other paper-based resources. They did not yet see mobile learning in terms of a tool replacing their traditional learning resources.

What we found out

In conclusion, when developing learning technology, we need to consider both the users and the context in which it is used. With appropriate training and teacher input, mobile learning can be introduced correctly into a context in which it can be used as a vital, supplementary tool to assist learning in a variety of schools.

Study 2: Who was involved?

32 learners came from a location-based school. Location-based schools are schools in low income areas often challenged by inadequate teaching and learning resourcest.

Background of participants

- 80% had no access to personal computers to use as a learning resource.
- All of the participants either owned or had access to a mobile phone.
- All of the learners were either second, third or fourth language speakers of the language used for teaching and learning.
- Learners said their teachers were multilingual and would switch between their home languages and English in order to further explain a concept they did not grasp immediately.

Language plays an important role in the learning process. Most of the learning technologies and textbooks produced do not consider issues such as mother tongue languages. Therefore, many learners are frequently challenged with jargon that impedes their learning process. Such considerations are vital for contextualising content on mobile platforms. As Africa looks toward promoting the use of indigenous African languages to support learning, it will also be vital to extend this pragmatic view to the mobile learning environment.

Further detailed information concerning the results of the study can be found in Jantjies and Joy (2013) and Jantjies and Joy (2015).

The eLearning Africa Survey 2015

Ninety five per cent of people surveyed by eLearning Africa this year say ICTs are the key to improving education. But, is there the right infrastructure and support for the benefits of ICTs to be realised?

We polled 1,050 people, including education and ICT professionals, students, entrepreneurs, women working in technology, health and agricultural workers across Africa. They agreed that ICTs are improving efficiency and creating opportunities across a variety of sectors but they also want a greater focus on infrastructure development, in order to fully reap the benefits

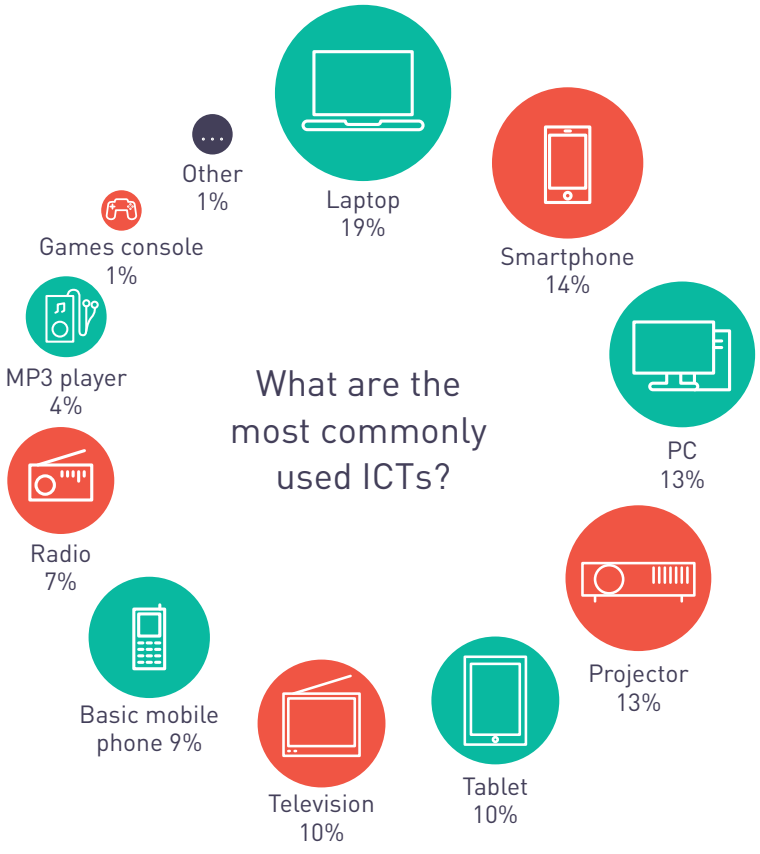
In agriculture, the majority of our respondents said that the use of ICTs has led to increased yields and income, is contributing to better food security and sustainable development, and has enabled them to move into new markets.

Women surveyed said ICTs have provided them with increased employment opportunities and boosted their social and political participation. Interestingly, the majority also stated that they believe there is equal opportunity for women to gain digital skills and to be involved in the ICT sector. However, one cannot ignore the digital gender gap prominent across sub-Saharan Africa – according to respondents this is largely related to confidence.

Who took part?

The general survey drew respondents from throughout the whole continent. The countries with the highest number of respondents were Nigeria (13%), Kenya (11%), Uganda (9%), South Africa (7%) and Ethiopia (5%). While those working primarily in education – higher education (26%), secondary (11%), primary (8%) – and ICT (14%) made up the largest percentage of respondents, sectors such as agriculture, development/aid and health were also represented. Respondents came from both the public and private sectors.

33% of those who took part were women, 53% said they were in an urban setting, 11% rural and 36% stated they worked in both.

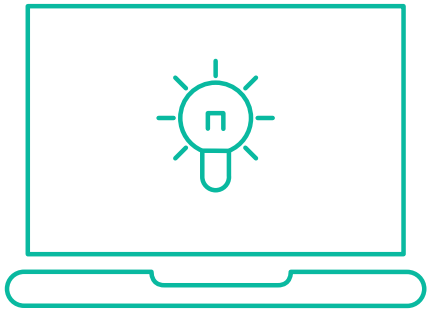


Reluctance was also a major theme emerging from teachers and educators; many revealed that their attitude towards ICTs in education was not always shared throughout their institution. Poor infrastructure and a lack of support for teachers to improve their digital literacy were among the main reasons for many preferring to stick to traditional teaching methods. For educators who are avid ICT users, open source options have become increasingly popular. This is due, in part, to the collaborative approach to content creation – one that allows both teachers and students to customise eLearning tools and resources to suit their needs better.

These are just some of the key findings from the survey, which this year included specialised surveys for women, entrepreneurs, teachers and educators, health professionals and agricultural workers. The data we collected provides a broader picture of the influence of digital technologies – not just in education but in a larger development context. Over the next few pages, find out more about how ICTs are being used throughout the continent, and people's expectations, experiences and ideas about its role in the future.

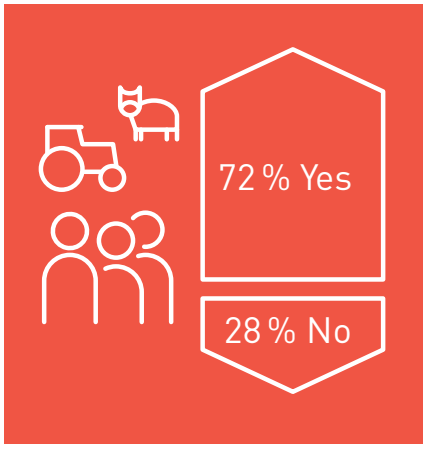
Despite the rapid growth of mobile penetration throughout the continent over the past years, our results show that the most commonly used ICTs remain more or less the same as they did when we asked the same question in 2013 – laptops lead, followed by mobiles and then PCs. The gap has, however, decreased – in 2013, there was a 12% difference between laptop and mobile use; this has now narrowed to just 5%.

Respondents were also asked what they are most likely to use ICTs for, which revealed education was only slightly ahead of social and private communication. However, one must take into account the large amount of respondents working in education when considering this result.

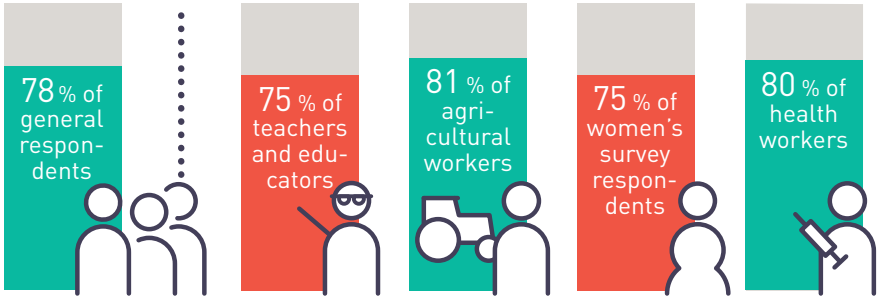


73 % say using ICTs equipped them with the digital skills or interest to take on a new career

In rural areas there was a similar response:



Majority of respondents have taken online courses or self-taught themselves skills using online resources



Education and training 12%

Social and private communication 11%

To connect with people from other parts of the world.....10%

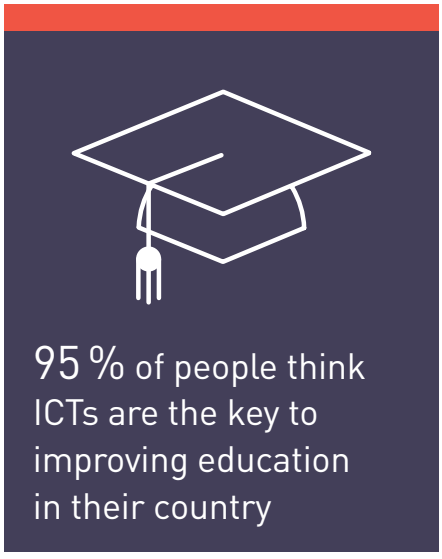
To share information.....10%

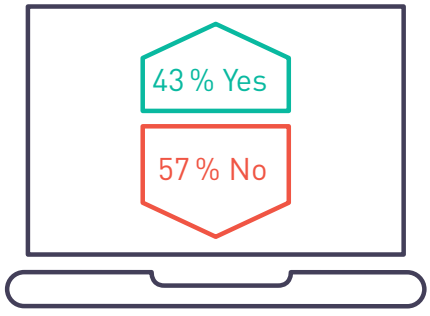
To use social networks 10%

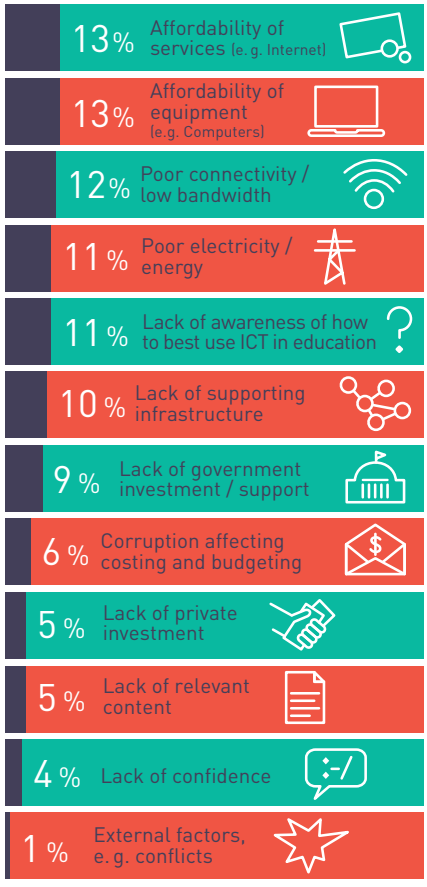
Professional networking.....9%

Accessing news 9%

We also wanted to establish where people access the internet. In both rural and urban areas, the most common place the internet is accessed is work – overall 48% of respondents – followed by mobile phones (16%) and at home (16%). This again provides insight into mobile usage; mobiles are still commonly used as an offline tool for communication purposes rather than for internet access.







Changing attitudes

Raising the awareness and skills of teachers – and learners – is crucial for ICT integration to be successful. A lack of awareness about the benefits, as well as the lack of digital skills, leads to a reluctance to embrace them. For example:

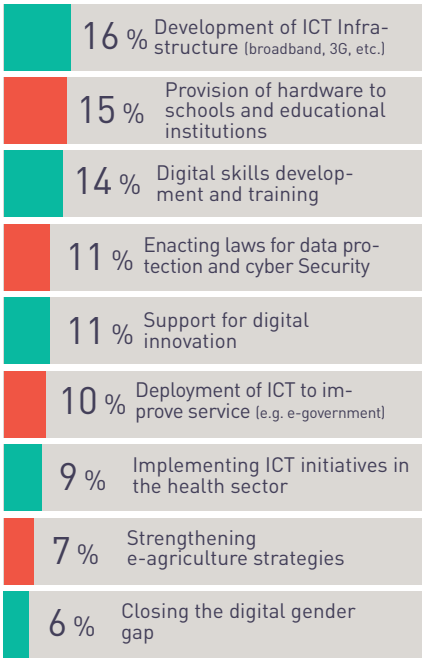
- According to a respondent working in administration in Kenya: "There are major challenges that hinder or lead to failure in the integration of ICT in organisations in developing countries. **Lack of awareness and mind-set is by far the greatest barrier** and should be the first one that must be dealt with before an organisation can start moving forward."

- A teacher from Mauritius said: "An online platform has already been set up but there is still a **resistance as a matter of fear and lack of confidence** in the use of ICT in the teaching and learning process."

- A professor from a Sundanese university said of a project that aimed to develop a learning management system using Moodle: **"The main challenge that faced the project was the resistance among the staff members."**

In addition to the lack of awareness of how best to use ICT in education, other main obstacles preventing greater use of ICTs in education were cited as being firstly affordability – of services such as internet and the equipment itself – and poor internet connectivity, followed closely by unreliable electricity. When **teachers and educators** were asked specifically if their institution had adequate infrastructure to support ICT offerings, **54% in urban areas said yes**, compared to only **37% from a rural setting.**

What should take priority in government ICT policies?



Government involvement

The key to the successful integration of ICT in education and training relies on a solid framework, which includes a Government commitment to improving ICT infrastructure and investing in schools' ICT plans – both in rural and urban areas. Although many countries have ICT policies in place, the effects are not always seen in the education system, as the policy does not always match the practice.

The below graphic reflects the opinions of general survey respondents. In the view of teachers and educators, just over half said there is **sufficient government support** for their institution's ICT plans. Breaking this down across education sectors, **57% said yes in both higher and secondary education**, whilst only **47% of primary school teachers** think their government shows sufficient support.

When asked about private donor involvement, 54% of teachers and educators said private donors are involved – 23% saying private donors provide funding, whilst 23% said they deliver infrastructure.

According to Dr Aida Opoku-Mensah, Special Adviser to the Executive Secretary on the post-2015 development agenda at the UN Economic Commission for Africa (UNECA), ICT will play a prominent role in the Sustainable Development Goals. Dr Opoku-Mensah told eLearning Africa: "Already countries are investing in ICTs but we are looking at the acceleration. For me, that's going to be the challenge; sticking to those commitments is going to be key."

What do respondents think should take priority? The top three areas respondents want governments to prioritise in ICT policies are: development of ICT infrastructure, provision of hardware to schools and educational institutions, and digital skills development and training.

55 % think their government shows enough support for ICT development


Angola
77 % say yes


Mauritius
71 % say yes


Madagascar
63 % say yes

but

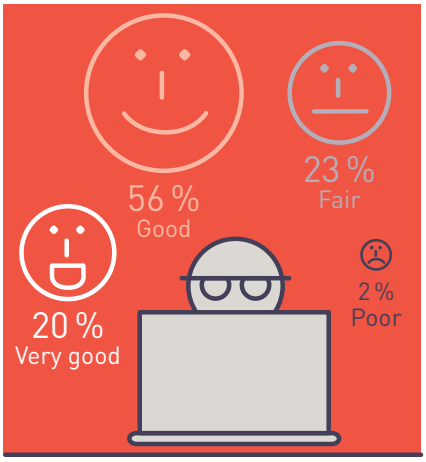
65 % say there is not enough support to develop digital literacy


Nigeria
55 %


South Africa
57 %


Burkina Faso
68 %

Teachers and educators rate their digital literacy



Digital competences

Training of teachers in both ICT skills and pedagogical application of ICT plays a prominent role alongside the development of relevant curricula at the different levels of the school system. How did these points weigh up? When asked if there is enough **support to develop digital literacy, 65% of general survey respondents said no**. This increased further when we asked teachers and educators the same question: **74% saying there is not enough support** – this is despite 56% rating their digital literacy as 'good' and 20% saying it is 'very good'.

In higher education, 68% said they had received formal ICT training, compared to 58% of secondary school teachers, whilst only **33% of those in primary education said they had been properly taught digital skills.**

Teacher motivation

The survey sought to find out the motivation for using digital technologies to support learning. Respondents were asked about their greatest motivation for using learning technologies. The most popular responses were 'to enhance learning', followed by 'equipping students with the digital skills to prepare them for the workforce', and to 'access information and content'.

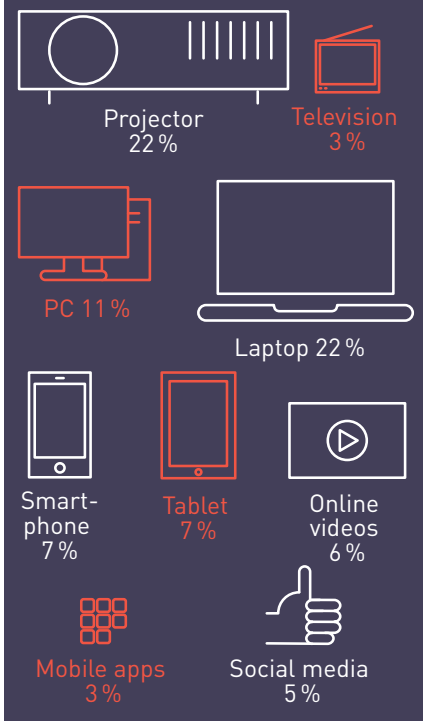
When asked how ICTs were currently being used in their institution, distance education was the least popular answer (11%) - even for respondents working in higher education where this is generally more common. The top response was for administration and management operations (25%), followed closely by supporting lessons, for example presentations and videos (24%). Sourcing educational content was next (22%) and then teacher / student interaction (17%).

Examples of how ICT is being used in the classroom

- "I often use a hand-held projector with a laptop for classroom presentations and video displays. I develop digital content for learner interaction but this is limited to computer lab use and never in the classrooms, thus limiting access and utilisation."

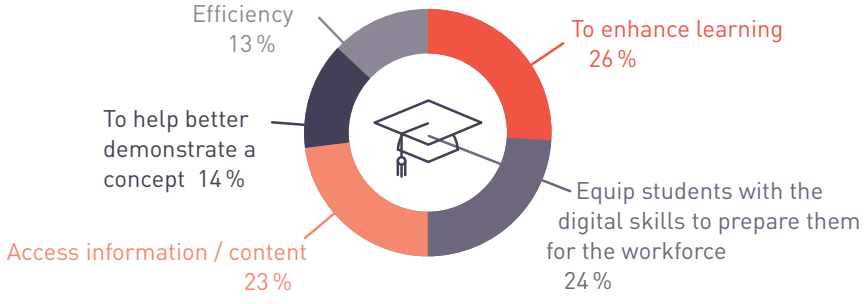
- "Assignments and quizzes are posted online. Discussion forums and chats with students are also conducted online in real time."

Most commonly used ICTs in the classroom



- "I like to use video conferencing in my Business English classes in which students simulate business meetings online. They meet other people in these meetings and reflect on their intercultural, business and linguistic competences."

What do you think are the main benefits of using ICT in education?



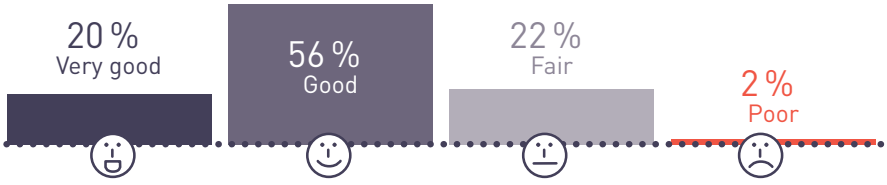
Importance of content quality and relevance

Content relevance and the quality of the available digital content can play a major role in shaping attitudes and willingness to adopt ICTs in teaching and training. A key factor here is languages. Whilst 85% of general survey respondents have access to ICTs in their workplace for training purposes, **83% said the digital content is not available in indigenous African languages** - an issue increasingly being addressed for the sustainability and equality of ICT for education and training.

Teachers and educators were asked various questions about the digital content they use. The data shown in the graphic below provides an interesting overview of where the content is sourced and how educators think it can be improved.

As Nnenna Nwakanma, Africa Regional Coordinator at the World Wide Web Foundation says in this Report: "The failure to understand the needs of frontline users, such as teachers, women and girls, and their non-involvement in the design of programmes, has only led to failed projects."

How do teachers and educators rate the quality of the digital content available to them?



How can content be improved?

"Allowing students to assist in building content."

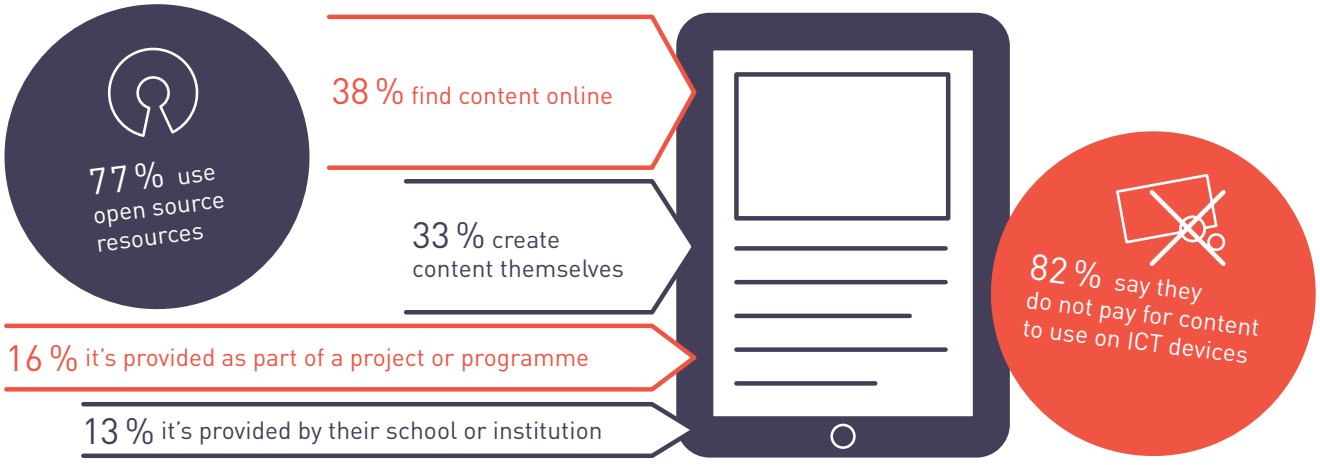
"Continuous input by facilitators and participants."

"If it is made freely available and easily shared ."

"It should be relevant to the local users and consumers."

"By using animations, real experiences through video or other media, involving the learners in creation of the content."

Where do you source content to use on ICT devices?



Benefits of using ICT in agriculture –

Respondents say:

93% ICTs are creating more opportunities for women and young people in the agriculture sector

91% ICTs have led to increased yields and income

90% ICTs are contributing to better food security and sustainable development in their region

87% ICTs have helped them move into new markets and created business opportunities

71% have used ICTs to adopt new techniques into their farming – for example ...

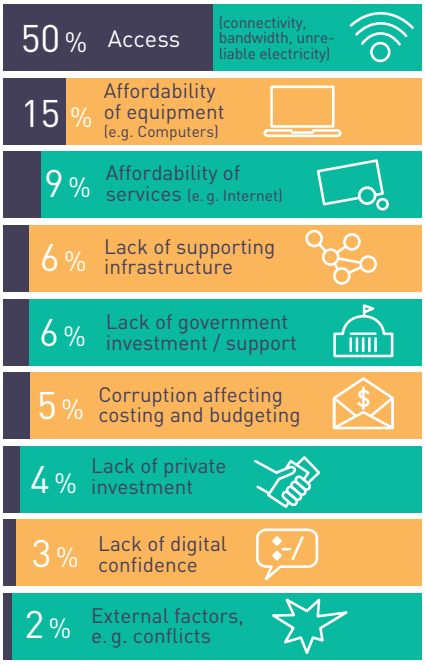
- Improved seeding methods
- Product traceability
- Safe use of pesticides
- Hybrid crops
- Organic farming
- Using ICT for certification audits
- Sharing farming experiences worldwide
- Use of conservation agriculture

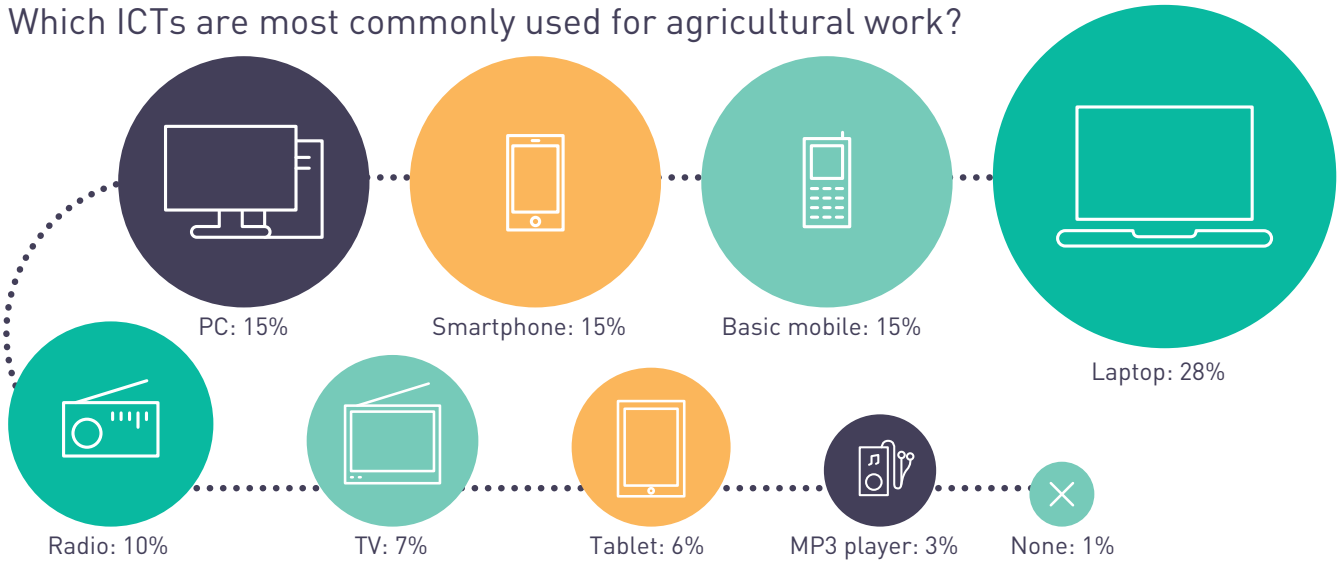
Agriculture

As agriculture makes up a sizeable proportion of Africa's GDP, boosting agricultural growth and sustainability is a priority. Results from the agriculture section of the eLearning Africa survey reveal a positive overall attitude towards ICT in aiding growth, with respondents agreeing that it is improving smallholder farm productivity, allowing them to break into new markets and establish industry networks.

However, our data also show that there is a long way to go before agricultural workers throughout the continent gain the access they need to unlock the full potential of ICTs.

60% say they do not have sufficient access to ICTs. What are the main barriers hindering use?





Organisations such as the Farm Radio Trust in Malawi are experimenting with ways to overcome obstacles associated with access and affordability. For example, cooperation with private sector stakeholders has enabled them to provide free on-demand information using the '3-2-1' mobile service – a resource that can be accessed using simple mobile phones, which has been described as a "search engine for those without access to the internet."

The survey drew 90 respondents from the agriculture industry. Their involvement in the industry was primarily in education and training (37%), followed by farming (16%) and e-agriculture (12%). 13% stated 'other', which ranged from policy to development, consultancy and conservation. It is important to consider the respondents' roles within the agriculture sector when viewing this data, as factors such as the prominent use of smartphones can be indicative of the high number of those surveyed working in e-agriculture.

The results revealed that those who have access to ICTs have experienced much success. When asked about how they became aware of the business and/or educational opportunities available through ICT, common answers were through friends, conferences, media, radio programmes and internet research.

The survey went further to find out about the information sourced using ICTs and how this is shared. **96% said they have used ICTs to share knowledge or connect with other people in the industry.** The most common way this is done is email (25%), then SMS (17%) and social media (16%). The main types of information sourced include farming practices (61%), market and prices (25%), seeds, crops and animal husbandry (7%), and weather and climate (6%).

Entrepreneurs

What some have described as the 'telecommunications boom' across Africa has brought with it more opportunities for home-grown innovation to flourish, as entrepreneurs are taking advantage not only of new technical offerings but also of increased investment.

The phenomenal growth of mobile banking, for example, has opened doors for tech start-ups in Kenya.The ICT business parks, being developed in countries such as Ethiopia, Nigeria and Tunisia, are gaining the attention of international players.

This year's survey provided a specialised section for entrepreneurs to shed light on the realities of the business landscape and whether they are, in fact, provided with the right means and support to get their ideas off the ground.

Of the entrepreneurs surveyed, 63% said they were an 'ICT entrepreneur', involved, for instance, in developing apps, digital content or owning an online business. However, only around half of them said they received specific education and training in this field, implying that digital skills may often be self-taught.

Whilst 62% say they have access to the digital tools they need to enable them to reach their business goals, the majority (84%) said there is not enough government support for entrepreneurs in their country.

Many entrepreneurs take advantage of tech hubs and networks for extra guidance and support. 56% said they are part of a knowledge-sharing or networking community for entrepreneurs. In addition to social networks, recipients mentioned participating in pitch nights and visiting tech hubs.

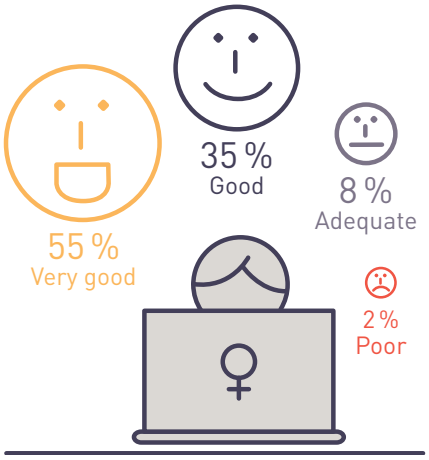
Do you have access to the digital tools that will enable you to reach your business goals?

84 % say there is not enough support for entrepreneurs in their country

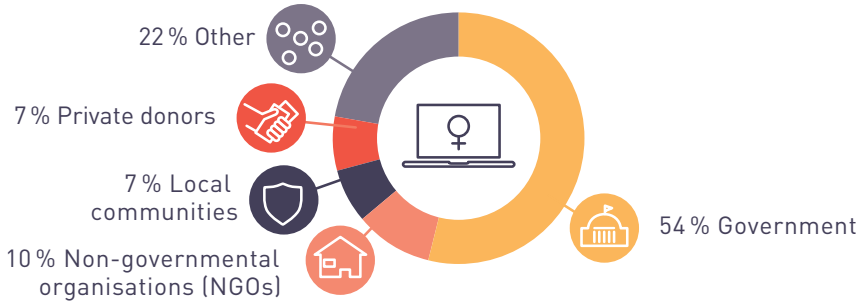
83 % use ICTs to market their business

56 % are part of a knowledge-sharing / networking community for entrepreneurs

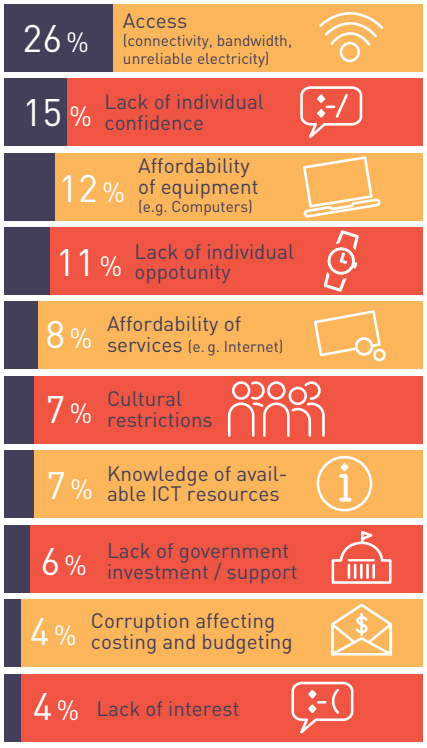
How would you rate your digital literacy?



Who is providing the support or training for women to gain digital skills?



Main barriers hindering women's ICT usage



Women

Despite the rapid growth in internet access, women are much less likely to get online than men – 2013 figures show this gap is 45% in regions such as sub-Saharan Africa – and are still largely under-represented in the technology sector. The eLearning Africa Survey of women aimed to gain a better understanding of their experiences – if and how ICTs have an impact on their life, and what is holding back progress in bridging the gender digital divide.

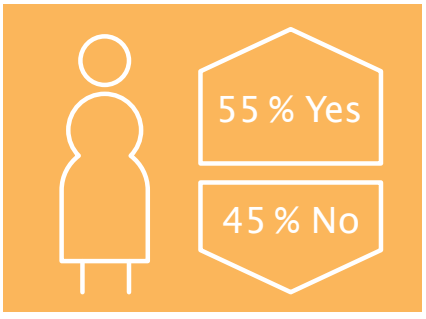
Of the 100 respondent's, **67% work in an ICT-related industry**. This was reflected in digital literacy levels where most ranked themselves as 'good' or 'very' good.

When asked about equality, women's attitudes were interesting. **66% said they think there are equal opportunities for women and men to gain digital skills** but there is lack of support to encourage them to take advantage of the benefits of ICTs. Lack of support is often linked to confidence, which was the second most common barrier to women's ICT usage.

The women surveyed appear to be more confident with ICTs; the majority said they have taken online courses and taught themselves skills using ICTs. This, indeed, is an incentive to others, as 75% said ICTs had provided them with increased employment opportunities and boosted their social and political participation. For more women to feel confident online, languages should be considered, as 66% said they do not have access to digital content in their local language.

For mothers, the benefits of ICT usage were highlighted. 75% said they use ICTs to support their children - for example, finding information on care for different stages of their life, researching health and education information, and retrieving school and examination results.

Do you think there are equal opportunities for men and women to gain digital skills in your country / region?



Women share experiences and insights

"As a stay-at-home mum, my life revolves around my children, my husband and our immediate needs. I don't get to interact with the larger society that much. I get information about my immediate society in terms of growth, development, security threats, opportunities et al from the internet."

"Whatever lack there is, I don't think it's got much to do with gender. Lack of resources and individual opportunity is the main reason why women are underrepresented in the tech industry."

"Before I started using ICT I was just a classroom teacher and all my friends were fellow teachers. But after I started using the internet I gained many new connections. It improved my teaching skills, I started writing content, and it also changed my social life."

