Ministry of ICT and Innovation

ICT Sector Strategic Plan (2024 – 2029)

1/1/2025

ACKNOWLEDGEMENTS

The 2024/25 – 2028/29 ICT Sector Strategic Plan is an outcome of an extensive consultative process involving a wide range of stakeholders and members of the ICT fraternity, reflecting a collective vision for the future of ICT in our nation. We would like to, therefore, extend our deepest gratitude to the dedicated staff at the Ministry of ICT and Innovation, the personnel of our affiliated agencies, and our partners, who have generously shared their expertise in shaping this strategic plan.

This Strategic Plan serves as a management tool used for setting priorities, focusing efforts and resources within the ICT sector over the next five years. It commits the Ministry and its affiliated agencies to actively engage in programs and initiatives designed to align with the aspirations of the second phase of the National Strategy for Transformation (NST II), supporting our collective ambitions for national progress.

We invite all stakeholders to familiarize themselves with this document, bearing in mind that the SSP is intended to be an adaptable and evolving guide. It reflects the current state of the ICT landscape, based on the most current information available. It is subject to continuous review to ensure it remains relevant and responsive to shifts in socioeconomic conditions, national priorities, and available funding. As such, the SSP may be periodically updated to encompass new legislation, capitalize on emerging trends, and integrate initiatives that are aimed at enhancing the digital ecosystem for citizens, businesses, and the government.

As we embark on the implementation phase of this Strategic Plan, we call upon the management and staff to sustain the spirit of collaboration and ownership that has brought us to this point. Together, we will work towards fulfilling the expectations of our stakeholders and realizing the transformative potential of ICT for Rwanda's future.

CONTENTS

ABBREVIATIONS

4IR	Fourth Industrial Revolution
AfCFTA	African Continental Free Trade Area
AI	Artificial Intelligence
ALU	African Leadership University
BPO	Business Process Outsourcing
CCA	Crosscutting Area
CDO	Chief Data Officer
CII	Critical Information Infrastructure
CMU	Carnegie Mellon University
CNMS	Converged Network Management System
CPD	Continuing Professional Development
CRVS	Civil Registration and Vital Statistics
DAP	Digital Ambassadors Program
DIC	Digital Inclusion Council
DIMS	Disability Management Information System
DPI	Digital Public Infrastructure
ESOs	Entrepreneur Support Organizations
EUCL	Energy Utility Corporation Limited
G2B	Government-to-Business
G2B	Government-to-Citizen
G2G	Government-to-Government
GBS	Global Business Services
GDaaS	Geospatial Data as a Service
GESB	Government Enterprise Service Bus
GII	Global Innovation Index
ICT	Information and Communication Technology
IoT	Internet of Things
IP	Intellectual Property
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
SSP	ICT and Innovation Sector Strategic Plan

ITU	International Telecommunication Union
KBE	Knowledge-based Economy
KIC	Kigali Innovation City
KIFC	Kigali International Financial Centre
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
mRNA	Messenger RNA
NCD	Non-communicable Disease
NPKI	National Public Key Infrastructure
NRI	Network Readiness Index
NST	National Strategy for Transformation
PKI	Public Key Infrastructure
POC	Proof of Concept
PPI	Public Procurement for Innovation
PPP	Public-Private Partnership
R&D	Research and Development
RCA	Rwanda Coding Academy
RED	Rwanda Economy Digitalization
RGB	Rwanda Governance Board
SACCO	Savings and Credit Cooperative
SDID	Single Digital ID
SRMP	Smart Rwanda Master Plan
SSP	Sector Strategic Plan
TBI	Tony Blair Institute
UR CST	University of Rwanda College of Science and Technology

EXECUTIVE SUMMARY

Section 1. Introduction

The ICT Sector Strategic Plan (SSP, 2024-2029) presents a roadmap to fast-track the next phase of Rwanda's digital transformation, aiming to fully integrate citizens, businesses, and government functions into the digital economy. This plan is part of the broader national ambition to become a knowledge-driven, middle-income nation by 2035 laying the foundation for achieving upper-middle income status by 2050.

In elaborating the SSP, sector stakeholders focused on identifying the key objectives and milestones that will define ICT success over the next five years, with particular focus on advancing the quality of life for citizens. Through extensive consultations, analysis of current trends, and a review of previous strategies, this plan established the strategic priorities and corresponding interventions that aim to accelerate ICT sector growth and Rwanda's overall digital transformation.

Care was taken to ensure the SSP is aligned with the second National Strategy for Transformation (NST2, 2024/25–2028/29), supports the broader objectives of the second Smart Rwanda Master Plan (SRMP II, 2024–2028), and incorporates the continental goals set out in the Digital Transformation Strategy for Africa (DTS, 2020–2030). Together, these frameworks provide overarching guidance and serve as guardrails, enabling the ICT sector to advance the digital transformation aspirations laid out in Vision 2050, the African Union Agenda 2063, and the Sustainable Development Goals (SDGs).

Section 2. Sector Overview

The ICT sector is inherently progressive, with each achievement building the foundation for the next phase of growth. This SSP is inspired by the sector's previous advancements while seeking to address the challenges and taking advantage of the emerging opportunities observed during the previous SSP cycle (2018–2024).

The performance, challenges, and opportunities are presented across six (6) portfolios that encompass the breadth (scope) and depth (impact) of the ICT sector: Infrastructure, Cybersecurity, Skills Development, Data and Digitalization, Application and Emerging Technology, and Innovation Ecosystem.

The sector achieved important milestones, including increased broadband and mobile penetration, expanded broadband infrastructure, widespread adoption of digital government services, improvements in digital literacy, and the establishment of critical regulatory and institutional frameworks. Despite this progress, several core challenges persist, forming a crucial basis for the sector's "theory of change" in this SSP phase. This theory of change emphasizes addressing foundational barriers while targeting high-impact opportunities that align with Rwanda's digital transformation ambitions.

A primary concern is the development of a skilled ICT workforce. Despite progress, there's a pressing need for more targeted digital training programs. Such programs are essential to nurturing the talent needed to drive job creation, foster innovation, and support the achievement of Rwanda's ambitious ICT objectives. Equally important is the goal of universal digital access. Current gaps in terms of smart device ownership and limited access to affordable, high-quality internet connectivity pose significant challenges that must be addressed to ensure that all citizens can benefit from digital advancements. The implementation of a Single digital ID system also stands out as a critical undertaking. Beyond improving access to government services, the SDID will play a key role in promoting digital inclusion and championing a data and knowledge-driven economy.

Section 3. Strategic Framework

The SSP provides a structured framework to guide the ICT sector's ambitions to expand digital access, inclusion and engagement of citizens, businesses, and government, while strengthening ICT sector contribution to the national GDP. The SSP is structured around three priority areas each underpinned by actionable goals and spin-off benefits:

1. **Accelerating Digital Transformation:** This priority area is centered on attaining universal digital literacy and transforming the Rwandan workforce to drive Rwanda's digital economy. The plan includes providing 1.5 million citizens with training in basic coding and advanced ICT skills. Beyond educational initiatives, the sector aims to nurture innovation-driven entrepreneurship, which is expected to create 50,000 digital jobs and expand the market for locally developed digital content, software applications, and services, both within and beyond Rwanda's borders.

2. **Promoting Digital Inclusion:** The ICT sector commits to progressively modernize Rwanda's digital infrastructure to ensure widespread access, affordability, and security of digital services. Plans include upgrading communication and internet facilities, increasing computing capacities, and encouraging smart device ownership through collaborations with the private sector. Special attention will be given to closing the digital gender gap, with initiatives designed to provide women and girls, particularly in rural areas, with equal access to digital technologies.

3. **Enhancing Digital Service Delivery:** Leveraging the success in digitizing public services, the ICT sector aims to further refine the digital service landscape. The plan includes the full digitalization of government services, the promotion of online private sector services through PPI and data infrastructure, and the rollout of a Single Digital ID system. By 2029, the goal is to have all government services available online, simplifying access and enhancing the security of trusted online services.

To achieve these ambitious objectives, the SSP is organized around nine strategic outcomes, which are viewed through the lens of the six ICT sector portfolios. The linkage of the portfolios with the strategic outcomes aims to provide a holistic approach to digital advancement over the next five years.

Section 4. Implementation Arrangements

In accordance with the guidelines set forth by the Ministry of Finance and Economic Planning (MINECOFIN), the SSP is supported by a detailed implementation plan coupled with a monitoring and evaluation framework. The implementation framework provides a structure for the execution of the plan, defining the roles and responsibilities of various ICT sector stakeholders including government ministries and agencies, the private sector, and development partners.

To ensure success over the next five years, the ICT sector developed an accompanying M&E matrix adopted from MINECOFIN's guidelines. The matrix is designed to track progress, assess the impact of interventions, and inform decision-making. Specific targets have been set for each strategic priority and targeted outcome aligned with NST2. Importantly, some of the indicators are derived from global indices which will be used to benchmark Rwanda's ICT sector performance and positioning on the global stage.

Section 5. Cost and Financing

The projected cost for implementing the ICT SSP over the next five years is estimated at **2.04 trillion Rwandan** Francs. To ensure that each of the **27 strategic priorities** and corresponding interventions are adequately funded, a multifaceted approach to resource mobilization will be employed to secure the financial, human, and technological resources required for the SSP.

While a significant portion of the SSP funding will come from the national government's budget allocations, the ICT Sector will actively explore and mobilize resources from avenues including the private sector, development partners, international funding, and other innovative financing mechanisms.

1. INTRODUCTION

1.1. Context and Rationale

In 2020, Rwanda launched Vision 2050, a 30-year economic and social transformation agenda aiming to achieve the status of upper-middle income economy by 2035, and high-income economy by 2050. This agenda is implemented through a framework of successive medium-term development plans, National Strategy for Transformation (NST) and priorities as cascaded into the respective sectoral plans.

This document outlines the new five-year ICT Sector Strategic Plan, SSP (2024/25 – 2028/29) aligned with the second iteration of the NST (NST 2) that is designed to guide Rwanda's development Agenda over the next five years. The process of elaborating the new SSP was contextualized on the second Smart Rwanda Master Plan (SRMP II, 2024–2028), which is the active ICT policy framework centered on advancing the role of citizens, businesses, and government in national digital transformation.

The SSP is based on three foundational pillars from SRMP II: Digital Business, Digital Citizen, and Digital Government, each corresponding to NST 2's vision for economic, social, and governance transformation. These pillars focus on catalyzing economic growth through digital skills, technology and innovation (Digital Business); building a digitally inclusive society (Digital Citizen); and promoting citizen engagement by making digital services more accessible and efficient (Digital Government).

1.2. Purpose

The expiration of the previous ICT Sector SSP (2018-2024) necessitated the articulation of a new plan. This new five-year SSP aims to recalibrate and set forth updated priorities that not only build on the investment and momentum of the previous SSP while paying attention to the sectors evolving challenges and opportunities, but importantly also, resonate with the current medium-term NST 2 and SRMP II targets.

Besides the sector and national alignment, the SSP is also designed to align with regional and global trends to ensure the ICT sector remains adaptable and responsive to the evolving technology landscape. It aligns with the African Union (AU) Digital Transformation Strategy for Africa (DTS, 2020 - 2030) that focuses on critical areas such as digital infrastructure, skills, governance, and innovation to drive society and economic transformation across the continent. It also embraces the ICT-related components in the Sustainable Development Goals (SDGs), and the International Telecommunication Union (ITU) regulations and recommendations.

1.3. Objectives

The ICT sector has identified three sector objectives:

1. Fostering digital transformation across key economic sectors
2. Promoting digital inclusion through accessible and secure ICT infrastructure
3. Enhancing digital service delivery

These objectives cascade into nine (9) strategic outcomes that support NST2's goals, including a 5% ICT sector contribution to GDP, a 20% reduction in the digital skills gap, and the creation of 50,000 digital jobs. Other key targets include achieving universal digital literacy, digitizing all government services, contributing towards job creation, improved education quality, and increased citizen satisfaction with public services. The increased emphasis on data and research, along with capacity development, will provide the building blocks for ICT to support cross-sectoral economic growth, and solutions that improve the quality of life for Rwandans.

