COUNTRY ANALYSES AND PLANS

Kenya

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$124M of CapEx funding and $67M of annual OpEx funding will enable Kenya to connect 23,300 public primary schools

This investment will bring **8.5 million students and teachers** online and bring connectivity to **12.8 million community members** who live locally, potentially enabling up to 3.3 billion USD in GDP (1.4%) growth.

Source: Dalberg Analysis based on Giga mapping and modelling data, 2020

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“Broadband is expected to facilitate connections … that will help in transforming Kenyans’ lives regardless of their location and thus enable the societal and economic benefits of digital transformation to be realized.”

HON. JOE MUCHERU
EGH. Secretary, Kenya Ministry of ICT

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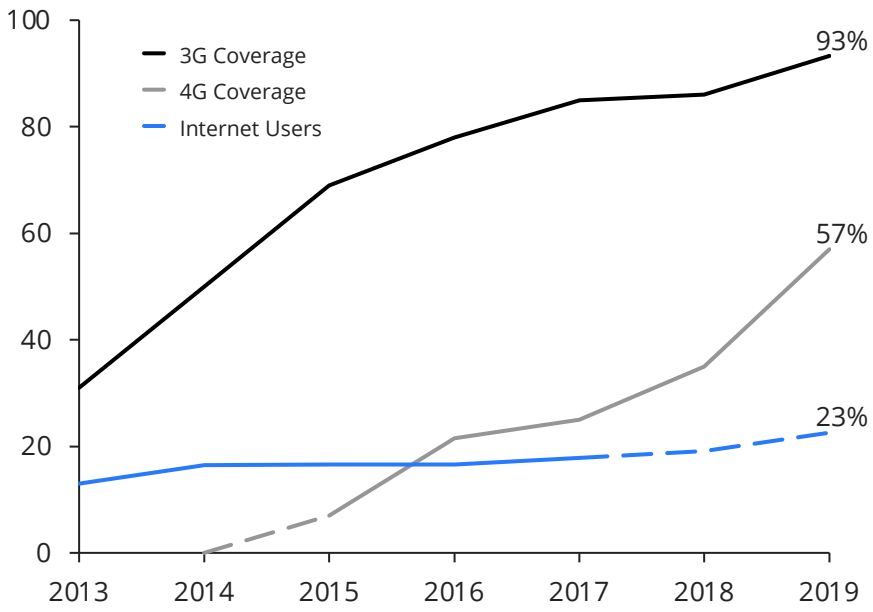
Kenya has significantly expanded mobile connectivity, and has policies in place to promote future broadband expansion

Mobile connectivity has expanded since 2013, with 57% of the population covered by 4G

Broadband coverage and internet penetration, % of population (ITU, 2020)



The Government of Kenya is aiming to grow the digital economy with universal access to connectivity by 2023

Kenya hopes to achieve this target through the following broadband connectivity policies:

- Kenya National Broadband Strategy 2018-2023: Aims to provide last mile infrastructure through fixed or wireless technology to achieve 95% national broadband coverage, with fixed infrastructure available in every ward by 2020. The target is to provide 2 MBPS in communities and 10 MBPS in high impact economic areas, schools and other essential public services by 2023
- Kenya Digital Economy Blueprint: Seeks to create a digital economy that supports Kenya in its aim to emerge from a low middle-income economy to an emerging markets/advanced economy. The 5 pillars include: Digital Government, Digital Business, Infrastructure, Innovation Driven Entrepreneurship, and Digital Skills and Values
- Kenya Basic Education Framework 2017: Outlines the competency-based curriculum strategy that Kenya will adopt across all levels of education. Digital Literacy is one of the strategic pillars within the framework
- Kenya Digital Literacy Programme – DigiSchool: Aims to equip pupils with relevant skills needed in today's digital world. To date 1,148,160 devices have been distributed to 21,232 schools with additional investment on digital content, teacher training, and electricity supply