"The use of ICTs has had a positive impact on my life. Socially, it has helped me connect with many people, from whom I benefit a lot. For example, by sharing information on various issues. It has also helped me to be well informed. Through the use of social networks and online news, for example, I always get information as things happen."

"I have used ICT to do research, attain certifications online and access job opportunities."

"With my computer knowledge, I have been able to train my daughter to use them. She too can now work with certain software and use mobile internet."

75 % of women's survey participants have taken online courses or self-taught themselves skills using online resources

ALISON "ALISON (Advanced Learning Interactive Systems Online) platforms and online courses on global health."

Codecademy "Computer programming from Codecademy."

DiPLO "I have taken Internet Governance classes from Diplo Foundation. I also use online resources every day to find solutions to ICT problems that I face."

iEARN "iEARN's distance training in the framework of professional development."

Health

The results of the health sector survey are based on data from 70 respondents, primarily from Kenya, Uganda, South Africa, Ghana and Tanzania.

Although 67% said they have not been provided with training and/ or information through eLearning and telemedicine programmes to respond to emergencies and crises, they said ICTs are being used in their sector for the following reasons:

- "Training of health workers and we're about to begin using smartphones for collecting health information from village health teams."
- "ICTs are used to provide information about the side effects of medications."
- "Some of our patients find information about local illness through ICTs."
- "Video conferencing. Health professionals also access information on health-related websites."

80% said their country has programmes and measures in place to enable the public to access health information through ICTs, such as mobile health SMS and voice services, and dedicated health websites. 40% said that their patients do access public information about preventable diseases through ICTs.

Respondents share their struggles and success stories

"My company is spearheading the use of computer-based assessments in secondary schools in Nigeria. We are also developing computer-aided exam prep solutions to cut across rural and urban areas. For the rural schools that have computer infrastructure challenges, we developed an interactive DVD solution that runs on any modern home DVD player. It simulates a computer-based exam prep system using the DVD remote control to function like a mouse or keyboard." *Mr Babs Iwarere, Nigeria*

"We at the Kenya Institute of Curriculum Development are digitising curriculum content and have so far rolled out 12 subjects for secondary schools. We are also orientating teachers through an online programme called Elimika, a Swahili word for 'get acquainted with the knowledge'" *Florence Keta, Kenya*

"Since December last year, schools across Nigeria have been testing out an indigenous eLearning platform called Slatecube. I have mostly discovered its ease and effectiveness in delivering course content to students both physically and virtually. It has also helped connect bright students to top-class organisations and companies." *Chris Kweks, Nigeria*

"Using ICTs in schools in the village in Namibia is nonexistent. There are many challenges, such as electricity, safety, technical know-how, human resources, financing and maintenance. Africa has a long way to go to develop ICT in rural areas." *Abed Timo Nangombe, Namibia*

"Digital knowledge has a very big gap in my country. 99% of students up to university cannot even type their assignments or even conduct research on the internet. All this is made worse by the very small amount of computers in institutions in the country. Therefore, as a basic necessity, computer literacy in my country should be a high priority." *Mamadu Bah, Sierra Leone*

"It is really tough talking about the use of ICT in education in Angola. As a teacher, I have been conducting seminars for fellow teachers related to this topic. Unfortunately, I have been facing many challenges trying to overcome the resistance among the teachers. Normally, I find only 2% to 5% of teachers use ICT for education proposes. My main objective in conducting seminars is to show them the advantages of using ICT tools, giving practical examples." *Alberto Paulo, Angola*

Measuring ICT in education in sub-Saharan Africa: A call for action

Peter Wallet, Programme Specialist in ICT in education statistics at the UNESCO Institute for Statistics gives us an overview of the latest ICT in education data collected by the UIS.

Information and communication technology plays an ever-important role in increasing economic performance through digital economies, enhancing the delivery of public and private services, and achieving broad socio-economic goals in education, healthcare, employment and social development. As a result, countries are advancing ICT policies to underpin growth in a variety of socio-economic sectors and help steer economic competition. However, given the rapidly evolving ICT landscape, as a result of emerging technologies, systematic examination and evaluation of stated policies is essential.

The UNESCO Institute for Statistics (UIS) is mandated to administer international data collections on the availability, use and impact of ICT in education. Through the establishment of internationally-comparable and policy-relevant indicators, the UIS contributes significantly to international benchmarking and monitoring of the integration of ICT in education, which are fundamental for policymakers to select priorities and adopt and develop policies.

Mind the data gap

The most significant obstacle in measuring ICT in education in sub-Saharan Africa is the lack of systematic data collection. Several countries do not currently carry out data collection and for those that do their efforts are in their infancy. In fact, in response to recent UIS survey amongst sub-Saharan African countries Angola, Benin, Central African Republic, Democratic Republic of Congo, Djibouti and Somalia all reported that at the current time (2013/2014), no systematic data collection on ICT in education existed at the national level.

The existence of systematic data collection typically reflects national priorities and in many countries in sub-Saharan Africa, the integration of ICT is a low priority when compared to other objectives including increasing enrolment rates, decreasing the proportion of out-of-school children, and ensuring adequate numbers of trained teachers. Furthermore, the integration of ICT in education is occurring relatively slowly in many countries due to a number of factors including a lack of formal policy, financial resources, basic infrastructure, and teachers with appropriate skills. Due to a general lack of data on ICT in education, this article will elaborate three specific aspects related to school's ICT infrastructure for which data are more commonly available:

1) Electrification

2) Computer density

3) Internet connectivity

Data on these three concepts provide some insight as to where ICT in education is feasible as well as where significant obstacles hinder expansion.

Photo: Vera Obiakor

Electrification of schools

While battery-operated mobile devices that can be recharged off-site (e.g. smart phones, tablets) have the potential for supporting instruction, most devices including television, desktop and laptop computers and the internet continue to require a more stable energy source. In other words, the integration of ICT in schools requires electricity that is regularly and readily available. In many developing countries, however, rural, remote and mountainous regions are frequently neglected in national infrastructure plans. Moreover, even when schools are connected to an electrical grid, power surges and brownouts are common in both rural and urban areas, further impeding the reliable usage of ICT. (Mudenda, et al., 2014; Practical Action, 2013).

According to Figure 1, electricity is not frequently available in primary schools in Guinea, Lesotho, Burkina Faso, Zambia and Cameroon, where fewer than 20% have an electrical supply. It is extremely rare in both Madagascar and Niger where fewer than 5% of primary schools are connected — 2% and 4%, respectively. In contrast, more than three-quarters of primary schools have an electric supply in Djibouti, Botswana, South Africa and São Tomé and Príncipe. In Mauritius, all primary institutions have electricity. Figure 1 also shows that secondary schools typically have relatively higher rates of electrification. This is most evident in Niger and in Zambia where 77% and 100% of upper secondary schools have electricity, respectively, compared to 4% and 16% in primary schools. In Liberia, where data cannot be disaggregated by school level, only 6% of primary and secondary schools combined have electricity.

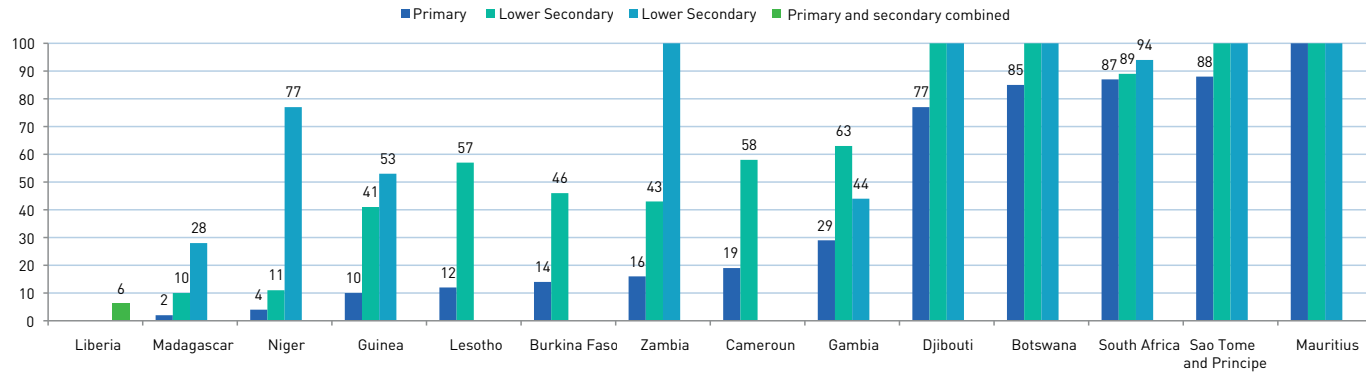
Computer density

In order to support instruction using computers and online tools and content, sufficient computer density must be established, keeping pace with demand based on enrolment. Computer density can be measured using the pupil (learner)-to-computer ratio (LCR), which refers to the mean number of pupils sharing a single computer available for pedagogical use in national aggregate education systems. While the LCR sheds light on current infrastructure to support eLearning, national-level LCRs mask sub-national differences within a single country (i.e. digital divide). In general, computers are very unevenly spread within African countries with computers typically being concentrated in relatively few schools that already have the basic infrastructure to support them.

Secondary schools typically have relatively higher rates of electrification

Figure 2 shows that computer resources are greatly overstretched in primary education in a number of countries including the Gambia, where 214 pupils on average share a single computer. Computers are especially overstretched in Zambia and São Tomé and Príncipe where there are more than 500

Figure 1: Electricity in educational institutions, primary and secondary, 2013



Source: UIS Statistical database, 2015.

Notes: m = missing data. Data from Botswana and South Africa represent public schools only. Secondary data for Lesotho, Burkina Faso and Cameroon represent combined lower and upper secondary levels. Data for South Africa reflect 2011; data for Zambia and Botswana reflect 2012; and data for Gambia and Mauritius reflect 2014.

primary school pupils per computer. While the LCR is an average, computer resources may, however, be so strained in many schools that time on task is too limited per pupil to allow a meaningful learning experience. While no country provides evidence of high computer density among pupils, some countries have made progress to lower their LCR. The primary level LCR in South Africa, Botswana, Rwanda and Mauritius is 90:1, 55:1, 40:1 and 23:1, respectively. In Rwanda, computer density is high partly due to its involvement with the One Laptop Per Child (OLPC) programme, which included the distribution of more than 150,000 low cost laptop computers to approximately 11% of Rwanda's primary schools (Rwanda, 2012).

According to Figure 2, data are more frequently available for secondary education, which might reflect countries' tendency to prioritise ICT in secondary education compared to primary education. In the Gambia, the LCR decreases from 214:1 in primary education to 64:1 and 38:1 in lower and upper secondary education, respectively; while, in South Africa, the LCR decreases from 90:1 in primary education to 54:1 for combined secondary. In other countries, evidence shows that LCRs remain very high in secondary education. For example, there are more than 500 learners on average sharing a computer in lower secondary education in Madagascar and Niger, while at the upper secondary level the LCR in Niger decreases to 94:1, yet remains at >500:1 in Madagascar. Rwanda remains an exception to other countries in the region in that the ratio for both primary and secondary levels is the same at 40:1.

Internet to support online learning

Online or web-based learning refers to an interactive learning method using content from the World Wide Web. Ministries of Education often have little or no control over school internet connectivity as this depends to a great extent on the level of development of the national telecommunications infrastructure and access to a reliable power supply (UIS, 2014; World Bank, 2010).

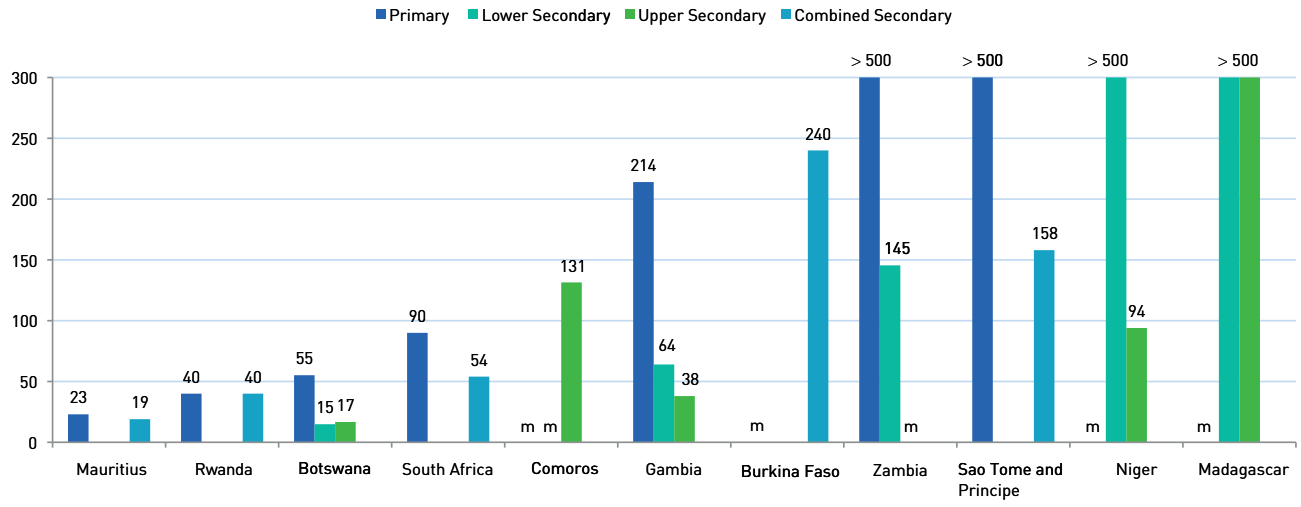
500 or more

learners on average sharing a computer in lower secondary education in Madagascar and Niger

Figure 3 shows the proportion of schools with internet; however, the data do not represent the proportion of schools that use internet for pedagogical purposes, but rather those that have internet for pedagogical and/ or administrative use. Moreover, the data do not provide information on bandwidth and therefore data may represent a combination of schools with both broadband and narrowband.

Internet availability ranges substantially within sub-Saharan Africa. For example, internet availability is negligible in primary schools in Burkina Faso, Liberia, Madagascar, and Guinea while being just slightly more available at the secondary level — 1% of combined secondary schools in Burkina Faso, 3% of

Figure 2: Pupil (learner)-to-computer ratio, primary and secondary, 2013



Source: UIS Statistical database, 2015.

Notes: m = missing data. Data from Botswana reflect public sector schools only. Data from South Africa reflect 2011; data from Rwanda, Botswana and Zambia reflect 2012; and data from the Gambia and Mauritius reflect 2014.

Looking forward: Better data for better policymaking

ICT use in education is at a particularly embryonic stage in the majority of countries in sub-Saharan Africa and there are few data available to shed light on the level of integration in both primary and secondary education. Nevertheless there are new developments and announcements related to ICT in education happening on an almost daily basis across the continent. This article should be regarded as a "snapshot" of available resources to support ICT in education across a number of countries in the region; however collecting more and better quality statistics from sub-Saharan Africa should be a priority in the post-2015 context as ICT is expected to play an increasing role in any future education goals. Data on device type, broadband internet, and other key aspects will be important to help shape policymaking as ICT expands across African education systems. Therefore this article should also be considered as a call for action on the part of Ministries to mainstream the collection of ICT in education data in their regular school census reporting.

upper secondary schools in Madagascar, and in 3% and 5% of lower and upper secondary schools in Guinea, respectively. In Niger the proportion of primary schools with internet is unknown; however in lower and upper secondary schools the proportion of schools with internet is 2% and 14%, respectively. At the other end of the range, Mauritius has connected 93 and 99% of primary and secondary schools, respectively, while Botswana has connected all public secondary schools to the internet. Data for primary schools in Botswana are not available.

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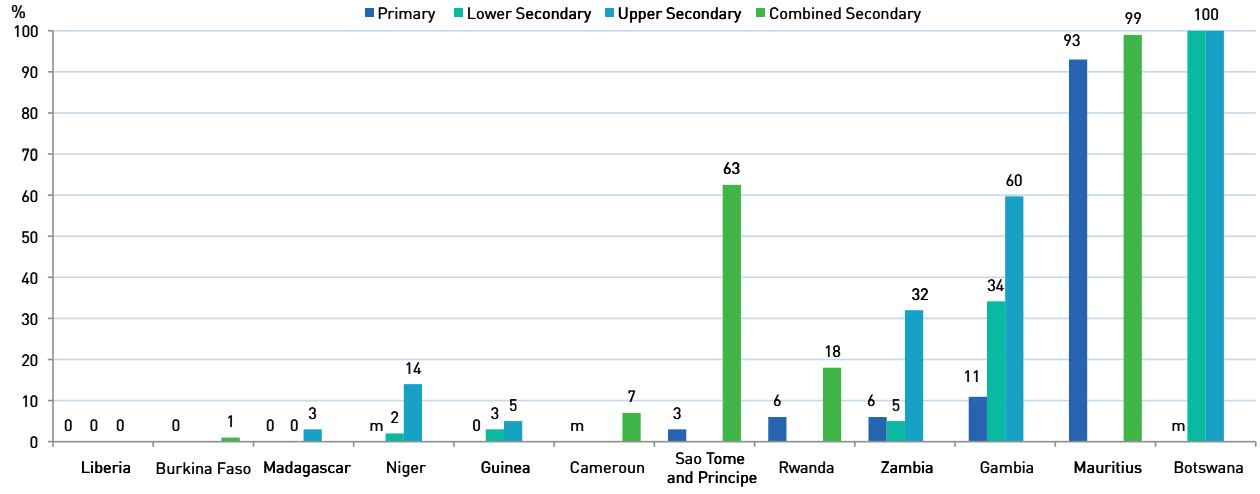
Figure 3: Proportion of educational institutions with internet, primary and secondary, 2013



Source: UIS statistical database, 2015.

Notes: m = missing data. Data for Botswana, Burkina Faso, Madagascar and São Tomé and Príncipe reflect public institutions only. Data from Zambia, Rwanda, and Botswana reflect 2012; data for Gambia, Liberia and Mauritius reflect 2014.

Finding funds

The who, where and how of ICT and education funding in Africa

Raising funds for education and channelling them in a positive and sustainable way was an important theme of the Dakar World Education Forum in 2000, from which the Dakar Framework for Action was borne. It has dictated education policy since its inception. This was needed, as education budgets in sub-Saharan Africa grew by only about 1% annually between 1980 and 2000, hindering growth. A global fund for education was discussed but never implemented. In its place, the Fast Track Initiative (FTI) was introduced, which focused on helping countries create sound national plans and coordinating fund mobilisation among donors. Sub-Saharan spending on education subsequently grew by 4.6% between 1999 and 2008.

During broadly the same period, two thirds of the increase in public education funding was brought about by economic growth, not aid, despite the fact that aid also increased by 35%. According to Birger Fredriksen of the Results for Development Institute, aid as a share of total education spending in sub-Saharan Africa will continue to decline over the coming years. This does not mean, however, that it is likely to stop playing a critical role in many countries in the region. On the contrary, Fredriksen predicts that its impact could increase as it progressively targets the large groups who miss out on education and lack a voice.

As a whole, education spending performance has been strong in Africa and, as a percentage of GDP, it is only marginally short of country spending in Europe and North America. Data is hard to come by, although the latest UNESCO statistics show that, of the 26 countries with comprehensive data, only the Central African Republic has decreased education spending since 2000. Lesotho spends the highest percentage of GDP out of any African country, at 12.4%. In Burundi and Mozambique, spending rose by an average of 12% during the 2000s. Aid in the region, as a whole, accounts for roughly 5% of spending; in some countries, however, it can be as high as 50%, with Guinea, Mali, Rwanda and Zambia providing notable examples of this.

Below is a guide to some of the specialised programmes and prominent organisations providing extra support for education and ICT development across the continent.

African Development Bank (AfDB)

- The AfDB provides resources for investment and policy advice and technical assistance to support development efforts.
- Funding is available for private and non-profit sectors in three major areas: supporting centres of excellence; ensuring infrastructure and training in specific areas, such as agriculture and engineering, as well as strengthening links with labour markets.
- Current projects include an E-Education and Adaptive Learning programme which aim to transform the education sector in Mauritius, and a TVET-based skills development programme in Tanzania.

http://www.afdb.org/en

Agence Française de Développement (AFD) and the Organisation internationale de la Francophonie

- France's development agency provides numerous funding opportunities for projects, often for the continent's French speaking countries, in line with the Millennium Development Goals.
- In the last few years the AFD has strengthened its commitment to education in line with the Global Partnership for Education, supporting projects that will increase access to school, particularly for girls, improving learning outcomes and capacity building programmes.
- Bilateral projects which reform national vocational training policies are also carried out, with the AFD working in recent years with Burkina Faso, Cameroon and Democratic Republic of Congo all receiving support.
- Debt Reduction and Development Contracts (C2D) for eligible countries are another key form of aid for the AFD. The Cote d'Ivoire has received 93 million euros in recent years as part of a C2D project which covers primary, secondary, vocational and higher education.
- The Organisation Internationale de la Francophonie and the Agence Universitaire de la Francophonie are another important source of funding for Francophone countries in Africa. They recently launched the 100,000 teachers for Africa programme, which aims to use digital technologies to consolidate the teaching of French, and teaching in French, on the African continent

http://www.afd.fr/home

British Government Department for International Development (DFID)

- The DFID offers a number of development funds and bilateral programmes in Africa. The recent 'Innovation for Education' project in Rwanda, which included the theme of technology in education, was a good example of the possibilities for the funding of eLearning on the continent.
- Women's empowerment is also an important theme here - The Girls' Education Challenge (GEC), for example, funds strategic partnerships and projects which improve learning opportunities for girls in remote or marginalised communities, encouraging technical innovation in 14 different African countries.
- Connecting Classrooms grants allow schools in 17 African countries to link with UK schools, providing an interactive online platform for collaboration, grants for teachers to visit their partner schools and professional development for teachers and school leaders.

https://www.gov.uk/government/organisations/department-for-international-development

Canadian International Development Agency (CIDA)

- The Canadian government's assistance agency has been involved in a huge variety of programmes over recent years.
- Notable bilateral partners include Kenya, with which CIDA have undertaken ambitious projects to improve primary education, raising both completion and enrolment rates. CIDA disbursements in Kenya alone in 2012-13 totalled $66.29 million.
- Particular focus is devoted to securing children's futures. Training plays a role here. Improving Maternal and Child Health: Partnership and Action for Community Transformation was a $2 million project to train health workers and traditional birth attendants on safe, clean delivery, nutrition and improved child-feeding practices.

http://www.international.gc.ca/

Danish International Development Agency (DANIDA)

- Denmark is one of only five countries in the world that has exceeded the UN target of spending 0.7% of Gross National Income (GNI) on development assistance. DANIDA's activities in Africa aim at reducing poverty and creating employment for the young people entering the labour market.
- Denmark has diplomatic missions in 12 African countries - Burkina Faso, Ethiopia, Ghana, Kenya, Mali, Mozambique, Nigeria, South Africa, Tanzania and Zambia.
- A recent project with the South African Department of Higher Education and Training is enhancing the ability of the Further Education and Training (FET) colleges to provide technical education and skills development responsive to the needs of industries, SMEs, the communities and the students.

http://um.dk/en/danida-en/

Dubai Cares

- Dubai cares is a philanthropic organisation with a singular focus upon education. Guided by the Millennium Development Goal of providing universal primary education and promoting gender equality, Dubai Cares has partnerships with almost 20 African countries.

- Funding is available for 'integrated, impactful, sustainable and scalable primary education programmes', which aim to help form a global partnership for development in accordance with Millennium Development Goal 8.

- Recent projects include the 'WASH-in-schools' programme in Sierra Leone, which equips schools with water, sanitation and hygiene facilities and implements peer led teaching on positive hygiene practices. As well as equipping schools, Essential School Sanitation Hygiene & Education (SSHE) materials have been distributed across all 5,000 primary schools in Sierra Leone.

http://www.dubaicares.ae/en

DVV International

- DVV International is the Institute for International Cooperation of the German Adult Education Association, an umbrella organisation for Germany's regional community adult education centres. Under the overarching goal of poverty reduction, the organisation works with partners in a variety of African countries, with the aims of fostering the exchange of information and expertise, providing support for the establishment of youth and adult education structures, and providing training, advice and media for global education.

- DVV International receives financial support from the Federal Ministry of Economic Cooperation and Development (BMZ) for projects with numerous partners in all corners of Africa. Recent projects include the Integrated Women's Empowerment Programme (IWEP) in Ethiopia, which helps 31,000 women through an integrated approach that combines three traditionally separate components of Functional Adult Literacy - FAL, the livelihoods skills and non-formal vocational training with support for entrepreneurial activities.

http://www.iiz-dvv.de/

European Commission (EC)

- Through the Joint Africa-EU strategy, established in 2007, the EC acts in partnership with the continent to build high-quality tertiary capacity through networking, increasing the mobility of students and scholars, and promoting institutional support and innovation.

- The partnership particularly focuses on higher education and, as such, it supports the development of centres of excellence in Africa, particularly through the Pan-African University project.

- 15 university networks, involving more than 120 partners from 37 African countries, organise academic mobility across the African continent in the framework of the Nyerere Programme, and a new roadmap has been established for the years 2014-2017 that focuses on integration of African higher learning institutions.

http://ec.europa.eu/index_en.htm

Gates Foundation

- The Gates Foundation is the largest private foundation in the world, with an extensive range of projects in different countries and areas of development.

- The 'Global Libraries' project is just one of these, working to transform libraries into centres of development. Working in partnership with governments and other public and private funders, the project aims to expand technology access in public libraries, foster innovation in libraries, train library leaders, and advocate for policy changes that benefit public libraries.

- As part of the 'Global Libraries' project, the Arid Lands Information Network was set up, which created 12 knowledge centres in the most hard-to-reach regions of Kenya, Uganda and Tanzania, allowing people there to use technologies to improve their living conditions.

http://www.gatesfoundation.org/

Irish Aid

- Ireland is one of the world's highest aid donors when ranked as a percentage of gross national income, and Irish Aid devotes much of its focus to Africa, with eight sub-Saharan partner countries receiving the majority of aid, namely, Ethiopia, Lesotho, Malawi, Mozambique, Tanzania, Uganda, Zam-

bia, and Sierra Leone.

- Recent projects involve the linking of schools in Ireland to Gambia and Malawi in order to focus on sustainable development.

https://www.irishaid.ie/

Japan International Cooperation Agency (JICA)

- JICA supports education projects in Africa from basic and higher education to TVET.

- With regard to basic education, JICA addresses the following three concepts in line with EFA and the Dakar Framework for Action: (1) Increase access to primary and secondary education; (2) Improve quality of primary and secondary education; and (3) Improve education administration and school management.

- JICA also supports efforts to boost university capacity and create academic networks between Japan and developing countries. The Egypt-Japan University of Science and Technology (E-JUST), which opened in 2010, is an example of this. The facility offers a Japanese-style educational and research system based on cooperation with 12 universities in Japan.

http://www.jica.go.jp/english/

Korean Education and Research Information Service (KERIS)

- Since the late 1990s, the Korea Education Research & Information Service (KERIS) has contributed to beneficiary countries' growth by focusing on employing ICTs for the benefit of the education sector.

- In line with Korea's switch from being an aid recipient to a donor country in recent years, KERIS has begun to expand its programme, providing help for developing countries in the hope that they can follow the path Korea has taken.

- Particular focus is devoted to policy research and global cooperation, and to this end KERIS has funded regional workshops, such as the UNESCO Institute for Statistics (UIS) Sub-Saharan Africa regional workshop on Information and Communication Technology (ICT) in Education Statistics in Harare in 2014.

http://english.keris.or.kr/

Kuwait Fund

- The Kuwait Fund has existed since the country gained independence in 1961 and has been offering support to developing countries since 1971, making it one of the Arab world's longest established sources of aid.

- Education projects have been supported since 2001 and the Kuwait Fund has a strong relationship with Africa. Current projects include loans for the building of two polytechnic agrarian science institutes in Mozambique, four technical institutes in Uganda, and the development of 27 primary and secondary schools in Kenya.

http://www.kuwait-fund.org/

Norwegian Agency for Development Cooperation (Norad)

- Norway is a significant aid donor and its support for education has doubled in the last decade, with much of this channelled through multilateral organisations. With its Government White Paper number 25 in 2013, Norway set out to become a global leader in helping children secure education.

- Norad has had a strong presence in Tanzania for a number of years now, and Norwegian support to EPINAV (Enhancing Pro-poor Innovations in Natural Resources and Agricultural Value-chains), has contributed to ensuring that 30 master's degree students and five doctoral degree students are following their programmes.

http://www.norad.no/en/front

Open Society Foundations

- The former Open Society Institute, now known as the Open Society Foundations, is a philanthropic network founded by George Soros, which aims to promote democratic governance,

human rights and economic, legal and social reform. Education is a key issue for the foundation, which provides funding globally for projects, which combine the joint aims of progressing education and human rights.

- Current funding opportunities in Africa include the 'Advancing Human Rights through Higher Education' grants, available in 16 African countries in order to support projects that enhance the role of university communities in the advancement of human rights. Grants are available for partners who propose projects which address local human rights issues and offer creative, community-based responses to them.

http://www.opensocietyfoundations.org

Swedish International Development Cooperation Agency (Sida)

- Sida's total support to education amounted to SEK 687 million (circa $82 million) in 2013, with a general focus on strengthening capacity for quality education and promoting equal rights for education. Roughly two thirds of Sida's development aid for education is bilateral funding carried out with partner countries – in Africa these countries include Tanzania, Rwanda and Liberia. This is complimented by multilateral initiatives, including The Global Partnership for Education (GPE) and the Education for All Global Monitoring Report.

- Particular attention is given to gender equality and, in 2012, almost one third of Sida's overall support was allocated to education initiatives that improved gender equality as their main purpose. Projects such as the Geracão Biz Program in Mozambique, which uses peer educators, to bring information, education and counselling on sexual and reproductive health to Mozambican youth, are contributing to this aim.

http://www.sida.se/english/

Swiss Agency for Development and Cooperation

- Basic education and vocational training is a key sector for the Swiss Agency for Development and Cooperation (SDC), which aims to help provide education to all members of society, with a particular focus on helping the most disadvantaged groups.

- The SDC has four key priorities regarding education aid: equality, quality, decentralised governance and improved systems of education and training. Geographically, the agency's main focus is on West Africa, specifically on Benin, Burkina Faso, Chad, Mali and Niger.

- The SDC provides support to a multitude of partners – state-level (central and decentralised), multilateral organisations, networks, civil society associations and research networks/institutes. Recent projects in Mali include the strategy for fast track schooling, mobile schools for nomads, centres applying the "pedagogy of text" approach and Zamblara community agro-pastoral training centres. These projects have helped almost 11,100 children who had never been to school, or had dropped out, to receive an education.

https://www.eda.admin.ch/sdc

The Aga Kahn Development Network

- The Aga Kahn Development Network is an umbrella organisation for a variety of development agencies founded by the Aga Kahn. Within this network, the Aga Kahn Foundation, Aga Khan Education Services and Aga Kahn University represent opportunities for funding.

- Education constitutes one of the major priority areas for the network, with four areas of focus: ensuring better early caring and learning environments for young children; increasing access to education; keeping children in school longer, and raising levels of academic achievement.

- East Africa has received particular attention in recent years, namely in the area of teacher training. The Aga Khan University's Centre for Continuing Education and Life Long Learning (CELL) in East Africa delivers programmes, which are specifically designed to meet educational training needs across a range of subject areas, including ICT in Education.

http://www.akdn.org/

The Varkey Foundation

- The Varkey Foundation, formerly known as the Varkey GEMS foundation, is the philanthropic arm of the education giant GEMS. The foundation's aim is to impact 100 underprivileged children for every child enroled in a GEMS school. The foundation was established in order to improve standards of education for underprivileged children, taking three main approaches: build-

ing access to education; building teacher capacity; and advocacy.

- In line with the first of these approaches, the foundation partners with local NGOs principally to build infrastructure. Recent projects include building new school buildings in Kenyan slums, and 12 learning resource centres across rural India. Varkey also funds projects that contribute to high standards of teaching, with projects reaching 12,340 teachers in sub-Saharan Africa in 2014.

https://www.varkeyfoundation.org/

THE WORLD BANK

The World Bank

- The World Bank is the largest provider of development assistance to Africa. In the 12 months to June 2014, it committed a total of $15.3 billion in financing to sub-Saharan Africa – the highest amount so far.

- In this time, it funded major infrastructure projects, as well as youth-training programmes, and set up the $150 million Africa Centres of Excellence (ACE) project, which will finance 19 competitively selected university-based Centres of Excellence in seven countries in West and Central Africa. They will receive funding for advanced specialised studies in science, technology, engineering and mathematics (STEM)-related disciplines, as well as in agriculture and health.

- It is supporting the ongoing Central African Backbone - APL1A, a $215 million programme which aims to help the Central African region develop a high-speed telecommunications backbone infrastructure, which follows on from the successful completion of The Eastern Africa Submarine Cable System (EASSy) in 2010.
- The $201.90 million Regional Communications Infrastructure Project provides funds for projects that lower prices and extend the reach of broadband services, as well as promoting eGovernment.

http://www.worldbank.org/

UNESCO

UNESCO

- As the UN's agency for education, UNESCO is one of African education's largest donors. It is currently carrying out a 'last push' with regard to its Education for All project, which aimed to meet the learning needs of all children, youth and adults by 2015. Despite progress, the project will not meet these aims. UNESCO have identified three key continuing challenges to which it is committed to facing: gender inequality in schools, lack of skills for employment amongst youth, and high drop-out rates.

- UNESCO also encourages innovation in financing with its Innovative Financing for Education taskforce, and is encouraging debt swaps and South to South cooperation to find funding solutions.

- The UNESCO-China-Funds-in-Trust continues to train teachers in eight African countries on the use of ICTs for teaching.

http://en.unesco.org/

unicef

UNICEF

- The United Nations Children's Fund is at the forefront of many projects to benefit education in Africa. The Schools for Africa project is one of its most impressive, helping 21 million children since its inception in 2004.
- Funds are allocated to countries with UNICEF cooperation, to strategic or innovative activities, as well as emergency programmes. In 2013, $808 million went to supporting projects and countries' education systems.

- The Learning for Peace partnership between UNICEF, the Government of the Netherlands and 14 participating countries, is a four-year programme, which combines the joint aims of peace-building and education. Ten African countries have been selected and the project will seek to increase the inclusion of education in peace-building and conflict reduction policies.

USAID FROM THE AMERICAN PEOPLE

http://www.unicef.org/

United States Agency for International Development (USAID)

- Funding is available for governments, partner organisations and members of the development community. $1 billion dollars per year are invested globally in education programmes, including projects running currently in 18 different African countries.

