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SUDESA BROADBAND IMPLEMENTATION PLAN

Strategic Framework for National Connectivity

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SUDESA Broadband Infrastructure Implementation Plan: Strategic Framework for National Connectivity

Chapter 1: General Phase – Strategic and Institutional Preparation

1.1 Establishment of National Broadband Policy and Regulatory Alignment

The successful implementation of a national broadband infrastructure programme in South Sudan requires a coherent and forward-looking policy and regulatory framework. Drawing from the South African experience under the SA Connect initiative and its foundational National Broadband Policy (NBP-2013), the General Phase of the SUDESA programme shall begin with the formal articulation of a National Broadband Policy for South Sudan, aligned with the objectives of Agenda for Social Equity 2074 and the Strategic Engagement Agreement between the Government of South Sudan and the European Social Label (EUSL).

This policy shall serve as the legal and strategic anchor for all subsequent infrastructure investments, institutional arrangements, and digital governance reforms. It shall be developed through a consultative process led by the Ministry of Information and Communication Technology (or its equivalent), in close collaboration with SUDESA, EUSL, and relevant national stakeholders.

The policy shall address the following core dimensions:

- **Vision and Objectives**: Establishing broadband as a public good and a strategic enabler of inclusive development, economic transformation, and state-building.

- **Regulatory Framework**: Defining the roles of sector regulators, licensing regimes, spectrum management, and open access principles to ensure fair competition and infrastructure sharing.

- **Institutional Mandates**: Clarifying the responsibilities of SUDESA, relevant ministries, and implementing partners, including the designation of EUSL as a strategic technical and fiduciary partner.

- **Public Investment Strategy**: Outlining the scope of public sector investment, including anchor tenancy models, pooled procurement, and blended finance mechanisms.

- **Digital Rights and Inclusion**: Embedding principles of digital equity, data protection, and universal access, with a focus on underserved populations and rural areas.

- **Monitoring and Evaluation**: Establishing a national MEL framework for broadband rollout, aligned with Agenda 2074 and regional benchmarks.

The policy shall be accompanied by a Regulatory Alignment Roadmap, which will:

- Review and amend existing ICT laws and regulations to support broadband deployment;

- Establish fast-track procedures for permits, wayleaves, and rights-of-way;

- Define standards for infrastructure sharing, interoperability, and cybersecurity;

- Enable the legal recognition of SUDESA as a hybrid public-interest institution with delegated authority.

This foundational step is critical to ensure that the broadband programme is not only technically sound but also institutionally anchored, legally protected, and politically supported.

1.2 Mapping of Underserved Areas and Institutional Demand

A foundational step in the implementation of South Sudan's national broadband programme is the comprehensive mapping of underserved areas and institutional demand. This exercise is not merely technical; it is a strategic and political act of inclusion, ensuring that the digital transformation agenda reaches those historically excluded from infrastructure investment and public service delivery.

The mapping process shall be led by SUDESA in collaboration with the Ministry of Information and Communication Technology, the Ministry of General Education and Instruction, the Ministry of Health, and the Ministry of Public Service and Human Resource Development. It shall be supported by EUSL and relevant development partners, and aligned with the principles of Agenda for Social Equity 2074, particularly SGG 1 (Universal Access to Essential Services), SGG 4 (Educational Equity and Lifelong Learning), and SGG 8 (Social Justice and Fair Governance).

The mapping shall include:

- **Geospatial Identification of Underserved Areas**: Using satellite imagery, mobile network coverage data, and local administrative records, SUDESA shall identify all counties, payams, and bomas with limited or no broadband access. Special attention shall be given to areas affected by conflict, displacement, or environmental vulnerability.

- **Institutional Demand Assessment**: A national audit shall be conducted to catalogue all public institutions requiring broadband connectivity, including:

    - Primary and secondary schools;

    - Health clinics and hospitals;

    - Government ministries, departments, and agencies at national and subnational levels;

    - Police stations, courts, and civil registration offices;

    - Agricultural extension centers and cooperatives.

- **Demand Forecasting and Prioritisation**: Based on population density, service delivery mandates, and development indicators, institutions shall be prioritised for phased connectivity. Anchor tenancy models shall be explored to ensure that public institutions serve as hubs for community access.

- **Integration with National Planning Systems**: The mapping outputs shall be integrated into the national digital architecture and planning systems, including the Digital Transformation Steering Committee's dashboard and the Flowhub PPP framework.

- **Community Validation and Feedback**: To ensure accuracy and legitimacy, the mapping results shall be validated through community consultations, involving local authorities, civil society, and traditional leaders.

This mapping exercise shall culminate in the publication of a **National Broadband Access and Institutional Demand Atlas**, which will serve as a reference for all infrastructure investments, donor coordination, and public-private partnerships. It shall be updated annually and made publicly accessible through the SUDESA digital portal.

