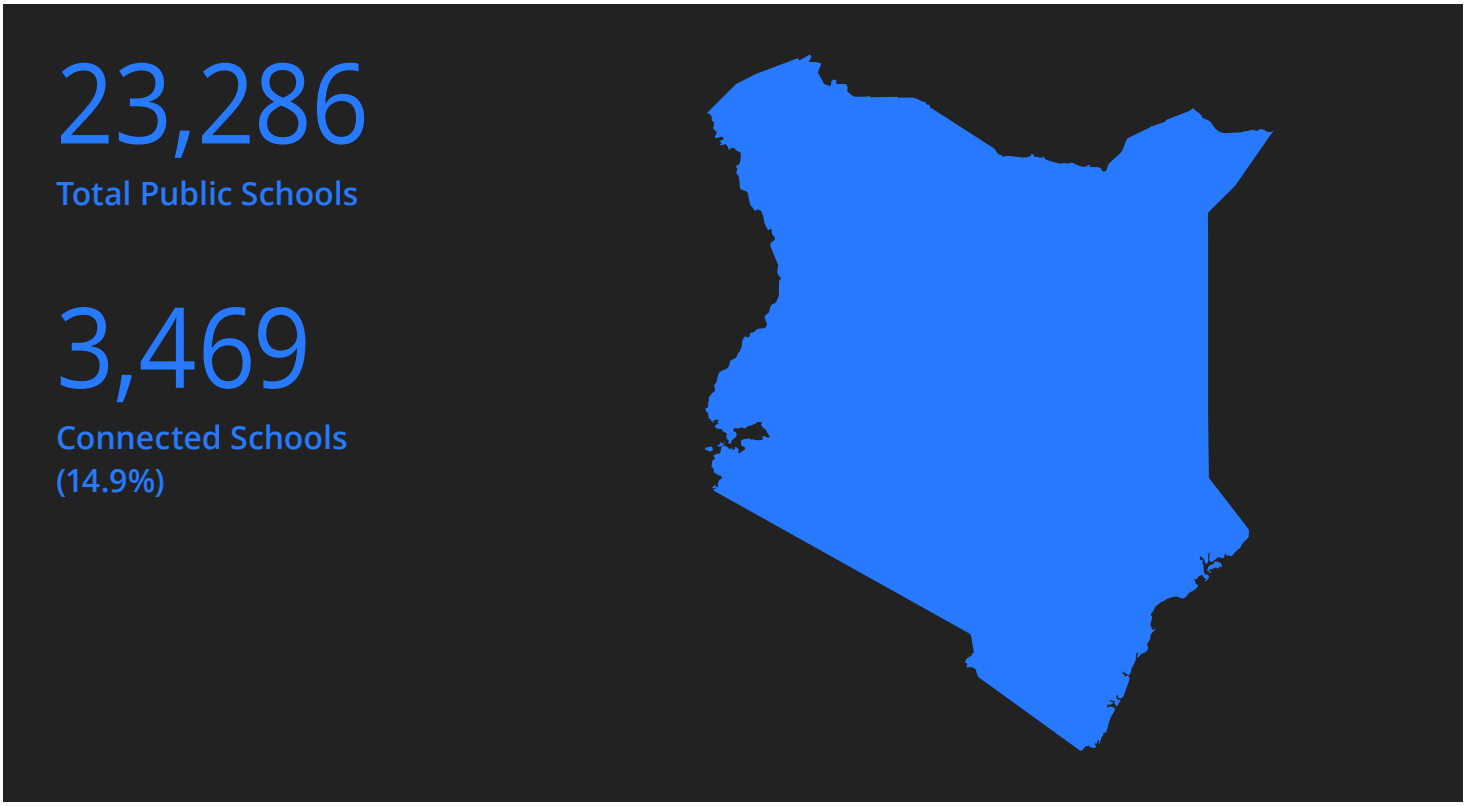
Scaling Up School Connectivity in Kenya

Integrating Hard and Soft Infrastructure to Deliver Impact



Introduction

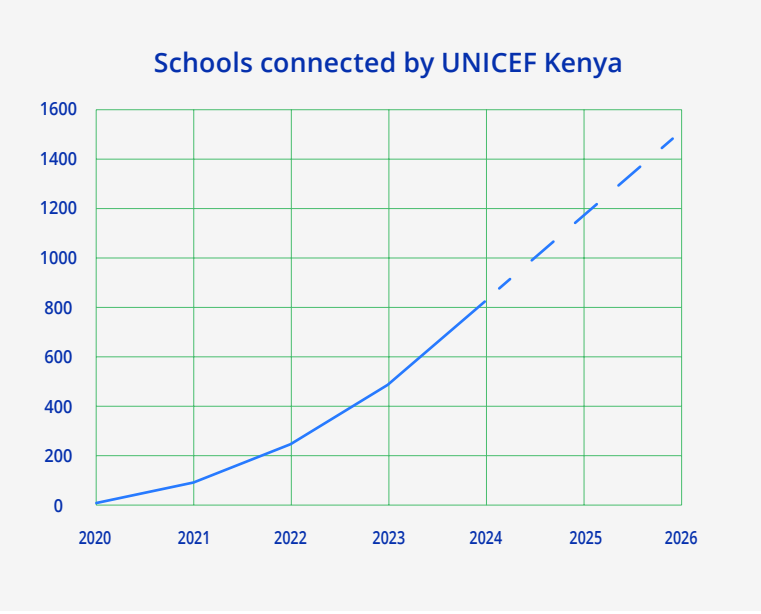
Scaling up infrastructure leverages the knowledge and experience acquired from previous projects to facilitate smoother implementation and improve outcomes. Applying learnings from prior infrastructure projects can translate to cost savings of up to 40% and schedule reductions of up to 50%.[1] In the context of delivering last-mile connectivity to underserved communities, technical expertise in planning, procurement, and project management is hard earned. However, once developed, this expertise along with the ability to coordinate project delivery across a diverse set of stakeholders is indispensable and can dramatically accelerate impact. As a result, organizations that demonstrate they can effectively scale up may attract additional investment, because they have proven their ability to deliver results. According to research conducted by the Global Impact Investing Network ("GIIN"), organizations that demonstrate the ability to scale are more likely to receive development funding. In a survey conducted by GIIN, they found that 85% of impact investors prioritize scalability when making investment decisions.[2] In Kenya, UNICEF has established itself as a capable implementer of school connectivity and is scaling up its work by way of new funding.

Background

In 2019, the Republic of Kenya joined Giga, the joint initiative between UNICEF and the International Telecommunication Union ("ITU") to connect every school in the world to the internet. The decision to join Giga coincided with other notable initiatives that reflected the government's goals of expanding digital infrastructure, enhancing access to education and