Stakeholder Workshop on Co-Creating Sustainable Operating Models for Connected Schools in Kenya

ITU partnership with the United Kingdom's Foreign, Commonwealth & Development Office (FCDO) Digital Access Programme (DAP)

Date: 22 March 2023 **|** 9:00-16:30 EAT
Place: Strathmore University

Website: http://www.itu.int/go/2023-expert-workshop-kenya

Summary record

Overview

The pressing issue of providing long-term internet connectivity to Kenyan schools and communities requires immediate attention. To address this, ITU organized a workshop titled "Co-creating Sustainable Operating Models for Connected Schools in Kenya," which brought together a diverse group of stakeholders from the government, ISPs, mobile network operators, complementary access networks, NGOs, and academia, among others. The goal was to collaborate on developing sustainable solutions for long-term connectivity in the country.

The workshop aimed to explore crucial factors for developing sustainable operating models for school connectivity, investigate financing options sustainable connectivity, and foster partnerships and collaboration at various levels to support the provision of connectivity to schools. Three roundtable discussions were held, focusing on current operating models for school connectivity, key elements for developing sustainable operating models for school connectivity, partnerships, and enhancement of procurement practices. Key insights and recommendations from the event included moving away from the "free mentality," assessing schools' e-readiness, engaging communities, and taking a business approach to connectivity, such as bundling connectivity with other services. Private-public sector collaboration and establishing an asset depreciation fund were also deemed crucial for long-term connectivity.

ITU presented preliminary findings from a study comparing existing and ideas for new or innovative school connectivity models in Kenya, sparking further discussion among participants. The workshop marked a significant step in addressing challenges and opportunities associated with sustainable internet connectivity in Kenya. It laid the groundwork for future initiatives and projects aimed at achieving sustainable connectivity as part of the ITU-FCDO partnership and the government's efforts to promote sustainable connectivity by fostering collaborative discussions among various stakeholders.

This post-event report offers a summary of the key insights, discussions, and outcomes, focusing on the critical issues surrounding school connectivity in Kenya. It covers the knowledge and lessons learned by

stakeholders from implementing school connectivity projects, essential elements for sustainable operating models, financing options, enhancing procurement practices for sustainable connectivity, and recommendations.

The workshop's expected outcomes were achieved through roundtable discussions, plenary sessions, and presentations of preliminary findings. By providing a comprehensive reflection of the workshop and its outcomes, the report also identifies areas for improvement and further collaboration in the pursuit of sustainable school connectivity in Kenya.

Background and Context

To ensure that school connectivity solutions are reliable, meaningful, and sustainable, it is essential to take a comprehensive approach that takes into account a number of factors. This includes understanding the specific needs and challenges of each school, such as its location and context, existing infrastructure, and available resources; identifying the necessary technical expertise; developing an implementation plan that considers both cost and long-term maintenance; and co-designing customized solutions to meet the unique connectivity needs of each school. The workshop on 22 March 2023 examined sustainable operating models, financing mechanisms, partnership opportunities, and procurement methods for sustaining internet connectivity in schools and communities, bringing together government agencies, internet service providers (ISPs), mobile network operators (MNOs), complementary access networks, NGOs, and academia to address sustainable connectivity in schools.

Diverse stakeholders must collaborate to solve the connectivity and sustainability gaps in schools and communities. The workshop encouraged mutual support and learning to inform future connectivity projects. Participants were encouraged to offer ideas for future connectivity solutions.

The workshop was an integral component of a larger study that aimed to evaluate existing and innovative school connectivity models from the ground up by meeting with school heads and conducting interviews with key stakeholders directly involved in or impacted by school connectivity, such as computer teachers, technicians, school boards, surrounding communities, and supportive businesses (MNOs, ISPs, community networks, development partners), in order to understand the reality on the ground and identify new or innovative approaches to sustainable connectivity that can be piloted. The study took this approach in an attempt to develop context-specific, sustainable operating models for school connectivity.

This work was supported by the ITU-FCDO partnership in Kenya, which was established in 2021 and focuses on promoting effective regulation, increasing investment, and developing innovative models for expanding digital access and inclusion. The workshop on sustainable operating models for connected schools supported the partnership's second pillar, on promoting sustainable models to expand school connectivity in underserved communities. It also aimed to contribute to Giga's work in Kenya. The ITU and UNICEF's global initiative Giga aims to connect all schools to the internet so that young people can have access to information, opportunities, and choices. Giga helps governments provide the infrastructure needed for digital connectivity to every school, community, and citizen. Giga investigates sustainable school connectivity models, including self-sufficient community models, around the world to maximize funding resources and reduce costs.

Objectives of the Workshop

The goal of the workshop was to bring together government representatives and other stakeholders who are directly involved in or capable of supporting school connectivity to share experiences and lessons learned in providing connectivity to schools, co-create sustainable connectivity solutions, and identify

models that can be tested. The workshop further aimed to foster collaboration and a culture of mutual learning and support.