1.3 Institutional Readiness Assessment and Capacity Planning

The deployment of broadband infrastructure and digital services in South Sudan must be matched by institutional readiness at all levels of government. Without adequate capacity to absorb, manage, and sustain digital systems, infrastructure investments risk underutilisation, inefficiency, or failure. This subchapter outlines the process for assessing institutional readiness and planning for capacity development, in alignment with the broader objectives of Agenda for Social Equity 2074 and the operational mandate of SUDESA.

The readiness assessment shall be conducted as a structured, multi-dimensional diagnostic, covering the following domains:

- **Digital Infrastructure and Equipment**: Evaluation of existing ICT infrastructure within ministries, schools, clinics, and local government offices, including availability of power, connectivity, devices, and secure storage.

- **Human Resource Capacity**: Assessment of digital literacy, technical skills, and administrative competencies among civil servants, educators, and frontline service providers. This includes identification of training needs and gaps in ICT-related job roles.

- **Institutional Processes and Governance**: Review of internal workflows, data management practices, and decision-making structures to determine the extent to which institutions are prepared to adopt digital systems. This includes the presence (or absence) of digital focal points, ICT units, and change management protocols.

- **Legal and Policy Compliance**: Verification of institutional alignment with emerging national policies on data protection, cybersecurity, procurement, and digital governance. Institutions shall be assessed for their ability to comply with the forthcoming Digital Transformation Act and related regulations.

- **Change Management Readiness**: Evaluation of institutional culture, leadership commitment, and openness to reform. This includes stakeholder attitudes toward digitalisation, perceived risks, and incentives for adoption.

The assessment shall be led by SUDESA in partnership with the Ministry of Public Service and Human Resource Development, the Ministry of ICT, and the Council for Global Social Advocacy (CGSA). It shall be conducted through a combination of surveys, interviews, site visits, and digital maturity scoring tools, with technical support from Microsoft and other partners.

Based on the findings, a National Institutional Capacity Development Plan shall be developed, including:

- Tiered training programs for civil servants, educators, and ICT personnel;

- Establishment of digital transformation units within key ministries and agencies;

- Deployment of Microsoft Learn, Intune for Education, and Power Platform for local innovation;

- Integration of digital competencies into public service recruitment and performance frameworks;

- A phased rollout strategy for Microsoft 365 Government Suite and Azure Cloud services.

This readiness and capacity planning process is not a one-time exercise. It shall be institutionalised as a continuous function within SUDESA's Secretariat, with annual reviews and adaptive updates based on implementation feedback and evolving institutional needs.

1.4 Legal and Regulatory Gap Analysis

The establishment of a national broadband infrastructure programme in South Sudan must be underpinned by a coherent, enforceable, and future-oriented legal and regulatory framework. While the country has initiated reforms in the ICT sector, significant gaps remain in the legislative architecture required to support digital transformation at scale. This subchapter outlines the process for identifying and addressing those gaps, ensuring that the broadband programme is legally protected, institutionally anchored, and aligned with both national sovereignty and international standards.

The legal and regulatory gap analysis shall be conducted under the leadership of the Ministry of Justice and Constitutional Affairs, in collaboration with the Ministry of ICT, SUDESA, and EUSL. It shall be guided by the principles of Agenda for Social Equity 2074, particularly SGG 8 (Social Justice and Fair Governance), SGG 17 (Ethical Use of Technology for Social Benefit), and SGG 16 (Promoting Civic Engagement and Participation).

The analysis shall focus on the following domains:

- **ICT and Telecommunications Law**: Review of existing legislation governing telecommunications, spectrum allocation, licensing, and infrastructure deployment. Particular attention shall be paid to the absence of provisions for open access, infrastructure sharing, and universal service obligations.

- **Data Protection and Privacy**: Identification of gaps in legal protections for personal data, including the absence of a comprehensive Data Protection Act aligned with the African Union's Malabo Convention and global best practices such as GDPR.

- **Cybersecurity and Critical Infrastructure Protection**: Assessment of the legal basis for national cybersecurity strategy, including incident response, threat intelligence sharing, and protection of digital infrastructure.

- **Digital Identity and Civil Registration**: Review of the legal framework for digital identity systems, including authentication, consent, and interoperability with civil registries and public services.

- **Public Procurement and PPP Frameworks**: Evaluation of procurement laws and regulations to determine their adequacy for digital infrastructure projects, including transparency, competition, and anti-corruption safeguards. This includes alignment with the Flowhub PPP model.

- **Institutional Mandates and Delegated Authority**: Clarification of the legal status of SUDESA as a semi-autonomous, co-owned institution with delegated authority to implement national digitalisation programmes. This includes the need for a Digital Transformation Act and a Host Country Agreement.

