

Overcoming Internet Connectivity Limitations in Tertiary Education: Insights from KENET's Initiative

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Agenda

- About KENET
- KENET National Broadband Coverage
- KENET's Tertiary Colleges Connectivity and Educational Technology Initiative
- Case Study
- Impact
- Challenges identified
- Q & A

About KENET

- The Kenya Education Network (KENET) serves as the National Research and Education Network (NREN) of Kenya.
- KENET was founded in the year 1999, by five (5) founder universities
- Membership Organization that currently connects over 600 campuses of research and education institutions.
- Beyond affordable connectivity, its core mission is to advance digital transformation and promote inclusive research and education in Kenya.

Background

- Tertiary institutions in Kenya face persistent Internet access challenges.
- Many colleges operated on less than 20 Mb/s of bandwidth.
- Others lacked internet connectivity because of budget constraints and remoteness.
- This limits eLearning, research, and access to digital tools.

Problem

- 2022 KENET Survey: Average bandwidth 30 Mb/s per 1,000 students.
- Recommended benchmark: 100 Mb/s per 1,000 students.
- Insufficient connectivity hinders digital learning and administrative efficiency.
- Rural and remote areas are particularly disadvantaged.

The Initiative

- KENET's Tertiary Colleges Connectivity and Educational Technology Initiative launched in November 2023.
- Goal: Improve Internet access and educational technology adoption.
- Core focus areas:
 1. Affordable Internet bandwidth.
 2. Mini-Digital campus infrastructure upgrades.
 3. Educational technology tools.
 4. Capacity building.

Core focus areas of the initiative

1. Affordable Internet Package

- New pricing structure introduced.
- Minimum subscription: 50 Mb/s at reduced cost.
- Encouraged institutions to upgrade from low-bandwidth connections.

Core focus areas of the initiative

2. Mini Digital Infrastructure Upgrades

- Provided free of charge to participating institutions, and included:
 - High-capacity WiFi access points
 - Network switches and secure routers
 - Firewalls for improved security
 - Last-mile connectivity improvements
- Result: More stable, faster campus networks.

Core focus areas of the initiative

3. Educational Technology Integration

- Institutions supported to adopt:
 - Google Workspace for Education
 - Moodle LMS
 - KENET Web Conferencing Platform
 - Institutional domain registration and web hosting
- Optional eduroam WiFi.

Core focus areas of the initiative

4. Capacity Building

- Included training workshops for lecturers and ICT staff.
- Cybersecurity, Network Monitoring, Campus Networks, etc
- In-person/online

