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AFRICA BRIDGING THE DIGITAL DIVIDES

Cover photo: El Fasher, North Darfur, 18 July 2012. A young girl
takes a picture with a cell phone during the opening ceremony
of the new Library at the Cultural Center. Photo by Albert Gon-
zález Farran, Unamid, CC BY-NC-ND 2.0.

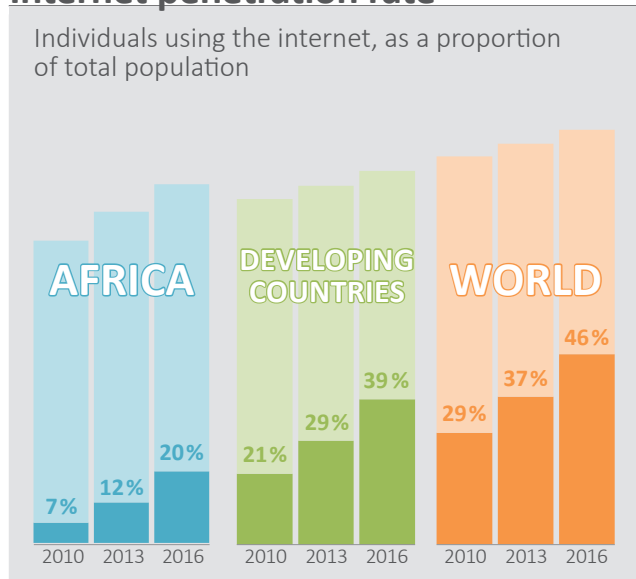# AFRICA BRIDGING THE DIGITAL DIVIDES

Africa's leapfrogging information and communication technology development is fueled by mobile broadband. The number of mobile-broadband subscriptions on the continent has increased more than 15 times over the past six years, a growth rate that is three times the global average. However, there are also worrying trends, such as a growing digital divide between men and women, and between urban and rural areas.

SAMIA SATTI MOHAMED NOUR, Professor of Economics at Khartoum University and Guest Researcher at NAI
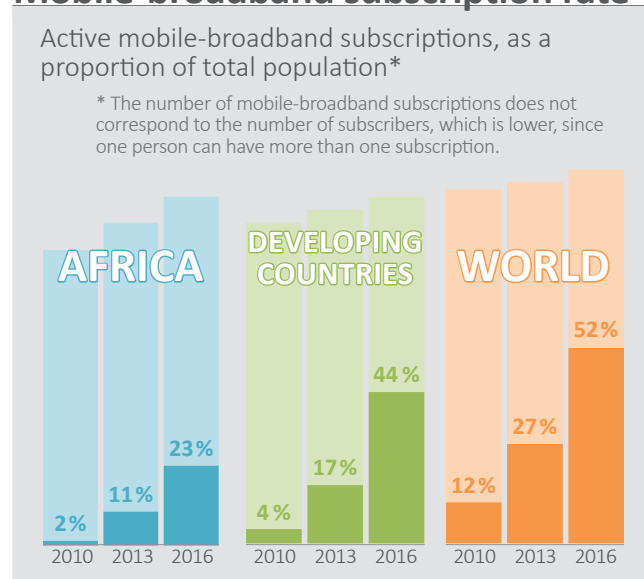
According to the International Telecommunication Union (ITU), a UN agency that specialises in information and communication technology (ICT), 2.6 billion of the world's total 3.6 billion internet users are from developing countries. The relative number of internet users in the developed countries (80 percent) is, however, more than twice the level in the developing countries (39 percent). In recent years, the global digital divide has received increasing interest from researchers, practitioners and policymakers in developed and developing countries. It describes a gap between those who have ready access to ICT and the skills to make use of it and those who do not have ICT access or skills.

