5

Detailed Empirical Data & Analysis

To be read in support of

TBI-P4P Ethiopia
Digital Transformation Diagnostic:
Preliminary Findings

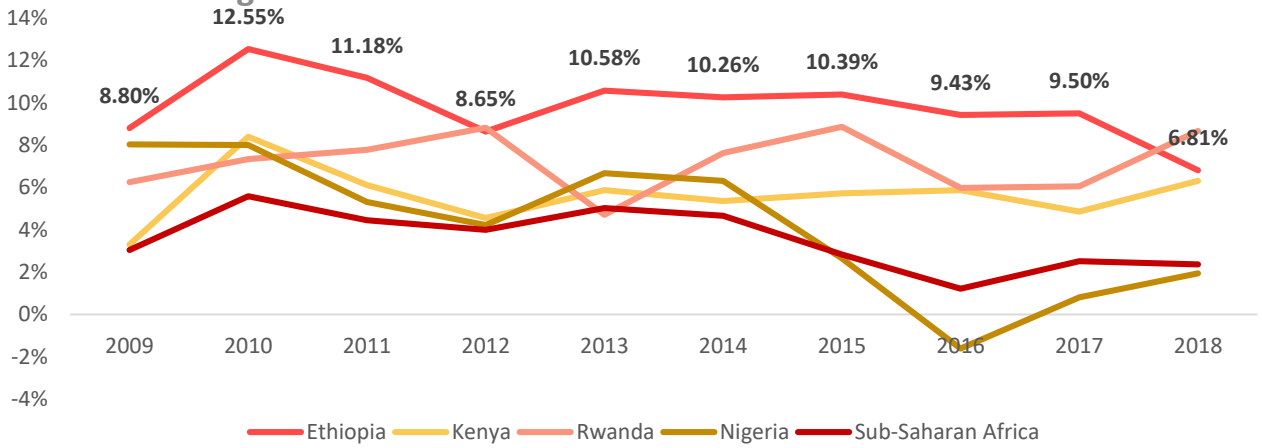
GOVERNANCE

5a

Ethiopia Macro Overview

Ethiopia's economic growth has been strong, averaging 10% annually since 2009, yet overall incomes are still comparatively low

Compared to regional peers, how fast is Ethiopia's economy growing? Annual % change of GDP:

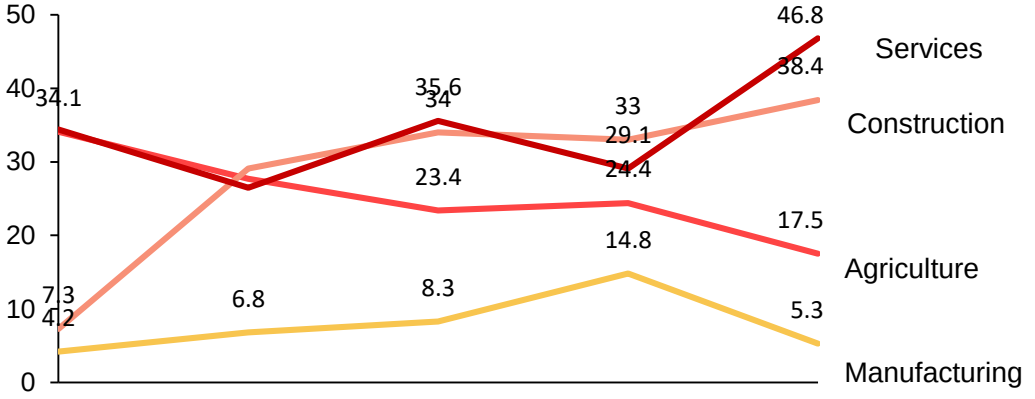


Compared to regional peers, what are Ethiopian income levels? GNI per capita (Atlas method) 2018:

Rank	Economy	GNI pc (US$)
147	Nigeria	1960
153	Kenya	1620
174	**Ethiopia**	**790**
175	Rwanda	780
	Sub-Saharan Africa	1506.98
	Low income average	789.53
	Lower middle income average	2244.53

- **GDP Growth rate is strong,** averaging 10% in the past ten years and is **largely driven by the services and industrial sectors,** and by the construction sector within industry.
- **GDP per capita** has risen from $559 in 2013 **to over $883 in 2018***
- The **Economist Intelligence Unit (EIU) predicts average annual growth rates of 7.5% in 2019-2023.** This is below the targeted 11% in GTP II
- Ethiopia is still among the world's poorest countries **– GNI pc. will need to grow by 30% to meet the GTP II target of reaching lower-middle income status** (US$ 1,026) by 2025.

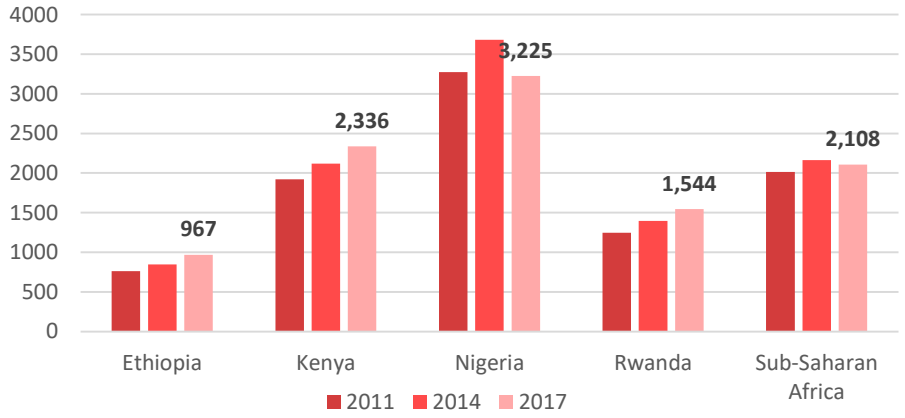
Where is Ethiopia's growth generated? Contribution of sectors to GDP growth in % of total growth, 2010-2018:



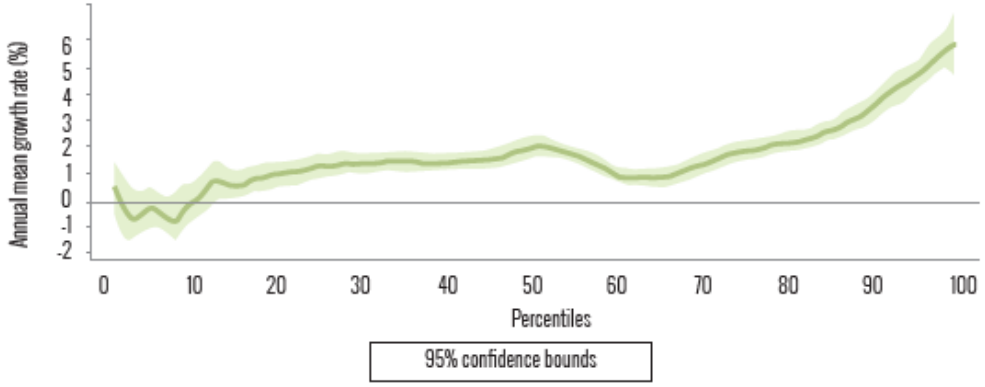
Source: World Bank (2019) and National Planning Commission, Study Report on Ethiopian Macroeconomic Framework, Hangyong Lee, 17/2/19

Household consumption levels continue to rise, but are not equally shared across regions and incomes

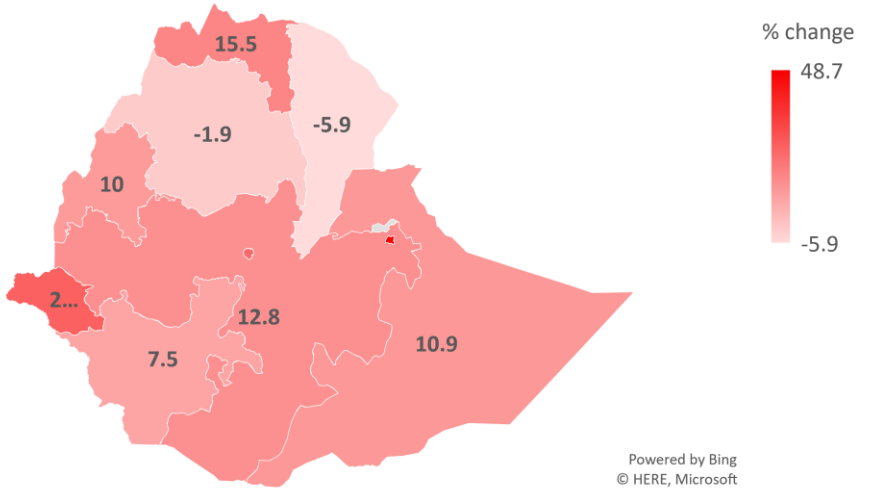
Households and NPISHs final consumption expenditure per capita (constant 2010 US$)



Average annual growth of consumption between 2011 and 2016, by percentile of the population



Regional median annual consumption per adult equivalent, % change between 2011 and 2016



- Ethiopia's average consumption per capita is still comparatively low at 967 US$, below the levels of regional peers and the SSA average.
- Between 2011 and 2016 **consumption increased in all regions except Afar and Amhara**. Mean consumption is highest in Dawari (16,739 Birr) and lowest in Afar (8503 Birr

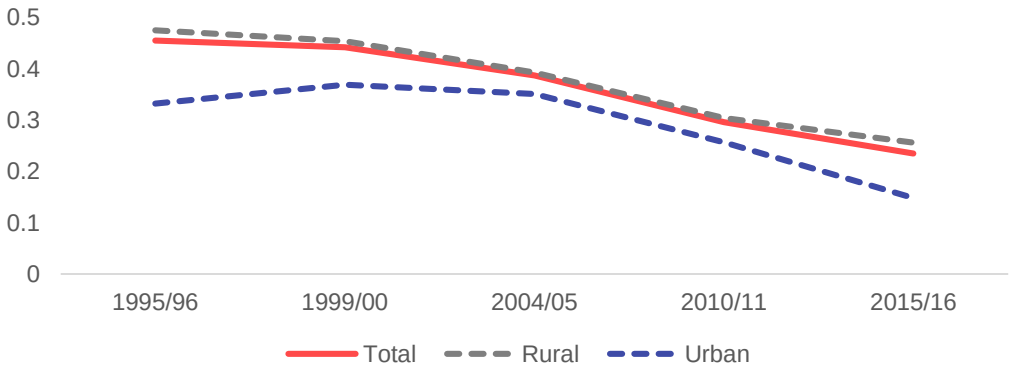
Source: World Bank (2019) based on Household Consumption Expenditure Survey 2016

Growth has helped reduce poverty and increase overall consumption levels, but inequality is also increasing

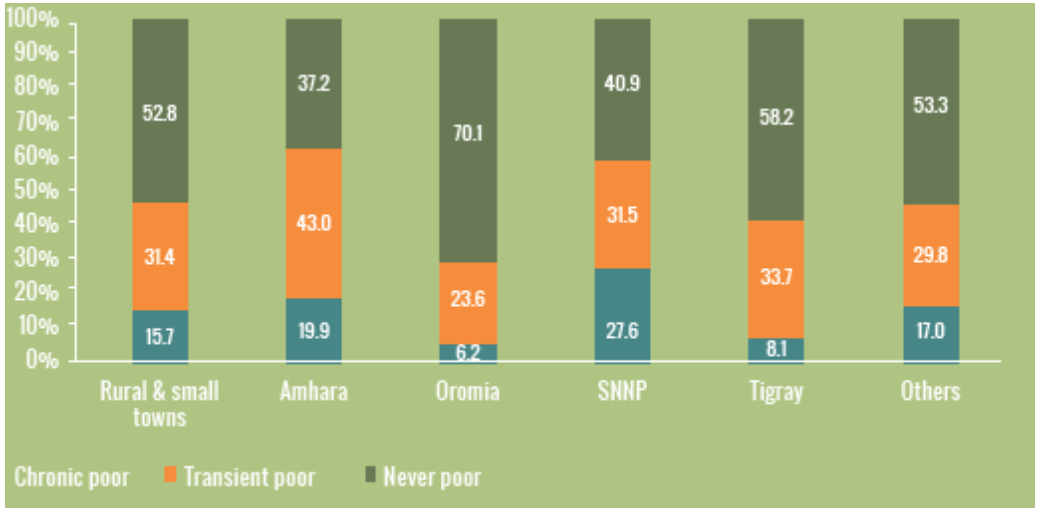
How inclusive is Ethiopia's growth compared to regional peers? Poverty and inequality in Ethiopia and comparator countries:

Economy	% of population living below the PL	Δ 2010	GINI index
Ethiopia	**27.3**	**-37%**	**39.1**
Kenya	36.8	-19%	40.8
Rwanda	55.5	-11%	43.7
Sub-Saharan Africa	41	-12%	-
Lower middle income	13.8	-40%	-

Change in poverty headcount ratio 1995-2015, national poverty lines (less than US$ 0.6)



Poverty levels in rural areas and small towns between 2012-2016



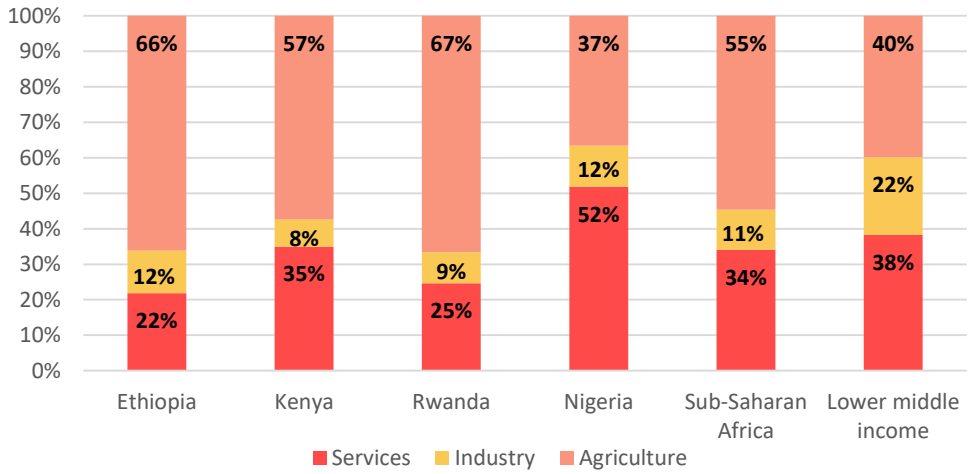
- **Ethiopia reduced poverty** from 44% in 2000, to 30% in 2011, to 21% in 2018.
- **But Inequality is increasing** from 29.8 in 2004, to 33.2 in 2010 to 39.1 in 2015. But this remains below regional peers
- **Poverty is** higher in rural areas where rates of poverty reduction have also slowed in recent years
- **Stark regional differences exist with respect to the extent of chronic poverty**: Rates are highest in Somali and lowest in Addis Ababa (both listed under "Others" in the graph above).

Notes: Refers to the percentage of the population living below the US$ 1.90 a day poverty line; GINI index measures income inequality among individuals or households within an economy. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

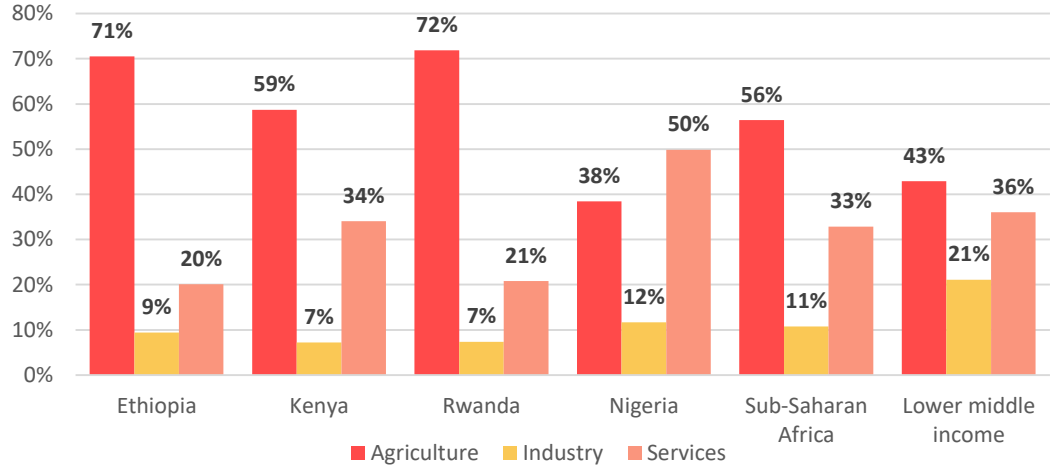
Source: World Bank World Development Indicators (2018)

The share of agricultural employment remains comparatively high, while informality is on the rise in urban areas

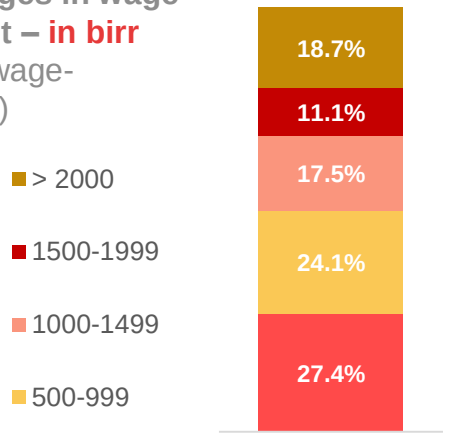
Employment shares in 2018, Ethiopia and regional peers (% of total employment)



Where are Ethiopia's new jobs created? Still mainly in Agriculture. Average annual growth in employment across sectors 2009-2018



Level of wages in wage-employment – in birr
2013 (% of wage-employment)

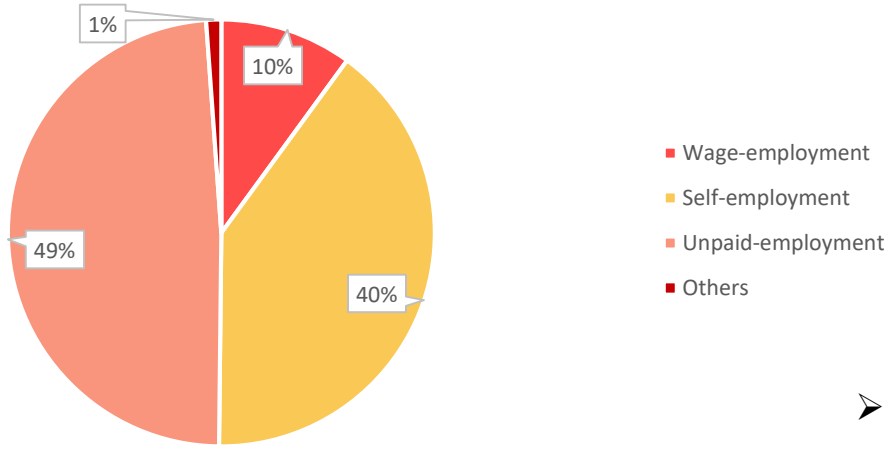


- The **unemployment rate (as defined by ILO) is relatively low in Ethiopia** (5.40% in 2017 at the national level), compared to a 7.2% average in SSA
- **Unemployment is mainly an urban phenomenon** with a rate of 19.1% in 2018
- **Agriculture remains the main sector in employment (66% in 2017).** Despite the high increase in the share of Industry in GDP between 2009 and 2017, the increase in employment in industry has been very shy with an increase of only 3.1% between 2009 and 2017
- While employment growth was strongest in agriculture, **recent years have shown faster employment growth for services and industry** while employment in agriculture has grown more slowly

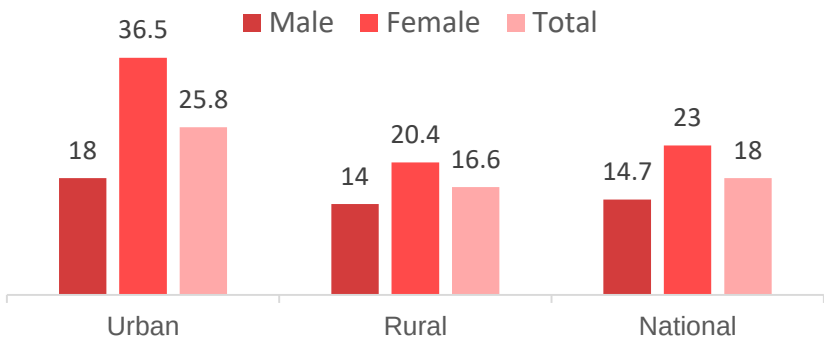
Source: World Bank World Development Indicators (2018), IMF (2013) IMF Country Report No. 13/309, National Labour Force Survey 2013

Despite low unemployment, 90% of employment is vulnerable, with significant gaps in economic opportunities for women and youths

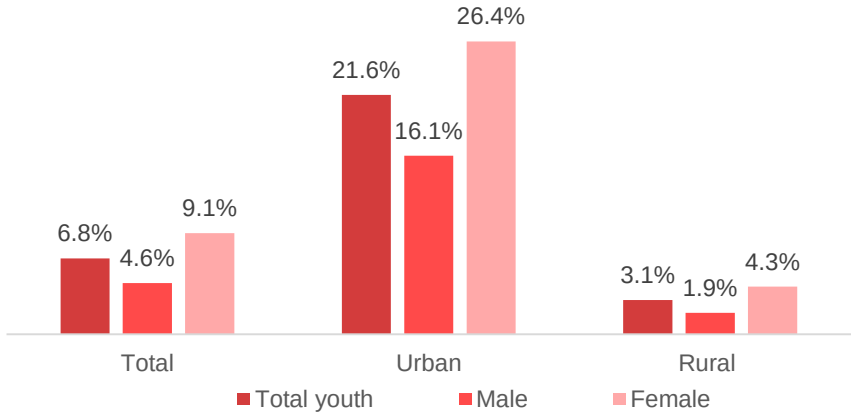
Status in employment – National level - 2013



Employed in the informal sector of the economy* 2013 (%)



National youth unemployment rate by Urban/Rural and gender (%, 2013)

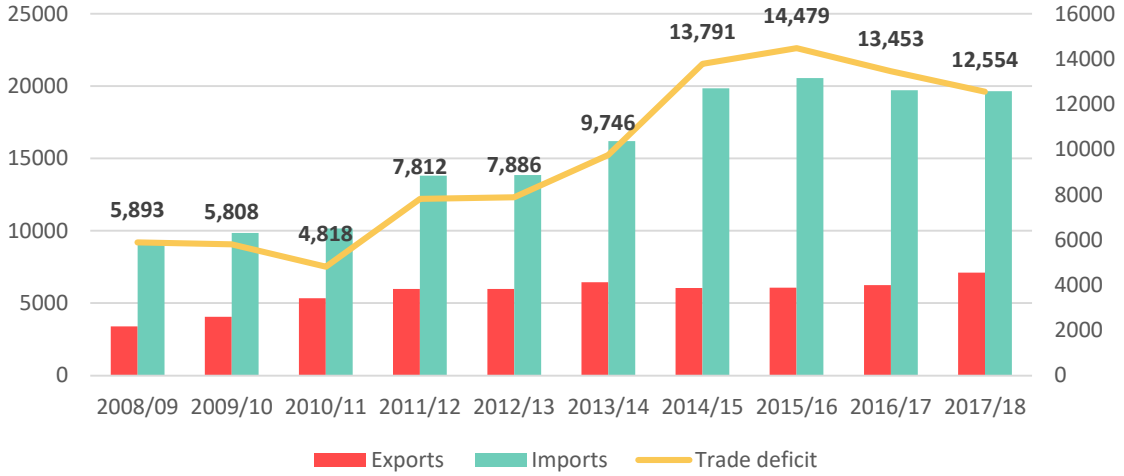


- While official unemployment is low, **90% of employment is vulnerable** (unpaid employment, self-employment, informal employment)
- The **size of the informal economy is estimated at about 38.6% of GDP** in Ethiopia, similar to the average of 38.4% for SSA and 38% for low-income countries.
- More than **80% of wage-employed workers are paid less than 2,000 birr per month** (about US$ 2.31 a day).
- There is **a strong and persistent gender gap in accessing economic opportunities in the labour market**: women have lower labour force participation, higher unemployment rates, and are over-represented in vulnerable employment.
- **Youths have lower labour force participation rates and employment rates** than older workers and are twice as likely to be unemployed (~7% of youths were unemployed in 2013, compared to 3.5% of older people)

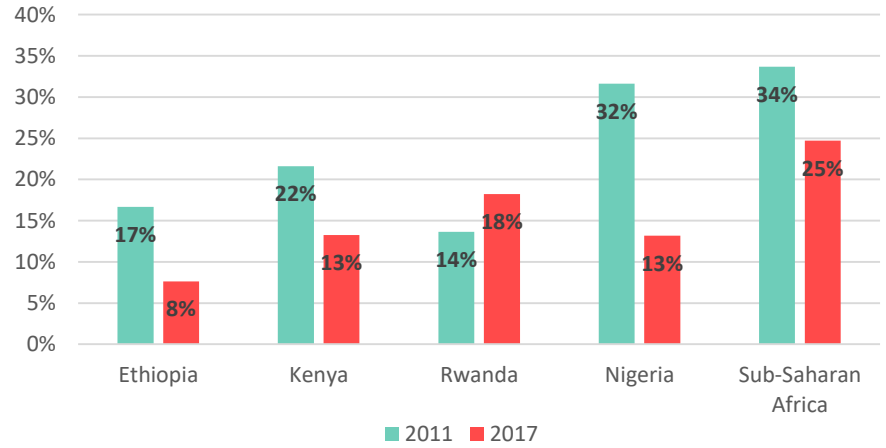
Source: JCC analysis using data from the CSA National Labour Force Survey 2013 World Bank World Development Indicators (2018), IMF (2013) IMF Country Report No. 13/309,

A weakening performance in exports drives the rising trade deficit – contributing to constraints for external borrowing

The imbalance between exports and imports of goods and services leads to a significant trade deficit:

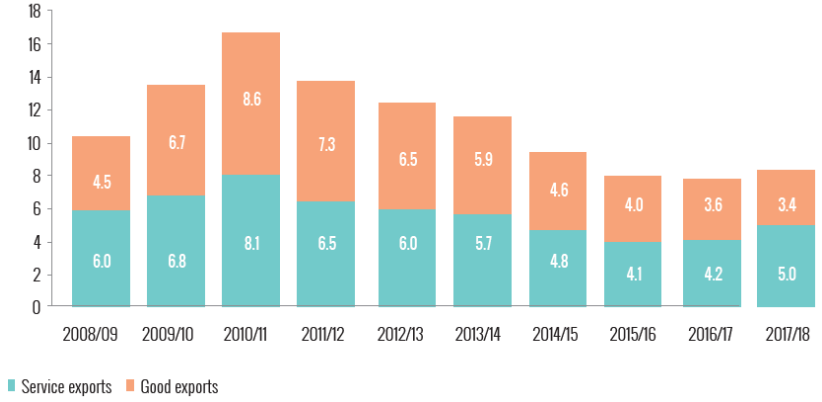


Ethiopia's exports of goods and services as % of GDP are currently the lowest amongst regional peers:



- In 2017/18 Ethiopia recorded a **trade deficit of US$ 12,553.7m**, a 9% decrease since a high in 2014/15
- **Service exports performed well in 2017/18, increasing by 27%**, which can be attributed to Ethiopian Airlines' strong performance.
- **Goods exports performed weakly overall** due to the decrease in coffee exports – which accounts for 43% of goods exports – while **exports in the leather, textile and garments, chemical, and electricity sectors increased**
- Weak exports decrease **foreign reserves**, **which declined by US$606m in 2018/19** and, as of Dec 31 2018 could only cover 2.8 months of imports.

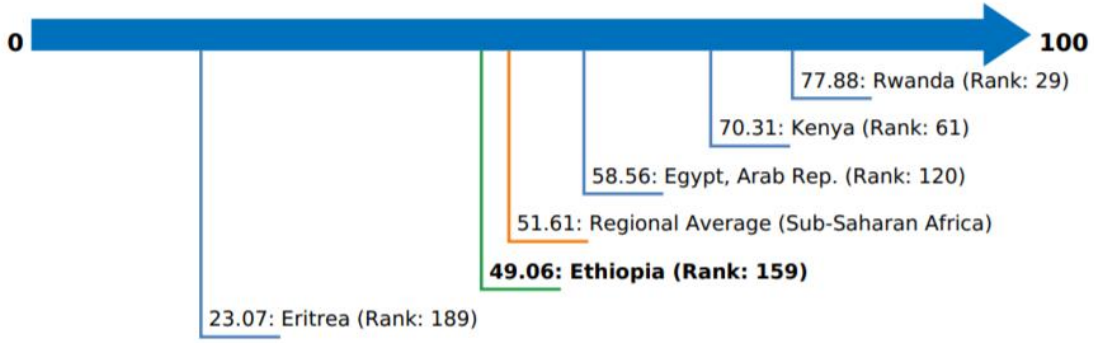
Throughout the 2010s, Ethiopia's exports as % of GDP have steadily decreased:



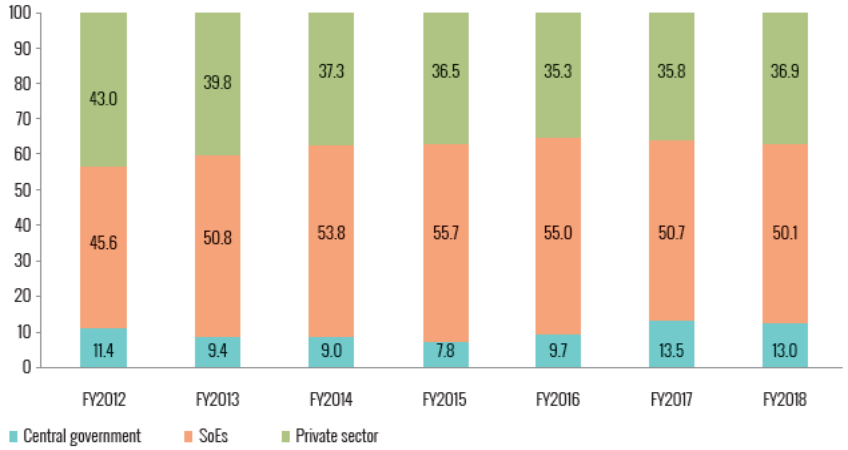
Source: COMTRADE , National Bank of Ethiopia (2019) Second quarter bulletin

Private sector participation is low and faces regulatory and financial constraints.

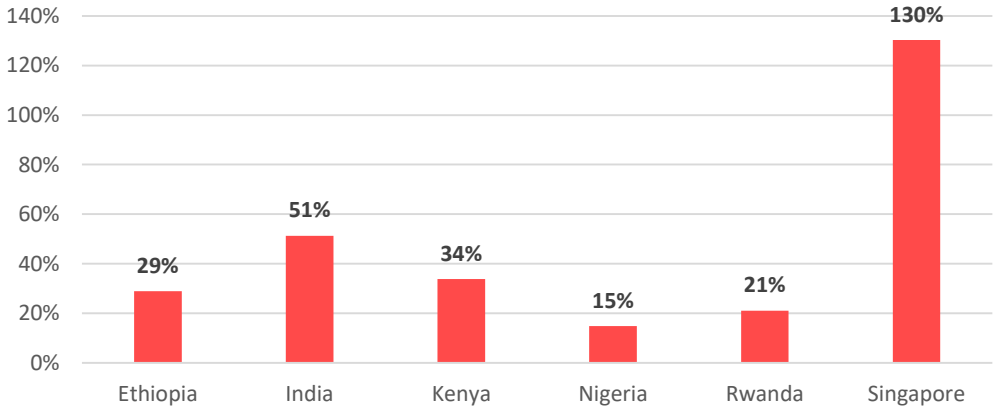
Ethiopia's Ease of Doing Business ranking in 2019:



Composition of Domestic Credit (%)



Domestic credit to private sector by banks (% of GDP), Ethiopia and peers

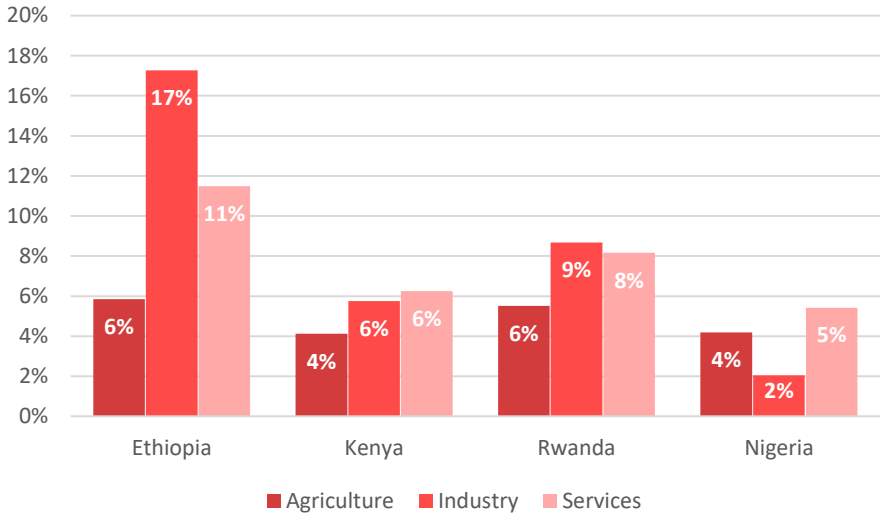


- The private sector is still comparatively small.
- Ethiopia's rank on the Doing Business Index significantly worsened in the period 2010-2015: from 104th in 2010, to 159th in 2015, where it stabilized until 2019.
- **"Getting Credit" is Ethiopia's lowest scoring Doing Business sub-index,** ranking it 175th of 190 countries, scoring below the Sub-Saharan African average.

Source: World Bank (2019) Doing Business Index. World Bank (2019) World Development Indicators, National Bank of Ethiopia

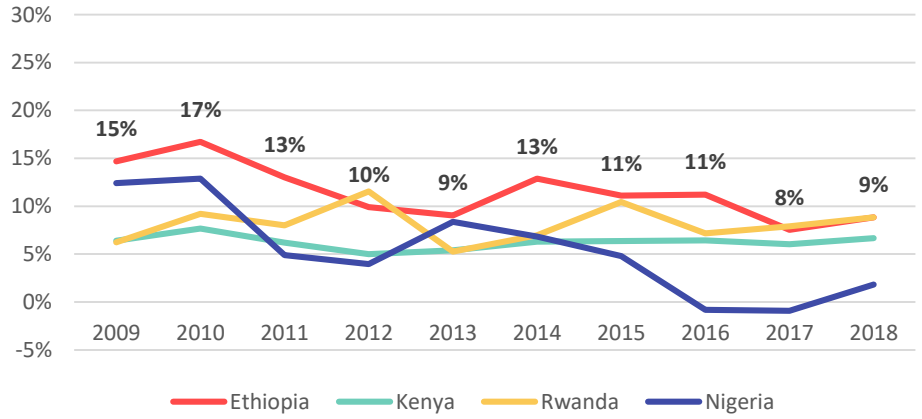
Ethiopian services and industrial sectors exhibit strong growth rates – supported by construction and private household employment

Average growth rates in the main sectors (2009-2018)

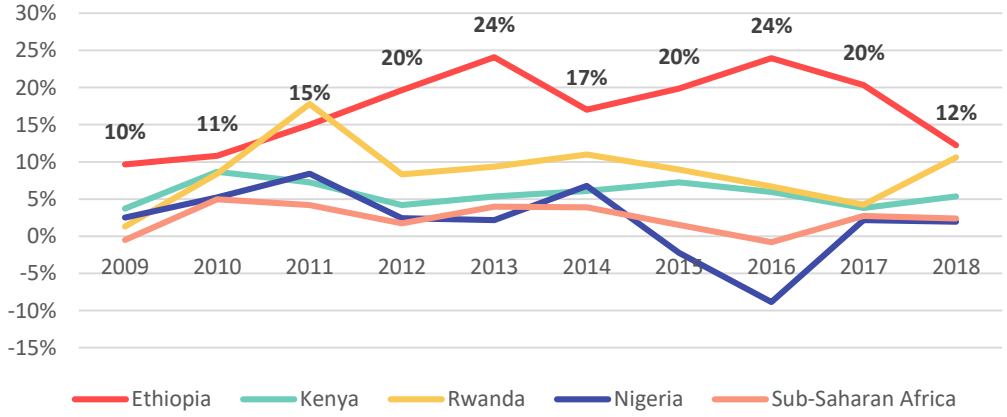


- Ethiopia's **industrial and service sectors are growing fast compared to regional peers** and Sub Sahara Africa
- **Growth in industrial value added was particularly strong** in recent years, which to a large extent is supported by a strong construction industry and manufacturing.
- **Growth in services has slowed since 2014, but it still strong** in regional comparison. Wholesale and retail trade is the most important service sub-sector, while private household employment has grown considerably in the past years.

Annual growth in value added: Services



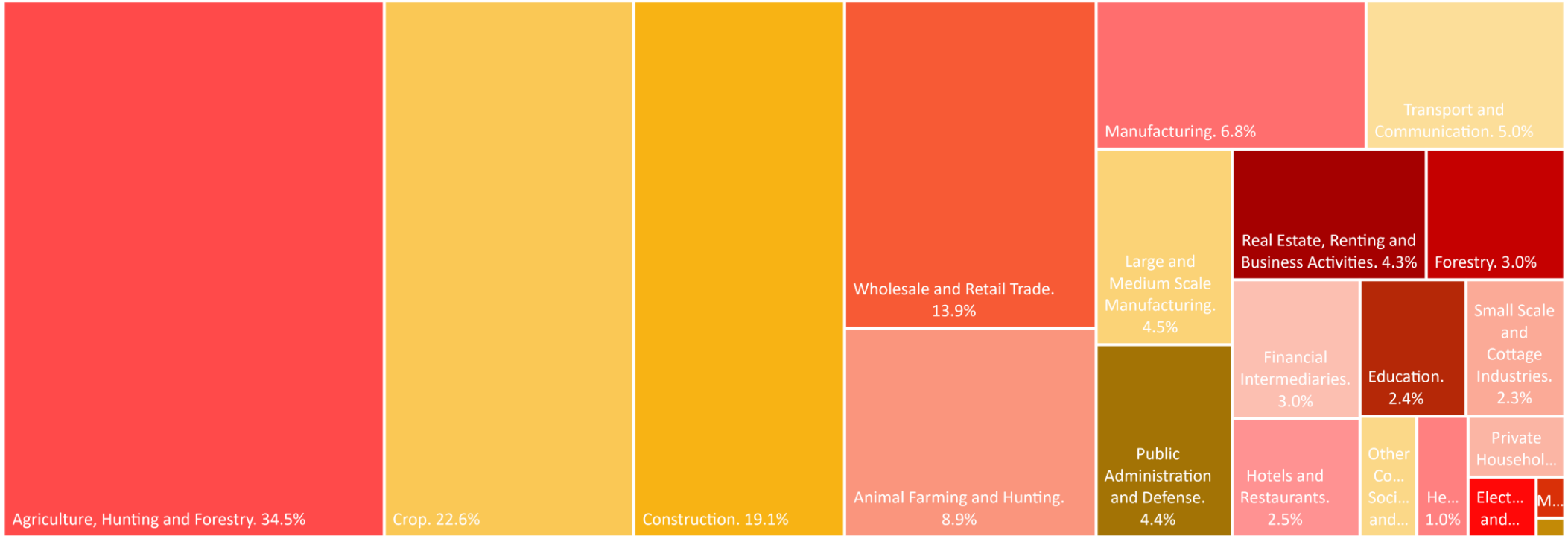
Annual growth in value added: Industry



Source: World Bank (2018), based on data from the National Planning Commission

While agricultural activities still comprise most of Ethiopia's GDP, the fastest growth is observed in services and construction

National GDP by activity, 2017/18



Top five growth in the last ten years

(2022%) Construction
(1597%) Private HH with employed persons
(720%) Large and medium scale manufacturing
(710%) Manufacturing
(692%) Small scale and cottage industries

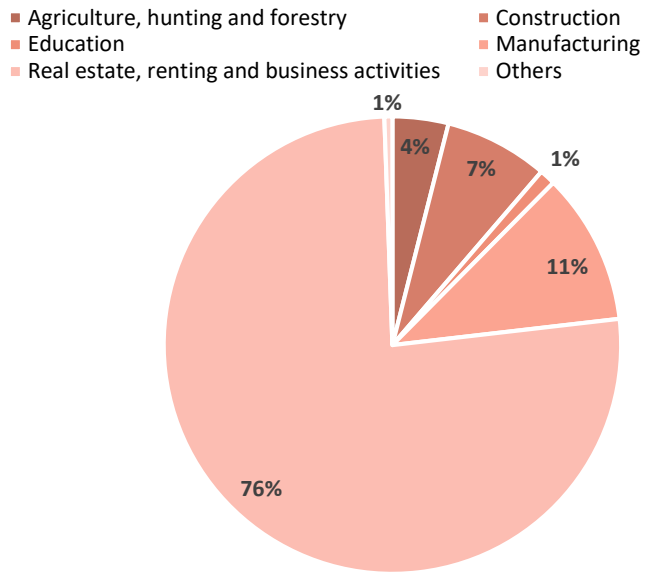
Top five growth in the last five years

1 Private HH with employed persons (1127%)
2 Construction (852%)
3 Small scale and cottage industries (459%)
4 Fishing (392%)
5 Manufacturing (373%)

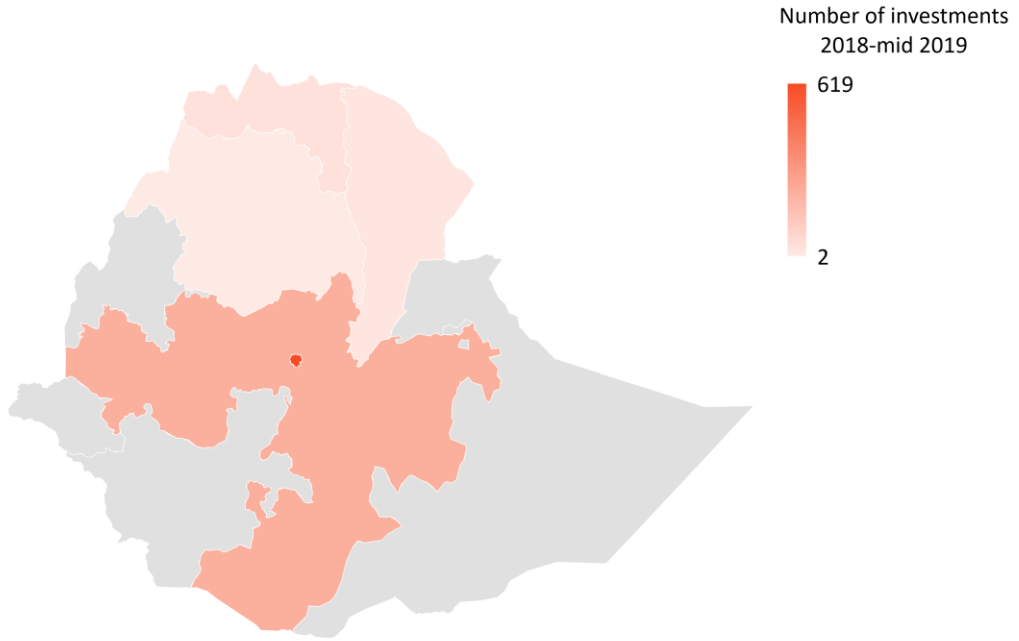
Source: National Bank of Ethiopia (2019)

Most investments occur in real estate activities and predominantly in Addis.

Number of investment projects, during QII of 2018/2019



Operational investments across regions, QII 2017/18 to QII 2018/19



- **The real estate, renting & business activities sector received 57.7% of the total Birr 814.3m capital** invested, followed by manufacturing (33.7%), and construction (4.4%)
- However, **most permanent employment (64.3%) was created by manufacturing** with investments in real estate, renting & business activities (sic?) contributing only 24.4%, education 6% and construction 2.6 % to all permanent employment.

- Between 2018 and mid 2019, **75% of investment projects and 86% of capital were operational in Addis**
- However, **more recently (QII 2018/19) Oromia recorded the largest share of investments (81.9%) and investment capital (63.8%)**, with only 14.1% of projects and 34% of capital operational in Addis.

