SCORECARD

ACCESSIBILITY OF GOVERNMENT WEBSITES TO PERSONS WITH DISABILITIES

KICTANet
The Power of Communities

APC
ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS

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Acknowledgements

Executive Summary

This research aimed to address the challenges faced by persons with disabilities when accessing government websites and digital services.

The research employed a mixed approach and utilised three methods for data collection. First, a web scanning was done to identify the indicators for each of the [1.] POUR principle. Secondly, the researchers carried out an ethnography to score the websites as per the indicators from the website scan reports.

Lastly, the findings from these reports informed part of the discussion in the Focused Group Discussion (FGD) composed of stakeholders and persons with disability, to explain the data from an experienced perspective.

On average, most public websites achieved a moderate level of compliance with international accessibility standards.

Approximately **71.1%** of websites scored between **50-59** out of **100,** while **20%** scored above average with a range of **70-100.** Only 8.9% scored below average.

While it suggests a positive trend in improving accessibility for persons with disabilities on government websites there are still significant barriers to accessibility, most of which emerge from lack of alternative texts, and errors in labelling alternative texts where they exist.

The National Council for Persons with Disability (NCPWD) website emerged top, scoring 80%

across all indicators. Nonetheless, there is a concern regarding websites that contain critical information for all citizens, such as the National Transport and Safety Authority Website (NTSA) and Ministry of Health (MOH) websites, as they scored below average.

The study recommends that respective government websites address the challenges of perception and functionality by regularly updating their websites and fostering consultations between developers and individuals with diverse disabilities, beyond visual disability.

The Government should have in place a National Accessibility Committee comprising the National Council for Persons with Disability **(NCPWD),** Ministry of **ICT** and Digital Economy, and relevant stakeholders to expedite the implementation of accessibility for government websites and services for persons with disabilities.

In conclusion, the study highlights the need for improvement and growth to ensure that no one is left behind in accessing public digital content and services.

It emphasises the collective responsibility of all stakeholders to make digital platforms and services accessible to everyone.

Accessibility is a continuous process that requires active listening and learning.

Let us listen! Let us learn!

[1.] *POUR is a method of handling web accessibility by categorizing it into four major aspects: perceivable, operable,understandable, and robust.*

Introduction

The evolution and adoption of digital technologies continues at a fast pace, disrupting old models of economic, social and political interactions.

This evolution continues to improve human lives in supporting the way people access essential services and how these services are delivered to them.

For persons with disabilities, these opportunities brought by technologies include services being delivered to them wherever where they are, being able to reach public offices at extended working times and accessing technical assistive tools offered by the World Wide Web.

However, with the emergence of the same technologies, there also exists the problem of widening inequalities and the potential to create new forms of marginalisation.

For instance, research has found that COVID-19 did not necessarily lead to increased numbers of internet users, but those who were already advantaged in internet use and access increased their bandwidth, while those who were disadvantaged were edged out. [2.]

When new technologies are layered upon challenges of access, affordability and disability the marginalised become even more disadvantaged.

Persons with disabilities have different needs and different levels of abilities. Disabilities are usually discovered before birth, at birth and some are acquired, either as a result of maybe an accident, illness or age.

Challenges of vision, mobility and cognitive skills are more common with older populations. This explains the need for disaggregated data about the different needs of the population, not

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2. *Research ICT Africa, (2022) COVID-19, Digital Substitutional and Intersectional Inequality – The Case of South, Africa*

https://researchictafrica.net/publication/covid-19-digital-substitutional-and-intersectional-inequality-the-case-of-south-africa/

just as a one-time exercise, but as a continuous process for the government to understand how citizens can be met at their points of needs.

While the concept of public service provision and communications promises equal access to the Kenyan population, this could be far from the truth if the websites are not accessible to persons with disabilities.

This study is driven by the KICTANet Digital Access Fellowship Team, and aims to engage policymakers in the ICT industry with evidence to develop inclusive policies that serve persons with disabilities. The study examined the accessibility of government services and communications, at the national level including, Nairobi county government, and Council of Governors websites. This was through the scans and analysis of forty six (46) public websites.

These websites were selected based on their levels of essentiality. For example, the eCitizen and iTax websites, are the only means Kenyans can access passports and file tax returns.

The Independent Electoral and Boundaries Commission (IEBC), Nairobi County government and Council of Governors websites are critical in civic and political participation. This necessity emphasises the need for accessible websites and services for all.

Literature Review

This review of literature serves to provide the status of web accessibility in Kenya, by mapping relevant policies, and related work that has been undertaken by other organisations and institutions to improve accessibility of government services delivered through websites.

Available Data on Status of Disability in Kenya Disability can be defined based on models that range from medical, religious, and societal to human rights.

Regardless of the model used for describing, disability as defined by the United Convention on the Rights of Persons with Disabilities (CRPD) is a result of the interaction of impairments and barriers.

[3.] The interactions of different forms of impairments with barriers within various environments result in varying degrees of auditory, cognitive, physical, speech, and visual disabilities.

The 2019 census in Kenya is hailed as a progressive exercise as far as disability-inclusive data collection is concerned.

It was the first time Kenya went paperless and adopted technology to enumerate and map respondents.

Furthermore, the Kenya National Bureau of Statistics (KNBS) worked closely with organisations of persons with disabilities (DPOs) and civil society to formulate inclusive disability questions and train the enumerators.

3. *Convention on the Rights of Persons with Disabilities. (2006). United Nations Convention on the Rights of Persons with Disabilities.*
   https://www.un.org/disabilities/documents/convention/convention_accessible_pdf.pdf
4. *Washington Group on Disability Statistics (2020), An Introduction to the Washington Group on Disability Statistics Question Sets,*
   https://www.washingtongroup-disability.com/fileadmin/uploads/wg/Documents/An_Introduction_to_the_WG_Questions_Sets__2_June_2020_.pdf

DPOs proposed utilisation of the Washington Group on Disability Questions. This is a set of questions that assesses the level of limitations, if any, in the performance of six basic actions namely seeing, hearing, mobility, cognition, self-care, and communication.

The four levels of difficulty for each aspect included: 1) No, no difficulty; 2) Yes, some difficulty; 3) Yes, a lot of difficulty; 4) Cannot do it at all. An additional option "I don't know" was included.