Internet penetration rate

Individuals using the internet, as a proportion of total population

	AFRICA			DEVELOPING COUNTRIES			WORLD		
	7%	12%	20%	21%	29%	39%	29%	37%	46%
	2010	2013	2016	2010	2013	2016	2010	2013	2016

Mobile-broadband subscription rate

Active mobile-broadband subscriptions, as a proportion of total population*

* The number of mobile-broadband subscriptions does not correspond to the number of subscribers, which is lower, since one person can have more than one subscription.

	AFRICA			DEVELOPING COUNTRIES			WORLD		
	2%	11%	23%	4%	17%	44%	12%	27%	52%
	2010	2013	2016	2010	2013	2016	2010	2013	2016

Source: ITU. The developed/developing country classifications are based on the UN M49 standard for area codes, based on UNDP's Human Development Index (HDI).

	Africa	Arab States	Asia & Pacific	Europe	The Americas	Developed countries*	Developing countries*	World
Percentage of households with Internet access at home 2016 (%)	16	45	45	82	63	83	40	51
Percentage of households with computer at home 2016 (%)	10	43	38	80	65	82	34	47

Source: ITU

* The developed/ developing country classifications are based on the UN M49 standard for area codes.

Assessing the divide

At global level, a standard method for identifying the extent of the digital divide and differences between countries is to examine national ICT levels and performance compared with global averages in developed and developing countries