- One area of focus is empowering women through education. USAID is spearheading the 'White House Let Girls Learn' initiative, which promotes female education in order to tackle gender inequality.

- Regarding ICT, USAID's Global Broadband and Innovations (GBI) programme is aimed at bridging the digital divide. USAID places strong emphasis on building relationships with the private sector, and many partnerships with private sector companies disbursing funds for projects which promote eLearning and ICT in education.

http://www.usaid.gov/

Country Profiles

The past 12 months have been very important for Africa, as the deadline for the achievement of the Millennium Development Goals approaches. Attention is turning now towards the post-MDG agenda, despite the fact that, although the deadline lies at the end of 2015, it is already clear that the ambitious aims of the MDGs have not been fulfilled. The education-specific MDGs are representative of a broader trend: despite some progress, universal attainment of the goals remains distant. Progress has been uneven too. Some statistics nevertheless stand out: since 1999, for example, the number of children enrolled in primary schools in sub-Saharan Africa increased by 75% to 144 million in 2012. In the same period, the gender parity gap was halved in primary education. In the 2000's, the percentage of countries carrying out national assessments of learning almost doubled.

If the general narrative is one of progress with room for further growth then this should not blind us to disparities within the data. Some countries have achieved, or are on course to achieve, all of the goals. Others will reach none. Within this, there are further disparities – Burundi, for example, has achieved goals 2 (universal primary enrolment), 4 (halving adult illiteracy), and 5 (achieving general parity in primary and secondary education), whilst having a very low level of achievement on goal number 1(pre-primary enrolment). This is not surprising, as it is impossible to reduce Africa to any singularity – it is a vast continent with a vast array of narratives. Our country profiles allow for a more detailed view on a country-by-country basis, analysing national trends, policies and best practice, highlighting how each country in Africa, from Mauritania to Madagascar, uses ICT for education and development. They show the scale of Africa's achievement, the obstacles that remain to be overcome and, in many cases, the enormous opportunities that are now within reach of so many people across the continent.

Algeria

Algeria's longest-serving president, Abdelaziz Bouteflika, won re-election in April 2014, despite concerns about his ongoing health complications, promising the advent of a "diversified economy" for the country heavily reliant of hydrocarbons. Accounting for 97% of exports, and around 60% of budget revenues, there are calls to accelerate this shift, as the government's past investments into economic diversity were criticised for having little impact due to a slow pace of reform.

Officially the People's Democratic Republic of Algeria, the largest Arab country in North Africa has remained relatively stable despite turmoil in neighbouring countries. President Bouteflika has remained popular among many Algerians, credited with helping to end a devastating civil war in the 1990s and containing Arab Spring protests in 2011.

Algeria has been praised for its high primary school enrolment rate, which stands at 97% with good gender parity, as well as free education at all levels. However, the UN has suggested the country focuses more on teacher training in order to improve the quality of education.

National ICT initiatives have been on the radar since around 2000 with the creation of the Regulatory Authority for Post and Telecommunications (ARPT), and the emergence of the incumbent Algeria Telecom (AT). Since then various projects have paved the way for increased access to online information. For instance, the Academic Research Network (ARN), which connects the country's academic and research institutions; and the Ousratic initiative, which was rolled out in two phases with the aim to equip every household in Algeria with a PC or laptop and increase internet penetration.

- Area (km²): **2,381,740**
- Population (2014): **39,928,947**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **85.0% (1992); 84.4% (1997); 93.2% (2002); 93.9% (2007); 99.1% (2012)**

Recently Algeria announced it will strengthen cooperation with countries such as South Africa and Portugal in various fields including education, ICTs and entrepreneurship. Minister of Post and Information and Communication Technologies, Zohra Derdouri, said that Algeria "is interested in the Portuguese experience in the field of eLearning for students."

In recent years the country has experienced strong mobile growth and penetration has now reached 100%. All regions of the country are expected to be connected to the fibre optic network by the end of 2015.

Algeria "is interested in the Portuguese experience in the field of eLearning for students."

ICT and Infrastructure

- Internet users (2014): **6,669,927**
- Internet penetration (2014): **17.2%**
- Facebook users (2013): **4,111,320**
- Broadband subscriptions (2013): **3.26%**
- Mobile subscriptions (2013): **102%**
- Television companies: **Government-owned: ENTV (Canal Algérie, Algérie 3, Amazigh tv 4, Coran tv 5) Independent: Chorouk TV**
- Radio stations: **Government-owned: Radio Algérienne**

Education

- Students in higher education: **1,210,272 (2012)**
- Student mobility: **Outgoing: 24,751, Incoming: 6,529**
- Language(s) of instruction: **Arabic, French; Tamazight optional**
- Pupil/ teacher ratio, primary: **23 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 11.7% (2003), Secondary 18.2% (2003)**
- Literacy rate (2015 UIS estimate): **Male 87.17%, Female 73.13%**
- Unemployment (% of total labor force, 2013): **9.8%**
- Children in employment (Age 7-14): **5% (2006)**
- Education spending (% of GDP): **4.3% (2008)**

Society and Politics

- Date of independence: **3 July 1962 (from France)**
- Style of government: **Semi-presidential republic**
- Leader(s): **President Abdelaziz Bouteflika (since 1999)**
- Population growth rate (2014 est.): **1.88%**
- Birth rate 2014 est. (births/1,000 population): **23.99**
- Infant mortality (deaths/1,000 live births) 2014 est.: **21.76**
- Life expectancy at birth (2014 est.): **76.39**
- GDP (PPP) (2013 est.): **$284.7 billion; per capita $7,500**
- Growth rate (2013 est.): **3.1%**
- GDP by sector (2013 est.): **agriculture: 9.4% industry: 62.6%, services: 28%**
- Budget (2013 est.): **Revenues: $80.55 billion, Expenditures: $85.58 billion**
- Percentage below poverty line: **23% (2006 est.)**
- Languages: **Arabic (official), French, Berber dialects**
- Religions: **Muslim (official; predominantly Sunni) 99%; other (includes Christian and Jewish) <1% (2012 est.)**
- Monetary unit: **Algerian Dinar**

Angola

Angola continues its path to recovery following a devastating 26-year civil war. More than a decade after its end, Angola is now one of Africa's largest oil producing countries, generating almost 2 million barrels a day – second only to Nigeria. Oil revenues have promoted rapid economic growth in the last decade – from 2001 to 2010, the country's average GDP growth was 11.1%, the highest global annual average – as well as infrastructure projects and foreign investment. However, Angola's society remains imbalanced, and poverty is pervasive. The 2014 collapse in oil prices highlighted the government's dependence on the resource, and President José Eduardo dos Santos, almost halfway through his third decade of leadership, is under pressure to diversify.

The Angolan Government has displayed a commitment to ICT in recent years which is paying dividends. LTE testing is underway, and government access points are being set up around the country in aid of ensuring the government's goal of 5 million internet users by 2017 is met. Angosat, Angola's first communications satellite, now has a concrete launch date for November 2016, and a $260 million undersea fibre-optic cable linking Angola and Brazil is being laid which will mean that data traffic will no longer have to pass through Europe and the US. eGovernance is becoming a priority – in April 2014, the Angolan Government held a workshop in Luanda announcing the roll-out of infrastructure and governmental initiatives to this aim, including the Innovate project, which includes annual awards for innovation in public administration.

Education still lags behind other countries, as poverty and infrastructural disadvantage persist. ICT is at the forefront of attempts to bring education standards up to speed. A National Youth Development Plan (Plano Nacional de Desenvolvimento da Juventude), was approved in December 2013, which includes an ICT youth plan consisting of initiatives to provide young people and educational institutions with access points and hardware. Particular attention is being paid toward expanding connectivity in remote areas. The National Center for Information Technology (CNTI) has launched two projects to this aim: N'Gola Digital, which will see classrooms being equipped with computers and broadband internet connectivity with a particular focus on previously ignored locations; and the 'Walking with ICT' project: a mobile computer lab that travels to the most remote regions in order to teach basic computer skills.

- Area (km²): **1,246,700**
- Population (2014): **22,137,261**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **53.6% (1998); 85.8% (2008); 85.7% (2011)**

ICT and Infrastructure

- Internet users (2014): **5,102,592**
- Internet penetration (2014): **26.0%**
- Facebook users (2013): **645.460**
- Broadband subscriptions (2013): **0.1%**
- Mobile subscriptions (2013): **61.9%**
- Television companies: **State-owned: Televisão Pública de Angola Private station: TV Zimbo**
- Radio stations: **Government-owned: Rádio Nacional de Angola**

Education

- Students in higher education: **142,798 (2011)**
- Student mobility: **Outgoing: 7,534**
- Language(s) of instruction: **Portuguese**
- Pupil/ teacher ratio, primary: **43 (2011)**
- Literacy rate (2015 UIS estimate): **Male 81.98%, Female 60.69%**
- Unemployment (% of total labor force, 2013): **6.8%**
- Children in employment (Age 7-14): **24% (2001)**
- Education spending (% of GDP): **3.5% (2010)**

Society and Politics

- Date of independence: **11 November 1975 (from Portugal)**
- Style of government: **Unitary presidential republic**
- Leader(s): **President José Eduardo dos Santos (since 1979)**
- Population growth rate (2014 est.): **2.78%**
- Birth rate 2014 est. (births/1,000 population): **38.97**
- Infant mortality (deaths/1,000 live births) 2014 est.: **79.99**
- Life expectancy at birth (2014 est.): **55.29**
- GDP (PPP) (2013 est.): **$131.8 billion; per capita: $6,300**
- Growth rate (2013 est.): **5.6%**
- GDP by sector (2013 est.): **agriculture: 10.2%, industry: 61.4%, services: 28.4%**
- Budget (2013 est.): **Revenues: $52.75 billion, Expenditures: $48.48 billion**
- Percentage below poverty line: **36.6% (2008)**
- Languages: **Portuguese (official), Bantu and other African languages**
- Religions: **Indigenous beliefs 47%, Roman Catholic 38%, Protestant 15% (1998 est.)**
- Monetary unit: **Kwanza**

Benin

Benin continues to enjoy a stable and democratic government under President Thomas Boni Yayi, who is serving a second five-year term, ending in 2016. Over the past five years the country's real GDP average saw a sharp spike and, by increasing sustainable growth over the mid-term, Benin aims to become an emerging economy by 2025. As poverty remains widespread and the economy vulnerable to external shocks, the country receives external support to boost development priorities. A 2014 Consultative Group Meeting on Financing Benin's Development saw donors and private investors pledge a record $10.4 billion (against a funding gap of $6.7 billion).

Since stepping into the role in 2006, President Boni Yayi has made education a priority, developing a strong education policy which focuses on, among other things, free universal primary education, recruiting and training teachers and tuition support for junior girls in secondary education. At a Global Education First Initiative anniversary event in September 2013, President Boni Yayi said: "Significant results have been achieved, enabling my country to secure, among others, a net enrolment ratio of 97.4% and a 70% primary completion rate."

Developing the country's ICT sector is also high on the agenda. The Ministry of Communications and ICT announced in late 2014 that the country will nearly double its spending on ICTs in 2015, to $50 million. The aim is to accelerate Benin's digital transformation and improve the country's image as an ICT spender. Since 2010, the e-Benin Project has set the agenda for developing ICT services and includes a White Paper on integrating ICT into education systems. Concluding in June 2015, e-Benin has been credited with facilitating ICT training for women and increasing internet access. In addition, in 2013, the government announced it would be opening technology incubation centres at schools and vocational training centres to help would-be entrepreneurs get their ideas off the ground.

In higher education, the University of Benin has an established Centre for Distance Learning and, soon after Benin hosted the eLearning Africa Conference in 2012, the University's main Abomey-Calavi campus was equipped with WiFi.

Mobile competition is strong in Benin where there are five main players. This has helped push mobile penetration above 90%. In April 2015, Benin Telecoms announced it had officially commenced its 4G rollout. At an event attended by President Boni Yayi, Benin Telecoms CEO Djalil Assouma said LTE will benefit farmers in remote areas, students and entrepreneurs.

- Area (km²): **112.622**
- Population (2014): **10,599,510**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **48.8% (1992); 61.7% (1997); 82.9% (2003); 87.6% (2008); 94.9% (2012)**

ICT and Infrastructure

- Internet users (2014): **497.867**
- Internet penetration (2014): **4.9%**
- Facebook users (2013): **171,780**
- Broadband subscriptions (2013): **0.05%**
- Mobile subscriptions (2013): **93.3%**
- Television companies: **State-run Télévision du Bénin (ORTB)**
- Radio stations: **National & regional state-owned stations, many private providers**

Education

- Students in higher education: **110,181 (2011)**
- Student mobility: **Outgoing: 3,871**
- Language(s) of instruction: **Yoruba, Baatonu, Adja, Fon, Ditamari, Dendi to highschool; French**
- Pupil/ teacher ratio, primary: **44 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 15.0% (2010), Secondary 25.7% (2005)**
- Electricity in primary schools: **72.4% (2011)**
- Literacy rate (2015 UIS estimate): **Male 49.87%, Female 27.29%**
- Unemployment (% of total labor force, 2013): **1.0%**
- Children in employment (Age 7-14): **15% (2012)**
- Education spending (% of GDP): **5.3% (2010)**

Society and Politics

- Date of independence: **1 August 1960 (from France)**
- Style of government: **Presidential republic**
- Leader(s): **President Yayi Boni (since 2006)**
- Population growth rate (2014 est.): **2.81%**
- Birth rate 2014 est. (births/1,000 population): **36.51**
- Infant mortality (deaths/1,000 live births) 2014 est.: **57.09**
- Life expectancy at birth (2014 est.): **61.07**
- GDP (PPP) (2013 est.): **$16.65 billion; per capita $1,600**
- Growth rate (2013 est.): **5%**
- GDP by sector (2013 est.): **agriculture: 31.6%, industry: 12.9%, services: 55.6%**
- Budget (2013 est.): **Revenues: $1.712 billion, Expenditures: $1.825 billion**
- Percentage below poverty line: **36.2% (2011)**
- Languages: **French (official), Fon and Yoruba, tribal languages**
- Religions: **Christian 42.8%, Muslim 24.4%, Vodoun 17.3%, other 15.5% (2002 census)**
- Monetary unit: **CFA Franc**

Botswana

Continuing economic growth and political stability persists in Africa's longest multi-party democracy. The diamond industry remains the key economic driver, with low levels of corruption prompting high levels of investment. Elections in October 2014 saw Ian Khama's Botswana Democratic Party (BDP) win their 11th straight victory in a contest increasingly channelled through social media. Despite a strong opposition movement, the BDP continues to hold on to power, buoyed by the kind of stability and growth that saw Botswana voted as Africa's most prosperous country in the 2014 Africa Prosperity Report.

With one of the highest mobile penetration rates in Africa at almost 160%, Botswana is increasingly staking a claim to being a regional ICT leader. Improvements in cable connection quality and quantity have led to sharp drops – as much as 70% – in prices for internet access.

This constantly improving infrastructure has allowed for ambitious government ICT programmes. The Connecting Communities Programme connects rural, urban and remote areas with affordable computer and internet services, and Kitsong Centres (knowledge centres), which target rural areas, are part of the Government of Botswana's obligation to involve the nation in the social and economic development of the country. A project co-funded by SIDA (the Swedish International Development Cooperation Agency) called 'Botswana Speaks' aims to bridge the gulf between ICT development and tradition, by enabling citizens, traditional leaders and local kgotla assemblies in four constituencies to share their views and concerns with elected representatives through the use of ICT. In education, the Thuto Net initiative has coordinated delivery of ICTs within the education system connecting over 100 secondary schools to the internet.

The prevalence of HIV remains high – the second highest globally. Botswana does, however, have one of the most comprehensive and effective HIV treatment programmes in Africa and transmission of HIV from infected mothers to their foetuses and newborn babies has been brought down to just 4%. Key to this success is the ICT infrastructure, which helps empower and inform. The National ICT Master Plan of 2012 establishes growth in use of ICTs as vital to meeting the challenge of HIV/AIDS. The country's highly lauded national treatment programme, 'Masa', meaning 'new dawn', is particularly dependant on ICT infrastructure, and continues to drive infection rates down.

- Area (km²): **582,000**
- Population (2014): **2,038,587**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **86.8% (1992); 80.0% (1998); 82.9% (2003); 84.0% (2009)**

ICT and Infrastructure

- Internet users (2014): **323,368**
- Internet penetration (2014): **15.0%**
- Facebook users (2013): **294,000**
- Broadband subscriptions (2013): **1.07%**
- Mobile subscriptions (2013): **160.6%**
- Television companies: **State-owned Botswana Television (BTV); Privately owned Gaborone Broadcasting Company (GBC)**
- Radio stations: **National state-owned radio: Radio Botswana and Radio Botswana 2. Some private stations**

Education

- Students in higher education: **39,894 (2011)**
- Student mobility: **Outgoing: 6,634, Incoming: 141 (2011)**
- Language(s) of instruction: **Setswana in primary; English at all levels**
- Expenditure per student (% of GDP per capita): **Primary 10% (2009) Secondary 33% (2009)**
- Literacy rate (2015 UIS estimate): **Male 88.01%, Female 88.93%**
- Unemployment (% of total labor force, 2013): **18.4**
- Children in employment (Age 7-14): **9% (2006)**
- Education spending (% of GDP): **9.5% (2009)**

Society and Politics

- Date of independence: **30 September 1966 (from Britain)**
- Style of government: **Parliamentary republic**
- Leader(s): **President Ian Khama (since 2008)**
- Population growth rate (2014 est.): **1.26%**
- Birth rate 2014 est. (births/1,000 population): **21.34**
- Infant mortality (deaths/1,000 live births) 2014 est.: **9.38**
- Life expectancy at birth (2014 est.): **54.06**
- GDP (PPP) (2013 est.): **$34 billion; per capita $16,400**
- Growth rate (2013 est.): **3.9%**
- GDP by sector (2013 est.): **agriculture: 1.9%, industry: 35.7%, services: 62.4%**
- Budget (2013 est.): **Revenues: $5.04 billion, Expenditures: $4.952 billion**
- Percentage below poverty line: **19.3% (2009)**
- Languages: **Setswana (national), Kalanga, Sekgalagadi, English (official), tribal languages**
- Religions: **Christian 71.6%, Badimo 6%, other 1.4%, unspecified 0.4%, none 20.6% (2001 census)**
- Monetary unit: **Pula**

Burkina Faso

A popular uprising removed long-time President Blaise Compaoré in October 2014, after he attempted to abolish term limits to extend his 27-year reign in Burkina Faso. Stability has remained following the uprising, and a transitional government has arranged new elections for October 2015. Fears of potential political instability have led to a lack of investment, however, particularly in the country's lucrative gold mining industry. Hopes are high that the transitional government will maintain strong growth rates – Burkina Faso is one of Africa's least developed nations, with as many as 45% living below the poverty line according the International Monetary Fund (IMF).

Internet usage and connectivity is sporadic but growing rapidly. The number of internet subscribers tripled between 2012-2013, but poor infrastructure and very low literacy rates, at just above 30%, are hindering progress. Efforts are being made to improve access, which was rated at only 3% at the end of 2012. An ambitious fibre backbone project is being rolled out, which aims at transforming Burkina Faso from one of the least interconnected countries in the world to among the most.

A number of eLearning courses are now available in Burkina Faso. The University Ouaga II, set up in 2008, is using eLearning platforms to teach its International Business Master's programme. A National internet Week was held in the country in December 2014, with panel discussions on various topics. Child safety on the internet was deemed a top priority.

- Area (km²): **274,200**
- Population (2014): **17,419,615**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **27.7% (1992); 35.0% (1998); 39.0% (2003); 61.0% (2008); 66.8% (2012)**

Cotton remains Burkina Faso's main export and the country is still reliant on its agriculture sector. It is here where ICT has had the biggest impact, with tools and services such as voice-based information delivery services, radio dial-up, broadcasts and SMS-based eLearning becoming increasingly important for farmers. Mobile application platforms such as Esoko, a mobile-based agriculture market information exchange for individuals and businesses, are becoming widely used. The UNPMB (Union Nationale des Producteurs de Mangue du Burkina), Burkina's largest association of mango growers, claimed in June 2014 that they managed to extend their harvest by two months by using the app to coordinate pest control activities.

ICT and Infrastructure

- Internet users (2014): **808,065**
- Internet penetration (2014): **4.4%**
- Facebook users (2013): **141,740**
- Broadband subscriptions (2013): **0.08%**
- Mobile subscriptions (2013): **66.4%**
- Television companies: **Government-owned Télévision Nationale du Burkina; one privately operated television station**
- Radio stations: **State-owned Radiodiffusion-Télévision du Burkina (RTB), many private stations**

Education

- Students in higher education: **74,276 (2013)**
- Student mobility: **Outgoing: 3,313, Incoming: 2,040 (2012)**
- Language(s) of instruction: **French, national languages**
- Pupil/ teacher ratio, primary: **48 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 15% (2012), Secondary 16.6% (2012)**
- Electricity in primary schools: **88.2% (2012)**
- Literacy rate (2015 UIS estimate): **Male 43.03%, Female 29.32%**
- Unemployment (% of total labor force, 2013): **3.1%**
- Children in employment (Age 7-14): **39% (2010)**
- Education spending (% of GDP): **3.4% (2011)**

Society and Politics

- Date of independence: **5 August 1960 (from France)**
- Style of government: **Semi-presidential republic**
- Leader(s): **Interim president Michel Kafando (since 2014)**
- Population growth rate (2014 est.): **3.05%**
- Birth rate 2014 est. (births/1,000 population): **42.42**
- Infant mortality (deaths/1,000 live births) 2014 est.: **76.80**
- Life expectancy at birth (2014 est.): **54.78**
- GDP (PPP) (2013 est.): **$26.51 billion; per capita $1,500**
- Growth rate (2013 est.): **6.5%**
- GDP by sector (2013 est.): **agriculture: 33.6%, industry: 23.6%, services: 42.8%**
- Budget (2013 est.): **Revenues: $2.838 billion, Expenditures: $3.228 billion**
- Percentage below poverty line: **46.7% (2009)**
- Languages: **French (official), Sudanic languages**
- Religions: **Muslim 60.5%, Catholic 19%, animist 15.3%, Protestant 4.2%, other 0.6%, none 0.4% (2006 est.)**
- Monetary unit: **CFA Franc**

Burundi

At the time of publication, the small and densely populated Republic of Burundi was in a state of precarious peace. The country has experienced substantial progress and overcome many challenges since the end of the civil war and, although the upcoming national elections in May and June provide Burundians with the opportunity to further strengthen peace consolidation efforts undertaken since the Arusha Accord, tensions are at a high. To avoid renewed violence, President Pierre Nkurunziza is being urged to abandon his potentially unconstitutional bid for a third term, as it breaks the two-term limit for the presidency mandated in the Arusha Peace and Reconciliation Agreement.

Although economic growth picked up slightly in 2014, in April 2015, the International Monetary Fund said it would lend Burundi $6.9 million to support the aid-dependent central African nation, months before a presidential election in June, as well as a further $13.9 million in 2016 to "help strengthen the management of public finances and consolidate the country's economic reform program."

The country moved up seven places on the Human Development Index (HDI) in 2013, due to education developments including free primary-school tuition. And, although faced with challenges such as poor infrastructure and teacher shortages, a recent report by the UN Secretary-General put Burundi at the top of the list of developing countries for progress in educational reform.

The government has been working to improve ICT for education, planning investment for 2012-2013 in order to improve ICT infrastructure and resources for higher education. The government is also highly committed to the National Policy for Science,Technology and Innovation (STI), for which an action plan is being drafted, to ensure funding in these areas – the aim is to 'reinvigorate research in Burundi'.

- Area (km²): **27,834**
- Population (2014): **10,482,752**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **47.8% (1993); 40.8% (2000); 57.3% (2005); 94.1% (2010)**

The African Virtual University, in partnership with the African Development Bank, recently announced it will launch a new open, distance and eLearning centre in the country, which focuses on programmes around teacher education, computer science, and peace and conflict resolution. Meanwhile, organisations such as UNICEF have been working to expand educational opportunities for children by providing rural areas with access to digital information through its 'digital drum' solar-powered computer kiosks.

Burundi's mobile penetration rate is estimated at 34%. Communication costs are set to reduce as the Government of Burundi, in cooperation with the World Bank, commences a 13,000 kilometre fibre-optic project to cover Bujumbura, 17 provinces and the borders.

ICT and Infrastructure

- Internet users (2014): **405,441**
- Internet penetration (2014): **3.9%**
- Facebook users (2013): **41,900**
- Broadband subscriptions (2013): **0.1%**
- Mobile subscriptions (2014): **34%**
- Television companies:**Government-owned: Burundi National Radio and Television (RTNB)**
- Radio stations: **Government-owned: Burundi National Radio and Television (RTNB); some private radio stations**

Education

- Students in higher education: **29,269 (2010)**
- Student mobility: **Outgoing: 1,872, Incoming: 1,813 (2010)**
- Language(s) of instruction: **Kurindi, French**
- Pupil/ teacher ratio, primary: **47 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 12.6% (2012) Secondary 33.5 % (2012)**
- Electricity in primary schools: **96.4% (2012)**
- Literacy rate (2015 UIS estimate): **Male 88.24%, Female 83.12%**
- Unemployment (% of total labor force, 2013): **6.9%**
- Children in employment (Age 7-14): **26% (2010)**
- Education spending (% of GDP): **5.8% (2012)**

Society and Politics

- Date of independence: **1 July 1962 (from Belgium)**
- Style of government: **Presidential republic**
- Leader(s): **President Pierre Nkurunziza (since 2005)**
- Population growth rate (2014 est.): **3.28%**
- Birth rate 2014 est. (births/1,000 population): **42.33**
- Infant mortality (deaths/1,000 live births) 2014 est.: **63.44**
- Life expectancy at birth (2014 est.): **59.55**
- GDP (PPP) (2013 est.): **$5.75 billion; per capita $600**
- Growth rate (2013 est.): **4.5%**
- GDP by sector (2013 est.): **agriculture: 34.4%, industry: 18.4%, services: 47.2%**
- Budget (2013 est.): **Revenues: $766.9 million, Expenditures: $855.8 million**
- Percentage below poverty line: **66.9% (2006)**
- Languages: **Kirundi, French (official), Swahili**
- Religions: **Christian 86%, Muslim 2.5%, other 3.6%, unspecified 7.9% (2008 est.)**
- Monetary unit: **Burundi Franc**

Cameroon

President Paul Biya's reign has seen stability in Cameroon, but this has recently been challenged by incursions from Boko Haram in the North and the knock-on effects of civil war in the Central African Republic to the West. Economic growth has also remained steady over the past years, and is hoped to improve with the 2015 budget increasing more than 13% from 2014. The government expects this will accelerate economic growth to 6.3%.

Over the past decade, there have been great improvements in access to basic education. However, a recent report published by the World Bank states that learning outcomes have deteriorated. It suggests that in the future "the public authorities should be able to focus on the most important issues by improving data collection in order to better track the delivery of education services, assessing student outcomes in a more systematic manner."

The government has long prioritised ICT for development, establishing a National Policy for the Development of Information Communication in 2007. However, affordability and poor infrastructure has hindered widespread use of ICT in education, especially for primary and secondary levels. In order to recognise secondary teachers who make the best use of ICT in education and share best practices, in May 2014, the Ministry of Secondary Education and the MTN Foundation launched an award in this area. Open to all secondary school teachers in Cameroon, the award aims to 'drive the taste for research in innovative teaching methods.' Universities and higher education institutions have progressed – the country has two virtual universities and, in 2014, the World Bank designated the University of Yaoundé I an African Centre of Excellence in Information and Communication Technologies.

- Area (km²): **475.442**
- Population (2014): **22,818,632**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **72.0% (1990); 82.1% (2008); 91.5% (2012)**

Internet penetration remains low at below 8%. Reports say only 400,000 Cameroonians have internet connections in their homes against 7 million Nigerians. A recent deal signed by the government of Cameroon and MTN will renew the company's GSM and launch its 3G operations. This is expected to increase internet usage with better speed, quality and affordable services. MTN says the 3G/4G license will usher in "a new era for telecommunications in Cameroon." Meanwhile, Cameroon just initiated a fibre-optic deal with Chad, which will help its neighbour, among other things, extend its fibre-optic network. Chad's fibre optic network is only 750km long, while Cameroon's is 6,000 km.

ICT and Infrastructure

- Internet users (2014): **1,486,815**
- Internet penetration (2014): **6.4%**
- Facebook users (2013): **562,480**
- Broadband subscriptions (2013): **0.08%**
- Mobile subscriptions (2013): **70.4%**
- Television companies: **State-owned: CRTV Télé; many privately owned stations (not fully licensed)**
- Radio stations: **several public radio stations (regulated by CRTV); about 20 privately owned radio stations**

Education

- Students in higher education: **244,233 (2011)**
- Student mobility: **Outgoing: 22,297, Incoming: 3,385 (2012)**
- Language(s) of instruction: **French, English**
- Pupil/ teacher ratio, primary: **46 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 6.3% (2012), Secondary 20.6 % (2012)**
- Electricity in primary schools: **91.4% (2011)**
- Literacy rate (2015 UIS estimate): **Male 81.15%, Female 68.88%**
- Unemployment (% of total labor force, 2013): **4.0%**
- Children in employment (Age 7-14): **42% (2011)**
- Education spending (% of GDP): **3.2% (2011)**

Society and Politics

- Date of independence: **1 January 1960 (from France) 1 October 1961 (from Britain)**
- Style of government: **Dominant-party presidential republic**
- Leader(s): **President Paul Biya (since 1982)**
- Population growth rate (2014 est.): **2.60%**
- Birth rate 2014 est. (births/1,000 population): **36.58**
- Infant mortality (deaths/1,000 live births) 2014 est.: **55.10**
- Life expectancy at birth (2014 est.): **57.35**
- GDP (PPP) (2013 est.): **$53.16 billion; per capita $2,400**
- Growth rate (2013 est.): **4.6%**
- GDP by sector (2013 est.): **agriculture: 70%, industry: 13%, services: 17%**
- Budget (2013 est.): **Revenues: $5.089 billion, Expenditures: $6.28 billion**
- Percentage below poverty line: **39.9% (2007)**
- Languages: **English (official), French (official), 24 major African language groups,**
- Religions: **Christian 69%, Muslim 21%, animist 6%, other 4%**
- Monetary unit: **CFA Franc**

Cape Verde

Since the establishment of democracy in Cape Verde in 1991, the country has earned a reputation as an outpost of stability and a popular tourist destination. The West African archipelago tops many development indicators in Africa and is set to reach the majority of its Millennium Development Goals. Growth, which had in previous decades far exceeded the continental average has, however, slowed in recent years as the island's close economic relationship with Europe made it vulnerable to the Eurozone crisis. The country is ranked as one of the most democratic in the world, and elections are due in 2016.

Cape Verde has one of Africa's highest internet penetration rates and continues to grow in this regard. ICT is one of five 'clusters' of development to which the government has devoted its energies with the aim of promoting growth and diversifying the economy. The country's status as a regional leader was confirmed in late 2014 when it was announced that it will host a regional internet Exchange Point (IXP) for 30 member states of the African Union (AU) as part of the organisation's initiative to establish connections across Africa. The IXP will reduce costs in Cape Verde, which should work to combat the digital divide. CV Movel, Cape Verde's largest telecommunications operator, is also working to address the divide, installing 14 public ICT access centres in 2014 as part of a drive to provide network coverage to the most remote and least developed areas of the country.

- Area (km²): **4,033**
- Population (2014): **503,637**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **99.1% (1994); 99.5% (2000); 97.1% (2004); 93.3% (2008); 97.3% (2012)**

The Cape Verdean Government is committed to ICT in education, with a particular focus on improving women's access to ICT. In February 2014 it became the 19th Member State of the African Virtual University. As an archipelago located (560 km) off the coast of Western Africa, distance learning has great potential in Cape Verde, and membership of the Virtual University allowed Cape Verdean's the opportunity to partake in open long-distance courses. Female-only scholarships are helping balance the gender divide. A UNESCO long-distance adult eLearning programme concluded in 2011 that distance learning was ideal for Cape Verde, helping it transform into a 'knowledge society'.

ICT and Infrastructure

- Internet users (2014): **201,950**
- Internet penetration (2014): **37.5%**
- Facebook users (2013): 107.340
- Broadband subscriptions (2013): **4.25%**
- Mobile subscriptions (2013): **100.1%**
- Television companies: **one state owned (RTC) and two foreign owned**
- Radio stations: **RTC, Rádio Barlavento, Rádio Clube do Mindelo**

Education

- Students in higher education: **13,068 (2013)**
- Student mobility: **Outgoing: 2,775, Incoming: 133 (2011)**
- Language(s) of instruction: **Portuguese**
- Pupil/ teacher ratio, primary: **23 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 15.4% (2011), Secondary 14.8 % (2011)**
- Electricity in primary schools: **33.9% (2012)**
- Literacy rate (2015 UIS estimate): **Male 92.10%, Female 83.09%**
- Unemployment (% of total labor force, 2013): **7.0%**
- Children in employment (Age 7-14): **6% (2012)**
- Education spending (% of GDP): **5% (2011)**

Society and Politics

- Date of independence: **5 July 1975 (from Portugal)**
- Style of government: **Unitary semi-presidential republic**
- Leader(s): **President Jorge Carlos Fonseca (since 2011)**
- Population growth rate (2014 est.): **1.39%**
- Birth rate 2014 est. (births/1,000 population): **20.72**
- Infant mortality (deaths/1,000 live births) 2014 est.: **24.28**
- Life expectancy at birth (2014 est.): **71.57**
- GDP (PPP) (2013 est.): **$2.222 billion; per capita $4,400**
- Growth rate (2013 est.): **1.5%**
- GDP by sector (2013 est.): **agriculture: 9.3%, industry: 18.8%, services: 71.9%**
- Budget (2013 est.): **Revenues: $414.6 million, Expenditures: $607 million**
- Percentage below poverty line: **26.6% (2007)**
- Languages: **Portuguese (official), Crioulo**
- Religions: **Roman Catholic 77.3%, Protestant 3.7%, other Christian 4.3%, Muslim 1.8%, other 1.3%, none 10.8%, unspecified 0.7% (2010 est.)**
- Monetary unit: **Escudo**

Central African Republic

The Central African Republic is still reeling from internal conflicts, the most recent of which began when Séléka forces overthrew President François Bozizé in 2013. Fighting has broken out across the country since then, with reports of ethnic violence and warnings of a potential genocide from the international community. In March 2015, the CAR made headlines when Samantha Power, the US envoy to the United Nations, claimed that almost all of the 436 mosques in the country had been destroyed. The presence of French, UN and African Union troops has dampened if not extinguished the violence.