Source: National Bank of Ethiopia (2019), based on information by the Ethiopian Investment Commission

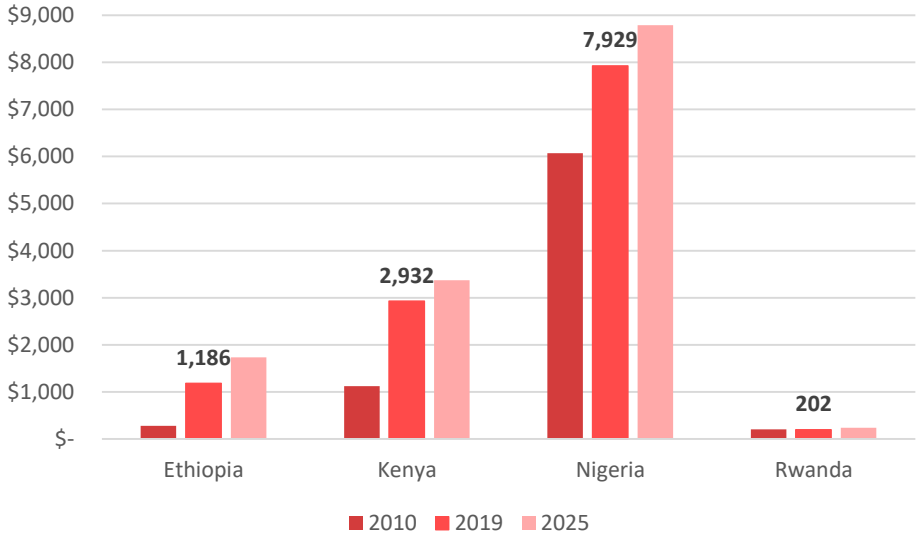
The digital sector is still nascent, comprising approximately only a small % the economy

The digital sector covers the core activities of digitalization, ICT goods and services, online platforms, and platform-enabled activities such as the sharing economy. (IMF)

According to ISIC 4, the ICT sector encompasses the following subsectors:

- ICT manufacturing industries 2610-2680
- ICT trade industries 4651-4652
- ICT services industries 5820-9512
  - Telecommunications
  - 62 Computer programming, consultancy and related activities
  - 631 Data processing, hosting and related activities; web portals
  - 951 Repair of computers and communication equipment

Revenue of the telecommunications market in 2010, 2019 and 2025 (projected), US$m



Source: GSMA Intelligence (2019)

5b

Digital Transformation Framework: Empirical background

GOVERNANCE

Digital Transformation Framework: Hard Infrastructure

Hard Infrastructure

- Accessible basic infrastructure (e.g. power)
- Accessible core connectivity infrastructure (from fiberoptic cables to mobile towers to devices to data)

Soft Infrastructure

Enabling Systems:

- Systems and platforms which enable remote verification and creation of apps and services while ensuring interoperability. E.g. ID verification, gateways, asset registries, payments

Applications

- Inclusive digital products and services (e.g. E-Gov, E-Commerce) used by citizens, enterprises, and governments

Ecosystem

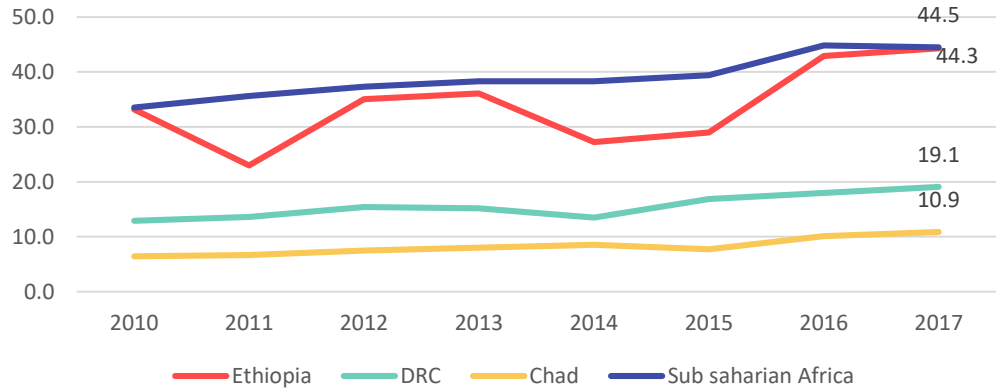
Finance: Access to suitable capital for start-ups & enterprises utilising digital; public finance to fund enabling ecosystems and infrastructure

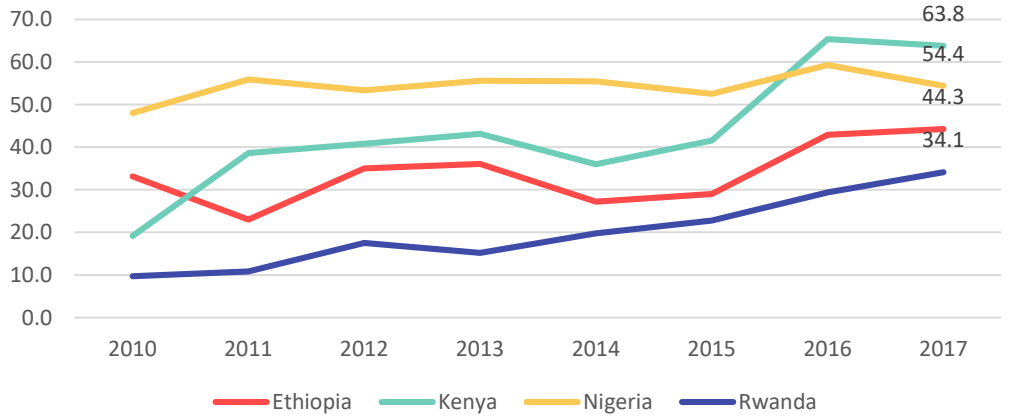
People: Human Capital incl. skills and social expectations

Policy & Regulation: A conducive environment that attracts investment, enables the private sector, and creates jobs

Power– as *the* baseline to internet connectivity - is accessible to 44.3% of Ethiopians. This is on par with the SSA average, but lower than its larger peers, Kenya (63.8%) and Nigeria (54.4%)

Access to electricity (% of population)
2010 - 2017





Source: World Bank
Based on International Energy Agency (IEA), Sustainable Energy for All, and the Energy Sector Management Assistance Program.

Rank in Electricity Access, (out of 140 countries in 2017)

Kenya **110**

Nigeria **114**

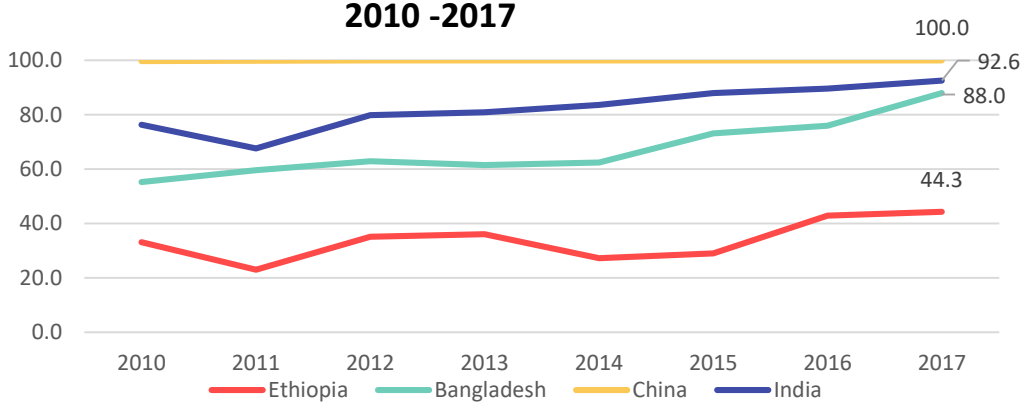
Ethiopia **121**

Rwanda **130**

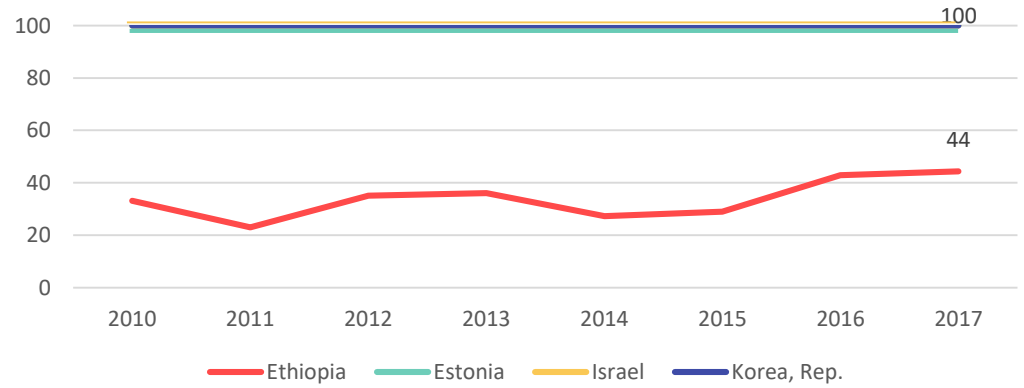
Source: Global competitiveness report, 2018
Based on International Energy Agency (IEA).

Compared to the wider world – and especially newly industrialising peers such as Bangladesh – Ethiopia's electricity access is inadequate

Access to electricity (% of population)
Ethiopia and new industrialisers
2010 -2017



Access to electricity (% of population)
Ethiopia and advanced aspirational economies
2010 -2017

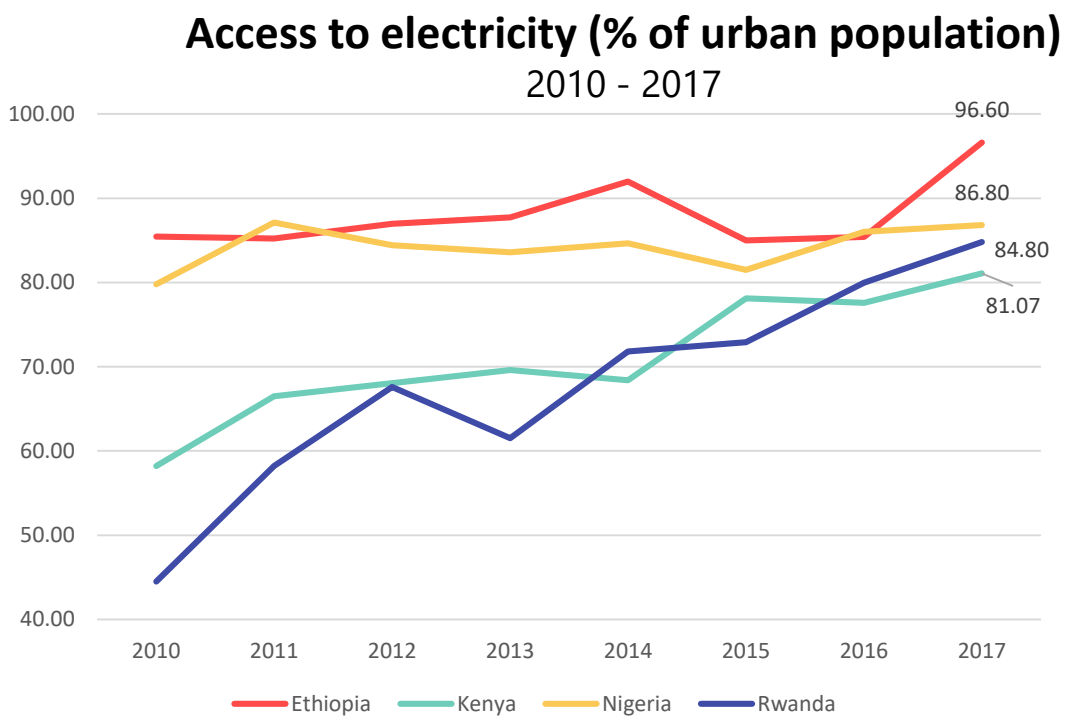


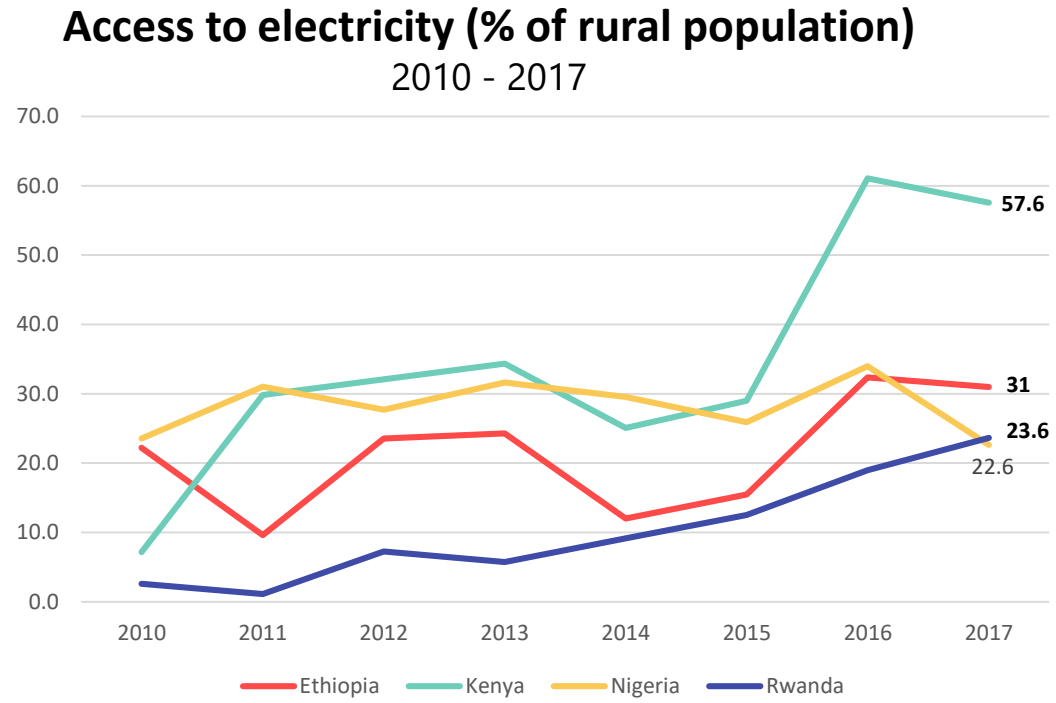
Main bottlenecks in electricity affects the digitalisation of the economy

- Whilst Ethiopia is outperforming other 'high performers' in SSA, such as Rwanda as illustrated in the slide before, it is no where near globally competitive to peers it aspires to rival, such as Bangladesh.
- Its trajectory for access is rising (albeit it plateaued in the last year), but it needs to grow exponentially if it is able to support widespread digitisation of the economy.
- Even regardless of digitisation aspirations, its existing development plans for industrialisation will require a significant investment in electricity access

Source: World Bank
Based on International Energy Agency (IEA), Sustainable Energy for All, and the Energy Sector Management Assistance Program.

Electricity coverage is high amongst the urban population (96%) – far higher than its regional peers and indicative of Ethiopia's industrialisation efforts. However rural access is still low and will need to be addressed if inclusive digital economic growth is to occur





Source: World Bank
Based on International Energy Agency (IEA), Sustainable Energy for All, and the Energy Sector Management Assistance Program.

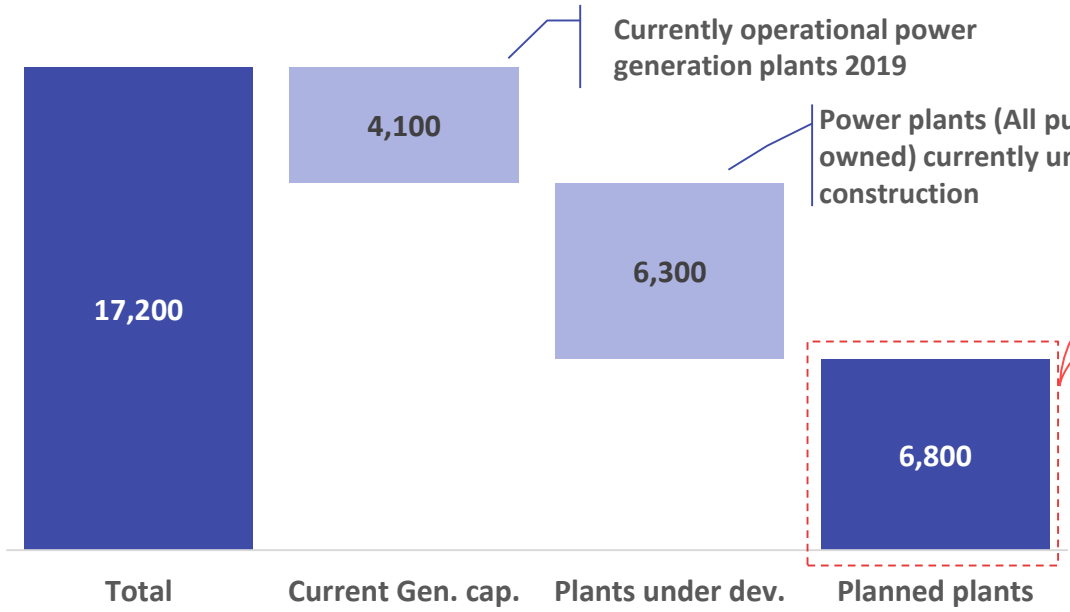
Whilst electricity coverage is relatively unequal, Ethiopia does offer the most affordable electricity of its peers where access is available. But reliability and quality remain a challenge, affecting business and FDI in particular

	Price of electricity (US cents per kWh)	Electricity production kWh/capita	Reliability of supply index (0-8)	Quality of supply index (0-8)
Ethiopia	**3.9**	**92.2**	**0**	**0**
Nigeria	**12.8**	**167.6**	**0**	**0**
Rwanda	**13.9**	**28.7**	**5**	**5**
Kenya	**21.5**	**203.1**	**4**	**4**

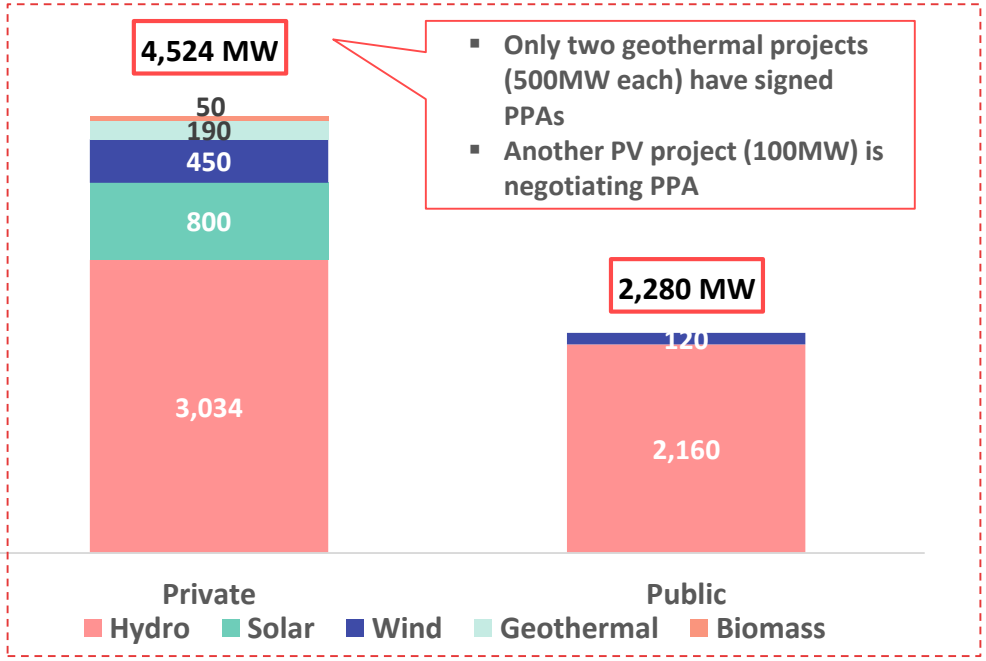
Source: Doing Business 2018, based on data collected from markets' players and regulators. Networked Readiness Index (2016) based on International Energy Agency (IEA) and World Bank

Power generation expansion plan set by GTP II didn't reach the expected target to increase generation capacity up to 17,200 MW by 2020 through major private sector contribution leaving the system exposed to power shortage risks

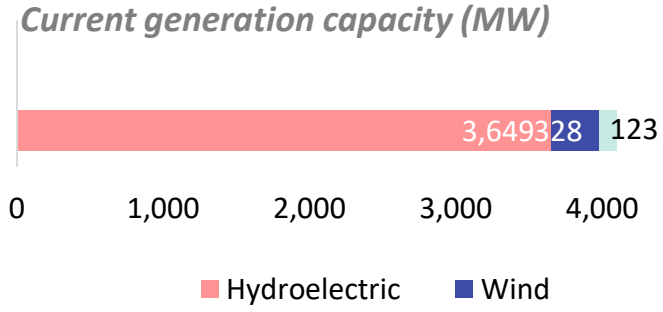
GTP II power generation targets, 2020 (in MW)



Planned generation capacity with new plants



Current generation capacity (MW)



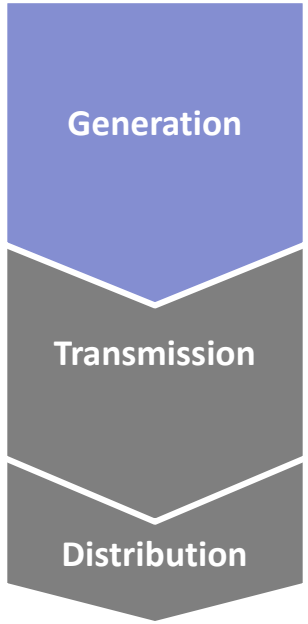
- **Ethiopia introduced power rationing program in June-July 2019** due to low water availability
- This confirms its **high dependence on hydropower** and stresses the need to diversify its generation mix
- To avoid power shortages in the next years **Ethiopia needs to address the current unbalances between demand and supply**
- Government's efforts to **crowd-in private sector into power generation have not yet reached the expected result**s with only 3 projects currently underdevelopment

Sources: "SDG Performance Report", EEU, 2017; GTP II; Salini Construction website; "Geothermal Development in Africa: The Corbetti Example", Reykjavik Geothermal, 2016. TBI analysis

Ethiopia's power sector is run by a state monopoly, with only generation open to private companies. This may indicate why prices have remained low, though reliability and quality is variable with respect to transmission and distribution

Private sector participation is allowed for on-grid power generation, but not transmission and distribution

Overview of actors and respective duties along the power supply value chain in Ethiopia



EEP (Ethiopian Electric Power) **administers state owned power plants** in the country and **buys power from IPPs**

IPPs (Independent Power Producers) generate power and sell it to EEP

EEP is **in charge of transmitting** all power across the nation

EEP **owns and operates** all long distance power transmission lines

EEU bulk purchases power from EEP and **sells to customers**

Private sector participation allowed

Private sector participation not allowed

Off-grid transmission and distribution are open for private investors

MOWIE oversees the power sector and EEA serves as the regulator

Institutional framework of the Ethiopian power sector

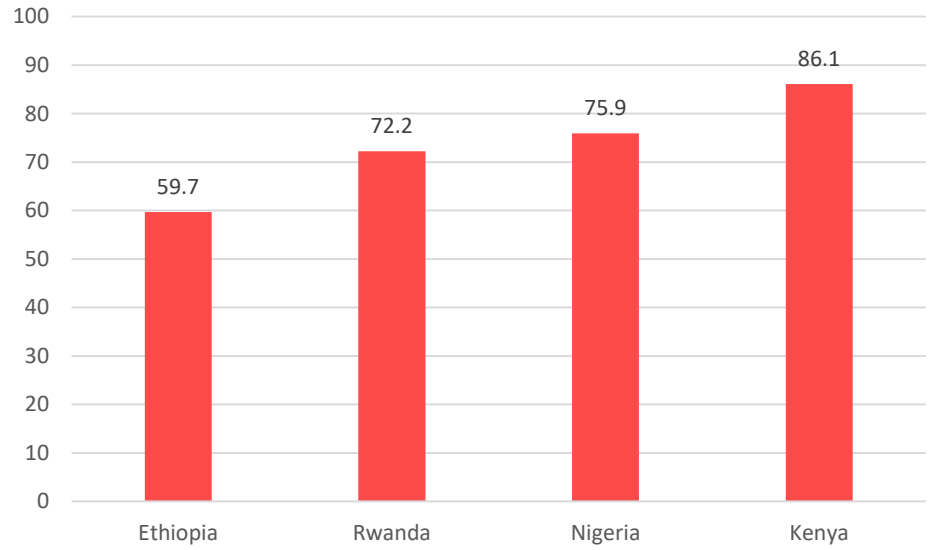
Ministry of Water Irrigation and Energy (MoWIE)	• Oversees the power sector at a ministerial level
Ethiopian Energy Authority (EEA)	• Regulates the power sector • Provides licenses for sector investment
Ethiopian Electric Power (EEP)	**Ethiopian Electric Utility (EEU)**
• Generation • Transmission • Power procurement • Investment promotion	• Distribution and retail

MOFEC – develops detailed project pipelines for power generation plants through PPP project teams *[According to the new PPP law]*

Sources: "Inventory of Policy Interventions – Ethiopia", USAID/PATRP, 2015; World Bank, Access to Electricity in Ethiopia, June 2015; Interviews with EEU and EEP officials; TBI analysis

Mobile phones are the predominant means for internet access on the continent. And mobile subscriptions in Ethiopia have been significantly lower than its regional peers

Mobile-cellular telephone subscriptions (as percentage of population) 2017

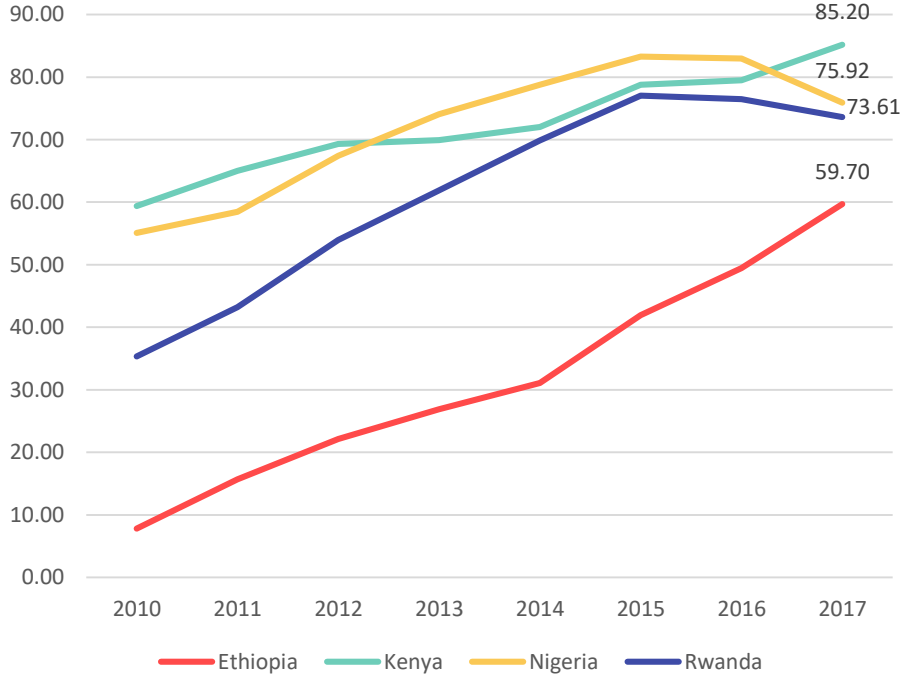


Rank Mobile-cellular phone subscriptions out of 140, 2017

Ethiopia	Rwanda	Nigeria	Kenya
130	127	124	113

Source: Global competitiveness report, 2018. Based on ITU

Mobile-cellular telephone subscriptions (as percentage of population) 2010 - 2017

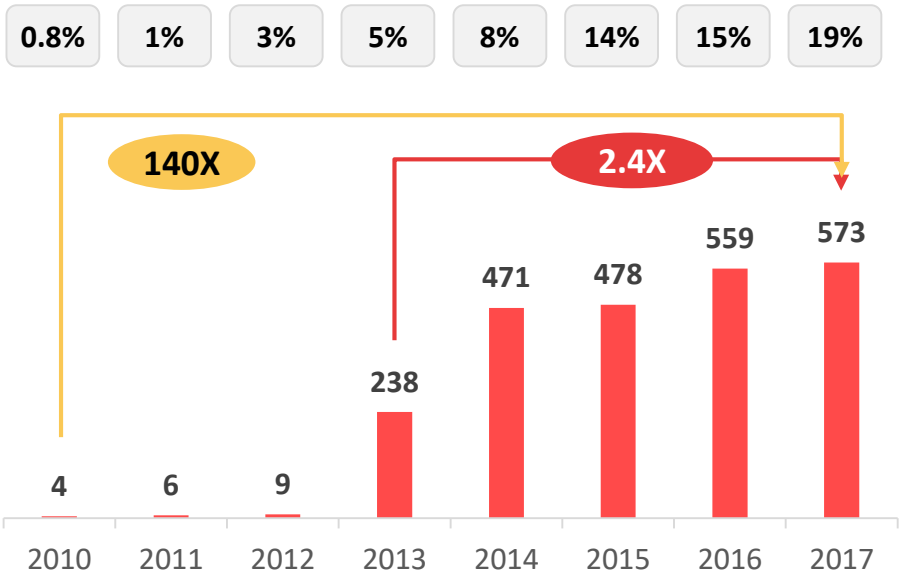


Source: ITU 2017, based on national data

In the last five years, Ethiopia has seen significant growth in internet use and mobile phone subscriptions. But it has been from an extremely low base

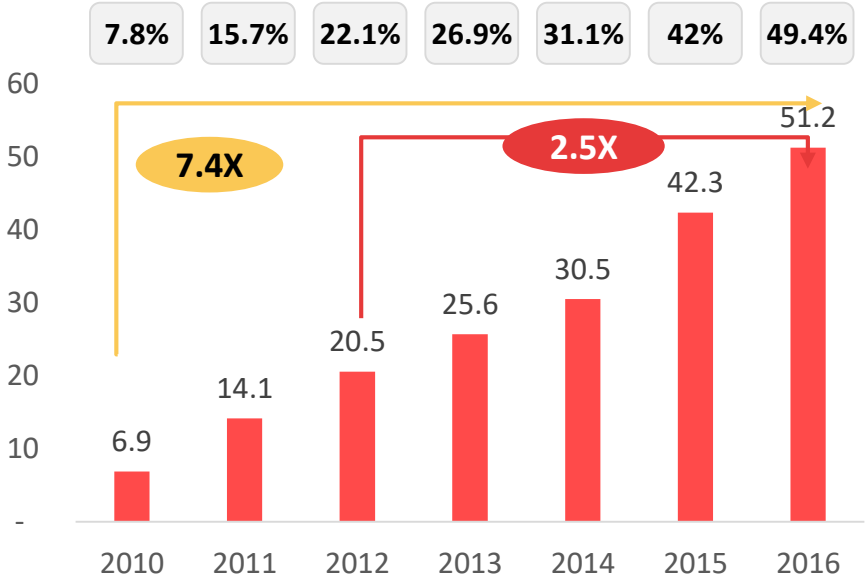
Internet subscription increased 140X over 7 years, reaching 20% coverage in 2017

Fixed broadband Subscriptions (in thousands of users) and Coverage (users as percentage of population)



Mobile-cellular telephone subscriptions (2010 – 2016)

Mobile-cellular telephone subscriptions (in millions of users) and Coverage (users as percentage of population)



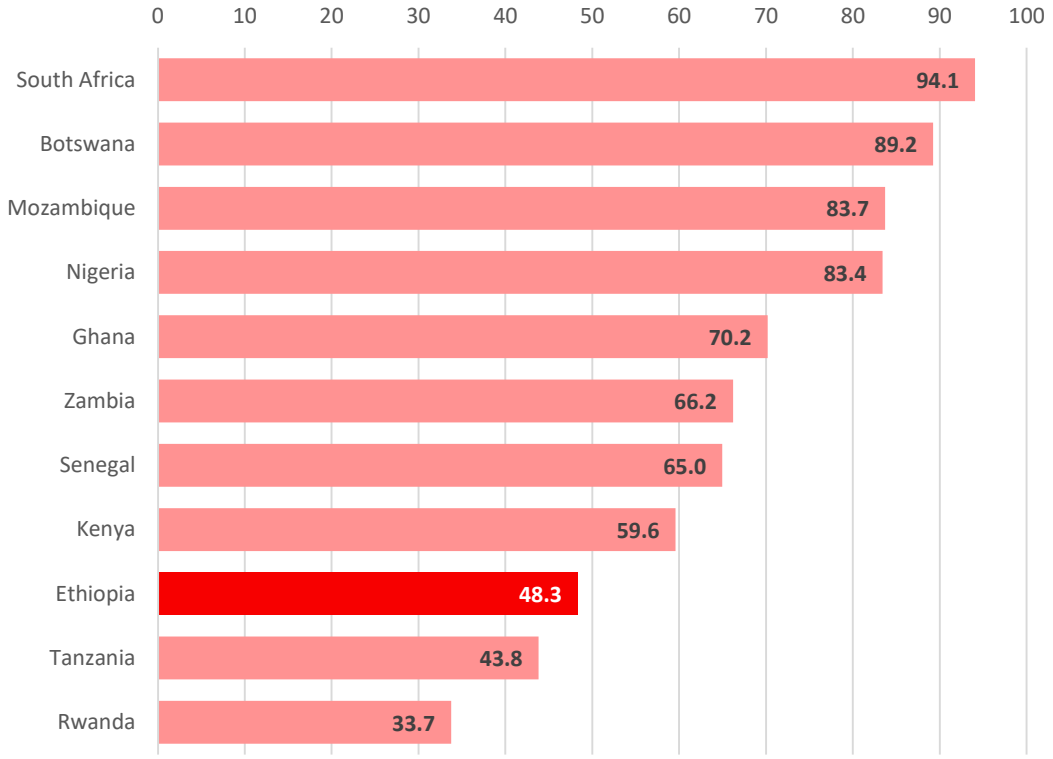
Reasons for the expansion of customers:

Extensive investment in infrastructure during the period: The availability of supplier credit from The Export-Import Bank of China to the tune of US$1.5 billion in 2006. The first phase of network expansion, the Chinese firm ZTE undertake the building of 6 000 km of national fibre backbone and the expansion of mobile reach. The second phase of the contract, with a loan amount of US$1.6 billion, was instrumental in accelerating mobile penetration.

Source: ITU (2017) based on national data
Research ICT Africa

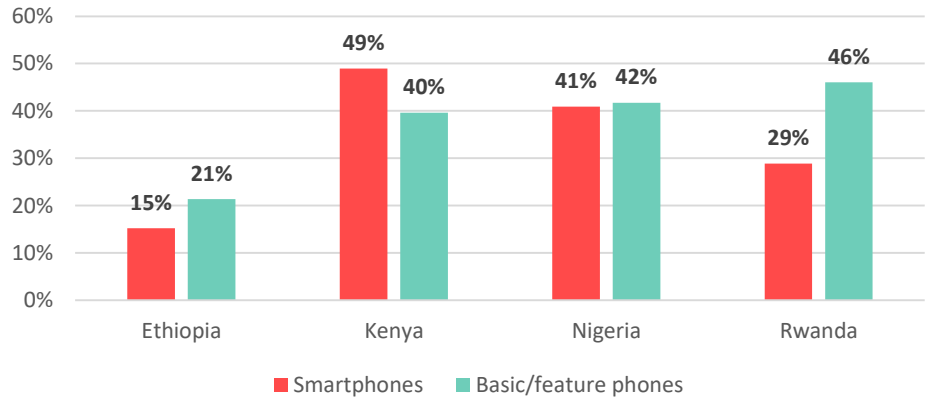
Internet-enabled smartphones are expensive for large parts of the population, which is reflected in the low take-up rate (15%)

Cost of a smartphone (handset) relative to income,
100=most affordable



Note: Indexed scores of the price of entry-level handset to the consumer, as a percentage of monthly GNI per capita; Score of 0-100, 100=most affordable

Market penetration of hardware, %

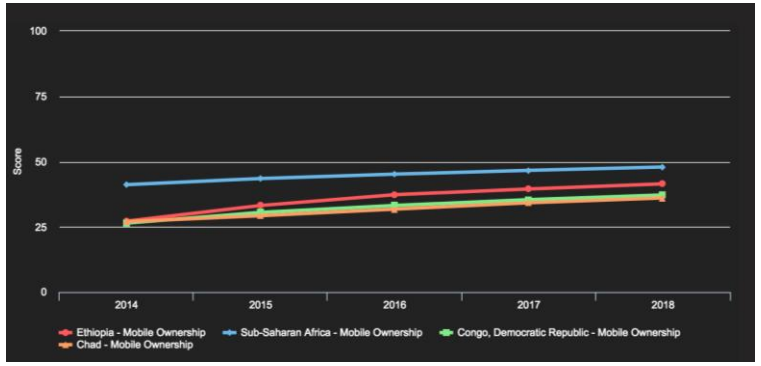


- **Taxation of (imported) hardware is an issue for businesses because of uncertainty regarding** taxation and customs charges

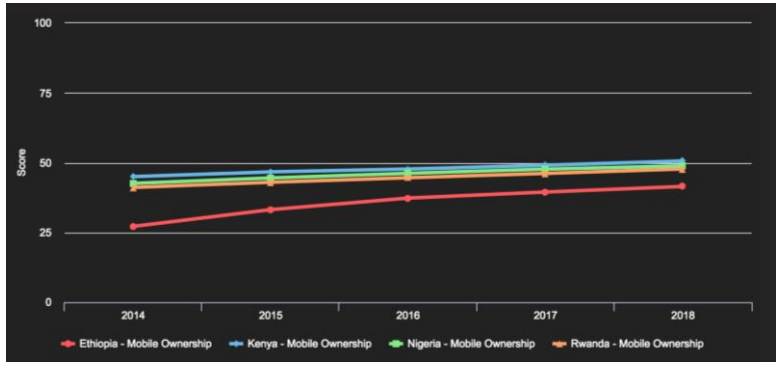
Source: (GSMA 2018)

Mobile phone ownership is not only lower than the sub-Saharan average, but underperforms competitors such as Bangladesh and India

Ethiopia, Chad, DRC, SSA av.

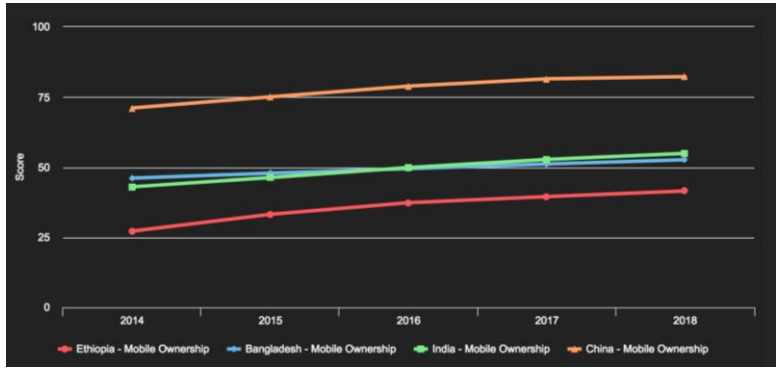


Ethiopia, Rwanda, Nigeria, Kenya

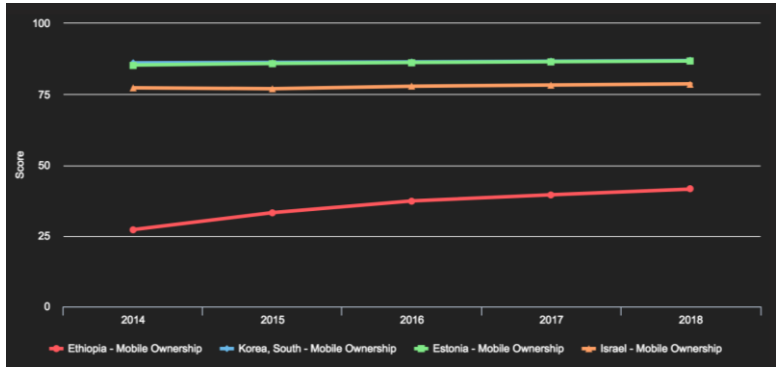


- Ethiopia's number of devices is lower than the African average, its direct competitors and it is also lower than in Bangladesh.
- The comparative growth rates of mobile ownership suggest that Ethiopia is only very slowly catching up.

Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



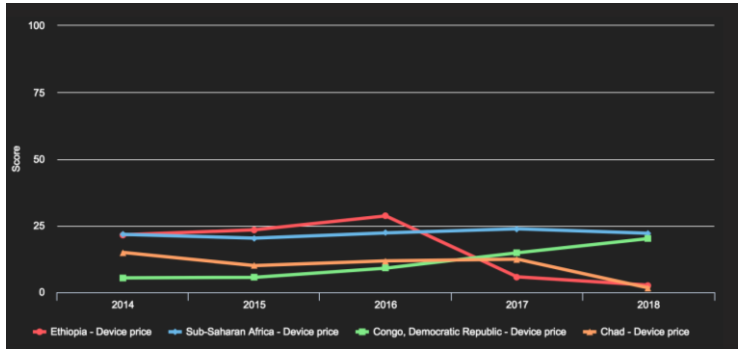
Implications for Ethiopia

- Most Africans experience the digital world via their mobile phones. Speeding up the rate of device ownership is crucial for digital readiness.
- A possible remedy would be second-hand imports.

Source: GSMA 2019, based on GSMA Intelligence

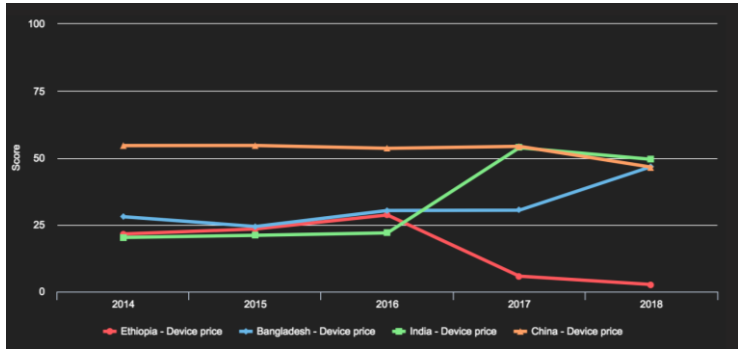
It is likely that the falling price competitiveness of mobile devices in Ethiopia has suppressed mobile phone subscription growth compared to peers

Ethiopia, Chad, DRC, SSA av.

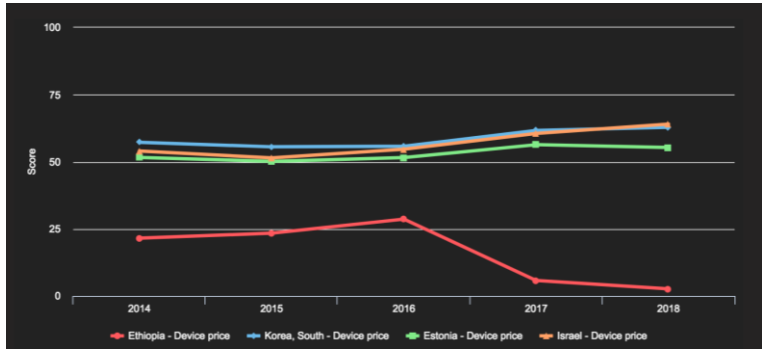


Ethiopia, Rwanda, Nigeria, Kenya

Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



- Compared to the African average, Ethiopia's devices have become significantly *more expensive* in recent years, same as in Nigeria and particularly in Rwanda (top left and right). Meanwhile, Indians and Bangladeshis have enjoyed more affordability of devices, on par with the global frontier countries.
- **Implications for Ethiopia's Digital Readiness:** Bringing down the cost of devices is imperative to increasing digital readiness of the population.

