

Digital Malawi Acceleration Project

Commercial Transaction Manual

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Acknowledgements

The Commercial Transaction Manual (CTM) has been prepared as part of the Digital Malawi Acceleration Project (DMAP), an initiative by the Government of Malawi financed by the World Bank. The project is implemented by the Public Private Partnership Commission (PPPC) under the guidance of the Ministry of Information and Digitalization (MoID). The CTM has been prepared by Ernst & Young (EY) as part of the consultancy assignment supporting the development of DMAP's commercial, procurement, and transaction frameworks.

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Collectively, the insights, sector experience, and constructive feedback from all stakeholders have played a pivotal role in shaping a comprehensive, context-appropriate, and operationally robust CTM that will meaningfully support the successful implementation of DMAP and Malawi's broader digital transformation agenda.

Table of Contents

General Definitions	1
Acronyms & Abbreviations	4
Disclaimer.....	9
Executive Summary.....	2
1. Introduction	7
1.1. Purpose and Scope of the Manual	7
1.2. Relevance to DMAP	7
1.3. Objectives of the Commercial Transaction Manual	9
1.4. Incorporation of Findings from Previous Deliverables	Error! Bookmark not defined.
2. Overview of Legal and Regulatory Guidelines in Malawian Context	11
2.1. Public Private Partnership Guidelines	11
2.2. Legal and Policy Framework	Error! Bookmark not defined.
2.3. Legal Framework of Procurement Models in Malawi	12
2.4. World Bank Procurement Regulations	13
2.5. Overview of Non-Procurement Guideline Documents.....	16
2.6. Legal framework of ICT sector in Malawi	18
3. Learnings from Previous World Bank Funded Projects in Malawi	22
3.1. Challenges in Attracting Private Sector Involvement and Potential Mitigation Measures	23
3.2. Attracting New Internet Users in Malawi.....	25
3.3. Mechanisms for Transparent Price Discovery	27
3.4. Transparent Bid Parameters.....	28
3.5. Electronic Auction Platform (EAP)	29
3.6. Publication of Auction Results	29
3.7. Ensuring Equity and Market Competitiveness	30
3.8. Anti-Concentration Rules.....	30
3.9. Collusion Prevention.....	31
3.10. Non-Discriminatory Access and Open Access Obligations	31
4. Technology-Neutral Approach for Fair Procurement	32
4.1. Neutral Performance Specifications.....	32
4.2. Alignment with Regulatory Frameworks	32
5. Approach and Maximum Allowable Subsidy Framework	33
5.1. Current State Assessment	33

5.2. Low Level Design of Network	34
5.3. Maximum Allowable Subsidy Frameworks.....	36
5.4. Budget Allocation for Maximum Allowable Subsidy	43
5.5. Lotting of Sites	51
6. Tender Strategy and Sequencing	52
6.1. Overview of Tender Model.....	52
6.2. Early Market Engagement	54
6.3. Expression of Interest (EOI)	56
6.4. Understanding Framework Agreement.....	57
6.5. Roles and Responsibilities of Government Departments and Institutions in the Tendering Process.....	83
6.6. Summary of Procurement of the Model	88
6.7. E-Government Procurement (e-GP) using Electronic Auction Platform (EAP).....	91
6.8. Guidelines for Procurement of Selections.....	96
7. Agreement Provisions	105
7.1. Submission of Performance Bank Guarantee (PBG).....	105
7.2. Advance Mobilisation Capital	105
7.3. Indefeasible Right of Use (IRU)	106
7.4. Internet Protocol Transit	107
8. Annexure – Commercial Transaction Manual	109

Table of Figures:

Figure 1: Digital Malawi Acceleration Project.....	8
Figure 2: Core Procurement Principles	15
Figure 3: Illustrative Network Diagram.....	35
Figure 4: Illustrative Least Cost Selection	66
Figure 5: Difference between Single & Multi supplier FA.....	68
Figure 6: Illustrative Process Flow of Framework Agreement.....	90
Figure 7: Advertisement of DMAP Project.....	111
Figure 8: Industry Consultation Meeting	112
Figure 9: Access Gap Framework.....	113
Figure 10: Scatter Plot of Traditional Authorities based on SEI & FEI	117
Figure 11: Indicative Net Cash Flow across Project Tenure for Schools.....	127
Figure 12: Mapped tower sites in Malawi	132

List of Tables:

Table 1: Quadrant Based Adoption Rate.....	41
Table 2: Budget Allocation Summary	43
Table 3: MAS value for 91 Towers.....	46
Table 4: MAS value for 2000 Schools	47
Table 5: MAS Value for 500 Government Sites.....	48
Table 6: IP Transit Simulation.....	49
Table 7: Example explaining qualification based on Financial Capacity.....	61
Table 8: Format for Commercial Summary	63
Table 9: Format for lot subsidy.....	64
Table 10: Declaration for Commercial Proposal.....	64
Table 11: Description table for Illustrative Reverse Auction	76
Table 12: Illustration sample lots.....	76
Table 13: Illustrative Round 1	78
Table 14: Illustrative Round 2	78
Table 15: Illustrative Round 3	79
Table 16: Illustrative Round 4	79
Table 17: Illustrative Round 5	79
Table 18: Illustrative Round 6	79
Table 19: Illustrative Final Auction Result	79
Table 20: Roles and Responsibilities of Government Departments and Institutions in the Tendering Process.....	87
Table 21: Indicative Pre-Qualification for Mobile Tower Deployment (USF Component)	97

Table 22: Implementation Plan for Mobile Tower Deployment	98
Table 23: Tentative Payment Schedule for Mobile Towers.....	98
Table 24: Indicative Pre-Qualification for Government Sites	100
Table 25: Tentative Implementation Schedule for Government Sites	101
Table 26: Payment Schedule for Government Sites.....	102
Table 27: Tentative Pre-qualification for Schools	103
Table 28: IP Transit implementation schedule for schools	104
Table 42: Social Environmental Index (SEI) Indicators & Weightage Assumption	115
Table 43: Financial Economic Index (FEI) Indicators & Weightage Assumption	115
Table 44: Classification of Traditional Authorities based on SEI & FEI	116
Table 45: Cost Assumption of Capital Expenditure	120
Table 46: Cost assumption for yearly operational expenditure	121
Table 47: Assumption for Maximum Penetration for Household Broadband in each quadrant.....	122
Table 48: Capital Expenditure without IP Transit	125
Table 49: Operational Expenditure without IP Transit	126
Table 50: Indicative Revenue Projection for School NPV	126
Table 51: Negative NPV TAs without IP Transit	128
Table 52: Cost Assumption for Government sites	128
Table 53: Capital Expenditure for Government sites	128
Table 54: Operations Expenditure for GI	129
Table 55: Operations cost.....	129
Table 56: Year on Year Connection Assumption	130
Table 57: Bandwidth Calculation for Educational & Government sites	132
Table 58: Tower- 19 Lots.....	133
Table 59: Detailed Lot for 91 Tower	138
Table 29: Types of Broad Market Engagement	140
Table 30: Types of Targeted Market Engagement.....	141
Table 35: Indicative Pre-Qualification Table	142
Table 36: Indicative Technical Compliance Sheet for Government Sites	144
Table 38: Indicative Technical Compliance Sheet for Schools	145
Table 31: EOI Data Sheet	148
Table 32: EOI Reference Details.....	153
Table 33: Respondent Information Table	154
Table 34: Consortium Information Table	154
Table 40: Indicative SLA for Service Restoration	158
Table 41: Indicative SLA for Service Availability	161
Table 60: Comparison of SRA, BAFO and MRRA.....	162
Table 61: International Best Practices of Reverse Auction	164

General Definitions

Term	Definition
Anchor Tenant	A public sector entity (e.g., Government of Malawi) that commits to purchasing connectivity services, providing a guaranteed minimum revenue stream to support commercial viability.
Applicable Law	All laws, regulations, rules, and guidelines of the Government of Malawi and IFIs governing procurement, PPPs, digital infrastructure, and data protection.
Backhaul	High-capacity transmission infrastructure (fiber, microwave, satellite) connecting local access networks to the core network or PoP.
Bid / Proposal	A formal offer submitted by a qualified bidder in response to a procurement document (EoI, RFB, RFP, or E-auction).
Bidder	Any entity, consortium, or joint venture that submits a bid under the CTM procurement processes.
Build-Own-Operate (BOO)	A model in which the private partner finances, constructs, operates, and maintains infrastructure and retains ownership throughout the contract period.
Commercial Viability	The ability of a solution or site to generate long-term revenue sufficient to cover CAPEX and OPEX without ongoing subsidies.
Connectivity Services	Internet, broadband, mobile, or related services provided to schools, government sites, towers, or households.
Contracting Authority (CA)	A government ministry or agency responsible for initiating and managing procurement or PPP processes, under PPPC oversight.
Data Protection Requirements	Obligations for secure processing of personal data as defined under the Malawi Data Protection Act (2024) and related regulations.
Digital Malawi Acceleration Project (DMAP)	A World Bank financed project, which seeks to increase access to, and inclusive use of, the internet and improve Malawi’s government capacity to deliver digitally enabled services.

Term	Definition
Electronic Auction Platform (EAP)	A secure online platform used to conduct real-time reverse auctions with anonymity, automated ranking, and audit trails.
Financial-Economic Index (FEI)	The FEI reflects economic vibrancy by integrating population density, school availability, and enterprise presence. It serves as a proxy for demand potential and economic activity, helping assess financial viability and cost implications for service delivery.
Framework Agreement (FA)	A long-term procurement arrangement established through Primary Procurement, enabling further Call-Offs under Secondary Procurement.
Implementation Period	The period from contract signing until completion of infrastructure deployment, excluding operational phases.
Indefeasible Right of Use (IRU)	A long-term contractual right granting exclusive use of bandwidth capacity or fiber infrastructure.
Least-Cost Selection (L1)	The evaluation rule under which the bidder offering the lowest subsidy among compliant bids is selected.
Maximum Allowable Subsidy (MAS)	The upper subsidy limit established per site through Score-Based or NPV-Based modelling; no bid above this limit is accepted.
Net Present Value (NPV)	The discounted cash-flow value used to determine financial viability and subsidy requirements for each site.
Non-Responsive Bid	A bid that fails to meet mandatory technical, commercial, legal, or administrative criteria as defined in the procurement documents.
Open Access	A principle requiring non-discriminatory, technology-neutral access to shared infrastructure built using public funds.
Operational Expenditure (OPEX)	Recurring annual costs for operating and maintaining network infrastructure, including power, bandwidth, field operations, and repairs.
Performance Bank Guarantee (PBG)	A financial instrument provided by the successful bidder to ensure fulfillment of contractual obligations.

Term	Definition
Point of Presence (PoP)	A network site equipped for interconnection and traffic aggregation to deliver broadband services, typically on a fiber network.
Primary Procurement	The process of selecting vendors and establishing Framework Agreements prior to site-level secondary procurements.
Private Partner / Vendor	The private entity responsible for designing, constructing, operating, and maintaining connectivity infrastructure under the BOO model.
Procurement Documents	All documents issued by PPP/CA — including EoIs, RFBs, FAs, SLAs, and Call-Off Agreements.
Reverse Auction	A competitive bidding process in which bidders reduce subsidy amounts in real time (multi-round) or via sealed bids (single-round).
Secondary Procurement / Call-Off	Procurement conducted under the Framework Agreement to award specific lots based on lowest subsidy requirements.
Service Level Agreement (SLA)	A binding document specifying performance standards such as uptime, latency, availability, and repair response times.
Site	Any school, government office, telecom tower, or location designated for connectivity under DMAP.
Social-Environmental Index (SEI)	SEI captures the underlying conditions that enable digital adoption, combining literacy levels, electricity access, computer penetration, and income sufficiency as proxies for overall social readiness. It reflects the enabling environment that influences a location's ability to effectively utilize ICT infrastructure.
Subsidy	Financial support provided to bridge the viability gap of sites with negative NPV after anchor tenant revenue.
Traditional Authority (TA)	A Malawi administrative area used for geographic clustering and MAS modelling.
Viability Gap Funding (VGF)	One-time capital subsidy required to make sites financially viable, awarded only to sites with negative NPV.

Acronyms & Abbreviations

Acronym	Full Form
ALBs	Abnormally Low Bids
ARPU	Average Revenue per User
BAFO	Best and Final Offer
BG	Bank Guarantee
BOO	Build-Own-Operate
BOOT	Build-Own-Operate-Transfer
BOT	Build-Operate-Transfer
Cas	Contracting Authorities
Capex	Capital Expenditure
CDD	Community-Driven Development
CGS	Central Government Stores
COMESA	Common Market for Eastern and Southern Africa
CP3P	Certified PPP Professional
CTB	Central Tender Board
CTM	Commercial Transaction Manual
DE4A	Digital Economy for Africa
DFI	Development Finance Institution
DIGMAP	Digital Malawi Project
DMAP	Digital Malawi Acceleration Project
DNA	Digital Nepal Acceleration
EAP	Electronic Auction Platform
EASSy	Eastern Africa Submarine System
E-Auction	Electronic Auction
E-GP	E-Government Procurement
EOI	Expression of Interest
EPEC	European PPP Expertise Centre

Acronym	Full Form
ERP	Enterprise Resource Planning
ESCAP	Economic & Social Commission for Asia and the Pacific
ESCOM	Electricity Supply Corporation of Malawi
ESMP	Environmental & Social Management Plan
ETCSA	Electronic Transactions and Cyber Security Act
EXIM	Export-Import Bank
FA	Framework Agreement
FEI	Financial-Economic Index
FTTH	Fiber to the Home
FTTP	Fiber to the Premises
FWA	Fixed Wireless Access
GEO	Geostationary Earth Orbit
GLAN	Government Local Area Network
GoM	Government of Malawi
GovNet	Government Network
GPON	Gigabit Passive Optical Network
GTV	Gross Total Value
HIV	Human Immunodeficiency Virus
ICB	International Competitive Bidding
ICT	Information & Communication Technology
IDA	International Development Association
IoT	Internet of Things
IP	Internet Protocol
IP Transit	Internet Protocol Transit / Bandwidth
IPA	Infrastructure and Projects Authority
IPF	Investment Project Financing
IRR	Internal Rate of Return

Acronym	Full Form
IRU	Indefeasible Right of Use
ISM	Industrial, Scientific and Medical
ISP	Internet Service Provider
ISPs	Internet Service Providers
ITT	Invitation to Tender
ITU	International Telecommunication Union
JV	Joint Venture
KT	Korea Telecom
KTRN	KT Rwanda Networks
L1	Least-Cost Selection Method
LAN	Local Area Network
LCC	Life-Cycle Costing
LCS	Least-Cost Selection
LEO	Low Earth Orbit
LLDC	Landlocked Developing Country
LTE	Long Term Evolution
MAB	Most Advantageous Bidder
MACRA	Malawi Communications Regulatory Authority
MAS	Maximum Allowable Subsidy
Mbps	Megabits per second
MCDA	Multiple Criteria Decision Analysis
MCFTC	Malawi Competition and Fair-Trading Commission
MDPA	Malawi Data Protection Act
MGDS II	Malawi Growth & Development Strategy II
MPLS	Multiprotocol Label Switching
MRA	Malawi Revenue Authority
MRRA	Multi-Round Reverse Auction

Acronym	Full Form
MRRCA	Multi-Round Reverse Clock Auction
MTN	Mobile Telephone Networks
NGOs	Non-Governmental Organizations
NITA	National Information Technology Authority
NITA-U	National IT Authority – Uganda
NPV	Net Present Value
O&M	Operations & Maintenance
OAN	Open Access Network
ODPP	Office of the Director of Public Procurement
OEM	Original Equipment Manufacturer
OPEX	Operational Expenditure
OSH	Occupational Safety and Health
OTT	Over-the-Top Services
PBC	Performance-Based Contract
PBG	Performance Bank Guarantee
PDO	Project Development Objective
PoP	Point of Presence
PPDA	Public Procurement & Disposal of Assets
PPL	Public Procurement Laws
PPP	Public-Private Partnership
PPPC	Public Private Partnership Commission
PPSD	Project Procurement Strategy for Development
PQ	Pre-Qualification
QCBS	Quality and Cost-Based Selection
QoS	Quality of Service
RCIP	Regional Communications Infrastructure Program
RDOF	Rural Digital Opportunity Fund

Acronym	Full Form
RF	Reduction Factor
RFB	Request for Bids
RFP	Request for Proposals
RFQ	Request for Quotation
ROW	Right of Way
S-Curve	Logistic Technology Adoption Curve
SEA/SH	Sexual Exploitation, Abuse, and Sexual Harassment
SEACOM	Southeast Africa Communications Cable
SEI	Social-Environmental Index
SLA	Service Level Agreement
SPP	Sustainable Public Procurement
SRA	Single Round Auction
SWN	Single Wholesale Network
TA	Traditional Authority
TOR	Terms of Reference
TQ	Technical Qualification
TVET	Technical and Vocational Education & Training
UAT	User Acceptance Testing
UDAP	Uganda Digital Acceleration Project
UPS	Uninterruptible Power Supply
USD	United States Dollar
USF	Universal Service Fund
VfM	Value for Money
VLP	Virtual Landing Point
WB	World Bank

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Disclaimer

This document has been developed to support the planning and implementation of the Digital Malawi Acceleration Program (DMAP) public connectivity network infrastructure. It presents analyses, recommendations, and insights intended to guide policy formulation, infrastructure planning, and stakeholder coordination under the program. The report has been prepared in collaboration with the Government of Malawi and drawing upon verified primary and secondary information sources relevant to the project. It is intended for public dissemination to inform stakeholders, partners, and interested entities on the strategic direction and implementation framework of DMAP public connectivity network infrastructure.

Reproduction or distribution of this document, in whole or in part, should acknowledge the Government of Malawi and the World Bank as the primary sites responsible for the program's design and oversight.

The image features a minimalist abstract design. A large yellow rectangle is positioned in the upper left, containing the text 'Executive summary' in a bold, black, sans-serif font. Below this rectangle, a grey triangle points upwards towards the bottom left corner. To the right of the yellow rectangle, a grey vertical bar extends from the top to the bottom of the frame. A yellow triangle is situated between the grey vertical bar and the bottom right corner, partially overlapping the grey triangle. The overall composition is clean and modern, using a limited color palette of yellow, grey, and black.

Executive summary

Executive Summary

The Commercial Transaction Manual (CTM) is the cornerstone of the Digital Malawi Acceleration Project (DMAP), a transformative initiative by the Government of Malawi, supported by the World Bank, to bridge the digital divide and drive inclusive digital transformation. The CTM will provide a robust, transparent, and actionable framework for the procurement, bidding, contracting, and management of investments in digital infrastructure and services, targeting the expansion of affordable broadband connectivity to close to 100 telecom towers, 500 government sites, and 2,000 schools, with a special focus on rural and underserved communities.

This CTM is designed to standardize and professionalize all major connectivity transactions under DMAP, serving as a reference for the Public Private Partnership Commission (PPPC) and all stakeholders. It will ensure that procurement, bidding, and contract management processes are conducted with integrity, consistency, and in full compliance with both national regulations and international best practices. More importantly, the manual will guarantee that public funds used in connectivity transactions are managed through transparent, evidence based, and value for money methodologies.

The manual is closely aligned with the World Bank Procurement Regulations, the Malawi Public Private Partnership Act, and the Public Procurement and Disposal of Public Assets Act 2025 which influences key areas of procurement including the establishment of the IPDC, the nomination of evaluators, and the overall governance framework. It will also reflect leading global standards to ensure that every transaction achieves value for money, encourages competitive outcomes, and promotes long-term sustainability

By defining clear public-private partnership models, CTM aims to attract private investment while safeguarding public interests and long-term sustainability. It introduces mechanisms to promote market competitiveness, such as transparent price discovery, technology neutrality, and safeguards against anti-competitive practices. Further, the manual also emphasizes optimizing resource utilization, aligning with regulatory frameworks, and supporting Malawi's broader digital development goals.

A significant feature of the CTM is its integration of lessons learned from previous submitted deliverables, including the Open Access Network (OAN) assessment and Commercial Models Report. The manual adopts a commercial model centred on the Anchor Tenant & Viability Gap Funding approach, where the government acts as a guaranteed customer and provides targeted subsidies to incentivize private investment in less commercially attractive areas. The CTM is firmly grounded in Malawi's legal and regulatory landscape, detailing the relevant PPP frameworks, procurement

regulations, and sector-specific laws such as the Communications Act 2016 and Data Protection Act 2024. It ensures compliance with World Bank procurement principles such as value for money, economy, integrity, fit-for-purpose, efficiency, transparency, and fairness and aligns with regional competition regulations and domestic consumer protection laws.

Furthermore, the CTM will convert these commercial methodologies into practical procurement and contracting frameworks by utilizing technology-neutral, performance-based specifications. This approach enables bidders to propose fiber, wireless, satellite or any other solutions tailored to local terrain, cost considerations and ensure that selected technology delivers superior efficiency with long-term value.

A transparent and competitive tendering framework will be applied. Wherever feasible, an Electronic Auction Platform (EAP) shall be adopted as the primary procurement mechanism to ensure efficiency, fairness, and price discovery.

The CTM employs a reverse auction mechanism to ensure transparent identification of the minimum required subsidy, guided by established Maximum Allowable Subsidy (MAS) thresholds. Additionally, procurement activities are organised through appropriate lotting strategies and sequencing of each process. This approach is particularly important as separate procurement exercises will be conducted for telecom towers, government site connectivity, and schools.

Strong governance and safeguards are integral to CTM. Therefore, subject to prevailing circumstances of each procurement process, the deployment of an Electronic Auction Platform (EAP) is recommended to ensure transparency, fairness, and auditability in the bidding process. The EAP automates real-time bid ranking, maintains bidder anonymity, promotes price discovery and generates tamper-proof audit trails, minimizing human discretion and reducing the risk of collusion or manipulation. Further, the platform will also support the publication of auction results, reinforce market confidence and demonstrate the fairness of the process to all stakeholders. Similarly, additional safeguards including anti-collusion provisions and performance guarantees can ensure accountability and integrity throughout the transaction lifecycle.

The CTM utilises a Score-based Maximum Allowable Subsidy (MAS) methodology to establish a transparent, site-specific ceiling for subsidy allocations relating to tower installations, establishing connectivity to government sites and schools. Under this framework, each tower is evaluated using a structured composite scoring model (ranging from 0 to 100), which reflects deployment complexity and developmental priority parameters, such as terrain characteristics, power infrastructure, economic

activity, population distribution, and backhaul accessibility. The resulting score is directly converted into a site-level subsidy cap, which is communicated to bidders during the procurement process. This mechanism ensures that subsidy requests align with genuine requirements, mitigates the risk of excessive bids, and incorporates value-for-money principles from the outset of the transaction.

As detailed site conditions for schools and government sites will be confirmed later through the field surveys, the CTM has adopted an NPV-based MAS framework at this stage to determine the maximum allowable subsidy, specifically for government sites and schools. The financial modelling approach begins with a Market Access Gap Framework, using Social-Environmental and Financial-Economic indices to prioritize sites for connectivity. Sites are mapped into quadrants to guide targeted interventions, with each quadrant reflecting different levels of adoption potential and financial viability.

Since the project life cycle extends beyond the construction phase, operational expenditure projections incorporate field operations, maintenance, electricity, and bandwidth costs. These projections include annual escalation factors and are assessed over a 10-year project horizon. Further, Revenue modelling is based on adoption rates, differentiated by quadrant, and average revenue per user assumptions. Adoption is modelled using an S-curve trajectory, reflecting real-world uptake patterns.

This financial model evaluates capital expenditures, operating costs, and revenue projections to determine the Net Present Value (NPV) of various sites, which is crucial for effective subsidy allocation. To accurately reflect the macroeconomic environment in Malawi, a high discount rate is applied during the NPV calculation. Sites that yield a negative NPV after accounting for the Anchor Tenant Amount, are eligible for Viability Gap Funding (subsidies). This approach aims to maximize the number of viable sites within the constraints of the available budget.

The CTM outlines a structured implementation approach by dividing projects into individual lots for each procurement selections such as towers, government sites, and schools. These lots are further grouped geographically to ensure a balance between financial viability and operational efficiency. The manual also emphasizes capacity building, recommending institutional strengthening, training, and knowledge sharing to ensure effective project delivery and long-term sustainability. CTM encourages ongoing monitoring, stakeholder engagement, and adaptive management to respond to evolving markets, regulatory conditions, and technological developments. To support digital inclusiveness, CTM also includes measures aimed at attracting new internet users through improved service availability, and community level awareness initiatives.

Procurement under this Manual will be carried out in full alignment with the [World Bank Procurement Regulations for IPF Borrowers \(Sixth Edition, 2025\)](#). A structured two-tier approach will be applied:

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- i. Primary Procurement to establish competition and award of Framework Agreements for non-consulting services through a Request for Bids (RFB) process which include pre-qualification and technical compliance screening, and commercial quote.
- ii. Secondary Procurement through award of call-off processes using RFQs and MRRA under the established Framework Agreements.

This procurement architecture ensures transparency, value for money, predictable supplier performance, and fair competition across all connectivity interventions, while enabling rapid deployment and operational efficiency for DMAP.

By operationalizing the CTM, DMAP aims to accelerate broadband coverage in rural and underserved areas, attract private sector investment through assured demand and targeted subsidies, and ensure transparent, technology-neutral procurement aligned with international best practices. The CTM fosters a sustainable PPP ecosystem that promotes competition, affordability, and high-quality digital services, enabling Malawi to achieve its digital inclusion and socio-economic development objectives while ensuring prudent and effective use of public funds.

Introduction

1. Introduction

1.1. Purpose and Scope of the Manual

The Commercial Transaction Manual (CTM) sets out a structured framework for transactions to promote the development of commercial connectivity networks under the Digital Malawi Acceleration Project (DMAP). It is designed to guide the Public Private Partnership Commission (PPPC), MACRA and project stakeholders to ensure that procurement, bidding, and contract management processes are conducted in a transparent and consistent manner, in line with applicable regulations and recognized best practices.

The manual will act as a guide for outlining the roles and responsibilities of stakeholders described in the Framework Agreement, which will be awarded to qualified bidders for the EAP process, and will facilitate cooperation between public and private sector organizations. It will outline procedures that promote fair competition and efficient use of resources, while maintaining accountability throughout the transaction lifecycle.

Furthermore, the CTM will incorporate principles and requirements from the World Bank Procurement Regulations to ensure that all project related transactions follow the guideline and provide structured guidance on planning and financial considerations to support effective infrastructure deployment and service delivery. The Manual will help to establish an environment that supports connectivity initiatives which aligns with broader digital development objectives.

1.2. Relevance to DMAP

The Digital Malawi Acceleration Project (DMAP) is a national initiative that will expand affordable broadband connectivity and promote inclusive access to digital services across Malawi. A major component of DMAP is providing internet access to approximately 2,000 Schools, 500 government sites and construction of 91 cellular towers with the aim of enhancing digital access to rural Malawi and bridging the digital gap between urban and rural areas. Achieving these targets will require a structured approach to procurement, financing, and implementation to maintain transparency, efficiency, and sustainability.

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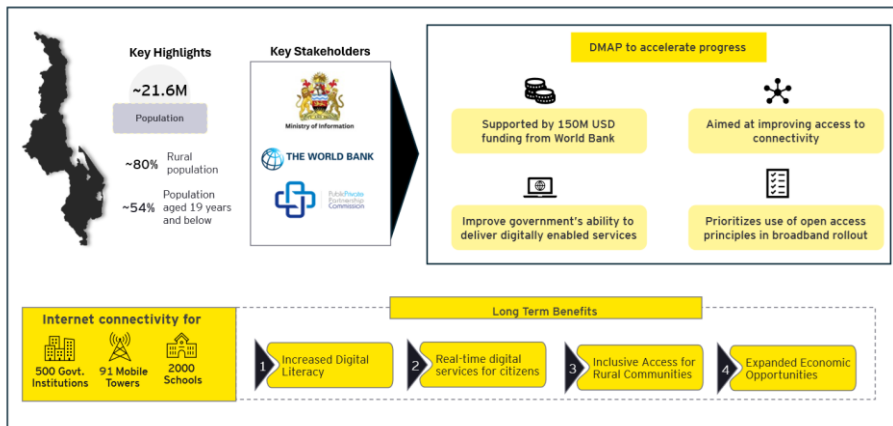


Figure 1: Digital Malawi Acceleration Project

The CTM is intended to guide implementation of Component 1 of DMAP “Affordable broadband and secure data hosting”, which focuses on expanding broadband access and improving digital connectivity across Malawi, including the targeted connection of schools, government sites, and underserved communities. Successful delivery of Component 1 requires a clear commercial framework to support site prioritisation, procurement of network infrastructure, engagement with service providers, and development of sustainable financing mechanisms. The CTM will therefore outline structured approaches for planning, financial assessment, and commercial negotiations to enable efficient infrastructure rollout under this component.

The Commercial Transaction Manual (CTM) provides structure and frameworks which will serve as a practical guide for managing commercially viable transactions under DMAP, ensuring that all processes, from competitive bidding to contract management, will be standardized and compliant with regulatory requirements. Additionally, this manual will aim to establish clear procedures to facilitate infrastructure deployment and address affordability challenges by outlining mechanisms such as anchor tenant models and viable gap (subsidy) financing strategies.

The CTM will also aim to promote public-private partnerships by outlining roles, responsibilities, and risk-sharing frameworks, creating an enabling environment for private sector participation. Ultimately, the CTM will align transaction processes with DMAP’s vision of driving digital transformation and socio-economic development in Malawi.

The proposed Electronic Auction Platform (EAP) is an important enabler for strengthening transparency and efficiency within Malawi's public procurement ecosystem. Although component 1 of the Digital Malawi Acceleration Project (DMAP) focuses primarily on digital connectivity and digital government service expansion, the adoption of an EAP would directly support the project's broader objectives of improving governance, reducing procurement inefficiencies, and modernizing government commercial processes.

In addition, the CTM integrates lessons from reports earlier, including the Open Access Network (OAN) Assessment and Commercial Models Report (Deliverables 2 & 3), ensuring that transaction design incorporates open access, technology neutrality, non-discriminatory pricing, infrastructure sharing, and long-term sustainability principles that are foundational to Malawi's digital transformation strategy.

1.3. Objectives of the Commercial Transaction Manual

The CTM provides a structured, transparent and replicable framework for implementing commercial transactions under the DMAP. Specifically, the CTM seeks to:

- i. **Standardize Procurement Processes:** By establishing clear and consistent procedures for procurement, bidding, and contract management to ensure transparency and compliance.
- ii. **Ensure Commercial viability and sustainability:** Through clear risk allocation, performance-linked incentives, and enforceable open-access provisions.
- iii. **Facilitate Public-Private Partnerships:** By defining roles, responsibilities, and risk-sharing mechanisms that attract private investment while safeguarding public interests and long-term sustainability.
- iv. **Promote Market Competitiveness:** By introducing transparent price discovery methods, technology neutrality, and safeguards against anti-competitive practices.
- v. **Ensure Value for Money:** By optimizing efficient resource utilization through competitive bidding and accountability measures.
- vi. **Align with Regulatory and Best Practices:** By ensuring adherence to Malawi's legal framework and recognized international standards to enhance investor confidence.

- vii. Support Digital Development Goals: Contribute to initiatives that expand connectivity and foster socio-economic growth through structured commercial transactions.

1.4. Open Access & Sustainable Connectivity Models for DMAP

i. Open Access Network (OAN)

The Open Access Network assessment established the technical and structural principles required to promote non-discriminatory access to broadband infrastructure across Malawi.

By embedding OAN principles into the transaction framework, the Manual ensures that network investments under DMAP remain open, fair, and efficiently utilised, enabling multiple service providers to leverage shared infrastructure at transparent, regulated prices.

The winning bidders will be required to comply with Open Access Principles (OAP), which include obligations such as enabling national roaming, providing fair and non-discriminatory access to their infrastructure, and supporting infrastructure sharing at reasonable, cost-oriented rates. These measures are intended to promote competition, reduce duplication of network investments, and ensure that all market participants can benefit from a more open and efficient telecommunications environment.

ii. Commercial Models

Specific commercial models are recommended for the Digital Malawi Acceleration Project (DMAP). These models are designed specifically for Malawi's rural and semi-urban connectivity landscape, where low population density, high deployment costs, and limited commercial returns require structured public financial support and predictable demand assurance.

Model 1: Anchor Tenant & Viability Gap Funding:

In this model, the Government of Malawi serves as a guaranteed customer, or "anchor tenant," by agreeing to buy internet connectivity services for schools and government offices. Furthermore, it will provide financial support for construction projects including tower construction in remote areas. To encourage private companies to build networks in less commercially attractive areas, the government provides a one-time capital subsidy (Anchor Tenant + Viability Gap Funding) through a competitive process. This approach reduces investment risk for private operators and ensures reliable service delivery in underserved regions.

Model 2: Co-Investment with Infrastructure Provider (Matching investments)

In Model 2, the government partners directly with existing infrastructure providers by making a one-time co-investment to expand network capacity. The government secures long-term usage rights (such

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as IRU and IP transit) and then allocates affordable bandwidth to last-mile service providers, who connect public sites. Payments to these providers are linked to performance milestones and service quality. This model maximizes the use of existing assets, supports smaller Internet Service Providers (ISPs), and promotes open access and sustainability.

GIGA Connectivity Credits – Incentive-Based School Connectivity Model

A variant on the matching investments model is offered by GIGA, a partnership between ITU and UNICEF, it is work in Malawi. In this model, the Government leverages GIGA's incentive framework to promote sustainable school and community connectivity. Instead of traditional subsidies, last-mile ISPs receive access to discounted backhaul capacity, secured through bulk procurement by government entities such as MAREN, in exchange for keeping schools connected to the internet. ISPs earn "Connectivity Credits" only when they meet predefined service benchmarks, such as uptime and bandwidth, verified through real-time monitoring tools like the Giga Meter.

The model is suitable for locations where last-mile ISPs see commercial potential near schools and can be scaled nationally by replacing pilot-level satellite backhaul with low-cost fiber secured through the government's capacity-buying arrangements. It strengthens accountability, reduces long-term operational burdens on government, and supports sustainable rural connectivity.

2. Overview of Legal and Regulatory Guidelines in Malawian Context

2.1. Public Private Partnership Guidelines

The Government of Malawi (GoM) recognizes that strategic infrastructure investment is fundamental to driving economic growth, enhancing productivity, and reducing poverty. To advance this objective, Malawi has adopted a Public–Private Partnership (PPP) framework as a preferred mechanism for procuring and financing public infrastructure and services. The foundation for this framework was laid through the Public–Private Partnership Policy Framework approved by Cabinet on 18 May 2011 and subsequently reinforced by the Public–Private Partnership Act (2022)¹ and the Public–Private Partnership Regulations (2023). Together, these instruments establish comprehensive legal and institutional architecture for effective PPP implementation across the country.

The PPP Act repealed the Public Enterprises (Privatization) Act and consolidated provisions relating to the PPP framework and the Divestiture Program into one piece of legislation. These regulations are valid for all Public Sectors. [The law establishes PPP arrangements as commercial contracts, which are subject](#)

¹ Public–Private Partnership Act (2022) <https://ppp.worldbank.org/library/ppp-laws-concession-laws-malawi>

to the tenets of the Arbitration Act in Malawi for the purposes of disputes resolution. The Public Procurement Act and Rules made thereunder are not applicable to PPPs.

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The PPP Concept, is a legally enforceable contract in which a Contracting Authority partners with a private sector Partner to build, expand, improve, or develop infrastructure or service in which the Contracting Authority and private sector Partner contribute one or more of know-how, financial support, facilities, logistical support, operational management, investment or other input required for the successful deployment of a product or service, and for which the private sector partner is compensated in accordance with a pre-agreed plan, typically in relation to the risk assumed and the value of the result to be achieved.

Usually, the private entity performs infrastructure service delivery functions that would otherwise have been provided through traditional public sector procurement and assumes the associated risks through a long-term contract (typically ranging from 10 to 50 years). In return, the private entity receives a benefit/financial remuneration according to predefined performance criteria, which may be derived:

- Entirely from service tariffs or user charges
- Entirely from Government of Malawi's budgets, and or
- A combination of the above

2.2. Legal Framework of Procurement Models in Malawi

The public procurement system in Malawi is regulated by the Public Procurement and Disposal of Assets Act (2017) and other secondary legislation. Prior to 2003, Malawi had a centralized procurement system characterized by the presence of the Central Tender Board (CTB) that was responsible for all procurement above a prescribed threshold for Government Ministries and Departments. The Central Government Stores (CGS) used to procure for Government Ministries and did its own procurement without much control from the Government.

This was one of the gaps that led to the enactment of the Public Procurement Act (PPA) of 2003, which decentralized procurement responsibility to procuring entities and established the Office of the Director of Public Procurement (ODPP) as a public office with the responsibility of regulation, monitoring and oversight of public procurement in Malawi.

However, lack of limited enforcement mechanisms led to the enactment of the Public Procurement and Disposal of Assets Act (2017), which established the Public Procurement and Disposal of Assets Authority (PPDA) as an impartial and independent institution responsible for the regulation, monitoring, oversight and enforcement of public procurement and disposal of assets in Malawi.

The fact that the PPDA enjoys high degree of independence and is equipped with wide authority is in line with best international standards of having an independent public procurement authority that has enough resources and legal authority to impartially monitor the system and make sure the Public Procurement Laws (PPL) is being followed in practice. PPDA is considering the options to procure an EAP or develop the same, the decision will be disclosed in the RFB stage of all selections.

Further, the Public Procurement and Disposal of Assets Authority (PPDA) is in process to implement an electronic Government Procurement (e-GP) system that will enable Procuring and Disposing Entities (PDEs) to publish tender notices, receive bids from suppliers, and manage public contracts.

