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Utilizing Universal Service Funds to support girls in education – a case study of the Tribal Districts of Pakistan

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Abstract
Girls' educational exclusion in geographically remote and socioeconomically marginalized regions remains a major challenge to inclusive development. Pakistan's Tribal Districts have historically faced substantial constraints related to educational infrastructure, teacher availability, poverty, gender-based inequalities, geographical isolation, and limited access to information and communication technologies (ICTs). This study examines the potential of Pakistan's Universal Service Fund (USF) to support girls' education by addressing gendered digital exclusion in the Tribal Districts. The study adopts a qualitative policy-analysis approach based on documentary evidence from Pakistan's USF framework, official reports, international policy documents, and relevant literature on gender, digital inclusion, and ICT-enabled education. The analysis is organized around a proposed framework comprising reachability, accessibility, and affordability. The findings suggest that network expansion alone is insufficient to improve girls' educational opportunities. Meaningful digital inclusion requires reliable connectivity, affordable devices and services, safe and socially accessible learning spaces, digital skills, trained teachers and facilitators, and gender-responsive institutional arrangements. The study argues that USFs can serve as instruments not only for telecommunications expansion but also for broader social inclusion where their mandates permit investment in digital-access projects. Pakistan's existing USF initiatives, including ICT facilities for girls and women and special digital-inclusion projects, demonstrate the practical feasibility of this approach (Universal Service Fund [USF], n.d.-a, n.d.-b). The paper proposes a USF-supported girls' digital education model consisting of connected schools, Smart Village pilots, women-focused community digital learning centres, affordable user access, digital-literacy training, institutional partnerships, and independent impact evaluation. The study contributes a policy framework for linking universal-service financing with gender-responsive educational inclusion in underserved regions.

Keywords: Universal Service Fund; Girls' Education; Digital Inclusion; ICT; Tribal Districts; Pakistan; Gender Digital Divide; Education Policy

Introduction

Education is widely recognized as a fundamental driver of individual capability, gender equality, social mobility, and inclusive development. However, educational opportunities remain highly unequal across geographical and social groups. Girls living in remote, economically disadvantaged, and socially marginalized communities often experience multiple and overlapping barriers to education, including poverty, distance from educational institutions, inadequate infrastructure, shortages of qualified teachers, safety concerns, and restrictive gender norms (UNESCO, 2023; World Bank, 2018). Digital technologies have created new possibilities for expanding access to information, learning resources, teachers, and skills. Nevertheless, the benefits of digital transformation are distributed unevenly. The digital divide is shaped not merely by whether infrastructure exists but also by affordability, skills, device ownership, quality of access, and the social conditions governing technology use (International Telecommunication Union [ITU], 2023; World Bank, 2016). These inequalities may be particularly severe for women

and girls in rural and underserved regions. Pakistan's Tribal Districts provide an important context for examining the intersection between educational exclusion and digital exclusion. The region's historical geographical isolation, infrastructure challenges, socioeconomic disadvantages, and gender inequalities have contributed to persistent barriers to educational participation. Pakistan has also recognized the need to improve girls' access to education in remote and difficult-to-reach areas, including areas formerly administered as FATA (UNESCO, 2015). At the same time, digital connectivity has increasingly become a public-policy concern. Pakistan's Universal Service Fund was established to promote telecommunications access and reduce the digital divide in unserved and underserved areas. Its programmes include broadband and connectivity initiatives as well as special digital-inclusion projects (USF, n.d.-b). Importantly, the USF has already implemented an ICTs for Girls programme involving ICT facilities, equipment, internet connectivity, software, and training in girls' and women's educational institutions (USF, n.d.-a). These developments raise an important policy question: Can universal-service financing be used more systematically to address gendered digital exclusion and expand girls' educational opportunities in Pakistan's Tribal Districts? This study argues that the answer depends on moving beyond a narrow understanding of connectivity. A broadband network passing through or near a community does not necessarily provide meaningful educational access to girls. Effective intervention must address three interconnected conditions: reachability, accessibility, and affordability. Building on these dimensions, the study develops a policy framework for leveraging universal-service mechanisms to support girls' digital education.

Research Problem, Objectives and Questions

Despite the expansion of digital infrastructure and the existence of universal-service mechanisms, girls in remote and marginalized communities may remain excluded from meaningful digital participation. Network availability alone cannot overcome barriers related to affordability, social accessibility, safety, digital literacy, and institutional capacity.

The central research problem of this study is:

How can Pakistan's Universal Service Fund be strategically leveraged to address the interconnected barriers of reachability, accessibility, and affordability and thereby improve digital educational opportunities for girls in the Tribal Districts?

Research Objectives

The study aims to:

1. Examine the major ICT-related barriers affecting girls' access to education in Pakistan's Tribal Districts.
2. Analyze the potential of Pakistan's USF framework to address gendered digital exclusion.
3. Identify relevant lessons from international USF and digital-inclusion policy.
4. Develop a policy model for utilizing USF-supported digital infrastructure to improve girls' educational access.

Research Questions

RQ1: What major ICT-related barriers affect girls' access to education in Pakistan's Tribal Districts?

RQ2: How can Pakistan's USF framework address these barriers?

RQ3: What lessons can be drawn from international approaches to universal service and digital inclusion?

RQ4: What policy model could effectively link USF-supported connectivity with girls' educational inclusion?