promoting economic growth. Earlier in 2019, Kenya launched the National Broadband Strategy to enhance broadband connectivity across the country, and subsequently, the Kenya National Digital Masterplan (2022-2032) which aims to deliver equitable, accessible and robust national ICT infrastructure. The government also began making strategic capital investments, like the Kenya National Optic Fiber Backbone Infrastructure ("NOFBI"), now with more than 10,000 km of fiber cable that connects all the country's 47 counties. In education, the government's Digital Literacy Program ("DLP"), launched in 2016, sought to equip primary schools with digital devices and internet connectivity, with plans to connect over 22,000 schools to the internet. These initiatives align with the government's broader strategic plan, Kenya's Vision 2030, which prioritizes leveraging technology for socio-economic development and access to quality education.

Connecting Schools to the Internet

UNICEF began its work in 2020 by identifying 1,160 public primary schools, in conjunction with the Ministry of Education and Ministry of Information, Communications and The Digital Economy, to connect to the internet using a jointly agreed-upon criteria. These schools were to be connected with at least 10 Mbps download and 5 Mbps upload speeds, reflecting Giga's recommended minimum speeds for meaningful school connectivity and the Government's National Broadband Strategy. Schools were then connected incrementally. In the first phase of the project in 2020, ten schools were connected to the internet by way of a shared value partnership with three private operators. The second phase expanded work to connect an additional one hundred schools in 2021. By the end of 2023, more than five hundred schools had been connected to the internet for the first time.