The following critical school connectivity issues were addressed:

1. What knowledge and lessons about sustainability have stakeholders gained from implementing school connectivity projects?
2. What are the essential elements for a sustainable school connectivity operating model across various types of schools in Kenya?
3. What are the sustainable financing options for internet connectivity in schools?
4. Recommendations on sustainable operating models for school connectivity, building on lessons learned, and the roles of the different players

Expected Outcomes

The following were the workshop's outcomes:

- Participants discussed and gained insights into the critical variables for the long-term implementation of school connectivity across Kenya's diverse schools and communities, emphasizing the importance of approaches customized to local context.
- Participants shared experiences and lessons learned from the implementing school connectivity projects in Kenya, providing valuable information to guide future efforts in this area.
- Preliminary findings from the study on co-creating sustainable operating models for connected schools in Kenya were shared and participants given the opportunity to provide valuable feedback to help refine and improve the study's findings.

Based on the insights from the workshop, coupled with the findings of the ongoing study, a high-level guide for implementing sustainable operating models for school connectivity in Kenyan schools will be developed, and suitable sustainable operating models for testing will be proposed.

Participation

Thirty-six (36) participants from diverse sectors, including the government, UNICEF, FCDO, the World Bank, ISPs, complementary access networks, development partners, and academia, attended the workshop. The participation of these stakeholders was essential to ensuring that the discussion was informed by a variety of perspectives and experiences. From the government, the Communications Authority was represented, which is instrumental in supporting connectivity at the last mile, particularly through the support of the Universal Service Fund. The participation of UNICEF and the World Bank was essential as it brought both local and global experiences to the discussion. ISPs and complementary access networks (CANs) shared their experiences and lessons learned in providing connectivity solutions to schools and their communities, while development partners provided a unique perspective on the role and suggested good practices for development initiatives in ensuring sustainable connectivity solutions. The academic representatives contributed their knowledge regarding the crucial role of research in informing the discussion on sustainable connectivity.

Workshop Structure

The workshop consisted of four sections: welcome and introductions; agenda setting to provide context for the research on ‘co-creating sustainable operating models for connected schools in Kenya’ and the purpose of the meeting; roundtable discussions followed by plenary presentations and discussions; and the presentation of preliminary study results.

Participants convened in three groups to: 1. review previous school connectivity projects and evaluate new or innovative sustainable operating models that can be implemented; 2. identify key elements for implementing sustainable connectivity and financing options for internet access in schools; and 3. explore partnerships and collaboration for sustainable school connectivity while enhancing government procurement procedures. A cross-cutting question on exploring innovative and alternative connectivity solutions for remote and underserved schools and communities was assigned to each group. All participants were given approximately two hours to discuss the various topics before presenting at the plenary session. The following is a synopsis of the presentations:

Following the discussions, each group presented their findings and recommendations. An open and constructive plenary discussion was then held to reflect on key insights, discuss emerging issues, and identify practical steps for implementing sustainable school connectivity models. Throughout the workshop, participants had opportunities to network, share experiences and lessons learned, and establish relationships that can be utilized in future collaborations. For example, during the coffee break, participants engaged in a stimulating discussion. Each table engaged in conversations centered around two key questions related to sustainable school internet connectivity. The participants then wrote their responses on sticky notes and pinned them to a designated board. The two questions that guided these lively discussions were: **What are your thoughts on sustainable school internet connectivity? What do you think is the best model for long-term school internet connectivity?**

Welcome and Introductions

The workshop began with welcome remarks and introductions from a number of speakers. The session speakers were:

- Charles Juma, *Foreign, Commonwealth, and Development Office, United Kingdom*
- Moses Rono, *Technology for Development Expert, UNICEF Kenya*
- Sameer Sharma, *Head of Special Initiatives, ITU*
- Godfrey Muhatia*, M & E Manager, Universal Service Fund, Kenya*
- Moderator: Kagwiria Nkonge, *Project Officer, ITU-FCDO Partnership Kenya*

Charles Juma highlighted the significance of partnerships in providing affordable and meaningful connectivity to schools and communities. Moses Rono spoke about Giga (an ITU-UNICEF initiative to connect all schools to the internet) and the positive impact it has had. He stressed that the introduction of the competency-based curriculum (CBC), which is a digital-based curriculum, underscores the critical need to prioritize digital inclusion in the country. Sameer Sharma welcomed participants and discussed the global commitment of the ITU to supporting different stakeholders in addressing sustainable connectivity for schools and communities. Godfrey Muhatia provided a brief history of the Universal Service Fund in Kenya, the 2016 internet access study that paved the way for school internet connectivity, and the progress made so far. Challenges faced by the initiative, such as sustainability, were also acknowledged. He applauded the move by the ITU to convene different stakeholders to explore sustainable school internet connectivity models.

Overall, the speakers highlighted the country's digital divide issues, emphasizing the importance of connectivity as a national priority and the importance of collaboration among various stakeholders to achieve sustainable connectivity for schools.