The crisis has taken its toll on the country. In 2013 there was a 36% drop in GDP, and an estimated one million people have been displaced. The war has damaged infrastructure and, in June 2014, SMS was temporarily suspended in the capital Bangui due to security concerns. A month later an attempt to register all SIM cards in the country was complicated by the fact that many Central Africans do not have valid identification.

ICT is at the forefront of combating the humanitarian crisis in the CAR. In July 2013, the World Food Programmme (WFP) announced the rollout of communications centres by the Emergency Telecommunications Cluster (ETC) in seven different locations in the country. Satellite internet connections are increasingly important in this regard. Telecommunications company Thuraya, a leading Mobile Satellite Services (MSS) operator, has been working since October 2014 in conjunction with SOS Children's Villages, to bring satellite connectivity to remote communities affected by the civil war, helping the organisation link its programmes as well as manage emergency readiness and response teams.

The CAR has huge potential – a recent report into telecommunications predicted massive growth in the industry in the coming years. The country also has rich agriculture and minerals. Peace is now needed in order for this potential to be unlocked.

- Area (km²): **622,984**
- Population (2014): **4,709,203**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **49.6% (2005); 68.0% (2008); 72.2% (2012)**

ICT and Infrastructure

- Internet users (2014): **184,729**
- Internet penetration (2014): **3.5%**
- Facebook users (2013): **163,780**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **29.5%**
- Television companies: **government owned: Radio–Télévision Centrafrique (RTV)**
- Radio stations: **state-operated: Radio Centrafrique; a small number of private radio stations**

Education

- Students in higher education: **12,522 (2012)**
- Student mobility: **Outgoing: 971, Incoming: 1,800 (2012)**
- Language(s) of instruction: **French**
- Pupil/ teacher ratio, primary: **80 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 4.4% (2010), Secondary 15.8% (2009)**
- Electricity in primary schools: **100% (2012)**
- Literacy rate (2015 UIS estimate): **Male 50.71%, Female 24.36%**
- Unemployment (% of total labor force, 2013): **7.6**
- Children in employment (Age 7-14): **29% (2010)**
- Education spending (% of GDP): **1.2% (2011)**

Society and Politics

- Date of independence: **13 August 1960 (from France)**
- Style of government: **Provisional republic**
- Leader(s): **Interim president Catherine Samba-Panza (since 2014)**
- Population growth rate (2014 est.): **2.13%**
- Birth rate 2014 est. (births/1,000 population): **35.45**
- Infant mortality (deaths/1,000 live births) 2014 est.: **92.86**
- Life expectancy at birth (2014 est.): **51.35**
- GDP (PPP) (2013 est.): **$3.336 billion; per capita $700**
- Growth rate (2013 est.): **-14.5%**
- GDP by sector (2013 est.): **agriculture: 56.6%, industry: 14.5%, services: 28.9%**
- Budget (2013 est.): **Revenues: $186.2 million, Expenditures: $270.7 million**
- Percentage below poverty line: **62% (2008)**
- Languages: **French (official), Sangho (national language), tribal languages**
- Religions: **Protestantism (51.0%), Catholicism (29.0%), Islam (15.0%), Others (5.0%) (2012 est.)**
- Monetary unit: **CFA Franc**

Chad

Oil revenues continue to contribute to sustained economic growth in Chad, one of Africa's least developed nations. With relations with Sudan stabilised, ending the internecine proxy wars of the mid-2000s, the nation has become a leading example of stability in a tumultuous region. Increasingly an important regional force, Chadian troops recently have been playing a key role in the multinational taskforce charged with taking on Boko Haram.

Driven by investment in oil, the economy was predicted to grow by a massive 11.2% in 2014. Growth rates remain dependent upon oil by as much as a third, however, and are thus subject to fluctuation – in 2013, for example, the rate was only 3.4%. Attempts for diversification are necessary as the International Monetary Fund (IMF) has warned that oil production is set to peak in 2017.

Increasing revenues have allowed for much-needed investment in education, particularly following the nation's disastrous national exam results in 2012, when 91% of students failed high school leaving exams. A lack of infrastructure and corruption, however, has held progress back.

The internet is becoming increasingly important as a mode of cultural and political expression. WenakLabs, a non-profit initiative in N'Djamena set up to provoke experimentation with tech innovation, held a BarCamp event in November 2014, which involved several workshops discussing the use the of internet. A month later the first internet governance forum was organised by the internet Society in Chad, which was followed by an internet festival attended by hundreds of young people at the national library. It included panel discussions on the merits of open source software, good social media practices, digital mapping and learning by experimentation.

Airtel is behind much of the expanding internet infrastructure in the country, introducing 3G services and a license to develop 4G services in the future. Having sponsored the internet festival, Airtel also announced a project in March to train 6,000 young Chadians in ICT capabilities in association with the Ministry of Secondary Education.

- Area (km²): **1,284,000**
- Population (2014): **13,211,146**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **37.5% (1996); 51.7% (2000); 57.9% (2003); 63.8% (2011)**

ICT and Infrastructure

- Internet users (2014): **317,197**
- Internet penetration (2014): **2.8%**
- Facebook users (2013): **43,120**
- Broadband subscriptions (2013): **0.16%**
- Mobile subscriptions (2013): **35.6%**
- Television companies: **government-owned: Télé Tchad; Catholic Church-owned: Voix du Paysan; private station: FM Liberté**
- Radio stations: **state-operated Radiodiffusion Nationale Tchadienne (RNT)**

Education

- Students in higher education: **24,349 (2011)**
- Student mobility: **Outgoing: 362, Incoming: 978 (2011)**
- Language(s) of instruction: **French, Arabic**
- Pupil/ teacher ratio, primary: **61 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 5.8 % (2011), Secondary 20.9 % (2011)**
- Electricity in primary schools: **95.3% (2011)**
- Literacy rate (2015 UIS estimate): **Male 48.49%, Female 31.92%**
- Unemployment (% of total labor force, 2013): **7.0%**
- Children in employment (Age 7-14): **26% (2010)**
- Education spending (% of GDP): **2.3% (2011)**

Society and Politics

- Date of independence: **11 August 1960 (from France)**
- Style of government: **Dominant-party presidential republic**
- Leader(s): **President Idriss Déby (since 1990)**
- Population growth rate (2014 est.): **1.92%**
- Birth rate 2014 est. (births/1,000 population): **37.29**
- Infant mortality (deaths/1,000 live births) 2014 est.: **90.30**
- Life expectancy at birth (2014 est.): **49.44**
- GDP (PPP) (2013 est.): **$28 billion; per capita $2,500**
- Growth rate (2013 est.): **3.9%**
- GDP by sector (2013 est.): **agriculture: 46.3%, industry: 9.9%, services: 43.8%**
- Budget (2013 est.): **Revenues: $2.753 billion, Expenditures: $3.557 billion**
- Percentage below poverty line: **46.7% (2011)**
- Languages: **French (official), Arabic (official), Sara, more than 120 different languages and dialects**
- Religions: **Muslim 53.1%, Christian 34.3%, animist 7.3% (1993 census)**
- Monetary unit: **CFA Franc**

Comoros

The island nation of the Comoros has seen stability in recent years that had generally evaded the country since independence in 1975. Legislative elections held in early 2015 were deemed fair, free and transparent. Subject to over 20 coups or attempted coups in the past four decades, the Comoros does not boast the prosperity or booming tourist trade that characterise other East African islands such as the Seychelles or Mauritius.

Growth remains reliant on exports of cloves, perfume essence and vanilla, all of which are inclined to price fluctuations. The government has controversially started selling Comorian citizenship, which NGO Freedom House estimates to have generated as much as $200 million.

ICT Infrastructure remains basic with very low penetration rates for mobile phones and internet. The government Strategy for Accelerated Growth and Sustainable Development is placing emphasis on basic infrastructure development, but these plans have been hampered by the cancelation of projects to privatise the sole state owned telecom company, Comores Telecom, and create a second competitor. The Government is currently seeking funding to establish a second fibre-optic link.

Comoros has an ICT policy, which was developed in 2004. Education is at the heart of this, with a national goal to connect universities and schools to modern ICT. The first computer room complete with internet connectivity was officially opened at the University of Comoros on the island of Anjouan in March 2011, and in 2013 Comoros joined the ITU's initiative 'Connect a School, Connect a Community' which aims to equip and connect classrooms in schools and provide teacher training on the use of basic software. Overall progress in education has improved with a major increase in net school enrolment between 1999 and 2011, from 67% to 79%. School dropouts and the quality of teaching and educational resources remain a challenge.

- Area (km²): **2,235**
- Population (2014): **752,438**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **68.0% (1994); 76.4% (2000); 83.3% (2007)**

ICT and Infrastructure

- Internet users (2014): **49,846**
- Internet penetration (2014): **6.5%**
- Facebook users (2013): **19,940**
- Broadband subscriptions (2013): **0.18%**
- Mobile subscriptions (2013): **47.3%**
- Television companies: **state-owned: ORTC**
- Radio stations: **state-owned ORTC; a few private stations**

Education

- Students in higher education: **6,163 (2013)**
- Student mobility: **Outgoing: 3,912**
- Language(s) of instruction: **Shikomori in pre-school; french, Arabic**
- Pupil/ teacher ratio, primary: **28 (2011)**
- Expenditure per student (% of GDP per capita): **Primary 27.4% (2008), Secondary 25.1% (2002)**
- Electricity in primary schools: **78.9% (2012)**
- Literacy rate (2015 UIS estimate): **Male 81.81%, Female 73.72%**
- Unemployment (% of total labor force, 2013): **6.5%**
- Children in employment (Age 7-14): **22% (2012)**
- Education spending (% of GDP): **7.6% (2008)**

Society and Politics

- Date of independence: **6 July 1975 (from France)**
- Style of government: **Federal presidential republic**
- Leader(s): **President Ikililou Dhoinine (since 2011)**
- Population growth rate (2014 est.): **1.87%**
- Birth rate 2014 est. (births/1,000 population): **29.05**
- Infant mortality (deaths/1,000 live births) 2014 est.: **65.31**
- Life expectancy at birth (2014 est.): **63.48**
- GDP (PPP) (2013 est.): **$911 million; per capita $1,300**
- Growth rate (2013 est.): **3.5%**
- GDP by sector (2013 est.): **agriculture: 51%, industry: 10%, services: 39%**
- Budget (2013 est.): **Revenues: $170.1 million, Expenditures: $167.4 million**
- Percentage below poverty line: **44.8% (2004)**
- Languages: **Arabic (official), French (official), Shikomoro**
- Religions: **Sunni Muslim 98%, Roman Catholic 2%**
- Monetary unit: **Comorian Franc**

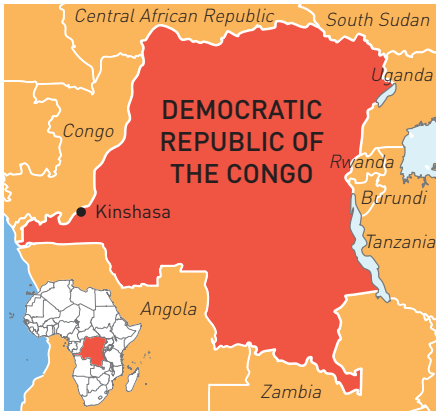
Democratic Republic of Congo

Despite challenges, the Democratic Republic of the Congo is more stable than it has been for the past 20 years, with strong growth rates thanks to a booming mining industry. Focus is currently turned toward President Joseph Kabila, now in his 14th year as President, as he approaches the 2016 constitutional deadline for his stepping down. An uneasy calm remains, punctuated by occasional flare-ups such as protests in January following a proposed delay to upcoming elections.

Much-needed investment in education continues to grow. Following the culmination of the country's first education sector plan and 2013's Global Partnership for Education $100 million package towards school building and rehabilitation, the US Agency for International Development (USAID) and the UK Department for International Development announced a $180 million joint programme which includes improving reading and writing for 1.5 million children in indigenous languages and in French, and helping access to primary schooling for 450,000 out-of-school children amongst its aims. It also hopes to increase retention rates of children in schools by 30%.

Particular focus has been directed toward teacher training. The first results of the 2nd Status Report of the National Education System of the DRC (RESEN) claimed that in secondary schools, only 17% of teachers are skilled, and most have no training. The December 2014 launch of the UNESCO-China Funds-In-Trust project that the DRC joined in 2013 marked an important step toward better teacher training. Lauded as a new model of South-South cooperation, the project seeks to use ICT to revolutionise teaching practices, providing development and online publication of educational materials, and training on how to use new technical tools. Complimenting this, three new teacher resource centres funded by USAID and constructed by the International Rescue Committee (IRC), will give 70,000 teachers access to resources and training.

In terms of ICT infrastructure, deployment continues to be stunted by perceived lack of demand. Mobile phone penetration remains low at 44%. On the internet front, the national fibre backbone roll-out continues, and the launch of LTE services is imminent.



- Area (km²): **2,344,858**
- Population (2014): **69,360,118**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **61.0% (1991); 66.8% (1995); 36.2% (1999)**

ICT and Infrastructure

- Internet users (2014): **1,703,542**
- Internet penetration (2014): **2.2%**
- Facebook users (2013): **903,020**
- Broadband subscriptions (2013): **0.01%**
- Mobile subscriptions (2013): **43.7%**
- Television companies: **one state-owned station (near national), several private**
- Radio stations: **Two state-owned radio stations; more than 100 private radio stations**

Education

- Students in higher education: **511,251 (2012)**
- Student mobility: **Outgoing: 5,297, Incoming: 2,242 (2011)**
- Language(s) of instruction: **National languages in primary; French**
- Pupil/ teacher ratio, primary: **35 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 4.9% (2010), Secondary 15.1 % (2010)**
- Electricity in primary schools: **88.8% (2011)**
- Literacy rate (2015 UIS estimate): **Male 78.08%, Female 49.96%**
- Unemployment (% of total labor force, 2013): **8.0%**
- Children in employment (Age 7-14): **15% (2010)**
- Education spending (% of GDP): **2.5% (2010)**

Society and Politics

- Date of independence: **30 June 1960 (from Belgium)**
- Style of government: **Semi-presidential republic**
- Leader(s): **Joseph Kabila (since 2001)**
- Population growth rate (2014 est.): **2.50%**
- Birth rate 2014 est. (births/1,000 population): **35.62**
- Infant mortality (deaths/1,000 live births) 2014 est.: **73.15**
- Life expectancy at birth (2014 est.): **56.54**
- GDP (PPP) (2013 est.): **$29.39 billion; per capita $400**
- Growth rate (2013 est.): **6.2%**
- GDP by sector (2013 est.): **agriculture: 44.3% industry: 21.7%, services: 34%**
- Budget (2013 est.): **Revenues: $5.817 billion, Expenditures: $6.472 billion**
- Percentage below poverty line: **71.3% (2006)**
- Languages: **French (official), Lingala, Kingwana, Kikongo, Tshiluba**
- Religions: **Roman Catholic 50%, Protestant 20%, Kimbanguist 10%, Muslim 10%, other 10%**
- Monetary unit: **CFA Franc**

Republic of Congo

Denis Sassou Nguesso, who has ruled the Republic of Congo for the best part of the last 35 years, announced in March 2015 that he would seek a referendum to overturn term limits, which would allow him to compete for a third term in the coming elections in 2016. Nguesso has played a key role in the country's recent history – both in the brutal civil war that took place from 1997 to 1999, and as presiding over 17 years of relative stability and economic growth in the years that followed. However, both stability and growth have come at a price, with the fruits of Congo's vast oil reserves failing to spread evenly, and accusations of human rights abuses and fraudulent elections common.

ICT infrastructure is one of the most poorly developed in the region, due to decades of low investment and a destructive civil war. This is being recognised and efforts are underway to make improvements – Brazzaville is at the heart of the ongoing Central African Backbone project, initially funded by the World Bank. The government of Turkey recently announced that it is collaborating with Brazzaville to further the project, which marks a second positive step in boosting broadband connectivity in the region following connection to the WACS submarine fibre optic cable in 2013.

Despite internet access remaining limited, local ICT innovation is thriving. VMK, a Congolese smartphone retailer, plans on opening a manufacturing facility soon. Bantuhub, Brazzaville's first tech hub, is offering training courses, weekly ICT brainstorming sessions and meetings in order to serve as an incubator for startups in Congo's capital.

Nguesso's government have displayed a commitment to ICT, investing $200 billion into the area in the past decade. The country plans to become a regional tech hub; Thierry Moungalla, the Congolese Minister of Post and Telecommunications, has claimed that his ministry is "overseeing a strategy to encourage the digital economy, in the provision of e-government, e-commerce, e-learning and e-health." Encouragement from the Minister for women has seen an upsurge in Congolese women using ICTs. Infrastructure is needed to make sure that these trends prevail.

- Area (km²): **342,000**
- Population (2014): **4,558,594**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **52.7% (2005); 87.8% (2010); 91.6% (2012)**

ICT and Infrastructure

- Internet users (2014): **307,721**
- Internet penetration (2014): **6.6%**
- Facebook users (2013): **107,640**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **104.8%**
- Television companies: **Government operated TV Congo**
- Radio stations: **2 government-owned stations, 1 national (Radio Congo) 1 local (Radio Brazzaville); several private**

Education

- Students in higher education: **37,037 (2013)**
- Student mobility: **Outgoing: 8,280, Incoming: 39 (2011)**
- Language(s) of instruction: **French**
- Pupil/ teacher ratio, primary: **44 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 11.2 % (2011), Secondary 16.4 % (2002)**
- Literacy rate (2015 UIS estimate): **Male 86.43%, Female 72.88%**
- Unemployment (% of total labor force, 2013): **6.5%**
- Children in employment (Age 7-14): **18% (2012)**
- Education spending (% of GDP): **6.2% (2010)**

Society and Politics

- Date of independence: **15 August 1960 (from France)**
- Style of government: **Presidential republic**
- Leader(s): **President Denis Sassou Nguesso (since 1997)**
- Population growth rate (2014 est.): **1.94%**
- Birth rate 2014 est. (births/1,000 population): **36.59**
- Infant mortality (deaths/1,000 live births) 2014 est.: **59.34**
- Life expectancy at birth (2014 est.): **58.52**
- GDP (PPP) (2013 est.): **$20.26 billion; per capita $4,800**
- Growth rate (2013 est.): **5.8%**
- GDP by sector (2013 est.): **agriculture: 3.3%, industry: 73.9%, services: 22.9%**
- Budget (2013 est.): **Revenues: $6.608 billion, Expenditures: $4.618 billion**
- Percentage below poverty line: **46.5% (2011)**
- Languages: **French (official), Lingala and Monokutuba, many local languages and dialects**
- Religions: **Christianity 50.0%, animist 45%, Muslim 2%, others 3%**
- Monetary unit: **Congolese Franc**

Côte d'Ivoire

Fears that the Ebola outbreak that crippled Côte d'Ivoire's neighbours Guinea and Liberia throughout 2014 would disrupt the country's impressive recovery from its second civil war in 2010-2011 proved unfounded. Political reconciliation remains a controversial topic ahead of the October 2015 elections, with former president Laurent Gbagbo due to go on trial at the International Criminal Court in July 2015. Stability has nevertheless remained and economic growth has been strong, with increasing levels of investment observable and a burgeoning entrepreneurial scene.

Investment in the region has been timely, as ICT development in Côte d'Ivoire has lagged behind that of other countries. In 2013, the country was ranked 137th out of 157 countries in ICT development by the ITU (International Telecommunication Union). The master plan (2012-2017) for e-governance (E-Gov) sought to reverse this trend, and a variety of laws passed in 2013, and the rollout of a 6,700-km fiber-optic network covering the entire country has gone some way to doing so. Mobile phone usage is now at almost 100% and, following years of neglect, the telecommunications landscape is benefitting from market liberalisation. The launch of LTE services by YooMee in April 2014 typified this trend.

In education, attempts to add ICT as part of the national curricula were hampered, with ICT failing to appear on the primary and secondary school class schedules at the beginning of the 2013-2014 school year due to a lack of resources. Home-grown solutions, however, could be at hand, with local ICT businesses booming. Ivorian developers launched the Qelasy in April 2014: a tablet resistant to water splashes, dust, humidity and heat which has enabled school textbooks to be converted into digital formats. A number of projects have been set-up to improve eLearning capabilities, including the Francophone Initiative for Distance Teacher Training, which uses ICTs to develop distance learning for teachers; the Sankoré project, which is setting up 600 digital classes for a variety of institutions; and the provision of ICT infrastructure, equipment and training for teacher supervisors and educators through the UNESCO-China Funds in Trust (CFIT) project.

- Area (km²): **322,463**
- Population (2014): **22,848,945**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **48.9% (1992); 56.8% (1997); 64.5% (2002); 61.9% (2009)**

ICT and Infrastructure

- Internet users (2014): **968,000**
- Internet penetration (2014): **4.2%**
- Broadband subscriptions (2013): **0.28%**
- Mobile subscriptions (2013): **95.4%**
- Television companies: **state-controlled Radiodiffusion Télévision Ivoirienne (RTI), satellite**
- Radio stations: **2 national (RTI), many private local stations**

Education

- Students in higher education: **169,351 (2013)**
- Student mobility: **Outgoing: 7,350, Incoming: 6,569 (2012)**
- Language(s) of instruction: **French**
- Pupil/ teacher ratio, primary: **42 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 15.4% (2012)**
- Electricity in primary schools: **24.8% (2009)**
- Literacy rate (2015 UIS estimate): **Male 53.15%, Female 32.55%**
- Unemployment (% of total labor force, 2013): **4.0%**
- Children in employment (Age 7-14): **36.5% (2012)**
- Education spending (% of GDP): **4.6% (2008)**

Society and Politics

- Date of independence: **7 August 1960 (from France)**
- Style of government: **Multiparty presidential regime**
- Leader(s): **President Alassane Ouattara (since 2011)**
- Population growth rate (2014 est.): **1.96%**
- Birth rate 2014 est. (births/1,000 population): **29.83**
- Infant mortality (deaths/1,000 live births) 2014 est.: **60.16**
- Life expectancy at birth (2014 est.): **58.01**
- GDP (PPP) (2013 est.): **$43.67 billion; per capita $1,800**
- Growth rate (2013 est.): **8%**
- GDP by sector (2013 est.): **agriculture: 26.3%, industry: 21.3%, services: 52.4%**
- Budget (2013 est.): **Revenues: $5.7 billion, Expenditures: $6.665 billion**
- Percentage below poverty line: **42.7% (2008)**
- Languages: **French (official), 60 native dialects**
- Religions: **Muslim 38.6%, Christian 32.8%, indigenous 11.9%, none 16.7% (2008 est.)**
- Monetary unit: **CFA Franc**

Djibouti

Djibouti's geo-strategic importance continues to dictate its internal politics, as global powers vie for bases on its coast, which overlooks the Gulf of Aden as well as providing the access point for Ethiopia. China is joining France and the US in establishing a military presence in the East African state, bringing massive infrastructure investment with it. A wave of grand infrastructural projects announced by the government worth $6 billion, including ports, railroads and power plants, will be funded by Chinese investors by up to 45%. However, despite the foreign direct investment associated with foreign military presence, almost half of Djiboutians live below the poverty line. President Ismail Omar Guelleh has been in power for 16 years, although claims that he will step down in 2016.

Despite the fact that Djibouti's location also makes it an international connections hub where many international fibre-optic cables enter the region, broadband services in Djibouti remain prohibitively expensive. This is often put down to the fact that Djibouti remains one of the few remaining countries in the world with a monopolised telecoms industry. Djibouti Telecom's investments in the mobile market have nevertheless seen it grow significantly in recent years, and Djibouti is now considered one of the fastest growing telecom markets in Africa.

Djibouti has historically lagged behind countries in the region with regard to education, showing low enrolment and literacy rates, and it is not on track to meet educational Millennium Development Goals. This has given the country a skills gap crisis, with few Djiboutians having the necessary training to fill jobs in the shipping industry, for example, which often go to Ethiopians. SOS Children's Villages International opened an eLearning centre in the capital Djibouti City in October 2014, with the express aim of filling these gaps. Around 200 disadvantaged young people will learn skills identified as necessary for the Djiboutian job market each term.

- Area (km²): **23,200**
- Population (2014): **810,179**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **26.6% (1994); 25.5% (1999); 34.4% (2004); 50.6% (2009); 58.3% (2013)**

ICT and Infrastructure

- Internet users (2014): **80,378**
- Internet penetration (2014): **9.9%**
- Facebook users (2013): **50,140**
- Broadband subscriptions (2013): **2.03%**
- Mobile subscriptions (2013): **28.0%**
- Television companies: **government-owned: Radio Television of Djibouti (RTD)**
- Radio stations: **government-owned: RTD**

Education

- Students in higher education: **4,705 (2011)**
- Student mobility: **Outgoing: 1,676**
- Language(s) of instruction: **Afar, Somali in pre-school; Arabic at secondary; French at all levels**
- Pupil/ teacher ratio, primary: **34 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 22.5% (2007)**
- Electricity in primary schools: **72.1% (2013)**
- Unemployment (% of total labor force, 2013): **59.0% (2007 est.)**
- Children in employment (Age 7-14): **8% (2006)**
- Education spending (% of GDP): **8.4% (2007)**

Society and Politics

- Date of independence: **27 June 1977 (from France)**
- Style of government: **Republic**
- Leader(s): **President Ismaïl Omar Guelleh (since 1999)**
- Population growth rate (2014 est.): **2.23%**
- Birth rate 2014 est. (births/1,000 population): **24.50**
- Infant mortality (deaths/1,000 live births) 2014 est.: **50.20**
- Life expectancy at birth (2014 est.): **62.40**
- GDP (PPP) (2013 est.): **$2.505 billion; per capita $2,700**
- Growth rate (2013 est.): **5%**
- GDP by sector (2013 est.): **agriculture: 3%, industry: 17.3%, services: 79.7%**
- Budget (2013 est.): **Revenues: $512.7 million, Expenditures: $532.9 million**
- Percentage below poverty line: **47% (2007)**
- Languages: **French (official), Arabic (official), Somali, Afar**
- Religions: **Muslim 94%, Christian 6%**
- Monetary unit: **Djiboutian Franc**

eLearning Africa

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Egypt

Egypt witnessed political instabilities from 2011 – 2013, including two popular uprisings which overshadowed progress in sectors such as ICT infrastructure and education. Egypt boasts one of the most developed internet ecosystems in continental Africa in terms of users, international bandwidth and services offered. Mobile broadband is one area of particular growth.

Egypt's higher education continues to be seen as a regional leader. eLearning is prominent here, with an eLearning University set up in Cairo in 2008 and many others offering eLearning and blended learning courses. The National ICT Strategy for 2012-2017 aims to provide high speed internet for all schools and educational institutions, undertaking cloud- based learning for the national curricula and producing over 20 million tablets for students and the learning community.

There are hopes that ICTs can also tackle Egypt's well documented gender divide. A joint initiative in partnership with the UNDP has been using 'tabluters': customised, ergonomic computers embedded in tableya a low, round, dining table around which rural Egyptians sit cross-legged and eat, in order to teach thousands of women in oasis communities literacy and computer skills.

Moreover, Egypt hosted the Egypt Economy Development Conference earlier this year, which attracted more than 1,500 investors and government officials. The conference resulted in pledges being made by several stakeholders.

- Area (km²): **1,002,450**
- Population (2014): **86,895,099**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **4.8% (1999); 98.0% (2003); 97.7% (2007); 97.3% (2011)**

ICT and Infrastructure

- Internet users (2014): **46,200,000**
- Internet penetration (2014): **53.2%**
- Facebook users (2013): **12,173,540**
- Broadband subscriptions (2013): **3.26%**
- Mobile subscriptions (2013): **121.5%**
- Television companies: **state-run: 2 national and 6 regional terrestrial networks, 20 private satellite channels**
- Radio stations: **state-run about 70 stations; 2 private stations**

Education

- Students in higher education: **2,301,182 (2012)**
- Student mobility: **Outgoing: 16,217, Incoming: 49,011 (2010)**
- Language(s) of instruction: **Arabic**
- Pupil/ teacher ratio, primary: **28 (2010)**
- Literacy rate (2015 UIS estimate): **Male 82.15%, Female 65.42%**
- Unemployment (% of total labor force, 2013): **12.7%**
- Children in employment (Age 7-14): **9% (2010)**
- Education spending (% of GDP): **3.4% (2011)**

Society and Politics

- Date of independence: **28 February 1922 (from Britain); 18 June 1956 (end of British influence)**
- Style of government: **Republic**
- Leader(s): **President Abdel Fattah el-Sisi (since 2014)**
- Population growth rate (2014 est.): **1.84%**
- Birth rate 2014 est. (births/1,000 population): **23.79**
- Infant mortality (deaths/1,000 live births) 2014 est.: **22.41**
- Life expectancy at birth (2014 est.): **73.45**
- GDP (PPP) (2013 est.): **$551.4 billion; per capita $6,600**
- Growth rate (2013 est.): **1.8%**
- GDP by sector (2013 est.): **agriculture: 14.5%, industry: 37.5%, services: 48%**
- Budget (2013 est.): **Revenues: $45.57 billion, Expenditures: $80.42 billion**
- Percentage below poverty line: **25.2% (2011)**
- Languages: **Arabic (official), English and French**
- Religions: **Muslim (predominantly Sunni) 90%, Christian (majority Coptic Orthodox) 10% (2012 est.)**
- Monetary unit: **Egyptian Pound**

Equatorial Guinea

Since striking oil in the 1990s, wealth has flown into Equatorial Guinea, and the country now boasts Africa's highest per capita GDP rate. It has instituted ambitious infrastructure plans such as Oyala, the country's new capital city being built in dense forest in the West of the country, and diversification as oil production starts to decline along with global oil prices. Despite all of this, inequality is still a major problem, and large swathes of the population live in poverty. In November 2013, opposition parties walked out of talks with President Teodoro Obiang Nguema Mbasogo, dashing hopes of democratic reform. Obiang is now the world's longest serving non-royal head of state, and will remain so until at least 2016, when the next round of presidential elections are scheduled.

Oil wealth has not brought widespread internet usage, which continues to be defined by a digital divide. According the UN Development Programme, only 14% of the population use the internet, below the sub-Saharan average of 15.2%. No official government ICT policy existed until 2012, when the National Broadcasting Plan for Information and Communication Technologies eLearning plan was introduced as a part of the TICGE (Information and Communication Technologies in Equatorial Guinea) project. In the same year, the government also created the Management and Maintenance of Telecommunication Infrastructures Organisation in Equatorial Guinea (GITGE) which managed the connecting of Equatorial Guinea to the ACE submarine network cable and continued to attempt to improve broadband infrastructure. In 2013, the UNDP inaugurated a technology centre that has trained 1,500 mostly young people in information and communication technology in an effort to reduce the digital divide.

- Area (km²): **28,051**
- Population (2014): **722,254**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **68.3% (2000); 72.7% (2003); 56.1% (2009); 62.2% (2012)**

Primary education is free and compulsory, and literacy rates are close to 100% for people aged 15-24. UNICEF claims that the amount of children of primary school age out of school is close to 40%, and secondary school completion rates are also low. A March 2013 IMF report noted that spending on education was relatively low considering the country's income. This level of investment may improve as Equatorial Guinea's Horizon 2020 development plan, which prioritises education spending, begins to take effect.

ICT and Infrastructure

- Internet users (2014): **124,035**
- Internet penetration (2014): **17.2%**
- Facebook users (2013): **32,980**
- Broadband subscriptions (2013): **0.46%**
- Mobile subscriptions (2013): **67.5%**
- Television companies: **1 state-owned TV station, 1 private TV station**
- Radio stations: **1 state-owned radio station, 1 private radio station**

Education

- Student mobility: **Outgoing: 1,374 (2012)**
- Language(s) of instruction: **Spanish**
- Pupil/ teacher ratio, primary: **26 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 1.1% (2001), Secondary 2.8% (2001)**
- Electricity in primary schools: **32.3% (2011)**
- Literacy rate (2015 UIS estimate): **Male 97.37%, Female 92.99%**
- Unemployment (% of total labor force, 2013): **8.0%**
- Children in employment (Age 7-14): **28% (2000)**
- Education spending (% of GDP): **0.6% (2002)**

Society and Politics

- Date of independence: **12 October 1968 (from Spain)**
- Style of government: **Republic**
- Leader(s): **President Teodoro Obiang Nguema Mbasogo (since 1979)**
- Population growth rate (2014 est.): **2.54%**
- Birth rate 2014 est. (births/1,000 population): **34.35**
- Infant mortality (deaths/1,000 live births) 2014 est.: **71.12**
- Life expectancy at birth (2014 est.): **63.49**
- GDP (PPP) (2013 est.): **$19.68 billion; per capita $25,700**
- Growth rate (2013 est.): **-1.5%**
- GDP by sector (2013 est.): **agriculture: 4.6%, industry: 87.3%, services: 8.1%**
- Budget (2013 est.): **Revenues: $6.837 billion, Expenditures: $6.795 billion**
- Percentage below poverty line: **76.8% (2006)**
- Languages: **Spanish (official), other (includes French (official), Fang, Bubi**
- Religions: **nominally Christian and predominantly Roman Catholic, pagan practices**
- Monetary unit: **CFA Franc**

Eritrea

Eritrea has emerged from 30 years of war with one of the region's best healthcare systems, having achieved 3 health- related Millennium Development Goals early: reducing infant child mortality by two-thirds (MDG 4); improving maternal health (MDG 5); and combating HIV/AIDS, Malaria and other diseases (MDG 6). The country nevertheless remains engulfed in human rights allegations and a mass exodus of citizens, estimated at 3,000 each month. President Isaias Afewerki has been in power since 1993, and despite continued promises of elections, none appear imminent.

Internet connections are scarce in a country which was the last to connect to the internet in Africa. Telecommunications infrastructure remains monopolised, and mobile penetration stands at 6%. Mobile internet markets are somewhat more advanced thanks to market liberalisation and 3G networks having been rolled out. However, lack of foreign direct investment is holding back the infrastructure reforms deemed necessary for continued expansion.

Eritrea's advancements in healthcare development goals have not been matched in education. UNESCO's latest stats put the amount of school aged children enrolled in primary education at only 33%. Scattered attempts have been made to encourage ICT for eLearning. The British Council Eritrea equipping every school and public library in the country with IT equipment provided by Computer Aid being the most impressive of these. The government remains in strict control of the internet, however, stunting the possibilities available for the usage of ICT in education.