Source: ITU (2020) World Telecommunication/ICT Indicators Database; Kenya National Broadband Strategy 2018-2023, Kenya Digital Economy Blueprint, ICT Authority Digischools webpage

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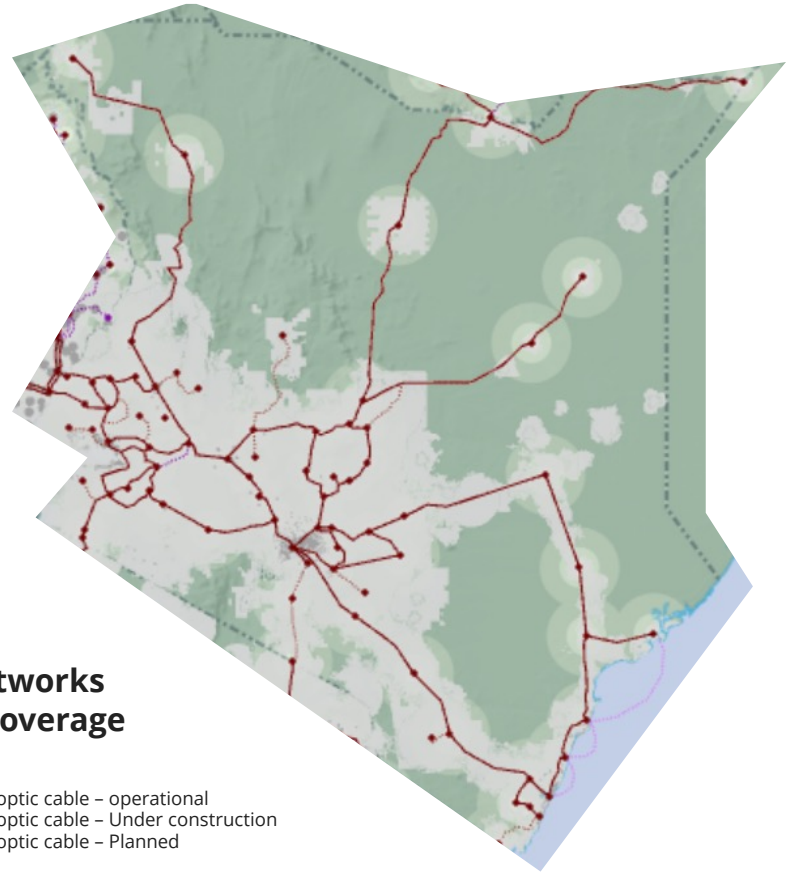

Fiber networks and 4G coverage

Fiber optic cable – operational
Fiber optic cable – Under construction
Fiber optic cable – Planned

	Mobile	Fixed
Subscriptions per 100 inhabitants	41	1
5-year CAGR	+36%	+34%

The Goal: National Coverage and Connectivity

GoK has made significant investments in the National Backbone, and most of the population is now covered. Remaining gaps are in low population density areas such as ASALs (arid and semi-arid lands), although new technology is beginning to bridge these gaps.

Note: 1) Broadband is defined as access to 4G or fiber networks. The Kenyan government has targeted reaching 94% of population with 3G coverage by 2020.
Source: ITU (2020) World Telecommunication/ICT Indicators Database; ITU Broadband Map, Dalberg analysis