In this context, the CTM positions an Electronic Auction Platform (EAP) as an additional capability to be implemented within the ongoing e-GP/MANePS rollout (once available), to further strengthen transparent, competitive price discovery in DMAP procurements

2.3. World Bank Procurement Regulations

Procurement under Investment Project Financing (IPF) helps borrowers achieve Value for Money (VfM) with integrity while delivering sustainable development outcomes. The World Bank's Articles of Agreement require that financing proceeds are used exclusively for their intended purposes, with due attention to economy and efficiency and without political or other non-economic influences.

To meet these obligations, the Bank has adopted the World Bank Procurement Regulations for IPF Borrowers, which govern the procurement of goods, works, non-consulting services, and consulting services for projects financed wholly or partly by the Bank. Procurement in World Bank-financed projects is carried out by borrowers in line with a Procurement Framework that sets out mandatory principles and procedures.

World Bank Procurement Framework

The World Bank's Procurement Framework² is designed to help Borrowers achieve value for money with integrity in delivering sustainable development.

The Framework promotes tailored procurement approaches that emphasize choice, quality, and value for public spending, while enabling adaptation to country contexts. It offers flexibility by helping client countries determine the best value for money to ensure quality outcomes and sustainability over the life of a project.

² [Project Procurement Framework | World Bank Group](#)

By focusing on how the supply market can meet their needs, the WB supports countries to develop procurement strategies that mitigate risks, contribute to the project's development objectives, and where possible, deliver additional environmental, social and economic benefits.

Within the Framework, there are four mandatory documents:

- i. Policy³: Procurement in Investment Project Financing (IPF) and Other Operational Procurement Matters
- ii. Directive⁴: Procurement in IPF and Other Operational Procurement Matters
- iii. Procedure⁵: Procurement in IPF and Other Operational Procurement Matters
- iv. Procurement Regulations for Investment Project Financing (IPF) Borrowers⁵, February 2025

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World Bank Procurement Principles

The procurement framework for the Digital Malawi Acceleration Project (DMAP) will be guided by the World Bank's Core Procurement Principles, ensuring compliance with International Development Association (IDA) financing requirements and supporting Malawi's digital transformation objectives.

Further, World Bank Procurement Regulations for IPF Borrowers (Procurement in Investment Project Financing – Sixth Edition, Feb 2025) recognize E-Reverse Auctions as an approved approach under open competitive procurement. The World Bank/MDB e-Reverse Auction Guidelines⁶ further note that e-reverse auctions are implemented through e-GP/electronic systems and define them as an online, real-time dynamic auction process

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³ Bank Policy Procurement in IPF and Other Operational Procurement Matters - [Bank-Policy-Procurement-in-IPF-and-Other-Operational-Procurement-Matters.pdf](#)

⁴ Bank Directive Procurement in IPF and Other Operational Procurement Matter- [Procurement-Directive-April-2024.pdf](#)

⁵ PROCUREMENT IN INVESTMENT PROJECT FINANCING Goods, Works, Non-Consulting and Consulting Services Sixth Edition, February 2025 - [World Bank Document](#)

⁶ e-Reverse Auction Guidelines for MDB Financed Procurement - [World Bank Document](#)

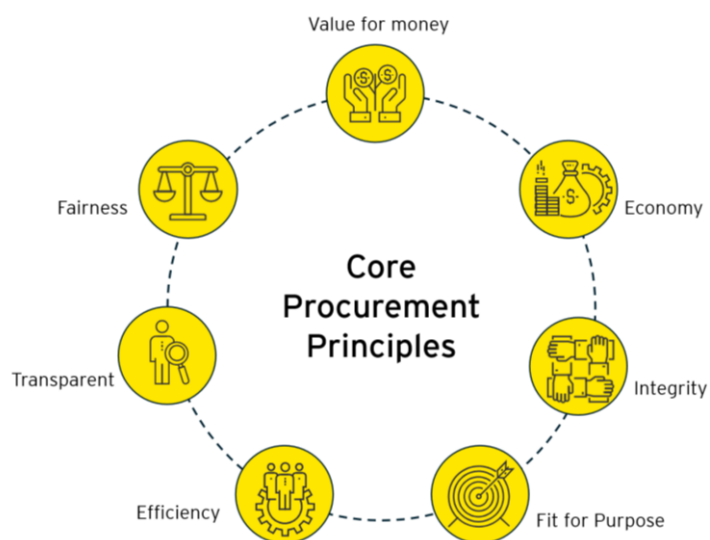


Figure 2: Core Procurement Principles

Core Procurement Principles⁷

1. Value for Money (VfM): DMAP procurement decisions should aim for the best use of resources by considering not just price, but also whole life-cycle costs, quality, resilience, maintenance and other important factors. Decisions should focus on long-term benefits and risk management, not just the lowest cost. In Malawi, this means choosing options that last longer and cost less to maintain, not just the cheapest upfront price.

2. Economy: Processes should include sustainability, quality, and social considerations / safeguards (eg: Public Wi-Fi, school connectivity etc). This ensures that procurement supports broader DMAP goals like environmental responsibility and inclusive development. This needs to be reflected in evaluation criteria and technical specifications.

3. Integrity: All activities must follow the highest ethical standards. Anti-fraud and anti-corruption measures in the Regulations should be applied across DMAP procurements. Resources should be used only for their intended purpose, with strong anti-corruption measures and compliance with relevant guidelines.

⁷ [PROCUREMENT-Beginners-Guide-to-IPF-WEB-VERSION-Nov-2023.pdf](#)

4. Fit for Purpose: Procurement methods should match the project’s objectives, complexity, and risk of each package. Complex turnkey contracts will use approaches that are practical and suited to the specific needs of the project.

5. Efficiency: Processes should be proportional to the value and risk involved, avoiding unnecessary delays and ensuring timely delivery of goods and services.

6. Transparency: Information about procurement should be shared openly and promptly through accessible platforms, allowing stakeholders to review and maintain accountability.

7. Fairness: All qualified bidders should have equal opportunities. Evaluation criteria must be clear and unbiased, and there should be mechanisms to address complaints and maintain trust.

In alignment with core procurement principles, the World Bank Procurement Regulations offer Borrowers a variety of procurement options. However, for the Digital Malawi Acceleration Project (DMAP), this Commercial Transaction Manual (CTM) establishes a single, standardized procurement pathway which is procurement of non-consulting services using Framework Agreement and Electronic Auction Platform (EAP) platform. In this structure, the Primary Procurement will conclude the Framework Agreement(s), while subsequent requirements will be procured through call-offs or Secondary Procurement.

Partnering for Impact

As part of a broader global effort to work as a system for impact and scale, the World Bank works closely with multilateral development banks to harmonize their respective procurement policies and approaches. A more coordinated approach ensures consistency for both borrowers and suppliers and allows us to scale our impact.

Sustainable Procurement

Sustainable Public Procurement⁸ (SPP) helps organizations meet their needs for goods, services, works, and utilities in a way that achieves value for money on a whole lifecycle basis in terms of generating benefits not only to the organization, but also to society and the economy, while minimizing damage to the environment.

2.4. Overview of Non-Procurement Guideline Documents

Regional Competition Regulations

⁸ [Implementing Sustainable Procurement](#)

Malawi is a member of Common Market for East and Southern Africa (COMESA).⁹

COMESA is created under the Treaty Establishing the Common Market for Eastern and Southern Africa (the Treaty). The main objective of the Treaty is market integration, i.e. where the markets of all the Member States would culminate in one.

To ensure that firms operating in the Common Market do not erect barriers to trade through anti-competitive conduct, the Treaty, under Article 55, provides for matters of competition. It was realised by the Member States which had enacted competition laws that it was becoming increasingly difficult to deal with anti-competitive practices emanating from outside national borders.

To deal with these challenges, it became palpable that a law with supra-national jurisdiction had to be promulgated. Pursuant to Article 55(3) of the Treaty, the COMESA Competition Regulations (the Regulations) were developed to regulate competition in the Common Market. The COMESA Member States realised that market integration could only be achieved in a dynamic competitive economic environment where new trade barriers are not erected in place of those that have been dismantled.

The COMESA Competition Regulations 2004 is the basic legal framework for competition and consumer protection enforcement for the COMESA region. Main purpose of the regulations are to:

- Promote and encourage competition
- Enhancing the welfare of consumers in the Common Market
- Protect consumers against offensive conduct by market actors.

The COMESA regulations are applicable to all economic activities by private or public persons within, or having an effect within the Common Market, which may have an appreciable effect on trade between Member States, and which restrict competition in the Common Market.

Domestic Competition framework

The main legislation governing competition in Malawi is the Competition and Fair-Trading Act, Cap 48:09 (as amended). The Act is designed to promote fair competition, prevent anti-competitive practices, and protect consumer interests.

The objectives of the Act, *inter alia* are:

- To promote and maintain competition in trade and commerce.

⁹ COMESA is a Region Economic Commission, composed of 21 Member States namely Republic of Burundi, Union of Comoros, Democratic Republic of Congo, Republic of Djibouti, Arab Republic of Egypt, State of Eritrea, Federal Democratic Republic of Ethiopia, Federal Republic of Somalia, Republic of Kenya, Libya, Republic of Madagascar, Republic of Malawi, Republic of Mauritius, Republic of Rwanda, Republic of Seychelles, Republic of Sudan, Kingdom of Swaziland, Republic of Tunisia, Republic of Uganda, Republic of Zambia and Republic of Zimbabwe.

- To prevent practices that restrict competition such as cartels and abuse of dominance.
- To protect consumers from unfair business practices.
- To ensure efficient allocation of resources and economic growth.

The Malawi Competition and Fair-Trading Commission (MCFTC) is the independent regulatory body responsible for enforcing competition law.

The Commission investigates complaints, conducts market inquiries, and takes enforcement action where necessary.

Key take-aways

- Anti-competitive agreements: Prohibits agreements between enterprises that restrict competition, such as price fixing, market sharing, and bid rigging.
- Abuse of dominance: Businesses with significant market power must not engage in practices that unfairly restrict competition or exploit consumers (e.g., predatory pricing, refusal to supply).
- Merger control: Certain mergers or acquisitions that meet prescribed thresholds must be notified to the MCFTC for approval to prevent substantial lessening of competition.
- Consumer protection: The Act includes provisions to protect consumers against unfair trade practices and deceptive marketing.

2.5. Legal framework of the ICT sector in Malawi

The Communications Act 2016

The ICT sector in Malawi is regulated by Malawi Communications Regulatory Authority (MACRA). MACRA was initially established pursuant to Section 3 of the Communications Act, 1998 of the Laws of Malawi, which Act was repealed by the Communications Act of 2016 where MACRA currently draws its mandate to regulate and monitor the provision of communications services and ensure that, as far as it is practicable, reliable and affordable communications services are provided throughout Malawi.

The Communications Act of 2016 provides for the regulation of the provision of services in the electronic communications sector, posts, information society; for the establishment of the Malawi Communications Regulatory Authority, the Malawi Broadcasting Corporation and the Malawi Posts Corporation; and for matters connected therewith or incidental thereto.

The Data Protection Act (2024)

The Malawi Data Protection Act (MDPA), enacted in February 2024 and came in force in June 2024, marks a pivotal step in safeguarding personal data within Malawi. This comprehensive legislation clearly establishes frameworks for data processing and outlines the responsibilities of data processors. It also robustly defines the rights of data subjects. As the digital landscape continues to evolve, the importance of such legislative measures becomes more critical in protecting privacy and personal information.

Electronic Transactions and Cyber Security Act, 2016

The Electronic Transactions and Cyber Security Act (ETCSA) law regulates the use of electronic devices and digital platforms. It prohibits sharing content that incites violence or discrimination, using online platforms to harass or intimidate others, and hacking into systems or accounts without permission.

In addition to ETCSA, the government of Malawi has also put in place National Cybersecurity strategy.

The Malawi's Vision 2020 policy statement sets the conceptual parameters for subsequent policy including National ICT policy (revised 2013) whose mission is to facilitate the creation of an enabling environment for efficient, effective, and sustainable utilization, exploitation, and development of ICT in all sectors of the economy in order to attain an information-rich and knowledge-based society and economy. This policy has a dual focus. It aims at developing the ICT industry and related sectors and promoting the development for use of ICTs.

Taxation Instruments

The tax system surrounding the ICT sector is a crucial element in shaping the ecosystem, influencing both supply and demand. Taxes are financial charges or levies imposed on individuals or legal entities by a state or its equivalent. They represent a pecuniary burden placed on individuals or property by the government, enacted through legislative authority.

To establish a taxation system, a nation must make decisions regarding the distribution of the tax burden: determining who will pay taxes, how much they will pay, and how the collected taxes will be utilized. In many developing economies, where public influence over the taxation system is limited, the system often reflects the preferences of those in power.

Governments utilize taxes to address market failures and rectify wealth distribution imbalances within society. Without government intervention, the private sector may misallocate resources due to monopolies, distortions, and asymmetries in information availability among market players. Therefore, taxes are employed to stabilize economic activities and ensure the full employment of productive resources within the country.

In Malawi, the Ministry of Finance formulates fiscal policy direction, which is translated into Fiscal Bills for enactment into law by Parliament. The Malawi Revenue Authority (MRA) is responsible for tax administration. The primary sources of tax laws in Malawi include:

- Taxation Act Cap 41:01 Laws of Malawi
- Customs and Excise Act Cap 42:01 Laws of Malawi
- Value Added Tax Act Cap 42:02 Laws of Malawi

In addition to these taxes, various non-tax revenues (parafiscal fees) apply to different sectors, including the ICT sector. Both taxes and parafiscal fees are guided by national policy direction, which is informed by the government agenda as articulated in the national budget.

Furthermore, the implementation of the Digital Malawi Acceleration Project (DMAP) will adhere to project-specific Environmental and Social Safeguards (ESS) instruments prepared and disclosed by the Public Private Partnership Commission (PPPC). These instruments operationalize the World Bank Environmental and Social Framework (ESF) requirements for DMAP and outline mandatory processes for environmental and social screening, stakeholder engagement, labor management, land acquisition/resettlement planning, and grievance handling.

Key DMAP ESS instruments disclosed by PPPC include:

- Environmental and Social Management Framework (ESMF)¹⁰
- Resettlement Policy Framework (RPF)¹¹ (guiding Resettlement Action Plans where necessary)
- Labour Management Procedures (LMP)¹²
- Stakeholder Engagement Plan (SEP)¹³
- Grievance Redress Mechanism (GRM) Manual¹⁴
- Activity-specific Environmental and Social Management Plans (ESMPs)¹⁵ (e.g., for the National Data Centre)

Key Procurement documents

¹⁰ <https://digimap.pppc.mw/wp-content/uploads/2024/10/P505095-DIGITAL-MALAWI-ACCELERATION-PROJECT-ESMF-October-2024.pdf>

¹¹ <https://digimap.pppc.mw/wp-content/uploads/2024/11/Resettlement-Framework-Digital-Malawi-Acceleration-Project-DMAP-P505095.pdf>

¹² <https://digimap.pppc.mw/wp-content/uploads/2024/10/P505095-DIGITAL-MALAWI-ACCELERATION-PROJECT-LMP-October-2024.pdf>

¹³ https://digimap.pppc.mw/wp-content/uploads/2024/09/Stakeholder-Engagement-Plan-Digital-Malawi-Acceleration-Project-DMAP_Final.pdf

¹⁴ <https://digimap.pppc.mw/wp-content/uploads/2024/09/Dislosed-Digital-Malawi-Acceleration-Project-GRM-Manual.pdf>

¹⁵ <https://digimap.pppc.mw/wp-content/uploads/2025/09/Environmental-and-Social-Management-Plan-ESMP-for-the-National-Data-centre--Digital-Malawi-Acceleration-Project-DMAP-P505095.pdf>

The main procurement documents, issued by the implementing agency and approved by the World Bank are:

- The procurement plan, which is updated on a regular basis throughout the life of the project. At the time of writing, the current version is dated March 11, 2026. All relevant procurements under DMAP will be listed in future updates of the plan.¹⁶
- The project procurement strategy for development (PPSD) sets out a market analysis and a description of key procurements to be undertaken. The PPCS will be updated once the CTM is approved.

Other Key Instruments

The following national legal acts shall apply as relevant for the implementation of activities financed by the subcomponents:

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- World Bank Environmental and Social Framework
- Environmental Management Act, 2017
- National Environmental Policy, 1996
- National Water Policy, 2002
- National Gender Policy, 2015
- Gender Equality Act, 2013
- Land Act
- Land Acquisition (Amendment) Act, 2016
- Physical Planning Act, 2016
- Town and Country Planning Act, 1988
- Local Government Act Cap 22:01
- Public Roads Act, 2023
- National Construction Industry Act Cap 53:05
- Employment Act, 2000
- Monuments and Relics Act Cap 29:01
- National Parks and Wildlife Act, 1992
- Occupational Safety, Health and Welfare Act, 1997

All activities under the Commercial Transaction Manual must be carried out in compliance with the World Bank Environmental Safeguards Policies and national environmental legislation.

¹⁶ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099031126075017181>

3. Learnings from Previous World Bank Funded Projects in Malawi

World Bank digital initiatives in Malawi have progressed through two distinct phases. **RCIP Malawi (2009–2016)** concentrated on establishing the national fibre backbone and creating virtual landing station in Lilongwe, Malawi through cross-border fiber connections to Zambia and Tanzania. Its Project Development Objective (PDO) aimed to reduce broadband prices and expand geographic coverage, and the project concluded with a *Moderately Satisfactory* rating.

The subsequent **Digital Malawi Foundations Phase 1 (2018–October 2024)** shifted the focus to last-mile connectivity, targeting providing connectivity to over 630 Government institutions and higher education facilities. This phase also expanded international bandwidth for Government and university users. Its PDO centered on increasing access to high-quality, affordable broadband and enhancing the delivery of digital government services. The project was assessed as *Satisfactory* at completion.

Regional Communications Infrastructure Program Malawi Project (RCIPMW)

The project adopted a pre-purchase (anchor tenant) model, whereby the Government procured a 10-year Indefeasible Right of Use (IRU) for international bandwidth. This guaranteed demand from the government encouraged private operators to invest in national infrastructure. Through a competitive process, SimbaNet (Kenya) was selected, which subsequently financed and deployed a fibre backbone from the Tanzania border through northern Malawi to Lilongwe, and from the Zambian border to Lilongwe. The model also required establishing a Virtual Landing Point (VLP), enabling eight operators (up from zero) to access international submarine capacity, and expanding the number of ISPs in the market from 12 to 21.¹⁷

A core design principle was open access, ensuring that the discounted wholesale prices offered to Government were extended to all operators. This approach significantly reduced wholesale international bandwidth costs from US\$10,000/Mbps per month to US\$481/Mbps per month. The project's implementation completion report noted that this anchor-tenant model was more efficient than a traditional PPP where Government owned the infrastructure.¹⁸

Digital Malawi Foundations Project (DIGMAP)

A similar IRU-based long-term capacity purchase model was used under DIGMAP, which closed in October 2024. However, the scale expanded significantly. Some 630 termination points were defined

¹⁷ Leveraging Private Sector Investment in Digital Communications Infrastructure in Eastern Africa <https://documents1.worldbank.org/curated/en/099135507312434566/pdf/IDU-a0df719e-a152-4a9f-9be4-23f35220101c.pdf>

¹⁸ DIGITAL MALAWI PROGRAM PHASE I: MALAWI DIGITAL FOUNDATIONS PROJECT May 11, 2017 <https://documents1.worldbank.org/curated/en/279041495480051045/pdf/Digital-Malawi-PAD-P160533-Formatted-Final-vF-05162017.pdf>

including over 500 Government sites, more than 60 higher education sites, and additional Government Wide Area Network (GWAN) sites. The focus shifted toward last-mile connectivity, targeting universities, TVETs, teacher colleges, medical schools, post offices, markets, community centres, airports, and rural government sites. By pre-purchasing substantial internet bandwidth, under long-term supply agreements, the Government again acted as an anchor customer, incentivizing private operators to build last-mile fiber to each site.

Procurement for internet pre-purchase for Government was organized into five lots:

- Two lots for international connectivity to Blantyre via Mozambique and Zambia (awarded to Inq Digital)
- Three regional lots were designated as Central, South, and North. The Central region was served by the DataCom–Luna Technologies consortium, while the other regions were connected through BengolNet.

In addition, MAREN concluded its own long-term supply agreements, both through the EU AfricaConnect program and independently, with a focus on route diversity.

3.1. Challenges in Attracting Private Sector Involvement and Potential Mitigation Measures

Across both phases, the most significant barrier was the limited access to foreign currency and investment capital within Malawi's telecom market.

1) Foreign Exchange Constraints and Funding Delays

Both phases experienced acute foreign currency shortages, limiting operators' ability to finance network expansion or pay international bandwidth providers.

Phase 1: SimbaNet encountered delays in securing financing, leading to an extension of the implementation period. The final tranche was paid post-project closure using Government funds due to funding gaps on the contractor side.

Phase 2: Digital Inq submitted its bid in Malawian Kwacha, and the subsequent >40% currency devaluation severely weakened its capacity to meet USD-denominated international payment obligations.

Potential Mitigation Suggestions:

- Price bids or contracts should be denominated in USD, or alternatively, split between USD for services for which components and internet supply are imported, and local currency for domestic costs.
- Utilize Direct Payments to remit funds directly to international suppliers or bandwidth providers in USD, thereby reducing foreign exchange pressures on contractors.

2) High Import Taxes on Telecom Equipment

BengolNet and DataCon faced a combined effective tax rate of ~65% on imported equipment (import duty + sales tax). These elevated costs directly undermined project economics and slowed last-mile deployment timelines.

Potential Mitigation Suggestions:

- Pursue tax exemptions or waivers for project telecom equipment, including duties and sales tax.
- If waivers are not feasible, advocate for a refund or drawback mechanism to prevent taxes from impacting cash flow.
- Expedite customs clearance procedures for project imports to minimize delays.

3) Contractor Cash Flow Constraints

All three Phase 2 contractors faced persistent liquidity challenges, exacerbated by the project's payment schedule.

Delayed disbursements by the contractor impacted field teams and suppliers, slowing implementation progress.

Potential Mitigation Measures:

- The Lead Bidder must provide a No Objection Certificate (NOC) confirming all payments to the subcontractor are settled before the final milestone payment, which is typically disbursed after one year of operation & maintenance.
- Implement more frequent payments based on smaller milestones rather than larger, delayed installments.
- Initiate direct payments to key suppliers or subcontractors upon certification to prevent work stoppages resulting from contractor liquidity challenges.

4) Evolving Approach to Operations & Maintenance (O&M) Costs

In DMAP Phase 1, post-closure O&M costs shifted to the Government, and although normally minor, they became more material as bandwidth prices dropped sharply. Phase 2 attempted to mitigate this by bundling future O&M into upfront contract costs, but the long-term sustainability of this structure remains to be confirmed.

The Digital Malawi Acceleration Project (DMAP) will maintain the anchor-tenant approach for pre-purchasing bandwidth and IRU rights, supported by Anchor Tenant and Subsidy to reduce capital costs and improve financial sustainability. Under the Build-Own-Operate model, the selected bidder will be fully responsible for asset ownership, operation, and maintenance, covering all related costs.

3.2. Attracting New Internet Users in Malawi

While connectivity initiatives, such as DMAP, primarily address the supply-side expansion of network infrastructure, parallel interventions are required to stimulate demand through improved adoption, affordability, and access to end-user devices for both mobile and broadband services.

Expanding internet adoption in Malawi necessitates a systemic approach that tackles structural poverty, limited energy access, institutional capacity gaps, and an underdeveloped digital ecosystem in addition to core telecommunications constraints. In predominantly rural, low-income contexts, broadband expansion extends beyond network deployment, it represents a cross-sector development priority

requiring coordinated action across infrastructure planning, fiscal reform, education systems, energy access programs, and social protection mechanisms.

Relevance and Livelihood Integration

Internet adoption increases when digital services directly support daily livelihoods. Expanding access to digital agriculture services, mobile financial services, digital payments, e-learning platforms, and online marketplaces increases user motivation and willingness-to-pay for connectivity.

Digital Literacy and Safe Usage

Limited awareness and concerns about online safety can restrict sustained adoption. Embedding digital literacy in school curricula and establishing community-based training programmes, supported by local communities, can build user confidence and promote safe, productive use of online services.

Affordability and Device Access

Low household incomes and irregular cash flows make smartphones and routers difficult to purchase upfront. To ease this barrier, Malawi Government may encourage mobile-money-enabled pay-as-you-go device financing, where users acquire a device immediately but repay through small, flexible instalments over time. Complementary measures such as temporary tax reductions on entry-level devices and targeted devices-access for students, teachers, and low-income women—can further accelerate adoption.

Energy Availability

Limited or unreliable electricity remains a major inhibitor of meaningful connectivity. Even where coverage exists, households struggle to charge devices and sites lack stable power for ICT use. Integrating solar-powered towers, community charging hubs, and mini-grids for schools and clinics ensures that connectivity is usable and sustainable.

Institutional Anchoring for Rural Viability

Connecting public sites such as schools, health centers, and agriculture offices creates predictable baseline demand that strengthens commercial viability in rural areas. Policies supporting open-access backbone networks, passive infrastructure sharing, and simplified rights-of-way reduce deployment costs. Satellite backhaul can serve remote districts where fiber or microwave rollout is not immediately economically feasible.

In summary, a coordinated approach that addresses device affordability, electricity availability, institutional demand, service relevance, and digital skills is essential for converting connectivity

investments into meaningful usage. These demand-side dynamics directly influence uptake assumptions, commercial viability, and determination of the Maximum Allowable Subsidy (MAS) within the CTM.

3.3. Mechanisms for Transparent Price Discovery

A credible and fair procurement process must ensure that subsidy allocation or any form of public financing is determined through a transparent price discovery mechanism. Price discovery refers to the process of establishing the lowest acceptable subsidy requirement among competing operators based on clearly defined parameters. In the context of DMAP, transparent price discovery is especially critical because the Government seeks to maximize impact by allocating limited resources to operators who can deliver high-quality service at the lowest possible level of public support.

To achieve these objectives, the CTM introduces several mutually reinforcing mechanisms, including the use of reverse auctions, standardized bid parameters, deployment of an electronic auction platform, and publication of results to enhance market confidence. These mechanisms collectively ensure that bidder competition produces outcomes that are economically efficient, non-discriminatory and verifiable. Furthermore, implementing a lot approach enhances price transparency by facilitating direct comparisons of subsidy requirements among bidders.

Reverse Auction Methodology

The reverse auction methodology serves as the foundation of DMAP's price discovery process. Unlike conventional procurement where bidders propose a price for goods or services, a reverse auction requires bidders to compete by offering the lowest subsidy they need to deliver connectivity in predefined lots. This approach ensures that public funds act only as a catalyst, with the private sector covering the majority of capital and operational expenditures.

Under DMAP, two main auction formats are recommended depending on the level of market interest and competition:

1. Multi-round reverse auctions:

These will be used where three or more qualified bidders' express interest in a given procurement. Multi-round reverse auctions (MRRAs) allow bidders to revise their subsidy requests downward over successive rounds based on competitive pressure. This format typically results in deeper price

reductions, improved efficiency, and better value for money. It is particularly suitable for urban or peri-urban lots where market attractiveness is relatively high.¹⁹

2. Single-round sealed-bid auctions:

This option will be used where market analytics indicate limited competition, generally one or two bidders. Single-round auctions ensure that limited competition does not compromise integrity. Bidders submit subsidy requests in sealed envelopes with no opportunity for revision, thereby reducing opportunities for collusion or signalling.

In both cases, the winning bidder will be the operator who requires the lowest subsidy relative to the Maximum Allowable Subsidy (MAS), calculated based on detailed cost modelling of each lot. The MAS acts as a ceiling above which no bid will be considered, thus protecting the Government from overpaying for services.

However, where no bids meet the MAS, a second auction may be conducted for those lots. In such cases, the MAS may also be revised upwards, where justified, to enhance the attractiveness and competitiveness of the lot. This effectively makes the process similar to a structured multi-round bidding approach.

3.4. Transparent Bid Parameters

To ensure that bids can be fairly compared and evaluated, the process mandates consistency and transparency in bid parameters. All bidders will compete based on standardized criteria, the most important of which is the requested subsidy amount. However, subsidy alone cannot fully determine the underlying value or sustainability of a proposal, especially in the telecommunications sector where long-term operational viability is essential.

The following mandatory bid parameters will therefore be applied:

- **Required subsidy:** This is the principal financial evaluation factor and determines the ranking of offers.

¹⁹ This topic is explored in more detail in World Bank and CEPA. 2024. *Leveraging private investment for digital communication infrastructure in Eastern Africa*. At: <https://documents1.worldbank.org/curated/en/099135507312434566/pdf/IDU-a0df719e-a152-4a9f-9be4-23f35220101c.pdf>

- **Compliance with technical specifications:** All proposed solutions must meet the minimum performance requirements defined by PPC and international standards for broadband and energy efficiency.
- **Service Level Agreements (SLAs):** Bidders must commit to quality-of-service standards, uptime levels, network availability, and response times in accordance with defined benchmarks.

By standardizing these parameters, DMAP ensures that the evaluation process is objective, fair, and capable of distinguishing between proposals based strictly on merit and long-term sustainability.

3.5. Electronic Auction Platform (EAP)

To further enhance transparency, it is proposed that the procurement process shall be executed through a secure and independent Electronic Auction Platform (EAP). The use of an EAP minimizes discretionary human involvement and significantly reduces the risk of manipulation, collusion, or administrative errors. The system will provide real-time ranking of bids during multi-round auctions. However, identities of bidders will remain anonymous, during the bidding, to avoid signalling or indirect collusion.

The key functionalities of the EAP will include:

- Automated real-time ranking of bids, enabling bidders to know their relative position without disclosing competitor identities.
- Full anonymity, ensuring impartiality.
- Tamper-proof audit trails, meeting World Bank standards for transparency and data integrity.
- Automated evaluation support, reducing manual handling of data and minimizing administrative risks.

This platform will serve as both a safeguard and an efficiency enhancer, ensuring that the auction is conducted consistently, securely, and auditable at all stages.

3.6. Publication of Auction Results

After each auction process, whether single-round or multi-round, the government will publish a summary of results to reinforce credibility and market trust. Publication improves transparency and demonstrates the fairness of the process, which is particularly important in markets where historical concerns about procurement integrity have deterred private participation.

The published information will include:

- Names of participating bidders
- Confirmation that published bids were pre-qualified (pass/fail) and responsive, with brief reasons for any disqualifications
- Final subsidy amounts requested and winning bids by lots
- Summary scores based on technical Qualification and commercial results
- Any notable observations or procedural clarifications
- Information on any complaints received during the bidding process.

Confidential information, such as proprietary financial data or detailed network designs, will not be disclosed.

Collectively, these steps ensure that price discovery is based on a robust, verifiable, and trustable process aligned with global best practice.

3.7. Ensuring Equity and Market Competitiveness

While price discovery is vital, it cannot be pursued at the expense of market diversity or competition. Malawi's broadband market, like many in Sub-Saharan Africa, has a few dominant operators and several smaller ISPs with limited resources. However, when the market is opened to bidders offering different technological solutions (fiber, wireless and satellite), the list of potential bidders is widened.

A well-designed bidding process must therefore safeguard equity, prevent excessive concentration of market power, promote technological neutrality and ensure that smaller operators have a credible opportunity to compete and win.

3.8. Anti-Concentration Rules

Anti-concentration rules are essential for avoiding outcomes where a single operator dominates the entire procurement, potentially undermining competition over the long term. The CTM introduces specific mechanisms to prevent such dominance:

- Lot-by-lot bidding.
- Smaller lots to lower entry barriers and enable participation beyond large incumbents.
- Allow consortium bidding and use of sub-contractors so smaller ISPs can partner and compete credibly
- Technological neutrality, to widen the pool of potential bidders and technological solutions.

By enforcing these guidelines, DMAP ensures that subsidy allocation supports a more inclusive broadband ecosystem.

3.9. Collusion Prevention

Collusion presents a serious risk in auction-based procurements, particularly in relatively small markets where bidders may know one another. DMAP incorporates several safeguards to prevent formal and tacit collusion:

- Publish the auction rules (this CTM), site/lot lists, and Maximum Allowable Subsidy (MAS) ceilings in advance to facilitate transparency and reliable price discovery.
- Maintain bidder confidentiality and anonymity throughout the live auction (i.e., protect bidder identities and bid progression during bidding) to minimise signalling and mitigate coordinated bidding.
- Utilise an Electronic Auction Platform (EAP) supporting remote participation (with the exception of mock auctions), thereby reducing the risk of signalling via physical interactions.
- Expressly prohibit communication among bidders for the duration of the auction process.
- Incorporate debarment provisions to disqualify participants that have engaged in collusion.

Collectively, these measures uphold auction integrity and foster genuine price competition.

3.10. Non-Discriminatory Access and Open Access Obligations

To promote competitive downstream markets, DMAP will embed open access provisions across all infrastructure supported by public funds. These provisions ensure that:

- All operators, large or small can access shared infrastructure on the same terms.
- Public sites served under DMAP can be interconnected with other operators without discrimination.
- High-capacity facilities (e.g., education and health sites) are available for wholesale leasing.
- Technology-neutral and competitively neutral interconnection obligations are maintained.

These requirements prevent dominant operators from leveraging publicly funded assets to exclude competitors, thereby safeguarding affordable broadband access across Malawi.

To uphold open-access and competition principles, owners of passive infrastructure, such as rights-of-way authorities and electricity distribution networks etc, should join bids only as

subcontractors, not joint venture partners. This avoids exclusivity, allows them to support multiple bids, and ensures all bidders have equal, non-discriminatory access to essential passive assets.

4. Technology-Neutral Approach for Fair Procurement

Technology neutrality is a core principle guiding World Bank procurement processes, including DMAP. In a rapidly evolving digital landscape, prescribing specific technologies risks limiting innovation, inflating costs and reducing the adaptability of solutions to local conditions. The CTM therefore emphasizes performance-based specifications that allow bidders to propose any technology capable of meeting the defined service standards.

4.1. Neutral Performance Specifications

Instead of mandating the use of particular technologies (e.g., fiber), the CTM defines a set of minimum performance indicators that all solutions must meet. These include:

- Minimum bandwidth thresholds for institutional connectivity
- Latency limits aligned with international broadband benchmarks
- Network availability and uptime percentages
- Quality-of-Service (QoS) metrics consistent with MACRA standards

By focusing on performance rather than methods, the bidding process encourages operators to propose cost-effective, locally appropriate technologies such as fixed wireless access, microwave backhaul, fiber-to-the-premise (FTTP), 4G/5G, or low-earth-orbit (LEO) satellite depending on the geographic and economic conditions of each site.

Further, the CTM explicitly does not recommend the use of language that may indirectly favour particular technologies. Terms such as “fiber-only solution” or “preferred technology” will not be used in bidding documents unless there is a compelling regulatory or operational need. This prevents skewing the results toward large incumbents that possess extensive fiber networks, while ensuring openness to innovative connectivity models.

4.2. Alignment with Regulatory Frameworks

Technology neutrality is also aligned with the broader policy and regulatory environment, including:

- MACRA’s spectrum allocation and licensing rules

- Malawi's National Broadband Strategy
- World Bank guidance on open access and competitive neutrality

This alignment ensures that the procurement process supports long-term policy objectives while complying with regulatory obligations.

5. Procurement Approach and Maximum Allowable Subsidy Framework

5.1. Current State Assessment

Malawi's population in 2024 is estimated at approximately 21.65 million people. Malawi's population is predominantly young, with a high share of the population under 25 years of age, and remains heavily rural although rates of urbanization have been rising gradually. The economy is characterized by a large subsistence agricultural sector, low per capita income and elevated poverty levels. These demographic and socioeconomic characteristics have direct implications for the digital market: demand for broadband services is constrained by low levels of disposable income in rural areas.

The following are some of the key digital development indicators for Malawi as mentioned in OAN Report (Section 3.1.4):

- Internet penetration: 27.7% of population as of early 2024 (~5.86 million users)
- Mobile connections: 11.77 million cellular mobile connections, which equates to 55.5% of population
- Fixed broadband subscriptions are still very low. Data indicate that fixed broadband subscriptions in Malawi numbered ~16,700 in 2023 and fixed broadband per 100 inhabitants is extremely low (close to zero or very small fraction)
- Social media/digital platforms adoption remains low relative to population; in early 2024, there were approximately 1.30 million social media users (~6.1%) of total population

Malawi's digital indicators show that internet adoption remains low relative to global averages. According to ITU telecom indicators, only around 18.9 percent of the population used the internet in 2024. Mobile cellular subscriptions stood at approximately 61 subscriptions per 100 people in 2023, while active mobile-broadband subscriptions are higher per 100 population (reflecting the dominant role of mobile access as the primary connectivity medium). Fixed broadband penetration (subscriptions per 100 people) is negligible, reflecting the low level of fixed residential and business broadband infrastructure outside a few urban centres.

Affordability remains a critical barrier because mobile data price-basket analyses indicate that the cost of 1GB of mobile prepaid data in Malawi can translate to a high share of average monthly income, which constrains low-income and rural users from regular internet use.

Despite progress, notable disparities between urban and rural areas remain, with overall internet penetration at only 18% and significantly greater access in urban centers compared to rural locations. In an effort to address connectivity challenges in remote regions. While Satellite service providers remains cost-prohibitive for many households, they offer a suitable solution for schools and government. Consequently, the Government of Malawi continues to emphasize investments in digital infrastructure and skills development to improve accessibility and affordability throughout the country.