The outcome of this analysis shall be a **Legal and Regulatory Reform Roadmap**, which will:

- Propose new legislation and amendments to existing laws;

- Define institutional responsibilities for enforcement and oversight;

- Establish timelines and consultation processes for legislative drafting;

- Identify areas requiring technical assistance or international benchmarking.

This roadmap shall be submitted to the Digital Transformation Steering Committee for endorsement and integrated into the broader implementation plan of the national broadband programme. It shall also serve as a reference for development partners, investors, and civil society actors engaged in the digital transformation of South Sudan.

1.5 Stakeholder Engagement and Inter-Ministerial Coordination

The success of South Sudan's national broadband programme depends not only on technical execution but on the sustained engagement of a broad coalition of stakeholders. Digital transformation is inherently cross-sectoral and must be implemented through a whole-of-government and whole-of-society approach. This subchapter outlines the mechanisms for stakeholder engagement and inter-ministerial coordination during the General Phase of implementation.

The stakeholder engagement strategy shall be anchored in the principles of transparency, inclusivity, and co-ownership, as articulated in the Strategic Engagement Agreement between the Government of South Sudan and the European Social Label (EUSL), and operationalised through the Agenda for Social Equity 2074.

Key stakeholder categories include:

- **Government Ministries and Agencies**: Core ministries such as ICT, Finance, Education, Health, Public Service, and Justice shall be engaged through formal coordination structures. Each ministry shall designate a digital transformation focal point and participate in technical working groups under the Digital Transformation Steering Committee (DTSC).

- **Local Government and Traditional Authorities**: County commissioners, payam administrators, and traditional leaders shall be consulted to ensure local ownership, contextual relevance, and alignment with decentralised service delivery mandates.

- **Civil Society and Community-Based Organisations**: NGOs, faith-based groups, and advocacy networks shall be engaged to support digital literacy, community mobilisation, and citizen feedback mechanisms.

- **Private Sector and Telecom Operators**: Engagement with mobile network operators, broadband resellers, and ICT service providers shall be structured through the Flowhub PPP framework, ensuring alignment with national priorities and equitable access.

- **Development Partners and Multilateral Institutions**: Strategic partners such as SIDA, Swedfund, AfDB, and the World Bank shall be engaged through joint programming platforms and donor coordination mechanisms, with SUDESA serving as the central interface.

- **Academic and Training Institutions**: Universities, teacher training colleges, and vocational institutes shall be mobilised to support capacity building, curriculum development, and research on digital governance.

Coordination Mechanisms:

- **Digital Transformation Steering Committee (DTSC)**: The DTSC shall serve as the apex coordination body, chaired jointly by the Government and EUSL, with representation from all

key stakeholder groups. It shall meet quarterly to review progress, resolve bottlenecks, and approve strategic decisions.

- **Technical Working Groups (TWGs)**: Sector-specific TWGs shall be established under the DTSC to coordinate implementation in areas such as education, health, infrastructure, and legal reform.

- **Stakeholder Forums and Consultations**: Regular forums shall be convened at national and subnational levels to gather input, share updates, and build consensus. These shall include public hearings, roundtables, and digital town halls.

- **Digital Inclusion Advisory Panel**: A multi-stakeholder advisory body shall be established to monitor equity, inclusion, and rights-based implementation, with a focus on gender, youth, and vulnerable populations.

This coordinated engagement model ensures that the broadband programme is not imposed from above but co-created with those it is meant to serve. It also reinforces institutional accountability, reduces duplication, and builds the political and social capital necessary for long-term success.

Chapter 2: Phase 1 – Foundational Deployment and Institutional Activation (Years 1–2)

Subchapter 2.1: Target – Connect 10–20% of Priority Government Facilities

This subchapter outlines the initial deployment scope of the SUDESA broadband infrastructure initiative, focusing on the connection of approximately 10 to 20 percent of all government facilities across South Sudan during the first two years of implementation. The selection of these facilities shall be based on a national mapping exercise conducted during the General Phase, prioritizing institutions with high public service impact, including but not limited to:

- Educational institutions (primary and secondary schools, vocational centers)

- Healthcare facilities (clinics, hospitals, maternal health centers)

- Administrative offices (ministries, local government units, civil registry offices)

- Security and justice institutions (police stations, courts, correctional facilities)

The deployment strategy shall be guided by the following principles:

1. Equity and Inclusion: Ensuring that remote and underserved regions are prioritized to bridge the digital divide.

2. Institutional Impact: Focusing on facilities that serve large populations or are critical to public service delivery.

3. Feasibility and Readiness: Selecting sites with basic infrastructure readiness or those that can be rapidly prepared for connectivity.