Literature Review

Girls' Education and Educational Exclusion

Girls' educational participation is influenced by economic, institutional, geographical, and sociocultural conditions. Research on gender and education consistently demonstrates that poverty and geographical marginalization can intensify barriers to girls' schooling, particularly where schools are distant, infrastructure is weak, or families face concerns regarding safety and social acceptability (UNESCO, 2023; World Bank, 2018). Educational exclusion is particularly important in remote areas because conventional educational provision may be constrained by geography and limited institutional capacity. In such contexts, investments in schools remain essential, but digital technologies can potentially complement physical education systems by connecting learners and teachers with educational content, learning platforms, and additional sources of knowledge. Digital technologies, however, should not be assumed to automatically produce equality. Without adequate access, skills, affordability, and institutional support, digitalization can reproduce or even deepen existing inequalities (World Bank, 2016).

The Gender Digital Divide

The gender digital divide refers to unequal opportunities to access, use, and benefit from digital technologies. These inequalities may arise from differences in connectivity, affordability, device ownership, skills, safety, social norms, and participation in digital spaces (ITU, 2023). For women and girls, digital exclusion may be particularly complex because access is often mediated by household decision-making and wider social norms. Even when mobile or broadband networks are available, girls may not possess devices, have private access to technology, or enjoy equal opportunities to develop digital skills. The policy challenge, therefore, extends beyond infrastructure. ITU (2013) specifically noted that Universal Service Funds can promote the digital inclusion of women and girls through measures such as network rollout, affordability interventions, community ICT centres, equipment, connectivity, and digital-literacy programmes. This provides an important foundation for considering USFs as gender-responsive policy instruments.

ICT and Educational Inclusion

Digital technologies can support education through access to learning materials, communication with teachers, online courses, digital libraries, and skills development. However, meaningful digital learning requires more than physical connectivity. Learners need appropriate devices, digital skills, relevant content, institutional support, and reliable access. The World Bank (2016) argues that the developmental benefits of digital technologies depend substantially on complementary investments in institutions and human capabilities. Similarly, UNESCO has emphasized the importance of accessible and trusted digital learning opportunities and digital literacy for expanding educational participation (UNESCO, 2026). Consequently, policies that focus exclusively on infrastructure risk producing nominal connectivity without meaningful educational use.

Universal Service Funds and Digital Inclusion

Universal Service Funds are policy mechanisms intended to address market failure in telecommunications and ICT provision, particularly where private investment alone is unlikely to extend services to commercially unattractive areas. They can subsidize infrastructure deployment and, depending on their legal and institutional frameworks, support wider digital-inclusion interventions. ITU (2024) notes that USFs can provide an important source of funding for extending high-quality broadband infrastructure to rural and remote areas and for supporting innovative approaches to bridging the digital divide. Earlier ITU guidance similarly emphasized the importance of clear USF strategies, appropriate legal frameworks, and broader approaches to digital inclusion (ITU, 2013). Pakistan's USF provides a relevant case because its activities extend beyond conventional network expansion. Its special and digital-inclusion portfolio

includes ICTs for Girls, telecentres, telemedicine, accessibility initiatives, and other projects (USF, n.d.-b). Pakistan's ICTs for Girls programme has supported computer laboratories and ICT facilities in women-focused and girls' educational institutions, alongside internet connectivity, equipment, software, and training (USF, n.d.-a). These initiatives demonstrate that using universal-service mechanisms for gender-responsive digital inclusion is not merely theoretical; it already has an institutional precedent in Pakistan.

Conceptual Framework

This study proposes the Reachability–Accessibility–Affordability–Educational Inclusion Framework.

Reachability

Reachability refers to the physical and technical availability of digital infrastructure, including:

- mobile-network coverage;
- broadband availability;
- fibre connectivity;
- reliable institutional connections;
- electricity or alternative power systems.

The first requirement for digital inclusion is that individuals and institutions must be capable of connecting to networks. USFs can play an important role in addressing this barrier by subsidizing deployment in commercially underserved areas (ITU, 2024).

Accessibility

Accessibility refers to whether girls can meaningfully and safely use available technology. It includes:

- physically accessible digital facilities;
- socially acceptable access arrangements;
- safe learning environments;
- female teachers or facilitators;
- digital literacy;
- appropriate supervision.

This dimension recognizes that infrastructure availability does not automatically create equal access.

Affordability

Affordability refers to the economic ability of households and institutions to obtain and sustain access to:

- devices;
- internet services;
- electricity;
- equipment maintenance;
- digital learning resources.

USF interventions can potentially address affordability through shared community facilities, institutional connectivity, subsidies, and other mechanisms designed for underserved populations (ITU, 2013).

Educational Inclusion

Educational inclusion is the intended outcome produced when the three dimensions operate together:

Reachability → Infrastructure is available.

Accessibility → Girls can practically, safely, and socially use it.

Affordability → Households and institutions can sustain access.

Together, these conditions can facilitate:

Digital participation → Educational access → Digital skills → Greater socioeconomic inclusion.

The framework therefore proposes that investments addressing only reachability will produce limited educational outcomes.

Methodology

Research Design

This study adopts a qualitative policy-analysis and case-study design. The Tribal Districts of Pakistan are examined as a policy case at the intersection of education, gender, telecommunications, and digital inclusion. Qualitative policy analysis is appropriate because the study seeks to examine institutional arrangements, policy instruments, documented barriers, and potential interventions rather than estimate causal relationships through statistical modelling.