5.2. Low Level Design of Network

The Digital Malawi Acceleration Project (DMAP) is an ambitious initiative to connect 500 government sites, and 2,000 schools to high-speed internet, and construct up to 100 telecom towers across Malawi. As a landlocked nation, Malawi faces unique challenges, including high upstream bandwidth costs and uneven infrastructure distribution. To overcome these barriers, the network design recommends a blend of technologies—fiber optics, microwave radio, 4G/5G mobile networks, and satellite links, each chosen for its suitability to specific geographic and economic contexts.

As highlighted previously, this layered approach with optimal technology ensures that each segment of the network is optimized for cost, performance, and sustainability, with last mile solutions tailored to the specific needs and constraints of Malawi's diverse region

Design Considerations for Hub-and-Spoke Topology, for use in Connectivity initiatives:

- Select hub locations based on proximity to the national backbone and existing infrastructure.
- Ensure hub locations have reliable, high capacity backhaul, using fiber where feasible or microwave as an alternative in challenging terrain.
- Connect spoke locations (schools) to their nearest hub (for instance, a higher education institution) using local links (fiber or wireless) optimized for cost and terrain.
- Minimize the use of long-haul connections by aggregating traffic at hubs.
- Prioritize redundancy at hub sites to maintain service continuity.
- Design for scalability, allowing additional spokes or hubs as demand grows.
- Consider power availability and ease of maintenance at both hub and spoke locations.

- Incorporate security and resilience measures, especially for critical educational sites.
- Using the technical and human resources of local HEIs to provide basic level operations and maintenance support, as well as digital skills training, for schools.

Further, spoke schools can be connected using either wired or wireless technologies, depending on location and feasibility. Wireless options, including microwave, Wi-Fi 6, LTE/5G, or even satellite, provide flexibility for remote or hard-to-reach schools.

All affiliated schools and government offices must maintain a minimum bandwidth of **40 Mbps** during peak hours to ensure optimal internet performance.

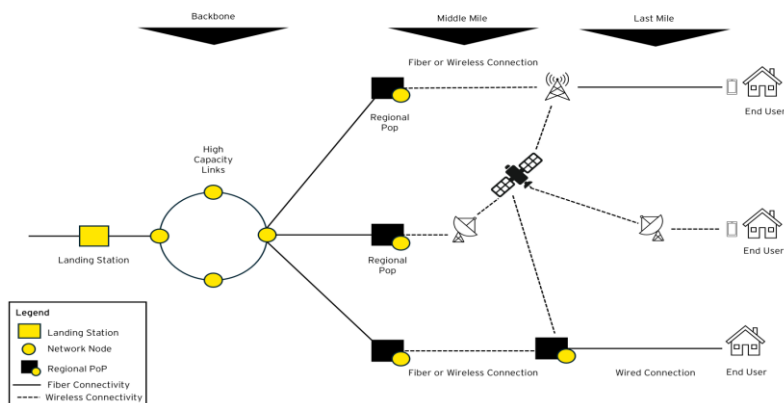


Figure 3: Illustrative Network Diagram

All service delivery shall be governed by agreed Service Level Agreements (SLAs) that comply with procurement principles of fairness, transparency, and accountability.

Point of Presence (PoP) Strategy

Points of Presence (PoPs) serve as essential aggregation hubs for managing network traffic across all technology layers. Their design should ensure both interoperability and open access. In accordance with DMAP guidelines, PoPs are to be strategically located at designated sites.

- District hubs and municipal centers for middle-mile aggregation.
- Government sites and schools where clustering supports cost efficiency.
- Existing telecom sites to leverage power and fiber availability.

PoP Infrastructure Requirements:

- i. Air Conditioning: To maintain optimal operating conditions for routers, switches, and transmission equipment.
- ii. Power Stability: Dual power sources or solar backup with batteries for off-grid sites.
- iii. Security: Controlled access and monitoring systems.

Further, the PoP locations should support content filtering for traffic to support child online protection.

It should be noted that the DMAP project is intended solely to support last-mile connectivity and it does not apply to the development of backbone or middle-mile networks. Backbone support may be provided under future projects, but is not a design goal for DMAP, except insofar as incentivizing last mile connectivity should encourage investment also in middle mile networks.

Energy and Equipment Considerations

To address Malawi's rural power challenges, the design should prioritize energy efficiency with battery backups, uses edge routers and Wi-Fi access points, and ensures environmental protection through sealed cabinets and anti-theft measures all aligned with DMAP's technology-neutral standards for flexibility and reliability.

5.3. Maximum Allowable Subsidy Frameworks

The Maximum Allowable Subsidy (MAS) ensures that public funds are allocated fairly, transparently, and in line with the goal of expanding digital connectivity in underserved areas. It provides a clear subsidy ceiling for each site, helping procurement teams make consistent, evidence-based decisions while safeguarding public resources and avoiding market distortion.

Two main approaches are utilised: the score-based approach and the NPV-based approach. The score-based method is particularly effective following a completed field survey. However, since surveys of government sites and towers are ongoing, the NPV-based approach was applied in this instance. Either method may be selected, Score-based approach is preferred once the field survey has been concluded.

The Score-based Maximum Allowable Subsidy (MAS) methodology relies on a structured assessment of each site's conditions, drawing from a comprehensive scoring framework that evaluates infrastructure deficits, geographic constraints, economic environment, and population distribution. Each parameter reflects a specific dimension of deployment feasibility or development need.

5.3.1 Score Based MAS Framework

For each of the 91 tower sites, all necessary field information was obtained during the site survey. The MAS value for every location was subsequently determined using the following systematic process:

Step 1: Gather data for each parameter

During the field survey, record following site details:

- Power availability
- Terrain classification
- Economic activity level
- PoP/backhaul accessibility
- Population (for normalized scoring)

Step 2: Allocate points to each parameter

Apply the scoring criteria based on their relative impact. The scoring values presented below are assumptions used exclusively for calculating the Maximum Allowable Subsidy (MAS) for the tower sites.

Higher scores are allocated to tasks of greater difficulty to ensure that participants may receive the highest possible subsidy in the final assessment.

- a. Power Availability (0–10 points)
 - Absence of grid/ESCOM power: 10 points
 - Presence of grid power: 5 points

Rationale: Sites lacking access to power are more challenging and costly to operate.

- b. Terrain Difficulty (0–20 points)
 - Mountainous or hilly terrain: 20 points
 - Standard terrain: 5 points

Rationale: Challenging terrain increases construction complexity and expenses.

- c. Economic Activity (0–20 points)
 - Low level of economic activity: 20 points
 - Moderate or high activity: 5 points

Rationale: Areas with limited economic activity possess lower commercial viability and require additional support.

- d. Backhaul / PoP Availability (0–20 points)

- No nearby PoP/backhaul infrastructure: 20 points
- Available PoP/backhaul: 5 points

Rationale: Lack of backhaul necessitates further investment to establish site connectivity.

e. Population-Based Score (0–30 points)

- Small population within the TA: Higher points (up to 30)
- Large population: Lower points

Rationale: This scoring promotes equitable treatment for TAs with numerous sites and supports less populated regions.

Step 3: Calculate the Total Score

Total Score = Aggregate of all parameter points (range: 0–100).

Step 4: Derive the MAS percentage from the Total Score

$MAS \% = \text{Total Score} \div 100$

Step 5: Determine the site's MAS share

Calculate the proportion of the site's score relative to the combined scores of all 91 towers:

$MAS \text{ Share} = \text{Site Score} \div \text{Total Score of all towers}$

Step 6: Compute the final MAS allocation

$\text{Final MAS Amount} = \text{MAS Share} \times \text{Total Allocated budget for Tower}$

5.3.2 NPV Based MAS Framework

As it is clear that the Score Based MAS framework requires field-verified data, and the field surveys for government and school sites are still ongoing, an alternative method was necessary. Therefore, we also applied the Net Present Value (NPV) based methodology for calculation of Maximum Allowable Subsidies (MAS). This framework ensures that public funds are allocated only to sites that show a genuine financial viability gap, directing subsidies to locations where support is most needed to achieve commercially sustainable outcomes.

Under the Build-Own-Operate (BOO) model, the network operator assumes full responsibility for capital expenditure (CAPEX), operational expenditure (OPEX), and revenue generation from expanded commercial use cases, including mobile broadband and fixed wireless/home broadband services. The Government offers an anchor-tenant payment to facilitate site connectivity, which constitutes the base grant. The remaining funds are allocated as subsidies to sites with negative net present value (NPV),

ensuring their viability. For the purposes of bids and financial modelling, the Anchor Tenant Amount combined with the Viability Gap Funding (Subsidy) represents the Maximum Available Support (MAS). Subsequently, the NPV for each site is calculated based on projected cash flows.

Where the NPV is negative, the model allocates a Maximum Allowable Subsidy (MAS) equivalent to the viability gap, ensuring that the site attains financial viability. Sites that show a positive or zero NPV after the base (anchor) grant do not receive additional funding, thereby promoting fiscal discipline and preventing over subsidization.

Step 1: Capital Expenditure (CAPEX) for Government Sites and Schools

The Capital Expenditure (CAPEX) for each government site and school shall be determined as follows:

$$\text{Total CAPEX} = \text{Base CAPEX} \times \text{Terrain Factor}$$

Where:

- Base CAPEX refers to the standard site-level capital cost applicable under normal terrain conditions. Base CapEx shall be calculated prior to the application of the terrain factor and shall include, but not be limited to, the following cost components:
 - Right of Way (RoW) costs, as applicable
 - Power backup and UPS infrastructure costs
 - Network and site equipment costs
- Terrain Factor accounts for region-specific variations in cost arising from terrain conditions and shall be applied uniformly in accordance with the classification below:
 - Hard terrain (including mountainous or highly inaccessible areas): 1.5
 - Medium terrain: 1.2
 - Normal terrain: 1.0

Step 2: Operational Expenditure (OPEX) for Government Sites and Schools

Operational Expenditure (OPEX) has been assessed over a project period of ten (10) years.

Electricity expenses are assumed to remain constant over the operational period. The electricity bill becomes applicable from Year 1 onwards, following completion of works in Year 0, and is not subject to any year-on-year escalation.

Operations and Maintenance (O&M) costs are estimated at fifteen percent (15%) of the Capital Expenditure (CAPEX) over a ten year period. These costs shall be applicable from Year 1 and shall increase on a year-on-year basis at a rate of five percent (5%) per annum, compounded annually, to account for inflation and increases in operational input costs.

This approach ensures transparency, uniformity, and consistency of operating cost assumptions in accordance with public procurement and long-term financial assessment requirements.

Formulation and Cost Computation

- Annual electricity cost per site
- Year-1 O&M cost: $O\&M_1 = 0.15 \times \text{Base CAPEX}$
- O&M cost in year t (for $t = 1$ to 10): $O\&M_t = O\&M_1 \times (1.05)^{(t-1)}$
- Total OPEX per site in year t :

$$OPEX_t = \text{Annual electricity cost} + O\&M_t$$

Step 3: Revenue Assessment for Government Sites and Schools

Year-on-Year Commercial Consumer Adoption Assumptions

To ensure long-term commercial viability under the BOO model, vendors are advised to leverage government-served sites as central hubs for expanding broadband access to surrounding commercial customers, including small and medium-sized enterprises (SMEs), households, and institutions. Revenue forecasts are based on projected Commercial Customer adoption rates in service areas, starting only after commercial launches, so no subscriptions or revenue are expected in Years 0 and 1 during network setup. From Year 2 onward, adoption rises as service quality and awareness improve.

Broadband adoption differs by region due to local socio-economic conditions. The Social-Environmental Index (SEI) and Financial-Economic Index (FEI), which measure factors like literacy, income, population density, and economic activity, help define these regions. Areas with higher SEI and FEI values adopt broadband faster, so adoption rate projections are set according to the characteristics of each quadrant.

Quadrant-Wise Year-on-Year Household Penetration Rate

Scenario	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Q1: High SEI & High FEI	0%	0%	1%	3%	5%	7%	8%	8%	8%	8%	8%
Q2: High SEI & Low FEI	0%	0%	0%	2%	3%	5%	5%	5%	5%	5%	5%

Q3: Low SEI & High FEI	0%	0%	1%	2%	5%	6%	7%	7%	7%	7%	7%
Q4: Low SEI & Low FEI	0%	0%	0%	1%	2%	3%	3%	3%	3%	3%	3%

Table 1: Quadrant Based Adoption Rate

Application for Revenue Estimation

For each project year, connected households are estimated by applying the relevant adoption share to the total households in the catchment area:

$$\text{Connected Customer}_t = \text{Total Commercial Connections} \times \text{Penetration Rate}_t$$

Annual Revenue Estimation

Annual revenue is calculated using fixed annual revenue per connected household, with no tariff escalation assumed.

Let:

R_{annual} = fixed annual revenue per connected household

$$\text{Revenue}_t = \text{Connected Customer}_t \times R_{\text{annual}}$$

Step 4: Net Cash Flow and Subsidy Calculation

For each project year, net cash flow is calculated as follows:

$$\text{Net Cash Flow}_t = \text{Revenue}_t - \text{OPEX}_t - \text{CAPEX}_t + \text{Anchor Tenant Revenue}_t$$

Where:

- Revenue includes household broadband revenues.
- OPEX represents annual operating and maintenance costs.
- CAPEX represents capital expenditure incurred in the year 0.
- Anchor tenant revenue is given to vendor as the fixed amount in year 0.

Step 5: Net Present Value

The Net Present Value (NPV) of the project is calculated by discounting the year-on-year net cash flows at the applicable discount rate.

$$NPV = -\text{Net Cashflow in year 0} + \sum \frac{\text{Net Cash Flow}_t}{(1+r)^t}$$

If the calculated NPV is negative, the Maximum Allowable Subsidy is defined as the amount required to offset the negative NPV and bring the project NPV to zero.

$$\text{Subsidy Required} = | \text{Negative NPV} |$$

Step 6: Subsidy (Viable Gap Funding) Allocation

After deducting the Anchor Tenant, this subsidy fund supports sites that are not independently financially sustainable and require subsidies to achieve a net present value (NPV) of zero.

Eligibility Criteria

- Only sites exhibiting a negative NPV are eligible for subsidy consideration.
- The maximum subsidy per site is strictly limited to the amount necessary to bring its NPV to zero.

Allocation Logic

- All qualifying sites are ranked in ascending order based on the required subsidy to reach an NPV of zero.
- Subsidy allocations commence with the site requesting the smallest subsidy and proceed incrementally up the ranking.
- Disbursements continue until the VGF is fully allocated.

Rationale

- Maximize the number of sites that achieve financial viability,
- Optimize the deployment of limited public funds, and
- Uphold principles of transparency, fairness, and operational efficiency.

Step 7: Maximum Allowable Subsidy

Maximum Allowable Subsidy per site equals the sum of the Anchor Tenant Amount and the Viability Gap Funding (Subsidy) allocated to the site.

$$\text{Maximum Allowable Subsidy} = \text{Subsidy (Viable Gap Funding)} + \text{Anchor Tenant Amount}$$

A more sophisticated version of NPV Based MAS framework has been implemented in the R programming language. The full computational model, including outputs, is provided in [Annexure 4: Access Gap Framework Based Site Classification](#) & [Annexure 5: Financial Modelling](#).

5.4. Budget Allocation for Maximum Allowable Subsidy

Under DMAP (over both phases) an aggregate grant of USD 50 million has been allocated for works and services, including tower deployment, LTE upgrade, institutional connectivity, and IP transit support, structured through MAS frameworks to ensure overall project viability and a positive Net Present Value.

Selection	Count / Capacity (assumption)	Grant Allocated
Tower Deployment	91 towers	\$ 7,000,000
Tower 4G/LTE Upgrade	250 sites	\$ 3,000,000
Government Sites Connectivity	500 sites	\$ 13,500,000
IP Transit Costs for Government Sites	40 Mbps per site	\$ 1,500,000
School Connectivity	2,047 schools	\$ 22,500,000
IP Transit Costs for Schools	20 Mbps per school	\$ 2,500,000
Total Grant Allocation		\$ 50,000,000

Table 2: Budget Allocation Summary

In summary, allocations for tower-related selections amount to 10 million, government sites are receiving 15 million, and schools will also be funded 25 million accordingly. These initial figures may change based on the interest of the market and the pattern of competitive bidding. The level of private capital mobilization (PCM) by network operators and ISPs is estimated to be at least US\$20 million.

Tower Deployment and MAS

MAS values were computed for all 91 surveyed tower sites using the defined scoring framework. In the event that bids come in lower than expected (ie below the MAS), then more tower sites may be added in a later round. In the event that some lots are without bids, a portion of them may be auctioned in a later round, with a higher starting MAS, but without going beyond the original budget of US\$7 million.

Sno.	District	Traditional Authority	Site Name	Latitude	Longitude	MAS Value
1.	Mchinji	Mkanda	Katutula	-13.4388	32.9020	\$ 58,040.04
2.	Mchinji	Mkanda	Fanuel	-13.5016	33.0370	\$ 59,687.00
3.	Mchinji	Mduwa	M'duwa	-13.7206	33.0838	\$ 59,780.23
4.	Mzimba	Khosolo	Kachere TC	-12.4617	33.8690	\$ 98,848.13
5.	Dowa	Chiwere	Chimwanjati Hill	-13.5930	34.1058	\$ 77,082.08
6.	Dowa	Chiwere	Kanyenyeva	-13.7452	34.2711	\$ 77,082.08
7.	Dowa	Chiwere	Chipiri	-13.8168	34.0930	\$ 85,523.42
8.	Mzimba	Mzikubola	Ndawa	-12.2087	33.5225	\$ 70,285.51
9.	Mangochi	Chowe	Nkope Mission	-14.2000	35.0361	\$ 79,202.66
10.	Mangochi	Makanjira	Lukoloma	-13.8311	35.1055	\$ 54,503.03

Sno.	District	Traditional Authority	Site Name	Latitude	Longitude	MAS Value
11.	Mangochi	Chowe	Malombe TC	-14.6323	35.3494	\$ 60,637.63
12.	Mangochi	Mponda	Mbonechera	-14.4731	35.1239	\$ 98,185.83
13.	Mangochi	Chowe	Sambammanja	-14.6836	35.3173	\$ 66,825.97
14.	Mzimba	Kampingosibande	Kambuzi Hill	-11.5776	33.8307	\$ 92,943.58
15.	Machinga	Liwonde	Masidi Primary School	-14.9397	35.4211	\$ 103,434.86
16.	Mzimba	Mtwalo	Mphawa Hill	-11.5939	33.6452	\$ 69,052.04
17.	Salima	Kambalame	Gwirize	-13.8213	34.4880	\$ 79,889.67
18.	Machinga	Nkoola	Mpiri TC	-14.7705	35.6075	\$ 76,254.29
19.	Salima	Mwanza	Makiyoni	-13.5616	34.2227	\$ 59,934.39
20.	Machinga	Mlomba	Mlomba TC	-15.0740	35.4973	\$ 71,292.28
21.	Rumphi	Chikulamayembe	Luviri Primary	-10.9584	33.6508	\$ 82,376.10
22.	Rumphi	Chikulamayembe	Kasere Hill	-11.0215	33.6148	\$ 104,019.19
23.	Rumphi	Chikulamayembe	Ruhono Hill	-10.9891	33.6358	\$ 82,376.10
24.	Rumphi	Mwankhunikira	Bale	-10.7811	34.1165	\$ 68,296.02
25.	Kasungu	Simlemba	Sazalamba Hill	-12.7329	33.7468	\$ 64,733.89
26.	Kasungu	Wimbe	Kapsanga Tc	-12.8301	33.7885	\$ 43,893.45
27.	Zomba	M'Biza	Sunuzu	-15.5817	35.5006	\$ 80,956.02
28.	Zomba	M'Biza	Chiphoola	-15.4388	35.3629	\$ 84,650.50
29.	Zomba	M'Biza	M'Biza	-15.6467	35.3807	\$ 96,645.44
30.	Kasungu	Santhe	Nyaza	-13.4083	33.2254	\$ 53,670.91
31.	Nkhotakota	Malengachanzi	Sesani	-12.9738	34.2302	\$ 76,690.36
32.	Ntchisi	Kasakula	Chimbindu	-13.3703	34.1037	\$ 68,784.82
33.	Mulanje	Juma	Namulenga	-15.8717	35.3294	\$ 63,225.94
34.	Nkhotakota	Mwadzama	Bamba Site	-13.1474	34.1892	\$ 81,035.65
35.	Nkhotakota	Mwadzama	Benga Site	-13.3143	34.2716	\$ 76,036.72
36.	Dedza	Tambala	Kalulu	-13.9829	34.2166	\$ 82,342.74
37.	Dedza	Tambala	Tchesa	-13.9882	34.2873	\$ 82,342.74
38.	Nkhotakota	Mwansambo	Mphanda Madzi	-13.2171	34.1786	\$ 83,965.61
39.	Dedza	Kachindamoto	Kachindamoto	-14.2102	34.5573	\$ 37,697.85
40.	Balaka	Amidu	Chilanga CDSS	-14.9794	35.1667	\$ 62,328.13
41.	Ntcheu	Mpando	Matanda	-15.0998	34.6646	\$ 57,615.23
42.	Ntcheu	Phambala	Jumbe	-15.1110	34.7095	\$ 64,832.65
43.	Ntcheu	Makwangwala	Nkutumula	-14.8409	34.8980	\$ 47,088.52
44.	Nkhata-Bay	Kabunduli	Mzenga	-11.7474	34.0766	\$ 65,836.79
45.	Karonga	Mwakaboko	Ngana	-9.6195	33.7000	\$ 79,972.18
46.	Karonga	Kyungu	Kabuyu	-10.1731	33.8540	\$ 102,403.28
47.	Karonga	Mwirang'Ombe	Thabilo	-10.3142	34.0626	\$ 82,506.84
48.	Chitipa	Mwenemisuku	Chinsasu	-9.7044	33.4314	\$ 103,434.65
49.	Chitipa	Mwenemisuku	Mwamalange	-9.6628	33.4776	\$ 89,941.55
50.	Chitipa	Mwenemisuku	Sokola	-9.7372	33.5930	\$ 89,941.55
51.	Chitipa	Mwenemisuku	Msumbe	-9.7513	33.6725	\$ 83,944.09
52.	Chitipa	Nthaliire	Kapirinkhonde	-10.2795	33.5869	\$ 91,570.45
53.	Chitipa	Nthaliire	Mahowe	-10.1903	33.6910	\$ 84,257.79

Sno.	District	Traditional Authority	Site Name	Latitude	Longitude	MAS Value
54.	Chitipa	Nthalire	Mukule	-10.0914	33.6911	\$ 90,255.26
55.	Chitipa	Nthalire	Mibanga	-10.1246	33.7173	\$ 90,255.26
56.	Chitipa	Kameme	Impeza Primary School	-9.4980	33.0807	\$ 72,061.06
57.	Karonga	Kyungu	Katiri	-10.0925	33.8959	\$ 78,413.40
58.	Nkhata-Bay	M'Bwana	Bweteka Peak	-11.2736	34.1593	\$ 68,901.72
59.	Mzimba	Mtwalo	Kayowera Primary School	-11.3123	33.9520	\$ 69,052.04
60.	Nkhata-Bay	Kabunduli	Chilundwe Hill	-11.6313	34.1391	\$ 62,626.02
61.	Neno	Dambe	Chawe TC	-15.3270	34.5745	\$ 96,266.08
62.	Mwanza	Kanduku	Tulonkhondo	-15.7573	34.5222	\$ 92,408.17
63.	Neno	Mlauli	Felemu	-15.7003	34.6770	\$ 101,141.57
64.	Zomba	Mlumbe	Chingale TC	-15.3906	35.1742	\$ 71,407.00
65.	Zomba	Mlumbe	Mlooka	-15.2190	35.1643	\$ 72,426.95
66.	Mulanje	Mabuka	Milonde	-16.1093	35.5022	\$ 81,699.09
67.	Chikwawa	Kasisi	Kasisi	-15.9883	34.7734	\$ 61,211.84
68.	Mangochi	Nankumba	Lipalazi Hill	-14.3929	34.9672	\$ 75,288.97
69.	Mangochi	Chimwala	Khungwa Primary School	-14.5555	34.8760	\$ 48,033.31
70.	Mangochi	Mponda	Maone Site Hill	-14.5130	35.0089	\$ 77,358.99
71.	Mangochi	Mponda	Thumu Primary School	-14.4180	35.0274	\$ 78,472.18
72.	Mangochi	Mponda	Njereza Cement Factory	-14.3231	35.0595	\$ 77,358.99
73.	Ntchisi	Nthondo	Ndinda	-13.2429	34.0628	\$ 84,657.91
74.	Ntchisi	Nthondo	Sambakunsi	-13.3507	33.9762	\$ 82,240.74
75.	Thyolo	Nsabwe	Nsabwe	-16.3399	35.2026	\$ 93,073.55
76.	Chikwawa	Chapananga	Chang'ambika	-15.7958	34.3250	\$ 87,105.05
77.	Neno	Symon Likongwe	Matope	-15.3482	34.9489	\$ 71,871.51
78.	Machinga	Liwonde	Mjahito	-14.8793	35.4292	\$ 79,444.99
79.	Mulanje	Mabuka	Nnesa	-16.0297	35.5983	\$ 91,368.13
80.	Machinga	Liwonde	Chikuluma	-14.7515	35.3442	\$ 79,444.99
81.	Kasungu	Chisemphere	Milenje	-12.6132	33.4338	\$ 81,816.46
82.	Mzimba	M'Mbelwa	Mbunge	-11.5736	33.4135	\$ 55,021.98
83.	Chitipa	Nthalire	Therere TC	-10.4163	33.6635	\$ 104,398.37
84.	Chitipa	Kameme	Sopelera	-9.5977	33.0645	\$ 90,053.47
85.	Chitipa	Kameme	Nkhanire	-9.4662	33.0139	\$ 92,719.28
86.	Chitipa	Kameme	Nkhanga	-9.3831	32.9964	\$ 86,530.94
87.	Rumphi	Mwamlowe	Tcharo	-10.9563	34.2198	\$ 84,037.93
88.	Likoma	Chinyama	Likoma Secondary School	-12.0455	34.7315	\$ 61,458.32
89.	Likoma	Mkumpha 3	Kaya-Mawa	-12.0928	34.7255	\$ 64,649.32
90.	Dedza	Tambala	Khwekhwele Peak	-14.2102	34.5573	\$ 49,157.25
91.	Karonga	Kyungu	Khondowe	-10.0925	33.8959	\$ 78,413.40
Total						\$ 7,000,000

Table 3: Calculated MAS value for 91 Towers

PPPC based on their industry insights allocated \$7,000,000 for the towers, which we then distributed according to the mechanism outlined above.

Tower LTE Upgrade

The 250 sites proposed for LTE upgrade are distributed across districts in accordance with the approved allocation framework. The final selection of specific sites within each district will be undertaken by MACRA/USF in consultation with PPPC, based on identified coverage gaps, operator submissions, and site readiness at the time of implementation. A dedicated grant budget of USD 3 million has been allocated for this component, with a uniform subsidy of USD 12,000 per site to ensure consistency, cost control, and efficient execution. It is anticipated that bidders for this subsidy will be existing operators/cell tower companies that already own each site. However, winning bidders will be obliged to apply open access principles, such as national roaming and infrastructure sharing at reasonable, cost-oriented rates.

District-wise Maximum Allowable Subsidy for Schools

The NPV approach has been adopted at the Traditional Authority level as a practical and robust basis for analysis until the field survey is completed. The actual lotting will be done during the RFB stage.

Total School Budget- U\$ 25 million

- IP Transit Grant: U\$ 2.5 million
- Connectivity Grant: U\$ 22.5 million

Region	School Count	Maximum Allowable Subsidy Value
Central	754	\$ 7,202,835
Dedza	73	\$ 748,485
Dowa	78	\$ 630,175
Kasungu	78	\$ 714,195
Lilongwe	275	\$ 2,015,674
Mchinji	51	\$ 468,646
Nkhotakota	53	\$ 558,781
Ntcheu	69	\$ 1,209,615
Ntchisi	27	\$ 267,241
Salima	50	\$ 590,023
Northern	418	\$ 5,422,001
Chitipa	46	\$ 502,988
Karonga	65	\$ 543,632
Likoma	4	\$ 88,640

Region	School Count	Maximum Allowable Subsidy Value
Mzimba	150	\$ 1,824,318
Mzuzu City	34	\$ 242,188
Nkhata Bay	64	\$ 1,423,453
Rumphi	55	\$ 796,784
Southern	875	\$ 9,875,165
Balaka	55	\$ 681,239
Blantyre	210	\$ 2,214,470
Chikwawa	52	\$ 859,183
Chiradzulu	42	\$ 521,379
Machinga	49	\$ 582,889
Mangochi	86	\$ 612,742
Mulanje	90	\$ 841,828
Mwanza	26	\$ 177,203
Neno	30	\$ 761,302
Nsanje	34	\$ 544,477
Phalombe	39	\$ 257,206
Thyolo	88	\$ 806,522
Zomba	74	\$ 1,014,727
Grand Total	2047	\$ 22,500,000

Table 4: Calculated MAS value for 2,047 Schools

District-wise Maximum Allowable Subsidy for Government Sites

Total School Budget- \$ 15 million

- IP Transit Grant: \$ 1.5 million
- Connectivity Grant (Including IRU Rights): \$ 13.5 million

Region	Government sites *	Maximum Allowable Subsidy Value
Central	175	\$ 4,184,931
Dedza	14	\$ 226,800
Dowa	22	\$ 398,708
Kasungu	22	\$ 498,281
Lilongwe	31	\$ 677,274
Mchinji	13	\$ 210,940
Nkhotakota	17	\$ 399,674
Ntcheu	25	\$ 875,129
Ntchisi	11	\$ 352,000
Salima	20	\$ 546,125
Northern	95	\$ 3,072,292
Chitipa	17	\$ 629,700
Karonga	11	\$ 209,224
Mzimba	28	\$ 624,769
Nkhata Bay	18	\$ 796,542
Rumphi	21	\$ 812,057

Southern	230	\$ 6,242,780
Balaka	13	\$ 211,425
Blantyre	28	\$ 782,220
Chikwawa	15	\$ 430,832
Chiradzulu	12	\$ 402,784
Machinga	17	\$ 501,999
Mangochi	30	\$ 647,337
Mulanje	19	\$ 446,373
Mwanza	8	\$ 255,149
Neno	12	\$ 428,072
Nsanje	19	\$ 723,506
Phalombe	19	\$ 440,902
Thyolo	25	\$ 654,235
Zomba	13	\$ 317,946
Grand Total	500	\$ 13,500,000

Table 5: Calculated MAS Value for 500 Government Sites

The specific 500 sites within the district-level that will be connected are currently under discussion.

IP Transit Costs

IP Transit is a service purchased from licensed Internet Service Providers to allow Government networks to access the global public internet. It provides international routing, content access, and bandwidth.

Further, details of the IP transit assumptions, bandwidth modelling approach, pricing structure, and grant drawdown analysis are provided in [Annexure 5: Financial Modelling — Detailed Methodology \(R\)](#).

The Annexure 5 presents the underlying R-based financial model used to estimate bandwidth requirements, phased procurement, and grant exhaustion across the project horizon. Relevant summary tables are included therein.

- IP Transit Grant for schools: \$ 2.5 million
- IP Transit Grant for Government sites: \$ 1.5 million

Year	Bandwidth Price (USD)	Schools Bandwidth Mbps	Govt_ Bandwidth Mbps	Schools Bandwidth Cost	Govt Bandwidth Cost	Remaining Grant for School	Remaining Grant for Government
1	5	7642	3733	\$ 458,528	\$ 224,000	\$ 2,041,472	\$ 1,276,000
2	5	11463	5600	\$ 687,792	\$ 336,000	\$ 1,353,680	\$ 940,000
3	3	15284	7467	\$ 550,234	\$ 268,800	\$ 803,446	\$ 671,200
4	3	19105	9333	\$ 687,792	\$ 336,000	\$ 115,654	\$ 335,200
5	2	19105	9333	\$ 458,528	\$ 224,000	\$ 0	\$ 111,200
6	2	19105	9333	\$ 458,528	\$ 224,000	\$ 0	\$ 0
7	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0
8	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0
9	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0

Year	Bandwidth Price (USD)	Schools Bandwidth Mbps	Govt_ Bandwidth Mbps	Schools Bandwidth Cost	Govt Bandwidth Cost	Remaining Grant for School	Remaining Grant for Government
10	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0

Table 6: IP Transit Simulation

The school IP transit grant is fully utilized by Year 5, whereas the government sites' IP transit grant is completely exhausted by Year 6. Additionally, bidders intending to arrange IP transit independently are required to formally declare this in their bid submission and ensure the provision of IP transit services.

It is important to note that the budget allocation is based on primary data, secondary data, and logical assumptions, all of which may change during the tendering and implementation stages. As a result, the funds required for a successful bid may exceed the initially available budget.

School Data Consumption Estimate

The estimated of the monthly data usage (in GB) for a typical school environment where one device is actively used for teaching and learning purposes of up to 50 students in a class. The calculation is based on realistic digital usage patterns commonly observed in African schools, where bandwidth availability and digital device density may be limited.

Assumptions

Bandwidth & Device Use

- Available bandwidth: 20 Mbps
- Active devices: 1 laptop for every 50 students
- The device is used continuously for assigned educational activities.
- School operational days per month: 22 days

Daily Internet Usage Pattern

Activity Type	Daily Duration	Estimated Consumption Rate
Video streaming	4 hours	1 Mbps (480p quality)
Web browsing	1 hour	0.2 Mbps (light usage)

Data Consumption Calculation

- Video: 4 hours × 1 Mbps = 4 Mbps-hours

- Browsing: 1 hour × 0.2 Mbps = 0.2 Mbps-hours

Total per day: 4 + 0.2 = 4.2 Mbps-hours/day = 1.89 GB/day

Monthly Data Consumption = 1.89 GB/day × 22 days = 41.58 GB/month

Monthly Data Requirement for One Device ≈ 42 GB per month

This estimate reflects a scenario where one shared device (serving 50 students) streams educational video content for 4 hours per day and performs 1 hour of web browsing across 22 school days.

The same method can be scaled proportionally based on total students and number of devices available.

Data Usage Estimate for Government Office

This document provides an estimate of monthly internet data usage per employee in a government office operating from 9 AM to 5 PM with 22 working days per month. The office primarily uses intranet services with limited internet access.

Assumptions

- **Work hours:** 9 AM – 5 PM (8 hours/day)
- **Working days per month:** 22
- **Email usage:** Medium–High
- **Web browsing:** 1–2 hours/day
- **File transfers:** Medium
- **Video usage:** 480p (1 Mbps)

Daily Data Usage Breakdown

Activity	Daily Usage
Email	100 MB/day
Web browsing	80 MB/day
File upload/download	75 MB/day
Video usage	200 MB/day

Total Daily Usage: $100 + 80 + 75 + 200 = 455$ MB/day

Monthly Data Usage: $455 \text{ MB/day} \times 22 \text{ days} = 10010 \text{ MB} \approx 9.8 \text{ GB/month}$

Per-employee monthly data requirement: ≈ 10 GB per month

This estimate reflects moderately heavy email usage, increased browsing, and higher video consumption typical in modern government office environments.

This assumption can be considered for devices or employees across government offices.

5.5. Lotting of Sites

Following the financial modelling and viability analysis undertaken for Malawi's national connectivity initiative, a structured lotting strategy has been adopted under this Commercial Transaction Manual (CTM). The objective of the lotting strategy is to divide the overall project scope into manageable, financially viable, and operationally efficient procurement packages, while ensuring transparency, competition, and value for money in the allocation of public grants and subsidies.

The lotting framework is designed to promote equitable participation by eligible bidders, support effective implementation, and facilitate monitoring and contract management across the different components of the project.

Project Division

The project is divided into five primary procurement selections, each representing a distinct component of the national connectivity initiative and reflecting differences in scope, technical requirements, cost structure, and implementation approach:

- Selection 1: Tower Deployment
- Selection 2: Connectivity for Government sites including IP Transit and IRU Rights
- Selection 3: Connectivity for Schools including IP Transit
- Selection 4: Upgrade of 250 Towers

Each procurement selection will be implemented through a separate procurement process, with bidding documents, technical specifications, qualification criteria, evaluation methodology, and contract conditions tailored to the specific nature of the works or services to be procured.

Lotting Logic and Methodology

Each procurement selection follows a lotting approach appropriate to its specific scope and implementation characteristics. Notwithstanding these differences, the overarching objective across all

selections is to ensure that contract packages are broadly comparable in scale and complexity, and that no lot is materially larger or smaller than others, except in clearly justified exceptional cases.

The following principles guide the lotting process:

- **Limits on lot size:** Upper limits are applied to the number of sites included within a single lot to ensure manageability, timely implementation, and effective supervision.
- **Balanced distribution of scope and subsidy:** Lots are structured to avoid excessive concentration of high-cost or low-cost sites within a single package, thereby reducing the risk of distorted bidding behaviour.
- **Exception handling:** In exceptional circumstances, such as highly remote or isolated sites, single-site lots may be created where aggregation is not feasible without compromising efficiency or risk allocation.

Furthermore, the indicative lotting outcomes for tower deployment sites have been prepared to exemplify the implementation of the lotting principles outlined in [Annexure 6](#). The results are intended for planning and illustrative purposes, demonstrating the application of subsidy thresholds, site count limitations, and geographic proximity criteria.

A similar lotting approach may be applied to the other procurement selections once field surveys and site-level data collection, including geographic coordinates, are completed.

6. Tender Strategy and Sequencing

6.1. Overview of Tender Model

The sixth edition of the World Bank's Procurement in Investment Project Financing – Goods, Works, Non-Consulting Services²⁰ outlines the approved procurement regulations for Investment Project Financing (IPF) Borrowers. It provides guidance on the various selection methods and market approaches to be adopted, depending on the requirement and level of competition in international and national markets. Procurement under DMAP will be carried out in accordance with these regulations.