respectively. Some indicators, such as mobile-broadband subscriptions, fixed-broadband subscriptions, and the percentages of individuals using the internet, with access to internet at home and with a computer, are especially useful indicators for assessing and bridging the global digital divide. The ITU provides comprehensive indicators that show the extent and development of the global digital divide. The ITU indicators are particularly useful for illustrating the position of Africa.
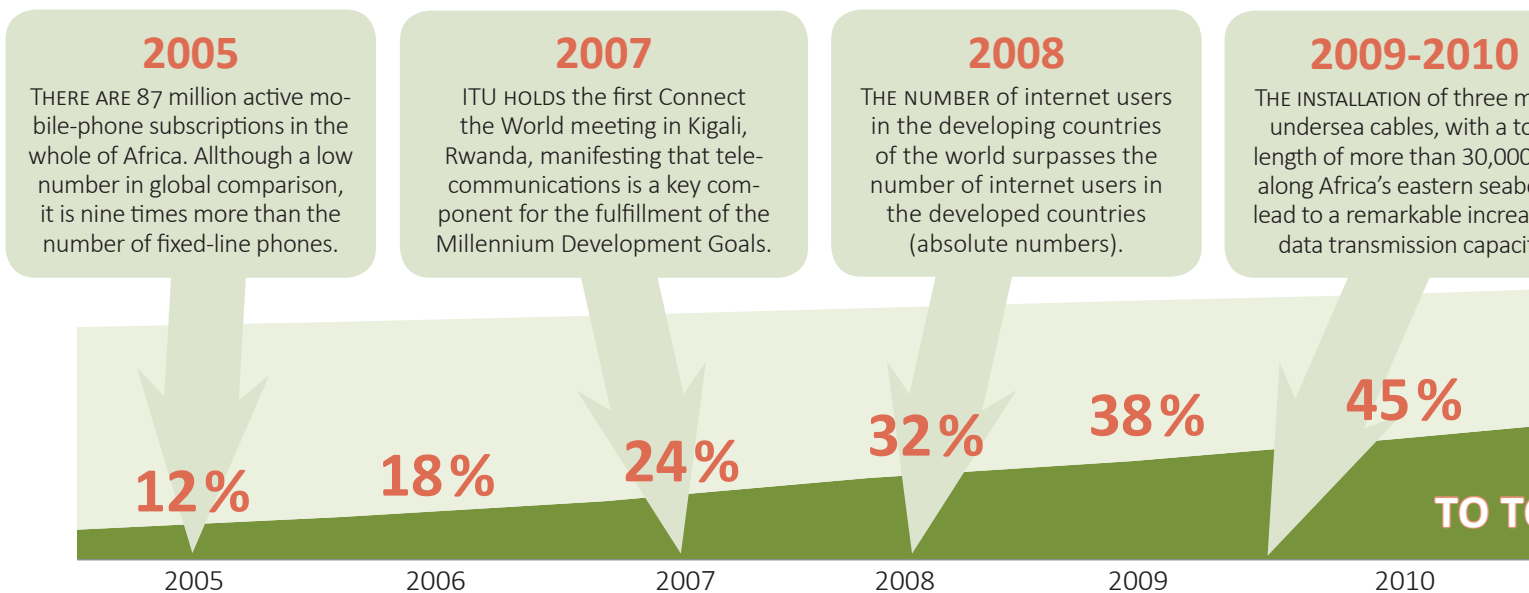
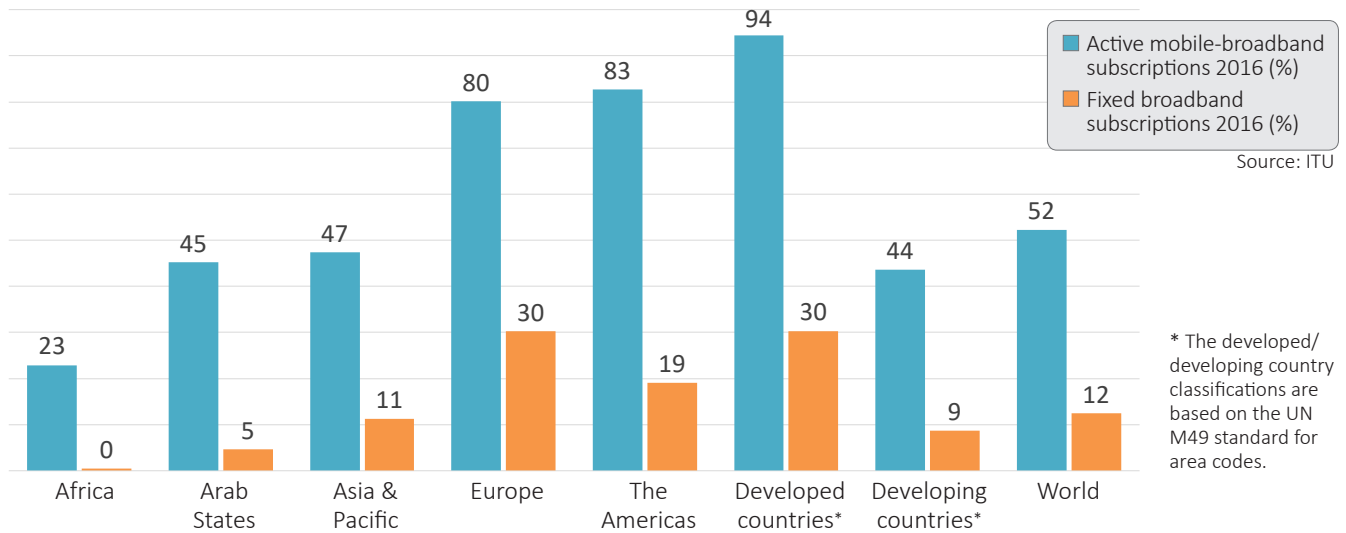By the end of 2016, only one in five people in Africa were using the internet compared with almost one out of every two people worldwide. The global digital divide is even more palpable when it comes to internet access at home. Only 16 percent of households in Africa have internet access at home, compared to the global average of 51 percent. Another relevant measure is broadband subscriptions. Only 0.4 percent of Africans have fixed broadband subscriptions and less than one-quarter have active mobile broadband subscriptions – the global averages are 12 and 52 percent, respectively.

Moreover, there is the digital divide in terms of urban/rural location. This divide is very large in parts of sub-Saharan Africa. For example, in Zimbabwe 36 percent of the urban population use the internet, but less than 7 percent of the rural, according to ITU.