- Area (km²): **117,600**
- Population (2014): **6,380,803**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **24.8% (1997); 38.7% (2002); 43.7% (2006); 31.2% (2010); 34.2% (2012)**

ICT and Infrastructure

- Internet users (2014): **377,363**
- Internet penetration (2014): **5.9%**
- Facebook users (2013): **20,940**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **5.6%**
- Television companies: **1 state-owned TV station**
- Radio stations: **2 state-owned networks**

Education

- Students in higher education: **12,554 (2014)**
- Student mobility: **Outgoing: 1,284 (2012)**
- Language(s) of instruction: **Arabic, Teigrinya in primary; Italian, English in secondary and further**
- Pupil/ teacher ratio, primary: **41 (2012)**
- Expenditure per student (% of GDP per capita): **Primary, Secondary**
- Electricity in primary schools: **31.9% (2011)**
- Literacy rate (2015 UIS estimate): **Male 82.39%, Female 65.45%**
- Unemployment (% of total labor force, 2013): **7.2%**
- Education spending (% of GDP): **2.1% (2006)**

Society and Politics

- Date of independence: **24 May 1993 (from Ethiopia)**
- Style of government: **Single-party presidential republic**
- Leader(s): **President Isaias Afwerki (since 1993)**
- Population growth rate (2014 est.): **2.30%**
- Birth rate 2014 est. (births/1,000 population): **31.39**
- Infant mortality (deaths/1,000 live births) 2014 est.: **38.44**
- Life expectancy at birth (2014 est.): **63.51**
- GDP (PPP) (2013 est.): **$4.717 billion; per capita $1,200**
- Growth rate (2013 est.): **7%**
- GDP by sector (2013 est.): **agriculture: 11.7%, industry: 26.9%, services: 61.4%**
- Budget (2013 est.): **Revenues: $968.8 million, Expenditures: $1.417 billion**
- Percentage below poverty line: **50% (2004)**
- Languages: **Tigrinya (official), Arabic (official), English (official), other Cushitic languages**
- Religions: **Muslim, Coptic Christian, Roman Catholic, Protestant**
- Monetary unit: **Nakfa**

Ethiopia

Thirty years ago, Ethiopia was struggling through the worst famine in its history. Today, due to long-term development work, strong agricultural growth and improvements in basic services, the country is viewed as an economic miracle.

Poverty has fallen from 75% to 35% since 1990, and economic growth over the past decade has remained steady – averaging 10.9% per year compared to the regional rate of 5.3%. The World Bank says if progress continues over the next 10 years, "Ethiopia can propel itself and most importantly its people into a new era of prosperity."

The education system has also made large strides over the past 10 years; a trend that is set to continue as the Ethiopian Federal Ministry of Education prepares its fifth Education Sector Development Plan (ESDP-V), in cooperation with the International Institute for Educational Planning (IIEP) and the UNESCO Office in Addis Ababa. According to UNESCO statistics, gross primary enrolment rates have increased steadily since 2000, surging from 81% in 2005 and hitting a high of 130% in 2012. The university landscape has grown to a network of 34 institutions, with the Ethiopian People's Revolutionary Democratic Front making a pre-election promise to build another 11 public universities across the country. The country has also been praised for its innovative TVET strategy, which aims to expand and restructure the TVET sector.

The Ethiopian Government has long prioritised ICTs as a driver for development, implementing progressive national initiatives across various sectors; namely eGovernment and Public Key Infrastructure (PKI), eInfrastructure including EthERNet (Ethiopian Education and Research Network), entrepreneurship and eEducation. Amongst the educational success stories, the SchoolNet project has connected around 756 schools since 2003, using a satellite-based network to provide internet and educational TV-broadcasts to secondary schools across the country.

- Area (km²): **1,104,300**
- Population (2014): **96,633,458**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **22.0% (1995); 36.3% (1999); 47.5% (2003); 68.7% (2006)**

Investment in ICT has also enabled the entrepreneur landscape to flourish, as prominent start-up incubators and hubs lure entrepreneurs from throughout Africa. Many international companies also plan to establish themselves at the EthioICT-Village: Ethiopia's 200 hectare ICT business hub, which is expected to create 300,000 jobs.

Mobile penetration rates stood at 34% at the end of 2014 and growth is accelerating rapidly. The country's state-owned Ethio Telecom claimed 4.5 million internet subscribers as of mid-2014, and the country's broadband market is set for a boom following improvements in international bandwidth, national fibre backbone infrastructure and 3G mobile broadband services. In March 2015, Ethio Telecom rolled out 4G in Addis Ababa.

ICT and Infrastructure

- Internet users (2014): **1,836,035**
- Internet penetration (2014): **1.9%**
- Facebook users (2013): **902,440**
- Broadband subscriptions (2013): **0.25%**
- Mobile subscriptions (2014): **34%**
- Television companies: **1 public TV station broadcasting nationally**
- Radio stations: **1 public radio broadcaster, few commercial radio stations, c.12 community stations**

Education

- Students in higher education: **693,287 (2012)**
- Student mobility: **Outgoing: 6,540 (2012)**
- Language(s) of instruction: **Oromiffa, Amharic, Somali, Tigrinya in primary; English in secondary and further**
- Pupil/ teacher ratio, primary: **54 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 9.0% (2004), Secondary 16.0% (2004)**
- Literacy rate (2015 UIS estimate): **Male 57.21%, Female 41.09%**
- Unemployment (% of total labor force, 2013): **5.7%**
- Children in employment (Age 7-14): **27% (2011)**
- Education spending (% of GDP): **6% (2013)**

Society and Politics

- Date of independence: **Never colonised; in existence since 1st c. BC**
- Style of government: **Federal parliamentary republic**
- Leader(s): **President Mulatu Teshome (since 2013)**
- Population growth rate (2014 est.): **2.89%**
- Birth rate 2014 est. (births/1,000 population): **38.07**
- Infant mortality (deaths/1,000 live births) 2014 est.: **55.77**
- Life expectancy at birth (2014 est.): **60.75**
- GDP (PPP) (2013 est.): **$118.2 billion; per capita $1,300**
- Growth rate (2013 est.): **7%**
- GDP by sector (2013 est.): **agriculture: 47%, industry: 10.8%, services: 42.2%**
- Budget (2013 est.): **Revenues: $6.702 billion, Expenditures: $8.042 billion**
- Percentage below poverty line: **26%**
- Languages: **English, Arabic, Amharic (official), oromo, Tigrayan (official regional), Somali, Sidamo, Wolaytta, Guragiegna, Afar, Hadiyya, others**
- Religions: **Ethiopian Orthodox 43.5%, Muslim 33.9%, Protestant 18.5%, traditional 2.7%, Catholic 0.7%, other 0.6%**
- Monetary unit: **Ethiopian Birr**

Gabon

Vast oil reserves, sparse population levels and political stability have given Gabon a reputation as one of sub-Saharan Africa's more prosperous nations. The equatorial nation boasts the regions fourth highest Human Development Indicators and third highest per capita GDP, but much of this wealth is reliant upon oil. Like so many African oil producing nations, Gabon has suffered from the global drop in oil prices recently, and talk has turned to diversification. President Ali Bongo Ondimba, the son of long serving President Omar Bongo, who ruled Gabon for 41 years until his death in 2009, is pushing for diversification ahead of elections in 2016, as well as the halting of the export of raw materials by 2020.

Mobile markets are highly developed. In 2008, Gabon became one of the first countries in Africa to exceed 100% mobile market penetration. 3G services were belatedly launched in April 2014, and a second international submarine fibre optic cable (ACE) has arrived, which should boost a broadband market which lags behind mobile – up to 94% of internet subscriptions are thought to be mobile. Gabon Telecom has lowered broadband tariffs by 50% in 2014 however, and bandwidth will be boosted by a connection to the Central African Backbone.

Such an advanced mobile market makes Gabon potentially fertile ground for mobile eLearning. Despite this, ICT in education has so far received little attention. A recent agreement between Airtel Gabon and UNESCO is seeking to change this, launching Train My Generation: Gabon 5000, a three-year project providing scientific and entrepreneurial training, through ICT, to thousands of young people in Gabon. Skills training is also being provided for teachers, in what is UNESCO's first-ever partnership with a sub-Saharan based African company. Hopes are that ICT can further cement Gabon's impressive performance regarding educational Millennium Development Goals, with the country set to achieve both literacy rate targets for 15-24 year-olds and universal primary education.

- Area (km²): **267,668**
- Population (2014): **1,672,597**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **92.1% (1997)**

ICT and Infrastructure

- Internet users (2014): **657,928**
- Internet penetration (2014): **39.3%**
- Facebook users (2013): **132,000**
- Broadband subscriptions (2013): **0.53%**
- Mobile subscriptions (2013): **214.8%**
- Television companies: **2 state-owned stations, a few private**
- Radio stations: **2 state-owned stations,a few private**

Education

- Student mobility: **Outgoing: 6,461 (2012)**
- Language(s) of instruction: **French**
- Pupil/ teacher ratio, primary: **25 (2011)**
- Electricity in primary schools: **49.4% (2011)**
- Literacy rate (2015 UIS estimate): **Male 85.32%, Female 81.02%**
- Unemployment (% of total labor force, 2013): **19.6%**
- Children in employment (Age 7-14): **13% (2012)**
- Education spending (% of GDP): **3.8% (2000)**

Society and Politics

- Date of independence: **17 August 1960 (from France)**
- Style of government: **Dominant-party presidential republic**
- Leader(s): **President Ali Bongo Ondimba (since 2009)**
- Population growth rate (2014 est.): **1.94%**
- Birth rate 2014 est. (births/1,000 population): **34.82**
- Infant mortality (deaths/1,000 live births) 2014 est.: **47.03**
- Life expectancy at birth (2014 est.): **52.06**
- GDP (PPP) (2013 est.): **$30.06 billion; per capita $19,200**
- Growth rate (2013 est.): **6.6%**
- GDP by sector (2013 est.): **agriculture: 3.6%, industry: 63.9%, services: 32.5% (2013 est.)**
- Budget (2013 est.): **Revenues: $5.031 billion, Expenditures: $6.599 billion**
- Percentage below poverty line: **32.7% (2005)**
- Languages: **French (official), Fang, Myene, Nzebi, Bapounou/Eschira, Bandjabi**
- Religions: **Christian 55%-75%, animist, Muslim less than 1%**
- Monetary unit: **CFA Franc**

The Gambia

Morocco

Having earned a reputation as a haven of stability in a tumultuous region, the Gambia is showing signs of strife, as Yahya Jammeh's rule continues into its 21st year amid human rights criticisms and a failed coup attempt. Jammeh left the Commonwealth in 2013 in reaction to similar criticisms, and is engaged in conflict with the UN and the EU, the latter of which suspended $191m in aid in 2014 in reaction to the execution of nine death-row prisoners. Jammeh's position was strengthened, however, by a failed coup in 2014, in which security forces proved loyal. Real opposition forces remain divided.

Stability has allowed for extensive telecoms infrastructure to be established, and Gambia has higher than average mobile penetration rates. Roughly 10% of the population are internet users, a number that should be boosted by the installation of a new internet Exchange Point in July 2014 (data not yet available). An increasingly embattled government has begun to crack down on the free use of the internet, however, and has been accused of shutting down VoIP services like Viber.

Despite these crackdowns, ICT continues to grow as a means to education. In November 2014, Rlg Communications Gambia Limited, an African and Asian multinational working with the Ministries of Trade and Education, launched their 'Connect Gambia - Vision 2020' project. The project aims to provide Gambian-assembled laptops with internet connectivity for every child from primary to secondary schools through to university. The project comes off the back of the ambitious Vision 2020 programme, which aims to transform Gambia into a middle income country by 2020. Jammeh has also made the ambitious claim that universal free higher education will also be put in place by that year. Doubts surround this, but eLearning is at least on the rise in Gambian universities, with the African Virtual University opening an eLearning centre in the country in 2014 and The University of the Gambia (UTG) collaborating with the Amity University of India to offer distance learning courses for Gambians.

- Area (km²): **11,295**
- Population (2014): **1,925,527**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **63.5% (1998); 75.4% (2003); 73.1% (2008); 73.7% (2012)**

ICT and Infrastructure

- Internet users (2014): **271,711**
- Internet penetration (2014): **14.1%**
- Facebook users (2013): **97,280**
- Broadband subscriptions (2013): **0.02%**
- Mobile subscriptions (2013): **100.0%**
- Television companies: **state-owned, single-channel TV service**
- Radio stations: **1 state-owned radio station, 4 private; international broadcasters**

Education

- Student mobility: **Outgoing: 1,236, Incoming: 5,358 (2012)**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **34 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 18.1% (2012), Secondary 13.1 % (2010)**
- Electricity in primary schools: **29.6% (2011)**
- Literacy rate (2015 UIS estimate): **Male 63.91%, Female 47.62%**
- Unemployment (% of total labor force, 2013): **7.0%**
- Children in employment (Age 7-14): **19% (2010)**
- Education spending (% of GDP): **4.1% (2012)**

Society and Politics

- Date of independence: **18 February 1965 (from Britain)**
- Style of government: **Dominant-party presidential republic**
- Leader(s): **President Yahya Jammeh (since 1994)**
- Population growth rate (2014 est.): **2.23%**
- Birth rate 2014 est. (births/1,000 population): **32.59**
- Infant mortality (deaths/1,000 live births) 2014 est.: **65.74**
- Life expectancy at birth (2014 est.): **64.36**
- GDP (PPP) (2013 est.): **$3.678 billion; per capita $2,000**
- Growth rate (2013 est.): **6.4%**
- GDP by sector (2013 est.): **agriculture: 19.7%, industry: 12.6%, services: 67.7%**
- Budget (2013 est.): **Revenues: $229.6 million, Expenditures: $265.1 million**
- Percentage below poverty line: **48.4% (2010)**
- Languages: **English (official), Mandinka, Wolof, Fula**
- Religions: **Muslim 90%, Christian 8%, indigenous beliefs 2%**
- Monetary unit: **Dalasi**

Ghana

Ghana is often touted as one of Africa's success stories. A pioneer in the de-colonialisation process, Ghana has seen broad stability, growth and development in recent years. Despite displaying resilience to the global downturn of 2008-2009, thanks to the high prices of its key exports cocoa and gold, Ghana experienced a difficult 2014. A broad spectrum of the public voiced their discontent in a series of protests in mid-2014 over the high cost of living, and similar demonstrations were held following power outages in early 2015.

Despite these woes, Ghana retains its image as a regional leader. The decision of the UN Ebola mission to base their headquarters in Accra in 2014 is emblematic of this, as is the key role that Ghana continues to play in peacekeeping missions in the region. The former British colony is also a regional ICT leader, being one of the first countries in Africa to connect to the internet and introduce ADSL services. Ghana boasts a competitive ICT ecosystem, with over 140 internet service providers, and prices have fallen since the arrival of two international fibre links in 2012 and 2013. A further boost was provided by the decision to remove the 20% import duty on smartphones in 2015.

Ghana is on track to achieve the Millennium Development Goal of universal primary education. One area of focus is reducing the gender gap in schooling, and ICT is at the forefront of this. In June 2014, the Ghanaian government announced a campaign in association with the British Department for International Development to help disadvantaged girls through a distance learning project entitled Make Ghanain Girls Great! The project will install classrooms with solar-powered computers and projectors which will facilitate learning. Key to the project is ameliorating the problems caused by low quality of teaching and teacher absenteeism. Teacher training is vital to these eLearning projects, and efforts have been made to make sure teachers are up to date in ICT skills – 2,650 laptops being distributed to ICT trained teachers in the Central Region alone in 2014.

- Area (km²): **238,533**
- Population (2014): **25,758,108**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **60.2% (2001); 67.4% (2005); 76.5% (2009); 87.6% (2013)**

ICT and Infrastructure

- Internet users (2014): **5,171,993**
- Internet penetration (2014): **20.1%**
- Facebook users (2013): **1,630,420**
- Broadband subscriptions (2013): **0.27%**
- Mobile subscriptions (2013): **108.2%**
- Television companies: **state-owned; several privately owned TV stations**
- Radio stations: **2 state-owned radio networks; a large number of privately owned radio stations**

Education

- Students in higher education: **295,344 (2012)**
- Student mobility: **Outgoing: 9,103, Incoming: 9,132 (2012)**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **32 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 11.4% (2009), Secondary: 26.1% (2009)**
- Electricity in primary schools: **31.0% (2013)**
- Literacy rate (2015 UIS estimate): **Male 82.04%,n Female 71.35%**
- Unemployment (% of total labor force, 2013): **4.6%**
- Children in employment (Age 7-14): **48.9% (2006)**
- Education spending (% of GDP): **8.1% (2011)**

Society and Politics

- Date of independence: **6 March 1957 (from Britain)**
- Style of government: **Constitutional democracy**
- Leader(s): **President John Dramani Mahama (since 2012)**
- Population growth rate (2014 est.): **2.19%**
- Birth rate 2014 est. (births/1,000 population): **31.4**
- Infant mortality (deaths/1,000 live births) 2014 est.: **38.52**
- Life expectancy at birth (2014 est.): **65.75**
- GDP (PPP) (2013 est.): **$90.41 billion; per capita $3,500**
- Growth rate (2013 est.): **7.9%**
- GDP by sector (2013 est.): **agriculture: 21.5%, industry: 28.7%, services: 49.8%**
- Budget (2013 est.): **Revenues: $10.56 billion, Expenditures: $14.87 billion**
- Percentage below poverty line: **24.2% (2012)**
- Languages: **English (official), Asante, Ewe, Fante, Boron, Dagomba, Dangme, Dagarte, Akyem, Ga, Akuapem, other**
- Religions: **Christian 71.2%, Muslim 17.6%, traditional 5.2%, other 0.8%, none 5.2%**
- **Monetary unit: Ghanaian Cedi**

Guinea

Guinea began the decade on a wave of optimism, with a nascent democracy emerging from almost 30 years of authoritarian rule. The outbreak of Ebola in 2014 cut short this optimism, forcing the government into declaring a state of emergency in August, and postponing elections scheduled for 2015. The outbreak originated in the country, and was the first time the epidemic has struck there. Guinea's healthcare infrastructure, suffering from years of a lack of investment, was further damaged by the outbreak. Whilst Guinea recorded less cases than its neighbours Liberia and Sierra Leone, mortality rates were higher. The situation had stabilised by April 2015, although reports of new cases continued.

Guinea boasts one of the fastest growing mobile markets in the region, with liberalisation following years of stagnation producing consecutive years of triple digit growth rates. Penetration rates are still below the Africa average, however, and internet connections remain rare. Mobile technology came into its own during the Ebola crisis. A mobile app allowed survivors to document their stories through the #ISurvivedEbola hashtag, to help combat the stigma attached to the disease. In October Samsung donated 3,000 smartphones through the United Nations Office for the Coordination of Human Affairs (OCHA) to help attempts to provide humanitarian support in the country. The UN's app, Smart Health Pro allows medical staff to utilise smartphones to treat patients and collect medical data, as well as meaning that quarantined patients can contact their families.

eLearning in Guinea is hindered by the difficulties of obtaining secure internet connections. Guinea's first Bluezone is an attempt to counter this difficulty, establishing public facilities, including an eLearning centre, in the heart of the capital Conakry, powered by a continuous and unlimited energy supply. As the Ebola crisis fades, Guinea is in need of progress in the educational arena, with latest UN figures putting primary education attendance levels at 45%.

- Area (km²): **245,857**
- Population (2014): **11,474,383**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **45.2% (2000); 63.1% (2004); 68.5% (2008); 75.5% (2012)**

ICT and Infrastructure

- Internet users (2014): **205,194**
- Internet penetration (2014): **1.8%**
- Facebook users (2013): **68,780**
- Broadband subscriptions (2013): **0.01%**
- Mobile subscriptions (2013): **63.3%**
- Television companies: **1 state-run**
- Radio stations: **1 state-run broadcaster, some private, several community**

Education

- Students in higher education: **101,173 (2012)**
- Student mobility: **Outgoing: 6,056, Incoming: 930 (2012)**
- Language(s) of instruction: **French**
- Pupil/ teacher ratio, primary: **44 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 7.7% (2012), Secondary 6.6% (2008)**
- Electricity in primary schools: **2.1% (2012)**
- Literacy rate (2015 UIS estimate): **Male 38.08% , Female 22.77%**
- Unemployment (% of total labor force, 2013): **1.8%**
- Children in employment (Age 7-14): **44.9% (2010)**
- Education spending (% of GDP): **2.5% (2012)**

Society and Politics

- Date of independence: **2 October 1958 (from France)**
- Style of government: **Republic**
- Leader(s): **President Alpha Condé (since 2010)**
- Population growth rate (2014 est.): **2.63%**
- Birth rate 2014 est. (births/1,000 population): **36.02**
- Infant mortality (deaths/1,000 live births) 2014 est.: **55.24**
- Life expectancy at birth (2014 est.): **59.6**
- GDP (PPP) (2013 est.): **$12.56 billion; per capita $1,100**
- Growth rate (2013 est.): **2.9%**
- GDP by sector (2013 est.): **agriculture: 22.9%, industry: 46.5%, services: 30.5%**
- Budget (2013 est.): **Revenues: $1.508 billion, Expenditures: $1.839 billion**
- Percentage below poverty line: **55.2% (2012)**
- Languages: **French (official), ethnic languages**
- Religions: **Muslim 85%, Christian 8%, indigenous beliefs 7%**
- Monetary unit: **Guinean Franc**

Guinea-Bissau

Optimism is in the air in Guinea-Bissau, which has long struggled with civil wars and military coups. Former finance minister José Mário Vaz won the presidential elections in May 2014 by a landslide, with 62% of the vote. With the return of democracy President Vaz has vowed to end the dominance of the army in the West African nation. Efforts to do so have satisfied the EU, which has restored relations with the country after almost five years of broken ties brought on by the coup d'état in 2012. President Vaz's regime has asked international donors for $1.8 billion in aid to fund a 10-year development plan, as significant challenges remain to be overcome. Years of lack of infrastructure spending, simmering political tension and narco-traffickers who, with the help of the army, are making Guinea-Bissau a major hub in the cross-Atlantic drugs trade.

ICTs are rare in Guinea-Bissau. Years of neglect have led to one of Africa's worst ICT infrastructures. With ACE and WACS fibre-optic cables both bypassing the country in favour of its neighbours, broadband services are extremely limited, a problem compounded by poor electricity supplies. Mobile penetration rates are better but still lower than regional averages – Guinea-Bissau was the last African country to receive a mobile phone network. There were some glimmers of hope in 2014, however: Orange tested a 3G network and the nation's own top level domain, .gw, was also officially launched.

The field of eLearning in Guinea-Bissau currently plays second fiddle to establishing basic infrastructure. Following 2012's military takeover up to 90% of schools had shut down. The Second National Strategy for Poverty Reduction in Guinea-Bissau (PRSP II) 2011–2015 is now coming to an end, which included efforts devoted to increasing enrolment rates, providing reliable electricity and training teachers.

- Area (km²): **36,125**
- Population (2014): **1,693,398**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **49.4% (2000); 70.8% (2010)**

ICT and Infrastructure

- Internet users (2014): **57,764**
- Internet penetration (2014): **3.4%**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **74.1%**
- Television companies: **1 state-owned, 1 Portuguese (RTP)**
- Radio stations: **1 state-owned, several private, several community, international**

Education

- Students in higher education: **3,689 (2006)**
- Student mobility: **Outgoing: 1,577 (2012)**
- Language(s) of instruction: **Portuguese**
- Pupil/ teacher ratio, primary: **52 (2010)**
- Electricity in primary schools: **20.1% (2010)**
- Literacy rate (2015 UIS estimate): **Male 71.78%, Female 48.28%**
- Unemployment (% of total labor force, 2013): **7.1%**
- Children in employment (Age 7-14): **50.5% (2006)**

Society and Politics

- Date of independence: **24 September 1973 (declared); recognised 10 September 1974 (from Portugal)**
- Style of government: **Republic**
- Leader(s): **José Mário Vaz (since 2014)**
- Population growth rate (2014 est.): **1.93%**
- Birth rate 2014 est. (births/1,000 population): **33.83**
- Infant mortality (deaths/1,000 live births) 2014 est.: **90.92**
- Life expectancy at birth (2014 est.): **49.87**
- GDP (PPP) (2013 est.): **$2.005 billion; per capita $1,200**
- Growth rate (2013 est.): **3.5%**
- GDP by sector (2013 est.): **agriculture: 58%, industry: 13.5%, services: 28.5%**
- Budget (2013 est.): **Revenues: $142 million, Expenditures: $157.7 million**
- Percentage below poverty line: **69.3% (2010)**
- Languages: **Portuguese (official), Crioulo, African languages**
- Religions: **Muslim 50%, indigenous beliefs 40%, Christian 10%**
- Monetary unit: **CFA Franc**

Kenya

Kenya remains a land full of contradiction. Africa's 'Silicon Savannah' is often touted as the heart of digital innovation on the continent, with Nairobi increasingly drawing huge amounts of investment for ICT projects. The Kenyan Government's ambitious plans to become a top 10 global ICT hub, however, contrast with high poverty rates and an unstable security situation which is having an adverse effect on the tourism industry upon which Kenya is reliant – arrivals dropped by 45% in the second quarter of 2014. Despite these challenges, Kenya remains a leader in mobile technology on the continent, thanks in no small part to the spectacular success of the M-pesa mobile banking scheme.

With 74 mobile phones for every 100 Kenyans and 99% of internet being accessed through mobile devices, mobile-based projects are vital to education. Startups such as Eneza Education, who partner with schools allowing students to access educational quizzes and learning tools via SMS to track and assess students' knowledge, are commonplace. Kenya's challenge lies in turning ambition and investment into tangible change. The scale of this challenge was revealed in Nakuru County in March 2014, where a well-publicised project to provide free WiFi across the county collapsed within hours of launch.

Government action to further the mobile innovation boom has been impressive. The Kenya National ICT Masterplan 2014-2017 was launched in April 2014, and represents a thorough blueprint to transform government processes, services and management. It also aims to make information access and service delivery more efficient, in the process creating an enabling policy, legal and regulatory environment.

Foreign investment has been providing further opportunities, with Kenya receiving the second highest amount of foreign direct investment (FDI) in 2013 on the continent. This amount will increase further following the historic agreement with China, announced in the summer of 2014, for investment worth $5 billion, including the funding of a new rail line between Mombasa and Nairobi. Kenyans will hope that this continued influx of investment will begin to reap dividends in terms of development, particularly education. In February 2015, President Uhuru Kenyatta opened the 8th Education International Africa Regional Conference by announcing his intention to invest heavily in education, with specific emphasis on science and technology.

- Area (km²): **580,367**
- Population (2014): **45,010,056**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **66.0% (2000); 73.9 (2004); 83.0% (2009)**

ICT and Infrastructure

- Internet users (2014): **21,273,738**
- Internet penetration (2014): **47.3%**
- Facebook users (2013): **2,045,900**
- Broadband subscriptions (2013): **0.13%**
- Mobile subscriptions (2013): **70.6%**
- Television companies: **c. 6 private, 2 state-owned channels**
- Radio stations: **2 state-owned, many private, national and provincial**

Education

- Students in higher education: **167,983 (2012)**
- Student mobility: **Outgoing: 13,573 (2012)**
- Language(s) of instruction: **Swahili in primary, English**
- Pupil/ teacher ratio, primary: **47 (2009)**
- Expenditure per student (% of GDP per capita): **Primary 22.4% (2006), Secondary 21.2% (2006)**
- Literacy rate (2015 UIS estimate): **Male 81.08%, Female 74.90%**
- Unemployment (% of total labor force, 2013): **9.2%**
- Children in employment (Age 7-14): **37.7% (2000)**
- Education spending (% of GDP): **6.7% (2010)**

Society and Politics

- Date of independence: **12 December 1963 (from Britain)**
- Style of government: **Republic**
- Leader(s): **Uhuru Kenyatta (since 2013)**
- Population growth rate (2014 est.): **2.11%**
- Birth rate 2014 est. (births/1,000 population): **28.27**
- Infant mortality (deaths/1,000 live births) 2014 est.: **40.71**
- Life expectancy at birth (2014 est.): **63.52**
- GDP (PPP) (2013 est.): **$45.31 billion; per capita $1,800**
- Growth rate (2013 est.): **5.1%**
- GDP by sector (2013 est.): **agriculture: 29.3%, industry: 17.4%, services: 53.3%**
- Budget (2013 est.): **Revenues: $7.866 billion, Expenditures: $9.742 billion**
- Percentage below poverty line: **45.9% (2005)**
- Languages: **English (official), Kiswahili (official), indigenous languages**
- Religions: **Christian 82.5%, Muslim 11.1%, Traditionalists 1.6%, other 1.7%, none 2.4%**
- Monetary unit: **CFA Franc**

Lesotho

Lesotho emerged from political crisis in 2015 with tightly contested elections in February that saw the formation of a coalition headed by Pakalitha Mosisili of the Democratic Congress. Previous incumbent Tom Thabane had fled the country in August 2014, claiming that the army were planning on attempting a coup to oust him, creating fears of an eruption of violence. But Thabane returned and the elections were deemed fair and free by international observers. Thabane's acceptance of defeat has raised hopes of a period of stability being on the horizon, although critics suggest that Mosisili's coalition may lack the unity to carry out the reforms needed to tackle the country's unemployment and poverty rates.

Lesotho has mountainous, rugged terrain and is fairly sparsely populated, with roughly 70% of the population living in rural, often remote, areas where infrastructure can be limited. Mobile penetration is lower than the regional average, and the IMF claimed in 2012 that only 5% of the population were connected to the internet. Vodacom's launch of LTE services in October 2014 should boost the number of connections, providing mobile internet as a solution to the difficulties of establishing fixed line infrastructure in the country.

Back in the 2012, the government of Lesotho identified the ICT sector as a key player in the fight against poverty. Projects such as the ICT village in Mahobong, Leribe District, partly funded by the Italian government, connects healthcare and agricultural experts in the region with their counterparts in Italy, allowing training on the use of ultrasound technology and telemedicine for the former and e-phytopathology and parasitology services for the latter.

Literacy rates are higher than the sub-Saharan average in Lesotho, thanks to compulsory and free primary education. A South African based NGO, The Community Education Computer Society (CECS), is running a programme that attempts to improve ICT literacy in the country, offering free 80-hour programmes teaching the basics of ICT competence.

- Area (km²): **30,355**
- Population (2014): **1,942,008**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **59.6% (1999); 80.9% (2003); 75.2% (2007); 82.1% (2012)**

ICT and Infrastructure

- Internet users (2014): **110,065**
- Internet penetration (2014): **5.7%**
- Facebook users (2013): **51,440**
- Broadband subscriptions (2013): **0.11%**
- Mobile subscriptions (2013): **86.3%**
- Television companies: **1 state-owned**
- Radio stations: **2 state-owned**

Education

- Students in higher education: **25,507 (2012)**
- Student mobility: **Outgoing: 4,260, Incoming: 127**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **34 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 22.8% (2008) Secondary 51.2% (2008)**
- Literacy rate (2015 UIS estimate): **Male 70.07%, Female 88.29%**
- Unemployment (% of total labor force, 2013): **24.7%**
- Children in employment (Age 7-14): **2.6 % (2002)**
- Education spending (% of GDP): **13.0 % (2008)**

Society and Politics

- Date of independence: **4 October 1966 (from Britain)**
- Style of government: **Parliamentary constitutional monarchy**
- Leader(s): **Head of State: King Letsie III (since 1990) Prime minister: Bethuel Pakalitha Mosisili (since 2015)**
- Population growth rate (2014 est.): **0.34%**
- Birth rate 2014 est. (births/1,000 population): **25.92**
- Infant mortality (deaths/1,000 live births) 2014 est.: **50.48**
- Life expectancy at birth (2014 est.): **52.65**
- GDP (PPP) (2013 est.): **$4.265 billion; per capita $2,200**
- Growth rate (2013 est.): **4.1%**
- GDP by sector (2013 est.): **agriculture: 7.4%, industry: 34.5%, services: 58.2%**
- Budget (2013 est.): **Revenues: $1.462 billion, Expenditures: $1.483 billion**
- Percentage below poverty line: **56.6% (2003)**
- Languages: **Sesotho (official), English (official), Zulu, Xhosa**
- Religions: **Christian 80%, indigenous beliefs 20%**
- Monetary unit: **Loti**

Liberia

Hopes are high that as Ebola disappears progress will return to Liberia. The outbreak halted almost a decade of relative peace and prosperity in the country following the end of the Second Liberian War in 2003, and the establishment of a nascent democratic process in the country. As the epidemic abated in early February 2015, it had claimed close to 4,000 lives and caused significant economic damage.

Before the year had begun, optimism was prevalent in the West African nation. Although still languishing near the bottom of the human development index, the administration of Ellen Johnson Sirleaf had put a number of initiatives in place in the fields of education and eLearning, including the drafting of a new Education Operational Plan in May 2014, marking the first attempt to institutionalise results-based planning within the sector in Liberia.

Schools, however, were closed in July 2014 as the outbreak worsened, staying shut for a full six months before they reopened in February 2015. The situation forced students and educators to adapt, and ICT and eLearning came into its own, with many students continuing their studies. Textbooks were digitised, and major wireless carrier Cellcom allowed access to some educational content free of charge. Worldreader, a non-profit organisation committed to providing digital books to promote reading in low-income countries, provided a free phone app which enables students to use mobiles to access course readings. These non-profit interventions followed the wave of self-organised learning on the part of Liberians themselves, with self-study groups being arranged. In October 2014, the Liberian Government launched 'Teaching by Radio', an educational radio programme, providing the material for radio listening clubs and home schools to continue out-of-school learning.

The emphasis on mobile learning is partially a consequence of the lack of infrastructure due to years of civil war, with Liberia operating an almost entirely wireless telecommunications market. Latest figures put mobile phone usage at 59,5% in the country, while 50% have access to mobile internet.