The ICT sector interventions and outcomes will, both directly and indirectly, support NST2's transformative goals including boosting exports, improving education, enhancing public service delivery, and leveraging technology and data for national development.

1.4. SSP Elaboration Process

The preparation of the ICT SSP was a collaborative effort led by the Ministry of ICT and Innovation (MINICT). The process adhered to the guidelines for "Elaboration of Sector Strategic Plans" set by the Ministry of Finance and Economic Planning (MINECOFIN) - which coordinates the NST 2. Care was taken to ensure broad participation and representation from all sector stakeholders through workshops and consultative sessions. These engagements, especially involving institutional leaders, portfolio leads, the planning unit, and sector experts, ensured multiple avenues were explored, and all input was appropriately captured for the SSP to accurately reflects the current state and future direction.

All details of the SSP including the sector performance, challenges, gaps, strategic framework, and interventions were elaborated within the 6 ICT sector portfolios: infrastructure, cybersecurity, digital skills, data and emerging technologies, applications and smart cities, and innovation ecosystem engagement.

1.5. Structure of the SSP

Sections 1 sets the stage, providing context and rationale. Section 2 presents a snapshot of the current state of the ICT sector, highlighting past achievements and identifying challenges and opportunities. Section 3 describes the Strategic Framework, detailing the sector vision, mission, objectives, key priorities and strategic interventions designed to achieve Rwanda's digital transformation goals. Section 4 combines aspects of the operational and M&E frameworks to ensure the sector keeps track on its performance and alignment with NST2. Section 5 presents the financial cost projections, and resource mobilization strategies.

2. SECTOR OVERVIEW

This section presents the status of the ICT sector in relation to implementation of the previous strategy (SSP, 2018 – 2024). It begins with an evaluation of the current digital landscape, highlighting Rwanda's international positioning, then progresses to the specific achievements through the lens of 6 portfolios.

2.1. Situation

Rwanda ICT sector has experienced progressive growth with continued investments in building digital infrastructure, digital skills, device ownership, cyber resilience and innovation. The results of these investments continue to manifest not only in local uptake, but also in regional and global recognition and ranking. At continental level, Rwanda ranks in the top tier of various key ICT indices including the recently published Global Cybersecurity Index (GCI, 2024) where Rwanda ranked in the top 5 in Africa, 99th in the Network Readiness Index[1], 103rd in the Global Innovation Index[2], and 139th in the Frontier Technologies Readiness Index[3]. As of 2023 it joined the ranks of high EGDI performers in the United Nations' E-Government Development Index 2022, achieving a score of 0.55 and moving up 11 positions to rank 119th globally. These achievements underscores Rwanda's dedication to cybersecurity and the broader digital economy growth.

The previous SSP aligned with the SRMP I and was designed to contribute to NST-1. The SSP's overarching objective was to fast-track the national transition into a knowledge-based society. The SSP set a number of objectives including pursuing broadband for all, digital government services, digital literacy, becoming a leading regional ICT hub, pursuing digital transformation, promoting a cashless economy, developing advanced technology skills and capacity, and fostering the innovation ecosystem. The table below provides a summary of achievements corresponding to the key objectives and targets sets in the previous SSP.

Table 1. Summary of achievements mapped to the previous SSP objectives

Objective	Target/Metric	Strategic Initiatives	Current Status & Achievements
Broadband Coverage	Universal broadband access by 2024	Promote broadband as utility, expand connectivity	Nearly universal 4G coverage achieved, with significant infrastructure development and policy reforms
Universal Internet Penetration	80% internet and 98% mobile penetration by 2024	Expand high-speed internet access	Internet and mobile penetration rates have substantially increased, with efforts to liberalize the 4G market and enhance affordability
Government Digital Transformation	24/7 online government services by 2024	Digitize government services, enable G2C, G2B, G2G interactions	Significant digitization of services, with platforms like IREMBO facilitating millions of transactions and enhancing service delivery
Digital integration across all sectors	Integrated digital services across all sectors	End-to-end digitization in key sectors	Progress in digitizing services. Efforts are still required to achieve full integration across sectors
Digital Literacy for All	100% digital literacy among citizens by 2024	Nationwide digital literacy campaigns	Over 2.1 million citizens trained through Digital Ambassadors Program, challenges remain in reaching the 100% target

[1] Network Readiness Index, NRI 2023 - Portulans Institute

[2] Global Innovation Index, GII 2023 - World Intellectual Property Organization (WIPO)

[3] Technology And Innovation Report, 2023 - United Nations Conference on Trade and Development (UNCTAD)

Development of Human Capital	Retain and attract talent	Incentivize skills development, strengthen FDI and local talent link	Growth in skilled professionals and digital literacy, with ongoing efforts to attract diaspora and foreign talent.
Advanced Skills, Professional Capacity	Develop market-oriented ICT skills	Partner with private sector and academia	Growth in ICT professional workforce, with initiatives like Rwanda Coding Academy contributing to skill development
Leading ICT Hub in Region by 2024	Position Rwanda as Africa's leading ICT hub	Leverage Smart Cities, Kigali Innovation City	High regional ranking, innovation hubs established. Efforts are needed to solidify Rwanda's position as a leading ICT hub
Sustainable Development through Smart Cities	Creation of Smart Cities	Focus on smart governance and service delivery	Ongoing initiatives including smart mobility and parking solutions, aimed at transforming urban centers
Innovation support and Ecosystem Development	Support for homegrown ICT businesses	Nurture local ICT solutions, support startups, attract FDI	Notable support for ICT startups and innovation ecosystems, though more can be done to attract FDI and support local businesses. Establishment of innovation hubs and funding initiatives
Cashless Economy and Digital Society	Achieve a cashless economy	Promote cashless and paperless transactions	Increased adoption of mobile financial services and efforts towards financial inclusion. Efforts still needed to fully realize a cashless economy
Smart Sectoral Focus	Apply ICT in key sectors for improved productivity	Smart Agriculture, Smart Health, Smart Finance, Smart Commerce	Limited sectoral initiatives underway. Need to identify and strengthen

Despite notable achievements, it is important to note that these objectives are not just one-time targets, they are ongoing and require continuous effort and adaptation. Further insights into the ICT sector's performance across the six portfolios are detailed below.

2.1.1. ICT Infrastructure

a. Infrastructure Capacity, Access and Affordability

Rwanda's has an extensive fiber optic and broadband network that stretches over 21,847 kilometers. The network underpins the national telecommunications framework which has facilitated the achievement of near universal 4G coverage, 99% (ITU, 2022).

Table 2. ICT Infrastructure Progress Indicators (SSP, 2018-2024)

Indicator	Target (2024)	Current Status	Achievement	Challenges
Broadband Coverage (%)	100%	99%	Near-Universal Coverage	Underused infrastructure
Mobile Subscribers (million)	13 m	12.54m	Growth in Mobile Adoption	Low smartphone penetration (rural areas)
Mobile internet suscriptions per 100 inhabitants	100%	76.03%	Improved Mobile Rates	High data costs
Local Hosting (%)	50%	14.90%	Improved Data Centers	Low adoption of local hosting

The rise in active mobile subscribers from 9.6 million in December 2018 to 12.54 million by September 2023, alongside an increase in active mobile-cellular (SIM card) subscriptions per 100 people from 82.4% to 93.04%, underscores the positive impact of these digital infrastructure efforts.

Other notable achievements include:

- Improved access to services by connecting 29 sectors, 664 health posts, 1,694 schools, 2,098 cells, 49 SACCOs, 16 National Electoral Commission offices, and 194 Rwanda Investigation Bureau stations.
- Adoption of a Broadband Policy and Universal Access Fund (UAF) Law, which provide a regulatory framework and financial mechanisms to support further infrastructure development.
- Smartphone penetration was boosted through the Connect-Rwanda 2.0 initiative in collaboration with mobile network operators.
- The introduction of zero-rating for mobile termination rates and the establishment of mobile wallet interoperability played a key role in reducing costs and increasing convenience of mobile transactions, which in turn is instrumental in promoting financial inclusion.
- Establishment of regulations prescribing radio communication license fees have helped simplify compliance and operational processes for service providers.
- Issuance of the Starlink license which introduced satellite internet as a viable and innovative solution providing internet coverage in remote and underserved regions.

b. Hosting services and Data centers

A number of initiatives have improved the local hosting capabilities. This includes the introduction of the TransAfrica Communications (TrAC) data center, a 50% reduction in hosting prices at the National Data Center (NDC), the issuance of data center and cloud service directives in 2023, and the launch of new data centers by Liquid Telecom, MTN and Business Services Company (BSC). Despite these advancements, only 14.9% of 4,660 websites and web applications are hosted locally, indicating room for growth.

c. Smart City Initiatives

Rwanda aims to transform urban centers into smart cities by integrating advanced technologies to improve infrastructure, service delivery, and environmental sustainability. Ongoing initiatives include the Kigali Innovation City (KIC) hub, smart mobility and parking solutions, modernized waste stations, and advanced monitoring and emergency response capabilities.

d. Space Programs

Ongoing national space initiatives focus on leveraging satellite-based data, space research, telecommunications, earth observation, and national security. These programs aim to strengthen capacity across diverse sectors such as agriculture, environmental monitoring, and disaster management, reflecting a comprehensive approach to space technology application.

Key milestones in Rwanda's space endeavors include:

- The successful launch of Rwanda’s first satellite, RwaSat-1, in 2019, marking Rwanda's entry into the realm of satellite operations with a focus on earth observation to support sectors like agriculture, water resources, and urban planning.

- The establishment of the Rwanda Space Agency (RSA) to coordinate and advancing the space-related activities. The RSA plays a crucial role in developing satellite technology, conducting space research, and building local expertise in space science and technology.

- The construction of a ground satellite teleport and a National GeoHub has enhanced national capabilities in satellite communications and data reception.

- The formation of strategic partnerships with development partners and international space organizations that facilitate knowledge sharing, technical assistance, and the development of local capacities.

2.1.2. Cybersecurity

Under the precious SSP, efforts to develop a secure and trusted digital environment focused on strengthening the existing policy and regulatory framework, adjusting institutional settings, and building capacity.

Table 3. Achievements across the four intervention areas to

Policy and Regulatory Framework	Institutional Configuration	Digital Authentication	Capacity Building
A suite of regulatory instruments was established, including Law Nº 058/2021 of 13/10/2021 relating to the protection of personal data and privacy , the law focused on the Prevention and Punishment of Cybercrimes (2018), and Cybersecurity and Network Information Security Directives (2022).	Operationalization (2020) of the National Cyber Security Agency (NCSA), the Rwanda Computer Emergency Response Team (Rw-CERT), and the Data Protection & Privacy Office (2022).	The adoption of electronic signatures (PKI) in public institutions has seen a remarkable increase from 72.45% in 2017 to 94% by December 2023 exceeding the ambitious target of 85% set for 2024, as highlighted in the RISA Report of December 2023.	Substantial progress has been made in developing a pool of skilled cybersecurity experts. The number has grown from 30 in 2017 to 237 by December 2023, edging closer to the target of 300 individuals set for 2024.

2.1.3. Skills, Talent Development and Job Creation

By 2030, it is projected that between 3.3 to 3.4 million workers[4] will be required to possess proficient digital skills to propel Rwanda towards its ambitious goals outlined in Vision 2050. In response to this critical need, the ICT sector has implemented several interventions that are aimed at bridging the digital skills gaps, targeting different segments of the population, from students to professionals.

a) **Digital Ambassadors Program (DAP)**: This flagship program aims to increase the number of digitally literate citizens and their use of e-Government and e-Business services in Rwanda. DAP has made remarkable strides in empowering citizens with digital skills, particularly in rural areas. By deploying Digital Ambassadors across all 30 districts to manage Service Access Points, the program has trained 2,125,186 citizens as of 2023, making significant headway towards the ambitious goal of equipping 5 million citizens with basic digital skills by 2024. The current digital literacy rate stands at 35.1% among citizens aged 15 and above, a figure poised for an update in the forthcoming EICV7[5] survey.

b) **Andela Program and Rwanda Economy Digitalization (RED) Programme**: These programs are tailored to bridge the skills gap in the tech industry and bolster the digital capabilities of the workforce, respectively. The Andela Program has been instrumental in nurturing high-caliber software developers, training 500+, many of whom have secured positions with leading global tech firms.