Agenda Setting: The Research on sustainable connectivity solutions for Kenyan schools and why this meeting.

The purpose of this session was to provide an overview of the research conducted on co-creating sustainable operating models for connected schools in Kenya and to explain why this meeting was necessary.

The session was facilitated by Christine Sund, *Senior Advisor, ITU Regional Office for Africa.*

An overview of background work around sustainable connectivity was presented to the participants, referencing the 2021 global research carried out by Giga in collaboration with Boston Consulting Group (BCG). The study presented school connectivity operating models unique to each country's typology, with the aim of delivering digital infrastructure to schools. The study explored connectivity configurations, operations, funding methods, and business models that can drive long-term, sustainable internet access in countries with the greatest need. The report demonstrated how different sustainability approaches can be applied to a country's individual context by detailing test-cases for specific countries.

While the report was extremely insightful and practical, more research was required, particularly to delve deeper and explore school context-specific solutions to address their unique challenges and requirements. As a result, it was deemed necessary to assess the unique contexts of connected schools for the models proposed in the preceding study to be applied where most appropriate and to identify other innovative sustainability approaches for testing.

Around Sustainable Connectivity for Schools.

The purpose of this session was to organize attendees into roundtable groups so they could engage in discussions on a variety of topics related to the day's theme.

The roundtables were facilitated by Eric Nyamwaro, *ITU Consultant*

This being a technical workshop, the attendees were given the opportunity to choose a subject based on what most interested them.

Roundtable 1:

Moderator: Risper Mumbe, *Education Consultant Digital Learning, UNICEF Kenya*

- Lessons learned from past school connectivity projects in Kenya
- Evaluating existing sustainable operating models for school connectivity

Roundtable 2:

Moderator: Dr. Patrick Karimi, *Deputy Director, Institute of Energy Studies Research KPLC*

- Identifying key variables for successful implementation of sustainable connectivity models
- Sustainable financing options for internet connectivity in schools

Roundtable 3:

Moderator: Dr. Jared Aremba, *Associate Consultant, Leadedge Consulting*

- Fostering collaboration and partnerships for sustainable school connectivity
- Enhancing Government Procurement Practices for Sustainable Connectivity

A cross-cutting question on exploring innovative and alternative connectivity solutions for remote and underserved schools/communities was assigned to each group. All participants were given

approximately two hours to discuss the various topics before presenting at the plenary session. The following is a synopsis of the discussions that were held.

Roundtable 1

Lessons Learned, Challenges, and Solutions in Already Connected Schools

The panelists noted that the key challenge to connectivity was **infrastructure**; it was either dilapidated or not enough to accommodate the school's population, and in some areas, they completely lacked the right facilities for connectivity. In some schools, there was **obsolete equipment and devices** due to their poor lifespan and lack of proper maintenance, which rendered them unsuitable for use. No proper maintenance visits and follow-ups were made by the service providers to ascertain that the state of the equipment was intact, especially in communities in far-flung regions. The **lack of power** in remote areas further complicated connectivity efforts, as it necessitated considering alternative options, such as satellite connectivity, which was more expensive compared to other models.

Funding the project was also a huge challenge given the lack of capital and even delayed disbursements of funds from the government. Schools were also unaware of the limited free period, as some of them argued that education in the country is free, so its accompaniments are required to be free services, and thus they were reluctant to pay to maintain the project.

Suggested way forward: There is a need for a shift from the free mentality that most people have, as accountability is needed to reap and enjoy full benefits. It was encouraged that business models should be explored from the onset and low-cost connectivity approaches should be explored, e.g., termly payments. Another suggestion was for the pre-purchase of internet connectivity, with payment to be made in installments so that, with time, they would fully own the service.

The group agreed that the e-readiness statistics provided for school connectivity were unreliable because it is important to understand the different types of schools, including their student populations, geographic locations, bandwidth requirements, operating budgets, organizational structures, and other demographic factors, to develop solutions that are specific to their needs.

Suggested way forward: There is a need for extensive research on the country's state of e-readiness and on the number of schools that offer computer studies, as it is mandatory for them to have well-equipped ICT facilities for the students' learning. Clustered connectivity models were a suggestion to focus on the community as a whole and then let the school be a beneficiary.

The communal nature of schools was also mentioned, as was the significance of community involvement. It was also deemed crucial to bundle connectivity with other services, such as electricity, in order to solve the last-mile problem. After connectivity is established, educational institutions and local communities should collaborate to create models that allow the communities to take advantage of the connectivity.

Associating connectivity with a social interest will be of big help since some schools and communities have bigger problems as compared to internet connectivity; hence, it was seen as important to work with communities or community-led organizations as they understand the communities' "pain points" much better and thus the project will be better welcomed in such cases. Building the capacity of the beneficiaries is needed to make them understand the importance of the project and be able to sustain it.

