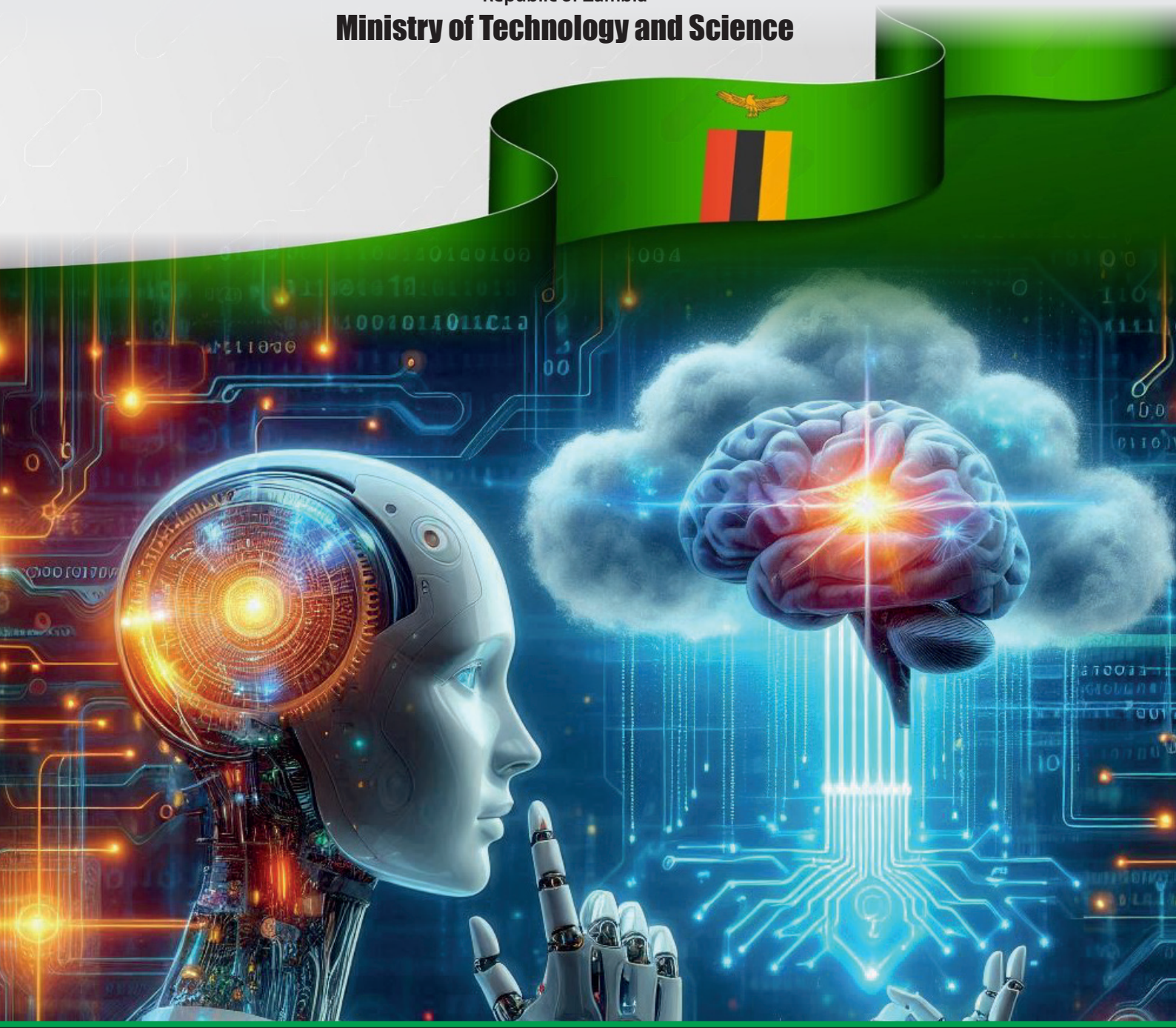
Republic of Zambia

Ministry of Technology and Science



NATIONAL ARTIFICIAL INTELLIGENCE STRATEGY

2024-2026

Contents

Glossary of Terms

Artificial Intelligence (AI):
A branch of computer science focusing on creating systems that can perform tasks requiring human intelligence, such as learning, reasoning, problem-solving, perception (listening and seeing) and understanding language.

National AI Strategy:
Formal plan to develop, regulate, and promote AI technologies for national development, economic growth, and social advancement.

Machine Learning:
A subset of AI where algorithms improve automatically through experience by analysing data and identifying patterns without being explicitly programmed.

Digital Infrastructure:
The foundational technologies that enable the functioning and integration of digital technologies, such as broadband connectivity, cloud computing, and data centres.

AI Ecosystem:
The collective framework of government, academic institutions, private sector, civil society, and international partners working together to develop, apply, and regulate AI technologies.

Ethics of AI:
Principles and standards ensuring that AI systems are developed and deployed in ways that respect human rights, promote fairness, and prevent biases or harm.

AI for Development:
AI applications specifically aimed at solving challenges and driving progress in low- and middle-income countries, such as improving healthcare, education, agriculture, and governance.

National AI Council:
An advisory body responsible for giving strategic advice on AI policy development, regulation, and strategic implementation at the national level.

Data Privacy:
Protecting personal and sensitive information from unauthorized access or misuse, ensuring compliance with legal frameworks such as data protection laws.

High-Performance Computing (HPC):
Advanced computing capabilities enabling large-scale processing and analysis, essential for running complex AI models and algorithms.

Centre of Excellence (CoE):
Dedicated hub or institution focusing on advanced research, development, and innovation in AI and related technologies.

Digital Inclusion:
Efforts aimed at ensuring all individuals and communities, especially marginalized ones, have access to and can effectively use digital technologies.

Data Sovereignty:
The concept that data is subject to the laws and governance structures of the country where it is collected and stored.

Public-Private Partnership (PPP):
Collaborations between government and private sector entities to achieve large-scale initiatives, such as deploying AI technologies in public services or infrastructure.

AI Literacy:
Understanding and competence in AI, enabling citizens and professionals to effectively engage with and use AI technologies.

Regulatory Sandbox:
A controlled environment where companies can test innovative products, services, or technologies under regulatory supervision, but with less strict legal compliance for the trial period.

Cloud Computing:
The delivery of computing services such as storage, processing, and analytics over the internet, enabling scalable and flexible resources for businesses and AI applications delivered as a service.

AI Model:
An algorithm or system trained using data to perform specific tasks, such as classification, prediction, or decision-making.

Broadband Connectivity:
High-speed internet access essential for digital and AI-enabled services to function across urban and rural areas.

Stakeholder Engagement:
Involving all relevant parties—government, private sector, civil society, and academia—in the decision-making, planning, and implementation of AI initiatives.

Open Data Initiatives:
Policies and practices aimed at making data freely available and accessible to the public, researchers, and businesses to promote transparency and innovation.

Human Capital Development:
Investing in education and training to build the skills and competencies required for a workforce capable of driving innovation in AI and other emerging technologies.

Ethical AI:
AI systems developed and deployed to prioritize fairness, accountability, and transparency, ensuring they do not reinforce bias or cause harm.

Sustainable Development:
Leveraging AI to address environmental and societal challenges while promoting economic growth that benefits current and future generations.

AI Pilot Projects:
Small-scale, experimental implementations of AI technologies in specific sectors (e.g., healthcare, agriculture) to test their effectiveness and scalability before full adoption.

Monitoring and Evaluation (M&E):
A structured framework for assessing the implementation, progress, and impact of a strategy or project to ensure objectives are met and adjustments are made where necessary.

International Benchmarking:
Comparing a country's AI development and policies to those of other nations to identify best practices and align with global standards.

This glossary should provide a clearer understanding of the key concepts within the National AI Strategy document.

Abbreviations and Acronyms

Below is a list of abbreviations and acronyms used throughout the National AI Strategy document:

- **AI**: Artificial Intelligence
- **AU**: African Union
- **CoE**: Centre of Excellence
- **CIDRZ**: Centre for Infectious Disease Research in Zambia
- **FISP**: Farmer Input Support Programme
- **GDP**: Gross Domestic Product
- **HPC**: High-Performance Computing
- **ICT**: Information and Communication Technology
- **INRIS**: Integrated National Registration Information System (Digital Identity System)
- **IP**: Intellectual Property
- **KPI**: Key Performance Indicator
- **MoTS**: Ministry of Technology and Science
- **M&E**: Monitoring and Evaluation
- **NGO**: Non-Governmental Organization
- **OECD**: Organisation for Economic Co-operation and Development
- **PPP**: Public-Private Partnership
- **R&D**: Research and Development
- **SDGs**: Sustainable Development Goals
- **SME**: Small and Medium Enterprise
- **STEM**: Science, Technology, Engineering, and Mathematics
- **TB**: Tuberculosis
- **TWGs**: Technical Working Groups
- **UNESCO**: United Nations Educational, Scientific and Cultural Organization
- **ZICTA**: Zambia Information and Communications Technology Authority
- **SZI**: Smart Zambia Institute
- **BCG**: Boston Consulting Group

This list of abbreviations and acronyms helps ensure clarity and consistency throughout the strategy document.

Foreword

The pace of innovation is accelerating at an unprecedented rate, driven by rapid technological advancements, vast access to data, and exponential growth in computing power. In this new era, artificial intelligence (AI) is becoming extensive across all sectors of society, enabling us to drive progress, enhance equity, and build a sustainable future.

The impact of AI is comparable to that of the steam engine, electricity, and the internet during past industrial revolutions. It is estimated that AI will create over **$10 trillion** in economic value over the next decade, transforming h w we deliver affordable healthcare, educate our society, manage scarce resources, and ensure a sustainable world. However, studies indicate that these gains may not be equitably distributed, with the developing world at risk of being left behind.

Through this **National AI Strategy and Vision**, Zambia seeks to lay the foundations to enable our country and region to take full advantage of this new revolution. Our aim is to ensure that the benefits brought about by this next wave of innovation reach all segments of Zambia's society. We also aspire to present the global community with a platform to apply and learn how this technology can accelerate progress in low- and middle-income countries.

In developing this strategy, we have set an explicit goal to position Zambia as a leading nation that leverages a high-impact national AI program to drive national development. **Our vision is for Zambia to become the premier destination for 'AI for Emerging Economies' ventures— through closer engagement with private sector and global research networks, Zambia will become a place where innovators come to build their AI-driven businesses.** We are focusing on creating an environment that encourages innovation while effectively managing risks as we pursue this transformation.

Some actions in this respect are already underway. We have launched the **National Digital Inclusion Program**, geared towards developing the country's **digital infrastructure** as a foundational enabler for growth. We are investing in connecting the region to create a large digital market in Southern Africa. We plan to integrate AI into our education and healthcare reform programs, in Agriculture to improve yield and market access, in mitigating the impacts of climate and managing our forestry resources, in our mining sector to discover rare earth minerals critical for the global energy transition as well as improve public service delivery. These initiatives will enhance service delivery to Zambia's citizens and businesses, improve economic and social progress, and promote excellence within public administration.

Zambia has already experienced the benefits of AI in the private sector. An AI-enabled startup recently discovered the largest copper deposit in over 100 years, underscoring the value of government creating an environment to enable innovation and private sector bring the best technology and capital to build a unique proposition in Zambia and make progress.

We are mindful of the ethical challenges that AI presents and are committed to establishing robust guidelines for ethical AI development and use. We will balance innovation with the establishment of guardrails for the safe use of AI. This will be done transparently and in consultation with the public and key stakeholders to build common understanding, awareness, and trust along the way.

We expect this strategy to catalyse research, development, and innovation across the country in partnership with the international AI ecosystem. We will set up regulatory and data sandboxes for AI to help companies test innovative concepts and solutions in a contained environment with proportionate safeguards. We aim to build a vibrant startup community and encourage its members to collaborate with local businesses looking to integrate AI into their operations.

Together, we can harness the power of AI to unlock unprecedented opportunities for our nation. **We call upon educators, entrepreneurs, innovators, and all citizens to join us in shaping an AI-powered future for Zambia.**

We are committed to pursuing the Zambia AI Strategy and Vision in partnership with our country's citizens. Conscious that this is a new area, we will nurture dialogue to ensure that stakeholders can ask questions, voice concerns, and make recommendations as we advance this strategy. In instituting strong governance, we will establish a **National AI Taskforce** and a **Centre of Excellence** that will host various industry AI working groups as well as innovation labs.

In conclusion, I extend my heartfelt gratitude to **His Excellency Hakainde Hichilema** for placing technology at the heart of our national reform agenda, to my colleagues in the **Cabinet** for their unwavering support, and to all **stakeholders and individuals** who have contributed to the development of this strategy. I eagerly anticipate working together towards our shared vision.

Hon Felix Mutati (MP)
Minister of Technology and Science,
Government of Zambia

Acknowledgement

The National Artificial Intelligence Strategy development has been led by the Ministry of Technology and Science. The Ministry coordinated multiple stakeholders across other government line ministries, government agencies, private sector, academia and cooperating partners who together discussed how AI can be used for development in our nation, especially in key socio-economic sectors such as agriculture, mining, health, education, finance and the public sector.