The final list of facilities shall be validated by the Technical Coordination Unit (TCU) under SUDESA, in coordination with relevant ministries and local authorities. The deployment shall be phased geographically to optimize logistics, workforce mobilization, and vendor coordination.

A preliminary breakdown of the target facilities by category and region shall be included in Annex 2A, subject to updates following the completion of the national mapping exercise.

Subchapter 2.2: Infrastructure – Fibre/Satellite Mix, Trenching, and Last-Mile Solutions

The infrastructure strategy for Phase 1 of the SUDESA broadband deployment shall adopt a hybrid model combining fibre-optic backbone, satellite uplinks, and context-appropriate last-mile technologies. This approach ensures both scalability and adaptability to South Sudan's diverse geographic, demographic, and infrastructural conditions.

The deployment model shall be structured around the following components:

1. **Fibre Backbone and Trunk Lines**
   Where feasible, fibre-optic cables shall be deployed along existing road corridors and utility easements to establish a high-capacity national backbone. This backbone will interconnect major urban centers, regional hubs, and key government facilities. Trenching and ducting shall follow standardized civil works protocols, with environmental and social safeguards in place.

2. **Satellite Connectivity for Remote Areas**
   In regions where fibre deployment is not immediately viable due to terrain, conflict, or cost constraints, satellite connectivity shall be used as an interim or long-term solution. The plan shall prioritize **Ka-band or Ku-band VSAT systems** with scalable bandwidth and centralized management via the National Network Operations Centre (NOC).

3. **Last-Mile Access Technologies**
   The final connection from the backbone or satellite node to the facility shall be implemented using a mix of:

   - **Microwave point-to-point links** for medium-range connections.

   - **Wi-Fi mesh networks** for clustered facilities or campuses.

   - **Ethernet or fibre drop cables** for direct facility access in urban or peri-urban areas.

4. **Power and Equipment Considerations**
   All sites shall be equipped with **s**olar backup systems and uninterruptible power supplies (UPS) to ensure service continuity. Equipment racks, routers, and access points shall be standardized and pre-certified through the procurement framework established in the General Phase.

5. **Security and Redundancy**
   Network design shall incorporate redundant routing, firewall protection, and VPN tunneling for secure government data transmission. Facilities handling sensitive data shall be prioritized for dual-path connectivity and encrypted uplinks.

6. **Local Integration and Civil Works**
   Civil works, including trenching and tower erection, shall be executed in partnership with local contractors and vocational trainees under the SDEP framework. This ensures both cost efficiency and local capacity development.

The infrastructure mix shall be reviewed annually by the Technical Coordination Unit (TCU) and adjusted based on performance data, cost trends, and evolving technological standards.

Subchapter 2.3: Vocational Training – Workforce Development for Civil Works and Maintenance

The success of Phase 1 of the SUDESA broadband deployment depends not only on infrastructure investment but also on the availability of a trained, locally embedded workforce capable of executing and maintaining the network. This subchapter outlines the vocational training strategy designed to build national capacity in broadband-related civil works, installation, and long-term maintenance.

The training program shall be implemented in close coordination with the Social Development and Employment Program (SDEP) and aligned with the broader Agenda for Social Equity 2074. It shall be structured around three core components:

1. **Curriculum Development and Certification**
   A modular training curriculum shall be developed in partnership with technical institutes, vocational schools, and international partners. The curriculum shall cover:

   - Fibre trenching and ducting techniques

   - Satellite dish installation and alignment

   - Network equipment setup and configuration

   - Power systems (solar and UPS) installation

   - Health, safety, and environmental compliance

   - Basic digital literacy and troubleshooting

Certification shall be issued under the World Future Label framework, ensuring recognition across SUDESA-aligned programs and potential regional mobility.

2. **Training of Trainers (ToT) and Local Delivery**
   A national Training of Trainers (ToT) initiative shall be launched to build a cadre of certified instructors. These trainers shall be deployed to regional hubs and mobile training units to deliver courses in local languages and contexts. Priority shall be given to youth, women, and returnees in line with the social equity mandate.

3. **On-the-Job Training and Employment Pathways**
   Trainees shall be integrated into live deployment projects under the supervision of certified contractors and engineers. This hands-on experience shall be formalized through short-term contracts, apprenticeships, or public works schemes. Upon completion, graduates shall be eligible for employment with:

   - SUDESA-licensed vendors and contractors

   - Local maintenance cooperatives under CEIU

   - Government ICT departments and digital service units

The vocational training program shall be monitored through the Flowhub Trio Plus platform, with key performance indicators including enrollment rates, completion rates, gender balance, and post-training employment outcomes.