Within Malawi, procurement strategies for the Digital Malawi Acceleration Project are developed under the supervision of the Public Private Partnership Commission (PPPC) and the Department of e-Government. These approaches are intentionally structured to maintain adequate flexibility, enabling adaptation to varying market maturity levels, diverse capacities of Internet Service Providers and

²⁰ THE WORLD BANK Procurement Regulations for IPF Borrowers, PROCUREMENT IN INVESTMENT PROJECT FINANCING Goods, Works, Non-Consulting and Consulting Services Sixth Edition, February 2025. [World Bank Document](#)

Telecom Service Providers, and the technical complexities inherent in deploying broadband infrastructure.

As mentioned earlier, under DMAP Component 1, the objective is to establish high-capacity network connectivity to 91 cell towers, 2,000 schools and 500 government sites nationwide, requiring evaluation on cost, design, implementation approach, service quality, and sustainability. The procurement method to be used for Government Sites and Schools under DMAP is Request for Bids (RFB) – Framework Agreements for Non-Consulting Services, Reverse Auctions for price discovery, and Electronic Auction Platform from Pre-Qualification to award of Contract delivering transparency and Value for Money.

The Request for Bids (RFB) for the tower infrastructure component has commenced as part of the procurement process. This method is applicable exclusively to government sites and schools. Further, this method does not impact ongoing procurement activities related to tower infrastructure that have already been initiated. The component relating to USF towers is being procured through an RFB for Non-Consulting Services, using a two-envelope process, followed by a Best and Final Offer (BAFO).

Additionally, if the EAP has been finalized but the tower lots have not yet been procured, then procurement should be conducted through the EAP platform, utilizing Reverse Auctions for price discovery.

While the procurement method applied to the USF sites differs from that used for the institutional connectivity components (government sites and schools), the Maximum Allowable Subsidy (MAS) and the lotting of sites mentioned in this document is applicable to all three procurements. The approach set out for site-based grouping of locations, with the option to aggregate sites into lots where appropriate, is applicable across all three procurements.

The applicable market approach is Open International Competitive Procurement, ensuring broad participation and transparency. According to World Bank Procurement Regulations, international advertisement is required for complex, high-value, or high-risk contracts. As specified in the World Bank's Guidance on Thresholds for Procurement Approaches and Methods by Country (2023)²¹, projects with a value exceeding USD 15 million are required to follow an Open International procurement approach.

Prior to the procurement, an Early market engagement (EME) should be undertaken after public advertisement of the project to assess market interest and obtain market feedback on the procurement features and lot design.

²¹ Bank Guidance Thresholds for procurement approaches and methods by country [BG-TfP.pdf](#)

The procurement process summary provided in [Section 6.6](#) of this document.

It is important to understand the following procurement components by both the procurement agency and the suppliers for the success of DMAP:

1. Early Market Engagement
2. Primary Procurement
3. Framework Agreement and Guidelines
4. Electronic Auction Platform
5. Secondary Procurement
 - Multi-Round Reverse Auction
 - Call-off Contract

6.2. Early Market Engagement

Early Market Engagement (EME) refers to structured and transparent interactions between the Borrower and potential suppliers that take place prior to the initiation of the formal procurement process. It enables informed decisions, improves procurement design, and prepares the market to respond efficiently when bidding documents are released, providing bidders with clear opportunities and time to submit strong bids. Effective March 2025, EME is mandatory for all WB-funded international procurements exceeding USD 10 million.²²

To attract relevant suppliers and partners, an early market engagement is scheduled on 23rd March 2026, in Blantyre where MACRA and most network operators are located. Further outreach can be undertaken through widely recognized channels used for World Bank-financed projects, including:

- National newspapers in Malawi
- World Bank and World Bank Group procurement platforms
- Other relevant international procurement portals

This includes public disclosure of procurement intentions through forward procurement plans such as publishing of this CTM document.

Guiding Principles

All EME must be conducted in accordance with the Bank's core principles - transparency, fairness, efficiency, integrity and shall ensure:

²² Early Market Engagement <https://thedocs.worldbank.org/en/doc/c3f7190450f73c0780a33be39a33cfd3-0290012025/original/Early-Market-Engagement-Fact-Sheet-Feb-5th-For-Publication.pdf>

- Equal access to information for all interested suppliers;
- No negotiation or commitment regarding future procurement outcomes; and
- Clear identification that all information shared is preliminary and non-binding.

How to conduct an Early Market Engagement (EME)?

Preparation: PPPC shall create a purpose and scope document for EME and the specific issues on which supplier input is sought such as the technical qualifiers, site lots, reverse auction awareness, feasibility of project timelines, indicative cost drivers, etc.

Engagement: Early Market Engagement (EME) may be undertaken through broad outreach, including industry sessions (the session planned for 23rd March 2026) and structured consultations with key market participants. These may include:

- Telecommunication Operators (MNOs)
- Internet Service Providers (ISPs)
- Backhaul Network Operators
- Tower Infrastructure Companies
- Trenching and Fiber-Laying Contractors
- Power Supply Providers (Grid and Solar Backup Vendors)
- Network Equipment Manufacturers / OEMs
- Satellite Service Providers
- Passive Infrastructure Providers
- Active Network Vendors (routers, switches, transmission equipment)
- ICT Managed Service Providers
- Logistics and Field Deployment Vendors
- Development partners
- Other interested parties

Where direct engagement with all market actors is not feasible, structured questionnaires may be issued to capture supplier insights. These questionnaires may also be accessed through a QR code during in-person sessions to facilitate broader and more efficient participation.

Information Management:

- PPC will provide consistent, non-confidential, high-level information to all market participants, on a non-discriminatory basis, including the intended scope, preliminary technical requirements, indicative lots, expected timelines, and known constraints.
- Suppliers may in turn share insights related to their capacity, technical solutions, cost drivers, risks, and barriers to participation.
- All communication during EME will be documented and clearly marked as “preliminary and subject to change.”

Close-Out: EME ceases before issuance of Expression of Interest (EOI), though bidders meetings may be convened. PPC consolidates insights and documents on how EME findings have informed the Project Procurement Strategy for Development (PPSD), Procurement Plan, RFB, specifications, evaluation arrangements, and risk allocation.

Governance, Records, and Disclosure

The Borrower maintains complete records of objectives, participants, materials shared, and key insights for Bank oversight, audit, and transparency purposes. Any clarifications of general interest arising from the EME are disclosed to all potential suppliers to avoid any perceived or actual competitive advantage. Additionally, the types of Early Market Engagement undertaken for this Project are outlined in [Annexure 7](#).

Limitation

EME is **not** part of the formal procurement process. It **does not** evaluate, rank, or pre-qualify suppliers, **does not** initiate bidding and **must not** involve commercial negotiation or selective disclosure. Formal procurement commences only upon issuance of the Request for Bids (RFB).

Following completion of Early Market Engagement activities, an Expression of Interest (EOI) will be issued in accordance with World Bank Procurement Regulations.

6.3. Expression of Interest (EOI)

The Expression of Interest (EOI) serves as an initial procurement tool designed to identify and evaluate organisations capable of providing a defined range of services. In the context of DMAP, the EOI aims to attract firms and organisations within the ICT sector that possess relevant expertise in telecommunications and network infrastructure.

The EOI is typically published on official procurement portals, donor websites, and newspapers to ensure wide visibility and fair competition. Interested firms obtain the EOI document either through the issuing authority's website or an e-procurement website or by directly contacting the procurement unit of the implementing agency. The key objective of an EOI is to invite capable firms to signal their interest and provide an overview of their credentials and experience prior to the release of a detailed RFB document. The standard World Bank document used is Template Request for expression of interest for consultants, July 2016²³

The EOI document outlines the background of the project, tentative scope of services, indicative timelines, and Terms of Reference (TOR). It also presents instructions for submission and the format in which firms must present their organisational profile, capabilities, and relevant experience. By providing this basic information upfront, the EOI enables potential suppliers to assess the suitability of the opportunity and prepare a structured submission for RFB demonstrating their qualifications and track record.

It is important to note that an EOI is not a contract and does not constitute a commitment by the procuring entity to award any lot. Instead, it serves solely as an invitation for interested organisations to express their willingness to participate in the procurement process. The procuring authority may receive multiple submissions and will review these to determine which firms meet the minimum requirements to proceed.

6.4. Understanding Framework Agreement

A Framework Agreement (FA) is an arrangement (not a contract) with one or more qualified suppliers that sets the terms, conditions, and pricing mechanisms for the RFB and future call-off contracts, allowing efficient procurement without repeating the full RFB process. For DMAP, the Framework Agreement for ICT equipment and Non-Consulting Services is an open FA, allowing new suppliers to be admitted at intervals of approximately once a year across its 3-year tenure. The Framework Agreement is designed to accommodate multiple suppliers by default.

Framework Agreement is structured in two stages:

1) Primary Procurement

Primary Procurement consists of issuing an open and competitive Request for Bids (RFB), followed by evaluation of bids against the established qualification requirements. Only bidders qualifying (pass) the

²³ Template Request for expression of interest for consultants - <https://thedocs.worldbank.org/en/doc/796631468421566876-0290022016/Template-Request-for-expression-of-interest-for-consultants>

pre-qualification, technical compliance and pricing requirements are considered for Framework Agreement award.

The Procuring Agency then concludes a Framework Agreement with each selected Framework Agreement Supplier and issues a 'Notification of Intention to conclude' the Framework Agreement(s), triggering a 7-business-day standstill period during which debriefs and complaints are managed. Upon completion of the standstill period, the Procuring Agency publishes a public notice announcing the conclusion of the Framework Agreement(s) and naming the successful bidders.

2) Secondary Procurement

While suppliers are shortlisted through the Framework Agreement, contract awards occur only at the secondary procurement stage through call-off contracts. Call-offs are issued via mini-competition among FA suppliers and involves the following:

1. Request for Quotations (RFQ) specifying the exact site, quantity, or lots
2. Multi-Round Reverse Auction (MRRA) conducted on the Electronic Auction Platform (EAP).

Call-off contracts are awarded to the supplier offering the lowest subsidy per lot, in accordance with the RFQ requirements.

Design Considerations for Request for Bids (RFB) for a Framework Agreement (FA)

When designing a Request for Bids (RFB) for a Framework Agreement (FA), the following considerations shall be addressed sequentially to ensure compliance with World Bank Procurement Regulations, transparency, and value for money.

1. Institutional Arrangements and Governance

The procuring entity or entities shall be clearly identified at the outset. A Lead Purchaser (if the agency procures for itself and others) or Responsible Agency (if the agency procures only for others) shall be designated as a party to the Framework Agreement (FA), with clearly defined roles and responsibilities for governance, administration, oversight, and performance monitoring of the Framework Agreement throughout its tenure.

2. Framework Agreement Model and Digital Platform

The Framework Agreement shall be designed as an open, multi-supplier panel with two-stage competition. For such Open FAs, the use of an electronic Government Procurement / Electronic Auction Platform (e-GP/EAP) shall be mandatory.

3. Scope Definition and Procurement Documentation

The scope of the Framework Agreement shall be clearly defined, covering non-consulting services related to:

- Connectivity for government sites
- Connectivity for secondary schools

The RFB shall be prepared in accordance with the World Bank Standard Procurement Document: Request for Bids – Framework Agreement(s), Non-Consulting Services.²⁴

4. Primary Procurement: Technical Compliance and Price Evaluation Framework

The primary procurement shall include Technical Compliance and Price Commercial Evaluation based on economically advantageous selection.

Following completion of the evaluation and shortlisting process, the Procuring Entity will issue a Notification of Intention to conclude the Framework Agreements, which will trigger a mandatory ten-day Standstill Period. After the Standstill Period has elapsed, a formal notice will be published disclosing the names of all successful bidders designated as 'FA Suppliers'.

6.4.1. Primary Procurement - Request for Bids (RFB) for Non-Consulting Services

The primary procurement starts with publishing of RFB till the award of Framework Agreement. The procurement document to be used is SPD – Request for Bids – Framework Agreement(s) – Non-Consulting Services.

The RFB stage has the following stages of qualification, and the outcome of both stages is binary pass/fail.

1. Pre-qualification Criteria
2. Technical Compliance

A. Pre-Qualification Criteria

The pre-qualification is designed to screen applicants on validation of the completeness, currency, and acceptability of bidder information in line with the World Bank's Evaluating Bids, Proposals guidance (April 2023)²⁵, confirming compliance with the legal and regulatory requirements in Malawi. Bidders failing to meet any mandatory requirement are excluded from further consideration.

²⁴ [Request for Bids: Framework Agreement\(s\) Non-Consulting Services - Two-Envelope Bidding Process](#)

²⁵ EVALUATING BIDS AND PROPOSALS - Including Use of Rated Criteria for Procurement of Goods, Works, and Non-Consulting Services [Evaluating-Bids-and-Proposals-with-Rated-Criteria.pdf](#)

Pre-Qualification (PQ) assessment at this stage is on a pass/fail criteria, and only bidders that meet all minimum criteria are considered eligible for commercial evaluation.

The joint venture and consortium-led bids are allowed under this RFB with one Lead Bidder shall be confirmed. No financial information shall be submitted as part of the EOI. All pricing will be submitted independently during the RFB and Call-Off stages through the formal submissions and electronic auction processes.

Bidders participating in procurement financed by the International Finance Corporation (IFC), as a member of the World Bank Group, must comply with the World Bank Procurement Regulations including IFC's integrity framework, and applicable environmental, social, and financial requirements. These requirements apply equally to all bidders, including joint venture (JV) partners and, where applicable, key subcontractors.

Pre-Qualification considerations for Bidders to be Included in the Request for Bids (RFB)

1. Legal Status and Incorporation

Bidders must be legally established entities, duly incorporated and in good standing in their country of registration. They must possess full legal capacity to enter contracts under IFC/World Bank-financed projects. Evidence includes a Certificate of Incorporation and the Articles or Memorandum of Association.

2. Licensing Requirements

Where applicable under Malawi law, bidders must hold a valid operating license. At bidding stage, bidders may submit an existing license, evidence of application, or a declaration confirming they will obtain the license upon award of the Framework Agreement.

3. Tax Compliance

Bidders must provide a valid tax clearance certificate issued by the Malawi Revenue Authority or by the relevant tax authority in their home jurisdiction, demonstrating current tax compliance.

4. Sanctions, Integrity, and Anti-Corruption Compliance

Bidders must not be debarred, suspended, or cross-debarred by the World Bank Group or any participating multilateral development bank, and must not appear on United Nations Security Council sanctions lists. They must declare the absence of blacklisting and commit to the World Bank Anti-Corruption Guidelines, including no engagement in fraud, corruption, collusion, coercion, or

obstructive practices, and compliance with Anti-Money Laundering(AML) / Countering the Financing of Terrorism(CFT) obligations.

5. Conflict of Interest, Governance, and Ownership Disclosure

Bidders must declare any actual, potential, or perceived conflict of interest as defined under the World Bank Procurement Regulations. The structure of the JV and consortium should be disclosed. They shall disclose beneficial ownership, JV structure, and key subcontractors. Where a consortium or JV is proposed, the Lead Bidder must be clearly identified.

6. Environmental and Social (ESHS) and IFC Performance Standards Compliance

Bidders must demonstrate the capacity to meet IFC Performance Standards and project-specific ESHS requirements, including labour and working conditions, occupational health and safety, environmental safeguards, and community health and safety obligations. Bidders may be required to submit an ESHS Code of Conduct and ESHS Management Plans.

7. Relevant Experience

Bidders must demonstrate adequate technical experience, including completion of at least one similar ICT project and a minimum of five (5) years of ICT sector experience in Africa. For tower sites, eligibility requires that at least five towers must have been connected in the previous project. For schools and government sites, eligibility is based on having established connectivity to either more than 10 commercial sites or a minimum of 50 household sites. Acceptable evidence includes completion certificates, client references, and delivery documentation.

8. Financial Capacity and Turnover

Bidders must demonstrate financial soundness through audited financial statements for the last three fiscal years (2023–24, 2024–25, 2025–256). The average annual turnover must be at least 1.5 times the estimated value of the lot(s) being bid. Bidders must confirm that they have not filed for bankruptcy or insolvency and are not subject to restructuring or similar proceedings.

Example: Assume that a company TechNet Solutions Ltd. submits audited financial statements for the last three years:

Fiscal Year	Annual Turnover (USD)	Auditor
2023–24	4,200,000	ABC & Associates (Certified Auditor)
2024–25	4,850,000	ABC & Associates
2025–26	5,100,000	ABC & Associates

Table 7:Example explaining qualification based on Financial Capacity

Average Annual Turnover:

$(4,200,000 + 4,850,000 + 5,100,000) \div 3 = 4,716,666$ USD

Value of the Lot: USD 2,500,000

Required Minimum Turnover: $1.5 \times 2,500,000 = 3,750,000$ USD

Result:

TechNet Solutions' average turnover of 4,716,666 USD exceeds the required 3,750,000 USD, thus qualified.

9. Manpower and Technical Resources

Bidders must demonstrate sufficient skilled personnel, including at least thirty (30) staff with relevant qualifications (engineering, ICT, planning, installation, GIS/survey, maintenance) experience in Malawi or the African region.

10. Operation and Maintenance (O&M) Capability

At least one project in managing operations and maintenance (O&M) of fibre optic networks, with clear examples of meeting stringent Service Level Agreements (SLAs) on uptime, restoration times, and redundancy.

11. Performance Security Capacity

The Lead Bidder must demonstrate the ability to furnish a Performance Security equivalent to ten percent (10%) of the contract value within the required timeframe. Evidence includes a letter of intent or confirmation from a reputable bank or insurer.

12. Litigation and Claims

Bidders must declare the absence of significant past or pending litigation or claims that could materially impact their ability to perform the contract. Supporting legal records may be requested if needed.

[Annexure 8](#) outlines the comprehensive Pre-Qualification (PQ) requirements and PPC has the discretion to modify the criteria as it deemed fit.

B. Technical Compliance

To support evaluation of bidders' proposed solutions and to ensure that the required Service Level Agreements (SLAs) can be reliably achieved, the RFB shall include a Technical Compliance Sheet.

The purpose of this sheet is to allow bidders to clearly indicate the technologies, equipment, network architecture, and operational methodologies they propose to deploy across the different selections. Since the achievement of minimum bandwidth thresholds, network availability targets, fault-response times, and interoperability with existing backhaul infrastructure depends directly on the technical design proposed by each bidder.

Therefore, this Technical Compliance Sheet provides a structured format for bidders to confirm compliance with mandatory technical requirements and to describe the corresponding technological solutions. This sheet will be used strictly for compliance verification during the technical responsiveness assessment and not for scoring or comparative evaluation unless specified in the Bid Data Sheet.

Bidders shall complete and submit the Technical Compliance Sheets for Government Sites and Secondary Schools [\[Annex \[9\]\]](#) as part of the qualification. All fields under ‘Bidder’s Technical Description / Proposed Technology’ must be completed. Failure to submit the completed sheets may result in the bid being declared non-responsive.”

C. Commercial Evaluation and setting of Ceiling Prices

Commercial evaluation involves assessing each bid to understand its real financial impact and long-term value throughout the entire duration of the contract. For the DMAP project, the core element of this assessment is the Gross Total Value (GTV), which represents the bidder’s total proposed financial commitment. In this case, the GTV corresponds to the Total Subsidy, which ultimately becomes the contract sum.

Although bidders estimate costs for the individual sites or lots they plan to pursue, the RFB requires them to submit only a single consolidated subsidy figure for the predefined lot. This consolidated value allows the evaluation team to effectively compare individual lots and re-evaluate the MAS for each lot.

Commercial Summary

Field	Bidder’s Input
Lots Selected	[Insert Lot Count – X] Mention Lot Names
Total Number of Site(s) in Lot	[Insert Number]
Total Bid Value	[Insert Amount]
List of Site(s)	[Insert Site Names & Lot Name]

Table 8:Format for Commercial Summary

Commercial Offer – Lot [Insert Lot Number] (Fill for each lot)

Field	Bidder's Entry
Subsidy Ceiling for the Lot (USD)	[As per RFB]
Total Subsidy Quoted (USD – Figures)	[Insert Amount]
Total Subsidy Quoted (USD – Words)	[Insert Amount in Words]
Confirmation that Total Subsidy Quoted ≤ MAS	Yes / No

Table 9:Format for lot subsidy

Bidder Declaration Table

Declaration	Confirmation
One bid submitted per Lot	Yes / No
Bid is unconditional and compliant with RFP	Yes / No
Authorized Signatory	
Signature & Date	

Table 10:Declaration for Commercial Proposal

The other components that can be considered for Commercial evaluation based on the project objective is attached in [Annexure 10](#).

D. Lowest Subsidy Selection Method

For each Site or Lot, the Procuring Entity will publish a fixed Maximum Allowable Subsidy (MAS), which represents the maximum subsidy payable for delivering a high-quality, technically compliant solution. Bidders must quote a single subsidy amount for each Lot, and the quoted subsidy must be equal to or lower than the published MAS.

A bid will be considered responsive only if it meets all eligibility and mandatory technical requirements and the quoted subsidy does not exceed the MAS for that Lot.

All responsive bids will be evaluated using a lowest-subsidy selection method. Bidders will be ranked strictly in ascending order of their quoted subsidy:

- L1 — Lowest quoted subsidy
- L2 — Second-lowest quoted subsidy
- L3 — Third-lowest quoted subsidy, and so forth

The bidder ranked L1 will be recommended for award of the Framework Agreement for that Lot.

Commercial Evaluation Considerations

During commercial evaluation, the Evaluation Panel will review the realism, completeness, and internal consistency of each quoted subsidy. This includes checks for abnormally low bids (ALBs) or zero. The Procuring Entity reserves the right to examine any quoted subsidy amount. Bidders may be requested to provide clarifications or supporting evidence demonstrating that their quotation is sustainable and consistent with the required scope and service levels.

Failure to provide adequate and verifiable justification may result in the bid being rejected in accordance with applicable Procurement Regulations. This clarification is to be provided by the bidder within 10 working days of receiving the email from PPPC for justification on the quote.

Admission to the Framework Agreement

A minimum of two qualified bidders, making sure there is at least one bidder for each North, Central and South, that can deliver connectivity across the lots will be admitted to the Framework Agreement, provided they meet pre-qualification and technical compliance requirements.

The final number of admitted suppliers will depend on considerations such as:

- Operational manageability
- Administrative efficiency
- Depth of market competition

In the context of Malawi, it would be most effective to include between five and eight bidders within the framework agreement.

Commercial Evaluation Criteria

- Only bidders that meet all eligibility, pre-qualification, and technical compliance requirements shall proceed to commercial evaluation, and the commercial bids of such technically compliant bidders shall be opened at the notified date and time in the presence of their representatives.
- Bidders shall be ranked in ascending order of their Total Subsidy (USD) as L1, L2, L3, etc., with L1 recommended for award under the Lowest Cost Selection (LCS) method
- Bids that contain abnormally low or unrealistically high subsidy values, or attempt to distort competition, shall be asked for revision or be rejected if they don't submit relevant proof within 5 working days. However, it is possible that bidders may register a zero subsidy bid for towers,

in which case they would be encouraged to go ahead and construct using their own funds. It is unlikely that bidders would register zero value bids for sites, as this would mean they are offering connectivity free of charge, but they may choose to do so for reasons of corporate social responsibility.

- Any bid that is incomplete, inconsistent, or non-compliant may be rejected.
- If a bidder withdraws its bid at any stage prior to the final award decision, the bid shall be treated as withdrawn and the Procuring Entity may, at its discretion, apply appropriate administrative actions in accordance with applicable procurement regulations. Evaluation will continue with the remaining bidders.
- If two or more bidders quote the same Total Subsidy, even after repeated auction rounds or a BAFO process, the tie shall be resolved in favour of the bidder with the higher Average Annual Turnover (based on the last three financial years). If the bidders also have the same Average Annual Turnover, the tie shall be resolved in favour of the bidder whose bid submission was recorded earliest in the bid receipt register or e-procurement system.
- If a Lot receives no responsive bids, or if all bids exceed the MAS ceiling or fail to meet the technical evaluation criteria, the Purchaser may declare the Lot unsuccessful and, at its discretion, re-tender the Lot, adjust the scope or parameters, revise the subsidy ceiling, or adopt an alternative delivery approach in accordance with applicable regulations.

Example of Least Cost Selection

Commercial Evaluation			
Financial Criteria	Bidder A	Bidder B	Bidder D
Total Subsidy	\$ 5.9M	\$ 6.5M	\$6.6 M

The Financial bid is evaluated on a Least Cost Basis and Bidder A is becomes as L1

Figure 4: Illustrative Least Cost Selection

E. Award of Framework Agreement

Following completion of the Commercial Evaluation, the PPPC shall issue a **Notification of Intention to Conclude Framework Agreements (FAs)**. A **standstill period of seven (7) working days** will apply, during which the procuring entity shall:

- Provide debriefings to unsuccessful bidders upon request and

- Address any complaints in accordance with applicable procedures.

Upon completion, a public award notice shall be published. Both notices shall disclose the names of all successful bidders designated as “FA Suppliers.”

Features of a Framework Agreement

- The Primary Procurement shall be conducted through International Open Competitive Procurement to establish multiple Framework Agreements (FAs), enabling award of unlimited call-off contracts to qualified suppliers during the Framework Agreement term.
- Indicative quantity ranges may be disclosed in the RFB for planning purposes only; these estimates are not binding and shall not create any obligation on the Purchaser.
- A Framework Agreement is not a contract for supply. It supports anticipated procurement needs and creates no legally binding obligation for the Purchaser to order any minimum volume, value, or quantity during the Framework Agreement term.
- Suppliers shall have no expectation or guarantee of receiving any call-off contract under the Framework Agreement.
- The initial Framework Agreement tenure may be three (3) years, extendable by up to two (2) additional years based on requirements. Call-off contracts must be planned and executed within this tenure to ensure value for money (VfM).
- No minimum purchase commitment shall be stated or implied; any such indication would convert the Framework Agreement into a supply contract and is therefore prohibited.
- The arrangement is intended to be multi-supplier and multi-user, allowing multiple government agencies to place call-offs, and enabling addition or replacement of suppliers during the Framework Agreement term as permitted by regulations.
- A Lead Purchaser may be appointed by participating agencies to conduct the procurement on their behalf and establish the Framework Agreement. If the procuring entity does not itself procure the goods/services, it shall act as the Responsible Agency coordinating the process.

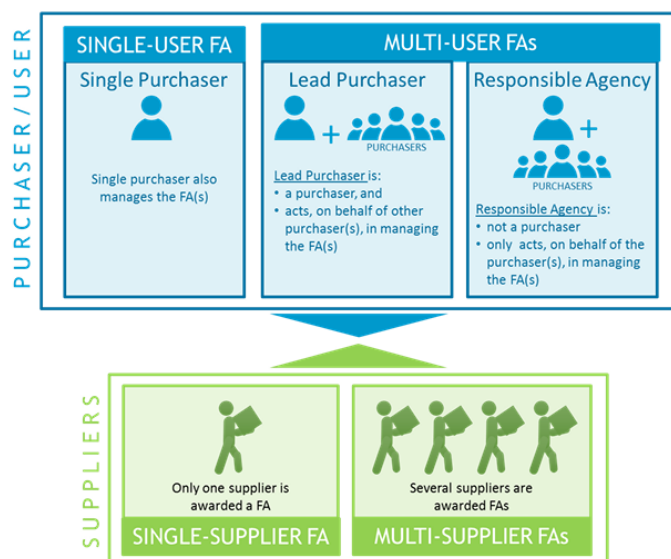


Figure 5: Difference between Single & Multi supplier FA

- Call-off contracts shall be awarded through a Secondary Procurement process, conducted via RFQ and Reverse Auction (using the EAP) for price discovery among all eligible FA Suppliers.
- The Maximum Allowable Subsidy (MAS) established in the Primary Procurement shall serve as the baseline ceiling for the Reverse Auction process.
- Each Call-off Contract shall be governed by its own GCC and SCC, tailored to the specific requirements and service locations.
- Call-off Contracts may only be issued for the goods and services covered under the Framework Agreement, such as DMAP connectivity services in the Malawi context.
- Performance-Based Contracting (PBC) is not applied at the Framework Agreement level, but may be incorporated into individual Call-off Contracts as required.
- The Framework Agreement shall maintain at least two active, capable FA Suppliers to ensure competition and service coverage across Malawi. Under an Open Framework Agreement model, additional suppliers may enter the panel during the Framework Agreement term if they meet all technical and commercial requirements set in the RFB.
- If an FA Supplier is terminated or withdraws, the Lead Purchaser may (i) invite the next eligible bidder from the original Primary Procurement ranking, or (ii) admit a new supplier through an EOI/RFB cycle to maintain adequate competition.

F. Admission of Additional Service Providers to the Framework Agreement

This Framework Agreement is established as an Open Framework Agreement, which permits the Procuring Entity to admit additional qualified service providers after the initial award, in accordance with the World Bank Procurement Regulations for IPF Borrowers.

The purpose of this provision is to:

- Ensure continued competition throughout the Framework duration.
- Strengthen market depth and operational flexibility.
- Allow entry of newly qualified, innovative, or competitively priced suppliers; and
- Safeguard uninterrupted service delivery across regions.

Admission of additional suppliers is not automatic and remains subject to the procedures and conditions outlined below.

Circumstances Under Which Additional Suppliers May Be Admitted

The Procuring Entity may initiate the admission of additional service providers under the Framework Agreement in the following circumstances:

1. Periodic Opening of Applications: Every quarter, the Framework Agreement application window opens for ten working days, during which new interested bidders may submit their Expressions of Interest (EOI).
2. Insufficient Supplier Pool: The number of active Framework Agreement suppliers falls below two.
3. Capacity Gaps: Existing suppliers demonstrate capacity constraints in specific geographic regions.
4. Need for Enhanced Competition: Additional suppliers are required to strengthen supply resilience and promote competitive pricing.
5. Technological Advancements: New technologies or innovations justify re-opening the Framework Agreement to ensure up-to-date solutions.

All decisions to admit additional suppliers shall be made in accordance with the rules governing the primary procurement process.

Procedure for Admission of Additional Suppliers

Step 1 — Decision to Re-Open the Framework

The Procuring Entity may reopen the Framework Agreement as per the terms mentioned above. Where relevant, Early Market Engagement (EME) or an Expression of Interest (EOI) may be used to signal the opportunity to the market.

Step 2 — Publication of Notice

For quarterly periodic procurement, a public notice shall be issued at least 15 working days before the start date for accepting Expressions of Interest (EOIs) from interested suppliers. For non-periodic procurement, the Procuring Entity shall publish a public notice announcing the reopening of the Framework Agreement. In both the cases the notice is published on the government website as specified in the EOI.

Step 3 — Submission by Interested Suppliers

Applicants are shared RFB in response to the EOI and must submit the complete RFB package, including:

- Pre-Qualification (PQ) forms
- Technical Compliance Sheet
- All required declarations and supporting evidence
- A subsidy quotation at or below the MAS for the applicable Lots

Step 4 — Evaluation Process

The Procuring Entity shall evaluate submissions in three stages similar to primary procurement evaluation:

1. Eligibility and PQ Assessment – Verification of eligibility and qualification criteria.
2. Technical Responsiveness – Compliance with all mandatory technical requirements.

3. Commercial Evaluation – Confirmation that the subsidy quotation does not exceed the MAS and is realistic, complete, feasible, and consistent.

Only suppliers meeting all three stages will be considered responsive.

Step 5 — Notification of Intention to Award

Responsive and competitive suppliers if qualified shall be published **Notification of Intention to Conclude Framework Agreements (FAs)** in the respective website and hold a **standstill period of seven (7) working days**

Step 6 — Admission to the Framework Agreement

After the standstill period (where applicable), suppliers will sign a Framework Agreement Addendum and formally join the Framework. Admission does not guarantee any minimum quantity or call-off contract.

Step 7 — Participation in Call-Off (RFQ) Processes

Once admitted, suppliers may participate in all applicable RFQs, mini-competitions, and subsequent call-off processes. Existing Framework suppliers will be informed whenever a new supplier is admitted.

Treatment of Additional Suppliers

Newly admitted suppliers:

- Have the same rights and obligations as existing Framework suppliers
- Participate in all mini-competitions and call-offs on equal terms
- Are subject to the same performance monitoring, KPIs, and reporting requirements
- May not claim preferential treatment or retrospective benefits
- Will be announced to existing suppliers

No Entitlement Clause

Participation in the initial EOI/RFB process does not guarantee future admission. Meeting minimum eligibility or technical criteria does not create any right to automatic inclusion.

Admission remains entirely at the discretion of the Procuring Entity in accordance with the Procurement Regulations.

Exclusion and Rejection During Admission

Applications may be rejected where:

- Submissions are incomplete or unverifiable
- Subsidy quotations exceed the MAS
- Eligibility requirements are not met
- The technical proposal is non-compliant
- Subsidy quotations are unrealistic or inadequately justified
- The bidder is sanctioned or subject to conflict of interest
- Operational feasibility cannot be confirmed

Rejected bidders may re-apply during subsequent reopening cycles only if they have demonstrably addressed the deficiencies identified in their previous submission. The Authority reserves the right to decline repeated applications from the same bidder if the submission remains substantially unchanged or if the bidder has been rejected for material non-compliance. This prevents administrative burden and ensures that re-openings remain meaningful and competitive.

EOI and RFB Processing

EOIs must be submitted during the designated submission period announced in the public notice. The Lead Purchaser will evaluate EOIs in accordance with Procurement Regulations and inform applicants of the outcome. Pre-qualified suppliers will be invited to submit RFB responses within the stated timeframe. The PPPC will evaluate RFBs and issue notifications of intention to award following the standard procedures for World Bank-financed procurements.

Furthermore, suppliers eliminated during the initial primary procurement process cannot re-enter the Framework Agreement, whether individually or within the same consortium.

6.4.2. Secondary Procurement

While qualified suppliers are issued Framework Agreements (FAs), contract awards occur only during the secondary procurement stage through call-off contracts. Call-off opportunities are offered through a structured mini-competition conducted as follows:

Secondary procurement shall be carried out through:

1. Issuance of a Request for Quotation (RFQ) specifying exact quantities, sites, or bundled sites as lots; and
2. A Multi-Round Reverse Auction (MRRA) undertaken on the EAP platform.
3. Call-off contracts shall be awarded to the supplier offering the lowest evaluated bid, below the MAS, per lot, as determined through the MRRA and in full alignment with RFQ requirements.

The primary purpose of the Framework Agreement is to reduce procurement lead time. Accordingly, all legal, eligibility, and qualification checks are completed during primary procurement. Only quantities and prices are established at the call-off stage.

Key Principles for Secondary Procurement

1. Eligibility to Participate

Only active FA suppliers, including newly admitted suppliers, are eligible to participate in secondary procurement. Suppliers disqualified during primary procurement remain ineligible.

2. Lot Structure and Bidding Scope

Lots may be structured as:

- single-site lots, or
- bundled multi-site lots,

based on project requirements and early market engagement. Awards shall be made only for lots receiving responsive bids.

3. Auction Completion and Re-Auction

The MAS ceiling shall not be revised or increased after bid submission. Revising MAS post-bid would alter the advertised evaluation conditions, violate equal treatment and transparency principles, create incentives for inflated bidding, and undermine the integrity of the competition. If bids exceed the MAS,

the Lot shall be declared unsuccessful and may be re-tendered with revised parameters in a new competitive process.

4. Performance Security and Contract Structure

No performance security is required at the Framework Agreement (FA) level. Suppliers awarded Call-Off Contracts shall provide a performance security in accordance with the requirements stated in the RFQ. All Call-Off Contracts shall operate as Performance-Based Contracts (PBCs), where payments are linked to measurable service outputs such as service availability, bandwidth performance, latency, and maintenance response times, consistent with World Bank guidance on output-based contracting. It is critical that all payments from project funds must be completed before the project's closing date and no disbursements are permitted thereafter.

5. Contract Management and Oversight

The Lead Purchaser – PPPC, shall manage and oversee all Call-Off Contracts under the Framework Agreement, monitor supplier performance against contractual obligations, ensure ongoing compliance with Framework Agreement and Call-Off terms, and maintain complete procurement and contract records to demonstrate Value for Money (VfM) and meet audit and regulatory requirements.

A. Request for Quotations (RFQ)

A Request for Quotation (RFQ) is a simple, competitive procurement method used to obtain price quotations for non-consulting services or small works. It focuses on comparing written quotations from FA suppliers be given sufficient time to prepare and submit their offers. Quotations may be provided electronically or in writing, depending on what is specified. Evaluation and award follow the criteria outlined in the RFQ and the Request for Bids (RFB), and the Purchaser must maintain complete records of all RFQ proceedings.

Components of an RFQ

- Description and quantity of required goods, services, or works
- Delivery, performance, or installation period
- Service or delivery locations
- Technical and compliance requirements
- Deadline for submission
- Permitted submission methods (letter, email, electronic)

These minimum details ensure comparability and responsiveness across supplier quotations. The quotations received through the RFQ also establish the Maximum Allowable Subsidy (MAS) price ceiling, which is set as the lowest compliant subsidy quotation submitted for the Lot.

B. Multi-Round Reverse Auction (MRRA)

The core objective of a Reverse Auction is to achieve value for money using price discovery in a competitive market. The World Bank has lent approximately \$117.5 billion for projects across the globe in 2024²⁶ and DMAP project falls under the IDEA²⁷ project funded by World Bank.