4 Demand for Digital Skills in Sub-Saharan Africa, IFC & World Bank Group, 2021

5 Integrated Households Living Condition Survey (EICV)

c) The RED Programme, on the other hand, has mobilized substantial resources towards training professionals in advanced digital skills, thereby supporting Rwanda's digital economy across different public institutions.

d) **Rwanda Coding Academy (RCA)**: The RCA is a program established in 2019 aimed at producing youth that are proficient in software development and engineering in line with national commitment to digital literacy and technical proficiency. The RCA has not only contributed to increasing the pool of skilled IT professionals within the country but also reinforced Rwanda's position as a growing regional tech hub, emphasizing the critical role of specialized education in driving economic growth and technological advancement.

With such initiatives, Rwanda has witnessed substantial progress in digital skills development over the past five years. The number of citizens trained in basic digital literacy through DAP surged from 500,000 in 2018 to over 2.1 million in 2023. Concurrently, the IT professional workforce expanded threefold, from 5,000 in 2018 to 15,000 in 2023. Despite these achievements, challenges such as the 60% completion rate for advanced IT courses underscore the need for continuous improvement and innovation in skills development strategies.

2.1.4. Data, Emerging Technology, Content & Accessibility

Rwanda's digital transformation prospects are strongly linked with the extensive use of data across different sectors, and recognizing its crucial role in influencing policy decisions, efficiency and effectiveness. The foundation of a secure and ethical data management system in Rwanda has been laid through the establishment of crucial legal frameworks, including the National Data Revolution Policy (2017), and the Data Protection and Privacy Law (2021). These, coupled with the ratification of the Malabo Convention Cyber Security and Personal Data Protection (2019), underscore Rwanda's commitment to ensuring data security and pave the way for a data environment that supports Rwanda's ambitious digital aspirations.

The emerging technology is focused on leveraging technology to solve societal challenges, strengthen economic performance, and improve the quality of life or Rwandans, in line with Vision 2050. The government is actively working to create an environment that supports the adoption of new technology such as artificial intelligence (AI), and the Internet of Things (IoT), while also optimizing and integrating existing technologies to improve efficiency, accessibility, and service delivery.

Rwanda has been promoting applications such as AI and IoT to drive innovation and efficiency across sectors like agriculture, healthcare, and smart cities. From the establishment of dedicated Center of Excellence to providing a testing ground for emerging technologies, Rwanda is positioning itself for exploration of cutting-edge technology. Challenges like high costs, limited local expertise, and regulatory barriers remain. This plan seeks to address these challenges through simplifying regulatory frameworks, facilitating easier access to venture capital, forging strategic partnerships with leading global technology firms, and advancement of innovation and research centers dedicated to exploring applications of emerging technology.

However, the landscape has been marked by significant challenges, including the needed skills in emerging technology, underutilization and inaccessibility of data for policy and decision-making, as well as the low levels of data maturity among private and public entities, reflecting the emerging nature of Rwanda’s data ecosystem. Initiatives such as the Rwanda Economy Digitalization Program (RED 1), launched in March 2021,

have started to tackle these issues, providing insight on both the existing challenges and the potential opportunities within Rwanda's data ecosystem.

The success stories registered during the initial 3-year period of the RED I (2021-2024) showcased the value of data-driven decision-making across multiple sectors and highlighted the potential for data in revolutionizing governance, optimizing public service delivery, and enhancing social equity. One of the key lessons from this phase was the critical need for a data-sharing framework to dismantle data silos that obstruct the free flow of information across government entities.

Applications

Table 4. Indicators on Digitalizing Government Services (2023)

Indicator	2017 Baseline	2023	Target (2024)
Digitization of Public Services (%)	40%	85%	100%
Irembo Transactions Processed	5 million	30 million	35 million
Revenue Generated ($ million)	$100 million	$400 million	$500 million

Significant progress has been made in digitizing government services, with coverage expanding from 40% in 2017 to 85% by June 2024, covering a total of 892 public services. This initiative has not only created a nationwide network of 5000 agents providing support to citizens but has also significantly enhanced accountability, transparency, and citizen trust in government operations. A prime example of this success is the Irembo platform, which has processed over 30 million transactions, saving an estimated 120 million working hours, and contributing to a consistent increase in government service revenue - reaching an estimated $400 million with a 30% annual growth rate over the past seven years. This initiative has also significantly reduced service turnaround times from 2-3 weeks to just 2-48 hours.

The momentum for change has been further accelerated by the introduction of the Chief Digital Officer (CDO) role within several government ministries in 2020. The CDO is tasked with enhancing digital transformation across sectors.

In terms of digital inclusion, Rwanda has modernized civil registration through a digitized 9-module Civil Registration and Vital Statistics (CRVS) backend, significantly enhancing service delivery. The expansion of Service Access Points has made it easier for citizens to access essential services. Furthermore, innovations such as real-time newborn registration, which has seen adoption rates jump to 90% from zero, and the integration of NIDA-enabled SIM card registration by telecom operators have been pivotal. The expansion of Mobile Financial Services (MFS) usage by 130% and the integration of the ID system with over 70 external business partners have streamlined processes across sectors, further promoting digital inclusion. The capacity of the Automated Fingerprint Identification System has been upgraded from 8 million to 14 million fingerprints, enhancing security and efficiency.

2.1.5. Innovation ecosystem and private sector

The impact of ICT and innovation on socio-economic development highly depends on the level of maturity of the national innovation ecosystem. The government has actively worked to cultivate a thriving innovation landscape, implementing initiatives that promote scientific research and technological innovation. Initiatives include promoting Rwanda as a Proof of Concept (PoC) Hub, supporting SMEs, stimulating the private sector, refining IP frameworks, promoting technology transfer, and commercialization efforts.

Global indicators for Rwanda's innovation ecosystem in 2023 highlight ambitious targets for 2024, including improving its Global Start-Up Ecosystem Index ranking from 98th to 85th, increasing supported startups from 200 to 350, and doubling mobilized funds from 50 million to 100 million.

Table 5. Select Innovation Ecosystem Indicators

Indicator	Current Status (2023)	Target (2024)
Global Start-Up Ecosystem Index Ranking	98th globally	85th globally
Total Startups Supported	200	350
Total Funds Mobilized (million USD)	$50 million	$100 million

Rwanda's strategic initiatives aim at making it a PoC Hub, ideal for testing and scaling new technologies in regional and global markets. Flagship programs include Zipline's drone delivery, VKW's knowledge sharing platforms, Ampersand's digital payments, and mRNA vaccine production collaboration with BioNTech.

In financial services innovation, Rwanda focuses on transforming Kigali into a global financial hub through the Kigali International Financial Centre (KIFC). The KIFC aims to diversify the economy and enhance financial inclusion via digital and fintech innovations. Supporting this vision, the Rwanda Innovation Fund and Timbuktu initiatives offer increased funding opportunities for local startups through various financial schemes.

Rwanda’s science park and innovation hub landscape has been also boosted by the continued development of the Kigali Innovation City (KIC) that will spur technology development, job creation, and contribute to the national GDP. The local innovation environment has been also strengthened by the Norrsken hub and a growing network of incubators and accelerators, that provide collaborative space for global technology enterprises and local innovators. These hubs offer crucial resources, including financing, human, and market access, that support local innovators and entrepreneurs.

2.2. Challenges and Gaps

Below are some of the key challenges that emerged from stakeholder engagement presented under each of the six portfolios.

Infrastructure

- Limited connectivity in remote areas due to lack of electrification
- Interoperability and integration issues across ICT systems which hinder public service delivery
- High costs for fixed broadband and hosting services reduce affordability for citizens and businesses.
- High initial investment costs and lacks academic support for the space program

Cybersecurity

- Outdated infrastructure which affects cybersecurity operations and resilience to new threats
- Limited integration of the National Public Key Infrastructure (NPKI) weakens digital security
- Shortage of skilled cybersecurity professionals due to a lack of specialized education programs

Skills and Talent Development

- Limited access to digital skills training, especially in rural areas
- High dropout rates in ICT training programs
- Insufficient ownership of staff digital training
- Low digital literacy among adults restricts digital inclusion

Data and Emerging Technology

- Lack of data governance, standardization, and sharing frameworks
- Limited data and computational capacity constrain data-driven decision-making
- Scarcity of local digital content
- Lack of skills in emerging Technology and limited digital infrastructure.

Applications

- High costs of smart devices are limiting the acquisition and use of available resources and online services
- Many existing systems don't communicate with each other, creating silos and hindering data exchange
- Lack of clear e-commerce policies and low trust in digital platforms restricts e-commerce growth

Innovation Ecosystem

- Developing nature of innovation ecosystem and the lack of technology readiness
- Limited funding and support for startups impede innovation and scaling.
- Insufficient financial resources to invest in R&D and merging technology acquisition.

2.3. External Drivers and Scenario Planning

In the context of the SSP, understanding the external drivers that influence the strategic direction is crucial. The SSP elaboration referenced the outcome of future scenario planning exercise which identified key uncertainties such as climate change effects, demographic shifts, and technological evolutions. Among these, globalization, technology disruption, and climate change stand out as pivotal forces shaping the current and future socioeconomic landscape. Each presents unique challenges and opportunities for innovation and adaptation.

a) Globalization and Rapid Technology Advancement

Globalization impacts the technology sector in various ways. Countries like Rwanda that rely heavily on imported technology face challenges in establishing high-tech industries and growing their local innovation ecosystem. Businesses, especially startups, face tough competition from established international firms and must deal with complex global rules and intense competition.

Rapid technology advancement also presents yet another hurdle for Rwanda's nascent tech sector. Rwandan businesses, particularly startups, have to adapt to the rapid pace of technological change. This situation, while challenging, also presents an opportunity for firms to leapfrog traditional development stages which sets precedence for the growth of the local innovation ecosystem.

Both globalization and rapid technology advancement offer opportunities for Rwandan firms to not only access new markets but also collaborate on technology development and innovation. To leverage such opportunities and make the most of strategies like “Made in Rwanda”, the SSP elaboration sought to integrate strategic interventions that strengthen Rwanda's emerging technology capabilities by increasing support for local tech solutions and developing the needed skills and innovativeness of the young population.

b) Climate Change

The ever-increasing threat of climate change presents a complex set of challenges that demand immediate and innovative responses. As identified in the scenario planning exercises, the impacts of climate change are not just hypothetical but are already manifesting through more erratic rainfall patterns and an increase in extreme weather events. This poses a significant risk to agricultural productivity, a foundation of Rwanda's economy, potentially leading to food insecurity and poverty.

The change in weather not only threatens the livelihood of those directly involved in agriculture but also affects the quality of exports. This situation further demonstrates the critical importance for Rwanda to leverage data and advancements in data analytics to develop more accurate forecasting models to anticipate climatic shifts, enabling the formulation of effective strategies to mitigate the effects of climate change.

2.4. Emerging Opportunities

The ICT sector has identified the following emerging opportunities that will strengthen Rwanda's digital transformation resolve in the next five years.

Infrastructure Development

- The adopted policy shift towards market liberalization is expected to reduce internet prices, making broadband services more accessible and affordable for the population.

- As a landlocked nation, Rwanda stands to benefit significantly from cooperating and collaborating with neighboring countries for instance in establishing access to the dark fiber networks. Such regional cooperation could lead to substantial price reductions in internet services, further improving Rwanda's connectivity and foster digital inclusion.

- The planned development of a framework for Energy Utility Corporation Limited (EUCL) approval to categorize data centers under industrial tariffs could halve electricity costs, enhancing the operational viability and competitiveness of data centers.

Space and Satellite Technology

- Utilizing space data holds immense potential for boosting economic development across key sectors like precision agriculture, climate monitoring, and sustainable resource management. Integrating Geospatial Data as a Service (GDaaS) with growing innovation and STEM education can unlock the advantages of analytics and remote sensing applications, driving informed decision-making and sustainable practices.

- Rwanda's geographical location near the equator presents a strategic advantage for satellite launches, benefiting from optimal rotation speeds and orbits with lower inclination. Satellite connectivity offers a solution to the challenges posed by the hilly terrain, improving communication capabilities and providing additional benefits such as weather monitoring and safety applications.