Data Sources

The study draws upon:

- official USF publications and programme information;
- ITU reports on Universal Service Funds and digital inclusion;
- UNESCO and World Bank publications concerning education and digital development;
- documentary information relating to girls' ICT access;
- international policy literature on universal service and gender inclusion.

The analysis also builds upon the policy evidence and educational context contained in the original source document from which this article was developed.

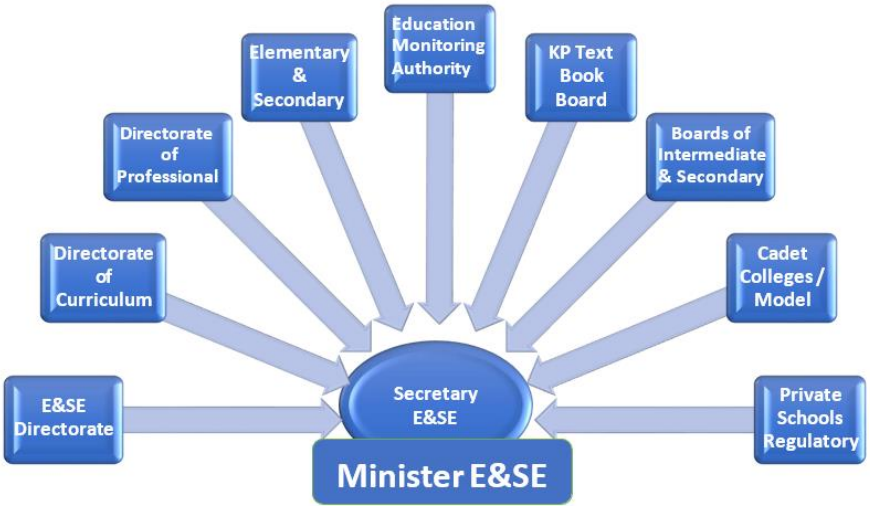
Analytical Procedure

Documents were analyzed through four broad themes:

1. **Educational exclusion and infrastructure constraints**;
2. **Gendered digital exclusion**;
3. **USF institutional capacity and policy instruments**;
4. **Potential interventions and implementation mechanisms**.

The study does not claim that the documentary evidence establishes statistical causality. Its purpose is to develop an evidence-informed policy framework.

School Education Department Tribal Districts of Pakistan: Department Hierarchy and Structure:



Comparative Analysis of No. of Existing Schools in Tribal Districts with Province of Khyber Pakhtun Khwa Pakistan:

S. No		*Merged Districts (Ex-FATA)*	*KPK*	*Total*
1	*Govt. Schools*	*6202*	*27638*	*33840*
2	*Girls Community Schools*	*00*	*2201*	*2201*
3	*ALP Centres*	*230*	*150*	*380*
4	*BECH and NCHD Centres*	*389*	*1447*	*1836*
5	*Literacy for ALL centres*	*209*	*00*	*209*
TOTAL				

Comparative Analysis of Student enrollment in Existing Schools in Tribal Districts with Province of Khyber Pakhtun Khwa Pakistan:

S. No		Merged Districts (Ex-FATA)	*Khyber PakhtunKhwa*	*Total*
1	*Govt. Schools*	*0.61M*	*4.84M*	*5.45M*
2	*Girls Community Schools*	*00*	*154000*	*154000*
3	*ALP Centres*	*6802*	*3846*	*10648*
4	*BECH and NCHD Centres*	*31578*	*55137*	*86715*
5	*Private Schools through Govt. Vouchers*	*360*	*46000*	*46360*
Total				

Comparative Analysis of Teacher Enrollment in Existing Schools in Tribal Districts with Province of Khyber Pakhtun Khwa Pakistan:

S. No		*Merged Districts (Ex-FATA)*	*Khyber PakhtunKhwa*	*Total*
1	*Govt. Schools*	*17046*	*158838*	*175884*
2	*Girls Community Schools*	*0*	*3300*	*3300*
3	*ALP Centres*	*230*	*150*	*380*
4	*BECH and NCHD Centres*	*710*	*1531*	*2241*
5	*In-process Teacher's recruitment*	*3442*	*3486*	*6928*
TOTAL				

Comparative Analysis of Student to Teacher ration in Existing Schools in Tribal Districts with Province of Khyber Pakhtun Khwa Pakistan:

Teacher to student ratio	*Primary Schools*	*Middle*	*Secondary Schools*
FATA (Merged Districts)	*39*	*8*	*16*
Khyber Pakhutun Khwa	*38*	*12*	*19*

Out of School Children (OOSC) conundrum in Tribal Districts and KPK Province:

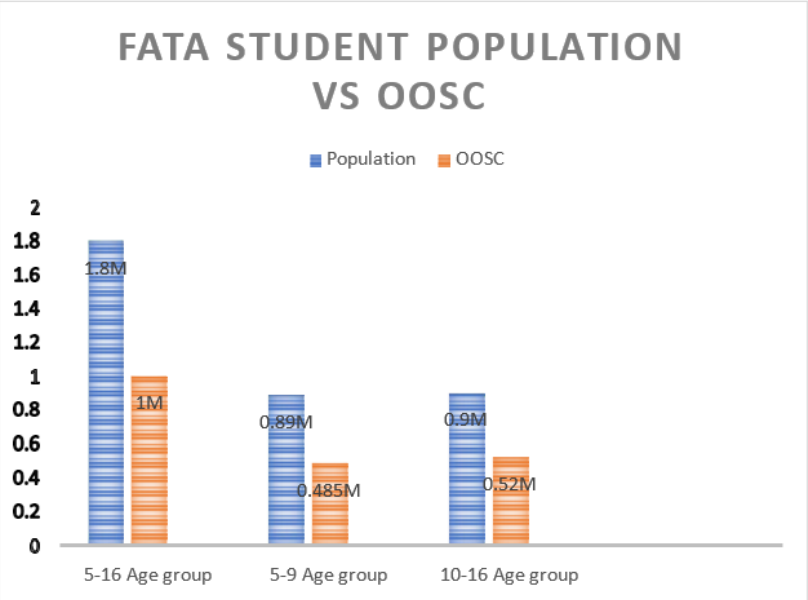
An analysis of the total population of children aged 5-16 with respect to the out of school children (OOSC) in Tribal Districts is as follows;

Source: Official Published report of Education Department Pakistan

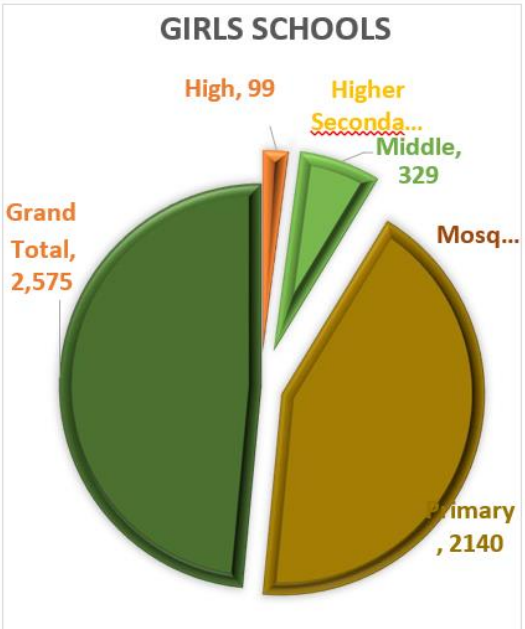
The shows an alarming situation. More than half of the population of children in a specific age

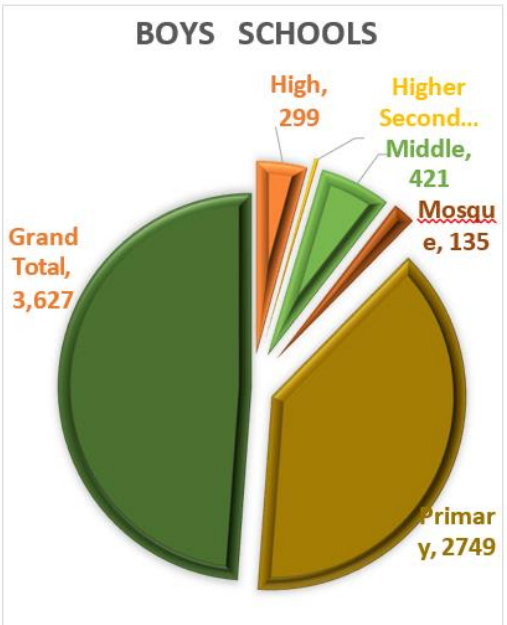
group from 5 to 16 is out of school.

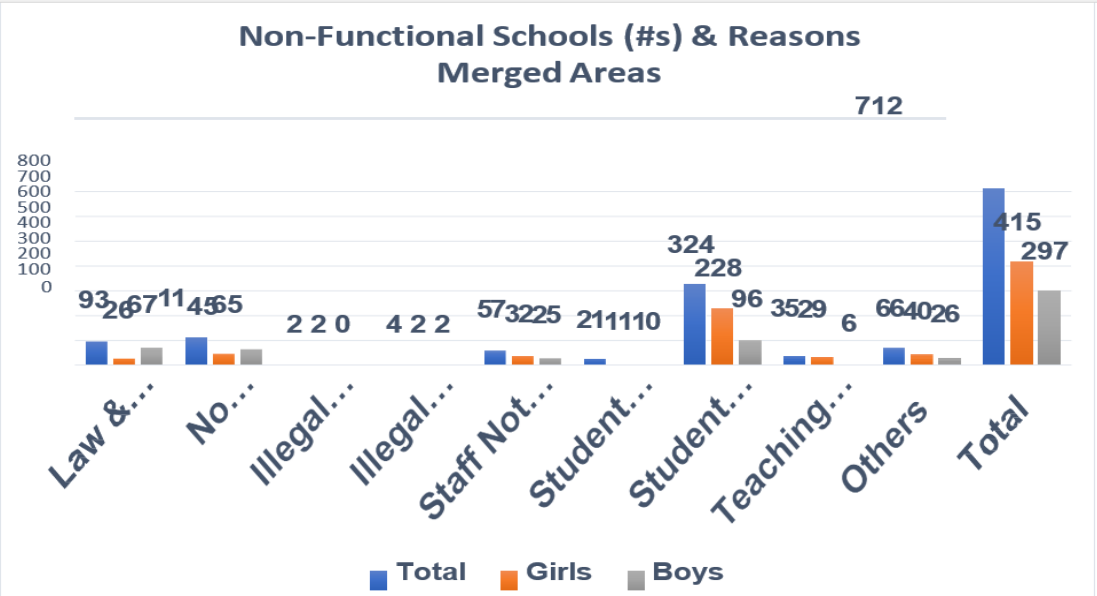
The OOSC situation in KPK province of Pakistan also paints a gloomy picture. The below data will clarify this statement;



The Province of KPK in Pakistan is not that remote and unserved with respect to ICT in comparison to FATA (Merged Districts). Considering the worse scenario in KPK it can be easily deduced that situation is far worse in FATA regarding the access to education and ICT.