Teacher capacity-building programs should be developed to deepen usage. Subsidies and tax incentives for schools should also be taken into consideration. All relevant ecosystem players should be mapped out and their roles identified. School boards are important stakeholders who should be lobbied and brought to the table, as they play a key role in how schools allocate resources. Teacher training on technology and the need for the internet should start at the teacher training institutions so that they understand issues

of connectivity early enough. Finally, educational institutions should be accessible to students with disabilities at the school level as schools become more connected.

Other key points for sustainability raised included the importance of collaboration with the private sector in achieving last-mile connectivity, as well as the need to build an asset depreciation fund to replace aging equipment in schools and build accountability for the project by having an integrated management mechanism.

Roundtable 1: Evaluating Existing Sustainable Operating Models for School Connectivity

From the onset, there is a need for a market model, to make sure that the community and schools are well aware of the situation and project. Notify all players of their role, especially financially, and help schools understand the importance of their contribution, and that connectivity is not free of charge.

In the community model approach, ISPs are required to filter content, especially if people from the community are going to be allowed into the school and given access to the internet connectivity, to shield the children and keep the connectivity safe for its intended use. There should also be payment plans with schools where the service providers should have a zero rating on all educational programs. Another approach was to have ISPs and schools share revenue to ease the burden on one of them.

Strategic partnerships should be made with the Teacher Service Commission (TSC), CEMASTEA, and the Ministry of Education to empower and train teachers on digital skills. Furthermore, they should come up with curriculums on ICT and digital literacy for teachers that should be taught while they too are in school.

Some success factors seen in already connected schools are:

- Learners, teachers, and communities have become digitally literate.
- There are more online collaborations among schools on both the national and global levels.
- Increase in the enrollment for computer studies
- Students are learning new skills. It was reported that a school started their own baking business after students watched and took an interest in baking on the internet. Connectivity has also helped in tracing expectant mothers for antenatal check-ups in nomadic communities.
- There has also been an increase in connectivity demand from the community, catalyzed by the schools' connectivity.

Roundtable 2

Key variables for successful implementation of sustainable connectivity models

Experts gathered around the table to discuss the key variables for designing and implementing sustainable connectivity models for schools.

The **evaluation of a school's infrastructure** was identified as the first crucial factor. The panelists agreed that evaluating the information and communications technology (ICT) resources, the physical condition of buildings, and the power availability would serve as the basis for implementing a sustainable connectivity model. This evaluation would ensure that the infrastructure could support the model and identify any areas in need of improvement or upgrade.

The experts also emphasized the significance of **ensuring that the educational content is available, relevant, and interesting** to the students. Additionally, it was suggested that the content be whitelisted in order to maintain a secure digital environment.

Panelists also discussed the **e-readiness of the school**, agreeing that teachers and students must possess the necessary digital skills to fully benefit from the connectivity model.

The **significance of capitation** for financing models of sustainable connectivity in schools was acknowledged, and participants agreed that allocating a substantial amount per student, which would also cover connectivity costs, was essential to the long-term success of these models.

The question of **who would pay for school connectivity** was also discussed. The panelists stressed the need to strike a balance between public and private sector funding. They acknowledged that while government funding could provide a stable foundation, it may not be sufficient to cover all costs associated with sustainable connectivity if only public funds are used. The experts suggested that participation from the private sector is also important to supplement government funding, either through partnerships or the adoption of innovative financing mechanisms. Panelists also agreed that schools must prioritize connectivity in their budgets and allocate the necessary resources. The importance of financial transparency and accountability was stressed. Monitoring and assessing the impact of connectivity investments would be essential for ensuring their efficacy and making necessary adjustments.

The panelists also discussed the to-be-deployed technology, recognizing that selecting the **proper hardware and software was crucial to the connectivity model's success.**

Finally, the discussion shifted to **stakeholder engagement**. The panelists emphasized the significance of identifying the various parties involved, including students, parents, teachers, administrators, the community, government agencies, and private sector partners. Implementation of the sustainable connectivity model would be more likely to succeed if different approaches were used to engage with these stakeholders.

In conclusion, the experts agreed that carefully considering infrastructure, content availability, e-readiness, financing approaches for installation and long-term maintenance, technology options, cost-bearing responsibilities, and stakeholder engagement are critical factors for sustainable connectivity. The experts concurred that capitation played a crucial role in financing models of sustainable connectivity in schools.

Roundtable 2: Sustainable financing options for internet connectivity

Additionally, roundtable 2 investigated sustainable internet connectivity financing options for schools. Their discussion centered on determining the optimal roadmap for infrastructure development, maintenance, and sustainability. A number of important concepts emerged.

The panelists discussed the possibility of internet service providers and government agencies **collaborating on the ownership and operation of connectivity infrastructure**, such as fiber networks. This strategy could provide a solid foundation for internet connectivity and allow institutions to utilize the infrastructure more effectively. Public and private sector entities could reduce costs and create a more sustainable model for connectivity by pooling their resources and collaborating on infrastructure development.