Competitive procurement is used in markets with multiple operators and considerable competition. Competitive auctions such as the Single Round Auction (SRA) used in Chile since 1995 (Sepulveda, 2004) and Multi-Round Reverse Auctions (MRRA) pioneered by India in the early 2000s (Wu, 2014, Jain & Raghuram, 2010) have shown success in efficiently allocating funds. According to World Bank procurement guidelines, to utilize reverse actions the bids must be substantially responsive, meeting all eligibility and technical requirements.²⁸

The core Components of a Reverse Auction includes Lot Configuration, Lot Sizing, Maximum Allowable Subsidy and Pricing rule which is discussed in Section 5.3 and 5.5

In the Eastern African context, where auction experience is evolving and resources must be used strategically, careful balancing of complexity and cost can enhance outcomes. Thoughtfully designed auctions can both safeguard public funds and nurture long-term market development. While highly efficient subsidy minimization may advantage larger incumbents, creating space for smaller or emerging suppliers can strengthen competition and innovation over time. Clearly defining policy objectives enables auction designs that support an appropriate balance of efficiency, competitive growth, and sector sustainability.

Multiple round reverse auctions (MRRA) are typically a clock auction, where the auctioneer announces prices (subsidy amounts) which decline over successive rounds.

1. Key characteristics of MRRA format:

²⁶ World Bank and CEPA. 2023. Allocating universal service subsidies using electronic multi-round reverse auctions: Telecommunications in Tanzania <https://documents1.worldbank.org/curated/en/099101824180532047/pdf/BOSIB-3bdde89d-72a5-4a7f-b371-dd8e86adb477.pdf>

²⁷ Inclusive Digitalization in Eastern and Southern Africa (IDEA) is a US\$2.48 billion Multi-phase Programmatic Approach (MPA) approved by the World Bank Board in June 2024.

²⁸ Allocating universal service subsidies using electronic multi-round reverse auctions: Telecommunications in Tanzania World Bank Group <https://documents1.worldbank.org/curated/en/099651211282373597/pdf/IDU0dbf327200338f04d3e0baf708920f13a346c.pdf>

- Reverse auction: Bidders compete by requesting lower subsidies.
- Clock-based: Subsidy amounts decrease round by round.
- Multiple rounds: Allows iterative adjustment of bids, enabling price discovery.

Illustrative Example

This example demonstrates how the Reverse Auction would operate for the DMAP connectivity procurement in Malawi, where subsidy lots are small-value and an MRRA (Multiple-Round Reverse Auction) is used.

Item	Description
Implementing Agency	Public Private Partnership Commission (PPPC)
Objective	Mobile Broadband Connectivity for underserved areas
Total Subsidy Budget	USD 7 million
Auction Format	Multi-Round Reverse Clock Auction (MRRA)
Lots	91 geographic lots (for cell towers)
Typical Lot Value	~USD 350,000
Smallest Lot	~USD 65,000
Number of Bidders	3

Table 11: Description table for Illustrative Reverse Auction

2. Reserve Prices (Lowest MAS from RFB Stage)

The starting (or 'reserve') price in the Reverse Auction shall be the lowest substantially responsive subsidy quotation submitted in the RFB stage for each Lot. The Reverse Auction shall not use the MAS ceiling as the starting point.

For illustration, below are three sample lots:

Lot	Characteristics	Lowest MAS (USD)	Status
Lot 1	Rural / Medium cost	350,000	Proceeds to auction
Lot 2	Growth centre	350,000	Proceeds to auction
Lot 3	Very small site	65,000	Proceeds to auction

Table 12: Illustration sample lots

All other lots follow the same principle.

3. Bidding Mode

One of the below Bidding Mode will be used in the Auction Process

A. Manual Bidding Mode (Paragraph Format)

In Manual Bidding Mode, the first round begins with the bidding amount starting at the Upper Limit (MAS) and extending down, which is calculated by subtracting the configured decrement percentage from the MAS. Bidders can place their bids within this defined range, and their ranking in each round is determined by the bid amount; if multiple bidders submit the same amount, the system ranks them based on the precise bid submission time, recorded up to microseconds. After all rounds are completed, the bidder with the lowest final bid is declared the winner, and bidders have the flexibility to participate in or skip any round.

B. Auto Bidding Mode

In Auto Bidding Mode, the first round begins with the bidding value calculated as the Maximum Allowable Subsidy (MAS) minus the configured decrement percentage, and each subsequent round continues to reduce this value by applying the same decrement logic to the MAS of the previous round. The MAS for the first round is defined during auction setup. Instead of entering a bid value, bidders respond with a simple “Yes” or “No” to the system-generated value displayed in each round. Ranking is determined solely based on the exact time at which the bidder responds, recorded up to microseconds. The winner is selected after the final round based on the lowest accepted value, and bidders may choose to participate or skip any round. If no bids are received in any round, the committee may declare the auction unsuccessful or reconfigure and rerun it.

Example: To ensure predictable and orderly price discovery, the minimum decrement per bid or round:

Price Decrement = 2% of Reserve Price per Round

- For USD 350,000 lot when there is a 2% reduction = USD 7,000 reduction per round
- For USD 65,000 lot where there is a 2% reduction = USD 1,300 reduction per round

This decrement is disclosed before the auction starts.

This method is consistent with World Bank descending-clock auction design because:

- small lots need small decrements,

- bidders can react predictably,
- auction remains fair and transparent.

4. Reverse Auction Process

Step 1 — Start at Reserve Price (MAS) - Auction rounds open at the lowest bid submitted for each lot.

Step 2 — Clock Reduces Subsidy - PPC reduces subsidy by a fixed, pre-announced decrement.

Step 3 — Bidders Respond YES/NO - If a bidder exits (NO), they cannot enter for that lot.

Step 4 — Last Remaining Bidder Wins the Lot

5. Reverse Auction Rounds

(Using 3 sample lots)

Round 1 — Opening (No reduction yet)

Lot	Start Price	Bidder 1	Bidder 2	Bidder 3	Result
Lot 1	350,000	Yes	Yes	Yes	Continue
Lot 2	350,000	Yes	Yes	Yes	Continue
Lot 3	65,000	Yes	Yes	Yes	Continue

Table 13: Illustrative Round 1

Round 2 — Current MAS Level is reduced by 2%

Lot	New Price	Decrement	Participation	Result
Lot 1	343,000	-7,000	All stay	Continue
Lot 2	343,000	-7,000	All stay	Continue
Lot 3	63,700	-1,300	Bidder 2 exits	Continue

Table 14: Illustrative Round 2

Round 3 — Current MAS Level reduced again

Lot	New Price	Participation	Result
Lot 1	336,000	Bidder 1 exits	Continue
Lot 2	336,000	All stay	Continue

Lot 3	62,400	Bidder 3 exits - Bidder 1 wins Lot 3 at 62,400	Award
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Table 15: Illustrative Round 3

Round 4 — Only Lot 1 and 2 continue

Lot	New Price	Participation	Result
Lot 1	329,000	Bidder 3 remains - Lot 1 awarded at 329,000	Award
Lot 2	329,000	All 3 remain	Continue

Table 16: Illustrative Round 4

Round 5 – Final competition on Lot 2

Lot	New Price	Participation	Result
Lot 2	322,000	Bidder 1 exits	Continue (B2 & B3)

Table 17: Illustrative Round 5

Round 6 — Final price drop

Lot	New Price	Participation	Result
Lot 2	315,000	Bidder 3 exits - Bidder 2 wins at 315,000	Award

Table 18: Illustrative Round 6

6. Final Auction Results

Lot	Reserve Price (USD)	Final Price (USD)	Winning Bidder
Lot 1	350,000	329,000	Bidder 3
Lot 2	350,000	315,000	Bidder 2
Lot 3	65,000	62,400	Bidder 1

Table 19: Illustrative Final Auction Result

All remaining lots follow the same auction logic.

Subsidy Allocation Summary (Illustrative Outcome)

The Reverse Auction using the 2% fixed decrement rule resulted in competitive and progressively reduced subsidy levels across the lots. In the three sample lots illustrated:

- Lot 1 (reserve price USD 350,000) cleared at USD 329,000

- Lot 2 (reserve price USD 350,000) cleared at USD 315,000
- Lot 3 (small lot at USD 65,000) cleared at USD 62,400

These outcomes reflect meaningful price reductions achieved through structured, round-by-round competition. The combined subsidy for these sample lots equals USD 706,400, well within the expected average lot value for the DMAP framework (most lots at USD ~350,000; one lot significantly smaller).

Price reductions of 6–10% from the reserve price demonstrate that the Multi-Round Reverse Auction (MRRA) mechanism is effective even for smaller subsidy lots, which often show less room for reduction compared to large-scale infrastructure subsidies.

Across an auction portfolio of 91 lots, similar competitive dynamics can be expected, provided that:

- reserve prices are based on lowest responsive RFB quotations,
- decrements are small and proportionate (2%), and
- participation includes at least two active bidders per lot.

The auction outcomes illustrate that subsidy reductions can be achieved while still ensuring that bidders retain the financial feasibility to deploy and sustain mobile broadband services in underserved Malawi regions.

Key Insights:

- Price discovery occurred progressively across multiple rounds, with the descending-clock mechanism allowing bidders to reassess viability at each price level.
- Limited disclosure of bidder activity preserved competitive pressure while reducing opportunities for coordination or collusion.
- Lots with more predictable or moderate costs required additional rounds, as bidders remained competitive for longer periods before reaching their minimum acceptable subsidy.
- The multi-round auction format produced deeper price reductions compared to a single-round or static quotation process, strengthening value-for-money outcomes.
- Descending-clock prices and binary YES/NO bidding simplified participation, reduced strategic complexity, and ensured that bidding behaviour remained transparent and auditable.
- Gradual bidder exit patterns enabled clear identification of true cost thresholds, supporting efficient allocation of funds.

- The approach is well-suited to markets with cost variability, uncertainty, or asymmetric information, allowing the auction process itself to reveal underlying economic conditions.
- The structure supports coverage maximization within a fixed budget, enabling decisionmakers to allocate resources efficiently across multiple lots or regions.

What to do when Auction Price Discovered is above the budget?

The following initiatives can be taken based on the strategic importance and objective of the auction.

Options When Auction Outcomes Exceed the Available Budget

1. Revised Price Ceiling

Un-successful Lots shall be re-issued through a new RFQ process using a revised MAS. This budget generally reflects the remaining available funds and the savings realized from the 1st round of completed Reverse Auction process.

2. Re-optimize Lot Packaging

If discovered prices indicate structural cost challenges, high-cost lots can be restructured. This may involve bundling them with commercially attractive areas or splitting them into smaller lots to attract niche or regional bidders. The auction is subsequently re-run with revised lot configurations. The administrative and time costs of re-auctioning should be weighed against the benefits gained from improved price discovery.

3. Adjust Coverage or Service Obligations

Where prices remain persistently high, non-essential service requirements and stringent SLAs may be relaxed, while preserving minimum service standards. This can improve project viability without compromising core policy objectives.

4. Cap Awards at the Approved Budget and Defer Residual Lots

In single-round or static auction formats, awards are strictly constrained by the allocated budget. Lots that exceed the available funding limit are deemed unsuccessful and may be offered again in future rounds of tendering.

5. Avoid *Ex-Post* Budget Top-Ups

Increasing the budget after bids have been disclosed should be avoided, as it weakens auction credibility and creates incentives for strategic overbidding in future procurement process.

C. Call-off Contract

A Call-Off Contract is a legally binding contract issued under an established Framework Agreement (FA) for the procurement of defined non-consulting services. While the Framework Agreement sets the overarching commercial and legal terms applicable to all suppliers, contractual and financial obligations arise only when a Call-Off Contract is awarded.

Call-Off Contracts shall be awarded through secondary procurement, conducted after the completion of the MRRA process, and restricted to suppliers who have been admitted to the Framework Agreement and have submitted compliant RFQ responses. Awards shall be based on the lowest evaluated subsidy at the lot level, in accordance with the criteria specified in the procurement process.

Each Call-Off Contract shall explicitly define the:

- scope of work and service outputs,
- performance standards,
- delivery and deployment timelines, and
- payment schedule and milestones.

All Call-Off Contracts shall operate as Performance-Based Contracts (PBCs), where payments are linked to the achievement of measurable and verifiable outputs such as service availability, bandwidth performance, latency, quality-of-service parameters, and maintenance response times.

A performance security shall be required at the Call-Off Contract stage, in the form and amount stated in the RFQ. The Procurement agency, shall be responsible for managing each Call-Off Contract, monitoring supplier performance, verifying achievement of outputs, and ensuring full compliance with the Framework Agreement and World Bank procurement requirements. This includes maintaining detailed contract records and documentation to demonstrate transparency, accountability, and value for money.

6.5. Roles and Responsibilities of Government Departments and Institutions in the Tendering Process

Entity	Primary role	Responsibilities
1. Public Private Partnership Commission (PPPC)	The PPPC is the implementing agency responsible for structuring, guiding, and facilitating procurement activities in the project. The Project Implementation Unit (PIU) sits at the PPPC.	• Provide strategic guidance on the procurement approaches (e.g., Multi-Round Reverse Auction, RFB) and ensure alignment with World Bank and Government of Malawi (GoM) procurement regulations as well as international best practices. • Support and supervise the competitive bidding process, ensuring transparency, value for money, and compliance with World Bank and GoM procurement regulations. • Review and approve procurement documents (e.g., bidding documents, Request for Qualifications/Proposals), • Manage and coordinate procurement activities including bidder prequalification, evaluation criteria, and award recommendations. • Coordinate with Ministry of Information, Communications & Technology and Ministry of Finance for fiscal liabilities clearance and risk mitigation. • Ensure procurement governance and escalation pathways are established for bid protests and contract negotiation support.
2. Ministry of Information, Communication and Technology and Department of e-Government	Technical lead for digital public service delivery components and institutional procurement coordination.	• Define functional and technical requirements for connectivity services to government offices and digital infrastructure. • Provide inputs for procurement specifications and performance standards for the Multi-Round Reverse Auction. • Participate in evaluation committees to assess technical proposals and price submissions.

Entity	Primary role	Responsibilities
		- Coordinate with the Project Implementation Unit (PIU) on various project activities including procurement of services. - Facilitate inter-agency coordination on site lists, digital readiness assessment, and government needs.
3. Malawi Communications Regulatory Authority (MACRA)	Sector regulator ensuring compliance with communications laws and market fairness.	- Ensure that procurement specifications comply with national regulatory standards (frequency use, interconnection norms, quality of service). - Provide technical guidance on regulatory requirements applicable to bidders (licenses, spectrum allocation, statutory obligations). - Review connectivity solutions proposed in bids for compliance with market rules. - Support the evaluation committee with sector expertise and risk assessments related to telecommunications delivery. - Monitor competitive dynamics to avoid anti-competitive practices during auction and tender processes.
4. Malawi Research and Education Network (MAREN)	Co-Lead for the education connectivity component of the project and technical stakeholder for school connectivity design and procurement input.	- Define technical requirements for connectivity services prioritized for schools and educational institutions. - Provide data (site inventories, expected throughput, service levels) to inform procurement packaging and evaluation criteria. - Serve as technical reviewer for bids related to school connectivity elements. - Coordinate with e-Government and MACRA on interoperability, network architecture design, and consistency with national backbone plans.

Entity	Primary role	Responsibilities
5. Other Government Departments (Including Ministry of Education, Ministries with MDAs, PPDA as relevant)	Sector beneficiaries and contributors to procurement due diligence.	• Provide relevant input for site selection, specific service needs, and functional requirements for targeted departments/agencies. • Engage in consultation during drafting of specifications and procurement documents. • Participate as stakeholders or observers in evaluation panels where relevant to ensure needs alignment. • Collaborate with PPDA to ensure compliance with public procurement legislation.
6. World Bank	Project financier and guardian of financing safeguards and procurement compliance.	• Ensure procurement strategy and methods (RFB, Multi-Round Reverse Auction) comply with the World Bank's Procurement Framework and Procurement Regulations for IPF Borrowers. • Provide prior-no-objection and review of procurement documents, thresholds, and evaluation reports for high-value and high-risk contracts. • Monitor safeguards, fiduciary risk, anti-corruption measures, and procurement transparency throughout the process. • Offer technical guidance to the contracting entity, PIU, and consultants where specialized interpretation of Bank policies is required. • Review bidder eligibility, conflict of interest assessments, and contract award decisions before no-objection or clearance.
7. Universal Service Fund (USF)	Responsible for overseeing tower construction and universal access projects.	• Lead procurement execution for tower construction under the Non-Consulting Services RFB. • Provide technical specifications, civil works designs, and site requirements for tower lots. • Coordinate with PPPC, MACRA, and e-Government on appropriate packaging and bidders. • Conduct pre-bid site visits and respond to bidder queries during RFB processes.

Entity	Primary role	Responsibilities
		- Participate in evaluation and award recommendation for tower construction bids. - May conduct additional call-off rounds, using its own funds, after closure of DMAP.
8. UNICEF	Partner supporting school connectivity and innovation components where relevant; may offer technical assistance.	- Provide insights and technical perspectives particularly on school connectivity and digital inclusion strategies (e.g., Giga/UNICEF initiatives). - Support coordination on aligning procurement outcomes with broader education access and child-focused development goals. - Where UNICEF is co-financing or procures specific elements, ensure alignment of procedures with its own operational policies and local procurement practices. - Act as stakeholder and potential bidder liaison for activities intersecting with its programmes.
9. Electronic Auction Platform (EAP) System Supplier	Supplier of the EAP system.	- Supply and implement the EAP system. - Review of the tendering strategy (e.g., Multi-Round Reverse Auction design) so that it is aligned to the EAP system.
10. Bidder (Build–Own–Operate, BOO)	Private sector entity responsible for financing, building, owning, operating, and maintaining the awarded connectivity and/or infrastructure assets under a Build–Own–Operate (BOO) model.	- Participate in the Multi-Round Reverse Auction and/or RFB processes in accordance with the bidding documents and applicable procurement regulations. - Arrange financing and bear investment and operational risks in line with the BOO structure. - Design, build, own, operate, and maintain the awarded infrastructure and/or connectivity services for the contract period. - Comply with all regulatory, licensing, quality of service, and reporting requirements as defined by MACRA and other relevant authorities.

Entity	Primary role	Responsibilities
		• Meet performance standards, service levels, and coverage obligations specified in the contract and bidding documents. • Cooperate with the PIU, PPC, and relevant MDAs for monitoring, reporting, and verification of service delivery.
11. Bid Evaluation Committee	Evaluation of bids and recommending awards based on established criteria.	• Review and evaluate all bids in line with approved criteria, bidding documents, and World Bank/GoM procurement regulations. • Conduct technical and financial evaluations with objectivity and consistency. • Prepare clear and transparent Evaluation Reports documenting all assessment steps. • Recommend contract award(s) to PPC/PIU based on value for money and compliance with procurement rules. • Consult subject-matter experts (ICT Ministry, MACRA, MAREN, USF, etc.) when specialized technical input is required. • Maintain confidentiality, integrity, and independence throughout the evaluation process. • Manage clarifications with bidders and escalate issues to PPC/World Bank when necessary. • Participate in debriefing sessions for unsuccessful bidders to support transparency and good procurement practice.

Table 20: Roles and Responsibilities of Government Departments and Institutions in the Tendering Process

6.6. Summary of Procurement of the Model

This section provides an overview of procurement initiatives aimed at enhancing digital connectivity throughout Malawi. The proposed model adheres to Malawi's regulatory and institutional frameworks and is in full compliance with the World Bank Procurement Framework.

Proposed Procurement Model

The procurement process begins with a structured Early Market Engagement (EME), through which the Procuring Entity consults potential suppliers to assess market capacity, validate lot design, and refine cost and subsidy assumptions. EME also ensures that suppliers clearly understand the Framework Agreement (FA), the call-off mechanism, and the use of the Electronic Auction Platform (EAP). By engaging the market at this stage, the Government strengthens supplier awareness, encourages broad participation, and promotes a competitive bidding environment.

After completing the Early Market Engagement, and receiving Bank no objection for the draft bidding documents, the Procuring Entity issues an Expression of Interest (EOI). In this procurement model, the EOI serves as public notice to attract interested firms and signal the upcoming opportunity. Its purpose is to enable suppliers to formally register their interest, ensure broad visibility of the opportunity, and allow the Procuring Entity to gauge the depth of market participation before launching the Request for Bids (RFB). All eligibility and qualification checks occur only at the Primary Procurement stage of the RFB.

Under the CTM, the Primary Procurement process is structured around three mandatory evaluation stages. The first stage—Pre-Qualification (PQ) which assesses legal, financial, and operational eligibility on a strict pass/fail basis. Firms that meet all PQ conditions advance to technical evaluation. In the second stage, bidders submit a Technical Compliance Sheet (TCS) confirming compliance with mandatory technical requirements, performance standards, service levels, coverage obligations, and regulatory approvals. This stage is also evaluated on a pass/fail basis, with no scoring or weighting, ensuring that only fully compliant bidders move forward. The final stage focuses on Commercial Evaluation, where bidders submit a financial proposal that must fall within the Maximum Allowable Subsidy (MAS) and below the prescribed price ceiling. For each lot, the bidder offering the lowest evaluated subsidy within the MAS limit is selected for inclusion in the Framework Agreement.

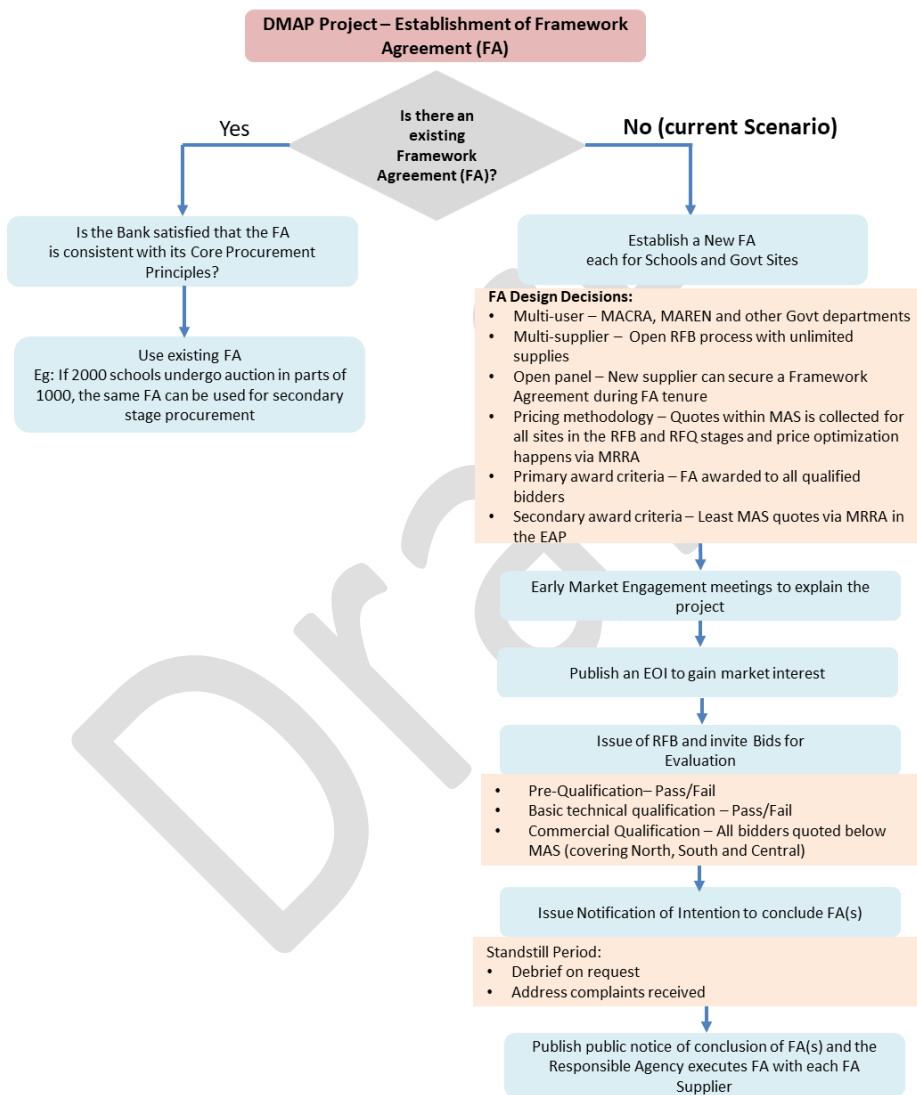
Following the establishment of the FA, procurement transitions to the Secondary Procurement stage. It begins with the Request for Quotations (RFQ), sent only to suppliers admitted to the FA. The RFQ specifies the exact sites or lots, technical conditions, timelines, and subsidy ceilings. Suppliers submitting compliant RFQs then participate in a Multi-Round Reverse Auction (MRRA) conducted on the EAP.

The lowest Maximum Allowable Subsidy (MAS) received at the RFQ stage is adopted as the price ceiling for the Multi-Round Reverse Auction (MRRA). The MRRA is conducted through successive, anonymously administered descending-bid rounds, enabling transparent and efficient price discovery. At the close of the auction, the supplier offering the lowest valid subsidy is awarded the call-off contract. All call-off awards are performance-based, with service delivery and payment tied to measurable outputs.

This procurement framework applies to two selections: connectivity for 500 government sites and connectivity for 2,000 schools. Although each selection has distinct qualification requirements, technical specifications, MAS ceilings, and auction parameters, the overall procurement sequence—EME, EOI, PQ, TCS, MAS-based financial evaluation, FA, RFQ, and MRRA and call-off stages remains consistent. Each selection (government sites and schools) has in its own Framework Agreement to ensure tailored management, competition, and implementation oversight.

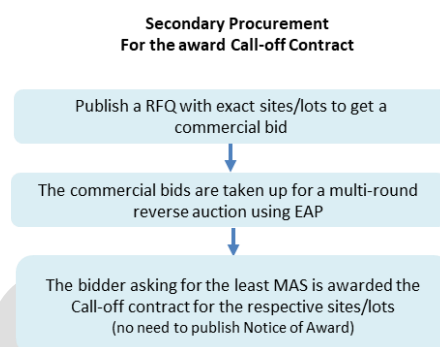
For the tower construction package, a separate procurement is underway. The Government retains the option to align that component with the updated CTM model, though the processes outlined here apply exclusively to the government sites and school connectivity selections unless explicitly adopted for the tower procurement.

(Below Figure)
Figure 6: Illustrative Process Flow of Framework Agreement



During the tenure of the Open Framework Agreement, any new supplier seeking admission shall submit a formal submission of EOI to the PPC (Responsible Agency). The PPC shall provide the RFB, evaluate the application against the same pre-qualification and technical criteria applied at the time of the initial

framework award. From a commercial standpoint, the Maximum Allowable Subsidy (MAS) requested must be within the permissible limit of the MAS in order to qualify for the award of FA.



If a supplier awarded a call-off contract fails to comply with the contractual terms or does not perform in accordance with the project requirements, the Procuring Authority may terminate the call-off contract in accordance with the applicable provisions of the Framework Agreement and the call-off terms. Upon termination, the Procuring Authority may proceed to award the call-off to the next highest-ranked supplier of the MRRA subject to verification of capacity, continued eligibility, and written acceptance by that supplier.

If no other supplier is available or capable for the specific call-off—such as in situations where only one supplier is listed under the Framework Agreement for that lot or category -- the Procuring Authority may re-initiate the Secondary Procurement process among the eligible framework supplier(s) without issuing a new RFB. Any such re-initiation must remain fully consistent with the established Framework Agreement terms, the approved Secondary Procurement procedures, and the original award methodology (including use of RFQ and MRRA where applicable).

6.7. E-Government Procurement (e-GP) using Electronic Auction Platform (EAP)

An Electronic Auction Platform (EAP) is a digital system that enables suppliers to submit bids remotely and participate in real-time competitive auctions during procurement processes. It records all bidding activities electronically, supports transparent price discovery, and allows wider participation by removing geographical constraints.

It is assumed that VfM is attainable in a market with robust competition, established monitoring and government oversight, these factors may pose as a challenge in East African Market, especially in the market of Malawi. E-procurement is advocated as one way to improve and make more accountable

procurement, especially in developing economy contexts. The Benchmarking Public Procurement of 2017 suggests that e-procurement curbs opportunistic behaviour and unfair advantages.²⁹ The key advantage of an Electronic Auction Platform (EAP) is that it enables bidders from any location to participate remotely, thereby expanding the competitive pool without requiring significant physical presence. In addition, the electronic recording of all bidding activities enhances transparency and significantly reduces the scope for unethical practices. However, the overall effectiveness of the platform ultimately depends on the readiness of the market, the capacity of stakeholders to adopt digital processes, and the strength of the accompanying governance framework.

6.7.1. Process for e-Procurement Implementation

It is crucial to assess the readiness of the market for electronic procurement via an assessment as mentioned in Electronic Government Procurement (E-GP) Readiness Self-Assessment³⁰.

E-GP Readiness Self-Assessment

The Electronic Government Procurement (e-GP) Readiness Assessment³¹ is designed to help governments evaluate their procurement environment and determine their preparedness for transitioning to e-GP in a sustainable manner. It provides a high-level review of essential components and subcomponents that form the foundation of e-GP, focusing on strategic aspects rather than detailed processes. The assessment considers existing procurement initiatives, identifies gaps, and invites feedback on factors influencing readiness and critical changes required for implementation. It is to be conducted with follow-up interviews to clarify issues.

The assessment involves five Strategic Foundations and nine Components as the following:

- Institutional Capacity: Government Leadership, Human Resource Management
- Governance: Planning & Management, Policy, Legislation & Regulation
- Business Functionality & Standards: Infrastructure & Web Services, Standards
- Third Party Involvement: Private Sector Integration
- Application of Technology: Systems

²⁹ BENCHMARKING PUBLIC PROCUREMENT | 2017 ASSESSING PUBLIC PROCUREMENT REGULATORY SYSTEMS IN 180 ECONOMIES [World Bank Document](#)

³⁰Electronic Government Procurement (E-Gp) Readiness Self-Assessment
<https://openknowledge.worldbank.org/server/api/core/bitstreams/2cf8c623-7ab4-5ae7-a0cf-b1e993c2ed23/content>

³¹

These nine components should be scored against the readiness level between 1 to 4. Subcomponents use the same scale, and overall component readiness may require averaging.

Assessment Method

Respondents: This group includes government officials, procurement managers, information technology managers, representatives from the private sector, relevant organizations, and training institutions.

e-GP Readiness Assessment Process

- **Distribute the Assessment:** Share the assessment with selected respondents so they can complete it digitally.
- **Initial Responses:** Respondents review each component and indicate whether it is in place and supported by selecting: Yes (fully in place and supported) or Partly (partially in place or supported) or No (not in place or supported)
- **Provide Evidence:** Respondents add comments and supporting evidence such as documents, reports, or personal experience to justify their answers.

Assign Readiness Levels (1–4): For each subcomponent, assign a readiness level based on the degree of implementation and support:

- **Level 1 – None:** No evidence of implementation or support.
- **Level 2 – Small degree:** Limited evidence; minimal progress.
- **Level 3 – Some degree:** Partial implementation and support.
- **Level 4 – Adequate degree:** Comprehensive implementation and strong support.

Follow-Up: Conduct interviews or group discussions with an assessor to clarify responses and validate findings.

Supporting Data: Use audits, strategic plans, e-readiness reports, and other official documents to corroborate responses.

Evaluation

The evaluation compares each response against established good-practice standards to determine overall alignment with international e-procurement standards. Subcomponent scores are consolidated into an aggregate readiness level, enabling identification of priority gaps and areas requiring improvement. The process also incorporates stakeholder perspectives on incentives, constraints, and necessary reforms, offering insight into factors that may influence successful adoption.

The assessment outputs a concise readiness profile and summary matrix for all components, forming the basis for targeted recommendations to strengthen weaker areas and reinforce those already performing well. Where readiness is deemed sufficient, the next step is to establish the institutional and coordination arrangements, typically through a dedicated committee involving e-Gov and PPPC—to guide implementation.

Once readiness for e-auction deployment is confirmed, preparatory work begins on defining the foundational elements required before developing or deploying the Electronic Auction Platform, ensuring full alignment with functional, regulatory, and operational requirements.

6.7.2. Considerations while designing a EAP Platform

The objective is to conduct the tendering process in a transparent manner in the shortest possible time. The optimal method would be to publish and handle the process via internet which can be supported by physical documentation where required. The following should be considered in this stage of the process:

- All procurement notices and contract award details should be centralized on one official portal for transparency and easy access.
- While the official portal may have information on multiple projects and tenders, there should be filtered to allow the potential bidders to navigate and identify the specific opportunity.
- Suppliers/Bidders should be able to submit bids electronically through the portal, with secure upload functionality and compliance with legal standards.

6.7.3. Pre-Implementation Alignment and Procurement Preparation

The next phase involves establishing the foundational elements required before developing or deploying the e-auction platform. This phase ensures that the forthcoming system is aligned with functional needs, regulatory standards, and operational realities.

Defining the Functional and Technical Requirements

The procuring agency must establish a clear and comprehensive set of functional and technical requirements before initiating platform development or procurement. From a functional perspective, PPPC and e-government must first determine the appropriate auctions to be used.

Electronic Auction Platform (EAP): Procurement Rules and Operational Requirements

Where an Electronic Auction Platform (EAP) is used, it shall be deployed through a Request for Bids (RFB) or Direct Selection process conducted in accordance with the World Bank Procurement Regulations and the applicable Standard Procurement Documents. The use of the EAP must remain fully

consistent with the approved procurement method, evaluation approach, and the terms and conditions of the Framework Agreement or call-off procedure, as applicable.

Accordingly, the RFB shall define and disclose, at a minimum, the following:

- Bid submission rules cover the schedule, timelines, bid decrements, and conditions for changes, withdrawal, or re-entry if allowed.
- Evaluation method confirms only qualified bids are ranked, with contracts awarded to the lowest cost or subsidy, as applicable.
- Ranking visibility sets how rankings may be shown, without revealing bidder identities or values.
- Tactical bidding safeguards state the auction will end on schedule even if last-minute bids are placed.
- Confidentiality requirements keep bidder identities hidden throughout the auction.
- Monitoring and audit include real-time tracking, system alerts, and a full audit trail.
- System integration, if needed, ensures secure transfer of results to relevant government systems.

From a technical perspective, the Procuring Entity shall determine the hosting arrangement for the Electronic Auction Platform, whether cloud-based or hosted on a server operated by the Procuring Entity or an authorized third-party service provider, taking into account cost, security, and operational considerations.

The platform shall comply with applicable national data-security regulations and incorporate appropriate safeguards, including secure encryption, user authentication controls, and audit logging to ensure system integrity and accountability.

The requirement-definition phase is essential, as it removes ambiguity throughout development and procurement, ensuring that the final e-auction platform aligns with sector-specific procurement needs, operational complexities, and regulatory requirements. Additionally, it is important to conduct both User Acceptance Testing and Penetration Testing.

6.7.4. Introduction of Electronic Auction Platforms (EAP) in Malawi: Implementation Options and Transitional Arrangements

As the Electronic Auction Platform (EAP) is being introduced in the Malawian market for what may be the first time, it is recommended to conduct a mock auction to build stakeholder awareness and operational familiarity with the auction methodology, including applicable rules, procedures, and terms. This preparatory exercise would help mitigate implementation risks and enhance market confidence.

For the design and implementation of EAP in Malawi, reference may be made to established guidance and international experience, including the World Bank e-Procurement Reference Guide³², the World Bank and CEPA (2023) report, and the study on Allocating Universal Service Subsidies Using Electronic Multi-Round Reverse Auctions: Telecommunications in Tanzania³³. These resources provide relevant best practices and lessons learned applicable to the Malawian context.

Under the World Bank Procurement Regulations, e-auction methods implemented through EAP are recognized as a preferred approach for open and competitive procurement. While the Government of Malawi is currently assessing the feasibility of adopting EAP, the following options are proposed for consideration:

1. The World Bank has already undertaken due diligence for the EAP currently in use in Kenya. PPPC may consider renting and utilizing this platform on a short-term basis at a modest cost.
2. PPPC may alternatively consider engaging an EAP software solution available in the market, subject to the completion of an appropriate due diligence process.
3. The Government of Malawi, through PPDA, may develop a dedicated national e-auction module within its e-Government Procurement (e-GP) system

Concurrently, the Government of Malawi may evaluate the feasibility and cost-effectiveness of developing and operationalizing a domestically owned EAP solution as a medium- to long-term option.

6.8. Guidelines for Procurement of Selections

6.8.1 Procurement Strategy for Selection 1 - Mobile Tower Deployment (USF Component)

The Mobile Broadband Services component aims to extend mobile broadband coverage to rural and underserved areas by procuring wholesale services from licensed Mobile Network Operators (MNOs) and tower infrastructure providers. The service availability for towers is a minimum of 10 years.