- Fostering entrepreneurship and innovation within the space industry encourages startups and technology companies to develop cutting-edge solutions and services using satellite technology. This not only supports the domestic tech ecosystem but also positions Rwanda as an attractive destination for space industry investment, stimulating economic growth and technological advancement.

- Rwanda's increasing participation in global and regional space initiatives, such as the Artemis Accords, International Astronautical Federation (IAF), and International Telecommunication Union (ITU), enhances its role in space diplomacy. Becoming an integral member of the Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA) would strengthen Rwanda's capabilities in satellite navigation services and applications, contributing to global efforts in space exploration and sustainability.

Cybersecurity

- The recent adoption of a Personal Data & Privacy Law and the projected establishment of a National Cybersecurity Strategy will guide interventions towards a more secure and trusted digital environment, fostering confidence among users, stakeholders, and investors while mitigating cyber risks and supporting the course towards national digital transformation.

- A lot is also expected from the introduction of a Single Digital ID (SDID) system which will build on the existing Public Key Infrastructure (PKI) to improve identity verification processes, which in turn will enable secure and seamless digital interactions and transactions.

- Establishment of a Cyber Academy and Innovation Center will play a key role in addressing the cybersecurity skills gap by developing and equipping professionals and technicians that are highly effective and adaptable to effectively combat cyber threats, while also providing an environment for research and innovation to advance national cyber interests.

Digital Skills and Inclusion

- The operationalization of the Digital Inclusion Council and the implementation of the National Digital Skills Framework present an effective approach to address the digital skills development challenges.

- With high mobile penetration, Rwanda is adopting a mobile-first approach to digital service delivery, making services accessible via smartphones.

- A significant opportunity exists to address the digital literacy gap by creating a robust library of digital content in Kinyarwanda. This locally relevant content will empower Rwandans to acquire essential digital skills, fostering greater access to information, services, and economic opportunities.

- Increased demand from an empowered and vibrant youth population to access innovation hubs. By investing in these hubs and fostering a culture of creativity, Rwanda can cultivate a generation of innovators and entrepreneurs with the potential to solve existing and emerging challenges.

- The growing number of institutions like Carnegie Mellon University (CMU), African Leadership University (ALU), Rwanda Coding Academy (RCA), and University of Rwanda College of Science and Technology (UR-CST) are playing a key role in producing expert-level engineers and professionals in line with market demand for skilled ICT professionals.

Application, Innovation and Entrepreneurship

- The adoption of low-code development platforms presents an opportunity to accelerate the development of backend systems. By simplifying the process of building digital platforms, low-code technologies enable faster deployment of applications and systems, thereby supporting the rapid digitalization of government and business processes in Rwanda.

- Rwanda to leverage its strategic position as a financial hub. The KIFC coupled with the prospects of the African Continental Free Trade Area (AfCFTA) open doors for market expansion beyond national borders. This will necessitate development of a strong fintech strategy and implementing programs like the Rwanda Innovation Fund (RIF) and continued investment in the Kigali Innovation City (KIC).

- Establishing a clear e-commerce policy will boost trust and participation in the digital economy. The Rwanda Global Business Services (GBS) Initiative has the potential to create a significant number of jobs, while the Timbuktoo initiative provides much-needed access to early-stage risk capital for promising startups.

- Initiatives, such as ConnectRwanda, in collaboration with Mobile Network Operators (MTN and Airtel) have facilitated broader connectivity and digital inclusivity by making devices more affordable and accessible to citizens.

- The next five years will witness dedicated programs that are designed to enable active exploration and capitalizing on emerging technologies like the actively exploring and capitalizing on emerging technologies through initiatives like Centre for AI Policy & Innovation (CAIPI)

2.5. Medium-term perspectives

A cross-sectional look at all six dimensions introduced several perspectives for the next five years, including:

- Modernizing existing infrastructure to improve reliability, speed, and capacity. Radio spectrum refarming will free up resources for growing data demands, while extending the national fiber backbone will bridge the digital divide in rural communities.
- A phased rollout of 5G infrastructure will ensure Rwanda stays on par with global trends in connectivity and enable advancements like smart cities, widespread IoT adoption, and various digital innovations.
- Cybersecurity initiatives will focus on ensuring compliance with international standards, capacity building, adapting policies to address emerging threats, and proactively identifying vulnerabilities.
- Establishment of Digital Inclusion Council (DIC) will play a central role in coordinating digital skills training. The DIC will ensure programs align with job market needs and promote digital literacy.
- Low-code development platforms will be developed to accelerate the digitization of government backend systems, enabling faster deployment and improvement of services like Irembo. This will enhance service delivery efficiency, transparency, and online access to essential services.
- Expansion of the roles and skills of the Chief Data Officers (CDOs) will improve data management, privacy, security, sharing, and usage especially in relation to data-driven decision making.
- Encouraging Private Public Partnerships (PPPs) will leverage private sector expertise and investment in emerging technologies to foster economic diversification and technological innovation.
- Initiatives like Kigali Innovation City will be scaled up, alongside expanding innovation funding through existing channels like the Rwanda Innovation Fund and the timbuktoo Africa Innovation Foundation. This will support promising startups and drive Rwanda's innovation ecosystem.
- Expedite smart device adoption to enhance digital literacy by subsidizing their costs to make them widely available and affordable, thereby ensuring all citizens can benefit from existing digital services and information.

3. STRATEGIC FRAMEWORK

This section details the ICT sector strategy and priorities for 2024/25 – 2028/29, aimed at supporting NST2.

3.1. Sector Vision, Mission and Objectives

3.1.1. Vision

A thriving digitally advanced society where technology and innovation empower every citizen and business to participate in the digital economy.

3.1.2. Mission

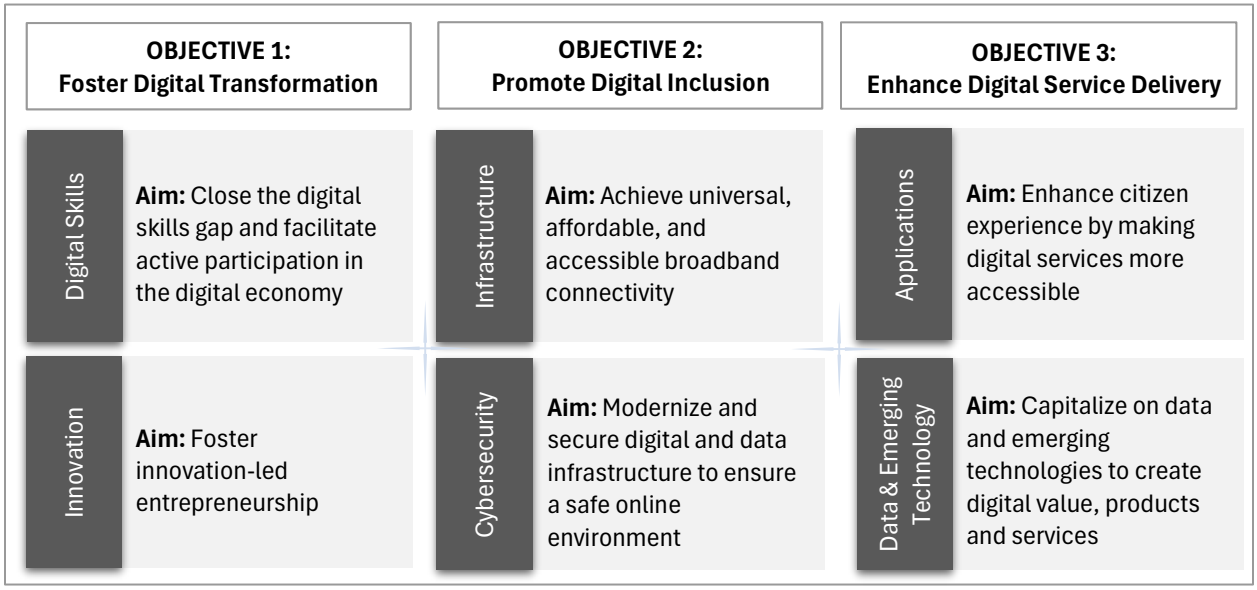
To deliver equitable access to affordable, reliable, and secure digital services for all Rwandans leveraging modern technology and infrastructure.

3.1.3. Goal and Objectives

The strategic goal of this SSP is to " **Accelerate the growth of digital economy through universal digital inclusion, greater adoption of digital services, and increased productivity**." This goal is supported by three key objectives developed in the framework of six ICT sector portfolios:

- **Objective 1**: **Foster digital transformation** across key economic sectors
- **Objective 2**: **Promote digital inclusion** through accessible, resilient, and secure ICT Infrastructure
- **Objective 3: Enhance digital service delivery** through the increased use of data and emerging tech

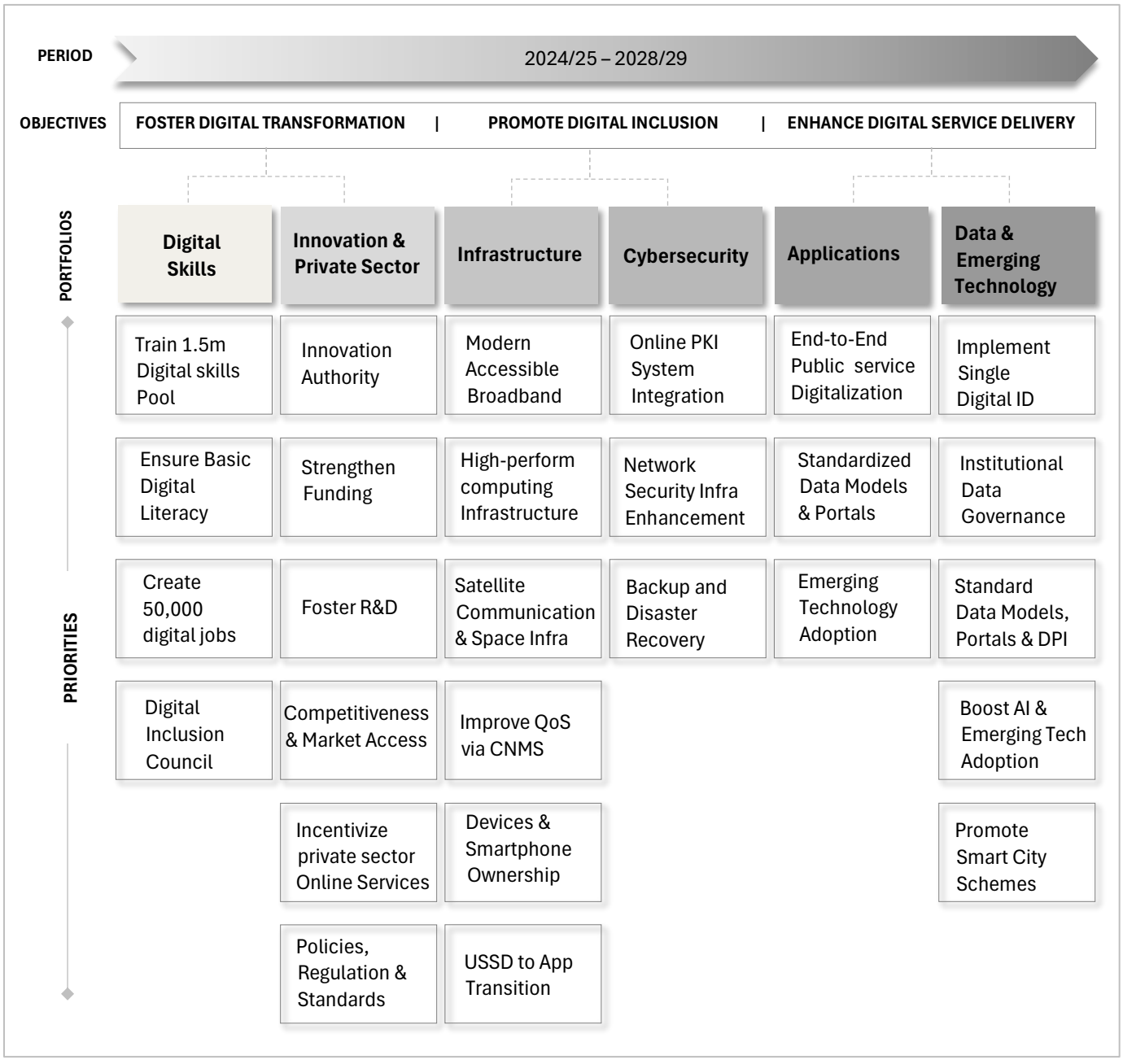
Figure 1: Mapping of Objectives to Corresponding ICT Sector Portfolios



3.2. Priorities

The sections below provide details on each of the portfolios, the 27 priorities, cascaded into 128 strategic interventions and a set of indicators that will be used to track its realization.