Source: GSMA 2019, based on GSMA Intelligence

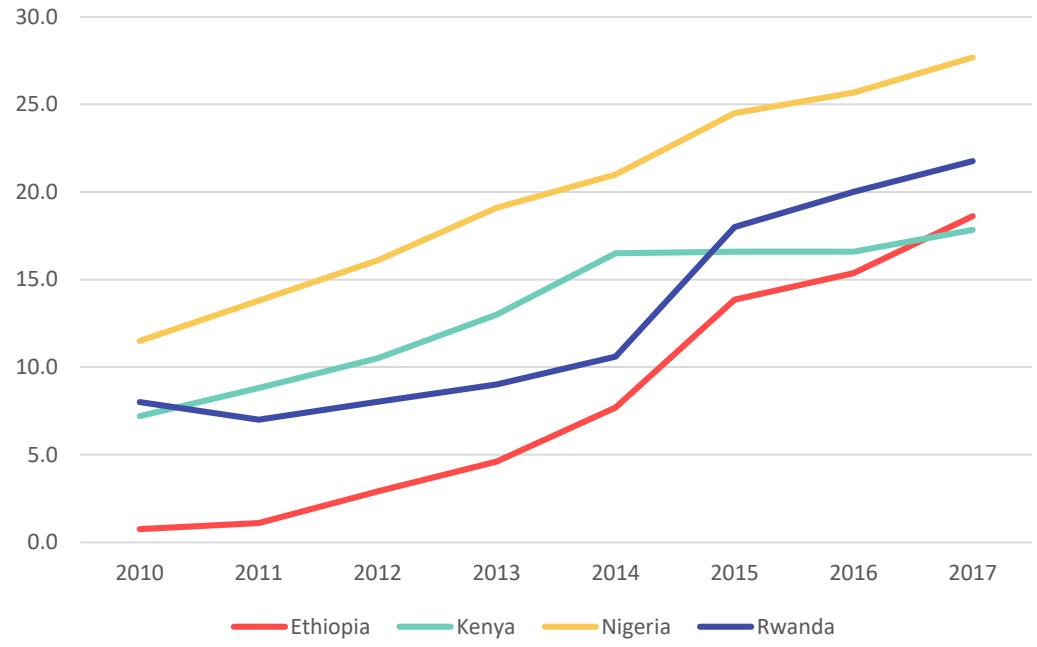
Given mobile access has been lower than its regional peers, it is not surprising that Ethiopia has some of the lowest rates of internet access in the world, lower than the SSA average

Comparative Factors	Ethiopia	Africa	World
Percentage of individuals using the internet	**18.6**	22.1	48.6
Percentage of households with internet access	**18**	19.4	54.7
Percentage of households with computer	**4.9**	8.9	47.1
International Internet bandwidth per Internet user, kb/s	**2.0**	11.2	76.6
Mobile cellular subs per 100 inhab.	**59.7**	74.4	103.6
Active mobile broadband sub. Per 100 inhab.	**7.1**	24.8	61.9

Source: ITU, 2017

However, compared to its regional comparators and particularly Kenya – heralded as the most digitally advanced on the continent – the percentage of internet users was surpassed by Ethiopia in the last year

Internet users
(percentage of population using internet)
2010 - 2017



Source: World Bank, based on ITU
*Percentage of individuals who used the internet from any location and for any purpose, irrespective of the device and network used.

Rank in Use of internet, out of 140
2017


107


119

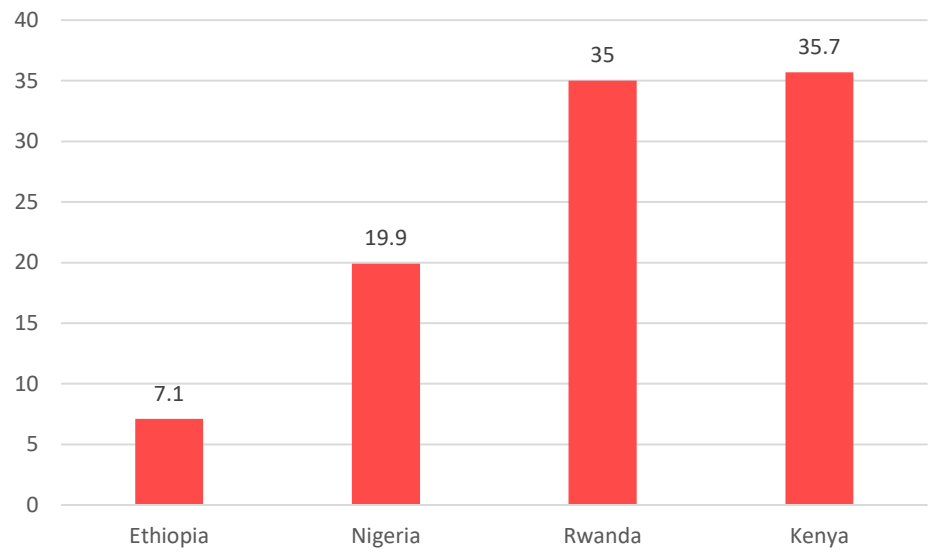

125


127

Source: Global competitiveness report, 2018, based on ITU

Despite the rise in internet use amongst the population, mobile broadband subscriptions remains low versus regional peers.

Mobile broadband subscriptions (as percentage of population) 2017



Mobile broadband subscriptions, out of 140 2017


108

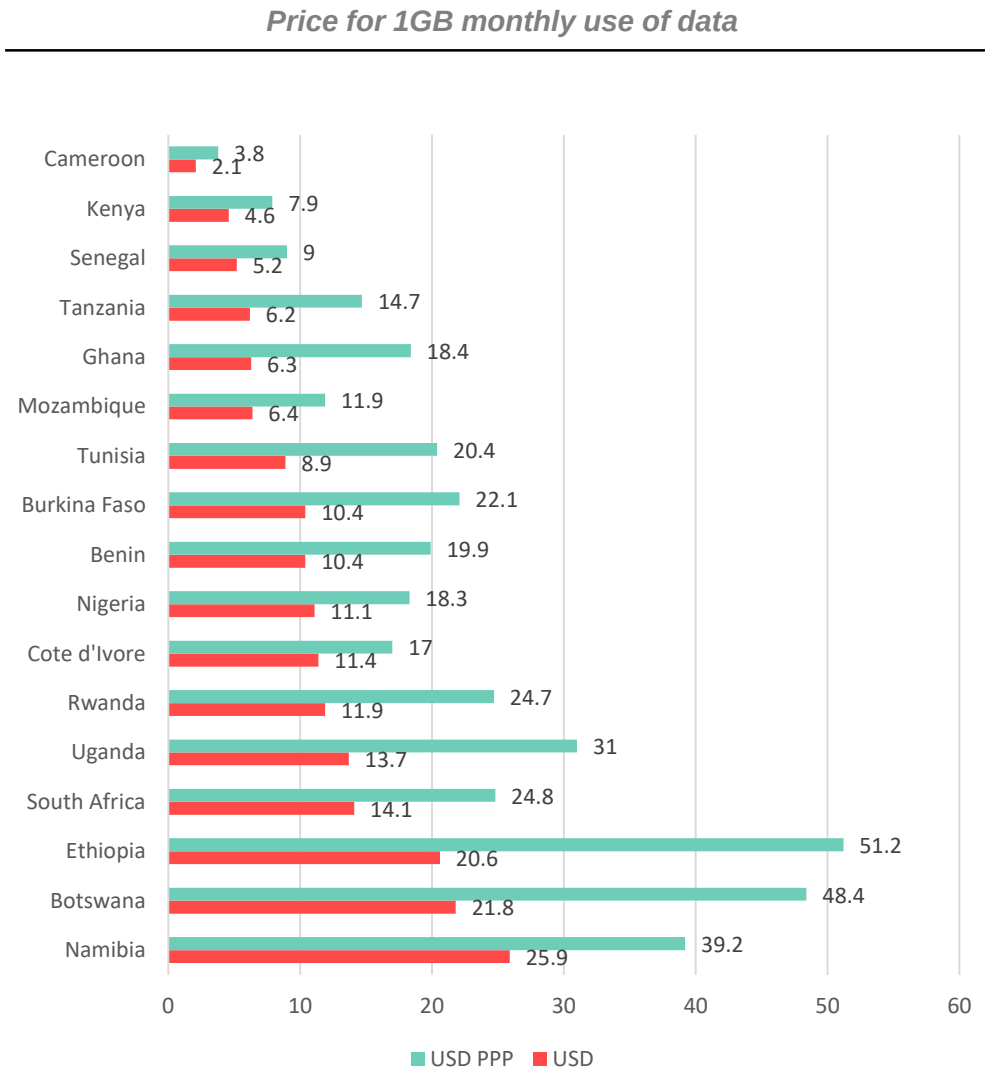

109

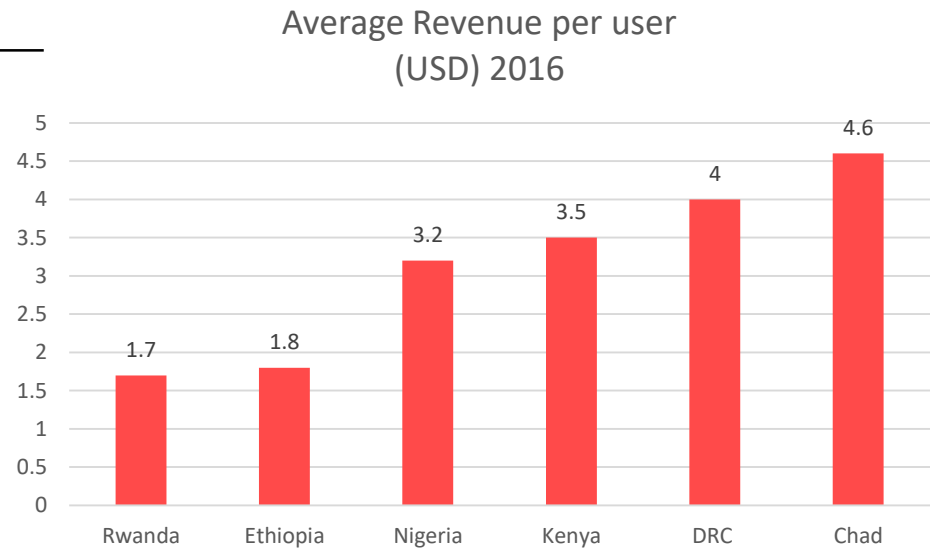

126


138

Source: Global competitiveness report, 2018, based on ITU

Ethiopia's internet tariffs are the highest in East Africa – which could well indicate why broadband subscription remains so low





- Ethiopia's prices for internet are high but at the same time, it is failing at getting sustainability. The Average revenue per User is within the lowest of the region. This is an indicative that the monopoly in Ethiopia is not effective at generating revenue and demand for telecommunication services.

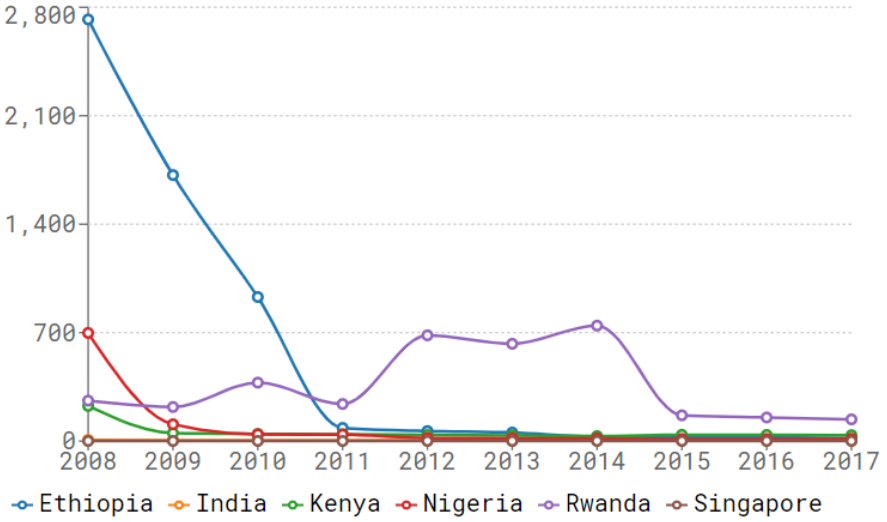
Source: ICT research Africa, based on RIA African Mobile Pricing Index

*ARPU: total revenue divided by the number of subscribers.

Source: ICT research Africa based on GSMA

And even though internet and mobile data has become more affordable in Ethiopia at US$3.45 per 1GB, it is still above the 2% target set by the ITU broadband commission.

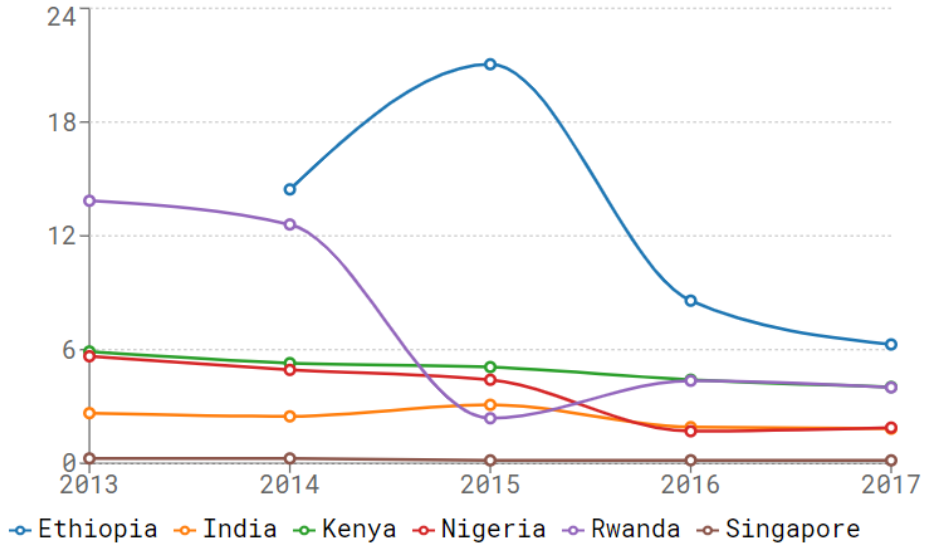
Cost of fixed broadband basket as a % of GNI, Ethiopia and peers



Note: Basket is on the basis of a 5GB monthly usage and an advertised download speed of at least 256 kbit/s.

	2012	2013	2014	2015	2016	2017
Singapore	0.71	0.44	0.69	0.63	0.5	0.8
India	4.12	3.66	5.28	5.11	4.84	4.48
Nigeria	19.6	17.73	16.05	13.23	13.4	14.9
Ethiopia	**64.55**	**55.07**	**27.95**	**26.31**	**25.24**	**18.45**
Kenya	39.3	35.92	31.73	40.65	39.69	37.88
Rwanda	682.64	627.91	745.2	166.44	152.6	140.3

Cost of 500MB of mobile broadband as a % of GNI, Ethiopia and peers, 2017



	2013	2014	2015	2016	2017
Singapore	0.26	0.26	0.16	0.17	0.16
India	2.65	2.48	3.09	1.91	1.83
Nigeria	5.65	4.93	4.41	1.7	1.89
Rwanda	13.85	12.6	2.38	4.36	4.01
Kenya	5.9	5.29	5.08	4.41	4.03
Ethiopia		**14.45**	**21.05**	**8.58**	**6.27**

Source: International Telecommunications Unit (2017) ICT Prices 2017

Ethiopia ranks second to last on the A4AI's Affordability Drivers Index. Policies of digital inclusion need to be strengthened given particularly that poor digital infrastructure exacerbates gaps

Affordability policy

- There is **no Universal Access / -Service Fund** in Ethiopia
- The **draft PE proclamation** in the telecoms sector currently **includes a community service obligation**, which works similar to a Universal Access Fund.
  - Depending on government support, services under the CSO could be provided by both Ethio Telecom and new private players
  - Another possibility currently being discussed is the inclusion of CSOs in telecoms licenses
- There is **no policy for gender equity in internet access and use**

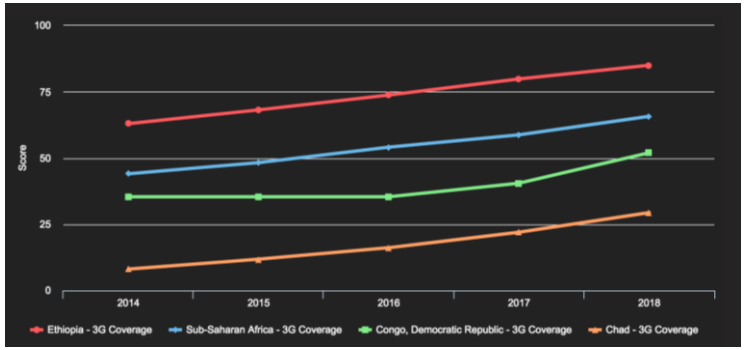
New market entrants and market dynamics

- Due to the **monopoly**, there haven't been market entrants in the telecommunications sector
- The sector is set to begin **liberalization by the end of 2019**, with two licenses being issued to foreign firms. In addition a **minority stake in Ethio Telecom** will be sold to investors.
- **Ethio Telecoms cut prices by in 2018**, potentially as a response to the threat of new entrants from market opening
- Electricity tariff rates have increased over the past year with the increments cascaded for 4 years

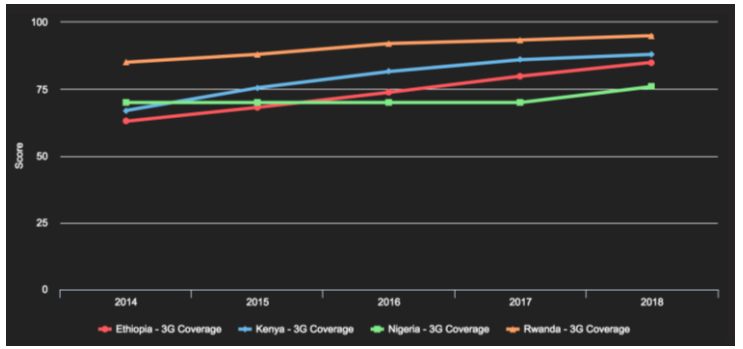
Source: Alliance for Affordable internet 2016, based on The Web Index. TBI intelligence

Ethiopia is nonetheless making strides to improve its 3G access – outperforming the SSA average and coming closer to Kenya and Rwanda's 3G connectivity

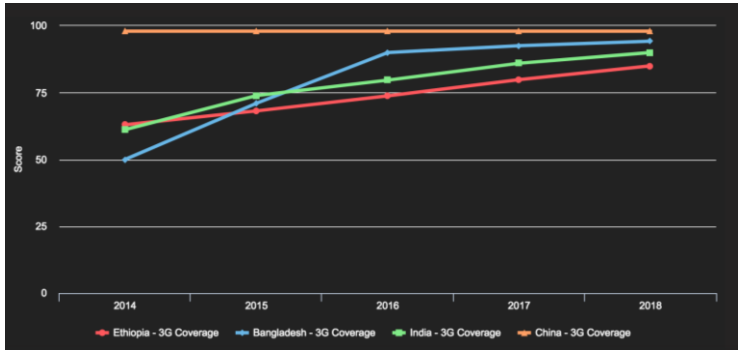
Ethiopia, Chad, DRC, SSA av.



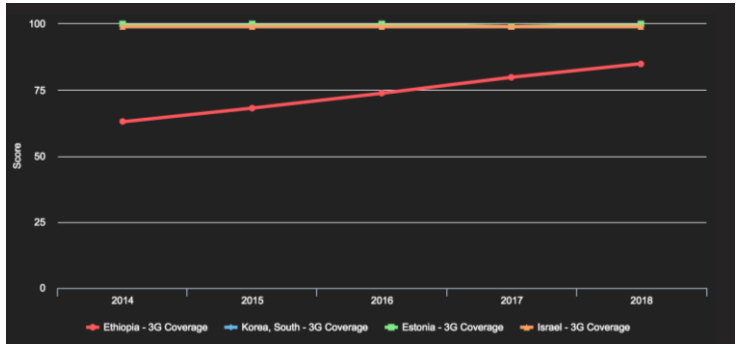
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



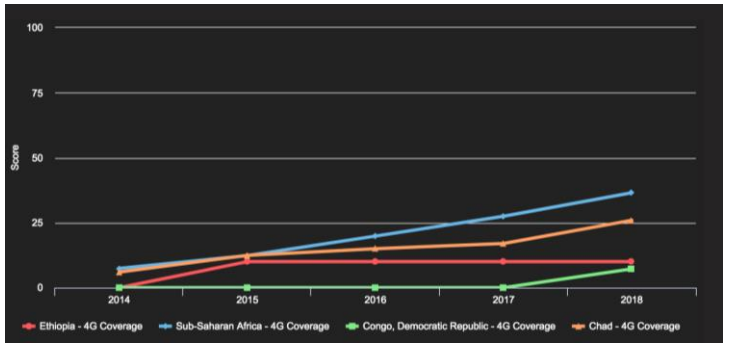
- Ethiopia's 3G access is steadily rising and noticeably above the African average and Nigeria.
- Kenya, Rwanda, India, and even Bangladesh have better 3G coverage
- China and the global frontier countries all have universal 3G coverage.

- **Implications for Ethiopia's Digital Readiness:** inching upward on 3G coverage is important for basic communication. But many applications (such as audio and video are not accessible via 3G). Hence, 3G may not be enough to become competitive.

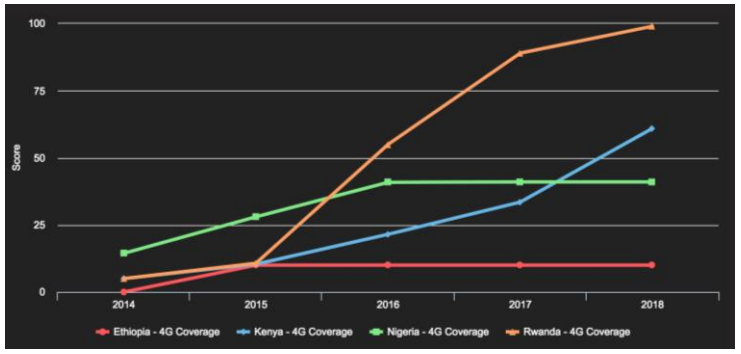
Source: GSMA 2019, based on GSMA Intelligence

But Ethiopia's efforts towards 4G access has plateaued compared to regional peers, and other aspirational benchmarks such as India and China. This will be a key bottleneck to a growth strategy grounded in the digital age

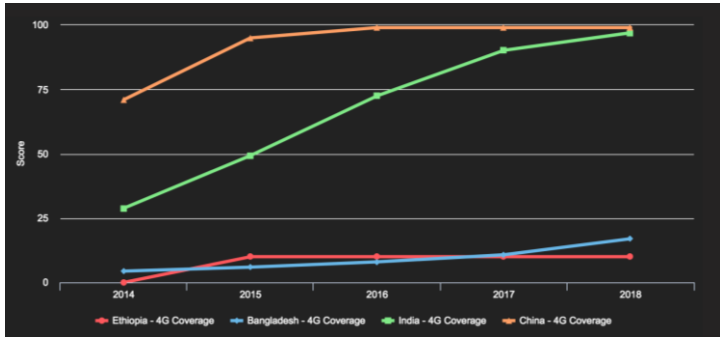
Ethiopia, Chad, DRC, SSA av.



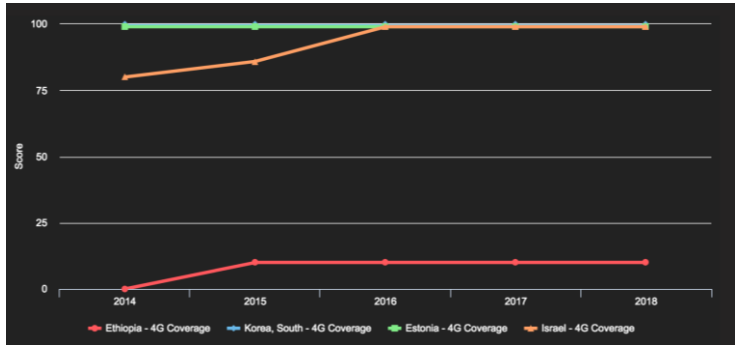
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



- Ethiopia's 4G access is stagnant at 10. This is far below the African average, which has steadily risen to 36.5%.
- Within the main competitors, Nigeria hovers above at 41%, while Kenya (61%) and particularly Rwanda (99%) have rapidly spreading their 4G networks
- Rwanda, India, China and all the frontier countries have universal universal 4G coverage
- Only Bangladesh has comparable network problems

- **Implications for Ethiopia's Digital Readiness:** As the world gears up for 5G, this constitutes Ethiopia's key bottleneck.

- **Possible remedies:** *ethio telecom's* pending breakup and privatization.

Source: GSMA 2019, based on GSMA Intelligence

Ethiopia's low bandwidth per internet user will likely limit availability of technologies in the country, and firms' technology absorption in the country as compared to regional peers

	International Internet bandwidth per Internet user, kb/s,	International internet bandwidth Rank/140	Networked Readiness Index Rank/140	Availability of latest technologies, Rank / 140	Firm-level technology absorption Rank / 140
	25.2	50	86	50	54
	8.95	115	80	45	47
	5.0	118	120	119	128
	3.1	127	119	99	91

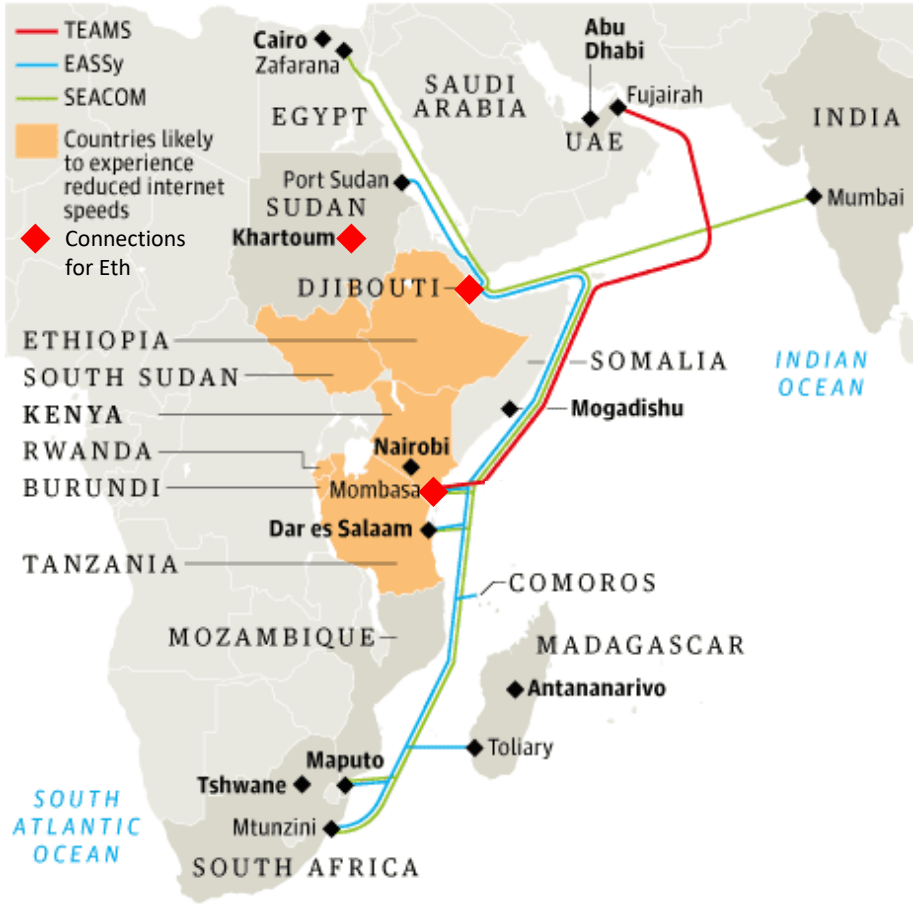
Source: Networked Readiness Index, 2016, based on ITU, WEF Surveys and The Global Information Technology Report 2016

Ethiopia currently has access to 75 GB via underwater connections through 3 neighbouring countries. *The current reforms will hopefully improve the environment for further investments in the network*

Ethiopia is dependant on 3 countries for access to underwater cables…

- Ethiopia accesses underwater ICT cables through **terrestrial connections in Sudan, Djibouti and Kenya**
- Total bandwidth capacity **is 75 GB**
- The primary connection is through a fibre network that stretches from the Red Sea port of Djibouti to Addis Ababa.
- The national optical-fibre network is **connected to the continental shelf of East Africa - Eastern Africa Submarine Cable System (EASSY) –** accessed through underwater cables via Mombassa.
- Ethiopia has two domestic satellites used as backup / redundancy.

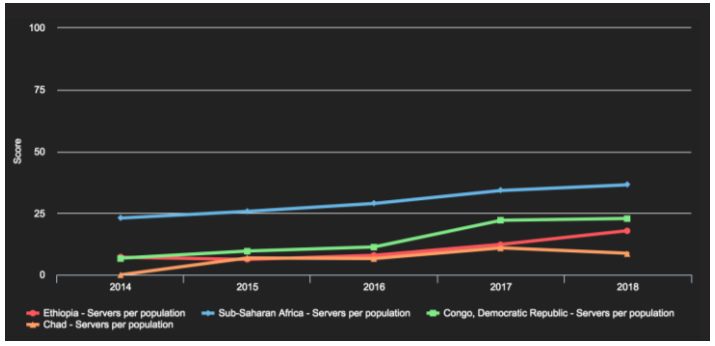
Ethiopia has internet access via neighbouring Djibouti, Kenya, and Sudan



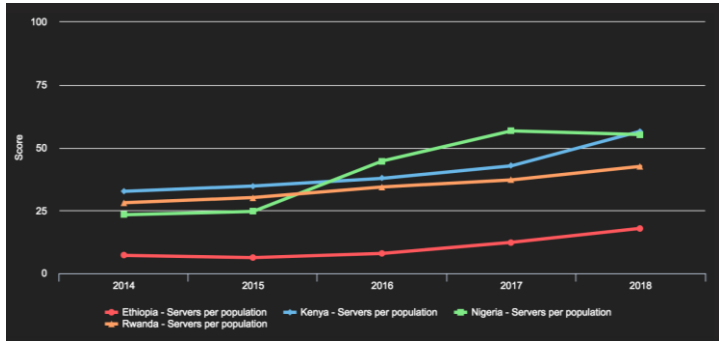
Source: Ministry of Innovation and Technology

Ethiopia also has a relatively low number of servers per user as compared to the SSA average, and below that of its regional peers.

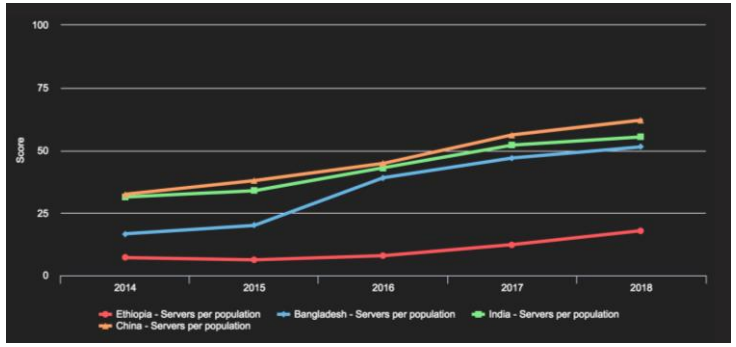
Ethiopia, Chad, DRC, SSA av.



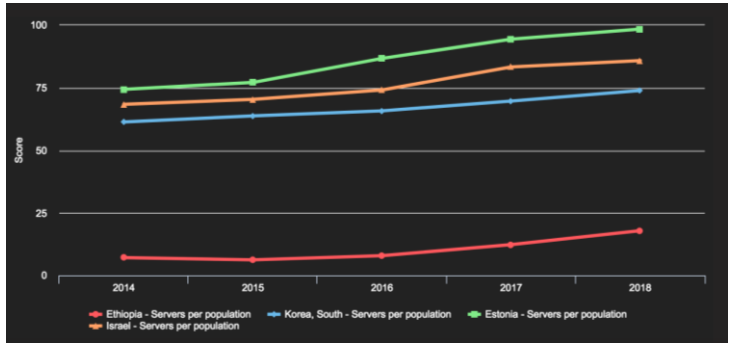
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



Source: GSMA 2019, based on World bank

- The number of available servers per user in Ethiopia is below the African average, and substantially below region's leading ICT countries.
- **Implications for Ethiopia's Digital Readiness:** the low availability of servers, together with the infrastructure issues and the low internet access deepen the challenges for Ethiopia's digitalisation.
- **Possible remedies:** Ethiopia's energy costs are comparatively low; the PMO's office is in negotiations with Chinese Bitcoin miners. Addis Ababa's high altitude and low temperatures would also be conducive for attracting server farms (energy reliability and cyber security would need to improve)

The government has also made steps towards boosting rural connectivity, although implementation issues have stalled the efforts thus far

The GoE has implemented some initiatives to deliver ICT services for rural population, and generating inclusion within its connectivity programmes

Rural Connectivity Programme: Project led by the MInT and implemented by *ethio telecom*. The objective was to connect 18,000 kebeles to internet services.

Rural Public Internet Access Centres (PIAC). consisted in providing kebeles' administrative centres with equipment an using them as a centre to deliver ICT services to rural dispersed population

Agriculture network ('Agrinet'), was an initiative which would link more than 30 research and operational agricultural centres to stimulate the growth of this cornerstone of the economy.

Rural connectivity programmes face managing issues as well as structural constraints to be sustainable

Administrative changes affected the continuity of the project.

Digital literacy in rural areas is a challenge for the use and sustainability of these programmes.

Low access to electricity in rural areas represents a great constraint for the implementation of internet connectivity.

Source: Ministry of Innovation and Technology

Digital Transformation Framework: Soft Infrastructure – Enabling Systems

Soft Infrastructure

Hard Infrastructure

- Accessible basic infrastructure (e.g. power)
- Accessible core connectivity infrastructure (from fiberoptic cables to mobile towers to devices to data)

Enabling Systems:

- Systems and platforms which enable remote verification and creation of apps and services while ensuring interoperability. E.g. ID verification, gateways, asset registries, payments

Applications

- Inclusive digital products and services (e.g. E-Gov, E-Commerce) used by citizens, enterprises, and governments

Ecosystem

Finance: Access to suitable capital for start-ups & enterprises utilising digital; public finance to fund enabling ecosystems and infrastructure

People: Human Capital incl. skills and social expectations

Policy & Regulation: A conducive environment that attracts investment, enables the private sector, and creates jobs

A fundamental enabling system to support digital transformation will be a national ID programme to ensure everyone can gain access to government services and become included within the formalised economy

Some steps have been taken for stablishing a National ID programme, special attention should be given to implementation for the success of the initiative

- The original concept and justification document for a national ID to replace the kebele ID system was drafted in 2009.
- The **National Digital ID program envisioned to replace the Kebele ID system**, initially led by a commission of authorities' representatives and, now under the Ministry of Peace's mandate.
- All **citizens will be provided a unique number (NID number) assigned at birth** and used as a means of consistent lifetime identification
- The project includes an **Automated Fingerprint Identification System (AFIS)**, and the **issuance of smart cards** and regular, polycarbonate cards.
- **MoP** is currently setting the strategy for the NIP and **engaging MINT** on whether to include a foundational digital ID programme within it.
- Digital ID program has **started implementation is Addis Ababa** and could **serve as an important pilot for the national upscale**

Source: World Bank, MINT

Implications of a National ID Programme for the digitalisation of the economy

- Assigning the NID number at birth and including it in the birth certificate to provide a consistent lifetime identification and linking the civil registration processes and database to that of the national ID system, would give every Ethiopian and/or resident of Ethiopia a unique lifetime number, which could serve for national accountability and planning.

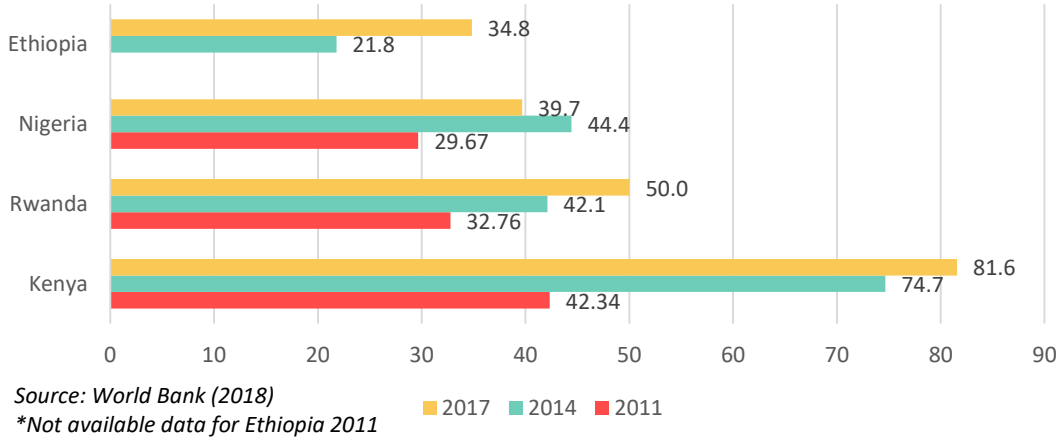
- Providing legal identity for all, including birth registration, can accelerate progress towards many targets, such as financial inclusion, universal healthcare coverage and economy formalization.

The program is, however, facing challenges

- Changing mandates across Ministries (MCIT–MINT–MOP)

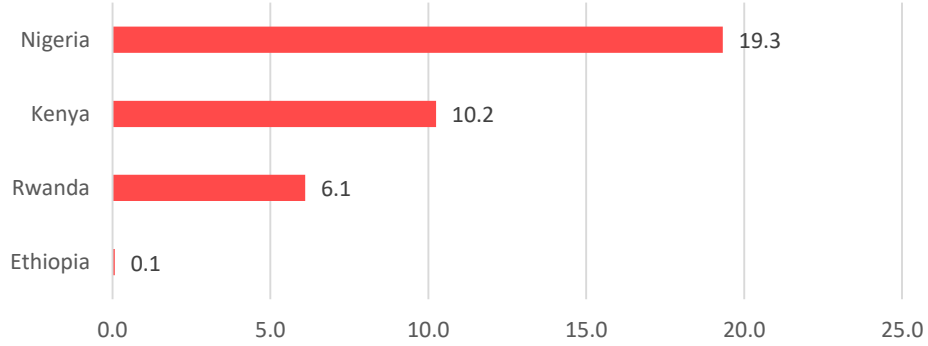
Mobile money is a key innovation for digitally enabled innovations, instrumental in formalising workers and can play a key role in supporting governments improve tax collection. Solutions in Ethiopia are at a nascent stage.

Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+)



Source: World Bank (2018)
**Not available data for Ethiopia 2011*

Used an account to make a transaction through a mobile phone (% of population ages 15+)



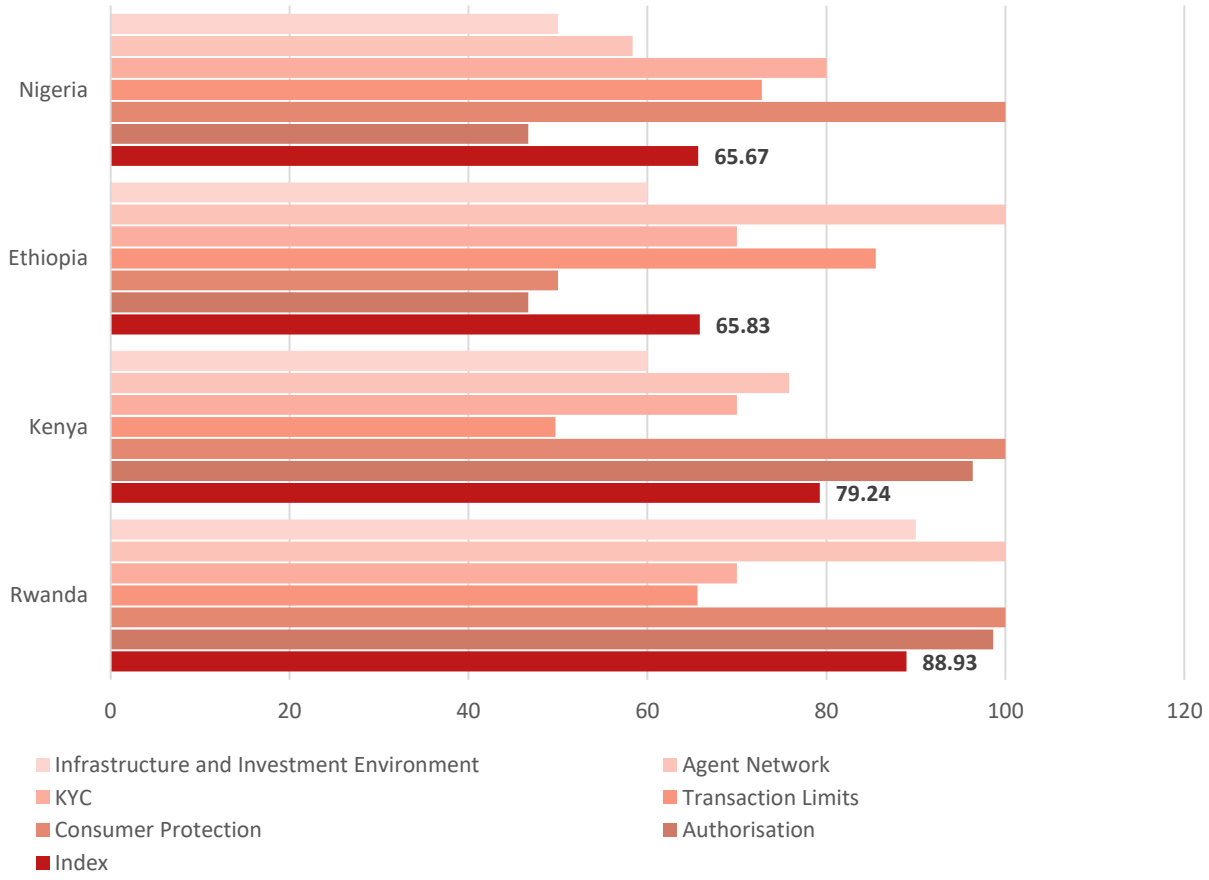
Mobile money solutions are in nascent stage and face regulatory challenges to grow

- Ethiopia is a cash driven economy. Currently, only **35% of population has access to financial services** in Ethiopia and only **0.1% used mobile phone for transactions.**
- Although the low access represents a challenge for financial inclusion, it also opens a huge opportunity for mobile money and fintech companies which can be more effective than commercial banks at reaching Ethiopian population.
- However, regulation affects the development of these kind of solutions. In order to be recognized, companies must register only as partners of a formal financial institution to provide services to them, which limits new solutions to the current financial gaps.
- There is no clarity on who should regulate them, the National Bank, the MINT, the Ministry of Finance, etc.

Source: World Bank. Global Findex. 2017. Last available data for transactions through mobile is 2014.

Ethiopia performs relatively well on the MobileMoney regulatory index with respect to certain indices, yet the exclusive right of financial institutions to issue mobile money remains a key constraint

GSMA MobileMoney Regulatory Index 2019, Ethiopia and peers

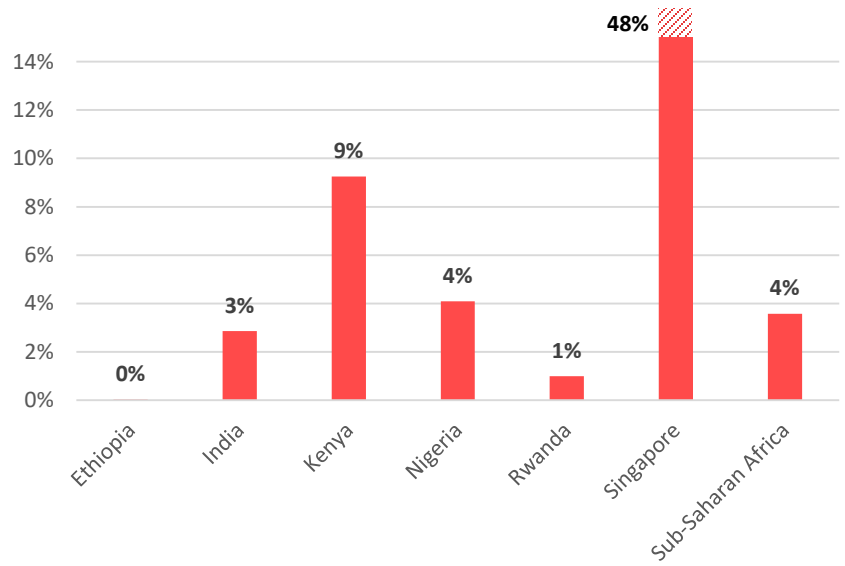


Source: GSMA 2019 based on GSMA Intelligence

- Ethiopia has a **relatively well-established agent network** (as measured as proportionality of employing and using agents) as well as a **high level of flexibility of providers to meet customer needs with regards to transactions**
- However, Ethiopia's regulatory framework is **restrictive in authorisation, as non-financial institutions are currently not allowed to issue mobile money**

Currently Ethiopians use digital technology mainly for entertainment. This may be a reflection of the nascent development of mobile money and e-services, but also that citizens are not aware of the potential for economically productive activities.