This methodology of asking questions was intended to minimise the instances of the stigma that happens during data collection when it is associated with the word "disability." Respondents sometimes tend to be reluctant to reveal limitations that may be perceived as disabling.

Disability according to Demographics

According to the 2019 census, 2.2% (0.9 million people) of Kenyans live with some form of disability.[5.]

The 2019 census indicates that 1.9% of men have some form of disability compared with 2.5% of women. There are more persons with disabilities living in rural than urban areas, comprising 2.6% (0.7 million) of them in rural areas and 1.4% (0.2 million) in urban areas.

2009 vs. 2019 Census Disability Demographics
The 2009 census reported higher disability prevalence rates than the 2019 census. In 2019, 3.8% of adults and children above five years of age in rural areas had a disability and 3.1% in urban areas. The census also recorded a 3.4% disability prevalence rate for men and 3.5% for women. In 2009, and using the same threshold that included adults and children above five, 3.7% of men and 3.9% of women had a disability.

The differences in the results can be attributed to the different data collection methodologies employed in each census. The differences in the ages covered and the size of administrative units also led to contrasting results.

Prevalence of the Type of Disability

Analysis of the types of disability found that mobility is the most reported challenge constituting 0.4 million Kenyans, which is 42% of persons with disabilities. Hearing, seeing, self-care, cognition, and communication comprise between 36% - 12% of persons with disabilities. Further, persons with albinism make up 0.02% of the population.

Disability Prevalence By County

In breaking down Kenya's disability by county, the statistics revealed a difference in the prevalence rates. The highest recorded rates were in Embu County at 4.4%, Homa Bay came in second with 4.3%, and Makueni came in third with a 4.1% prevalence rate of 4.1%. Wajir County recorded the lowest disability prevalence rate of 0.6%.

The distribution of disability per country, when broken down, revealed that physical disabilities ranged from 2.0% to 0.2%, visual disabilities between 1.7% to 0.1%, and intellectual disabilities from 1.3% to 0.2%, hearing disabilities from 0.9% to 0.1%, and self-care and communication difficulties ranged from 0.6% to 0.1%.

Potential Gaps in Kenya's Disability Data

There is a discrepancy between the global disability prevalence of 15% and Kenya's reported disability rate of 2.2% from the 2019 census. Further research is necessary to find the reasons contributing to this, and ways to improve the accuracy of disability data collection in Kenya. The consequences of inaccurate disability data reflect inadequate inclusion in national policies and disability programs, and poor formulation in emergency response for example during the COVID-19 pandemic.

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5. *Kenyan Ministry of Public Service, Gender, Senior Citizen Affairs and Special Programmes, (2021), Status Report on Disability and Inclusion in Kenya, https://www.socialprotection.go.ke/wp-content/uploads/2022/03/STATUS-REPORT-ON-DISABILITY-INCLUSION-IN-KENYA-2021.pdf*

CATEGORIES OF DISABILITIES IN KENYA

INTELLECTUAL DISABILITY
1.3%-0.2%

VISUAL DISABILITY
0.1%-1.7%

HEARING DISABILITY
0.9%-0.1%

DISABILITY CATEGORIES IN KENYA

PHYSICAL DISABILITY
0.2%-2.0

SELF CARE DISABILITY
0.1%-0.6

COMMUNICATION DISABILITY
0.1%-0.6

GOVERNMENT COMMITMENTS TO PERSONS WITH DISABILITY

During the Global Disability Summit of 2018,[6] the government of Kenya made eight commitments as follows:

1. **Ending stigma and discrimination:** Raise awareness of the rights of persons with disabilities and support their involvement and/or their organizations to demystify disability.

2. **Inclusive Education:** Development and implementation of a cost inclusive education sector plan with a focus on equipment, infrastructure, and teacher training.

3. **Economic Empowerment:** Enhance opportunities to develop economic potential and improve the lives of persons with disabilities.

4. **Harnessing of technology and innovation:** Finish the development and implement the National Disability Policy on assistive devices and support services.

5. **Data Collection and Disaggregation:** Promote collecting accurate data on persons with disabilities. This data breaks down according to gender, age, disability, and geographic location for planning purposes.

Kenya has pledged to fulfil its commitments by taking additional measures, including:

- Institutionalising National Disability Inclusive budgeting in all government departments at the county and national levels.

- Enforce the current laws and policies that promote the rights of Persons with Disabilities.

- Strengthen institutions and enhance their capacity to effectively deliver on their supervisory and enforcement mandates.

- This ensures that service implementation at the county and national government levels complies with the government commitments.

POLICY AND LEGAL FRAMEWORKS ON ACCESSIBILITY IN KENYA

Kenya is governed by the 2010 constitution, the foundation upon which all other laws derive from and must align with.

Any law, including customary law, that is inconsistent with this Constitution is void to the extent of the inconsistency, and any act or omission in contravention of this Constitution is invalid.[7] In addition to providing more elaborate human rights, compared to the previous constitutions, the current constitution emphasises on national values and principles of governance.

Article 10b expresses the value of human dignity, equity, social justice, inclusiveness,

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6. *Global Disability Summit 2018 - Summary of Commitments.*
   https://www.internationaldisabilityalliance.org/sites/default/files/global-disability-summit-summary-commitments_2.pdf
7. *Republic of Kenya, (2010), The Constitution of Kenya, http://kenyalaw.org/lex/actview.xql?actid=Const2010*

equality, human rights, non-discrimination and protection of the marginalised.

These are elaborated not only in the bill of rights, but also in chapter three on citizenship, chapter eleven on devolved government and chapter 13 on public service.

Article 54 of the Constitution of Kenya as read with Article 27 of makes it a requirement that reasonable accommodations be provided for persons with disabilities on an equal basis with others.

The constitution also recognises the validity of international treaties that Kenya may be party to. International agreements signed by the government become part of Kenyan laws. This ensures the application of human rights, social justice and equality to the levels of international standards.

The Marrakesh Treaty makes provisions on making written materials accessible to the Blind in all formats and technologies.

The values of equality, respect and protection of human rights as set out in the constitution are further enhanced through frameworks developed by ministries and parliament.

The main policy frameworks addressing access to Public ICT services by persons with disabilities include the National ICT policy, the Kenya Information and Communications Act (KICA), Access to Information Act 2016, and the Kenya Standards for Accessibility of ICT products and services which was developed by the Kenya Bureau of Standards(KEBS).