The stakeholders brought to the fore critical considerations which have guided the drafting of this strategy, including continuous learning to build human capital capable of adopting AI application effectively, developing an ecosystem that promotes and encourages the growth of AI for advancement, upholding ethical standards in the use of AI and conforming to global standards.

I would like to extend special gratitude to the Tony Blair Institute for technically supporting the formulation of the Strategy. I would also like to extend sincere gratitude to the Government of Finland, USAID Open Spaces (OS) and Multi-stakeholder Initiative (MSI) on tech, human rights and democracy in the strategy development process. The Ministry further wishes to acknowledge the role of Zambia Information Communication Telecommunication Authority (ZICTA), Smart Zambia Institute and BongoHive.

Zambia renders its full support to the successful implementation of the National AI Strategy 2024 - 2026, I look forward to the impact of it.

Dr Brilliant Habeenzu
Permanent Secretary
Minister of Technology and Science,
Government of Zambia

Executive Summary

1. Executive Summary

The National Artificial Intelligence (AI) Strategy of Zambia is a forward-thinking framework aimed at leveraging AI to accelerate economic growth, enhance public services, and improve the quality of life for all Zambians. Recognizing AI's potential as a transformative tool, the strategy seeks to position Zambia as a regional leader in AI for development, focusing on key sectors such as agriculture, healthcare, mining, education, finance, and public services. This initiative is aligned with the country's 8th National Development Plan, advancing Zambia's economic diversification, social inclusion, and long-term sustainability.

The strategy envisions Zambia becoming the premier destination for 'AI for Emerging Economies' ventures, offering a unique platform where innovators can create AI-driven solutions to address the distinct challenges faced by low- and middle-income countries. The government's aim is to ensure that the benefits of AI are distributed equitably across all segments of society, bridging gaps in access and opportunity while fostering inclusive growth. By harnessing AI, Zambia can address critical issues such as healthcare delivery, educational reform, resource management, and sustainable development.

Central to the strategy is the establishment of a robust governance framework that supports ethical AI deployment, protects data privacy, and ensures fairness in AI-driven decisions. This will be achieved through the formation of a National AI Council and the creation of sector-specific Technical Working Groups (TWGs). These bodies will oversee the implementation of AI initiatives, ensuring that Zambia adheres to international standards such as the African Union's AI strategy and UNESCO's ethics recommendations.

Zambia's National AI Strategy focuses on building human capital by integrating AI into educational curricula at all levels and offering professional training to upskill the workforce. AI literacy campaigns will be launched to raise awareness and empower citizens to participate in the AI economy. To further support AI development, the strategy outlines a plan for investing in digital infrastructure, including enhancing cloud data centres to support AI technologies.

Research, innovation, and entrepreneurship are key priorities, with a focus on fostering collaboration between local and international research institutions, universities, and startups. The government will incentivize AI research and innovation by fostering international partnerships, developing the emerging technology centre of excellence and supporting the development of AI hubs and incubators. These efforts will contribute to creating a vibrant AI ecosystem that integrates industry, academia, and government.

The implementation of the strategy is divided into three phases: the first 100 days will focus on establishing governance structures, initiating pilot projects, and engaging international partners; the first year will concentrate on finalizing AI policies, scaling AI education, and implementing pilot projects in key sectors; and the second year will see an expansion of AI education, investment in digital infrastructure, and scaling of successful AI projects nationwide.

A comprehensive Monitoring and Evaluation (M&E) framework has been designed to ensure accountability, transparency, and continuous learning throughout the implementation process. This framework includes performance indicators, regular reporting, and risk management mechanisms to track progress and adjust as needed.

Ultimately, Zambia's National AI Strategy aims to harness AI's potential to drive national development while positioning the country as a leader in ethical and inclusive AI adoption. By investing in AI, Zambia is set to unlock unprecedented opportunities for economic growth, social progress, and sustainable development, ensuring that all citizens benefit from the transformative power of this emerging technology.

Introduction

2. Introduction

Artificial Intelligence (AI) stands at the forefront of a global technological revolution, poised to redefine how economies function, transform industries and societies. As nations worldwide harness its potential, AI emerges not merely as a tool but as a catalyst for profound socio-economic transformation. For the Republic of Zambia, embracing AI is a strategic imperative, one that offers a unique opportunity to accelerate the development envisioned in **Zambia's 8th National Development plan**, enhance public services, and elevate the quality of life for all citizens.

In an era where data drives decision-making, AI's ability to analyse vast datasets, recognize patterns, and make autonomous decisions presents unparalleled possibilities. Its applications span a multitude of sectors from healthcare to education, agriculture, finance, mining and public services providing innovative solutions to complex challenges and unlocking new avenues for growth and efficiency.

Zambia today is not well positioned in a leading role for AI-driven economic development and is not attracting substantial international AI ventures focused on emerging economies. There are significant infrastructure gaps in national broadband, data centers, and cloud services to support AI. The country is further plagued with a talent shortage in skilled AI workforce. Currently, there is no AI governance set up to oversee the ethical implementation of AI in Zambia and there remains limited funding and partnerships to support AI innovation.

However, Zambia is making great strides to prioritize technology as a strategic enabler and now focusing on integrating AI into the country's national agenda, Zambia can address critical challenges such as economic diversification, infrastructure deficits, and regional disparities, propelling the nation toward a more prosperous and inclusive future.

Aligning with the **African Union's** Continental **Strategy for Artificial Intelligence**, Zambia is committed to harnessing AI for inclusive growth and sustainable development. This continental vision underscores the importance of ethical AI deployment, adherence to international best practices, and collaborative efforts among African nations to ensure that AI technologies are developed and utilized responsibly. Zambia further recognizes the value of cooperation globally as defined in the global compacts for digitization and will work to expand the country's international cooperation on AI.

2.1 The Promise of AI for Zambia

Artificial Intelligence refers to **systems capable of performing tasks that traditionally require human intelligence**—learning, reasoning, problem-solving, perception, and language understanding. These systems can analyze complex data, identify trends, and make informed decisions with minimal human intervention, continually improving through machine learning algorithms.

2.2 Ethical Commitment and International Alignment

Embracing AI brings with it the responsibility to ensure that its development and deployment are guided by ethical principles and respect for human rights. Zambia is dedicated to upholding international standards and best practices, aligning its AI strategy with key global frameworks:

- **African Union's Continental Strategy for Artificial Intelligence**: Advocates for AI that fosters inclusive growth, respects human rights, and upholds ethical standards across the continent. It emphasizes collaboration among member states to harness AI for Africa's collective benefit.

- **UNESCO's Recommendation on the Ethics of Artificial Intelligence**: Highlights the importance of transparency, accountability, fairness, and the protection of data privacy and security in AI systems. It calls for AI that contributes to sustainable development and the well-being of humanity.
- **OECD Principles on Artificial Intelligence**: Provides guidelines for responsible stewardship of trustworthy AI, focusing on human-centred values, robustness, safety, and accountability.

By adhering to these principles, Zambia commits to:

- **Protecting Data Privacy and Security**: Today, Zambia has established the legal frameworks to safeguard personal information and prevent data misuse in the country's data privacy law. We have further established the office of the Data Commissioner to ensure compliance with both the law and regulations.
- **Preventing Bias and Discrimination**: Implementing measures to identify and minimise biases in AI algorithms, ensuring fairness and equity in AI-driven decisions.
- **Promoting Inclusivity**: Ensuring that the benefits of AI reach all citizens, particularly marginalized and vulnerable groups, to reduce inequalities and promote social inclusion.
- **Fostering International Collaboration**: Engaging with global partners to share knowledge, resources, and best practices in AI development and governance, reinforcing Zambia's commitment to global progress in AI ethics and applications.

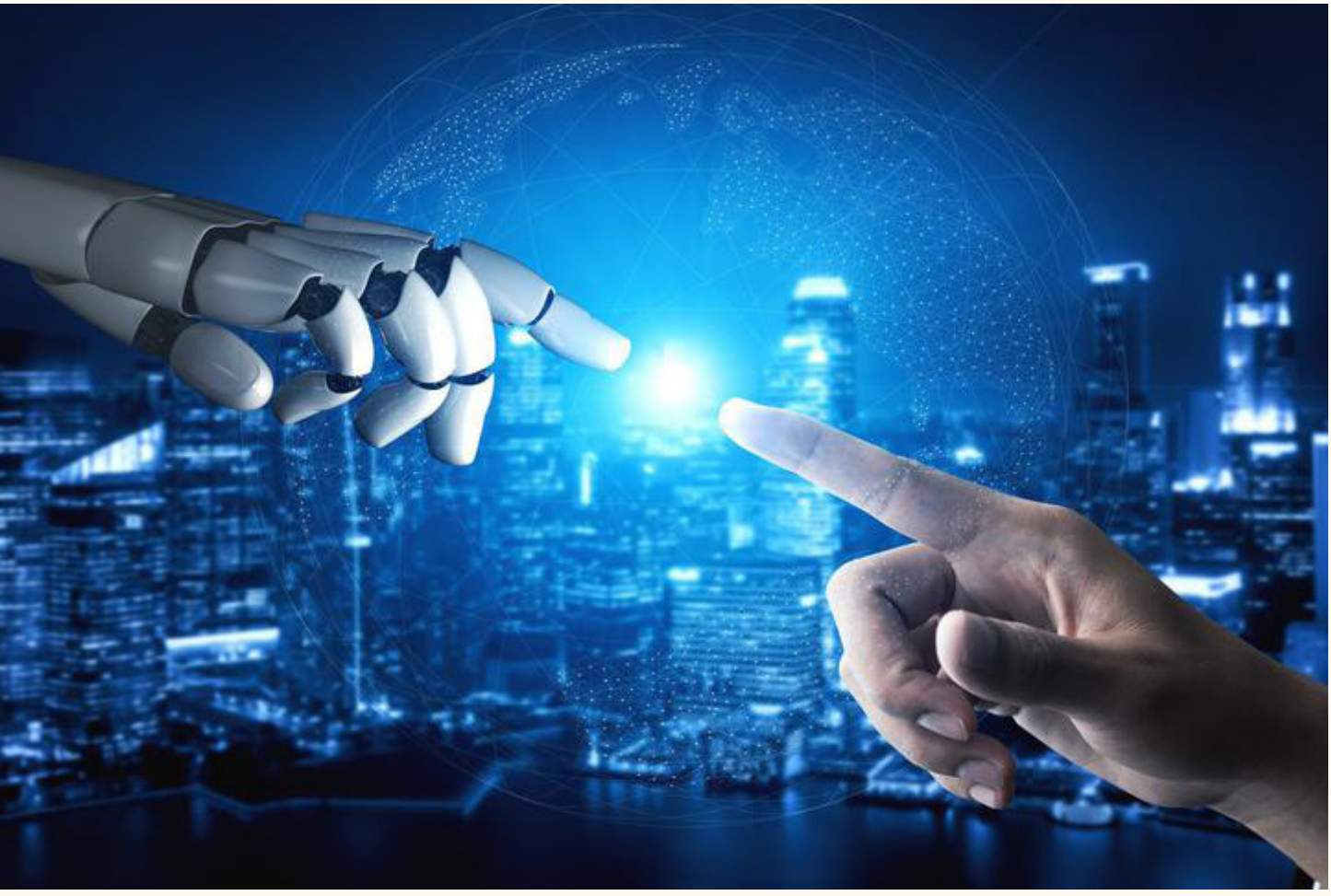
2.3 Strategic Imperatives for Zambia

To fully realize AI's potential, Zambia must undertake strategic actions:

- **Investing in Human Capital**: Developing skills and expertise in AI through education and training programs, nurturing a workforce capable of driving innovation and adapting to technological advancements.
- **Enhancing Digital Infrastructure**: Expanding and upgrading digital connectivity to support AI technologies, ensuring access across urban and rural areas.
- **Establishing Ethical and Regulatory Frameworks**: Crafting policies and regulations that ensure responsible AI development, protect individual rights, and build public trust in AI systems.
- **Stimulating Innovation and Entrepreneurship**: Encouraging research and development, supporting startups, and fostering an environment where innovative AI solutions can thrive.
- **Promoting Sustainable Development**: Leveraging AI to address environmental challenges, manage natural resources efficiently, and support sustainable practices that benefit current and future generations.
- **Adopt AI across 6 Priority sectors**: Healthcare, agriculture, education, mining, climate, and public services to advance Zambia's national development goals.

Intelligence presents a transformative pathway for Zambia to achieve its 8th National Development Plan goals and uplift the lives of all citizens and residents. By strategically embracing AI, grounded in ethical principles and reinforced by international collaboration, Zambia will position itself as a leader in the responsible adoption of AI.