- Area (km²): **111,369**
- Population (2014): **4,092,310**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **46.6% (1999); 35.1% (2006); 40.2% (2009); 40.9% (2011)**

ICT and Infrastructure

- Internet users (2014): **188,246**
- Internet penetration (2014): **4.6%**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **59.5%**
- Television companies: **3 private TV stations; satellite**
- Radio stations: **1 state-owned; several indpendent regional**

Education

- Students in higher education: **42,883 (2012)**
- Student mobility: **Outgoing: 680 (2012)**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **27 (2011)**
- Literacy rate (2015 UIS estimate): **Male 62.42%, Female 32.81%**
- Unemployment (% of total labor force, 2013): **3.7%**
- Children in employment (Age 7-14): **18.4% (2010)**
- Education spending (% of GDP): **2.8% (2008)**

Society and Politics

- Date of independence: **26 July 1847 (from USA)**
- Style of government: **Republic**
- Leader(s): **President: Ellen Johnson Sirleaf (since 2005)**
- Population growth rate (2014 est.): **2.52%**
- Birth rate 2014 est. (births/1,000 population): **35.07**
- Infant mortality (deaths/1,000 live births) 2014 est.: **69.19**
- Life expectancy at birth (2014 est.): **58.21**
- GDP (PPP) (2013 est.): **$2.898 billion; per capita $700**
- Growth rate (2013 est.): **8.1%**
- GDP by sector (2013 est.): **agriculture: 76.9%, industry: 5.4%, services: 17.7%**
- Budget (2013 est.): **Revenues: $465 million, Expenditures: $521.7 million**
- Percentage below poverty line: **63.8% (2007)**
- Languages: **English 20% (official), 20 ethnic languages**
- Religions: **Christian 85.6%, Muslim 12.2%, Traditional 0.6%, other 0.2%, none 1.4%**
- Monetary unit: **Liberian Dollar**

Libya

Four years following the start of the civil war in which Muammah Gaddafi was overthrown, Libya remains in the throes of conflict, as differing rebel groups vie for control of the North African state. The country has two governments and parliaments, and conflicts still spill over into violence on a regular basis. Well-armed militias remain a legacy of the conflict, and fraught negotiations are underway to attempt to create a unified government and organise elections in 2015, but analysts remain sceptical of the prospect of a lasting solution being on the horizon.

The civil war has destroyed much of Libya's ICT infrastructure. High levels of pre-war investment, however, mean that this infrastructure remains one of Africa's most advanced. The existence of this infrastructure has allowed the world's first mobile-based registration system to be deployed in early 2014. More than 1.1 million Libyans, both within the county and in the diaspora, used SMS to register to vote. The system was deemed a success and is being continued for use in the next Libyan elections.

Numerous eLearning projects have been put on hold following the civil war, but the end of the Gaddafi era has also given hopes for a fresh start in Libya's overcrowded education system. In April 2013, TVET UK signed an agreement with the Libyan authorities to facilitate partnerships and exchanges between Libya and UK national TVET agencies in order to improve vocational training in Libya. The hope is that political stability will allow for the country's significant oil revenues to enable expansion of a higher education system that is reported to be desperately stretched. With a median age of 24.5, and a free education system until university level, this is unsurprising. ICT has been mooted as a possible solution to the problem of overcrowding, but investment is unlikely to arrive until a lasting peace can be established.

- Area (km²): **1,759,540**
- Population (2014): **6,244,174**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **no data**

ICT and Infrastructure

- Internet users (2014): **1,030,289**
- Internet penetration (2014): **21.8%**
- Facebook users (2013): **781,700**
- Broadband subscriptions (2013): **1.04%**
- Mobile subscriptions (2013): **165.0%**
- Television companies: **state-funded and private TV stations; some local; pan-Arab satellite**
- Radio stations: **state-funded**

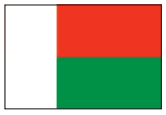
Education

- Students in higher education: **375,028 (2003)**
- Student mobility: **Outgoing: 6,431 (2012)**
- Language(s) of instruction: **Berber in primary; Arabic at all levels**
- Literacy rate (2015 UIS estimate): **Male 96.72%, Female 85.59%**
- Unemployment (% of total labor force, 2013): **19.6%**

Society and Politics

- Date of independence: **24 December 1951 (from UN trusteeship)**
- Style of government: **Transitional**
- Leader(s): **Prime Minister: Abdullah al-Thani President of the General National Congress: Nouri Abusahmain**

- Population growth rate (2014 est.): **3.08%**
- Birth rate 2014 est. (births/1,000 population): **18.4**
- Infant mortality (deaths/1,000 live births) 2014 est.: **11.87**
- Life expectancy at birth (2014 est.): **76.04**
- GDP (PPP) (2013 est.): **$73.6 billion; per capita $11,300**
- Growth rate (2013 est.): **-5.1%**
- GDP by sector (2013 est.): **agriculture: 2%, industry: 58.3%, services: 39.7%**
- Budget (2013 est.): **Revenues: $41.54 billion Expenditures: $41.87 billion**
- Languages: **Arabic (official), Italian, English, Berber languages**
- Religions: **Muslim 96.6&, other 3.4%**
- Monetary unit: **Libyan Dinar**



Madagascar

Foreign aid returned to Madagascar following the 2013 elections, which were deemed fair and transparent by the international community. Prior to the election of President Hery Rajaonarimampianina, aid had stopped due to a coup in 2009 which caused five years of political instability, leaving a large hole in of Madagascar's budget. With aid and calm restored there are hopes of growth and progress, both of which are certainly needed, as 90% of Madagascans live on less than $2 a day.

ICT infrastructure is sparse in Madagascar. The country lacks a national broadband plan, which has led to low internet connection rates. Consumer spending is weak and mobile phone penetration, whilst growing, is also below African averages at 40%. 3G is gaining traction, however, and LTE services have been launched by Blueline.

The capital, Antananarivo, continues to be home to a nascent entrepreneurial ICT ecosystem, with Madagascar's first tech hub, Habaka, making headlines in 2014. Habaka were behind the launch of CoderDojo in the country in September 2014. A global network of volunteer-led, independent, community-based programming clubs for people between the ages of seven and 17, Coderdojo teaches young people to code and develop websites, apps, programmes and games. Following the success of this programme, the Madagascan government began consulting Habaka on how to nurture the growth of ICT in the country.

In the field of eLearning, a lack of funds is inhibiting development. Foreign investment is still vital in this regard. Events such as Microsoft's 'Digigirlz' workshop in Antananarivo, held on International Women's Day 2013, which provides careers advice and technology workshops for girls at high school age, are becoming more common as foreign direct investment continues to flow back to the island.

- Area (km²): **587,041**
- Population (2014): **23,201,926**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **57.2% (1996); 65.2% (2000): 77.4% (2003)**

The overall education system in Madagascar improved significantly between 2001–2008, with the number of children in primary education doubling to over 4 million. Budget constraints and the freeze of donor support from 2009 crippled much of the system, which now suffers from overcrowded classrooms, lack of learning materials and qualified teacher shortages. Projects such as Let Us Learn from UNICEF have focused on achieving gender parity at the post-primary school level where drop-out rates for girls are the highest. Since 2011, the programme has provided 10,000 scholarships to support re-enrolment to girls who had dropped out of school, improved school facilities for 72,000 children, and encouraged the Minister of Education to approve the inclusion of gender mainstreaming in the national education plan.

ICT and Infrastructure

- Internet users (2014): **510,442**
- Internet penetration (2014): **2.2%**
- Facebook users (2013): **282,880**
- Broadband subscriptions (2013): **0.06%**
- Mobile subscriptions (2013): **36.1%**
- Television companies: **state-owned TVM, private urban stations**
- Radio stations: **state-owned RNM, private urban stations**

Education

- Students in higher education: **90,235 (2012)**
- Student mobility: **Outgoing: 4,881, Incoming: 1,567 (2012)**
- Language(s) of instruction: **Malagasy for the first 7 years of primary; French beyond**
- Pupil/ teacher ratio, primary: **43 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 6.5% (2012), Secondary 8.3 % (2012)**
- Electricity in primary schools: **3.5% (2010)**
- Literacy rate (2015 UIS estimate): **Male 66.74%, Female 62.61%**
- Unemployment (% of total labor force, 2013): **3.6%**
- Children in employment (Age 7-14): **26.0% (2006)**
- Education spending (% of GDP): **2.7% (2012)**

Society and Politics

- Date of independence: **26 June 1960 (from France)**
- Style of government: **Republic**
- Leader(s): **President Hery Rajaonarimampianina (since 2014)**
- Population growth rate (2014 est.): **2.62%**
- Birth rate 2014 est. (births/1,000 population): **33.12**
- Infant mortality (deaths/1,000 live births) 2014 est.: **44.88**
- Life expectancy at birth (2014 est.): **65.2**
- GDP (PPP) (2013 est.): **$22.03 billion; per capita $1,000**
- Growth rate (2013 est.): **2.6%**
- GDP by sector (2013 est.): **agriculture: 27.3%, industry: 16.4%, services: 56.3%**
- Budget (2013 est.): **Revenues: $2.113 billion, Expenditures: $2.356 billion**
- Percentage below poverty line: **75.3% (2010)**
- Languages: **French (official), Malagasy (official), English**
- Religions: **indigenous beliefs 52%, Christian 41%, Muslim 7%**
- Monetary unit: **Malagasy Ariary**

Malawi

Attention in landlocked Malawi is focused on new President Peter Mutharika, who won the May 2014 elections - keenly followed by Malawians on social media - by a narrow margin. Mutharika will try to convince foreign donors, upon which Malawi is dependant, to return to the country following their withdrawal of aid in response to the 'Cashgate' scandal in 2013. In September 2014, Mutharika presented his first budget an austere one designed at regaining donor support. As of early 2015, however, the aid taps remained switched off. Devastating floods in February of the same year displaced almost a quarter of a million people.

The floods have had knock-on effects, destroying crops in what remains a largely agricultural country. ICT has played a key role in assessing damage, following on from its increased use in trading. The Malawi Market Linkages Initiative Bridging Activity (MLI BA) is an 18-month project funded by USAID which helps create structured, transparent trading systems aimed at smallholder participation through mobiles. It is exclusively for female farmers, and has led to profit increases of up to 10%. The government is encouraging schemes like these, helping young people enter the agricultural world. Gorta-Self Help Africa, a mobile-based agricultural education system, reported 85,000 unique phone users in its first week.

Malawi's national ICT policy promotes ICT across all levels of education. The Computers for African Schools Malawi project has been active for the past decade, implemented by the British Council and Ministry of Education. It provides ICT training to teachers, provides computers and printers to schools and develops the ICT Curriculum for schools.

- Area (km²): **118,484**
- Population (2014): **17,377,468**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **99.1% (2002); 97.6% (2005); 93.4% (2007); 97.5% (2009)**

The cost of internet in Malawi remains prohibitive, despite a 50% decrease in the last five years thanks to fibre cable connections. Government taxes on internet services, re-introduced in 2013, are not helping. The establishment of a regulatory regime and a national fibre backbone rollout should drive down prices. A TV White Spaces pilot, initiated by the University of Malawi, is tackling poor connectivity rates in rural areas, connecting a variety of institutions, both educational and medical, to broadband in the rural region of Zomba.

Mobile penetration is very low in comparison to the African averages, and currency devaluations have hampered infrastructure spending. The mobile market remains a duopoly, and the ITU recently reported that phone costs are 56.29% of average monthly earnings for Malawians, one of the highest rates in the world.

ICT and Infrastructure

- Internet users (2014): **931,054**
- Internet penetration (2014): **5.4%**
- Facebook users (2013): **203,840**
- Broadband subscriptions (2013): **0.03%**
- Mobile subscriptions (2013): **32.3%**
- Television companies: **1 government-owned, two private TV networks**
- Radio stations: **1 state-run; c. 12 private and community**

Education

- Students in higher education: **12,203 (2011)**
- Student mobility: **Outgoing: 2,358, Incoming: 117 (2012)**
- Language(s) of instruction: **Chichewa in primary; English at all levels**
- Pupil/ teacher ratio, primary: **74 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 7.8 (2011), Secondary 33.2% (2011)**
- Electricity in primary schools: **10.3% (2012)**
- Literacy rate (2015 UIS estimate): **Male 72.99%, Female 58.64%**
- Unemployment (% of total labor force, 2013): **7.6%**
- Children in employment (Age 7-14): **25.1 % (2011)**
- Education spending (% of GDP): **5.4% (2011)**

Society and Politics

- Date of independence: **6 July 1964 (from Britain)**
- Style of government: **Multiparty democracy**
- Leader(s): **President Peter Mutharika (since 2014)**
- Population growth rate (2014 est.): **3.33%**
- Birth rate 2014 est. (births/1,000 population): **41.8**
- Infant mortality (deaths/1,000 live births) 2014 est.: **48.01**
- Life expectancy at birth (2014 est.): **59.99**
- GDP (PPP) (2013 est.): **$15.02 billion; per capita $900**
- Growth rate (2013 est.): **5%**
- GDP by sector (2013 est.): **agriculture: 29.4%, industry: 18.9%, services: 51.7%**
- Budget (2013 est.): **Revenues: $1.347 billion, Expenditures: $1.4 billion**
- Percentage below poverty line: **50.7% (2010)**
- Languages: **English (official), Chichewa (common), Chinyanja, Chiyao, Chitumbuka, Chilomwe, Chinkhonde, Chingoni, Chisena, Chitonga, Chinyakyusa, Chilambya**
- Religions: **Christian 82.6%, Muslim 13%, other 1.9%, none 2.5% (2008 est.)**
- Monetary unit: **Malawian Kwacha**

Mali

French troops remain active in the former French colony. President Ibrahim Boubacar Keita was elected to great optimism in 2013, but he so far proved unable to provide a final resolution to the country's problems. In January, Prime Minister Moussa Mara, Keita's opponent in the 2013 elections, resigned along with the entire government. Mara had been in power for less than a year, following his predecessor Oumar Tatam Ly's resignation, only six months after he himself had come to power.

A forbidding landscape for infrastructure means that Mali has below average penetration rates for most ICTs, barring mobile. Since market liberalisation in 2003, mobile usage has skyrocketed, and penetration is almost 100%. Work is underway to improve internet connectivity: in Februrary 2014, the 1,000km Sotelma-Malitel fibre optic cable was inaugurated, which boasts 20 Gbps capacity. In December 2014, the government unveiled its 'Mali Digital Plan 2020', which aims to use ICT to revolutionise life in the country and developed local ICT industries.

Mali continues to struggle to provide extensive education for its children, with the latest UN figures putting primary attendance figures at 47%. Basic infrastructural issues hinder the implementation of eLearning in the country. However, schemes such as the computer programming training centre in the Millennium Villages Project (MVP) in Bamako are seeking to spark interest in ICTs amongst Malian youth. Mobile appears to be the technology with the most potential – Al-Jazeera's SMS based opinion gathering project Mali Speaks has been a huge success, allowing otherwise marginalised voices to be heard, and is now being replicated across the world.

- Area (km²): **1,240,192**
- Population (2014): **16,455,903**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**55.9% (2002), 61.4% (2005), 72.5% (2009); 73.3% (2012)**

ICT and Infrastructure

- Internet users (2014): **444,309**
- Internet penetration (2014): **2.7%**
- Facebook users (2013): **212,020**
- Broadband subscriptions (2013): **0.02%**
- Mobile subscriptions (2013): **129.1%**
- Television companies: **1 national public company, private international services**
- Radio stations: **1 national public broadcaster, community radio**

Education

- Students in higher education: **97,278 (2012)**
- Student mobility: **Outgoing: 4,544, Incoming: 462 (2011)**
- Language(s) of instruction: **National languages, English compulsory second language in primary; French at all levels**
- Pupil/ teacher ratio, primary: **48 (2011)**
- Expenditure per student (% of GDP per capita): **Primary 13.5% (2011), Secondary 31.1 % (2011)**
- Electricity in primary schools: **8.3% (2012)**
- Literacy rate (2015 UIS estimate): **Male 48.21%, Female 29.22%**
- Unemployment (% of total labor force, 2013): **8.2%**
- Children in employment (Age 7-14): **23.0 % (2007)**
- Education spending (% of GDP): **4.8% (2011)**

Society and Politics

- Date of independence: **22 September 1960 (from France)**
- Style of government: **Republic**
- Leader(s): **President Boubacar Keita (since 2013)**
- Population growth rate (2014 est.): **3%**
- Birth rate 2014 est. (births/1,000 population): **45.53**
- Infant mortality (deaths/1,000 live births) 2014 est.: **104.34**
- Life expectancy at birth (2014 est.): **54.95**
- GDP (PPP) (2013 est.): **$18.9 billion; per capita $1,100**
- Growth rate (2013 est.): **4.8%**
- GDP by sector (2013 est.): **agriculture: 38.5%, industry: 24.4%, services: 37%**
- Budget (2013 est.): **Revenues: $2.868 billion, Expenditures: $2.948 billion**
- Percentage below poverty line: **43.6% (2010)**
- Languages: **French (official), Bambara 46.3%, Peul/foulfoulbe, Dogon, Maraka/soninke, Malinke, Sonrhai/djerma, Minianka, Tamacheq, Senoufo, other**
- Religions: **Muslim 94.8%, Christian 2.4%, Animist 2%, none 0.5%, unspecified 0.3%**
- Monetary unit: **CFA Franc**

Mauritania

As an ally of the West, Mauritania has enjoyed stability and direct investment on a large scale in recent years. President Abdel Aziz, elected with 82% of the vote thanks to an opposition boycott, enjoys powerful support from the US and France for his commitment to anti-terror operations. As such, criticism from opposition parties of a lack of transparency in the country's democracy has fallen on deaf ears outside of Mauritania. The country consists mainly of desert, but is mineral rich and has oil reserves, as well as one of the world's most well stocked coastlines for fishing, all of which have contributed to impressive growth rates in recent years.

Mauritania's harsh climate and a power deficiency problem mean that the country's telecommunications network is underdeveloped. It has one of the lowest fixed-line connection rates in the world despite a connection to the ACE fibre-optic cable in 2011, and ICTs are rare in the more remote areas. Mobile penetration is very high however, at 110%. Aziz's government is working on improving the power supply, and a World Bank funded gas-to-power project announced in May 2014 should help do so.

eLearning has been a large part of government attempts to connect the country to the internet – a datacentre constructed in Nouakchott in late 2013 is connected to broadband and offers eLearning and eHealth services. This is part of a wider trend which includes joining regional ICT initiatives, the incorporation of ICT in the education system, training of staff in ICT, and the establishment of 500 literacy centres.

ICTs are also helping agriculture in a country that has been hit by drought in recent years. The eLocust app uses computing devices, satellite images, and crowd sourced locust reports from nomads with cellphones. Sent to the National Anti-Locust Center (CNLA), the data has helped prevent potentially disastrous locust swarms since its introduction.

- Area (km²): **1,030,700**
- Population (2014): **3,516,806**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **59.7% (2009); 65.5% (2003); 74.5% (2007); 70.8% (2010): 70.4% (2012)**

ICT and Infrastructure

- Internet users (2014): **218,042**
- Internet penetration (2014): **6.2%**
- Facebook users (2013): **106,200**
- Broadband subscriptions (2013): **0.19%**
- Mobile subscriptions (2013): **102.5%**
- Television companies: **1 state-run with 3 channels; 5 private channels**
- Radio stations: **1 state-run ; several private stations**

Education

- Students in higher education: **19,243 (2013)**
- Student mobility: **Outgoing: 3,939 (2012)**
- Language(s) of instruction: **Arabic, French**
- Pupil/ teacher ratio, primary: **40 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 11.5% (2011), Secondary 23.2% (2011)**
- Electricity in primary schools: **2.4% (2012)**
- Literacy rate (2015 UIS estimate): **Male 62.60%, Female 41.57%**
- Unemployment (% of total labor force, 2013): **31.0%**
- Children in employment (Age 7-14): **21.3% (2007)**
- Education spending (% of GDP): **3.7% (2011)**

Society and Politics

- Date of independence: **28 November 1960 (from France)**
- Style of government: **Military Junta**
- Leader(s): **President Mohamed Ould Abdel Aziz (since 2009)**
- Population growth rate (2014 est.): **2.26%**
- Birth rate 2014 est. (births/1,000 population): **31.83**
- Infant mortality (deaths/1,000 live births) 2014 est.: **56.06**
- Life expectancy at birth (2014 est.): **62.28**
- GDP (PPP) (2013 est.): **$8.204 billion; per capita $2,200**
- Growth rate (2013 est.): **6.4%**
- GDP by sector (2013 est.): **agriculture: 16.9%, industry: 54.6%, services: 28.5%**
- Budget (2013 est.): **Revenues: $1.677 billion, Expenditures: $1.702 billion**
- Percentage below poverty line: **42% (2008)**
- Languages: **Arabic (official and national), Pulaar, Soninke, Wolof (all national), French, Hassaniya**
- Religions: **Muslim (official) 100%**
- Monetary unit: **Ouguiya**

Mauritius

Mauritius continues to enjoy its reputation as one of Africa's richest and most stable states, with an ICT environment that is the envy of the continent. The pacific island has diversified from its dependence on sugar and is now a hub for textiles, upmarket tourism, banking and business outsourcing. The World Economic Forum consistently ranks Mauritius as the best performing African country regarding the use and implementation of ICT, and the country is predicted to become a high-income country in the next decade. Prime Minister Anerood Jugnauth won by a surprise landslide in the elections in 2014 to hold the position for the third time in his career.

Mauritius boasts a high-quality telecoms infrastructure. It was the first African country to provide cellular systems and 3G mobile services, and the first in the world to develop a national WiMAX broadband network. It is one of few African countries to have launched a 4G network. In March 2015, the Minister of Technology, Communication and Innovation, Mr Pravind Kumar Jugnauth, launched the 'Smart Mauritius' strategy, which is based on the ultra-high bandwidth concept. The strategy will involve the creation of a second Cyber City, strengthening the role of ICTs in the Mauritian economy; enhancing telecommunications infrastructure to improve quality and affordability; introducing a National Innovation Programme and creating the necessary platforms for the training and education of youth in ICT.

eLearning is thus a vital part of Mauritius's plans to become a high income country. Numerous projects are currently underway. The Universal ICT Education Programme (UIEP), which trains students, employees, non employees and the population at large in digital literacy and proficiency, has trained almost 200,000 people since its inception. The Sankoré project has been equipping all schools with low-cost digital interactive equipment such as projectors and laptops, as well as providing educational software. In 2014 the Tablet PC project provided 26,000 tablets to students and educators, and high speed secure internet links and wireless connectivity are being provided in order to maximise their potential.

Beyond these impressive achievements, Mauritius boasts an eHealth Plan, ePayment project, National Green IT Policy and Strategy, National eWaste Policy, Strategy and Action, and a National Cyber Security Strategy. It is not difficult to see how it has obtained its reputation as a regional leader.

- Area (km²): **2,040**
- Population (2014): **1,331,155**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**92.8% (1999); 93.9% (2003); 96.8% (2007); 97.3% (2010); 97.9% (2012)**

ICT and Infrastructure

- Internet users (2014): **519,150**
- Internet penetration (2014): **39.0%**
- Facebook users (2013): **367,900**
- Broadband subscriptions (2013): **12.54%**
- Mobile subscriptions (2013): **123.2%**
- Television companies: **State-run MBC with 13 stations, 2 pay-TV stations**
- Radio stations: **1 state-run, some private**

Education

- Students in higher education: **41,621 (2013)**
- Student mobility: **Outgoing: 6,788, Incoming: 924 (2012)**
- Language(s) of instruction: **Creole, French in primary; English in secondary and further**
- Pupil/ teacher ratio, primary: **21 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 10.5% (2012), Secondary 19.0% (2012)**
- Electricity in primary schools: **100% (2012)**
- Literacy rate (2015 UIS estimate): **Male 92.85%, Female 88.48%**
- Unemployment (% of total labor force, 2013): **8.3%**
- Education spending (% of GDP): **3.5% (2012)**

Society and Politics

- Date of independence: **12 March 1968 (from the UK)**
- Style of government: **Parliamentary democracy**
- Leader(s): **President Rajkeswur Kailash Purryag (since 2012)**
- Population growth rate (2014 est.): **0.66%**
- Birth rate 2014 est. (births/1,000 population): **13.46**
- Infant mortality (deaths/1,000 live births) 2014 est.: **10.59**
- Life expectancy at birth (2014 est.): **75.17**
- GDP (PPP) (2013 est.): **$20.95 billion; per capita $16,100**
- Growth rate (2013 est.): **3.4%**
- GDP by sector (2013 est.): **agriculture: 4.5%, industry: 22%, services: 73.4%**
- Budget (2013 est.): **Revenues: $2.507 billion, Expenditures: $2.736 billion**
- Percentage below poverty line: **8% (2006)**
- Languages: **English (official, <1%), Creole, Bhojpuri, French**
- Religions: **Hindu 48.5%, Roman Catholic 26.3%, Muslim 17.3%, other Christian 6.4%, other 0.6%, none 0.7%, unspecified 0.1%**
- Monetary unit: **Mauritian Rupee**

Morocco

One of the few North African regimes to emerge relatively unscathed from the Arab spring, Morocco is somewhat unique compared to the rest of the region. The country is one of three remaining monarchies in Africa: King Mohammed VI celebrated 15 years on the throne in July 2014. It has strong ties with Europe; Its relationship with Spain is particularly close, and occasionally conflictual. Local and regional elections are scheduled for June 2015, and will test a weak coalition headed by the Islamist Justice and Development Party which has struggled since breaking from its former ally, the Independence Party.

Morocco's ICT infrastructure is one of Africa's best, and is often held up as a model for other countries. Telecommunications are managed by an independent regulator and Morocco's mobile penetration rates are especially high. Fixed-line connections are less common than mobile, but the government is investing in this area, and through the National Broadband Plan aims to provide fixed or mobile broadband access to the entire population by 2022. Maroc Telecom has begun testing 4G services in Rabat, following national 4G auctions.

The Moroccan Government has displayed a commitment to open-data, launching an Open Data Portal as part of a re-launch of its eGovernance portal in July 2014, which provides public data produced by government, public institutions and local communities. This picture contrasts with government attacks on free speech on the internet, however, which remain common.

Morocco has been criticised for a lack of eLearning despite excellent conditions for its implementation. Whilst education is free and compulsory, many children, mostly in rural areas, do not attend school, often due to travel costs or fees associated with schooling such as school books. Local charity Dar Si Hmad has been organising eLearning based courses for rural schoolchildren in order to counter this problem, using ICTs to help children prepare for national exams. The Itqane project is using distance and blended learning to train teachers in the Fès-Boulemane and Doukkala-Abda regions of Morocco, in order to stem the flow of students dropping out of middle school, currently between 250,000 to 300,000 per year. In a country with such rugged, sometimes unforgiving terrain and great ICT infrastructure, distance learning in particular is proving useful.

- Area (km²): **446,550**
- Population (2014): **32,987,206**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **65.9% (1998); 83.7% (2002); 87.2% (2006); 94.4% (2010); 98.7% (2013)**

ICT and Infrastructure

- Internet users (2014): **18,472,835**
- Internet penetration (2014): **56.0%**
- Facebook users (2013): **5,091,760**
- Broadband subscriptions (2013): **2.53%**
- Mobile subscriptions (2013): **128.5%**
- Television companies: **State-run SNRT runs 9 channels; 2 partly-privatized networks**
- Radio stations: **State-run SNRT (national and regional); some private**

Education

- Students in higher education: **505,681 (2011)**
- Student mobility: **Outgoing: 44,161, Incoming: 8,604 (2010)**
- Language(s) of instruction: **Arabic, French**
- Pupil/ teacher ratio, primary: **18 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 20.4% (2013)**
- Electricity in primary schools: **86.7% (2013)**
- Literacy rate (2015 UIS estimate): **Male 78.60%, Female 58.83%**
- Unemployment (% of total labor force, 2013): **9.2%**
- Children in employment (Age 7-14): **4.5% (2004)**
- Education spending (% of GDP): **5.4% (2009)**

Society and Politics

- Date of independence: **2 March 1956 (from France)**
- Style of government: **Constitutional monarchy**
- Leader(s): **Chief of state: King Mohammed VI (since 1999) Prime minister: Abdelillah Benkirane (since 2011)**
- Population growth rate (2014 est.): **1.02%**
- Birth rate 2014 est. (births/1,000 population): **18.47**
- Infant mortality (deaths/1,000 live births) 2014 est.: **24.52**
- Life expectancy at birth (2014 est.): **76.51**
- GDP (PPP) (2013 est.): **$180 billion; per capita $5,500**
- Growth rate (2013 est.): **5.1%**
- GDP by sector (2013 est.): **agriculture: 15.1% industry: 31.7%, services: 53.2%**
- Budget (2013 est.): **Revenues: $26.07 billion, Expenditures: $34.51 billion**
- Percentage below poverty line: **15% (2007)**
- Languages: **Arabic (official), Tamazight (official), Tachelhit, Tarifit, French (lingua franca)**
- Religions: **Muslim 99%, other 1%**
- Monetary unit: **Dirham**

Mozambique

Foreign investment is flowing into Mozambique as companies seek to profit from the country's massive natural energy reserves. This investment should make Mozambique a major exporter of coal and gas in the coming years, promising to maintain strong growth rates. A two-year insurgency carried out by the Renamo party against the incumbent Frelimo ended in September 2014. The insurgency raised fears of a return to the destruction seen in the civil war fought between the two groups between 1977 and 1992. Implementing a peace agreement is on the agenda for 2015, which promises to be a tense process.

Despite the fact that Mozambique was one of the first countries in the region to reform its telecoms sector, mobile market penetration remains low at 56%. Internet services also remain limited, although increasing competition across platforms and an ongoing fibre backbone rollout should improve this.

Important strides have been made in education, with increases in school attendance. Challenges remain, however, with primary school drop-out rates high for the region and having increased in recent years. Secondary school attendance is also low, at roughly 20%. Mozambique's 2012 Strategic Education Plan sees ICT as fundamental to addressing educational challenges – one possible solution mooted is increased distance learning, which would address the prevalent urban/rural divide in school attendance. Also following this principal, German pharmaceutical giant Merck has begun to offer eLearning courses in diabetes treatment at the University Eduardo Mondlane.

- Area (km²): **799,380**
- Population (2014): **24,692,144**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **48.2% (1998); 56.1% (2002); 79.8% (2006); 88.6% (2009); 86.4% (2012)**

More broadly, there are a number of government ICT programmes currently being carried out. The World Bank funded Mozambique eGovernment and Communication Infrastructure Project (MEGCIP) in extending broadband networks to improve efficiency and transparency in government. One feature of the project is the establishment of a government sponsored business incubator in Maputo, capable of supporting up to 35 companies with high growth potential. Maputo is increasingly seen as an attractive market for foreign investment – in 2014, Mozambique received the greatest increase in foreign direct investment outside of Kenya and was ranked Africa's 9th most attractive retail market by AT Kearny.

ICT and Infrastructure

- Internet users (2014): **1,333,375**
- Internet penetration (2014): **5.4%**
- Facebook users (2013): **362,560**
- Broadband subscriptions (2013): **0.07%**
- Mobile subscriptions (2013): **48.0%**
- Television companies: **1 state-run; 1 private; RTP Africa (Portugal), TV Miramar (Brazil)**
- Radio stations: **State-owned national network, private & community stations**

Education

- Students in higher education: **128,073**
- Student mobility: **Outgoing: 1,887, Incoming: 396 (2011)**
- Language(s) of instruction: **Portuguese**
- Pupil/ teacher ratio, primary: **55 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 15.0% (2006)**
- Literacy rate (2015 UIS estimate): **Male 73.26%Female 45.37%**
- Unemployment (% of total labor force, 2013): **8.3%**
- Children in employment (Age 7-14): **27.4% (2008)**
- Education spending (% of GDP): **5.0% (2006)**

Society and Politics

- Date of independence: **25 June 1975 (from Portugal)**
- Style of government: **Republic**
- Leader(s): **President Armando Guebuza (since 2005)**
- Population growth rate (2014 est.): **2.45%**
- Birth rate 2014 est. (births/1,000 population): **38.83**
- Infant mortality (deaths/1,000 live births) 2014 est.: **72.42**
- Life expectancy at birth (2014 est.): **52.6**
- GDP (PPP) (2013 est.): **$28.15 billion; per capita $1,200**
- Growth rate (2013 est.): **7%**
- GDP by sector (2013 est.): **agriculture: 81%, industry: 6%, services: 13%**
- Budget (2013 est.): **Revenues: $4.808 billion, Expenditures: $6.101 billion**
- Percentage below poverty line: **54.7% (2009)**
- Languages: **Portuguese (official), Emakhuwa, Xichangana, Cisena, Elomwe, Echuwabo, other Mozambican languages**
- Religions: **Christian 56.1%, Muslim 17.9%, other 6.7%, none 18.7%, unspecified 0.7%**
- Monetary unit: **Mozambican Metical**

Namibia

Namibia celebrates 25 years of independence in 2015, with the South West African People's Organisation (SWAPO) remaining the country's largest political party, a position it has held throughout independence. Strong levels of growth have returned following a blip caused by the global financial crisis, driven by increasing levels of diamond production – according diamond giant DeBeers, Namibia has the world's largest known maritime diamond resources in the world, and maritime harvesting of the mineral surpassed land-based mining in 2011.

Namibia boasts strong performance regarding educational indicators, with net enrolment in primary education just short of 100%, and a 100% literacy rate among 15-24 year-olds. ICT is firmly integrated into education plans, with a particular focus on teacher training. A digital divide is still evident however, in a country where poverty rates remain high.

Internet connectivity rates stand at 14%, but a large amount of projects are underway to address this. One of them is 'Citizen Connect', a collaboration between the Microsoft 4Afrika Initiative, the MyDigitalBridge Foundation, and the MCA-N (Millennium Challenge Account Namibia) which has connected an area just short of 10,000km² in Northern Namibia. The project uses TV White Space and is the largest yet of its kind.

Unlike internet connectivity rates, mobile market penetration is above the average for Southern Africa, thanks to a long overdue liberalisation of the mobile market in 2007. Telecom Namibia has invested more than 2 billion Namibian Dollars in the country's telecommunications infrastructure since 2007, and is rolling out a fibre-optic network to connect central government to administrative capitals as well as all educational and health institutions.

During elections in November 2014, Namibia became the first African country to use electronic ballots. Despite some criticisms from opposition groups and delays caused by the machines, the vote was deemed free and fair by observers from the African Union.