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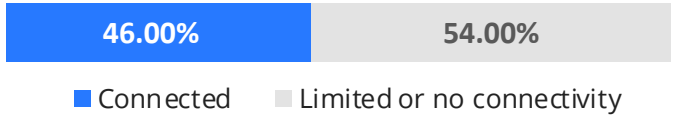
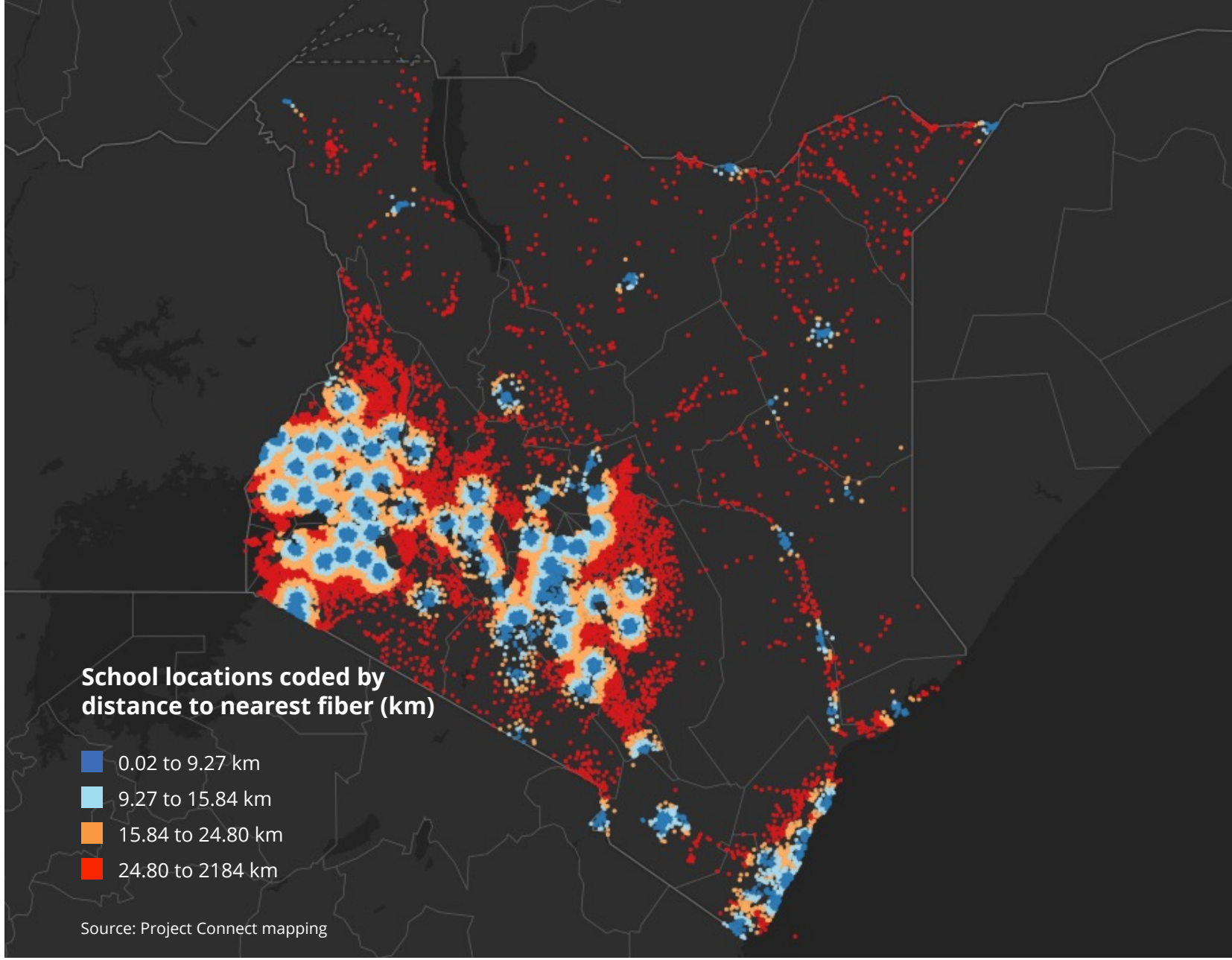
School Coverage and Connectivity

Total schools: 43,000



The National Broadband Strategy sets a goal of reaching 100% connectivity of all schools with 1GBPs by 2030, with 50% coverage of primary schools by 2022.

The Giga initiative will prioritize these public primary schools (23,300 out of 43,000 total schools).