Non-Functional Schools in Tribal Districts of Pakistan:
Target Activities by the Government to Increase Enrollment 2018-2022:

- Establishment of 139 Primary Schools
- Upgradation of 304 Primary, Middle & High schools
- Reconstruction of 400 (Fully & Partially) Primary, Middle & High schools
- Conversion/Establishment of 07 (2/5) Governor M/School (GHSS Jamrud, GHSS Mishti Mela Orakzai, GMS Musa Nika SWD, GMS Zam Public School SWD, GMS Khalifa Bakht Jamal SWD, GMS M. Ayaz Barwand SWD & GMS Shewa NWD)
- Establishment of 82 IT Labs
- Establishment of 350 Science Labs
- Strengthening of Cadet Colleges
- 389 BECS & NCHD Centers Support
- Solarizing 1100 schools
- Standardization of 21 Higher Secondary Schools
- Provision of Stipends to primary & secondary students
- Provision of 8,976 Missing Facilities
- Provision of Scholarships & Launching Enrollment Campaign
- Development of 500 play areas & 733 ECE Rooms in primary schools
- Introduction of Digital Literacy Program (Early Age Program)

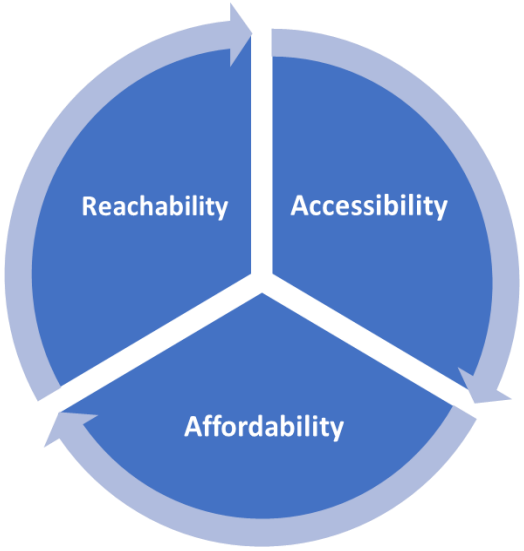
Apart from the Highlighted ones in red, none of them relate to ICTs which shows the priorities of the Government and department.

7: Online Education and way forward for improvement Tribal Districts of Pakistan:

After analysis of available data and ground situation one can easily reach to this unfortunate conclusion that even in this current age of ICT, not a single school of the Ex-Fata tribal districts of Pakistan is provided with broadband internet connection. Similarly, the same goes for the community as there is no availability of broadband internet services at home. Until a few years ago these areas were even deprived of mobile signals coverage and it is very recently a couple of years ago that cellular companies started to operate in some areas and communities started to have access to mobile networks. The mobile networks mainly provided voice services and even if in certain areas 3G signals is available than the service is very poor and unreliable. The local culture and traditions bar the girls to possess any kind of hand-held ICT device. This whole

scenario paints a very bleak picture of over-all access to ICTs and the worst affected are the girls. Some of the Girls schools may have IT Labs but they mostly have outdated and/or dysfunctional computers with no internet access while the teachers are either not available or not trained properly.

8: Where lies the problem?

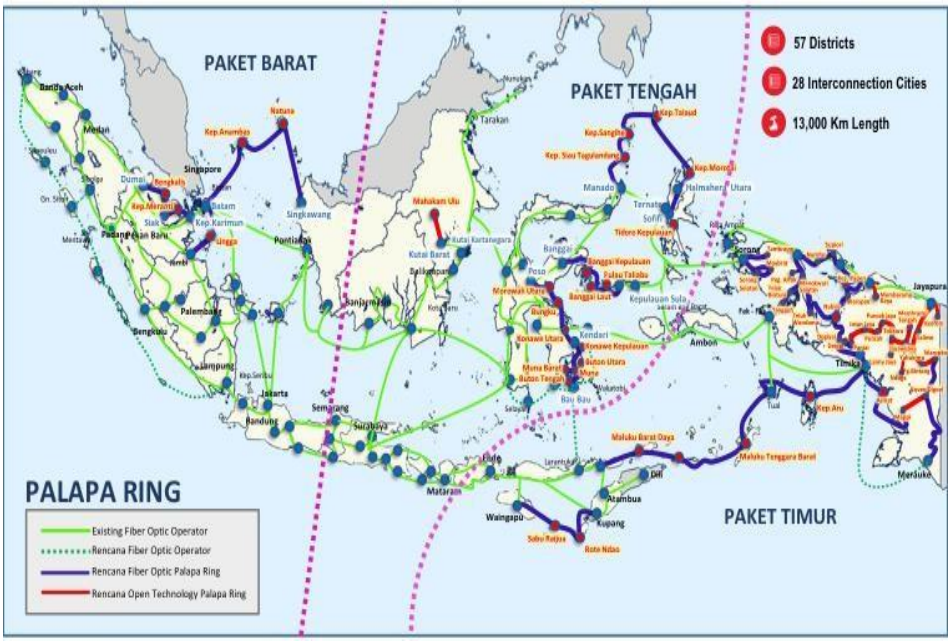


These pictures are taken in the Tribal Districts and are self-explanatory in showing the despicable situation of Girls education in this region. The issues relating to use of ICTs by the girls in this region can be divided into three main areas;