The gender divide – large and growing

Internet penetration rates are higher for men than for women in all regions of the world. In 2016, 28 percent

2005
THERE ARE 87 million active mobile-phone subscriptions in the whole of Africa. Allthough a low number in global comparison, it is nine times more than the number of fixed-line phones.

2007
ITU HOLDS the first Connect the World meeting in Kigali, Rwanda, manifesting that telecommunications is a key component for the fulfillment of the Millennium Development Goals.

2008
THE NUMBER of internet users in the developing countries of the world surpasses the number of internet users in the developed countries (absolute numbers).

2009-2010
THE INSTALLATION of three m undersea cables, with a to length of more than 30,000 along Africa's eastern seab lead to a remarkable increa data transmission capacit

12%
18%
24%
32%
38%
45%

TO T

2005   2006   2007   2008   2009   2010

	Active mobile-broadband subscriptions 2016 (%)	Fixed broadband subscriptions 2016 (%)
Africa	23	0
Arab States	45	5
Asia & Pacific	47	11
Europe	80	30
The Americas	83	19
Developed countries*	94	30
Developing countries*	44	9
World	52	12

Source: ITU

* The developed/developing country classifications are based on the UN M49 standard for area codes.

of men in Africa were internet users but only 22 percent of women. This means that the digital divide by gender is 23 percent in Africa, the highest of all regions in the world, almost twice as high as the global average of 12 percent. Moreover, while the global average grew from 11 percent in 2013 to 12 percent in 2016, the gender gap in Africa grew from 21 to 23 percent during the same period, a greater increase than any other region in the world.