- Area (km²): **824,292**
- Population (2014): **2,198,406**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**87.5% (1998); 91.3% (2002); 86.9% (2006); 86.9% (2009); 88.5% (2012)**

ICT and Infrastructure

- Internet users (2014): **305,578**
- Internet penetration (2014): **13.9%**
- Facebook users (2013): **231,340**
- Broadband subscriptions (2013): **1,47%**
- Mobile subscriptions (2013): **110.2%**
- Television companies: **1 private, 1 state; satellite & cable**
- Radio stations: **State-run radio in many languages, c. 12 private**

Education

- Students in higher education: **19,707 (2008)**
- Student mobility: **Outgoing: 7,602, Incoming: 2,004 (2008)**
- Language(s) of instruction: **Afrikaans, German, others at primary; English**
- Pupil/ teacher ratio, primary: **28 (2010)**
- Expenditure per student (% of GDP per capita): **Primary 17.9% (2010)**
- Electricity in primary schools: **58.3% (2012)**
- Literacy rate (2015 UIS estimate): **Male 79.16%, Female 84.48%**
- Unemployment (% of total labor force, 2013): **16.9%**
- Education spending (% of GDP): **8.4% (2010)**

Society and Politics

- Date of independence: **21 March 1990 (from South Africa)**
- Style of government: **Republic**
- Leader(s): **President Hage Geingob (since 2015)**
- Population growth rate (2014 est.): **0.67%**
- Birth rate 2014 est. (births/1,000 population): **20.28**
- Infant mortality (deaths/1,000 live births) 2014 est.: **45.64**
- Life expectancy at birth (2014 est.): **51.85**
- GDP (PPP) (2013 est.): **$17.79 billion; per capita $8,200**
- Growth rate (2013 est.): **4.4%**
- GDP by sector (2013 est.): **agriculture: 16.3%, industry: 22.4%, services: 61.3%**
- Budget (2013 est.): **Revenues: $4.325 billion, Expenditures: $5.126 billion**
- Percentage below poverty line: **28.7% (2009)**
- Languages: **English (official), Afrikaans (common language), German, indigenous languages**
- Religions: **Christian 80% to 90%, indigenous beliefs 10% to 20%**
- Monetary unit: **Namibian Dollar**

Niger

Niger, over 80% of which is covered by the Sahara desert, continues to suffer from its position at the heart of an increasingly strife ridden Sahel. Boko Haram and Al-Qaeda linked groups from Mali continue to cause problems for the country. Niger has suffered from droughts and military coups for much of its post-independence history. President Mahamadou Issoufou was democratically elected in 2011 and faces little opposition – his main rival, Hama Amadou, fled to France to escape charges of trafficking in August 2014. Whilst being mostly arid, Niger is rich in oil and minerals, exporting large amounts of Uranium.

ICT infrastructure is understandably sparse, considering the country's geography and tumultuous past. The mobile market is driven by urban areas, and grew by 13% between 2008 and 2013. There is huge room for growth, as mobile market penetration overall was estimated at only 20% in 2011. Attempts are being made to encourage ICT use. In July Airtel was awarded a 3G license, and June saw a 'startup weekend' held in the capital Niamey, in which 80 participants were invited to work on innovative projects. At the same time, CIPMEN, the first incubator in Niger, was launched, providing technical support and visibility to startups.

As with other countries in the Sahel, distance learning has great potential to allow teachers and pupils to overcome the problems of remoteness and lack of traditional infrastructure. Distance learning courses offered by the Francophone Numerical Campus in Niamey are proving popular with lecturers and other teaching professionals, and The African Virtual University launched a multinational project in association with the Université Abdou Moumouni de Niamey, delivering quality ICT education and seeking to break down gender disparities. Much work needs to be done going forward however – the latest UN stats show that only 28% of Nigerien children of primary school age are enrolled.

- Area (km²): **1,267,000**
- Population (2014): **17,466,172**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **25.5% (1998); 35.4% (2002); 44.1% (2006); 52.7% (2009); 63.6% (2012)**

ICT and Infrastructure

- Internet users (2014): **296,925**
- Internet penetration (2014): **1.7%**
- Facebook users (2013): **63,500**
- Broadband subscriptions (2013): **0,04%**
- Mobile subscriptions (2013): **39.3%**
- Television companies: **1 state-run, 3 private**
- Radio stations: **1 nationa, state-run; 30 private, 100 comunity stations**

Education

- Students in higher education: **12,823 (2008)**
- Student mobility: **Outgoing: 2,108, Incoming: 1,181 (2012)**
- Language(s) of instruction: **French, national languages**
- Pupil/ teacher ratio, primary: **39 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 19.3% (2012)**
- Electricity in primary schools: **3.0% (2012)**
- Literacy rate (2015 UIS estimate): **Male 27.29%, Female 11.04%**
- Unemployment (% of total labor force, 2013): **5.1%**
- Children in employment (Age 7-14): **55.1% (2009)**
- Education spending (% of GDP): **4.4% (2012)**

Society and Politics

- Date of independence: **3 August 1960 (from France)**
- Style of government: **Republic**
- Leader(s): **President Mahamadou Issoufou (since 2011)**
- Population growth rate (2014 est.): **3.28%**
- Birth rate 2014 est. (births/1,000 population): **46.12**
- Infant mortality (deaths/1,000 live births) 2014 est.: **86.27**
- Life expectancy at birth (2014 est.): **54.74**
- GDP (PPP) (2013 est.): **$13.98 billion; per capita $800**
- Growth rate (2013 est.): **6.2%**
- GDP by sector (2013 est.): **agriculture: 35.2%, industry: 14.2%, services: 50.6%**
- Budget (2013 est.): **Revenues: $1.911 billion, Expenditures: $2.086 billion**
- Percentage below poverty line: **59.5% (2007)**
- Languages: **French (official), Hausa, Djerma**
- Religions: **Muslim 80%, other (includes indigenous beliefs and Christian) 20%**
- Monetary unit: **CFA Franc**

Nigeria

It would be a mistake to reduce Africa's largest nation to a single narrative of the threat of the insurgency in its northern regions. Despite the increasing threat of Boko Haram, Nigeria remains a multifaceted and diverse state from which many positive trends are emerging. As Africa's largest country by population, Nigeria is now also its largest economy, following long-awaited GDP 'rebasing' last April. March 2015's hugely anticipated elections ended peacefully, with opposition candidate Muhammadu Buhari winning the presidential election by more than 2.5 million votes, becoming the first non-incumbent candidate to do so.

Whilst collapsing oil prices have hit growth, perceptions of Nigeria being entirely dependent on oil and gas imports ought to be tempered by the fact that the country's entire resource sector today accounts for just 14% of GDP, with agricultural and trade sectors both larger and growing faster. The government's inability to halt attacks by Boko Haram contrasts with its highly impressive action to halt an ominous Ebola outbreak in Lagos in July. Following the rapid establishment of Ebola Emergency Operations Center, Nigeria was declared officially Ebola-free in October 2014.

In the field of eLearning, Nigeria continues to be a leader on the continent. In September 2014, the National Educational Research and Development Council (NERDC) partnered with Sidmach Technologies Nigeria Limited to launch a new e-curriculum for senior secondary school education in the country, marking an important step for a burgeoning eLearning field. Alongside this, Sidmach has undertaken efforts in conjunction with the National Examination Council to root out impersonation in examinations using biometric technology.

- Area (km²): **923,768**
- Population (2014): **177,155,754**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**62.9% (1999); 66.1% (2004); 71.3% (2007): 65.7% (2010)**

Innovations such as these fit in with the general pattern of Nigeria as being a centre of innovation and ICT development on the continent. A recent report by VC4Africa, the leading peer-to-peer network for African entrepreneurs and investors, named Nigeria as the leading beneficiary of investment for startup ventures in Africa. In December 2014, former ICT Minister Omobola Johnson announced that Nigeria's ICT sector had attracted more than $6 billion in Foreign Direct Investments over the last three years, with the government committed to achieving 3G/LTE mobile broadband coverage of 80% of the population, and providing fixed fibre-based broadband to 16% by 2018.

ICT and Infrastructure

- Internet users (2014): **67,319,186**
- Internet penetration (2014): **38.0%**
- Facebook users (2013): **6,630,200**
- Broadband subscriptions (2013): **0.01%**
- Mobile subscriptions (2013): **73.3%**
- Television companies: **Nearly 70 government-controlled stations on federal and regional level**
- Radio stations: **40 government-owned stations, 20 private**

Education

- Students in higher education: **1,391,527 (2005)**
- Student mobility: **Outgoing: 49,531 (2012)**
- Language(s) of instruction: **Mother tongue in primary; English at all levels**
- Pupil/ teacher ratio, primary: **38 (2010)**
- Electricity in primary schools: **34.7% (2008)**
- Literacy rate (2015 UIS estimate): **Male 69.19%, Female 49.68%**
- Unemployment (% of total labor force, 2013): **7.5%**
- Children in employment (Age 7-14): **21.2% (2010)**

Society and Politics

- Date of independence: **1 October 1960 (from Britain)**
- Style of government: **Federal Republic**
- Leader(s): **President-elect Muhammadu Buhari (since 2015)**
- Population growth rate (2014 est.): **2.47%**
- Birth rate 2014 est. (births/1,000 population): **38.03**
- Infant mortality (deaths/1,000 live births) 2014 est.: **74.09**
- Life expectancy at birth (2014 est.): **52.62**
- GDP (PPP) (2013 est.): **$478.5 billion; per capita $2,800**
- Growth rate (2013 est.): **6.2%**
- GDP by sector (2013 est.): **agriculture: 70%, industry: 10%, services: 20%**
- Budget (2013 est.): **Revenues: $23.85 billion, Expenditures: $31.51 billion**
- Percentage below poverty line: **46% (2010)**
- Languages: **English (official), Hausa, Yoruba, Igbo, Fulani, over 500 others**
- Religions: **Muslim 50%, Christian 40%, indigenous beliefs 10%**
- Monetary unit: **Nigerian Naira**

Rwanda

Rwanda continues to be a leader in the field of ICT in East Africa. The state's commitment to developing ICT structure has been a standout feature of President Paul Kagame's rule and has shown no sign of letting up, buoyed by GDP growth consistently higher than the average for sub-Saharan Africa. Legacies of the 1994 genocide remain; with fighting continuing in the South Kivu province of DR Congo on the Rwandan border, but a hard-won political and social stability prevails. Financial support from foreign donors returned in 2014, following condemnation of Rwanda's support of the March 23 Movement in the DRC.

Rwanda's status as a beacon of ICT development began in 2000 after it adopted a National Information Communications Infrastructure (NICI) policy and created a long-term plan to achieve full digitisation in four five-year stages. The NICI policy is key to Vision 2020, the government's plan to transform Rwanda into a middle-income country by 2020. Internet penetration rates grew from 1% in 2000 to 13% by 2013, thanks in no small part to investment in ICT as a percentage of GDP on a par with OECD countries. This number is expected to continue its rapid growth, particularly after a deal was struck with Korea Telecom to build both a national fibre backbone and a national LTE network, the latter of which began trial in November 2014.

Rwanda's commitment to the joint fields of ICT and learning are typified by the merging of the ministries of youth and ICT in 2011 under the leadership of Jean Philbert Nsengimana. Nsengimana previously worked in the fields of eHealth and mobile solutions, managing the award winning mobile health apps TRACnet and mUbuzima and the real-time mobile based market information app for farmers eSoko, which now serves over 2.5m farmers. Nsengimana's ministry recently announced a joint initiative with the Groupe Speciale Mobile Association (GSMA) to increase access to mobile technologies for Rwandans, placing mobile solutions at the heart of their ICT drive.

Now a council member of the International Telecommunications Union (ITU), the UN telecommunications agency, the country is also taking a leading role in the Smart Africa vision, which brings together African governments, the private sector and international organisations to encourage broadband access and ICT in order to move Africa toward transformation into the knowledge economy. Despite these successes, the education system in Rwanda still bears some of the marks of a country in transformation. In the years to come, the challenge will be to transform ICT leadership into quality, comprehensive teaching.

- Area (km²): **26,338**
- Population (2014): **12,337,138**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**82.1% (1999); 90.5% (2003); 88.6% (2010); 98.7% (2012)**

ICT and Infrastructure

- Internet users (2014): **1,073,331**
- Internet penetration (2014): **8.7%**
- Facebook users (2013): **188,800**
- Broadband subscriptions (2013): **0.02%**
- Mobile subscriptions (2013): **56.8%**
- Television companies: **1 government-owned**
- Radio stations: **1 government-owned (Radio Rwanda); 9 private**

Education

- Students in higher education: **71,638 (2012)**
- Student mobility: **Outgoing: 4,028, Incoming: 547**
- Language(s) of instruction: **French; English in further**
- Pupil/ teacher ratio, primary: **60 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 7.3% (2013)**
- Electricity in primary schools: **35.0% (2012)**
- Literacy rate (2015 UIS estimate): **Male 73.21%, Female 68.02%**
- Unemployment (% of total labor force, 2013): **0.6%**
- Children in employment (Age 7-14): **19.1% (2010)**
- Education spending (% of GDP): **5.1% (2013)**

Society and Politics

- Date of independence: **1 July 1962 (from Belgium)**
- Style of government: **Presidential Republic; multiparty system**
- Leader(s): **President Paul Kagame (since 2000)**
- Population growth rate (2014 est.): **2.63%**
- Birth rate 2014 est. (births/1,000 population): **34.61**
- Infant mortality (deaths/1,000 live births) 2014 est.: **59.59**
- Life expectancy at birth (2014 est.): **59.26**
- GDP (PPP) (2013 est.): **$16.37 billion; per capita $1,500**
- Growth rate (2013 est.): **7.5%**
- GDP by sector (2013 est.): **agriculture: 31.9%, industry: 14.8%, services: 53.3%**
- Budget (2013 est.): **Revenues: $1.814 billion, Expenditures: $2.146 billion**
- Percentage below poverty line: **44.9% (2011)**
- Languages: **Kinyarwanda (official), French (official), English (official), others**
- Religions: **Christian 93.6%, Muslim 1.8%, indigenous beliefs 0.1%, other 0.6%, none 3.6%**
- Monetary unit: **Rwandan Franc**

São Tomé and Príncipe

Spirits raised by the much heralded discovery of vast amounts of untapped oil off the shores of the archipelago of São Tomé and Príncipe were dampened in late 2013 when French oil company Total abandoned exploration in its oil blocks, alongside an announcement from the Nigerian foreign minister that its joint blocks were loss-making. The Government has claimed that new technologies will allow production to begin at a later date. The election of the country's first majority government in years was positive news, raising the prospect of an end to the ill-matched coalitions that have become the norm in the country. Patrice Tovoada's Acção Democrática Independente (ADI) won only the second absolute majority in the country since 1991 during elections in October 2014.

Oil has frequently been presented as a panacea for São Tomé and Príncipe's reliance on a cocoa sector that has stagnated in recent years. Tourism, despite the country's exotic location and unspoilt beaches, has also failed to take off. The mobile market was given a boost in May 2014 when Unitel began its fixed and mobile operations, following the awarding of a license the previous year which broke the decade's long monopoly held by Companhia Santomense de Telecomunicacoes (CST).

ICT is a key component of the Ministry of Education, Culture and Training's (MoECT) Vision 2022, and is playing a role in education. The country has made commitments to the Millennium Development Goals, and is set to fulfil the goal of universal enrolment in primary schools. This drive has put a strain on teachers, however, and in May 2014 the World Bank Board of Executive Directors approved a $3.5 million to help training primary and pre-school teachers. ICT is a fundamental element of the project, which will enhance the country's teacher training school with new computer equipment and educational materials.

- Area (km²): **964**
- Population (2014): **190,428**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **80.2% (1999); 99.3% (2004); 98.8% (2009); 97.0% (2013)**

ICT and Infrastructure

- Internet users (2014): **43,798**
- Internet penetration (2014): **23.0%**
- Facebook users (2013): **6,940**
- Broadband subscriptions (2013): **0.51%**
- Mobile subscriptions (2013): **64.9%**
- Television companies: **1 government-owned**
- Radio stations: **1 government-owned; 3 independent local**

Education

- Students in higher education: **1,421 (2012)**
- Student mobility: **Outgoing: 498**
- Language(s) of instruction: **Portuguese**
- Pupil/ teacher ratio, primary: **31 (2013)**
- Electricity in primary schools: **65.3% (2012)**
- Literacy rate (2015 UIS estimate): **Male 81.80%, Female 68.38%**
- Unemployment (% of total labor force, 2013): **13.6%**
- Education spending (% of GDP): **9.5% (2010)**

Society and Politics

- Date of independence: **12 July 1975 (from Portugal)**
- Style of government: **Republic**
- Leader(s): **President Manuel Pinto da Costa (since 2011); Prime Minister Gabriel Arcanjo Ferreira Da Costa**
- Population growth rate (2014 est.): **1.89%**
- Birth rate 2014 est. (births/1,000 population): **35.12**
- Infant mortality (deaths/1,000 live births) 2014 est.: **49.16**
- Life expectancy at birth (2014 est.): **64.22**
- GDP (PPP) (2013 est.): **$421 million; per capita $2,200**
- Growth rate (2013 est.): **4.5%**
- GDP by sector (2013 est.): **agriculture: 13.7%, industry: 19.5%, services: 66.8%**
- Budget (2013 est.): **Revenues: $83.94 million, Expenditures: $120.3 million**
- Percentage below poverty line: **61.7% (2009)**
- Languages: **Portuguese (official)**
- Religions: **76.8% Christian, none 21.2%, unspecified 1%**
- Monetary unit: **Dobra**

Senegal

President Macky Sall rode to power on a wave of optimism in 2012 in one of Africa's model democracies. He has since struggled to turn an ailing economy around, and despite delivering on his promises to cut prices and rents and introduce universal healthcare, many in Senegal are not happy with the pace of change. Peaceful transitions and fair elections have become the norm in the West African country, but democracy has failed to bring prosperity in tow. However, oil has been discovered, and a World Bank financed project to build a 96 megawatt power station in Tobene is underway, bringing hopes of progress.

Senegal has a highly advanced ICT infrastructure. Mobile penetration is at 110%, and this section accounts for the majority of internet connections, too. The arrival of several fibre-optic submarine cables has significantly lowered prices for broadband. In 2015 construction will begin on Africa's latest digital city, Diamniadio Valley, which will aim to attract ICT investment to the state. The Ministry of the Interior has set up OSIRIS, an extensive news portal and discussion platform to help foster ICT development in the country.

Senegal has the most dynamic eLearning market in Africa according to a January 2014 report. Projects such as the Virtual University are cementing this reputation. Established by the Ministry of Higher Education and Research in 2014, the University creates digital open spaces in each department of the country, and had 2,000 students enrolled in online courses in its first year. Progress is also being made with regards to the gender gap – Senegal's first female only tech hub, Jjiguene, is offering women and girls training, from basic introductions to IT, such as using programs like Microsoft's Word and Outlook, to coding.

- Area (km²): **196,722**
- Population (2014): **13,635,927**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**54.8% (1999); 68.5% (2004); 76.5% (2008); 79.4% (2012)**

ICT and Infrastructure

- Internet users (2014): **2,849,909**
- Internet penetration (2014): **20.9%**
- Facebook users (2013): **675,820**
- Broadband subscriptions (2013): **0.76%**
- Mobile subscriptions (2013): **92.9%**
- Television companies: **State-run RTS with 2 stations, private subscription services**
- Radio stations: **RTS service national and regional, local and community radio**

Education

- Students in higher education: **92,106 (2010)**
- Student mobility: **Outgoing: 11,893**
- Language(s) of instruction: **French**
- Pupil/ teacher ratio, primary: **32 (2014)**
- Expenditure per student (% of GDP per capita): **Primary 18.2% (2007)**
- Electricity in primary schools: **21.8% (2012)**
- Literacy rate (2015 UIS estimate): **Male 69.72%, Female 46.57%**
- Unemployment (% of total labor force, 2013): **10.3%**
- Children in employment (Age 7-14): **13.1% (2011)**
- Education spending (% of GDP): **5.6% (2009)**

Society and Politics

- Date of independence: **4 April 1960 (from France)**
- Style of government: **Republic**
- Leader(s): **President Macky Sall (since 2012)**
- Population growth rate (2014 est.): **2.48%**
- Birth rate 2014 est. (births/1,000 population): **35.09**
- Infant mortality (deaths/1,000 live births) 2014 est.: **52.72**
- Life expectancy at birth (2014 est.): **60.95**
- GDP (PPP) (2013 est.): **$27.72 billion; per capita $2,100**
- Growth rate (2013 est.): **4%**
- GDP by sector (2013 est.): **agriculture: 14.9%, industry: 22.7%, services: 62.4%**
- Budget (2013 est.): **Revenues: $3.555 billion, Expenditures: $4.366 billion**
- Percentage below poverty line: **46.7% (2011)**
- Languages: **French (official), Wolof, Pulaar, Jola, Mandinka**
- Religions: **Muslim 94%, Christian 5%, indigenous beliefs 1%**
- Monetary unit: **CFA Franc**

Seychelles

With one of the highest human development indicator ratings in Africa, the pacific idyll of the Seychelles remains a leading example of development in the region. Tourism is expanding and remains a vital economic driver along with fishing. Attempts have been made to diversify, however, given the unpredictability of the tourism market, and licenses for oil exploration in Seychelles waters being sold to a variety of international companies.

With an ICT Development Index rating of above the global average and ranking second behind Mauritius, Seychelles remains a leader in ICT in Africa. A number of indicators are particularly strong – entry-level fixed- broadband prices are low (1.6%), and bandwidth per user levels are high (24 000 bit/s). Political stability has led to continued growth on this front. The April 2014 World Economic Forum (WEF) Networked Readiness Index, which measures countries' abilities to exploit opportunities afforded by ICT, saw Seychelles jump from 79th in 2013 to 66th in 2014.

ICT in education remains an important priority due to the skills required for Seychellois who work in the tourism industry. In June 2014, work began on the drafting of an ICT in Education National Policy, and eLearning continues to increase its presence throughout the country. The University of the Seychelles, set up in 2009, reached the milestone of welcoming its first international students in January 2015, and continues to take part in long distance eLearning with Indian universities through the pan-African tele-education network. In February 2014, a World Customs Organization programme, in association with the Seychelles Revenue Commission, introduced eLearning into the training of customs officers as part of a new training strategy. In addition, through a partnership with Airtel, the Lifelong Learning for Farmers (L3F) project organised by the Seychelles Agriculture Agency (SAA) uses mobile technology to share agricultural technologies and information to all agricultural producers in Seychelles.

- Area (km²): **455**
- Population (2014): **91,650**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes)**: 99.7% (1998); 94.6% (2002); 94.3% (2007); 93.9% (2011)**

ICT and Infrastructure

- Internet users (2014): **46,192**
- Internet penetration (2014): **50.4%**
- Facebook users (2013): **27,600**
- Broadband subscriptions (2013): **12.94%**
- Mobile subscriptions (2013): **147.3%**
- Television companies: **1 government-run; cable and satellite**
- Radio stations: **2 government-run**

Education

- Student mobility: **Outgoing: 448**
- Language(s) of instruction: **Creole in primary, English, French at all levels**
- Pupil/ teacher ratio, primary: **13 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 8.7% (2011)**
- Electricity in primary schools: **100% (2012)**
- Literacy rate (2015 UIS estimate): **Male 91.41%, (2012), Female 92.26% (2012)**
- Unemployment (% of total labor force, 2013): **4.7%**
- Education spending (% of GDP): **3.6% (2011)**

Society and Politics

- Date of independence: **29 June 1976 (from Britain)**
- Style of government: **Republic**
- Leader(s): **President James Alix Michel (since 2004)**
- Population growth rate (2014 est.): **0.87%**
- Birth rate 2014 est. (births/1,000 population): **14.54**
- Infant mortality (deaths/1,000 live births) 2014 est.: **10.77**
- Life expectancy at birth (2014 est.): **74.25**
- GDP (PPP) (2013 est.): **$2.404 billion; per capita $25,900**
- Growth rate (2013 est.): **3.3%**
- GDP by sector (2013 est.): **agriculture: 3%, industry: 23%, services: 74%**
- Budget (2013 est.): **Revenues: $516.7 million, Expenditures: $491.7 million**
- Languages: **Seychellois Creole (official) 89.1%, English (official), French (official), other**
- Religions: **Christian 89.2%, Hindu 2.4%, Muslim 1.6%,**
- Monetary unit: **Seychellois Rupee**

Sierra Leone

As in neighbouring Liberia, the 2014 Ebola outbreak in Sierra Leone struck a country still finding its feet following years of strife. Peace, achieved in 2002 after a destructive 11-year civil war which killed an estimated 50,000 people, has brought stability if not full prosperity to the former British colony. In the years following 2002 the country experienced extremely high levels of growth, whilst retaining the scars of war, and was making progress. The Ebola outbreak is now almost a year old and, as the eLearning Africa Report went to press in May 2015, was considered in decline. The epidemic will have immense costs to the country. However, in April, Premier Ernest Bai Koroma vowed to use this as an opportunity to rebuild the country's health infrastructure.

Sierra Leone's civil war destroyed much of its telecoms infrastructure. Since the establishment of peace, however, its mobile market has grown rapidly, aided by strong competition from 5 GSM networks. Fixed line connections remain rare, and a fibre optic cable came late to the coastal country, with ACE arriving in 2013. This is expected to reduce the prices of previously prohibitively expensive broadband.

Schools were a major victim of Sierra Leone's war, with 1,270 destroyed. The Ebola outbreak has hampered education in a country that has sought to rebuild its school system, with schools closed for eight whole months. During that time ICTs came into their own as a means of continuing education. The 'school in a radio' programme targeted over 1.7 million school children from pre-primary, primary, junior and senior secondary levels in every district across the country, offering lessons in all subjects. Developed by professional teachers and delivered to the pupils in their homes through a network of 41 radio stations across the country, the project allowed learning to continue in spite of the epidemic.

More broadly, ICTs have been at the forefront of fighting Ebola. A UK-based NGO, Radar, used SMS to train citizen journalists in the country, helping Sierra Leoneans from even the remotest regions share news and influence policy. Whilst curfews and restrictions on movement stopped many mainstream reporters from accessing these regions, local journalists were able to provide insights into the reality on the ground.

- Area (km²): **71,740**
- Population (2014): **5,743,725**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **no data**

ICT and Infrastructure

- Internet users (2014): **97,643**
- Internet penetration (2014): **1.7%**
- Facebook users (2013): **76,880**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **44.1%**
- Television companies: **1 government-owned, 1 private; pay-TV**
- Radio stations: **1 government-owned national station, c.24 private in cities**

Education

- Students in higher education: **9,041 (2002)**
- Student mobility: **Incoming: 810 (2012)**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **35 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 6.8% (2012)**
- Electricity in primary schools: **3.4% (2012)**
- Literacy rate (2015 UIS estimate): **Male 58.74%, Female 37.65%**
- Unemployment (% of total labor force, 2013): **3.2%**
- Children in employment (Age 7-14): **39.9% (2009)**
- Education spending (% of GDP): **2.9% (2009)**

Society and Politics

- Date of independence: **27 April 1961 (from Britain)**
- Style of government: **Constitutional Democracy**
- Leader(s): **President Ernest Bai Koroma (since 2007)**
- Population growth rate (2014 est.): **2.33%**
- Birth rate 2014 est. (births/1,000 population): **37.4**
- Infant mortality (deaths/1,000 live births) 2014 est.: **73.29**
- Life expectancy at birth (2014 est.): **57.39**
- GDP (PPP) (2013 est.): **$9.156 billion; per capita $1,400**
- Growth rate (2013 est.): **13.3%**
- GDP by sector (2013 est.): **agriculture: 47.9%, industry: 18.6%, services: 33.5%**
- Budget (2013 est.): **Revenues: $614.8 million Expenditures: $754.4 million**
- Percentage below poverty line: **52.9% (2011)**
- Languages: **English (official), Mende (southern vernacular), Temnse (northern vernacular), Krio (lingua franca)**
- Religions: **Muslim 60%, Christian 10%, indigenous beliefs 30%**
- Monetary unit: **Leone**

Somalia

Hopes that 24 years of civil war are coming to end were raised in 2015, as Somalia's campaign against Al-Shabaab, the latest incarnation of a variety of insurgent forces who have contested the country for the last two decades, showed signs of success, thanks partially to African Union involvement. An element of calm has been restored to the capital Mogadishu, once known as the 'white pearl of the Indian Ocean' and later embroiled in years of internecine conflict, allowing for efforts to increase school attendance. A new technocratic cabinet, established in February 2015, must contend with a defiant, if weakened, Al-Shabaab and separatist movements in the northern regions of Somaliland and Puntland.

Fears surrounding a US ban on banks handling wire transfers from Somali Americans to their families at home in February 2015 highlighted the insecurity Somalis are still subject to, with remittances making up an incredible 50% of gross national income. ICT and education infrastructure remains poor after years of effective anarchy. In 2014, however, contrasting with the reported ban of 3G internet in Al-Shabaab controlled areas, fibre optic connections were rolled out in February to wide acclaim. Internet had previously been restricted to dial-up or satellite links. This will help with distance learning, which remains an important medium for Somali students due to lack of physical educational infrastructure.

Many efforts are focused simply upon getting children to school. UNICEF in partnership with Educate A Child (EAC) is working to identify out of school, marginalised children and providing them with access to quality primary education, and aims to enrol 64,000 children in the next three years. Additionally, the Go2School Programme saw 40,000 new pupils enrol in 2014. The numbers of children out of school remains high, however, and there is a long way to go as Somalia continues on the path to stability.

- Area (km²): **637,657**
- Population (2014): **10,428,043**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **no data**

ICT and Infrastructure

- Internet users (2014): **156,420**
- Internet penetration (2014): **1.5%**
- Facebook users (2013): **123,480**
- Broadband subscriptions (2013): **0.57%**
- Mobile subscriptions (2013): **49.4%**
- Television companies: **2 international private broadcasts (Al-Jazeera & CNN), 1 government-operated and 1 regional private**
- Radio stations:**Government-owned Radio Mogadishu, regional governmental & private stations**

Education

- Student mobility: **Incoming: 3,315 (2012)**
- Language(s) of instruction: **Somali**
- Pupil/ teacher ratio, primary: **36 (2007)**
- Unemployment (% of total labor force, 2013): **6.9%**
- Children in employment (Age 7-14): **43.5% (2006)**

Society and Politics

- Date of independence: **1 July 1960 (from Britain & Italian UN trusteeship)**
- Style of government: **Federal Parliamentary republic**
- Leader(s): **President Hassan Sheikh Mahamud (since 2012)**
- Population growth rate (2014 est.): **1.75%**
- Birth rate 2014 est. (births/1,000 population): **40.87**
- Infant mortality (deaths/1,000 live births) 2014 est.: **100.14**
- Life expectancy at birth (2014 est.): **51.58**
- GDP (PPP) (2013 est.): **$5.896 billion; per capita $600**
- Growth rate (2013 est.): **2.6%**
- GDP by sector (2013 est.): **agriculture: 59.3%, industry: 7.2%, services: 33.5%**
- Languages: **Somali (official), Arabic (official), Italian, English**
- Religions: **Sunni Muslim (official)**
- Monetary unit: **Somali Shilling**

South Africa

Despite being surpassed by Nigeria as Africa's biggest economy in 2014, South Africa remains one of the most globally significant and regionally powerful states on the continent. The rapid growth that had led to the country's inclusion into the BRICS group of emerging economies has slowed recently due to the effects of a global recession and conflictual labour relations, but growth was returning in early 2015 following fears of recession raised the previous year.

South Africa is a leader in numerous aspects of ICT: the country's telecoms infrastructure remains the most advanced on the continent, and it is a regional leader in the areas of online retail, electronic banking, mobile banking, social media and cloud computing. Ambitious projects such as Project Isizwe in the city of Tashwane, which provides free WiFi for the city and has seen huge uptake in 2014, particularly around educational centres, are common. Textbooks are being digitised, with publisher Via Afrika reporting 64,000 sales of e-books by July 2014, compared with just 1,000 the previous year. Cape Town based NGO Breadline Africa have been converting old shipping containers into 'digital centres' with tablets carrying the latest Via Afrika eLearning material.

An impressive eLearning programme supported by national policy is currently being implemented. However the effectiveness of this programme is being limited by challenges such as inadequate teacher training - a report in July 2014 commissioned by Via Afrika found that whilst more than 80% of schools have the required infrastructure for eLearning, most teachers are not trained with the necessary skills to implement it. Electricity supply is also a challenge, with more than 20% of schools lacking any power whatsoever.

The South African context provides an example for multi-stakeholder cooperation in the introduction of ICTs in schools. Government, private sector and civil society are working together and towards ensuring successful integration of ICTs in schools. The ongoing multi-stakeholder initiatives range from teacher training, connectivity, digital content development and delivery as well as research in improving ICT integration in schools.

Successful TV White Space trials have been carried out in recent years, and may provide the answer to the country's ICT gap, providing broadband in rural and other overlooked areas.

- Area (km²): **1,219,090**
- Population (2014): **48,375,645**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**96.5% (1999); 95.3% (2003); 96.8% (2007); 90.5% (2012)**

ICT and Infrastructure

- Internet users (2014): **23,655,690**
- Internet penetration (2014): **48.9%**
- Facebook users (2013): **6,269,600**
- Broadband subscriptions (2013): **3.06%**
- Mobile subscriptions (2013): **147.5%**
- Television companies: **SABC, 4 stations; private e.tv, national and local channels**
- Radio stations: **SABC, 18 stations in all official languages, →100 community stations**

Education

- Students in higher education: **1,005,721 (2012)**
- Student mobility: **Outgoing: 6,378, Incoming: 70,428 (2011)**
- Language(s) of instruction: **11 national languages; English main language of instruction**
- Pupil/ teacher ratio, primary: **29 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 19.4% (2012)**
- Electricity in primary schools: **94.5% (2013)**
- Literacy rate (2015 UIS estimate): **Male 95.51%, Female 93.13%**
- Unemployment (% of total labor force, 2013): **24.9%**
- Education spending (% of GDP): **6.6% (2012)**

Society and Politics

- Date of independence: **31 May 1910 (from Britain); 31 May 1961 (republic); 27 April 1994 (majority rule)**
- Style of government: **Republic**
- Leader(s): **President Jacob Zuma (since 2009)**
- Population growth rate (2014 est.): **-0.48%**
- Birth rate 2014 est. (births/1,000 population): **18.94**
- Infant mortality (deaths/1,000 live births) 2014 est.: **41.61**
- Life expectancy at birth (2014 est.): **49.56**
- GDP (PPP) (2013 est.): **$353.9 billion; per capita $11,500**
- Growth rate (2013 est.): **2%**
- GDP by sector (2013 est.): **agriculture: 2.6%, industry: 29%, services: 68.4%**
- Budget (2013 est.): **Revenues: $88.53 billion, Expenditures: $105.5 billion**
- Percentage below poverty line: **31.3% (2009)**
- Languages: **IsiZulu, IsiXhosa, Afrikaans, English, Sepedi, Setswana, Sesotho, Xitsonga, siSwati, Tshivenda, isiNdebele, other**
- Religions: **Christian 79.7%, Muslim 1.5%, none 15.1%**
- Monetary unit: **Rand**

South Sudan

Africa's youngest country continues to be enveloped in a civil war which began in 2013 and has claimed tens of thousands of lives. The conflict between President Salva Kir and former Vice President Riek Machar has continued into 2015 and attempts by the Intergovernmental Authority on Development (IGAD) to establish a ceasefire have been faltering. Sanctions have been put in place hoping to speed up the process. More talks were planned when we went to press. The war is damaging already scarce infrastructure and preventing the state from benefitting fully from its oil reserves in the Upper Nile region. Accusations of foreign involvement by Sudan and conflicts with Sudan over the usage of oil pipelines continue to create instability.