This commitment to AI is about more than technological advancement, it is about building a future where innovation drives inclusive growth, public services are efficient and accessible, and every citizen can thrive in a rapidly evolving world. Zambia stands poised to seize this moment, harnessing the power of AI to shape a prosperous and equitable future for all. Zambia also seeks to open its doors to enable the world to learn together with us as we focus on the emerging areas of 'Artificial Intelligence for Development/ Artificial Intelligence for good.' Under this strategy we seek to create an enabling environment for our international partners to develop and pilot new capabilities that focus on the unique challenges of low and middle-income countries.



Strategy Development Approach

3 Strategy Development Approach

The development of Zambia's National Artificial Intelligence (AI) Strategy followed a structured and holistic methodology, guided by Zambia's Technology Strategy Development Toolkit. This approach was crafted to ensure that the AI strategy was inclusive, aligned with national priorities, and designed for practical implementation. The toolkit provided a robust framework that combined strategic visioning, stakeholder consultation, benchmarking, governance structuring, and evaluation mechanisms. By leveraging these tools, the development of Zambia's National AI Strategy was grounded in a systematic process designed to maximize its impact and ensure sustainability.

3.1. National Toolkit Framework for Technology Strategy Development

The Government of Zambia's Technology Strategy Development Toolkit served as the primary guide for the AI strategy. This toolkit offered a step-by-step methodology that ensured each element of the AI strategy was carefully crafted to align with Zambia's development goals and socio-economic realities. The methodology was designed to be iterative, inclusive, and reflective of best practices, combining rigorous analysis with continuous stakeholder engagement.

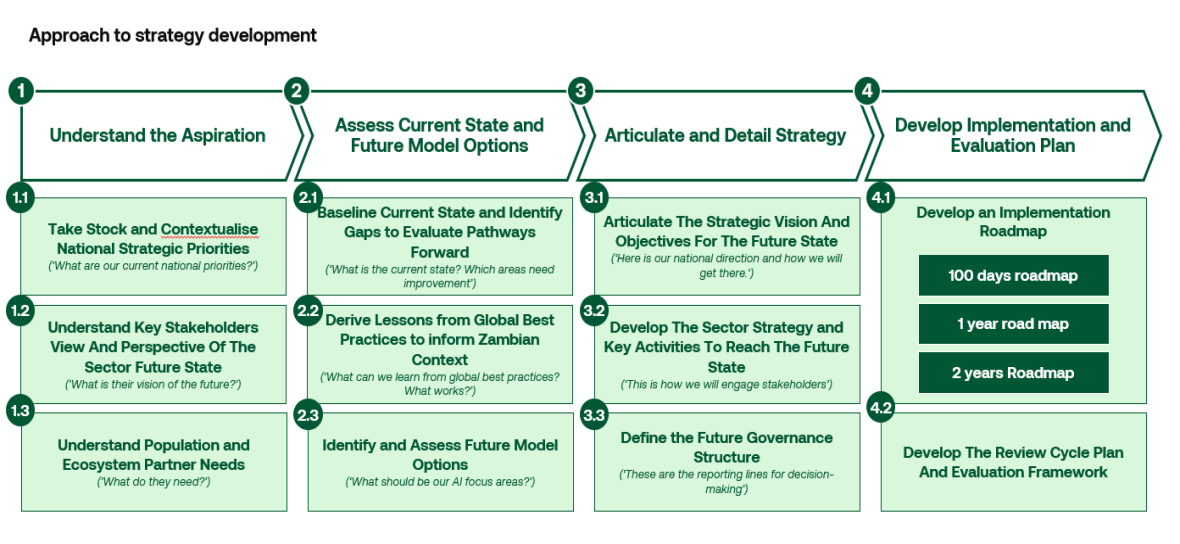


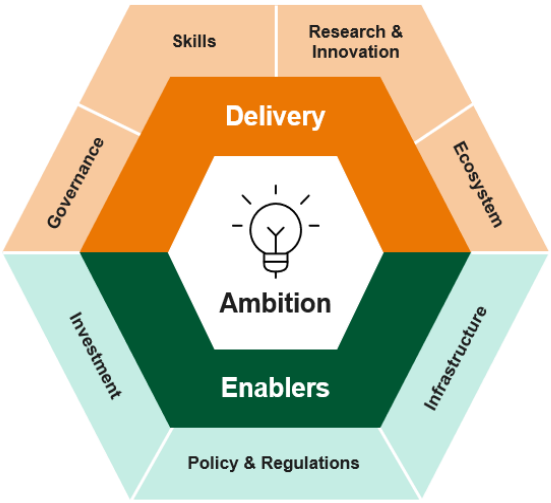
Figure 1: Strategy Development Process

3.2. Assessment and Goal Setting

The initial phase of the strategy development involved a detailed assessment and goal-setting exercise, as guided by the national toolkit.

- **Situation Analysis**: The first step was a comprehensive analysis of Zambia's readiness to adopt AI. This assessment focused on evaluating the existing infrastructure, availability of skills, institutional capabilities, and technological environment. The findings helped identify strengths, opportunities, weaknesses, and challenges that shaped the strategic direction.
- **Stakeholder Analysis**: Understanding stakeholder needs and expectations was essential for designing a strategy that was inclusive and responsive. The assessment phase identified key stakeholders from across government, private sector, civil society, and academia, which were critical for co-creating a strategy that reflects the aspirations of Zambia's diverse population.

- **Goal Setting**: Building on the insights from the assessment, clear short- and long-term goals were formulated. These goals sought to align AI adoption with national priorities, focusing on sectors such as healthcare, education, agriculture, and mining to maximize socio-economic benefits. The goals also outlined the ambition of positioning Zambia as a leader in AI adoption for development, with a particular focus on inclusivity.



Dimension		Description
Vision	Ambition	Vision and goals for the country
Delivery	Governance	National AI governance to deliver AI solutions and innovation
	Skills	Attraction, development, and retainment of the AI workforce
	Research & Innovation	Research and innovation institutions and establishments within the domain of AI
	Ecosystem	Interconnected AI ecosystem at the national level and international level
Enablers	Investment	Funding mechanisms to stimulate and attract AI-related businesses
	Policy & Regulations	Regulatory environment that offers flexibility and certainty for AI development, and promotion of responsible AI
	Infrastructure	IT Infrastructure at the national level to enable the use of AI

Figure 2: BCG ASPIRE Framework for National AI strategies

3.3. Stakeholder Engagement

Stakeholder engagement was central to the strategy development process, ensuring that every stage of the methodology was rooted in the needs and aspirations of the people of Zambia.

- **Inclusive Consultation**: Broad consultations were conducted with representatives from ministries, the private sector, academic institutions, civil society, and international development partners. This engagement was key to understanding the challenges, opportunities, and potential impact of AI technologies across different sectors.
- **Iterative Input**: Stakeholders were not only consulted during the initial stages but throughout the strategy development process. Their feedback shaped the strategy to ensure it was both practical and representative of the interests of all, including marginalized and vulnerable groups.

3.4. Benchmarking and Research

An important aspect of the methodology involved benchmarking Zambia's strategy against international best practices and successful AI initiatives from other countries.

- **Learning from International Experiences**: Insights from global AI strategies provided a basis for designing Zambia's approach. The benchmarking process focused on understanding the successes and challenges faced by other nations, particularly those with similar socio-economic profiles. This allowed Zambia to adopt best-fit solutions that were suited to local conditions, while also learning from the pitfalls experienced elsewhere.

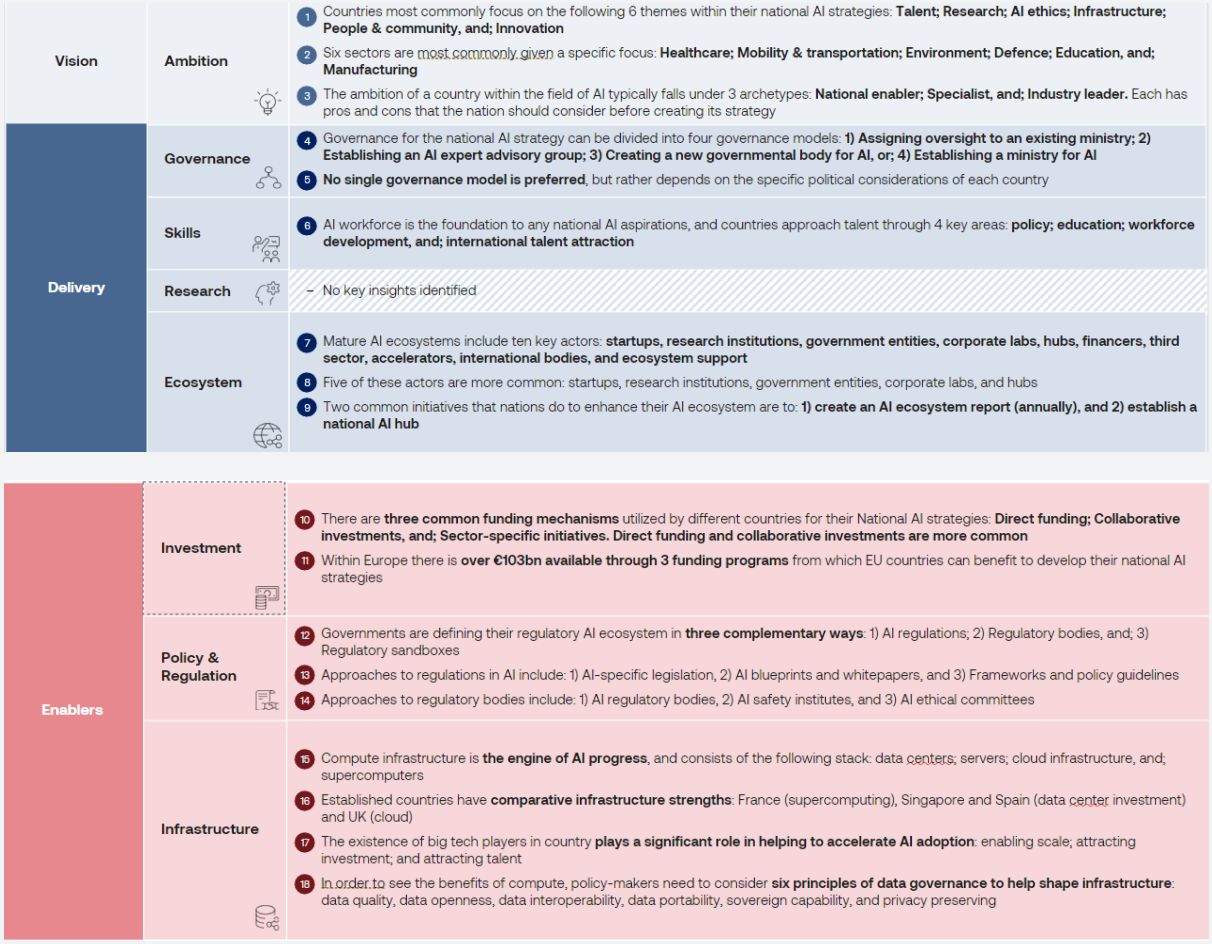


Figure 3: Insights from international benchmarks

- **Adaptation to Local Context**: Rather than a direct replication of international strategies, Zambia's approach was tailored to address the specific needs of its people and the realities of its economic landscape. This meant focusing on equitable AI adoption and leveraging AI to address priority issues, such as health service delivery, agricultural productivity, and education quality.

3.5. Policy and Regulatory Framework Development

A critical part of the methodology involved developing a comprehensive policy and regulatory framework. The toolkit provided structured guidance on formulating policies that promote ethical AI use while ensuring that technological development aligns with Zambia's legal and social frameworks.

- **Drafting Policies and Ethical Guidelines**: Policies were drafted with inputs from key stakeholders and focused on ethical standards, privacy concerns, and data protection. The national toolkit emphasized the importance of ensuring AI deployment is ethical, safe, and beneficial to society.

- **Governance Flexibility**: The governance model embedded flexibility to accommodate emerging AI technologies and evolving international standards. This dynamic approach ensured that policies could be adjusted as the technology and its societal implications developed.

3.6. Implementation and Governance Structure

The national toolkit emphasized the importance of a well-defined governance structure to ensure effective implementation. The governance model included distinct roles and responsibilities to ensure coordination across different sectors and stakeholders.

- **National AI Council**: Out of the four governance archetypes, the National AI Council was proposed as an expert advisory group that would provide strategic advice for the implementation of AI initiatives across the country. Its role would be to offer high-level advice to the Ministry of Technology and Science, ensuring alignment with national development priorities.