In the most recent update of the Kenya National ICT policy, the government recognises that Kenya is a signatory to the United Nations Convention on the Rights of Persons with Disabilities (CRPD), adopted by the UN General Assembly on 13th December 2006.

This Convention stipulates that Persons with Disabilities have a right to access to information through different mediums with Article 9 covering accessibility including ICTs.

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8. *United Nations, (2016), United Nations Convention on the Rights of Persons with Disabilities,*
https://www.un.org/disabilities/documents/convention/convention_accessible_pdf.pdf

8. The ICT policy commits to instrumenting all government agencies to fulfil this mandate. The policy also goes into detail in committing to full accessibility of e services to persons with disability by ensuring that the services are provided in alternative formats for persons with disability.

This will drive the adoption of accessible use of technology at an early stage, incentivising the private sector to develop accessible technologies for persons with disabilities. In addition, ensuring that government websites comply with the Web Content Accessibility Guidelines (WCAG) international standards of website accessibility.

In the National ICT policy, the guidance set out from the Kenya Information and Communications Act (KICA), the Kenyan government not only committed to enhance the culture of the use of ICT as it is a more affordable and convenient way of accessing government services, but also pledged to using Swahili in local ICT content. [9]

The Kenya Access to Information Act of 2016 Section 5(2) requires that Information be disseminated taking into consideration the need to reach persons with disabilities, the cost, local language, the most effective method of communication in that local area, and the information be easily accessible and available free or at cost taking into account the medium used.

Kenya Standard Accessibility ICT Products And Services Implementation Framework (KS 2952) [10] was developed to guide the implementation of the National ICT Policy issued in 2020. The aim of the Standard was to ensure that ICT products, services and opportunities are made accessible to all, including Persons with Disabilities.

This included identification of categories of work to be carried out and how these intersect with other categories of work. In addition, it guided accessibility for Persons with Disabilities and assistive technologies ecosystem from a universal design perspective.

This policy framework contains a road map which includes: launching of the standard along with its implementation frameworks, driving awareness of these standards, mainstreaming their adoption through certification and award of best performers in their application, and carrying out surveillance audits, monitoring, evaluation, and certification.

8. United Nations, (2016), United Nations Convention on the Rights of Persons with Disabilities, https://www.ca.go.ke/wp-content/uploads/2020/10/National-ICT-Policy-Guidelines-2020.pdf

9. The Government of Kenya, (2020), The National Information Communications and Technology Act Guidelines 2020, https://www.ca.go.ke/wp-content/uploads/2020/10/National-ICT-Policy-Guidelines-2020.pdf

10. Kenya Bureau of Standards, (2020), Accessibility – ICT Products and Services, https://www.kebs.org/images/miscellaneous/KS-2952_2_2022.pdf

TYPES OF DISABILITIES AND HOW PERSONS WITH DISABILITIES(PWDS) NAVIGATE WEBSITES

This scorecard has focused on the way persons with disabilities interact with websites. It therefore demands a determination of how accessible these platforms are as a way of gauging the degree of the online barriers, against the Web Content Accessibility Guidelines POUR[11.] principles.

This section is adapted from the WCAG resource materials.[12.]

1.) **Hearing disabilities** range from hard of hearing, to deafness and deaf-blindness.
Individuals with this form of auditory disability access websites by relying on audio captions and transcripts, audio tracks, adjustable text size and colours of captions, and options to independently stop, pause, and adjust the volume of audio content. Some individuals may solely depend on sign language, while others may not understand sign language entirely.

2.) **Visual disabilities** include reduced vision perception presented as moderate loss of vision in one or both eyes, blindness resulting from total vision loss in both eyes, or colour blindness

as a result of lack of sensitivity or increased sensitivity to colours.

To access websites, individuals with visual disabilities depend on adjustable colour and size of text font and images, text-to-speech synthesis, audio descriptions, and Braille among other assistive technologies.

It is important to note that these individuals may prefer using the keyboard to mouse cursor to navigate the website in addition to depending on page structures and elements like lists, headings, and tables.

3.) **Cognitive disabilities** is a term that refers to intellectual, learning, and neurological impairments that include behavioural, neurological and neurodiversity disorders, that necessarily do not affect all their intellectual abilities.

This disability may affect their nervous system, hearing, sight, speech, movements, and information perception. These individuals, depending on their disabilities, require the

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11. *POUR is a way of approaching web accessibility by breaking it down into four main aspects namely perceivable, operable, understandable and robust.*

12. *Web Accessibility Initiative, (2017), How People with Disabilities Use the Web:* https://www.w3.org/WAI/people-use-web/

following website features to access the sites: well-structured and labelled content, predictable link targets, and functionality and interaction supplemented by images, graphs, and other illustrations.

Additionally, they need customizable options to adjust page animations.

According to W3C Web Accessibility Initiative, physical[13.] disabilities, also referred to as motor disabilities, come as a result of limited and or involuntary muscular movements like tremors and paralysis.

They also present loss of sensation, movement pain, missing limbs and joint disorders. To access websites, persons with physical disabilities mostly rely on hardware input assistive technologies and devices like on-screen keyboards, head pointers, voice controls, and eye tracking tools.

On the general website layout, it is recommended that there should be large clickable patches and adequate timing on timed-out links. It is also recommended that there should be error identification and correction options.

Although there are specific accessibility features tied to individual disabilities, it is worth noting that some of the POUR principles are cross-cutting, and like disabilities, they can occur under multiple instances.

However, it should be that the overall aim of having accessible websites is to ensure everyone gets meaningful, equal and productive interaction sessions online.

13. *W3C Web Accessibility Initiative. https://www.w3.org/WAI/*

Methodology and Scope of the Research

This research examines the accessibility of Kenyan public service websites under the POUR (perceivability, operability, understandable and robust) principles developed under the Web Content Accessibility Guideline(WCAG).

The study utilised Accessi and Wave evaluating tools to scan the websites for comprehensive reports detailing elements of compliance and non-compliance to accessibility standards.

Because these tools provided different standards of scoring, rather than relying on their scores and the WCAG's levels of compliance, three researchers applied an ethnographic method for scoring levels of accessibility.