Source: ITU (2020) World Telecommunication/ICT Indicators Database; Giga Project Connect mapping

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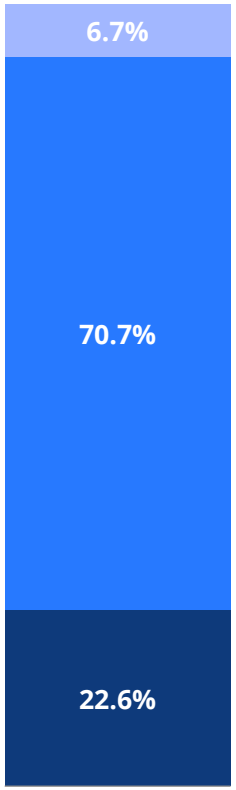
6.7% of Kenyans lack coverage while 70.7% face affordability, electrification and other challenges

THE MOBILE INTERNET COVERAGE AND USAGE GAP



CONNECTIVITY ACCESS		NEEDS	GOALS
6.7%	COVERAGE GAP **No mobile internet**	Increase coverage	+3.5 million Kenyans not covered
70.7%	USAGE GAP **Covered by 3G/4G but not connected**	Increase affordability Increase digital literacy Increase electrification	43% cite affordability as barrier Digital literacy mainstreamed in the education system 75% of population electrified
22.6%	CONNECTED **Active mobile internet use**	Bridge the digital divide	$425m (13%) annual growth

Notes: Prices based on ITU Data-only mobile broadband basket 1.5GB, pro-rated down to 1GB for comparison against the Broadband Commissions 2% global recommendation. Note that Individuals in remote locations will likely spend a higher proportion due to lower income levels. 43% of mobile users aware of mobile internet who identified the following as the single most important barrier to using mobile internet.
Sources: Dalberg analysis; ITU (2020) World Telecommunication/ICT Indicators Database; Kenya National Broadband Strategy 2018-2023; GSMA, Hjort and Poulsen, Internet in Africa, 2019

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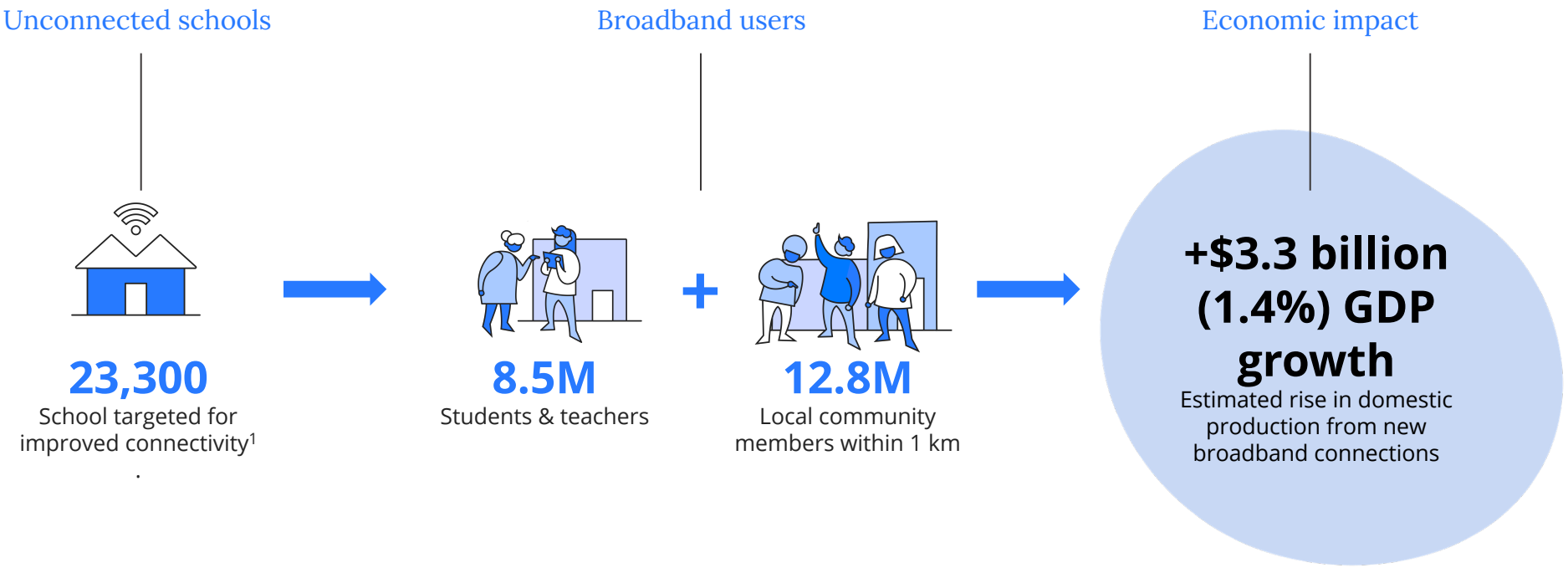
Targeted financing for connecting 23,300 schools can create GDP growth of over $3.3 billion