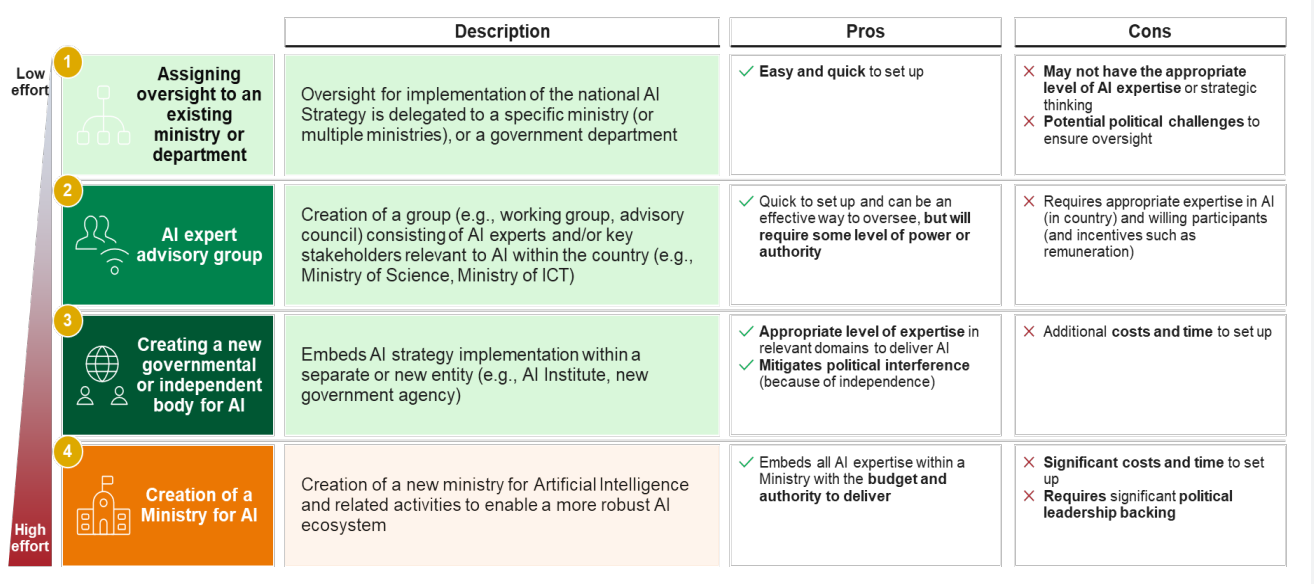


Figure 4: Governance Models for AI

- **Technical Working Groups (TWGs)**: The TWGs will be formed to focus on the application of AI within specific sectors such as healthcare, agriculture, and education. These groups were tasked with sector-specific problem-solving, ensuring that AI solutions were tailored to the needs and capabilities of each sector.

- **Cross-Sector Coordination**: The toolkit outlined mechanisms for cross-sector coordination, with Smart Zambia coordinating AI adoption across government institutions and the Ministry of Technology and Science overseeing the broader economy. International partners were also brought in to provide technical expertise, resources, and alignment with global standards.

3.7. Roadmap Development

A detailed roadmap was developed as part of the strategy, outlining specific milestones and activities for the effective rollout of Zambia's National AI Strategy.

- **Prioritization of Projects**: The roadmap included criteria for prioritizing projects based on their feasibility, alignment with Zambia's development goals, and potential impact. Priority was given to projects that offered immediate benefits to citizens, such as improving healthcare services, agricultural productivity, and public service delivery.

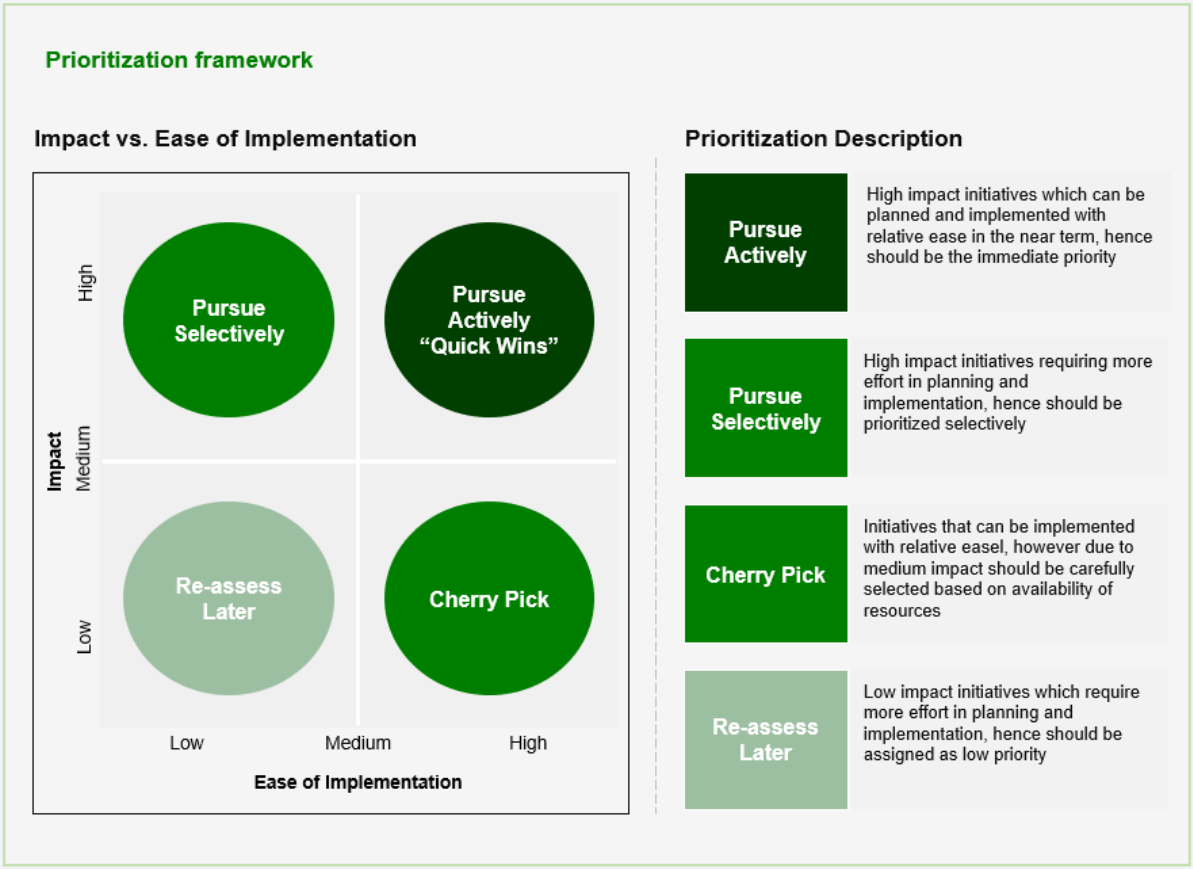


Figure 4: Prioritization Matrix

- **Defined Milestones and Timelines**: The roadmap established clear milestones to guide the implementation process. These milestones were designed to ensure progress at a steady pace, while also allowing for necessary adjustments based on changing conditions and learnings from ongoing initiatives.

3.8. Monitoring and Evaluation

The Monitoring and Evaluation (M&E) framework was critical for tracking the strategy's progress and making informed decisions. The national toolkit provided a structured approach for designing an M&E framework that ensured transparency, accountability, and continuous learning.


Situation Analysis

4. Situation Analysis

4.1 Overview

Zambia's AI ecosystem is in its early stages, with nascent developments primarily driven by private sector initiatives and startups. There is limited involvement from academic and public institutions in foundational AI research. There are some notable initiatives in the health sector, in Mining and the Financial Services industry.

Notable Initiatives:

- **Healthcare Sector:** The partnership between the Centre for Infectious Disease Research in Zambia (CIDRZ) and Qure.ai utilizes AI-powered medical imaging diagnostics for tuberculosis (TB) screening. This project enhances TB detection and monitoring across seven hospitals in Zambia.
- **Mining Sector:** Kobold Metals, a Silicon Valley company, has invested $150 million to employ AI and machine learning for identifying battery metal deposits and renewable energy resources at the Mingomba mine, this is the largest copper find in Africa over the past 100 years. This initiative exemplifies AI's potential in resource exploration and extraction.

Challenges

- **Underdeveloped Research Infrastructure:** Lack of advanced research facilities and limited funding for ambitious AI projects.
- **Insufficient Collaboration:** There is limited collaboration between academia, industry, and government on AI innovation.
- **Talent Shortage:** A shortage of researchers and scientists proficient in cutting-edge AI technologies limits advancements.

Opportunities

- **Establishment of Centre of Excellence:** The Ministry of Technology and Science is in the early stages of developing an Emerging Technologies Centres of Excellence to foster advanced research and application-focused innovations. This will form the core of Zambia's innovation network and present the interface for international partnerships.
- **Increased Funding:** Allocate more public and grant funding to support AI research and development initiatives as well as early-stage startup capital to catalyse venture capital.
- **International Partnerships:** Encourage collaborative projects with global research institutions, innovation hubs and universities to enhance innovation and access to resources.

4.2 Delivery and Enabling Factors

i) AI Ecosystem Development

Current State

Zambia's AI ecosystem comprises startups, private enterprises applying AI to their businesses, academic institutions, and government. The ecosystems are relatively fragmented, limiting the synergies an integrated ecosystem would bring. There is no centralized platform for AI data aggregation or model deployment, and coordination among stakeholders is limited.

Sector Highlights:

- **Startups and SMEs:** Emerging ventures are leveraging AI in healthcare, agriculture, and mining to address societal challenges, there are some notable successes.
- **Public Sector Engagement:** AI adoption in public services is minimal, with limited projects integrating AI into government operations and services.

Challenges

- **Fragmented Efforts:** Lack of coordination among government agencies, private sector, academia, citizens and civil society.
- **Data Accessibility:** Inadequate data ecosystems and absence of standardized data-sharing frameworks hinder AI development, there are limited public data sets.
- **Infrastructure Limitations:** Insufficient digital infrastructure, especially in rural areas, impedes widespread AI adoption. There's also inadequate investment in cloud infrastructure in Zambia, limiting the access to high performance computing.

Opportunities

- **National AI Platform:** Develop a centralized platform for data sharing, collaboration, and AI model deployment under the centre of excellence. Leverage existing data centres to build digital infrastructure.
- **Public-Private Partnerships:** Strengthen collaborations to drive large-scale AI deployment in key sectors.
- **Ecosystem Integration:** Foster connections among startups, investors, research institutions, and government agencies to create a cohesive AI ecosystem both locally and internationally.

ii) Governance Framework

Current State

Zambia's governance framework for AI is still evolving. There is no centralized authority or regulatory body dedicated to overseeing AI development and ensuring compliance with ethical standards.

Challenges

- **Lack of Centralized Oversight:** Absence of a dedicated agency to regulate AI and enforce ethical guidelines.
- **Ethical and Privacy Concerns:** The data privacy landscape is developing with data privacy law and regulations developed. Data residency and sovereign cloud requirements limit the use of cloud technology as many hyperscalers don't have a concrete business case to develop in country regional cloud data centres.
- **Regulatory Gaps:** Slow development of policies related to AI adoption in sensitive sectors like healthcare and finance. The need to evolve regulations to enable the use of public cloud.

Opportunities

- **Establish a National AI Council:** Create a governing body to oversee AI strategy implementation, and bring industry experts together with government and academia to review and adopt the strategy

- **AI regulation:** Extend the mandate of the regulator ZICTA to include AI regulation, and ethical compliance.
- **Develop Ethical Guidelines:** Formulate national AI ethics guidelines aligned with international best practices to ensure responsible AI deployment.
- **Legislative Frameworks:** Evolve policies and regulations that address data privacy, security, intellectual property, and AI standards to be fit for purpose.

iii) Investment

Current State

- **Limited Investment:** Private sector investment in AI technologies is minimal, and public funding for AI research and development is constrained.
- **Funding Challenges:** High costs associated with AI adoption deter small businesses and startups from investing in AI solutions.

Opportunities

- **Incentivize Investment and use:** Provide fiscal incentives and support mechanisms to encourage private sector investment in AI adoption and development.
- **Public Funding Initiatives:** Increase government funding for AI research, development projects, and infrastructure.
- **International Funding:** Seek partnerships with international organizations and development funds to finance AI initiatives.

iv) Policy and Regulation

Current State

- **Regulatory:** There are some policies regulating AI, particularly concerning data privacy and security but more needs to be developed around ethics.
- **Uncertainty for Businesses:** The absence of clear regulations creates uncertainty for AI developers and enterprises.

Opportunities

- **Policy Development:** Formulate policies that promote innovation while ensuring ethical considerations are upheld.
- **Standardization:** Establish national AI standards and data-sharing protocols to
- facilitate interoperability and collaboration.
- **Intellectual Property Rights:** Develop frameworks to protect AI innovations and encourage investments in AI development in Zambia.

v) Infrastructure

Current State

- **Digital Infrastructure Gaps:** Inadequate digital infrastructure, particularly in rural areas, limits AI adoption and accessibility. This however is being addressed and Zambia is making progress on digital inclusion.

- **Data Limitations:** Access to high-quality, structured data is restricted, affecting AI model training and development.

Opportunities

- **Infrastructure Investment:** Expand broadband connectivity, cloud computing services, and establish data centres to support AI technologies.
- **Data Ecosystems:** Create national data repositories and trusts to standardize data collection, storage, and sharing.
- **Emerging Technologies:** Leverage advancements in broadband networks and high performance computing cloud data centres to enhance computational capabilities for the support of AI development and adoption.