Each researcher gave their scores which were then averaged to come up with the levels of compliance for the individual websites.

The Wave and Accessi evaluation tools used for scoring were applied on Chrome and Firefox browsers to test their compatibility with the browser's in-built assistive tools. Additional analysis was obtained through focus group discussions and through the validation of the first draft of the report.

To contextualise the assessments, the team developed a scorecard for two reasons. The first was to narrow down the assessment topics to fit the target users who are persons with visual, hearing and cognitive disabilities. Second to contextualise the report to fit the Kenyan person with disability who is a user of ICT services. The ratings assigned by team members were then weighted to give a percentage review and average score.

Regarding the scope of this research, this report excludes mobile phone applications.

Also, the assumption of this research was based on feedback from persons with disabilities who mostly go to cyber cafes to access government services or Huduma centres as they are likely to get assistance at these locations.

The study takes cognizance of the fact that disability is a spectrum and each person will experience disability in an individual space.

The assessments covered in this report considers the averaged experiences of persons with visual, hearing and cognitive disabilities but does not take away the individual experiences of each.

The recommendation therefore acts as feedback to government policymakers and individual ministries as a proactive evaluation on their public communication through website portals. While reliance was placed on using technology to assess, there are aspects of assessment that would have to be observational.

The user of technology is after all human and there are certain matters that Wave or Accessi cannot report on. This includes the experiences of persons who need a full time personal assistant as reasonable accommodation.

[14.] *Web Accessibility Initiative, (2005), Web Content Accessibility Guidelines,* *https://www.w3.org/WAI/standards-guidelines/wcag/*

Findings

Introduction to the Scorecard

The Web Content Accessibility Guidelines (WCAG) are a set of internationally recognized standards for making web content more accessible to Persons with disabilities.

The WCAG standards provide clear guidance to web designers and developers to ensure that web content is accessible and websites are usable by everyone regardless of their abilities.

This is an international standard that is incorporated within the National Kenya ICT policy 2019 as a guideline for website accessibility.

This scorecard is a tool that was created to assess the accessibility of the Government of Kenya websites for persons with disabilities.

It consists of four (4) principles outlined below:

1.) Perceivable
This relates to how information on the website accommodates sensory differences in sight, audio, and touch. For content to be considered perceivable, it must be detectable and encodable with the senses that the users rely on at their different levels of reliability.

Because of the diversity of users and types of disabilities, web content presentation should be multimodal. It should also be easy to consume without requiring a lot of time.

For instance, if a web page includes an automatically playing video, the user should be able to use controls within their abilities to navigate through the video or skip to the next content. Features under this principle can include providing alternative text descriptions for images, high-contrast colour schemes for text, and transcripts or captions for audio or video content.

2.) Operable
This principle entails making a website or application easy to use for persons with visual, physical or motor disabilities.

Success factors under this principle include website content, including headers, being carefully arranged to convey the same meaning across devices and assistive technologies and the ability of all website functionalities to be carried out using the keyboard.

Navigation tools, character key shortcuts and proper use of headings are some of the indicators measured under this principle.

3.) Understandable
The principle of understandable relates to the use of simple language in the User design and experience. For example, the navigation buttons should use simple and clear language for the user to be able to take action regardless of cognitive or language abilities.

This can involve using simple and familiar language, avoiding technical terms, providing explanations, and using consistent and predictable design elements. This can include alternative formats, such as audio or visual aids, that would help individuals who may have difficulty processing written or spoken language.

15. *Ministry of Information Communications Technology Kenya, (2019), National ICT policy 2019,*
    https://www.ict.go.ke/wp-content/uploads/2019/12/NATIONAL-ICT-POLICY-2019.pdf
16. *Bureau for Internet Accessibility, (2022), What Is Perceivability in Web Accessibility? WCAG Principles Explained,*
    https://www.boia.org/blog/what-is-perceivability-in-web-accessibility-wcag-principles-explained

4.) Robust

This refers to websites and content designed to work seamlessly with assistive technologies that users with disabilities can access and use digital content in a way that is compatible with their assistive technology, and other accessibility features such as screen readers, braille displays, and keyboard-only navigation.

Although there are more indicators under each principle, the scorecard selected indicators for measurement based on their level of criticality and the ability of the scores to provide comparable analysis across the 46 public websites. The below table shows clustered indicators used under the WCAG POUR principles.

Scorecard indicators

Principles	Score indicators
Perceivable	• Alt text • Media captions • Language (Sign or Swahili) • Audio Descriptions
Operable	• Character key shortcuts • Navigation tools present • Colour contrasts and arrangements • Screen reader/accessibility con or add-on • Proper use of headings
Understandable	• Readable/Understandable text • Prediction/input assistance software • Easy to read/understand context • Error identification/suggestion features
Robust	• Work seamlessly with browser and assistive technologies e.g. JAWS,[17] Speech to text convertors

Table 1: Accessibility principles and measured indicators

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[17] *Job Access With Speech (JAWS) is the world's most popular screen reader, designed for computer users who are unable to view screen information or navigate with a mouse due to vision loss. For the most popular computer applications on your PC, JAWS provides speech and Braille output. From your office, remote desktop, or home, you will be able to access the Internet, compose a paper, read an email, and make presentations*

Analysis

When website accessibility was measured across all indicators, most websites scored an average with 50-59% accessibility level.

The websites analysed, 19.6% of had high scores of 70-100%, and a few but significant number of websites (8.7%) had below average levels of accessibility (See the chart below on Website overall accessibility performance ranking).

Leading by example, the National Council for Persons with Disability (NCPWD) website scored the highest on all the indicators.

While the average scored demonstrate a general positive trend in accessibility of government websites for persons with disability, it still remains a concern that some of the mostly used and relied-upon websites have the lowest scores.

These include the National Transport and Safety Authority (NTSA) Website which contains a self-service portal and is critical for citizen mobility and safety.