A. Indicative Pre-Qualification Requirements (Pass/Fail)

PQ Criterion	Minimum Requirement (Pass/Fail)	Evidence Required
1. Legal Incorporation	Bidder/Consortium/JV must be legally incorporated and in good standing.	Certificate of Incorporation Articles/Memorandum of Association

³² e-Procurement Reference Guide

<https://documents1.worldbank.org/curated/en/751741468163749785/pdf/882160WP0Box380ementReferenceGuide.pdf>

³³ Allocating universal service subsidies using electronic multi-round reverse auctions: Telecommunications in Tanzania
<https://documents1.worldbank.org/curated/en/099651211282373597/pdf/IDU0dbf327200338f04d3e0baf708920f13a346c.pdf>

2. License to Operate	Bidder must hold, or commit to obtain, a valid MACRA license to provide mobile broadband services in Malawi.	License copy / Proof of application / Declaration to apply on award of Framework Agreement
3. Tax Compliance	Bidder must be tax compliant.	Valid Tax Clearance Certificate
4. Conflict of Interest	No conflict of interest; Lead Bidder identified.	Signed declaration JV/subcontractor structure disclosure
5. UN / Legal Restrictions	Not under UN Security Council sanctions or Malawi law restrictions.	Self-declaration
6. Relevant Experience	At least one mobile broadband or telecom network project completed; minimum 5 years sector experience in Africa.	Completion certificates Client references
7. Company Turnover	Average Annual Turnover $\geq 1.5 \times$ estimated lot value (avg of last 3 FYs).	Audited financial statements
8. Blacklisting / Debarment	Bidder not debarred by any government, regulator, IFI, or UN agency.	Self-declaration
9. Litigation / Claims	No significant unresolved litigation.	Self-declaration
10. Manpower Capability	Minimum 30 staff with relevant experience in mobile broadband, transmission, O&M.	CVs as per RFB
11. O&M Capability	Demonstrated or rapidly deployable O&M capability in Malawi (NOC, field teams, spares).	O&M statement Mobilisation plan
12. Performance Security Capacity	Ability to furnish performance security (10% of contract value).	Letter of intent/comfort from bank/insurer
13. Bankruptcy / Insolvency	Bidder must not be bankrupt or under administration.	Self-declaration

Table 21: Indicative Pre-Qualification for Mobile Tower Deployment (USF Component)

B. Technical Compliance Requirements

- Minimum broadband speeds: ≥ 5 Mbps 4G cell edge, ≥ 10 Mbps for 5G
- Monthly network availability: 95–97%
- SLA compliance for latency, CSSR, drop-call rate
- Technology neutrality (no vendor/brand preference permitted)
- Power availability plan for rural sites
- O&M model including field force, NOC integration, escalation matrix

C. Commercial Evaluation Approach

The Commercial Evaluation will follow a least-cost / lowest-subsidy selection (L1) methodology aligned with the Maximum Allowable Subsidy (MAS) framework.

D. Implementation Plan (Aligned to CTM Phase Tables)

Phase	Activity	Key Activities Covered	Indicative Duration
Phase 1	Mobilization & Planning	Site validation, 4G/5G radio planning, backhaul readiness, regulatory clearances	2–4 weeks
Phase 2	Equipment Installation	Installation of antennas, RRUs/5G radios, cabling, power upgrades	2–3 weeks
Phase 3	Integration & Testing	RAN/core integration, PCI/NR planning validation, backhaul testing	1–2 weeks
Phase 4	Service Activation	Activation of 4G/5G broadband services at each site	1 week
Phase 5	Monitoring & Optimisation	KPI tuning, QoS monitoring, and drive testing	4–6 weeks

Table 22: Implementation Plan for Mobile Tower Deployment

E. Payment Schedule (CTM-Aligned Table)

Milestone	Deliverable Triggering Payment	% of Contract Value
M1 – Mobilization & Network Plan Acceptance	Approved rollout plan, coverage maps, backhaul plan	15%
M2 – Equipment Installation & Integration	Completed installation and integration reports	25%
M3 – Service Activation (All Sites)	Verified 4G/5G service go-live certificates	30%
M4 – KPI Compliance (60–90 Days)	Achievement of mandatory service KPIs	20%
M5 – Final Handover	Submission of all compliance reports, O&M manuals, SLA documentation	10%
Total	—	100%

Table 23: Tentative Payment Schedule for Mobile Towers

6.8.2 Procurement Strategy for Selection 2 – Connectivity for Government Sites

Overview of Procurement Strategy for Government Site Connectivity

The Government Site Connectivity initiative aims to deliver secure, high-capacity, and reliable broadband services to approximately 500 priority government locations across Malawi. Consistent with the CTM's technology-neutral requirements, the procurement model does not prescribe any specific access technology. Instead, suppliers are evaluated on their ability to meet outcome-based performance standards, including minimum bandwidth thresholds, SLA commitments, backhaul resilience, and compliance with MACRA regulations. The service availability for government sites is 10 years for IRU rights and 5 years for IP transit. Since the government provides the IP transit, it can extend the service for another 5 years, if required.

Where appropriate, the Procuring Entity may secure Indefeasible Rights of Use (IRU) for assets owned by licensed operators. IRUs support long-term continuity of service for government systems and reduce lifecycle operating costs.

Primary Procurement establishes a multi-supplier Framework Agreement, under which suppliers are technically pre-qualified. Secondary Procurement for each lot is carried out through an RFQ process combined with a Multi-Round Reverse Auction (MRRA), with awards determined within the Maximum Allowable Subsidy (MAS) ceilings.

Pre-Qualification (PQ) Requirements

PQ Criterion	Minimum Requirement (Pass/Fail)	Evidence Required
1. Legal Incorporation	Bidder/Consortium/JV must be legally incorporated and in good standing.	Certificate of Incorporation Articles/Memorandum of Association
2. License to Operate	Bidder must hold, or commit to obtain, a valid MACRA ICT service license for enterprise/government connectivity.	License copy Proof of application Declaration to apply for license on award of FA
3. Tax Compliance	Bidder must be tax compliant.	Valid Tax Clearance Certificate
4. Conflict of Interest	No conflict of interest and the lead Bidder identified.	Signed declaration JV/subcontractor disclosure with organization structure
5. UN / Legal Restrictions	Not under UN Security Council sanctions or Malawi restrictions.	Self-declaration

6. Relevant Experience	At least one government/enterprise connectivity project completed; minimum 5 years ICT/fibre/wireless sector experience in Africa.	Completion certificates Client references
7. Company Turnover	Average Annual Turnover $\geq 1.5 \times$ estimated lot value (last 3 FYs).	Audited financial statements
8. Blacklisting / Debarment	Not debarred by any government, regulator, IFI, or UN agency.	Self-declaration
9. Litigation / Claims	No significant unresolved litigation.	Self-declaration
10. Manpower Capability	Minimum 30 qualified staff in planning, installation, engineering, O&M.	CVs as per RFB
11. O&M Capability	Existing or rapidly deployable O&M capability in Malawi (NOC, field teams, spares).	O&M statement Mobilisation plan
12. Performance Security Capacity	Ability to furnish performance security (10% of contract value).	Letter of intent/comfort from bank/insurer
13. Bankruptcy / Insolvency	Bidder must not be bankrupt or under administration.	Self-declaration

Table 24: Indicative Pre-Qualification for Government Sites

Technical Compliance Requirements

The Technical Compliance Sheet (TCS) will apply a strict pass/fail evaluation based on technology-neutral performance specifications. Bidders must demonstrate:

- A minimum committed bandwidth and throughput must be provided for each site, regardless of the technology used. The minimum threshold is 20 Mbps for schools and 30 Mbps for government sites. For each lot, the minimum requirement is calculated as: Minimum requirement per site $\times$ number of sites in the lot.
- Minimum network availability (≥ 98 –99% monthly).
- Backhaul capability using fibre, microwave, wireless, or hybrid.
- If bidder proposes fibre: submission of valid IRU rights, leased capacity agreements, or binding letters from fibre owners.

- Resilience plan including redundancy options, route protection, or alternative paths where feasible.
- Secure interconnection capability with GWAN and government data centres.
- O&M capability: field force, NOC integration, power backup arrangements, escalation processes.
- Compliance with MACRA QoS parameters and Government security standards.

Commercial Evaluation under MAS Framework

The Commercial Evaluation will follow a least-cost / lowest-subsidy (L1) methodology aligned with the Maximum Allowable Subsidy (MAS) framework.

Implementation Schedule

Milestone	Payment Trigger	% of Contract Value
M1 – Installation, Commissioning & IRU Activation	Completion of installation, configuration, commissioning of the site, and activation (or confirmation) of IRU rights for the required backbone/metro fibre segment, valid for the agreed IRU period.	50%
M2 – Go-Live & Service Activation	Successful go-live of the site, achievement of required performance thresholds during acceptance testing, issuance of Go-Live Certificate, and confirmation that IRU rights remain valid for the contracted IRU period.	50%

Table 25: Tentative Implementation Schedule for Government Sites

Payment Milestone for IP Rights

Milestone	Milestone Description	Deliverable Triggering Payment	Payment Percentage
Contract Signing & Service Readiness	Agreement execution and finalisation of service configuration	Approved work plan (inception report) and readiness confirmation	10%

Service Activation	Provisioning and commissioning of IP Transit at agreed capacity	Service activation certificate / acceptance sign-off	40%
Stabilisation & Performance Validation	Successful completion of stabilisation period with SLA compliance after 1 year of Service Activation	SLA performance report with uptime SLA confirmation	50%

Table 26: Payment Schedule for Government Sites

The project govt site – IRU right is for 10 years and IP transit is for 5 years.

6.8.3 Procurement Strategy for Selection 3 – Connectivity for Schools

The Schools Connectivity initiative aims to provide affordable, reliable, and high-quality broadband services to approximately 2,000 secondary schools across Malawi. Consistent with the CTM's technology-neutral requirements, the procurement model does not prescribe fiber, mobile broadband, microwave, or any specific access technology. Instead, suppliers are assessed solely on their ability to meet outcome-based performance standards, including minimum throughput, availability, SLA commitments, and compliance with MACRA regulations. The service availability for schools is 10 years for IRU rights and 5 years for IP transit. Since the government provides IP transit, it can extend the service for another 5 years.

This selection will be implemented under a Reverse Subsidy Auction using Maximum Allowable Subsidy (MAS) ceilings. Suppliers compete on the lowest subsidy required to deliver sustainable services to rural and underserved schools.

Primary Procurement will establish a multi-supplier Framework Agreement, after which Secondary Procurement for each lot will be executed through RFQ + Multi-Round Reverse Auction (MRRA) on the EAP

Pre-Qualification (PQ) Requirements

PQ Criterion	Minimum Requirement (Pass/Fail)	Evidence Required
1. Legal Incorporation	Bidder/Consortium/JV must be legally incorporated and in good standing.	Certificate of Incorporation Articles/Memorandum of Association
2. License to Operate	Bidder must hold, or commit to obtain, a valid MACRA license to provide ICT/internet services.	License copy Proof of application

PQ Criterion	Minimum Requirement (Pass/Fail)	Evidence Required
		Declaration to apply for license on award of FA
3. Tax Compliance	Bidder must be tax compliant.	Valid Tax Clearance Certificate
4. Conflict of Interest	No conflict of interest; Lead Bidder identified.	Signed declaration JV/subcontractor disclosure with organization structure
5. UN / Legal Restrictions	Not under UN Security Council sanctions or Malawi restrictions.	Self-declaration
6. Relevant Experience	At least one ICT/broadband connectivity project completed; minimum 5 years ICT/mobile/FWA sector experience in Africa.	Completion certificates Client references
7. Company Turnover	Average Annual Turnover $\geq 1.5 \times$ estimated lot value (last 3 FYs).	Audited financial statements
8. Blacklisting / Debarment	Not debarred by any government, regulator, IFI, or UN agency.	Self-declaration
9. Litigation / Claims	No significant unresolved litigation.	Self-declaration
10. Manpower Capability	Minimum 30 qualified staff in mobile broadband, FWA, microwave, engineering, installation, O&M.	CVs as per RFB
11. O&M Capability	Existing or rapidly deployable O&M capability (NOC, field teams, spares, rural support mechanisms).	O&M statement Mobilisation plan
12. Performance Security Capacity	Ability to furnish performance security (10% of contract value).	Letter of intent/comfort from bank/insurer
13. Bankruptcy / Insolvency	Bidder must not be bankrupt or under administration.	Self-declaration

Table 27: Tentative Pre-qualification for Schools

Technical Compliance Requirements

The Technical Compliance Sheet (TCS) applies a strict pass/fail assessment. Suppliers must demonstrate:

- Minimum committed bandwidth per school (technology-neutral).
- Minimum network availability: $\geq 95\text{--}98\%$ (depending on lot and service tier).

- Technology-neutral last-mile connectivity: mobile broadband, FWA, microwave, fibre, or hybrid.
- Backhaul capability using any compliant technology (fibre/microwave/wireless).
- Rollout and service delivery plan tailored to rural/remote schools.
- O&M model including field force deployment, NOC integration, ticketing and escalation procedures.
- Device installation capability (where applicable) such as CPE, routers, antennas.
- Compliance with MACRA QoS standards and Government security requirements.

Commercial Evaluation Under MAS Framework

The Commercial Evaluation will follow a least-cost / lowest-subsidy (L1) methodology aligned with the Maximum Allowable Subsidy (MAS) framework.

Implementation Schedule

Because Schools Connectivity typically involves last-mile activation rather than construction, the schedule focuses on equipment installation, configuration, and service commissioning.

Milestone	Payment Trigger	% of Contract Value
M1 – Installation & Commissioning	Completion of installation and configuration of CPE/routers/antennas, activation of backhaul (mobile/FWA/microwave/fibre), and successful commissioning tests.	50%
M2 – Go-Live & Service Activation	Successful Go-Live of the school site, achievement of required performance thresholds during acceptance testing, issuance of Go-live certificate, and validation that service meets SLA requirements.	50%
Total	—	100%

Table 28: IP Transit implementation schedule for schools

The project schools site – IRU right is for 10 years and IP transit is for 5 years.

7. Agreement Provisions

7.1. Submission of Performance Bank Guarantee (PBG)

- a. Within 14 days of the receipt of notification of award of call-off contract from the Purchaser, the successful bidder shall be required to submit a Contract – Performance Bank Guarantee (PBG) of 10% of the contract value and should be valid up to 90 days after “Project Handover”/ “Phase Handover”. PBG shall be in the form of Bank Guarantee (BG) from any internationally recognized bank with availability of branches in African countries.
- b. The Contract PBG shall be returned to bidder upon Project Handover/ Phase Hand Over.
- c. Any term mentioned in the PBG should not be contradictory to General and Specific conditions of the call-off contract, to be signed after the successful selection of bidder.
- d. Successful bidder shall deposit the security/ performance guarantee money as follows:
 - i. 10% of total order value for the contract being signed.
 - ii. The form of security money shall be Bank Guarantee (from a internationally recognized bank with availability of branches in African countries) duly discharged in favour of Purchaser
 - iii. Performance bank Guarantee should be unconditional and irrevocable till final termination of project period.
 - iv. Purchaser may take the confirmation of validity of PBG from the bank at their discretion.
 - v. No interest will be paid by the Tendering Authority on the EMD & performance security deposit.

7.2. Advance Mobilisation Capital

Advance Mobilisation Capital is an upfront payment made by the Government to the contractor to facilitate timely initiation of project activities. It is intended to meet initial capital requirements such as procurement of materials, mobilisation of manpower, logistics, and establishment of project infrastructure. The mobilisation advance forms part of the overall contract value and is recoverable from subsequent payments in accordance with the terms of the contract.

The objective of providing a mobilisation advance is to ease early-stage cash flow constraints, particularly in CAPEX-intensive projects, and to enable faster mobilisation and adherence to project timelines. From a public procurement perspective, it also supports effective project execution and reduces risks associated with delayed deployment of resources.

Mobilisation advance may be availed by the lead contractor, subject to explicit provision in the contract and approval by the competent authority of the Government of Malawi. Availing the advance is

optional, where the contractor does not opt for it, no such payment shall be made. The quantum of mobilisation advance shall be capped at a maximum of 10% of the total CAPEX value of the contract, as specified in the contract.

Disbursement of the mobilisation advance shall be strictly conditional upon submission of an unconditional and irrevocable Advance Bank Guarantee equivalent to 110% of the mobilisation advance amount, issued by a bank acceptable to the Government of Malawi. Upon verification and acceptance of the bank guarantee and fulfilment of all pre-disbursement conditions, the mobilisation advance shall be released as a lump-sum payment.

The mobilisation advance shall be recovered progressively from milestone-based or interim payments due to the contractor and shall be fully adjusted prior to or at the time of final payment, unless otherwise approved by the competent authority. The Government shall exercise appropriate oversight over the utilisation and recovery of the mobilisation advance and reserves the right to invoke the Advance Bank Guarantee in cases of non-performance, contract termination, or misuse of funds. Submission of the Advance Bank Guarantee by the MSI shall be the mandatory deliverable for release of the mobilisation advance.

7.3. Indefeasible Right of Use (IRU)

An Indefeasible Right of Use (IRU) is a long-term, non-revocable contractual right granted by an infrastructure owner to the Purchaser or Supplier to use specified telecommunications capacity or infrastructure for the duration of the applicable agreement. IRU arrangements may cover, without limitation:

- Fiber optic infrastructure (including fiber pairs, fiber strands, or dark fiber)
- Microwave, radio, or licensed wireless transmission channels
- Optical wavelengths, including DWDM/WDM capacities
- International, cross-border, or national backhaul routes
- Any other transmission medium capable of meeting the required service performance standards

An IRU confers a legally protected, exclusive, non-terminable right of access and use, independent of ownership changes, reorganizations, insolvency events, or any third-party commercial disputes.

Where IRU rights form part of the solution proposed for Government Site Connectivity, the cost of acquiring such IRU rights shall be fully integrated into the MAS payment.

Key Features of IRU Rights

Non-revocable Usage Rights: The IRU must provide exclusive, non-cancellable, and indefeasible usage rights for the full term. Neither party may suspend, revoke, or reduce the rights except as permitted under the contract or applicable law.

Defined Tenure: The IRU must be valid for a period sufficient to cover the entire contract duration, including extensions. IRU tenure typically ranges between 7-10 years or for the full useful life of the infrastructure.

Technology-Neutral Application: IRUs may apply to any backhaul, transport, or transmission infrastructure (fibre, microwave, optical wavelength, etc.) that is capable of meeting contractual performance requirements.

Guaranteed Capacity: The IRU must guarantee minimum committed bandwidth, throughput, availability, latency, jitter, and other service performance parameters as specified in the agreement.

Maintenance and Access Rights: The granting party must provide the beneficiary with the right to conduct (directly or through designated contractors) maintenance, repair, testing, splicing, performance monitoring, and restoration activities. These rights must be unhindered, 24/7, and free of unreasonable conditions.

7.4. Internet Protocol Transit

IP Transit refers to a wholesale internet bandwidth service that enables traffic originating from government sites, schools, and other project locations to reach all destinations on the global public internet. The service provides upstream connectivity through licensed providers, allowing traffic to be routed, forwarded, and exchanged across international and domestic networks beyond the Supplier's own infrastructure.

Core Components of IP Transit Service

Upstream Internet Connectivity

The Supplier must procure and maintain upstream connectivity through one or more Tier-1, Tier-2, or licensed international gateway providers to ensure global routing coverage and reliable reachability of all internet destinations.

Bandwidth Commitments

- Guaranteed minimum Committed Information Rate (CIR) per site
- Burstable bandwidth where applicable

- Scalable capacity to accommodate increasing traffic demand over the contract term

Redundancy and Resilience

- Dual-path or multi-path routing where feasible
- Automatic upstream failover mechanisms
- Redundant upstream links to prevent single-point failures

Security Protections

- DDoS detection and mitigation capabilities
- Secure DNS and DNSSEC support where available
- Continuous traffic monitoring and anomaly detection
- Compliance with Government cybersecurity and MACRA gateway requirements

Supplier Obligations for IP Transit

The Supplier shall:

- Ensure continuous availability of upstream IP Transit capacity
- Maintain redundancy, route diversification, and automatic failover policies
- Provide 24/7 Network Operations Centre (NOC) monitoring and incident response
- Maintain all regulatory compliance obligations (including MACRA and gateway licensing requirements)
- Notify the Purchaser promptly of upstream failures, congestion, or routing anomalies
- Maintain full compliance with all SLA thresholds for latency, uptime, jitter, and packet loss

Failure to achieve IP Transit performance obligations constitutes material non-compliance, entitling the Purchaser to invoke penalties, service credits, deductions, or termination in accordance with the contract.

8. Annexure – Commercial Transaction Manual

Annexure 1: Pre-read for Industry Consultation



Ministry of Information and Digitalization (MoID)

INVITATION TO THE STAKEHOLDER INDUSTRY CONSULTATION MEETING ON COMMERCIAL TRANSACTION MANUAL (CTM) UNDER DIGITAL MALAWI ACCELERATION PROJECT (DMAP)

The Ministry of Information and Digitalization (MoID), in collaboration with the Public Private Partnership Commission (PPPC), is implementing the World Bank-funded project *Digital Malawi Acceleration Project (DMAP)*. The project, which runs from 2024 to 2030, seeks to increase access to and inclusive internet use and improve the government's capacity to deliver digitally enabled services in Malawi.

DMAP is structured into four main components: Component 1: Affordable Broadband and Secure Data Hosting – Expanding broadband coverage, particularly in rural areas, to achieve universal mobile broadband access. Component 2: Interoperable and Secure Data Platforms – Strengthening digital ID systems and data exchange platforms. Component 3: High-Impact Digital Services and Productive Digital Usage – Promoting digital skills, literacy, and entrepreneurship across Malawi. Component 4: Programme Management – Supporting the establishment and operationalisation of the National Digital Transformation Agency (NDTA), transitioning from the current Department of e-Government.

The focus of the current engagement under DMAP is the development of commercially viable models for public connectivity infrastructure. Ernst & Young (EY) is the consultant supporting this effort. The engagement is structured to deliver a Commercial Transaction Manual (CTM) and other strategic outputs that will guide procurement and implementation of Government connectivity. In this regard, stakeholders are invited to a consultation meeting that may include the following but not limited to:

1. Government & Regulatory Bodies
2. Development Partners
3. Consulting Firms
4. Internet Service Providers (ISPs)
5. Fiber Infrastructure Providers / Contractors
6. Fixed Network Operator
7. Tower Operator
8. Mobile Network Operators (MNOs)
9. Satellite Provider

The Stakeholder Consultation Meeting will be held as follows:

Date: Tuesday, 7th October 2025

Venue: Amaryllis Hotel, Blantyre

Time: 9:00 AM

For further information, kindly contact (Vincent Mnthambala on 0884955662).



Annexure 2: DMAP Advertisement in the Newspaper

**INVITATION TO THE STAKEHOLDER
INDUSTRY CONSULTATION
MEETING ON COMMERCIAL
TRANSACTION MANUAL (CTM)
UNDER DIGITAL MALAWI
ACCELERATION PROJECT (DMAP)**

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The Stakeholder Consultation Meeting will be held as follows:

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Venue	Amaryllis Hotel, Blantyre
Time	9:00 AM

For further information, kindly contact (Vincent Mnthambala on 0884955662).



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Figure 7: Advertisement of DMAP Project

Annexure 3: Excerpt from article on Industry Consultation – 07th October 2025

Stephen Mjuweni, Principal Secretary for the Department of e-Government in Malawi's Ministry of Information and Digitalization, praised the Digital Malawi Project (DIGMAP) for laying a strong digital foundation in the country. He highlighted achievements such as internet connectivity for 530 public sites and the establishment of a National Data Centre in Lilongwe. While, Patrick Kabambe, Chief Executive Officer of the Public Private Partnership Commission (PPPC), supported Mjuweni's remarks, emphasizing DIGMAP's role in promoting transparency through the electronic public procurement system. He noted that automation helps curb fraud and corruption in public procurement.

Together, both officials underscored DIGMAP's broader impact, including digital skills training for over 19,000 individuals, support for the Data Protection Act, and enhanced services for higher education through the Malawi Research and Education Network (MAREN).



Figure 8: Industry Consultation Meeting

Annexure 4: Access Gap Framework based Site Classification

When identifying sites under the Market Access Gap Framework, it is essential to align decisions with the principles of Value for Money (VfM)³⁴. It refers to the effective, efficient, and economic use of resources, requiring a comprehensive evaluation of relevant costs and benefits, alongside an assessment of risks and non-price attributes, including life-cycle costs where applicable. Therefore, price alone does not necessarily represent VfM.

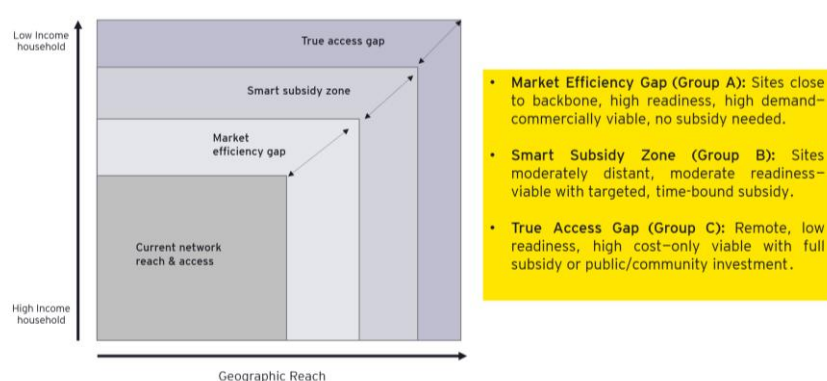


Figure 9: Access Gap Framework³⁵

VfM should be considered throughout the entire procurement life cycle, not just at the point of purchase. While high throughput and low cost may appear attractive, these factors alone do not guarantee optimal value. Similarly, VfM is not limited to a simple Net Present Value (NPV) calculation. Further, sites that are inherently difficult to connect will remain challenging regardless of cost considerations. Therefore, multiple criteria complexities must be factored into planning and decision-making.

Further, to achieve true VfM, projects must prioritize affordability for end users by effectively balancing demand and supply. Accordingly, demand will be assessed through published reports such as Integrated Household Survey³⁶, National Survey³⁷ & Malawi USF Mobile Access Gap Report.

These datasets will offer information on connectivity gaps, socio-economic conditions, and infrastructure readiness. An Infrastructure Prioritization Framework, as described in the research paper

³⁴ [Procurement-Guidance-Value-for-Money-Nov-2023-WEB.pdf](#)

³⁵ [Leveraging Private Sector Investment in Digital Communications Infrastructure in Eastern Africa -World Bank Document](#)

³⁶ [Malawi - Fifth Integrated Household Survey 2019-2020](#)

³⁷ [Home - National Statistical Officer](#)

"Prioritizing Infrastructure Investment: A Framework for Government Decision Making,"³⁸ has been developed utilizing Multiple Criteria Decision Analysis (MCDA). This approach enables the prioritization of sites based on multiple indicators, rather than relying solely on a single criterion such as cost or throughput.

Further, the World Bank's Infrastructure Prioritization Framework (IPF) introduces two composite indices—Social-Environmental Index (SEI) and Financial-Economic Index (FEI)—and mapping projects into quadrants for strategic decision-making. IPF is ideal for national-level planning and donor-funded programs because it combines MCDA scoring with policy alignment and budget constraints.

Socio-Economic and Financial Assessment for Internet Connectivity at Traditional Authority Level

A structured methodology has been developed to assess socio-economic and financial factors affecting school connectivity at the Traditional Authority (TA) level. Two composite indices, the Social-Environmental Index (SEI) and the Financial-Economic Index (FEI), combine with TA-level and district-level indicators to systematically identify disparities and guide targeted interventions for improving internet access

Methodology

The first step will involve selecting relevant indicators for each index. In our case, the SEI focuses on conditions that enable adoption and usage, such as literacy, computer penetration, while the FEI emphasizes economic drivers like enterprise presence, population size, and school infrastructure. For example, electricity access can be included in SEI as an enabling factor or in FEI as a cost determinant, depending on the analytical perspective. The key is to maintain conceptual clarity while acknowledging that these indicators collectively shape both affordability and accessibility.

- **Social-Environmental Index SEI combines literacy, electricity, computer penetration, and income sufficiency. (As a proxy for standard of living)**
- **Financial-Economic Index FEI combines population density, school count, and enterprise proportion. (Reflecting economic activity)**

Once indicators are identified, the next critical decision is determining their relative importance through weightage. Weightage should not be arbitrary; it must reflect the influence of each indicator on connectivity readiness and economic capacity. For example, literacy rate often has a stronger correlation with digital adoption than population density, so it may warrant a higher weight. Similarly,

³⁸ [World Bank Document](#)

the presence of registered enterprises can be a stronger driver of financial readiness compared to population size.

After deciding on weightage, all indicators are normalized using the Min-Max method to ensure comparability. This technique scales values between 0 and 100 based on the minimum and maximum observed values within the dataset. District-level indicators are normalized across all districts, while TA-level indicators are normalized across all Traditional Authorities (TA). The SEI and FEI scores for each TA are then calculated by combining normalized values according to the chosen weights. District-level normalized scores are applied uniformly to all TAs within the same district.

Proposed Weights & Assumptions

The weights assigned to each indicator reflect their relative importance in influencing connectivity readiness and project objectives. Indicators that directly impact affordability and infrastructure have been prioritized, while those with limited influence have been assigned lower weights.

Social-Environmental Index (SEI)

Indicator	Description	Weight
Literacy	Educational attainment influencing digital adoption	0.20
Electricity Access	Critical enabler: absence increases connectivity cost	0.40
Computer Penetration	Proxy for utilisation of internet	0.20
Savings Capability	Reflects financial resilience and purchasing power	0.20

Table 29: Social Environmental Index (SEI) Indicators & Weightage Assumption

Financial-Economic Index (FEI)

Indicator	Description	Weight
Population	Market size and demand potential	0.30
School Count	Infrastructure for connectivity; revenue driver	0.30
Enterprise Presence	Indicator of economic vibrancy and digital readiness	0.40

Table 30: Financial Economic Index (FEI) Indicators & Weightage Assumption

Rationale for the assumption

- Indicators were selected to balance enabling conditions (electricity, literacy) with economic viability (enterprise presence, population) and social inclusion (schools, computer access).
- Electricity Access and Savings Capability dominate SEI because electricity is a non-negotiable prerequisite for digital connectivity, and savings reflect financial resilience, enabling households to afford devices and services.
- Literacy is included as it determines the ability to effectively use digital platforms, ensuring that connectivity translates into meaningful adoption.
- Computer Penetration is considered because it signals readiness for internet utilization and the presence of digital infrastructure at the household level.
- Enterprise Presence is prioritized in FEI since economic vibrancy and business activity strongly influence the sustainability of connectivity projects and align with revenue models dependent on institutional and commercial uptake.
- Population is weighted significantly because larger populations create higher demand potential, making investments more viable and impactful.
- School Count is included as schools act as anchor sites for connectivity, driving structured demand and supporting educational objectives tied to development goals.

Analysis for Infrastructure Prioritization Framework

This analysis is indicative

Quadrants	No of TAs	No of Schools	Average of SEI_norm	Average of FEI_norm
Q1: High SEI & High FEI	69	778	29.26	52.05
Q2: High SEI & Low FEI	75	362	19.97	24.44
Q3: Low SEI & High FEI	70	722	6.61	55.99
Q4: Low SEI & Low FEI	64	185	5.18	23.14
Grand Total	278	2047	15.51	38.94

Table 31: Classification of Traditional Authorities based on SEI & FEI

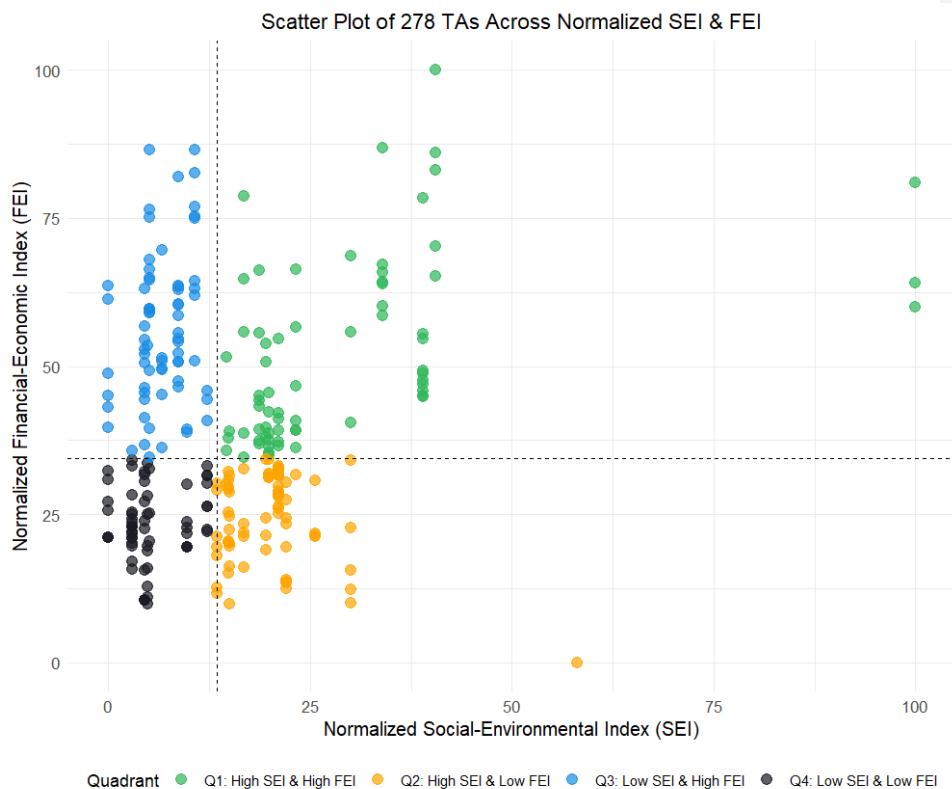


Figure 10: Scatter Plot of Traditional Authorities based on SEI & FEI

The scatter plot segments Traditional Authorities (TAs) into four quadrants based on their Social-Environmental Index (SEI) and Financial-Economic Index (FEI), which jointly determine adoption potential.

- Quadrant 1 (High SEI & High FEI) represents the most favourable scenario, combining strong societal acceptance with economic viability, leading to rapid adoption and scalability.
- Quadrant 2 (High SEI & Low FEI) indicates socially aligned but financially constrained options, requiring policy support to sustain adoption.
- Quadrant 3 (Low SEI & High FEI) reflects economically attractive solutions facing social resistance, necessitating stakeholder engagement and compliance measures.
- Quadrant 4 (Low SEI & Low FEI) shows minimal adoption prospects without significant intervention, often deprioritized unless strategically mandated.

Quadrants 1 and 3 may be classified within the Market Efficiency Gap due to their strong economic potential. In contrast, Quadrants 2 and 4 are likely included in the Smart Subsidy zone. Accordingly, it is advisable for the government to prioritise sites with the lowest composite MCDA (SEI/FEI) scores for subsidy, as these locations are the least likely to receive sustainable service from the private market without financial support.

However, any of the quadrants may require subsidy because of negative NPV, which might happen due to substantial capital expenditure and limited revenue generation as compared to expenses.

Further, analysing these quadrants can support informed decisions regarding grant allocation based on the specific requirements of each Traditional Authorities (TA). This framework helps prioritize investments and tailor strategies for accelerating technology uptake.

Limitations

While this framework offers a structured basis for decision-making, several limitations must be acknowledged:

1. **Data Granularity:** Reliance on district-level indicators for literacy, electricity, and income may not accurately capture conditions within individual TAs, potentially leading to misrepresentation.
2. **Contextual Factors Excluded:** Cultural norms, geographic constraints, and policy environments are not incorporated into the indices, even though these factors significantly influence connectivity outcomes.
3. **Financial vs. Social Objectives:** While financial profitability and economic value are common investment criteria, public investment decisions must also consider externalities, including indirect economic effects such as multiplier and network impacts on other sectors.

Conclusion

By combining weighted indicators and normalization techniques, this methodology offers a practical and evidence-based approach to assess connectivity readiness at the TA level. The quadrant analysis enables policymakers to prioritize interventions effectively, ensuring resources are directed to areas with the greatest need. Despite its limitations, this framework provides a strong foundation for planning targeted strategies to improve internet access in schools.

Annexure 5: Financial Modelling (R-programming)

Computation of NPV and Maximum Allowable Subsidy (MAS) using R

The IPF quadrant analysis indicates that each TA should be approached distinctly, as their adoption pathways are shaped by their unique socio-economic circumstances. From a financial modelling perspective, it is reasonable to anticipate varying adoption rates across these quadrants. This segmentation is essential for developing targeted interventions and optimizing value for money in infrastructure investment. Leveraging these findings, the subsequent phase will focus on financial modelling to evaluate project feasibility and establish the necessary support for achieving commercial sustainability.

For NPV calculations, it is essential to estimate costs and revenues over the project lifecycle and then convert these future cash flows into their present value using a discount rate. This reflects the time value of money, ensuring that future earnings and expenses are evaluated in today's terms.

In the context of Malawi, a discount rate of 35% has been applied, which aligns with an expected real rate of return ranging around 8%. Considering that Malawi's inflation rate was approximately 27% in May 2025³⁹. However, the real discount rate is subject to change based on future inflation and interest rate movements and significantly impact NPV outcomes. Therefore, this choice is consistent with existing economic indicators. However, a reduction in inflation rates over time would be advantageous and could contribute to an improved net present value for the project. Accordingly, it is recommended that the Government of Malawi implements measures aimed at reducing the inflation rate.

Disclaimer:

The Net Present Value (NPV) calculations presented in this document are based on cost and revenue projections derived from secondary research. While every effort has been made to ensure these figures are as realistic as possible, they are indicative and subject to change. It is important to emphasize that the primary purpose of these calculations is to illustrate the underlying framework and methodology, which remain robust regardless of specific input values.

In light of the modelling results, the financial model will adopt model, whereby IP transit is procured directly by the Government to ensure cost efficiency and streamlined operations.

Financial Model for schools

Cost Assumption:

Item	Indicative Value	Description

³⁹ Navigating Uncertainty [World Bank Document](#)

Distance per school	7 km	Average Fiber length required to connect a school
Labour cost per km	USD 2,000	Labor cost for underground trenching
Fiber cost per km	USD 7,000	Material cost including installation and commissioning
Equipment cost per school	USD 3,000	Equipment cost including installation and commissioning
Electricity backup	USD 800	UPS installation cost per school
Right of way	USD 500	ROW cost per kilometre

Table 32: Cost Assumption of Capital Expenditure

Note: Source of the costing is from Secondary Research and Industry Consultations

Total Construction Costs for Schools

The total construction cost for the project comprises several key components that collectively define the financial investment required for implementation. The largest component is Fiber Construction Capital Expenditure (CAPEX), calculated based on the number of schools in each TA, the distance to be covered, and associated costs for fiber installation, labour, and right-of-way charges.