4.3 International Benchmark Insights

Insights from international benchmark studies, highlight key themes and best practices in AI strategy development:

- **Vision:** Countries define their AI strategies based on national priorities, aiming to become global leaders, specialists in specific AI niches, or leveraging AI for socio-economic growth. These were the common architypes that emerged in the benchmark study.
- **Governance:** Effective governance models vary, from existing ministries overseeing AI strategies to dedicated AI offices or ministries ensuring focused oversight. The governance models also had a fourth architype in the constituting of a national AI council.
- **Skills and Talent:** Emphasis on developing AI talent through education, workforce development, and attracting international expertise is common among leading AI nations. The key insight is that Zambia needs to explore all these options to accelerate its AI adoption and/or development.
- **Research and Innovation:** Investment in AI research institutions and fostering collaboration between academia, industry, and government drives innovation.
- **Ecosystem Development:** A mature AI ecosystem involves startups, research institutions, government bodies, and international collaborations working cohesively.
- **Enabling Factors:** Robust investment, sound regulatory policies, and strong technological infrastructure are critical enablers for AI advancement.

4.4 Comparative Analysis

Strengths:

- **Youthful Demographics:** Zambia's young population presents an opportunity to develop a vibrant AI workforce, though investments need to be made to improve Zambia's human development index
- **Emerging Initiatives:** Partnerships like CIDRZ with Qure.ai and investments from companies like Kobold Metals indicate growing interest in AI applications.

Areas for Improvement:

- **Strategic Ambition:** Clearly define Zambia's AI ambition—whether to be a regional leader, specialist, or focus on national development through AI.
- **Governance Structure:** Establish a centralized governance model to coordinate AI strategy implementation effectively.

- **Skills Development:** Invest in education and training programs to build a pipeline of AI talent.
- **Research Capacity:** Enhance research infrastructure and foster collaborations to drive innovation.
- **Ecosystem Integration:** Encourage synergies among ecosystem actors and create an enabling environment for startups and investors.
- **Enablers:** Strengthen investment mechanisms, develop policies and regulations that promote ethical AI, and upgrade infrastructure to support AI technologies.

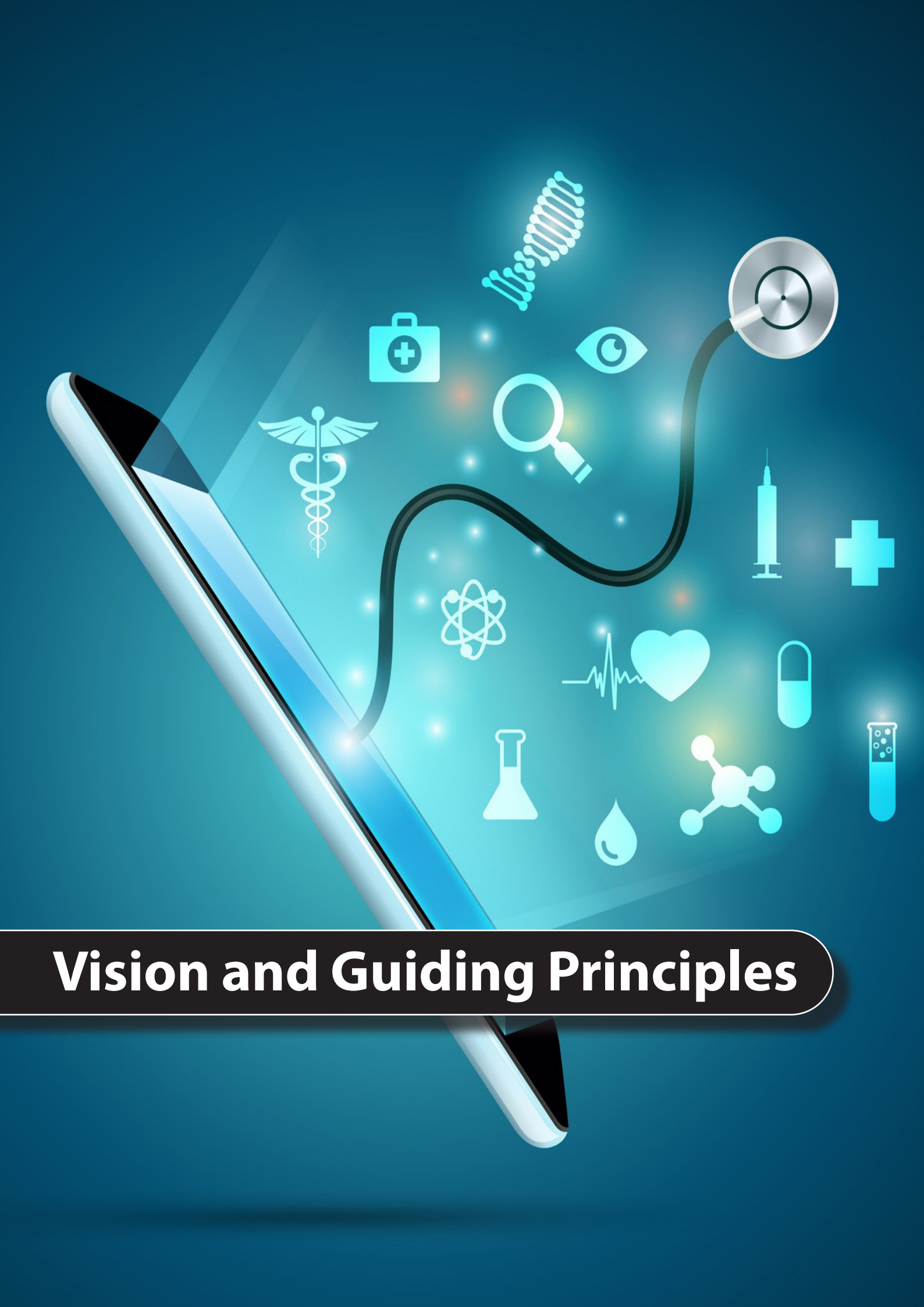
4.5 Opportunities for Zambia

Zambia stands at a pivotal point in embracing AI for national development. While there are significant challenges—such as skills shortages, limited infrastructure, and governance gaps—the country also has considerable opportunities to leverage AI for economic growth, social inclusion, and innovation. AI can also play a transformative role in climate change adaptation, ensuring Zambia manages its natural resources efficiently and responsibly in the face of environmental challenges.

By incorporating insights from international benchmarks, Zambia can learn from global best practices to:

- **Articulate a Clear Vision:** Define a strategic ambition aligned with national priorities and socio-economic goals.
- **Strengthen Governance:** Establish dedicated bodies to oversee AI strategy implementation and ensure ethical compliance.
- **Invest in Human Capital:** Develop comprehensive education and training programs to build AI expertise.
- **Enhance Research and Innovation:** Foster a collaborative environment among academia, industry, and government to drive AI advancements.
- **Develop the Ecosystem:** Create a cohesive AI ecosystem that encourages innovation, entrepreneurship, and attracts investments.
- **Improve Enabling Factors:** Secure funding, enact supportive policies and regulations, and invest in critical infrastructure.

Through concerted efforts and strategic planning, Zambia can effectively harness the transformative power of AI, positioning itself as a leader in responsible and inclusive AI adoption in the region. This will not only drive national development but also contribute to the broader goal of leveraging technology for the betterment of society.



Vision and Guiding Principles

5. Vision and Guiding Principles

5.1 Vision

To position Zambia as a regional hub for 'AI for development' innovation where the transformative power of Artificial Intelligence is harnessed to drive inclusive and sustainable national development.

This vision encapsulates Zambia's commitment to leveraging AI as a catalyst for the attainment of Zambia's 8th National Development Plan goals, economic diversification, social advancement, and improved quality of life for all citizens. By embracing AI technologies ethically and strategically, Zambia aims to:

- **Enhance Economic Growth:** Utilize AI to enhance labour productivity, foster innovation, and create new opportunities across key sectors such as agriculture, healthcare, education, mining, and finance.
- **Promote Social Inclusion:** Ensure that AI benefits are accessible to all, reducing inequalities and empowering marginalized communities.
- **Strengthen Governance and Public Services:** Improve the efficiency, transparency, and accessibility of government services through AI-enabled solutions.
- **Champion AI for development programs globally:** Engage with global partners to share knowledge, attract investments, and contribute to the global AI for development programs. Ensuring this technology is mainstreamed to solve some of the world's most challenging international development issues.

5.2 Guiding Principles

To realize this vision, Zambia's National AI Strategy is anchored on the following guiding principles:

5.2.1 Ethical and Responsible AI

- **Human-Centric Approach:** AI systems should enhance human capabilities and well-being.
- **Transparency and Explainability:** AI algorithms and decision-making processes must be sufficiently transparent and understandable to stakeholders.
- **Accountability:** Developers and users of AI systems are accountable for their actions and the outcomes of AI deployment.
- **Fairness and Non-Discrimination:** AI systems must be designed to prevent biases, ensuring equitable treatment of all individuals regardless of race, gender, ethnicity, or socio-economic status.

5.2.2 Inclusivity and Accessibility

- **Bridging the Digital Divide:** Ensure equitable access to AI technologies and benefits across urban and rural areas, including marginalized and vulnerable populations.
- **Capacity Building:** Invest in education and training to develop AI literacy and skills among all segments of the population.
- **Universal Design:** Promote AI solutions that are accessible to people with disabilities and tailored to diverse user needs.

5.2.3 Innovation and Economic Growth

- **Fostering a Vibrant AI Ecosystem:** Create an enabling environment for startups, research institutions, and businesses to innovate and collaborate in AI development.
- **Investment Promotion:** Attract domestic and international investments in AI research, development, and commercialization.
- **Competitive Advantage:** Leverage AI to enhance Zambia's competitiveness in regional and global markets.

5.2.4 Data Privacy and Security

- **Protecting Personal Data:** Establish robust legal frameworks and technical measures to safeguard personal and sensitive information.
- **Secure Data Infrastructure:** Invest in secure data storage, transmission, and processing systems to prevent unauthorized access and cyber threats.
- **Responsible Data Management:** Promote ethical data collection, usage, and sharing practices in compliance with national and international regulations.

5.2.5 Sustainable Development

- **Environmental Stewardship:** Utilize AI to promote sustainable practices, efficient resource management, and address environmental challenges such as climate change.
- **Long-Term Planning:** Integrate AI initiatives with national development plans (8th National Development Plan) to ensure alignment with Zambia's Vision 2030 and the United Nations Sustainable Development Goals (SDGs).
- **Resilience Building:** Leverage AI to enhance the country's ability to anticipate, respond to, and recover from economic, environmental, and social challenges.

5.2.6 Collaboration and Partnership

- **Multi-Stakeholder Engagement:** Involve government agencies, private sector, academia, civil society, and international partners in the AI ecosystem.
- **International Alignment:** Align with international agreements and frameworks, such as the African Union's Continental Strategy for Artificial Intelligence, UNESCO's Recommendation on the Ethics of Artificial Intelligence, and the OECD Principles on AI.
- **Knowledge Sharing:** Encourage the exchange of expertise, best practices, and technological advancements with global AI communities.

5.2.7 Good Governance and Regulatory Compliance

- **Policy and Regulatory Frameworks:** Develop and enforce policies, laws, and regulations that promote ethical AI development and use.
- **Standards and Certification:** Establish national standards and certification processes to ensure the quality and reliability of AI systems.
- **Monitoring and Evaluation:** Implement mechanisms to regularly assess the impact of AI initiatives and adjust strategies accordingly.

5.2.8 Capacity Building and Skills Development

- **Education Reform:** Integrate AI and digital literacy into educational curricula at all levels, from primary schools to higher education.
- **Professional Training:** Offer continuous learning opportunities and professional development programs in AI and related fields.
- **Talent Retention and Attraction:** Implement strategies to retain local AI talent and attract international experts to contribute to Zambia's AI ecosystem.

5.2.9 Infrastructure Development

- **Digital Infrastructure:** Expand and enhance digital infrastructure, including broadband connectivity, data centres, and cloud services, to support AI technologies.
- **Access to Computational Resources:** Provide affordable access to high-performance computing resources necessary for AI research and development.
- **Data Ecosystems:** Establish national data repositories and platforms to facilitate data sharing and collaboration while ensuring data sovereignty and security.

5.2.10 Societal Well-being and Public Trust

- **Public Awareness:** Promote understanding and awareness of AI technologies, benefits, risks, and ethical considerations among the general public.
- **Engagement and Transparency:** Involve citizens in dialogue about AI policies and initiatives to build trust and acceptance.
- **Mitigating Negative Impacts:** Proactively address potential adverse effects of AI, such as job displacement, by implementing reskilling programs and social support mechanisms.