Subchapter 2.4: Digital Services – Pilot e-ID, e-Gov, and Data Governance Systems

The deployment of broadband infrastructure under Phase 1 shall be leveraged to initiate pilot programs for foundational digital public services, laying the groundwork for a fully integrated e-Government ecosystem. These pilots shall be implemented in parallel with infrastructure rollout at selected connected facilities, with a focus on institutional readiness, citizen benefit, and long-term scalability.

The pilot program shall include the following components:

1. **e-ID System Deployment**
   A foundational digital identity system shall be piloted to enable secure authentication and access to public services. The system shall be designed to:

   - Register citizens and residents using biometric and demographic data

   - Issue unique digital identifiers linked to civil registry records

   - Enable secure login to government platforms and mobile services

   - Comply with international standards for data protection and interoperability

The pilot shall target a representative sample of regions and demographics, with priority given to areas served by newly connected administrative and civil registry offices.

2. **e-Government Service Portals**
   Selected ministries and local government units shall be supported in launching basic e-Government portals, enabling:

   - Online access to public records and forms

   - Digital submission of applications and service requests

   - Real-time tracking of administrative processes

   - Integration with the e-ID system for secure access

These portals shall be developed using modular, open-source platforms and hosted centrally via the National Network Operations Centre (NOC), with local access points established at connected facilities.

3. **Data Governance and Institutional Capacity**
   A pilot framework for data governance shall be introduced to guide the ethical, secure, and efficient use of digital data across government institutions. This shall include:

   - Drafting of national data governance guidelines and protocols

   - Training of designated data officers at pilot institutions

   - Establishment of secure data storage and backup systems

   - Integration with the broader digital transformation strategy under Agenda 2074

The data governance pilot shall be coordinated by the Technical Coordination Unit (TCU) in collaboration with the Ministry of ICT and relevant oversight bodies.

All digital service pilots shall be monitored through the Flowhub Trio Plus platform, with performance indicators including user adoption rates, service delivery efficiency, and institutional compliance with data protocols.

Subchapter 2.5: MEL – Baseline Data Collection and Performance Tracking

A robust Monitoring, Evaluation, and Learning (MEL) framework shall be embedded into Phase 1 of the SUDESA broadband deployment to ensure transparency, accountability, and adaptive management. The MEL system shall be designed to generate actionable insights, support evidence-based decision-making, and inform the scale-up strategy under Phase 2.

The MEL approach shall be structured around the following components:

1. **Baseline Data Collection**
   Prior to deployment, baseline assessments shall be conducted at all selected facilities to capture:

   - Existing connectivity status and digital infrastructure

   - Institutional capacity for ICT integration

   - Service delivery performance indicators (e.g., school attendance, clinic throughput)

   - Community-level digital access and literacy

These assessments shall be standardized and geo-tagged, forming the foundation for longitudinal impact tracking.

2. **Performance Indicators and Targets**
   A set of quantitative and qualitative indicators shall be defined in alignment with Agenda 2074 and the broader PCGG framework. Key indicators shall include:

   - Number of facilities connected and operational

   - Uptime and bandwidth utilization rates

   - Number of trained personnel deployed

   - Uptake of digital services (e.g., e-ID registrations, portal usage)

   - User satisfaction and institutional feedback

Each indicator shall be assigned a baseline value, target, and reporting frequency.

3. **Digital MEL Platform – Flowhub Trio Plus**
   All MEL data shall be captured and visualized through the Flowhub Trio Plus platform, enabling real-time dashboards, automated alerts, and cross-institutional comparisons. The platform shall be configured to:

   - Integrate field data from mobile devices and facility terminals

   - Support offline data entry with later synchronization

   - Generate periodic reports for internal and external stakeholders

4. **Learning and Adaptive Management**

MEL findings shall be reviewed quarterly by the Technical Coordination Unit (TCU) and shared with implementing partners. Lessons learned shall inform:

- Mid-course corrections in deployment strategy

- Adjustments to training and procurement plans

- Refinement of digital service design and user engagement

A formal Phase 1 Mid-Term Review shall be conducted at the end of Year 1, followed by a Final Evaluation at the end of Year 2, both feeding directly into the design of Phase 2.

Subchapter 2.6: Budget – Financial Structure of Phase 1

The financial structure for Phase 1 of the SUDESA broadband infrastructure initiative comprises two distinct but interdependent components: the implementation envelope for infrastructure and services, and the institutional budget for SUDESA as the coordinating body.

The implementation envelope shall be capped at USD 45 million, covering all direct costs related to infrastructure deployment, vocational training, digital service pilots, monitoring and evaluation, and technical coordination. This ceiling is based on comparative benchmarks, including South Africa's SA Connect Phase 1, adjusted for South Sudan's geographic and logistical context.