UNICEF strategically engaged both private and public stakeholders to deliver each phase of the project on time and within budget. In engaging the private sector, UNICEF performed due diligence on local, private internet service providers and selected seven for long-term agreements ("LTAs"): Maruway, Poa, Telkom, Safaricom, Frontier, Airtel and Liquid Intelligent Technologies. Long-term agreements are valuable tools because they apply to both a current project and serve as a contractual framework for future projects, ensuring accountability, maintaining quality standards, and establishing a cap on prices for during the LTA period (in this case, three years). LTAs not only streamline the procurement process, but they produce cost savings and reduce risk, as they serve as a foundation for ongoing collaboration and partnership with operators.

In working with the public sector, UNICEF partnered with Kenya's Information and Communication Technology Authority ("ICTA"), a State Corporation under the Ministry

1. The infrastructure conundrum: Improving productivity. Mckinsey Global Institute, January 2015.
2. Annual Impact Investor Survey, Global Impact Investing Network (GIIN). (2020), 2020.

of Information Communication and Technology, to deliver connectivity to schools that were in close proximity to NOFBI. More than 100 schools were within 3 kilometers of the country's fiber backbone. To date, 35 of those schools have been connected to the fiber backbone with UNICEF support. The government, unlike private operators, is not profit-oriented, allowing the provision of service to schools at lower costs. Directly integrating schools into the government-managed fiber backbone creates a sustainable framework for internet connectivity by substantially lowering the ongoing operational expenses associated with maintaining online access. In cases where schools are unable to pay operating expenses, they may not be charged at all. However, the initial capital expenditure required to connect a school is equivalent to, or may be higher, than private operators primarily driven by the limited current reach of NOFBI to last mile locations.

ITU has been working closely with the Communications Authority of Kenya to advance school connectivity initiatives as well. With the support of the United Kingdom Foreign, Commonwealth and Development Office (FCDO), ITU published an assessment report titled the "Broadband connectivity for schools in Kenya funded by the Universal Service Fund" that compiles the lessons learned and benefits realized through connecting schools, revealing the strategic importance of broadband connectivity as a critical enabler for teaching and learning. Aided by ITU, the Communications Authority is actively deploying the USF to connect schools with 886 schools connected to the internet to date.

Encouraging Digital Adoption

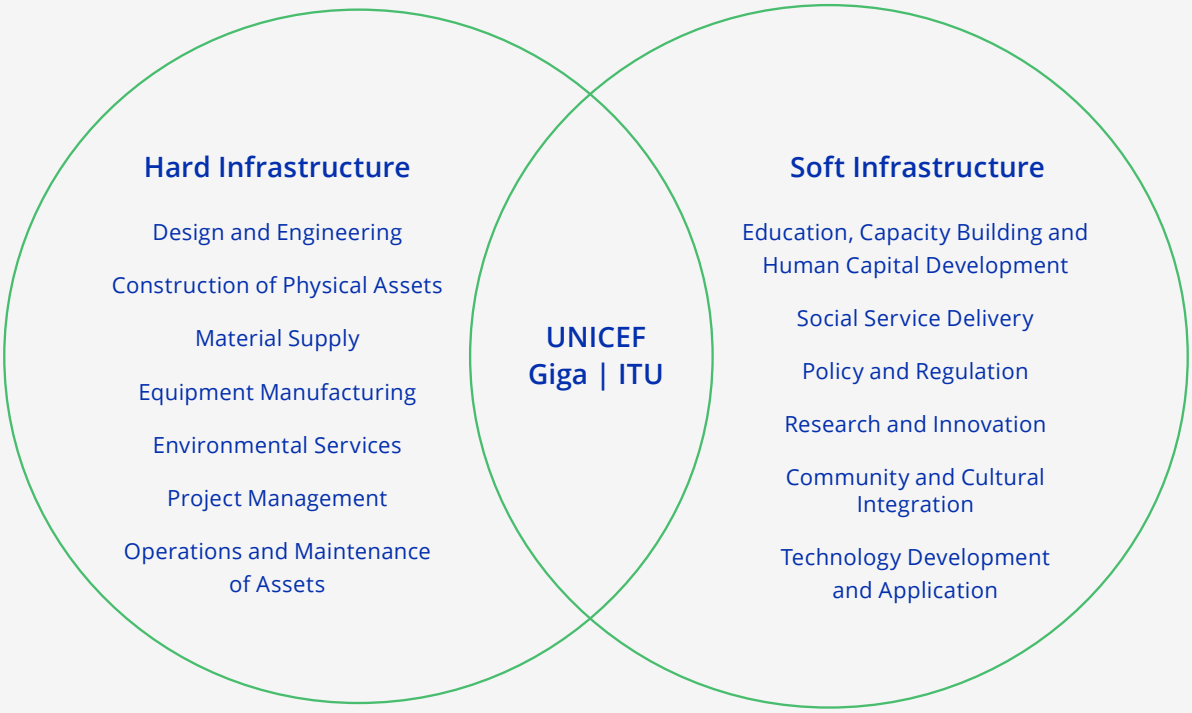
In addition to delivering hard infrastructure by physically connecting schools to the internet, UNICEF has shown its ability to deliver soft infrastructure as well. Meaningful digital adoption is not limited to hard physical assets, structures, and facilities. It is equally dependent on soft infrastructure, which allows users to utilize ICT devices to draw value from digital content and develop digital skills to enhance employability upon completing their education. Hard and soft infrastructure are strongly interdependent. Hard infrastructure cannot be operated without the use of soft infrastructure; soft infrastructure cannot be deployed effectively without the presence of hard infrastructure.[3]