The vision and guiding principles outlined in this chapter serve as the foundation for Zambia's National AI Strategy. They reflect the nation's aspirations to harness AI responsibly and effectively, driving inclusive growth, innovation, and sustainable development. By adhering to these principles, Zambia is poised to navigate the complexities of AI adoption, maximize its benefits, and mitigate potential risks, ultimately improving the lives of all its citizens and positioning itself as a leader in the regional AI landscape.

Strategic Initiatives

6. Strategic Initiatives

Zambia's strategic direction for Artificial Intelligence (AI) outlines the actionable pathways to achieve its national objectives. In this section we highlight the strategic priorities, goals, and initiatives that will enable Zambia to leverage this technology to address the country's development challenges.

6.1 Strategic Objectives

To realize the vision, Zambia's AI Strategy focuses on the following strategic objectives:

1. Leverage AI for National Development

- **Economic Diversification and Growth**
  - Integrate AI technologies across key sectors to enhance productivity and foster innovation.
  - Promote AI-driven solutions in the priority sectors, agriculture, mining, manufacturing, healthcare, education, and finance.
- **Social Progress**
  - Use AI to improve public service delivery, healthcare outcomes, educational access, and Zambia's social welfare programs.

2. Create a Facilitative Environment for AI Innovation

- **Policy and Regulatory Frameworks**
  - Develop and implement supportive policies, regulations, and standards that encourage AI research and deployment.
  - Ensure regulations uphold ethical considerations, data privacy, security, and intellectual property rights.
- **Infrastructure Development**
  - Invest in digital infrastructure, data centres, and cloud services.
  - Enhance access to computational resources necessary for AI research and applications.

3. Foster Collaboration and Investment

- **Joint Research Initiatives**
  - Encourage partnerships between local and international research institutions, universities, and startup hubs.
  - Establish Centres of Excellence in AI and Emerging Technologies to drive innovation.
- **Attract Commercial Investments**
  - Promote Zambia as an attractive destination for AI-related investments.
  - Offer incentives and reduce barriers to entry for investors and technology companies.

4. Enable Ecosystem Actors to Build and Innovate in Zambia

- **Inclusive Ecosystem Development**
  - Engage key institutions in the AI ecosystem: government agencies, academia, research organizations, private sector companies, startups, investors, NGOs, international bodies, incubators and accelerators, and civil society groups.
- **Capacity Building**
  - Enhance skills and competencies through education and training programs focused on AI and digital technologies.
  - Support entrepreneurship and innovation by providing resources, mentorship, and funding opportunities.

5. Establish Zambia as a Hub for AI Development

- **Regional Leadership**
  - Position Zambia as a hub for 'AI for development' research programs and ventures.
  - Participate in international forums and contribute to shaping global AI discourse.
- **Ethical and Responsible AI Adoption**
  - Uphold international best practices and ethical standards.
  - Promote trustworthiness, transparency, and accountability in AI systems.

6. Promote Sustainable and Inclusive Growth

- **Equitable Access**
  - Ensure AI technologies and benefits are accessible to all, including marginalized communities.
  - Address the digital divide by expanding connectivity and digital literacy programs. This objective is under implementation through the national digital inclusion program and will be managed through a different governance framework.
- **Environmental Sustainability**
  - Leverage AI for efficient resource management and environmental conservation.
  - Support initiatives aimed at climate change mitigation and adaptation.

6.2 Key Strategic Pillars

To achieve these objectives, the strategy is structured around six key pillars:

1. Policy and Regulatory Framework

- **Develop Comprehensive AI Policies**
- Formulate a National AI Policy that outlines standards, guidelines, and regulations.

- Align policies with international frameworks such as the African Union's AI Strategy and UNESCO's AI Ethics Recommendations.

- **Establish Governance Structures**

- Create a National AI Council to oversee strategy implementation, coordination, and compliance.

- Set up ethics committees to monitor AI applications and ensure adherence to ethical standards. This capability is envisioned as part of the proposed emerging technology centre of excellence.

2. Human Capital Development

- **Education System Enhancement**

- Integrate AI and digital skills into curricula at all educational levels.

- Promote STEM education and encourage participation, especially among girls and underrepresented groups.

- **Professional Training and Upskilling**

- Implement continuous learning programs for the existing workforce.

- Collaborate with industry partners to offer certifications and practical training.

3. Infrastructure and Data Ecosystems

- **Digital Infrastructure Expansion**

- Enhance national data centres and promote cloud computing services both to enable the collection of data at scale.

- **Data Management and Accessibility**

- Develop national data repositories with standardized protocols.

- Encourage open data initiatives while ensuring data privacy and security.

4. Research, Innovation, and Entrepreneurship

- **Support Research Institutions**

- Fund AI research projects and establish Centres of Excellence.

- Promote interdisciplinary research addressing national challenges.

- **Stimulate Innovation Ecosystem**

- Provide incentives for startups and SMEs developing AI solutions.

- Support innovation hubs, incubators, and accelerators to catalyse investment in AI startups

5. Industry and Sectoral Development

- **Sector-Specific AI Adoption**

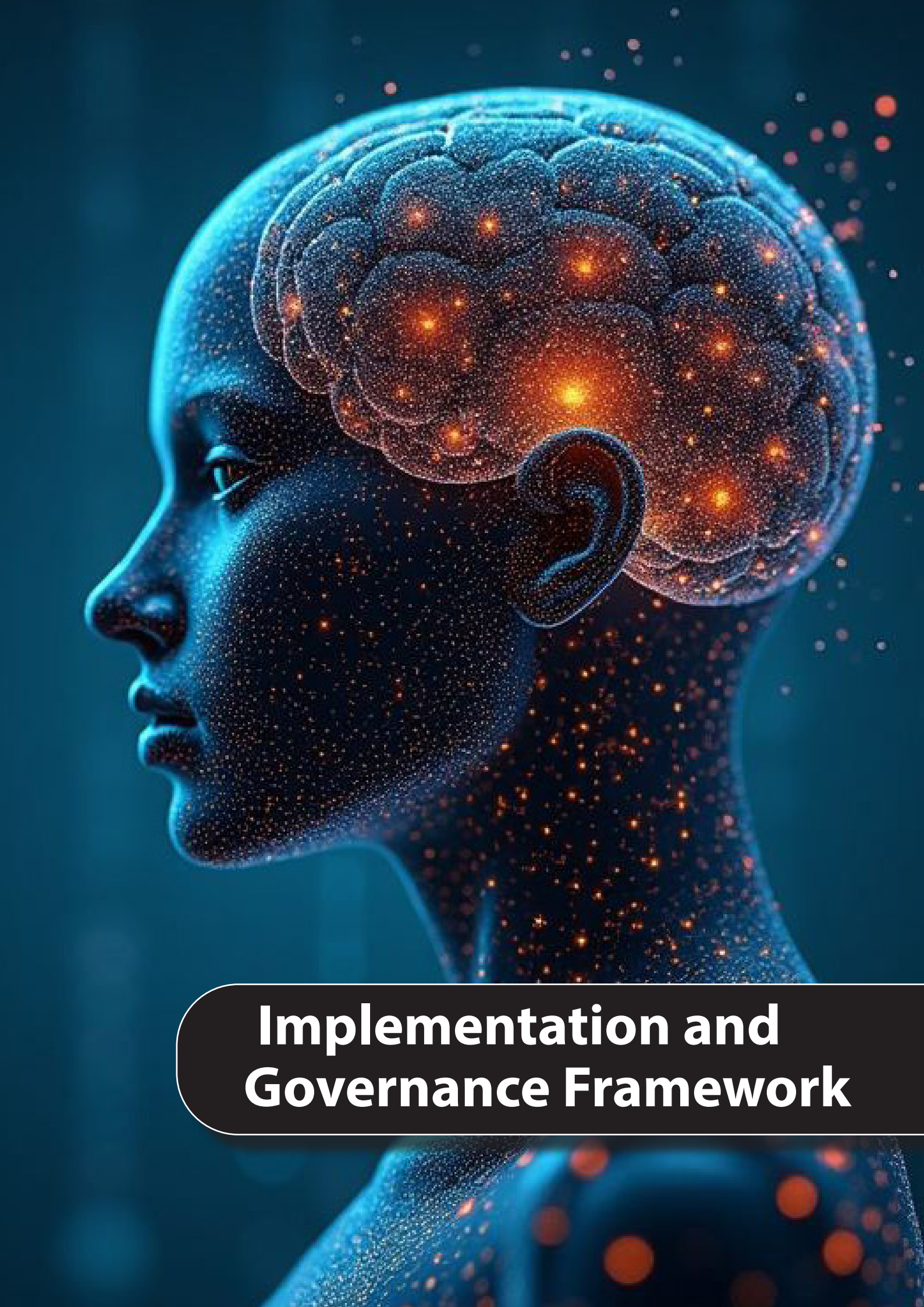
- Identify priority sectors for AI integration: agriculture, healthcare, mining, education, finance, and public services.

- Implement pilot projects and scale successful initiatives.

- **Private Sector Engagement**
- Encourage businesses to adopt AI technologies.
- Offer support through toolkits, financial assistance, and advisory services.

6. International Collaboration and Partnerships

- **Global Engagement**
- Participate in international AI collaborations and research networks.
- Align with global AI standards and contribute to international policy discussions.
- **Attract Foreign Investment and Expertise**
- Promote Zambia as a destination for AI investment.
- Facilitate knowledge transfer and capacity building through international partnerships.



Implementation and Governance Framework

7. Implementation and Governance Framework

Effective implementation of Zambia's National Artificial Intelligence (AI) Strategy requires a robust and coordinated framework that brings together key stakeholders across government, industry, academia, and civil society. This chapter outlines the implementation framework designed to operationalize the strategic objectives and initiatives detailed in this strategy. The framework establishes governance structures, defines roles and responsibilities, and sets forth mechanisms for collaboration, coordination, and monitoring of AI initiatives across Zambia.

7.1 Governance Structure

1. National AI Council

Role and Function:

The National AI Council will serve as the central advisory body to the government on all matters related to AI. Its primary functions include:

- **Strategic Guidance:** Provide high-level strategic advice to the Ministry of Technology and Science and other relevant ministries on AI policies, regulations, and initiatives.
- **Policy Advice:** Provide advice through the development and implementation of the National AI Policy and ensure alignment with international best practices and global standards.
- **Coordination:** Provide advice on the approaches the Ministry of Technology and Science can take to engage all stakeholders, including other governments and agencies, private sector, academia, and civil society.
- **Advisory Capacity:** Serve as an expert advisory group to inform decision-making at the highest levels of government.

Composition:

The Council will comprise representatives from:

- Government ministries and agencies (e.g., Ministry of Technology and Science, Ministry of Education, Ministry of Commerce)
- Academic and research institutions
- Private sector leaders in AI and technology
- Civil society organizations
- Legal and ethical experts in AI
- Representatives from international cooperation bodies focusing on AI for development

7.2 Technical Working Groups (TWGs)

Role and Function:

Technical Working Groups will be established to focus on specific sectoral solution areas. Their primary responsibilities include:

- **Sector-Specific Implementation:** Develop and oversee the implementation of AI initiatives within their respective sectors (e.g., healthcare, agriculture, education, finance, mining).

- **Expert Collaboration:** Bring together experts from various fields to address technical challenges and innovate solutions.
- **Policy Input:** Provide sector-specific insights and recommendations to inform policy development and adjustments.
- **Monitoring and Evaluation:** Track progress, assess impacts, and report on sectoral AI initiatives.

Composition:

Each TWG will include:

- Sector-specific government officials from Ministries and Parastatals
- Industry experts and practitioners
- Academic researchers and scientists
- Representatives from relevant non-governmental organizations
- Technical experts in AI and data science

7.3 Coordination Entities

a. Smart Zambia Institute

Role and Function:

Smart Zambia Institute will be responsible for coordinating the implementation of AI initiatives within government institutions. Its functions include:

- **Digital Transformation Leadership:** Drive the integration of AI technologies into public administration and service delivery.
- **Capacity Building:** Provide training and resources to government personnel on AI applications.
- **Standards and Best Practices:** Establish guidelines and standards for AI adoption in government processes.
- **Inter-Agency Collaboration:** Facilitate collaboration among different government departments to ensure cohesive implementation.

b. Ministry of Science and Technology

Role and Function:

The Ministry of Science and Technology will lead the coordination of AI adoption across the entire economy. Its responsibilities encompass:

- **Policy Implementation:** Execute the National AI Policy and oversee its integration into various sectors.
- **Ecosystem Development:** Promote the growth of the AI ecosystem by supporting research, innovation, and entrepreneurship.
- **Stakeholder Engagement:** Engage with industry, academia, and international partners to foster collaboration.
- **Resource Mobilization:** Secure funding and investments to support AI initiatives.

7.4 National Emerging Technologies Centre of Excellence

Role and Function:

An interface within the governance structure will be established to facilitate international cooperation on AI. This interface will:

- **Engage with International Organizations:** Collaborate with global and regional bodies focusing on AI for development.
- **Mobilize Support and Resources:** Attract technical assistance, funding, and expertise from multilateral donors, development agencies, and international foundations.
- **Knowledge Exchange:** Participate in international forums, conferences, and networks to share best practices and learn from global advancements.
- **Alignment with Global Standards:** Ensure that Zambia's AI initiatives align with international ethical guidelines and regulatory frameworks.