Website overall accessibility performance ranking
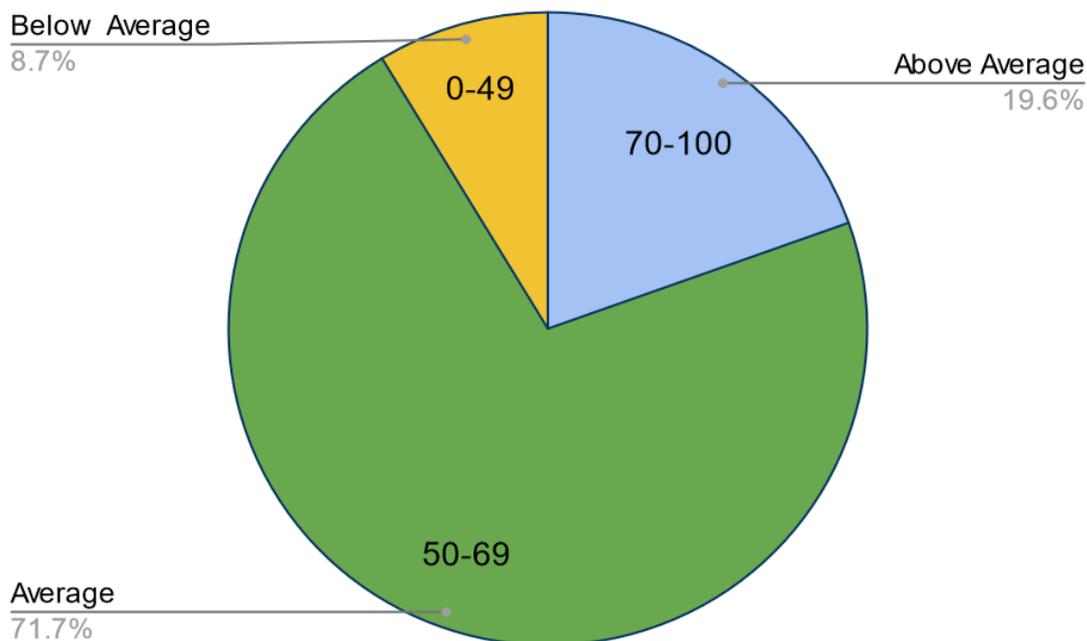
Pie Chart 1: Website overall accessibility performance ranking

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18. *inABLE, (2021), Enhancement of Digital Accessibility of Government Services in Kenya, n.d*

The below table shows cumulative scores per individual website.

Table 1. Average Score for websites

Website	Average Per Website
E-Citizen	65.5
Kenya Revenue Authority	72.9
KRA iTax Portal	50.8
Teachers Service Commission	65.4
Ministry of Health Self-Service Portal	55.0
The Ministry of Health	52.0
Public Service Commission	63.4
Ministry of Foreign and Diaspora Affairs	53.6
The Judiciary of Kenya	59.7
Kenya Gazette	58.2
Central Bank of Kenya	51.6
Parliament of Kenya	57.7
The Ministry of Finance	61.2
The Ministry of Interior and Coordination of National Government	56.9
The Ministry of Education	48.7
The State Department for Lands and Physical Planning	52.1
The Ministry of Defence	74.9
The Presidency	70.5
The Ministry of Energy	56.3
The Ministry of Environment, Climate Change and Forestry	66.6
The Ministry of Roads and Transport	62.8
The Ministry of Petroleum and Mining	70.5
The Ministry of Agriculture, Livestock, and Fisheries	62.1
The Government Human Resource Information System (GHRIS)	69.3
National Council for Persons with Disabilities	80.0
National Hospital Insurance Fund	65.4
National Social Security Fund	66.5
The Kenya Medical Supplies Authority (KEMSA):	60.5
The Kenya Pharmacy and Poisons Board	73.0
The Kenya Medical Research Institute (KEMRI)	74.6

The Kenya National Blood Transfusion and Transplant Service (KNBTS)	**73.0**
The National Aids Control Council (NACC)	**63.7**
The Kenya Institute of Mass Communication (KIMC)	**42.8**
NTSA citizen self portal	**42.1**
The Council of Governors	**46.7**
Communication Authority of Kenya	**61.2**
Ministry of Information, Communications, and The Digital economy	**54.6**
ICT Authority	**52.8**
Kenya Bureau of Standards	**51.6**
Kenya Medical and Practitioners council	**62.1**
Insurance Regulatory Authority	**65.0**
Office of the Data Protection Commissioner	**62.9**
The National Gender and equality commission	**75.9**
Independent Electoral and Boundaries Commission	**53.9**
Access to Government Procurement Opportunities	**67.3**
Nairobi City County	**59.6**
Average	**60.14**

Table 2, below, shows the website accessibility ranking (%):

Name of websites	PERCEIVABLE				OPERABLE				UNDERSTANDABLE		ROBUST	
	Alt text	Media captions	Language	Audio descriptions	Character key shortcuts	Navigation tools present	Colour contrasts and arrangements	Screen reader/accessibility Icon or add-on	Readable/Understandable text	Error identification/suggestion features	Compatibility with other apps eg JAWS	Speech to text convertors
E-Citizen	40	10	70	0	70	80	50	60	70	100	100	100
Kenya Revenue Authority	60	70	70	0	80	80	70	80	60	100	80	80
KRA iTax Portal	30	0	70	0	90	0	50	60	70	100	80	60
Teachers Service Commission	60	60	70	0	70	90	60	60	60	80	80	80
Ministry of Health Self-Service Portal	0	0	80	0	80	0	70	50	90	90	60	100
The Ministry of Health	60	50	70	0	60	30	50	60	70	30	80	80
Public Service Commission	50	0	80	0	90	80	60	60	80	80	70	80
Ministry of Foreign and Diaspora Affairs	20	30	70	0	70	100	70	50	70	30	60	80
The Judiciary of Kenya	40	10	100	0	80	40	80	60	100	60	70	60
Kenya Gazette	60	20	80	0	80	50	70	70	80	40	70	70
Central Bank of Kenya	60	70	70	0	80	20	60	60	60	30	60	60
Parliament of Kenya	60	70	80	0	70	50	70	70	70	30	70	60
The Ministry of Finance	60	60	70	0	50	70	70	60	70	80	60	60
The Ministry of Interior and Coordination of National Government	60	70	80	0	80	70	70	70	90	0	60	60