- Reachability: The mobile and broadband network has not been extended in to most of these areas.
- Accessibility: Even if there is a broadband or mobile network the Girls have no access to it due cultural or religious reasons.
- Affordability: Lastly and most importantly comes the issue of Affordability. Poverty is widespread in these areas and families can not afford use of ICTs by there children.

9: What other Countries are doing?

Indonesian Example:



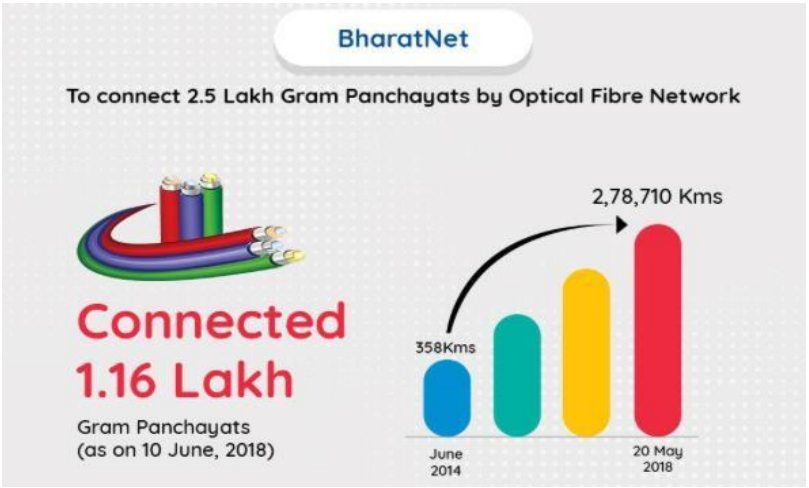
BAKTI (USF) spent USD 400M to connect remote eastern islands with 13,000 km undersea OFCs, under Palapa Ring Project

Malaysian Example:

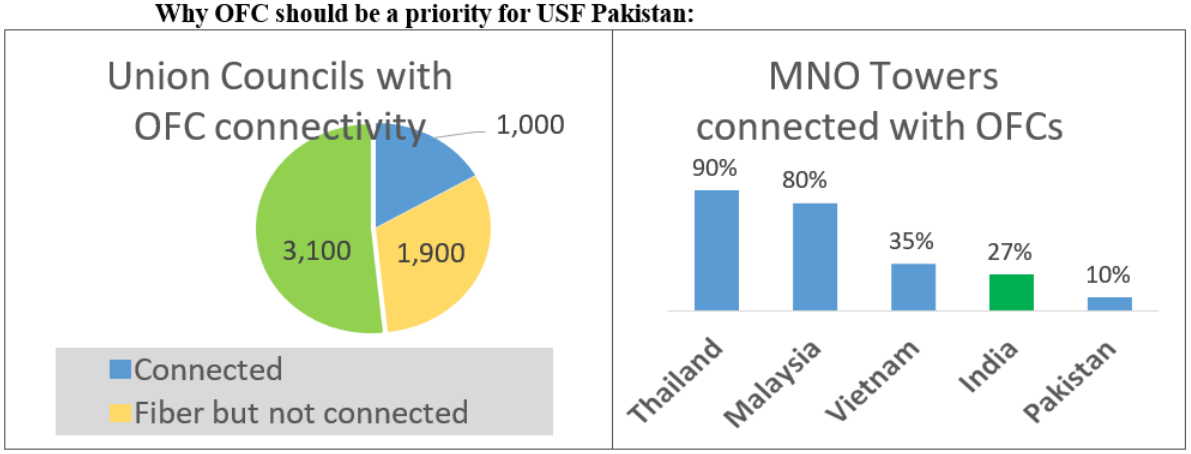
Indian Example:

USOF subsidizing OFCs to 250,000 Gram Panchayats (avg. 5 villages) promising 100 mbps for every user.