Rebecca Joshua, Minister of Telecommunications and Postal Services, noted in June 2014 that Sudan is one of only two African countries still without a sub-marine cable connection. As the country is landlocked, any connection must connect to the coast through Eritrea, Ethiopia or Kenya. Such a connection is due to be established during 2015. The government of South Sudan has sought to encourage international investment in the country's ICT sector, and a National Telecommunication Corporation regulatory body. Progress remains hampered by the conflict, however, and South Sudan's mobile market penetration is also low by regional standards, at 20%.

- Area (km²): **644,329**
- Population (2014): **11,562,695**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **41.4% (2011)**

Against this backdrop of infrastructural problems and conflict, eLearning is increasingly important for South Sudanese. A number of charities such as Become and War Child have set up eLearning solutions for children without access to education. UNESCO has teamed up with telecommunications operator ZAIN in order to train and empower South Sudanese youth in mobile technologies, hoping to kick-start local app and mobile technology development.

ICT and Infrastructure

- Internet users (2014): **100**
- Internet penetration (2014): **0.001%**
- Broadband subscriptions (2013): **0.00%**
- Mobile subscriptions (2013): **25.3%**
- Television companies: **Government-controlled**
- Radio stations: **Several private**

Education

- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **50 (2011)**
- Expenditure per student (% of GDP per capita): **Primary 3.3% (2011)**
- Literacy rate (2015 UIS estimate): **Male 40.00%, Female 16.00%**

Society and Politics

- Date of independence: **9 July 2011 (from Sudan)**
- Style of government: **Republic**
- Leader(s): **President Salva Kiir Mayardit (since 2011)**
- Population growth rate (2014 est.): **4.12%**
- Birth rate 2014 est. (births/1,000 population): **37.68**
- Infant mortality (deaths/1,000 live births) 2014 est.: **68.16**
- Life expectancy at birth (2014 est.): **54,64**
- GDP (PPP) (2013 est.): **$14.71 billion; per capita $1,400**
- Growth rate (2013 est.): **24.7%**
- Budget (2013 est.): **Revenues: $437 million, Expenditures: $2.259 billion**
- Percentage below poverty line: **50.6% (2009)**
- Languages:**English (official), Arabic (includes Juba and Sudanese variants), regional languages include Dinka, Nuer, Bari, Zande, Shilluk**
- Religions: **Indigenous beliefs, Christian**
- Monetary unit: **South Sudanese Pound**

Sudan

President Omar al-Bashir remains head of state in Sudan and has announced he will run in elections due to be held in April 2015. Sudan remains troubled by conflict, a lack of infrastructure and international isolation. Bashir has International Criminal Charges hanging over him, and US Sanctions continue to contribute to a lack of investment in the country. The source of this isolation, the war in Darfur, continues to be defined by occasional flare-ups. Relations between Sudan and recently independent South Sudan continue to be strained. Despite the fact that Bashir publically supported his South Sudanese counterpart Salva Kir during fighting there in early 2014, disputes remain between the two states over oil pipelines and allegations of rebel support by both countries.

Despite poor economic performance, Sudan's telecommunications infrastructure is reasonably strong when compared with other countries in the region. A national fibre optic backbone exists, as well as an international fibre connection, although concerns continue to be raised regarding internet freedom. In August, telecoms company Zain launched 'Hassa', Sudan's first mobile money service, and is hoping to launch 4G LTE services soon.

Displacement due to war means that the basic education system in Sudan fails to provide up to 1.8 million children with access to primary education. eLearning offers a potential response to this – in August 2014, UNICEF launched the eLearning Sudan programme, which aims to use ICTs to provide out-of-school children with a basic education. An Accelerated Learning Program (ALP) has been developed, and digitised content has been produced using open source principles, allowing tablets to be used for teaching.

News in February 2015 that the US will lift sanctions on technology exports will be a relief to those engaged in Sudan's budding tech scene; while interest has been boosted by a popular TV show Mashrouy, a competition for young entrepreneurs.

- Area (km²): **1,861,484**
- Population (2014): **35,482,233**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **51.5% (2011)**

ICT and Infrastructure

- Internet users (2014): **8,054,467**
- Internet penetration (2014): **22.7%**
- Broadband subscriptions (2013): **0.12%**
- Mobile subscriptions (2013): **72.9%**
- Television companies: **Government-controlled with military censor**
- Radio stations: **Government-controlled, 1 private station**

Education

- Students in higher education: **640,224 (2013)**
- Language(s) of instruction: **Arabic**
- Pupil/ teacher ratio, primary: **46 (2012)**
- Literacy rate (2015 UIS estimate): **Male 83.26%, Female 68.61%**
- Unemployment (% of total labor force, 2013): **15.2%**
- Children in employment (Age 7-14): **12.5% (2008)**

Society and Politics

- Date of independence: **1 January 1956 (from Egypt and Britain)**
- Style of government: **Federal Republic**
- Leader(s): **President Omar al-Bashir (since 1993)**
- Population growth rate (2014 est.): **1.78%**
- Birth rate 2014 est. (births/1,000 population): **30.01**
- Infant mortality (deaths/1,000 live births) 2014 est.: **52.86**
- Life expectancy at birth (2014 est.): **63.32**
- GDP (PPP) (2013 est.): **$89.97 billion; per capita $2,600**
- Growth rate (2013 est.): **3.9%**
- GDP by sector (2013 est.): **agriculture: 27.4%, industry: 33.6%, services: 39%**
- Budget (2013 est.): **Revenues: $4.513 billion, Expenditures: $6.842 billion**
- Percentage below poverty line: **46.5% (2009)**
- Languages: **Arabic (official), English (official), Nubian, Ta Bedawie, Fur**
- Religions: **Sunni Muslim, small Christian minority**
- Monetary unit: **Sudanese Pound**

Swaziland

Thanks to strong government funding in education, latest indicators suggest that Swaziland is on course to reach its Millennium Development Goal of universal primary education. With the IMF reporting that the education sector will receive the highest allocation (17%) of the total government budget for 2014/2015, optimism regarding education remains high in the landlocked kingdom.

Concerns remain, however, for the Africa's last remaining absolute monarchy. Criticism regarding press freedom, the right to protest, and the lack of legal recognition for labour and employer federations led to Swaziland being removed from the US African Growth and Opportunity Act (AGOA), damaging exports and further boosting already high unemployment rates. Fears surround Swaziland's dependency on highly volatile Southern Africa Customs Union (SACU) revenue. An IMF report in June claimed that whilst the country is recovering from the fiscal shocks of 2010-2011, growth remains 'sluggish', threatening attempts to combat the country's fight against HIV rates, which remain the highest in the world at 26.5%.

Usage of social media, particularly among the youth, continues to grow and provide an alternative media source to government outlets. A Media Institute of Southern Africa (MISA) report, produced in conjunction with UNESCO in March 2014, showed that 69% of young people prefer social media to mainstream media, and Facebook is increasingly perceived as a reliable alternative news source. Swazis are increasingly turning to the internet for empowerment and information dissemination, as the popularity of the Wikileaks-inspired 'Swazileaks' campaign has shown.

ICT infrastructure has been helped by the launch of the Mbabane internet Exchange Point (MB-IX) in April as part of a drive to route 80% of local traffic through local IXPs, but a long running conflict between MTN and SPTC has caused unease for investors in the telecoms space and stunted competition. Despite this, mobile market penetration in Swaziland remains well above the African average.

- Area (km²): **17,364**
- Population (2014): **1,419,623**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **70.9% (1999); 72.9% (2003); 84.9% (2007)**

ICT and Infrastructure

- Internet users (2014): **350,647**
- Internet penetration (2014): **24.7%**
- Facebook users (2013): **89,500**
- Broadband subscriptions (2013): **0.34%**
- Mobile subscriptions (2013): **71.5%**
- Television companies: **state-owned; SA satellite services**
- Radio stations: **state-owned with 3 channels; 1 private**

Education

- Students in higher education: **5,692 (2006)**
- Student mobility: **Outgoing: 4296, Incoming: 79 (2011)**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **29 (2012)**
- Expenditure per student (% of GDP per capita): **Primary 18.8% (2011)**
- Electricity in primary schools: **94.3% (2012)**
- Literacy rate (2015 UIS estimate): **Male 87.44%, Female 87.50%**
- Unemployment (% of total labor force, 2013): **22.5%**
- Children in employment (Age 7-14): **13.3% (2010)**
- Education spending (% of GDP): **8.3% (2011)**

Society and Politics

- Date of independence: **6 September 1968 (from Britain)**
- Style of government: **Monarchy**
- Leader(s): **King Mswati III. (since 1986)**
- Population growth rate (2014 est.): **1.14%**
- Birth rate 2014 est. (births/1,000 population): **25.18**
- Infant mortality (deaths/1,000 live births) 2014 est.: **54.82**
- Life expectancy at birth (2014 est.): **50.54**
- GDP (PPP) (2013 est.): **$6.259 billion; per capita $5,700**
- Growth rate (2013 est.): **0%**
- GDP by sector (2013 est.): **agriculture: 7.6%, industry: 47.8%, services: 44.6%**
- Budget (2013 est.): **Revenues: $1.274 billion, Expenditures: $1.316 billion**
- Percentage below poverty line: **63.0% (2009)**
- Languages: **English (official, used for government business), siSwati (official)**
- Religions: **Zionist 40% (a blend of Christianity and indigenous ancestral worship), Roman Catholic 20%, Muslim 10%, other (includes Anglican, Baha'i, Methodist, Mormon, Jewish) 30%**
- Monetary unit: **Lilangeni**

Tanzania

One of Africa's most stable countries, Tanzania will hold elections in October 2015. The Chama Cha Mapinduzi (CCM), formerly the only party in Tanzania, is expected to continue its hold on power. Recently discovered offshore gas reserves are beginning to be extracted, and predicted to provide huge amounts of revenue in the coming years. Growth is steady, and expectations are that upcoming elections will centre around who can claim most convincingly to turn new found gas wealth into development. Despite the peace which has characterised Tanzania since independence, it remains at 152 out of 182 countries on the Human Development Indicator index.

Mobile penetration is high at almost 80%, and Bharti Airtel have estimated that in Tanzania over 10% of GDP is transacted through mobile commerce, which is now used by a majority of Tanzanians. Some predict that Tanzania will soon become the world's biggest mobile money market. Mobile competition is set to improve with the granting of a 3G license to Vietnamese company Viettel.

The Tanzanian government has shown a strong commitment to ICT, with an established ICT policy which calls for the teaching of ICT at all levels of education and training, the development of a nationwide e-education system, and the use of ICT to improve the quality of delivery of education. Along with the presence of the One Laptop Per Child programme in Tanzania, the Regional and District Education Officers Association (REDEOA) have teamed up with Global Education Link (GEL) to distribute computer tablets fitted with learning materials for secondary schools.

Tanzanians are increasingly turning to ICT solutions, too. Ubongo, a Tanzania-based social enterprise, has received plaudits for producing educational entertainment content for small children on a number of platforms. Especially popular is Bunga Bongo, an educational cartoon show on TV. Bunga Bongo has been praised for providing an alternative to MOOCs and online learning, which often requires bandwidths not commonly seen in Tanzania, and is in English. By producing ICT content in Swahili, Ubongo allows younger children – Tanzanians learn Swahili in school until they are 13 – to take part in ICT driven education.

- Area (km²): **947,300**
- Population (2014): **49,639,138**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **49.3% (1999); 81.5% (2003); 97.8% (2008)**

ICT and Infrastructure

- Internet users (2014): **6,949,479**
- Internet penetration (2014): **14.0%**
- Facebook users (2013): **705,460**
- Broadband subscriptions (2013): **0.11%**
- Mobile subscriptions (2013): **55.7%**
- Television companies: **1 state-owned; multiple private**
- Radio stations: **1 state-owned; ←40 private**

Education

- Students in higher education: **166,014 (2012)**
- Student mobility: **Outgoing: 5,741 (2012)**
- Language(s) of instruction: **Kiunguja in primary (Zanzibar Swahili dialect); English at all levels**
- Pupil/ teacher ratio, primary: **43 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 10.9% (2009)**
- Electricity in primary schools: **14.1% (2012)**
- Literacy rate (2015 UIS estimate): **Male 75.91%, Female 65.36%**
- Unemployment (% of total labor force, 2013): **3.5%**
- Children in employment (Age 7-14): **29.4% (2011)**
- Education spending (% of GDP): **6.2% (2010)**

Society and Politics

- Date of independence: **9 December 1961 (Tanganyika, from Britain) 10 December 1963 (Zanzibar, from Britain) 26 April 1964 (Union)**
- Style of government: **Republic**
- Leader(s): **President Jakaya Kikwete (since 2005)**
- Population growth rate (2014 est.): **2.8%**
- Birth rate 2014 est. (births/1,000 population): **36.82**
- Infant mortality (deaths/1,000 live births) 2014 est.: **43.74**
- Life expectancy at birth (2014 est.): **61.24**
- GDP (PPP) (2013 est.): **$79.29 billion; per capita $1,700**
- Growth rate (2013 est.): **7%**
- GDP by sector (2013 est.): **agriculture: 27.6%, industry: 25%, services: 47.4%**
- Budget (2013 est.): **Revenues: $7.117 billion, Expenditures: $8.917 billion**
- Percentage below poverty line: **28.2% (2012)**
- Languages: **Kiunguja (official), English (language of commerce, administration, and higher education), Arabic, local languages**
- Religions: **Mainland - Christian 30%, Muslim 35%, indigenous beliefs 35%; Zanzibar - more than 99% Muslim**
- Monetary unit: **Tanzanian Shilling**

Togo

After many delays, Togo went to the polls in April 2015, which resulted in President Faure Gnassingbé winning a third term with 58.77% of the vote. The victory will extend the family's rule to more than half a century - Gnassingbé took over presidency from his father in 2005, after a 38-year reign.

The death of the elder Gnassingbé plunged the country into violence in 2005 and the political scars remain, with reconciliation still elusive. Togo has experienced rapid growth since then, however, and numerous large infrastructure projects have been carried out. However, critics have pointed out that growth rates haven't been matched by decreases in poverty or inequality.

Togo has been a latecomer to ICT infrastructure and remains without an ICT policy, although the education policy of 2003 does make reference to the need to provide ICT orientation and training for students. Internet users made up just 4.8% of the population at the beginning of 2014. In the absence of governmental action, Togolese are taking matters into their own hands, and a vibrant tech scene is increasingly evident in the country. In November 2014, the Togolese business community organised a technology forum aimed at pressuring the government to adopt eCommerce polcies and spearhead a shift toward cashless payments. Tech hubs are sprouting up – including Woelabs, a Lomé-based hub which gained worldwide acclaim when one of its members, Afate Gnikou, built a functioning 3D printer out of e-Waste.

In the field of education, too, Togolese are stepping in to act where the government is not. Makeshift ICT training centres have sprung up around Lomé, offering affordable ICT training, thanks to huge demand. Infrastructure and hardware are needed to capitalise on this insatiable desire for ICTs in Togo– an ambitious 'one student, one laptop' campaign was launched in 2015, and the first batch of computers were delivered in February.

- Area (km²): **56,785**
- Population (2014): **7,351,374**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **88.5% (1999); 88.9% (2003); 92.8% (2008)**

ICT and Infrastructure

- Internet users (2014): **356,300**
- Internet penetration (2014): **4.8%**
- Facebook users (2013): **117,420**
- Broadband subscriptions (2013): **0.10%**
- Mobile subscriptions (2013): **62.5%**
- Television companies: **2 state-owned; 5 private, local**
- Radio stations: **State-owned network, many private & community stations**

Education

- Students in higher education: **64,909 (2013)**
- Student mobility: **Outgoing: 3,363 (2012)**
- Language(s) of instruction: **Ewé and Kabiyé in primary; French at all levels**
- Pupil/ teacher ratio, primary: **41 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 9.1% 2012)**
- Electricity in primary schools: **8.2% (2011)**
- Literacy rate (2015 UIS estimate): **Male 78.31%, Female 55.30%**
- Unemployment (% of total labor force, 2013): **6.9%**
- Children in employment (Age 7-14): **48.8% (2010)**
- Education spending (% of GDP): **4.5% (2011)**

Society and Politics

- Date of independence: **27 April 1960 (from France/UN)**
- Style of government: **Republic under transition**
- Leader(s): **President Faure Gnassingbé (since 2005)**

- Population growth rate (2014 est.): **2.71%**
- Birth rate 2014 est. (births/1,000 population): **34.52**
- Infant mortality (deaths/1,000 live births) 2014 est.: **46.73**
- Life expectancy at birth (2014 est.): **64.06**
- GDP (PPP) (2013 est.): **$7.348 billion; per capita $1,100**
- Growth rate (2013 est.): **5.5%**
- GDP by sector (2013 est.): **agriculture: 65%, industry: 5%, services: 30%**
- Budget (2013 est.): **Revenues: $825.8 million, Expenditures: $983 million**
- Percentage below poverty line: **58.7% (2011)**
- Languages: **French (official), Ewé and Mina (in south), Kabiyé and Dagomba (in north)**
- Religions: **Christian 29%, Muslim 20%, indigenous beliefs 51%**
- Monetary unit: **CFA Franc**

Tunisia

The birthplace of the Arab Spring has its first democratically elected President, Beji Caid Essebsi, following elections in December 2014. Essebsi was a surprising choice for many, having been a minister in the governments of both of Tunisia's postcolonial regimes. He is seen as a safe pair of hands, however, and his election has settled fears of conflict erupting between secularist supporters of Essebsi the umbrella Nidaa Tounés party and the Islamist Ennahda, which was the largest party in the post revolution Constituent Assembly. Tunisia is now seen as one of the great success stories of the Arab Spring, and optimism abounds that the establishment of a government will return the country to growth.

A relatively prosperous country among its neighbours, Tunisia was the first African country to be connected to the internet in 1991. It has some of the most advanced telecommunications infrastructure on the continent, as well as low broadband prices and high mobile penetration rates. A nationwide fibre optic backbone and submarine cables offer national internet access.

The country has a vibrant tech scene, which was illustrated by the now globally recognised import of its bloggers, who played a key role in the revolution. Blog Nawaat has won numerous awards. A nascent tech scene is blossoming in Tunis, signalled by the opening of its first 'Incubator' in Tunis in 2014, an innovation hub associated with the rapidly growing Esprit University, a private institution which now boasts 4,500 students undertaking degrees in ICT related areas. Young entrepreneurs however, are complaining that growth in the tech sector is being hampered by outdated policy – international online payments, for example, are difficult due to banking restrictions.

eLearning was high on the agenda of the previous regime's development plans, and in 2014 Tunisia played host to a number of international conferences on the topic. The Maghreb Digital eLearning and Education Innovation Conference was held in Tunis in December 2014, in association with the British Council, bringing together many regional and international figures from the eLearning world with the aim of stimulating ideas and visions for eLearning in the region.

- Area (km²): **163,610**
- Population (2014): **10,937,521**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **96.3% (1999); 98.5% (2003); 98.7% (2007); 99.9% (2012)**

ICT and Infrastructure

- Internet users (2014): **5,408,240**
- Internet penetration (2014): **49.0%**
- Facebook users (2013): **3,328,300**
- Broadband subscriptions (2013): **4.86%**
- Mobile subscriptions (2013): **115.6%**
- Television companies: **State-run ERTT with 2 TV networks, 1 private, Egyptian & Arabic satellite services**
- Radio stations: **ERTT; 3 private**

Education

- Students in higher education: **357,392 (2012)**
- Student mobility: **Outgoing: 18,911, Incoming: 1,901 (2012)**
- Language(s) of instruction: **Arabic to secondary; French at all levels**
- Pupil/ teacher ratio, primary: **17 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 17.3% (2008)**
- Literacy rate (2015 UIS estimate): **Male 89.62%, Female 74.24%**
- Unemployment (% of total labor force, 2013): **13.3%**
- Education spending (% of GDP): **6.2% (2012)**

Society and Politics

- Date of independence: **20 March 1956 (from France)**
- Style of government: **Republic**
- Leader(s): **President Beji Caid Essebsi (since 2014)**
- Population growth rate (2014 est.): **0.92%**
- Birth rate 2014 est. (births/1,000 population): **16.9**
- Infant mortality (deaths/1,000 live births) 2014 est.: **23.19**
- Life expectancy at birth (2014 est.): **75.68**
- GDP (PPP) (2013 est.): **$108.4 billion; per capita $9,900**
- Growth rate (2013 est.): **2.8%**
- GDP by sector (2013 est.): **agriculture: 8.6%, industry: 30.4%, services: 61%**
- Budget (2013 est.): **Revenues: $12.16 billion, Expenditures: $15.8 billion**
- Percentage below poverty line: **15.5% (2010)**
- Languages: **Arabic (official), French (commerce), Tamazight**
- Religions: **Sunni Muslim (official) 99%, other (includes Christian, Jewish, Shia Muslim, and Baha'i) 1%**
- Monetary unit: **Tunisian Dinar**

Uganda

The past 30 years have seen Uganda, once a victim of civil war and the infamous reign of Idi Amin, find peace, stability and prosperity. One of East Africa's regional powers, Uganda has been ruled by President Yoweri Museveni since 1986. Museveni's reforms in the 1990s and the forcing out of the Lord's Resistance Army in 2005 brought him recognition as one of Africa's most successful leaders.

Primary education in Uganda is particularly good, and the Millennium Development Goal of universal primary school enrolment is close to being achieved. The eLearning Africa conference was held in Kampala in 2014, signifying Uganda's role as a regional leader regarding ICT in education. Many success stories are emerging from the country. Gayaza High School in Kampala is one of them. In March 2014, it was one of three schools globally to win a $15,000 award from the Microsoft Innovative Schools Pitch Competition, which provides funds for transformative ideas in education. The award-winning proposal would create an online library with links to videos showing how small-scale local enterprises in Uganda arrange production processes, supporting local entrepreneurs and students in the process.

Ugandans are continuing to develop ICT solutions in fields beyond education too. A young team of Ugandan innovators have developed a smartphone app named Matibabu which is capable of detecting Malaria – a problem in Uganda with most deaths caused by wrong medication and a lack of proper diagnoses. Matitbabu uses light sensors to detect the disease, removing the need to take blood, providing less margin for error and allowing diagnoses in the most remote of areas.

The telecoms market in Uganda is thriving, although there are problems with quality. All major providers were warned about low levels of network quality by the telecoms regulator in January 2014. Mobile internet services are booming, but fixed internet connections are rare. The government aims to reduce wholesale internet prices by as much as 80% by 2020.

- Area (km²): **241,038**
- Population (2014): **35,918,915**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **91.4% (2009); 88.2% (2010); 91.0% (2011)**

ICT and Infrastructure

- Internet users (2014): **8,531,081**
- Internet penetration (2014): **23.0%**
- Facebook users (2013): **562,240**
- Broadband subscriptions (2013): **0.11%**
- Mobile subscriptions (2013): **44.1%**
- Television companies: **Public UBC; over 35 private**
- Radio stations: **UBC; →150 private**

Education

- Students in higher education: **140,087 (2011)**
- Student mobility: **Outgoing: 4,853, Incoming: 15,035 (2012)**
- Language(s) of instruction: **Mother tongue in primary; English at all levels**
- Pupil/ teacher ratio, primary: **46 (2013)**
- Expenditure per student (% of GDP per capita): **7.6% (2012)**
- Electricity in primary schools: **1.5% (2011)**
- Literacy rate (2015 UIS estimate): **Male 85.31%, Female 71.47%**
- Unemployment (% of total labor force, 2013): **3.8%**
- Children in employment (Age 7-14): **36.7% (2012)**
- Education spending (% of GDP): **3.3% (2012)**

Society and Politics

- Date of independence: **9 October 1962 (from Britain)**
- Style of government: **Republic**
- Leader(s): **President Yoweri Museveni (since 1986)**
- Population growth rate (2014 est.): **3.24%**
- Birth rate 2014 est. (births/1,000 population): **44.17**
- Infant mortality (deaths/1,000 live births) 2014 est.: **60.82**
- Life expectancy at birth (2014 est.): **54.46**
- GDP (PPP) (2013 est.): **$54.37 billion; per capita $1,500**
- Growth rate (2013 est.): **5.6%**
- GDP by sector (2013 est.): **agriculture: 23.1%, industry: 26.9%, services: 50%**
- Budget (2013 est.): **Revenues: $3.2 billion, Expenditures: $3.803 billion**
- Percentage below poverty line: **24.5% (2009)**
- Languages: **English (official), Ganda or Luganda (in school), other Niger_Congo languages, Nilo-Saharan languages, Swahili, Arabic**
- Religions: **Christian 83.9%, Muslim 12.1%, other 3.1%, none 0.9%**
- Monetary unit: **Ugandan Shilling**

Western Sahara

Photo: European Commission DG ECHO

Western Sahara is a disputed state, partially controlled by Morocco – it refers to its territory as the Southern Provinces – and the Algerian-backed Polisario Front, which controls roughly 20% of the land it calls the Sahrawi Arab Democratic Republic.

Referred to as 'Africa's last colony', Western Sahara is divided by a 2,700 km long sand berm built by the Moroccan Government, which is located between the west of the desert and the Atlantic. It's the world's second-longest wall after the Wall of China, and has been dubbed the "wall of shame" by Sahrawi independence activists.

The Polisario Front remain, in effect, a government in exile with large amounts of Sahrawi refugees in the Tindouf region of Tunisia. Despite the African Union, European Union and United Nations' support for self-determination (if not the Polisario Front), Morocco remains entrenched in its occupation of the area and the chances of independence seem slim. A ceasefire has been in place since 1991, but various geopolitical interests keeps the four decades-long conflict in a permanent state of limbo.

Education is hugely important for Sahrawis, and thus concerted efforts have been made to develop an education system in refugee regions which has resulted literacy rates. Camps have primary and secondary schools, and higher education was previously possible by traveling abroad. In 2013, the first Sahrawi university was set up with the cooperation of the universities of Berkeley, Managua, Leeds and Pretoria, as well as more than a dozen others in Algeria, Cuba and Spain. The University's location in Tifariti, in non-occupied territory, will help Sahrawis who otherwise would have struggled to obtain higher education.

The internet has become a powerful tool for the Sahrawi refugee community, opening doors to facts and opinions about the state of the region. However, those left in Western Sahara continue to be reliant upon Moroccan connections and censorship is a problem. Freedom House has, nevertheless, stated that the blocking of sites related to Western Sahara on Moroccan internet links have ended following government liberalisations which sought to curb the influence of the Arab Spring on the Moroccan population. Statistics are hard to come by regarding connections, but it is clear that the region has no fibre connection, no top-level domain, no internet service providers and no internet hosts. Most internet connections are through satellites.

Zambia

The death of former President Michael Chilufya Sata in October 2014 caused a temporary lapse in Zambia's otherwise impressive growth rates. Political wrangling surrounded elections in January 2015, with Edgar Lungu, Sata's chosen successor as leader of the Patriotic Front (PF), winning by the narrow margin of 1.66%. President Lungu's election is the latest in a long list of peaceful, transparent ballots in the country, which have led to consistent growth of around 8% per annum in recent years. This growth is driven in no small part by strong infrastructure spending – Zambia has received $5.2 billion in foreign direct investment (FDI) in the past three years, making it one of Africa's top recipients.

Zambia has already achieved the Millennium Development Goal of universal primary education, although challenges remain regarding secondary school completion rates. A national ICT policy was launched in 2007 and is committed to innovative and productive lifelong education and training that is accessible to all as a precursor to knowledge-based development. Progress on this front remains somewhat lacking considering Zambia's relative success in other fields – a report in 2012 by the Consultancy Africa Intelligence (CAI) found that the country did not have sufficient financial resources and bandwidth needed for successful eLearning.

- Area (km²): **752,618**
- Population (2014): **14,638,505**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes):**71.5% (1999); 87.0% (2004); 97.0% (2008); 97.9% (2012)**

Internet access may be improved by the launching of commercial 4G services by MTN and Zamtel in 2014. Facebook's internet.org initiative, which aims to connect areas without the internet by providing a free app which provides a set of health, employment and local information services without data charges, was launched in November via Airtel. The growth of the importance of the internet to Zambian society was highlighted by the outcry caused by President Sata's rejection of a draft constitution which guaranteed online press freedoms in April 2014.

ICT and Infrastructure

- Internet users (2014): **2,711,928**
- Internet penetration (2014): **18.0%**
- Facebook users (2013): **327,600**
- Broadband subscriptions (2013): **0.09%**
- Mobile subscriptions (2013): **71.5%**
- Television companies: **State-owned ZNBC with 1 station; several private**
- Radio stations: **ZNBC, 3 networks; c.24 private**

Education

- Students in higher education: **94,115 (2013)**
- Student mobility: **Outgoing: 5,011 (2012)**
- Language(s) of instruction: **English**
- Pupil/ teacher ratio, primary: **48 (2013)**
- Expenditure per student (% of GDP per capita): **Primary 5.4% (2005)**
- Electricity in primary schools: **26.3% (2012)**
- Literacy rate (2015 UIS estimate): **Male 70.89%, Female 55.96%**
- Unemployment (% of total labor force, 2013): **13.3%**
- Children in employment (Age 7-14): **34.4% (2008)**
- Education spending (% of GDP): **1.3% (2008)**

Society and Politics

- Date of independence: **24 October 1964 (from Britain)**
- Style of government: **Republic**
- Leader(s): **President Edgar Lungu (since January 2015)**
- Population growth rate (2014 est.): **2.88%**
- Birth rate 2014 est. (births/1,000 population): **42.46**
- Infant mortality (deaths/1,000 live births) 2014 est.: **66.62**
- Life expectancy at birth (2014 est.): **51.83**
- GDP (PPP) (2013 est.): **$25.47 billion; per capita $1,800**
- Growth rate (2013 est.): **6%**
- GDP by sector (2013 est.): **agriculture: 19.8%, industry: 33.8%, services: 46.5%**
- Budget (2013 est.): **Revenues: $4.814 billion, Expenditures: $6.687 billion**
- Percentage below poverty line: **59.3% (2006)**
- Languages: **English (official) 1.7%, Bembe, Nyanja, Tonga, Chewa, Lozi, Nsenga, Tumbuka, Lunda, Kaonde, Lala, Lamba, Mambwe, Namwanga, Lenje, Bisa, other**
- Religions: **Christian 95.5%, other 2.7% (includes Muslim Buddhist, Hindu, and Baha'i), none 1.8%**
- Monetary unit: **Zambian Kwacha**

Zimbabwe

Skyrocketing tobacco production has been a bright spot for a country increasingly looking east for support as Western nations continue to shun nonagenarian Robert Mugabe's rule, which continues into its 35th year in 2015. Now 91, thoughts are turning to the post Mugabe era. Speculation abounded in late 2014 that Mugabe's wife, Grace, will seek to continue her husband's legacy after she was endorsed as the leader of the ZANU-PF women's league, although these rumours were dampened with reports of her ill health.

Zimbabwe's education system was once regarded as one of the finest on the continent, but the chaos brought about by Mugabe's regime, subsequent sanctions and foreign refusal to deal with Zimbabwe brought the system to its knees. Hyperinflation made teachers' salaries worthless and funding for school materials and maintenance impossible. An estimated 20,000 teachers left the country between 2007 and 2009. Since then, a government amnesty for fleeing teachers and the abandoning of the Zimbabwean dollar has led to greater stability; however, problems remain, particularly regarding infrastructure funding.

Internet connectivity is on the rise and fibre rollout has enabled better connections. A budding startup culture is evident. In September 2014, Saisai Wireless, which implements wireless mesh networks of free Wi-Fi in public areas and on public transportation, won the SWELL Innovation Award at the DEMO Africa startup showcase awards. The transition toward eLearning in schools however continues to be hindered by infrastructural issues. Zimbabwe continues to lack a dedicated National Policy on ICT in Education. Mobile learning is a potential solution to the infrastructural problem – Zimbabwe's Minister of Education, Dr Lazarus Dokora, called for the usage of mobile tech in schools in Febuaray 2015, and a number of Zimbabwean companies such as Econet are developing mobile learning solutions.

- Area (km²): **390,757**
- Population (2014): **13,771,721**
- Millennium Development Goal 2 - universal primary education (total net enrolment ratio in primary education, both sexes): **84.4% (1999); 87 6% (2001); 83 5% (2003)**

Sources:

BBC, The World Bank, UNESCO, CIA World Factbook, oAfrica, Internet World Stats, International Telecommunication Union, Global Resource and Information Directory, IST-Africa, Budde.au

ICT and Infrastructure

- Internet users (2014): **6,759,032**
- Internet penetration (2014): **47.5%**
- Broadband subscriptions (2013): **0.73%**
- Mobile subscriptions (2013): **96.3%**
- Television companies: **Government-owned, limited**
- Radio stations: **Government-owned, limited**

Education

- Student mobility: **Outgoing: 27994, Incoming: 352 (2012)**
- Language(s) of instruction: **Ndebele, Shona in primary; English at all levels**
- Pupil/ teacher ratio, primary: **36 (2012)**
- Literacy rate (2015 UIS estimate): **Male 88.53%, Female 84.55%**
- Unemployment (% of total labor force, 2013): **5.4%**
- Education spending (% of GDP): **2.5% (2010)**

Society and Politics

- Date of independence: **18 April 1980 (from Britian)**
- Style of government: **Parliamentary Democracy**
- Leader(s): **President Robert Mugabe (since 1986)**
- Population growth rate (2014 est.): **4.36%**
- Birth rate 2014 est. (births/1,000 population): **32.47**
- Infant mortality (deaths/1,000 live births) 2014 est.: **26.55**
- Life expectancy at birth (2014 est.): **55.68**
- GDP (PPP) (2013 est.): **$7.496 billion, per capita $600**
- Growth rate (2013 est.): **3.2%**
- GDP by sector (2013 est.): **agriculture: 20.1%, industry: 25.4%, services: 54.5%**
- Percentage below poverty line: **72.3% (2011)**
- Languages: **English (official), Shona, Sindebele, numerous tribal dialects**
- Religions: **92.7% Christian, other 1.2%, none 6.1%**
- Monetary unit: **Zimbabwean dollar (no longer in use); Government allows trade in US Dollar and other currencies**

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