The causes of the divide

The global digital divide is closely related to differences in economic development, literacy, schooling and education levels. Average gross national income per capita worldwide is more than four times above the level in Africa. In sub-Saharan Africa, adult illiteracy rates and gross enrolment ratios in secondary and tertiary educa-
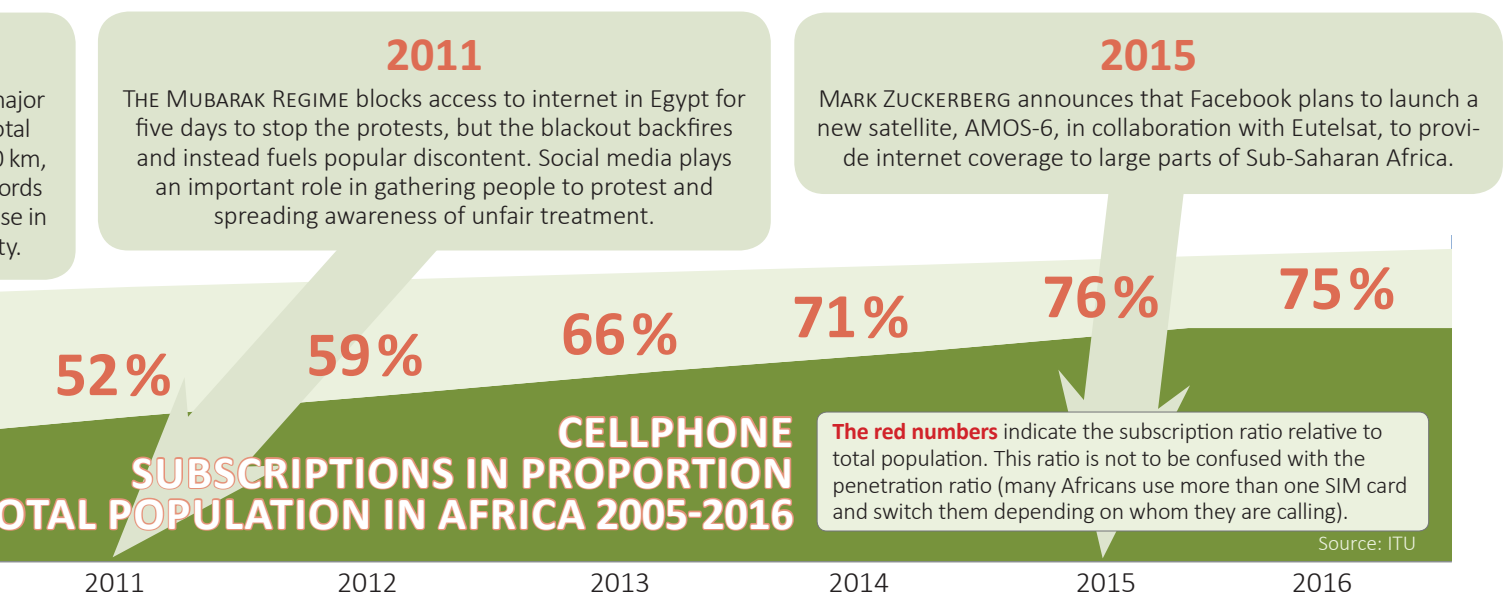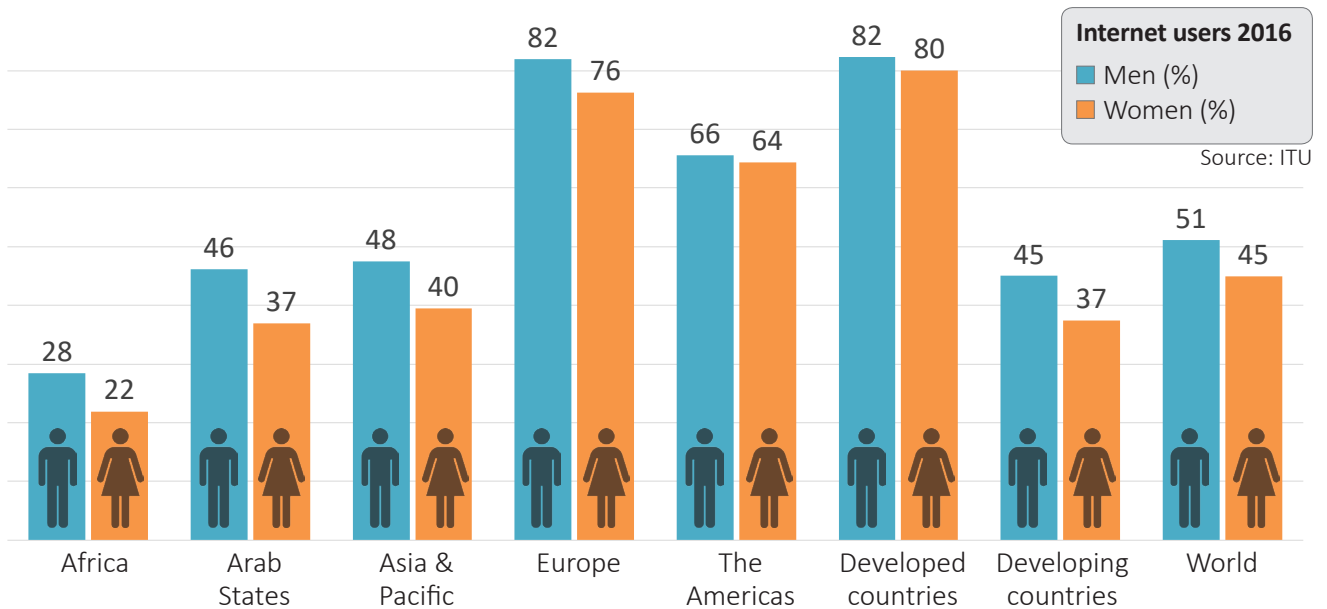
tion are very much lower than the global average.

In many parts of Africa, there is also a language problem. For instance, insufficient knowledge of English limits access to the internet. The English language has a dominant position in the ICT domain and less than 20 percent of Africa's total population speak English as either their native or a foreign language.

Moreover, the global digital divide is closely related to differences in the access to ICT. The lack of access to ICT is closely related to insufficient public and private spending and investment in ICT, insufficient ICT infrastructure and poor quality of ICT services.