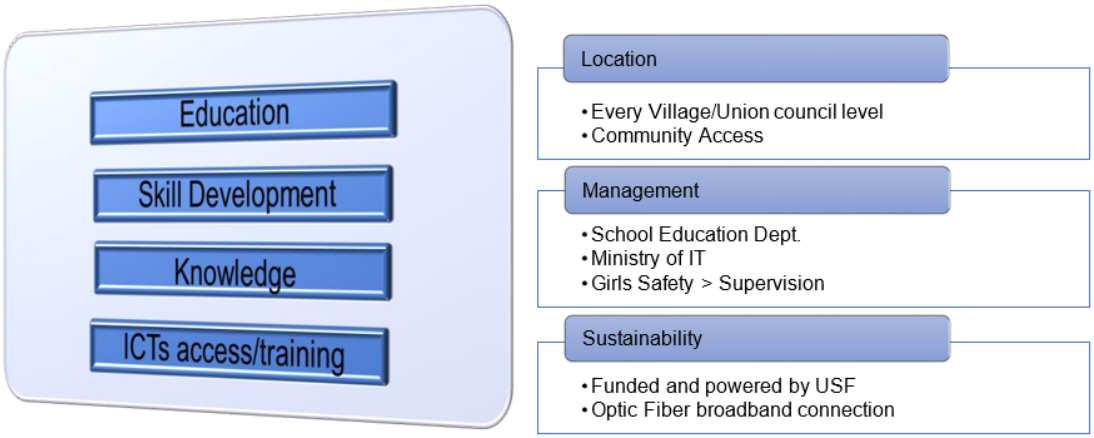
Around 90% USOF subsidy goes to BBNL + BSNL



Why OFC should be a priority for USF Pakistan:



Women Tele-Education and Skill Development centers:



Findings and Analysis

Connectivity Alone Does Not Guarantee Educational Inclusion

The first major finding is that infrastructure should not be equated with meaningful access. A community may technically fall within a network's coverage area while girls remain unable to benefit because they lack devices, affordable services, digital skills, or socially acceptable access opportunities. This finding is consistent with the broader digital-development literature, which emphasizes that infrastructure must be complemented by human and institutional capabilities (World Bank, 2016). It is also consistent with recent Pakistani USF policy discourse. In 2026, USF highlighted a community-centred connectivity model in which infrastructure was paired with a locally trusted and socially accessible digital space for women, emphasizing that infrastructure by itself may not generate inclusion (USF, 2026). For girls in the Tribal Districts, therefore, the policy objective should be meaningful access, not simply network deployment.

Pakistan's USF Has an Existing Foundation for Gender-Responsive Intervention

A second finding is that Pakistan's institutional experience already provides a foundation for gender-responsive USF interventions.

The USF's ICTs for Girls programme has supported ICT facilities in women's empowerment centres and girls' educational institutions and combines infrastructure with equipment, software, internet connectivity, and training (USF, n.d.-a).

USF's wider special/digital-inclusion portfolio also includes telecentres and other socially oriented projects (USF, n.d.-b).

This institutional experience strengthens the feasibility of a specialized intervention for girls in underserved regions. The policy proposal advanced in this article is therefore an extension and adaptation of existing digital-inclusion practice rather than an entirely new institutional concept.

Reachability Requires Institutional Connectivity

For the Tribal Districts, infrastructure policy should prioritize meaningful institutional connections.

Potential priority institutions include:

- government girls' schools;
- colleges;
- teacher-training institutions;
- libraries;
- community learning centres;
- women-focused digital centres.

Connected institutions can provide shared access to learners who cannot afford individual devices or home broadband.

USF's own programme portfolio demonstrates that public and educational institutions can serve as platforms for digital-inclusion interventions (USF, n.d.-a, n.d.-b).

Accessibility Requires Gender-Responsive Design

A central finding of this study is that gender must be integrated into project design.

A technically successful broadband project may fail from an inclusion perspective if girls cannot safely access the facilities. Accordingly, projects should include:

- community consultation;
- safe and supervised facilities;
- female facilitators where possible;
- appropriate operating hours;
- digital-safety training;
- safeguarding mechanisms.

This approach is consistent with ITU's recommendation that USF managers conduct gender analysis when designing projects intended to support women and girls (ITU, 2013).

Affordability Requires Shared and Sustainable Access Models

Individual household ownership cannot be assumed in low-income communities.

A more appropriate initial model may combine:

- school-based access;
- shared computers or tablets;
- community learning centres;
- subsidized institutional connectivity;
- maintenance arrangements;
- digital-literacy programmes.

This approach addresses the risk that infrastructure investments may remain underutilized because potential beneficiaries cannot afford devices or recurring connectivity costs.

International Policy Lessons

International evidence suggests that USFs can evolve beyond narrowly defined telecommunications subsidies. ITU (2024) argues that USFs can help bridge the digital divide through infrastructure funding and innovative technologies appropriate for rural and remote communities.

ITU (2013) further identifies a range of gender-responsive interventions, including:

- network expansion;
- affordability support;
- community ICT centres;
- equipment;

- connectivity;
- digital-literacy training;
- training of trainers.

These lessons suggest that Pakistan should not conceptualize USF investment as a single intervention. Effective digital inclusion may require a portfolio approach combining infrastructure with complementary measures.

The appropriate lesson for Pakistan is not to copy another country's model directly. Rather, international experience should guide locally adapted interventions that respond to the specific geographical, institutional, and social conditions of the Tribal Districts.

Proposed USF-Supported Girls' Digital Education Model

The principal policy contribution of this article is the proposed **USF-Supported Girls' Digital Education Model**.

Pillar 1: Smart Village Education Pilots

Selected underserved communities should be chosen for pilot interventions integrating:

- high-speed broadband;
- connected girls' schools;
- community digital-learning facilities;
- user equipment;
- reliable power solutions;
- digital-skills training.

Pilots would enable policymakers to test effectiveness before large-scale expansion.