The Ministry of Education	50	30	80	0	60	70	70	50	70	10	60	60
The State Department for Lands and Physical Planning	40	70	70	0	60	70	50	60	80	20	60	60
The Ministry of Defence	70	80	90	0	50	80	90	80	90	90	80	70
The Presidency	50	100	100	0	80	80	80	70	90	50	100	60
The Ministry of Energy	40	0	80	0	90	50	50	70	80	50	80	60
The Ministry of Environment, Climate Change and Forestry	60	60	80	0	80	80	80	70	80	50	80	80
The Ministry of Roads and Transport	80	80	80	0	60	60	70	60	60	70	60	70
The Ministry of Petroleum and Mining	70	70	100	0	70	80	80	80	80	50	90	80
The Ministry of Agriculture, Livestock, and Fisheries	70	20	80	0	60	60	60	80	80	50	90	80
The Government Human Resource Information System (GHRIS)	90	0	60	0	90	30	80	80	70	100	90	90
National Council for Persons with Disabilities	80	60	100	0	100	100	90	80	100	80	90	60
National Hospital Insurance Fund	20	70	100	0	80	70	70	50	80	80	90	70
National Social Security Fund	20	50	100	0	80	60	60	80	60	90	80	70
The Kenya Medical Supplies Authority (KEMSA):	20	70	80	0	80	70	60	50	70	70	70	80
The Kenya Pharmacy and Poisons Board	50	10	90	0	90	100	70	80	90	80	90	90
The Kenya Medical Research Institute (KEMRI)	70	60	100	0	70	100	90	80	80	70	90	70

The Kenya National Blood Transfusion and Transplant Service (KNBTS)	50	50	100	0	80	90	60	80	90	80	90	80
The National Aids Control Council (NACC)	80	70	80	0	80	10	80	80	80	50	70	80
The Kenya Institute of Mass Communication (KIMC)	50	40	60	0	30	40	60	70	60	0	50	60
NTSA citizen self portal	40	20	50	0	80	20	40	40	70	40	40	60
The Council of Governors	50	60	60	0	50	50	50	60	50	20	60	60
Communication Authority of Kenya	60	30	70	0	70	70	60	80	80	50	80	60
Ministry of Information, Communications, and The Digital economy	60	40	60	0	80	80	40	60	60	50	60	50
ICT Authority	50	20	60	0	70	50	60	70	80	40	60	50
Kenya Bureau of Standards	40	50	80	0	80	70	50	60	60	20	60	60
Kenya Medical and Practitioners council	60	70	70	0	90	80	80	70	80	30	60	60
Insurance Regulatory Authority	40	30	80	0	70	100	50	80	80	70	80	60
Office of the Data Protection Commissioner	50	80	80	0	70	30	60	80	50	80	80	60
The National Gender and equality commission	80	70	90	0	80	90	80	80	90	80	80	70
Independent Electoral and Boundaries Commission	40	50	80	0	60	10	60	80	80	30	80	70
Access to Government Procurement Opportunities	50	50	80	0	70	80	70	70	70	90	80	60
Nairobi City County	60	30	90	0	80	20	80	60	80	60	80	70
Per Indicator Average	52.2	45.9	79.1	0.0	73.7	61.1	65.9	67.6	75.2	57.6	74.1	69.3

Scores per Principle and Indicator

Content on government websites is not multimodal to meet the diverse needs of persons with disabilities. The Perceivable principle had the lowest compatibility score of 44.2 percent. A closer look into the data explains why: Audio description was missing in all the websites. Media captions as well as alternative texts were significantly low with average compliance levels of 45.9% and 52.2%respectively. See table score sheets below.

Table 3. Detailed scores of the principles

Indicators	Scores (%)
Perceivable	44.2
Operable	67.0
Understandable	66.8
Robust	66.9

Table 4. Average Score for each Indicator for the Perceivable Principle

Perceivable indicators	Scores(%)
Alt text	52.2
Media caption	45.9
Language	79.1
Audio description	0.0

The Operable principle had the highest levels of compliance across the indicators. Cumulative scores by government websites on character key shortcut was 73.7%, Navigation tools 61.1%, Colour contrast and arrangements 65.9% and screen reader and accessibility icon 67.6%. See the table below

Table 5. Average Score for each indicator for the Operable Principle

Operable Indicators	Scores(%)
Character key shortcuts	73.7
Navigation tools present	61.1
Colour contrast and arrangements	65.9
Screen reader, accessibility icon or add-on	67.6

Only two indicators were measured under the Understandable principle. Most websites complied with a high average of 75.2%. However, there existed many errors in the suggestion features by the websites. On the error identification indicator, the websites averaged a score of 57.6%. Most errors related to poor labelling of alternative texts perhaps as a result of over relying on web accessibility plug-ins and failing to go through content to provide in-context labels. Please see the table below.

Table 6. Average Score for each indicator for the Understandable principle

Understandable Indicators	Scores(%)
Readable/understandable texts	75.2
Error identification/suggestion features	57.6

Indicators used to measure the Robust principle include; compatibility with other applications and Speech to text converters which had above average compliance levels of 74.1% and 69.3% respectively.

Table 7. Average Score for each indicator for the Robust Principle

Understandable Indicators	Scores(%)
Readable/understandable texts	75.2
Error identification/suggestion features	57.6

Website average accessibility scores per principle below on table 8.