In addition to fiber costs, each school incurs a one-time Equipment CAPEX, ensuring adequate connectivity infrastructure. Furthermore, each school requires UPS installation for electricity backup, which is included as a separate cost component.

The total CAPEX for each Traditional Authority (TA) is the sum of three components: Fiber CAPEX, Equipment CAPEX, UPS Installation.

Fiber CAPEX includes fiber material, labour, and right-of-way charges, with labour cost adjusted by region-specific terrain impact—Hard (1.5) for mountainous areas, Medium (1.2), and Normal (1.0). These adjustments are based on secondary research regarding the terrain characteristics of each district.

Equation 1: Fiber Laying Construction Cost

Fiber CAPEX = School Count × Distance per school × [(Fiber cost per km + Labour cost per km) × Region impact) + Right of way]

- Equipment CAPEX is calculated as:

Equipment CAPEX = School Count × Equipment cost per school

- UPS Installation is calculated as:

UPS Installation = School Count × Electricity backup

Equation 2: Total Fiber laying expenditure including other costs

Total CAPEX = Fiber CAPEX + Equipment CAPEX + UPS Installation

Adjustments for Hybrid Connectivity

Given the high cost of fiber deployment, a hybrid connectivity model has been introduced. This assumes that 80% of schools will use wireless connectivity and remaining will be connected with fiber. Overall, connectivity cost will reduce with this approach.

Equation 3: Introduction of wireless connectivity

Hybrid Connectivity = $(1 - RF) \times \text{Fiber Cost} + (RF \times \text{School Count} \times \text{Wireless connectivity cost})$

- RF = Reduction Factor (80%)
- Wireless connectivity cost= USD 6,000

The computed hybrid connectivity cost is then combined with equipment costs, UPS installation expenses, and IP transit charges for each site to derive the revised CAPEX estimate, ensuring a more balanced and economically viable approach.

Yearly Operational Expenditures (OPEX)

Project Duration	Yearly Electricity Bill	Yearly OPEX Cost	Yearly OPEX Increase
10 years	USD 20 per month × 12 months	15% of total CAPEX including wireless connectivity	5% annually

Table 33: Cost assumption for yearly operational expenditure

Yearly OPEX comprises electricity costs and O&M expenses. For the purpose of this analysis, we have assumed a constant electricity cost over the 10-year project duration. This approach is intended to provide additional support to the vendor.

Revenue Projection and Adoption Dynamics

The revenue model estimates broadband service income over a 10-year project horizon, beginning in Year 2 to account for the assumption that household subscriptions will start only after the infrastructure has been deployed.

The calculation is based on several key parameters, including a broadband monthly rate of USD 40 and an annual average revenue per user (ARPU) of USD 480 per household. This figure reflects the original USD 25 monthly charge for household broadband, plus an additional USD 10 per month to account for estimated revenue from other revenue streams such as Enterprise connections & Public Wi-Fi, which are enabled by the same infrastructure

Quadrant	Description	Maximum Penetration Rate
Q1	High Socio-Economic Index (SEI) & High Financial Engagement Index (FEI)	8%
Q2	High SEI & Low FEI	5%
Q3	Low SEI & High FEI	7%
Q4	Low SEI & Low FEI	3%

Table 34: Assumption for Maximum Penetration for Household Broadband in each quadrant

Further, the maximum penetration rate sets the upper limit for potential adoption of the broadband service within each quadrant. These rates are tailored to reflect the socio-economic realities and unique characteristics of each Traditional Authority (TA), ensuring that the projections remain realistic and aligned with the specific market conditions.

Additionally, the R code subtracts household-level bandwidth purchase costs and new connection acquisition expenses from revenue when calculating the vendor's net present value (NPV).

Industries follow S-Curve

Industry adoption patterns typically do not follow a linear trajectory. Instead, they exhibit an S-curve pattern that reflects four distinct phases: Introduction, Growth, Maturity, and Slowdown. During the Introduction phase, uptake is slow as services are launched, and early adopters begin to engage. The Growth phase is characterized by rapid acceleration, driven by increased awareness and improved service reliability.

As the market approaches saturation, growth slows during the Maturity phase, eventually leading to a plateau in adoption during the Slowdown phase.

This logistic S-curve is a widely recognized model for understanding technology adoption, as it effectively mirrors real-world behaviours associated with the diffusion of innovations. This model can be divided into three distinct phases:

1. **Slow Start (Years 1–2):** During the initial phase, adoption begins gradually as awareness of the technology builds among potential users. This slow uptake is characterized by a limited number of early adopters who explore the new technology.
2. **Rapid Growth (Years 3–6):** In this phase, adoption accelerates significantly as the market reaches a critical mass. The technology gains traction, leading to aggressive uptake as more users recognize its value and benefits.
3. **Tapering (Years 7–10):** As the market approaches saturation, growth begins to slow. This tapering phase reflects the diminishing number of new adopters, as most potential users have already integrated the technology into their routines.

The mathematical representation of the logistic curve is given by the following formula:

Equation 4: S Curve Revenue Projection

$$\text{Adoption} = \frac{\text{Max Adoption}}{1 + e^{-k(y-t_0)}}$$

Where:

- k = Steepness of the curve (a higher k indicates a faster rate of adoption).
- t_0 = Midpoint year (the year in which adoption reaches approximately 50% of the maximum).
- y = Project year.
- Max Adoption = Total number of households considered multiplied by the adoption rate.

Strategic Insight: The Need for Market Disruption

As the adoption curve flattens by Year 10, signalling market maturity and diminishing incremental gains, it becomes crucial for operators to initiate a new S-curve through innovative strategies. These strategies may involve offering higher bandwidth tiers to support advanced applications, as well as bundling services such as Internet of Things (IoT) solutions, smart home technologies, and over-the-top (OTT) services. By aligning their offerings with current market trends, operators can unlock new growth opportunities.

By implementing these initiatives, operators can effectively reset the adoption curve, creating a fresh cycle of introduction, growth, and maturity. This approach will help ensure sustained revenue expansion in an increasingly competitive landscape.

Indicative Net Present Value Analysis:

Disclaimer:

The division of the school connectivity grant into a base grant (60%) and Viability Gap Funding (SUBSIDY, 40%) is a deliberate design choice to ensure equitable and effective allocation of resources. If the total grant were distributed equally to each school, sites with higher costs or greater financial gaps would remain unsupported, as not all locations face the same economic or operational challenges. By structuring the grant in this manner, the base grant provides foundational support to all schools, while the SUBSIDY is specifically reserved for those sites that require additional funding to achieve financial viability. This approach recognizes that each site is unique and cannot be treated identically.

For calculation purposes, the 60/40 split is an assumption to illustrate the framework; the actual distribution of the SUBSIDY will be targeted to sites with negative Net Present Value.

Grant Allocation and Funding Approach

A total of USD 50 million has been earmarked to improve connectivity. Out of this, USD 22.5 million is dedicated to connecting 2,047 schools across 278 Traditional Authorities (TAs).

For schools, the grant is split into two parts:

- **Base Grant:** 60% of the pool (USD 13.5 million) is provided as an anchor grant to ensure basic connectivity. This is distributed evenly in Year 0 and Year 1. Each school will receive a base grant of approximately USD 6,595.
- **Viability Gap Funding (SUBSIDY):** The remaining 40% (USD 9 million) is reserved for schools that still show negative financial viability after receiving the base grant.

Capital costs are shared across the first two years, while operational costs begin in Year 1. Revenue generation starts in Year 2, based on household adoption and population growth projections.

Allocation Methodology of Viability gap funding

After applying the base grant, some TAs may still have negative Net Present Value (NPV). SUBSIDY is used to bridge this gap and make projects viable. The process works as follows:

Step 1: Identify Eligible TAs

- Check which TAs remain with negative NPV after receiving the base grant.
- TAs with positive NPV do not receive any SUBSIDY.

Step 2: Calculate SUBSIDY Requirement

- For each eligible TA, compute the amount needed to bring its NPV to zero.
- This amount is called the SUBSIDY Required.

Step 3: Prioritize Allocation

- Sort the TAs by smallest SUBSIDY requirement first.
- This approach ensures that more TAs can be rescued within the available funds.

Step 4: Allocate Funds

- Start with the TA needing the least support and allocate the required amount.
- Deduct from the remaining SUBSIDY pool and continue until funds are exhausted.
- All SUBSIDY is provided in Year 0 only.

Step 5: Recalculate Viability

- After allocation, update each TA's cashflow and compute the final NPV and IRR.
- Report how many TAs moved from negative to positive viability.

This method ensures fair distribution, avoids over-subsidization, and maximizes the number of schools that become financially sustainable.

Capital Expenditures

Item	Amount (USD)
Fibre CAPEX	160,934,900
Equipment CAPEX	6,141,000
UPS installation	1,637,600
Overall Total capex	168,713,500

Table 35: Capital Expenditure without IP Transit

Based on the assumption that 80% of sites will utilize wireless connectivity, the total estimated capital expenditure for wireless deployment is approximately USD 49,791,180.

Yearly Expenditures for 10 years:

Metric	Indicative Cost
Field Operation Cost	USD 93,940,217
Recurring Electricity	USD 4,912,800
Total Operational Expenditure	USD 98,853,017

Table 36: Operational Expenditure without IP Transit

Revenue Projection

Year	Number of Households Connected	Revenue (USD)
0	0	0
1	0	0
2	5,085	2,440,750
3	21,101	10,128,411
4	70,998	34,078,954
5	150,302	72,145,147
6	200,199	96,095,690
7	216,215	103,783,351
8	220,145	105,669,598
9	221,041	106,099,871
10	221,242	106,196,357

Table 37: Indicative Revenue Projection for School NPV

Assumption: The monthly broadband rate is set at 40 USD.

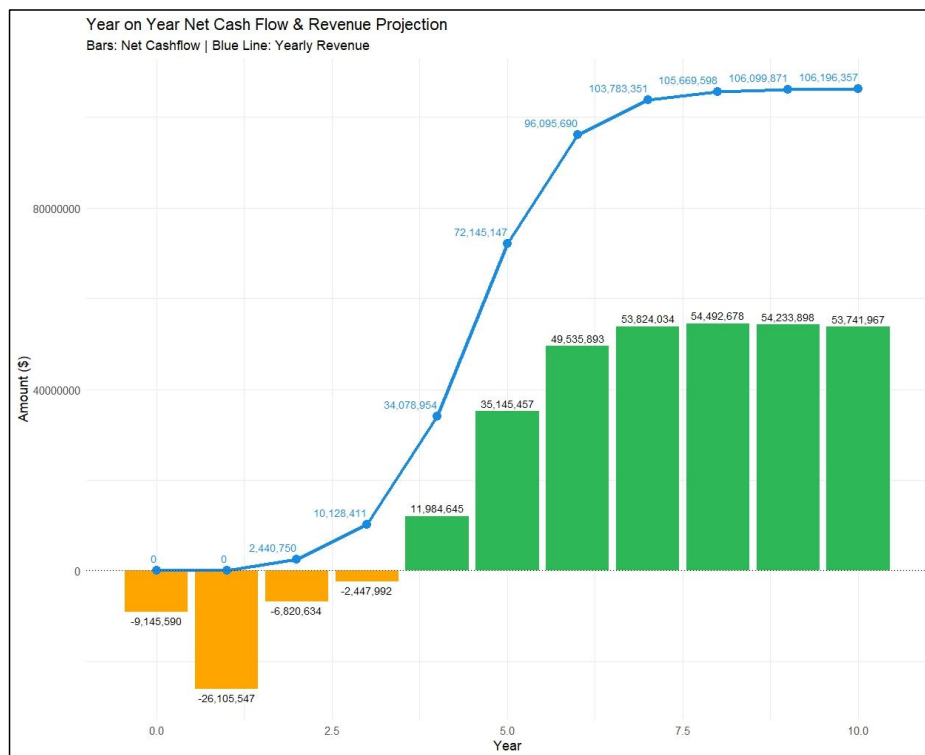


Figure 11: Indicative Net Cash Flow across Project Tenure for Schools

Impact of SUBSIDY Allocation

- Initial Positive TAs: 152
- Final Positive TAs after SUBSIDY: 266

Negative NPV TAs

Region	District	TA	Net Present Value
Northern	Mzuzu City	Mtwalo	-\$ 641,986
Central	Lilongwe	Chitukula	-\$ 960,234
Central	Lilongwe	Njewa	-\$ 523,041
Central	Lilongwe	Tsabango	-\$ 1,264,274
Southern	Mwanza	Kanduku	-\$ 369,643
Northern	Chitipa	Mwabulambya	-\$ 504,404
Southern	Mulanje	Mabuka	-\$ 412,253

Southern	Blantyre	Kuntaja	-\$ 133,769
Southern	Blantyre	Kapeni	-\$ 1,298,956
Southern	Blantyre	Machinjiri	-\$ 1,600,210
Northern	Karonga	Kyungu	-\$ 449,154
Northern	Rumphi	Chikulamayembe	-\$ 565,982

Table 38: Negative NPV TAs without IP Transit

Incorporating Government sites into the Financial Model

To enhance the comprehensiveness of our financial analysis, 500 Government sites are also incorporated into our connectivity model. This addition allows us to assess the impact of these sites on overall cash flows and project valuation, ensuring that our connectivity plan accounts for all critical stakeholders while maintaining financial sustainability.

Cost Assumption:

Item	Indicative Value	Description
Distance per GI	4 km	Average fiber length required to connect a GI
Labour cost per km	USD 2,000	Labor cost for underground trenching
Fiber cost per km	USD 7,000	Material cost including installation and commissioning
Equipment cost per GI	USD 3,000	Equipment cost including installation and commissioning
Electricity backup	USD 800	UPS installation cost per GI
Right of way	USD 500	ROW cost per kilometre

Table 39: Cost Assumption for Government sites

Capital Expenditure for Government sites:

Component	Amount (USD)
Fiber CAPEX	22,621,600
Equipment CAPEX	1,500,000
UPS Installation	400,000
Total CAPEX (GI)	24,521,600

Table 40: Capital Expenditure for Government sites

It is projected that around 30% of the sites will employ wireless connectivity, with an associated cost of \$6,000 USD per site. Consequently, the total hybrid connectivity cost amounts to \$ 18,635,120

Operations Expenditure for GI

Project Duration	Yearly Electricity Bill	Yearly OPEX Cost	Yearly OPEX Increase
10 years	USD 20 per month × 12 months	15% of total CAPEX including wireless connectivity	5% annually

Table 41: Operations Expenditure for GI

Operations cost

Component	Amount (USD)
Field Operation Costs	35,158,581
Recurring Electricity	1,200,000
Total OPEX (10-year)	36,358,581

Table 42: Operations cost

Revenue Projection:

Consistent with the Schools model, this approach applies the same quadrant-based adoption logic (SEI/FEI) to estimate achievable household penetration over time, utilizing an S-curve to represent realistic diffusion patterns. This reflects early adoption in favourable quadrants, followed by rapid expansion and eventual market saturation.

It is projected that 182,697 unique households will be connected over a ten-year period, with an expected ARPU of USD 30 per month.

Government sites (GI) — Year-wise Commercial connections & Revenue

Year	Number of Commercial Connections	Revenue (USD)
0	0	0
1	0	0
2	4,199	1,259,696
3	17,425	5,227,375

4	58,628	17,588,491
5	124,116	37,234,837
6	165,320	49,595,953
7	178,545	53,563,632
8	181,791	54,537,143
9	182,531	54,759,212
10	182,697	54,809,009

Table 43: Year on Year Connection Assumption

NPV Calculation:

This \$13.5 million is further divided into two components: Base Grant (60%) totalling \$8.1 million, and Viability Gap Funding (VGF/subsidy, 40%) amounting to \$5.4 million, which supports Technical Applications (TAs) that remain negative NPV after base support.

Approximately 500 Government sites were identified, with each government sites projected to receive about \$16,200. Additionally, the Base Grant may be distributed in two equal installments, 50% in Year 0 (G1) and 50% in Year 1 (G2), in accordance with construction progress and initial operations milestones.

IP Transit and Bandwidth Allocation Methodology

The IP transit requirement for the project is derived from dedicated bandwidth allocations across key user categories to ensure reliable connectivity and optimal performance. Each school is provisioned with 20 Mbps to support e-learning platforms and administrative functions, while Government sites will receive 40 Mbps to maintain secure and efficient operations. These allocations form the foundation for estimating IP transit costs and structuring contractual agreements with service providers.

Bandwidth Calculation for Educational & Government sites

To determine the average bandwidth requirement per school, a structured methodology is applied that accounts for both peak and off-peak usage patterns. During peak hours, each school is provisioned with 20 Mbps, ensuring adequate support for high-demand activities such as virtual classrooms, digital learning platforms, and administrative functions. During off-peak periods, bandwidth demand is lower and is therefore modelled using a contention ratio of 5:1, resulting in an effective allocation of 4 Mbps per school.

By weighting peak and off-peak consumption across a 24-hour cycle, the average daily bandwidth requirement per school is estimated at approximately 8.6 Mbps. This approach ensures that bandwidth provisioning remains realistic, cost-efficient, and aligned with operational needs, while maintaining consistent service quality during periods of peak usage.

A similar methodology is applied for government sites. Each government site is allocated 40 Mbps during peak hours to support critical administrative, operational, and e-governance applications. During off-peak periods, bandwidth is adjusted using a 5:1 contention ratio, resulting in an effective bandwidth of 8 Mbps per site. With peak demand assumed for 8 hours per day, the weighted average bandwidth requirement per government institution is calculated at approximately 13.3 Mbps over a 24-hour cycle.

Scale-up and tranche-based procurement

Bandwidth utilization is expected to increase progressively over the project duration as sites are connected, digital adoption improves, and service usage matures. Procuring the full required bandwidth capacity at the outset would result in underutilization and avoidable expenditure during the initial years. To ensure cost efficiency and fiscal discipline, bandwidth procurement is therefore aligned with projected demand growth through a phased, tranche-based approach.

Utilization scale-up factors are applied for each project year as follows: 40% utilization in Year 1, 60% in Year 2, 80% in Year 3, and full utilization (100%) from Year 4 onward. Bandwidth is procured incrementally in line with these factors, ensuring that contracted capacity closely reflects actual usage requirements rather than being frontloaded at project inception.

As utilization increases over time, bandwidth unit prices are expected to decline due to market maturation, increased competition, and network expansion. Accordingly, a dynamic step-down pricing structure is applied in the financial model. For the purpose of this analysis, bandwidth costs are assumed at USD 5 per Mbps per month for Years 1–2, USD 3 for Years 3–4, USD 2 for Years 5–6, and USD 1 from Year 7 onward. This pricing framework ensures transparency, predictability, and a clear linkage between contracted prices, project timelines, and expected market conditions.

- IP Transit Grant for schools: \$ 2.5 million
- IP Transit Grant for Government sites: \$ 1.5 million

Year	Bandwidth Price (USD)	Schools Bandwidth Mbps	Govt_ Bandwidth Mbps	Schools Bandwidth Cost	Govt Bandwidth Cost	Remaining Grant for School	Remaining Grant for Government
1	5	7642	3733	\$ 458,528	\$ 224,000	\$ 2,041,472	\$ 1,276,000

Year	Bandwidth Price (USD)	Schools Bandwidth Mbps	Govt_ Bandwidth Mbps	Schools Bandwidth Cost	Govt Bandwidth Cost	Remaining Grant for School	Remaining Grant for Government
2	5	11463	5600	\$ 687,792	\$ 336,000	\$ 1,353,680	\$ 940,000
3	3	15284	7467	\$ 550,234	\$ 268,800	\$ 803,446	\$ 671,200
4	3	19105	9333	\$ 687,792	\$ 336,000	\$ 115,654	\$ 335,200
5	2	19105	9333	\$ 458,528	\$ 224,000	\$ 0	\$ 111,200
6	2	19105	9333	\$ 458,528	\$ 224,000	\$ 0	\$ 0
7	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0
8	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0
9	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0
10	1	19105	9333	\$ 229,264	\$ 112,000	\$ 0	\$ 0

Table 44: Bandwidth Calculation for Educational & Government sites

The school IP transit grant is fully utilised by Year 5, whereas the government sites ' IP transit grant is completely exhausted by Year 6.

Annexure 6: Indicative Lotting

Tower Lotting Approach

- **Subsidy cap per lot:** Tower sites were grouped into lots subject to a maximum cumulative Maximum Allowable Subsidy (MAS) of USD 300,000 per lot, to ensure that no lot is disproportionately high- or low-subsidy, except in justified exceptional cases.
- **Limit on number of sites:** Each tower lot is capped at a maximum of three (5) sites to maintain manageable contract sizes, reduce implementation risk, and facilitate effective supervision.
- **Geographic proximity:** Tower sites were clustered based on latitude and longitude coordinates, ensuring that sites within each lot are geographically proximate and can be implemented efficiently with lower logistics and mobilization costs.

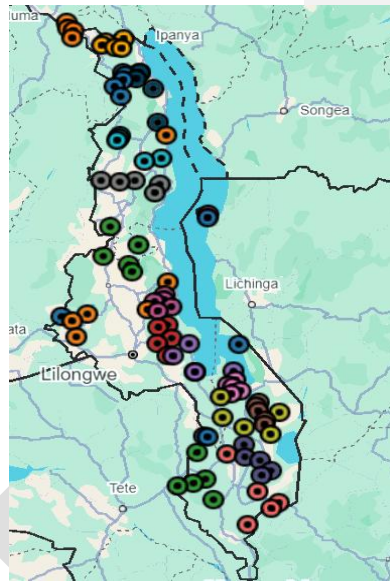
Tower Lot Summary of 91 Towers:

Row Labels	Site Count	Maximum Allowable Subsidy
Central_Dedza_CL15	5	\$ 328,290
Central_Dowa_CL13	5	\$ 381,965
Central_Likoma_CL19	1	\$ 61,458

Central_Ntcheu_CL18	5	\$ 299,640
Central_Ntchisi_CL14	5	\$ 394,481
Central_Ntchisi_CL16	5	\$ 332,069
Northern_Chitipa_CL1	5	\$ 460,737
Northern_Chitipa_CL12	5	\$ 425,403
Northern_Chitipa_CL4	5	\$ 447,234
Northern_Karonga_CL5	5	\$ 410,033
Northern_Mzimba_CL11	5	\$ 345,480
Northern_Mzimba_CL7	5	\$ 359,577
Northern_Rumphi_CL2	5	\$ 406,725
Southern_Machinga_CL17	5	\$ 304,997
Southern_Machinga_CL3	5	\$ 389,788
Southern_Mangochi_CL8	5	\$ 406,665
Southern_Neno_CL6	5	\$ 438,133
Southern_Thyolo_CL10	5	\$ 401,238
Southern_Zomba_CL9	5	\$ 406,086
Grand Total	91	\$ 7,000,000

Table 45: Tower- 19 Lots

Mean is \$ 368,421 & Median is \$ 394,481



Complete List:

Lot Name	Traditional Authority	District	Site Name	Latitude	Longitude	MAS Value
Central_Dedza_CL15	Chowe	Mangochi	Nkope Mission	-14.200047	35.036087	\$ 79,203
Central_Dedza_CL15	Kambalame	Salima	Gwirize	-13.821345	34.487977	\$ 79,890
Central_Dedza_CL15	Tambala	Dedza	Tchesa	-13.988208	34.287317	\$ 82,343
Central_Dedza_CL15	Kachindamoto	Dedza	Kachindamoto	-14.210193	34.557293	\$ 37,698
Central_Dedza_CL15	Tambala	Dedza	Khwekhwele Peak	-14.210193	34.557293	\$ 49,157
Central_Dowa_CL13	Chiwere	Dowa	Chimwanjati Hill	-13.5929788	34.1057587	\$ 77,082
Central_Dowa_CL13	Chiwere	Dowa	Kanyenyeva	-13.7451612	34.2711435	\$ 77,082
Central_Dowa_CL13	Chiwere	Dowa	Chipiri	-13.8168099	34.0930353	\$ 85,523
Central_Dowa_CL13	Mwanza	Salima	Makiyoni	-13.561619	34.22267	\$ 59,934
Central_Dowa_CL13	Tambala	Dedza	Kalulu	-13.982936	34.216598	\$ 82,343
Central_Likoma_CL19	Chinyama	Likoma	Likoma Secondary School	-12.04553	34.731543	\$ 61,458
Central_Ntcheu_CL18	Mkanda	Mchinji	Katutula	-13.4388289	32.9020361	\$ 58,040
Central_Ntcheu_CL18	Makanjira	Mangochi	Lukoloma	-13.8310733	35.10545	\$ 54,503
Central_Ntcheu_CL18	Mpando	Ntcheu	Matanda	-15.099778	34.664555	\$ 57,615
Central_Ntcheu_CL18	Phambala	Ntcheu	Jumbe	-15.111049	34.709472	\$ 64,833
Central_Ntcheu_CL18	Mkumpha 3	Likoma	Kaya-Mawa	-12.092752	34.725504	\$ 64,649
Central_Ntchisi_CL14	Kasakula	Ntchisi	Chimbindu	-13.370281	34.103676	\$ 68,785

Lot Name	Traditional Authority	District	Site Name	Latitude	Longitude	MAS Value
Central_Ntchisi_CL14	Mwadzama	Nkhotakota	Bamba Site	-13.1473554	34.1891702	\$ 81,036
Central_Ntchisi_CL14	Mwadzama	Nkhotakota	Benga Site	-13.3143015	34.2715591	\$ 76,037
Central_Ntchisi_CL14	Mwansambo	Nkhotakota	Mphanda Madzi	-13.2171052	34.178598	\$ 83,966
Central_Ntchisi_CL14	Nthondo	Ntchisi	Ndinda	-13.2429021	34.0628484	\$ 84,658
Central_Ntchisi_CL16	Mkanda	Mchinji	Fanuel	-13.5016415	33.0370267	\$ 59,687
Central_Ntchisi_CL16	Mduwa	Mchinji	M'duwa	-13.7205934	33.0837737	\$ 59,780
Central_Ntchisi_CL16	Santhe	Kasungu	Nyaza	-13.408277	33.225369	\$ 53,671
Central_Ntchisi_CL16	Malengachanzi	Nkhotakota	Sesani	-12.9737939	34.2302479	\$ 76,690
Central_Ntchisi_CL16	Nthondo	Ntchisi	Sambakunsi	-13.3507032	33.9761649	\$ 82,241
Northern_Chitipa_CL1	Nthalire	Chitipa	Kapirinkhonde	-10.2795457	33.5868568	\$ 91,570
Northern_Chitipa_CL1	Nthalire	Chitipa	Mahowe	-10.1902554	33.6909542	\$ 84,258
Northern_Chitipa_CL1	Nthalire	Chitipa	Mukule	-10.0913672	33.6910771	\$ 90,255
Northern_Chitipa_CL1	Nthalire	Chitipa	Mibanga	-10.1246222	33.7172793	\$ 90,255
Northern_Chitipa_CL1	Nthalire	Chitipa	Therere TC	-10.416346	33.663524	\$ 104,398
Northern_Chitipa_CL12	Kameme	Chitipa	Impeza Primary School	-9.497982	33.0807226	\$ 72,061
Northern_Chitipa_CL12	Kameme	Chitipa	Sopelera	-9.5977333	33.0645317	\$ 90,053
Northern_Chitipa_CL12	Kameme	Chitipa	Nkhanire	-9.4661883	33.0138817	\$ 92,719
Northern_Chitipa_CL12	Kameme	Chitipa	Nkhanga	-9.38305	32.9964367	\$ 86,531
Northern_Chitipa_CL12	Mwamlowe	Rumphi	Tcharo	-10.9562667	34.21976	\$ 84,038
Northern_Chitipa_CL4	Mwakaboko	Karonga	Ngana	-9.61947	33.7000015	\$ 79,972

Lot Name	Traditional Authority	District	Site Name	Latitude	Longitude	MAS Value
Northern_Chitipa_CL4	Mwenemisuku	Chitipa	Chinsasu	-9.7043695	33.4313682	\$ 103,435
Northern_Chitipa_CL4	Mwenemisuku	Chitipa	Mwamalange	-9.6627718	33.4775525	\$ 89,942
Northern_Chitipa_CL4	Mwenemisuku	Chitipa	Sokola	-9.737234	33.592963	\$ 89,942
Northern_Chitipa_CL4	Mwenemisuku	Chitipa	Msumbe	-9.7512535	33.6725442	\$ 83,944
Northern_Karonga_CL5	Mwankhunikira	Rumphi	Bale	-10.7811358	34.1164987	\$ 68,296
Northern_Karonga_CL5	Kyungu	Karonga	Kabuyu	-10.173093	33.85395	\$ 102,403
Northern_Karonga_CL5	Mwirang'Ombe	Karonga	Thabilo	-10.3142065	34.0625599	\$ 82,507
Northern_Karonga_CL5	Kyungu	Karonga	Katiri	-10.0925073	33.8959399	\$ 78,413
Northern_Karonga_CL5	Kyungu	Karonga	Khondowe	-10.0925073	33.8959399	\$ 78,413
Northern_Mzimba_CL11	Kampingosibande	Mzimba	Kambuzi Hill	-11.577626	33.830663	\$ 92,944
Northern_Mzimba_CL11	Mtwalo	Mzimba	Mphawa Hill	-11.5938733	33.6452338	\$ 69,052
Northern_Mzimba_CL11	Kabunduli	Nkhata-Bay	Mzenga	-11.7474314	34.0765968	\$ 65,837
Northern_Mzimba_CL11	Kabunduli	Nkhata-Bay	Chilundwe Hill	-11.6312673	34.1390615	\$ 62,626
Northern_Mzimba_CL11	M'Mbelwa	Mzimba	Mbunge	-11.5736159	33.4134706	\$ 55,022
Northern_Mzimba_CL7	Khosolo	Mzimba	Kachere TC	-12.4616667	33.8690417	\$ 98,848
Northern_Mzimba_CL7	Mzikubola	Mzimba	Ndawa	-12.2086539	33.5225402	\$ 70,286
Northern_Mzimba_CL7	Simlemba	Kasungu	Sazalamba Hill	-12.732925	33.746844	\$ 64,734
Northern_Mzimba_CL7	Wimbe	Kasungu	Kapsanga Tc	-12.83011	33.788511	\$ 43,893
Northern_Mzimba_CL7	Chisemphere	Kasungu	Milenje	-12.6132452	33.4337857	\$ 81,816
Northern_Rumphi_CL2	Chikulamayembe	Rumphi	Luviri Primary	-10.9583932	33.6508102	\$ 82,376
Northern_Rumphi_CL2	Chikulamayembe	Rumphi	Kasere Hill	-11.0215238	33.6148001	\$ 104,019

Lot Name	Traditional Authority	District	Site Name	Latitude	Longitude	MAS Value
Northern_Rumphi_CL2	Chikulamayembe	Rumphi	Ruhono Hill	-10.9890615	33.6357708	\$ 82,376
Northern_Rumphi_CL2	M'Bwana	Nkhata-Bay	Bweteka Peak	-11.2736115	34.1592889	\$ 68,902
Northern_Rumphi_CL2	Mtwalo	Mzimba	Kayowera Primary School	-11.3123333	33.9519774	\$ 69,052
Southern_Machinga_CL17	Nkoola	Machinga	Mpiri TC	-14.7705	35.6075	\$ 76,254
Southern_Machinga_CL17	Mlomba	Machinga	Mlomba TC	-15.0740093	35.4973065	\$ 71,292
Southern_Machinga_CL17	Amidu	Balaka	Chilanga CDSS	-14.979437	35.166732	\$ 62,328
Southern_Machinga_CL17	Makwangwala	Ntcheu	Nkutumula	-14.840901	34.897995	\$ 47,089
Southern_Machinga_CL17	Chimwala	Mangochi	Khungwa Primary School	-14.5555208	34.8759648	\$ 48,033
Southern_Machinga_CL3	Chowe	Mangochi	Malombe TC	-14.6322514	35.3494454	\$ 60,638
Southern_Machinga_CL3	Chowe	Mangochi	Sambammanja	-14.6835733	35.3172517	\$ 66,826
Southern_Machinga_CL3	Liwonde	Machinga	Masidi Primary School	-14.9396892	35.421083	\$ 103,435
Southern_Machinga_CL3	Liwonde	Machinga	Mjahito	-14.8793412	35.4291527	\$ 79,445
Southern_Machinga_CL3	Liwonde	Machinga	Chikuluma	-14.7514917	35.3442083	\$ 79,445
Southern_Mangochi_CL8	Mponda	Mangochi	Mbonechera	-14.473083	35.12391	\$ 98,186
Southern_Mangochi_CL8	Nankumba	Mangochi	Lipalazi Hill	-14.3929345	34.9671985	\$ 75,289
Southern_Mangochi_CL8	Mponda	Mangochi	Maone Site Hill	-14.5129985	35.0088653	\$ 77,359
Southern_Mangochi_CL8	Mponda	Mangochi	Thumu Primary School	-14.418005	35.0273836	\$ 78,472

Lot Name	Traditional Authority	District	Site Name	Latitude	Longitude	MAS Value
Southern_Mangochi_CL8	Mponda	Mangochi	Njereza Cement Factory	-14.3230922	35.0594748	\$ 77,359
Southern_Neno_CL6	Dambe	Neno	Chawe TC	-15.3270445	34.5745101	\$ 96,266
Southern_Neno_CL6	Kanduku	Mwanza	Tulongkhondo	-15.7573422	34.5221553	\$ 92,408
Southern_Neno_CL6	Mlauli	Neno	Felemu	-15.7002567	34.67704	\$ 101,142
Southern_Neno_CL6	Kasisi	Chikwawa	Kasisi	-15.9883347	34.7733635	\$ 61,212
Southern_Neno_CL6	Chapananga	Chikwawa	Chang'ambika	-15.7957651	34.3249723	\$ 87,105
Southern_Thyolo_CL10	Juma	Mulanje	Namulenga	-15.87174	35.329411	\$ 63,226
Southern_Thyolo_CL10	Mabuka	Mulanje	Milonde	-16.1093417	35.5022367	\$ 81,699
Southern_Thyolo_CL10	Nsabwe	Thyolo	Nsabwe	-16.3398653	35.2025704	\$ 93,074
Southern_Thyolo_CL10	Symon Likongwe	Neno	Matope	-15.3482005	34.9489472	\$ 71,872
Southern_Thyolo_CL10	Mabuka	Mulanje	Nnesa	-16.0297233	35.598305	\$ 91,368
Southern_Zomba_CL9	M'Biza	Zomba	Sunuzu	-15.5817072	35.5005765	\$ 80,956
Southern_Zomba_CL9	M'Biza	Zomba	Chiphoola	-15.4388255	35.3629254	\$ 84,651
Southern_Zomba_CL9	M'Biza	Zomba	M'Biza	-15.6466772	35.380651	\$ 96,645
Southern_Zomba_CL9	Mlumbe	Zomba	Chingale TC	-15.39055	35.17424	\$ 71,407
Southern_Zomba_CL9	Mlumbe	Zomba	Mlooka	-15.2190183	35.1642883	\$ 72,427

Table 46: Detailed Lot for 91 Tower

Annexure 7: Types of Early Market Engagement

Early Market Engagement (EME) activities may be undertaken through Broad or Targeted approaches depending on the procurement objective, level of market maturity, and the nature of market insights required. The following tables outline typical forms of engagement, their purpose, and key features.

1. Broad Early Market Engagement

Broad engagements are designed to reach a wide group of suppliers simultaneously.

Key Characteristics

- Efficient way to engage a large pool of suppliers
- Ensures all suppliers receive the same information at the same time
- Minimizes risks of fraud, corruption, or perception of bias
- Provides limited opportunity to test procurement strategies or explore innovative solutions
- Suppliers may be less willing to share sensitive insights or alternative approaches in a public forum

Types of Broad Market Engagement

Type of Engagement	What It Is
Business Outreach / Opportunities Event	An open event organized by the Borrower or the World Bank to inform suppliers about upcoming procurement opportunities, sector objectives, and participation requirements.

Trade Show / Exhibition	Industry fairs where suppliers showcase technologies and services. Useful for updating Borrowers on market trends and raising awareness of upcoming opportunities.
Meet the Buyer / Meet the Supplier	Events where multiple buyers and suppliers interact. Allows Borrowers to explain project needs and suppliers to present capabilities and solutions.
Meeting with Industry Bodies	Engagements with associations or representative groups to understand industry practices, obtain technical feedback, and identify potential suppliers.
Pre-Bid Supplier Briefing	A session held just before issuing a Notice of Procurement to provide high-level information and allow suppliers to ask clarifying questions in advance of bidding.

Table 47: Types of Broad Market Engagement

2. Targeted Early Market Engagement

Targeted engagements involve smaller groups or individual suppliers to obtain more detailed insights.

Key Characteristics

- Provides in-depth feedback on procurement strategy and technical options
- Helps identify innovations and leading market practices
- Useful for understanding supplier-specific constraints and barriers to participation
- Higher risk of perceived bias or selectivity must be carefully managed (e.g., with an independent probity advisor)

Types of Targeted Market Engagement

Type of Engagement	What It Is
Supplier Meeting	Typically, one-on-one engagements that provide detailed insights on technical alternatives, innovations, delivery constraints, and barriers that may prevent a supplier from bidding.
Supplier Workshop	A session with a small, focused group of suppliers to discuss the Borrower's preliminary requirements, viability, delivery options, and potential innovative solutions. Encourages discussion on partnering or subcontracting.
Supplier Networking Event	A forum where suppliers can explore joint ventures, consortium arrangements, or subcontracting opportunities, particularly useful where diverse capabilities are required.