The significance of managing operational costs to ensure the affordability and long-term reliability of internet connectivity in schools also emerged. It was recommended that schools should strive to develop efficient business models. **Policies that facilitate cost-sharing** among diverse stakeholders, including government agencies, private sector partners, and schools themselves, should also be implemented. The panelists also emphasized the importance of **sustainable operational practices**, such as regular maintenance and resource management, which can prevent unanticipated costs and reduce the long-term need for additional funding.

The possibility of utilizing existing infrastructure, such as Kenya Power and Lighting Company (KPLC) cables, to facilitate internet connectivity in schools also emerged. Panelists agreed that **utilizing existing resources could reduce the initial investment** required for internet access by allowing institutions to

avoid building new infrastructure from scratch. This strategy could result in cost savings that could be redirected towards maintaining and expanding connectivity, thereby benefiting a greater number of schools and students. The experts also noted that partnerships with entities that own and maintain existing infrastructure could generate additional opportunities for cost-sharing and resource pooling, thereby enhancing the financing's sustainability.

In conclusion, the participants of the roundtable identified a number of crucial factors for developing a sustainable financing plan for school Internet connectivity infrastructure. They emphasized the significance of collaboration between internet service providers and government agencies, efficient operational practices, appropriate business models, and exploitation of existing resources such as infrastructure.

Roundtable 2: Using existing resources to support connectivity.

As a continuation of the above discussion, roundtable 2 also investigated the feasibility of utilizing existing resources, at the school level or elsewhere, to support connectivity. A variety of topics, including raising awareness among school administrators, amending existing laws, maximizing current connectivity plans, and the importance of political support, were discussed.

The panelists emphasized the importance of **educating school leadership**, including the board of directors, principals, parents, and teachers. They agreed that this knowledge would be essential for gaining support for a sustainable connectivity program. By **ensuring that key stakeholders comprehend the value and impact of Internet access**, schools can obtain the necessary support to maintain and enhance their connectivity.

The experts also discussed the possibility of **amending existing laws to permit the inclusion of connectivity fees in school fees**. This strategy would ensure that students and teachers have dependable access to digital resources by providing a consistent source of funding for maintaining and upgrading school Internet connectivity. The panelists acknowledged that some schools already have internet connectivity support plans in place. By analyzing these existing plans, other institutions could adapt successful models to their circumstances. Experts noted that schools' financial models and operational expenses (OPEX) vary, and it is crucial to comprehend these differences when developing sustainable connectivity models.

The need for **favorable policies to support the whitelisting of educational content** was a further significant aspect of the discussion. Experts concurred that policies that promote access to relevant and secure online resources would increase the value of internet connectivity in schools by providing students and teachers with a secure and advantageous digital environment and supporting meaningful use of connectivity.

Finally, panelists emphasized the importance of **political support for financing school connectivity**. They suggested that utilizing the Constituencies Development Fund (CDF) and budget allocations could make obtaining financial support from the government easier. The experts believed that including connectivity for schools in the budgets of constituencies would help ensure consistent and adequate funding for internet access in schools.

In summary, the participants of the roundtable identified a number of crucial factors for utilizing existing resources to support and maintain internet connectivity in schools. By focusing on creating awareness among stakeholders, amending laws, learning from existing connectivity plans, implementing favorable policies, and securing political support, schools can develop sustainable models that ensure access to reliable and sustainable connectivity.

Roundtable 2: Exploring innovative and alternative connectivity solutions for remote and

underserved schools.

Lastly, roundtable 2 investigated alternative and innovative connectivity solutions for remote and underserved schools. Participants acknowledged that these schools face significant obstacles in gaining access to reliable Internet connectivity, primarily because of their geographical location and the expensive nature of getting infrastructure to those places. The discussion centered on addressing these issues and identifying new ways to provide connectivity.

Some innovative or alternative ways discussed included TV whitespaces, satellite technology, fixed wireless, and microwaves. Despite the fact that these solutions may be more expensive than conventional methods, they have the potential to overcome geographical obstacles and provide dependable internet access to schools in inaccessible areas.

The significance of generating political support at all levels to draw attention to the needs of these schools was emphasized. Advocates can help ensure that remote and underserved schools receive the funding necessary to implement and maintain internet connectivity by engaging with politicians and policymakers.

The involvement of stakeholders was identified as another essential factor for promoting connectivity in remote and underserved schools. The panelists suggested that collaboration between government agencies, private sector partners, non-profit organizations, and local communities could result in the creation of innovative solutions tailored to the specific challenges faced by these schools and their communities.

In order to support remote and underserved schools, the experts also discussed the necessity of e-learning policy shifts. By prioritizing digital education and creating policies that encourage the adoption of alternative connectivity solutions, governments can assist in closing the digital divide and ensuring that students in these schools have access to the same educational resources as their peers in better-connected areas.

Finally, the panelists emphasized the importance of developing strategic partnerships that target remote and underserved schools in particular. Partners can develop customized connectivity solutions that are both effective and sustainable by combining their resources and exchanging their knowledge.