Figure 2. Sector Priorities under each Sector Portfolio



3.3. Strategic Interventions

This section provides a detailed list of interventions under each Strategic Objective and Priority Area.

3.3.1. Fostering Digital Transformation

For Rwanda to achieve a digitally advanced society and economy, it is essential to develop a skilled workforce and create a conducive environment for digital innovation and entrepreneurship. By investing in digital literacy and skills training, the ICT sector aims to empower citizens to actively and effectively participate in the digital economy. A skilled workforce, supported by a thriving innovative ecosystem, is envisaged to not only unlock new economic opportunities, but also boost productivity, and increase tech exports. Prominently under this priority, the ICT sector aims to achieve universal digital literacy, train 1.5 million citizens in ICT skills, and create over 50,000 digital jobs.

Strategic Outcomes:

- **Outcome 1:** Increased digital literacy and digital skills development for a globally competitive workforce
- **Outcome 2:** Strengthened innovation ecosystem for private sector-led growth
- **Outcome 3:** Enhanced digital service delivery

Objective 1	Fostering Digital Transformation across key economic sectors
Outcome 1	**Increased digital literacy and digital skills development for a globally competitive workforce**
Priority 1	**Train 1.5 million citizens in basic coding and advanced ICT skills**
	• Conduct a comprehensive needs assessment for digital skills • Introduce coding academies model across high school, launch RCA vertical mobility program • Develop professional internships and apprenticeship programs • Establish cybersecurity academy and innovation center • Collaborate with education authorities to incorporate cybersecurity into the curriculum • Conduct nationwide cybersecurity awareness campaigns • Partner with technology companies to provide hands-on training in cybersecurity • Develop targeted cybersecurity literacy programs for high-risk groups • Implement upskilling programs for cybersecurity talent • Implement the National Digital Skills Framework (NDSF)
Priority 2	**Ensure universal basic digital literacy**
	• Implement DAP 2.0 • Implement the National Digital Skills Framework (NDSF) • Implement Comprehensive Digital Literacy and Certification Programs for the workforce • Cultivate partnership with e-learning platforms to expand access to quality training • Address and bridge the digital gender divide
Priority 3	**Create 50,000 digital jobs for local and global market competitiveness**

	• Position Rwanda as a hub for Global Business Services (GBS) focusing on BPO/ITO • Build partnerships with strategic BPO outsourcing countries
Priority 4	**Strengthen co-ordination and impact of digital literacy and skills investments through the DIC**
	• Establish the DIC project management office
Outcome 2	**Strengthened innovation ecosystem for private sector-led growth**
Priority 5	**Establish an innovation authority to drive technological progress across key economic sectors**
	• Create an innovation authority as a centralized hub for technological advancement • Implement a comprehensive framework for fostering technological advancement • Integrate innovative practices into public sector processes • Expand initiatives that position Rwanda for Proof of Concept (POC) projects • Develop an innovation awareness campaign • Promote innovation and entrepreneurship within academia • Create a platform for exchanging innovation ideas, lessons learnt, opportunities, and tools • Establish global partnerships to leverage international expertise, resources, and models
Priority 6	**Expand and strengthen funding accessibility to support innovative startups**
	• Create a funding pool to support tech startups and scale innovation projects • Operationalize a guarantee fund to reduce the risk associated with early-stage investment • Expand and actively promote existing innovation support instruments
Priority 7	**Boost the innovation ecosystem and invest R&D activities**
	• Create R&D labs and sandboxes for critical industries • Strengthen public procurement for innovation (PPI) • Facilitate R&D partnerships between Rwandan and international firms • Strengthen data R&D capabilities across institutions • Set up IP clinics for startups and innovators • Promote e-commerce for market expansion and competitive advantage
Priority 8	**Enhance Rwanda's competitiveness and access to regional and global market**
	• Develop an incentives framework for domestic and international market access • Identify regulatory requirements to accelerate go-to-market strategies • Attract foreign innovation firms to Rwanda to stimulate the ecosystem • Promote Rwanda as a destination for Entrepreneur Support Organizations (ESOs)
Outcome 3	**Enhanced digital service delivery**

Priority 9	**Completing end-to-end digitalization of government services at 100%**
	• Complete end-to-end digitalization of government systems • Build with "mobile by default" philosophy
Priority 10	**Incentivize private sector to provide their services online**
	• Design business digitalization approach based on value chains • Create incentives for business digitalization

3.3.2. Promoting Digital Inclusion

Ensuring that all Rwandans have access to affordable, reliable, and secure digital services is crucial for bridging the digital divide and promoting social and economic inclusion. This will be achieved by expanding broadband connectivity, promoting smart device ownership, and investing in cybersecurity, with the goal of creating a digital environment that benefits everyone, regardless of their location or socioeconomic status.

Strategic Outcomes:

- **Outcome 4:** Enhanced access to affordable, quality broadband connectivity and infrastructure
- **Outcome 5:** Universal smart device ownership
- **Outcome 6:** Enhanced Cybersecurity infrastructure and systems

Objective 2	**Promote digital inclusion through accessible, resilient, and secure ICT Infrastructure**
Outcome 4	**Enhanced access to affordable, quality broadband connectivity and world-class infrastructure**
Priority 11	**Modernize and expand access to communication and internet infrastructure**
	• Implement broadband network redundancy and competitive market interventions • Expand high speed internet access to public institutions and spaces • Expand high speed internet access to public institutions and spaces • Promote 4G/5G network transitions and improve telecom services • Encourage multiple technology infrastructure providers • Modernize connectivity and local internet infrastructure • Modernize connectivity and local internet infrastructure • Implement spectrum management for service quality (QoS and QoE) • Conduct regulatory impact assessments and review frameworks • Define standards, regulations, and enforce global standard best practices • Integrate modern ICT in infrastructure planning and promote infrastructure sharing • Assess status readiness for migration to 5G and develop a 5G roadmap • Review and amend national regulations for telcos and optimize spectrum utilization • Upgrade of One Mobile and Portable Spectrum Monitoring system and Staff Training • Purchase of cellular mobile coverage planning tool and staff training • Supply, install and commission a Network/Service Operations Center at RURA • Upgrade of one fixed Frequency Spectrum Monitoring Sites

Priority 12	**Develop high-performance computing infrastructure to support advanced IT & geospatial Apps**
	• Assess data infrastructure needs considering future computing capacities needs • Establish a minimum procurement framework and harmonized standards for data processing • Foster establishment of high-performance computing environments • Promote local hosting destinations with competitive incentives • Create a resilient, affordable and attractive local hosting destination
Priority 13	**Advance national satellite communication and space infrastructure for sovereign capabilities**
	• Operationalize satellite broadband agreements and infrastructure • Operationalize Rwanda's teleport and ground station to enable satellite operations • Bridge the digital divide with satellite communication services • Define national regulations and policies for the space sector • Implement space incubation programs to fast track the growth of star ups in space • Develop capacity in satellite Assembly, Integration, and Testing (AIT) and manufacturing • Fast-track the development of space assets for research and national benefits • Support the Rwanda Climate Observatory Project (RCOP) • Advance Rwanda's earth and space science and astronomy sector • Develop national space applications • Establish centralized national coordination of GIS platforms • Centralize satellite imagery procurement and distribution • Fast-track satellite-based PNT applications development
Priority 14	**Improve quality of service and experience through mobile number portability and CNMS[6]**
	• Enforce the broadband policy, including number portability • Prioritize digital device penetration through financing schemes leveraging economies of scale

[6] Converged Network Management System (CNMS)

Outcome 5	**Universal smart device ownership**
Priority 15	**Establish device financing models for smart devices in partnership with the private sector**
	• Promote access and use of smart devices, including refurbished phones
Priority 16	**Advance transition from USSD to application-based services**
	• Enforce the broadband policy, including transition from USSD to applications
Outcome 6	**Enhanced Cybersecurity infrastructure and systems**
Priority 17	**Enhancing Cybersecurity Resilience and strategic investments**
	• Integrate online platforms with PKI system in public and private institutions • Invest in building and upgrading secure data centers • Upgrade network security infrastructure • Formulate and enforce national cybersecurity resilience strategy • Scan, develop and implement cybersecurity policies, standards, and guidelines • Strengthen coordination, collaboration and enforcement of child protection policy • Create enabling environment for cybersecurity investments • Foster and support R&D initiatives at academic institutions • Develop and promote local cybersecurity solutions • Change organizational structures to include cybersecurity • Advocate for agencies to add cybersecurity professionals to their structure • Leverage NCSA for coordinating cybersecurity efforts across different institutions • Integrate government agencies' backend systems
Priority 18	**Upgrade network security infrastructure**
	• Develop cybersecurity compliance scorecard and regularly evaluate cybersecurity maturity
Priority 19	**Establish comprehensive backup and disaster recovery systems**
	• Establish comprehensive backup and disaster recovery systems

3.3.3. Enhancing Digital Service Delivery

This priority is centered on improving access, efficiency, and adoption of digital services provided to Rwandans. This will be achieved by transitioning all applicable government services to digital platforms and capitalizing on data and emerging technologies to create digital value, products and services, that enhance the quality of life for Rwandan residents.

Strategic Outcomes:

- **Outcome 7:** Implementation of Single Digital ID
- **Outcome 8:** Increased adoption of data and emerging technologies to improve operational efficiency
- **Outcome 9:** Foster usage of technology to advance Smart Cities

Objective 3	**Enhance digital service delivery through the increased use of data and emerging tech**
Outcome 7	**Implementation of Single Digital ID**
Priority 20	**Implement the SDID and promote its adoption through high impact use cases**
	• Define and prioritize use cases for SDID • Implement SDID across key use cases • Create awareness and adoption campaigns for SDID
Outcome 8:	**Increased adoption of data for decision making and improved operation efficiency**
Priority 21:	**Strengthen data governance across institutions for decision and policy making**
	• Implement national data policy and strategy • Establish data governance act and data governance framework • Develop guidelines for data culture • Renew the data revolution policy • Champion cross-border data sharing framework, starting with the East African region • Set open data standards • Establish open APIs and data hub • Adopt data maturity framework leveraging international standards
Priority 22:	**Promote standardized data models, data portals and DPI accessible by citizens & businesses**
	• Assess Data regulatory landscape • Assess and Incentivize organizations to improve their data positioning • Develop interoperable government platforms • Encourage government-private sector collaboration • Implement interoperability platform (Government Service Bus) • Map strategic sectors and existing critical systems relevant for DPIs • Develop and implement frameworks for DPI development, deployment, and operation • Develop and deploy DPIs that improve the quality-of-service delivery
Outcome 9:	**Foster usage of emerging technology to advance Smart Cities**
Priority 23:	**Increase Rwanda's capabilities to rapidly test and adopt AI and other emerging technology**
	• Test and implement AI solutions across various sectors to enhance efficiency and innovation • Partner with industry for digital sandbox platform • Create collaborative platform that unites industry, researchers, and technology companies • Partner with existing innovation and start-up funds to include a focus on emerging technologies

	• Implement strategies to attract global companies in emerging technologies • Support the creation and growth of AI companies
Priority 24:	**Implement schemes that prioritize smart cities and efficient services, utilities, & urbanization**
	• Design city-level smart city strategies • Develop smart cities and communities command and control center • Develop urban dynamic map • Build and leverage platforms and citizens engagement portals • Build integrated e-waste strategy and collection centers • Design, build and launch public safety and emergency response management system

3.4. Alignment with National Goals

The SSP aligns with the ICT sector guiding policy framework, SRMP II, which adopted three core pillars: Digital Citizen, Digital Business, and Digital Government. These pillars mirror the NST2's objectives of Economic Transformation, Social Transformation, and Transformational Governance, ensuring the ICT sector's contributions align with NST2 and the broader Vision 2050 goals.