Share of the population who used the internet to buy something online in the past year (% age 15+)



Source: World Bank (2018) Findex database, Economist Intelligence Unit (2018)

Ethiopians are self-reportedly amongst the least productive technology users in Sub-Saharan Africa, behind Burkina Faso
2017 survey: E-Entertainment usage (% of overall internet usage)

Note: Reply to the survey question 'How often do you use the internet for entertainment purposes? Ranked by responses indicating 'Several times a day', 'Every day' and 'Several times a week'

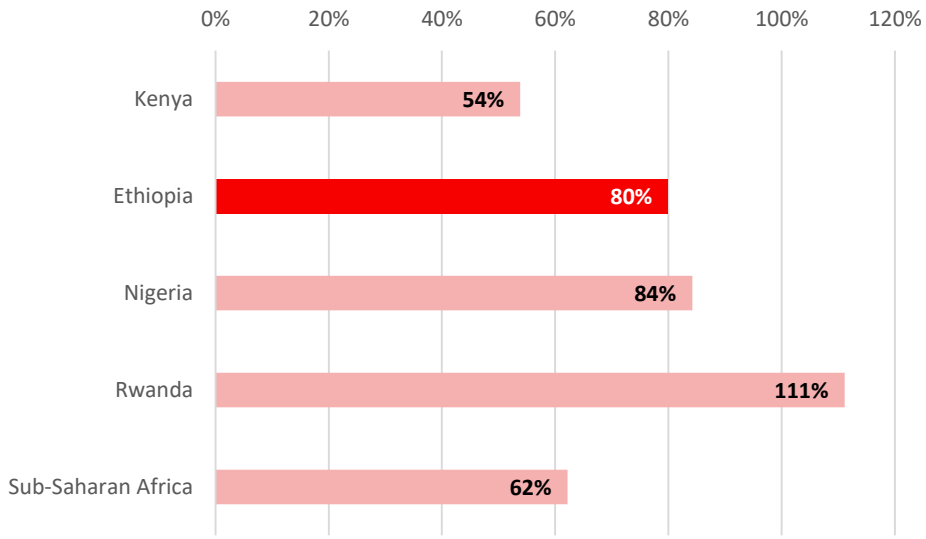
When only 15% of the population uses the internet, the gender gap is further amplified in internet access – worse than Kenya and the African average

Ethiopia's Internet users, as % of the population: below regional peers, Catching up fast, but not nearly as fast as Rwanda:

Rank	Country	Previous	Current (2016)	Change	Facebook users (12/17)
1	South Korea	98.8	99.2	**0.41%**	**83.8%**
10	Singapore	89.5	91.1	**1.79%**	**73.0%**
52	Rwanda	6.7	39.7	**490.77%**	**3.8%**
65	India	20	22.6	**13.19%**	**15.7%**
67	Kenya	19.6	22.3	**13.78%**	**13.4%**
74	Ethiopia	9.8	15.4	**56.81%**	**4.1%**
75	Nigeria	11.4	15.2	**33.60%**	**8.5%**
	Sub-Saharan Africa	14.6	20		

Note: Internet users are individuals who have used the Internet (from any location) in the last 12 months. Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.

Ethiopia's gender gap in internet access – worse than Kenya or the African average, but better than Nigeria and Rwanda:

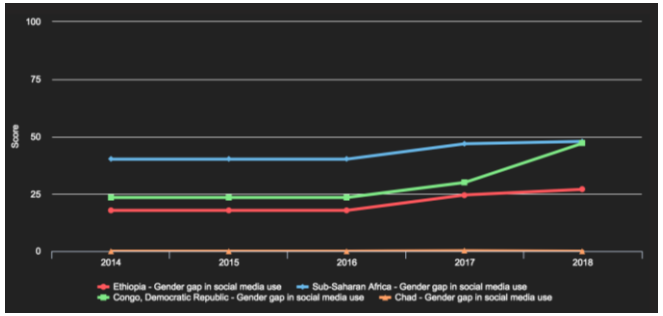


Note: Indicator measures the gap between male and female access to the Internet. Higher values indicate larger gaps.

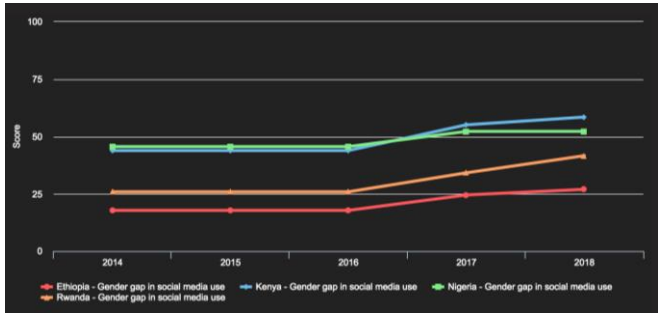
Source: Economist Intelligence Unit (EIU), based on ITU and Gallup data, Internet World Stats (2017)

And this gender gap is then reflected in social media use – a key by-product, and likely future enabler in some form, of the digital economy

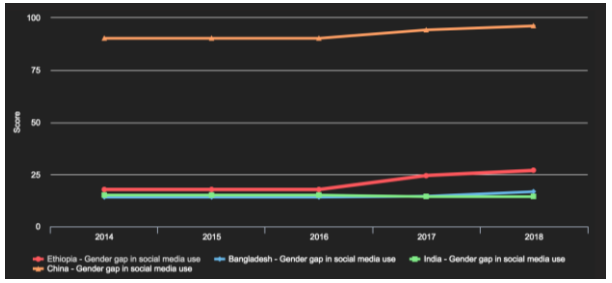
Ethiopia, Chad, DRC, SSA av.



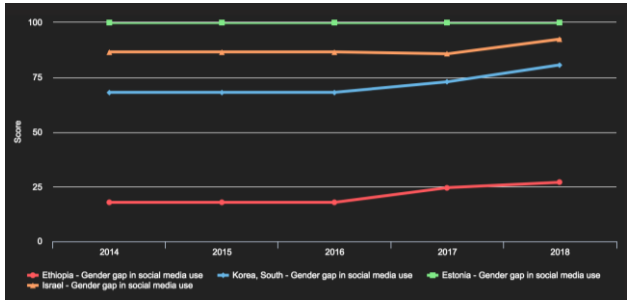
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea

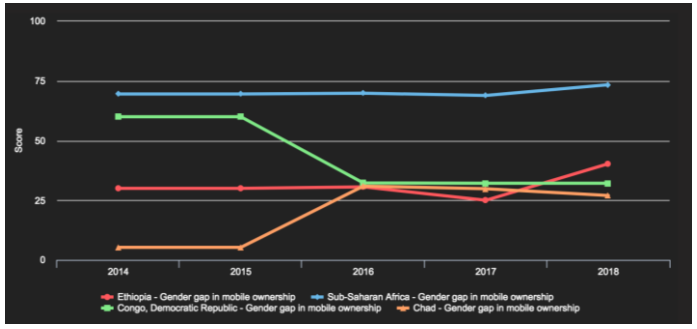


- **Trajectory:** Ethiopia gender disparity to less social media use by women, lower than the African average (top let), the region's front countries (top right). But, slightly higher than in Bangladesh, and India (bottom left).
- **Implications for Ethiopia's Digital Readiness:** Studies have found that internet usage has particularly helped working women in developing countries, more so than handsets (Bailur/Masiero 2017). This should be addressed.

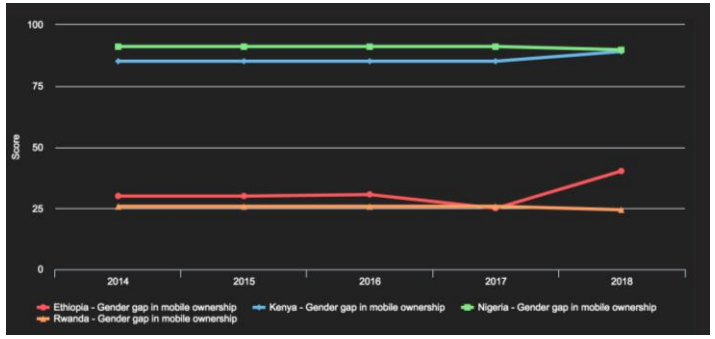
Source: GSMA 2019, based on Facebook Audience Insights/Datareportal

The gender gap in internet access and social media use will be highly steered by the gender gap in mobile ownership, far lower than the SSA average

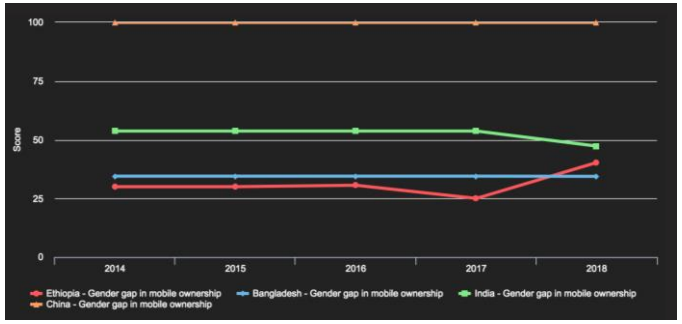
Ethiopia, Chad, DRC, SSA av.



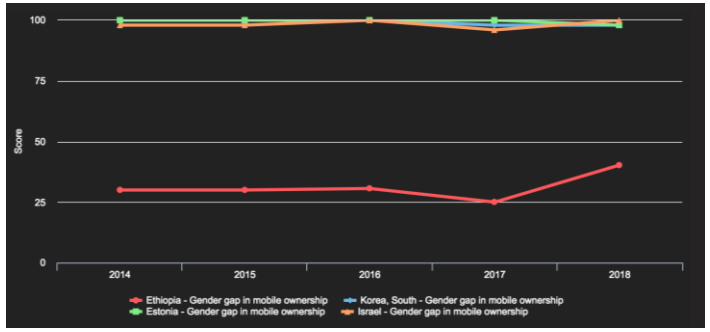
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



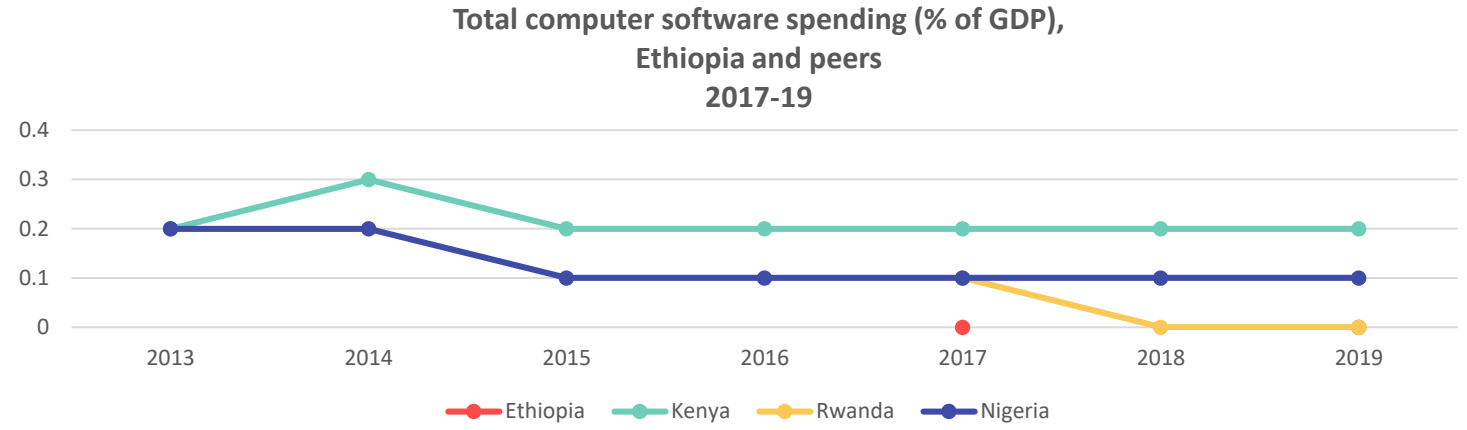
Ethiopia, Israel, Estonia, Korea

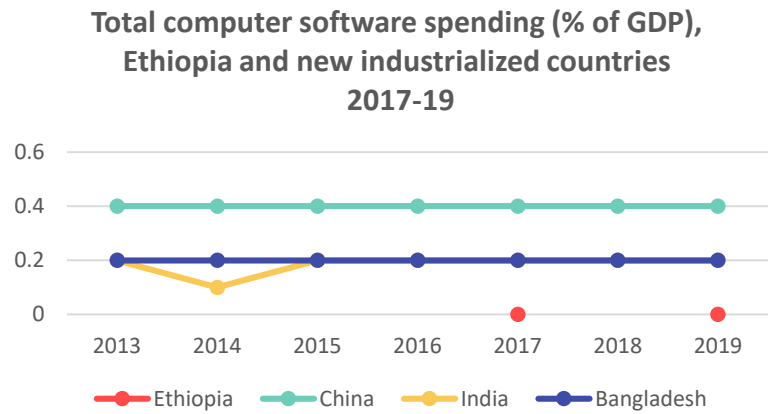


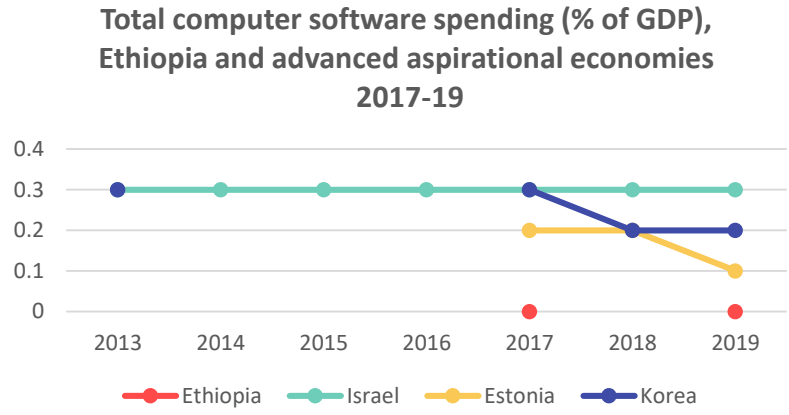
- **Trajectory:** the African gender gap (top left) is narrower than in South Asia (bottom left), and Kenya and Nigeria are lear the global frontier (top right and bottom right). But, despite recent improvements, Ethiopia still lags behind Africa and is on par with Bangladesh and India.

Source: GSMA 2019, based on GSMA Intelligence/Gallup World Poll

Ethiopia is behind its regional peers in computer software spending, which could also indicate why the internet is predominantly used for entertainment and less for economically productive purposes







Source: GII, based on Average score of the top 3 universities at the QS world university ranking | 2018 Average score of the top three universities per country. If fewer than three universities are listed in the QS ranking of the global top 1000 universities, the sum of the scores of the listed universities is divided by three, thus implying a score of zero for the non-listed universities. Source: QS Quacquarelli Symonds Ltd, QS World University Ranking 2017/2018, Top Universities. (https://www.topuniversities.com/university-rankings/ world-university-rankings/2018).*

But there is pause for optimism: Ethiopia is better ranked in higher proportion of high-tech and medium high-tech goods compared to some regional and international peers such as Kenya and Bangladesh

High-tech and medium high-tech output
(rank indicator), 2015 – 2017
Ethiopia and new industrialisers

	2015	2016	2017
China	15	18	14
India	32	36	40
Ethiopia	76	75	71
Kenya	84	82	78
Bangladesh	74	79	84

High-tech and medium high-tech output
(rank indicator), 2015 – 2017
Ethiopia and advanced aspirational economies

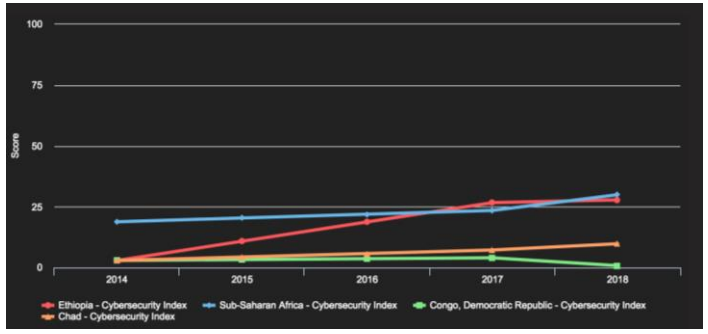
	2015	2016	2017
Korea	7	1	18
Estonia	23	24	30
Israel	37	41	37
Ethiopia	76	75	71

Ethiopia has improved its position in the ranking for High-tech and medium high-tech output, which should provide it with the capabilities to adopt new tech for productive purposes.

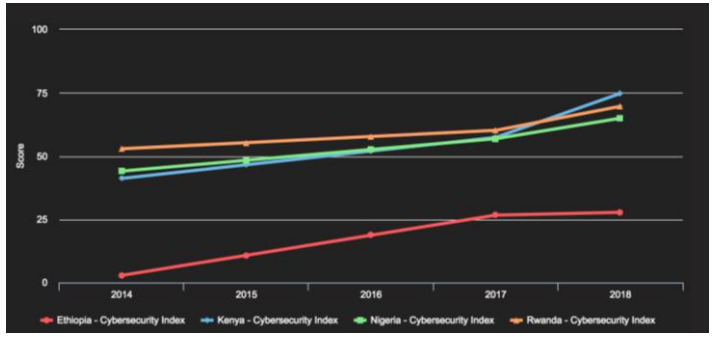
Source: GII, based on High-tech and medium-high-tech output (% of total manufactures output)a | 2016 – used rank indices
Source: United Nations Industrial Development Organization (UNIDO), Industrial Statistics Database, 3- and 4-digit level of International Standard Industrial Classification ISIC Revision 4 and Revision 3 (INDSTAT4 2018); OECD, Directorate for Science, Technology and Industry, Economic Analysis and Statistics Division, "ISIC Rev. 3 and Rev. 4 Technology Intensity Definition: Classification of Manufacturing Industries into Categories Based on R&D Intensities" (2008–16). (http://www.unido.org/statistics.html; http://stat.unido.org/content/focus/classification-of-manufacturing-sectors-by-technological-intensity-%2528isic-revision-4%2529;jsessionid=4DB1A3A5812144CACC956F4B8137C1CF;http://www.oecd.org/sti/ind/48350231.pdf).

Another enabling system critical to digital readiness – and pertinent to services exports – is cyber security. Whilst Ethiopia is on a par with the SSA average, it is behind its regional peers that are currently better positioned for online services exports

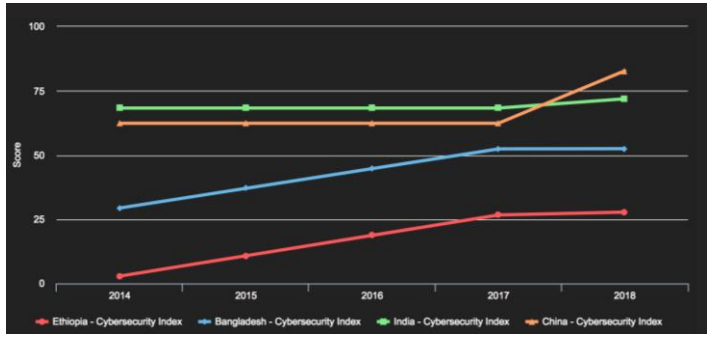
Ethiopia, Chad, DRC, SSA av.



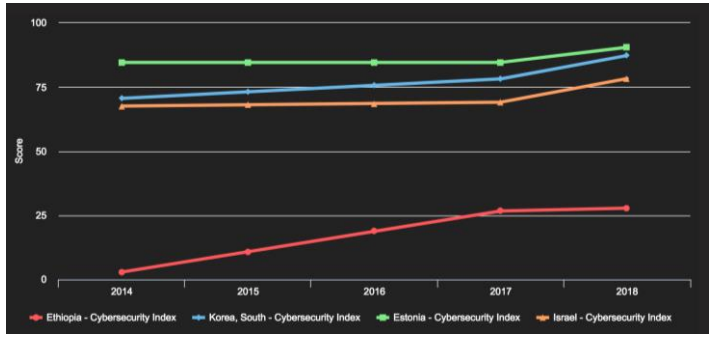
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



- Ethiopia's scores have improved and are now on par with the regional SSA average.
- ICT leaders, are far ahead (top right). They are catching up with the global frontier (compare bottom right). Bangladesh also has better cyber security than Ethiopia (bottom left).
- **Implications for Ethiopia's Digital Readiness:** Cyber security is a core 21st century asset. E.g. offshored BPO contracts have long hinged on it, and new manufacturing GVCs will increasingly demand secure data traffic.

Source: GSMA 2019 based on ITU

The GoE has built an ICT park with the vision of becoming the leading ICT hub of Africa, establishing an enabling innovation ecosystem where software solutions companies, start-ups and academia can grow

The ICT park has taken some steps to attract companies and develop new businesses

Implementation bottlenecks are still challenges for the full development of the park

Availability of land and infrastructure	Attraction of anchor companies	Development of new businesses	Market integration
• Concentration of efforts in physical infrastructure has led to neglect the processes and procedures to operate and attract tenants. • There are still gaps in availability and reliance of electricity and connectivity, which cannot be filled without tenants.	• There aren't any procedures for attracting key investors. • There isn't any segmentation or prioritization of target markets or potential investors.	• An incubation program is planned, but there is less clarity on the Implementation and services offered. • The ICT park location could imply a competitive disadvantage in relation to the incubators located in the centre of Addis. • There are no plans on attracting other incubators.	• There isn't any initiative to integrate the resident companies and enhance knowledge transfer. • Companies expected closer interactions with key players including authorities. Current tenants suggest that ICT park becomes part of MINT as it would have a better understanding of the sector.

Source: Ethio ICT Village

Digital Transformation Framework: Soft Infrastructure - Applications

Soft Infrastructure

Hard Infrastructure

- Accessible basic infrastructure (e.g. power)
- Accessible core connectivity infrastructure (from fiberoptic cables to mobile towers to devices to data)

Enabling Systems:

- Systems and platforms which enable remote verification and creation of apps and services while ensuring interoperability. E.g. ID verification, gateways, asset registries, payments

Applications

- Inclusive digital products and services (e.g. E-Gov, E-Commerce) used by citizens, enterprises, and governments

Ecosystem

Finance: Access to suitable capital for start-ups & enterprises utilising digital; public finance to fund enabling ecosystems and infrastructure

People: Human Capital incl. skills and social expectations

Policy & Regulation: A conducive environment that attracts investment, enables the private sector, and creates jobs

The Government of Ethiopia has a long history of e-governance initiatives, premised on its developmental state model

Ethiopia's e-governance capacity is comparatively strong and steadily growing

•Due to speed and security issues, the GoE has exclusive access to a dedicated network, called Woredanet. Services consist in voice, data, internet. The added value is the VPN.

•Woredanet was designed to create connectivity across public institutions. It is the base to sustain e-governance projects.

•All digital public projects are sustained by WoredaNet, including Schoolnet and e- health programs

•Capacity is equally allocated to each woreda (district) and capped at 2MB; this is not based on demand. However, as demand is increasing, Woredanet service speed is declining due to congestion.

•Woredanet is considered to be expanded and updated with a more efficient connection (migration to cloud within the options).

MInT is currently exploring new methods of rolling out connections to government institutions; private sector engagement through public-private partnerships are considered for project finance and development.

Ethiopia has long been Africa's developmental state

- Electronic offices
- Development of the IT portal and information services websites for more than 20 authorities
- Radio projects: Community radio stations for inclusion
- Automation for front office: (platforms, training and engagement)
- Concertation program: information management across the government.

E – government initiatives face key challenges

- The main challenge is the limited bandwidth capacity, and the lack of tools for monitoring the use of it. Currently, the government lacks tools to know which woreda is more active in terms of use of bandwidth.
- There is a need of stablishing standards to distribute the capacity. A study is being conducted by Addis Ababa University.
- There is a need of technical support.

Source: MINT

Compared to its leading regional peers, only Rwanda outperforms Ethiopia in its governments online services performance. However, it does still lag in providing these services in local languages, indicating they may not be as inclusive as could be

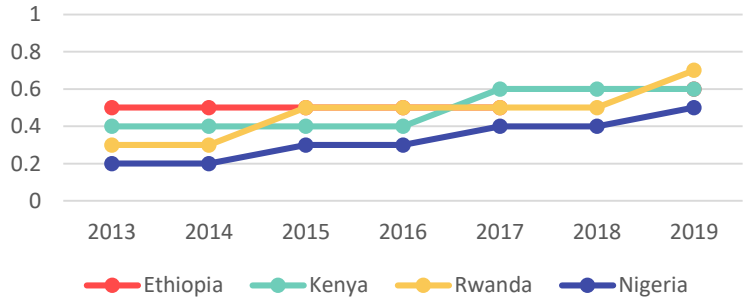
	Government Online Service Index, 0–1	ICT use & gov't efficiency, 1-7	Gov't procurement of advanced tech, 1-7	Availability of e-Gov services in local language, 0-2	Trust in Gov Websites and apps Score 0 - 100
	0.51	5.63	4.61	1	52
	0.45	3.78	3.59	1	54
	0.42	4.60	3.79	2	76
	0.30	2.86	2.78	1	50

Source: Networked Readiness Index, 2016. EIU based on own surveys and country research

Beyond its regional peers, Ethiopia still lags behind its global comparator peers such as Bangladesh and India, in its government's provision of online services

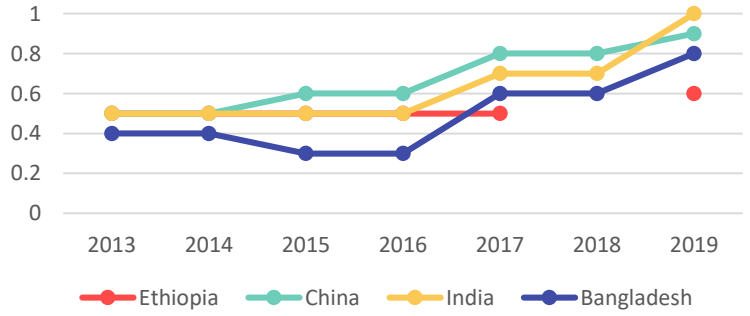
Ethiopia, Kenya, Rwanda, Nigeria

Government Online Services Index, 2013-19, index value



Ethiopia, China, India, Bangladesh

Government Online Services Index, 2013-19, index value



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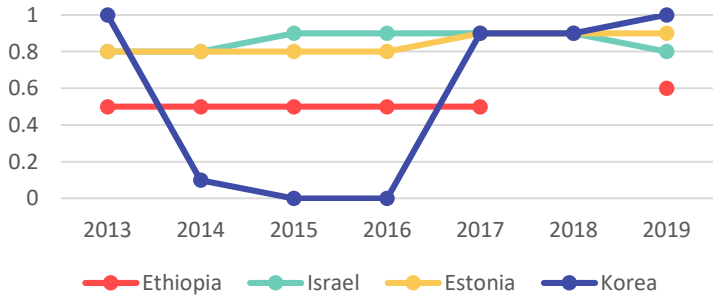
Government Online Services Index, 2013-19, index value



- Ethiopia's e-governance efforts have placed it in a competitive point in relation to its regional peers. E-government capacity is comparatively strong and steadily growing
- The global competitors are, however, all stronger, including Bangladesh.

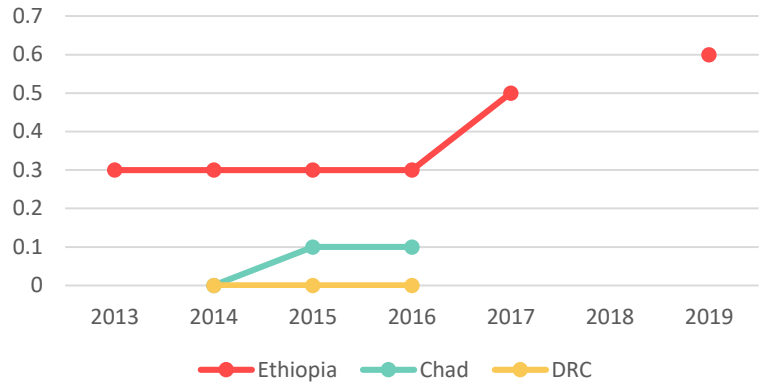
- **Implications for Ethiopia's Digital Readiness:** Ethiopia has long been Africa's developmental state. Woredanet, Schoolnet, and TeleCourt were all early indications of Ethiopia's potential.

Source: GII, based on The Online Services Index component of the E-Government Development Index, which is a composite indicator measuring the use of ICTs by governments in delivering public services at the national level. Note: The precise meaning of these values varies from one edition of the Survey to the next as understanding of the potential of e-government changes and the underlying technology evolves. Read about the methodology at https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_Annexes.pdf .
Source: United Nations Public Administration Network, e-Government Survey 2018. (https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index).

This is also true of the government's dissemination of information online to citizens and its interaction with stakeholders.

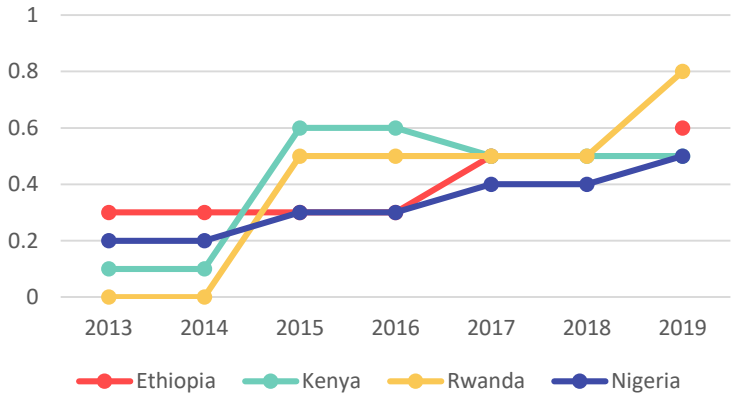
Ethiopia, Chad, DRC

Online e-participation index, 2013-19



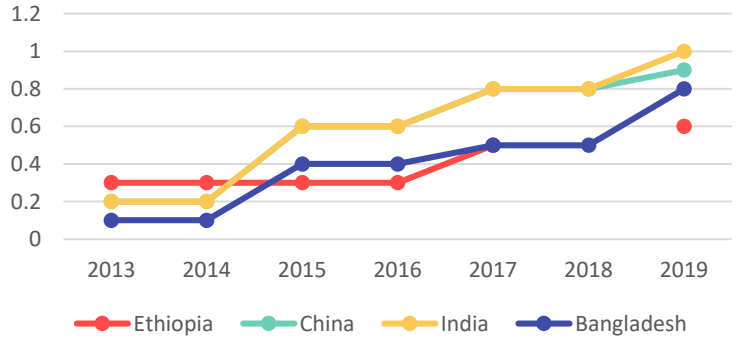
Ethiopia, Kenya, Rwanda, Nigeria

Online e-participation index, 2013-19



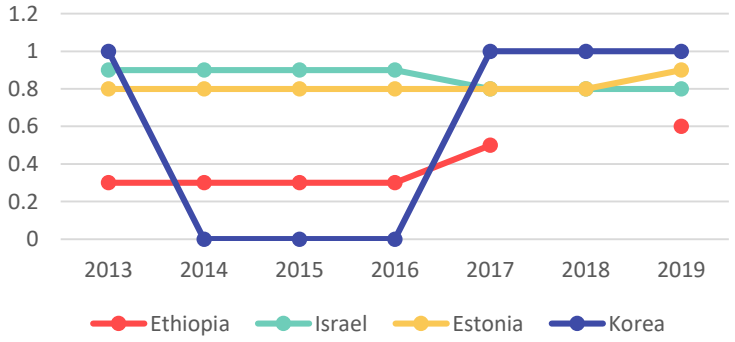
Ethiopia, China, India, Bangladesh

Online e-participation index, 2013-19



Ethiopia, Israel, Estonia, Korea

Online e-participation index, 2013-19



- E-government efforts are supported by a higher e-participation from citizens in relation to the regional peers.
- However, Ethiopia stands behind the global competitors for e-participation and citizen involvement.
- **Implications for Ethiopia's Digital Readiness:** A low citizen involvement could be a binding constraint to digitisation, which may well be exacerbated by low literacy levels

Source: GII, based on the E-Participation Index (EPI) derived as supplementary to the United Nations E-Government Survey. The precise meaning of these values varies from one edition of the Survey to the next, but focuses on focusing on the government use of online services in providing information to its citizens or "e-information sharing", interacting with stakeholders or "e-consultation" and engaging in decision-making processes or "e-decision-making as understanding of the potential of e-government changes and the underlying technology evolves. Source: United Nations Public Administration Network, e-Government Survey 2018. (https://publicadministration. un.org/egovkb/en-us/Reports/UN-E-Government-Survey- 2018).

E-commerce payment systems are a key application to facilitate digitisation of the economy. Ethiopia will need to make significant steps to improve it's e-commerce position regionally, ranking below its peers Nigeria and Kenya

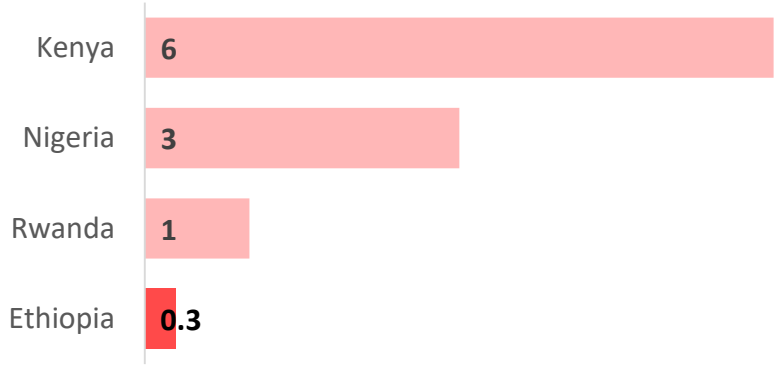
	E-Commerce content Score 0 – 100	E-commerce content Rank / 86	E-commerce safety Score 0 - 100	E-finance content Score 0 - 2	E-finance content Rank / 86
	46	50	74.5	2	33
	45	51	69	2	35
	37	63	69	1	61
	16	84	59.5	1	56

Source: EIU based on UNCTAD and surveys & country research

The instruments used by the financial sector in Ethiopia are not as modern as they could be and this has limited its ability to develop and benefit from e-commerce

Debit card ownership (% of population ages 15+)

Credit card use ownership (% of population ages 15+)



Electronic commerce is in its infancy in Ethiopia and is rarely used

- .Ethiopian banks use debit cards and automated teller machines (ATM) but have not begun to issue credit cards. Most Ethiopians do not have credit cards and internet connections are slow, expensive and unreliable.
- ATMs are interconnected with international banking networks. International ATM cardholders are able to withdraw funds from any ATM machine of the 18 commercial banks operating in Ethiopia.
- ET Switch S.C., a shared ownership company with the commercial banks, was created to improve bank-to-bank integration. According to sources at ET Switch S.C., the service is expected to be used by over 5 million ATM card holders across the country.
- Ethiopian banks have started using primary internet transactions through mobile and card banking services. These technologies followed the launch of centralized, online real-time, electronic banking solutions that have increased customers.
- There is still a long way to go to improve the digital financial services delivery system.
- Currently, foreign firms are engaged as technology service providers for various financial inclusion projects of the GOE.

Source: World Bank. Global Findex. 2017.

Digital Transformation Framework: Finance

Soft Infrastructure

Hard Infrastructure

- Accessible basic infrastructure (e.g. power)
- Accessible core connectivity infrastructure (from fiberoptic cables to mobile towers to devices to data)

Enabling Systems:

- Systems and platforms which enable remote verification and creation of apps and services while ensuring interoperability. E.g. ID verification, gateways, asset registries, payments

Applications

- Inclusive digital products and services (e.g. E-Gov, E-Commerce) used by citizens, enterprises, and governments

Ecosystem

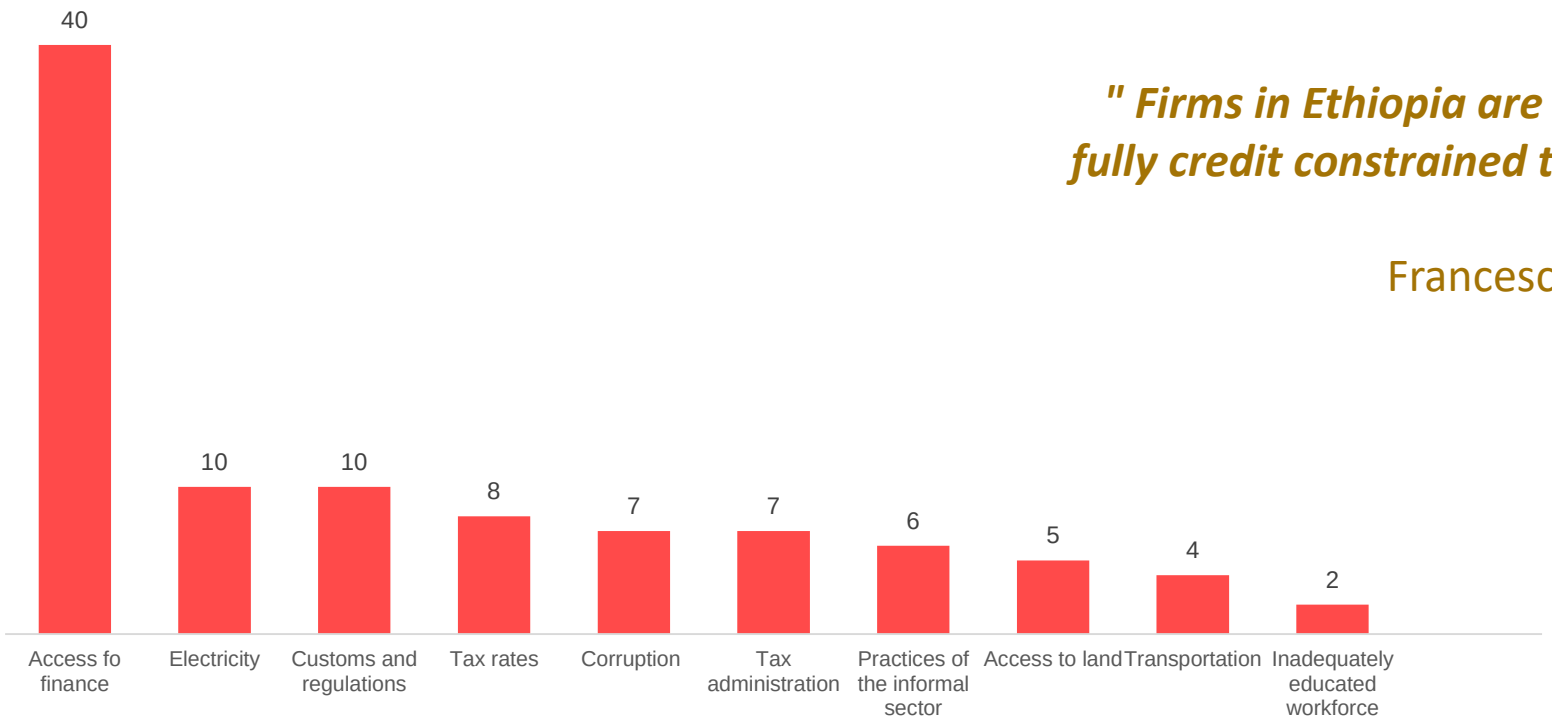
Finance: Access to suitable capital for start-ups & enterprises utilising digital; public finance to fund enabling ecosystems and infrastructure

People: Human Capital incl. skills and social expectations

Policy & Regulation: A conducive environment that attracts investment, enables the private sector, and creates jobs

Access to finance is identified as the top business constraint for enterprises in Ethiopia – a critical facilitator for innovation, regardless of the digital setting

Top ten business constraints for enterprises in 2015 (in %)



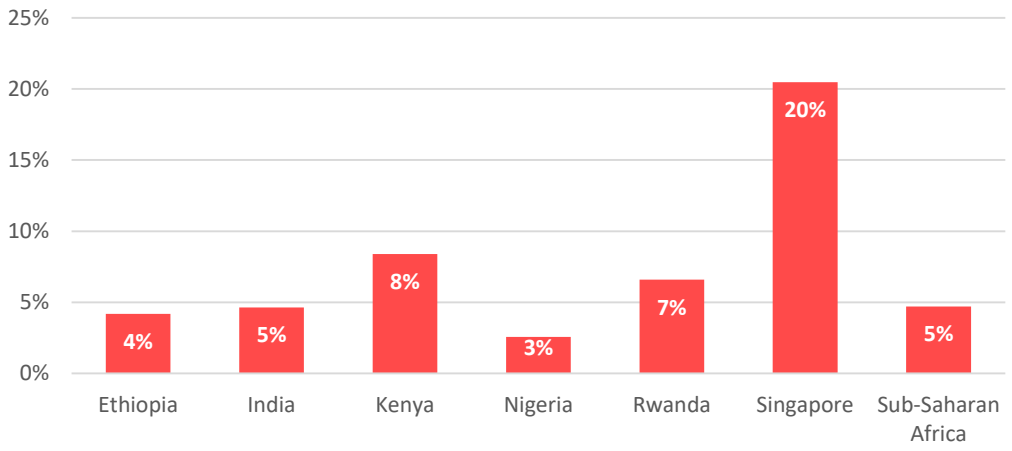
" Firms in Ethiopia are much more likely to be fully credit constrained than firms elsewhere in the world"

Francesco Strobbe (WBG, 2015)

Source: World Bank (2015) Enterprise Survey

Accordingly, various indicators show the extent of low access to and usage of finance for Ethiopian firms – pinpointing to a structural challenge of access to finance

Share of people who have 'Borrowed to start, operate, or expand a farm or business' (% age 15+)



- In the WEF Competitiveness Index **Ethiopia scores low on access to finance**, deteriorating from the 2017 survey
- **40% of the enterprises** included in the WB Enterprise Survey (ES) declared that **access to finance is a major constraint** to their development – the number one business constraint stated among Ethiopian firms
- **Credit demand of firms in the ES is relatively high (60% of the sample), but constrained**, with service firms more likely to be constrained than manufacturing firms

Percent of firms using banks to finance working capital

	% of firms	Last data
Rwanda	43.9	2011
Kenya	41.1	2013
India	36.4	2014
Nigeria	16.9	2014
Ethiopia	**16.4**	**2015**

Enterprise Survey

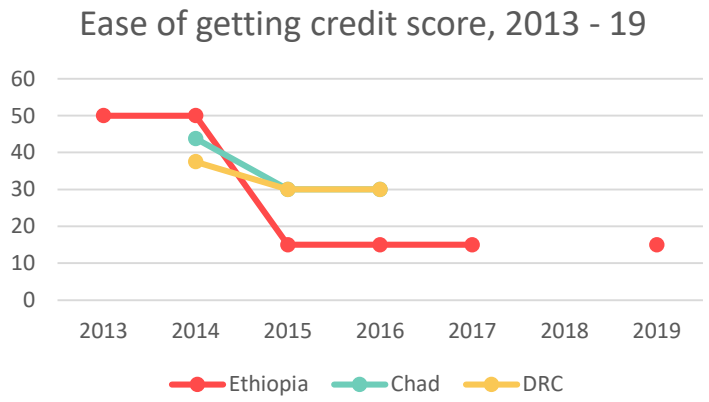
WEF Competitiveness Index 2018: Access to finance in Ethiopia, compared to peers

Economy	Rank 2018		Value (1-7)	*2017*
Singapore	→	4	5.23	*4*
India	↑	16	4.75	*20*
Rwanda	↑	35	4.21	*55*
Kenya	↓	44	4.04	*36*
Ethiopia	↓	**76**	**3.73**	***70***
Nigeria	↓	132	2.73	*123*

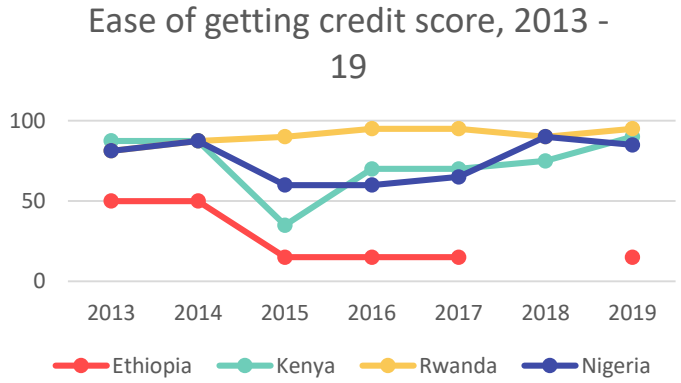
Source: World Bank (2018) Findex database, World Bank (2015) Enterprise Survey, WEF Competitiveness Index 2018

Ethiopia underperforms its regional comparators in the ease of accessing credit, and other less stable SSA countries too.