Internet shutdowns

Lack of democratic institutions is also a cause of the digital divide. In weak democracies all over the world, the internet has been a target for censorship interven-

2011

THE MUBARAK REGIME blocks access to internet in Egypt for five days to stop the protests, but the blackout backfires and instead fuels popular discontent. Social media plays an important role in gathering people to protest and spreading awareness of unfair treatment.

2015

MARK ZUCKERBERG announces that Facebook plans to launch a new satellite, AMOS-6, in collaboration with Eutelsat, to provide internet coverage to large parts of Sub-Saharan Africa.

52% **59%** **66%** **71%** **76%** **75%**

CELLPHONE
SUBSCRIPTIONS IN PROPORTION
OTAL POPULATION IN AFRICA 2005-2016

The red numbers indicate the subscription ratio relative to total population. This ratio is not to be confused with the penetration ratio (many Africans use more than one SIM card and switch them depending on whom they are calling).

Source: ITU

| 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |

Chart data:
- Africa: Men 28, Women 22
- Arab States: Men 46, Women 37
- Asia & Pacific: Men 48, Women 40
- Europe: Men 82, Women 76
- The Americas: Men 66, Women 64
- Developed countries: Men 82, Women 80
- Developing countries: Men 45, Women 37
- World: Men 51, Women 45

tions by regimes that wish to limit or deny freedom of information. Over the past couple of years, we have seen how many governments on the African continent

GOOGLE'S TRANSPARENCY REPORTS offer real-time information about traffic to their services around the world. Since Google is by far the predominant search engine across the world, including most African countries, the reports provide valuable insights. It is possible to use them to survey the effects government interventions have on Internet traffic, as seen in the charts below, in relation to shutdowns in Ethiopia (30 May) and Congo-Brazzaville (11 June).

Ethiopia, fraction of worldwide traffic, May/June 2017

Congo-Brazzaville, fraction of worldwide traffic, May/June 2017.