3.4.1. Contribute to social progress through fostering Digital Citizen

The SSP aims to create a digitally inclusive society where all Rwandan citizens can benefit from the opportunities and resources offered by the drive towards digital transformation. Rwandans will benefit directly from initiatives to promote digital literacy, to expand broadband access, to foster inclusion (digital, financial and social), to improve access to data, information and knowledge resources, to increase access to smart devices and ICT equipment, and to enhance ICT skills.

3.4.2. Contribute to economic progress by strengthening Digital Business

The second lens through which the ICT sector will contribute to NST2 is through fostering a vibrant digital economy by creating an enabling environment for businesses to thrive. Interventions that will contribute to this objective include strengthening national broadband infrastructure, promoting affordable and accessible internet access, and providing support for digital entrepreneurship. By investing in digital skills development and fostering a culture of innovation, the SSP aims to empower businesses to leverage emerging technology to improve their efficiency, create jobs, and reach new markets.

3.4.3. Contribution to good governance by delivering Digital Government

The third lens through which ICT will contribute to NST2 is through improving public service delivery through sound governance and oversight of the sector's performance. The SSP will prioritize digitizing government processes, streamlining administrative procedures, and leveraging data and technology to improve transparency, efficiency, and decision making. Both citizens and businesses will benefit from improved access to government services through various interventions.

NST2 Pillar	NST2 Strategic Priorities	ICT Sector Contribution
Economic Transformation (SSP: Digital Business)	Creating Decent Jobs	ICT training and universal digital literacy programs aim to equip the youth and women with the necessary skills for the digital economy, targeting to create 50,000 jobs
	Boosting Exports	Leveraging ICT, data and emerging technology will enhance competitiveness of Rwanda's exports, particularly through digital marketing, adopting use of e-commerce, and export of locally developed software applications
Social Transformation (SSP: Digital Citizen)	Reducing Stunting and Malnutrition	ICT will play a role in developing and deploying innovative tools for better data collection and analysis in health and nutrition programs, supporting targeted interventions
	Improving the Quality of Education	Training 1 million coders and 500,000 youth in advanced ICT skills, alongside increasing access to online learning and promoting creation of local digital content will improve access and quality of education
Transformational Governance (SSP: Digital Governance)	Enhancing Public Service Delivery and Citizen Participation	Digitizing 100% of government services and rolling out a Single Digital ID will enhance service delivery and promote citizen engagement through digital platforms
Cross-cutting, Digital Transformation	Enhancing Productivity through Technology and Digitalization	Moving towards universal digital literacy and adopting emerging technologies across public and private sectors to drive productivity improvements
	Leveraging Data and Research	Strengthening data governance for informed decision-making, fostering capitalization of data and emerging technologies to create digital value, products and services

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3.5. Mainstreaming of CCA

ICT primarily serves as an enabler across all sectors. In developing the SSP, two complimentary strategies were adopted: First, the ICT sector issued guidelines aimed at mainstreaming the integration of technology, digitization, and innovation across different sectors. Second, it focused on incorporating recommendations that address various cross-cutting themes, including capacity building, data management, and social inclusion.

CCA	Description of SSP adoption
Capacity Development	Capacity development is a core part of the ICT sector drive towards strengthening digital literacy and providing access to basic and advanced ICT skills training. The ICT sector will prioritize capacity building coordinated through the Digital Inclusion Council. Training will be provided in basic, intermediate and advanced digital skills. MINICT and its affiliated agencies will collaborate with MINEDUC and MIFOTRA to implement these initiatives. Also, the ICT sector will emphasize on training its staff through upskilling programs.
Disability and Social Inclusion	A significant segment of the Rwandan population, comprising at least 446,000 individuals living with disabilities, majority of which are youth, represents a vital part of the workforce. This underscores a fundamental aspect of fostering an inclusive digital environment for persons with disabilities including addressing their barriers to digital access. Some of the interventions adopted in the SSP are the provision of quality assistive devices, design considerations aimed at enhancing the accessibility of public online services, the creation of innovative technological solutions, ensuring the interoperability of the Disability Management Information System (DMIS), and leveraging its data for strategic planning are crucial steps in.
Data and Statistics	The ICT sector will promote a data culture to empower citizens, businesses, and investors with valuable insights and inform policy and decision-making. With the working premise “Data is an Asset”, the ICT sector has elevated data as one of the 6 ICT sector portfolios with the intention of promoting widespread use of data for policy and decision making and the creation of value products and services leveraging data. A whole suite of interventions has been designed to foster a data culture where citizens, businesses, and investors have access to data and can leverage insight generated to inform decisions.
Gender and Family Promotion	In pursuit of universal digital inclusion through interventions like increasing smartphone ownership and digital literacy, the ICT sector will ensure all citizens including women are not left behind. The ICT sector commits to constantly exploring initiatives to close the gender gap in digital technology utilization. The current SSP includes strategies aimed at increasing smartphone ownership among women, improving digital literacy for female populations, and cultivating an ecosystem that supports inclusive innovation. To measure progress, specific indicators have been established, focusing on the proportion of mobile phone ownership, broadband connectivity, and digital skills, all broken down by gender.

Regional and International Positioning	ICT diplomacy is crucial for Rwanda to consolidate its broadband networks and make internet access more affordable, and also expand its satellite and space-related programs. ICT diplomacy was specifically considered while developing interventions under the infrastructure and cybersecurity portfolios. For instance, consideration for developing hosting capabilities that can attract regional clients by ensuring resilient, affordable and attractive local hosting with competitive incentives.
Research & Development	R&D is the backbone of innovation, providing insights and breakthroughs that lead to new products, services, and processes. Under the innovation portfolio, SSP aims to support development of research capacity, provide a conducive environment, and foster R&D partnerships. The Innovation and Private Sector Portfolio has introduced strategic interventions aimed at bolstering research and development (R&D). A number of interventions have been designed with the objective of increasing research capacity, providing a conducive environment, and fostering partnerships between businesses and universities to stimulate research, innovation and generate valuable intellectual property rights (IPRs), including patents and trademarks. This SSP will track specific metrics to ensure national R&D progress.
Environment and Climate Change, Disaster Management	Although rapid advancement technology is, by its very nature, characterised as disruptive, the global COVID-19 pandemic and Climate Change have challenged the status quo even more and have highlighted the sheer power and importance of ICT. These global challenges underscore the necessity for national ICT systems to be both adaptable and agile, to ensure they can effectively respond to evolving circumstances and meet specific, changing needs. Under the SSP, all funded programs will prioritize projects that promote sustainable practices, reduce environmental footprint, and enhance resilience to climate change-related risks

4. IMPLEMENTATION OF THE SSP

The SSP provides a sector-wide guide to the development and delivery of the ICT commitments across Rwanda. The implementation of the 27 sector priorities and their corresponding interventions requires a structured implementation framework to enable the multiple stakeholders collaborate, implement, monitor, and deliver on the set targets and specified outputs over the next five years (2024/25 – 2028/29).

4.1. Implementation Plan

The implementation plan adheres to the guidelines provided by MINECOFIN, corresponding to the budget framework and the Medium-Term Expenditure Framework (MTEF). The plan translates the high-level sector strategies into actionable and measurable outcomes, providing clarity on indicated targets (deliverables) and responsibilities.

The implementation plan covers all the sector priorities and planned interventions to be carried out by the MINICT and its six affiliated Institutions: RISA (Rwanda Information Society Authority), RSA (Rwanda Space Agency), NCSA (National Cyber Security Agency), RURA (Rwanda Utilities Regulatory Authority), NIDA (National Identification Agency), and NPO (National Post Office). All are collectively tasked to ensure delivery of the sector mandate. The affiliated institutions use the SSP to develop action plans and budgets that reflect sector priorities and interventions. Details on the responsibilities for each intervention and actors are indicated in the implementation plan in the Appendix.

To ensure the SSP remains relevant and responsive to the evolving ICT landscape, a mid-term review will be conducted. This review will assess the progress made towards achieving the SSP objectives, identify any emerging opportunities or challenges, and make recommendations for adjustments to the strategic priorities and interventions as necessary.

4.2. Monitoring and Evaluation Framework

This section of the SSP was developed in accordance with the National Monitoring, Evaluation, and Learning (MEL) Guidelines established by MINECOFIN in 2021. The summary below highlights the key components and targets for tracking and assessing the sector progress over a five-year planning period, 2024/25 to 2028/29. A detailed M&E matrix, which outlines the specific indicators, targets, and methodologies for data collection and analysis, is included in the annex.

The SSP's success is predicated on a collaborative and strategic engagement among three key stakeholders: the government, the business sector, and the community. This partnership is pivotal for creating a conducive environment for digital transformation. By 2028/29, the SSP envisions a society where:

- **Government**: All government services are accessible online, supported by a digitally literate workforce, ensuring secure and integrated electronic transactions.
- **Business**: Digital technologies drive the business sector, with substantial growth in ICT investments and the emergence of new high-tech startups, significantly contributing to the GDP.
- **Society**: Universal access to the internet and digital literacy among citizens, coupled with online learning opportunities, leads to a skilled and digitally engaged workforce.

Data will be collected annually through established data collection mechanisms, surveys, and direct reporting from relevant agencies. Data analysis will be conducted to assess progress towards the targets, identify challenges, and inform policy adjustments as necessary. The M&E framework will be reviewed bi-annually to assess progress and make necessary adjustments to strategies and targets to ensure the objectives are met by 2029.

Outcome Key Performance Indicators (KPIs):

1. Digital Literacy and Skills Development

Indicators:	Targets
• Percentage of citizens above 15 years with basic digital literacy skills	100% have basic digital literacy skills
• Number of individuals trained in advanced ICT skills	500,000 trained in advanced ICT skills
• Number of people trained in basic coding skills	1,000,000 trained in Basic coding skills
Responsible Entity: MINICT/RISA **Source**: NISR reports, RISA reports	

2. Innovation Ecosystem for Private Sector-led Growth

Indicators:	Targets
• Gross expenditure on R&D as % of GDP • Number of jobs created **Responsible Entity**: NCST, MINICT, RISA **Source**: NCST R&D Survey, ICT sector reports	1.0% GERD 50,000 jobs created

3. Broadband Connectivity and Infrastructure

Indicators:	Targets
• % of individuals using the Internet • Geographical coverage by at least a 4G network • Mobile broadband subscriptions per 100 inhabitants **Responsible Entity**: MINICT **Source**: NISR/EICV, RURA reports	47% households have internet 100% 4G Coverage 85% mobile subscriptions

4. Universal Device and Smartphone Ownership

Indicators:	Targets
• % of households owning a smartphone **Responsible Entity**: MINICT **Source**: NISR reports	85% of population own a smartphone

5. Cybersecurity Infrastructure and Systems

Indicators:	Targets
• % of critical public institutions complying with cybersecurity standards **Responsible Entity**: MINICT, RISA/NCSA **Source**: MINICT reports	95% compliance

6. Data for Decisions and Emerging Technology

Indicators:

- Number of public institutions at data maturity Level 5
- Number of new applications using emerging technologies

Responsible Entity: MINICT, RISA
Source: NISR/big data and data revolution, RISA reports

Targets
10 institutions at level 5 data maturity
50 applications using emerging technologies

7. Digital Service Delivery

Indicators:

- % of government services fully digitized
- Number of digital public infrastructure (DPIs) available to citizens

Responsible Entity: MINICT
Source: IREMBO, RISA Reports

Targets
100% Government services digitized
10 digital public infrastructure available to citizens

8. Implement Single Digital ID

Indicators:

- % of citizens with a Single Digital Identification

Responsible Entity: MINICT
Source: NISR reports

Targets
100% of population own SDID

9. Foster Smart Cities

Indicators:

- Number of smart city solutions deployed

Responsible Entity: MINICT, RISA / COK / Secondary Cities
Source: MINICT reports

Targets
10 solutions deployed

5. COST AND FINANCING

The overall budget to implement the ICT Sector Strategic Plan over the next five years (2024/25 to 2028/29) is **2,024,896 million** (approximately 2 trillion) Rwandan Francs. The budget is allocated across three (3) sector priority areas (SPAs) supporting 27 strategic interventions within the six sector portfolios. The annual allocation is 14.82% (Year 1), 24.22% (Year 2), 24.08% (Year 3), 22.07% (Year 4), and 14.74% (Year 5). Two of the 9 targeted Outcomes, training (61%) and infrastructure (20%) make up 80% of the total budget with the other 7 making up the remaining 18%.