Universal expansion to all schools provides a gateway to community connectivity



Note: 1) Number of Kenyan primary and secondary schools lack access to internet with speeds over 10Mbs. This is around half of the country's 43,000 schools. Economic impact calculation assumes that school connectivity is comparable to gaining access to a fixed line connection in a middle/lower income country in terms of reliability, bandwidth, use etc. Assumes middle income fixed broadband which is a conservative assumption when compared to low income mobile broadband

Source: Dalberg Analysis; Giga Project Connect Analysis; ITU (2020) World Telecommunication/ICT Indicators database; UNESCO UIS.Stat, 2018; World Bank (2020) World Development Indicators (WDI); ITU (2018) The Economic Contribution of Broadband

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School connectivity will require an estimated $124M of upfront capital expenditure and up to $67M of ongoing annual funding

Giga will help to mobilize investment and financing to bridge initial infrastructure gaps and provide mechanisms to supply longer-term financing to boost geographic reach and affordability through smart subsidies

(Schools to be connected: 23,300)

UPFRONT LAST-MILE INFRASTRUCTURE CAPITAL

Based on an initial technology assessment: 32% Fiber, 25% WISP and 43% Satellite

$124M

Estimated total investment needed to reach 23,300 schools

*This does not factor in potential volume discounts or other sources of funding

ONGOING ANNUAL FUNDING FOR REGULAR SERVICE FEES

Estimates based on an all-in service, maintenance and technical support fee:

$67M[a]

Potential service fees for 23,300 schools (Giga estimate)*

*This does not factor in potential volume discounts or other sources of funding

Notes: These high level estimates can be further refined as the workflow progresses and more mapping and specific cost data is established
A) Pre-feasibility preliminary estimates based on Giga's ACTUAL model school bandwidth requirements and annual service fee estimates in Kenya
Source: Dalberg Analysis based on Giga Mapping/Modelling Data, 2020.

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Giga has already engaged significantly with the Government of Kenya (GoK)

Key Stakeholders: Ministry of ICT, Kenya ICT Authority, Ministry of Education, Communications Authority of Kenya, and Kenya Institute of Curriculum Development

Giga engagement to date

- High level buy in from Ministry of ICT and Ministry of Education established and currently in the process of being formalized
- Set up a sub-committee on school mapping to coordinate efforts amongst different stakeholders including MoE, USAID, Kenyan National Examination Council
- Co-creation workshop to identify priorities and next steps (see next page)

Giga actions to date

- Developed a proposed way forward on connecting 1,000 schools using a variety of connectivity technologies to achieve quick wins that extend connectivity during COVID-19, and test potential solutions for broader implementation
- Sought out financing opportunities to support Giga efforts
- Engaged with Kenyan ministries to determine options for open-source software across tele-education, tele-health, tele-work, and financial services

THE VALUE OF GIGA

"Digital literacy is one of our strategic pillars in the Basic Education Curriculum Framework. We want young Kenyans to be able to access and acquire skills useful not only for solving real-life problems, but also so they can participate meaningfully and thrive in the digital economy – and working with Giga helps us achieve this."