In conclusion, by leveraging new technologies, generating political goodwill, engaging stakeholders, advocating for policy shifts, and establishing strategic partnerships, it is possible to overcome the connectivity challenges faced by these schools and their communities in sustaining their connectivity.

Roundtable 3

Collaboration and partnerships

This discussion looked at the most effective way to create partnerships and beneficial collaborations to promote innovation and make the project a reality with ease.

The panelists recognized the importance of collaboration to prevent duplication of effort and ensure that all stakeholders are actively involved and contribute to the project's sustainability. They stressed the need for cooperation not only at the national level but also on a global scale, highlighting the value of engaging extensively with schools and their communities.

The panelists identified several crucial partnerships required for the successful implementation of school connectivity projects. At the policy level (MCAs, KICT, and ICTA), to bring forth the policy issues surrounding connectivity and the constraints on what cannot be done unless there is intervention with the laws. At the implementation level, there is a need to identify service providers for connectivity, such as MNOs, ISPs, and Tier II; publishers, content creators, and the community at large need to be reached

out to as well for consent on the project, as it affects them as well. Development partners are crucial for funding, technical assistance, advocacy, curriculum development, and procurement support. By forming partnerships with these organizations, schools can gain access to the technical knowledge and resources required to establish and maintain dependable Internet connectivity.

In conclusion, by focusing on policy-level collaboration, engaging with service providers, involving content creators and the local community, and working with development partners, schools can easily foster innovation and make their connectivity projects sustainable.

Roundtable 3: Enhancing government procurement practices for sustainable connectivity

Roundtable 3 also discussed the importance of enhancing public procurement practices to ensure that schools have access to the Internet that is dependable and durable.

The panelists agreed that developing procurement guidelines and enhancing the capacity of procuring entities would greatly assist government efforts in this area. In addition, they emphasized the importance of mapping connectivity data for all schools and establishing a database to track connectivity status. This data would enable governments to identify critical areas, prioritize resources, and determine the optimal starting points for enhancing connectivity.

The potential advantages of clustering schools according to suitable criteria and allowing them to acquire internet services collectively were also discussed. Schools could reduce connectivity costs and streamline the management of these services by leveraging group purchasing power. This strategy would not only make Internet access more affordable for schools but also streamline the process of monitoring and maintaining connectivity.

The panelists emphasized the need for policies that assist schools in developing business models to manage recurring internet connectivity costs. For instance, a policy could be implemented to encourage schools to collaborate with local businesses, ISPs, or community organizations to share the cost of internet connectivity. This partnership-based strategy would distribute the financial burden across multiple stakeholders, making it easier for schools to maintain consistent internet access. By promoting sustainable financial practices through these policies, schools can better manage ongoing connectivity costs.

In conclusion, by emphasizing capacity building, the development of procurement guidelines, the mapping of connectivity data, the clustering of schools for collective procurement, and the implementation of enabling policies, governments can create an environment that facilitates affordable and reliable connectivity.

Summary of the roundtables

The discussions at the workshop on the co-creation of sustainable operating models for connected schools in Kenya centered on challenges and potential solutions for sustainable connectivity. Key challenges to sustainability identified included a lack of dependable energy, high infrastructure and device costs, security concerns, community engagement, capacity building, and a need to shift mindsets toward valuing connectivity.

Based on the workshop discussions, the following overall recommendations can be drawn for sustainable school connectivity:

- Involving all relevant stakeholders, especially the government, in addressing the issue of sustainability, thereby ensuring better alignment between initiatives undertaken by the government, development partners, non-state actors, and academia, among others.
- Developing and implementing policies that assist schools in developing financially and

operationally sustainable models to manage the ongoing costs associated with internet connectivity, as well as promoting innovative solutions for providing access in remote and underserved areas.

- Enhancing procurement practices by improving government procurement procedures, building capacity for procuring entities, developing guidelines, and clustering schools according to appropriate criteria can result in more cost-effective connectivity solutions.
- Exploring alternative connectivity solutions such as satellite technology, TV whitespaces, fixed wireless, and microwaves for remote and underserved schools, while utilizing existing resources and infrastructure to support Internet connectivity.
- Stressing the significance of strong school leadership for the successful implementation and management of internet connectivity projects, ensuring that school leaders are aware of the benefits of internet access and are committed to sustaining the programs.
- Developing a comprehensive connectivity database to map and monitor connectivity data for all schools will make it easier to identify critical areas, prioritize resources, and monitor the progress of connectivity projects.
- Promoting partnerships between schools and local businesses, internet service providers (ISPs), community organizations, and other stakeholders to share the costs of internet connectivity and develop individualized solutions for each school's unique challenges.

Overall, participants acknowledged the significance of collaboration, innovative thinking, shift of mindset and policy, partnerships and enhancement of procurement practices among others.