Very few organizations can coordinate the delivery of both hard and soft infrastructure due to the unique challenges each type presents. Hard infrastructure projects require technical expertise, while soft infrastructure demands a nuanced understanding of social and cultural context. Coordinating these efforts requires a high level of organizational complexity and cross-disciplinary collaboration, which only a select few organizations have the resources and skills to manage effectively. UNICEF is one of those organizations.

At each newly connected school, UNICEF undertakes a multifaceted approach to enhance digital skills and knowledge among students and teachers. This includes training sessions for teachers on how to effectively integrate technology into their teaching practices and curriculum. UNICEF also delivers digital content to students, enriching their learning experience and equipping them with essential digital literacy skills. In collaboration with the Kenya Institute of Curriculum Development ("KICD"), UNICEF leverages new connectivity for virtual labs in schools where science labs do not exist.

Giga, as a partnership between UNICEF and ITU, is also uniquely positioned to support this necessary and coordinated dual approach on a larger, national scale, where each agency has long standing relationships with Ministries of Education and Telecommunications, respectively.

3. Digital Infrastructure Sector Strategy. Asian Infrastructure Investment Bank (AIIB), 2020.



In December 2023, UNICEF's Kenya Office received support from the European Union to connect an additional 1,000 schools to the internet and provide soft infrastructure to drive adoption and impact. UNICEF, ITU and the EU have a shared vision for supporting human-centric digital transformation and inclusive growth in Kenya. Digital is one of five areas of partnership and priorities of the EU Global Gateway. In selecting UNICEF as the project principal, the EU acknowledged the momentum that UNICEF has built in connecting schools to date.

With the support of Giga, both public and private operators will be engaged to facilitate the connectivity of the 1,000 schools. The project's timeline, set to commence in the first quarter of 2024, involves an e-readiness assessment of prospective schools, followed by school selection and procurement. Upon successful connection of schools, UNICEF will immediately begin providing digital skills training, capacity building, digital content delivery, and implementing child protection measures. Giga will monitor school connectivity on an ongoing basis. The project will utilize a hub and client model in which hub schools will extend connectivity to client schools, and in certain instances, surrounding households and business to offset the schools' operating expenses. This translates to long-term viability.

Conclusion

UNICEF's Kenya Office is a testament to UNICEF's ability to scale up its work on the ground. The office's unique ability to deliver both hard and soft infrastructure for school connectivity projects represents a model for sustainable and lasting impact, showcasing a comprehensive approach that balances technical expertise with social and cultural considerations. Giga would welcome the opportunity to discuss the success of this model in more depth and its applicability to other countries and contexts.