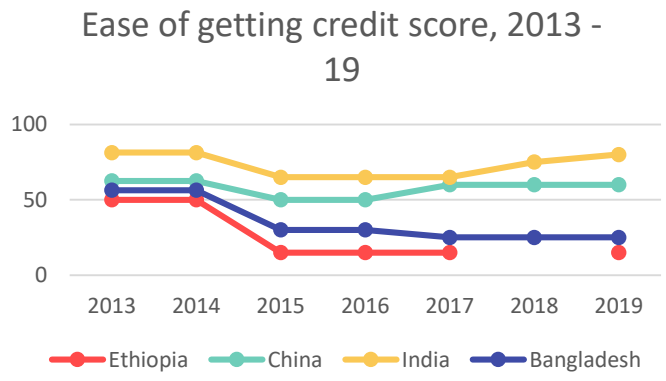
Ethiopia, Chad, DRC



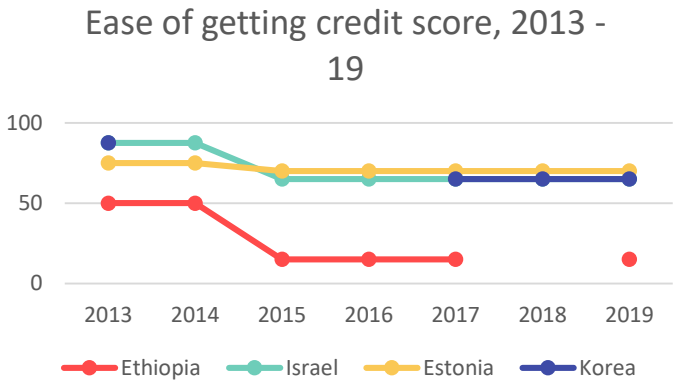
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, China, India, Bangladesh



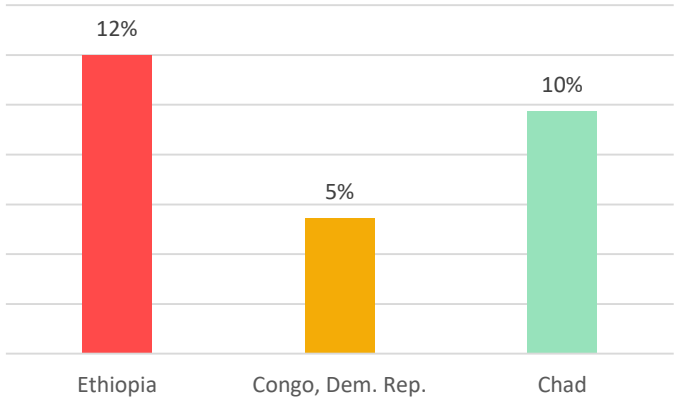
Ethiopia, Israel, Estonia, Korea



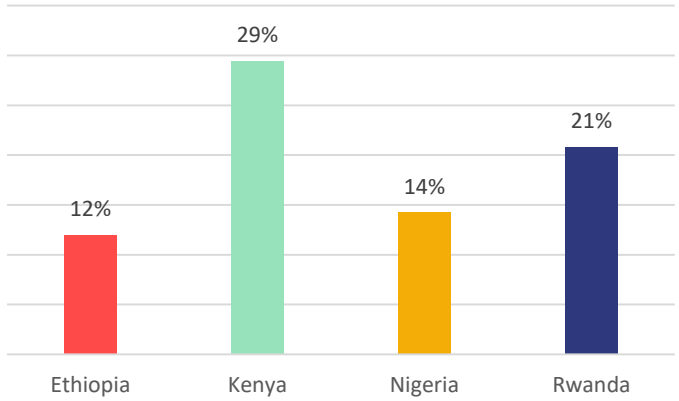
Source: GII, based on Ease of getting credit | 2018 World Bank, Doing Business 2019: Training for Reform. (http://www.doingbusiness.org/en/reports/global- reports/doing-business-2019).*
The ranking of economies on the ease of getting credit is determined by sorting their scores for getting credit. These scores are the score for the sum of the strength of the legal rights index (range 0–12) and the depth of credit information index (range 0–8).

Domestic credit to the private sector is low compared to other countries in Africa and globally, which is a major constraint to private-sector growth and job creation.

Ethiopia, DRC, Chad

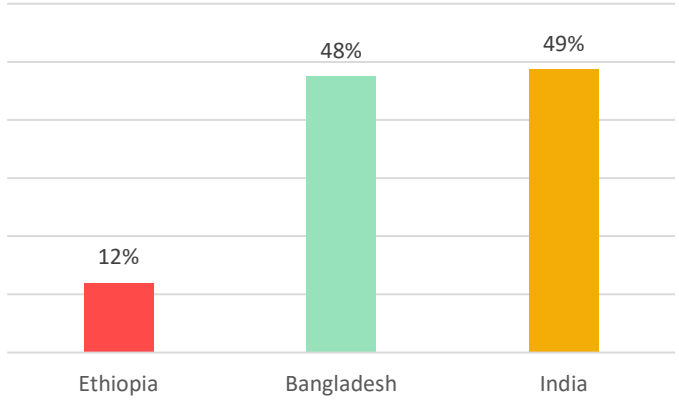


Ethiopia, Kenya, Nigeria, Rwanda

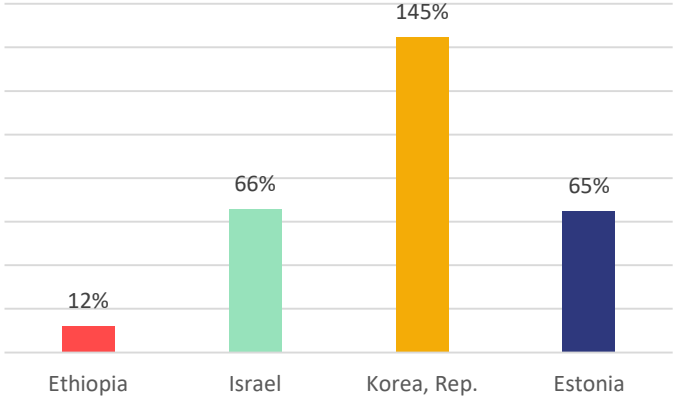


This could in part be based on the historic monopoly of the financial sector, as well as the FOREX challenges that were raised. However, further analysis is necessary to understand this

Ethiopia, Bangladesh, India



Ethiopia, Israel, Korea, Estonia



Source: World Development Indicators, World Bank (2018) Ethiopia Growth and Competitiveness (P168566) Program Document

A closer look at manufacturing firms illustrates the difficulties in accessing formal sources of credit and finance by firms in Ethiopia

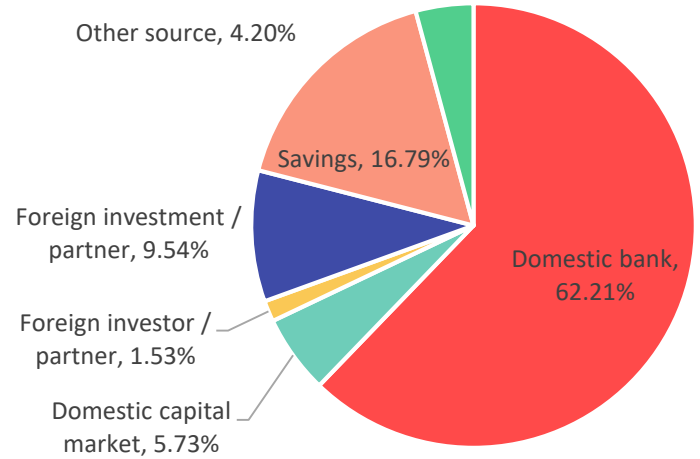
Source of finance for start up among manufacturing SMEs

Source of finance for start up %	%
Personal saving	**66.8**
Partners contribution	**18.2**
Borrowing from MFIs	4.9
Borrowing from friends/relatives	4.9
Borrowing from Savings and Credit Associations	2
Grant from relatives/friends	1.5
Support from NGO/government institution	1
Bank loan	**0.5**
Other	0.1

Sources of external finance for manufacturing SMEs

Source of finance	Loan for investment	Loan for working capital
Formal banks	**4.0%**	**4.9%**
MFIs	18.3%	20.4%
Government projects	0.7%	0.8%
NGOs	0.5%	0.6%
Saving and credit cooperatives	3.7%	4.3%
Informal sources	8.6%	12.2%
No access to external finance	**64.2**	**56.8%**

Sources of finance for manufacturing firms

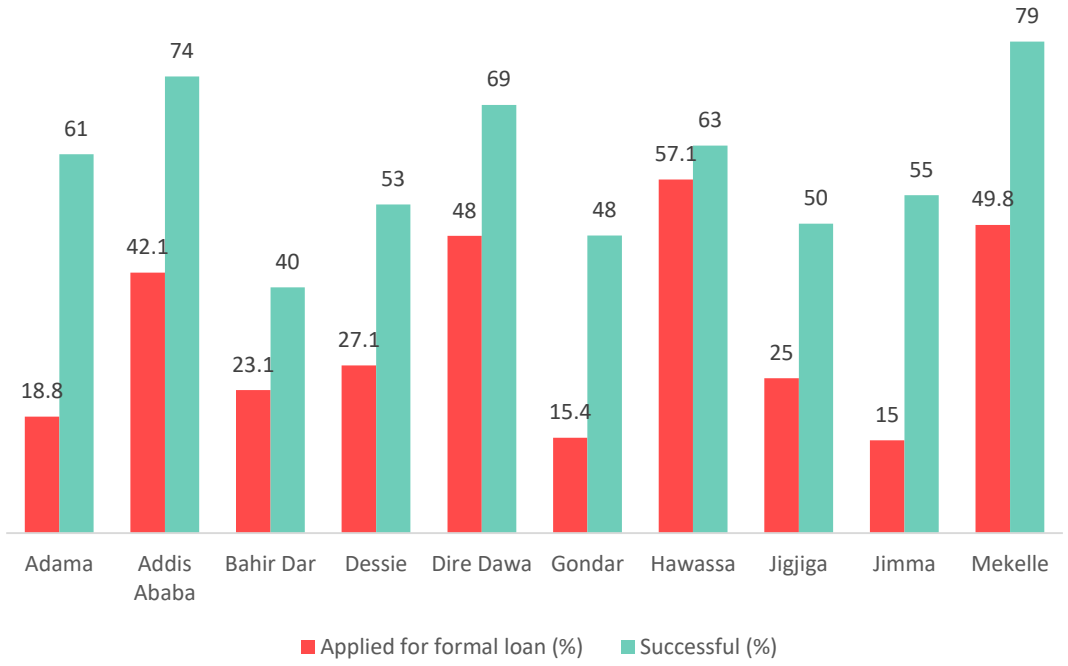


- **Surveys among Ethiopian manufacturing firms show that the majority of start up financing is still from private sources and that formal banks represent less than 5% of external financing**
- **Rejections of loan applications are common**. In the EDRI manufacturing SME survey, 39.4% applied for a loan. 70% of loan applications were rejected and 20% of those without giving a reason for rejection
- In addition, the survey showed that the use of **capital markets and foreign investment for finance is relatively low** among manufacturing firms

Source: TBI Startup Ecosystem report, EDRI (2017) Baseline Survey Report: Main Features of manufacturing MSEs in Ethiopia, AACCSA & DAB DRT (2014) Survey of Ethiopian Manufacturing Firms

There are regional discrepancies in the submission and success rates for loan applications as well as stark gender discrepancies in accessing finance

Applications and success rate (%) for formal loans by cities among manufacturing SMEs (2017 survey)



- Regional differences exist when it comes to the share of manufacturing SMEs submitting and succeeding in loan applications, with **firms in larger cities Addis Ababa, Dire Dawa and Mekelle having better access to loans**

Percent of firms identifying access to finance as a major constraint, women- vs male-owned firms (2015)

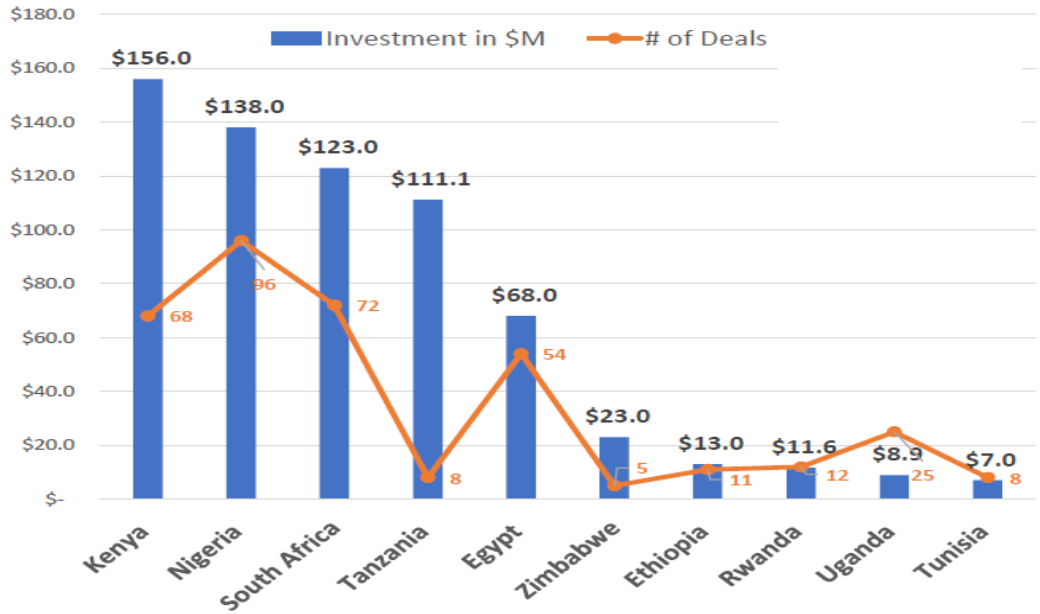
	Ethiopia	SSA avg	Global avg
Top manager is female	**49.1%**	40.9%	27.5%
Top manager is male	**18.8%**	38.2%	26.7%

- According to the World Bank Enterprise Survey (2015), **female-owned or –managed firms face more constraints in accessing finance**
- **The difference between men and women is particularly stark in Ethiopia** as compared to other SSA countries and worldwide
- This difference matters, **as loans have shown to help female-owned firms grow by 25%** in a recent study, while those firms are also most likely to employ other female employees, reducing gender inequalities in the labor market (World Bank, 2019).

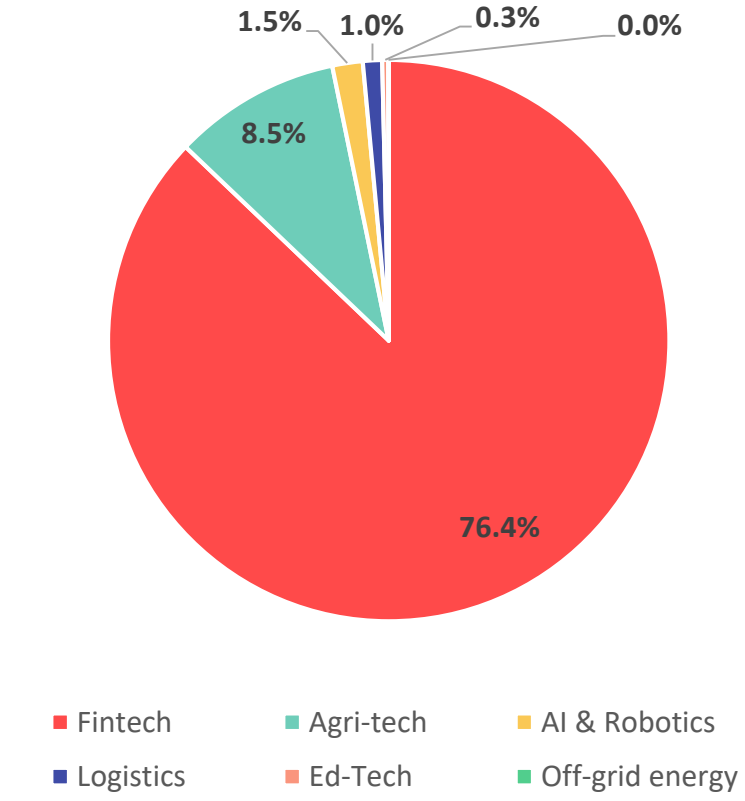
Source: Gebreeyesus and Ambachew (2017): Baseline Survey Report: Main Features of manufacturing MSEs in Ethiopia, Ethiopian Development Research Institute

Much innovation in the digital economy will be premised on start-ups – however SSA's top destinations for tech and start up funding exceed Ethiopia roughly 10 times

Top ten countries in Africa for 2018 tech and start up funding



Destination of disclosed funds by sectors

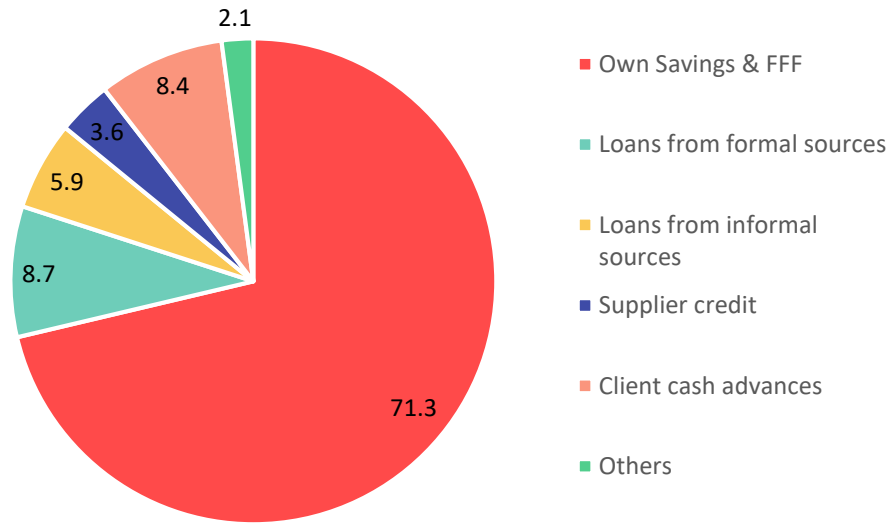


- Looking into tech start ups, a recent comparison of investments going into Sub-Saharan African start ups shows the **extent of the lack of investments in Ethiopian start ups, which lags behind Kenya, Nigeria and South Africa in investment value by approximately ten times**

Source: IBEX Frontier (2018)

Entrepreneurs in Ethiopia are limited by the under-developed credit system and women face particularly high barriers for accessing credit.

Entrepreneurs sources of funds by type



- New enterprises find it difficult to get loans from banks because of **unrealistic collateral guarantee requirements and hefty interest rates**
- Government financial support is available for start up MSEs under the **MSE support program**. But this support is **highly inadequate and doesn't meet the demand**

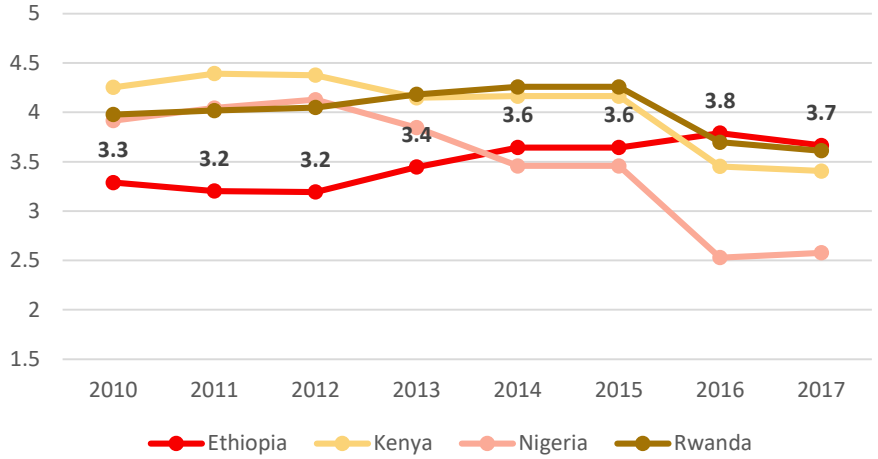
Investments in Ethiopian start ups are constrained in multiple ways

- There are **no domestic venture capital firms** and few other investment firms
- From a foreign investor's perspective, main hurdles include
  - **Constraints to foreign-owned investors** (a foreign stake of 1% is already considered foreign owned) with respect to accepting payments, which can only be channeled through local firm (oftentimes need to set up separate entity)
  - Foreign-owned firms **cannot operate in a range of key industries** like telecommunications and logistics
  - **Repatriation of investment** is extremely difficult, which lowers incentives to invest

Source: TBI Startup Ecosystem report

While the cost of borrowing is comparable to regional peers, bureaucratic hurdles and constrained access to foreign exchange impose significant costs to start ups.

Affordability of financial services in Ethiopia and regional peers (1-7)



- **Ethiopia is on par with peers, if not cheaper, in terms of affordability of financing for business activity** and has been able to become more affordable in recent years
- **Average lending rates** for commercial banks are at 13.5%, low 7% and high 20% and increased in last ten years, which is **in the same range as Kenya's average lending rates** and **lower than those in Nigeria and Rwanda**
- **However, access to foreign exchange is very costly for many innovative firms,** due to an overall shortage but also to government policy *(see boxes below)*

Access to foreign exchange is costly for many Ethiopian firms

- **Foreign exchange allocation by Ethiopian banks is prioritized to imports of "essential goods,"** including fuel, fertilizers, raw materials, and spare parts, among others, as well as for servicing approved foreign currency loans
- **All payments abroad require permits** and all transactions in foreign exchange must be carried out through authorized dealers supervised by the NBE
- **State owned enterprises and government sponsored infrastructure projects usually are given priority** over the private sector when competing for access to foreign exchange

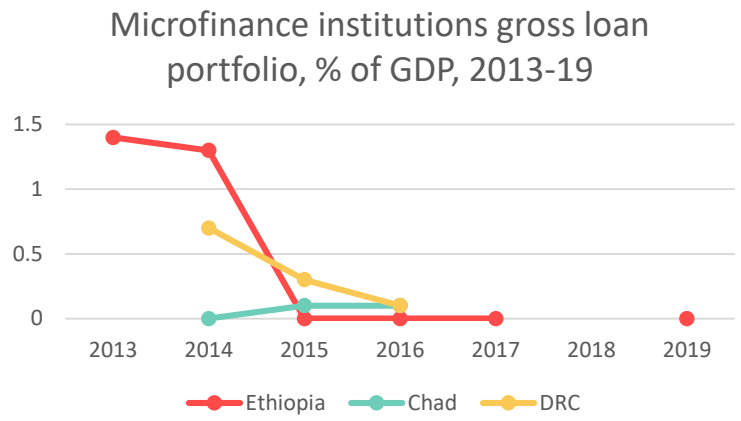
As a result, many Ethiopian start-ups have decided to operate from Kenya to triangulate the payments and avoid the Forex constraints in Ethiopia.

You must have 2 accounts, one for birr and other for foreign currency, but if you want to have your money from the forex account, you can't, you would have to convert it to birrs. […] The smart thing is to open an office in Kenya.

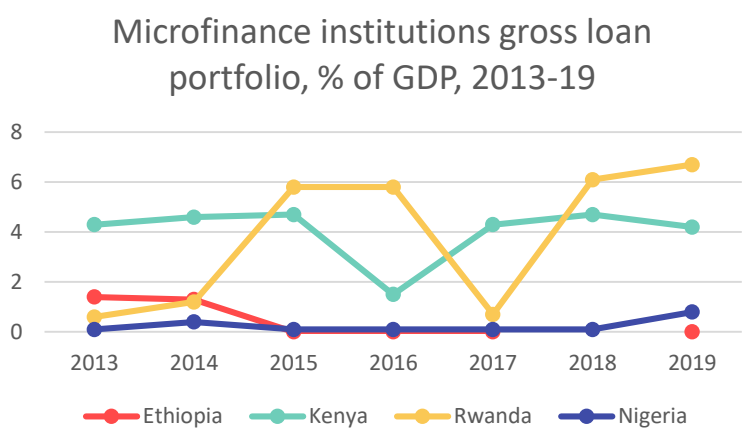
Source: Personal interviews, World Bank (2019) Country Private Sector Diagnostic – Ethiopia, https://www.export.gov/article?id=Ethiopia-Foreign-Exchange-Controls, WEF Global Competitiveness Index 2010--2017

But Ethiopia's microfinance sector is less developed than its regional peers, and below that of other more advanced developing nations such as Bangladesh and India

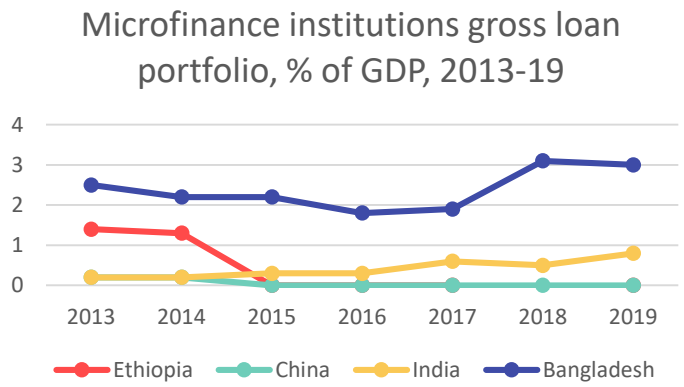
Ethiopia, Chad, DRC



Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, China, India, Bangladesh

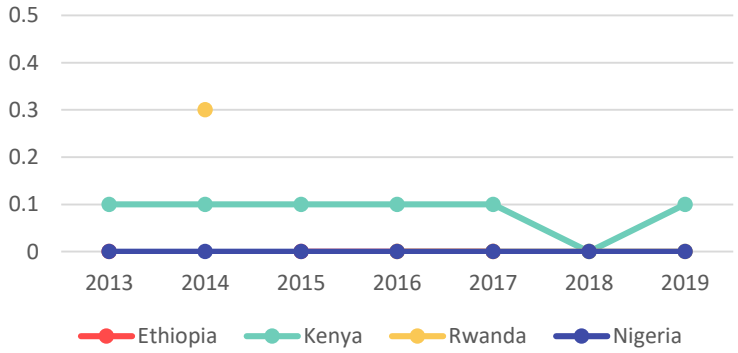


Source: GII, based on the Combined gross loan balances of microfinance institution (current US$) in a country as a percentage of its GDP (current US$).
Source: Microfinance Information Exchange, Mix Market database; International Monetary Fund, World Economic Outlook Database, October 2018 (current US$ GDP) (2011-2018). (https://reports.themix.org/; https://www.imf. org/external/pubs/ft/weo/2018/02/weodata/index.aspx).

Venture capital deals – indicative of entrepreneurial dynamism and the high growth potential of firms – are relatively low for Ethiopia, but also for its regional peers (bar Kenya). They are also relatively low for Bangladesh and India as well

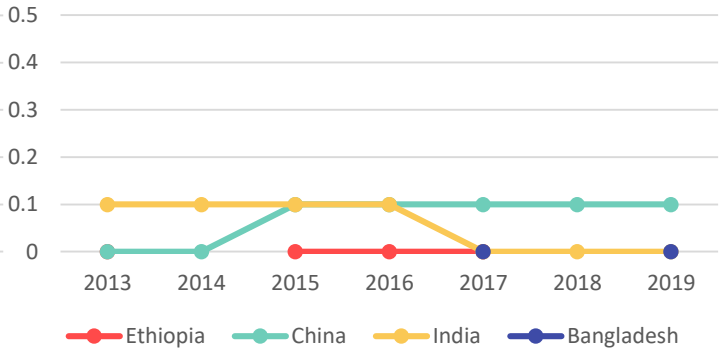
Ethiopia, Kenya, Rwanda, Nigeria

Venture capital deals, number of deals p/ billion PPP$ GDP



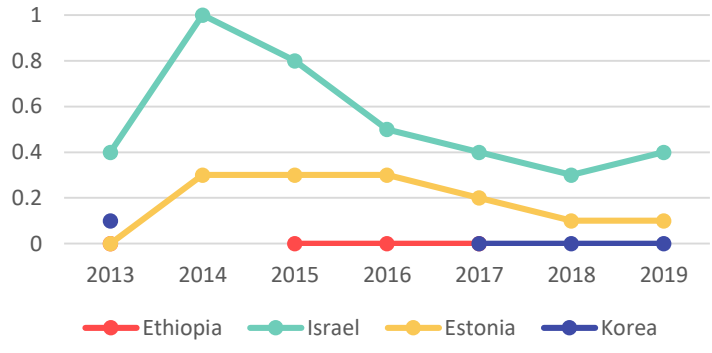
Ethiopia, China, India, Bangladesh

Venture capital deals, number of deals p/ billion PPP$ GDP



Ethiopia, Israel, Estonia, Korea

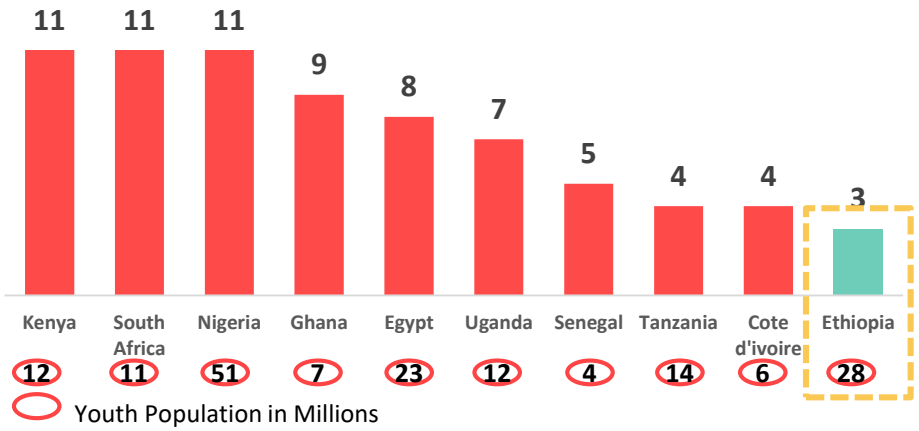
Venture capital deals, number of deals p/ billion PPP$ GDP



Source: GII, based on Venture capital per investment location: Number of deals (per billion PPP$ GDP)a | 2018 – based on Thomson Reuters data on private equity deals, per deal, with information on the location of investment, investment company, investor firms, and funds, among other details. The series corresponds to a query on venture capital deals from January 1, 2018 to December 31, 2018, with the data collected by investment location, for a total of 14,856 deals in 78 countries in 2018. The data are reported per billion PPP$ GDP. Underlying sources: Thomson Reuters, Thomson One Banker Private Equity database; International Monetary Fund, World Economic Outlook Database October 2018 (PPP$ GDP). (https://www.thomsonone.com); https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx).

The wider start-up ecosystem however is relatively under-developed compared to regional peers –cultural attitudes also play a role

Top 10 countries with the highest number of start-up incubators in Africa and youth population (aged 18-29) in

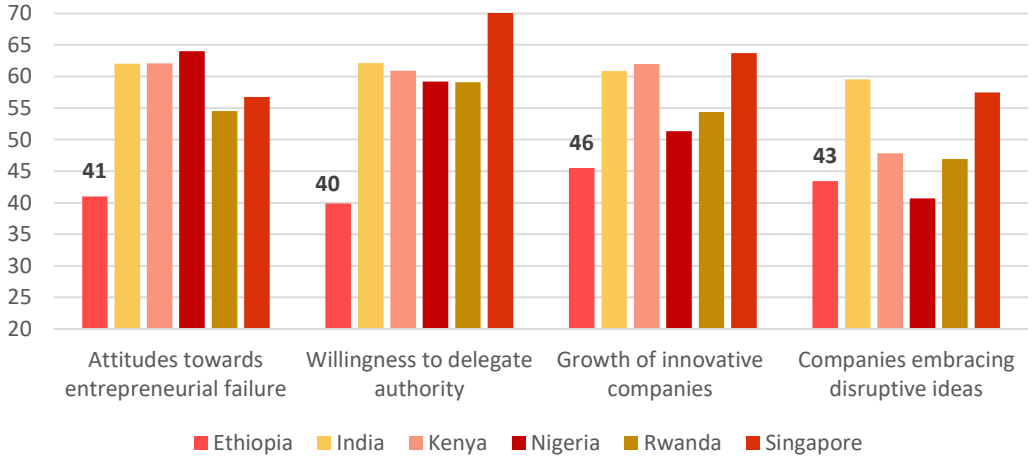


2018 Global Entrepreneurship Index compared to peers

Country	Overall Index	Sub-Index: Risk Capital
Korea	54.2	58.1
Singapore	52.7	79.6
India	28.4	15.2
Rwanda	21.5	6.8
Nigeria	19.7	15.3
Kenya	18.4	10.9
Ethiopia	**18.3**	**5.8**

Notes: The underlying sample data for Ethiopia is from 2012. The results should therefore be interpreted with caution; Risk capital is measured by the informal investment in start-ups and the depth of the capital market

WEF Competitiveness Index: Business dynamism indicators (1-7)



- **Ethiopia scores low – rank 110/137** – in the 2018 Global Entrepreneurship Index, which measures the health of the entrepreneurship ecosystems in 137 countries and particularly low on the availability of risk capital
- **Cultural factors may serve as barriers**, as "Ethiopians are conditioned not to be aggressive, assertive, demanding, go out of comfort zone, failure and rejections are considered taboos" (*personal interview*)
- Accordingly, **Ethiopia scores lower than peers in business dynamism indicators** such as attitudes towards entrepreneurial failure and willingness to delegate authority

Source: TBI Startup Ecosystem report, 2019, Global Entrepreneurship Development Institute (2018) Global Entrepreneurship Index

Digital Transformation Framework: People

Soft Infrastructure

Hard Infrastructure

- Accessible basic infrastructure (e.g. power)
- Accessible core connectivity infrastructure (from fiberoptic cables to mobile towers to devices to data)

Enabling Systems:

- Systems and platforms which enable remote verification and creation of apps and services while ensuring interoperability. E.g. ID verification, gateways, asset registries, payments

Applications

- Inclusive digital products and services (e.g. E-Gov, E-Commerce) used by citizens, enterprises, and governments

Ecosystem

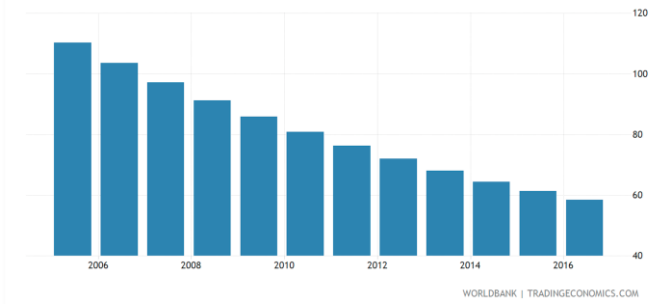
Finance: Access to suitable capital for start-ups & enterprises utilising digital; public finance to fund enabling ecosystems and infrastructure

People: Human Capital incl. skills and social expectations

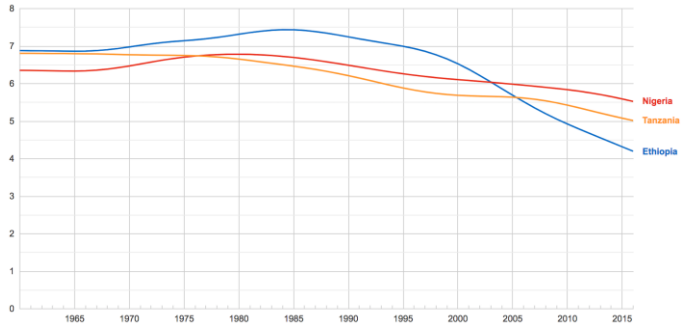
Policy & Regulation: A conducive environment that attracts investment, enables the private sector, and creates jobs

With improved child mortality rates, despite the fall in births per women, Ethiopia's population is growing at a steady rate with a growing balloon towards young adults

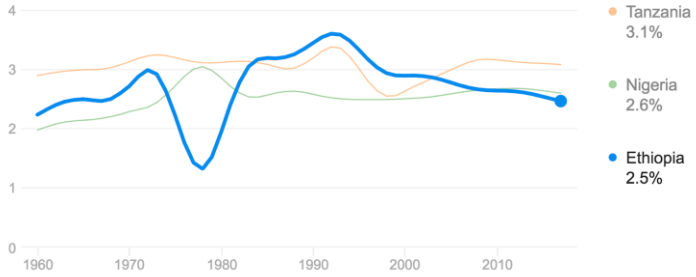
Mortality rate, under-5 (per 1,000) was at 58 in 2016 – drastically reduced from 112 in 2006



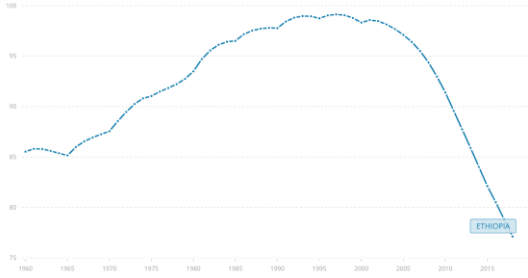
Fertility rate (av. number of births per woman) in Ethiopia – fell from 7.0 in 1995 to 4.2 in 2016



Population growth rate in Ethiopia peaked at 3.6ppa in 1992 and slowed to 2.44 by 2016



The age-dependency ratio in Ethiopia peaked at 99.1% in 1997 and fell fast to 77.1% 2018

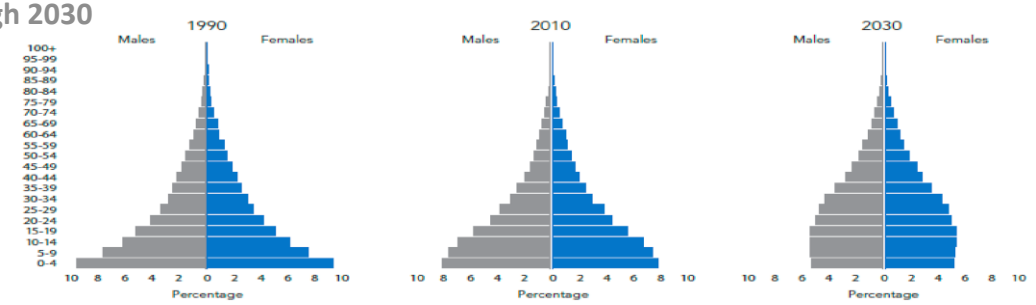


- In line with related indicators, the under-five **child mortality** rate is dropping rapidly, from above 11% in 2005 to below 6% today (top left).
- At the same time, **births per woman** in Ethiopia are dropping rapidly: from 7 in 1995 to 4 today (top right).
- Thus, the population still grows at a steady rate of 2.5ppa, *but for different reasons than in the past.*
- Ethiopia's **age dependency ratio** (how many 15-64-year-olds versus those older or younger), is rapidly falling: from 97% in 2005 to 77% today.

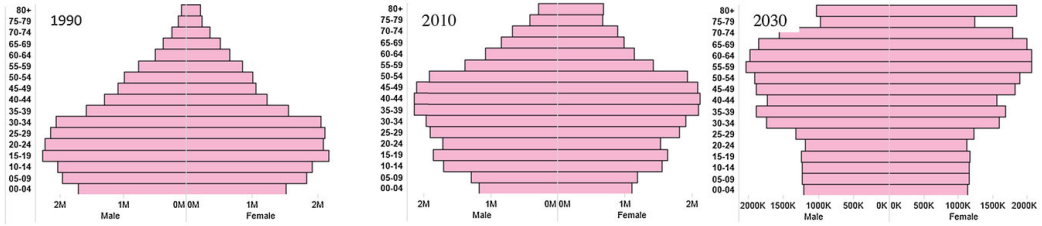
Source: World Development Indicators 2019. Top left: Tradingeconomics.com, at: https://tradingeconomics.com/ethiopia/mortality-rate-under-5-per-1-000-wb-data.html, accessed 21 Aug 2019 based on World Bank World Development Indicators Development Definition: Under-five mortality rate is the probability per 1,000 that a new-born baby will die before reaching age five, if subject to current age-specific mortality rates. Top right: Google Public Data, at: https://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&met_y=sp_dyn_tfrt_in&idim=country:ETH:NGA:TZA&hl=en&dl=en, accessed 21 Aug 2019, based on World Bank World Development Indicators. Bottom left: Google Public Data, at: https://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&met_y=sp_pop_grow&idim=country:ETH:NGA:TZA&hl=en&dl=en accessed 21 Aug 2019, based on World Bank World Development Indicators; Bottom right: World Bank World Development Indicators, https://data.worldbank.org/indicator/SP.POP.DPND?locations=ET accessed 21 Aug 2019.

This is leading towards a possible demographic dividend for trade in labour, as the pyramid of children are becoming adults and workers

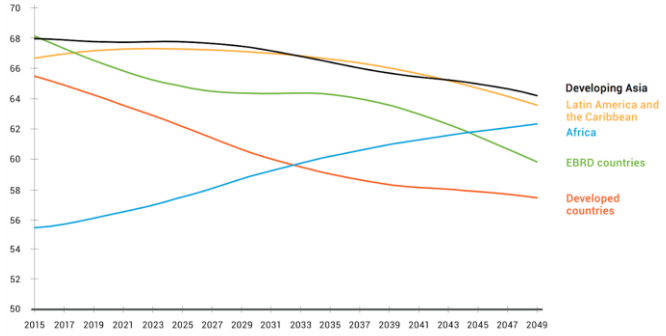
Ethiopia's population by age cohort and sex, showing a gradually aging society between 1990 through 2030



Comparison: The Demographic trend in South Korea



Evolution of the Working-Age Population as a Percentage of Total Population:



The working-age population will decline slightly in Asia and Latin America and the Caribbean, decrease more sharply in EBRD countries, and increase in Africa.

- Ethiopia's demographic "pyramid of children" is slowly turning into a demographic "bottle of workers" (top figure).
- By comparison, South Korea's demographic transformation within 70 years went from a "pyramid" of children to a "mushroom" of elderly (middle figure). Developed countries are following Korea's demographic trend. And, with a time lag, so are developing countries around the world.
- Let us compare all world regions by working-age men and women as proportions of their overall populations (bottom figure). This trend is not unique to Ethiopia (and, historically, it is not unique to Africa). But it *is* unique to Africa in the contemporary world.
- Coupled with ever-greater internet connectivity (and with the fact that OECD-world incomes are about 50 times higher than African incomes), these demographic trends suggest great opportunities for African trade in labour. This may take shape in a future version of IT-enabled services (e.g. VR-enabled online labour), or in some other, to date unforeseeable activity.

Sources:

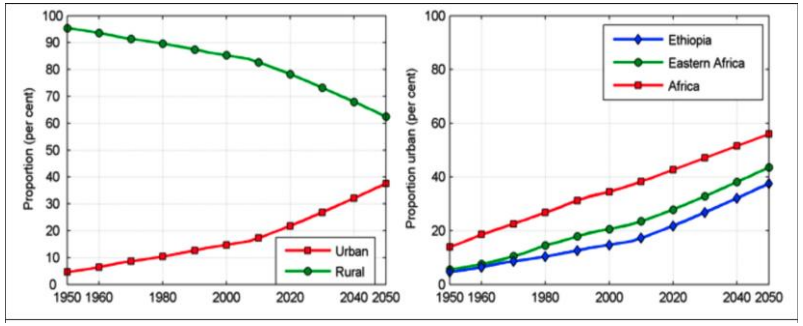
Top graph: Admassi & Mcquire (2015), at https://www.newsecuritybeat.org/2015/12/ethiopia-progress-demographic-dividend/, based on UN Populatino Division World Population Prospects, 2015 Revision.

Middle graph: Rhee et al. (2015 p. 1321) **Considering long-term care insurance for middle-income countries: comparing South Korea with Japan and Germany,**
Health Policy 119(10), pp. 1319-1329 at:
https://www.sciencedirect.com/science/article/pii/S016885101500161X accessed 21 Aug 2019, based on The World Bank. Population estimates and projections. Health, Nutrition and Population Statistics 2013.

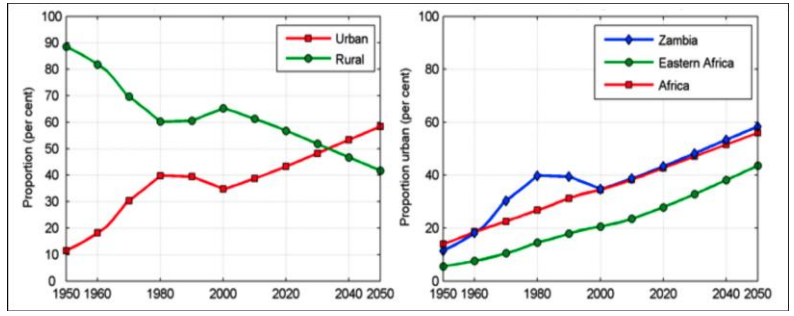
Bottom graph: Kapoor et al. (2018, p. 16) at:
https://www.adb.org/sites/default/files/publication/481901/future-work-regional-perspectives.pdf, accessed 21 Aug 2019, based on ILO (2017).