Key Innovations to promote inclusivity



High-capacity radio links – cost-effective last-mile solutions

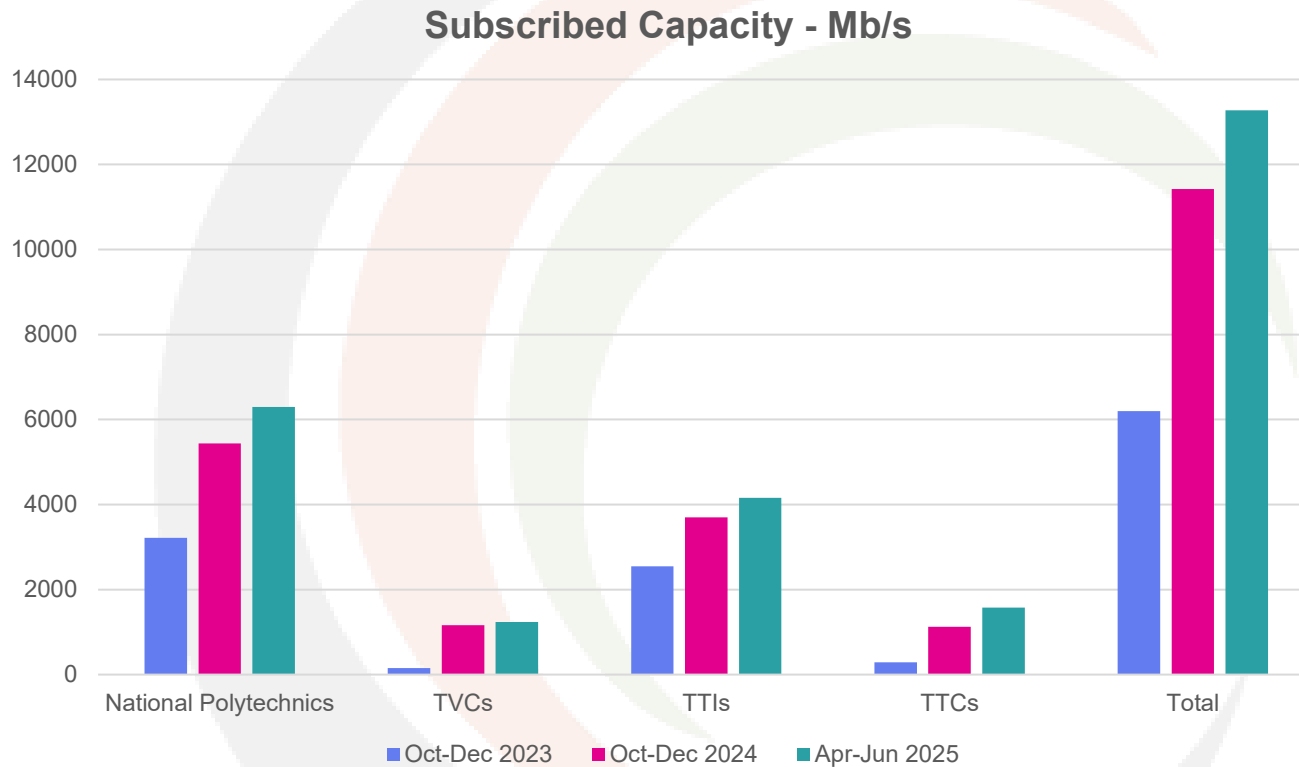


Starlink LEO satellites – for areas without terrestrial links



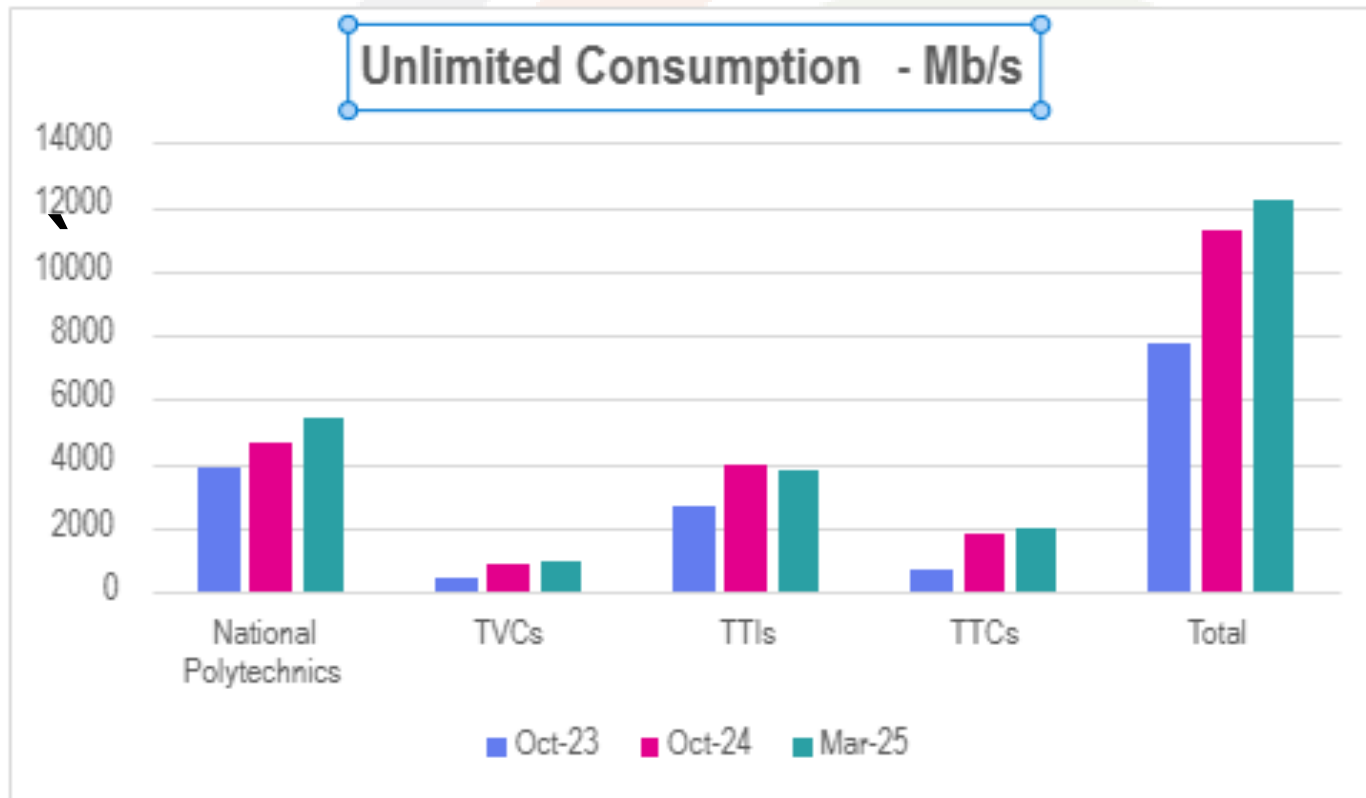
Solar inverters – for stable power in off-grid locations

Measurable Impact



- 72% subscribed bandwidth increase.
- Over 60% of the colleges upgraded their capacity.

Measurable Impact



- 58% increase in unlimited consumption capacity.

Impact

Improved access to eLearning platforms leading to enhanced digital learning and blended education.

Strengthened digital resilience of tertiary institutions.

Enhanced collaboration and research.

Encouraged digital transformation across Kenya's education sector.

Impact - Testimonials

Dear Sir/ Madam,

We would like to take this opportunity to express our sincere appreciation for the recent installation of fibre optic connectivity at our institution. This upgrade has significantly improved our internet speed and reliability, allowing us to better serve our students and staff.

The enhanced connectivity is already having a positive impact on our day-to-day operations, particularly with regards to online learning, research activities, and communication.

We look forward to continued collaboration with your team and are excited about the many benefits this new infrastructure will bring to our institution.

Thank you again for your support.

Case Study: Nyandarua National Polytechnic

Infrastructure Upgrades

- Migration from leased line to last-mile fiber connectivity.
- Implemented mini-DCI/ network upgrade
- Upgraded capacity from 100 Mb/s to 250 Mb/s

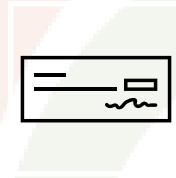
Impact:

- Over 2.5× increase in internet capacity
- Improved performance and user experience across academic and administrative systems

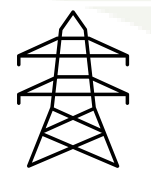
Challenges Identified



1. Limited funding for Internet subscriptions.



2. Inadequate investment in campus infrastructure.



3. High cost of last-mile connectivity.



4. Shortage of skilled ICT personnel in tertiary institutions.

Conclusion

- KENET's initiative demonstrates that affordable, innovative connectivity is achievable.
- Collaborative investment in digital infrastructure is vital.
- This model can be replicated to achieve inclusive digital education across other educational institutions in Africa to promote digital inclusivity.



*Transforming education
through ICT*

Thank You

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