In parallel, the institutional budget for SUDESA—covering governance, staffing, operational infrastructure, and strategic oversight—shall be maintained at USD 7.8 million annually, amounting to USD 15.6 million over the two-year Phase 1 period. This budget is financed separately through core funding agreements between EUSL and the Government of South Sudan and is not subject to the infrastructure disbursement ceiling.

The combined financial structure is summarized as follows:

Component	Estimated Share	Amount (USD)	Notes
Infrastructure Deployment	60–65%	27–29 million	Full allocation for Phase 1
Vocational Training and Workforce Dev.	~20% of total (2/10)	2.2 million	Proportional allocation from 11 million total
Digital Services Pilots	~20% of total	0.9 million	Proportional allocation from 4.5 million total
Monitoring, Evaluation, and Learning (MEL)	~20% of total	0.65 million	Proportional allocation from 3.25 million total

Component	Estimated Share	Amount (USD)	Notes
Project Management and Technical Coord.	10–12%	4.5–5.4 million	Includes TCU operations
Subtotal – Infrastructure Envelope		**Up to 45 million**	
SUDESA Institutional Budget	Fixed	**15.6 million (2 years)**	Separate from infrastructure ceiling
Total Combined Financial Scope		**Up to 60.6 million**	

Chapter 3: Phase 2 – National Scale-Up and Regional Integration (Years 3–10)

Subchapter 3.1: Strategic Expansion to Remaining Government Facilities and Underserved Regions

Phase 2 of the SUDESA Broadband Infrastructure Implementation Plan shall extend the foundational work of Phase 1 into a full national deployment, targeting the remaining 80–90% of government facilities and underserved regions across South Sudan. This phase spans Years 3 through 10, and is designed to consolidate infrastructure, institutional capacity, and digital service delivery into a unified national system.

The strategic expansion shall be guided by the following principles:

1. **Continuity and Scale**
   Building on the infrastructure models, training pipelines, and digital platforms piloted in Phase 1, Phase 2 shall scale deployment across all ten states and 79 counties, ensuring equitable access and national coverage.

2. **Geographic Prioritization**
   Deployment shall follow a tiered geographic strategy:

   - **Tier I**: High-density urban and peri-urban zones with existing partial infrastructure.

   - **Tier II**: Semi-rural regions with moderate logistical feasibility.

   - **Tier III**: Remote and conflict-affected areas requiring satellite-first solutions.

3. **Institutional Integration**

All remaining government facilities—including schools, clinics, administrative offices, and justice institutions—shall be mapped, validated, and integrated into the national connectivity plan. Special attention shall be given to:

- Facilities with high citizen throughput

- Institutions critical to national development goals

- Sites aligned with Agenda 2074 priority sectors

4. **Cross-Border and Regional Linkages**
   Phase 2 shall also initiate integration with regional fibre corridors, including links to Uganda, Kenya, Ethiopia, and Sudan, enabling cross-border data exchange, trade facilitation, and regional digital cooperation.

5. **Community Access Points**
   In addition to institutional connectivity, Phase 2 shall establish community digital access points in underserved areas, hosted within schools, community centers, or local government offices. These points shall provide public Wi-Fi, digital literacy training, and access to e-Government services.

The full deployment roadmap shall be detailed in the Phase 2 Implementation Annex, including timelines, regional sequencing, and infrastructure typologies.

Subchapter 3.2: Infrastructure Integration and Cross-Border Connectivity

Phase 2 shall prioritize the integration of domestic broadband infrastructure into a cohesive national network, while simultaneously establishing strategic linkages with regional and international fibre corridors. This dual approach ensures both internal service continuity and external digital interoperability, positioning South Sudan as a digitally connected actor within East Africa and beyond.

The infrastructure integration strategy shall be structured around the following components:

1. **National Backbone Consolidation**
   Fibre trunk lines deployed during Phase 1 shall be extended and interconnected to form a resilient national backbone. This backbone shall link all state capitals, major towns, and regional hubs, with redundancy built into routing paths to ensure network stability and fault tolerance.

2. **Interconnection of Institutional Nodes**
   All connected government facilities shall be integrated into a unified network architecture managed by the National Network Operations Centre (NOC). This shall include:

   - Standardized VPN configurations for secure data transmission

   - Centralized bandwidth management and traffic monitoring

   - Tiered access protocols based on institutional roles and data sensitivity

3. **Cross-Border Fibre Linkages**
   SUDESA shall coordinate with regional infrastructure bodies and telecom regulators to establish fibre interconnects with neighboring countries, including:

   - **Uganda** via Nimule and Kaya corridors

- **Kenya** via Nadapal and Lokichogio

- **Ethiopia** via Pagak and Raad

- **Sudan** via Renk and Bentiu corridors

These linkages shall be aligned with regional initiatives such as the Eastern Africa Regional Broadband Infrastructure Program (EARBIP) and the Northern Corridor Integration Projects, ensuring compatibility and cost-sharing opportunities.