Prof. George Magoha
Cabinet Secretary, Kenya Ministry of Education

KENYA

Rapid Regulatory Scan

Policies

Sector strategies:[1]	
Digital transformation/broadband strategy	Yes
Planned e-government roll out[9]	Yes
Digital education in strategy[10]	Yes
Child Online Protection:[2]	
National strategy/policy?	Yes
Responsible agency?	Yes
Non-discriminatory inclusive use policy?	No
Data Sharing:[2]	
Data protection policy?	Yes
Privacy and data protection laws	No

ICT Regulatory Tracker

Regulatory assessment:[3]	
Generation of ICT Regulation	G5
Overall	88/100
C1: Regulatory Authority	18/20
C2: Regulatory Mandate	22/22
C3: Regulatory Regime	21/30
C4: Competition Framework	27/28

Regulation

Regulatory structure:[1]	
Public/private sector consultation	Yes
Regulatory autonomy from the government	Yes
Clear planning and licensing process?	Yes
Procurement or competition agency?	Yes

Competition

Regulatory structure:[1]	
SMP in national anti-trust/competition law	Yes
Spectrum technology neutrality in place	Yes
No foreign investment restrictions?	No
Infrastructure sharing?	Partial
Wireless Operators Market HHI[4]	4903
Fixed Broadband Operator Market HHI[4]	2602

Taxation

Services	
VAT[5]	16%
Sector specific tax on internet services[5]	15%
ITA Participant[6]	No
ICT Equipment import duties[7]	0-20%
Ongoing regulatory/license fees[1]	Tbc

Universal Access

Services:[8]	
Is school broadband a universal service?	Yes
Operational Universal Service Fund (USF)?	Yes
Total amount allocated/disbursed so far	21.7M
Contributions as % of revenue	0.2%
Other public financing mechanisms?	Yes
Fully utilized currently?	No
Fully active in the last 5 years?	Tbc

Strength
Neutral
Limitation

Notes: HHI – Hirschman Herfindahl Index (HHI) Score, > 4,000 Highly concentrated. Import duties based on a review of several Telecommunications, Electrical and Radio Transmission Equipment HS codes
Sources: 1) Latest ITU World Telecommunication/ICT Regulatory Survey 2019 2) ITU (2019) Global Cyber Security Index 3) ITU (2018) ICT Regulatory Tracker 4) EIU (2020) The Inclusive Internet Index 5) ITU (2019) Taxation Survey
6) World Trade Organization (2020) Information Technology Agreement Website 7) WITS (2020) World Integrated Trade Solution – Tariff Database 8) Latest ITU Global Report (2020) and, where available, the country's Universal Service Fund website 9) http://www.zim.gov.zw/index.php/en/news-room/latest-news/228-sectors/367-ict,-e-government-innovations 10) Kenya Basic Education Framework 2017

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In partnership with the GoK, Giga has identified several activities to support the cost-effective connection of 23,300 schools

Use Project Connect mapping to identify need and refine business cases that size the investment opportunity and monitor real time connectivity

Refine school connectivity strategy based on benchmarks and set targets for connectivity

Help address policy, regulatory and tax barriers (particularly around USF, spectrum allocation, infrastructure sharing, child protection, intellectual property, data protection laws, and excise taxation) to boost competitiveness and protect consumers

Commission feasibility studies on the inclusion of school connectivity under KENET

Mobilize funding to connect 23,300 primary schools that currently lack connectivity

Prepare procurement lots with the Government for school connectivity

Provide support to develop local, regionally relevant digital solutions, especially digital public goods (DPGs) and support open data platforms for education and youth development

Support business model development and explore financing options to scale open data/content solutions, including local hosting

Facilitate connections with broader UNICEF expertise and other initiatives on scaling digital textbooks and content

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