Preliminary findings of the study: Co-creating sustainable operating models for connected schools in Kenya

ITU presented the preliminary findings of the study to the participants. The study aimed to assess existing and new/innovative school connectivity models by working with school heads, conducting interviews with stakeholders who are directly involved in and impacted by school connectivity (such as computer teachers, technicians, school boards, etc.), communities surrounding the schools, companies that may be able to provide support (MNOs, ISPs, community networks, development partners, among others), and people or organizations that understand the actual situation in those schools, in order to identify connectivity operating models that work. Thus, ensuring the elaboration of solutions for the sustainable funding of internet connectivity that are feasible and tailored to actual needs and contexts.

The study sought to address the following important questions:

- What does it take to build a sustainable operating model for school connectivity?
- What are the sustainable financing options for internet connectivity in schools?
- How can the impact of internet connectivity in schools be extended into the community while lowering school connectivity costs?

Below is a synopsis of the preliminary results:

An in-depth study was carried out to evaluate internet access across various groups and institutions. Data was collected through face-to-face and phone interviews, targeting households, schools, private internet service providers, community service internet providers, and civil society organizations. Among the households surveyed, there were 601 respondents, with 30.7% being businesspersons, 23.2% being casual employees, 15% being teachers, 13.6% being students, and 3.4% being parents. When it came to schools, a vast majority of the responses were from head teachers (89.8%), while computer teachers contributed 10.2%. The study included 49 schools from 30 counties, along with 12 small internet service providers and

five civil society organizations.

The findings show that people living in rural areas mostly depend on private cybercafés and mobile phones to access the internet. In contrast, a large portion (91%) of the urban population benefits from home Wi-Fi connections. About 40% of the households surveyed are willing to pay between KES 500 and KES 1000 for internet services. A significant 80% of respondents agreed that schools should offer internet access to their local communities. In addition, 63% of participants recognized the importance of internet access, and 62% of the community saw potential in extending internet access as a viable business venture. More than half of the schools (57%) thought that establishing a low-cost cybercafé could be a successful business idea. Other suggestions included partnering with government departments (28%) and setting up IT training centers within schools (14%). The study also uncovered gaps related to the availability and affordability of repair and maintenance professionals.

To expand internet access, the data indicated three primary approaches: private partnerships, commercial models, and community-based models.

Discussions on the preliminary results:

During the presentation of the research findings, several noteworthy points of discussion arose from the attendees. One key topic was the desire for a more comprehensive analysis of the willingness to pay, as well as an exploration of internet speed preferences. The research mainly concentrated on the willingness to pay aspect, and it was found to align with another study carried out in Kajiado by one of the participants. This was also consistent with a KPLC study that aimed to determine the amount people were willing to pay for electricity in informal settlements. The results indicated that, given the provision of internet services, community households would be prepared to pay. The attendees found the proposed models to be captivating and well-matched with the ideas presented in plenary by group 1. Additionally, the emphasis on the necessity of business models by all groups reinforced the significance of these models. Participants also expressed an interest in a more detailed analysis of devices and the subjects of choice to be included in the final report.

Moving forward, it was agreed that the insights gained from these discussions would serve to enhance the study. A final report that incorporates this additional data will be shared with all the stakeholders involved.

Conclusion

In conclusion, the workshop on co-creating sustainable operating models for connected schools in Kenya brought together various stakeholders who are committed to addressing the digital divide in the country. The discussions and insights provided during the workshop highlighted the need for a comprehensive approach that considers several factors to ensure that school connectivity solutions are sustainable, effective and efficient. It was clear that understanding each school's unique needs and challenges, identifying the necessary technical expertise, and developing an implementation plan that considers both initial costs and long-term operational costs and maintenance is critical to achieving this goal.

The workshop also underscored the importance of creating awareness on the value that connectivity brings to schools and communities, and presenting a good value proposition that ties to the community's social or economic priorities can help get buy-in for the connectivity and help shift mindsets from expecting internet connectivity to be free. Collaboration among various stakeholders and knowledge sharing to find practical and long-term solutions to the connectivity and sustainability gap in schools was also emphasized. The participants' commitment to working together and sharing best practices and experiences was encouraging, and it is hoped that this will inform future connectivity projects in the country.

The work of the ITU-UK FCDO partnership and Giga in Kenya is essential in promoting effective regulation, increasing investment, and developing innovative models for expanding digital access and inclusion. This workshop contributed to the second pillar of the partnership, "Promoting sustainable models to expand school connectivity in underserved communities." Additionally, it supported the work of Giga in Kenya, which aims to connect every school to the internet and every young person to information, opportunity, and choice.