Pillar 2: Connected Girls' Schools

Priority should be given to educational institutions serving geographically isolated communities. Each participating institution should receive:

- reliable connectivity;
- appropriate devices;
- technical support;
- teacher training;
- relevant digital content.

Performance should be measured not only by whether infrastructure is installed but also by actual educational use.

Pillar 3: Women and Girls' Community Digital Learning Centres

Where household-level access is constrained, community facilities can provide shared and supervised access.

These centres could offer:

- digital literacy;
- supplementary educational programmes;
- online learning;
- career guidance;
- ICT skills;
- employability and entrepreneurship training.

Pakistan's existing experience with ICT facilities in women-focused centres provides a useful institutional precedent for such an approach (USF, n.d.-a).

Pillar 4: Affordable User Access

Projects should consider:

- shared devices;
- subsidized institutional services;
- maintenance support;
- low-cost connectivity arrangements;
- transparent long-term sustainability plans.

Pillar 5: Gender-Responsive Implementation

Every project should incorporate:

- gender analysis before implementation;
- community engagement;
- female facilitation where feasible;
- safety and safeguarding measures;
- digital-safety awareness;
- gender-disaggregated monitoring.

Pillar 6: Institutional Partnership

A coordinated framework should involve:

- Universal Service Fund;
- Ministry of IT and Telecommunication;
- Government of Khyber Pakhtunkhwa;
- School Education Department;
- district administrations;
- telecommunications operators;
- local communities;
- development and educational partners.

Discussion

The findings support the argument that universal-service policy can contribute to girls' education when it is conceptualized as an instrument of meaningful digital inclusion rather than simply infrastructure expansion. The proposed Reachability–Accessibility–Affordability framework makes an important distinction between being connected and being able to benefit from connectivity. This distinction is particularly relevant for girls in marginalized communities. A fibre cable, mobile tower, or broadband connection can address reachability. However, educational inclusion requires additional conditions. Girls must be able to access the technology safely, possess the necessary skills, have appropriate devices or shared facilities, and use digital resources within supportive educational environments. Pakistan's existing USF initiatives demonstrate that the institution has already experimented with a broader approach. The ICTs for Girls programme and other special digital-inclusion projects provide evidence that universal-service mechanisms can support equipment, training, institutional facilities, and socially targeted interventions (USF, n.d.-a, n.d.-b). Recent USF activity also indicates continued policy attention to inclusive connectivity. USF's 2023–24 annual reporting documented continuing broadband expansion in underserved areas, while its publications and programmes include more recent initiatives and assessments related to digital inclusion (USF, 2024, 2025). The proposed model therefore has both conceptual and practical relevance. Conceptually, it extends the discussion of USFs from network deployment toward gender-responsive educational inclusion. Practically, it builds upon policy instruments and programmes that already exist within Pakistan's USF ecosystem.

Policy Recommendations

Based on the analysis, the following recommendations are proposed:

1. Establish a dedicated USF pilot for girls' digital education

Selected Tribal District communities should be targeted through a clearly defined Special/Digital Inclusion Project.

2. Prioritize girls' educational institutions for meaningful broadband connectivity

Success should be measured through actual educational use rather than the number of nominal connections.

3. Establish women- and girls-focused community digital learning centres

Such centres can address household affordability and social-access barriers.

4. Apply the Reachability–Accessibility–Affordability framework to every project
Project design should demonstrate how all three barriers will be addressed.
5. Conduct gender analysis before project approval
Needs assessments should examine device ownership, social barriers, safety, mobility, affordability, and digital skills.
6. Invest in teachers and facilitators
Infrastructure without trained users is unlikely to generate sustained educational benefits.
7. Ensure affordability and sustainability
Projects should include realistic arrangements for equipment maintenance, connectivity costs, and technical support.
8. Develop partnerships with provincial education institutions
USF investment should complement—not replace—public investment in schools and education.
9. Introduce gender-disaggregated monitoring indicators
Data should distinguish outcomes for girls and boys wherever possible.
10. Commission independent impact evaluations
Pilot projects should be independently evaluated before expansion.

Conclusion

This study examined the potential of Universal Service Funds to support girls' digital education in Pakistan's Tribal Districts. The analysis demonstrates that the challenge of digital exclusion cannot be reduced to the absence of telecommunications infrastructure. Educational inclusion depends upon the interconnected conditions of reachability, accessibility, and affordability. Pakistan's USF provides a potentially important institutional mechanism for addressing these challenges. Its existing ICTs for Girls and other digital-inclusion initiatives demonstrate that universal-service mechanisms can extend beyond conventional infrastructure deployment to support facilities, equipment, training, and targeted inclusion projects (USF, n.d.-a, n.d.-b). The article's principal contribution is the proposed Reachability–Accessibility–Affordability–Educational Inclusion Framework and the associated USF-Supported Girls' Digital Education Model. The proposed model combines infrastructure with connected schools, community learning centres, affordable access, digital literacy, gender-responsive safeguards, institutional partnerships, and independent evaluation. Digital connectivity should not replace investment in physical schools, teachers, and educational infrastructure. Rather, it should operate as complementary public infrastructure capable of expanding learning opportunities where conventional educational provision is constrained. A carefully designed USF pilot in the Tribal Districts could therefore test an important proposition: whether universal-service financing can be used not only to connect underserved communities but also to convert connectivity into meaningful educational and developmental opportunities for girls.

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