Stakeholder Categories:

- Secretariat staff
- Multilateral and bilateral development agencies
- International financial institutions
- Global philanthropic organizations
- International research and academic institutions
- Global technology and AI organizations

7.5 Roles and Responsibilities

1. Government Ministries and Agencies

- **Policy Development and Regulation:** Develop and enforce policies, laws, and regulations related to AI.
- **Implementation Support:** Provide resources and support for the execution of AI initiatives within their jurisdictions.
- **Monitoring and Evaluation:** Track progress and outcomes of AI projects and report to the National AI Council.

2. Private Sector and Industry

- **Innovation and Adoption:** Invest in AI research, development, and deployment within their operations.
- **Collaboration:** Partner with government and academia on AI projects and share expertise.
- **Capacity Building:** Contribute to developing the AI talent pool through training in partnership with the Ministry of Education and other stakeholders in the education sector.

3. Academic and Research Institutions

- **Research and Development:** Conduct cutting-edge AI research addressing national priorities.
- **Education and Training:** Offer AI-related programs and courses to build human capital.
- **Policy Input:** Provide evidence-based recommendations to inform AI policies and strategies.

4. Civil Society Organizations

- **Advocacy and Awareness:** Promote public understanding of AI and its implications.
- **Ethical Oversight:** Advocate for ethical considerations and the protection of human rights in AI deployment.
- **Community Engagement:** Facilitate dialogue between citizens and policymakers on AI issues.

5. International Partners

- **Technical Assistance:** Provide expertise and knowledge transfer to support AI initiatives.
- **Financial Support:** Offer funding and investment for AI projects and capacity building.
- **Policy Alignment:** Collaborate on aligning Zambia's AI framework with international standards.

7.6 Implementation Mechanisms

1. Collaboration Platforms

- **Digital Platforms:** Virtual innovation network that facilitates communication, data sharing, and collaboration among stakeholders, this will be hosted within the National Centre for emerging technologies.
- **Workshops and Conferences:** Organize regular events to bring together stakeholders for knowledge exchange and networking.

2. Funding and Resource Mobilization

- **Public Funding:** Allocate government budget resources specifically for AI initiatives, to catalyse AI adoption in strategic sectors.
- **Private Investment:** Encourage investment from domestic and international private sector entities through incentives.
- **Donor Engagement:** Engage with development partners to secure grants and technical assistance.

3. Capacity Building Programs

- **Training and Education:** Develop the AI component of the national digital skills framework under development through the national digital inclusion program and develop programs to enhance skills across government, industry, and academia. Leverage globally available digital content to accelerate the national capacity building process, with a specific focus on open courseware, that present a free to citizen learning opportunity.

- **Exchange Programs:** Facilitate opportunities for learning and collaboration with international institutions and international universities.

4. Monitoring and Evaluation Systems

- **Performance Metrics:** Define key indicators to assess the progress and impact of AI initiatives.
- **Reporting Mechanisms:** Implement regular reporting protocols for transparency and accountability.
- **Strategy Review:** Use evaluation findings to inform policy adjustments and strategic planning. Under the oversight of the Ministry and with advice from the National Council on AI, review the strategy implementation annually and make recommendations for adjustments.

7.7 Stakeholder Engagement

1. Multi-Stakeholder Involvement

- **Inclusive Participation:** Ensure representation from all relevant sectors, including marginalized groups, to promote equitable AI development.
- **Consultative Processes:** Conduct public consultations and stakeholder meetings to gather diverse perspectives.

2. Communication Strategies

- **Awareness Campaigns:** Educate the public about AI benefits, risks, and opportunities.
- **Transparency:** Maintain open channels of communication regarding AI policies, initiatives, and adoption.

7.8 Risk Management

1. Ethical and Legal Risks

- **Compliance Mechanisms:** Establish processes to ensure adherence to ethical guidelines and legal requirements.
- **Data Protection:** Implement strong data privacy and security measures.

2. Operational Risks

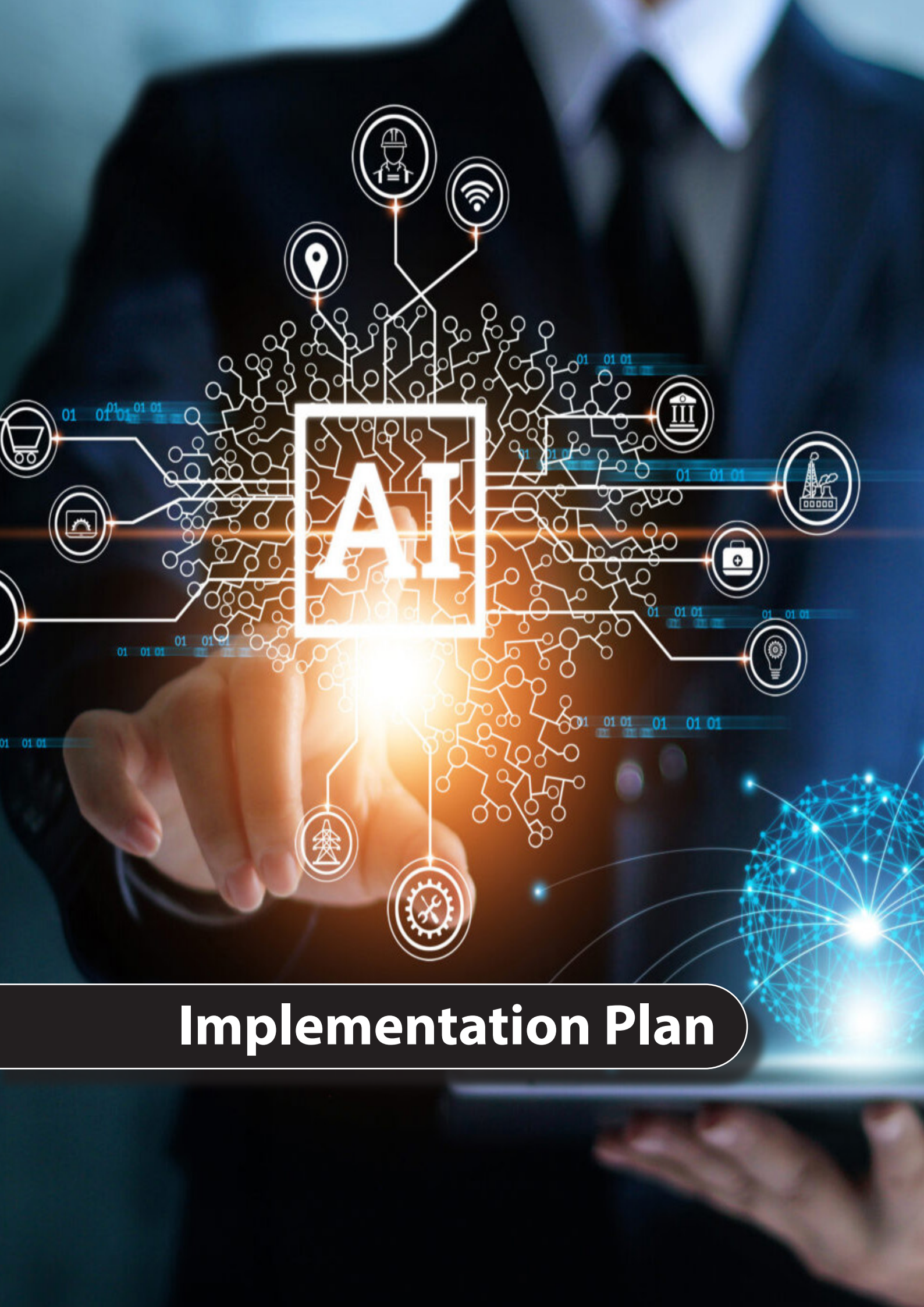
- **Capacity Constraints:** Address skill gaps through targeted training and recruitment.
- **Resource Limitations:** Secure diversified funding sources to mitigate financial risks.

3. Technological Risks

- **Infrastructure Reliability:** Invest in robust infrastructure to support AI technologies.
- **Cybersecurity Measures:** Protect AI systems from cyber threats and vulnerabilities.

The implementation framework provides a structured approach to operationalizing Zambia's National AI Strategy. By establishing clear governance structures, defining roles and responsibilities, and fostering collaboration among all stakeholders, Zambia is positioned to effectively harness AI for national development. This framework emphasizes inclusivity, ethical practices, and international cooperation, ensuring that AI adoption contributes positively to the economy and society while aligning with global standards.

Through coordinated efforts and strategic management, Zambia can navigate the complexities of AI implementation, mitigate potential risks, and realize the transformative potential of AI technologies for the benefit of all its citizens.



Implementation Plan

8 Implementation Plan

This implementation plan is organized into three time frames: the first 100 days, the first year, and the second year. The plan outlines specific objectives, activities, responsible entities, expected outputs, and indicators to track progress. This plan will be reviewed regularly by the Ministry of Technology and Science leadership and a progress report prepared annually.

Implementation Plan Table

Objective	Activities	Responsible Entities	Outputs	Indicators
1. Establish Governance Structures	1. Form the National AI Council 2. Establish Technical Working Groups (TWGs)	- Ministry of Technology and Science - National AI Council	- Operational National AI Council - Functional TWGs with defined mandates	- Council members appointed - Number of TWG meetings held
2. Develop Draft National AI Policy	1. Begin drafting the National AI Policy 2. Conduct initial stakeholder consultations	- Ministry of Technology and Science - National AI Council	- Draft outline of the National AI Policy - Initial stakeholder input collected	- Draft policy document prepared - Number of consultations conducted
3. Initiate Capacity Building Programs	1. Plan integration of AI into educational curricula 2. Design AI literacy campaigns	- Ministry of Education - Educational Institutions - Ministry of Information and Broadcasting	- Curriculum integration plan - AI literacy campaign strategy	- Plans approved by relevant authorities - Campaign materials developed
4. Identify Pilot Projects	1. TWGs propose potential pilot projects in key sectors	- Technical Working Groups - National AI Council	- List of prioritized pilot projects with initial proposals	- Number of projects identified - Proposals documented
5. Engage International Partners	1. Identify and reach out to potential international collaborators	- Ministry of Foreign Affairs - Ministry of Technology and Science	- Initial contacts made with international organizations - Expressions of interest received	- Number of partnerships initiated - MOUs drafted

Objective	Activities	Responsible Entities	Outputs	Indicators
1. Finalize and Enact National AI Policy	1. Complete drafting the policy 2. Public consultations 3. Government approval process	- Ministry of Technology and Science - National AI Council - Parliament	- Officially adopted National AI Policy	- Policy enacted - Number of public consultations held
2. Launch AI Literacy Campaigns	1. Implement AI awareness programs 2. Utilize media platforms	- Ministry of Information and Broadcasting - Civil Society Organizations	- Increased public awareness of AI - Media content produced	- Outreach metrics - Survey results indicating awareness levels
3. Implement Pilot Projects	1. Secure funding and resources 2. Establish project teams 3. Begin implementation	- Relevant Ministries - Industry Partners - TWGs	- Operational pilot projects - Initial results and data collected	- Projects launched - Progress reports submitted
4. Integrate AI into Educational Curricula	1. Update curricula with AI content 2. Train educators	- Ministry of Education - Educational Institutions	- Updated educational programs - Educators trained in AI content	- Number of institutions adopting new curricula - Number of educators trained
5. Secure Technical Assistance and Funding	1. Develop proposals 2. Apply for international grants	- Ministry of Technology and Science - National AI Council	- Grants received - Technical support agreements in place	- Amount of funding secured - Number of agreements signed
6. Begin Infrastructure Enhancement	1. Plan digital infrastructure upgrades 2. Identify priority areas for improvement	- Ministry of Technology and Science - Private Sector Partners	- Infrastructure development plan - Initial upgrades initiated	- Plan approved - Percentage of upgrades completed

Objective	Activities	Responsible Entities	Outputs	Indicators
1. Expand AI Education Programs	1. Introduce specialized AI degree programs 2. Offer scholarships and incentives	- Educational Institutions - Ministry of Education	- Increased number of AI graduates - Scholarships awarded	- Enrolment numbers - Number of scholarships granted
2. Professional Training and Upskilling	1. Develop training programs for professionals 2. Partner with industry for program delivery	- Smart Zambia Institute - Industry Associations	- Workforce with enhanced AI competencies - Training programs executed	- Number of professionals trained - Training completion rates
3. Evaluate and Scale Pilot Projects	1. Assess pilot outcomes 2. Plan nationwide expansion of successful projects	- TWGs - Relevant Ministries	- Evaluation reports - Expanded AI initiatives across regions	- Evaluations completed - Number of projects scaled nationally
4. Invest in Digital Infrastructure	1. Enhance data centres and cloud services	- Private Sector Partners	- Operational cloud data centres established	- Data centre capacity
5. Develop National Data Repositories	1. Create data management protocols 2. Encourage data sharing among institutions	- Smart Zambia Institute - Ministries	- Accessible and secure data repositories - Standardized data protocols	- Number of datasets available - Usage statistics of data repositories
6. Enhance Governance Frameworks	1. Develop sector-specific guidelines 2. Strengthen compliance mechanisms	- TWGs - Regulatory Bodies - Ministry of Justice	- Published guidelines - Compliance processes implemented	- Guidelines adopted by sectors - Compliance rates monitored
7. Support AI Startups and SMEs	1. Provide financial incentives and grants 2. Establish innovation hubs and incubators	- Ministry of Commerce, Trade and Industry - Investment Promotion Agencies	- Growth in AI startups - Operational innovation hubs	- Number of startups supported - Hub utilization rates

Objective	Activities	Responsible Entities	Outputs	Indicators
8. Organize AI Events and Competitions	1. Host national AI conferences 2. Conduct hackathons and innovation challenges	- National AI Council - Industry Associations	- Increased collaboration - Innovative AI solutions developed	- Event attendance - Number of solutions generated
9. Participate in International AI Forums	1. Attend global conferences 2. Share Zambia's experiences and learnings	- Ministry of Technology and Science - National AI Council	- Enhanced international presence - Knowledge exchange facilitated	- Number of Partnerships formed
10. Align with Global Standards	1. Review and update policies 2. Engage in international standard-setting bodies	- Ministry of Justice - National AI Council	- Policies aligned with global standards - Participation in global governance	- Compliance assessments - Records of international engage-ments

Monitoring and Evaluation Framework

9. Monitoring and Evaluation Framework

The Monitoring and Evaluation (M&E) framework is designed to assess the progress against the implementation, the effectiveness, and impact of Zambia's National Artificial Intelligence Strategy.