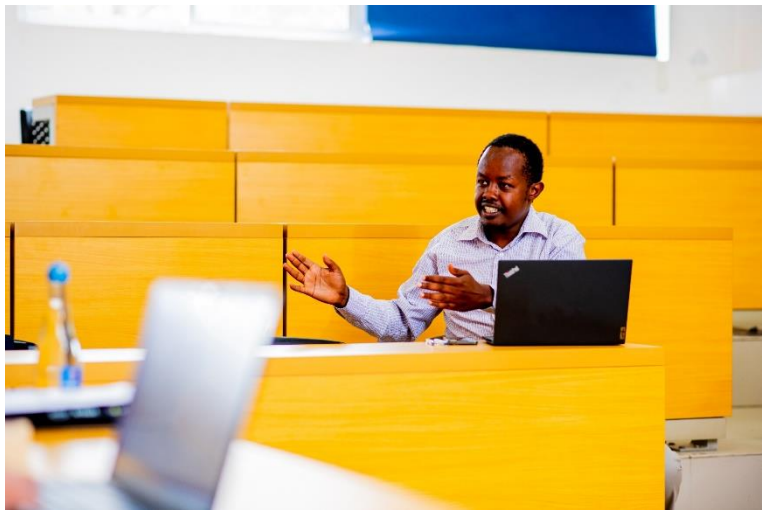
Overall, the workshop provided a valuable platform for stakeholders to come together, learn from each other, and co-create sustainable connectivity solutions that will benefit students, teachers, and their communities. The insights and recommendations generated during this workshop will be instrumental in informing future initiatives to expand digital access and inclusion, bridging the digital divide, and ensuring that Kenya's students have access to the resources they need to thrive in the digital age.

Annex 1: Key insights and takeaways: Sustainable Internet Connectivity

Participants at the workshop shared a range of key insights and takeaways to promote sustainable internet connectivity in Kenyan schools. Major themes and takeaways were:

- Shifting away from the mentality of free internet access: encourage schools and communities to recognize the value of internet connectivity and contribute towards its ongoing costs.
- Explore various business models to support low-cost connectivity for schools, such as termly payments, pre-purchase plans, and partnerships with service providers. These models can ease the financial burden on schools while maintaining reliable internet access.
- Assessing the e-readiness of schools: the number of schools offering computer studies, their ICT infrastructure, level of digital skills, etc. This research can shed light on the current state of connectivity and meaningful usage and highlight areas for improvement.
- Taking a clustered connectivity model approach that focuses on the broader community's needs and allows schools to benefit from the initiatives, or vice versa, can promote resource sharing and encourage collective investment in connectivity infrastructure.
- Emphasize community involvement. This inclusive approach can help create a supportive environment for sustainable connectivity initiatives.
- Bundle connectivity with other essential services like electricity.
- Promoting partnerships between education institutions and local communities to develop connectivity-based digital inclusion models can foster ownership and responsibility for connectivity initiatives.
- Engage community-led approaches to understand local "pain points" and promote project acceptance. Local knowledge and feedback can tailor the project to each community's needs.
- Capacity-building for long-term project success: This includes training and resources to help schools and communities maintain connectivity infrastructure.
- Sustainable connectivity models require assessing a school's ICT infrastructure, educational content that is relevant and interesting, and e-readiness. This can ensure sustainability is embedded in the design of the project from the ground up.
- Planning for equipment replacement, e.g., by setting up asset depreciation funds for the school.
- Co-designing connectivity models that follow policy recommendations, avoid service duplication, and engage schools broadly. Strong stakeholder partnerships enable more effective and sustainable solutions.

Annex 2: Photographs



Annex 3: List of Participants

	Name	Organization
1	Godfrey Muhatia	Communications Authority of Kenya
2	Miriam Mutuku	Communications Authority of Kenya
3	Dr. Patrick Karimi	KPLC
4	Stephen Gachogu	AFRALTI
5	Charles Juma	FCDO
6	Sameer Sharma	International Telecommunication Union
7	Christine Sund	International Telecommunication Union
8	Kagwiria Nkonge	International Telecommunication Union
9	Eric Nyamwaro	International Telecommunication Union
10	Moses Rono	UNICEF
11	Risper Mumber Dorothy	UNICEF
12	Tim Kelly	World Bank
13	Caroline Koech	World Bank
14	Johnson Riungu	Kenya Society for the Blind
15	Brian Kamau	Kenya Society for the Blind
16	Joan Masai	KENET
17	Catherine Kyalo	KICTANET
18	Nicodemus Nyakundi	KICTANET
19	Adam Lane	Huawei
20	Ben Roberts	Liquid Intelligent Technologies
21	Esther Wambui	Liquid Intelligent Technologies
22	Virginia Muthoni	Liquid Intelligent Technologies
23	Ruth Nekoye	Liquid Intelligent Technologies
24	Fredrick Kimaru	Maruway Networks
25	Kennedy Kurui	Maruway Networks
26	Godfrey Njoroge	Allogy Africa
27	Victor Nyongesa	Airtel Kenya
28	Victoria Macharia	Airtel Kenya
29	Barrack Otieno	AheriNet Community Network
30	Alex Magu	STEM Impact Kenya
31	David Mulongo	Viscar Industrial Capacity
32	Jared Ariemba	Leadedge Consulting
33	John Kimotho	Ed Tech Hub
34	Leonard Mabele	Strathmore University
35	Stephen Gitahi	Strathmore University
36	Vanessa Wambui	Consultant