5.1. Details of Budget allocation across the Priority Areas

- **SPA - 1: Foster Digital Transformation Across Key Economic Sectors**

This priority area has the largest budget allocation amounting to 1,427,908 million Francs accounting for approximately 71% of the SSP budget. This allocation is directed towards 10 strategic interventions that aim to strengthen digital literacy, foster innovation, and ensure the complete digitalization of government services. A significant portion (86%) is earmarked for training initiatives including provision for basic coding skills for 1 million citizens and advanced ICT skills for 500,000 citizens. The remaining 14% is allocated towards enhancing digital service delivery (10%) and strengthening the innovation ecosystem (4%).

- **SPA - 2: Promote Digital Inclusion Through Accessible, Resilient, and Secure ICT Infrastructure**

A budget of 455,194 million Francs, 22% of the overall budget, has been allocated to delivering the 6 strategic interventions that are designed to ensure that all citizens have access to affordable, reliable, and secure digital services, while also securing and modernizing Rwanda's communication and internet infrastructure. Of this amount, a significant portion, 91%, is budgeted for enhancing broadband connectivity and infrastructure modernization, about 4% is allocated to facilitating wider access to digital tools through initiatives towards achieving universal smart device ownership. The remaining 5% is for strengthening cybersecurity measures and safeguarding the digital ecosystem.

- **SPA - 3: Enhance Digital Service Delivery Through Increased Use of Data and Emerging Technology**

This priority area has 5 strategic interventions centered on harnessing data and emerging technologies to transform public service delivery. It has been allocated a budget of 141,794 million Francs, equivalent to 7% of the SSP budget. A major focus is the implementation of the Single Digital ID to enhance the efficiency, accessibility, and responsiveness of public services, allocated 74% of the SPA-3 budget. The remaining budget is split between initiatives to promote data usage for decision-making, developing products, solutions, and services, (6%) and the adoption of emerging technologies for smart cities (20%).

5.2. Financing Strategy

A mixture of funding sources will be used, including the Government budget, development partner support and the private sector. Even so, funding is limited, and projects must be prioritized, with the most efficient option chosen.

- A significant portion of the SSP funding will come from the national government budget allocations. This will cover key public sector-driven initiatives and infrastructural developments.

- The private sector investment and financing will play a key role especially in the areas of technology infrastructure development and device ownership. In specific initiatives, public-private partnerships (PPPs) will be actively sought to leverage private investment.

- The ICT sector will dedicate efforts to mobilizing funds through collaboration with development partners and international funding organizations, especially towards implementing initiatives that offer medium to long-term socio-economic benefits.

- The ICT sector will actively explore innovative financing options that provide alternative sources of funding, especially for innovative and high-impact projects.

The budget allocation is reflective of the expectations of the ICT sector's impact on the economy and society. As such, it is critical that the ICT periodically assesses all expenditures to ascertain their progress, evaluate their effectiveness, and ensure the investments generate the highest possible return.

The SSP acknowledges the potential for financial uncertainties. In the event of persistent financing gaps, projects will be proactively reprioritized and necessary adjustments made to ensure resources are allocated to areas with the highest impact and necessity.

Table 6. Five Year Projected Cost to implement the interventions

PRIORITY AREA, INTERVENTIONS	BUDGET (in Millions of Rwandan Francs)					
	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	TOTAL
SPA-1: Foster digital transformation across key economic sectors	**153,974**	**314,255**	**382,962**	**357,173**	**219,544**	**1,427,908**
Outcome 1: Increased digital literacy and digital skills development for a globally competitive workforce	120,105	276,417	344,714	318,516	180,368	1,240,120
Train 1.5 million citizens in basic coding and advanced ICT skills	68,760	140,112	208,364	208,416	71,468	697,120
Ensure universal basic digital literacy	51,275	136,185	136,180	109,980	108,780	542,400
Create 50,000 digital jobs for local and global market competitiveness	20	20	20	20	20	100
Strengthen co-ordination and impact of digital literacy and skills investments through DIC	50	100	150	100	100	500
Outcome 2: Strengthened innovation ecosystem for private sector-led growth	6,505	10,514	10,964	11,414	11,973	51,370
Establish an innovation authority to drive technological progress across key economic sectors	2,501	3,482	3,809	4,136	4,572	18,500
Expand and strengthen funding accessibility to support innovative startups	2,000	3,500	3,500	3,500	3,500	16,000
Boost the innovation ecosystem and invest R&D activities	1,004	2,532	2,655	2,778	2,901	11,870
Enhance Rwanda's competitiveness and access to regional and global market	1,000	1,000	1,000	1,000	1,000	5,000
Outcome 3: Enhanced digital service delivery	27,365	27,324	27,284	27,243	27,203	136,418
Completing end-to-end digitalization of government services at 100%	27,162	27,122	27,081	27,041	27,000	135,405
Incentivize private sector to provide their services online	203	203	203	203	203	1,013
SPA-2: Promote Digital Inclusion through accessible, resilient, and secure ICT Infrastructure	**87,809**	**138,302**	**88,115**	**73,018**	**66,708**	**455,194**
Outcome 4: Enhanced access to affordable, quality broadband connectivity and world-class infrastructure	82,725	123,520	76,474	64,727	63,558	412,245
Modernize and expand access to communication and internet infrastructure	42,091	80,244	48,045	43,007	42,985	256,372
Develop high-performance computing infrastructure to support advanced IT and geospatial apps	5,362	6,725	6,725	0	0	18,812

Advance national satellite communication and space infrastructure for sovereign capabilities	22,403	27,816	20,462	20,478	20,573	111,732
Improve quality of service and experience through mobile number portability and CNMS	12,868	8,736	1,242	1,242	0	25,329
Outcome 5: Universal smart device ownership	1,933	7,082	5,791	5,141	0	19,948
Establish device financing models for smart devices in partnership with the private sector	1,933	7,082	5,791	5,141	0	19,948
Outcome 6: Enhanced Cybersecurity infrastructure and systems	3,150	7,700	5,850	3,150	3,150	23,001
Integrate online platforms with PKI system in public and private institutions	3,150	7,700	5,850	3,150	3,150	23,001
SPA-3: Enhance digital service delivery through the increased use of data and emerging technology	**58,398**	**37,918**	**16,518**	**16,795**	**12,165**	**141,794**
Outcome 7: Implementation of Single Digital ID	46,854	26,515	9,670	10,730	10,730	104,500
Implement the SDID and promote its adoption through high impact use cases	46,854	26,515	9,670	10,730	10,730	104,500
Outcome 8: Increased adoption of data for decision making and improved operation efficiency	2,257	2,640	1,852	1,686	330	8,765
Promote standardized data models, data portals and DPI accessible by citizens and businesses	1,221	2,018	1,478	1,464	330	6,510
Strengthen data governance across institutions for decision and policy making	1,036	623	375	222	0	2,255
Outcome 9: Foster usage of emerging technology to advance Smart Cities	9,287	8,762	4,996	4,380	1,105	28,530
Increase Rwanda's capabilities to rapidly test and adopt AI and other emerging technology solutions	2,329	2,337	2,333	2,333	0	9,330
Implement schemes that prioritize smart cities and efficient services, utilities, and sustainable urbanization	6,958	6,426	2,663	2,047	1,105	19,200
Grand Total	**300,181**	**490,475**	**487,595**	**446,986**	**298,417**	**2,024,896**

APPENDIX

I. SSP Theory of Change

4.8. Digital transformation [Sector: ICT]

Goal 1: Accelerate the growth of digital economy through universal digital inclusion, greater adoption of digital services, and increased productivity

Priority 1: Foster digital transformation across key economic sectors

Outcome 1: Increased digital literacy and digital skills development for a globally competitive workforce

- Train 1.5 million citizens in basic coding and advanced ICT skills
- Ensure universal basic digital literacy
- Creating 50,000 digital jobs for local and global market competitiveness
- Strengthening co-ordination and impact of digital literacy and skills investments (through the Digital Inclusion Council)

Outcome 2: Strengthened innovation ecosystem for private sector-led growth

- Establish an innovation authority to drive technological progress across key economic sectors
- Expand and strengthen funding accessibility to support innovative startups
- Boost the innovation ecosystem and invest R&D activities
- Enhance Rwanda's competitiveness and access to regional and global market (for innovative products, services, and technologies)

Outcome 3: Enhanced digital service delivery

- Completing end-to-end digitalization of government services at 100%
- Incentivize private sector to provide their services online

Priority 2: Promote Digital Inclusion through accessible, resilient, and secure ICT Infrastructure

Outcome 4: Enhanced access to affordable, quality broadband connectivity and world-class infrastructure

- Modernize and expand access to communication and internet infrastructure
- Develop high-performance computing infrastructure (to support advanced IT and geospatial applications like big data and AI)
- Advance national satellite communication and space infrastructure for sovereign capabilities
- Improve quality of service and experience through mobile number portability and Converged Network Management System (CNMS)

Outcome 5: Universal smart device ownership

- Establish device financing models for smart devices in partnership with the private sector
- Advance transition from USSD to application-based services

Outcome 6: Enhanced Cybersecurity infrastructure and systems

- Integrate online platforms with PKI system in public and private institutions
- Upgrade network security infrastructure
- Establish comprehensive backup and disaster recovery systems

Priority 3: Enhance digital service delivery through the increased use of data and emerging technology

Outcome 7: Implementation of Single Digital ID

- Integrate government agencies' backend systems
- Implement the SDID and promote its adoption through high impact use cases

Outcome 8: Increased adoption of data and emerging technologies to improve operational efficiency

- Strengthen data governance across institutions for decision and policy making
- Promote standardized data models, data portals and Digital Public Infrastructure accessible by citizens and businesses

Outcome 9: Foster usage of technology to advance Smart Cities

- Increase Rwanda's capabilities to rapidly test and adopt AI and other emerging technology solutions across various sectors
- Implement schemes that prioritize smart cities and efficient services, utilities, and sustainable urbanization

II. SSP Implementation Plan

INDICATOR	UNITS	BASELINE	TARGET	KEY INTERVENTION	ANNUAL TARGETS (2024/25 – 2028/29) 24/25	25/26	26/27	27/28	28/29	RESP. INSTITUTION
GOAL: Accelerate the growth of digital economy through universal digital inclusion, greater adoption of digital services, and increased productivity										
Outcome 1: Increased digital literacy and digital skills development for a globally competitive workforce										
Indicator: % of citizens with basic digital skills (15 years and above)										
	%	53%	100%	**Achieve basic digital literacy among the population aged 15 and above** · Implement the National Digital Skills Framework (NDSF) · Digital Ambassador Program (DAP 2.0)	60%	70%	90%	90%	100%	MINICT, RISA
Indicator: Number of individuals trained in advanced ICT skills										
	Nmbr	6588	0.5m	**Train 500,000 professionals in advanced ICT skills** · Implement Comprehensive Digital Literacy and Certification Programs · Cultivate partnership with e-learning platform providers	50k	100k	125k	125k	100k	MINICT, RISA
Indicator: Number of People trained in basic coding skills										
	Nmbr	1656	1m	**Train professionals in basic coding skills** · Implement One million coders Project	50k	200k	200k	250k	300k	MINICT, RISA
Outcome 2: Strengthened innovation ecosystem for private sector-led growth										
Indicator: Gross expenditure on R&D as % of GDP										
	%	0.79%	1%	**Achieve spending on R&D as % of GDP** · Create R&D labs and sandboxes for critical industries · Facilitate R&D partnerships (Rwandan and international firms)	0.80%	0.83%	0.85%	0.09%	1.00%	NCST