This chapter outlines the Ministry of Technology and Science M&E framework to track the implementation of the strategy, measure outcomes, and inform decision-making processes. The framework is designed to ensure accountability, transparency, and continuous improvement throughout the implementation period.

Objectives of the M&E Framework

1. **Track Progress:** Monitor the implementation of activities against planned timelines and milestones.
2. **Assess Effectiveness:** Evaluate the extent to which the strategic objectives and outcomes are being achieved.
3. **Facilitate Decision-Making:** Provide evidence-based insights to inform policy adjustments and resource allocation.
4. **Ensure Accountability:** Hold implementing entities responsible for delivering expected outputs and outcomes.
5. **Promote Learning:** Identify best practices, challenges, and lessons learned to enhance future initiatives.

Components of the M&E Framework

The M&E framework comprises the following key components:

1. **Results Framework**
2. **Performance Indicators**
3. **Data Collection and Management**
4. **Reporting Mechanisms**
5. **Roles and Responsibilities**
6. **Evaluation Plan**
7. **Risk Management**
8. **Learning and Adaptation**

91. Results Framework

The Results Framework provides a structured approach linking inputs, activities, outputs, outcomes, and impacts. It serves as the foundation of this M&E framework.

Structure:

- **Impact:** Long-term changes expected from the AI Strategy (e.g., enhanced economic growth, improved quality of life, increase in agricultural yield and income).
- **Outcomes:** Medium-term results achieved through the strategy's outputs (e.g., increased AI adoption in key sectors).
- **Outputs:** Direct products of activities (e.g., number of AI professionals trained).
- **Activities:** Actions taken to produce outputs (e.g., developing AI curricula, integrating open courseware into curricula).
- **Inputs:** Resources used to conduct activities (e.g., funding, human resources).

9.2. Performance Indicators

Performance indicators are specific, measurable signs of progress toward achieving outputs, outcomes, and impacts. The indicators are designed based on the SMART framework (Specific, Measurable, Achievable, Relevant, Time-bound).

Key Performance Indicators (KPIs):

For each objective and activity outlined in the strategy, KPIs are established. Below is a detailed list of indicators aligned with the strategic objectives.

Strategic Objective 1: Establish Robust Governance Framework

Outcome Indicators:

- **Indicator 1.1:** National AI Policy enacted by Month 9.
- **Indicator 1.2:** Number of sector-specific AI guidelines developed and adopted.

Output Indicators:

- **Indicator 1.3:** Number of meetings held by the National AI Council per quarter.
- **Indicator 1.4:** Percentage of TWGs operational with defined mandates.

Strategic Objective 2: Develop Human Capital and AI Skills

Outcome Indicators:

- **Indicator 2.1:** Percentage increase in AI-skilled professionals annually.
- **Indicator 2.2:** Number of educational institutions offering AI programs.
- **Indicator 2.3:** Number of educational institutions leveraging existing open courseware in their offering.

Output Indicators:

- **Indicator 2.4:** Number of educators trained in AI.
- **Indicator 2.5:** Number of students enrolled in AI courses, both in local institutions, online learning internationally or leveraging open courseware.

Strategic Objective 3: Foster Research and Innovation

Outcome Indicators:

- **Indicator 3.1:** Number of AI research projects addressing national challenges.
- **Indicator 3.2:** Number of AI research partnerships established.

Output Indicators:

- **Indicator 3.3:** Amount of funding allocated to AI research.
- **Indicator 3.4:** Number of publications in reputable journals.

Strategic Objective 4: Build an AI Ecosystem

Outcome Indicators:

- **Indicator 4.1:** Increase in the number of AI startups and SMEs.
- **Indicator 4.2:** Level of private sector investment in AI. (both local and FDI)

Output Indicators:

- **Indicator 4.3:** Number of innovation hubs and incubators established.
- **Indicator 4.4:** Number of AI events and competitions organized.

Strategic Objective 5: Enhance Infrastructure and Data Ecosystems

Outcome Indicators:

- **Indicator 5.2:** Number of AI cloud services available in local data centres.

Output Indicators:

- **Indicator 5.3:** Amount of data accessible in national repositories. (open data sets)
- **Indicator 5.4:** Percentage of public institutions publishing data on open data platforms.

Strategic Objective 6: Promote Responsible AI Adoption

Outcome Indicators:

- **Indicator 6.1:** Compliance rate with AI ethical guidelines among AI projects.

Output Indicators:

- **Indicator 6.3:** Number of workshops on AI ethics conducted.
- **Indicator 6.4:** Adoption of data protection policies by institutions.

9.3. Data Collection and Management

Effective data collection and management are essential for accurate monitoring and evaluation.

Data Collection Methods:

- **Surveys and Questionnaires:** For gathering quantitative and qualitative data from stakeholders.
- **Administrative Records:** Utilizing existing records from institutions and government agencies.
- **Interviews and Focus Groups:** Engaging stakeholders for in-depth insights.
- **Monitoring Tools:** Implementing software and systems to track real-time data.

Data Sources:

- **Government Reports:** Official publications and statistics.
- **Educational Institutions:** Enrolment and graduation data.
- **Private Sector Records:** Investment figures, startup data.
- **International Organizations:** Benchmarking data for global comparisons.

Data Quality Assurance:

- **Validation Processes:** Cross-checking data from multiple sources. Ministry focal point ground truthing data.
- **Data Protection Measures:** Ensuring confidentiality and compliance with data privacy laws.
- **Standardization:** Using consistent definitions and measurement units.

9.4. Reporting Mechanisms

Regular reporting is crucial for transparency and informed decision-making.

Reporting Schedule:

- **Monthly Updates:** Brief reports on immediate activities and outputs.
- **Quarterly Reports:** Detailed analysis of progress against indicators.
- **Annual Reports:** Comprehensive evaluation of outcomes and impacts.

Reporting Responsibilities:

- **Implementing Entities:** Prepare and submit reports to MoTS and SZI.
- **National AI Council:** Provide strategic insights based on data provided.
- **Ministry of Technology and Science:** Present findings to government and stakeholders.

Reporting Formats:

- **Standardized Templates:** To ensure consistency and completeness.
- **Digital Dashboards:** For real-time data visualization and access.
- **Public Dissemination:** Sharing summaries with the public to promote transparency.

9.5. Roles and Responsibilities

Clearly defining roles ensures accountability and efficient implementation of the M&E framework.

Ministry of Technology and Science:

- **Lead Agency:** Overall coordination of the M&E activities.
- **Policy Oversight:** Ensuring alignment with strategic objectives.

National AI Council:

- **Strategic Monitoring:** Review progress and advising on adjustments.
- **Stakeholder Engagement:** Advise Ministry of Technology and Science on stakeholder engagement.

Technical Working Groups:

- **Sectoral Monitoring:** Tracking progress within specific sectors.
- **Data Collection:** Gathering and reporting sector-specific data.

Implementing Agencies:

- **Execution:** Carrying out activities and reporting on outputs.
- **Data Provision:** Supplying accurate and timely data.

M&E Unit (within the Ministry of Technology and Science and SZI):

- **Technical Support:** Providing expertise on M&E methodologies.
- **Quality Assurance:** Ensuring data integrity and report accuracy.

9.6. Evaluation Plan

Evaluations are systematic assessments of the strategy's relevance, effectiveness, efficiency, impact, and sustainability.

Types of Evaluations:

- **Mid-Term Evaluation (End of Year 1):** Assess progress, identify challenges, and recommend mid-course adjustments.
- **End-Term Evaluation (End of Year 2):** Evaluate overall achievements, impacts, and lessons learned.

Evaluation Criteria:

- **Relevance:** Alignment with national priorities and stakeholder needs.
- **Effectiveness:** Achievement of objectives and outcomes.
- **Efficiency:** Optimal use of resources to achieve outputs.
- **Impact:** Contribution to long-term goals and societal changes.
- **Sustainability:** Likelihood of continued benefits beyond the implementation period.

Evaluation Methods:

- **Mixed-Methods Approach:** Combining quantitative and qualitative data.
- **Comparative Analysis:** Benchmarking against initial baselines and targets.
- **Case Studies:** In-depth analysis of specific initiatives or sectors.

Evaluation Team:

- **Composition:** Independent evaluators with expertise in AI, M&E, and relevant sectors.

9.7. Risk Management

Identifying and mitigating risks is vital for the successful implementation of the strategy.

Risk Identification:

- **Operational Risks:** Delays in activity execution, resource shortages.
- **Strategic Risks:** Changes in political priorities, stakeholder disengagement.
- **External Risks:** Economic downturns, technological disruptions.

Risk Mitigation Measures:

- **Contingency Planning:** Developing alternative strategies.
- **Regular Risk Assessments:** Updating risk profiles periodically.
- **Stakeholder Engagement:** Maintaining open communication channels.

Risk Monitoring:

- **Indicators:** Specific metrics to detect early signs of risks.
- **Responsibilities:** Assigned to relevant entities for tracking and reporting.

9.8. Learning and Adaptation

Promoting a culture of continuous learning and improvement enhances the strategy's effectiveness.

Feedback Mechanisms:

- **Learning Forums:** Regular meetings to discuss findings and share experiences.
- **Knowledge Management Systems:** Documenting best practices and lessons learned and maintaining documentation in a centralized knowledge management system.

Stakeholder Involvement:

- **Participatory Approaches:** Engaging stakeholders in M&E processes.
- **Feedback Channels:** Allowing stakeholders to provide input and suggestions.

Summary of Key M&E Parameters

Summary of Key M&E Parameters

Parameter	Details
Indicators	Specific, measurable indicators for each objective and activity, including baselines and targets.
Data Sources	Government reports, institutional records, surveys, interviews, and international databases.
Data Collection Frequency	Monthly, quarterly, or annually, depending on the indicator and reporting schedule.
Responsibilities	Clearly assigned roles for data collection, analysis, reporting, and decision-making among various entities.
Reporting Mechanisms	Standardized templates, digital dashboards, and public reports to ensure transparency and accessibility.
Evaluation Schedule	Mid-term and end-term evaluations conducted by independent evaluators.
Risk Management	Regular risk assessments with mitigation strategies and monitoring indicators.
Learning Mechanisms	Feedback loops, learning forums, and adaptive management practices to incorporate lessons learned into ongoing implementation.
Compliance Measures	Processes to ensure adherence to ethical standards, legal requirements, and international best practices in AI development and deployment.
Stakeholder Engagement	Inclusive participation in M&E activities, ensuring that the voices of all relevant stakeholders are considered in evaluations and decision-making processes.

The Monitoring and Evaluation framework outlined provides the approach to tracking the implementation and impact of Zambia's National AI Strategy. The design of this framework is based on significant experience in systematically measuring progress, assessing outcomes, and incorporating feedback, the M&E framework ensures that the strategy remains effective, efficient, and responsive to the country's needs. The objective is to ensure accountability, promote transparency, and facilitate informed decision-making, ultimately contributing to the successful realization of the strategy's vision and objectives.

Through diligent application of this framework, Zambia can navigate the complexities of AI adoption, continuously improve the initiatives, and be positioned as the as a regional leader in responsible AI adoption.