have blocked and/or filtered access to social media and other parts of the internet, often by closing internet service providers. Different pretexts have been used. Shutdowns are often done under the guise of national security. In Ethiopia, in June 2017 government officials explained a nationwide shutdown of internet access as an attempt to stop leakage of school exam papers.
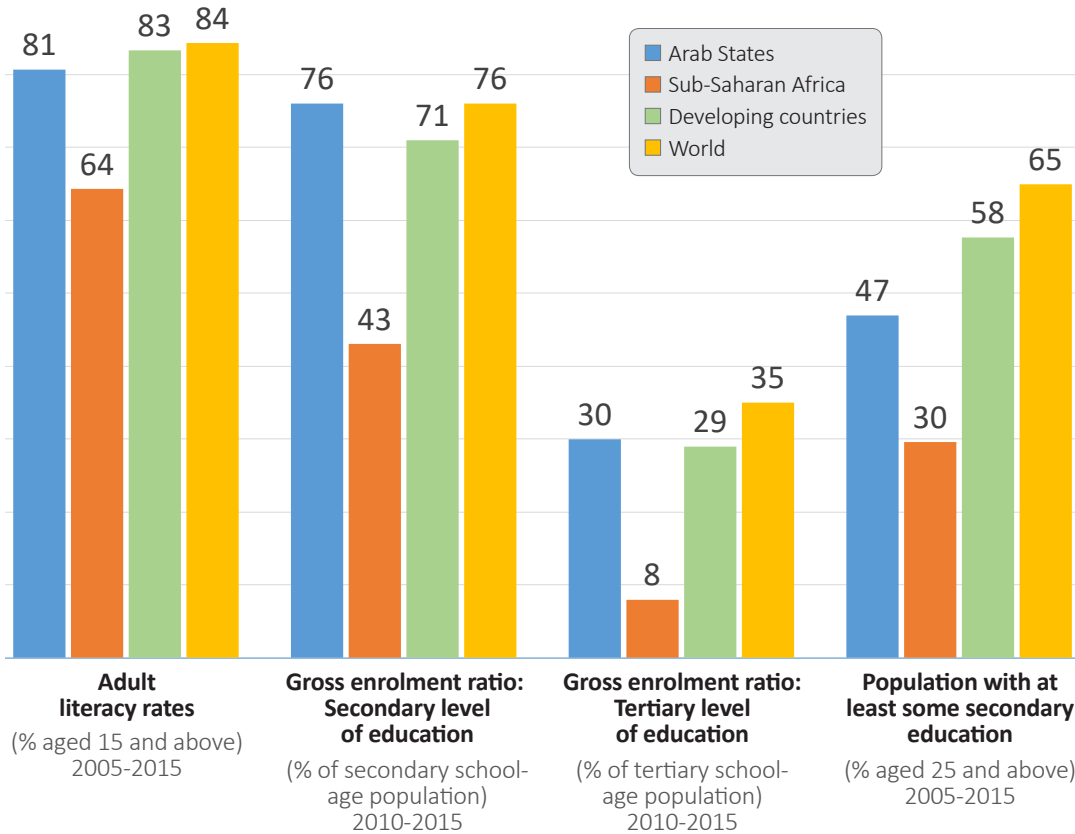
Censorship, surveillance and self-censorship, which often follows in the wake of surveillance, are mainly caused by the lack of strong democratic institutions. The situation impedes many Africans from developing their ICT skills and deriving educational and entrepreneurial benefits from full access to the internet. Hence, it contributes to the global digital divide. The trend seems to be towards increased government abuse of internet users' rights. Access Now, a non-profit advocacy group dedicated to an open and free internet, reported 56 documented internet shutdowns by governments around the world in 2016, compared to only 15 in 2015.
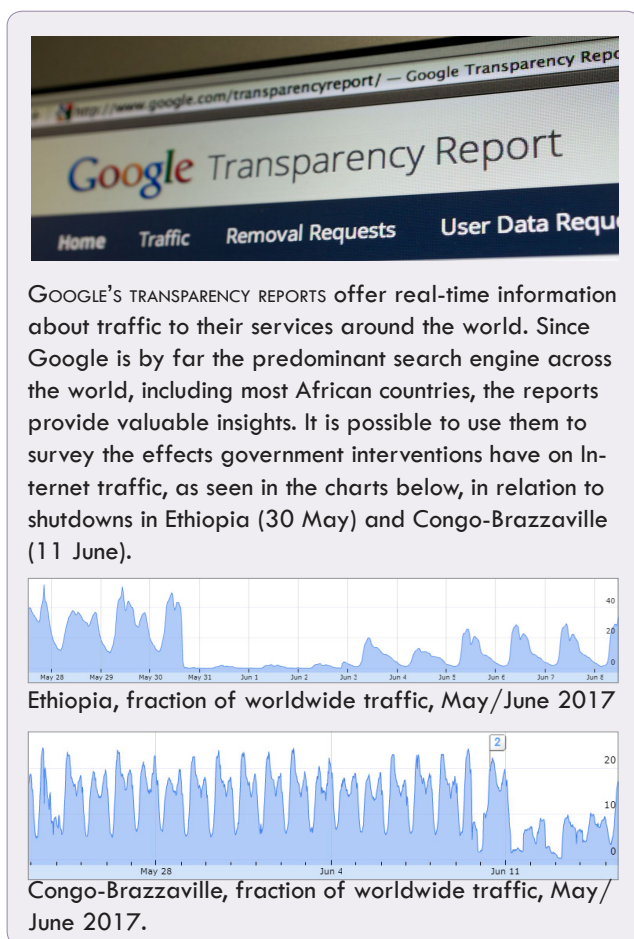
Policy recommendations

Sound and coherent policies, on both the supply and demand sides, are needed to further bridge the digital divide between Africa and other regions of the world. The major policy recommendations on the supply side are:

• Increase government investment and spending on ICT.