Indicator: Number of innovative firms supported by ESOs									
Nmbr	937	1,500	**Number of innovative firms Supported through ESOs** · Develop a comprehensive funding pool for startups and innovation projects · Implement a guarantee funding mechanism for early-stage investments	200	300	300	300	400	MINICT, RISA
Indicator: Number of patents applied									
Nmbr	9	500	**Achieve the submission of patent applications** · Set up IP clinics for startups and innovators	70	80	70	80	100	MINICT, RDB, NCST
Indicator: Number of trademarks applied									
Nmbr	777	6,600	**Achieve the submission of trademark applications** · Set up IP clinics for startups and innovators	800	1,000	1,500	1,500	1,800	MINICT, RDB, NCST
Indicator: Number of publications									
Nmbr	1060	6,500	**Publish scientific citable documents in recognized and indexed databases** · Strengthen data R&D capabilities across institutions	1,300	1,400	1,500	1,673	1,600	MINICT, MINEDUC, NCST
Indicator: Number of jobs created									
Nmbr	3181	50,000	**Create 50,000 jobs through strategic initiatives** · Develop a comprehensive funding pool for startups and proven innovations · Promote Rwanda as a hub for Global Business Services (GBS) focusing on BPO/ITO · Build partnerships with strategic BPO outsourcing countries for job linkages	10,000	10,000	10,000	10,000	10,000	MINICT, RISA, RDB
Indicator: Amount of loans and grants to tech startups									
Amt (USD)	30M	50m	**Disburse $50 million in loans and grants to startup firms through targeted funding** · Develop a comprehensive funding pool for startups and proven innovations	$5	$5	$10	$10	$20	MINICT, RISA, RDB, BNR

Outcome 3: Enhanced digital service delivery									
Indicator: % of Government services fully digitized									
%	11%	100%	Government services fully digitized · Complete end-to-end digitalization of government systems · Integrate government agencies' backend systems	15%	30%	50%	75%	100%	MINICT, RISA, Irembo
Indicator: % of critical e- services that meet accessibility / inclusivity standards									
%	0%	100%	Critical e- services that meet accessibility/inclusivity standards · Develop guideline for accessibility/inclusivity · Re-engineer critical e-services to meet accessibility/inclusivity standards		25%	50%	100%	100%	MINICT, RISA, NCPD
Indicator: Number of digital public infrastructure (DPIs) available to citizens									
Nmbr	3	10	.Digital public infrastructure (DPIs) are available to citizens · Develop and implement robust legal, regulatory, and policy frameworks of DPI · Develop and deploy DPIs that improve the quality-of-service delivery	2	2	3	3		RISA
Outcome 4: Enhanced access to affordable, quality broadband connectivity and infrastructure									
Indicator: Number of Fixed internet subscript									
Nmbr	62,175	300,000	Achieve an increase of subscribers on fixed internet services · Implement broadband network redundancy and competitive market interventions · Expand high speed internet access to public institutions and spaces · Modernize connectivity and local internet infrastructure	60,000	60,000	60,000	60,000	60,000	MINICT, RISA, RURA
Indicator: Mobile broadband subscriptions / 100 inhabitants									
%	47%	80%	Increase Mobile broadband subscriptions per 100 inhabitants · Implement broadband network redundancy and competitive market interventions · Expand high-speed internet access to public institutions and spaces · Promote 4G/5G network transitions and improve telecom services	54%	65%	70%	75%	85%	MINICT, RISA, RURA

Indicator: Proportion of Geographical coverage covered by at least a 4G mobile network										
%	75%	100%	Achieve geographical coverage with at least a 4G mobile network · Supply, install and commission a Network/Service Operations Center at RURA · Encourage multiple technology infrastructure providers	80%	85%	90%	95%	100%	MINICT, RISA, RURA
Indicator: Proportion of schools with internet access										
%	60%	100%	Achieve of schools with internet access · Expand high speed internet access to public institutions and spaces · Modernize connectivity and local internet infrastructure	68%	76%	84%	90%	100%	MINICT, RISA, MINEDUC
Indicator: Available satellite broadband capacity for GoR institutions										
Gbps	0	10	Availability of satellite broadband capacity for GoR institutions · Operationalize satellite broadband agreements and infrastructure · Operationalize national teleport and ground station to enable Satellite operations · Bridge the digital divide with satellite communication services	10	10	10	10	10	RSA
Indicator: Number of users accessing the Teleport and Ground Station services										
Nmbr	0	6	Users accessing the Teleport and Ground Station services · Operationalize national teleport and ground station to enable Satellite operations	0	1	1	2	2	RSA
Indicator: Number of remote sensing applications in critical sectors										
Nmbr	0	10	Develop remote sensing applications in critical sectors · Develop national space applications utilizing remote sensing and GIS · Establish centralized national coordination of GIS platforms	2	2	3	3	2	RSA

Outcome 5: Universal smart device ownership										
Indicator: Proportion of households owning a mobile phone										
	%	78%	100%	Achieve 100% of households owning a mobile phone · Promote access and use of smart devices, including refurbished phones · Prioritize digital device penetration through financing schemes	80%	85%	90%	95%	100%	MINICT, RISA, RURA
Indicator: % of households owning smartphone										
	%	36.2%	85%	Increase smartphone ownership of the eligible population · Promote access and use of smart devices, including refurbished phones · Prioritize digital device penetration through financing schemes	45%	55%	65%	75%	85%	MINICT, RISA, RURA
Outcome 6: Enhanced Cybersecurity infrastructure and systems										
Indicator: % of critical systems integrated into PKI										
	%	15	100%	**Critical systems integrated into PKI** · Integrate online platforms with PKI system in public and private institutions · Upgrade network security infrastructure	10%	20%	40%	60%	100%	NCSA, RISA
Indicator: % of critical public institutions complying with cybersecurity standards										
	%	0%	95%	**Critical public institutions complying with cybersecurity standards** · Formulate and enforce national cybersecurity resilience strategy · Scan, develop and implement cybersecurity policies, standards, and guidelines · Develop cybersecurity compliance scorecard and regularly evaluate cybersecurity maturity levels	5%	30%	50%	80%	95%	NCSA

Outcome 7: Implementation of Single Digital ID										
Indicator: Percentage of citizens with a single digital Identification										
	%	0%	100%	**Citizens owning a single digital identification** · Implement Single Digital ID (SDID) Project		25%	50%	100%	100%	MINICT, NIDA, RISA
Outcome 8: Increased adoption of data and emerging technologies to improve operational efficiency										
Indicator: Number of public institutions complying with data maturity Level 5										
	Nmbr	0	10	**Attain Level 5 data maturity in key sector** Establish the right policies, regulation and standards for a thriving data economy Adopt data maturity framework leveraging international standards Conduct regular assessments and incentivize organizations to improve their data positioning	0	1	2	3	4	MINICT, RISA, NISR
Indicator: Number of new applications using emerging Technologies										
	Nmbr	8	50	**Develop new applications utilizing emerging technologies** Implement strategies to attract global companies in emerging technologies Create collaborative platform that unites industry, researchers, and technology companies	5	10	10	10	15	MINICT, RISA, C4IR
Outcome 9: Foster usage of emerging technology to advance Smart Cities										
Indicator: Number of Smart city solutions deployed										
	Nmbr	2	10	Develop pipeline projects to address smart city challenges for livability of cities	**2**	2	2	2	2	MINICT, RISA, COK, SECONDARY CITIES

III. Monitoring and Evaluation Matrix

INDICATOR	UNITS	BASELINE	ANNUAL TARGETS (2024/25 – 2028/29)					OVERALL TARGET	RESPONSIBILITY FOR REPORTING	MEANS OF VERIFICATION, DATA SOURCES
			24/25	25/26	26/27	27/28	28/29			
Outcome 1: Increased digital literacy and digital skills development for a globally competitive workforce										
Percentage of citizens with basic digital literacy skills (15 years above)										
	%	53%	60%	70%	80%	90%	100%	100%	MINICT, RISA	NISR
Number of individuals trained in advanced ICT skills										
	Number	6,588	50,000	100,000	125,000	125,000	100,000	500,000	RISA	RISA
Number of People trained in basic coding skills										
	Number	1,656	50,000	200,000	200,000	250,000	300,000	1,000,000	MINICT, RISA	MINICT, RISA
Outcome 2: Strengthened innovation ecosystem for private sector-led growth										
Gross expenditure on R&D as % of GDP										
	%	0.79%	0.80%	0.83%	0.85%	0.90%	1%	1%	NCST	NCST
Contribution of ICT Sector to GDP										
	%	2	2.5%	3%	3.5%	4%	5%	5%	MINICT	NISR, NATIONAL ACCOUNT
Number of innovative firms supported by Entrepreneurial Support Organizations										
	Number	937	200	300	300	300	400	1500	RISA, MINICT	RISA, MINICT
Number of patents applied										
	Number	9	70	80	70	80	100	400	MINICT	NCST, RDB
Number of trademarks applied										
	Number	777	800	1000	1500	1500	1800	6600	MINICT	NCST, RDB
Number of publications as scientific citable documents from recognized and indexed databases										
	Number	1,060	1,300	1,400	1,500	1,673	1,600	7473	MINICT	NCST, RBD
Number of jobs created										
	Number	3,181	10,000	10,000	10,000	10,000	10,000	50000	MINICT, RISA	RDB, DPs, LFS
Amount of loans and grants to tech startups										
	Amount (USD)	30M	5m	5 m	10m	10m	20m	50M	MINICT	RDB, NCST

Outcome 3: Enhanced access to affordable, quality broadband connectivity and world-class infrastructure									
Number of Fixed internet subscriptions									
	Number	62,175	60,000	60,000	60,000	60,000	60,000	300000	MINICT	RURA reports
Mobile broadband subscriptions per 100 inhabitants									
	%	41.20%	52%	65%	70%	75%	85%	85%	MINICT	RURA reports
Proportion of Geographical coverage covered by at least a 4G mobile network									
	%	75%	80%	85%	90%	95%	100%	100%	MINICT, RISA	RURA reports
Percentage of Households using the Internet									
	%	22.8%	30%	35%	40%	45%	50%	50%	MINICT	NISR/EICV
Proportion of schools with internet access									
	%	60%	68%	76%	84%	92%	100%	100%	MINICT, RISA	MINEDUC/Statistical Yearbook
Available satellite broadband capacity for GoR institutions									
	Gbps	0	10	10	10	10	10	10Gbps	RSA	RURA
Number of users accessing the Teleport and Ground Station services									
	Number	0	0	1	1	2	2	6	RSA	RSA
Number of remote sensing applications in critical sectors									
	Number	0	0	2	3	3	2	10	RSA	RSA
Outcome 4: Universal smart device ownership									
The proportion of households owning a mobile phone									
	%	78%	80%	85%	90%	95%	100%	100%	MINICT, RISA	NISR,EICV,LFS
% of households owning a smartphone									
	%	20.8%	45%	55%	65%	75%	85%	85%	MINICT	,EICV,LFS
Outcome 5: Enhanced Cybersecurity infrastructure and systems									
Percentage of critical systems integrated into PKI									
	%	15	10%	20%	40%	60%	100%	100%	RISA	RISA Reports
Percentage of critical public institutions complying with cybersecurity standards									
	%	0%	5%	30%	50%	80%	95%	95%	MINICT, RISA, NCSA	MINICT Reports

Outcome 6: Increased adoption of data and emerging technologies to improve operational efficiency									
Number of public institutions complying with data maturity Level 5									
	Number	0	0	1	2	3	4	10	MINICT, RISA	NISR
Number of new applications using emerging Technologies									
	Number	8	5	10	10	10	15	50	MINICT, RISA	RISA reports
Outcome 7: Enhanced digital service delivery									
Percentage of Government services fully digitized (end to end)									
	Percentage	11%	15%	30%	50%	75%	100%			
Percentage of critical e-services that meet accessibility/inclusivity standards									
	Percentage	0	0%	20%	50%	70%	100%	100%	MINICT, RISA	RISA Reports
Number of digital public infrastructure (DPIs) available to citizens									
	Number	3	0	2	2	3	3	10	MINICT, RISA	RISA Reports
Outcome 8: Implementation of Single Digital ID									
Percentage of citizens owning a single digital identification									
	Percentage	0	0	25%	50%	100%	100%	100%	MINICT, NIDA	NIDA Reports
Number of SDID-enabled use cases in key sectors									
	Number	0	2	2	2	2	8	8	MINICT, NIDA	NIDA Reports
Outcome 9: Foster usage of emerging technology to advance Smart Cities									
Number of Smart city solutions deployed under the Smart city Hub									
	Number	2	2	2	2	2	2	10	MINICT, RISA, COK	RISA, COK REPORTS