Website Name	Perceivable	Operable	Understandable	Robust	Average Per Website
E-Citizen	30.0	65.0	73.8	93.4	65.5
Kenya Revenue Authority	50.0	77.5	79.4	84.8	72.9
KRA iTax Portal	25.0	50.0	70.0	77.5	50.8
Teacher's Service Commission	47.5	70.0	67.5	76.9	65.4
Ministry of Health Self-Service Portal	20.0	50.0	70.0	80.0	55.0
The Ministry of Health	45.0	50.0	52.5	60.6	52.0
Public Service Commission	32.5	72.5	73.1	75.8	63.4
Ministry of Foreign and Diaspora Affairs	30.0	72.5	55.6	56.4	53.6
The Judiciary of Kenya	37.5	65.0	71.3	65.3	59.7
Kenya Gazette	40.0	67.5	64.4	61.1	58.2
Central Bank of Kenya	50.0	55.0	51.3	50.3	51.6
Parliament of Kenya	52.5	65.0	58.8	54.7	57.7
The Ministry of Finance	47.5	62.5	68.1	67.0	61.2
The Ministry of Interior and Coordination of National Government	52.5	72.5	58.1	44.5	56.9
The Ministry of Education	40.0	62.5	48.1	44.5	48.7
The State Department for Lands and Physical Planning	45.0	60.0	55.0	48.8	52.1
The Ministry of Defence	60.0	75.0	83.8	80.9	74.9
The Presidency	62.5	77.5	71.9	70.5	70.5
The Ministry of Energy	30.0	65.0	66.3	64.1	56.3
The Ministry of Environment, Climate Change and Forestry	50.0	77.5	69.4	69.8	66.6
The Ministry of Roads and Transport	60.0	62.5	63.1	65.8	62.8
The Ministry of Petroleum and Mining	60.0	77.5	71.9	73.0	70.5
The Ministry of Agriculture, Livestock, and Fisheries	42.5	65.0	68.8	72.2	62.1
The Government Human Resource Information System (GHRIS)	37.5	70.0	80.0	90.0	69.3
National Council for Persons with Disabilities	60.0	92.5	88.1	79.5	80.0
National Hospital Insurance Fund	47.5	67.5	69.4	77.3	65.4
National Social Security Fund	42.5	70.0	75.0	78.8	66.5
The Kenya Medical Supplies Authority (KEMSA):	42.5	65.0	63.8	70.9	60.5
The Kenya Pharmacy and Poisons Board	37.5	85.0	83.8	85.9	73.0

The Kenya Medical Research Institute (KEMRI)	57.5	85.0	78.8	77.2	74.6
The Kenya National Blood Transfusion and Transplant Service (KNBTS)	50.0	77.5	81.9	83.0	73.0
The National Aids Control Council (NACC)	57.5	62.5	68.1	67.0	63.7
The Kenya Institute of Mass Communication (KIMC)	37.5	50.0	45.0	38.8	42.8
NTSA citizen self portal	27.5	45.0	48.8	47.2	42.1
The Council of Governors	42.5	52.5	45.6	46.4	46.7
Communication Authority of Kenya	40.0	70.0	70.0	65.0	61.2
Ministry of Information, Communications, and The Digital economy	40.0	65.0	58.8	54.7	54.6
ICT Authority	32.5	62.5	63.1	53.3	52.8
Kenya Bureau of Standards	42.5	65.0	51.3	47.8	51.6
Kenya Medical and Practitioners council	50.0	80.0	65.0	53.8	62.1
Insurance Regulatory Authority	37.5	75.0	76.3	71.6	65.0
Office of the Data Protection Commissioner	52.5	60.0	67.5	71.9	62.9
The National Gender and equality commission	60.0	82.5	83.1	78.3	75.9
Independent Electoral and Boundaries Commission	42.5	52.5	60.6	60.2	53.9
Access to Government Procurement Opportunities	45.0	72.5	75.6	76.4	67.3
Nairobi City County	45.0	60.0	65.0	68.8	59.6
Average Per Indicator	44.2	67.0	66.8	66.9	61.2

Focus Groups Discussion(FGD)

During the research, individuals with disabilities participated in a Focus Group Discussion (FGD) to share their experiences.

One main finding from this exercise is that the WCAG indicators are broad and elaborate to cater for all types of disability experiences.

However, much work needs to be done to contextualise the WCAG standards to apply at the local level.

The available assessment tools may not be able to capture some of the accessibility indicators and consequently miss capturing the experiences of persons with disabilities as they navigate websites.

As part of localisation of the standards, it is crucial to establish standardised accessibility requirements, particularly when third-party applications are involved.

For instance, government websites may have some accessibility features, but the same may not be true for third party applications where users may be directed to complete certain actions. Examples of these third party applications are payment portals.

Despite the availability of free and open-source software options for persons with disabilities to access websites, these options often have delays in upgrades and may require technical knowledge to use or address errors.

As a result, individuals in marginalised areas, such as slums or rural areas, find the proprietary alternatives excessively costly.

Consequently, many individuals with disabilities resort to seeking services at cyber cafes, which not only adds a financial burden in their quest for information and services but also exposes them to cybersecurity threats.

The FGD participants expressed that they are often not involved nor engaged in the development of web communication tools for the government and this could be a major reason why the websites lack multimodal content that supports encoding of content via multiple senses.

Some participants who have worked with government agencies noted that most accessibility issues arise due to the developers or the procuring bodies lacking awareness of the specific needs and challenges faced by individuals with disabilities.

The general lack of skills and awareness in the industry and among persons with disabilities also hinders the implementation of accessibility standards by government agencies and the private sector, as well as usage of accessibility tools by persons with disabilities.

Basic features such as accessibility icons remain largely unknown to users and they barely use it.

The FGD participants observed that in cases where websites are not accessible or interactive, and individuals with disabilities are required to make phone calls to a call centre number, certain types of disabilities hinder their ability to effectively interact with the person on the other end of the line.

This is because the call centre system lacks accessible features that would allow them to identify and communicate with the person on the phone.

Conclusions

While access to accessibility features seems to be generally available on Kenyan public websites, important features seem to be significantly missing across all websites and some critical websites have scores of below average accessibility compliance to the WCAG international standards.

Website plug-ins may help enhance some of the accessibility features, but extra attention is needed to ensure that that language and other features are contextualised to fit local needs. Even better, local developers should be encouraged to come up with local plug-ins and accessibility features.

A positive trend worth noting is the high compliance levels on indicators such as the presence of character key shortcuts, use of language and compatibility with accessibility tools.

Main shortfalls for high scores include errors out of poor labelling of audio, images and links, lack of audio description and transcriptions.

Experiences of navigating websites also vary across geography and levels of education. Assistive tools require skills, knowledge and awareness if they are to be used for equal access of websites across the country.

Because of variations on levels of income, affordability of assistive tools and software affect equal access to government web services among persons with disabilities.

It is important to enhance accessibility of websites and applications on mobile devices as most Kenya's access the internet through mobile devices.

Efforts to enhance website accessibility for persons with disabilities cannot end at development of policies and guidelines. Awareness creation among users and government agencies, and periodic assessment should be a continuous exercise.

In addition, while putting in place relevant data protection safeguards, the government should incorporate automated data collection on website usage for more granular data on the different needs of access across the various types and levels of disability.

Data on access can help answer the questions around intersectionality and multiple barriers to access. Such data can also be used in other digital accessibility programs.