4. **Open Access and Anchor Tenancy Models**
   The integrated network shall adopt an open access framework, allowing licensed service providers to utilize backbone infrastructure under regulated terms. Government institutions shall serve as **anchor tenants**, guaranteeing baseline demand and incentivizing private sector participation.

5. **International Gateway and Redundancy**
   A national internet gateway shall be established with multiple uplink routes to international exchange points, ensuring bandwidth diversity and resilience. Satellite uplinks shall remain operational as backup channels, particularly for Tier III regions.

6. **Infrastructure Governance and Compliance**
   All integration activities shall comply with national ICT regulations, cybersecurity protocols, and international standards for cross-border data exchange. SUDESA shall maintain oversight through its Technical Coordination Unit (TCU), in coordination with the Ministry of ICT and regional regulatory bodies.

Subchapter 3.3: Full Deployment of Digital Public Services and Citizen Access Points

With the national broadband infrastructure nearing full coverage under Phase 2, the Government of South Sudan, through SUDESA, shall initiate the comprehensive rollout of digital public services across all connected institutions and designated community access points. This subchapter outlines the strategy for scaling digital service delivery to the population, ensuring both institutional efficiency and citizen inclusion.

The deployment shall be structured around three interlinked pillars:

1. **Institutional Digital Transformation**
   All connected government facilities shall be equipped to deliver core digital services, including:

   - Civil registration and vital statistics (CRVS)

   - National e-ID issuance and authentication

   - Taxation, licensing, and permits

   - Health records and referrals

   - Education management systems and digital learning platforms

Ministries and agencies shall be supported in digitizing workflows, training staff, and integrating services into a unified e-Government portal. The National Network Operations Centre (NOC) shall serve as the central hosting and security node for all platforms.

2. **Citizen Access Points (CAPs)**
   To ensure equitable access, Citizen Access Points shall be established in underserved areas, hosted within schools, community centers, or local government offices. These CAPs shall provide:

   - Public Wi-Fi and device access

   - Assisted digital services (e.g., ID registration, form submission)

   - Digital literacy training and awareness campaigns

   - Access to e-learning, job portals, and agricultural advisories

CAPs shall be staffed by trained local personnel and integrated into the MEL system for usage tracking and service quality monitoring.

3. **Interoperability and Data Governance**
   All digital services shall be developed using open standards and interoperable APIs to ensure seamless integration across sectors. A national data governance framework shall be enforced, covering:

   - Data protection and privacy

   - Consent-based data sharing

   - Institutional data stewardship roles

   - Compliance with regional and international norms

The Technical Coordination Unit (TCU) shall oversee the implementation of these standards, in collaboration with the Ministry of ICT and the national data protection authority.

The full deployment of digital public services shall be phased over the eight-year duration of Phase 2, with annual targets and performance benchmarks defined in the Digital Services Implementation Annex.

Subchapter 3.4: Sustainability – Private Sector Partnerships, Maintenance Models, and Cost Recovery

Ensuring the long-term sustainability of South Sudan's national broadband infrastructure requires a deliberate shift from donor-driven deployment to a mixed-financing and maintenance model anchored in public-private collaboration, institutional ownership, and cost recovery mechanisms. This subchapter outlines the sustainability strategy for Phase 2, designed to preserve infrastructure integrity, ensure service continuity, and reduce fiscal dependency over time.

The sustainability framework shall be built on the following pillars:

1. **Public-Private Partnerships (PPPs)**
   SUDESA shall establish structured PPPs with licensed telecom operators, infrastructure providers, and managed service firms. These partnerships shall be governed by:

   - Anchor tenancy agreements with government institutions as guaranteed clients

   - Open access provisions to allow multiple service providers to lease capacity

- Shared infrastructure models (e.g., towers, ducts, power systems) to reduce duplication

- Performance-based contracts with service-level guarantees

PPPs shall be competitively procured and monitored through the Flowhub Trio Plus platform.

2. **Maintenance and Local Service Ecosystems**
   A decentralized maintenance model shall be implemented, combining:

   - National-level oversight by the Technical Coordination Unit (TCU)

   - Regional maintenance hubs staffed by certified technicians

   - Local cooperatives and SMEs trained under the SDEP framework to handle routine repairs, equipment servicing, and user support

This model ensures rapid response times, local job creation, and embedded accountability.

3. **Cost Recovery and Institutional Contributions**
   A phased cost recovery mechanism shall be introduced, requiring connected institutions to contribute to operational costs based on usage tiers and budget capacity. Contributions may take the form of:

   - Annual service fees integrated into institutional ICT budgets

   - In-kind support (e.g., hosting, security, power backup)

   - Cross-subsidization from higher-tier institutions to support lower-tier facilities

A national broadband fund may be established to manage these contributions and reinvest in network expansion and upgrades.