Ethiopia compared to the continent is relatively rural, and whilst it is tracking the African average of rural to urban migration, it lags behind many African comparators

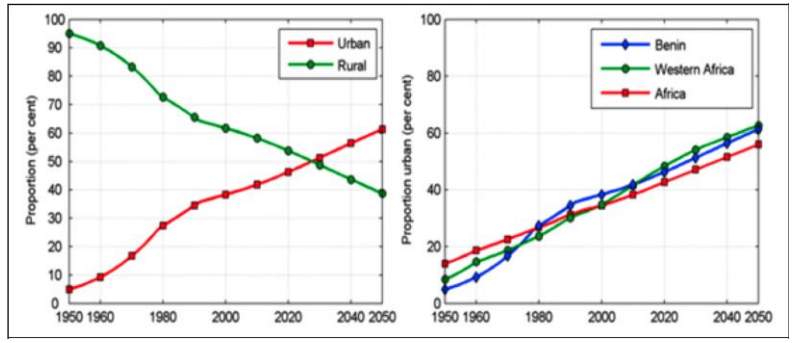
Development and prospects of urban and rural population in Ethiopia



Development and prospects of urban and rural population in Benin



Development and prospects of urban and rural population in Zambia



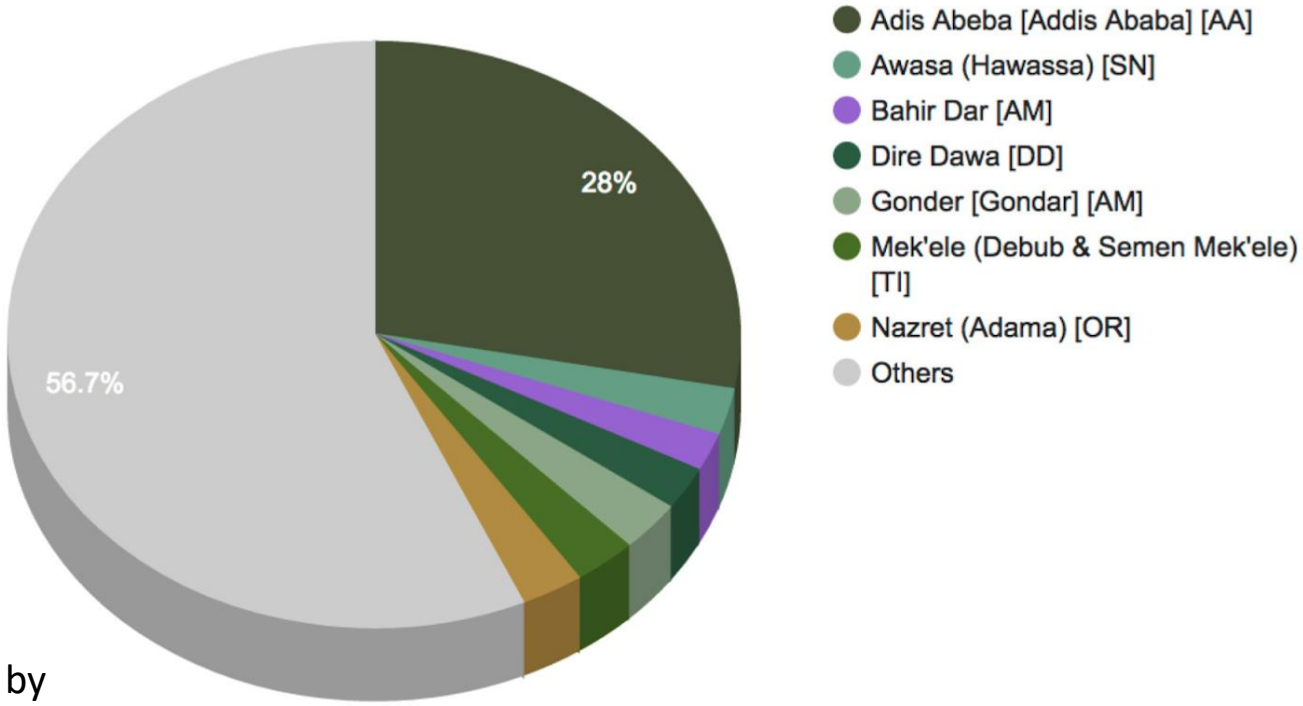
- 80% of Ethiopia's population is still rural (top figure). This is compared to 63% African average. Ethiopia's rural-urban migration is 2.5%, on par with the African average.
- This means that most other African countries will urbanize much sooner than Ethiopia.
- Urbanization in Ethiopia lags some 30 years behind. E.g. in Benin (middle figure) or Zambia (bottom figure), over half of the population will live in cities by 2030.
- Urban job-creation is important. But Ethiopia's agricultural sector (and thus rural farm jobs) will play a bigger role for much longer in Ethiopia than in many other African countries.

Source: All three tables: Lohnert B. (2017, pp. 13-15) "Migration and the Rural-Urban Transition in Sub-Saharan Africa" Centre for Rural Development (SLE) Berlin, SLE Discussion Paper 05/2017, at: https://edoc.hu-berlin.de/bitstream/handle/18452/19070/SLEDP-2017-05-Migration%20and%20the%20Rural-Urban.pdf?sequence=1; accessed 21 Aug 2019, based on UN Department of Economic and Social Affairs, World Urbanisation Prospects (2014).

However, although Ethiopia's rate of urbanisation will lag other SSA countries, its sheer population size – 5 times larger than the SSA average – will mean that its growing cities will also have comparatively large labour pools

Population of Ethiopia's largest cities, (based on 2012 data, but the proportional differences remain)

1	Adis Abeba	3,273,000
2	Nazret	…324,000
3	Gonder	…323,900
4	Mek'ele	…323,700
5	Awasa	…300,100
6	Dire Dawa	…277,000
7	Bahir Dar	…243,300
8	Dese	…187,900
9	Jima	…177,900

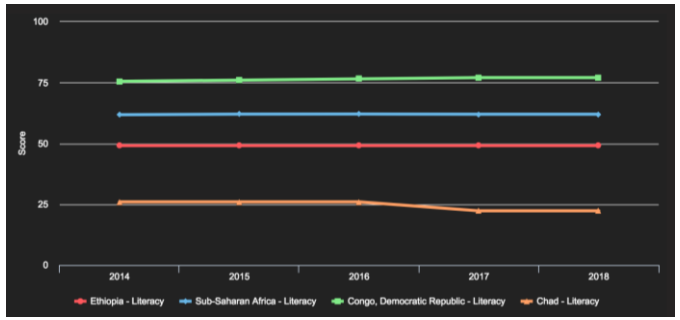


- Addis Ababa dwarfs Nazret and Mekele by factors of 10. Comparison: Kenya's Nairobi is only 3 times larger than Mombasa; as is Nigeria's Lagos vis-à-vis Kano and Ibadan.

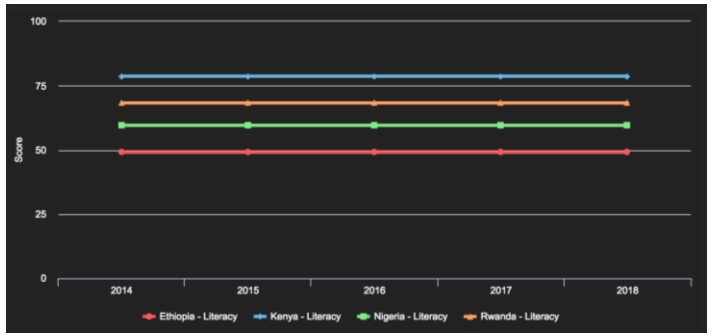
Source: Lohnert B. (2017, p. 15) "Migration and the Rural-Urban Transition in Sub-Saharan Africa" Centre for Rural Development (SLE) Berlin, SLE Discussion Paper 05/2017, at: https://edoc.hu-berlin.de/bitstream/handle/18452/19070/SLEDP-2017-05-Migration%20and%20the%20Rural-Urban.pdf?sequence=1; accessed 21 Aug 2019, based on City Population (2017).

Literacy rates will be one of Ethiopia's greatest constraints. It trails behind its regional peers, Nigeria, Kenya and Ethiopia, and its past trajectory shows little sign of improvement

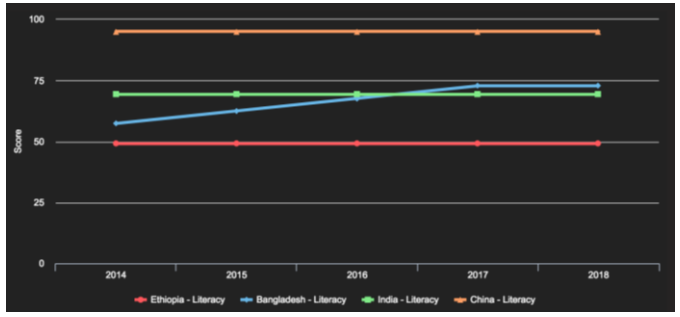
Ethiopia, Chad, DRC, SSA av.



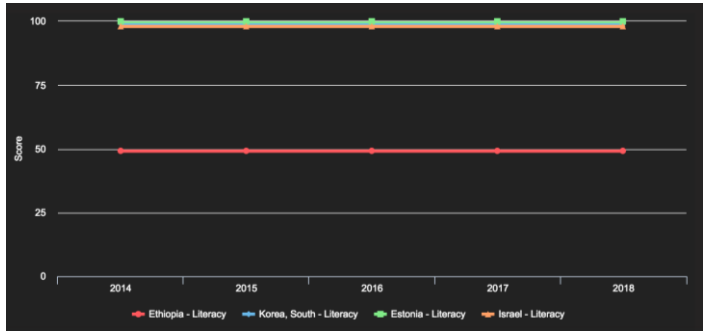
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



- **Trajectory:** Literacy is the best available proxy for digital readiness skills. This is Ethiopia's great battle for the next decade. Lagging significantly behind the Africa average, the region's frontrunners (top left and right), as well as Bangladesh (bottom left), Ethiopia's task is to bridge the gap to universal access (bottom right).

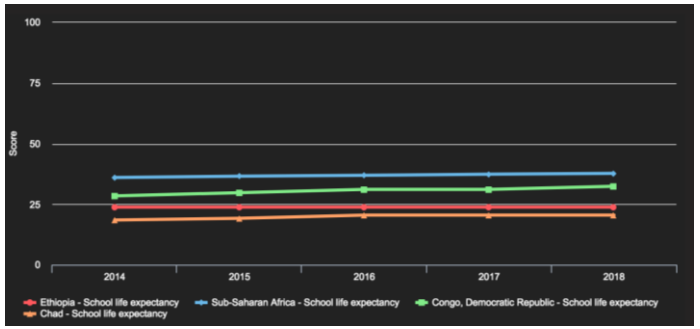
- **Implications for Ethiopia's Digital Readiness:** As the world moves ever-more into the digital realm, Ethiopians need to be able to read. Illiterate factory workers will not be the drivers of growth in the 21st century.

- **Possible remedies:** spread the internet faster, coupled with local language applications.

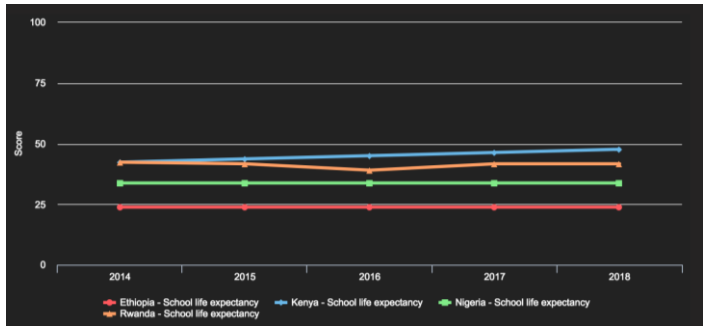
Source: GSMA 2019 based on UNDP and UNESCO

This could be driven by lower than the regional average in school life expectancy

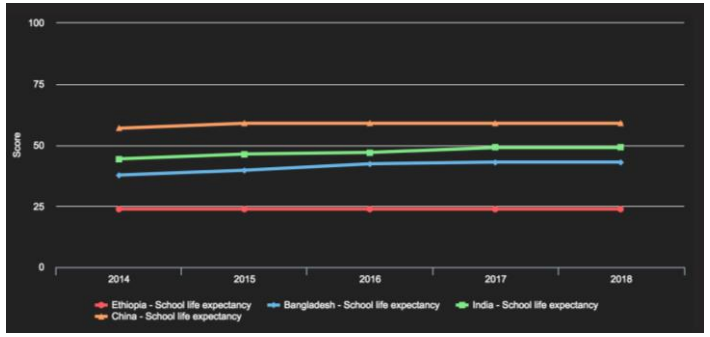
Ethiopia, Chad, DRC, SSA av.



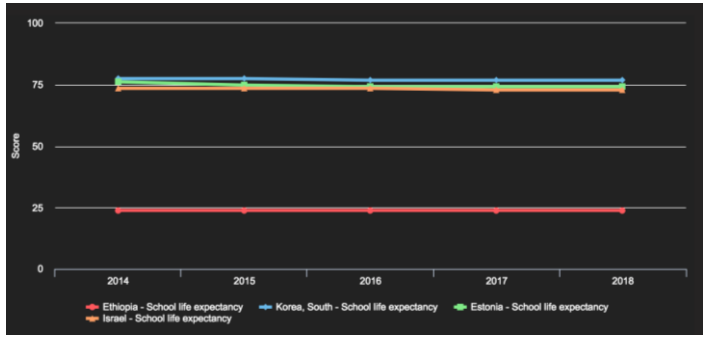
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea

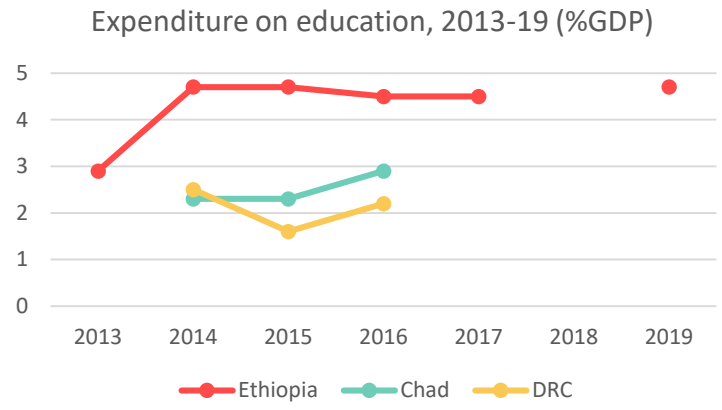


- **Trajectory:** In line with low literacy rates, Ethiopia lag behind the Africa average, the region's frontrunners (top left and right), as well as Bangladesh (bottom left).
- **Implications for Ethiopia's Digital Readiness:** As the 20th century education system has run its course, "years of schooling" may no longer be the best metric for gauging what children learn.
- **Possible remedies:** Hole-in-the-Wall, or Montessori type alternative schooling innovations may be the way forward for Ethiopia's many children to enter the Fourth Industrial Revolution.

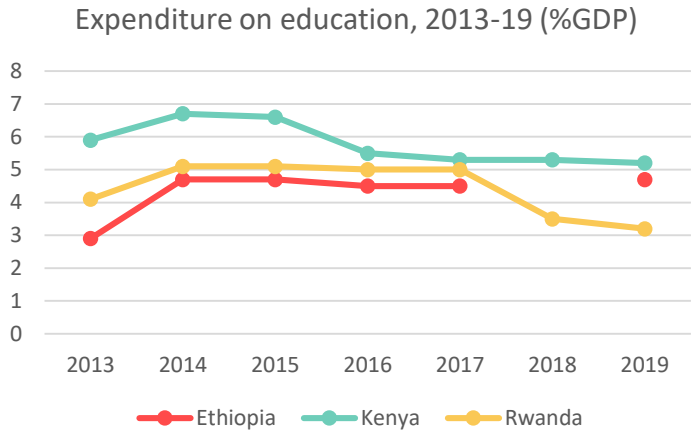
Source: GSMA 2019 based on UNDP and UNESCO

But Ethiopia is making significant investments in education, near par with Kenya and in the last year higher than Rwanda. And far higher than India and Bangladesh

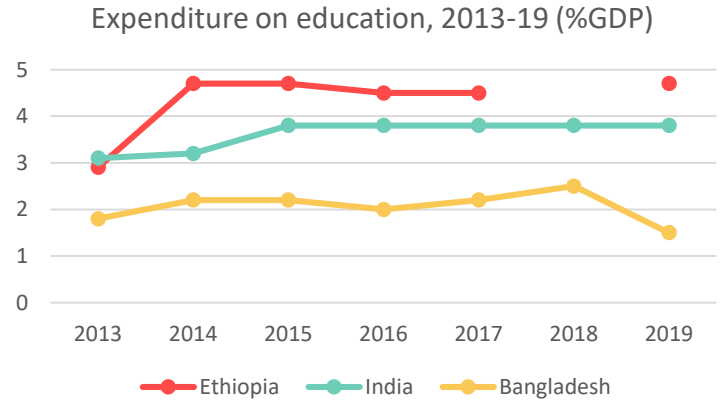
Ethiopia, Chad, DRC



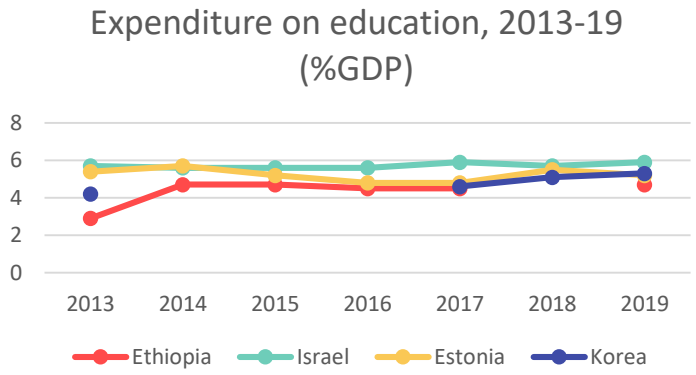
Ethiopia, Kenya, Rwanda



Ethiopia, India, Bangladesh



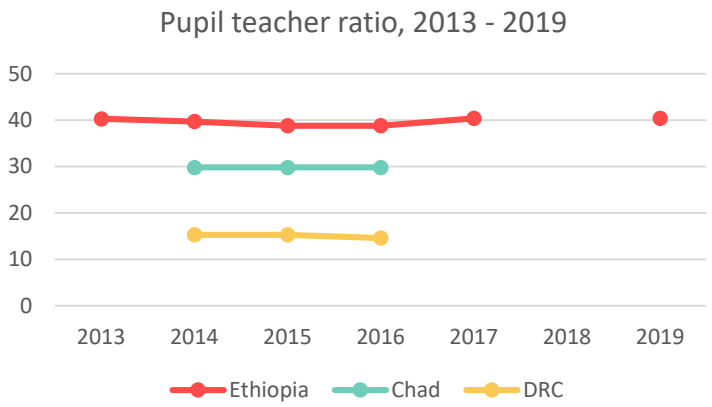
Ethiopia, Israel, Estonia, Korea



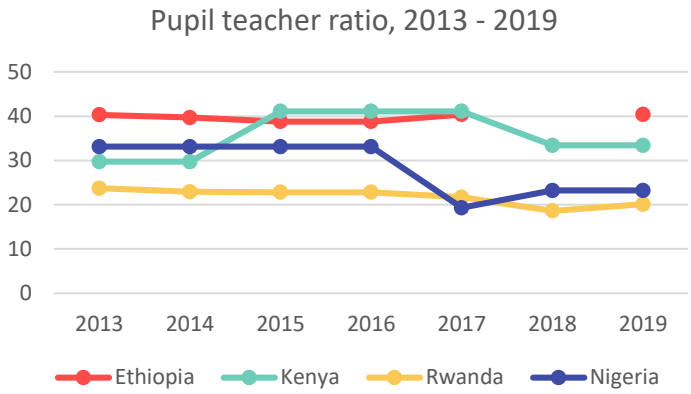
Source: GII, based on Government expenditure on education (% of GDP) | 2015
Total general (local, regional and central) government expenditure on education (current, capital, and transfers), expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. Source: UNESCO Institute for Statistics, UIS online database (2008–17). (http://data.uis.unesco.org/).

And moreover its pupil teacher ratio is higher than its regional peers as well as higher than that in China, India and Bangladesh

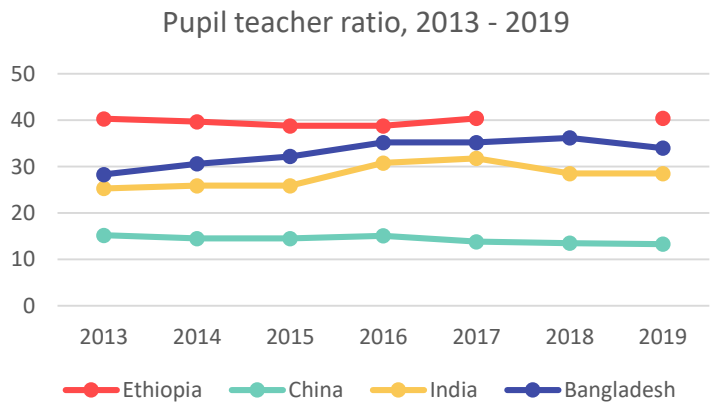
Ethiopia, Chad, DRC



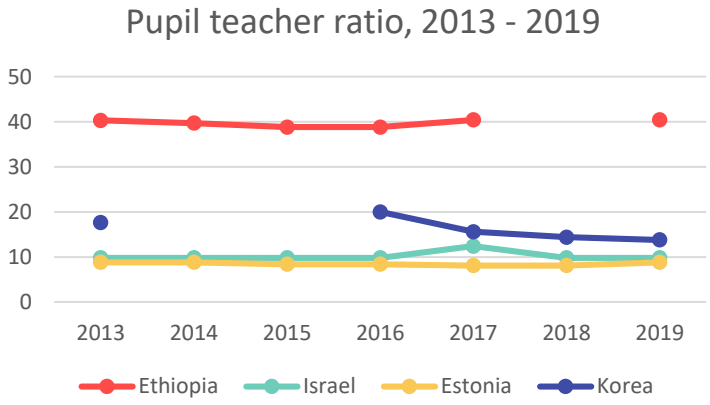
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, China, India, Bangladesh



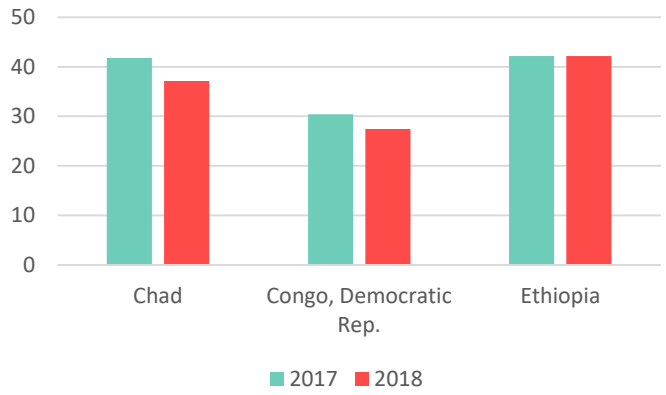
Ethiopia, Israel, Estonia, Korea



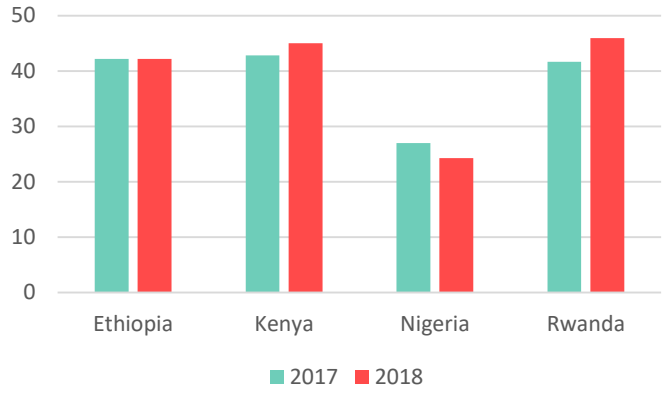
Source: GII, based on Pupil-teacher ratio, secondary | 2017
The number of pupils enrolled in secondary school divided by the number of secondary school teachers (regardless of their teaching assignment). Where the data are missing for some countries, the ratios for upper-secondary are reported; if these are also missing, the ratios for lower-secondary are reported instead. Argentina uses data for 2008. Source: UNESCO Institute for Statistics, UIS online database (2008–18). (http://data.uis.unesco.org).

If education investment is relatively high, there may well be challenges in the way Ethiopia is delivering education, resulting in such low literacy rates. Yet its critical thinking performance in teachers is on par with its regional competitors

Ethiopia, Chad, DRC

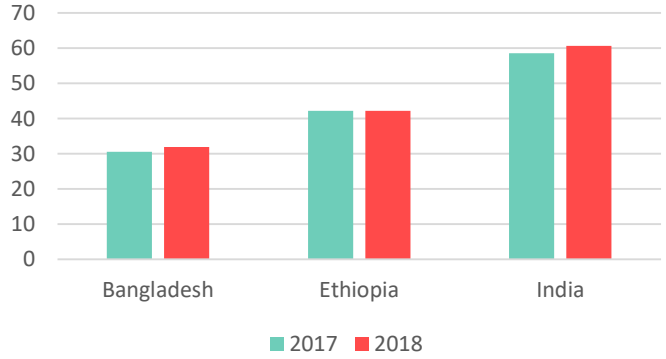


Ethiopia, Kenya, Rwanda, Nigeria

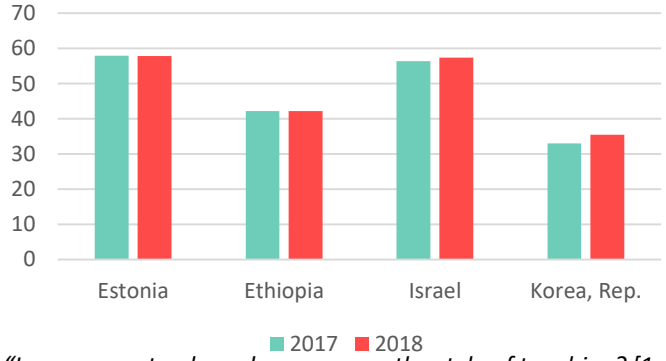


- **Definition:** Critical thinking in teaching survey, score 0-100

Ethiopia, India, Bangladesh



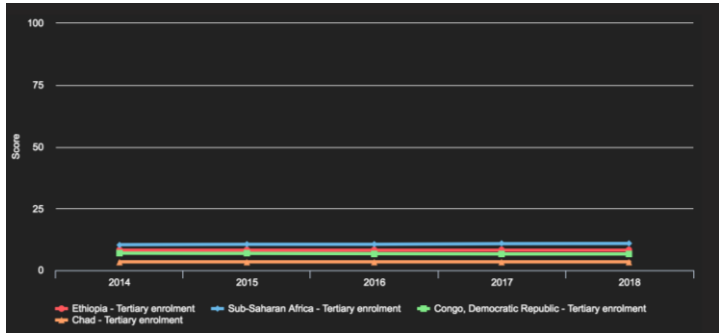
Ethiopia, Israel, Estonia, Korea



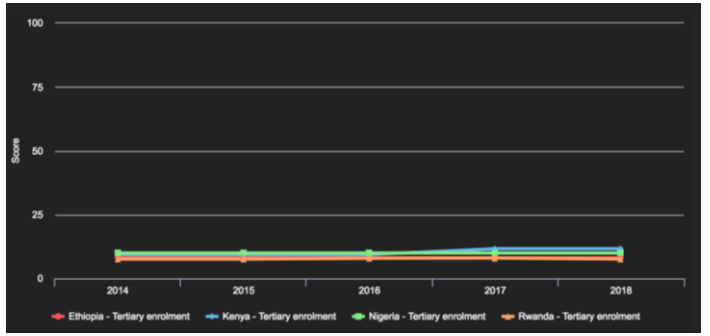
Source: WEF Global Competitiveness Index 2018, Executive Survey Question: "In your country, how do you assess the style of teaching? [1 = frontal, teacher based, and focused on memorizing; 7 = encourages creative and critical individual thinking]"

Tertiary enrolment is a big problem across Africa, particularly as compared with developing country competitors such as Bangladesh and India

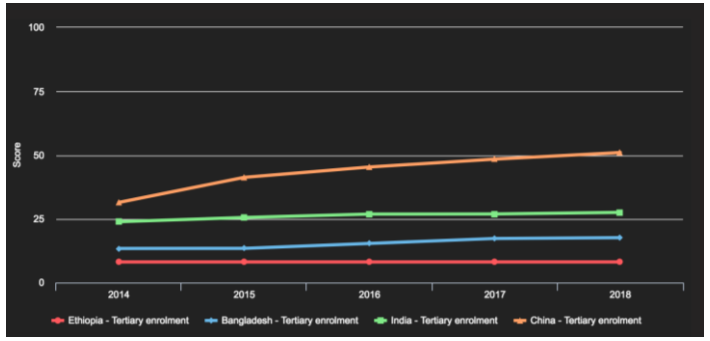
Ethiopia, Chad, DRC, SSA av.



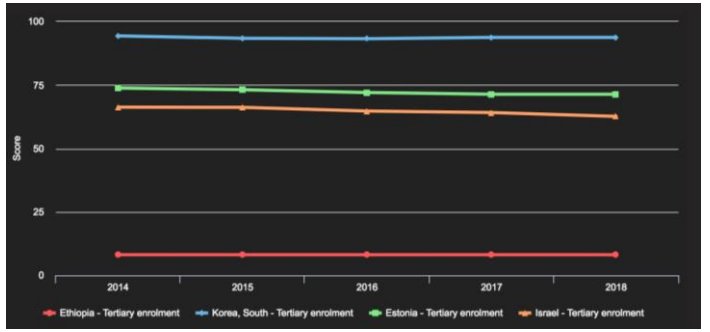
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



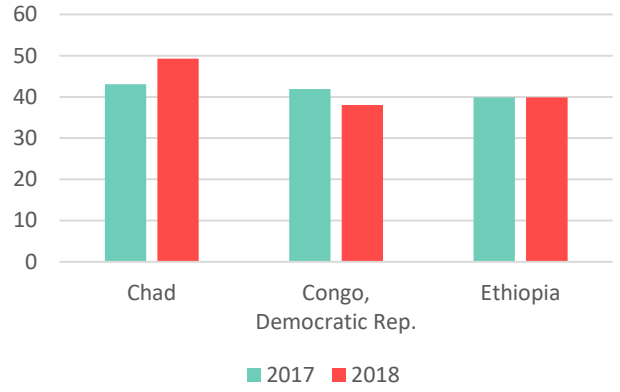
- **Trajectory:** the number of university students in Ethiopia is nearly at the African average (top left) and nearly on par with the region's tech countries (top right). The problem is that enrolment levels in the region as a whole significantly lag behind not merely the global frontrunners (bottom right), but also behind Bangladesh and India (bottom left).

- **Implications for Ethiopia's Digital Readiness:** As the the world moves online, alternative ways to educate Ethiopia's youngsters emerge. But tertiary education indicates a knowledge economy. Africa and Ethiopia will need to catch up.

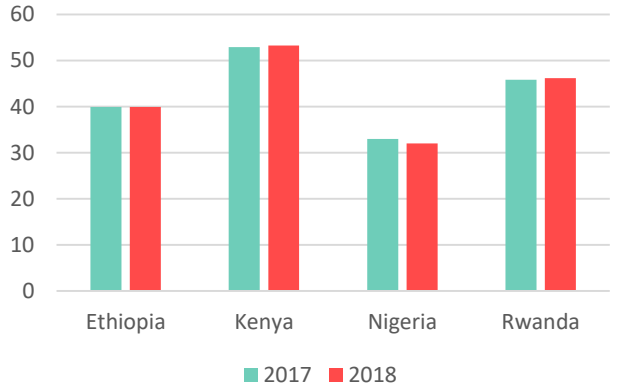
Source: GSMA 2019 based on UNDP and UNESCO

The skillsets of Ethiopian graduates are not ranked as highly as Kenya or Rwanda, though are on a par with Bangladesh. India, where graduates make up the BPO sector, outperforms all these countries

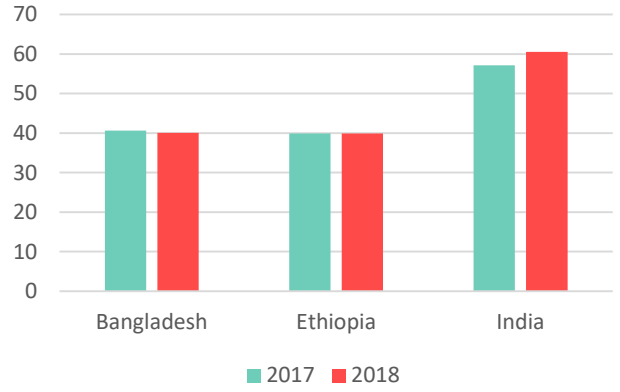
Ethiopia, Chad, DRC



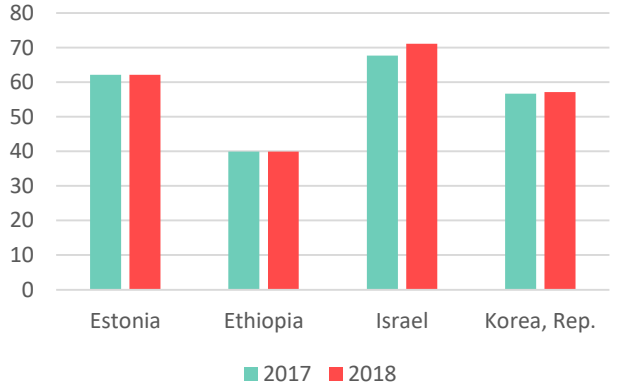
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, India, Bangladesh



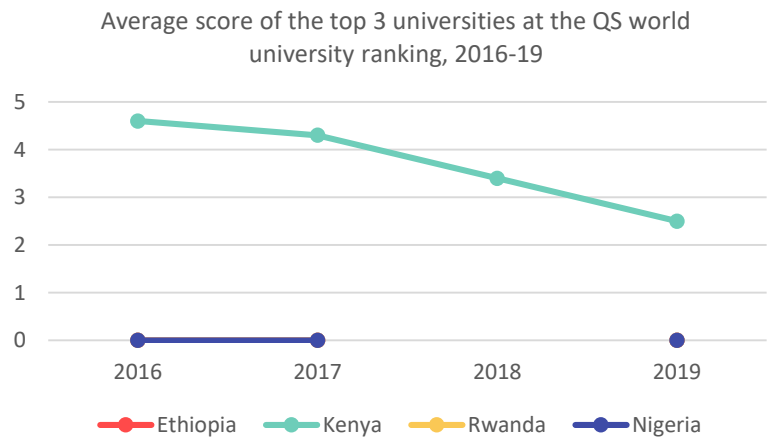
Ethiopia, Israel, Estonia, Korea



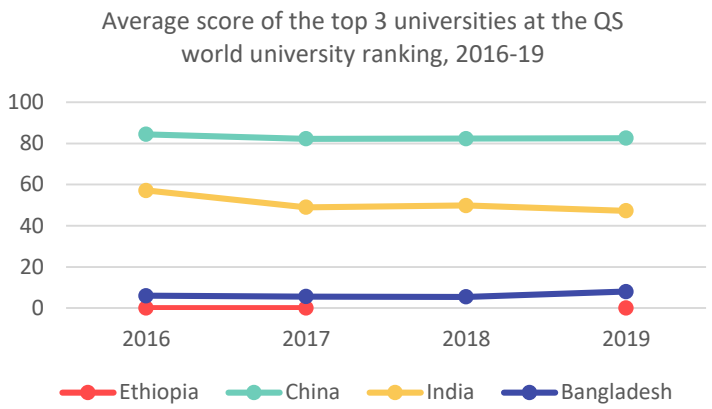
Source: WEF Global Competitiveness Index 2018, Executive Survey Question, Average score of the two following : In your country, to what extent do graduating students from secondary education possess the skills needed by businesses? and In your country, to what extent do graduating students from university possess the skills needed by businesses? In each case, the answer ranges from 1 [not at all] to 7 [to a great extent]In your country, how do you assess the quality of vocational training? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]"

Moreover Ethiopia's top 3 universities do not fare well as compared to scores achieved by those universities in Kenya. This is again much higher for Bangladesh and India

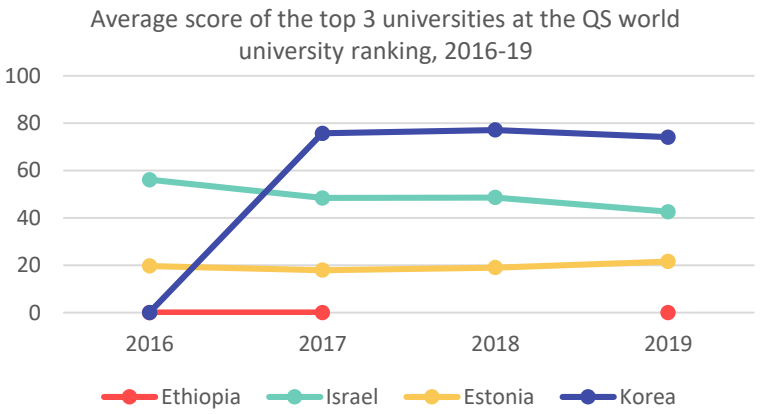
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, China, India, Bangladesh



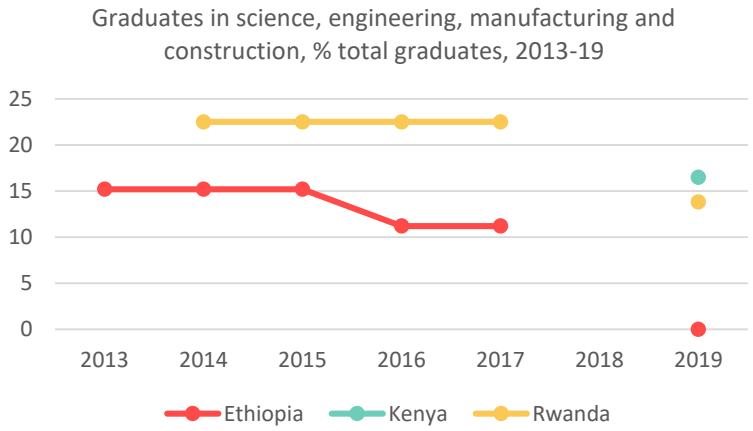
Ethiopia, Israel, Estonia, Korea



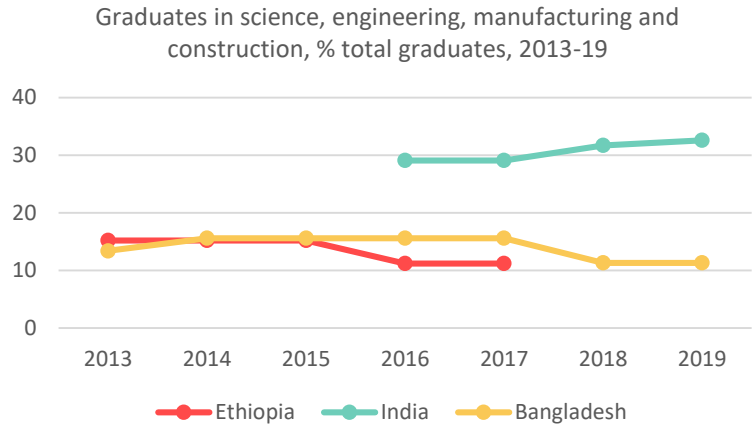
Source: GII, based on Average score of the top 3 universities at the QS world university ranking | 2018 Average score of the top three universities per country. If fewer than three universities are listed in the QS ranking of the global top 1000 universities, the sum of the scores of the listed universities is divided by three, thus implying a score of zero for the non-listed universities. Source: QS Quacquarelli Symonds Ltd, QS World University Ranking 2017/2018, Top Universities. (https://www.topuniversities.com/university-rankings/ world-university-rankings/2018).*

Ethiopia has relatively fewer graduates in STEM subjects compared to its regional peers, and worryingly these fell in the last two years. These subjects are deemed critical for many of the near-term jobs involved in the digital economy. Ethiopia does have policies to promote STEM in country.