Table 48: Types of Targeted Market Engagement

Annexure 8: Pre-Qualification Criteria

PQ Criterion	Minimum Requirement (Pass/Fail)	Evidence Required
1. Legal Incorporation	Bidder/Consortium/JV must be legally incorporated and in good standing in their country of registration.	Certificate of Incorporation; Articles/Memorandum of Association
2. License to Operate	Bidder must hold, or commit to obtain, a valid MACRA license to operate ICT services in Malawi at the time of award.	Existing license number or proof of license application or Declaration to secure license upon award
3. Tax Compliance	Bidder must be tax compliant in Malawi or in country of incorporation.	Valid Tax Clearance Certificate
4. Conflict of Interest	Bidder/Consortium must not have any conflict of interest affecting this procurement. Lead Bidder must be identified.	Signed Conflict of Interest Declaration; Disclosure of JV partners and key subcontractors

5. UN / Legal Restrictions	Bidder/Consortium must not be under UN Security Council sanctions or restrictions under Malawi law.	Self-declaration confirming no sanctions
6. Relevant Experience	At least one similar ICT/telecom project completed, and minimum 5 years sector experience in Africa.	Completion certificates; Client references; Delivery records
7. Company Turnover	Minimum Average Annual Turnover $\geq 1.5 \times$ Contract Value of Lots Bid (average of last 3 financial years).	Audited financial statements for FY 2022-23, 2023-24, 2024-25 signed by a licensed auditor
8. Blacklisting / Debarment	Bidder must not be currently blacklisted or debarred by any government, regulator, IFI, or UN agency.	Self-declaration
9. Litigation / Claims	Bidder must not have significant unresolved litigation or regulatory disputes that could affect performance.	Self-declaration of court and regulatory history
10. Manpower Capability	Minimum 30 qualified staff in planning, installation, engineering, O&M, GIS/survey, each with ≥ 2 years relevant Malawi/Africa experience.	HR roster; Organogram; CVs; Employment records
11. O&M Capability	Bidder must demonstrate existing or rapidly deployable O&M capability in Malawi (NOC, field teams, spares, escalation).	O&M capability statement; Mobilisation plan; Escalation structure
12. Performance Security Capacity	Bidder must demonstrate ability to furnish performance security (typically 10% of contract value).	Letter of intent/comfort from bank or insurer
13. Bankruptcy / Insolvency	Bidder must not be bankrupt, insolvent, under administration, or subject to winding-up proceedings.	Self-declaration and supporting legal documents (if applicable)

Table 49: Indicative Pre-Qualification Table

Annexure 9: Indicative Technical Compliance Sheet

1) Government Sites

Item	Technical Requirement	Minimum Specification	Bidder's Technical Description / Proposed Technology
1	IRU (Indefeasible Right of Use)	Provision of dedicated capacity for Government traffic under an IRU arrangement, including long-term right-of-use, guaranteed path availability, and maintenance obligations as per RFB.	(Bidder to fill)
2	Backhaul Capacity & Architecture	Fibre or microwave backhaul supporting ≥40 Mbps per school plus overhead, low latency, full integration with PPPC/operator backhaul; redundancy recommended.	(Bidder to fill)
3	Last-Mile Access Technology	LTE/4G, 5G NR, Microwave PTP/PTMP, Fibre, or equivalent capable of reliably delivering ≥40 Mbps per school considering terrain and distance.	(Bidder to fill)
4	Network Integration	Must integrate seamlessly with national backbone, existing towers, and project backhaul systems; interoperability with multi-vendor networks required.	(Bidder to fill)
5	Customer Premises Equipment (CPE)	CPE must support ≥40 Mbps throughput; include appropriate antenna (directional/omni); comply with power, environmental, and installation standards.	(Bidder to fill)
6	Power Backup & Energy	Mandatory: UPS, battery, or solar solution to maintain SLA uptime; installation must meet safety and electrical compliance standards.	(Bidder to fill)
7	SLA Performance Capability	Ability to meet uptime ≥98%, MTTR and latency requirements as specified; consistent throughput delivery.	(Bidder to fill)

Item	Technical Requirement	Minimum Specification	Bidder's Technical Description / Proposed Technology
8	Network Monitoring	Real-time monitoring via NMS/OSS, alerts, fault logs, and incident management capability.	<i>(Bidder to fill)</i>
9	Health, Safety & Regulatory Compliance	Compliance with MACRA licensing conditions, spectrum rules, equipment certification, EMF standards, and installation safety requirements.	<i>(Bidder to fill)</i>
10	Scalability & Future Growth	Ability to scale bandwidth beyond 40 Mbps without major redesign; equipment should be upgradeable (software/hardware).	<i>(Bidder to fill)</i>
11	Equipment Details	List of equipment models, technical specifications, datasheets, environmental ratings, power profile, certifications.	<i>(Bidder to fill)</i>

Table 50: Indicative Technical Compliance Sheet for Government Sites

2) School Connectivity

Item	Technical Requirement	Minimum Specification	Bidder's Technical Description / Proposed Technology
1	Backhaul Capacity & Architecture	Backhaul (fibre or microwave) must reliably support ≥20 Mbps per school plus protocol overhead; high-availability routes preferred, but full redundancy only if specified in the RFB.	<i>(Bidder to fill)</i>
2	Last-Mile Access Technology	LTE/4G, Wi-Fi 6/6E, Microwave PTP/PTMP, Fibre, or equivalent technology capable of consistently delivering ≥20 Mbps at each school location.	<i>(Bidder to fill)</i>

3	Network Integration	Must integrate with PPPC/operator backhaul and any existing or planned LAN/Wi-Fi systems at the school; seamless interoperability required.	(Bidder to fill)
4	Customer Premises Equipment (CPE)	CPE must support ≥20 Mbps throughput, include suitable antenna type (directional/omni), and be durable for school environments with minimal maintenance needs.	(Bidder to fill)
5	Power Backup & Energy	As per RFB: power backup recommended in unstable grid areas (UPS/battery/solar); all systems must comply with safety and electrical standards.	(Bidder to fill)
6	SLA Performance Capability	Solution must maintain uptime and performance levels appropriate for educational use (e.g., online learning, video sessions, basic e-learning platforms).	(Bidder to fill)
7	Network Monitoring	Must support remote monitoring through NMS/OSS or equivalent system, including performance analytics, alerts, and incident reporting.	(Bidder to fill)
8	Safety, Regulatory & Environmental Compliance	Compliance with national ICT regulations, spectrum rules, EMF exposure standards, installation safety guidelines, and environmental considerations.	(Bidder to fill)
9	Scalability & Expansion Capability	Ability to scale beyond 20 Mbps if student population or ICT program requirements grow, without major redesign or equipment overhaul.	(Bidder to fill)

Table 51: Indicative Technical Compliance Sheet for Schools

Annexure 10: Other Consideration for Commercial Evaluation

a. Time Schedule Adjustment: Adjustments are applied based on the bidder's proposed implementation timeline. Faster deployment may be valued positively, while extended timelines may attract financial penalties during evaluation.

b. Payment Schedule Adjustment: Variations in payment milestones affect project cash flow and are reflected in the evaluated cost. Bids requiring high upfront payments may be disadvantaged, while payment structures aligned with typical or enhanced delivery stages should be preferred.

c. Life-Cycle Costing (LCC): LCC captures the total cost of ownership over the contract duration rather than only the acquisition cost. Typical ICT considerations include hardware/software purchase, licensing and subscription fees, annual maintenance and upgrades, energy consumption, end-of-life replacements, and network O&M costs.

d. Functional Guarantees (Minimum/Maximum Adjustments): Bid prices may be adjusted based on the level of functional performance guarantees. Higher commitments such as better bandwidth, uptime or SLA levels can increase the evaluated value. Cost-benefit adjustments may apply if the bidder exceeds minimum technical requirements.

e. Adjustments for Nonmaterial Nonconformities: Minor deviations from the technical specifications that do not impact core functionality may require financial adjustments. These deviations are addressed through proportional cost corrections.

f. Discounts: Any discounts offered by bidders are factored into the final evaluated price. This includes volume-based discounts for large ICT procurements and bundled pricing for integrated solutions combining cloud, connectivity, and managed services. It is essential to incorporate Life-Cycle Costing (LCC) within the O&M assessment, given the project's sustainability objectives. This ensures that bidders allocate adequate and realistic funding for long-term operations, an area that has historically posed challenges in network connectivity projects.

Annexure 11: Indicative Expression of Interest (EOI) Format

(For Non-Consulting Services – Digital Malawi Acceleration Project)

Disclaimer

1. Disclaimer and Context

This Expression of Interest ("EOI") is issued by the Public Private Partnership Commission ("PPPC") on behalf of the Government of Malawi in connection with the Digital Malawi Acceleration Project ("DMAP"), financed by the International Development Association (World Bank). The information contained in this

document is provided solely for the purpose of inviting interested and eligible organisations to submit an EOI for the provision of broadband connectivity services under DMAP.

PPPC makes no representation or warranty, express or implied, as to the accuracy or completeness of the information contained herein and shall have no liability for any loss or damage arising from the use of this document. PPPC reserves the right, at its sole discretion, to amend, modify, or withdraw this EOI at any time, without assigning any reason and without incurring any liability. This EOI does not constitute a solicitation, invitation to bid, or an offer, nor does it create any contractual obligations whatsoever on the part of PPPC or the Government of Malawi.

Responding to this EOI shall not in any manner oblige PPPC to invite any respondent to participate in subsequent procurement stages. Only shortlisted respondents will be invited to submit bids under the subsequent Request for Bids (RFB) process.

2. EOI Data Sheet

Project:	Digital Malawi Acceleration Project (DMAP)
Borrower:	Government of Malawi
Implementing Agency:	Public Private Partnership Commission (PPPC)
Financier:	International Development Association (World Bank)
Assignment Title:	Provision of Broadband Connectivity Services
Scope Covered:	• 91 New Towers • 250 Tower Upgradation Sites • 500 Government Institutions • 2,000 Secondary Schools
Procurement Method:	For Towers, RFB for Non-Consulting Services, using a two envelope process followed by a Best and Final Offer (BAFO).

Project:	Digital Malawi Acceleration Project (DMAP)
	For Government Sites & Schools, Request for Bids (RFB) – Framework Agreements for Non-Consulting Services, Reverse Auctions for price discovery, and Electronic Auction Platform
EOI Reference Number:	[Insert]
EOI Issue Date:	[Insert]
Clarification Deadline:	[Insert Date/Time]
Submission Deadline:	[Insert Date/Time]
Submission Format:	Email submission (PDF only)
Submission Email Address:	[Insert PPPC Procurement Email]
Email Subject Line:	"EOI – DMAP Connectivity – [Firm Name]"
Language:	English

Table 52: EOI Data Sheet

3. Purpose of the EOI

The purpose of this EOI is to identify, screen, and shortlist interested firms and consortia with the potential technical and operational capacity to provide non-consulting broadband connectivity services under DMAP. The EOI seeks to establish a pool of qualified and interested suppliers who may subsequently be invited to participate in the Request for Bids (RFB) process to form a multi-supplier Open Framework Agreement ("Open FA").

This EOI stage is intended for initial market identification and pre-selection only. It does not involve the submission of financial proposals, nor does it constitute a binding commitment from PPPC to procure services from any respondent.

4. Project Summary

The Digital Malawi Acceleration Project is a national initiative aimed at improving digital access, enhancing public sector service delivery, and expanding broadband connectivity across Malawi, with a particular focus on rural and underserved communities. The Project supports investment in digital infrastructure, improvement of government connectivity, and expansion of affordable internet access to institutions and end-users.

Under Component 1, PPPC will facilitate the deployment of broadband services across new and existing tower sites, government institutions, and secondary schools, supporting Malawi's broader digital transformation agenda and creating a foundation for digital services and applications.

5. Indicative Scope of Services and Technical Requirements

Respondents are expected to indicate their capacity and interest in delivering broadband connectivity services for one or more of the following workstreams:

- Deployment of broadband connectivity to approximately 91 new tower sites;
- Upgrade and optimisation of broadband connectivity across approximately 250 existing tower sites;
- Provision of broadband connectivity services to approximately 500 government institutions;
- Provision of broadband connectivity services to approximately 2,000 secondary schools.

At a minimum, services are expected to include, but are not limited to:

- Provision of broadband connectivity meeting minimum bandwidth thresholds in the range of 20–40 Mbps per site (exact requirements to be specified in the RFB);
- Supply, installation, and configuration of customer premises equipment (CPE), access equipment, and any required ancillary equipment;
- Integration with existing or new tower and backhaul infrastructure (e.g., fibre, microwave, or other backhaul technologies);
- Provision of basic operations and maintenance (O&M) services, including incident management, fault diagnosis, and repairs;
- Service management in accordance with defined Service Level Agreements (SLAs), including target network availability, incident response times, and resolution times;
- Reporting and performance monitoring in line with PPPC and Project requirements.

Final technical specifications, including detailed SLAs, quality-of-service parameters, and site lists, will be provided in the RFB document issued to shortlisted respondents.

6. Sequence of Workstreams (Indicative)

The assignment is expected to be implemented through the following sequential or overlapping workstreams (subject to final confirmation in the RFB):

1. Selection 1 – 91 New Towers: deployment of connectivity, integration with backhaul, and site commissioning;
2. Selection 2 – 250 Tower Upgradation Sites: upgrade or optimisation of existing infrastructure and services;
3. Selection 3 – 500 Government Institutions: provision of broadband connectivity and associated CPE;
4. Selection 4 – 2,000 Secondary Schools: provision of broadband connectivity and associated CPE.

These workstreams represent the prioritised rollout sequence and are indicative in nature. Detailed deployment plans and phasing will be provided in the RFB.

7. Participation and Consortium Arrangements (Open Framework Agreement Model)

To promote competition, market depth, and operational flexibility, consortium participation is permitted under the Open Framework Agreement model.

7.1 Permitted Forms of Participation

Respondents may:

- Submit EOIs individually as a single firm; or
- Submit EOIs as part of a consortium (joint venture, association, or other collaborative arrangement).

A firm may participate in more than one consortium at the EOI stage, subject to managing any potential conflicts of interest in accordance with the World Bank Procurement Regulations. However, at the RFB stage, each firm shall participate and submit a bid as part of only one consortium (or individually, if bidding alone), and participation in more than one bid shall result in all related bids being declared non-responsive.

7.2 Nature of Consortium Arrangements at EOI Stage

Consortium arrangements declared at this stage are indicative and non-binding. Final consortium composition may be revised or formalised at the RFB stage, subject to the conditions that will be specified in the RFB. Respondents are requested to clearly indicate the proposed Lead Firm and the indicative roles of each consortium member.

7.3 Eligibility and Compliance (Informational at this Stage)

All firms and consortium members will be required, at the RFB and subsequent stages, to comply with the World Bank Procurement Regulations, including but not limited to eligibility, integrity, sanctions, environmental and social requirements, and conflict of interest provisions. At the EOI stage, respondents are requested only to provide a high-level confirmation that they are not under World Bank sanctions.

7.4 Competition and Integrity Requirements

- No commercial information (including pricing, subsidy assumptions, or detailed cost structures) shall be exchanged between competitors for the purposes of preparing EOIs;
- No financial proposals or cost-related information shall be submitted with the EOI;
- All financial submissions will occur exclusively at the RFB and call-off stages, as applicable.

8. Submission Guidelines and Content of EOI

Respondents are requested to submit their EOIs in English, in PDF format, by email only, to the email address specified in the Data Sheet by the stated deadline. PPPC will acknowledge receipt of submissions by email.

The EOI should, as a minimum, include the following information:

- Completed EOI Submission Form (Annex 1) duly filled in and signed by an authorised representative;
- Brief profile of the firm (and consortium members, if applicable), including core business areas, years of operation, and size of operations;
- High-level description of relevant experience in broadband connectivity, tower infrastructure, last-mile connectivity, and/or ICT infrastructure projects over the last 5–7 years (for information only);
- Indication of interest in one or more workstreams (e.g., new towers, tower upgrades, government institutions, secondary schools);
- Indicative geographic coverage and deployment capacity within Malawi;
- Signed declarations and confirmations as set out in the EOI Submission Form.

9. Required Statements to be Included in the EOI

The EOI must clearly include the following statements:

- "This EOI is not a Request for Bids and does not represent a procurement commitment."
- "Shortlisting at this EOI stage does not guarantee inclusion in, or award under, any Framework Agreement."
- "No financial proposal or pricing information is submitted as part of this EOI."
- "PPPC reserves the right to amend, suspend, or cancel this EOI at any time, without liability."

Firms shortlisted through this EOI may be invited to participate in the subsequent RFB process to establish an Open, Multi-Supplier Framework Agreement. The Open Framework Agreement may permit new suppliers to join in accordance with the procedures defined in the RFB and Framework Agreement documents. Participation in this EOI does not preclude future entry nor does it create any entitlement to an award.

EOI Submission Form – To be Completed by Respondents

Respondents are requested to complete this form and submit it as part of their EOI. Please type directly in the shaded or blank fields. Additional pages may be attached where necessary.

Section A: EOI Reference Details

EOI Reference Number:	[Insert EOI Reference Number]
Assignment Title:	Provision of Broadband Connectivity Services under DMAP
Implementing Agency:	Public Private Partnership Commission (PPPC)
Submission Date (DD/MM/YYYY):	[To be completed by Respondent]

Table 53: EOI Reference Details

Section B: Respondent Information (Lead Firm)

Please provide the following information for the Lead Firm. If the EOI is submitted on behalf of a consortium, complete Section C as well.

Legal Name of Firm:	
Country of Incorporation/Registration:	
Year of Incorporation:	
Registered Address:	
Website:	
Contact Person (Name & Title):	
Contact Email:	
Contact Phone Number:	
Authorised Signatory (Name & Title):	

Table 54: Respondent Information Table

Section C: Consortium Information (if applicable)

If the EOI is submitted on behalf of a consortium, please provide details of each consortium member and their indicative roles. Add rows as necessary.

No.	Firm Name	Country of Registration	Role in Consortium (Lead/Member)	Key Area of Contribution	Indicative % Involvement (if known)
1	[Insert Firm Name]	[Insert Country]	[Lead/Member]	[e.g., Network Operations, Tower Infrastructure, Backhaul, etc.]	[e.g., 40%]

Table 55: Consortium Information Table

Section D: Areas of Interest and Indicative Geographic Coverage

Please indicate the workstreams for which you are expressing interest (tick as applicable) and provide a brief description of your indicative geographic coverage and deployment capacity in Malawi.

Workstreams (tick all that apply):

- 91 New Towers
- 250 Tower Upgradation Sites
- 500 Government Institutions
- 2,000 Secondary Schools

Indicative Geographic Coverage and Deployment Capacity (max. 300 words):

[Provide a brief narrative on regions/districts that can be covered, deployment teams, and rollout capacity.]

Section E: Declarations and Confirmations

By signing this form, the Respondent confirms the following:

- We acknowledge that this EOI is not a Request for Bids and does not represent a procurement commitment by PPPC or the Government of Malawi.
- We understand that shortlisting at this EOI stage does not guarantee inclusion in, or award under, any future Framework Agreement.
- We confirm that no financial or pricing information is included in this EOI submission.
- We understand that PPPC reserves the right to amend, suspend, or cancel this EOI at any time.
- We confirm that, to the best of our knowledge, our firm (and consortium members, if any) is not under any sanction by the World Bank.
- We confirm that the information provided in this EOI Submission Form is true, complete, and accurate to the best of our knowledge.

Signed by (for and on behalf of the Respondent):

Annexure 12: Indicative Service Level Agreements

To maintain technological neutrality, it is essential to define Service Level Agreements (SLAs) that ensure all sites are treated fairly and transparently. These SLAs will serve as the benchmark for performance and accountability across all deployments. Further, certain exemptions may be considered only with mutual consent and documented evidence.

Commented [L8]: The project documents envisage a template to be annexed, with clear terms and conditions. Kindly include.

Circuit Availability

- The end-to-end circuit from the aggregation point to any site must be active and available for data transmission at the specified minimum speeds for at least 99% of the time during each calendar month.
- This equates to no more than 10.8 hours of downtime per month.
- For Towers, which serve as critical aggregation nodes, the availability requirement is 99.5% (maximum downtime 3.6 hours per month).

Round Trip Delay

- Government sites & Hub Schools: ≤100 milliseconds
- Spoke Schools (remote): ≤150 milliseconds
- Towers: ≤80 milliseconds

Packet Loss

- Government sites & Hub Schools: ≤0.5%
- Spoke Schools: ≤1%
- Towers: ≤0.3%

Excused non-compliance:

The Service Provider's service availability and quality obligations will be excused if and to the extent caused by but only for the duration of:

- a) Any physical or logical defect or failure in any equipment (including the WiFi routers originally supplied by the Service Provider) or any fault or omission.

- b) An engineering test transmission made at the request of the Employer.
- c) Any planned outage for works, maintenance and repairs, provided no more than one outage is planned per calendar month and no planned outage exceeds 6 hours, provided that (1) the outage is reasonable and necessary, (2) except in case of emergency, the Service Provider shall give at least 3 working days advance notice of the planned outage, and (3) to the greatest extent possible, the planned outage should be scheduled at low usage hours and is coordinated with and staggered from planned outages on the other IP transit routes to avoid unnecessary disruption to the IP transit supply; or
- d) A Force Majeure as defined in the contract, but such excuse may only continue for a reasonable time and for these purposes (notwithstanding the definition in the GCC) may not include: (1) power outages; (2) breakdown or failure of equipment operated by the Service Provider or its Subcontractors; (3) rain, flood, wind, tornado, hurricane, cyclone, rough seas, lightening, storm or other adverse weather conditions within limits observed by meteorological measurement of similar conditions at the place of occurrence during the previous 10 years; (4) strike or labor dispute involving employees of the Service Provider or its Subcontractors; (5) shortages of materials, spare parts, fuel or labor; or (6) theft, vandalism or breach of security that occurs through the neglect of the Service Provider or its Subcontractors in establishing, following and enforcing reasonable security measures;

Maintenance, support, fault management and service restoration

- **Routine and non-routine maintenance:** The Service Provider will regularly and punctually inspect, maintain and repair, and ensure that its Subcontractors inspect, maintain and repair, all cables, network systems and other facilities and equipment used in the route segments in accordance with best industry practices and reasonable and prudent engineering practices from time to time. The Service Provider will use best efforts to schedule all planned maintenance (whether on its network or those operated by its Subcontractors) far enough in advance so that adequate notice can be given to the Employer of any potential interruption in service and to schedule such maintenance during periods of the lowest network usage by the Employer based on network usage data, unless otherwise agreed.

- **Service restoration times:** If Service is interrupted, degraded or threatened for any reason, whether or not such interruption, degradation or threat constitutes a breach of the Service Provider's service availability and quality obligations, then the Service Provider will use prompt and diligent efforts to restore service to the required availability and quality as soon as possible and within the following restoration times:

Failure Level	Definition	Maximum restoration time		
		Gov. Inst. & Hub Schools	Spoke Schools	Towers
Critical	Total loss of service	7 Hours	12 Hours	4 Hours
Major	Major intermittent loss of service or degraded quality of service	24 Hours	24 Hours	12 Hours
Minor	Minor threat of loss of service or degraded quality of service where service is not interrupted or degraded	48 Hours	48 Hours	24 Hours

Table 56: Indicative SLA for Service Restoration

- **Mean time between failures:** Without limiting its other service availability and quality obligations, the Service Provider must ensure that the mean time between all critical and major failures during any 12-month period is no less than 30 days. Failure of the Service Provider to limit the mean time between unexcused critical and major failures as required will constitute sufficient grounds for immediate termination of the Contract by the Employer.

- **Fault management procedures:** The procedures and communication channels for reporting, escalating and addressing faults and other service failures will be mutually agreed and updated by the Service Provider and the Employer from time to time in accordance with industry best practices for service continuity and disaster recovery.
- **Support:** The Service Provider will provide continuous support to the user, 24 hours a day, 7 days a week, 365 days a year. The Service Provider will provide initial support through a help desk that is manned with suitably qualified personnel during all normal business hours and after hours through suitably qualified on-duty personnel, who in every case may be reached by telephone, email, web chat, text message or other mutually acceptable communication channel. If a critical failure or major failure occurs outside of normal business hours, and requires more experienced personnel than those on duty, the Service Provider will ensure that a suitably experienced and qualified engineer is available for troubleshooting within 2 hours after the incident is first identified or reported.
- **Troubleshooting:** The Service Provider will troubleshoot all network and system related problems, including critical failures, major failures, minor failures and other problems of any kind, whether identified by the Service Provider or by the Employer, and will establish an incident “ticket” to track each separate incident from initial identification or reporting through final resolution.

Service level monitoring and reporting

- **Monitoring:** The Service Provider will continuously monitor the network, using appropriate equipment, systems and personnel and in accordance with industry best practices, so that the Service Provider is able to detect, pinpoint and measure any interruption or degradation in Service as soon as it occurs and for as long as it continues, including interruptions and degradation impacting circuit availability, round trip delay and packet loss.
- **Incident notification and reports:**
 - The Service Provider must immediately notify the concerned stakeholders, by email, text message and telephone (or using such other communication channels as may be mutually agreed from time to time), upon detection of any circuit unavailability, excess latency or excess packet loss or upon discovery of any other incident impacting or likely to impact Service availability and quality.
 - If the Employer discovers any fault in Service availability or quality, the Employer will promptly notify the Service Provider.

- Following any incident classified as critical failure or major failure, or otherwise at the Employer's request, the Service Provider will investigate the fault and its causes, take all necessary steps to remedy the fault, and keep the Employer informed throughout the process, including by the delivery of the following initial, interim and final reports: (1) an initial report of the Service Provider's fault records, to be delivered within 24 hours after discovery or notification of the fault; (2) an interim report of the results of the Service Provider's investigation of the fault together with a summary of the identified actions to correct the fault and restore full service availability and quality, to be delivered within 3 working days after discovery or notification of the fault; and (3) a final report of the actions completed and confirming that the fault has been corrected and full service availability and quality restored, to be delivered within 5 working days after discovery or notification of the fault.
- **Monthly reports:** Within 5 working days after the end of each calendar month, the Service Provider will prepare and deliver to the Employer a detailed report showing for the preceding month the times of full service availability, the amount of latency, the amount of packet loss, any incidents that occurred (whether or not previously the subject of incident reports), a summary of any currently unresolved incidents and the steps taken, being taken and to be taken to resolve them, a summary of all resolved incidents that occurred during the previous month and the manner in which they were resolved, and the nature and anticipated dates, times and duration of any planned maintenance that will or may require downtime on the network.

Employer's remedies for Service Provider's noncompliance

- **Service credits:** The Employer will be entitled to monthly service credits for failure by the Service Provider to meet the service availability and quality requirements as a rebate of the following indicated portion of one month's share of the IRU purchase price:

Service Availability		Portion of Monthly Charge Forfeited
Tower	Other sites	
≥ 99.5%	≥ 99%	0%
< 99.5% but ≥ 99%	< 99% but ≥ 98%	25%
< 99% but ≥ 98%	< 98% but ≥ 97%	50%

< 98%	< 97%	100%
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Table 57: Indicative SLA for Service Availability

For purposes of calculating service credits, the IRU purchase price will be amortized on a straight-line basis over the 120 months of the IRU term. In terms of calculating percentage Service availability, the cumulative total of all unavailable bandwidth (P Mbps x T hours) will be divided by the total bandwidth contracted for the period (M Mbps x 30 days x 24 hours).

If 15 schools, each carrying 20 Mbps, are unavailable for 24 hours in one month within a network carrying 1,000 Mbps, the availability would be 99%. This is calculated by dividing the cumulative unavailable capacity (15 sites x 20 Mbps x 24 hours = 7,200 Mbps-hours) by the total monthly capacity (1,000 Mbps x 720 hours = 720,000 Mbps-hours), resulting in an outage impact of 1%.

Similarly, if all sites in the network were down for 7.2 hours in one month, this would also equate to a network availability of 99%.

- **Termination and reimbursement:** The Employer's service credit remedies against the Service Provider will be without prejudice to its rights to terminate the remaining term of the IRU and seek a refund in accordance with the terms and conditions set out in the contract. The Employer will have the option, upon any termination of the IRU, to relinquish to the Service Provider all rights in the IRU for the remaining IRU term and, in lieu thereof, to demand and receive a refund of any unamortized portion of the IRU price previously paid.

Annexure 13: Types of Reverse Auctions

The method of procuring providers to supply universal service obligations using a reverse auction within a competitive context falls broadly into one of three broad categories:

Parameter	Static Reverse Auction (SRA)	Multi-Stage: Best and Final Offer (BAFO)	Multi-Round Reverse Auction (MRRA)
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Process	Single-stage RFP Bids evaluated on predefined criteria and winner selected as Most Advantageous Bidder (MAB) with maximum score	Two-stage RFP Initial responsive bids shortlisted, followed by submission of Best and Final Offers	Multi-round competitive bidding among prequalified firms and final award based on best terms (often second price)
Suitability	Few lots easy to define lots and value largely private ⁴⁰ with known common value ⁴¹ and limited number of suppliers in the market with negotiation	Best for complex lots with multiple suppliers where common-value elements are significant	Ideal for multiple lots with measurable factors like price and quality in highly competitive markets
Advantages	Simple and quick with low administrative burden. It is effective where market competition is limited	Enables some price and value discovery and allows refinement of requirements after first round	Strong price and value discovery; encourages truthful bidding; ensures better value for money
Limitations	No real-time price discovery as the bidders may overstate costs and may result in lower value for money	More complex; requires probity oversight; bidders may still inflate costs	Time-consuming and complex; requires bidder training; may deter smaller participants; good when no. of participants is high

Table 58: Comparison of SRA, BAFO and MRRA

Annexure 14: Summary of International Best Practices in Reverse Auctions

Project/ Aspect	Kosovo Digital Economy (KODE)	Digital Tanzania Project (DTP)	RDOF – FCC (USA)
Auction / Subsidy Model Used	Matching-grants model with single-round sealed bidding (RFQ / SRA-type procurement)	Single-Round Reverse Auction (SRA) with ward-level Maximum Allowable Subsidy (MAS)	Multi-Round Reverse Auction (MRRA) using a descending clock
Primary Objective	Extend broadband to ~200 commercially unviable rural villages	Extend rural mobile broadband and upgrade 2G to 3G+ across identified wards	Extend high-speed fixed broadband to unserved rural homes and businesses
Bidder Participation	~10 firms participated	Primarily MNOs, later expanded to tower companies and alternative providers	386 qualified bidders participated and 180 won
Price Discovery Outcome	Weak price discovery evidenced by large bid dispersion (EUR 100k+ range)	Weak price discovery as bids clustered close to MAS in several rounds	Strong price discovery through multiple bidding rounds and descending prices
Coverage / Bid Success	Early progress in viable areas but effectiveness declined as higher-cost areas remained	Average bid success ~61%, declining to ~50% and some rounds saw 55% wards without bids	~99% bid success and support awarded to 5.2 million locations

Project/ Aspect	Kosovo Digital Economy (KODE)	Digital Tanzania Project (DTP)	RDOF – FCC (USA)
Subsidy Efficiency	Private leverage declined from ~1:1 to ~1:4 as project progressed	MAS insufficient in some wards, limiting commercial viability and uptake	Final support just over USD 9 Bn versus initial reserve prices
Key Limitation Observed	Single-round format did not allow bidders to revise bids or correct mispricing	SRA limited bidder flexibility and uniform MAS did not reflect cost differences	Higher design and operational complexity relative to SRA
Core Lesson	Single-round auctions are simple but risk poor price discovery when costs are uncertain	SRA constrains coverage and efficiency in heterogeneous rural cost environments	MRRA enables superior price discovery, coverage, and subsidy efficiency
Tender Design Implication	Multi-round formats could have improved pricing and value for money	MRRA or BAFO could improve bid success and coverage outcomes	MRRA represents international best practice for large-scale universal service programs

Table 59: International Best Practices of Reverse Auction

1. Kosovo Digital Economy (KODE) project

Background: Kosovo was a mountainous country in Europe with low population density and it was commercial unviable to provide broadband connectivity to 200 rural villages in the region.

Approach: In 2018, under Component 1 adopted a matching-grants model, where private operators received up to 80% of capital expenditure as grants, with the balance funded by the operators. While the private-to-public investment ratio was 1:1 at the beginning of the project it declined to ~1:4 as the most commercially viable geographies secured funding the in the beginning of the project. The procurement used multiple methods. For example, an RFQ was issued in September 2023 to procure and install internal network equipment for schools in Prizren municipality. Ten firms participated in a single-round sealed-bid process, mostly Kosovo-based, with bid prices spanning over EUR 100,000 between the highest and lowest offers.

Lessons: Single-round procurement offers simplicity and lower administrative burden, which is critical in contexts with constrained budgets and institutional capacity. But while the project had about 10 firms, which can be considered as healthy competition, a Single round auction lead to weak price discovery. Multi-round mechanisms (e.g., BAFO or MRRA) could improve competitive outcomes by enabling bidders to refine prices, reduce conservative bidding, and mitigate winner's curse effects through better information revelation.

2. The Digital Tanzania Project (DTP)

Background: The Digital Tanzania Project (DTP) aims to expand high-quality broadband access, particularly in rural areas. As of 2021, 68% of the population had access to 3G or higher networks, with a target of at least 75% by 2026. Component 2 (Digital Connectivity), specifically sub-component 2.2 on Rural Broadband for Development (RBD), builds on RCIP-3 and focuses on extending mobile broadband coverage and upgrading legacy 2G networks. The program targets first-time coverage in 763 wards and network upgrades in 488 wards, implemented through the Universal Communications Service Access Fund (UCSAF) in collaboration with MICIT, using a combination of public subsidies and private capital.

Approach: The RBD component adopts a Single-Round Reverse Auction (SRA) subsidy model. UCSAF and MICIT issue publicly advertised Invitations to Tender (ITT) specifying eligible wards, technical requirements, and a Maximum Allowable Subsidy (MAS) per ward. Eligible bidders—primarily mobile network operators, with participation extended to tower companies and alternative providers—submit a single sealed bid per ward, capped at the MAS. Subsidies are awarded to the lowest compliant bids and combined with private investment. Under prior programs such as RCIP-3, this approach demonstrated strong leverage, with USD 30 million

in subsidies mobilizing approximately USD 70 million in private investment (~1:2 leverage). However, performance under the SRA has weakened over time. Across 13 funding rounds, average bid success has been ~61%, declining to ~50% in recent rounds, with no round achieving more than 90% ward coverage. Uniform MAS levels across wards and the absence of bid revisions have constrained competition, price discovery, and coverage outcomes.

Lessons

- **Bid success determinants:** Outcomes are driven by bidders' expected returns, auction design, and the adequacy of the MAS. Where the MAS does not support a viable commercial return, wards fail to attract bids. In one recent award, 55% of wards received no successful bids, materially limiting investment in those areas.
- **Structural limitations of SRA:** Single-round formats restrict price discovery and prevent bidders from responding to competitive signals, increasing conservative bidding behavior and lowering overall coverage.
- **Empirical evidence (Kigoma):** In the 2022/23 SRA for greenfield sites (764 wards; MAS ~TZS 145–150 million), the Kigoma region achieved only a 44% bid success rate. Winning bids clustered close to the MAS (91–98%), indicating weak competitive tension and limited value discovery.
- **MRRA price discovery potential:** A speculative multi-round reverse auction (MRRA) scenario suggests that allowing two additional bidding rounds could improve outcomes. With bid revisions and bidder reallocation across wards, coverage could increase from 44% to ~55.5%, while reducing the average subsidy to ~91% of the MAS—both indicating improved value for money versus the SRA.
- **Tender design implication:** Given Tanzania's competitive telecom market with three to four capable operators, Multi-Round Reverse Auctions (MRRA) or BAFO formats are likely to deliver superior outcomes by enhancing price discovery, increasing bid success rates, and improving subsidy efficiency through informed bid revisions aligned to true cost structures.

3. Rural Digital Opportunity Fund (RDOF) by United States Federal Communications Commission (FCC)

Background

The most prominent MRRA is the United States Federal Communications Commission (FCC), which has developed and deployed large-scale MRRA mechanisms as part of its universal service strategy. The

FCC's experience is regarded as international best practice due to the flexibility, scalability, and strong value-for-money outcomes of its auction design.

Approach: The FCC's MRRA model is illustrated by Auction 904, conducted in 2020 under the Rural Digital Opportunity Fund (RDOF). The auction aimed to extend high-speed fixed broadband to rural homes and small businesses lacking adequate service. The FCC made up to USD 16 billion available in Phase I to support broadband rollout to over 5 million unserved locations.

Auction 904 was structured as a multi-round reverse clock auction with a descending price mechanism. For each geographic area, a reserve price (maximum subsidy) was set, and a common percentage price applied across all areas declined round by round whenever aggregate demand exceeded the available budget. The auction closed when total demand fell within the USD 16 billion budget and no areas remained with competing bids.

The auction was technology-neutral and incorporated quality-based weighting factors linked to service speed (performance tiers) and latency. These weights were designed to favor higher-speed and lower-latency solutions, aligning subsidy allocation with long-term service quality objectives while maintaining competitive pressure.

Lessons

- **Superior coverage outcomes:** Auction 904 achieved a bid success rate of nearly 99%, allocating support to 5.2 million unserved homes and businesses—significantly higher than outcomes observed under single-round formats.
- **Strong price discovery and efficiency:** Although initial reserve prices exceeded USD 26 billion, competitive multi-round bidding reduced the final support required to just over USD 9 billion. Only 56% of the available USD 16 billion budget was needed to achieve near-universal coverage.
- **Enhanced competition:** Of 386 qualified bidders, 180 bidders won support, indicating broad participation and sustained competitive tension across rounds.
- **Design effectiveness:** The descending clock and multi-round structure enabled continuous price discovery, improved subsidy efficiency, and better alignment of bids with true cost structures.
- **Policy implication:** The FCC experience demonstrates that MRRA formats can deliver higher coverage, stronger value for money, and better service quality outcomes than SRAs, particularly in competitive markets offering a clear benchmark for universal service tender design in contexts such as Tanzania.