Recommendations

This research makes the following recommendations:

1. COMPLIANCE

The following are specific recommendations made out of the findings from web scanning:

a).   Ensure that web content is multimodal and information can be received by multiple senses.

b).   Minimise errors in Alternative texts: Some of the most common errors included alternative text especially for images, audiovisual capture and colour contrasts not being labelled properly. For instance, the Kenyan flag which is used in most government websites presents a problem on colour contrast. Several applications have been designed to identify accessibility problems and the ICT practitioners should be made aware to use them regularly to check accessibility.

c).   Language is a constant error in all government websites and especially in the use of Kiswahili. The ICT sector is built on the English language and therefore Kiswahili, despite being our national and official language, will be identified as an error. Also, most government websites use technical terms that cause confusion and cognitive dissonance when translated to Kiswahili.

d).   Title pages that do not clearly describe the purpose of the content of the page, is also evaluated as an error. Titles, frames, content must be well described and Alt text used to describe any images.

e).   Placement of links, images, accessibility icons and information across the page should not be complex to avoid navigation problems or information overload.
        Arrangement of content, including headers should be consistent across different devices.

2. Skills building and awareness raising

To promote access for government services portals and public digital communication among persons with disabilities, users should not only be aware of the different assistive technologies available, but also have the necessary skills to use them. Accordingly, the research proposes:

a).   That the government raises awareness on the different services and communications they have on digital platforms. This can be done at county level, through chiefs and through digital villages. Further, stakeholders from civil society and the private sector should supplement the government's efforts on awareness raising and campaigns.

b).   Web development and communications curriculum in schools and higher Institutions of learning should include components of accessibility.

c).   Awareness on the developed web accessibility standards should be enhanced not only among government agencies, but also as a good practice for the private sector especially on those services that are of a public good and therefore critical to citizens.

d).   As usage of accessibility tools also depend on knowledge on how to use them, digital accessibility curriculum should be included in special learning with periodical review and updates to keep up with new and emerging technologies.

3. Coordination and implementation of standards

The wide range variations in accessibility score is a potential high indicator for lack of coordination across government agencies on developing and implementing accessibility standards, and also overall communications in general. Stakeholders should also coordinate their efforts to enhance the impact of web accessibility initiatives through mapping who is doing what and identify priority areas of focus. To achieve this:

a).   The government, through the Ministry of ICT should allocate an office for the implementation of KEBS accessibility standards. This office can provide necessary communications and updates on accessibility of government communications to other government agencies. Such updates can include changes on third party websites affecting accessibility of the main public websites.

b).   In collaboration with other stakeholders, the government should develop procurement guidelines on web accessibilities to encourage government agencies to demand for accessibility standards when procuring the development of digital services and in effect influence the market products.

c).   The coordinating institution should also schedule website accessibility periodical assessment.

4. Data to support policy

With increased uptake of digitisation, there exists an opportunity to generate digital footprints which can then be converted to knowledge and evidence to support policy making and improve their implementation. The following recommendations are made to enhance data collection for research and development.

a).   Within ethical and data protection frameworks, the government can track data on the usage of their websites by persons with disabililities. Data can be taken anonymously to generate information on ease of use, cost of access, and areas of priority. This can help identify policy gaps for greater equal access to information.

5. National Councils for Persons with Disability (NCPWD)

Considering that the National Councils for Persons with Disability scored the highest, this study recommends that the Council in collaboration with the Ministry of ICT coordinates the function of ensuring accessibility compliance for government e-services.

6. Further Enquiry
Finally, further research will need to be carried out to address the issue of web accessibility across different devices and accessibility of government services mobile applications.

Reference List

Links to websites reviewed
E-Citizen- https://accounts.ecitizen.go.ke/
Kenya Revenue Authority - https://www.kra.go.ke/
 iTax portal - https://itax.kra.go.ke/KRA-Portal/
Teachers Service Commission - https://www.tsc.go.ke/
Ministry of Health Self-Service Portal - https://portal.health.go.ke/
The Ministry of Health - http://www.health.go.ke/
Public Service Commission - https://www.publicservice.go.ke/
Ministry of Foreign and Diaspora Affairs - https://mfa.go.ke/
The Judiciary of Kenya - http://www.judiciary.go.ke/
Kenya Gazette - http://www.judiciary.go.ke/
Central Bank of Kenya - https://www.centralbank.go.ke/
Parliament of Kenya - http://www.parliament.go.ke/
The Ministry of Finance -http://www.treasury.go.ke/
The Ministry of Interior and Coordination of National Government - http://www.interior.go.ke/
The Ministry of Education - http://www.education.go.ke/
The State Department for Lands and Physical Planning - http://www.lands.go.ke
The Ministry of Defence - http://www.mod.go.ke/
The Presidency - http://www.president.go.ke/
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The Ministry of Roads and Transport - http://www.transport.go.ke/
The Ministry of Petroleum and Mining - https://www.petroleumandmining.go.ke/
The Ministry of Agriculture, Livestock, and Fisheries - https://kilimo.go.ke/
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National Council for Persons with Disabilities - https://ncpwd.go.ke/
National Hospital Insurance Fund - https://www.nssf.or.ke/
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The Kenya Medical Supplies Authority (KEMSA): - https://www.kemsa.co.ke/
The Kenya Pharmacy and Poisons Board - http://pharmacyboardkenya.org/
The Kenya Medical Research Institute (KEMRI) - https://www.kemri.org/
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The National Aids Control Council (NACC) - http://www.nacc.or.ke/
The Kenya Institute of Mass Communication (KIMC) - http://kimc.ac.ke/
NTSA citizen self portal - https://tims.ntsa.go.ke/login_csp.jsp
The Council of Governors - https://cog.go.ke/20-the-council-of-governors
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Kenya Bureau of Standards - https://www.kebs.org/
Kenya Medical and Practitioners council - https://kmpdc.go.ke/
Insurance Regulatory Authority - https://www.ira.go.ke/
Office of the Data Protection Commissioner - https://www.odpc.go.ke/
The National Gender and equality commission - https://www.ngeckenya.org/about/15/mandate
Independent Electoral and Boundaries Commission - https://www.iebc.or.ke/registration/
Access to Government Procurement Opportunities - https://agpo.go.ke/
Nairobi City County - https://nairobi.go.ke/

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