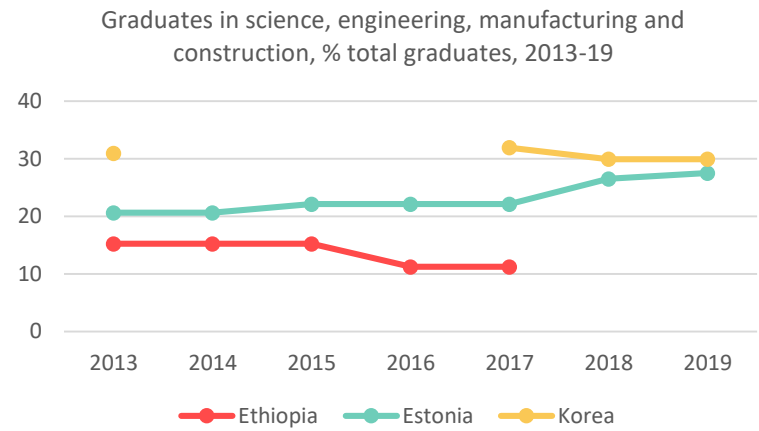
Ethiopia, Kenya, Rwanda



Ethiopia, India, Bangladesh



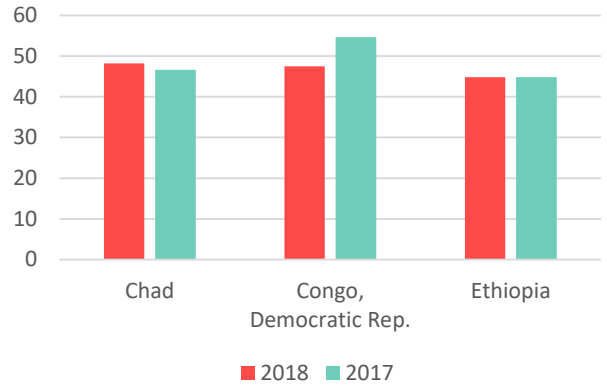
Ethiopia, Estonia, Korea



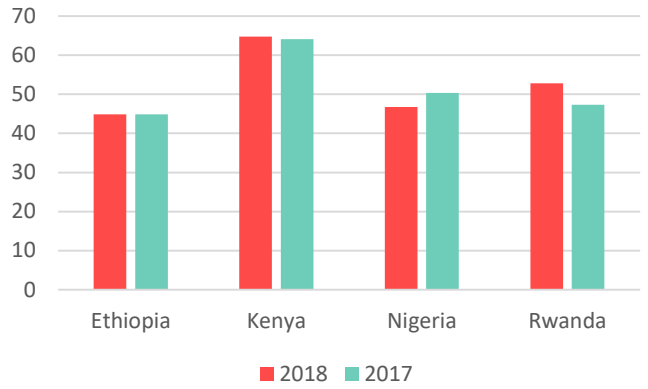
Source: GII, based on tertiary graduates in science, engineering, manufacturing, and construction (% of total tertiary graduates) | 2016
The share of all tertiary-level graduates in natural sciences, mathematics, statistics, information and technology, manufacturing, engineering, and construction as a percentage of all tertiary-level graduates. Source: UNESCO Institute for Statistics, UIS online database (2010–18). (http://data.uis.unesco.org)

Ethiopia slightly underperforms its regional peers in companies' perception of the ease of finding skilled employees. But it is on a par with Bangladesh, which at least relating to its existing light-manufacturing efforts, bodes well

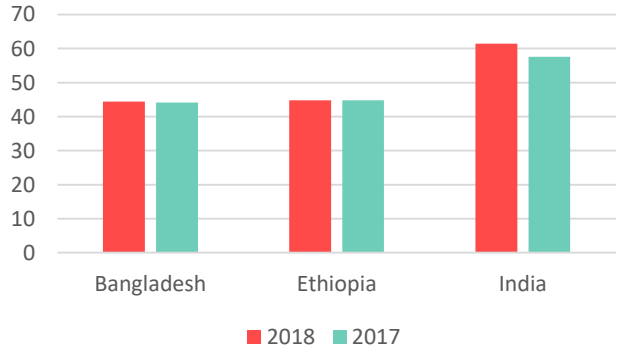
Ethiopia, Chad, DRC



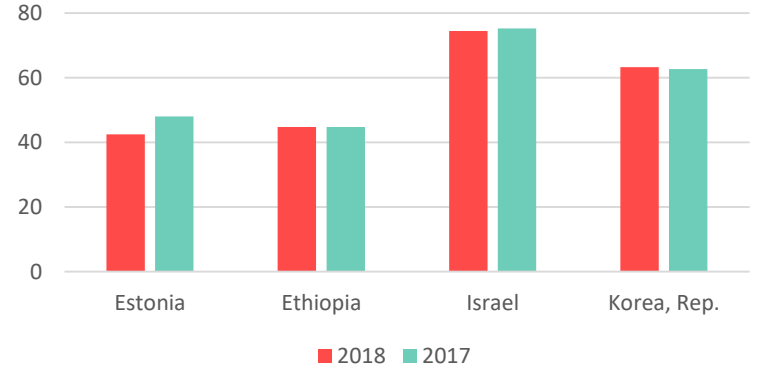
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, India, Bangladesh

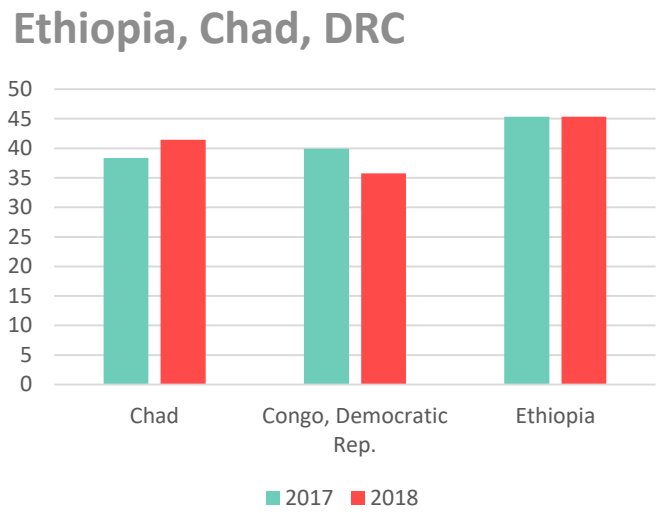


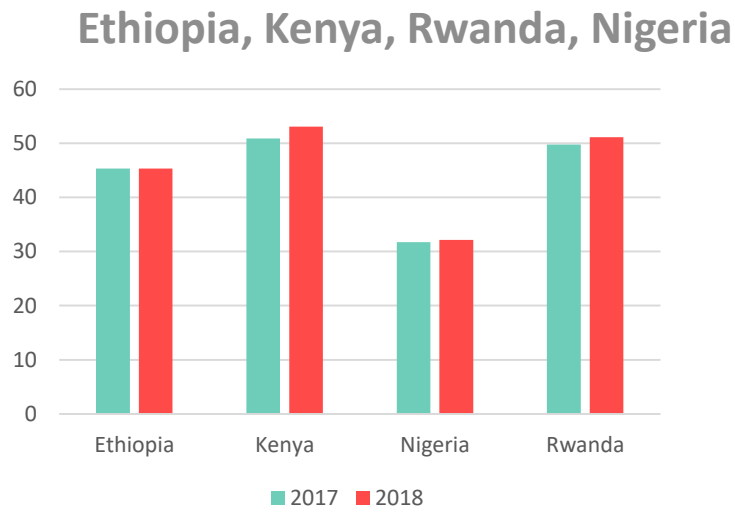
Ethiopia, Israel, Estonia, Korea

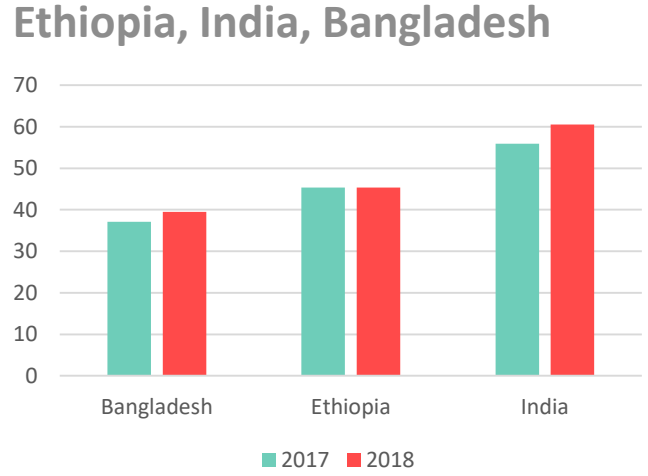


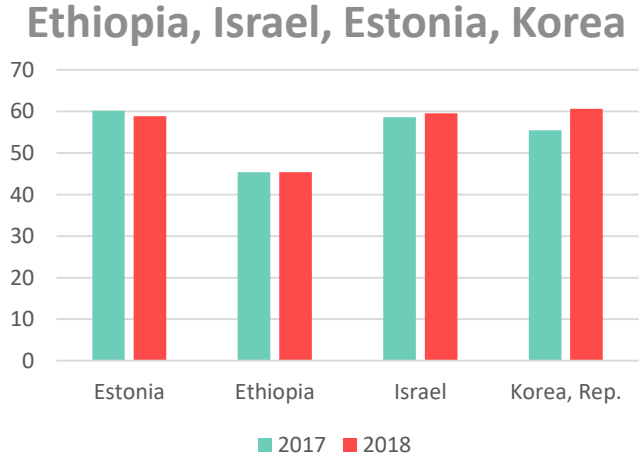
Source: WEF Global Competitiveness Index 2018, Executive Survey Question: "In your country, to what extent can companies find people with the skills required to fill their vacancies? [1 = not at all; 7 = to a great extent]"

Beyond tertiary education, the quality of vocational training is also considered to be better in Ethiopia than some comparator companies, mainly Nigeria and Bangladesh. But Ethiopia still underperforms as compared to Kenya and Rwanda





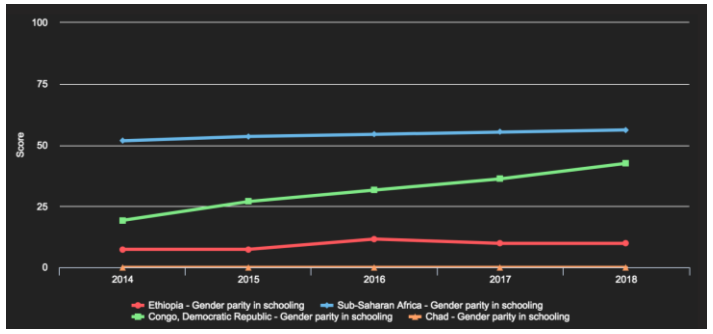




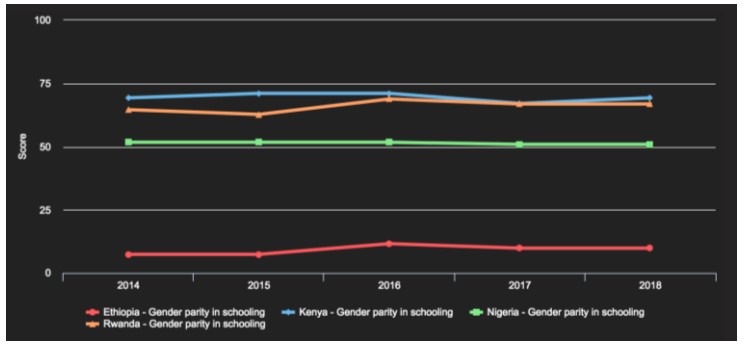
Source: WEF Global Competitiveness Index 2018, Executive Survey Question "In your country, how do you assess the quality of vocational training? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]"

Gender inclusivity will be critical to meeting Ethiopia's goals. At present schooling gender parity is much lower in Ethiopia than desired and below the SSA average

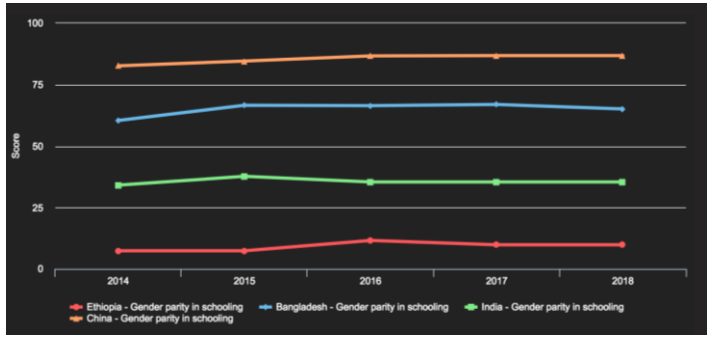
Ethiopia, Chad, DRC, SSA av.



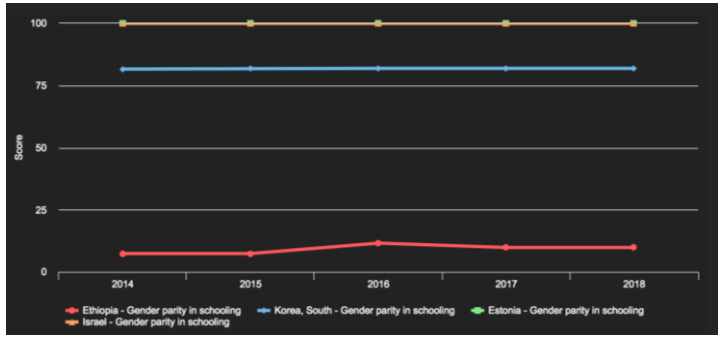
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea

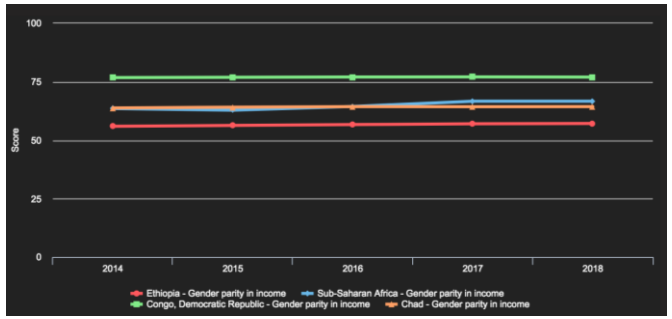


- **Trajectory:** Ethiopia lags behind on gender parity in schooling, not only behind the Africa average, but behind the DRC, which has made significant progress over the past 5 years (top let).
- **Implications for Ethiopia's Digital Readiness:** To become a digital ready knowledge economy, half the population will need be be brought along.

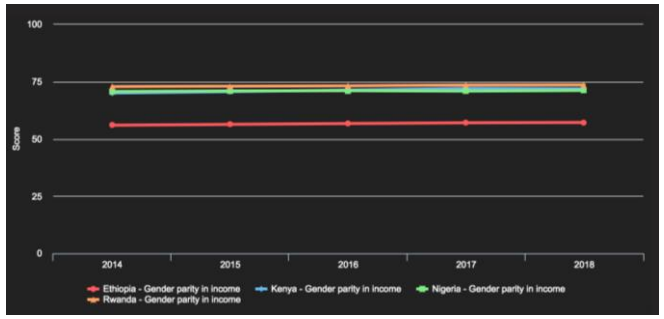
Source: GSMA 2019 based on UNDP and UNESCO

This inclusivity in education then plays out in poor income parity, lower than the SSA average – though surprisingly higher than in Bangladesh and India which is likely a poorer reflection of these comparator geographies

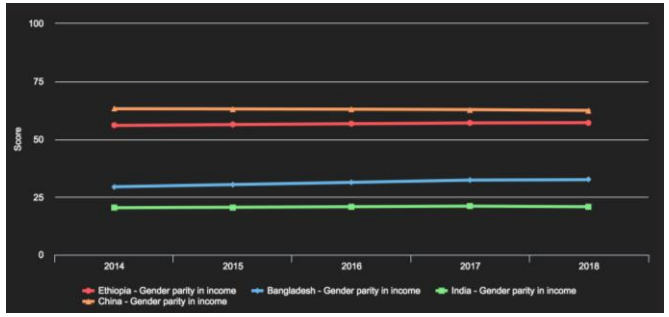
Ethiopia, Chad, DRC, SSA av.



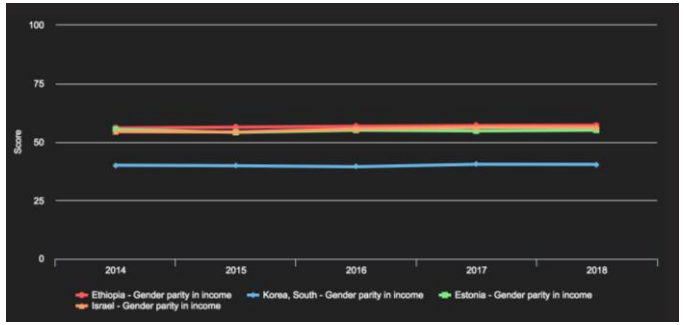
Ethiopia, Rwanda, Nigeria, Kenya



Ethiopia, China, India, Bangladesh



Ethiopia, Israel, Estonia, Korea



- **Trajectory:** Ethiopia's stark gender disparity is reflected in its income differences that are starker than those of the African average (top let), or of the region's frontrunner ICT countries (top right). But, for cultural reasons, Bangladesh, India and Korea (bottom left and right) have greater gender income disparities.
- **Implications for Ethiopia's Digital Readiness:** As the education system as a whole needs to catch up, an opportunity exists to use gender equity to leapfrog toward the knowledge economy over other more advanced economies by simply doubling Ethiopia's brain power .

Source: GSMA 2019 based on UNDP

Finally, the policy level requirements have also been analysed

Hard Infrastructure

- Accessible basic infrastructure (e.g. power)
- Accessible core connectivity infrastructure (from fiberoptic cables to mobile towers to devices to data)

Soft Infrastructure

Enabling Systems:

- Systems and platforms which enable remote verification and creation of apps and services while ensuring interoperability. E.g. ID verification, gateways, asset registries, payments

Applications

- Inclusive digital products and services (e.g. E-Gov, E-Commerce) used by citizens, enterprises, and governments

Ecosystem

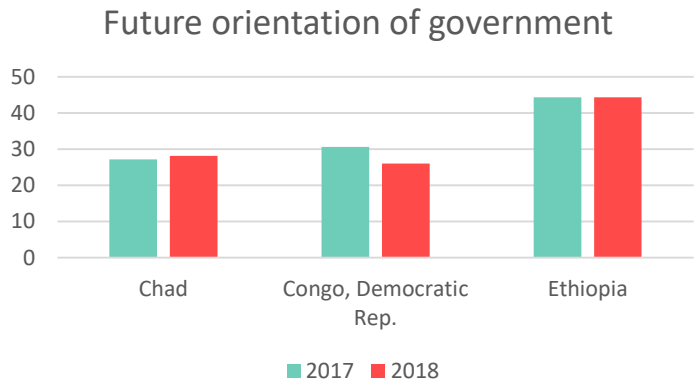
Finance: Access to suitable capital for start-ups & enterprises utilising digital; public finance to fund enabling ecosystems and infrastructure

People: Human Capital incl. skills and social expectations

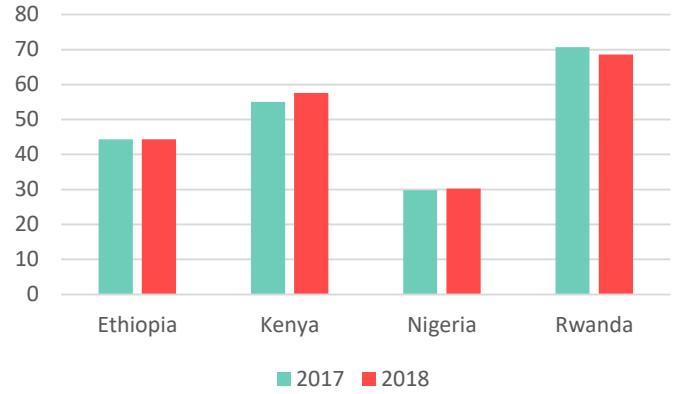
Policy & Regulation: A conducive environment that attracts investment, enables the private sector, and creates jobs

In line with those initiatives, the perception of the future-orientation of government is largely on par with comparator countries world-wide

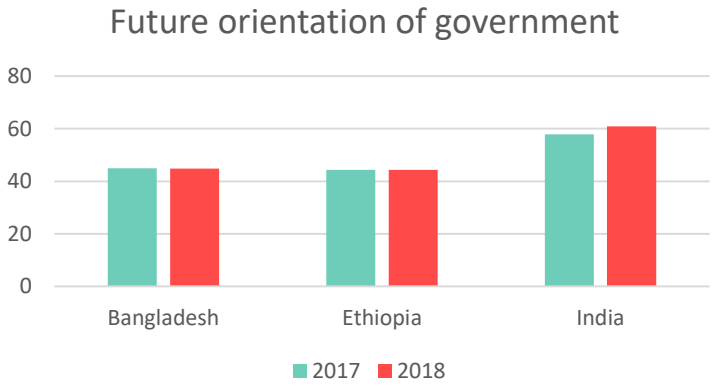
Ethiopia, Chad, DRC



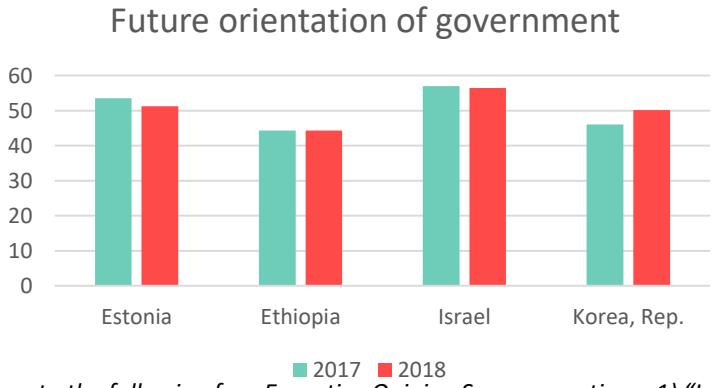
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, India, Bangladesh



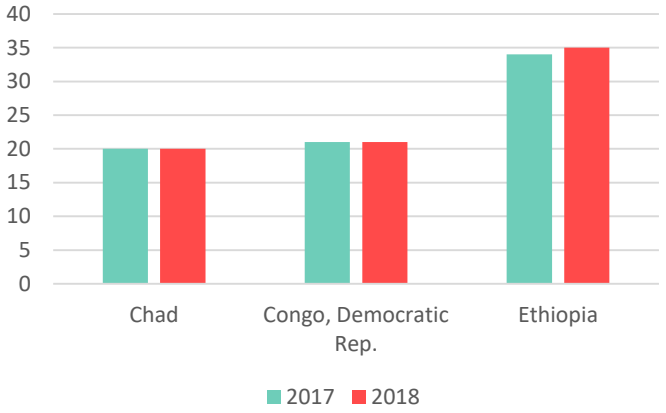
Ethiopia, Israel, Estonia, Korea



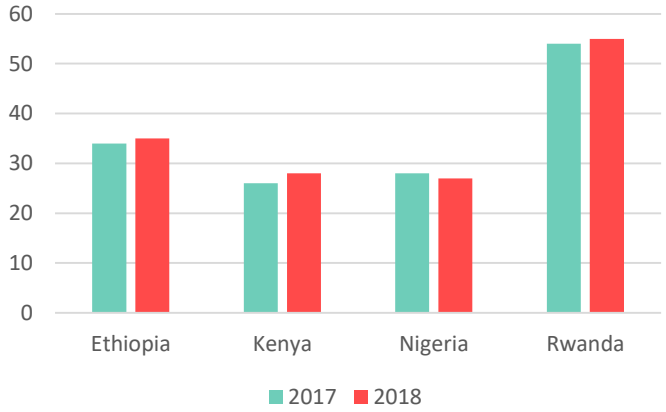
Source: WEF Global Competitiveness Index 2018; Average of the responses to the following four Executive Opinion Survey questions: 1) "In your country, how fast is the legal framework of your country in adapting to digital business models (e.g. e-commerce, sharing economy, fintech, etc.)?" [1 = not fast at all; 7 = very fast]; 2) "In your country, to what extent does the government ensure a stable policy environment for doing business?"; 3) "In your country, to what extent does the government respond effectively to change (e.g. technological changes, societal and demographic trends, security and economic challenges)?"; and 4) "In your country, to what extent does the government have a long-term vision in place?". For the last three questions, the answer ranges from 1 (not at all) to 7 (to a great extent). | 2017–2018 weighted average or most recent period available

Perception of corruption improved in the last year and it is lower than in Kenya and Nigeria; however Ethiopia lags behind advanced economies

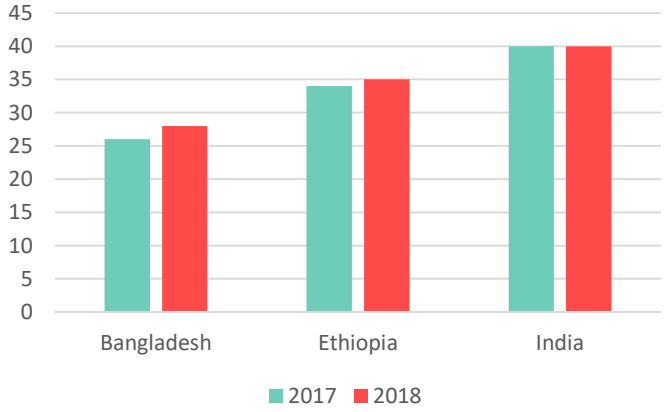
Ethiopia, Chad, DRC



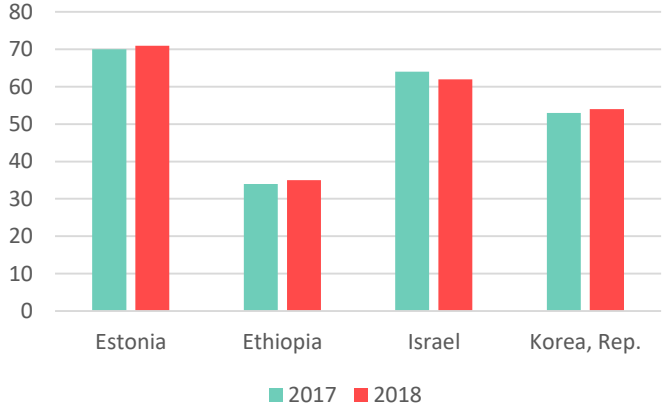
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, India, Bangladesh

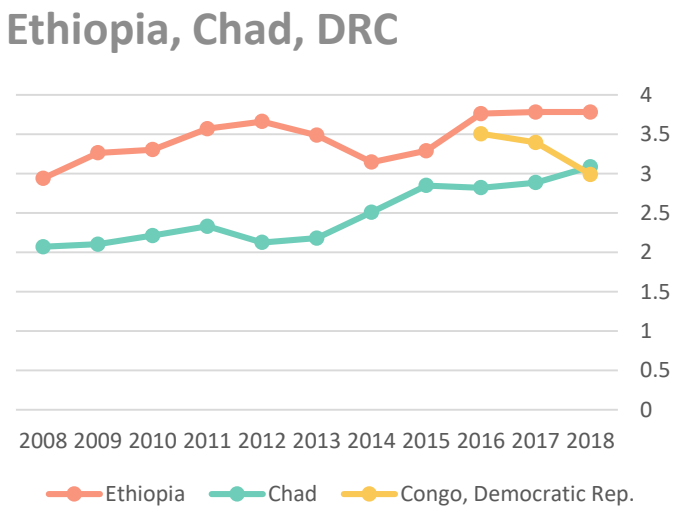


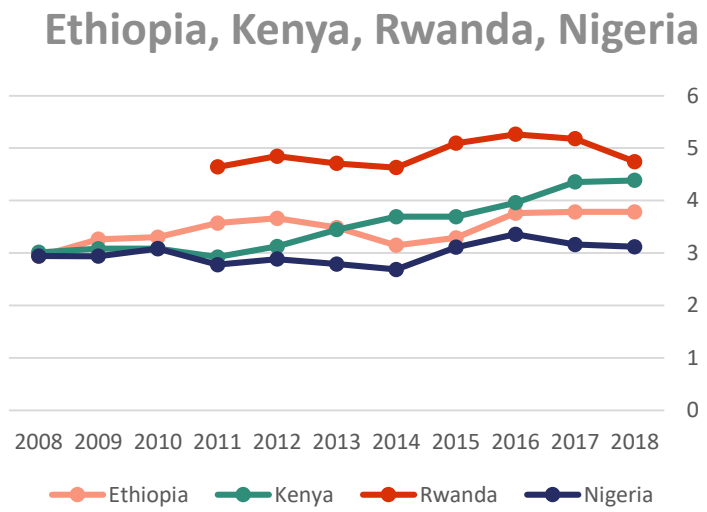
Ethiopia, Israel, Estonia, Korea

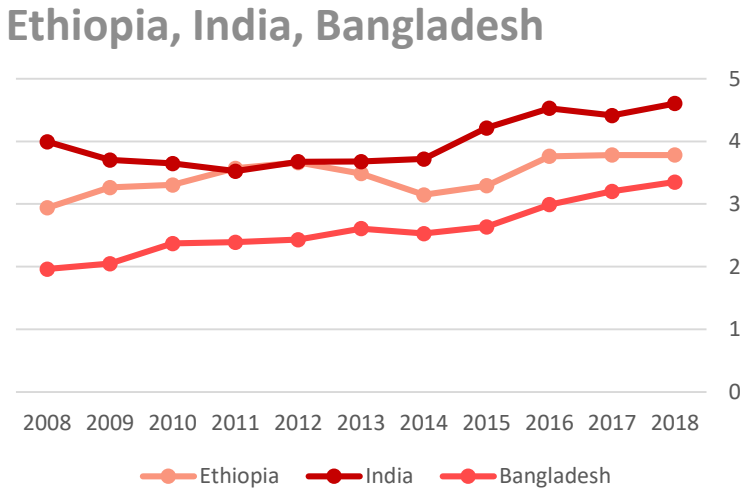


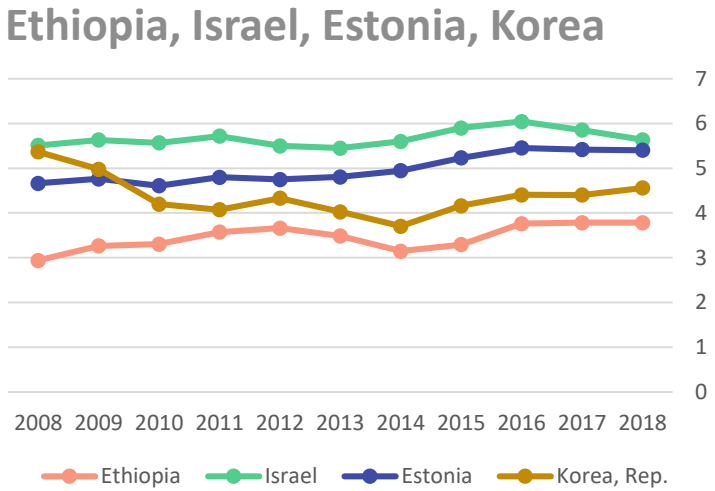
Source: WEF Global Competitiveness Index 2018, based on Transparency International's composite Corruption Perception Index

Ethiopia is in the mid-range among peers when it comes to laws on the protection of intellectual property



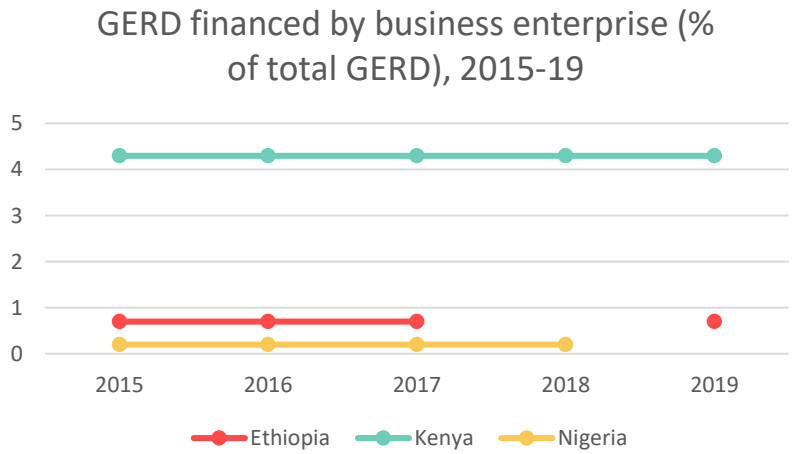


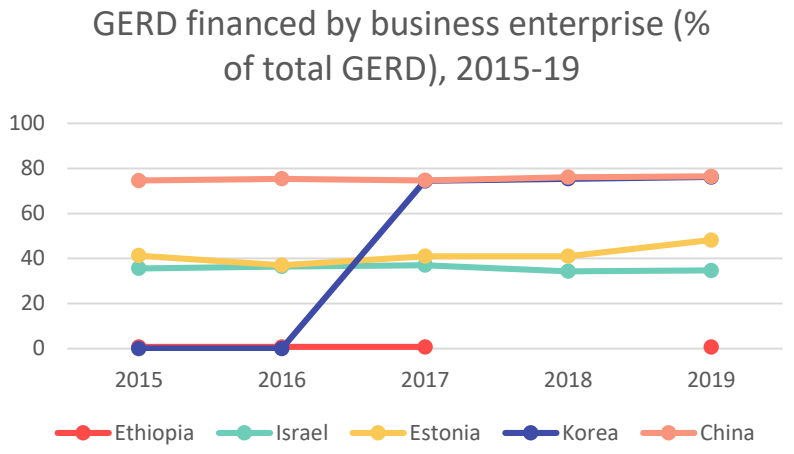


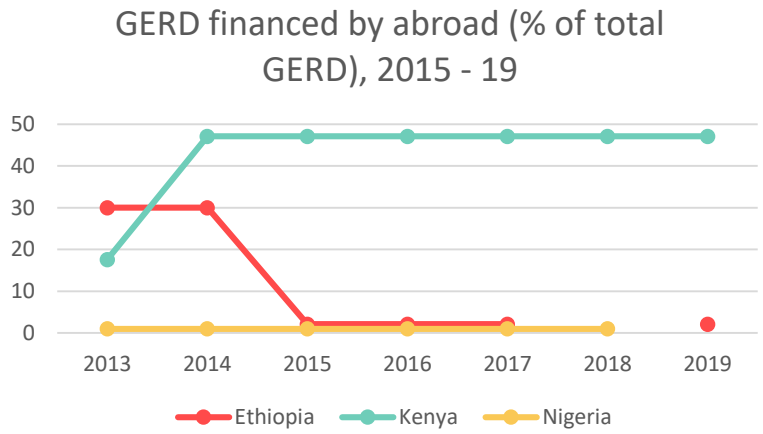


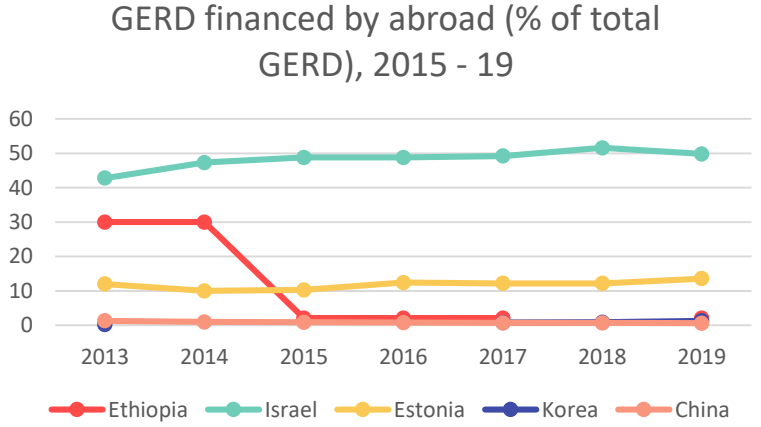
Source: WEF Global Competitiveness Index 2007-2018; Executive Survey Question: "In your country, to what extent is intellectual property protected? [1 = not at all; 7 = to a great extent]"

While public Gross Expenditure on R&D (GERD) is fairly high, private spending could be increased by incentivizing and strengthening the innovation ecosystem







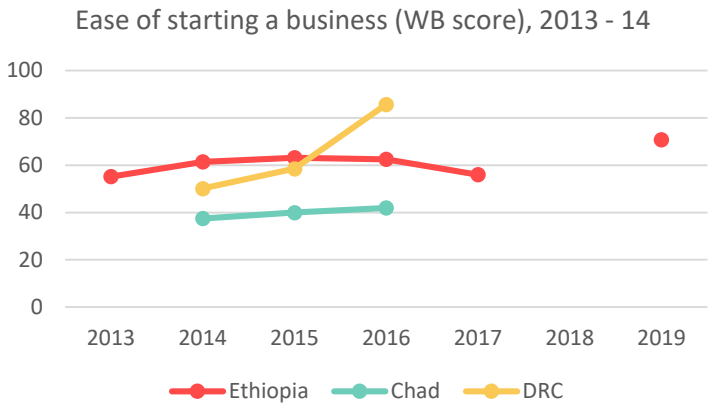


NIGERIA CASE STUDY
Special incentives for pioneer industries
Pioneer status entitles qualifying entities and companies to an income tax "holiday" for up to five years (three years initially and renewable for an additional two years). In addition to the income tax holiday, pioneer companies may enjoy other benefits including an exemption from withholding tax on dividends paid out of "pioneer profits."
27 industries eligible for pioneer status including software development and publishing; production and post-production of digital contents; music production, publishing and distribution; telecommunications; BPO; electricity supply and financial services.

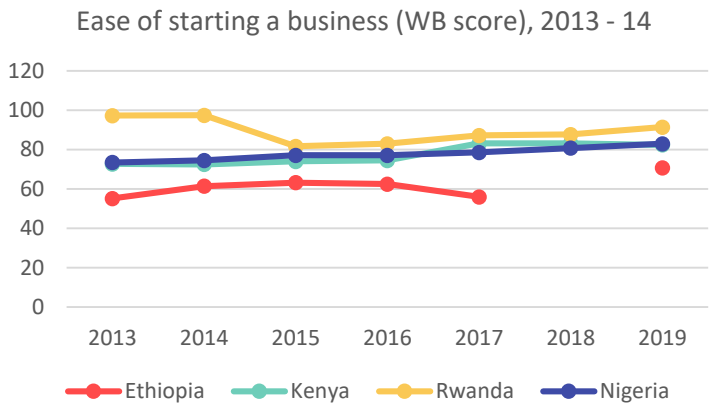
Notes: Gross expenditure on R&D financed by business enterprise as % of total gross expenditure on R&D (business enterprise) and as % gross expenditure on R&D financed by abroad—that is, with foreign financing as a % of total gross expenditure on R&D in a country.
Source: From Source: UNESCO Institute for Statistics, UIS online database; Eurostat, Eurostat database, 2019; OECD, Main Science and Technology Indicators MSTI database, 2019 (2008–17).

Overall, Ethiopia's regulatory framework is less business-friendly than elsewhere, especially with respect to new, potentially innovative firms.

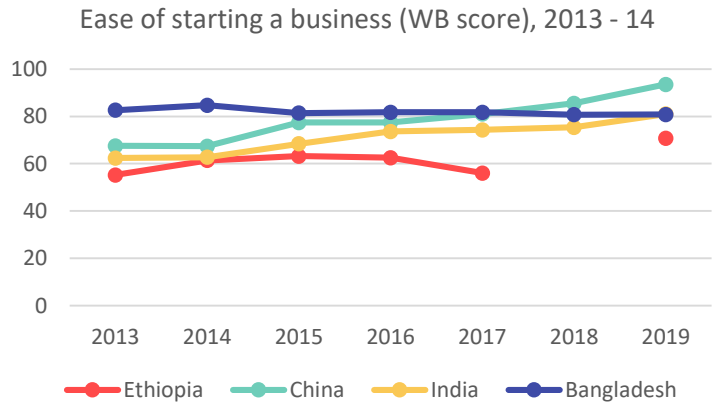
Ethiopia, Chad, DRC



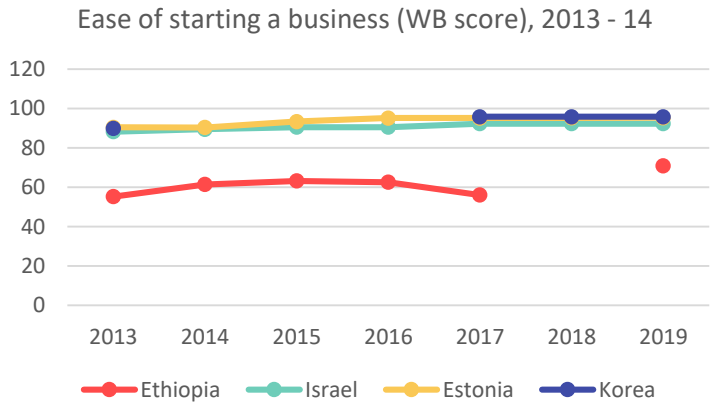
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, China, India, Bangladesh



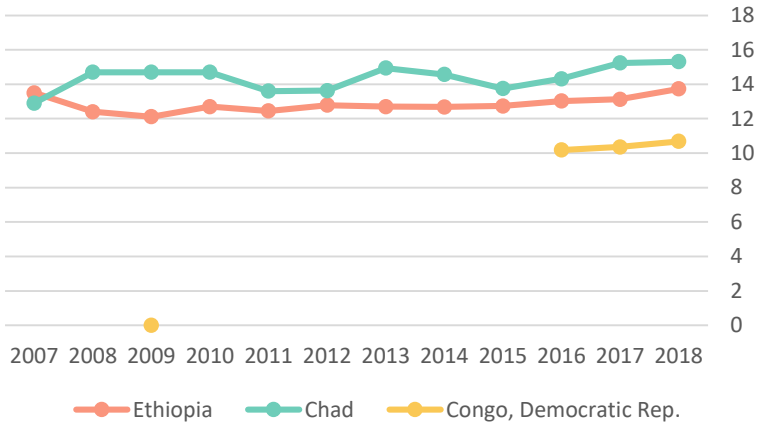
Ethiopia, Israel, Estonia, Korea



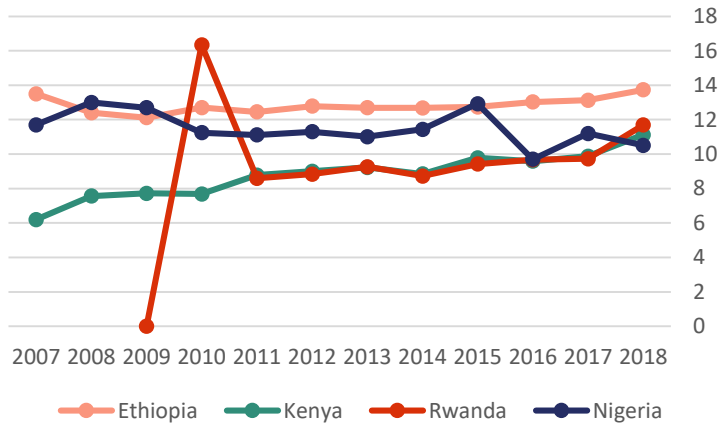
Source: GII, based on Ease of starting a business (score) in 2018 World Bank, Doing Business 2019 (http://www.doingbusiness.org/en/reports/ global-reports/doing-business-2019).
These scores are the simple average of the scores for each of the component indicators. The World Banks Doing Business records all procedures officially required, or commonly done in practice, for an entrepreneur to start up and formally operate an industrial or commercial business, as well as the time and cost to complete these procedures and the paid-in minimum capital requirement. Data are collected from limited liability companies based in the largest business cities. For 11 economies, including Bangladesh, China and India, the data are also collected for the second-largest business city.

Average tariffs are slightly higher than in regional peers and much higher than in advanced economies, making Ethiopian exports relatively expensive.