4. **Asset Management and Lifecycle Planning**
   All infrastructure assets shall be inventoried, tagged, and tracked through a centralized asset management system. Lifecycle planning shall include:

   - Scheduled upgrades and technology refresh cycles

   - Spare parts provisioning and vendor support contracts

   - Decommissioning protocols for obsolete or damaged equipment

5. **Policy and Regulatory Support**
   The sustainability strategy shall be underpinned by enabling policies, including:

   - A national broadband sustainability policy

   - Tariff regulation and universal service obligations

   - Incentives for private sector investment in underserved areas

SUDESA shall work with the Ministry of ICT and national regulators to ensure alignment and enforcement.

Subchapter 3.5: Budget – To Be Refined Based on Phase 1 Outcomes and Feasibility

The financial framework for Phase 2 shall be developed following the completion of Phase 1, drawing directly from its performance data, cost benchmarks, and institutional feedback. While preliminary estimates suggest a total investment requirement in the range of USD 400–500 million over eight years, the final budget shall be refined through a structured feasibility and costing process.

Key considerations for budget formulation include:

1. **Scale and Coverage**
   Phase 2 aims to connect the remaining 80–90% of government facilities, expand regional fibre corridors, and establish community access points nationwide. The cost per site shall vary based on geography, infrastructure type, and service level, with satellite-first regions requiring higher per-unit investment.

2. **Cost Drivers and Variables**
   Major cost components shall include:

   - Civil works (trenching, tower erection, power systems)

   - Equipment procurement and installation

   - Vocational training and workforce expansion

   - Digital service platform development and scaling

   - Maintenance and operational support

   - Cross-border infrastructure and international gateway integration

These shall be benchmarked against Phase 1 actuals and adjusted for inflation, technology shifts, and logistical complexity.

3. **Phased Disbursement and Multi-Year Planning**
   The budget shall be structured into annual tranches, aligned with deployment milestones and institutional absorption capacity. Each tranche shall be subject to performance verification and financial audit prior to release.

4. **Funding Sources and Instruments**
   Phase 2 shall be financed through a combination of:

   - Government budget allocations

   - Development partner grants and concessional loans

   - Private sector co-investment under PPP arrangements

   - Institutional contributions via cost recovery mechanisms

   - Potential issuance of digital infrastructure bonds or blended finance instruments

5. **Contingency and Risk Buffering**
   A contingency reserve of 5–10% shall be built into the budget to accommodate unforeseen costs, security-related delays, and technology transitions. Risk mitigation strategies shall be defined in the Phase 2 Financial Annex.

The final Phase 2 budget shall be presented in a dedicated annex following the Phase 1 Final Evaluation, and shall be approved by the SUDESA Board in consultation with the Ministry of Finance and development partners.

Conclusion of Chapters 1–3: From Strategic Foundations to National Connectivity

The SUDESA Broadband Infrastructure Implementation Plan is structured as a phased, ten-year national program designed to transform South Sudan's digital landscape through institutional coordination, inclusive infrastructure deployment, and sustainable service delivery. The three chapters presented herein form the core of this transformation strategy.

Chapter 1 established the strategic and institutional foundations, including the creation of a national broadband policy, the formation of SUDESA and its Technical Coordination Unit (TCU), and the design of a procurement and feasibility framework. This preparatory phase ensures that all subsequent deployment is grounded in regulatory alignment, institutional readiness, and evidence-based planning.

Chapter 2 detailed Phase 1 (Years 1–2), targeting the connection of 10–20% of government facilities. It introduced a hybrid infrastructure model (fibre/satellite/last-mile), launched vocational training under SDEP, piloted digital public services (e-ID, e-Gov), and embedded a robust MEL system through Flowhub Trio Plus. The financial structure was revised to reflect proportional allocations over the two-year period, with a capped infrastructure envelope of USD 45 million and a parallel institutional budget of USD 15.6 million for SUDESA.

Chapter 3 outlined Phase 2 (Years 3–10), the national scale-up phase. It expands connectivity to the remaining 80–90% of government facilities, integrates infrastructure into regional fibre corridors, and deploys full digital public services through institutional platforms and Citizen Access Points. Sustainability is addressed through public-private partnerships, decentralized maintenance models, and cost recovery mechanisms. The Phase 2 budget is to be finalized based on Phase 1 outcomes, with preliminary estimates ranging from USD 400–500 million.

Together, these chapters form a coherent, scalable, and institutionally anchored roadmap for achieving universal broadband access and digital public service delivery in South Sudan. The plan is fully aligned with Agenda for Social Equity 2074, and positions SUDESA as both a national implementer and a regional model for inclusive digital transformation.