Bar chart showing educational indicators for Arab States, Sub-Saharan Africa, Developing countries, and World:

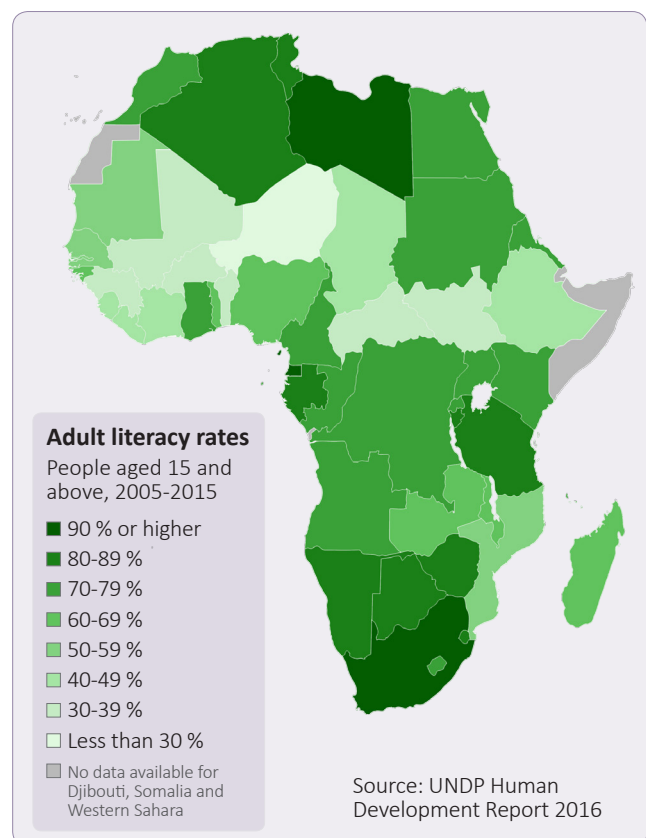| Indicator	Arab States	Sub-Saharan Africa	Developing countries	World
Adult literacy rates (% aged 15 and above) 2005-2015	81	64	83	84
Gross enrolment ratio: Secondary level of education (% of secondary school-age population) 2010-2015	76	43	71	76
Gross enrolment ratio: Tertiary level of education (% of tertiary school-age population) 2010-2015	30	8	29	35
Population with at least some secondary education (% aged 25 and above) 2005-2015	47	30	58	65

Source: UNDP Human Development Report 2016

- Improve quality, efficiency and speed of ICT services.
- Improve ICT infrastructure, including even very basic elements like the public electricity grid, which is of poor quality in many parts of Africa, also with a focus on reducing the urban/rural disparity.
- Improve technical skills, with special emphasis on empowering women through ICT knowledge.
- Enhance public-private partnership in investment and provision of ICT services.
- Strengthen democratic institutions and prevent internet censorship.

The major policy recommendations on the demand side are:

- On a more general level, fight poverty and facilitate access to ICT for poor populations.
- Improve literacy, including electronic literacy (ICT knowledge) for women and men.
- Improve access to secondary and tertiary education and implement more ICT education at all levels of education.
- Increase awareness of the economic and social importance and impact of ICT for all people in Africa.

Adult literacy rates
People aged 15 and above, 2005-2015

- 90 % or higher
- 80-89 %
- 70-79 %
- 60-69 %
- 50-59 %
- 40-49 %
- 30-39 %
- Less than 30 %
- No data available for Djibouti, Somalia and Western Sahara

Source: UNDP Human Development Report 2016

Literacy rates of course vary a lot between Africa's countries. 11 African countries have an adult literacy rate above the global average of 84 percent.

About the Author

SAMIA SATTI MOHAMED NOUR is a Professor of Economics at Khartoum University, and a Guest Researcher at the Nordic Africa Institute. Her main fields of research are economics, science and technology development, and knowledge economy.

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