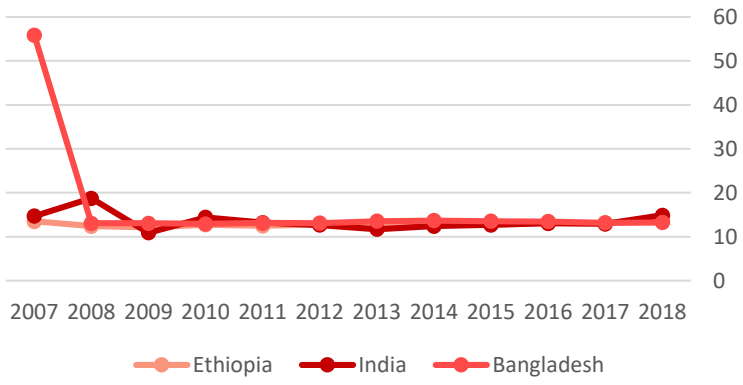
Ethiopia, Chad, DRC



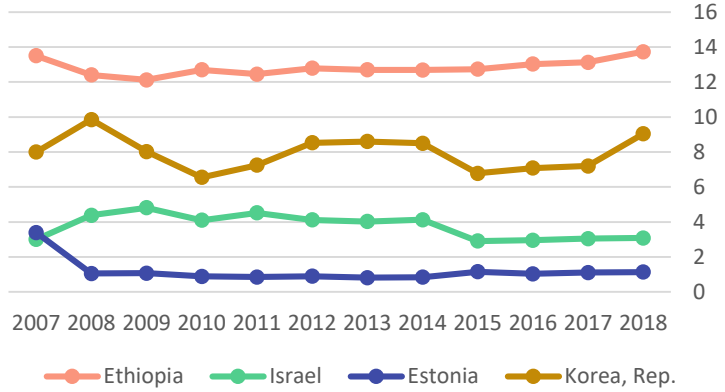
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, India, Bangladesh



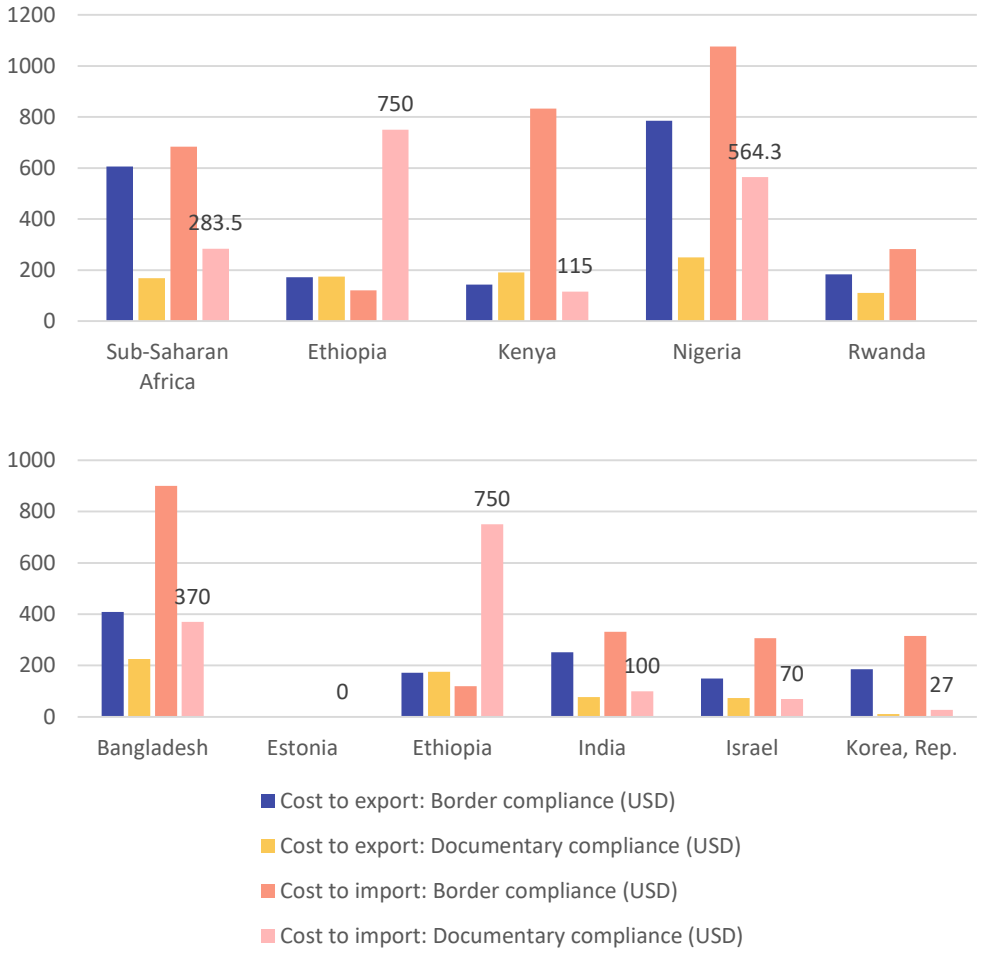
Ethiopia, Israel, Estonia, Korea



Source: WEF Global Competitiveness Index 2007-2018

Taxation and regulation of imports makes it costly and burdensome for innovative companies in Ethiopia to acquire and use equipment

Cost of trading across borders (import and export), in USD

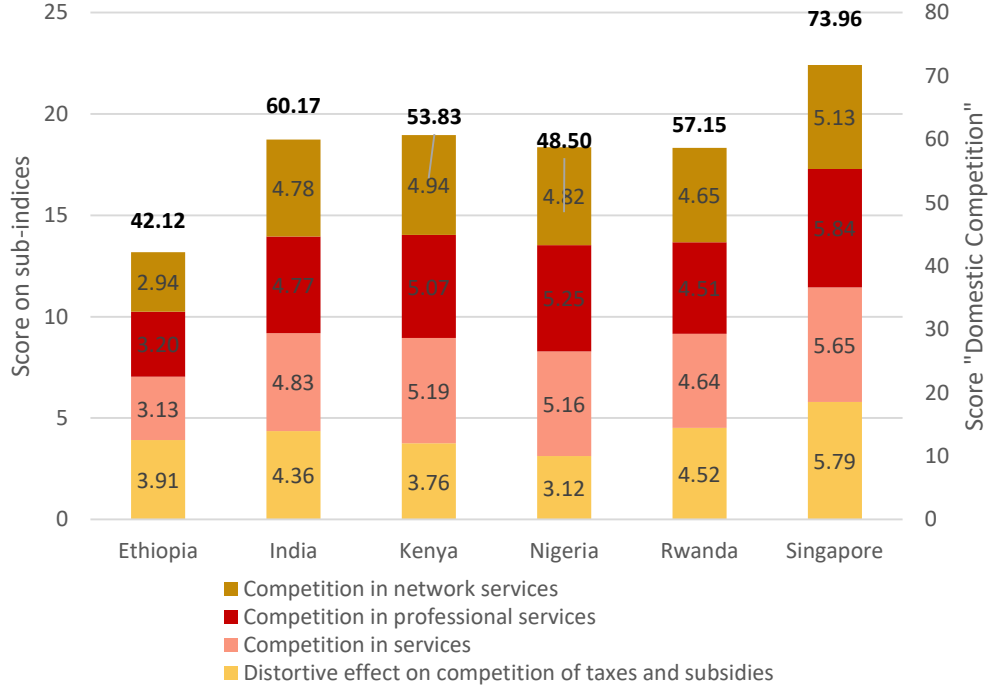


ICT and digital products are costly to import: According to the World Bank (2019), Ethiopia levies 14.4% import duties on average with some taxes as much as 30%, while in Kenya, the average tariff on these products is just 3.75 percent

Source: World Bank (2019) Ease of Doing Business, World Bank (2019) Ethiopia Country Private Sector Diagnostic

Various key sectors are not fully competitive or subject to monopolistic structures, which constrains Ethiopia's growth and innovation capacity

Level of competition in Ethiopia's services sectors compared to peers



- Overall **domestic competition in services is low compared to peers,** according to the WEF Executive Survey
- While laws safeguarding competition are in place both on the national level and in regulated sectors, **a range of sectors are not fully competitive**, especially through oligopolistic structures, anti-competitive behaviour and preferential treatment of SOEs
- **Three sectors remain monopolistic**: telecommunications, electricity and transport

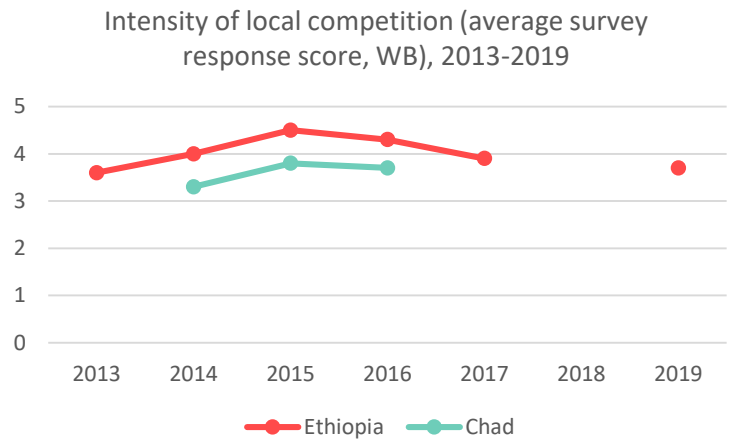
Market structures in selected sectors (UNCTAD)

Sector	Market structure
Coffee	• Low concentration • Few barriers to entry
Livestock	• Free market competition
Transport	• No competition in air and rail transport • Competition in road transport • Regulatory entry barriers
Construction (cement)	• Oligopolistic (three main producers) • Allegations of anti-competitive practices
Textiles and apparel	• Competitive • Open entry
Beer	• Free market competition
Telecommunications	• Monopoly
Power	• Monopoly

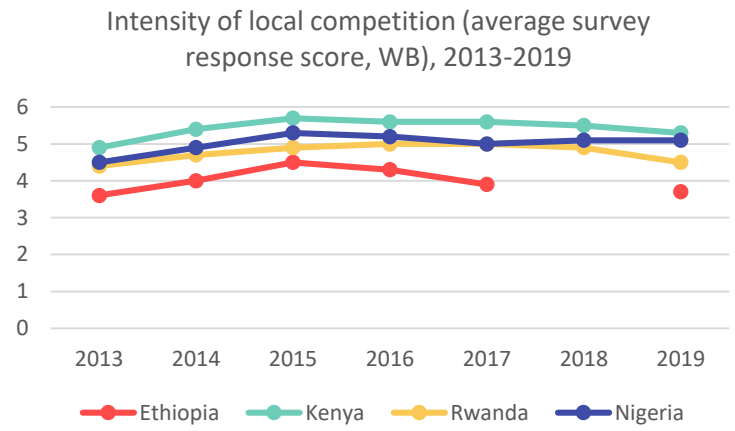
Source: WEF Global Competitiveness Index 2018, UNCTAD (2017) "Competition Policy in Ethiopia"

As indicated below, local competition is seen as less intense than in both regional and international comparator countries

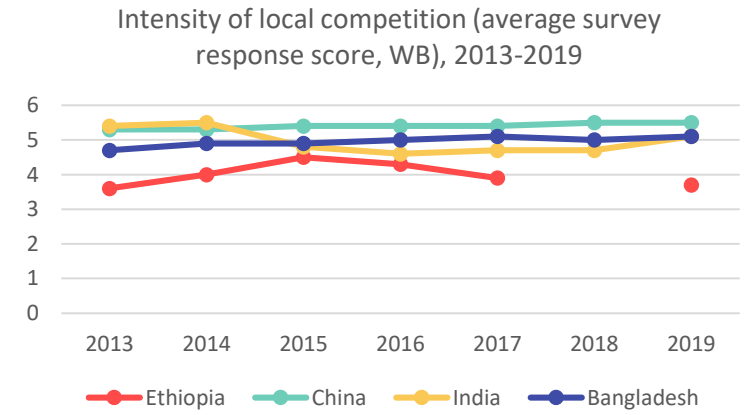
Ethiopia, Chad



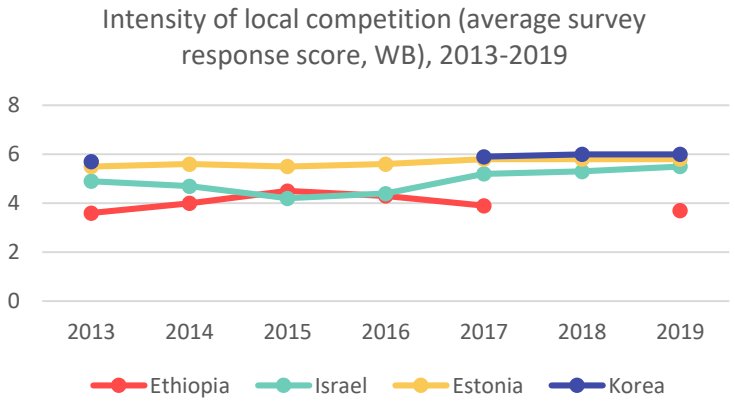
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, China, India, Bangladesh



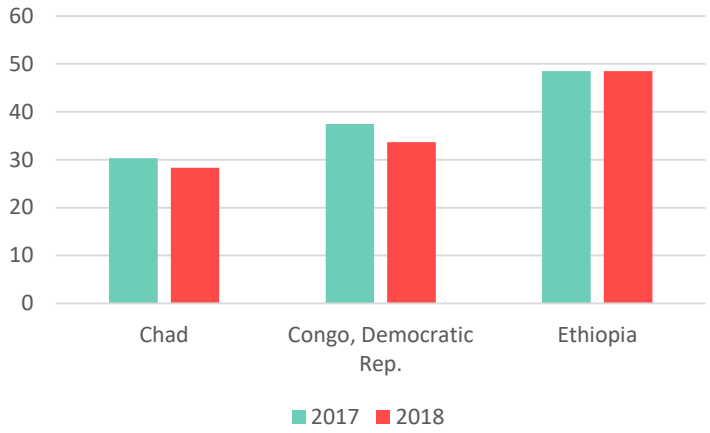
Ethiopia, Israel, Estonia, Korea



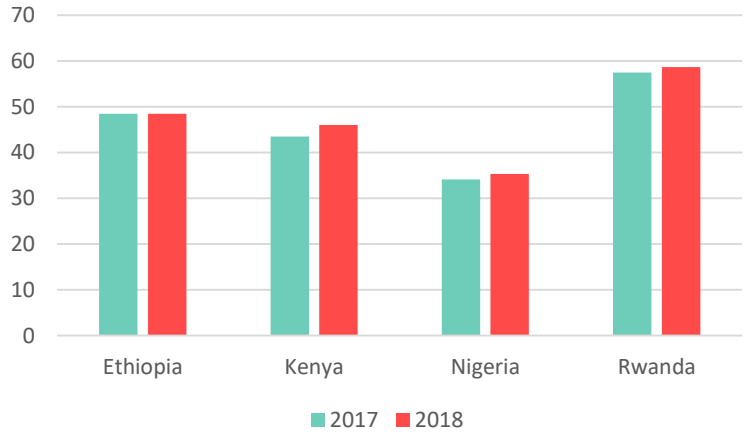
Source: GII

While overall domestic competition is constrained, subsidies and taxes per se seem to be on par with international comparators in their effect on competition

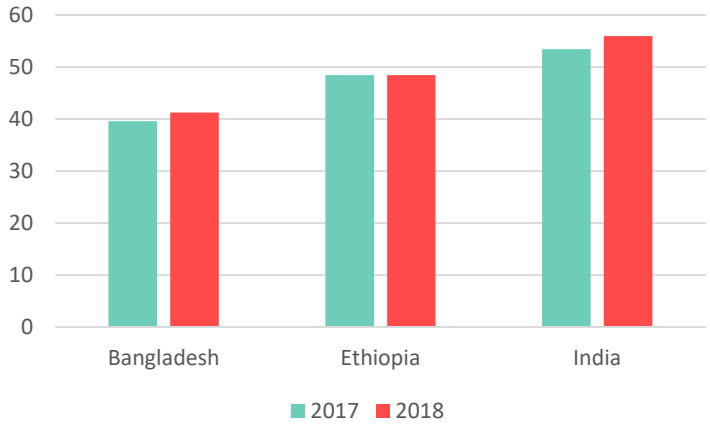
Ethiopia, Chad, DRC



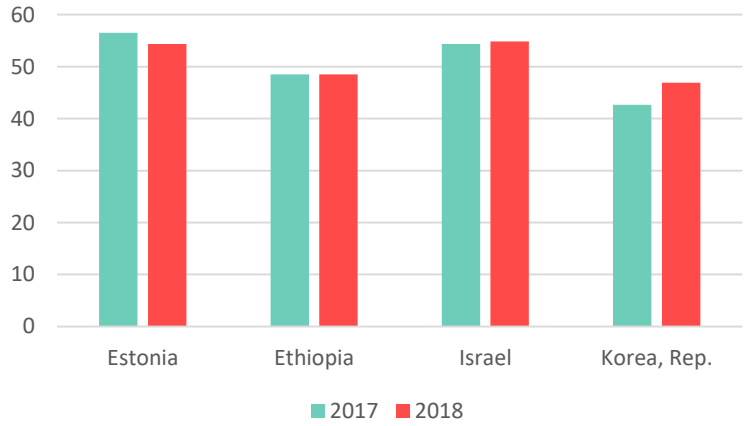
Ethiopia, Kenya, Rwanda, Nigeria



Ethiopia, India, Bangladesh

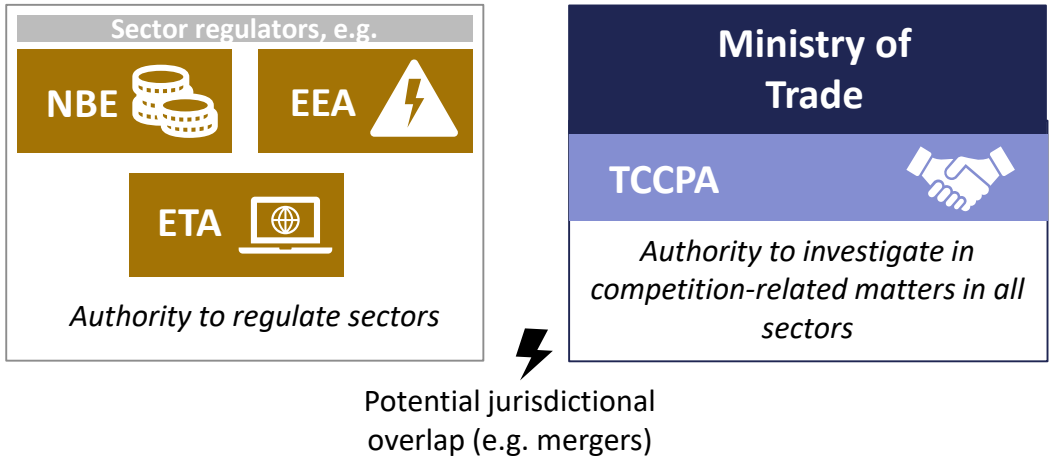


Ethiopia, Israel, Estonia, Korea



Source: WEF Global Competitiveness Index 2018; Executive Survey Question: "In your country, to what extent do fiscal measures (subsidies, tax breaks, etc.) distort competition? [1 = distort competition to a great extent; 7 = do not distort competition at all]"

Relevant authorities for safeguarding competition in Ethiopia – sector regulators and the TCCPA – seem to be resource-constrained and, hence, have limited impact



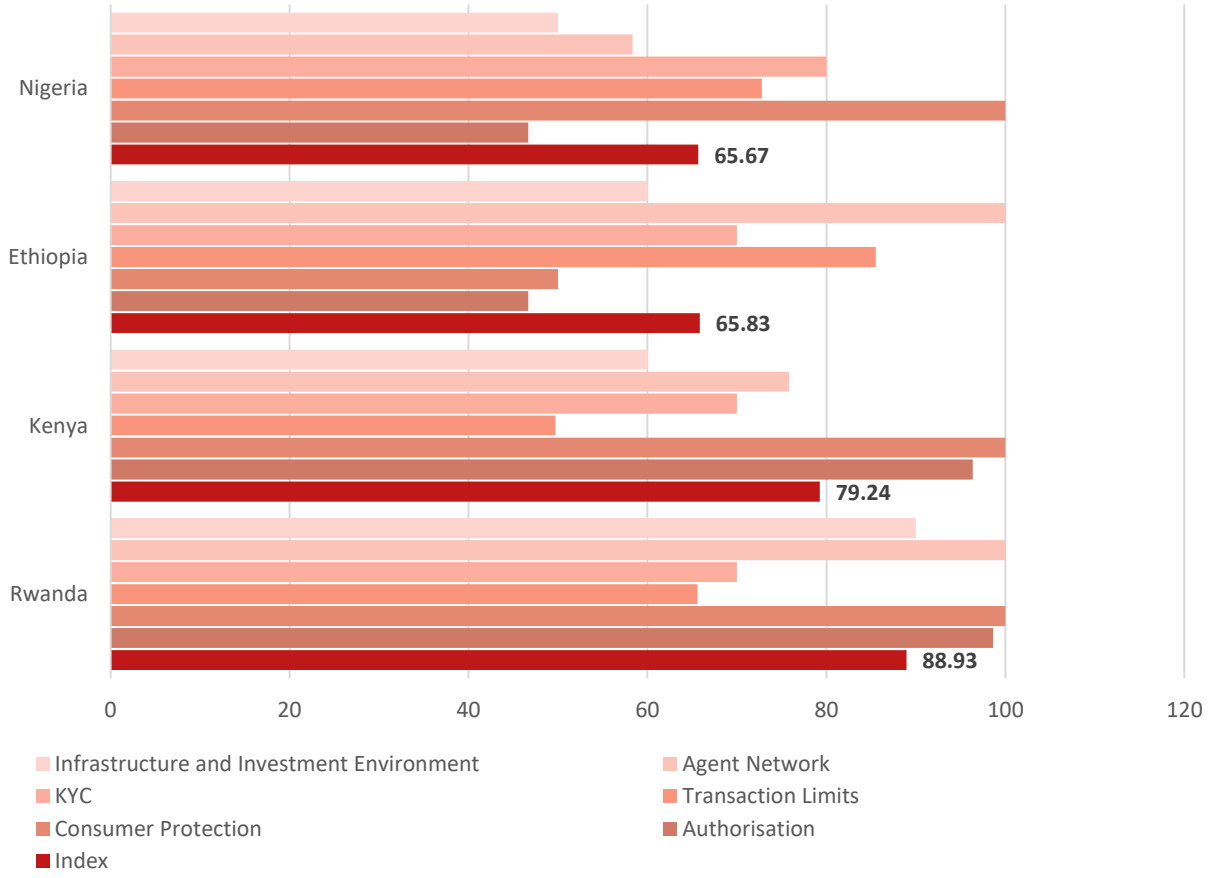
Ethiopia has a Trade Competition and Consumers Protection Proclamation (813/2013), and a reinforcing agency: the **Ethiopian Trade Competition and Consumer Protection Agency (TCCPA).**

Potential challenges for the TCCPA

- **Authority has lacked capacity to effectively enforce the Proclamation**, which has contributed it not having published any supplementary regulations an guidelines which would facilitate the enforcement of Proclamation 813/2013 yet
- **There is very little activity found in the public domain of the TCCPA,** and as revealed from personal interviews with and internet research for this diagnostic
- **The role, staffing and capacity of the TCCPA shall be further investigated in the dialogue phase,** given the importance of a functioning body for ensuring effective competition on markets – particularly in the digital economy

Ethiopia performs relatively well on the MobileMoney regulatory index, yet the exclusive right of financial institutions to issue mobile money remains a constraint.

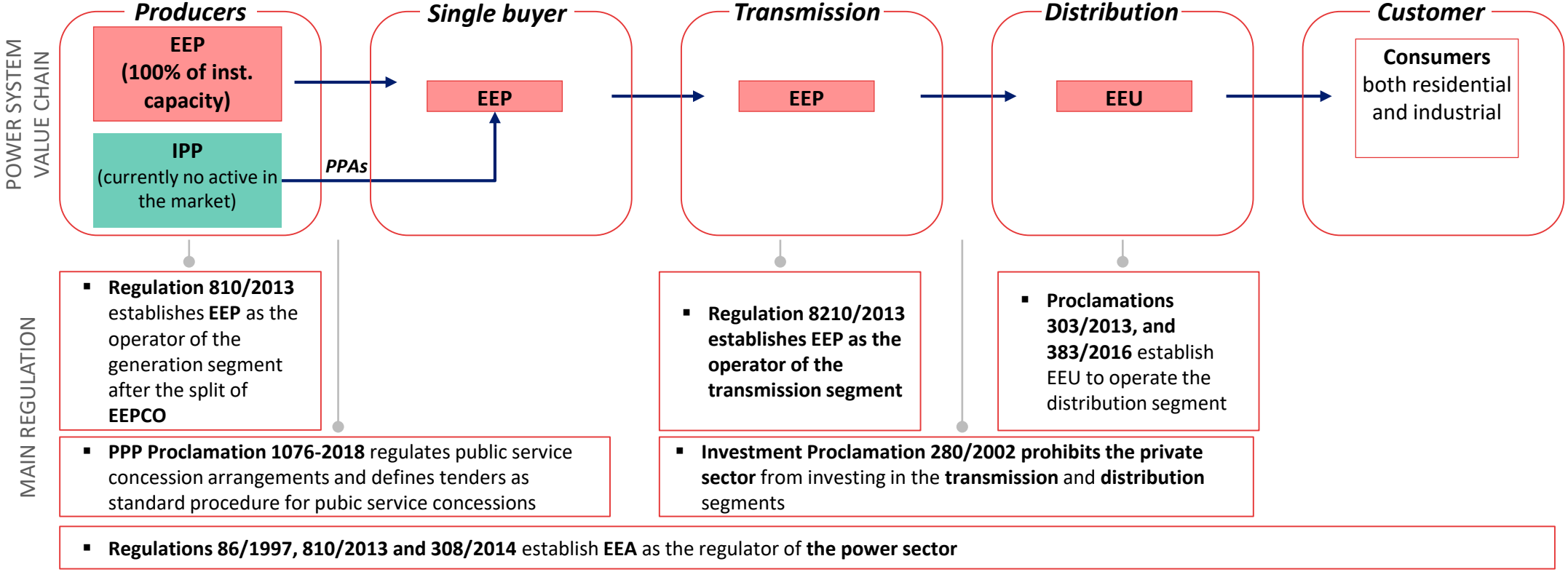
GSMA MobileMoney Regulatory Index 2019, Ethiopia and peers



- Ethiopia has a **relatively well-established agent network** (as measured as proportionality of employing and using agents) as well as a **high level of flexibility of providers to meet customer needs with regards to transactions**
- However, Ethiopia's regulatory framework is **restrictive in authorisation, as non-financial institutions are currently not allowed to issue mobile money**

Source: GSMA 2019 based on GSMA Intelligence

Ethiopia has recently opened to competition in the generation segment to accelerate sector development and support economic objectives but regulatory framework needs to be ameliorate and SOEs continue to play a dominant role



KEY TAKEAWAYS

- Proclamations regarding the power sector make it clear that the private sector can be engaged in generation segment through the provision of licenses from EEA while transmission and distribution sectors remain exclusively managed by the public sector
- The EEP and EEU proclamations have contradictions and uncertainties which hampers regulatory certainty for private investors
- PPP proclamation establishes a tender procedure, managed by MOFEC, for the procurement of new infrastructures projects under concession scheme but implementation is still at an early stage
- New IPPs entering into the market must sign power purchase agreement (PPAs) with EEP which acts as the single buyer and sole wholesale operator into the market

SOEs **Private sector**

Source: PPP proclamation n.1076-2018, Ethiopia's National Electrification Plan (NEP 2.0), EEU tariff review 2018, TBI intelligence

A comprehensive reform of power sector governance is under discussion to expand service, solve quality and reliability issues, and improve sector's capabilities to sustain economic development. But tariff increases will likely be passed on

Main undergoing reforms

Private sector participation

- New legal and regulatory framework for PPPs is being implemented with first tenders organized under the new regime, notably for renewable energy sources
- The GoE is intentioned to support PPPs for most of new generation projects in the future
- New National Electrification Plan (NEP 2.0) opened also to private sector participation into off-grid sector to achieve service expansion targets and full electrification of the country

Electricity tariffs

- A general review of electricity tariffs is undergoing to improve the financial health of the sector
- Tariffs will gradually achieve cost-reflectiveness to reduce current budgetary burden of subsidies

Power sector reform

- A comprehensive power sector reform roadmap is under discussion covering mainly unbundling of the EEP, the creation of an independent system operator, the restructuring of public utilities and the opening of T&D investments to private sector

Implications

Access to electricity and availability of power

- Tenders for new generation capacity will trigger competition, attract highly qualified IPPs and deliver new projects at the lower costs when at regime
- Availability of power will increase for all consumers in line with the reduction of current supply and demand deficit
- Economic damages of power shortages and interruptions will be limited
- New households will gain access to power services thanks to the investments in grid extension and off-grid tech.

Improvements in quality of service

- Increased reliability and quality of electricity supply will strengthen economic competitiveness of the country
- New financial equilibrium for power sector utilities will support further improvements in quality of service, as for connections, losses reduction, maintenance, billing and payment..

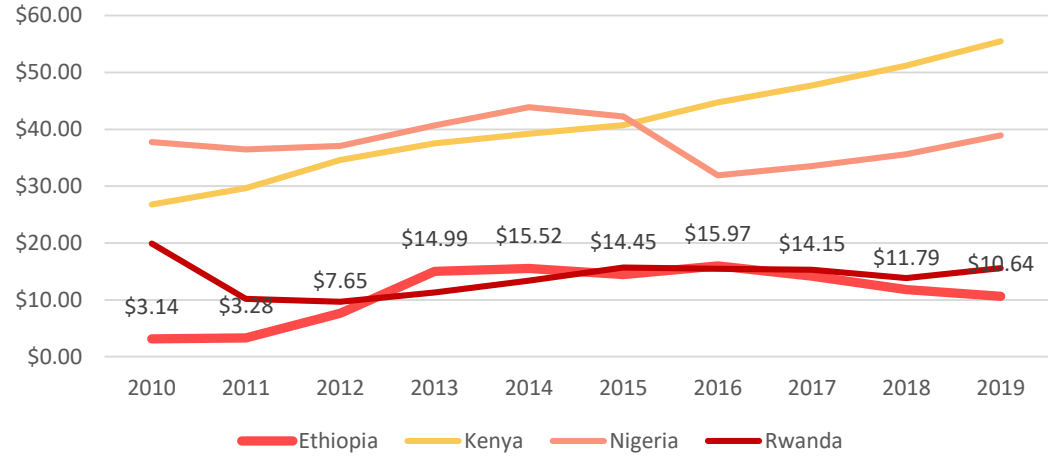
Higher costs for power supply

- Private sector crowding-in and tariff review will rise electricity service costs with the risk to jeopardize the competitive advantage of cheap power
- Power intensive industries (cement, steeling, chemicals) may be penalized and less attracted by investing in Ethiopia

Source: PPP proclamation n.1076-2018, Ethiopia's National Electrification Plan (NEP 2.0), EEU tariff review 2018, TBI intelligence

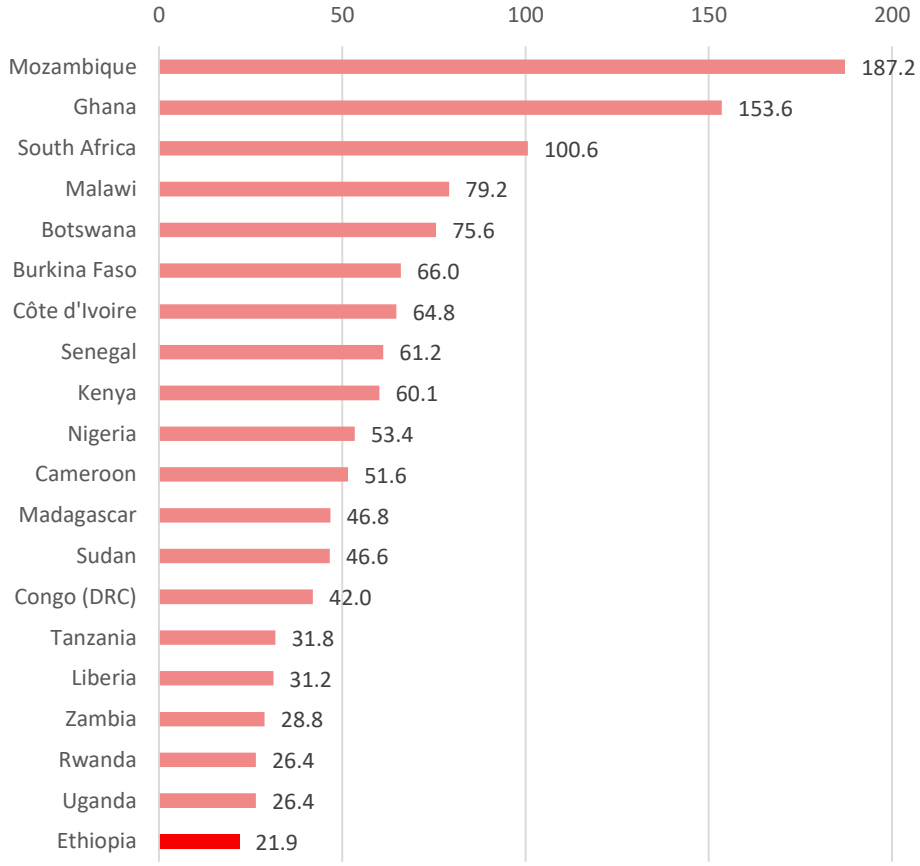
As an ICT subsector, telecommunications has a large untapped potential and is currently not attracting a large customer base.

Development of total revenue per population (US$), Ethiopia and regional peers 2010-2019



Note: Total revenue generated in the period, including both recurring (service) and non-recurring revenue.

Average revenue per user in USD (blended ARPU) per year



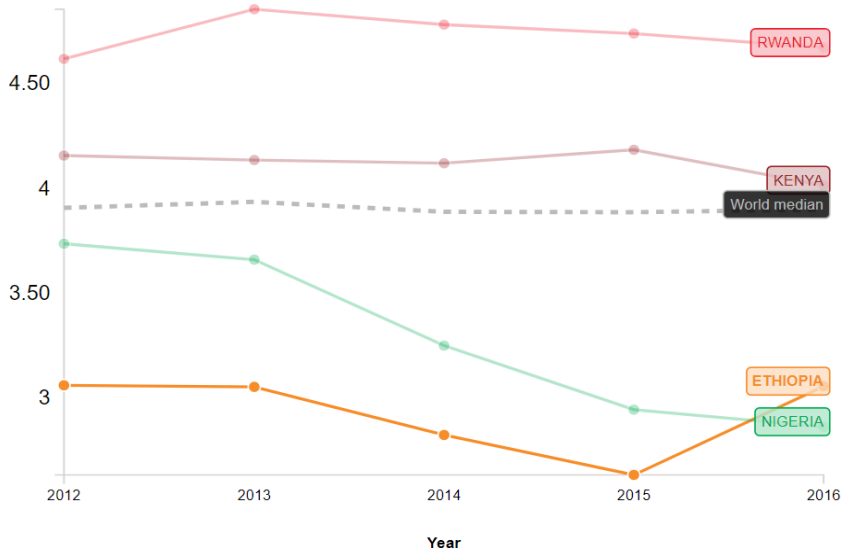
Note: Average revenue per user (ARPU). Total recurring (service) revenue generated per unique subscriber per month in the period. An inherent problem is that this measure does not account for multiple SIM card ownership, which is common among prepaid users.

- There is a **large untapped market potential in Ethiopia**, as revenue per population is comparatively low. Nigeria, with a comparable population size, has about twice as much revenue in the telecoms sector
- Average revenue per user (ARPU) measures the performance of the mobile telecommunications sector. According to Research ICT Africa (2018), **Ethiopia's very low ARPU indicates that the monopoly in Ethiopia is not effective** and has failed to develop innovative products to generate demand for telecommunication
- In 2019, 96% of Ethio Telecom customers were pre-paid and only 4% post-paid, which is similar among regional peers Nigeria and Kenya

Source: Economist Intelligence Unit (2018) Inclusive Internet Index (3i), Research ICT Africa

Ethiopia needs to develop a more comprehensive, innovation-friendly regulatory framework for the ICT sector – currently government initiatives focus on inclusive access

Scores for laws relating to ICTs in Ethiopia and regional peers (2018)



- However, in the Inclusive Internet Index (3i) published by the Economist Intelligence Unit (EIU) and Facebook, **Ethiopia has been able to improve its policy readiness ranking in 2019** – mainly by including "at least three underserved groups" in its national ICT policy plan and closing the gender gap in internet access

Overall score: POLICY

- According to the WEF Global Information Technology Report, the **regulatory framework in the ICT sector is insufficient to encourage the levels of growth and job creation that Ethiopia could benefit from** – this is measured by looking at how developed are a country's laws relating to the use of ICTs (e.g., e-commerce, digital signatures, consumer protection) are? [1 = not developed at all; 7 = extremely well developed]

Policy pillar of the inclusive internet index (3i) for Ethiopia and regional peers (2019)

	Ethiopia	Kenya	Nigeria	Rwanda
National female e-inclusion policies	75.0 ↑	25.0	50.0	75.0
Government e-inclusion strategy	100.0 ↑	100.0	100.0	100.0
National broadband strategy	100.0 →	0.0	100.0	50.0
Funding for broadband buildout	100.0 →	100.0	100.0	100.0
Spectrum policy approach	0.0 →	100.0	100.0	100.0
National digital identification system	50.0 ↑	100.0	100.0	100.0

Source: Economist Intelligence Unit (2018) Inclusive Internet Index (3i), WEF Global Information Technology Report 2016

The Ethiopian National ICT Policy can do more to encourage entrepreneurs particularly be creating more realistic requirements to obtain licensing

- **Value Added Services** refer to services which **are not basic telecommunication services** or additional services that will be provided **using mobile, internet or fixed line telecommunication services.**
- **As most tech start-ups** use mobile internet or fixed line telecommunication services, they are required to get a **VAS license from MInT i**n addition to the **Business Registration Certificate** they obtain from MoTI

VAS types

1. Short Messaging Services
2. Payment Transaction Services
3. Entertainment& information services
4. Location Based Services
5. Call Center Services
6. Virtual Internet Services

Requirements for obtaining VAS license

1. **Two graduate professionals** with first degree in Electrical or Computer Engineering, Computer or Information Science, or Information and Communication Technology, or in related fields and having two years experience in the sector;
2. **One technician having a diploma** from a recognized educational institution in Electricity, Electronics, Information Technology or related fields;
3. **Routers, servers and other similar equipment** applicable for the service;
4. **Business registration certificate***
    - Authenticated contract of **office space lease**

Key Challenges

- **The VAS types categorized** by MCIT lack updating and don't **include current technological trends.**
- **If a tech start-up's category falls** outside of the VAS **types above**, a **legal challenge usually happens** on how to categorize the tech start-up.
- Then this creates a **lengthy and time consuming** (up-to six months) process for a tech start-ups to be **registered and start operation**
- **As most tech start-ups** begin **with limited talent** and **very few computers,** the requirements set by MCIT to obtain VAS license are discouraging for most tech start-ups

Source: *Ministry of Communication and Information Technology; Value Added Services License Directive No. 3/2011; Interview of various start-ups*

The telecommunications sector is a monopoly managed by EthioTelecom with regulatory oversight from MInT, which the government plans to reform in 2019

Current model

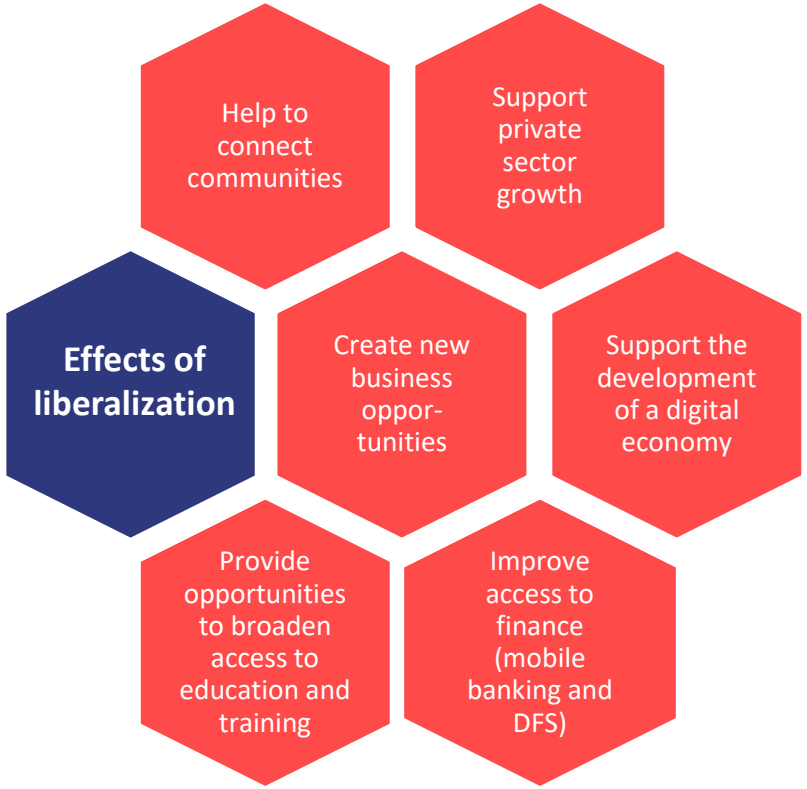
Prices are set by EthioTelecom + **The government has control over networks**

The government of Ethiopia is following a three-tiered reform plan for the telecommunications sector

→ International experience demonstrates **that reform benefits are maximised** when all three parts of the reform are implemented at the same time.

Partial privatization	Establishment of regulator	Market opening
• **Partial privatization of Ethio Telecom** (selling of minority shares) • Will introduce **private capital and international expertise** into the public enterprise resulting in an increase in value for the government	• **Establishment of a sector regulator**, the Ethiopian Communications Authority • Will **issue sector regulation** • Will ensure that the sector has **transparent pricing and effective competition**	• **Issuing of licenses to at least two new service providers** in an open, competitive and transparent process • Will open the market to **competition**

The liberalization will directly affect the sector by expanding mobile, fixed line and internet services communities, which in turn **contribute to national strategic objectives**…



Source: ICT research Africa, TBI analysis,

However, a sound regulatory framework and set-up of the sector regulator ETA are required to facilitate a competitive and open telecommunications sector

World Bank recommendations for telecommunications sector reform

Ensuring an effective liberalization process

- **Prepare agencies for the privatization process** by building capacity and in considering strategic options for Ethio Telecom, updating existing legislation, and drafting relevant regulations.
- **Issues that need to be addressed** include the timing of the privatization process, the mechanism to be used and the design and implementation of a program of support for staff.

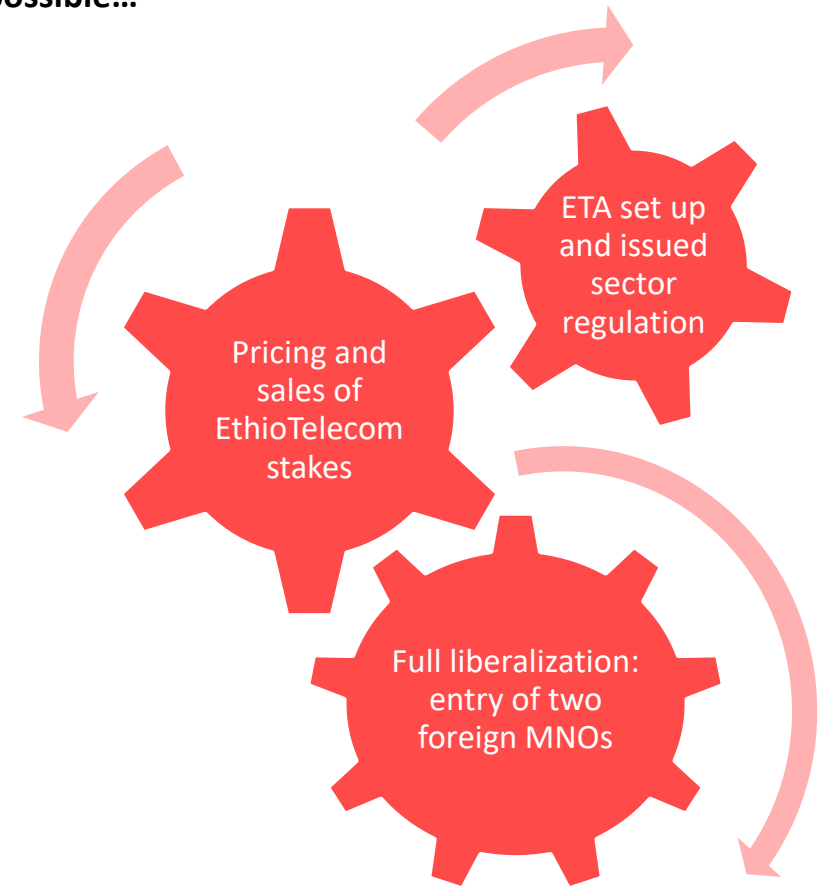
Ensuring good regulatory governance

- **ETA empowered as independent agency** to implement international best regulatory practice
- **Increased capacity of ETA** to effectively cover modern services such as mobile telephony and the internet
- **ETA properly defined institutionally** and aligned with Network Security Agency (INSA) to formulate and adopt regulations regarding information security

Ensuring healthy competition

- **Non-discriminatory access** to the backbone network for all operators
- **Mandatory infrastructure sharing** (e.g., towers) and enabling **wholesale carrier neutral broadband providers**
- **Enabling other players to enter the market with favourable conditions**, such as subsidized spectrum, longer license tenors, and mandatory roaming in Ethio Telecom's network

Without the proper set up and functioning of the ETA, neither the privatization of Ethio Telecom nor the market entry of foreign MNOs will be possible…



Source: World Bank (2019) Ethiopia Country Private Sector Diagnostic, Interview with MOF advisor (July 2019)

Partial privatisation of the sector should go some way to increase the sector's efficiency and enable Ethiopia to improve its connectivity position with respect to regional and global peers

Key points for the reform

Ethio Telecom's privatisation should be designed to meet the following goals:

- **Fiscal improvements:** Halt the dependence on supplier credit loans, reduce the foreign debt burden, promote access to capital to upgrade the network and increase the government tax base.
- **Efficiency:** Improve the efficiency and the performance of the telecom company by creating management autonomy and improving corporate governance.
- **Competitive ICT ecosystem**: Use privatisation to build a highly competitive telecom market and ICT ecosystem that drives the local ICT sector, youth employment and technology transfer.
- **Access and affordability**: Use privatisation and its proceeds to increase access to affordable universal broadband services for all, which will have a snowball effect on competitiveness in other sectors.
- **Workers productivity, quality of service and innovation:** Leverage privatisation to improve quality of service to consumers and to introduce new services and innovative technologies.
- **National security and privacy of citizens:** Use privatisation as a means to help safeguard national security and uphold the privacy of citizens.
- **Participation:** Encourage the Ethiopian people to become more involved and to play a bigger role in the ownership and management of the telecom business in the country.

Source: Research ICT Africa

Experiences from telecoms privatization

- Studies reveal that privatization results in lower prices and higher output in competitive industries.
- Privatization combined with a separate regulator is positively correlated with connection capacity and payphone penetration.
- Economic growth: Since the revenues generated by the telecommunication industry represent over 2% of world GDP, inefficient entry and high prices in the mobile segment generate large social costs.
- FUSS, MESCHI & WAVERMAN (2005), for instance, estimate that in a typical developing country, an increase of ten mobile phones per 100 people boosts growth by 0.6 percentage points.
- Privatization is associated with a significant increase in labour productivity (42 percent).
- Privatized telecommunication firms seem to be more productive and to invest more in network coverage. This is an improvement for the population, which in turn gains access to the service. Yet they also get rid of redundant employees, increase prices and disconnect those who cannot pay Their bills (inclusivity).

Source: COMMUNICATIONS & STRATEGIES, Special issue, Nov. 2005, p. 31.

Studies show the benefits of liberalisation to growth, employment, poverty reduction and capacity of firms to compete in foreign and domestic markets.

Studies show the benefits of telecommunications sector reform

Obi Iwuagwa (2014): The quality and price of telecommunication services not only affects business costs but the **strength of firms to network and compete in foreign and domestic markets**.

Auriol (2005): In a typical developing country, an increase of ten mobile phones per 100 people **boosts GDP growth by 0.06 percentage points.**

El-Haddad (2017): A study on the **liberalization of the telecommunications sector in Egypt noted the expansion of employment** by new providers has outweighed any contractionary effects from seeking efficiency gains in the existing operator, if indeed such pressures apply.

Kane (2002): **Liberalisation of the telecommunications sector in Kenya addresses the twin problems of access and affordability** through both a macro level (attracting donor funds to Kenya) and a micro level (local limits to ICT-related poverty alleviation interventions due to uneven roll-out) effect..

Case Study: Nigeria

Telecommunications reform commenced in 1991 and continues, producing a variety of benefits to the economy.

Effects:

- In 2014 Nigeria was the **fastest growing telecommunications market in Africa** and amongst the ten fastest growing in the world.
- **Private sector investment in the telecom sector increased** from US$50m in 1991 to US$18 billion by the end of 2009, including foreign direct investment, through license fees, infrastructure development, building local capacity and by growing local companies that provided support services.
- In 2001, a **spectrum auction** for three digital mobile licenses **generated US$285 million for each** 15-year license.
- **Mobile phone penetration increased** significantly in the decade to 2011 from 266,461 to 122.5 million.
- **Over a million new jobs** were created directly and indirectly

Source: ICT research Africa, TBI analysis,